

# Netherhall Gardens

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## Daylight and Sunlight study

### Re-Creo Developments Ltd

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—	07 December 2018	Draft issue for comments
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**X** Tom Sutherland

Principal author

Signed by: Sutherland, Tom

**X** Simona Vasinton

Checked by

Signed by: Vasinton, Simona

**X** Alan Fogarty

Verified by

Signed by: Fogarty, Alan

## Executive Summary

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This report reflects the assessment that was undertaken in order to evaluate the daylight levels achieved in the habitable zones located in the basement and the lower ground level of the proposed Netherhall Gardens development.

The current design has been assessed according to the recommendations for daylight, sunlight and access to the sky in the BRE's 'Site Layout and Planning for Daylight and Sunlight – A guide to good practice'.

As the proposed development has no works above ground, the proposed design will have no effect on surrounding properties and as such, has not been assessed.

From the analysis of the proposed development, in the context of the existing and surrounding buildings, all the spaces are able to comply with ADF thresholds, as set by BRE.

## Contents

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<b>1.0</b>	<b>Introduction</b>	<b>4</b>
1.1	Site Location	4
<b>2.0</b>	<b>Assessment Methodology</b>	<b>6</b>
2.1	Simulation	6
2.2	Benchmarking criteria	6
<b>3.0</b>	<b>Results</b>	<b>8</b>
3.1	Average Daylight Factor (ADF)	8
<b>4.0</b>	<b>Conclusion</b>	<b>12</b>

# 1.0

## Introduction

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## 1.0 Introduction

The assessment that has been carried out for this development, will help determine the daylight levels achieved inside bedrooms, kitchens and living rooms of the proposed development. The current design has been assessed according to the recommendations for daylight, sunlight and access to the sky in the BRE's 'Site Layout and Planning for Daylight and Sunlight – A guide to good practice'.

### 1.1 Site Location

The proposed development is located at 13 Netherhall Gardens, London as highlighted in the image below. It is a 3-storey residential building, including a lower ground floor and a basement. The surrounding area is a mix of open spaces and low-rise residential developments.



Figure 1 - Site Aerial Image



Figure 2: 3D model

# 2.0

## Assessment Methodology

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## 2.0 Assessment Methodology

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### 2.1 Simulation

A 3D architectural model of the proposed building was assessed in Radiance, which uses ray-tracing to calculate the amount of daylight falling on a surface. The analysis has been based in the following set of drawings and models provided by Re-Creo Architecture (as received on 10/06/2020):

- AP.02.7 Basement (Basement GA)
- AP.02.6 Lower Ground Floor (Lower Ground Floor GA)
- 200302\_1349R Netherhall Gardens\_S\_Phase 1A - 2\_CONSTRUCTION (SketchUp model).

### 2.2 Benchmarking criteria

The quality and quantity of daylight provision to a space in a new dwelling are both important. The BRE guidance suggests the use of the widely understood average daylight factor (ADF) metric to assess both the quantity and distribution of daylight in new rooms, using a CIE standard overcast sky condition. Daylight factor is expressed as the percentage of natural light falling on a work surface compared to that which would have fallen on a completely unobstructed horizontal surface under exactly the same sky conditions.

Referencing BS8206-2 Code of Practice for Daylighting, the guidance recommends values of 5% for a well day lit space and 2% for a partly day lit space. It also recommends the following minimum values:

- 2% for kitchens;
- 1.5% for living rooms;
- 1% for bedrooms.

It should be noted that in the case where one room serves more than one purpose, the minimum average daylight factor should be that for the room type with the highest value. For example, in a space which combines a living room and a kitchen the minimum average daylight factor should be 2%.

Each area in the new apartments has been assessed for daylight provision. Assumptions for the reflectance and light transmittance values used are documented in Appendix A.

# 3.0

## Results

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## 3.0 Results

### 3.1 Average Daylight Factor (ADF)

The results of the analysis for the levels of daylight available within the accommodation of the proposed development are presented on the table below.

Zone	ADF target	ADF achieved	Status
B_F10_Bedroom 1	1%	6.4%	Pass
B_F10_Bedroom 2	1%	6.5%	Pass
B_F10_Living/Kitchen	2%	2.1%	Pass
B_F11_Bedroom 1	1%	4.9%	Pass
B_F11_Bedroom 2	1%	4.6%	Pass
B_F11_Living/Kitchen	2%	2.8%	Pass
LG_F08_Bedroom 1	1%	4.6%	Pass
LG_F08_Living/Kitchen	2%	3.9%	Pass
LG_F09_Bedroom 1	1%	7.7%	Pass
LG_F09_Bedroom 2	1%	1.0%	Pass
LG_F09_Bedroom 3	1%	2.0%	Pass
LG_F09_Living/Kitchen	2%	2.1%	Pass

Table 3.1: ADF results for assessed zones

The results of the analysis have indicated that all the spaces are able to comply with ADF thresholds.

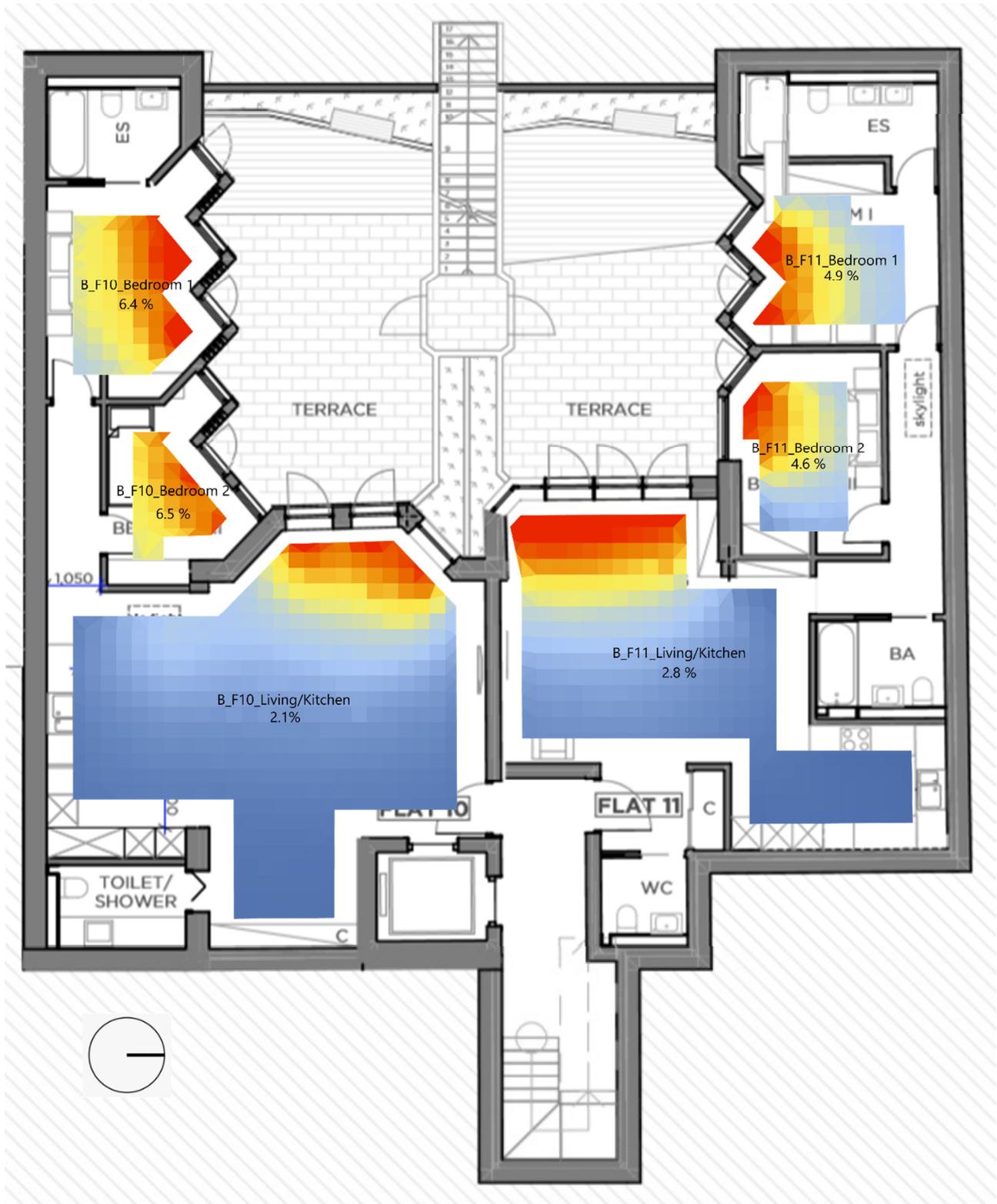


Figure 3: Basement results



Figure 4: Lower ground floor results

# 4.0

## Conclusion

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## 4.0 Conclusion

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This report reflects the assessment that was undertaken in order to evaluate the daylight levels achieved in the habitable zones located in the basement and the lower ground level of the proposed development. The current design has been assessed according to the recommendations for daylight, sunlight and access to the sky in the BRE's 'Site Layout and Planning for Daylight and Sunlight – A guide to good practice'.

From the analysis of the proposed development, in the context of the existing and surrounding buildings, all the spaces are able to comply with the BRE's recommended ADF thresholds.

# Appendices

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## Appendix A Modelling Assumptions

A range of assumptions were required to construct the daylighting model. These assumptions within the range recommended by the 'BS8206-2 Code of Practice for Daylighting'.

Material reflectance's effect the amount of light that is allowed to leave or bounce off of a surface after striking it. Visible light transmission (VLT) similarly determines how much light is allowed to pass through a window into a space. Based on typical values, they were assumed as the following:

- Ground plane: 20%
- Surrounding buildings: 30%
- Floor: 20%
- Walls: 60%
- Ceiling: 80%
- Glazing VLT: 68%
- Rooflight VLT: 65%

The definition of the analysis grid, where light performance is analysed, can also impact on the results.

- Height above floor level: 0.85m
- Distance from walls: 0.25m
- Node frequency: 0.25m (x and y directions).

