NRG CONSULTING

Coombe Lane

Daylight, Sunlight and Overshadowing Assessment

November 2023

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1 EXECUTIVE SUMMARY

1.1 NRG Consulting have been appointed to conduct a Daylight, Sunlight and Overshadowing Assessment on a proposed development consisting of the *demolition of existing and construction of a new residential building at* **260 Coombe Lane, West Wimbledon, London, SW20 0RW**.

1.2 Our assessment of the proposed development adheres to the following guidelines:

- BRE's *Site Layout Planning for Daylight and Sunlight, A guide to good practice (BR 209)*, by P J Littlefair, 3rd Ed.
- *BS EN 17037:2018 Daylight in Buildings*

1.3 Section 1.6 of the BRE document states that the:

The guide is intended for building designers and their clients, consultants, and planning officials. 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. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design

1.4 The findings of this report indicate that the proposed development has no negative impact on 8 of the 9 potentially impacted windows a minor negative adverse impact on the daylight and sunlight levels experienced by the neighbouring property at 262 Coombe Lane.

1.5 Based on these findings, it is considered that daylight & sunlight considerations should on balance, not be a constraint to the granting of planning permission.

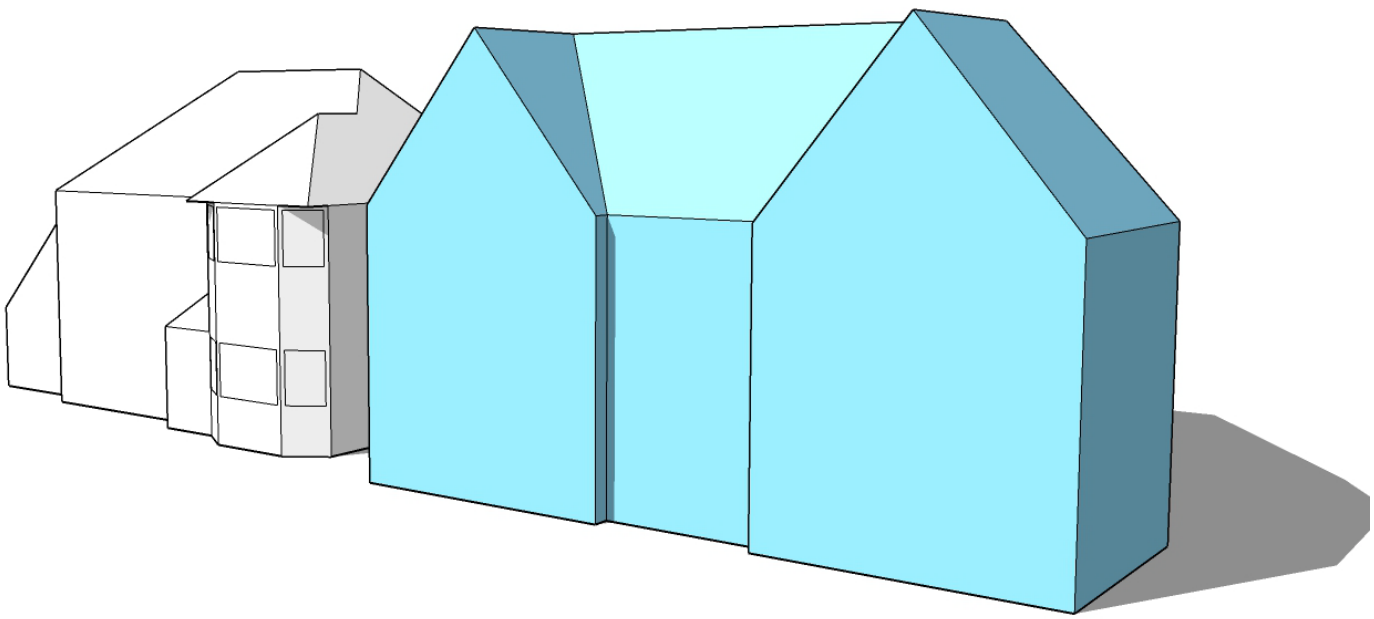


***Figure 1**: 3d Model of proposed buildings.*

2 INTRODUCTION

2.1 Background

The Building Research Establishment (BRE) has outlined guidelines and methodologies for measuring and assessing daylight and sunlight within proposed buildings in their handbook, “Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice”, 3rd Ed. This document is intended to be used in conjunction with the interior daylight recommendations found within the British Standard BS EN 17037:2018 and the Applications Manual on Window Design of the Chartered Institution of Buildings Services Engineers (CIBSE).

The guide also offers advice on site layout planning to determine the quality of daylight and sunlight within open spaces between buildings.

The British Standards Institution (BSI) has provided guidance on good practice in daylighting design in BS EN 17037:2018 Daylight in Buildings, presenting criteria intended to enhance the well-being and satisfaction of people in buildings.

This study assesses the availability of Daylight and Sunlight to the façades of local dwellings and their amenity areas with respect to the design proposals prepared by the design team, as well as the availability of internal daylight to the proposed building.

NRG Consulting has proposed the following methodology to assess the proposed layouts:

- Prepare a 3D computer model to understand and visualize sunlight for neighbouring properties.
- Carry out a daylight sunlight assessment using the methodologies set out by BRE and British Standard Guidelines for diffuse daylight and sunlight conditions.

This comprehensive approach ensures a thorough evaluation of both external and internal daylight conditions, taking into account both existing structures and proposed developments.

2.2 The Nature and Effect of Daylight and Sunlight

The 3rd edition of the “Site Layout Planning for Daylight and Sunlight” guide by Paul J. Littlefair, released in June 2022, replaces the second edition. The key update is the methods for assessing daylight in a proposed building, as per section 2.1 and Appendix C of the handbook. These methods are based on BS EN 17037, which offers two methodologies for evaluating daylight across a room’s working plane: the Illuminance Method and the Daylight Factor Method.

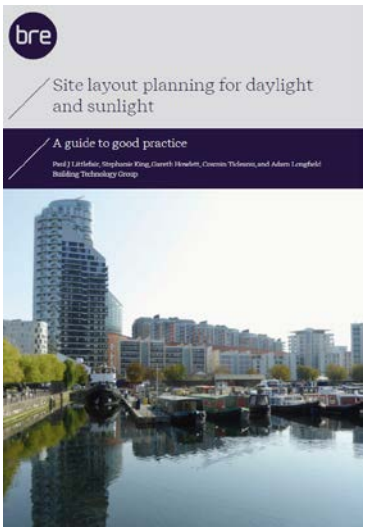


Figure 2: BRE guidelines

3 DAYLIGHT AND SUNLIGHT ASSESSMENT GUIDANCE

3.1 Assessment of the Effect of Daylight and Sunlight

When evaluating the potential light-related impacts of proposed building projects, it's crucial to distinguish between daylight and sunlight. Daylight encompasses all direct and indirect sunlight during daytime hours, while sunlight refers solely to direct sunlight. Even on cloudy or overcast days, diffuse daylight can illuminate rooms through windows, despite the absence of sunlight.

Particular attention should be paid when the development is located to the south of existing buildings. In the northern hemisphere, most sunlight comes from the south. In countries like the UK, south-facing facades generally receive the most sunlight, while north-facing facades receive less sunlight during summer months, specifically in early mornings and late evenings.

The Building Research Establishment (BRE) report, BRE 209 "Site Layout Planning for daylight and sunlight- a guide to good practice" by P J Littlefair, considers three separate areas when assessing the impacts of a new development on an existing property:

- Daylight - The impacts of all direct and indirect sunlight during daytime.
- Sunlight - The impacts of only the direct sunlight on a dwelling and its garden and open spaces. This comprehensive approach ensures a thorough evaluation of both external and internal light conditions, taking into account both existing structures and proposed developments.

Appendix 1 of the BRE Report outlines the methodologies and criteria used in this assessment.

The BRE report provides guidelines for when sunlight obstruction may become an issue:

- If the proposed or existing development has a window that faces within 90° of due south, and
- On this window wall, all points on a line 2m above ground level are within 4m (measured sideways) of a point which receives at least a quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months, between 21st September and 21st March.

The BSI guidance BS EN 17037:2018 "Daylight in Buildings" provides criteria for internal daylight in various internal spaces.

Table 1 below summarises the criteria used in this report to assess the impacts from new development on the sunlight reaching existing properties.

PARAMETER	REPORT REFERENCE	ACCEPTABILITY CRITERIA
Sunlight to Amenity Areas	BRE 209 Section 3.3	It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.
Vertical Sky Component	BRE 209 Section 2.2	Any reduction in the total amount of skylight can be calculated by finding the VSC at the centre of each existing window. If the VSC is both less than 27%, and less than 0.8 times its former value occupants will notice the reduction in the amount of skylight.
APSH/WPSH	BRE 209 Section 3.2	It is recommended that interiors where the occupants expect sunlight receive at least one quarter (25%) of Annual Probable Sunlight Hours (APSH), including the winter months between 21st September and 21st March at least 5% of Annual Probable Sunlight Hours (WPSH). If the available sunlight hours are both less than these values and less than 0.8 times their former value then the occupants will notice the loss of sunlight.

***Table 1**: BRE daylighting and sunlighting criteria*

3.2 Angle to sky from horizontal.

Generally, a building will maintain the potential for good interior diffuse daylighting as long as no obstruction, measured in a vertical section perpendicular to the main face from the centre of the lowest window, subtends an angle of 25° to the horizontal or less on all its main faces.

If this criterion is met, further calculations are typically not required as it is unlikely that daylighting will be significantly affected. This approach ensures that buildings are designed with optimal daylighting in mind, enhancing the overall quality of the interior environment.

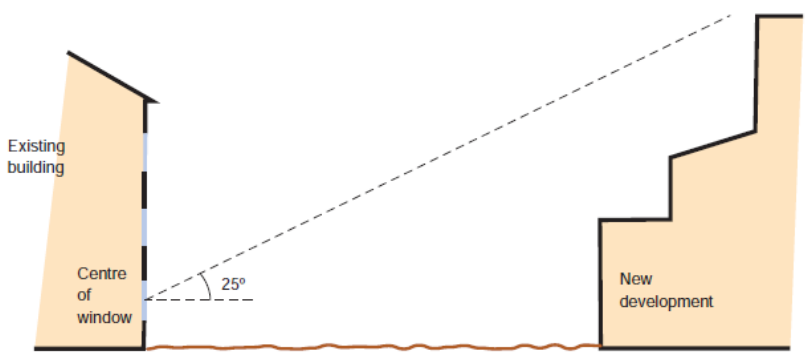


***Figure 3**: Section showing the angle to sky from horizontal criteria for diffuse daylighting*

4 METHODOLOGY APPLIED

4.1 Data

All data utilised in this report has been sourced directly from digital files supplied by the Design Team as well as a Site Visit conducted by NRG Consulting in November 2023.

The height of any potential obstructions has been determined using survey data and derived from publicly accessible aerial photographs. These were then cross-referenced and corroborated with our on-site photography where feasible.

***Figure 4**: Aerial view of the site as existing.*

***Figure 5**: Proposed site plan*

4.2 3D Model

To conduct the daylight, sunlight, and overshadowing assessment for the adjacent properties, we constructed a full-size 3D model of the existing area. This model includes existing buildings and neighbouring properties and was created using Trimble SketchUp 2021.

We manually measured the angle to the sky from the horizontal within the model space.

To assess the Vertical Sky Component, sunlight to the amenity areas and the Annual and Winter Probable Sunlight Hours (APSH/WPSH), we used MBS Daylight software.

This approach ensures a thorough and accurate assessment of daylight and sunlight conditions.

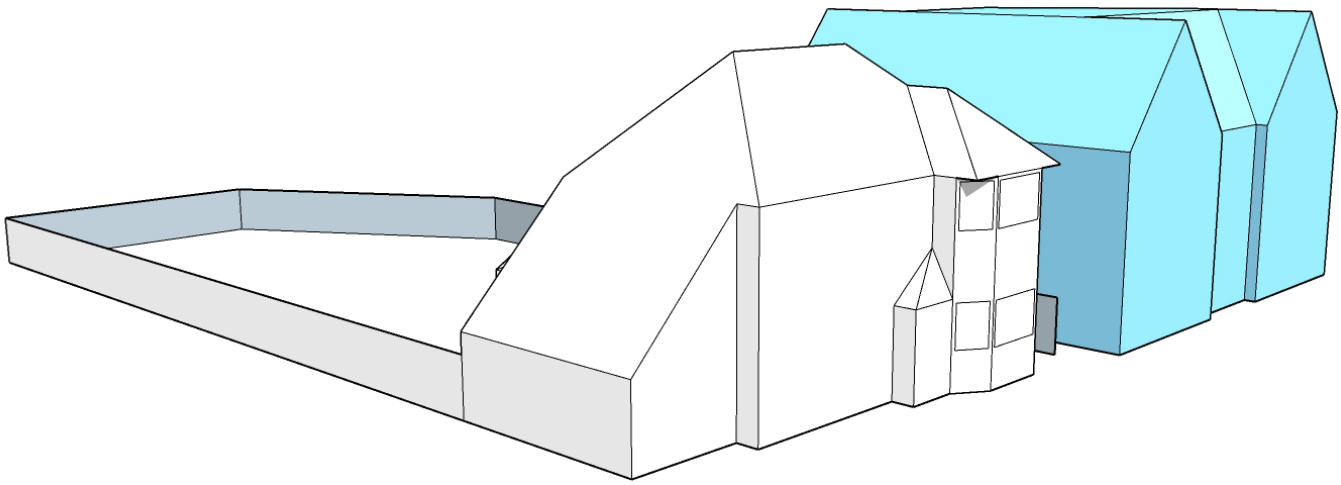
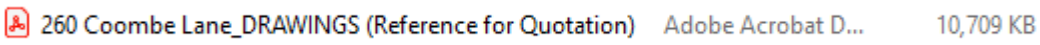


***Figure 6**: SketchUp 3D model of the proposed development.*

4.3 Design Data

The drawing pack used for this assessment was issued in November 2023.



5 RESULTS

5.1 Vertical Sky Component Analysis and APSH/WPSH Analysis

The windows analysed, along with their addresses, are listed in Tables 6 and 7 below.

ADDRESS	WINDOW No	PRE CONSTRUCTION VSC	POST CONSTRUCTION VSC	AFFECT RATIO	MEETS BRE CRITERIA
262 Coombe Lane	1	38.35	32.81	0.86	YES
	2	39.62	39.44	1	YES
	3	38	38	1	YES
	4	36.13	31.79	0.88	YES
	5	39.62	39.52	1	YES
	6	35.81	35.81	1	YES
	7	26.54	8.69	0.33	NO
	8	38.54	39.24	1.02	YES
	9	39.58	37.42	0.95	YES

Table 2: Results of Vertical Sky Component Analysis. If a window were to achieve less than 27% Post Construction VSC the Affect Ratio must be at least 0.80 to ensure BRE compliance.

ADDRESS	WINDOW No	PRE CONSTRUCTION APSH	POST CONSTRUCTION APSH	AFFECT RATIO	PRE CONSTRUCTION WPSH	POST CONSTRUCTION WPSH	AFFECT RATIO	MEETS BRE CRITERIA
262 Coombe Lane	1	79	65	0.82	28	26	0.93	YES
	2	87	84	0.97	30	30	1	YES
	3	72	72	1	26	26	1	YES
	4	83	69	0.83	28	26	0.93	YES
	5	87	85	0.98	30	30	1	YES
	6	72	72	1	26	26	1	YES

ADDRESS	WINDOW No	PRE CONSTRUCTION APSH	POST CONSTRUCTION APSH	AFFECT RATIO	PRE CONSTRUCTION WPSH	POST CONSTRUCTION WPSH	AFFECT RATIO	MEETS BRE CRITERIA
	7	45	18	0.4	13	6	0.46	NO
	North Facing window							
	North Facing window							

Table 3: Results of Annual Probable Sunlight Hours. If a window were to achieve less than 25% Post Construction APSH or 5% WPSH the Affect Ratio must be at least 0.80 to ensure BRE compliance

5.2 Window Arrangement

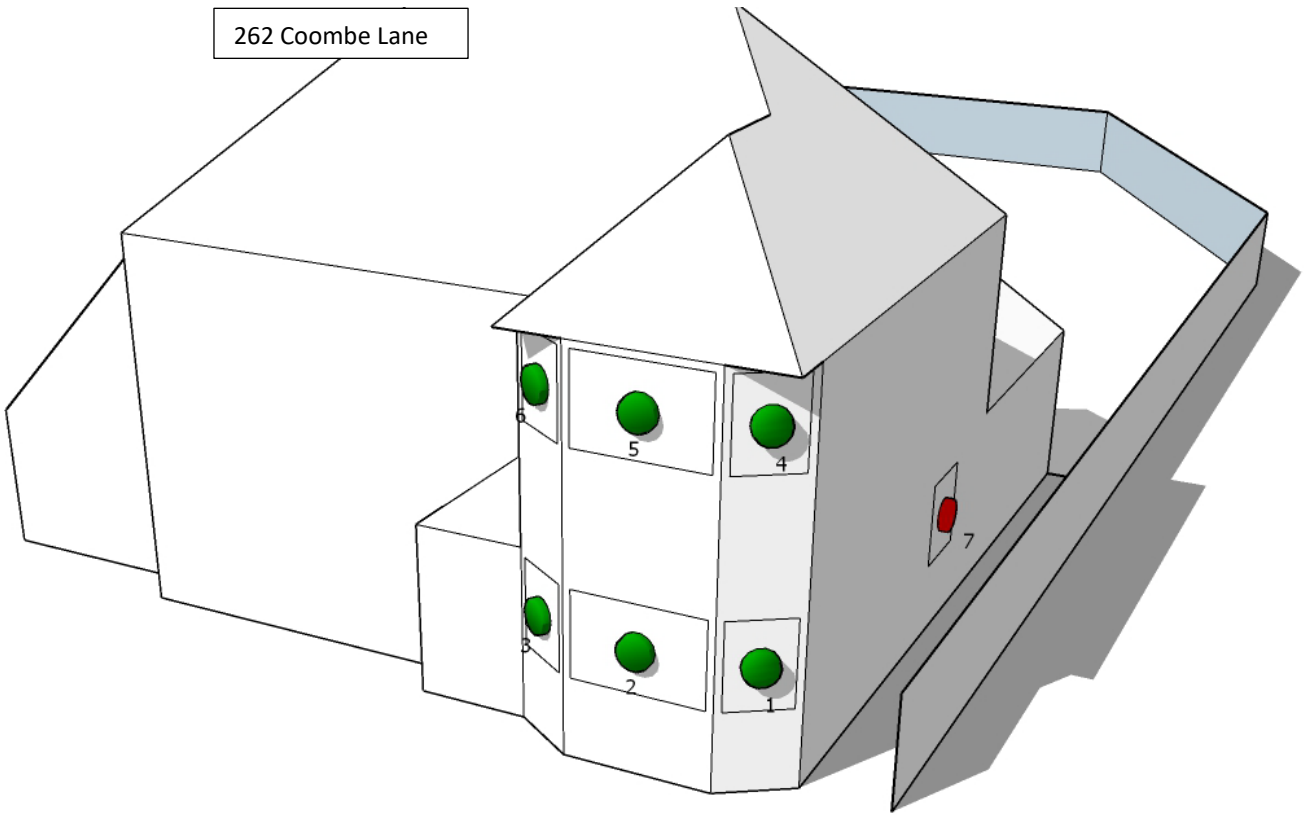


Figure 7: VSC window arrangement

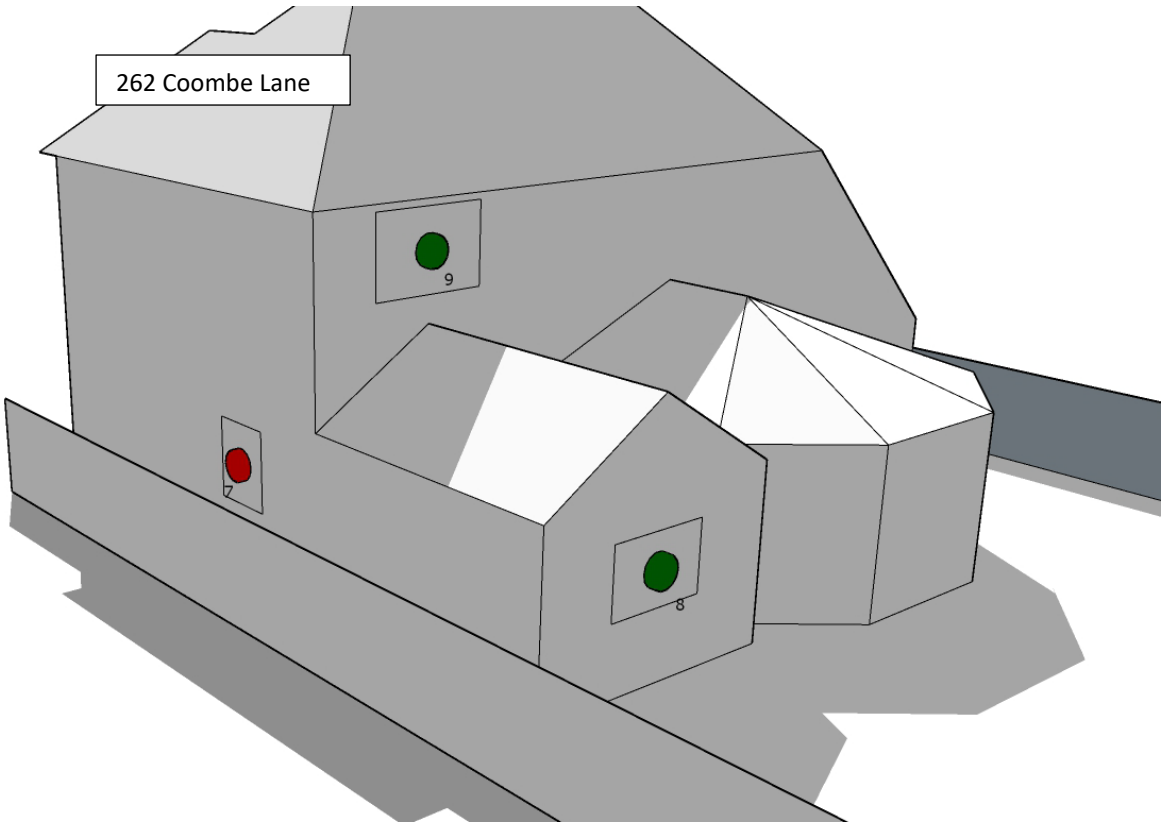


***Figure 8**: VSC window arrangement*

***Figure 9**: Window 7 as per Site Survey*

5.3 Overshadowing Assessment Results – Open Areas

In evaluating the impact of a development on existing neighbouring amenity or garden areas, the BRE guide suggests that at least 50% of each amenity space should receive a minimum of two hours of sunlight on March 21st. If a garden or amenity area fails to meet this 50% criterion due to the new development, and the area receiving two hours of sunlight on March 21st is less than 0.8 times its previous value, then the loss of sunlight is likely to be noticeable.

The existing and post development amenity areas at 262 Coombe Lane have been analysed using the 3D SketchUp model.

As depicted in Figures 10 and 11 below, our findings indicate that the proposed development does not significantly impact the sunlight received by adjoining amenity areas.

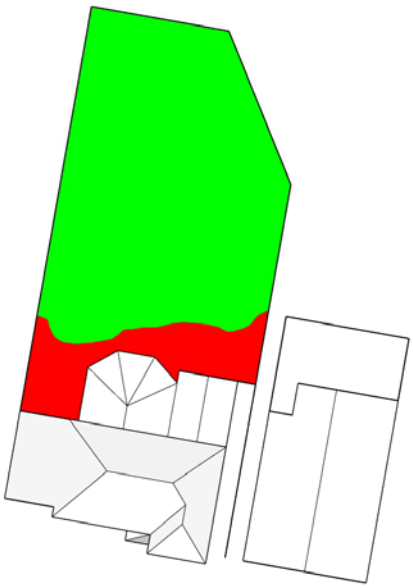


Figure 10: *Existing amenity area sunlight*

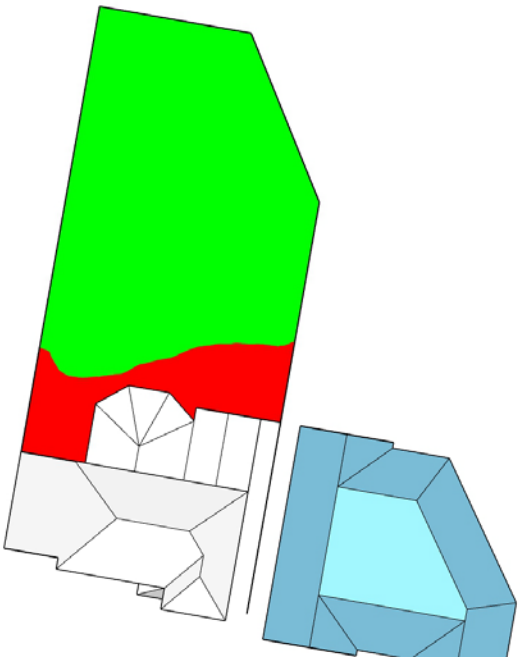


Figure 11: *Proposed development amenity area sunlight*

6 CONCLUSION

6.1 Our daylight and sunlight analysis indicates that the proposed development at 260 Coombe Lane, West Wimbledon, London, SW20 0RW will only have a negative impact on a single window at the neighbouring property at 262 Coombe Lane.

6.2 As detailed in Sections 5.1-5.3, our analysis shows that 8 of the 9 windows meet the target requirements of the BRE Guide in terms of daylight and sunlight in the proposed situation, with no significant adverse material effect. Where-by it is uncertain if a window is to a habitable room or otherwise, the window has been modelled for certainty. All compliant rooms easily clear the minimum 27% VSC target or 0.8 impact ratio as per the BRE guidance.

6.3 The Vertical Sky Component (VSC) Analysis reveals minimal changes in daylight access to the existing buildings before and after the proposed development. All but one analysed windows comply comfortably with BRE guidelines for adequate daylighting [Section 5.1].

6.4 Our Annual Probable Sunlight Hours (APSH) and Winter Probable Sunlight Hours (WPSH) assessment demonstrates that the proposed development will not significantly affect the existing buildings. All but one analysed windows comply comfortably with BS EN 17037:2018 [Section 5.1].

6.5 To ensure a garden or open space appears adequately sunlit throughout the year, at least half of it should receive a minimum of two hours of sunlight on March 21st. Our results confirm that existing open spaces will not be adversely affected by the proposed development [Section 5.3].

6.6 The single window that the proposed development does impact is Window 7 on the Ground Floor as shown within this report. It is unclear, despite our Site Survey and online searches, whether this window is to a non-habitable room (Hallway or stand-alone Kitchen or a downstairs WC), or is situated in the same room as window 8. On balance it is as likely as it is not that one of these two scenarios is correct.

6.7 In summary, the proposed development in its majority complies with BRE Guidelines and will not impact daylight and sunlight levels for the dwelling and amenity areas at 262 Coombe Lane with the exception of an adverse impact to Window 7.

6.8 **Therefore, it is the opinion of the author given all of the available information and the suburban context of the development that daylight & sunlight considerations should not pose a barrier to granting planning permission.**

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