
Interior Daylight Analysis

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Document prepared for

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Executive Summary

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Overview

An analysis of the daylight conditions of the two kitchen and living rooms located in the first floor at 69 High Street development has been carried out.

The daylighting analysis has been calculated and assessed according to the BRE guidance "Site layout planning for daylight and sunlight – A guide to good practice" (second edition).

The daylighting analysis shows that:

- Both rooms meet all three of the tested daylight recommendations.
- Both rooms meet the ADF requirement.
- Both rooms can receive direct light from the sky.
- Both rooms meet the room depth criterion.

Please note that the BRE report is a guide for good practice and not an assessment of "Pass" and "Fail". Therefore, the failure to meet the recommended values for the ADF and no-sky line area do not indicate that the development is unsuitable.

Introduction

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Introduction

The proposal involves the extension of an existing commercial building to create 4 new residential units. Since two of the kitchen and living spaces are located on the first floor and the main windows look into a private amenity space with a high boundary wall, they have been tested for daylight conditions.

The daylighting analysis has been calculated and assessed according to the BRE guidance "Site layout planning for daylight and sunlight – A guide to good practice" (second edition). The calculations are based on plans of the proposed development provided by Marcus Beale Architects, issued in May 2021.

BRE Guidelines

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Average Daylight Factor (ADF)

ADF is the average illuminance on the working plane in a room, divided by the illuminance on an unobstructed horizontal surface outdoors. For dwellings the following ADF are recommended:

- Kitchen 2%
- Living room 1.5%
- Bedroom 1%

The ADF is calculated by the following formula:

$$ADF = \frac{TMA_w \theta}{A(1-R^2)}$$

Where:

- T, is the diffuse visible transmittance of the glazing
- M, is a maintenance factor, allowing for the effects of dirt
- A_w, is the net glazed area of the window (m²)
- A, is the total area of the room surfaces: ceiling, floor, walls and windows (m²)
- R, is their average reflectance
- Θ, is the angle of visible sky in degrees.

Position of No-Sky Line (NSL)

More than 80% of the working plane is recommended to receive direct light from the sky.

Room depth

The room depth recommendation applies to rooms lit by windows on one wall only. In this case the depth of the room L should not exceed the limiting value given by:

$$\frac{L}{W} + \frac{L}{H} < \frac{2}{1-R_b}$$

Where:

- W, is the room width
- H, is the window head height above floor level
- R_b, is the average reflectance of surfaces in the rear half of the room (away from the window).

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Basis for calculations

The daylight conditions of the residential units have been calculated using a daylight simulation software as opposed to the standard ADF formula due to the complex nature of the room layouts. The simulation software will provide more accurate results when compared to the simple standard ADF formula, as it takes into account further parameters such as the room layout (shape) and ambient bounces.

The following values have been used for the daylight calculations:

- Area weighted reflectance of the room surface (ceiling, floor walls and windows) of 0.5*
- Correction factor for dirt of 1, which corresponds to vertical glazing that can be cleaned easily
- Glass transmission factor of 0.65 (double glazing with low emissivity coating)
- Working Plane of 0.85m above the floor

*0.5 surface reflectance refers to a grey colour (see image below). Painting the wall and ceiling surface white can achieve an average reflectance of more than 0.5.

Assessed areas

The proposal involves the extension of an existing commercial building to create 4 new residential units. Since two of the kitchen and living spaces are located on the first floor and the main windows look into a private amenity space with a high boundary wall, they have been tested for daylight conditions.



Results

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Interior daylight results

The ADF, NSL and room depth results are shown in Appendix B. Illustrations of the ADF and NSL are presented in Appendix A.

Both of the tested rooms meet the BRE recommendations.

Conclusions

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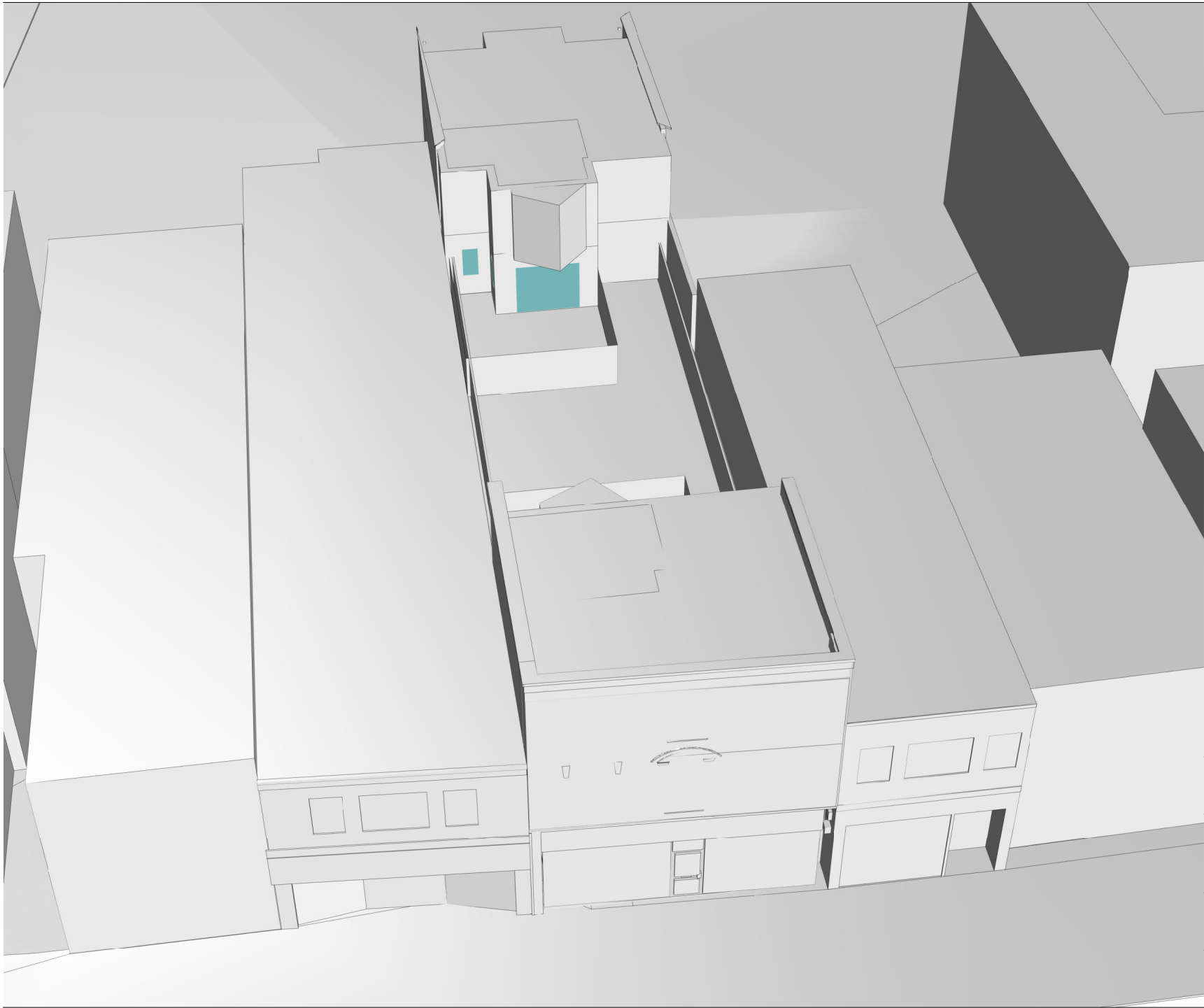
Conclusions

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Project Name:

69 High Street Ruislip

Drawing Name

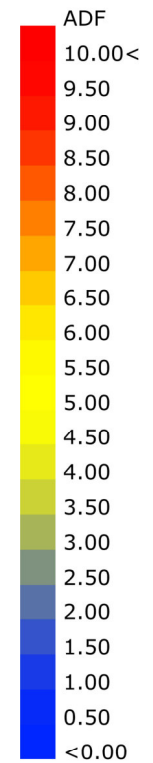
Proposed development

Date:

28/05/2021

Drawing Number:

5992_A_01



Project Name:

69 High Street Ruislip

Drawing Name

ADF – First Floor

Date:

28/05/2021

Drawing Number:

5992_B_01



-  Area with sky view
-  Area without sky view

Project Name:
69 High Street Ruislip

Drawing Name
NSL – First floor

Date:
28/05/2021

Drawing Number:
5992_C_01

Appendix B - Results

69 High Street Ruislip

Floor	Unit	Room	Required ADF (%)	Calculated ADF (%)	Compliance	NSL (%)	Compliance	Room depth - Maximum room depth	Compliance
Flat 1	Room 1	Kitchen/Living	2	2.6	Pass	95.70	Pass	4<6.6	Pass
Flat 2	Room 2	Kitchen/Living	2	2.44	Pass	95.90	Pass	4.5<6.8	Pass
			Total number of rooms		2		2		2
			Pass		2	Pass	2	Pass	2
					100.0%		100.0%		100.0%
			Fail		0	Fail	0	Fail	0
					0.0%		0.0%		0.0%