

Sherwood Park Avenue

**Internal Daylight
Assessment**

October 2023

DOCUMENT CONTROL SHEET	
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1 EXECUTIVE SUMMARY

- 1.1 NRG Consulting has been appointed to conduct an Internal Daylight Assessment on a proposed development consisting of a change of use of an existing building to create one studio unit at 250 Sherwood Park Avenue, Sidcup, DA15 9JN.
- 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)*, 3rd Ed.
 - BS EN 17037:2018 *Daylight in Buildings*
- 1.3 Our report's findings indicate that the assessed room achieves compliance with the internal daylight requirements set out in the BS EN 17037:2018.
- 1.4 Based on these findings, it is considered that daylight considerations should not be a constraint to the granting of planning permission.

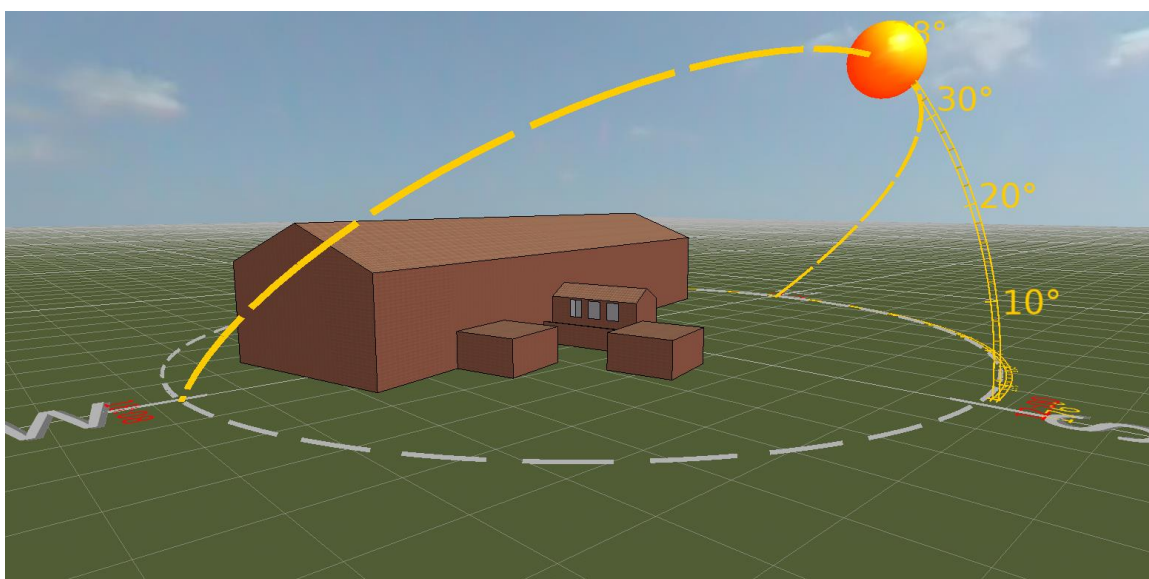


Figure 1 : 3D model of proposed buildings.

2 INTRODUCTION

2.1 Background

The British Standard “Daylight in Buildings” (BS EN 17037) provides advice and guidelines on interior daylighting. It offers two methodologies for daylight provision in buildings: one based on achieving target illuminances from daylight, and an alternative method based on calculating daylight factors.

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

- We will conduct a daylight assessment using the methodologies outlined in the BRE and British Standard Guidelines for diffuse daylight and sunlight conditions.
- We will create a 3D computer model to evaluate 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 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 Internal Daylight Assessment

In evaluating the internal daylight levels of proposed building projects, it is crucial to differentiate 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.

The BS EN 17037 outlines criteria for two methodologies: the Illuminance Method and the Daylight Factor Method.

3.1.1 Illuminance method

This method uses climatic data specific to the site location to calculate daylight illuminance at each point on a reference plane's assessment grid, at least hourly, for a typical year. A target illuminance (E_T) should be achieved across at least half of the reference plane in a daylit space for at least half of the daylight hours. Additionally, a minimum target illuminance (E_{TM}) should be achieved across 95% of the reference plane for at least half of the daylight hours; this is the minimum target illuminance to be achieved towards the back of the room.

Target illuminances from daylight over at least half of the daylight hours		
Level of recommendation	Target illuminance E_T (lx) for half of assessment grid	Target illuminance E_{TM} (lx) for 95% of assessment grid
Minimum	300	100
Medium	500	300
High	750	500

Table 1: Target illuminances for side lit rooms

3.1.2 Daylight factor method

This method involves calculating the daylight factor at each point on an assessment grid. The CIE standard overcast sky is used for this calculation, and the result is expressed as a percentage. The table below provides the daylight factor targets for side-lit rooms in London. The recommendations are considered met if both the target daylight factors are achieved.

Target daylight factors (D) for London		
Level of recommendation	Target daylight factor D for half of assessment grid	Target daylight factor D for 95% of assessment grid
Minimum	2.1%	0.7%
Medium	3.5%	2.1%
High	5.3%	3.5%

Table 2: Daylight factor targets for side lit rooms in London

3.1.3 Specific recommendations for daylight provision in UK dwellings

These recommendations are particularly relevant for ‘hard to light’ dwellings, such as those located in basements, those with significant external obstructions, or existing buildings being refurbished or converted into dwellings:

Target illuminances from daylight over at least half of the daylight hours	
Room	Target illuminance E_T (lx) for half of assessment grid
Kitchen	200
Living Room	150
Bedroom	100

Table 3: Specific recommendations for daylight provision in UK dwellings

Target daylight factors (DT) to achieve over at least 50% of the assessment grid			
Location	D_T for 100 lx (Bedroom)	D_T for 150 lx (Living room)	D_T for 200 lx (Kitchen)
London	0.7%	1.1%	1.4%

Table 4: Daylight factor target for 'hard to light' dwellings

4 METHODOLOGY APPLIED

4.1 Data

All data utilised in this report has been sourced directly from digital files supplied by the Design Team. The height of any potential obstructions has been determined using survey data or derived from publicly accessible aerial photographs.



Figure 3: Aerial view of the site as existing.

4.2 Proposed Floor Plans

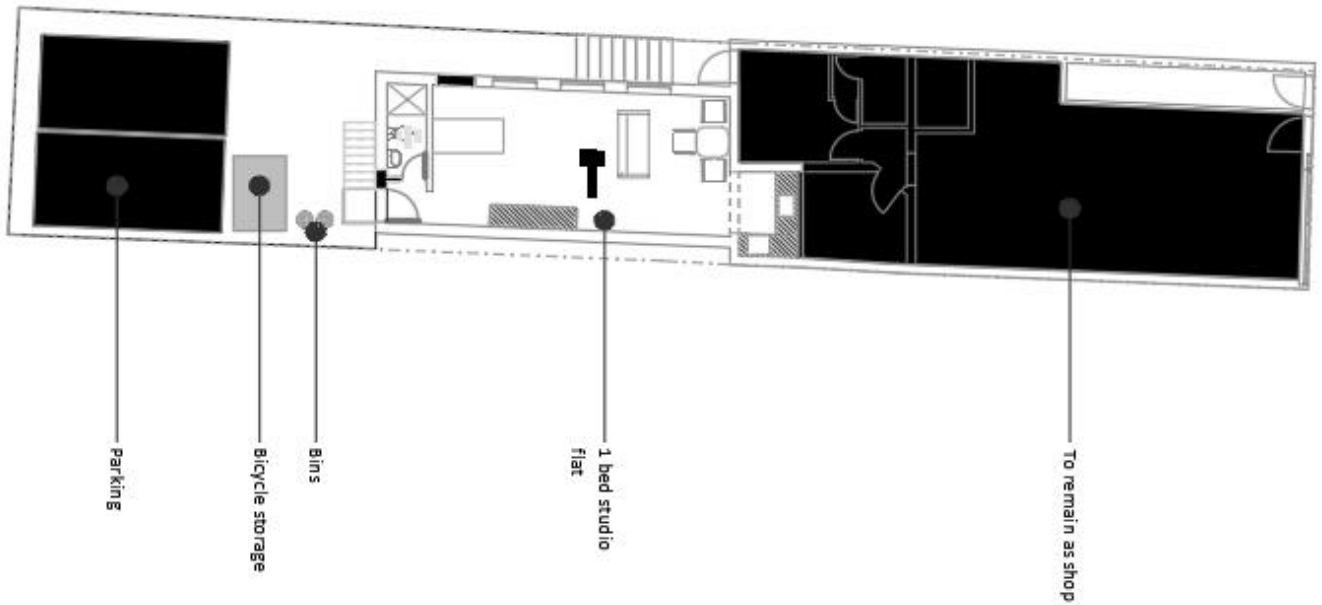


Figure 4: Proposed ground floor plan

4.3 3D Model

To carry out the internal daylight assessment, a full-scale 3D model of the proposed development was created using IES ModelIT. The internal daylight was then evaluated using IES Radiance, a program designed for thermal and environmental analysis.

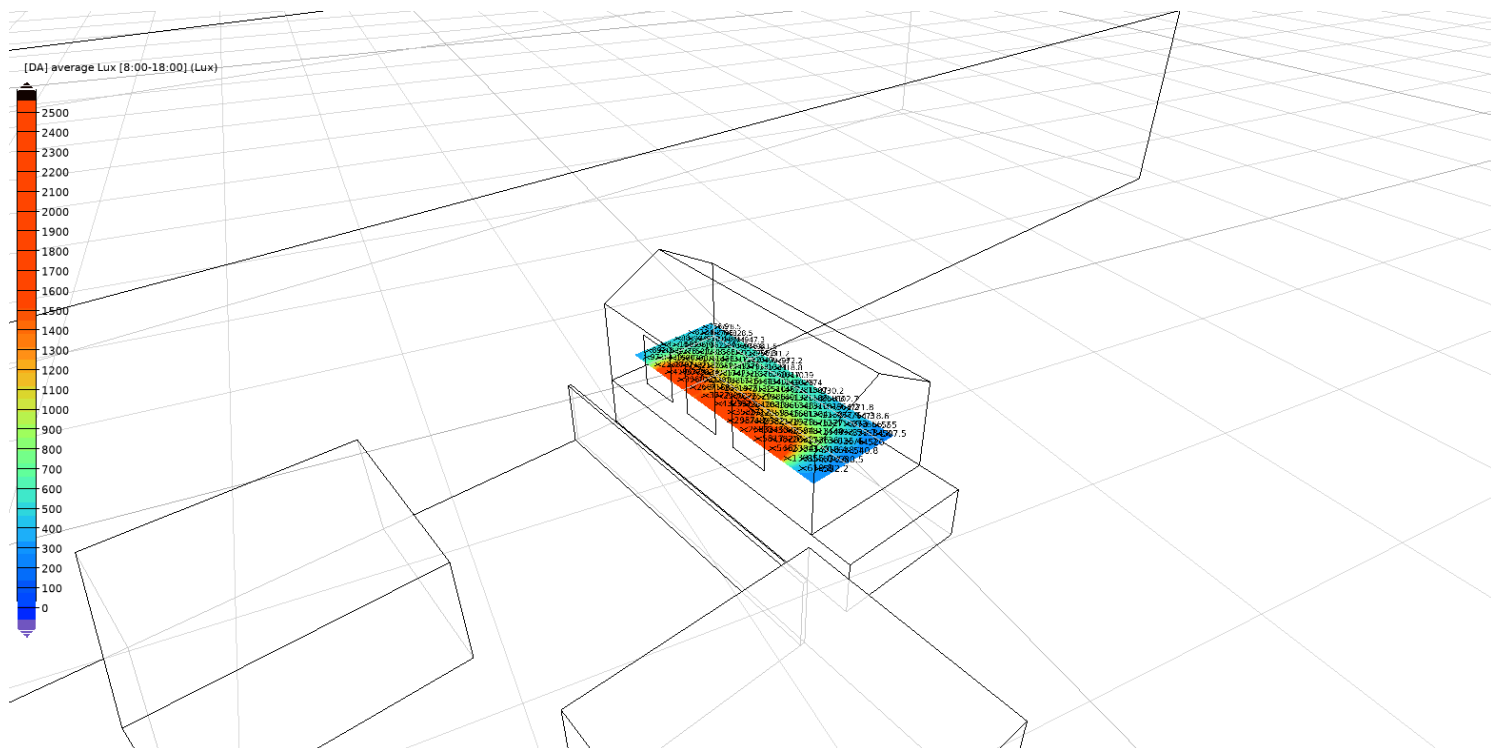


Figure 5: IES 3D model of the proposed development.

4.4 Internal Surface Properties



The reflectance of a room's internal surfaces significantly influences the internal daylight result. Lighter colours result in higher reflectance (white: 1.0; black: 0.0). The internal surface properties used in this assessment are detailed in Table 2 below.

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 5: Internal surface properties

4.5 Design Data

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

 AE_1040 - 250 Sherwood Park Avenue _ DWGS_Existng GA Drawings	DWG File	200 KB
 AE_1040 - 250 Sherwood Park Avenue _ DWGS_Proposed GA Drawings	DWG File	189 KB

5 RESULTS

5.1 Target Illuminance Factor – Proposed Development

We have evaluated the proposed new accommodation to ascertain if the internal spaces will receive adequate daylight, referencing Target Illuminance (E_T) Factor. This method calculates the illuminance level at each point on an assessment grid.

Our analysis of the internal space of the proposed development reveals that the assessed room comfortably exceed both the BRE Guide and BS EN 17037:2018 acceptable criteria in terms of Illuminance Factor.

The results are summarised in the table below.

Room	Floor area that achieves the target (%)	Target to be achieved over 50% of the floor area (E_T)	BRE Compliant
Studio Unit	100	200	YES

Table 6: Internal daylight results

6 CONCLUSION

We have conducted an Illuminance Factor (E) assessment for the internal spaces of the proposed development. Our analysis concludes that daylight levels within the proposed habitable room are adequate and surpass the target criteria outlined in BS EN 17037:2018 and the BRE publication “Site Layout Planning for Daylight & Sunlight – A Guide to Good Practice” [Section 5.1].

Given these findings, we believe that daylight considerations should not pose a barrier to granting planning permission.

