



# Daylight Report

**Client:** Avon Estates (London) Limited

**Project:** 17 Goldington Crescent, London, NW1 1UA

**Date:** 26<sup>th</sup> March 2014

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## **SUSTAINABLE BUILDING SOLUTIONS**

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## **About the Author**

*James Hargreaves* is an Associate member of the Royal Institution of Chartered Surveyors and has a Master's degree in Building Surveying. James provides consultancy advice to clients and undertakes detailed planning appraisals with regard all aspects of daylight, sunlight and shadow casting. Experienced in Code and BREEAM requirements James also works with clients to ensure their buildings achieve the required daylighting credits.

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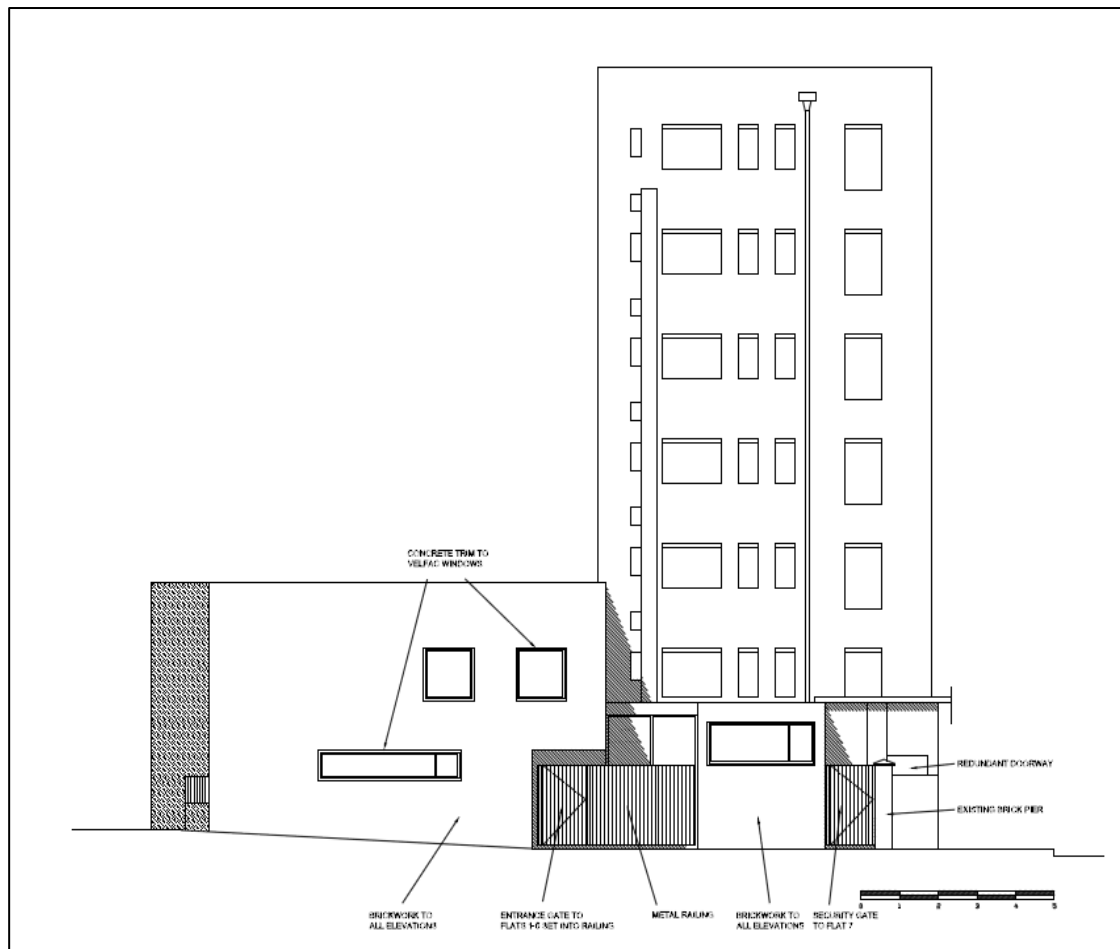
## Section 1: Executive Summary

We have assessed the expected amount of natural daylight in 16 habitable rooms in the proposed conversion of 17 Goldington Street, London, NW1 1UA, and compared the results to the recognised BRE guidance figures.

Our conclusions are that the significant majority of spaces comfortably fulfill the guidelines.

Two rooms (Ground R7 & R8) fall short of the ADF target value and one room (First R3) sees a small transgression from the Room Depth guidance threshold. There is no recommended value regarding the Daylight Distribution, however we have drawn a target value of 70%. In this case, one room (Ground R6) falls short of this figure. All other rooms meet all three target values.

Therefore in our opinion the development provides for an acceptable level of internal daylight provision in a closely positioned urban environment such as this.



Proposed Elevation to Goldington Crescent

## Section 2: Introduction

The purpose of this report is to assess the natural daylight levels in 21 habitable rooms in the proposed conversion of 17 Goldington Street, London.

This report considers the daylight issues against the criteria set out for national guidance in the following publications:

- Site Layout Planning for Daylight & Sunlight (SLPDS), PJ Littlefair 2011 published by the BRE (Building Research Establishment).

The SLPDS is the culmination of research undertaken by the BRE to determine whether or not a new development will achieve acceptable levels of internal daylight. The BRE tests are approved by the Department of the Environment and are widely used by local authorities when deciding on development applications.

- BS 8206-2- Code of practice for skylighting.

There are no minimum mandatory requirements for daylighting in Building Regulations for England & Wales but the guidance set out in SLPDS is widely accepted as the approved methodology when calculating light levels in habitable rooms.

It is worthy of note that SLPDS was first published in 1991 and BS 8206-2 in 1992. However SLPDS has recently been updated (Oct 2011). We have undertaken this study on the basis of this new guidance document.

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### **Section 3: Assessment Process**

The guidance states that rooms to be assessed should be living rooms, kitchens and bedrooms in residential properties. In non-domestic buildings rooms where occupants 'have a reasonable expectation of daylight' should be assessed. Although these spaces are not defined, examples are given of the type of non-domestic buildings that would normally fall into this category. These include schools, hospitals, hotels and hostels, small workshops and some offices.

It is important to note that the numerical values in the guidance are purely advisory and different criteria may be used based on the requirements for daylighting in an area viewed against other site layout constraints.

The three parameters we have assessed are:

- Average Daylight Factor (ADF)
- Room Depth Criteria
- Position of No-Sky Line

## **Section 4: The amount of daylight in the proposed development:**

### **Average Daylight Factors**

The BRE guidance states daylight provision may be checked by using the Average Daylight Factor (ADF). The ADF is a measure of the overall amount of daylight in a space.

BS 8206-2 Code of Practice for Daylighting recommends the following values for residential buildings:

Kitchens	2%
Living Rooms	1.5%
Bedrooms	1%

Other non-habitable rooms need not be assessed.

The calculation of the Average Daylight Factor takes into account the following variables:

- The diffuse visible transmittance of the glazing (we have assumed a figure of 0.68 for double glazing)
- A maintenance factor, allowing for the effects of dirt
- The net glazed area of the window
- The total area of the room surfaces
- The average reflectance of the rooms (we have assumed a light coloured room with a value of 0.5)
- The angle of the visible sky (taking into account external obstructions such as the light well and other adjacent buildings).

### ***Results***

Calculations were undertaken in accordance with the procedures shown in SLPDS. Our results show that all rooms except Ground R7 and Ground R8 achieve ADF values above the BRE guidelines. See overleaf.

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MES Calculations (ADF)  
 Project Name: 17 Goldington Crescent  
 Date of Analysis: 17/03/2014

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Target Value	Pass/Fail
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**17 Goldington Crescent**

Basement	R1	Bedroom	W1	0.68	4.15	37.41	105.47	0.50	1.00	1.33	1.00	PASS
										1.33		
Ground	R1	Bedroom	W1	0.68	1.44	56.60	60.88	0.50	1.00	1.21	1.00	PASS
										1.21		
Ground	R2	Bedroom	W2	0.68	1.44	65.94	47.14	0.50	1.00	1.83	1.00	PASS
										1.83		
Ground	R3	Kitchen	W3	0.68	5.79	62.13	115.40	0.50	1.00	2.83	2.00	PASS
			W4	0.68	1.35	47.57	115.40	0.50	1.00	0.50		
			W5	0.68	1.84	77.01	115.40	0.50	1.00	1.11		
										4.44		
Ground	R4	Kitchen	W6	0.68	5.78	56.60	143.83	0.50	1.00	2.06	2.00	PASS
			W7	0.68	5.14	41.43	143.83	0.50	1.00	1.34		
			W8	0.68	2.09	83.06	143.83	0.50	1.00	1.09		
										4.50		
Ground	R5	Bedroom	W10	0.68	1.10	52.99	77.15	0.50	1.00	0.69	1.00	PASS
			W9	0.68	1.11	41.37	77.15	0.50	1.00	0.54		
										1.22		
Ground	R6	Bedroom	W11	0.68	8.06	26.38	88.12	0.50	1.00	2.19	1.00	PASS
										2.19		
Ground	R7	Bedroom	W12	0.68	1.44	28.92	62.53	0.50	1.00	0.60	1.00	FAIL
										0.60		
Ground	R8	Bedroom	W13	0.68	1.44	32.87	54.05	0.50	1.00	0.79	1.00	FAIL
										0.79		
Ground	R9	Kitchen	W14	0.68	9.10	33.78	105.78	0.50	1.00	2.63	2.00	PASS
										2.63		
First	R1	Kitchen	W1	0.68	4.37	53.96	125.10	0.50	1.00	1.71	2.00	PASS
			W2	0.68	3.32	70.03	125.10	0.50	1.00	1.69		
										3.39		
First	R2	Bedroom	W3	0.68	1.15	83.52	49.44	0.50	1.00	1.76	1.00	PASS
										1.76		
First	R3	Bedroom	W4	0.68	1.17	83.57	63.37	0.50	1.00	1.40	1.00	PASS
										1.40		
First	R4	Bedroom	W11	0.68	1.44	54.88	63.06	0.50	1.00	1.14	1.00	PASS
										1.14		
First	R5	Bedroom	W12	0.68	1.44	64.12	55.15	0.50	1.00	1.52	1.00	PASS
										1.52		
First	R6	Kitchen	W13	0.68	7.19	68.05	105.75	0.50	1.00	4.19	2.00	PASS
										4.19		



## Room Depth Criteria

The BRE guidance states that if a daylit room is lit by windows in one wall only, the depth of the room should not exceed the limiting value given by:

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

Where:

L is the room length

W is the room width

H is the window head height above floor level

R<sub>b</sub> is the average reflectance of surfaces in the rear half of the room (away from the window)

## *Results*

Calculations were undertaken in accordance with the procedures shown in SLPDS. Our results show that all but one room (First R3) achieve Room Depth Criteria values better than the BRE guidelines.

## Room Depth Analysis for Daylighting



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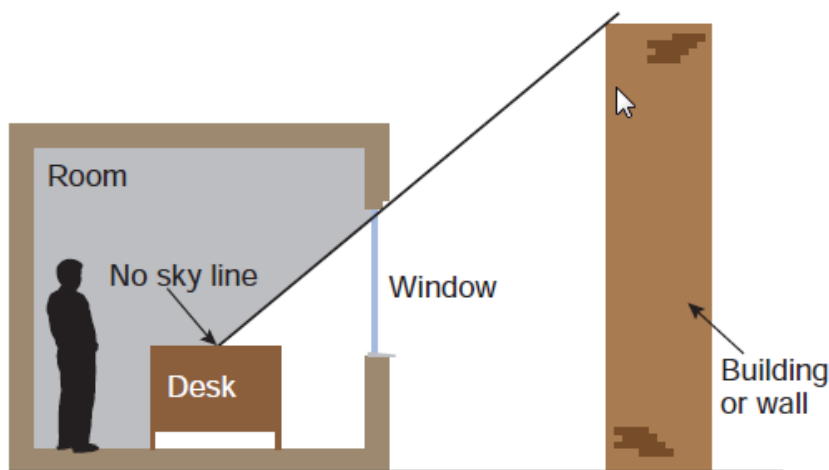
Site:	17 Goldington Crescent
Date:	17/03/2014

Room	Depth of Room (m) [L]	Width of Room (m) [W]	Window Head Height Above Floor Level (m) [H]	Average Reflectance of Surfaces at Rear of Room ( $R_b$ )	$[(L/W)+(L/H)]$	Limiting Value $[2/(1-R_b)]$	Pass or Fail?
Basement R1	5.45	5.36	2.35	0.50	3.34	4.00	PASS
Ground R1	3.30	4.19	2.25	0.50	2.25	4.00	PASS
Ground R2	2.80	3.32	2.25	0.50	2.09	4.00	PASS
Ground R3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ground R4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ground R5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ground R6	3.89	6.13	2.38	0.50	2.27	4.00	PASS
Ground R7	2.70	5.04	2.30	0.50	1.71	4.00	PASS
Ground R8	3.00	3.54	2.30	0.50	2.15	4.00	PASS
Ground R9	4.74	5.40	2.30	0.50	2.94	4.00	PASS
First R1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
First R2	3.61	2.75	2.00	0.50	3.12	4.00	PASS
First R3	5.22	2.52	2.00	0.50	4.68	4.00	FAIL
First R4	2.70	5.14	2.30	0.50	1.70	4.00	PASS
First R5	3.64	3.00	2.30	0.50	2.80	4.00	PASS
First R6	5.39	4.74	2.30	0.50	3.48	4.00	PASS

## Daylight Distribution

Where room layouts are known (or estimated) the daylighting distribution can be found by plotting what is known as the 'no sky line' in each of the main rooms.

The no sky line effectively divides the points on the working plane (0.85m high for residential properties and 0.7m high for offices) that cannot see the sky. Therefore areas beyond the no sky line will receive no direct daylight but will instead be lit from reflected light.



BRE 209

## Results

Calculations were undertaken in accordance with the planning guidance contained in BRE document 209 'Site Layout Planning for Daylight & Sunlight' - PJ Littlefair 2011. Results for the habitable spaces can be found overleaf.

Although there is no specific guidance on the amount of working plane that should be able to receive direct light from the sky, the results overleaf show that all rooms apart from Ground R6 receive direct light from the sky over at least 70% of its area.

In our opinion this is a satisfactory amount of direct light receivable from the sky.

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MES Calculations (Daylight Distribution)  
 Project Name: 17 Goldington Crescent  
 Date of Analysis: 17/03/2014

Floor Ref.	Room Ref.	Room Use.	Room Area	Lit Area Proposed
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### 17 Goldington Crescent

Basement	R1	Bedroom	Area m2 % of room	22.53 19.06 85%
Ground	R1	Bedroom	Area m2 % of room	11.70 10.19 87%
Ground	R2	Bedroom	Area m2 % of room	8.26 7.97 96%
Ground	R3	Kitchen	Area m2 % of room	29.55 29.55 100%
Ground	R4	Kitchen	Area m2 % of room	37.75 37.71 100%
Ground	R5	Bedroom	Area m2 % of room	16.79 14.58 87%
Ground	R6	Bedroom	Area m2 % of room	18.98 6.68 35%
Ground	R7	Bedroom	Area m2 % of room	11.89 9.26 78%
Ground	R8	Bedroom	Area m2 % of room	10.65 9.24 87%
Ground	R9	Kitchen	Area m2 % of room	26.91 26.91 100%
First	R1	Kitchen	Area m2 % of room	30.26 29.46 97%
First	R2	Bedroom	Area m2 % of room	8.76 8.60 98%
First	R3	Bedroom	Area m2 % of room	12.36 12.25 99%
First	R4	Bedroom	Area m2 % of room	11.91 9.40 79%
First	R5	Bedroom	Area m2 % of room	10.95 10.46 96%
First	R6	Kitchen	Area m2 % of room	26.90 26.90 100%

## Section 6: Notes:

This report has been prepared for the sole use of the Client. No representation or warranty (expressed or implied) is given to any other parties. Therefore this report should not be relied upon by any third party and we accept no liability from the use of this report by any other party.

Our calculations have been undertaken using drawings provided by Boyer Planning Limited and produced by Madoc Architecture. Drawing numbers:

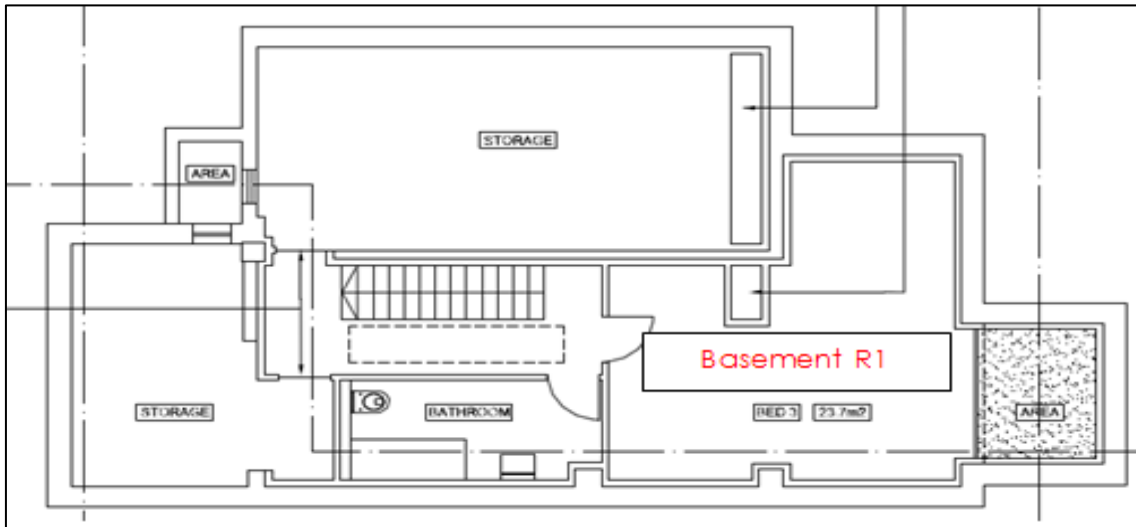
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We are not aware of any conflicts of interest between ourselves and any other party concerning this project.

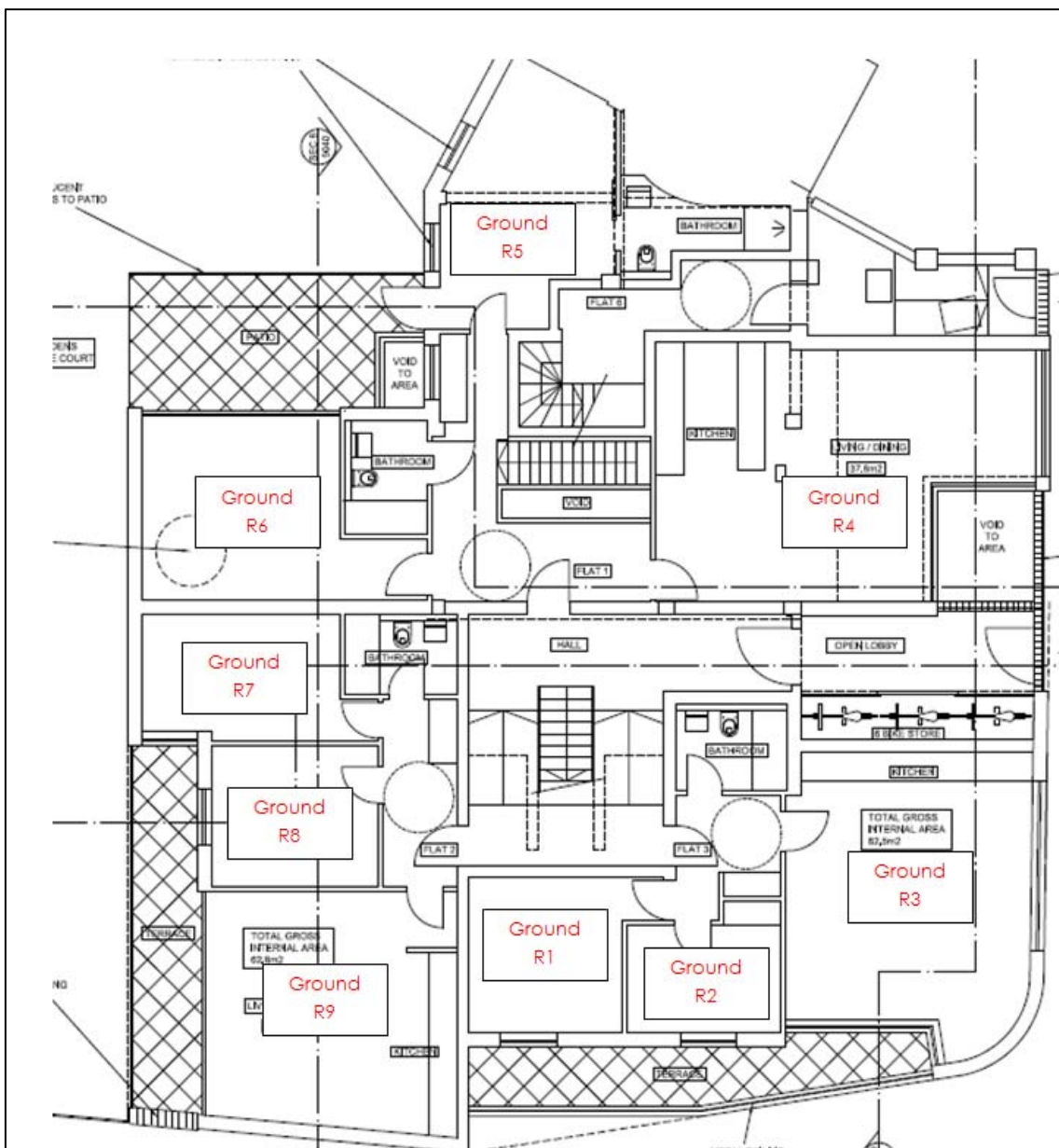
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## Appendix: Room references

Basement:



Ground Floor:



First Floor:

