

Appendix: Daylight, Sunlight, Overshadowing, Solar Glare and Light Intrusion

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Annex 1

Policy and Guidance

Legislation and Planning Policy Context

The following sections of this ES Chapter annex provide a review of relevant legislation, guidance and national, regional and local planning policy in terms of daylight, sunlight, overshadowing, solar glare and light pollution.

National Legislation

There is no relevant legislation for daylight, sunlight, overshadowing and solar glare.

National Planning Policy

National Planning Policy Framework 2021¹

The National Planning Policy Framework, adopted in 2021 stipulates that:

"... planning policies and decisions should ensure that developments ... create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users."

Paragraph 125, part C stipulates that

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

Planning Practice Guidance 2021 update²

The National Planning Practice Guidance (NPPG) was last updated in 2021. This document states that the form and scale of tall buildings should be designed with respect to daylight and sunlight patterns and whether the development would have an unreasonable impact on the daylight and sunlight levels enjoyed by neighbouring occupiers.

Local Planning Policy

Gravesham Local Plan (2014)³

This document was first adopted in November 1994, with the Saved and Deleted Policies Version issued in September 2014. Specific reference is not made to daylight and sunlight in the local plan, however, paragraph 6.7 states that "New development has an important role to play in contributing to the economic wellbeing of the Borough but it is important to ensure that it blends well with its surroundings, whether the development is in town or country. For example, the local environment needs to be protected from the intrusive effects of high buildings."

Draft Development Management Policies Document (2020)⁴

Policy RES 6: Residential Intensification through New Build must not have an unacceptable detrimental impact on occupiers of neighbouring properties through intrusiveness, overlooking, loss of daylight or sunlight, light pollution, noise and disturbance.

The Local Plan accepts the NPPF advise that a flexible approach should be applied in relation to daylight and sunlight, so that efficient use of a site is made whilst providing acceptable living standards. Policy CS19 on Development and Design Principles states that new development should be located designed and constructed to safeguard the amenity of its occupants and neighbouring properties – including in relation to daylight and sunlight.

Additionally, new development should ensure that there is reasonable access to daylight and sunlight within new development and that it does not compromise that available to its neighbours is a critical component of good design.

¹ Department for Communities and Local Government (DCLG), National Planning Policy Framework, 2021.

² Department for Communities and Local Government (DCLG), Planning Practice Guidance, 2021.

³ Gravesham Borough Council, Gravesham Local Plan, 2014.

⁴ Gravesham Borough Council, Draft Development Management Policies Document, 2020.

Other Relevant Policy, Standards and Guidance

*Historic England Guidance on Tall Buildings – Historic England Advice Note 4 (2022)*⁵

Paragraph 4.10 of the Historic England Advice Note 4 recommends that the following should be addressed in relation to the design of tall buildings:

“consideration of the impact on the local environment, including microclimate, overshadowing, night-time appearance, vehicle movements and the environment and amenity of those in the vicinity of the building”.

*Building Research Establishment (BRE) Guidelines*⁶

The Building Research Establishment (BRE) Guidelines ‘Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice 2022 (released June 2022) (‘BRE Guidelines’) provides advice on site layout planning to achieve good sunlighting and daylighting within buildings, and in the open spaces between them. The BRE Guidelines are intended for use by building designers, developers, consultants and Local Planning Authorities (LPAs). The advice presented in the BRE Guidelines is not mandatory and should not be used as an instrument of planning policy, the Guidelines state:

“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.”

The BRE Guidelines also state:

“The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. In special circumstances the developer or planning authority may wish to use different target values... 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 building” (para.1.6).

*Commission Internationale de L’Eclairage (CIE) 146:2002 & CIE 147:2002 Collection on Glare (2002)*⁷

The CIE 146:2002 Collection on Glare states:

“Disability glare is glare that impairs vision (CIE, 1987). 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 the contrast of objects to be seen is 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.”

⁵ Historic England, Tall Buildings, Historic England Advice Note 4, 2022.

⁶ Building Research Establishment (BRE) Guidelines: Site Layout Planning for Daylight and Sunlight A Guide to Good Practice, Third Edition, 2022.

⁷ 15 Commission Internationale de L’Eclairage (CIE), 2002, 146:2002 & CIE 147:2002 Collection on glare, 2002.

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Annex 2

Methodology and Baseline

Methodology

Daylight

The BRE Guidelines (2022) specify two primary methods for assessing daylight within an existing sensitive receptor:

- Vertical Sky Component (VSC); and
- No Sky Line (NSL) Method.

These are presented in further detail below.

Vertical Sky Component (VSC) Method

The VSC method of assessment is defined in the BRE Guidelines as the:

“ratio of that part of illuminance at a point on a given vertical plane that is received directly from a CIE standard overcast sky, to illuminate on a horizontal plane due to an unobstructed hemisphere of this sky”.

The 3D model uses a Waldram Diagram to establish the VSC and 3D geometric calculations for daylight distribution. This model (which is orientated to north by the use of Ordnance Survey (OS) information) enables the path of the sun to be tracked throughout the year to establish the shadow cast by existing and proposed buildings, and thus calculate the sun hours on ground in each scenario and how the Development would affect the amount of daylight being received at surrounding sensitive receptors.

Only those surrounding properties which have windows facing towards the Site were included in the assessment. If a nearby property has no windows facing the Site, these properties would not be affected by the Development in terms of light.

The assessment is calculated from the centre of a window on the outward face and measures the amount of light available on a vertical wall or window following the introduction of visible barriers, such as buildings.

Regarding existing trees, these may be ignored unless they form dense continuous belts. As stated within the BRE “where the effect of a new building on existing building is being analysed, it is usual to ignore the effect of existing trees. This is because daylight is at its scarcest and most valuable in winter when most trees will not be in leaf.” There are no “dense continuous belts” of trees within the Site, and as such, trees are excluded from the assessment as per the BRE Guidelines.

The maximum VSC value is 39.9% for a completely unobstructed vertical wall or window. In terms of assessment criteria, the BRE Guidelines state that:

“If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an

angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case 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
- 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.”

It is acknowledged that the values in the BRE Guidelines are predicated against a 2-3 storey suburban model, therefore the application of its guidelines in inner urban environments should be treated flexibly. This form of assessment does not take account of context or detailed matters such as window size, room use, room size, window number or dual aspect rooms. This assessment also assumes that all obstructions to the sky are 100% non-reflective. It should be noted that the BRE Guidelines acknowledges this and states, in paragraph 2.2.3;

2.2.3 ‘The numerical values given here are purely advisory. Different criteria may be used based on the requirements for daylighting in an area viewed against other site layout constraints.’

Clearly in more urban environments, if development is to meet the scale and proportion of neighbouring buildings, large factor reductions are very difficult to avoid. GIAs experience in daylight and sunlight matters in dense urban environments suggest that weight should also be given to the retained values rather than just the percentage change. Our experience in the field would suggest that a more realistic VSC level in a dense urban environment would be considered to be around 15%.

GIA’s view on retained VSC levels is supported by the Greater London Authority’s hearing report for the Monmouth House and Featherstone Street development (application reference: P2015/3136/FUL) where it was considered in Para 120, Page 31:

‘For general guidance, whilst the BRE guidelines recommend a target value of 27% VSC when measured on an absolute scale, that value is derived from a low density suburban housing model. In an inner city urban environment, VSC values in excess of 20% should be considered as reasonably good, and VSC in the mid-teens should be acceptable.’

No Sky Line (NSL) Method

The NSL method is a measure of the distribution of daylight at the ‘working plane’ within a room. The ‘working plane’ is a horizontal plane 0.85m above finished floor level for residential properties. The NSL divides those areas of the working plane which can receive direct sky light from those 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 may be poor and supplementary electric lighting may be required.

Where actual room layouts were available, these have been considered in the modelling of the internal layouts within the surrounding properties. Obtaining these room layouts enables

precise evaluation of the diffuse levels of daylight within each of the rooms via the NSL. Where layout information was not available assumptions have been made as to the use and internal configuration of the rooms (from external observations) behind the fenestration observed. In such cases a standard 4.2m (14 ft) room depth has been assumed, unless the building form dictated otherwise. This is common practice where access to buildings for surveying is unavailable.

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

Sunlight

Whilst there are no sunlight effects, the methodology used in determining this conclusions is provided below.

Annual Probable Sunlight Hours (APSH)

The APSH is a measure of sunlight that a given window may expect over the period of a year, and where there is no obstruction, equates to a maximum of 1,486 hours. Sunlight is measured using a sun indicator which contains 100 spots, each representing 1% of APSH (i.e. 14.86 hours of the total APSH).

The number of spots is calculated for all scenarios during the year and also during the winter period, and a comparison made between the two. This provides a percentage of APSH for each of the time periods for each window assessed.

The BRE Guidelines note on page 23 that:

- *“To assess loss of sunlight to an existing building, it is suggested 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. Normally loss of sunlight need not be analysed to kitchens and bedrooms, except for bedrooms that also comprise a living space, for example a bed sitting room in an old people’s home.”*
- *“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.”*

In regard to existing surrounding receptors, the BRE Guidelines provide that 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 if there is a reduction in total APSH which is greater than 4%.

It is often not possible to determine the room uses within each of the neighbouring properties, nor is it clear which windows should be considered as the ‘main windows’. Therefore, regardless of use, all the rooms with windows facing the Site and within 90 degrees of due south have been considered in the assessment.

Summary of Criteria for Daylight and Sunlight

Table 1 provides a summary of the criteria set out within the BRE Guidelines for daylight and sunlight.

Table 1 Summary of Daylight and Sunlight Assessment Criteria

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

Overshadowing

Transient overshadowing

The BRE Guidelines suggests that where large buildings are proposed that 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 hourly shadows were mapped for the following three key dates in the year:

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

21 September (Autumn Equinox) provides the same overshadowing images as March 21 (Spring Equinox) as the sun follows the same path at these corresponding times of year. Therefore, 21 March is used within the overshadowing assessment.

The transient overshadowing has been calculated at hourly intervals throughout the day from 08:00 to 19:00, and visual representations are provided in **Appendix 13.3**. Where there are gaps in timings in **Appendix 13.3**, this is because the sun would not be present during these times (for example. from approximately 16:00 onwards on 21 December) and thus no shadow can be cast. On December 21, the sun is at its lowest point causing long shadows to be cast and represents the worst-case scenario in terms of overshadowing.

Sun Hours on Ground

The BRE Guidelines suggest that Sun Hours on Ground assessments should be undertaken on the equinox (21st March or 21st September). Using specialist software, the path of the sun is tracked to determine where the sun would reach the ground and where it would not.

It is recommended that at least half of a garden or amenity area should receive at least two hours of sunlight on 21st March or the area which receives 2 hours of direct sunlight should not be reduced to less than 0.8 times its former value (i.e. there should be no more than a 20% reduction).

Solar Glare

Solar glare is particularly important at pedestrian crossings, road junctions and train lines, where glare can reduce visibility for drivers or pedestrians. Typically, elements considered to be reflective are either glazed apertures or metal cladding.

The BRE Guidelines includes the following statement in regard to the potential for reflected solar glare from a new development:

“Glare or solar dazzle can occur when sunlight is reflected from a glazed façade. This can affect road users outside and the occupants of adjoining buildings. The problem can occur either when there are large areas of reflective glass or cladding on the façade, or when there are areas of glass or cladding which slope back so that high altitude sunlight can be reflected along the ground. Thus solar dazzle is only a long term problem only for some heavily glazed (or mirror clad) buildings...”

Solar glare is not a comparative assessment; the fact it may occur in the baseline does not justify its occurrence as a result of a Development. Therefore, the assessment presented in this chapter considers the effect of the Development in absolute terms, by reference to the relevant guidance levels.

Viewpoints for Road Users and Pedestrians

The assessment considers potentially sensitive viewpoints for road users and pedestrians surrounding the Site. The viewpoints are generally located at the minimum stopping distance (and at the driver’s eye level. The focal point is a relevant traffic element, such as signals or incoming traffic.

Identifying the viewpoints based on the stopping distance is calculated as the combination of thinking and braking distances, using the following formula:

$$D_{total} = D_{thinking} + D_{braking} = V \cdot T + \frac{V^2}{(2\mu \cdot g)}$$

Where each component is:

- V = Relevant vehicle speed, typically the road speed limit;
- T = Thinking time (0.67 seconds);

- μ = Braking effort (considered 0.65 for cars and 0.5 for buses); and
- g = Gravity acceleration.

The height of the viewpoint is considered to be 1.5m for cars and 2.0m for buses. Therefore, a viewpoint for a car driving at 20mph (32km/h) (i.e. speed limit for a dense urban location) would be placed at 12m from a traffic light and 1.5m above the ground.

The assessment also considers a driver's / pedestrian's field of vision which takes the angular extent seen at any given time, which for humans facing forwards is approximately 180 degrees.

Railway lines

In addition to road users, instances of solar reflection also have the potential to effect train drivers and their view of traffic signals. Due to the proximity of the Site to the Elizabeth railway line running east to west north of the Proposed Development, an assessment has been undertaken from these viewpoints.

Solar Glare Technical Assessment

A technical assessment has not been undertaken at this stage, as the details of the future design are not yet available. The methodology for technical solar glare assessment is provided firstly in order to demonstrate how the conclusions of the qualitative assessment were established and secondly how future design will be assessed should effects be considered likely.

The potential for reflected solar glare or dazzle from glazed or reflective façades from the Development is assessed using specialist lighting software. The assessment shows the path of the sun for the entire year around the Development. From this, two computer generated angular images have been produced for each selected viewpoint, indicating the area which sees the reflection of the sunpath at any point during the year. A modified diagram portraying a standardised extent of human vision is then overlaid onto the image.

The assessment has been undertaken on the basis that 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, driving, and any activity where visual detail is of primary importance. The macula corresponds to the central 13° of the visual field; the fovea to the central 3°.

The degrees of vision corresponding to the foveal view, with a red circle of 3° of angle in order to identify the area most sensitive to reflected solar glare. Another red circle represents the incidence of the 30° radius of our typical field of view in order to identify a secondary area of sensitivity to potential reflected glare instances.

The degrees of vision provide a reference from which significant effects can be identified. At 3°, the potential for the reflected glare to cause a hazard is high and mitigation would be required.

Between 3° and 30°, there is the potential that there could be an issue and mitigation may be necessary.

As stated in the Commission Internationale de L'Eclairage guidance CIE 146:2002, occurrences at angles beyond 30° would be of little significance in most situations, but may be relevant in exceptional circumstances. When seated in a driving seat of a typical car, for example, the limits of the windscreen would generally obstruct the driver's view at angles beyond 30° from the line of sight. Therefore, the risk of reflective solar glare causing a hazard is reduced and, as such, mitigation would make only a minor difference.

The methodology for solar glare is not aimed at addressing the intensity of an instance of reflected solar glare, but rather its occurrence, duration throughout the year and the location of this occurrence in respect of an individual's line of sight. It is also to be noted that the hours presented reflect solar time and therefore do not take Daylight Saving Hours into account.

Light Pollution

Light pollution is defined as any light emitting from artificial sources into spaces where it is unwanted, such as spillage of light from office or commercial buildings onto residential accommodation, where this would cause nuisance to the occupants. The ILP Guidance Notes provide suggested lighting level values to ascertain the acceptability of lighting levels of light pollution.

It should be noted that artificial light is not always perceived as being negative, particularly in areas of high crime where good street lighting and light into street environments is seen as a positive attribute. Adverse effects caused as a result of electric lighting include the intrusion of light into sensitive locations such as adjacent residential accommodation, areas of special night-time interest, or needless spillage into the night sky.

It should also be noted that the ILP Guidance relates and refers to external luminaires. However, commercial buildings with large areas of glazing and possible night-time usage can sometimes cause light intrusion from their internal luminaires. For this reason, quantitative light pollution assessments can be undertaken in relation to these internal luminaires or any high powered external lighting, should the information be available at the planning application stage of a project.

Light Pollution Technical Assessments

A technical assessment has not been undertaken at this stage, as the details of the future design are not yet available. The methodology for technical light pollution assessment is provided firstly in order to demonstrate how the conclusions of the qualitative assessment were established and secondly how future design will be assessed should effects be considered likely.

Potential light pollution effects of a new development are typically assessed in relation to four specific criteria:

- Light pollution is not a comparative assessment; the fact it may occur in the baseline does not necessarily justify its occurrence as a result of the Proposed Development. Therefore, the assessment considers the effect of the Proposed Development in absolute terms, by reference to the relevant guidance levels.
- Light Intrusion is the spilling of light beyond the boundary of a proposed development. It is assessed as vertical illuminance in lux (Ev) measured flat at the centre of the sensitive receptor;
- Luminaire Intensity is the uncomfortable brightness of a light source when viewed against a dark background. It is applied to each source visible from a sensitive receptor and is measured as source intensity (I) (kcd); and
- Building Luminance which can cause an increase in the brightness of a general area and is measured in cd per metre squared (L) as an average over the building facade caused only by external lighting.

Light pollution is not a comparative assessment; the fact it may occur in the baseline does not necessarily justify its occurrence as a result of the Proposed Development. Therefore, the assessment considers the effect of the Proposed Development in absolute terms, by reference to the relevant guidance levels.

Significance Criteria

Effect Significance Terminology Overview

In terms of sensitivity, surrounding properties are considered highly sensitive to daylight and sunlight levels, and specifically habitable rooms within the properties such as living rooms, kitchens and bedrooms, in accordance with the BRE Guidelines. All existing residential receptors, assessed within this chapter are considered highly sensitive due to the expectation of natural light and given equal weighting, and therefore each individual receptor is not assigned a level of sensitivity as per the usual EIA methodology i.e. high, medium, low or very low. However, buildings with transient occupants such as student accommodation, educational facilities and hospitals are considered lower sensitivity as they are not permanent residences and are transient in nature.

For transient overshadowing, all public areas of open space such as parks, squares and private gardens in proximity to the Site are considered highly sensitive and are considered within the assessment.

The key terminology to be used to describe the magnitude of effects is as follows and is further described in the below sections of this chapter:

- Major;
- Moderate;
- Minor; and
- Insignificant.

The nature of the effects may be either adverse (negative) or beneficial (positive).

Following the classification of an effect using this methodology, a clear statement is then made as to whether the effect is significant or not significant. As a general rule, in relation to sunlight, daylight, overshadowing and solar glare the following criteria is applied:

- 'Minor', 'Moderate' or 'Major' effects are deemed to be 'significant';
- 'Insignificant' effects are considered to be 'not significant'.

Evaluating Effects and Significance – Daylight, Sunlight and Overshadowing

Daylight and Sunlight

For daylight and sunlight, the BRE Guidelines outline the approach within the accompanying Appendix I, in terms of assigning criteria to assess the effects:

- Section 3 of Appendix I states: *"Adverse impacts occur when there is a significant decrease in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space... The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied."*
- Paragraph 5 of Appendix I states: *"Where the loss of skylight or sunlight fully meets the guidelines, the impact is assessed as negligible or minor adverse. Where the loss of light is well within the guidelines, or only a small number of windows or limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate. Where the loss of light is only just within the guidelines and a larger number of windows or open space are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space."*
- Paragraph 6 of Appendix I states: *"Where the loss of skylight or sunlight does not meet the guidelines in this book, the impact is assessed as minor, moderate or long-term, local, adverse of major significance. Factors tending towards a minor adverse impact include:*
 - *Only a small number of windows or limited area of open space are affected;*
 - *The loss of light is only marginally outside the guidelines;*
 - *An affected room has other sources of skylight or sunlight; and*
 - *The affected building or open space only has a low level of requirement for skylight or sunlight."*

The classification of major adverse is documented within Paragraph 7 of the BRE Guidelines:

"Factors tending towards a major adverse impact include:

- a large number of windows or large area of open space are affected;
- the loss of light is substantially outside the guidelines;
- all the windows in a particular property are affected; and
- the affected indoor or outdoor spaces have a particular strong requirement for skylight or sunlight, e.g. a living room in a dwelling or a children’s playground”.

Where the BRE Guidelines are met, the effects would be considered insignificant.

With regard to the BRE Guidelines, professional judgement has been used to determine whether the potential effects would result in adverse or beneficial effects. The initial numerical criteria for determining the category of effect is based on percentage alterations, as follows:

Table 2 Daylight and Sunlight Significance Criteria

Scale of Effect	Numerical criteria
Negligible	0-19.9% reduction
Minor adverse	20-29.9%
Moderate adverse	30-39.9% reduction
Major adverse	40%+ reduction

For instances where existing VSC, NSL and APSH levels within a property are low, any alteration may result in a disproportionate percentage change, whereby the actual change in daylight or sunlight within the property experienced by the occupant may not be as noticeable as the percentage change would suggest. This is one example of when professional judgement is taken into account.

Therefore, when assigning an overall significance per property, consideration has been given to the proportion of rooms / windows affected, as well as the percentage alterations, absolute changes, and any other relevant factors, such as there may be mitigating factors such as balconies, overhangs or design features which may also affect the determination of assigning the criteria.

Where room uses are unknown, all rooms assessed within the property or building are considered habitable to give the worst-case scenario for potential daylight and sunlight effects caused by the Development.

Where the scale of VSC levels and NSL levels within a property differ, professional judgement has also been used to determine an overall significance. In addition, if the scale of total APSH and Winter PSH differ greatly, professional judgement has also been used to determine the significance of the effect. This has been based on the factors previously stated.

Overshadowing

Transient Overshadowing

The BRE Guidelines do not include criteria for the significance of transitory overshadowing other than to identify the different times of the day and year when shadow would be cast over a surrounding area.

The assessment of potential effects as a result of transient overshadowing is therefore based on professional judgement, taking into consideration the conditions of the existing Site and surrounding area, and comparing these conditions against the effect of the transient overshadowing arising from the Development.

Sun Hours on Ground

It is suggested in the BRE guidelines that for an area to appear adequately sunlit throughout the year, at least half (50%) of any assessment area should see direct sunlight for at least two hours on the 21st March. If, as a result of new development, an existing assessment area will not meet BRE guidelines and the area which can receive two hours of direct sunlight on the 21st March is reduced to less than 0.8 times its former area, then the loss of sunlight is likely to be noticeable.

Where the results show compliance with the BRE guidelines criteria, the occupants are unlikely to experience any noticeable change to their sunlight amenity levels. For the purposes of this assessment, such an effect would be considered insignificant. Should the relevant criteria not be achieved, a judgment has to be made as to the significance of the effect based on the level of loss, retained sunlight levels and the relevant baseline scenario.

The table below sets out the numerical criteria adopted in relation to the sun on ground assessment.

Table 3 Sun on ground Significance Criteria

Scale of Effect	Numerical criteria on 21 st March
Negligible	Over 50% of the amenity area will receive 2 hours of sunlight or less than 20% alteration in area which receives 2 hours of direct sunlight.
Minor adverse	20-29.9% reduction in the area which receives 2 hours of direct sunlight (and below 50% retained area).
Moderate adverse	30-39.9% reduction in the area which receives 2 hours of direct sunlight (and below 50% retained area).
Major adverse	40%+ reduction in the area which receives 2 hours of direct sunlight (and below 50% retained area).