12. DAYLIGHT, SUNLIGHT, OVERSHADOWING & SOLAR GLARE

Introduction

12.1. This chapter of the ES identifies and discusses the effects of the Development on the following:

- Daylight and sunlight amenity within the surrounding residential properties;
- Overshadowing to the surrounding gardens, amenity areas and open spaces; and
- Solar glare to the approaching motorists, cyclists and train drivers.

12.2. The daylight, sunlight and overshadowing conditions within the Development are set out within the Internal Daylight, Sunlight and Overshadowing assessment which accompanies the planning application submission and has been included within Appendix 12.16.

12.3. This chapter is supplemented by the following appendices:

- Appendix 12.1: Site Plan and 3D Computer Views of the Assessment Model;
- Appendix 12.2: Window Maps of the Surrounding Residential Properties;
- Appendix 12.3: Existing vs. Proposed VSC Tabular Results (Daylight Analysis);
- Appendix 12.4: Existing vs. Proposed NSL Tabular Results (Daylight Analysis);
- Appendix 12.5: Existing vs. Proposed NSL Contour Plots (Daylight Analysis);
- Appendix 12.6: Existing vs. Proposed APSH Tabular Analysis (Sunlight Analysis);
- Appendix 12.7: Existing vs. Proposed VSC Tabular Results for New Horizons Court Without Balconies/Overhangs in Place (Daylight Analysis);
- Appendix 12.8: Existing vs. Proposed NSL Tabular Results for New Horizons Court Without Balconies/Overhangs in Place (Daylight Analysis);
- Appendix 12.9: Existing vs. Proposed NSL Contour Plots for New Horizons Court Without Balconies/Overhangs in Place (Daylight Analysis);
- Appendix 12.10: Existing vs. Proposed APSH Tabular Analysis for New Horizons Court Without Balconies/Overhangs in Place (Sunlight Analysis);
- Appendix 12.11: Existing vs. Proposed Sun on Ground Analysis Plots;
- Appendix 12.12: Existing vs. Proposed Transient Overshadowing Analysis Plots;
- Appendix 12.13: Solar Glare Annual Sequence
- Appendix 12.14: Solar Glare View Points and Calendar Graphs;
- Appendix 12.15: Existing vs. Proposed ADF Tabular Results (Daylight Analysis); and
- Appendix 12.16: Internal Daylight, Sunlight and Overshadowing Report.

Legislation, Planning Policy and Guidance

12.4. The following sections review the relevant legislation, national, regional and local planning policy and guidance requirements in terms of daylight, sunlight, overshadowing, light pollution and solar glare.

National Planning Policy

National Planning Policy Framework (NPPF), February 2019[i], first published 24 July 2018

12.5. There are no national planning policies directly relating to daylight, sunlight and overshadowing. However, Chapter 11 of the NPPF deals with "Making effective use of land." Under the sub-heading "Achieving appropriate densities" it states at paragraph 123:

> *"123. Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies and decisions avoid homes being built at low densities and ensure that developments make optimal use of the potential of each site. In these circumstances; …*
>
> *(c) local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight where they would otherwise inhibit making efficient use of the site (as long as the resulting scheme would provide acceptable living standards)."*

National Planning Practice Guidance (NPPG), 2016[ii]

12.6. The NPPG is an online resource for planning practitioners. In respect to daylight and sunlight, the document states at paragraph 25 (Reference ID 26-025-20140306) in respect to building form that:

> *"some forms pose specific design challenges, for example how taller buildings meet the ground and how they affect local wind and sunlight patterns should be carefully considered."*

12.7. In respect to building scale it states at paragraph 26 (Reference ID 26-026-20140306) that *"account should be taken of local climatic conditions, including daylight and sunlight, wind, temperature and frost pockets*."

Regional Planning Policy

Housing SPG, 2016[iii]

12.8. The key policies from the Housing SPG of relevance to this assessment are detailed below.

- Policy 7.6:
  "requires new development to avoid causing 'unacceptable harm' to the amenity of surrounding land and buildings, particularly in relation to privacy and overshadowing and where tall buildings are proposed. An appropriate degree of flexibility needs to be applied when using BRE guidelines to assess the daylight and sunlight impacts of new development on surrounding properties, as well as within new developments themselves. Guidelines should be applied sensitively to higher density development, especially in opportunity areas, town centres, large sites and accessible locations, where BRE advice suggests considering the use of alternative targets. This should take into account local circumstances; the need to optimise housing capacity; and scope for the character and form of an area to change over time."

- Paragraph 1.3.46 states that:
  "The degree of harm on adjacent properties and the daylight targets within a proposed scheme should be assessed drawing on broadly comparable residential typologies within the area and of a similar nature across London. Decision makers should recognise that fully optimising housing potential on large sites may necessitate standards which depart from those presently experienced, but which still achieve satisfactory levels of residential amenity and avoid unacceptable harm."

- Policy 7.7 notes that large buildings should not adversely affect their surroundings in terms of overshadowing and solar reflected glare.
  "Location and design of tall buildings should not affect their surroundings adversely in terms of microclimate, wind turbulence, overshadowing, noise, reflected glare, aviation, navigation and telecommunication interference."

The London Plan, Intend to Publish (clean version), December 2019[iv]

12.9. The key policies from the London Plan of relevance to this assessment are detailed below:

- *Policy GG2 – Making the best use of land – states:*
  "To create successful sustainable mixed-use places that make the best use of land, those involved in planning and development must:
  proactively explore the potential to intensify the use of land to support additional homes and workspaces, promoting higher density development"

- *Policy D3 – Optimising site capacity through the design-led approach – states:*

"All development must make the best use of land by following a design led approach that optimises the capacity of sites, including site allocations. The design-led approach requires consideration of design options to determine the most appropriate form of development that responds to a site's context and capacity for growth, and existing and planned supporting infrastructure capacity (as set out in Policy D2 Infrastructure requirements for sustainable densities), and that best delivers the requirements set out in Part B.
Development Proposals should:
deliver appropriate outlook, privacy and amenity … [and] … achieve indoor and outdoor environments that are comfortable and inviting for people to use"

- *Policy D6 – Housing quality and standards - states:*
  "The design of development should provide sufficient daylight and sunlight to new and surrounding housing that is appropriate for its context…whilst minimising overshadowing"

- *Policy D89 – Tall Buildings – states that Development proposals should address the following impacts:*
  "buildings should not cause adverse reflected glare…[and]…daylight, sunlight penetration and temperature conditions around the building(s) and neighbourhood must be carefully considered and not compromise comfort and the enjoyment of open spaces…"

- *Policy H2 – Small sites and small housing developments - states:*
  "… schemes should achieve good design and ensure that existing and proposed homes benefit from satisfactory levels of daylight and sunlight"

Local Planning Policy

12.10. The Site is located within the London Borough of Hounslow (LBH) and the potential effects have therefore been considered against their current planning policy, which was adopted on 15th September 2015 until 2030.

Adopted Hounslow Council's Local Plan, September 2015[v]

12.11. LBH's Local Plan provides the planning framework for the borough until 2030. In relation to Daylight, Sunlight, Overshadowing and Solar Glare policies SC4, CC2, CC3 and EQ6 look to protect the amenity of the surrounding buildings and residents. The policies are detailed below:

- *Policy SC4 – Scale and Density of New Housing Development.*
  "Our Approach:
  We will ensure the scale and density of new housing development balances the need to make efficient use of land and achieves high quality design and accessibility, whilst responding to and

reflecting local context and character and protecting existing residents' amenity. Large-scale developments will be required to include a mix of land uses and spaces to help create a sense of place and community neighbourhood….We will expect development proposal to….(b) Applying the design standards contained within this Local Plan to ensure the delivery of high-quality developments which will not compromise the amenity of existing and future residents; …. (d) Meet the design standards set out in Building Regulations and the Local Plan and expanded upon within detailed supplementary guidance documents, including but not limited to, demonstrating compliance with prevailing daylighting standards (BRE Guidance 2011)."

- *Policy CC2 – Urban Design and Architecture.*
  "Our Approach:
  We will retain, promote and support high quality urban design and architecture to create attractive, distinctive, and liveable places …. We expect development proposals to…. (k) Respond meaningfully and sensitively to the site, its characteristics and constraints, and the layout, grain, massing and height of surrounding buildings. The orientation of buildings and uses on sites to make best use of opportunities for passive design and access to daylight/sunlight should be considered; …. (t) Provide adequate outlook, minimise overbearingness and overshadowing, and ensure sufficient sunlight and daylight to proposed and adjoining/adjacent dwellings."

- *Policy CC3 – Tall Buildings.*
  "We will expect tall building development proposals to …. (s) Incorporate innovative approaches to provide high quality, usable, private and communal amenity space where residential uses are proposed."

- *Policy EQ6 – Lighting.*
  "Our Approach:
  We will reduce the light pollution impacts of development and promote reduced light pollution and sky glow across the borough …. (f) Provide adequate protection from glare and light spill to sensitive receptors."

12.12. In addition, the Great West Corridor Plan issueds consultation document, which forms part of the local plan, does not specifically relate to daylight/sunlight matters, however, it does state *"Surrounding residential areas and public open spaces – that sit adjacent to commercial areas and buildings of greater scale and intensity of use and need protection".*

Guidance

Building Research Establishment Guidelines: Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice, Second Edition, 2011 (the "BRE Guidelines")[vi]

12.13. The BRE Guidelines provides:

> *"advice on site layout planning to achieve good daylighting and sunlighting, within buildings and in the open spaces between them."*

12.14. It is intended for building designers, developers, consultants and Local Planning Authorities (LPAs) and is intended to be used in conjunction with the interior daylight recommendations in the Chartered Institute of Building Services Engineers (CIBSE) publication Lighting guide: daylighting and window design[vii].

12.15. The advice it gives is not mandatory and should not be used as an instrument of planning policy. Of particular relevance, it states within the opening summary:

> *"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."*

12.16. In addition, paragraph 1.6 states:

> *"…its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design (see Section 5). In special circumstances, the developer or the planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings."*

12.17. The BRE Guidelines makes the following statement regarding the potential for reflected solar glare on a development:

> *"Glare or solar dazzle can occur when sunlight is reflected from a glazed façade or area of metal cladding. 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 or cladding on the façade, or when there are areas of glass or cladding, which slope back so that high altitude sunlight can be reflected along the ground. Thus, solar dazzle is only a long-term problem for some heavily glazed (or mirror clad) buildings. Photovoltaic panels tend to dazzle because they are designed to absorb light."*

Commission Internationale de L'Eclairage (CIE) 146:2002 & CIE 147:2002 Collection on glare, 2002[viii]

12.18. The guidance states that:

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

12.19. It describes how the closer the instance of glare is to the line of sight of the viewer the worse the veiling effect of glare becomes.

Assessment Methodology

Consultation

12.20. As agreed with LBH, the scope of this chapter is to consider the daylight, sunlight, overshadowing and solar glare effects of the Development on the surrounding buildings. A separate standalone report accompanies the planning application detailing the levels of daylight, sunlight and overshadowing that will be enjoyed by/within the Development.

12.21. Given that the Development is predominantly residential led, it is not anticipated that there will be any new significant light pollution sources, such as large areas of commercial office space, that are likely to cause a potential notable effect on the surrounding sensitive receptors. Any proposed commercial aspects of the Development are anticipated to close before the Institution of Lighting Engineers (ILE) guidance curfew time of 11pm. The commercial aspects of the Development would not therefore cause any light spllage upon the neighbouring properties post curfew. Additionally, and as set out and agreed within the Scoping Opinion, it is deemed, using professional judgement, that detailed light pollution assessments are not considered necessary.

12.22. The proposed approach to the daylight, sunlight, overshadowing and solar glare assessment was set out in the submitted EIA Scoping Report (refer to Appendix 2.1), where it was suggested that if an existing surrounding window were to experience a reduction in its daylight amenity beyond the BRE Guidelines, that we should look at the retained level of Vertical Sky Component (VSC). A subsequent scoping note, which was prepared by Point 2,

(Appendix 2.3) was issued stating that an alternative retained target value of 15% VSC could be considered acceptable for this urban area, however within the formal EIA Scoping Opinion (Appendix 2.4), LBH stated that the Site should look to retain 20% VSC to the existing surrounding windows and not 15% VSC.

12.23. The EIA Scoping Opinion (see Appendix 2.4) stated at 3.35 and 3.36:

> *"Scoping agreed. It respect of determining effects on neighbours from overshadowing it is confirmed that both VSV and NSL are to be used. It is noted that the Report acknowledged that ADF is not an appropriate measure unless full details of interior of rooms is known. In respect of daylight impacts, the alternative target of 15% VSC suggested at paragraph 9.12 of the Report is not agreed given the nature of the Site, which adjoins suburban housing. An alternative target VSC value of 20% is recommended."*

12.24. Whilst the Scoping Opinion agreed that the ADF assessment should not be undertaken if full details of the neighbouring properties rooms are not known, and subsequent to conversations with the Case Officer, ADF results for the surrounding properties (using assumed room layouts and a standard reflectance of 0.5) are given within the appendices for reference. These are included at Appendix 12.15.

12.25. The above requirement has been incorporated within the methodology and discussed in greater detail below.

Overall Approach

12.26. For the purposes of EIA, the likely significant effects are set out using the defined significance criteria. To assist LBH in their overall planning balance decision, commentary is also given discussing the acceptability of the results based around the retained levels of daylight and other factors such as the current baseline and proposed density. The overall conclusions that will be drawn for each of the surrounding residential properties will therefore be based on up to two separate sub-conclusions, i.e. the combination of the two sub-conclusions allow for the overall conclusion to be reached. The two sub-conclusions are based on:

- The reductions of daylight/sunlight that are likely to occur;
- The retained levels of daylight/sunlight given the Site's location; and
- Other factors that may influence the retained levels of daylight/sunlight such as, overhead balconies, windows that are set back, the room's use, whether the room is served by more than one window and/or the effect on the main window.

12.27. The first sub-conclusion is established using the relevant tests and criteria set out in the BRE Guidelines. These tests allow for consideration as to whether the Development is likely to create an 'adverse', or 'notable' effect, on the surrounding properties. The effect has been categorised depending on the significance as set out below under the heading 'Significance Criteria'.

12.28. Suitable retained VSC daylight levels for the second sub-conclusion are as suggested and agreed within the EIA Scoping Opinion (Appendix 2.4).

12.29. With regard to daylight distribution (NSL) for the second sub-conclusion, from a professional view, it is very difficult to retain direct daylight to at least 80% of the working plane in urban locations without having to compromise on other factors, such as, ensuring the development potential of the site is fully utilised. In addition, it is often found that this level is not achieved in the existing condition. For urban locations, a professional view is taken that if more than 50% of the working plane can continue to receive some direct daylight, then the room can be considered to retain an adequate level of daylight distribution.

12.30. As the ability to receive sunlight is dependent on the orientation of the window, it is considered that a retained APSH of 15% and above (to a window unobstructed by balconies or other projections etc.) is a reasonable level of retained daylight for a dense urban area for the second sub-conclusion. This retained total APSH value is as suggested and agreed within the EIA Scoping Report (Appendix 2.1).

12.31. In addition, and as above, other factors include overhead balconies or set back windows, the room's use, whether the room is served by more than one window and/or the effect on the main window.

12.32. Whilst the first sub-conclusion may therefore suggest that a 'major adverse' effect will occur (because the reduction in daylight/sunlight compared to the baseline levels will be large), the reduction could be considered to be acceptable if it is shown that adequate daylight/sunlight levels will still be retained given the Site's urban location and other contextual factors.

12.33. The following paragraphs set out the methodology used when applying the BRE Guidelines tests to the surrounding properties, amenity spaces and viewpoints.

12.34. This methodology has been carried out using a specialist software applied to a three-dimensional AutoCAD model, and using the detailed plans of the Development (Appendix 3.1) and its surrounding context which were received on 17th July 2020.

Daylight

12.35. In accordance with the policies and guidelines outlined above, this assessment has been based on the BRE Guidelines, which present two main methods of calculating daylight:

- Vertical Sky Component Method; and
- No Sky – Line Method.

12.36. These methods are described in detail below.

Vertical Sky Component Method (VSC)

12.37. 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 luminance under an unobstructed sky. The Commission International de l'Eclairage (CIE) 'standard' overcast sky is used, and the ratio is then expressed as a percentage. The maximum value achievable is approximately 40% for a completely unobstructed vertical wall.

12.38. VSC may be calculated by using the sky light indicator or Waldram Diagram. For calculation purposes, trees are ignored unless they form dense continuous belts. The computer model created for the daylight assessments presented within the chapter uses Waldram Diagrams, which is a more accurate method of calculating the VSC.

12.39. In addition to the standard VSC assessment, the BRE Guidelines at para 2.2.11 states that:

> *"Existing windows with balconies above them typically receive less daylight. Because the balcony cuts out light from the top part of the sky, even a modest obstruction opposite may result in a large relative impact on the VSC, and on the area receiving direct skylight. One way to demonstrate this would be to carry out an additional calculation of the VSC and area receiving direct skylight, for both the existing and proposed situations, without the balcony in place. For example, if the proposed VSC with the balcony, was under 0.8 times the existing value with the balcony, but the same ratio for the values without the balcony was well over 0.8, this would show that the presence of the balcony, rather than the size of the new obstruction, was the main factor in the relative loss of light."*

No Sky-Line Method (NSL)

12.40. 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 of 0.85m in height.

The NSL divides those areas of working plane in a room which receives direct sky light through the windows from those areas of the working plane which cannot. If a significant area of the working plane lies beyond the NSL (i.e. it receives no direct sky light) then the distribution of daylight in the room would be poor and supplementary electric lighting may be required.

12.41. The potential effect of the daylighting distribution in the surrounding existing buildings is established by plotting the NSL in each of the main rooms. For houses, this includes living rooms, dining rooms and kitchens. Bedrooms are also analysed, although they are less important in terms of the amount of daylight received.

Sunlight

12.42. The BRE Guidelines provide two methods for assessing sunlight, depending on whether the assessment is for 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.

12.43. For existing residential properties, the BRE Guidelines state in Section 3.2.3 that:

> *"… all main living rooms of dwellings and conservatories 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."*

12.44. Section 3.2.4 of the BRE Guidelines 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."*

12.45. The BRE Guidelines 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. Section 3.2.5 states:

> *"If this window point can receive at least one quarter of APSH (see section 3.1), including at least 5% of APSH in the winter months between 21 September and 21 March, then the room should still receive enough sunlight."*

12.46. Where an existing surrounding room is served by additional windows to those facing within 90^0 of due south, all windows have been assessed, even if any additional window serving

the room is facing within 90^0 of due north. This ensures that the true level of sunlight amenity to the room in question is taken into account. For clarity, when more than one window serves a room the results do not duplicate the sunlight values but measure the total sunlight availability to the room through all windows.

Overshadowing

Sun on the Ground

12.47. The method for assessing sun on the ground is the 'sun-on-ground indicator'. The BRE Guidelines suggest that the Spring Equinox (March 21st) is a suitable date for the assessment.

12.48. Using specialist software, the path of the sun is tracked to determine where the sun would reach the ground and where it would not. This assessment reviews the total percentage of an area that receives at least 2 hours of direct sunlight on March 21st.

12.49. The BRE Guidelines suggest that for a garden or amenity area to appear adequately sunlit throughout the year, no more than half (50%) of the area should be prevented by buildings from receiving 2 hours of sunlight on the 21st March.

Transient Overshadowing

12.50. The BRE Guidelines suggest that where large buildings are proposed which may affect a number of gardens or open spaces, it is useful to plot a shadow plan to illustrate the location of shadows at different times of the day and year. For the purpose of this assessment the overshadowing was mapped for the following three key dates:

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

12.51. September 21st (Autumn Equinox) provides the same overshadowing images as March 21st (Spring Equinox), as the sun follows the same path on these dates.

12.52. For each of these dates, the overshadowing has been calculated at hourly intervals throughout the day from 08:00 to 19:00. Some images are not included within Appendix 10.5 because the sun would not be present during these times (e.g. from approximately 16:00 onwards on 21st December) and thus no shadow can be cast.

12.53. The indicators are calculated for different latitudes, London being at 51.5° north. Southern orientation is critically important, as are the heights of the existing and proposed buildings.

12.54. Table 12.1 below shows the sunset and sunrise times for 21st March, 21st June and 21st December. It also shows the maximum altitude of the sun and the time at which the sun reaches the altitude of 10°, which is the altitude at which the BRE Guidelines specifies overshadowing should be assessed. Receipt of sunlight can be disregarded when it is lower than this altitude.

Table 12.1: Sun Altitude Dates and Times

London, UK - Greenwich Mean Time (Accurate to Nearest 10 minutes)					
Date	**Sunrise Time**	**Time at 10° Altitude Rising**	**Maximum (degrees) Altitude**	**Time at Setting 10° Altitude**	**Sunset Time**
21 March	06:10	07:10	39.4	17:10	18:10
21 June	03:50	05:10	62.4	19:00	20:10
21 December	08:10	09:50	15.6	14:10	16:00

Solar Glare

12.55. The BRE Guidelines makes the following statement regarding the potential for reflected solar glare on a development at paragraph 5.8.1:

> *"Glare or solar dazzle can occur when sunlight is reflected from a glazed façade or area of metal cladding. 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 or cladding on the façade, or when there are areas of glass or cladding, which slope back so that high altitude sunlight can be reflected along the ground. Thus, solar dazzle is only a long-term problem for some heavily glazed (or mirror clad) buildings. Photovoltaic panels tend to dazzle because they are designed to absorb light."*

12.56. The BRE Guidelines outline a brief methodology for evaluation of the scale of a solar glare issue:

> *"If it is likely that a building may cause solar dazzle the exact scale of the problem should be evaluated...by identifying key locations such as road junctions and windows of nearby buildings and working out the number of hours of the year that sunlight can be reflected to these points."*

12.57. The solar glare assessments undertaken for this chapter first simulate the path of the sun for the entire year around the Development in order to establish the locations, times, duration and direction of solar reflections and identify where these may affect sensitive locations, with a particular focus on road users or railways. This is referred to as the 'annual

sequence'. The assessment is carried out using a specialist software applied to a three-dimensional AutoCAD model of the Development and its surrounding context.

12.58. From the annual sequence assessment, and given the nearby road junction locations, the sensitive receptor locations have been identified from which more detailed tests have been run using calendar graphs. The calendar graphs show the angle at which the solar glare may occur from the reference point, when it will occur throughout the year, and the duration for which it may occur. An example calendar graph is given at Figure 12.1.

12.59. The calendar graphs' axes show the days of the year along the X axis and time of day on the Y axis. The graph has 365 segments along the X axis, one for each day of the year and 720 segments on the Y axis each representing 5 minutes of the 24hr period per day. The light grey areas illustrate the times of daylight during each day and the dark grey areas illustrates the times of night. The yellow, green, orange and red colours indicate when Solar Glare may occur, and, depending on the colour, the angle at which it is likely to occur from the receptor. If a band of colour is tall it means that solar glare is likely to occur for an extended period of time during that day. If the band of colour is thin and long on the graph, it means solar glare may occur on each day but only for a limited time. This assessment does not account for the limits of the windscreen or for possible use of drivers' visors, which could mitigate some glare instances.

Significance Criteria

Daylight, Sunlight and Sun on Ground

12.60. The BRE Guidelines are predicated upon a suburban environment. Therefore, a degree of flexibility should be applied when assessing the significance of daylight and sunlight effects in urban locations.

12.61. The BRE Guidelines state at paragraph I3 – I4 of Appendix I:

> *"I3 - Adverse effects 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*
>
> *I4 - The assessment of effect will depend on a combination of factors, and there is no simple rule of thumb that can be applied."*

12.62. In view of the above, the interpretation of the daylight and sunlight results must be assessed in terms of the quantum of light lost or gained, not purely in terms of 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.

12.63. Within the BRE Guidelines, the assessment criteria of whether a change in daylight and/or sunlight may be noticeable to the occupants, is limited to whether the effects are negligible or not. The BRE Guidelines do not therefore define any effects which are experienced beyond this.

12.64. The numerical criteria provided within the BRE Guidelines are presented in Table 12.2 below:

Table 12.2: Daylight, Sunlight and Sun on Ground Criteria for Existing Surrounding Residential Properties

Issue	BRE Guidelines Criteria
Vertical Sky Component	A window may be adversely affected if the VSC measured at the centre of the window is less than 27% and less than 0.8 times its former value.
No Sky Line	A room may be adversely affected if the daylight distribution (no sky line) is reduced beyond 0.8 times its existing area.
Annual Probable Sunlight Hours	A window may be adversely affected if a point at the centre of the window receives for the whole year, less than 25% of the APSH including at least 5% of the APSH during the winter months (21 September to 21 March) and less than 0.8 times its former sunlight hours during either period, and (for existing neighbouring buildings), if there is a reduction in total APSH which is greater than 4%.
Sun on Ground	An existing garden or amenity area may be adversely affected if it cannot receive two hours of sunlight on 21st March and is less than 0.8 times its former value.

12.65. However, in urban locations where the proposed site is either currently undeveloped or contains relatively low structures, reductions of daylight and sunlight beyond the BRE Guidelines as a result of redevelopments such as this are considered likely. This is because the existing levels of daylight and sunlight can be high and applying the BRE Guidelines 20% reduction rule can still result in a level above what is considered a good level of daylight or sunlight for an urban area.

12.66. The above view is supported by the BRE Guidelines, which recognises that it may not be appropriate to apply the general guidance but set alternative target values based on the locality of the proposed site. Therefore, as discussed above, under the heading of Overall Approach, the overall conclusions reached for each residential building surrounding the Site are to be based on up to two separate sub-conclusions. The first being the residual effects relating to the reductions of daylight/sunlight that are likely to occur. The scale of these reductions/effects have been described as negligible, minor, moderate or major by reference to the criteria summarised within Table 12.3 below, with moderate or major effects considered to be significant.

Table 12.3: Daylight, Sunlight and Sun on Ground Significance Criteria

Significance	Description
Negligible	No alteration or a small alteration from the existing scenario which is within the numerical levels suggested in the BRE Guidelines.
Minor Adverse	Minor infringements (20.1% - 30% reductions) of the numerical values suggested in the BRE Guidelines, which should be viewed in context.
Moderate Adverse	Moderate infringements (30.1% - 40%) of the numerical values suggested in the BRE Guidelines, which should be viewed in context.
Major Adverse	Major infringements (40.1%+) of the numerical values suggested within the BRE Guidelines, which should be viewed in context.

12.67. Once the scale of the reductions has been determined, and if the effects are moderate or major adverse (and therefore 'significant'), the second qualitative assessment will consider whether the effects, whilst significant, can still be considered acceptable. As already set out above, this will include factors such as:

- The retained levels of daylight or sunlight compared to the alternative target values;
- The room's use, whether the room is served by more than one window and/or the effect on the main window;
- Whether existing balconies restrict the existing levels of daylight and/or sunlight; and
- Whether the windows are set back from the main elevation such that lower levels of daylight and/or sunlight are enjoyed in the baseline condition.

Transient Overshadowing

12.68. The BRE Guidelines do not provide any criteria for the significance of transitory overshadowing, other than to suggest that by establishing the different times of day and year when shadow would be cast over adjacent areas, an indication is given as to the significance of the effect of the development.

12.69. The assessment of transient overshadowing effects is therefore based on professional judgement, taking into consideration the effect of the existing Site and comparing it with the likely transient overshadowing effect of the Development. The effects are defined as being of negligible, minor adverse, moderate adverse or major adverse or of beneficial significance, with moderate or major effects considered to be significant.

Solar Glare

12.70. There are no quantitative criteria within the BRE Guidelines regarding acceptable levels of solar glare. There is, however, research which suggests that the significance of a glare occurrence is largely dependent upon its angle from the line of sight and the relevance of

this with respect to the human field of vision:

> *"The fovea centralis, also generally known as the fovea, is a part of the eye, located in the centre of the macula region of the retina. The fovea is responsible for sharp central vision (also called foveal vision), which is necessary in humans for reading, watching television or movies, driving, any activity where visual detail is of primary importance."*

12.71. Glare occurrences that could encroach on the foveal view (which is 3° from the visual axis – See Figure 12.2) are likely to cause significant visual impairment or distraction. It is also likely that the viewer's line of sight will vary from the chosen view direction at each Viewpoint. To account for this along with the likely range of movement of the eye, it is considered that lengthy occurrences within approximately 10° of the centre of the visual axis are potentially the most hazardous. In this scenario, the adverse impact would often be considered moderate or major on the scale of effect which is significant, and mitigation may be required.

12.72. Between 10° and 30° corresponds to Near Periphery field of view and therefore where glare occurs between these angles, the impact would be considered minor or moderate in scale of effect, which could be considered significant depending upon the location and use of the adjacent sensitive receptor and the period of time the glare occurs for.

12.73. An angle of greater than 30° corresponds to the Far Periphery field of view and, therefore, the risk of reflective solar glare causing a hazard is reduced. As such, the impact is considered to be negligible.

Limitations and Assumptions

Daylight and Sunlight

12.74. The results set out in the Appendices and discussed in this chapter are based on a 3D computer model of the Site and the surrounding area and the use of bespoke 'Sol' software. The surrounding residential buildings that have been assessed, and the size/locations of the surrounding windows is based on land survey data. Further contextual modelling of the local area is based on a topographically correct 3D model of the area.

12.75. Access into the surrounding properties has not been obtained, which is considered normal practice for such assessments. The layouts used for the No-Sky Line test have therefore been principally based on publicly available information on the internet, such as planning

applications, previous sales particulars, or lease plans available from the Land Registry. Where the layouts for the surrounding properties have not been obtained using these sources, the room layouts have been assumed and typically taken as half the depth of the property.

12.76. The uses of the adjoining properties, in terms of whether they are of commercial or residential use, were established using external observations and Valuation Office Agency (VOA) checks.

Overshadowing

12.77. The 3D model, which is orientated to the north, enables the path of the sun to be tracked throughout the year to establish the shadows that will be cast by the existing buildings and the Development on the nearby amenity spaces. The extent and height of the ground level used in the assessments is based on Site notes and a topographically correct 3D model of the area.

Solar Glare

12.78. The solar glare assessment has made assumptions as to the exact specification of the glazing and assumed a normal reflective of 8% and a transmittance of 0.68. i.e. how reflective the glazing will be. The reflective properties of the proposed façade materials have also been assumed as 0.2% which is based on the understanding of current designs (refer to Appendix 3.1). A reflectance of 0.2% assumes a brick façade.

Defining a Sensitive Receptor

Daylight and Sunlight

12.79. The assessment of daylight and sunlight amenity is governed principally by the extent of the existing and proposed structures which surround a sensitive receptor. Using professional judgement and an inspection of the Site and surrounding context, the extent of the study area has been established by considering which of the surrounding sensitive receptors may be affected by the construction of the Development.

12.80. When assessing any potential likely significant effects on the surrounding residential buildings, the BRE Guidelines suggest that only those windows that have a 'reasonable expectation' of daylight or sunlight need to be assessed. In particular, the BRE Guidelines state at paragraph 2.2.2:

> *"The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed. The guidelines may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight; this would normally include schools, hospitals, hotels and hostels, small workshops and some offices."*

12.81. Commercial properties are generally not treated as having a reasonable expectation of daylight or sunlight. This is because they are usually designed to rely on electric lighting to provide sufficient light by which to work rather than natural daylight or sunlight. In addition to commercial buildings, windows to residential properties which serve non-habitable rooms, such as entrance ways, garages, bathrooms or storerooms, are also considered not to have a reasonable expectation of daylight or sunlight and are therefore not assessed.

12.82. In addition, the BRE Guidelines suggest assessments should also be carried out to any existing non-domestic buildings where the occupants have a reasonable expectation of daylight such as schools, hospitals, hotels etc. However, it is understood that none of these non-domestic properties surround the Site, therefore, only residential properties have been considered.

12.83. Only the existing surrounding residential properties are therefore considered to be the sensitive receptors in relation to this Site and the locations of these residential buildings can be seen in the drawings within Appendix 12.1.

12.84. These are:

- Block 1, 1 New Horizons Court
- Block 4, 1 New Horizons Court
- 19-20 Northumberland Gardens
- 17-18 Northumberland Gardens
- 15-16 Northumberland Gardens
- 13-14 Northumberland Gardens
- 11-12 Northumberland Gardens
- 9-10 Northumberland Gardens
- 7-8 Northumberland Gardens
- 5-6 Northumberland Gardens
- 3-4 Northumberland Gardens
- 1-2 Northumberland Gardens
- 29-30 Brambles Close
- 28-27 Brambles Close
- 25-26 Brambles Close
- 23-24 Brambles Close
- 40 Cherry Crescent
- 42-44 Cherry Crescent
- 46 Cherry Crescent
- 48 Cherry Crescent
- 50 Cherry Crescent
- 52 Cherry Crescent
- 2,4 Rothbury Gardens
- 1,3 Rothbury Gardens

Overshadowing

12.85. The BRE Guidelines acknowledge that sunlight in the space between buildings has an important effect on the overall appearance and ambience of a development. For this Site, it is possible that the amenity/open spaces to New Horizon's Court, Northumberland Gardens, Brambles Close and Cherry Crescent residential amenity spaces may be affected by the Development. Detailed Sun on Ground assessments will therefore be carried out to these surrounding properties. All other amenity spaces which are in proximity to the Site (i.e. the rear garden to Rothbury Gardens) are will not fall within the Development's shadow path and have therefore not been considered further. This is because these properties are located directly to the south of the Site.

Solar Glare

12.86. The Development has the potential to cause glare at certain times of the year and at certain locations surrounding the Site. This is particularly a potential problem for road users and train drivers.

12.87. A Solar Glare analysis will be undertaken at various locations around the Site to understand the likelihood and significance of any glare instances.

12.88. The solar glare assessments undertaken for this ES Chapter will be undertaken in two parts. The first part considers where and when glare could occur throughout the year. This is established by running a solar glare annual sequence. From the annual sequence assessment, the sensitive receptor locations have been identified (using professional judgement) from which more detailed tests have been run using calendar graphs. The calendar graphs show the angle at which the solar glare that may occur from the reference point, when it will occur, and the duration.

12.89. 6 locations, described as viewpoints, have been determined and these are shown in Figure 12.3.

Baseline Conditions

12.90. A 3D model of the existing baseline scenario was constructed. Detailed drawings of this scenario assessment model can be found at Appendix 12.1. The drawings in Appendix 12.1 also illustrate the location of the surrounding residential properties in relation to the Site.

12.91. The model was analysed in order to ascertain the baseline levels of daylight and sunlight amenity within the surrounding residential properties against the minimum values recommended in the BRE Guidelines.

Baseline VSC

12.92. The baseline VSC conditions were assessed. Full detailed results can be found in Appendix 12.3. The results are summarised in Table 12.4.

Table 12.4: Summary of Baseline VSC Results

Address	No. of Windows	No. of Windows that meet VSC criterion (>27%)
Block 1, 1 New Horizons Court	55	45
Block 4, 1 New Horizons Court	74	62
19-20 Northumberland Gardens	9	7
17-18 Northumberland Gardens	9	7
15-16 Northumberland Gardens	9	7
13-14 Northumberland Gardens	9	7
11-12 Northumberland Gardens	9	7
9-10 Northumberland Gardens	9	8
7-8 Northumberland Gardens	9	7
5-6 Northumberland Gardens	9	7
3-4 Northumberland Gardens	9	7
1-2 Northumberland Gardens	9	7
29-30 Brambles Close	5	5
28-27 Brambles Close	5	5
25-26 Brambles Close	5	5
23-24 Brambles Close	5	5
40 Cherry Crescent	1	1
42-44 Cherry Crescent	11	11
46 Cherry Crescent	7	7
48 Cherry Crescent	4	4
50 Cherry Crescent	3	3
52 Cherry Crescent	5	4
2,4 ROTHBURY GARDENS	5	5
1,3 ROTHBURY GARDENS	5	5
Total	**280**	**238**

12.93. The VSC baseline results show that in the current baseline, 85% of the surrounding properties benefit from at least 27% VSC which, per the BRE Guidelines, is sufficient to give reasonable daylight amenity in a suburban environment (on which the guidelines are predicated).

Baseline NSL

12.94. The baseline NSL conditions of the same properties were assessed. Full detailed results can be found in Appendix 12.4. These are summarised in Table 12.5.

Table 12.5: Summary of Baseline NSL Results

Address	Total Rooms	No. of Rooms that Meet APSH Criteria
Block 1, 1 New Horizons Court	38	38
Block 4, 1 New Horizons Court	35	35
19-20 Northumberland Gardens	5	5
17-18 Northumberland Gardens	5	5
15-16 Northumberland Gardens	5	5
13-14 Northumberland Gardens	5	5
11-12 Northumberland Gardens	5	5
9-10 Northumberland Gardens	5	5
7-8 Northumberland Gardens	5	5
5-6 Northumberland Gardens	5	5
3-4 Northumberland Gardens	5	5
1-2 Northumberland Gardens	5	5
29-30 Brambles Close	4	4
28-27 Brambles Close	4	4
25-26 Brambles Close	4	4
23-24 Brambles Close	4	4
40 Cherry Crescent	1	1
42-44 Cherry Crescent	8	8
46 Cherry Crescent	4	3
48 Cherry Crescent	4	4
50 Cherry Crescent	3	3
52 Cherry Crescent	4	4
2,4 ROTHBURY GARDENS	5	5
1,3 ROTHBURY GARDENS	2	2
Total	**170**	**169**

12.95. The NSL baseline results show that in the current situation, 99% of the rooms within the surrounding properties benefit from direct skylight at working plane height to in excess of 80% of the room area which, according to the BRE Guidelines, is sufficient to give reasonable daylight amenity results in a suburban environment.

Baseline APSH

12.96. The baseline APSH conditions of those properties which have windows which are orientated to within 90^0 of due south were assessed. Full detailed results can be found in Appendix 12.5. These are summarised in Table 12.6.

Table 12.6: Summary of Baseline APSH Results

Address	Total No. of Rooms	No. of Rooms that Meet APSH Criteria
Block 1, 1 New Horizons Court	38	38
Block 4, 1 New Horizons Court	35	29
17-18 Northumberland Gardens	2	0
13-14 Northumberland Gardens	2	1
9-10 Northumberland Gardens	2	0
5-6 Northumberland Gardens	2	0
1-2 Northumberland Gardens	2	0
46 Cherry Crescent	1	1
Total	**84**	**69**

12.97. The APSH baseline results show that in the current baseline, 82% of the rooms within the surrounding properties benefit from at least 25% total APSH, of which at least 5% APSH is in the winter months. The APSH assessment considers sunlight amenity to all windows serving a room, which means that those windows where sky visibility is obscured by surrounding buildings are mitigated by other windows serving the room.

Baseline Sun on Ground

12.98. The baseline Sun on Ground of the public amenity space at New Horizons Court and private amenity spaces at the rear of the properties along Northumberland Gardens, Brambles Close and Cherry Crescent have been assessed in March and June. The location of these can be seen in Figure 12.4.

12.99. Full detailed results can be seen in Appendix 12.11. The existing baseline levels of shadowing for each area are summarised in Table 12.7.

Table 12.7: Summary of Existing Baseline Sun on Ground Results

Area	% of Area Receiving at Least 2 Hours of Sunlight on 21st March – Existing Baseline
1 New Horizons Court	91.8%
19-20 Northumberland Gardens	100%
17-18 Northumberland Gardens	100%
15-16 Northumberland Gardens	100%
13-14 Northumberland Gardens	100%
11-12 Northumberland Gardens	97.5%
9-10 Northumberland Gardens	100%
7-8 Northumberland Gardens	95.7%
5-6 Northumberland Gardens	96.1%
28-27 Brambles Close	98.1%
21-22 Brambles Close	96.6%
40 Cherry Crescent	100%
42 Cherry Crescent	96.2%
44 Cherry Crescent	80.7%
46 Cherry Crescent	99.9%
48 Cherry Crescent	76.2%
50 Cherry Crescent	92.9%
52 Cherry Crescent	77.1%
54 Cherry Crescent	93.3%
56 Cherry Crescent	71.6%
58 Cherry Crescent	97.8%
60 Cherry Crescent	96.4%

12.100. The above results show that all of the amenity spaces assessed currently enjoy good levels of sunlight above that recommended by the BRE Guidelines.

Demolition and Construction

Assessment of Effects

12.101. Indicative construction information can be found in Chapter 5 Construction Methodology and Phasing. Effects in relation to daylight, sunlight and overshadowing will vary throughout the demolition and construction phase of the Development.

12.102. There will be no notable anticipated effects whilst the existing buildings on the Site are demolished, in fact the neighbouring residents will experience a short-term gain as there will no longer be any massing in front of their property. This has not been determined through modelling but through professional judgement. There will also be no anticipated effects following the completion of the demolition of the buildings. During the construction of the Development, the effects to the neighbouring properties would be no worse than those of the completed Development as set out below. In addition, for those residents, who would be living in the early phases of the Development, the levels of daylight/sunlight that they would enjoy would again be no worse than those of the completed Development which is reported on within the Internal Daylight, Sunlight and Overshadowing report listed within Appendix 12.16.

Completed Development

Assessment of Effects

Daylight to Surrounding Properties

12.103. There are 280 windows serving 170 residential rooms within the assessed properties surrounding the Site. These have all been assessed in terms of both VSC and NSL. Full detailed results can be found at Appendix 12.3 and are summarised in Table 12.8 and Table 12.9 below.

Table 12.8: VSC Summary with the Development in Place

Address	Total That Meet BRE Guidelines	Below BRE Guidelines				Total No. Of Windows	Gains
		20-29% Loss	30-39.9% Loss	>=40% Loss	Total		
Block 1, 1 New Horizons Court	52	2	0	1	3	55	0
Block 4, 1 New Horizons Court	46	22	6	0	28	74	0
19-20 Northumberland Gardens	7	2	0	0	2	9	0
17-18 Northumberland Gardens	5	3	1	0	4	9	0
15-16 Northumberland Gardens	5	3	1	0	4	9	0
13-14 Northumberland Gardens	2	5	2	0	7	9	0

Address	Total That Meet BRE Guidelines	Below BRE Guidelines				Total No. Of Windows	Gains
		20-29% Loss	30-39.9% Loss	>=40% Loss	Total		
11-12 Northumberland Gardens	3	3	3	0	6	9	0
9-10 Northumberland Gardens	2	4	3	0	7	9	0
7-8 Northumberland Gardens	1	4	4	0	8	9	0
5-6 Northumberland Gardens	1	3	5	0	8	9	0
3-4 Northumberland Gardens	0	2	7	0	9	9	0
1-2 Northumberland Gardens	2	2	5	0	7	9	0
29-30 Brambles Close	3	2	0	0	2	5	0
28-27 Brambles Close	3	2	0	0	2	5	0
25-26 Brambles Close	0	5	0	0	5	5	0
23-24 Brambles Close	0	5	0	0	5	5	0
40 Cherry Crescent	1	0	0	0	0	1	0
42-44 Cherry Crescent	11	0	0	0	0	11	0
46 Cherry Crescent	7	0	0	0	0	7	0
48 Cherry Crescent	4	0	0	0	0	4	0
50 Cherry Crescent	3	0	0	0	0	3	0
52 Cherry Crescent	5	0	0	0	0	5	0
2,4 Rothbury Gardens	2	3	0	0	3	5	0
1,3 Rothbury Gardens	5	0	0	0	0	5	0
Total	170	72	37	1	110	280	0

Table 12.9: NSL Summary with the Development in Place

Address	Total That Meet BRE Guidelines	Below BRE Guidelines				Total No. Of Rooms	Gains
		20-29% Loss	30-39.9% Loss	>=40% Loss	Total		
Block 1, 1 New Horizons Court	38	0	0	0	0	38	0
Block 4, 1 New Horizons Court	35	0	0	0	0	35	0
19-20 Northumberland Gardens	5	0	0	0	0	5	0
17-18 Northumberland Gardens	5	0	0	0	0	5	0
15-16 Northumberland Gardens	3	0	2	0	2	5	0
13-14 Northumberland Gardens	0	1	4	0	5	5	0
11-12 Northumberland Gardens	5	0	0	0	0	5	0
9-10 Northumberland Gardens	4	1	0	0	1	5	0
7-8 Northumberland Gardens	4	1	0	0	1	5	0
5-6 Northumberland Gardens	4	1	0	0	1	5	0
3-4 Northumberland Gardens	2	2	1	0	3	5	0
1-2 Northumberland Gardens	2	2	1	0	3	5	0
29-30 Brambles Close	2	2	0	0	2	4	0
28-27 Brambles Close	4	0	0	0	0	4	0
25-26 Brambles Close	2	2	0	0	2	4	0
23-24 Brambles Close	3	1	0	0	1	4	0
40 Cherry Crescent	1	0	0	0	0	1	0
42-44 Cherry Crescent	8	0	0	0	0	8	0
46 Cherry Crescent	4	0	0	0	0	4	0
48 Cherry Crescent	4	0	0	0	0	4	0
50 Cherry Crescent	3	0	0	0	0	3	0
52 Cherry Crescent	4	0	0	0	0	4	0
2,4 Rothbury Gardens	5	0	0	0	0	5	0
1,3 Rothbury Gardens	2	0	0	0	0	2	0
Total	149	13	8	0	21	170	0

12.104. The BRE Guidelines state that:

> *"…the diffuse daylighting of the existing building may be adversely affected if either the VSC measured at the centre of an existing main window is less than 27% and less than 0.8 times its former value [or] the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value."*

12.105. In situations where the Development would result in fully BRE compliant VSC and NSL alterations to the windows and rooms within a property, the effect on the daylight amenity to that property is considered to be of negligible significance.

12.106. The following properties will experience alterations which, in accordance with the BRE Guidelines, will not be noticeable to the occupants (i.e. there will be a negligible (not significant) effect:

- 40 Cherry Crescent
- 42-44 Cherry Crescent
- 46 Cherry Crescent
- 48 Cherry Crescent
- 50 Cherry Crescent
- 52 Cherry Crescent
- 1,3 Rothbury Gardens

12.107. The effect on the daylight amenity of a property in an urban context is considered to be minor adverse in situations where both the VSC and NSL alterations applicable to the room are no greater than 30% of their baseline values.

12.108. The following properties are therefore considered to experience reductions which are of minor adverse significance:

- 19-20 Northumberland Gardens
- 29-30 Brambles Close
- 28-27 Brambles Close
- 25-26 Brambles Close
- 23-24 Brambles Close
- 2,4 Rothbury Gardens

12.109. The following properties experience daylight alterations beyond those described as negligible or minor (i.e. experience an effect which is moderate or major adverse) in accordance with Table 12.3 above and, therefore, are considered in more detail below:

Block 1, 1 New Horizons Court

Significance of Effect

12.110. This property is located to the north of the Development and obtained planning permission in late 2017 for the permitted development of "*the change of use of a building from office*

use (Class B1(a) to provide 97 residential flats (Class C3)". Due to the limitations of converting a property from commercial to residential, this property did not therefore have to comply with the same residential standards for daylight and sunlight in the planning application.

12.111. Floor plans were obtained from LBH's Planning Portal. 55 windows have been modelled which are understood to serve 38 rooms. Of the 38 rooms assessed all, except for 3, will meet the BRE Guidelines percentage reduction criteria. The overall effect upon these 35 rooms is therefore considered to be negligible which is not significant. A further 2 rooms will experience VSC and NSL alterations which are considered to be of minor significance i.e. the alterations are within 30% of the existing baseline, which is not considered significant.

12.112. The remaining room is R8/133 which is served by 2 windows and its room use is understood to be a bedroom. When looking at the results to this room in more detail, for the NSL assessment, it will not experience a change in its daylight distribution amenity. For the VSC assessment one window will meet the BRE Guidelines reduction criteria and therefore experience a negligible effect as a result of the Development. The second window will not meet the BRE Guidelines to a major adverse extent which is considered significant. This is, however, due to the fact that it is positioned beneath a deep overhang on the property which is discussed in further detail below.

Discussion

12.113. Given that one window to the room experiences a negligible effect and one window experiences a major adverse effect when using the VSC test, but the NSL test shows a negligible effect, the overall effect on the room is not considered to be material.

12.114. When considering the window that experiences a major adverse effect in more detail, the BRE Guidelines state that existing windows with balconies/overhangs above them typically receive less daylight because the balcony/overhang cuts out light from the top part of the sky. This is the case here as the existing VSC value to this window is 4.82%, in comparison to the room's other window which enjoys a VSC of 18.64% in the baseline condition (and is not affected by an overhang to the same extent).

12.115. The BRE Guidelines state that even a modest obstruction opposite may result in a large relative impact on the VSC and one way to demonstrate this is to carry out an additional calculation of the VSC, without the balcony in place. The results of this assessment are included at Appendix 12.6 and show that without the overhang in place, this window would experience a reduction which is within the BRE Guidelines reduction criteria. The overall

effect upon this room is therefore considered to be acceptable.

12.116. Overall, whilst the percentage reductions for this room when compared to the baseline situation for the VSC assessment show a major adverse effect, the overall effect, when considering both the VSC and NSL tests and the overhang above the windows, can be considered acceptable.

Block 4, 1 New Horizons Court

Significance of Effect

12.117. This property is located to the north of the Development and obtained planning permission in late 2017 for the permitted development of the "*change of use of a building from office use (Class B1(a)) to provide 45 residential flats (Class C3)".* Due to the limitations of converting a property from commercial to residential, this property did not therefore have to comply with the same residential standards for daylight and sunlight in the planning application.

12.118. Floor plans were obtained from the LBH's Planning Portal. 74 windows have been modelled which are understood to serve 35 rooms. Of the 35 rooms assessed, 18 will meet the BRE Guidelines percentage reduction criteria. The overall effect upon these rooms is therefore considered to be negligible which is not significant.

12.119. In addition, a further 11 rooms, will experience VSC and NSL alterations which are considered to be of minor significance, which is not significant, i.e. the VSC and NSL reductions are within 30% of the existing baseline.

12.120. The remaining 6 rooms are each served by 1 window. When looking at the results to these rooms in more detail, for the NSL assessment, all will meet the BRE Guidelines reduction criteria. For the VSC assessment, all windows experience a reduction which is considered to be moderate adverse and significant. This is however due to the fact that these windows are positioned beneath an overhang on the property.

Discussion

12.121. In accordance with the BRE Guidelines, existing windows with balconies/overhangs above them typically receive less daylight because the balcony/overhang cuts out light from the top part of the sky. This is shown by the existing value to these windows, which are between 15.61% and 16.42%, in comparison, the windows which are adjacent and not affected by

the overhang enjoy a VSC in the existing baseline scenario of at least 32%.

12.122. The BRE Guidelines state that even a modest obstruction opposite may result in a large relative impact on the VSC and one way to demonstrate this is to carry out an additional calculation of the VSC, without the balcony in place. The results of this assessment are included at Appendix 12.6 and show that without the overhang in place, each of these windows would experience a reduction of up to 25.66% (which is a minor scale of effect) but retain a VSC of at least 23.41%. (which exceeds the alternative target value set for this area). The overall effect upon these rooms is therefore considered to be acceptable, as it is considered to be the presence of the overhang, rather than the size of the Development that is causing the larger relative reduction.

12.123. Overall, whilst the percentage reductions for these 6 rooms when compared to the baseline situation for the VSC assessment may be of a moderate adverse effect, the overall effect, when considering the overhangs above the windows, can be considered acceptable.

17-18 Northumberland Gardens

Significance of Effect

12.124. Floor plans from past sales particulars have not been obtained for this property, however the layouts from No. 3, No. 11 and No. 16, which were obtained, have been applied.

12.125. 9 windows which are assumed to serve 5 Site-facing rooms have been assessed within this property. Of the 5 rooms assessed, 1 will meet the BRE Guidelines percentage reduction criteria. The overall effect upon this room is therefore considered to be negligible which is not significant.

12.126. In addition, a further 3 rooms, will experience VSC and NSL alterations which are considered to be of minor adverse effect, which is not significant.

12.127. The remaining room is understood to be a reception room and served by 1 large window and 2 smaller windows which curve around towards the front door. Looking at the results to this room in more detail, the room will experience a small reduction in daylight distribution (NSL) which is well within the BRE Guidelines reduction criteria. The VSC results show that one of the small secondary windows (which is positioned closest to the front door) will experience a reduction in VSC which is considered to be of a moderate adverse significance. The main window will experience a negligible effect as it retains a VSC of at least 27% VSC.

Discussion

12.128. Whilst one of the side windows will experience a moderate adverse effect, it is clear that the room will retain good levels of daylight above those recommended by the BRE Guidelines with the Development in place. This is because the main window retains a VSC above 27% VSC and the retained NSL result is above 80% of the room's area.

12.129. Overall, whilst the percentage reduction compared to the baseline situation for the VSC assessment to the secondary window may be of a moderate adverse significance, the effect, when considering the retained daylight values, can be considered acceptable.

15-16 Northumberland Gardens

Significant of Effect

12.130. Floor plans from past sales particulars have been obtained for No. 16.

12.131. 9 windows which are assumed to serve 5 Site-facing rooms have been assessed within this property. Of the 5 rooms assessed, none will meet the BRE Guidelines percentage reduction criteria. 2 rooms will however experience VSC and NSL alterations which are considered to be of minor significance, which is not significant.

12.132. The remaining 3 rooms (R3/40, R2/41 and R3/41) will experience some reductions of up to a moderate adverse significance when compared against the baseline, which is considered significant.

Discussion

12.133. R3/40 is understood to serve a reception room on the ground floor of the property and has 1 large window and 2 smaller secondary windows which curve towards the front door. The results of the assessments to this room show that the main window will experience a reduction beyond the BRE Guidelines to a minor adverse effect (with a percentage reduction of 28.68%) and retain a VSC of 26.68%. The two secondary windows will meet the guidelines when using the VSC test and the NSL results show that a reduction of a moderate adverse extent may be experienced but the retained value is 69%. This room is therefore considered to retain a good level of daylight for an urban area.

12.134. R2/41 is understood to potentially serve a dining room on the first floor of the property and is served by one window. The results to this room show that the reduction in daylight

distribution is within the BRE Guidelines reduction criteria. With regard to the VSC results, a reduction of 30.18% is experienced, which is just 0.18% beyond the minor adverse criteria. However, when looking at the retained VSC value, this window exceeds the 20% alternative criteria as requested by LBH at 22.53%. This room is therefore considered to retain a good level of daylight for an urban area.

12.135. The remaining room is adjacent to the dining room and understood to potentially serve a reception room. The results to this room show that a reduction in daylight distribution may be experienced to a moderate adverse significance. However, the room would retain a No Sky-Line to over 50% of its room area at 68%, which (based on professional judgment) is considered a good level for an urban area. The VSC results show that each window will continue to enjoy a VSC which exceeds the BRE Guidelines with the Development in place. This room is therefore considered to retain a good level of daylight for an urban area.

12.136. Overall, whilst the percentage reductions for these 3 rooms when compared to the baseline situation for the VSC and/or NSL assessment may be of up to a moderate adverse effect, the overall effect, when considering the retained values, can be considered acceptable.

13-14 Northumberland Gardens

Significant of Effect

12.137. Floor plans from past sales particulars have not been obtained for this property, however the layouts from No. 3, No. 11 and No. 16, which were obtained, have been applied where they can.

12.138. 9 windows which are assumed to serve 5 Site-facing rooms have been assessed within this property. Of the 5 rooms assessed, 5 rooms will experience a reduction which is moderate adverse and significant.

Discussion

12.139. Looking at the VSC assessment results, whilst reductions beyond the BRE Guidelines are experienced, each of the main windows will retain a VSC of at least 22.32% which exceeds the alternative target criteria as suggested by LBH. In addition, despite the reductions beyond the BRE Guidelines, each room will retain an NSL to over 63% of the room's area which exceeds the alternative target criteria for an urban area of 50%.

12.140. Overall, whilst the percentage reductions for these 5 rooms when compared to the baseline

situation for the VSC and/or NSL assessment may be of up to a moderate adverse effect, the overall effect, when considering the retained values, can be considered acceptable.

11-12 Northumberland Gardens

Significant of Effect

12.141. Floor plans from past sales particulars have been obtained for the ground floor of No. 11. For the first floor, assumed room layouts have been applied using other past sales particulars which we have obtained.

12.142. 9 windows which are assumed to serve 5 Site-facing rooms have been assessed within this property. Of the 5 rooms assessed, 1 will meet the BRE Guidelines percentage reduction criteria, and this room is therefore considered to be negligible which is not significant.

12.143. The remaining 4 rooms (R1/30, R3/30, R1/31 and R2/31) serve two bedrooms, one reception room and one dining room. These rooms will experience reductions which are minor adverse and not significant (R3/30) and reductions which are moderate adverse and significant (R1/30, R1/31 and R2/31).

Discussion

12.144. In considering the VSC assessment results, each of the main windows will retain a VSC of at least 20.61% which exceeds the alternative target criteria as suggested by LBH. In addition, despite the reductions beyond the BRE Guidelines, each room will meet the BRE Guidelines reduction criteria for the NSL assessment.

12.145. Overall, whilst the percentage reductions for these 5 rooms when compared to the baseline situation for the VSC and/or NSL assessment may be of up to a moderate adverse effect, the overall effect, when considering the retained values, can be considered acceptable.

9-10 Northumberland Gardens

Significant of Effect

12.146. Floor plans from past sales particulars have not been obtained for this property, however the layouts from No. 3, No. 11 and No. 16, which were obtained, have been applied where they can.

12.147. 9 windows which are assumed to serve 5 Site-facing rooms have been assessed within this property. Of the 5 rooms assessed, 2 rooms will experience VSC and NSL alterations which are considered to be minor adverse significance, which is not significant. The remaining 3 rooms (R6/30, R5/31 and R6/31) are assumed to serve two bedrooms and one dining room. When compared against the baseline condition, all 3 rooms experience a reduction which is considered to be a moderate adverse effect which is significant.

Discussion

12.148. Looking at the VSC assessment results, each of the main windows will retain a VSC of at least 21.41% which exceeds the alternative target criteria as suggested by LBH. In addition, despite the reductions beyond the BRE Guidelines, these rooms will meet the BRE Guidelines reduction criteria for the NSL assessment.

12.149. Overall, whilst the percentage reductions for these 5 rooms when compared to the baseline situation for the VSC and/or NSL assessment may be of up to a moderate adverse effect, the overall effect, when considering the retained values, can be considered acceptable.

7-8 Northumberland Gardens

Significant of Effect

12.150. Floor plans from past sales particulars have not been obtained for this property, however the layouts from No. 3, No. 11 and No. 16, which were obtained, have been applied where they can.

12.151. 9 windows which are assumed to serve 5 Site-facing rooms have been assessed within this property. Of the 5 rooms assessed, 1 room will experience VSC and NSL alterations which are considered to be minor adverse, which is not significant.

12.152. The remaining 4 rooms (R1/20, R3/20, R1/21 and R2/21) are assumed to serve two bedrooms, one reception room and one dining room. When compared against the baseline condition, these rooms will experience reductions of up to a moderate adverse effect which is significant.

Discussion

12.153. Looking at the VSC assessment results, each of the main windows will retain a VSC of at least 21.19% which exceeds the alternative target criteria as suggested by LBH. In addition,

despite the reductions beyond the BRE Guidelines, 3 of these rooms will meet the BRE Guidelines reduction criteria for the NSL assessment. The remaining room is R3/20 which experiences a minor adverse effect but retains some direct daylight distribution to 71% of the room's area in the proposed condition.

12.154. Overall, whilst the percentage reductions for these 5 rooms when compared to the baseline situation for the VSC and/or NSL assessment may be of up to a moderate adverse effect, the overall effect, when considering the retained values, can be considered acceptable.

5-6 Northumberland Gardens

Significant of Effect

12.155. Floor plans from past sales particulars have not been obtained for this property, however the layouts from No. 3, No. 11 and No. 16, which were obtained, have been applied where they can.

12.156. 9 windows which are assumed to serve 5 Site-facing rooms have been assessed within this property. Of the 5 rooms assessed, 1 room will experience VSC and NSL alterations which are considered to be minor adverse, which is not significant.

12.157. The remaining 4 rooms (R4/20, R6/20, R5/21 and R6/21) are assumed to serve two bedrooms, one reception room and one dining room. When compared against the baseline condition, these rooms will experience reductions which are moderate adverse and significant.

Discussion

12.158. With regard to the VSC assessment, each of the main windows will retain a VSC of at least 21.25% which exceeds the alternative target criteria as suggested by LBH. In addition, despite the reductions beyond the BRE Guidelines, 3 of the rooms will meet the BRE Guidelines reduction criteria for the NSL assessment, with the exception of R4/20. This room experiences an NSL alteration which is considered to be minor adverse but retains some direct daylight distribution to 70% of the room's area in the proposed condition.

12.159. Overall, whilst the percentage reductions for these 5 rooms when compared to the baseline situation for the VSC and/or NSL assessment may be of up to a moderate adverse effect, the overall effect, when considering the retained values, can be considered acceptable.

3-4 Northumberland Gardens

Significant of Effect

12.160. Floor plans from past sales particulars have been obtained for No. 3.

12.161. 9 windows which are assumed to serve 5 Site-facing rooms have been assessed within this property. Of the 5 rooms assessed each will experience a reduction which is of up to a moderate adverse effect (for either/both the VSC and NSL assessments), which is significant.

Discussion

12.162. Looking at the VSC assessments, each of the main windows will retain a VSC of at least 21.02% which exceeds the alternative target criteria as suggested by LBH. In addition, despite the reductions beyond the BRE Guidelines, each room will retain an NSL to over 64% of the room's area which exceeds the alternative target criteria for an urban area of 50%.

12.163. Overall, whilst the percentage reductions for these 5 rooms when compared to the baseline situation for the VSC and/or NSL assessment may be of up to a moderate adverse effect, the overall effect, when considering the retained values, can be considered acceptable.

1-2 Northumberland Gardens

Significant of Effect

12.164. Floor plans from past sales particulars have not been obtained for this property, however the layouts from No. 3, No. 11 and No. 16, which were obtained, have been applied where they can.

12.165. 9 windows which are assumed to serve 5 Site-facing rooms have been assessed within this property. Of the 5 rooms assessed, each will experience a reduction which is of up to a moderate adverse effect (for either/both the VSC and NSL assessments), which is significant.

Discussion

12.166. Looking at the VSC assessments, each of the main windows will retain a VSC of at least 21.92% which exceeds the alternative target criteria as suggested by LBH. In addition, despite the reductions beyond the BRE Guidelines, each room will retain an NSL to over 68% of the room's area which exceeds the alternative target criteria for an urban area of 50%.

12.167. Overall, whilst the percentage reductions for these 5 rooms when compared to the baseline situation for the VSC and/or NSL assessment may be of up to a moderate adverse effect, the overall effect, when considering the retained values, can be considered acceptable.

Sunlight to Surrounding Properties

12.168. There are 709 windows serving 421 residential rooms surrounding the Site that are relevant for the sunlight amenity assessment. These have all been assessed in terms of total and winter APSH. Full detailed results can be found at Appendix 12.5 and are summarised in Table 12.10.

Table 12.10 - APSH Summary with the Development in Place

Address	Meet BRE Guidelines	No. Of Rooms Below the APSH Stated In BRE Guidelines								Total No. Rooms	Winter Gains	Total Gains
		Below Threshold – Winter APSH				Below Threshold – Total APSH						
		20-30 %	30-40 %	> 40 %	Tot.	20-30 %	30-40 %	> 40 %	Tot.			
Block 1, 1 New Horizons Court	38	0	0	0	0	0	0	0	0	38	0	0
Block 4, 1 New Horizons Court	29	0	4	2	6	1	4	1	6	35	0	0
17-18 Northumberland Gardens	2	0	0	0	0	0	0	0	0	2	0	0
13-14 Northumberland Gardens	1	0	0	0	0	1	0	0	1	2	0	0
9-10 Northumberland Gardens	1	0	0	0	0	1	0	0	1	2	0	0
5-6 Northumberland Gardens	2	0	0	0	0	0	0	0	0	2	0	0
1-2 Northumberland Gardens	2	0	0	0	0	0	0	0	0	2	0	0
46 Cherry Crescent	1	0	0	0	0	0	0	0	0	1	0	0
Total	76	0	4	2	6	3	4	1	8	84	0	0

12.169. The following properties have the following number of Site-facing rooms that are within 90 degrees of due south and will experience alterations which, in accordance with the BRE Guidelines, will not be noticeable to the occupants therefore are of negligible (not significant effect):

- Block 1, 1 New Horizons Court;
- 17-18 Northumberland Gardens;
- 5-6 Northumberland Gardens;
- 1-2 Northumberland Gardens; and
- 46 Cherry Crescent.

12.170. The effect on the sunlight amenity of a property in an urban context is considered to be minor adverse in situations where both the Winter and Annual APSH alterations applicable to the room are no greater than 30% of their baseline values.

12.171. The following properties are therefore considered to experience reductions which are of minor adverse significance:

- 13-14 Northumberland Gardens; and
- 9-10 Northumberland Gardens

12.172. Site-facing rooms, located within the following property will experience APSH alterations that are beyond those described above and so will be considered in more detail:

Block 4, 1 New Horizons Court

Significant of Effect

12.173. 29 of the 35 rooms with one or more Site-facing windows are fully BRE compliant in terms of any alteration to their APSH levels. This means that the occupants of these rooms are unlikely to notice any alteration to their levels of sunlight amenity. The effect on these rooms is therefore negligible.

12.174. The remaining 6 rooms are located on the second floor beneath an overhang and experience a reduction of up to a major adverse effect which is significant.

Discussion

12.175. In accordance with the BRE Guidelines, existing windows with balconies/overhangs above them typically receive less sunlight because the balcony/overhang cuts out light from the top part of the sky.

12.176. The BRE Guidelines state that even a modest obstruction opposite may result in a large relative impact on the APSH and one way to demonstrate this is to carry out an additional calculation of the VSC, without the balcony in place. The results of this assessment are included at Appendix 12.10 and show that without the overhang in place, each of these windows would experience a reduction which is within the BRE Guidelines reduction criteria as a result of the Development. The overall effect upon these rooms is therefore considered to be acceptable, as it is considered to be the presence of the overhang, rather than the size of the Development, which is causing the larger relative reduction.

12.177. Overall, whilst the percentage reductions for these 6 rooms when compared to the baseline situation for the APSH assessment may be of up to a major adverse significance, the overall effect, when considering the overhangs above the windows, can be considered acceptable.

Overshadowing

12.178. The potential for overshadowing to the public amenity spaces to the north of the Development have been assessed, as well as the gardens which may experience some additional overshadowing in the early morning/late evening. The location of these can be seen in Figure 12.4.

Sun on Ground

12.179. The proposed sun on ground assessment to each of the spaces, show that on the assessment date of 21st March, each amenity space will either continue to enjoy very good levels of sunlight with the Development in place or will experience a very slight reduction in their sunlight amenity, which is well within the BRE Guidelines reduction criteria. The retained percentages are summarised below in Table 12.11. The overall effect is therefore considered to be negligible.

Table 12.11: Summary of Retained Sun on Ground Results

Area	% of Area Receiving at Least 2 Hours of Sunlight on 21st March – Proposed Percentages
1 New Horizons Court	91.8%
19-20 Northumberland Gardens	100%
17-18 Northumberland Gardens	100%
15-16 Northumberland Gardens	100%
13-14 Northumberland Gardens	100%
11-12 Northumberland Gardens	97.5%
9-10 Northumberland Gardens	100%
7-8 Northumberland Gardens	95.7%
5-6 Northumberland Gardens	96.1%
28-27 Brambles Close	98.1%
21-22 Brambles Close	96.6%
40 Cherry Crescent	100%
42 Cherry Crescent	96.1%
44 Cherry Crescent	80.7%
46 Cherry Crescent	99.9%
48 Cherry Crescent	75.8%
50 Cherry Crescent	92.4%
52 Cherry Crescent	76%
54 Cherry Crescent	91.2%
56 Cherry Crescent	70.4%
58 Cherry Crescent	94.8%
60 Cherry Crescent	94.7%

Transient Overshadowing

12.180. The transient overshadowing images with the Development in place show that longer shadows will be cast as a result of the Development throughout the year. However, in our professional opinion, the shadows cast are not considered to create an adverse effect which is supported by the sun on ground assessment results. The effect is therefore considered to be negligible.

Solar Glare

12.181. Given the position of the nearby road junctions and the annual sequence images, there is the potential for solar glare to occur to the road users travelling north/north-west along Syon Lane, north-easterly along Northumberland Avenue and turning south-easterly onto Syon Lane from Great West Road, as well as, the train drivers travelling from a south-westerly and a north-easterly direction, to the south of the Site. Calendar graph assessments have therefore been carried out at 6 assessment points.

12.182. Calendar Graph plots showing the instances of solar reflected glare that can occur from the facades of the Development onto the 6 assessment points can be found within Appendix 12.14.

12.183. **View Point 01 –** This assessment point is positioned to consider the glare that may occur to a train driver travelling south-westerly. The calendar graph shows that any instances of glare that may occur is likely to be below 30° but above 10° from the train drivers' line of sight. The instances of glare are also considered very limited in frequency and duration. The overall scale of the effect is therefore considered to be negligible which is not significant.

12.184. **View Point 02 –** This assessment point is positioned to consider the glare that may occur to a driver turning right to continue driving along Syon Lane. The calendar graph shows that some instances of glare that may occur are likely to be below 30° but above 10° from the drivers' line of sight. The calendar graph shows that the instances of glare are most likely to occur between 8:00am and 9:30am during the course of January-February and similarly again in September-October. Given the angle at which any glare is likely to occur, the overall scale of the effect is considered to be, at worst, minor adverse which is not significant.

12.185. **View Point 03 –** This assessment point is positioned to consider the glare that may occur to a driver driving along Spur Road and joining onto Syon Lane. The calendar graph shows that some instances of glare that may occur are likely to either be below 30° but above 10° or some instances where the glare may occur below 10° from the drivers' line of sight. These

instances will occur primarily between 8:00am and 9:00am from late January to mid-February and similarly again in late September to mid-October.

12.186. Whilst this view point does indicate that the driver may experience some glare within 10°, this view point is not at a road junction (i.e. the driver will not be stationary). A driver or cyclist is therefore likely to experience fleeting glimpses of glare rather than continuous glare, which is not considered significant. The overall scale of the effect is therefore considered to be negligible or, at worst, minor adverse which is not significant.

12.187. **View Point 04 –** This assessment point is positioned to consider the glare that may occur to a train driver travelling north-easterly. The calendar graph shows that any instances of glare that may occur is likely to be below 30° but above 10° from the train drivers' line of sight. The instances of glare are also considered to be limited in frequency and duration. The overall scale of the effect is therefore considered to be negligible which is not significant.

12.188. **View Point 05 –** This assessment point is positioned to consider the glare that may occur to a driver travelling north-easterly along Northumberland Avenue. The calendar graph shows that some instances of glare that may occur are likely to either be below 30° but above 10° or some instances where the glare may occur below 10° from the drivers' line of sight. The instances of glare that occur below 10° are considered to be of limited frequency and duration. In addition, it must be remembered that this viewpoint is not at a road junction (i.e. the driver will not be stationary). A driver or cyclist is therefore likely to experience fleeting glimpses of glare rather than continuous glare, which is not considered significant. As the driver/cyclist approaches the junction with Syon Lane it is anticipated their viewing angle will go down (i.e. looking at the markings on the road to be able to judge where to stop) placing the glare at a higher angle away from the drivers' focus. When stationary at the junction the drivers' view will be looking away from the Development, again moving any potential glare away from the drivers/cyclist's foveal view. The overall scale of the effect is therefore considered to be negligible or, at worst, minor adverse which is not significant.

12.189. **View Point 06 –** This assessment point is positioned to consider the glare that may occur to a driver turning right onto Syon Lane from Great West Road. The calendar graph shows either some instances of glare that may occur above 30°, some instances where the glare is between 3° and 10° and 2 instances where the glare will fall within 3° of the drivers' sights. Whilst some instances of glare could occur within 10° or 3° of the drivers' sight, these instances are of a very limited frequency and duration. The overall scale of the effect is therefore considered to be minor adverse which is not significant.

Mitigation and Residual Effects

Demolition and Construction

12.190. No mitigation measures are required for the demolition and construction phase of the Development. Effects in relation to daylight, sunlight and overshadowing would vary throughout the demolition and construction phase. They would, however, certainly be less than the effects of the completed Development. Those effects, which may be perceptible during construction, would be similar or less than those of the completed Development set out previously.

12.191. The residual effects are therefore as set out above for the Demolition and Construction stage of the Development.

Completed Development

12.192. Whilst minor, moderate and/or major adverse scale of effects are expected to occur in terms of the daylight, sunlight, overshadowing and/or solar glare, as has been set out above, the effects can be considered acceptable for each property assessed. Mitigation measures are therefore not considered necessary.

12.193. Mitigation measures that were considered necessary to reduce the effects of the Development to the levels set out above have already been included during the iterative design of the Development i.e. stepping the massing fronting Syon Lane back in order to improve the effects to the Northumberland Garden properties.

12.194. The residual effects are therefore as set out above for the completed Development.

Cumulative Effects

12.195. Of the cumulative Developments set out in Chapter 2, using professional judgement, none are of a close enough proximity /or are positioned between the Development and the neighbouring properties windows in order to cause any further additional effects upon the daylight, sunlight, overshadowing or solar glare results.

12.196. A Cumulative assessment has therefore not been undertaken.

Summary

12.197. The chapter assesses the likely significant effects of the Development in terms of:

- Daylight and sunlight amenity to the sensitive receptors that surround the Site;
- Overshadowing to gardens, amenity areas and open space around the Site;
- Solar glare to any nearby road junctions and train approaches around the Site; and
- Daylight amenity within the residential elements of the Development, included within a separate appendix to the chapter.

12.198. A sensitive receptor has been defined as any residential property within a reasonable zone that could be affected by the Development. Each sensitive receptor was given equal consideration when determining any impacts. Commercial properties are not considered to have a reasonable expectation of daylight or sunlight and have therefore not been assessed.

12.199. Through undertaking research to the surroundings properties in conjunction with Valuation Office Agency searches, the number of surrounding properties within a close proximity of the Site in residential occupation or that include a residential component have been established. These can be listed as:

- Block 1, 1 New Horizons Court
- Block 4, 1 New Horizons Court
- 19-20 Northumberland Gardens
- 17-18 Northumberland Gardens
- 15-16 Northumberland Gardens
- 13-14 Northumberland Gardens
- 11-12 Northumberland Gardens
- 9-10 Northumberland Gardens
- 7-8 Northumberland Gardens
- 5-6 Northumberland Gardens
- 3-4 Northumberland Gardens
- 1-2 Northumberland Gardens
- 29-30 Brambles Close
- 28-27 Brambles Close
- 25-26 Brambles Close
- 23-24 Brambles Close
- 40 Cherry Crescent
- 42-44 Cherry Crescent
- 46 Cherry Crescent
- 48 Cherry Crescent
- 50 Cherry Crescent
- 52 Cherry Crescent
- 2,4 Rothbury Gardens
- 1,3 Rothbury Gardens

12.200. The assessment of daylight and sunlight effects were primarily based upon the BRE Guidelines. The approach however was also guided by the policy and guidance set out in the National Planning Policy Framework and London Plan. The assessment was based on a scale three-dimensional model of the existing Site and Development.

12.201. In accordance with the BRE Guidelines, National Planning Policy Framework and the London

Plan, and where the reductions from the baseline condition were considered to be 'adverse', the retained daylight and sunlight values against the alternative target value given the location and proposed density of the Site were considered. Factors such as the effect of any existing balconies were also taken into account as set out in the BRE Guidelines.

12.202. There will be a short-term negligible to beneficial effect whilst the demolition of the existing buildings takes place. During the construction of the Development, the effects would increase as the massing of the Development is constructed. It is therefore considered that the assessments undertaken for the completed Development present the worst-case position and any effect experienced by the existing surrounding sensitive receptors during the construction phase will therefore be less significant than those experienced against the completed Development.

12.203. Once completed, the effect upon the daylight, sunlight and overshadowing amenity of a number of Site-facing rooms surrounding the Site is considered to be of negligible to major adverse significance.

12.204. Whilst a number of windows will experience daylight and/or sunlight reductions beyond the BRE Guidelines, the retained levels of daylight and sunlight are considered acceptable and above the levels suggested by LBH. The effect can therefore be considered acceptable.

12.205. The overshadowing to the nearby surrounding gardens, amenity areas and open spaces were considered using the sun on ground assessment and transient overshadowing studies and once the Development is completed, the effects are considered to be of negligible significance.

12.206. The annual sequence images showed that there was the potential for solar glare to occur to the road users travelling north/north-west along Syon Lane, north-easterly along Northumberland Avenue and turning south-easterly onto Syon Lane from Great West Road, as well as, the train drivers travelling from a south-westerly and a north-easterly direction to the south of the Site. However, further detailed assessments at these locations show that any effect can likely be considered to either be negligible or, at worst, minor adverse which is not considered significant.

12.207. Table 12.12 contains a summary of the likely significant effects of the Development.

Table 12.12: Table of Significance – Daylight, Sunlight, Overshadowing & Solar Glare

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Construction											
Daylight and Sunlight to existing adjacent residential properties	Temporary	Negligible to Major Adverse	None Required							*	Negligible – 7 properties Minor Adverse – 6 properties Moderate Adverse – 10 properties Major Adverse – 1 property
Overshadowing to existing adjacent areas of open space	Temporary	Negligible								*	Negligible
Solar Glare to surrounding road junctions and train approaches	Temporary	Negligible to Minor Adverse								*	Negligible to Minor Adverse
Completed Development											
Sunlight to existing adjacent residential properties	Permanent	Negligible – Major Adverse	None Required							*	Negligible – 5 properties Minor Adverse – 2 properties Moderate Adverse – 0 properties Major Adverse – 1 property
Daylight to existing adjacent residential properties	Permanent	Negligible – Major Adverse								*	Negligible – 7 properties Minor Adverse – 6 properties Moderate Adverse – 10 properties Major Adverse – 1 property
Overshadowing to existing adjacent areas of open space	Permanent	Negligible								*	Negligible
Solar Glare to surrounding road junctions and train approaches	Permanent	Negligible to Minor Adverse								*	Negligible to Minor Adverse
Cumulative Effects											
Construction											
Sunlight to existing adjacent residential properties	n/a	n/a	None Required							*	n/a
Daylight to existing adjacent residential properties	n/a	n/a								*	n/a

Overshadowing to existing adjacent areas of open space	n/a	n/a								*	n/a
Solar Glare to surrounding road junctions and train approaches	n/a	n/a								*	n/a
Operation											
Sunlight to existing adjacent residential properties	n/a	n/a	None Required							*	n/a
Daylight to existing adjacent residential properties	n/a	n/a								*	n/a
Overshadowing to existing adjacent areas of open space	n/a	n/a								*	n/a
Solar Glare to surrounding road junctions and train approaches	n/a	n/a								*	n/a

* Geographical Level of Importance

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

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12.5.

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