9. Daylight, Sunlight & Overshadowing APPENDIX

Introduction

9.1 This appendix contains further information regarding the technical analysis of daylight and sunlight, and the methodology for assessing impacts of development on the daylight and sunlight amenity of the neighbouring receptors identified within the chapter.

The BRE Guidance

9.2 The assessment has been undertaken in accordance with the BRE Guidance document *Site Layout Planning for Daylight and Sunlight – A Guide to Good Practise*.

9.3 This document was produced following extensive consultation with architects, planning officers, consultants, professional institutions and Government officials.

9.4 The Guidance was first published in 1991 and superseded the Department of the Environment Guidance "Sunlight and Daylight Planning Criteria and Design of Buildings".

9.5 The current edition (3rd) of the BRE Guidance was published in June 2022.

9.6 Its overall purpose is to assist in evaluating the relationship between new and existing buildings to ensure that each retains the potential to achieve a "fair share" of available daylight and sunlight given their relative siting, height and mass.

9.7 The BRE Guidance is technically robust and has become the industry standard methodology for assessing daylight and sunlight amenity in the built environment.

9.8 The provisions of the BRE Guidance are not mandatory and the BRE have taken steps to confirm that it should not be read as an instrument of planning policy:

'The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural daylight is only one of many factors in site layout design'.

9.9 It is important to note that the BRE Guidance was principally developed for use in the assessment of low density suburban environments and should, therefore, be applied flexibly for developments in urban City or Town Centre sites, commercially influenced areas or areas where greater density is sought / encouraged.

9.10 The BRE targets should not, therefore, be seen as absolute and immoveable targets when applied in built environments either of existing high density or where increased density is being sought / encouraged. To facilitate the flexible application of the BRE Guidance in such circumstances, it promotes the setting of alternative target values.

9.11 The high density and the City Centre location of the Site and its surroundings justify the flexible application of the BRE Guidance in the daylight and sunlight amenity impact appraisal of this Proposed Development.

9.12 The BRE Guidance also notes that the guidelines contained therein may also be used as the basis for environmental impact assessment.

Assessment Methodology of the BRE Guidance

9.13 The primary purpose of any daylight and sunlight amenity impact assessment is to measure and evaluate the effects of any reduction in light on the identified key receptors of the surrounding built environment, that arise as a consequence of the Proposed Development.

9.14 Although the provisions of the BRE Guidance are not mandatory, nor are its aspirational targets by any means fixed, it does provide an objective means of appraising daylight and sunlight amenity impact. Using the provisions of the BRE Guidance as a starting point, professional judgement and experience has been used to further assess the significance of any impact identified, taking into account such things as the sensitivity of the receptors, and the nature / character of the impact and any other relevant factors that would justify the further flexible interpretation of the results.

9.15 The methodology adopted follows that set out in the BRE Guidance, which provides criteria and methods for measuring daylight and sunlight amenity. The BRE Guidance establishes a set of parameters intended to assist in the quantification of daylight and sunlight levels.

9.16 A distinction can be drawn between “daylight” and “sunlight”. Daylight is directly received from an unobstructed overcast sky. Sunlight is light received directly from the sun.

9.17 In accordance with the BRE Guidance, the daylight amenity impact has been appraised through establishing the Vertical Sky Component (“VSC”) for all relevant neighbouring windows, and, where appropriate, by measuring the No Sky Line (“NSL”) of the rooms.

9.18 The BRE Guidance promotes that sunlight amenity to buildings is assessed through establishing the winter and summer Annual Probable Sunlight Hours (“APSH”) for certain windows that face within 90 degrees of due south. Sunlight amenity to external land is appraised through establishing the number of sunlight hours received (“Time in Sun”).

9.19 To technically appraise the impact that the Proposed Development will have on the daylight and sunlight amenity of the surrounding built environment, it is necessary to build a computer generated 3D model representing the configuration and massing of the Site and its surroundings in the Baseline, Proposed and Cumulative conditions.

9.20 The metrics that are measured in the assessment of daylight and sunlight amenity impacts are Vertical Sky Component, the No Sky Line, and Probable Sunlight Hours.

9.21 Details of what these are and how they are measured is set out below.

Vertical Sky Component ("VSC")

9.22 The VSC is a unit of measurement that represents the amount of visible sky that is capable of being measured at the midpoint of the external face of a window.

9.23 The more unobstructed sky or sky visibility available to a window, then, in theory, the potential daylighting capability of the room that it serves will increase.

9.24 The unit is expressed as a percentage, as it is the ratio between the amount of visible sky available to the window being tested, compared to what would be available from a totally unobstructed sky. To put this unit of measurement into perspective, the maximum percentage VSC value of a window located in a vertical plane is 50%, but in practice the VSC values do not typically exceed 40%, because of projecting window reveals and window heads which reduce the angles of measurement.

9.25 The BRE Guidance for daylight sets out that:

> *"… daylighting of an existing building may be adversely affected … if … the VSC measured at the centre of an existing window is less than 27%, and less than 0.8 times its former value".*

9.26 Daylight amenity will therefore not be materially or adversely affected if it can be established that a window achieves 27% VSC in the proposed condition.

9.27 If a window has a VSC of less than 27%, then a reduction in daylight is not considered material by the BRE so long as the reduction does not exceed 20% (i.e. 0.8 x) the baseline value. This loss is not considered material by the BRE as it is unlikely to be noticed by the building occupants.

No Sky Line ("NSL")

9.28 The BRE Guidance confirms that the internal daylight distribution of an existing building can be found by plotting the NSL for each main room, which would include living rooms, dining rooms and kitchens (bedrooms can also be analysed, but the BRE consider them less important)

9.29 The NSL is measured at an internal working plane within a room and divides those parts of it which can and cannot see the sky through its window provision.

9.30 Those parts of a room beyond the NSL usually look dark and gloomy, compared with the rest of the room, because they receive no direct light from the sky.

9.31 The BRE Guidance considers that it is acceptable for the area of a room within the NSL to be reduced by 20% (or 0.8x) of its existing coverage, on the grounds that such a reduction in NSL coverage would not be noticed by the room occupants.

Annual Probable Sunlight Hours ("APSH")

9.32 Unlike daylight, which is not materially influenced by orientation and assumes that light from the sky is uniform, the availability of sunlight is dependent upon orientation.

9.33 As the United Kingdom is in the northern hemisphere, sun is only received from the south, rising in the east and setting in the west. The availability of sunlight is therefore

dependent upon the compass orientation of the window or room being tested relative to the position of due south.

9.34 The BRE Guidance for sunlight sets out that:

"If a living room of an existing dwelling has a main window facing within 90° of due south and any part of the new development subtends at an angle of more than 25° to the horizontal, measured from the centre of the window in a vertical section perpendicular to the window, the sunlighting of the existing dwelling may be adversely affected".

9.35 Further, that sunlight may also be adversely affected if the main living room window:

"... receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March".

9.36 From this, it is established that sunlight amenity will not be materially affected if 25% of all anticipated APSH is received, with 5% being received during the winter months.

9.37 The winter months are September through to March.

9.38 Again, the BRE considers it acceptable to reduce the availability of sunlight by 20% (0.8 x its former value) in circumstances where the target APSH is not achieved, the justification being that such a reduction is unlikely to be noticed by the building or room occupants.

Sunlight to Open Spaces

9.39 The BRE recommends that the availability of sunlight should be checked for all external spaces where sunlight would be appreciated / expected. They provide a list of examples which includes the back garden of dwelling houses, parks and playing fields and external sitting out areas, such as public squares and around fountains / monuments.

9.40 The BRE recommends that at least half the area of the external amenity space must be capable of receiving at least 2 hours of sunlight, on 21 March (the spring equinox). Again, if this is not achieved in the baseline condition, then the BRE consider a 20% (0.8x) reduction of the area that receives 2 hours sunlight to be acceptable on the grounds that the reduction is unlikely to be noticed by the occupants or users.

Setting Alternative Daylight and Sunlight targets

9.41 The BRE acknowledge the need for the provisions of the Guidance to be applied and interpreted flexibly, including adjustment, where it is used outside of the low density suburban environments for which it was principally designed, in confirming that:

"... the Developer or Planning Authority may wish to use different target values. For example, in a historic City Centre, or in an area with modern high rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportion of existing buildings".

9.42 This is logical. It is unrealistic to rigidly impose the BRE's low density massing targets in a higher density environments because it is obvious that they could not be met.

Generic Alternative Daylight & Sunlight Targets

9.43 A generic or non-site specific alternative VSC value of 21.6% is capable of being established / interpreted as being an Alternative Target that is within an acceptable tolerance of the 27% BRE target for higher density environments through the application of BRE principles.

9.44 To explain, the BRE Guidance confirms that the 27% target VSC is an acceptable level of daylight, and one that is capable and accepted of being reduced by 20%. In this regard, if a window enjoys 27% VSC in the existing condition, it would be acceptable to reduce that VSC to 21.6% (i.e. a reduction of 5.4% VSC, which is 20% of 27%). In such circumstances, it would be concluded that a VSC of 21.6% would be adequate to satisfy the BRE's daylight test criterion.

9.45 That conclusion would be drawn on the basis that the reduction in direct sky light would not be noticed by the building or room occupants. However, that is not the same, and this is an important distinction, as concluding that 21.6% VSC is in anyway an insufficient or detrimental amount of direct sky light for a window or room to receive.

9.46 A VSC value of 21.6% is established to be an appropriate VSC Alternative Target suitable for impact assessment within in a high density City Centre environment. A window with a VSC of 21.6% means that the window would still have access to more than half of the available sky dome from which daylight is typically derived.

9.47 Using the same principle, APSH values of 4% for winter APSH (rather than the low density 5%) and 20% for annual APSH (rather than 25%) can be / are deemed to be within an acceptable tolerance of the unmodified BRE targets, and appropriate for City Centre environments.

Site Specific Daylight & Sunlight Targets

9.48 There are also occasions that, rather than assess amenity impacts against generic alternative targets, it is appropriate to set Site-specific alternative daylight and sunlight targets, based on the specific massing conditions of a Site and the surrounding context.

9.49 Examples of approaches for setting Site specific alternative daylight and sunlight targets include the comparison of a Proposed massing against a massing established in planning policy; the impact of the receptor's own massing mirrored onto the proposed development Site; or comparison with a former massing of a development Site.