

**Richfield Road**

**Internal Daylight  
Assessment**

**June 2021**

## Document Control Sheet

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Client	Daniel Riahi
Site Address	55, Richfield Road, Bushey Heath WD23 4JY
Assessor	Alex Visintini
Approved By	Neil Rotheron
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## 1 EXECUTIVE SUMMARY

1.1 NRG Consulting have been commissioned to undertake a Daylight Assessment on a proposed development consisting of demolition of an existing building to create four residential units at 55, Richfield Road, Bushey Heath WD23 4JY.

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

- BS EN 17037:2018 – *Daylight in buildings*

1.3 The results of this report show that all the rooms receive adequate Daylight Provision in accordance with the recommendations set out in the BS EN 17037

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

Figure 1 : 3D Model of



*Proposed Buildings.*

## 2 INTRODUCTION

### 2.1 Background

The BSI has set out in BS EN 17037:2018 – Daylight in buildings, guidance's 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 to the façades of the local dwellings with respect to the design proposals prepared by the design team

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

- Carry out daylight 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 Factor ( $D_{TM}$ ) for the living rooms, kitchens and bedrooms of the proposed development.

### 2.2 The Nature and Effect of Daylight and Sunlight

The provision of daylight is as important as ensuring low levels of noise, or low levels of odour, in maintaining the enjoyment of one's property. Adequate levels of daylight are important not only to light and heat the home, but also for an occupant's emotional well-being. Daylight is widely accepted to have a positive psychological effect on human beings and there is a great deal of evidence to suggest that people who are deprived of daylight are more susceptible to depression and mood swings. This is common in northern countries, such as Norway, Iceland and Canada where daylight is scarce during the winter months.

### 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 recognise 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; and overshadowing of garden and open spaces.
- Overshadowing of Gardens and Open spaces.

A spacing to height ratio of just over 2:1 is normally enough to allow adequate daylighting on building faces. This aspect has not been analysed in this report as the proposed development is more than 18 metres from all neighbouring dwellings.

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 – Daylight in buildings provides criteria for Daylight Factors levels.

Table 1 below summarises the criteria used in this report to assess the internal  $D_{TM}$ .

Test	Minimum	Medium	Maximum
$D_{TM}$ over 50% of test plane	2.1%	3.5%	5.0%

Table 1: BS EN 17037 Daylighting Criteria

## 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 2: Aerial view of the site as existing.

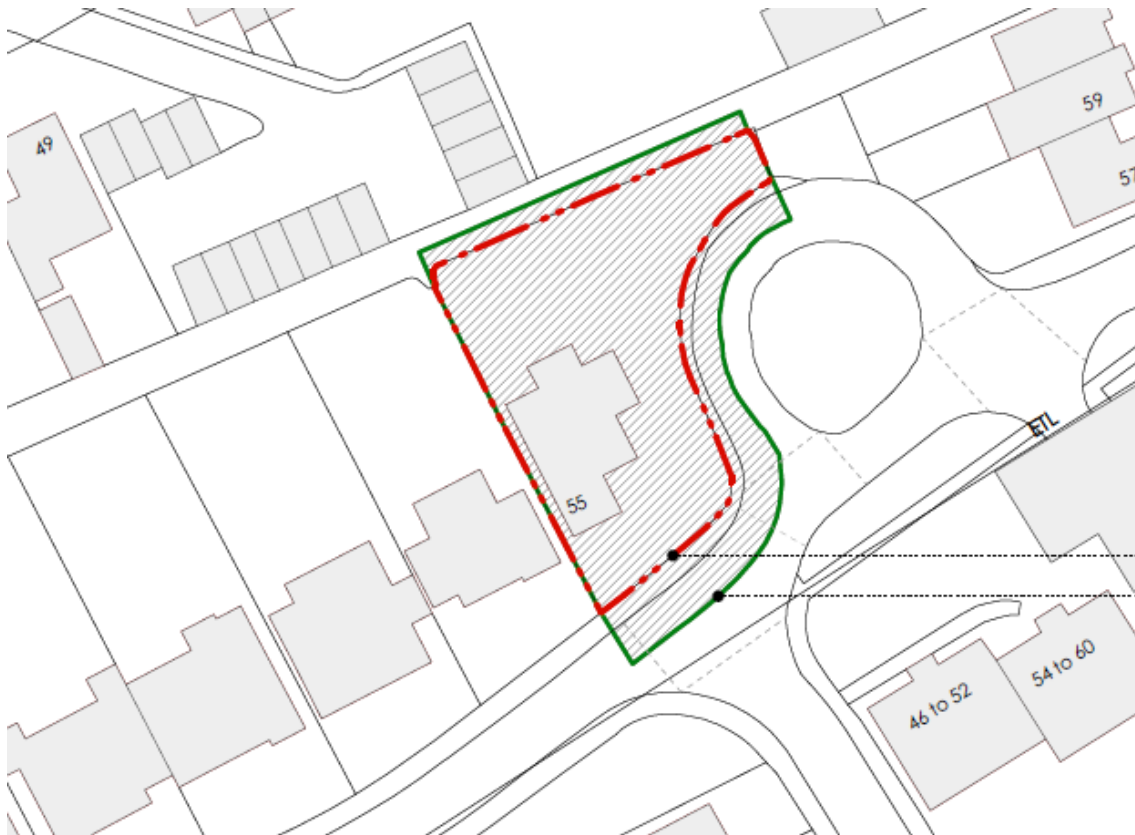


Figure 3: Existing Site Plan














## 4.4 Design Data

Architects: Ian Hogarth Architect

Drawing pack issued for Assessment on May 2021

 20004 L(-2) 300 Proposed scheme rev B.pdf	Adobe Acrobat D...	11,810 KB
 20004 Preapplication report.pdf	Adobe Acrobat D...	11,800 KB
 Existing Roof Floor Plan.dwg	DWG File	278 KB
 First Floor Plan.dwg	DWG File	1,655 KB
 Ground Floor Plan.bak	BAK File	1,087 KB
 Ground Floor Plan.dwg	DWG File	786 KB
 Loft Plan.dwg	DWG File	282 KB
 Sections elevations.dwg	DWG File	2,155 KB
 20004 55 RICHFIELD ROAD - DRAFT PLA...	Adobe Acrobat D...	15,721 KB

## 5 METHODOLOGY APPLIED

### 5.1 Daylight Factor $D_{TM}$ – Proposed Development

We have assessed the proposed new accommodation at 55, Richfield Road to determine whether the internal spaces will receive adequate daylight provision. The daylight factor is a measurement of the VSC at the window face combined with the average reflectance's of the surfaces inside the room, the area of the glazing and size of the room. This gives a more detailed assessment for the light that will be available in the space than the more simplistic measure of VSC which gives details of the potential for reasonable daylighting within the space rather than an actual measure of the internal effects. BS EN 17037 gives three levels of recommendation for assessment of daylight in interior spaces. The three levels are: minimum, medium and high, and the minimum recommendation level should be provided.

Level of recommendation for vertical and inclined daylight opening	Target illuminance $E_T$ lx	Fraction of space for target level $F_{plane}$ , %	Minimum target illuminance $E_{TM}$ lx	Fraction of space for minimum target level $F_{plane}$ , %	Fraction of daylight hours $F_{time}$ , %
Minimum	300	50 %	100	95 %	50%
Medium	500		300		
Maximum	700		500		

Table 3: Recommendations of daylight provision by daylight openings in vertical and inclined surface

The recommendations in Table 3 can be expressed in terms of a daylight factor  $D$ . Table 4 provides the corresponding daylight factor ( $D$ ) relative to recommended target illuminance  $E_T$  (lx) and target minimum illuminance  $E_{TM}$  (lx).

Nation	Capital	Geographical latitude $\phi$ [°]	Median External Diffuse Illuminance $E_{v,d,med}$	D to exceed 100 lx	D to exceed 300 lx	D to exceed 500 lx	D to exceed 750 lx
United Kingdom	London	51,51	14 100	0,7 %	2,1 %	3,5 %	5,3 %

Table 4: Values of  $D$  for daylight openings to exceed an illuminance level of 100, 300, 500 or 750 lx for a fraction of daylight hours  $F_{time}$ , % = 50 % for 33 capitals of CEN national members

The analysis of the internal space of the proposed development indicates that all the rooms comfortably exceed the acceptable criteria set within BS 17037 in terms of Daylight Factor.

The results are summarised in the table below.

Minimum Target Daylight Factor ( $D_{TM}$ ) 2.1% over 50% of floor area			
Unit	Room	% of floor area	Complies
Flat 1	Kitchen/living	68%	Y
	Main Bedroom	100%	Y
	Bedroom 2	63%	Y
Flat 2	Kitchen/living	65%	Y
	Main Bedroom	92%	Y

	Bedroom 2	54%	Y
Flat 3	Kitchen/living	100%	Y
	Main Bedroom (larger windows)	73%	Y
	Bedroom 2	56%	Y
Flat 4	Kitchen/living	93%	Y
	Main Bedroom (larger window)	63%	Y
	Bedroom 2	74%	Y

Table 5: ADF results

Below are shown the graphic results of the Daylight Factor calculations

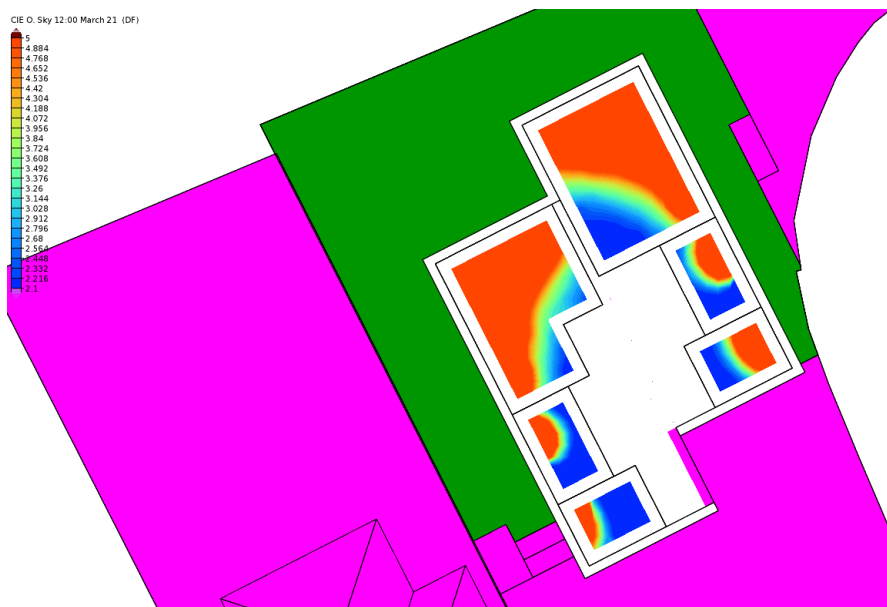


Figure 5: ADF results for the proposed lower ground floor

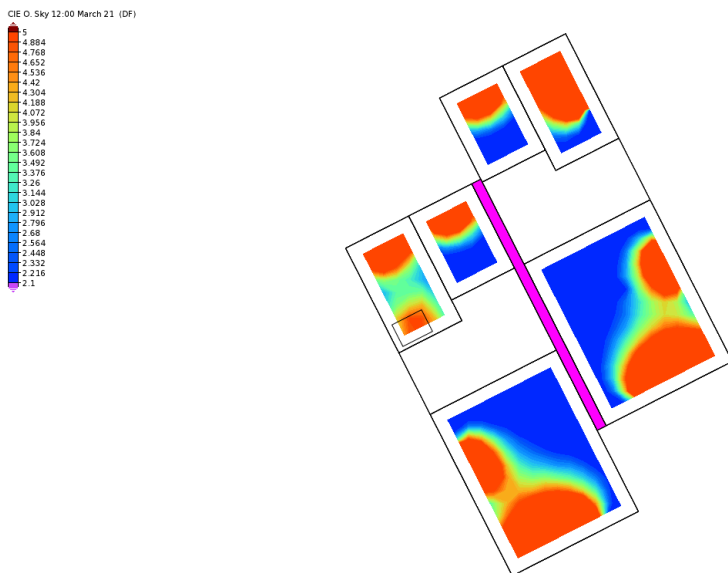


Figure 6: ADF results for the proposed ground floor

5.5 Proposed Floor Plans

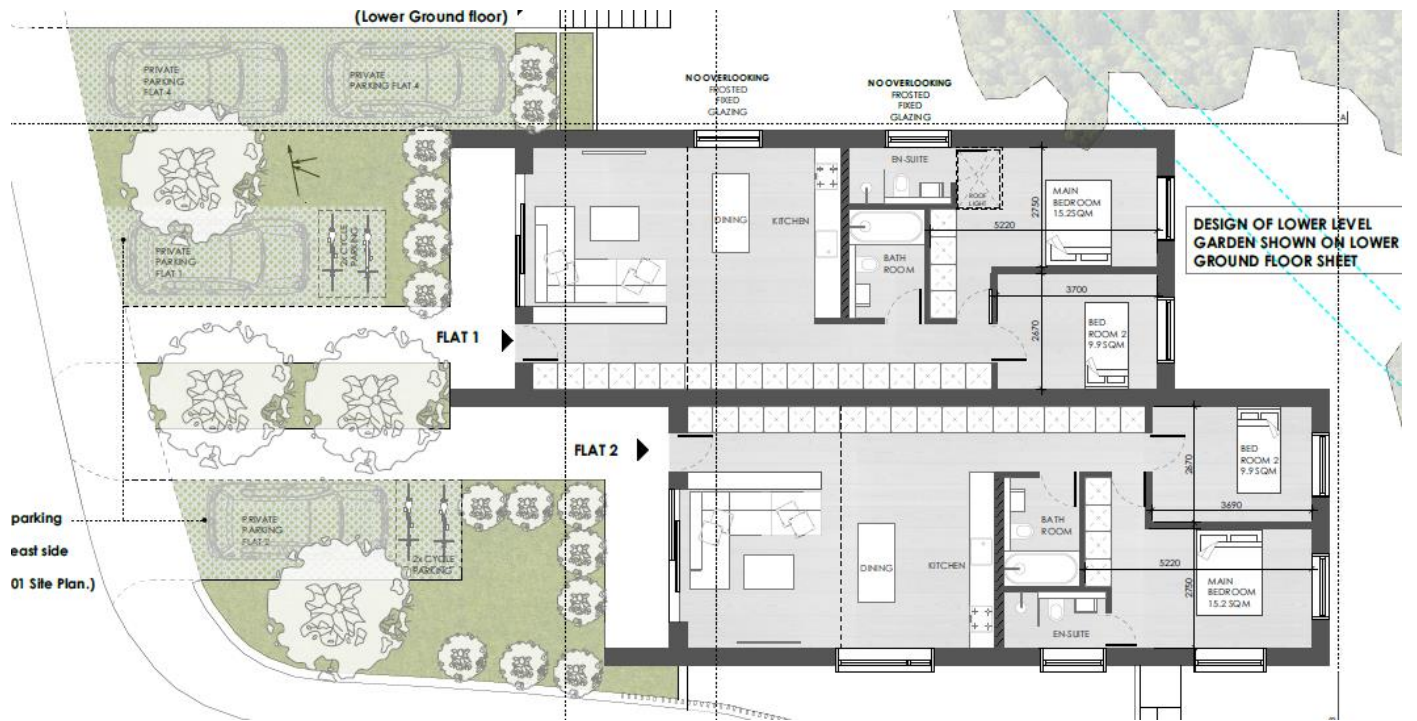


Figure 7: Proposed ground floor plan

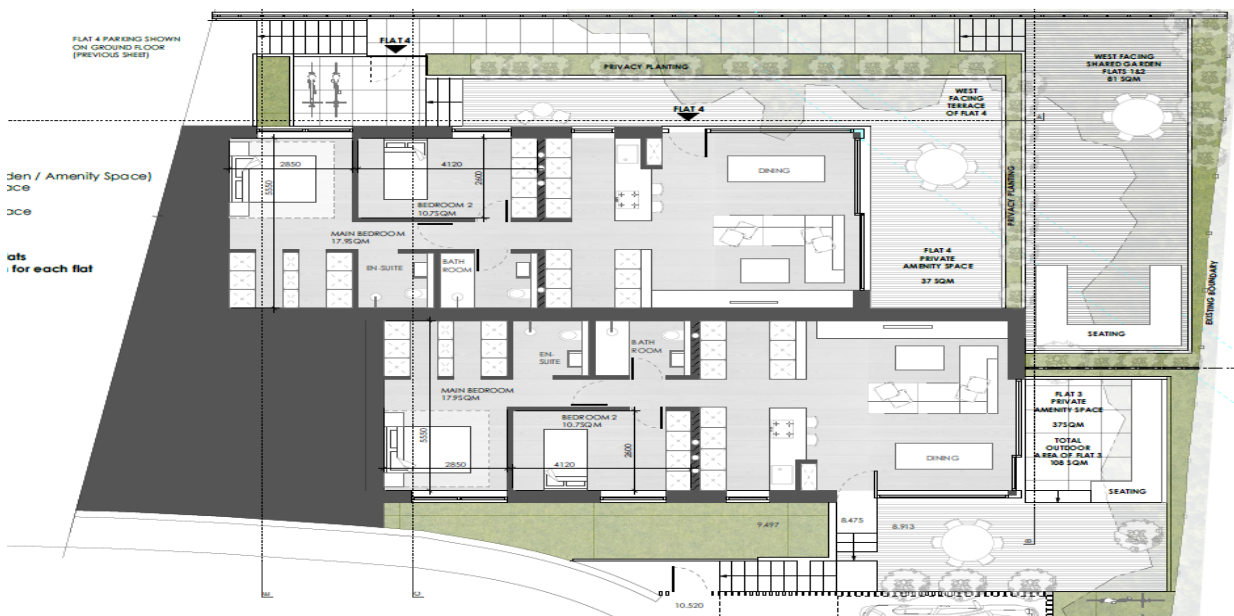


Figure 8: Proposed lower ground floor plan

## 6 CONCLUSION

The Daylight Factor  $D_{TM}$  for the internal spaces of the proposed development 55, Richfield Road has been carried out as part of this assessment. We conclude that daylight within the proposed habitable rooms is adequate and exceed the target criteria set within BS EN 17037. **In light of the above, it is considered that sunlight/daylight should not be a constraint to the granting of planning permission.**

