

BRE Client Report

Daylight assessment for proposed lower ground floor rooms to development at rear of 33 Priory Road, London

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Introduction

It is proposed to develop land to the rear of 33 Priory Road, London. The development involves the demolition of existing garages and construction of a new dwelling.

This report assesses daylight provision to the two proposed lower ground floor bedrooms. The results are compared to the recommendations in BS EN17037:2018 "Daylight in buildings".

The calculations are based on a 3D model 1579-33 dated 27 July 2020 and proposed drawings including basement floor plan 2579/10 P01 A dated July 2020 by Loren Design Ltd.



Methodology

Daylight provision to proposed habitable rooms

Guidance on daylight and sunlight to new dwellings, including numerical target values, is given in the recently published BS EN17037:2018 “Daylight in buildings”. This standard supersedes BS8206 Part 2:2008 “Lighting for Buildings, Code of Practice for Daylighting”.

For daylight provision, BS EN17037 recommends minimum, medium and high target illuminances over at least 50% of a room. Equivalent values of daylight factor for locations in Europe are also given. The daylight factor is the ratio of the illuminance at a point in on the working plane in a room divided by the illuminance of an unobstructed surface outside. It is measured using the CIE standard overcast sky and takes into account factors such as surface reflectances and glazing transmittance.

The UK National Annex gives further advice for the UK. It recommends the following target illuminances and equivalent daylight factors for a room to achieve over at least 50% of the reference plane in London for three room types.

Table 1: Daylighting targets in National Annex of BS EN17037.

Room type	Target Illuminance over at least 50% of a reference plane 0.85m from the floor, for at least half of the daylight hours (lx)	Equivalent Daylight Factor (D, %) for London
Bedroom	100	0.7%
Living Room	150	1.1%
Kitchen	200	1.4%

The daylight factor was calculated at a series of points on the reference plane (0.85m from the floor) of the two proposed lower ground floor bedrooms using software based on a Radiance ray tracing engine. The reference plane excluded areas within 0.5m of a room’s wall, in line with the guidance in the standard.

The recommendations are met if the median of the daylight factor point results meets, or exceeds, the targets in Table 1.

The following values were used in the daylight factor calculations for internal and external surfaces. It is assumed rooms would be decorated in light colours.



Table 2: Factors used in daylight factor calculations.

Object / surface	Values used in calculations
Internal walls	Reflectance: 0.7
Internal floors	Reflectance: 0.4
Internal ceilings	Reflectance: 0.8
Surrounding buildings, fences and other obstructions	Reflectance: 0.3
Ground	Reflectance: 0.2
Walls to lower ground floor lightwell	Reflectance: 0.6
Vertical glazing	Transmittance based on a value of 0.68 from Pilkington data for low emissivity double glazing.
Bedroom 1 light pipe top glazing	Transmittance of 0.68 based on double glazing
Bedroom 1 light pipe bottom glazing	Transmittance of 0.88 based on single clear pane
Bedroom 1 light pipe mirror shaft	Reflectance: 0.97 (high reflectance mirror material)
Bedroom 2 obscured rooflight glazing	Transmittance based on a value of 0.74 for Pilkington Optifloat translucent glazing in a double-glazing unit with a clear low emissivity pane. Reflectance of 0.16.
Maintenance factors (accounting for dirt on the windows)	Additional maintenance factors used from the National Annex of BS EN 17037 (based on suburban setting of the site): 0.96 vertical glazing 0.88 Horizontal glazing
Window frames	Reflectance: 0.1



Daylight provision to proposed lower ground floor bedrooms

The two proposed lower ground floor bedrooms at the development have been analysed for daylight provision. Figure 1 shows the layout of rooms analysed.

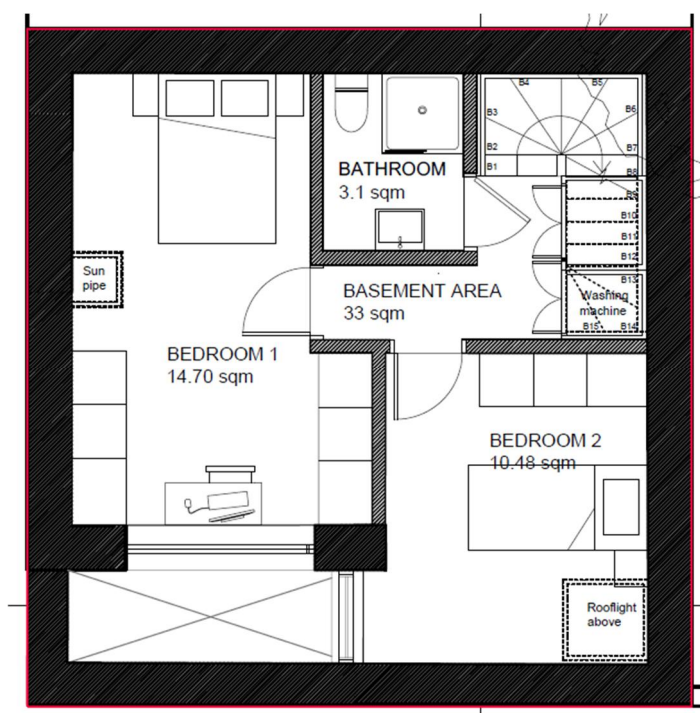


Figure 1: Layout of proposed lower ground floor. Drawing by Loren Design Ltd.

The daylight factor has been calculated at points on the working plane (0.85m from the floor) in the two proposed lower ground floor bedrooms. The national annex of BS EN17037 gives recommended values of daylight factor that over 50% of a space should receive in London. The median daylight factor value has therefore been assessed and the results are shown in Table 3.

Table 3: Median daylight factor results for proposed lower ground floor bedrooms.

Floor	Room	Median Daylight Factor (%)
Lower Ground	Bedroom 1	1.1
	Bedroom 2	0.9

Both lower ground floor rooms would exceed the 0.7% median daylight factor recommended for a bedroom.



Conclusions

Daylight provision to proposed lower ground floor bedrooms at a development of land at the rear of 33 Priory Road, London has been assessed.

The results have been compared to the recommendations in BS EN17037.

Both bedrooms would exceed the recommended value of median daylight factor for a bedroom given in the National Annex of BS EN17037. They would therefore be adequately daylit.