



Unit 28, Hawthorne Court, Ryefield
Crescent, Norwood HA6 1LJ

Internal Daylight and Sunlight Report

18th March, 2022



2-6 Boundary Row
London SE1 8HP
T 020 3714 4090

www.chpsurveyors.com



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1.0 Executive Summary

- 1.1 This report has been prepared by CHP Surveyors Ltd on behalf of Hamways Limited. It accompanies an application for the reconfiguration of the property and considers the level of daylight and sunlight the proposed residential accommodation will enjoy.
- 1.2 The GPDO states that the developer must apply to the local planning authority for prior approval as to ensure that all habitable rooms within the new development will achieve adequate natural light (A.2. (1) (f)), and the impact on the amenity of the existing building and neighbouring premises including overlooking, privacy and loss of light (A.2. (1) (g)).
- 1.3 To ensure that this assessment has correctly considered whether the proposed accommodation will have appropriate levels of daylight and sunlight, it has been undertaken in accordance with the Building Research Establishment's publication "*Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice*" (2011) (the "**BRE Guidelines**").
- 1.4 The results of our analysis demonstrate that all the proposed habitable rooms will achieve or exceed the recommended minimum level of daylight and that all rooms facing within 90° of due south will exceed the recommended levels of sunlight. The analysis therefore demonstrates that the aims of the Building Research Establishment's publication "*Site Layout Planning for Daylight and Sunlight. A guide to good practice*" (2011) are achieved.

2.0 Instruction

- 2.1 We have been instructed by Hamways Limited to establish the quality of daylight the proposed habitable rooms will enjoy.

3.0 Assessment

- 3.1 The GPDO states that when considering an application, it needs to show that all habitable rooms within the new development will have adequate natural light and the impact of the amenity of the existing building and neighbouring premises including overlooking, privacy and loss of light.



- 3.2 Within the National Planning Policy Framework (February 2019) under paragraph 123 it states:

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

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

Paragraph 127 (f) of the NPPF also states:

“Decisions should ensure that the 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.”

- 3.3 To ensure that this assessment has been appropriately considered, daylight and sunlight assessments have been undertaken in accordance with the Building Research Establishment (BRE) publication *“Site Layout Planning for Daylight and Sunlight. A guide to good practice”* (2011).
- 3.4 It is suggested within the BRE guidelines that for proposed residential accommodation a minimum Average Daylight Factor is achieved depending on the proposed use of the room.
- 3.5 A more detailed account of the BRE guidelines is attached at Appendix A, entitled the **“Principles of Daylight and Sunlight”**.



4.0 Information

4.1 We have made reference to the following information: -

RGP

Drawing numbers 202-273/(P)006A and 008A

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5.0 Proposals

5.1 The proposals are to carry out internal alterations to the property to provide residential accommodation.

6.0 Limitations

6.1 Our assessment is based on the proposed development drawings by RGP and based on this information we have produced a 3D computer model to enable us to run the necessary analysis using a specialist computer programme.

7.0 Methodology

7.1 Based on online research and information provided, we have produced a 3D computer model of the neighbouring structures to the site that would cause an obstruction to the daylight and sunlight the proposed accommodation will enjoy. We have then produced a 3D computer model of the proposals, including all windows serving habitable rooms and the rooms they serve.

7.2 Using a specialist computer programme, we have undertaken the analysis set out in the BRE Guidelines.

7.3 As clearly stated within the BRE Guidelines, its aims are to help designers not constrain them and the numerical values contained within this document should be interpreted flexibly since natural light is only one of many factors in site layout design. It also states that different target levels may be used in such an urban location as we are considering.



8.0 Daylight Assessment

8.1 General

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8.1.1 With regard to the level of daylight the proposed accommodation can enjoy, BS8206 Part 2 contains advice and guidance. The recommended level of daylight depends on the room uses. The daylight levels are established by calculating the Average Daylight Factor, which is the average illuminance on the working plane in a room, divided by illuminance on an unobstructed horizontal surface outdoors. The recommendations for habitable rooms are that the minimum Average Daylight Factor for a kitchen is 2% for a living room 1.5% and for a bedroom 1%.

8.1.2 To calculate the ADF, this is set out in Appendix C of the BRE guidelines. The equation used is: -

$$ADF = \frac{TMA_w\theta}{A(1-R^2)}$$

Where: -

- T** Is the diffuse visible light transmittance of glazing with 0.68 used for clear double glazing
- M** Is the maintenance factor allowing for the effects for dirt where 0.92 is used reflecting a 8% loss.
- A_w** Is the net glazed area of the window which is calculated from the 3D computer model.
- θ** Is the angle of visible sky which can be taken from VSC results.
- A** Is the total area of all the room surfaces (ceilings, floors, walls and windows) which is calculated from the 3D computer model.
- R** Is the area-weighted average reflectance for the room surfaces with 0.85 used for ceilings, 0.7 for walls and 0.4 for floors.



8.2 Analysis

8.2.1 We have analysed the daylight within the proposed habitable rooms, with the results set out in the table attached at Appendix C and indicated on drawing number 2611-100 attached at Appendix B.

8.2.2 The analysis demonstrates that through careful consideration during the design process, all rooms will achieve or exceed the recommended ADF. The analysis therefore demonstrates that the BRE guidelines are achieved.

9.0 Sunlight Assessment

9.1 General

9.1.1 Concerning the sunlight the proposed accommodation will enjoy, in accordance with the BRE Guidelines, for those habitable rooms that have a window facing within 90° of due south, we have calculated the Annual Probable Sunlight Hours (APSH) it will enjoy and the hours that will be enjoyed within the winter months, with the recommended minimum being 25%APSH and 5% during the winter months.

9.2 Analysis

9.2.1 The results of the analysis are set out in the table attached at Appendix D and demonstrate that all three rooms will exceed the recommended APSH and during the winter months. The analysis therefore demonstrates that the proposed accommodation facing within 90° will have good access to sunlight and the aims of the BRE guidelines are achieved.



10.0 Conclusion

10.1 The results of our analysis demonstrate that through careful design of the scheme, all of the proposed habitable rooms analysed will achieve or exceed the recommended level of daylight and the three rooms facing within 90° of due south will exceed the guidelines with regards to sunlight.

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10.2 The result of our analysis therefore demonstrates that the proposed accommodation will achieve a good level of daylight and sunlight and that therefore the aims of the Building Research Establishments publication “*Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice*” (2011).



Appendix A

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Principles of Daylight and Sunlight

In 2011 the Building Research Establishment (BRE) published a handbook titled “Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice” to provide advice to building designers on site layout planning in order to achieve good daylight and sunlight amenity to the proposed development, the open spaces between the proposed blocks and the existing surrounding properties.

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As stated within the Introduction of this document, the aim of these guidelines is:- *“To help to ensure good conditions in the local environment, considered broadly, with enough sunlight and daylight on or between buildings for good interior and exterior conditions.”*

The application of the BRE Guidelines are suited more to low density suburban development sites where there is a greater flexibility for site layout planning. In dense urban development sites, these are usually constrained often by adjacent buildings and the guidelines state that these should be applied more flexibly in these instances, as contained within the introduction of the BRE Guidelines:- *“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 guides, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design...”*

It must therefore be appreciated and as can be seen from the above extracts and which is reiterated throughout, the handbook is for guidance only.

Daylight

Daylight assessments should be undertaken to habitable rooms where the occupants can expect to receive a reasonable amount of daylight.

The first assessment is to establish whether the proposals will subtend an angle of 25° from the centre of the window. If it does not, then it is considered there will be good daylight. The BRE Guidelines advise:- *“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 a lowest window, subtends an angle of more than 25° to the horizontal may be affected.”*

This assessment is most appropriate for well spaced, low density or low rise, uniform proposed developments. It is not an appropriate assessment for dense urban environments where the existing building on the development site already subtends at an angle greater than 25° to the horizontal from the subject window. It is for this reason that this 25° assessment is generally dispensed with and the more detailed analysis outlined below is undertaken.

Vertical Sky Component (VSC)

The Vertical Sky Component (VSC) analysis establishes the amount of available daylight received directly from the sky for each individual window. The reference point for the analysis being the centre of the window, on the plane of the outer window wall.



The VSC is the amount of direct sky a window enjoys, expressed as a percentage of the amount of direct sky a horizontal, unobstructed rooflight would receive.

The maximum percentage of direct skylight a vertical window can receive is 40%. The BRE have determined that where a VSC of 27% is achieved, then daylight should reach the window of an existing building.

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Where a VSC of less than 27%, is either before the implementation of the proposals enjoyed, or it is enjoyed following the implementation, then the BRE Guidelines state that provided the new value is greater than 0.8 times the existing value, daylight will not be significantly affected.

Daylight Distribution

The Daylight Distribution analysis is undertaken at working plane level, with this set at 0.85m above floor level of a dwelling.

The BRE Guidelines state that provided a significant area of the room, which is considered to be 80% is in front of the No Sky Line (the point behind which at desk top level no sky is visible) or at least 0.8 times the existing area, then the room will enjoy good daylight distribution.

If in the existing situation this is not the case, the BRE Guidelines state that provided that the area following the implementation of the proposals is at least 0.8 times the existing area, there will not be a significant affect.

Sunlight

This analysis is undertaken in a similar method to calculating VSC. Within residential accommodation the analysis for a sunlight analysis relates to the main windows that are within 90° of due south. It is considered that sunlight to kitchens and bedrooms is less important, although care should be taken not to block out too much.

Within commercial or non-domestic buildings, the use of the building will determine whether a sunlight assessment is required.

In relation to neighbouring residential buildings, if a window is facing within 90° of due south and overlooking any part of the proposals subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlight of the existing dwelling may be affected.

Annual Probable Sunlight Hours (APSH)

The 'Probable Sunlight Hours' can be defined as the total number of hours in the year that sun is expected to shine.

The APSH assessment is undertaken to the main window of residential buildings, where the window faces 90° of due south. Within the BRE Guidelines it sets out the criteria for this assessment:-



"If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely effected. This will be the case if a point at the centre of the window, in the plane of the inner window wall, received in the year less than one quarter (25%) of annual probable sunlight hours including at least 5% of annual probable sunlight hours between 21 September and 21 March, and less than 0.8 times its former sunlight hours during either period."

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In summary, if it does not achieve the specific numerical values, the sunlight to an existing building may be reduced by 20% in either the annual or winter periods before that loss becomes noticeable as a result of a proposed development.



Appendix B



KEY



Appendix C

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Proposed Accommodation - Daylight Results

LEVEL	ROOM	ROOM USE	REQUIRED ADF	PROPOSED ADF
Ground	R1	Living/Kitchen/Dining Room	1.5	2.5
	R2	Living/Kitchen/Dining Room	1.5	1.6
	R3	Living/Kitchen/Dining Room	1.5	3.6
	R4	Living/Kitchen/Dining Room	1.5	1.8
	R5	Living/Kitchen/Dining Room	1.5	2.2
	R6	Bedroom	1.0	1.1
	R7	Bedroom	1.0	2.0



Appendix D

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Proposed Accommodation - Sunlight Results

LEVEL	ROOM	ROOM USE	WINTER APSH (%)	TOTAL APSH (%)
Ground	R5	Living/Kitchen/Dining Room	26%	60%
	R6	Bedroom	22%	51%
	R7	Bedroom	24%	53%