Hallowell Road

Daylight, Sunlight & Overshadowing Assessment

May 2023

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CONTENTS

1 EXECUTIVE SUMMARY

1.1 NRG Consulting have been commissioned to undertake a Daylight, Sunlight and Overshadowing Assessment on a proposed development consisting of a change of use and extension of three existing building to create four residential units at Hallowell Road, London HA6 1DW.

1.2 The following guidelines have been followed to assess the proposed development:

- 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 The BRE document is a guide whose stated aim "is to help rather than constrain the designer". The document provides advice and states that "it should not be mandatory and should not be seen as an instrument of planning policy. In special circumstances, the developer or planning authority may wish to use different target values".

1.4 The results of this report show that there is no adverse effect on the sunlighting levels to the neighbouring properties and spaces at 12-18, Hallowell Road. While the proposed development also shows that all the rooms achieve compliance with the internal daylight requirements set out in BS EN 17037:2018.

1.5 In light of the above, it is considered that sunlight/daylight should not be a constraint to the granting of planning permission.

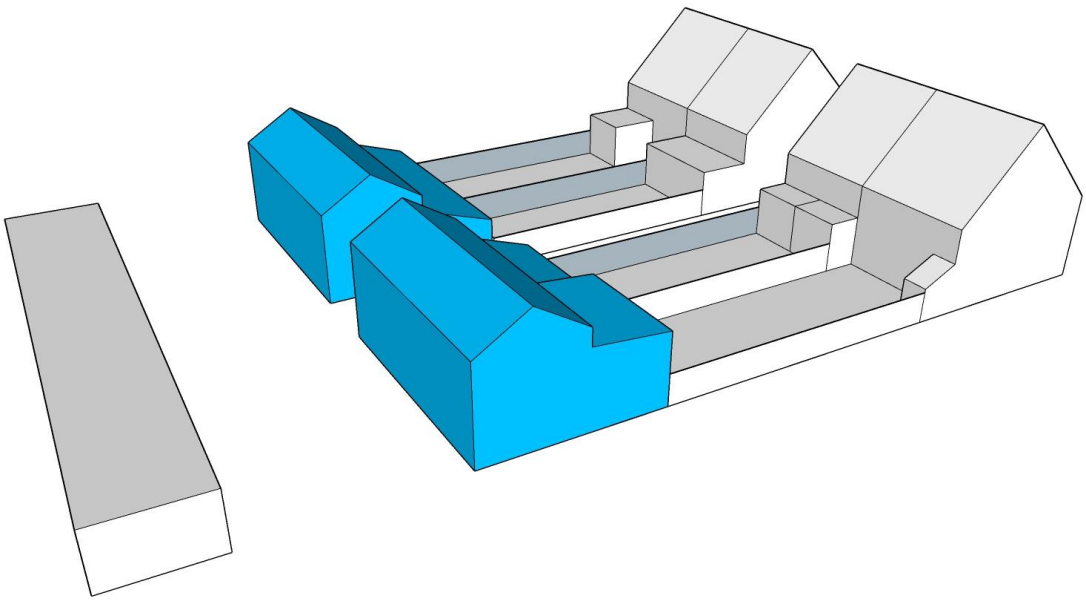


***Figure 1**: 3D model of proposed building.*

2 INTRODUCTION

2.1 Background

The Building Research Establishment (BRE) has set out in their handbook "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice", 3rd Ed, guidelines and methodology for the measurement and assessment of daylight and sunlight within proposed buildings. This document states that it is also 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 provides advice on site layout planning to determine the quality of daylight and sunlight within open spaces between buildings.

The BSI has set out in BS EN 17037:2018 Daylight in Buildings guidance to good practice in daylighting design, and presents 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 the local dwellings and their amenity areas with respect to the design proposals prepared by the design team and the availability of internal daylight to the proposed building.

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

- Prepare a 3D computer model to understand and visualize sunlight for the neighbours.
- Carry out daylight sunlight assessment using the methodologies set out in by BRE and British Standard Guidelines for diffuse daylight and sunlight conditions.
- Prepare a 3D computer model to assess the internal daylight/illuminances for the living rooms, kitchens, and bedrooms of the proposed development.

2.2 The Nature and Effect of Daylight and Sunlight

The BRE "Site layout planning for daylight and sunlight – A guide to good practice" 3rd edition by Paul J. Littlefair was released in June 2022 and superseded the second edition of the same guidance. The most important update from the previous version of the guidelines is represented by the methods for assessing daylight within a proposed building within section 2.1 and Appendix C of the handbook. These are based on the methods detailed in the BS EN 17037 which suggests two possible methodologies for appraising daylight across a room's working plane: Illuminance Method Daylight Factor Method.

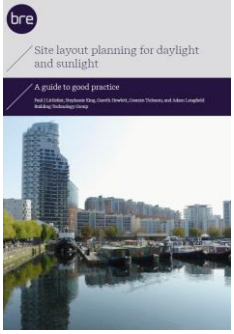


***Figure 2**: BRE guidelines*

3 DAYLIGHT AND SUNLIGHT ASSESSMENT GUIDANCE

3.1 Assessment of the Effect of Daylight and Sunlight

When assessing the effects of proposed building projects on the potential to cause issues relating to light, it is important to recognize the distinction between daylight and sunlight. Daylight is the combination of all direct and indirect sunlight during the daytime, whereas sunlight comprises only the direct elements of sunlight. On a cloudy or overcast day, diffused daylight still shines through windows, even when sunlight is absent.

Care should also be taken when the development is situated to the south of existing buildings, as in the northern hemisphere, the majority of the sunlight comes from the south. In the UK (and other northern hemisphere countries) south-facing facades will, in general, receive most sunlight, while north-facing facades will receive fewer sunlight hours during summer months, specifically 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, looks at three separate areas when considering 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 to a dwelling and its garden and open spaces.

Appendix 1 in the BRE Report details the methodologies and criteria.

The BRE report provides guidelines for when the obstruction to sunlight 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.

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, and for internal daylight.

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.	
Internal Daylight	BRE 209 Appendix C	Bedrooms	100 lx
		Living Rooms	150 lx
		Kitchens	200 lx

***Table 1**:BRE daylighting criteria*

3.2 Angle to sky from horizontal.

In general, a building will retain the potential for good interior diffuse daylighting provided that, on all its main faces 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.

If this criterion is satisfied, no further calculations are required as it is unlikely that daylighting will be significantly affected.

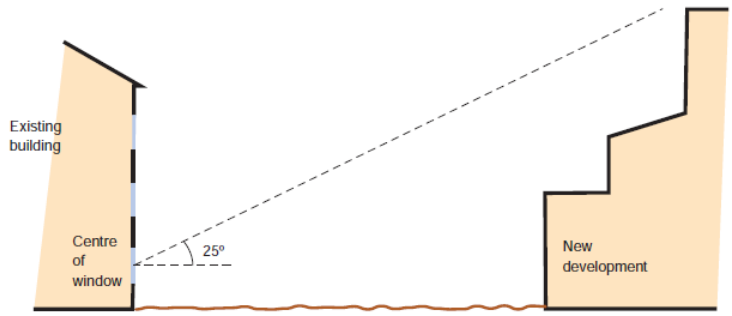


***Figure 3**: Section showing the angle to sky from horizontal criteria for diffuse daylighting*

4 METHODOLOGY APPLIED

4.1 Data

All the information has been taken directly from digital files provided by the Design Team. The height of the obstructions has been taken from survey data or from aerial photographs available online. Where available, further data has been used from existing information available online.

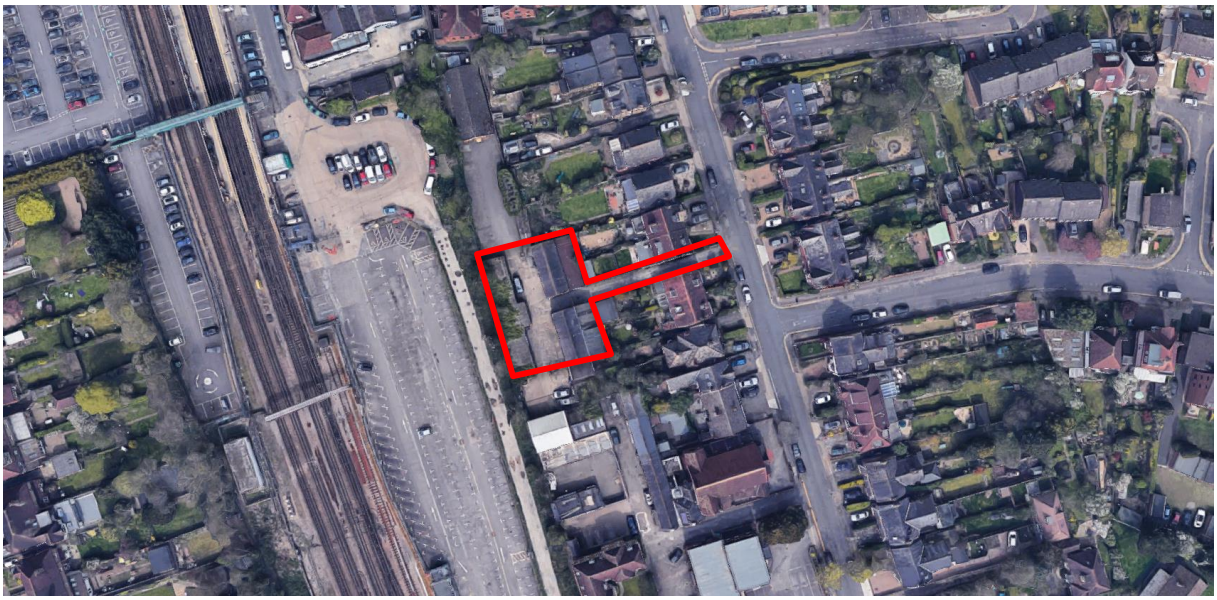
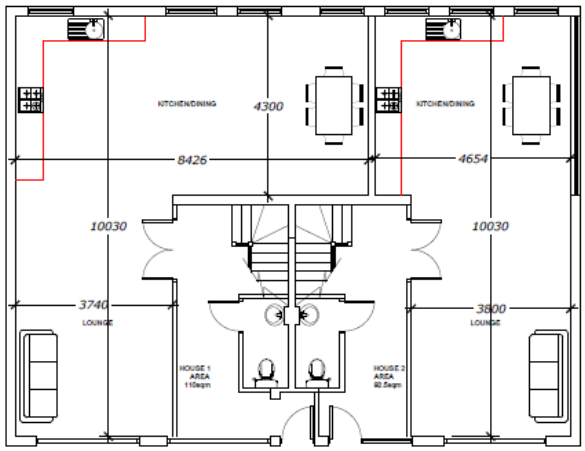


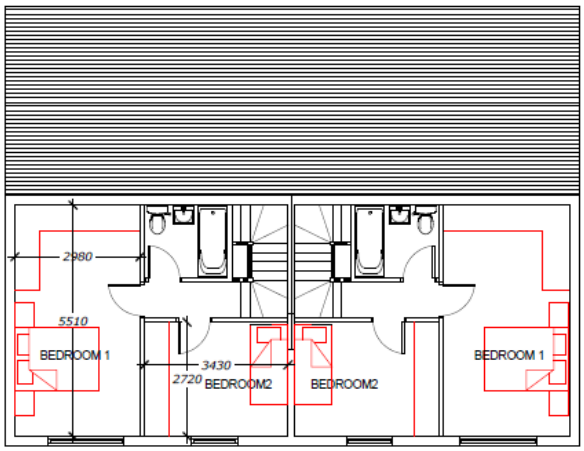
***Figure 4**: Aerial view of the site as existing*

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

4.2 Proposed Floor Plans

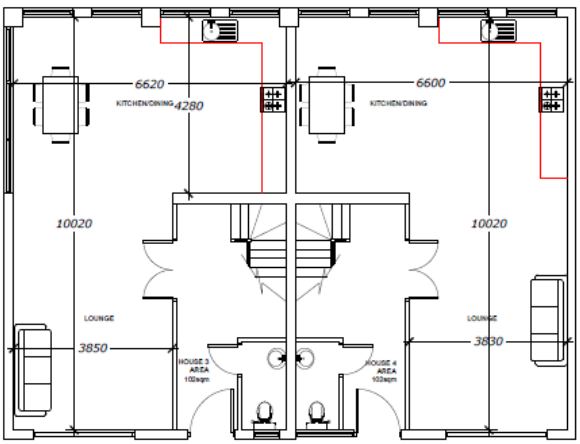


GROUND FLOOR PLAN

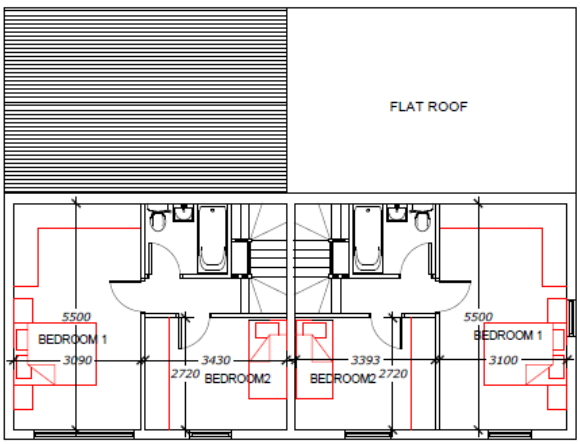


FIRST FLOOR PLAN

***Figure 6**: Proposed ground and first floor plan – North Block*



GROUND FLOOR PLAN



FIRST FLOOR PLAN

***Figure 7**: Proposed top floor plan – South Block*

4.3 3D Model

To complete the daylight, sunlight and overshadowing assessment for the adjacent properties, a full-size 3D model of the existing area, including existing buildings and neighbouring properties was constructed in Trimble SketchUp 2021. The measure of the angle to sky from horizontal has been made manually within the model space, MBS Daylight software has been used to assess the 25 degree rule and the sunlight to the amenity areas.

To measure the internal daylight levels for the proposed development a 3D model was constructed in IES ModelIT. The internal daylight has been assessed with IES Radiance, a thermal and environmental analysis program.

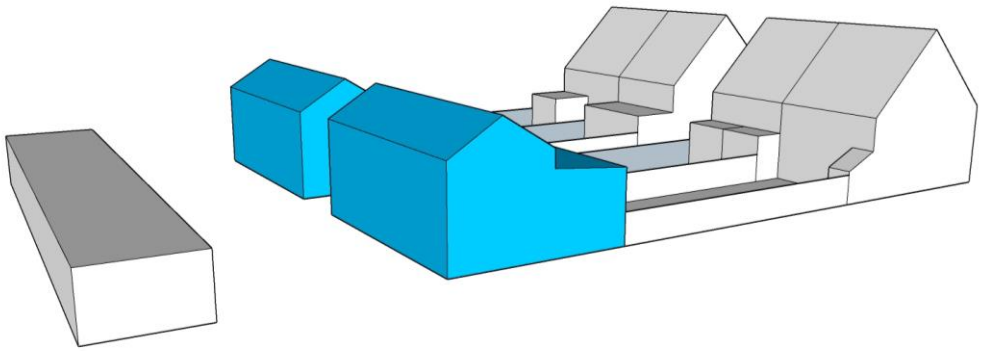


***Figure 8**: SketchUp 3D model of the proposed development*

4.4 Internal Surface Properties

Reflectance for rooms internal surfaces affect the resulting internal daylight. Lighter colours result in higher reflectance (white: 1.0; black:0.0). Windows Light Transmittance is the amount of light that enter the glazed surface.

Surface	Reflectance	
Floor	0.4 (e.g. light wood or grey tiles)	
Walls	0.7 (e.g. light pastel or white paint)	
Ceiling	0.7 (e.g. light pastel or white paint)	
Window	Light Transmittance	0.68

***Table 2**: Internal surface properties*

4.5 Design Data

Architects: Inside Out Architects
Drawing pack issued for Assessment on May 2023

- Existing elevations workshop 1
- Existing elevations workshop 2-1
- Existing floor plans workshop 1
- Existing floor plans workshop 2-1
- Proposed elevations house 1 and house 2
- Proposed elevations house 1 and house 2-1
- Proposed elevations house 3 and house 4
- Proposed elevations house 3 and house 4-1
- Proposed elevations WORKSHOP 1
- Proposed elevations WORKSHOP 2
- Proposed floor plans house 1 and house 2 copy
- Proposed floor plans house 1 and house 2
- Proposed floor plans house 3 and house 4
- Proposed floor plans house 3 and house 4-1
- Proposed floor plans house1 and house2
- Proposed floor plans house3 and house4
- Proposed floor plans WORKSHOP 1
- Proposed floor plans WORKSHOP 2
- P2212-IOA-ZZ-ZZ-DR-A-3000-Site Location Plan
- P2212-IOA-ZZ-ZZ-DR-A-3001-Existing L0 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3002-Existing L1 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3003-Existing L2 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3004-Existing Elevations
- P2212-IOA-ZZ-ZZ-DR-A-3100-North Block - Proposed L0 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3101-North Block - Proposed L1 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3102-North Block - Proposed L2 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3103-North Block - Proposed Roof Plan
- P2212-IOA-ZZ-ZZ-DR-A-3104-North Block - Proposed Layout
- P2212-IOA-ZZ-ZZ-DR-A-3105-North Block - Proposed Sections
- P2212-IOA-ZZ-ZZ-DR-A-3106-North Block - Proposed Elevations
- P2212-IOA-ZZ-ZZ-DR-A-3110-South Block - Proposed L0 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3111-South Block - Proposed L1 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3112-South Block - Proposed L2 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3113-South Block - Proposed Roof Plan
- P2212-IOA-ZZ-ZZ-DR-A-3114-South Block - Proposed Layout
- P2212-IOA-ZZ-ZZ-DR-A-3115-South Block - Proposed Sections
- P2212-IOA-ZZ-ZZ-DR-A-3116-South Block - Proposed Elevations
- P2212-IOA-ZZ-ZZ-DR-A-3120-Garage Block - Proposed L0 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3121-Garage Block - Proposed L1 Plan
- P2212-IOA-ZZ-ZZ-DR-A-3122-Garage Block - Proposed Roof Plan
- P2212-IOA-ZZ-ZZ-DR-A-3123-Garage Block - Proposed Layout
- P2212-IOA-ZZ-ZZ-DR-A-3124-Garage Block - Proposed Elevations
- P2212-IOA-ZZ-ZZ-DR-A-3125-Garage Block - Proposed Sections

5 RESULTS

5.1 Angle to sky from horizontal

For the adjacent properties it was measured the angle to the horizontal subtended by the new development at the level of the centre of the lowest window. As this angle is less than 25° for the whole of the development then it is unlikely to have a substantial effect on the diffuse skylight enjoyed by the existing building

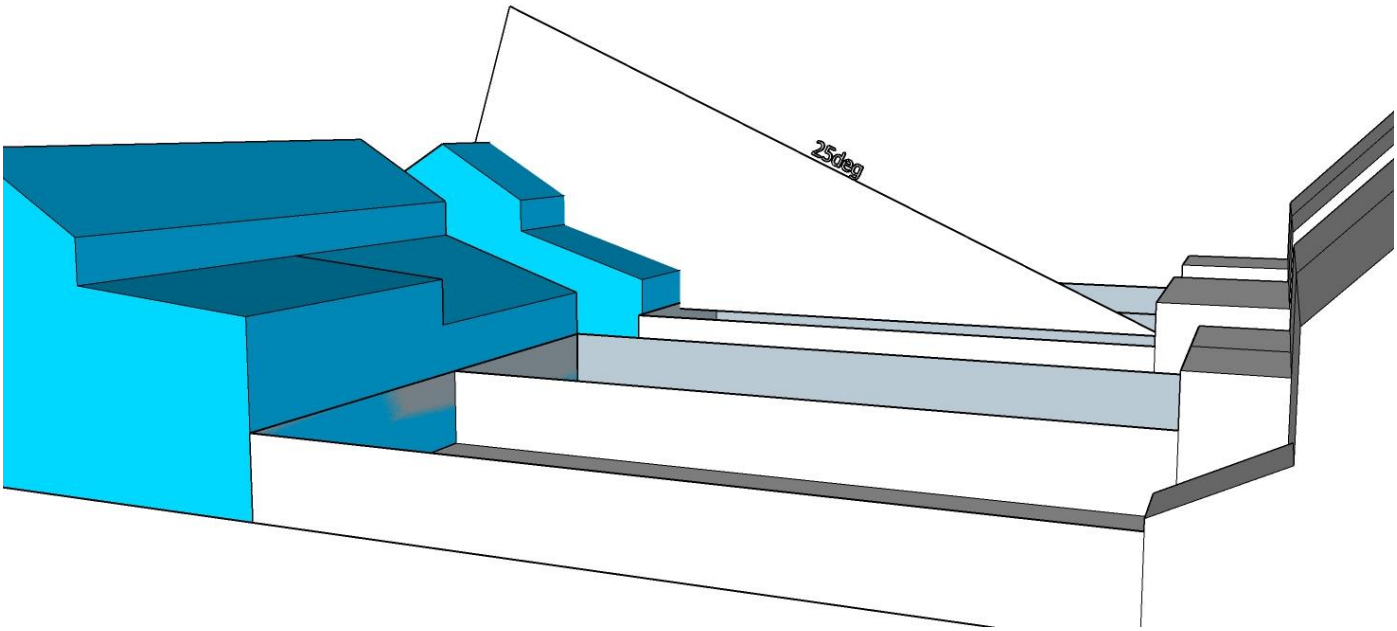


Figure 9*: 25 degrees angle measurement*

5.2 Sunlight Assessment Results – Open Areas

When assessing the impact of a development on an existing neighbouring amenity or garden area, the BRE guide recommends that at least 50% of the area of each amenity space should receive at least two hours of sunlight on 21st March. If, as a result of the new development, an existing garden or amenity area does not meet the 50% criterion, and the area which can receive two hours of sunlight on 21st March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.

The existing and post development amenity areas at 14-18, Hallowell Road have been analysed using the 3D SketchUp model.

Figures 15 and 16 below show that the proposed development does not significantly affect the adjoining amenity areas.

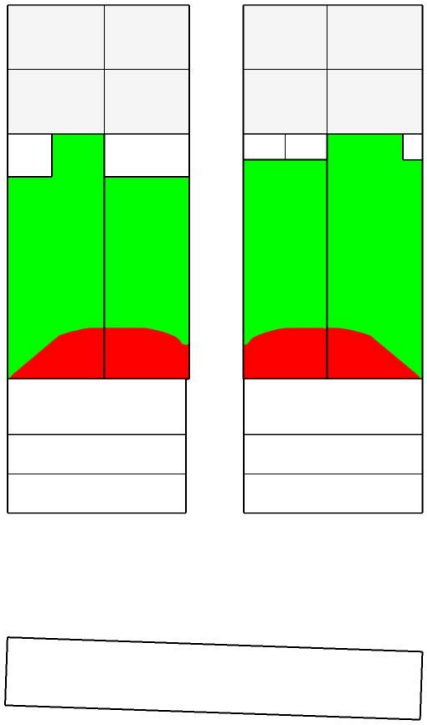


Figure 10: Existing amenity area sunlight

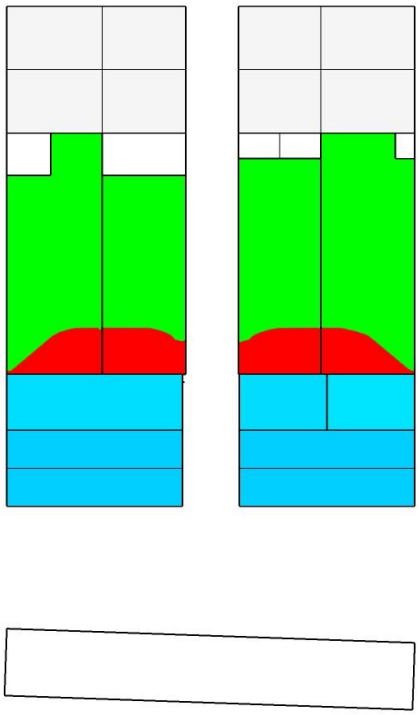


Figure 11: Proposed development amenity area sunlight

5.3 Target Illuminance Factor – Proposed Development

We have assessed the proposed new accommodation to determine whether the internal spaces will be provided with adequate daylight by reference to Target Illuminance (E_T) Factor. This method involves the computation of the illuminance level at each calculation point on an assessment grid.

The analysis of the internal space of the proposed development indicates that all the comfortably exceed the acceptable criteria of both the BRE Guide and as also set within BS EN 17037:2018 in terms of Daylight Factor.

The results are summarised in the table below.

Unit	Room	Floor area that achieves the target (%)	Target to be achieved over 50% of the floor area (E_T)	BRE Compliant
House 1	Kitchen/dining/living	84	200	**YES**
	Bedroom 1	100	100	**YES**
	Bedroom 2	100	100	**YES**
House 2	Kitchen/dining/living	100	200	**YES**
	Bedroom 1	100	100	**YES**
	Bedroom 2	100	100	**YES**
House 3	Kitchen/dining/living	100	200	**YES**
	Bedroom 1	100	100	**YES**
	Bedroom 2	100	100	**YES**
House 4	Kitchen/dining/living	100	200	**YES**
	Bedroom 1	100	100	**YES**
	Bedroom 2	100	100	**YES**

Table 3: Internal daylight results

6 CONCLUSION

6.1 The daylight and sunlight analysis indicates that there will be no impact on the surrounding properties at 14-18, Hallowell Road, as well as there is no expected impact on other adjacent properties at 10 and 20, Hallowell Road, arising from the proposed development at Hallowell Road, London HA6 1DW.

6.2 The results of our analysis [Sections 5.1-5.3] show that the neighbouring habitable windows/rooms analysed satisfy the target requirements of the BRE Guide in terms of daylight and sunlight in the proposed situation with no significant adverse material effect. Equally in terms of amenity areas shadowing, the proposal does not result in any adverse effect and meets BRE Guide target criteria.

6.3 The angle to sky from horizontal has been measured for the adjacent properties. No parts of the proposed development, 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. Therefore the new buildings will not affect the daylight and sunlight levels enjoyed by the neighbours.

6.4 For a garden or an open space to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least 2 hours of sunlight on 21st March. Results show that existing open spaces are not adversely affected by the proposed development [Section 5.3].

6.5 The internal daylight for the internal spaces of the proposed development has been carried out as part of this assessment. We conclude that daylight levels within the proposed habitable rooms are adequate and exceed the target criteria set within BS EN 17037:2018 and BRE publication “Site Layout Planning for Daylight & Sunlight – A guide to good practice” [Section 5.4].

6.6 Overall, the proposed development fully complies with BRE Guidelines and will not cause impact to daylight and sunlight access for the surrounding buildings and the amenity space within its vicinity. Its habitable rooms also achieve the minimum target internal daylight levels. **In light of the above, it is considered that sunlight/daylight should not be a constraint to the granting of planning permission.**