

Right of Light Consulting

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Daylight and Sunlight Study (Within Development) 27 West End Lane, London NW6 4QJ

9 June 2020



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DAYLIGHT AND SUNLIGHT STUDY 27 West End Lane, London NW6 4QJ

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1 EXECUTIVE SUMMARY

1.1 Overview

- 1.1.1 Right of Light Consulting has been commissioned by Almax Group to undertake a daylight and sunlight study in connection with the development at 27 West End Lane, London NW6 4QJ. The aim of the study is to check whether or not the proposed development receives satisfactory levels of daylight and sunlight.
- 1.1.2 The study is based on the numerical tests laid down in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a good practice guide, 2nd Edition' by P J Littlefair 2011.
- 1.1.3 Appendix 1 identifies the windows analysed in this study. The numerical test results (including all calculation workings) are provided in Appendix 2. No sky line contours are presented in Appendix 1.
- 1.1.4 Right of Light Consulting confirms that the proposed design satisfies all of the requirements set out in the BRE guide 'Site Layout Planning for Daylight and Sunlight'.

2 INFORMATION SOURCES

2.1 Documents Considered

2.1.1 This report is based on the following drawings:

Atomik Architecture

0390 (20) 105 0390 (20) 106 0390 (20) 107 0390 (20) 108 0390 (20) 106 0390 (20) 201 0390 (20) 202 0390 (20) 203 0390 (20) 204 0390 (20) 300 0390 (20) 301	Proposed Floor Plans: Lower Ground Plan Proposed Floor Plans: Upper Ground Plan Proposed Floor Plans: First Floor Plan Proposed Floor Plans: Second Floor Plan Proposed Floor Plans: Roof Plan Proposed Section: Proposed Section A Proposed Section: Proposed Section B Proposed Section: Proposed Section C Proposed Section: Proposed Section D Proposed Section: Proposed Front Elevation Proposed Section: Proposed Side Elevation 1	Rev J Rev H Rev H Rev E Rev F Rev D Rev D Rev F Rev F
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3 METHODOLOGY OF THE STUDY

3.1 Local Planning Policy

- 3.1.1 We understand that the Local Authority take the conventional approach of considering daylight and sunlight amenity with reference to the various numerical tests laid down in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a guide to good practice, 2nd Edition' by P J Littlefair 2011. A new European standard BS EN 17037 'Daylight in Buildings' was published in May 2019. An update to the BRE guide to take into account the European standard is not anticipated until sometime in 2020. It is not yet clear, how and to what extent, the European recommendations will be adopted by the BRE and Local Authorities.
- 3.1.2 The standards set out in the BRE guide are intended to be used flexibly. The BRE guide states:
- 3.1.3 "The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly, since natural lighting is only one of many factors in site layout design."

3.2 National Planning Policy Framework

- 3.2.1 The BRE numerical guidelines should be considered in the context of the National Planning Policy Framework (NPPF), which stipulates that local planning authorities should take a flexible approach to daylight and sunlight to ensure the efficient use of land. The NPPF states:
- 3.2.2 "Local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards)."

3.3 Interior Daylighting

3.3.1 The interior daylighting recommendations set out in BRE guide are based on British Standard BS 8206 Part 2 and the Chartered Institute of Building Services Engineers Applications Manual on window design. Collectively, the guides set out three main criteria for interior daylighting. These are summarised as follows:

Test 1 Average Daylight Factor (df)

3.3.2 The Average Daylight Factor can be calculated using the following formula:

$$df = \frac{T Aw \theta}{A (1-R^2)} \%$$

Where

T is the diffuse visible transmittance of the glazing Awis the net glazed area of the window (m²)

A is the total area of the room surfaces (m²)

R is their average reflectance

Θ is the angle of visible sky in degrees

- 3.3.3 The Average Daylight factor test is applied to habitable rooms within domestic properties. A kitchen is generally deemed to be a habitable room if it is large enough to accommodate a dining area. If the kitchen is small or if the property has a separate dining area then the accepted practice is to treat the kitchen as a non habitable room.
- 3.3.4 For the purpose of this study we have assumed BRE internal reflectance values pertaining to medium wooden floors (Coefficient value of 0.4), light painted walls (0.8) and matte white painted ceilings (0.85).
- 3.3.5 For the purpose of this study we have assumed the windows consist of modern double-glazed units with a frame to glazing ratio of 0.8. A maintenance factor has been applied to consider the effect of dirt and grime on the visibility of the window. On this basis, the transmittance value used within this study is 0.68.
- 3.3.6 To achieve a predominately daylit space, the guide recommends an Average Daylight Factor of 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary lighting is provided. There are additional minimum recommendations for dwellings of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.

- 3.3.7 The BRE guide does not give guidance on how to apply the ADF test to spaces which contain a mix of room uses e.g. open plan living, dining and kitchen areas. For this assessment we have set a target of 2% with the aim of reaching the predominately daylit benchmark.
- 3.3.8 A special procedure is required for floor to ceiling windows such as patio doors. If part of a window is below the height of the working plane (a horizontal plane 0.85m above the floor in housing), this portion should be treated as a separate window. The ADF for this window has an extra factor applied to it, to take account of the reduced effectiveness of low level glazing in lighting the room. A value equal to the floor reflectance may be taken for this factor. The ADF for the portion of the window above the working plane is calculated in the normal way without this additional factor, and the ADFs for the two portions are added together.
- 3.3.9 Where a window has a large obstruction in front of it, the angle of visible sky can be increased by around 6° assuming the obstruction is painted a light colour.

Test 2 Room Depth

3.3.10 If a daylit room is lit by windows in one wall only, the depth of the room L should not exceed the limiting value given by:

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

Where

W is the room width

H is the window-head height above floor level

R_b is the average reflectance of the surfaces in the rear half of the room

Test 3 Position of the no sky line

3.3.11 If a significant area of the working plane lies beyond the no sky line (i.e. it receives no direct skylight), then the distribution of daylight in the room will look poor and supplementary electric lighting will be required.

3.3.12 The no sky line assessment is not applicable where a room derives its daylight solely from a light well or atrium. In these situations the room relies on borrowed light instead of direct skylight.

3.4 Sunlight to Windows

- 3.4.1 The BRE guide recommends that where possible each dwelling should have at least one main living room window that faces within 90 degrees of due south. However, the guide acknowledges that this is not always possible when it comes to flats.
- 3.4.2 The BRE sunlight tests should be applied to all main living rooms and conservatories which have a window which faces within 90 degrees of due south. The guide states that sunlight is viewed as less important in kitchens and bedrooms. In non-domestic buildings, any spaces which are deemed to have a specific requirement for sunlight should be checked.
- 3.4.3 The BRE guide recommends that main living room windows should receive 25% of the total annual probable sunlight hours, including 5% of the annual probable sunlight hours during the winter months between 21st September and 21st March.

4 RESULTS OF THE STUDY

4.1 Window Reference Points and No Sky Line Contours

4.1.1 Refer to Appendix 1 for a drawing which identifies the positions of the windows analysed in this study. The no skyline contours for the habitable rooms are also presented in Appendix 1.

4.2 Numerical Results

4.2.1 The numerical test results including all calculation workings are provided in Appendix 2.

4.3 Interior Daylighting

- 4.3.1 All rooms meet or surpass the BRE Average Daylight Factor targets.
- 4.3.2 All rooms pass the room depth test.
- 4.3.3 The BRE guide does not give fixed numerical pass/fail criteria for the No Sky Line test when applied to new dwellings (guidance is given for when this test is applied to existing neighbouring buildings). However, for completeness, we have illustrated the no sky line contours in Appendix 1.

4.4 Sunlight to Windows

4.4.1 The BRE guide explains that for apartments it may not be possible to have every living room facing with 90 degrees of due south. The guide goes on to explain that the number of north facing living rooms should be minimised. Figure 26 on page 15 of the guide illustrates an example of good layout design where only 1 out of 5 apartments (20%) have only north facing windows. In the case of the proposed units at 27 West End Lane, none of the units have only north facing living room windows. The proposed development therefore satisfies the BRE direct sunlight to windows requirements.

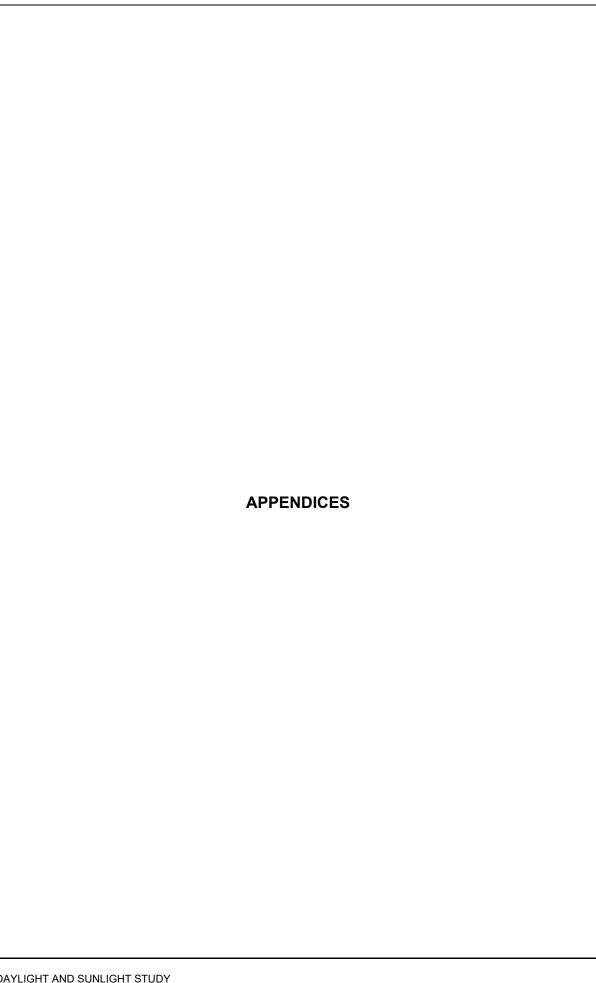
4.5 Conclusion

4.5.1 Right of Light Consulting confirms that the proposed design satisfies all of the requirements set out in the BRE guide 'Site Layout Planning for Daylight and Sunlight'.

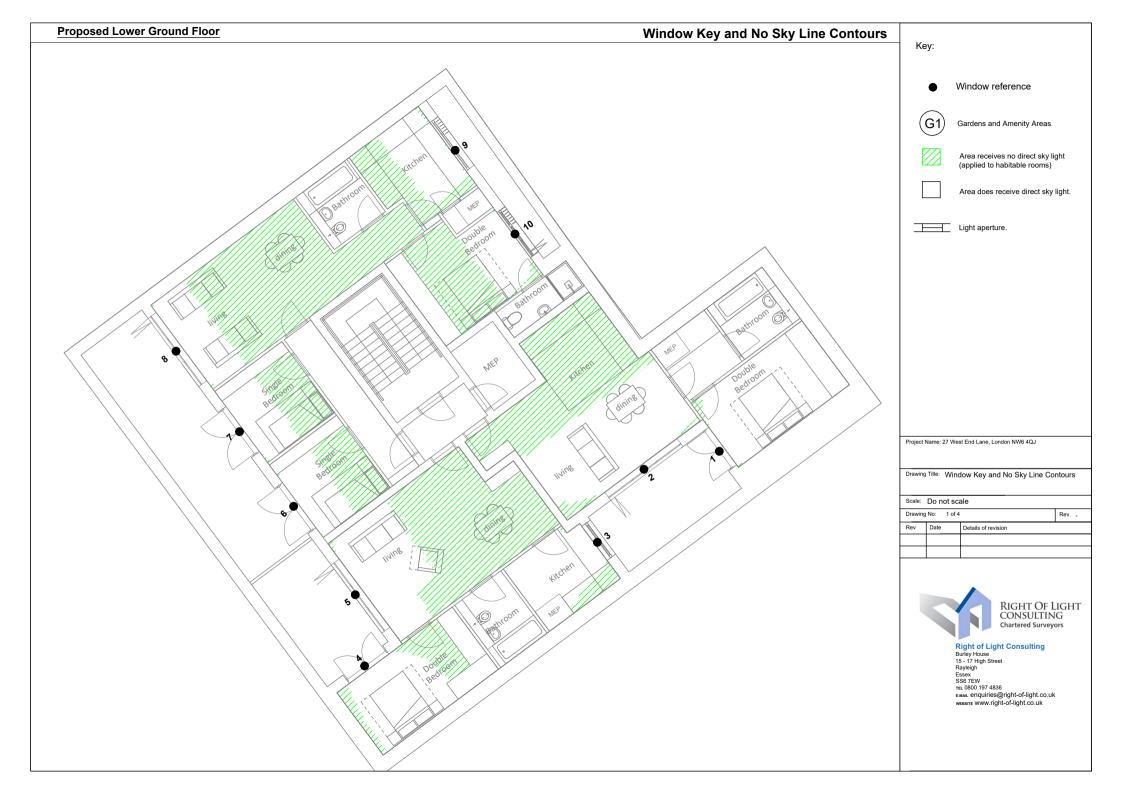
5 CLARIFICATIONS

5.1 General

- 5.1.1 The report provided is solely for the use of the client and no liability to anyone else is accepted.
- 5.1.2 The study is limited to assessing daylight, sunlight of the proposed development as set out in section 2.1, 3.1 and 3.3 of the BRE Guide.
- 5.1.3 The study has been undertaken following access to the proposed development site.
 We have not had access to neighbouring properties. The study is based on the information listed in section 2 of this report.
- 5.1.4 This study does not calculate the effects of trees and hedges on daylight, sunlight and overshadowing to gardens. The BRE guide states that trees should sometimes be taken into account, e.g. where there is concern that future occupants of the dwelling may want the trees to be cutdown if they block too much skylight or sunlight. We are not aware of any such circumstances, in this instance.
- 5.1.5 We have undertaken the survey following the guidelines of the RICS publication "Surveying Safely". Where limited access is available, assumptions will have been made.
- 5.1.6 This report is based upon and subject to the scope of work set out in Right of Light Consulting's quotation and standard terms and conditions.



	APPENDIX 1	
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	APPENDIX 2	
	DAYLIGHT AND SUNLIGHT CALCULATIONS	
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Appendix 2 - Average Daylight Factor (ADF)
27 West End Lane, London NW6 4QJ

Reference	Target ADF based on i	room use	A	Average Daylight Factor Coefficients				Actual ADF
	Primary room use	ADF	Т	Aw	Aw A		Theta	ADF
Proposed Lower Ground Floor								
Window 1 (lower)			0.68	1.05	61.53	0.7	34.0	0.39
Window 1 (upper)			0.68	1.91	61.53	0.7	42.1	1.7
Total ADF for room	Bedroom	1.0%						2.0
Window 2 (lower)			0.68	2.02	118.33	0.69	35.8	0.30
Window 2 (upper)			0.68	3.68	118.33	0.69	49.0	2.0
Total ADF for room	Living/Dining/Kitchen	2.0%						2.3
Window 3 (lower)			0.68	0.95	41.61	0.7	32.7	0.4
Window 3 (upper)			0.68	1.73	41.61	0.7	40.9	2.39
Total ADF for room	Kitchen	2.0%						2.7
Window 4 (lower)			0.68	1.11	54.23	0.7	33.3	0.49
Window 4 (upper)			0.68	2.01	54.23	0.7	39.2	1.99
Total ADF for room	Bedroom	1.0%						2.3
Window 5 (lower)			0.68	1.57	103.29	0.68	33.2	0.3
Window 5 (upper)			0.68	3.47	103.29	0.68	43.2	1.99
Total ADF for room	Living/Dining	1.5%						2.29
Window 6 (lower)			0.68	1.04	41.99	0.69	33.3	0.49
Window 6 (upper)			0.68	2.3	41.99	0.69	43.7	3.19
Total ADF for room	Bedroom	1.0%						3.5
Window 7 (lower)			0.68	1.03	41.44	0.69	36.2	0.5
Window 7 (upper)			0.68	2.29	41.44	0.69	44.5	3.2
Total ADF for room	Bedroom	1.0%						3.7
Window 8 (lower)			0.68	1.57	110.53	0.69	32.8	0.20
Window 8 (upper)			0.68	3.47	110.53	0.69	40.8	1.79
Total ADF for room	Living/Dining	1.5%						1.99
Window 9	Kitchen	2.0%	0.68	2.47	48.63	0.7	28.7	2.09

Appendix 2 - Average Daylight Factor (ADF)
27 West End Lane, London NW6 4QJ

Reference	Target ADF based on i	room use	A	Average Daylight Factor Coefficients				
	Primary room use	ADF	Т	Aw	Α	R	Theta	ADF
Window 10 (lower)			0.68	1.26	54.92	0.69	17.5	0.2%
Window 10 (upper)			0.68	2.3	54.92	0.69	28.6	1.6%
Total ADF for room	Bedroom	1.0%						1.8%
Proposed Ground Floor								
Window 12 (lower)			0.68	1.23	111.69	0.68	35.0	0.2%
Window 12 (upper)			0.68	2.72	111.69	0.68	31.6	1.0%
Window 11 (lower)			0.68	1.32	111.69	0.68	58.1	0.3%
Window 11 (upper)			0.68	2.72	111.69	0.68	60.7	1.8%
Total ADF for room	Living/Dining/Kitchen	2.0%						3.3%
Window 13 (lower)			0.68	0.16	102.93	0.66	65.3	0.1%
Window 13 (upper)			0.68	0.34	102.93	0.66	67.9	0.3%
Window 14 (lower)			0.68	0.57	102.93	0.66	65.1	0.2%
Window 14 (upper)			0.68	1.16	102.93	0.66	71.0	1.0%
Window 15 (lower)			0.68	0.66	102.93	0.66	64.7	0.2%
Window 15 (upper)			0.68	1.36	102.93	0.66	71.2	1.1%
Window 16 (lower)			0.68	1.32	102.93	0.66	56.6	0.4%
Window 16 (upper)			0.68	2.72	102.93	0.66	66.3	2.1%
Total ADF for room	Living/Dining/Kitchen	2.0%						5.4%
Window 17 (lower)			0.68	1.32	40.56	0.67	54.5	0.9%
Window 17 (upper)			0.68	2.72	40.56	0.67	60.5	5.0%
Total ADF for room	Bedroom	1.0%						5.9%
Window 18 (lower)			0.68	1.32	52.96	0.68	51.2	0.7%
Window 18 (upper)			0.68	2.72	52.96	0.68	58.2	3.8%
Total ADF for room	Bedroom	1.0%						4.5%
Window 19 (lower)			0.68	1.32	69.45	0.69	49.2	0.5%
Window 19 (upper)			0.68	2.72	69.45	0.69	50.9	2.6%
Total ADF for room	Bedroom	1.0%						3.1%

Appendix 2 - Average Daylight Factor (ADF)
27 West End Lane, London NW6 4QJ

Primary room use ADF T	Reference	Target ADF based on	room use	A	Average Daylight Factor Coefficients				
Window 20 (lower) 0.68		Primary room use	ADF	Т	Aw	А	R	Theta	ADF
Window 20 (upper) 0.68 2.73 80.76 0.66 75.3 Window 21 (lower) 0.68 1.23 80.76 0.66 38.2 Window 21 (lupper) 0.68 2.73 80.76 0.66 38.2 Window 22 (lupper) 1.5% 1.5% 0.68 2.73 80.76 0.66 76.1 Window 22 (lower) 1.5% 0.68 1.35 114.41 0.67 76.1 Window 22 (lower) 0.68 2.73 114.41 0.67 78.4 Window 23 (lower) 0.68 2.73 114.41 0.67 29.8 Window 24 (lupper) 0.68 0.68 2.73 114.41 0.67 29.8 Window 24 (lupper) 0.68 0.68 0.73 114.41 0.67 70.8 Window 24 (lupper) 0.68 0.77 114.41 0.67 70.8 Window 25 (lower) 0.68 0.73 40.9 0.67 68.1 Window 26 (lower) 0.68 1.35 60.68 <td>Proposed First Floor</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Proposed First Floor								
Window 21 (lower) 0.68 1.23 80.76 0.68 38.2 Window 21 (upper) 1.5% 80.76 0.68 46.6 Total ADF for room Living/Dining 1.5% 1.44 0.67 76.1 Window 22 (lower) 0.68 1.35 114.41 0.67 78.4 Window 22 (loper) 0.68 2.73 114.41 0.67 78.4 Window 23 (loper) 0.68 2.73 114.41 0.67 78.4 Window 23 (loper) 0.68 2.73 114.41 0.67 78.4 Window 24 (lower) 0.68 2.73 114.41 0.67 29.8 Window 24 (lower) 0.68 0.77 114.41 0.67 70.8 Window 24 (lower) 1.068 0.77 114.41 0.67 70.8 Window 25 (lower) 1.068 1.35 40.9 0.67 72.2 Window 25 (lower) 1.068 1.35 63.68 0.69 71.1 Window 26 (lower) 0.68	Window 20 (lower)			0.68	1.23	80.76	0.66	72.8	0.5
Window 21 (upper) Living/Dining 1.5% 2.73 80.76 0.66 46.6 Total ADF for room Living/Dining 1.5% 1.4.41 0.67 76.1 Window 22 (lower) 0.68 2.73 114.41 0.67 78.4 Window 23 (lower) 0.68 2.73 114.41 0.67 78.4 Window 23 (upper) 0.68 2.73 114.41 0.67 29.8 Window 24 (lower) 0.68 2.73 114.41 0.67 29.8 Window 24 (lower) 0.68 0.38 114.41 0.67 70.8 Window 24 (lower) 0.68 0.38 114.41 0.67 70.8 Window 25 (lower) 0.68 0.38 1.41.41 0.67 74.0 Window 25 (lower) 0.68 1.35 40.9 0.67 68.1 Window 25 (lower) 0.68 1.35 63.68 0.69 66.6 Window 26 (lower) 0.68 1.35 63.68 0.69 71.1	Window 20 (upper)			0.68	2.73	80.76	0.66	75.3	3.1
Total ADF for room Living/Dining 1.5% Window 22 (lower) 0.68 1.35 114.41 0.67 76.1 Window 22 (lupper) 0.68 2.73 114.41 0.67 78.4 Window 23 (lower) 0.68 1.35 114.41 0.67 29.8 Window 23 (lupper) 0.68 2.73 114.41 0.67 23.6 Window 24 (lupper) 0.68 0.38 114.41 0.67 74.0 Window 24 (lupper) 0.68 0.38 114.41 0.67 74.0 Total ADF for room Living/Dining/Kitchen 2.0% 114.41 0.67 74.0 Window 25 (lower) 2.0% 0.68 1.35 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% 1.0% 0.68 2.73 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% 0.68	Window 21 (lower)			0.68	1.23	80.76	0.66	38.2	0.3
Window 22 (lower) 0.68 1.35 114.41 0.67 76.1 Window 22 (upper) 0.68 2.73 114.41 0.67 78.4 Window 23 (lower) 0.68 1.35 114.41 0.67 29.8 Window 23 (upper) 0.68 2.73 114.41 0.67 23.6 Window 24 (upper) 0.68 0.77 114.41 0.67 70.8 Window 24 (upper) 0.68 0.77 114.41 0.67 70.8 Window 25 (lower) 0.68 1.35 40.9 0.67 68.1 Window 26 (lower) 0.68 2.73 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% 0.68 2.73 60.45	Window 21 (upper)			0.68	2.73	80.76	0.66	46.6	1.9
Window 22 (upper) 0.68 2.73 114.41 0.67 78.4 Window 23 (lower) 0.68 1.35 114.41 0.67 29.8 Window 23 (upper) 0.68 2.73 114.41 0.67 23.6 Window 24 (lower) 0.68 0.38 114.41 0.67 70.8 Window 24 (upper) 0.68 0.77 114.41 0.67 74.0 Total ADF for room Living/Dining/Kitchen 2.0% 2.0% 1.44 0.67 74.0 Window 25 (lower) 0.68 1.35 40.9 0.67 68.1 Window 26 (lower) 0.68 2.73 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% Window 26 (lower) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% Window 27 (lower) 0.68 2.73 60.45 0.69 53.0 Window 28 (lower) 0.68 2.73 41.46 0.67 64.3 Window 28 (lower	Total ADF for room	Living/Dining	1.5%						5.8
Window 23 (lower) 0.68 1.35 114.41 0.67 29.8 Window 23 (upper) 0.68 2.73 114.41 0.67 23.6 Window 24 (lower) 0.68 0.38 114.41 0.67 70.8 Window 24 (upper) 0.68 0.77 114.41 0.67 74.0 Total ADF for room Living/Dining/Kitchen 2.0% 1.35 40.9 0.67 68.1 Window 25 (lower) 0.68 1.35 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% Window 26 (lower) 0.68 1.35 63.68 0.69 66.6 Window 26 (lower) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% Window 27 (lower) 0.68 1.35 60.45 0.69 53.0 Window 27 (lower) 0.68 2.73 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% Window 28 (lower) 0.68 1.35 41.46	Window 22 (lower)			0.68	1.35	114.41	0.67	76.1	0.4
Window 23 (upper) 0.68 2.73 114.41 0.67 23.6 Window 24 (lower) 0.68 0.38 114.41 0.67 70.8 Window 24 (upper) 0.68 0.77 114.41 0.67 74.0 Total ADF for room Living/Dining/Kitchen 2.0% Window 25 (lower) 0.68 1.35 40.9 0.67 68.1 Window 25 (upper) 0.68 2.73 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% 40.9 0.67 72.2 Window 26 (lower) 0.68 1.35 63.68 0.69 66.6 Window 26 (lower) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% 50.45 0.69 53.0 Window 27 (upper) 0.68 1.35 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% 60.68 2.73 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Tota	Window 22 (upper)			0.68	2.73	114.41	0.67	78.4	2.3
Window 24 (lower) 0.68 0.38 114.41 0.67 70.8 Window 24 (upper) 0.68 0.77 114.41 0.67 74.0 Total ADF for room Living/Dining/Kitchen 2.0% Window 25 (lower) 0.68 1.35 40.9 0.67 68.1 Window 25 (lopper) 0.68 2.73 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% Window 26 (lower) 0.68 1.35 63.68 0.69 66.6 Window 26 (upper) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% 0.68 2.73 60.45 0.69 53.0 Window 27 (lower) 0.68 2.73 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% 0.68 2.73 41.46 0.67 64.3 Window 28 (lower) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Window 23 (lower)			0.68	1.35	114.41	0.67	29.8	0.2
Window 24 (upper) Living/Dining/Kitchen 2.0% Window 25 (lower) 0.68 1.35 40.9 0.67 68.1 Window 25 (lower) 0.68 2.73 40.9 0.67 68.1 Window 25 (upper) 0.68 2.73 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% 0.68 1.35 63.68 0.69 66.6 Window 26 (upper) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% 0.68 1.35 60.45 0.69 53.0 Window 27 (lower) 0.68 1.35 60.45 0.69 53.0 Window 27 (upper) 0.68 2.73 60.45 0.69 53.0 Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0% 0.68 2.73 41.46	Window 23 (upper)			0.68	2.73	114.41	0.67	23.6	0.7
Total ADF for room Living/Dining/Kitchen 2.0% Window 25 (lower) 0.68 1.35 40.9 0.67 68.1 Window 25 (upper) 0.68 2.73 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% Window 26 (lower) 0.68 1.35 63.68 0.69 66.6 Window 26 (upper) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% 0.68 2.73 60.45 0.69 53.0 Window 27 (lower) 0.68 2.73 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0% 41.46 0.67 66.9 Total ADF for room Bedroom 1.0% 41.46 0.67 66.9	Window 24 (lower)			0.68	0.38	114.41	0.67	70.8	0.1
Window 25 (lower) 0.68 1.35 40.9 0.67 68.1 Window 25 (upper) 0.68 2.73 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% 63.68 0.69 66.6 Window 26 (lower) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% 0.68 1.35 60.45 0.69 53.0 Window 27 (lower) 0.68 1.35 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% 0.68 2.73 60.45 0.69 54.1 Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (lower) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0% 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0% 0.68 2.73 41.46 0.67 66.9	Window 24 (upper)			0.68	0.77	114.41	0.67	74.0	0.6
Window 25 (upper) 0.68 2.73 40.9 0.67 72.2 Total ADF for room Bedroom 1.0% 0.68 1.35 63.68 0.69 66.6 Window 26 (lower) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% 0.68 1.35 60.45 0.69 53.0 Window 27 (lower) 0.68 2.73 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Total ADF for room	Living/Dining/Kitchen	2.0%						4.3
Total ADF for room Bedroom 1.0% Window 26 (lower) 0.68 1.35 63.68 0.69 66.6 Window 26 (upper) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% 0.68 1.35 60.45 0.69 53.0 Window 27 (lower) 0.68 2.73 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Window 25 (lower)			0.68	1.35	40.9	0.67	68.1	1.1
Window 26 (lower) 0.68 1.35 63.68 0.69 66.6 Window 26 (upper) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% 0.68 1.35 60.45 0.69 53.0 Window 27 (upper) 0.68 2.73 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Window 25 (upper)			0.68	2.73	40.9	0.67	72.2	6.0
Window 26 (upper) 0.68 2.73 63.68 0.69 71.1 Total ADF for room Bedroom 1.0% Window 27 (lower) 0.68 1.35 60.45 0.69 53.0 Window 27 (upper) 0.68 2.73 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Total ADF for room	Bedroom	1.0%						7.1
Total ADF for room Bedroom 1.0% Window 27 (lower) 0.68 1.35 60.45 0.69 53.0 Window 27 (upper) 0.68 2.73 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Window 26 (lower)			0.68	1.35	63.68	0.69	66.6	0.7
Window 27 (lower) 0.68 1.35 60.45 0.69 53.0 Window 27 (upper) 0.68 2.73 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Window 26 (upper)			0.68	2.73	63.68	0.69	71.1	4.0
Window 27 (upper) 0.68 2.73 60.45 0.69 54.1 Total ADF for room Bedroom 1.0% Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Total ADF for room	Bedroom	1.0%						4.7
Total ADF for room Bedroom 1.0% Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Window 27 (lower)			0.68	1.35	60.45	0.69	53.0	0.6
Window 28 (lower) 0.68 1.35 41.46 0.67 64.3 Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Window 27 (upper)			0.68	2.73	60.45	0.69	54.1	3.2
Window 28 (upper) 0.68 2.73 41.46 0.67 66.9 Total ADF for room Bedroom 1.0%	Total ADF for room	Bedroom	1.0%						3.8
Total ADF for room Bedroom 1.0% Proposed Second Floor	Window 28 (lower)			0.68	1.35	41.46	0.67	64.3	1.0
Proposed Second Floor	Window 28 (upper)			0.68	2.73	41.46	0.67	66.9	5.5
	Total ADF for room	Bedroom	1.0%						6.5
	Proposed Second Floor								
Window 29 (lower) 0.68 0.45 125.97 0.64 79.2	Window 29 (lower)			0.68	0.45	125.97	0.64	79.2	0.1

Appendix 2 - Average Daylight Factor (ADF)
27 West End Lane, London NW6 4QJ

Reference	Target ADF based on r	oom use	Α	verage Da	ylight Facto	r Coefficier	nts	Actual ADF
	Primary room use	ADF	Т	Aw	А	R	Theta	ADF
Window 29 (upper)			0.68	1.77	125.97	0.64	80.8	1.3%
Window 30 (lower)			0.68	0.64	125.97	0.64	82.5	0.2%
Window 30 (upper)			0.68	2.53	125.97	0.64	84.0	2.0%
Window 31 (lower)			0.68	0.64	125.97	0.64	82.2	0.2%
Window 31 (upper)			0.68	2.53	125.97	0.64	83.8	2.0%
Window 32 (lower)			0.68	1.32	125.97	0.64	52.2	0.3%
Window 32 (upper)			0.68	2.53	125.97	0.64	83.0	1.9%
Total ADF for room	Living/Dining/Kitchen	2.0%						8.0%
Window 33 (lower)			0.68	1.32	56.06	0.69	51.8	0.6%
Window 33 (upper)			0.68	2.53	56.06	0.69	82.5	4.8%
Total ADF for room	Bedroom	1.0%						5.4%
Window 34 (lower)			0.68	0.45	56.75	0.71	58.9	0.3%
Window 34 (upper)			0.68	1.77	56.75	0.71	61.9	2.6%
Total ADF for room	Bedroom	1.0%						2.9%
Window 35 (lower)			0.68	0.45	39.02	0.7	74.3	0.5%
Window 35 (upper)			0.68	1.77	39.02	0.7	77.6	4.7%
Total ADF for room	Bedroom	1.0%						5.2%

Appendix 2 - Room Depth Calculation 27 West End Lane, London NW6 4QJ

Room	Roo	m Depth C	oefficients		Room De	epth Cal	culation
	L	W	Н	Rb	L/W + L/H	<=	2/1-Rb
Proposed Lower Ground F	<u>loor</u>						
Window 1	4.6	2.6	2.4	0.7	3.69	<=	6.64
Window 2	5.6	6.2	2.4	0.69	3.24	<=	6.38
Window 3	2.9	2.6	2.4	0.7	2.32	<=	6.68
Window 4	2.6	4.1	2.4	0.7	1.72	<=	6.6
Window 5	6.5	4.0	2.4	0.68	4.33	<=	6.34
Window 6	2.8	2.6	2.4	0.69	2.24	<=	6.37
Window 7	2.8	2.5	2.4	0.69	2.29	<=	6.37
Window 8	8.7	3.4	2.4	0.69	6.18	<=	6.53
Window 9	2.8	3.2	2.4	0.7	2.04	<=	6.76
Window 10	3.3	3.4	2.4	0.69	2.35	<=	6.48
Proposed Ground Floor							
Window 11	4.0	7.1	2.5	0.68	2.16	<=	6.16
Window 12	7.1	5.0	2.5	0.68	4.26	<=	6.16
Window 13	5.7	4.9	2.5	0.66	3.44	<=	5.97
Window 14	5.7	4.9	2.5	0.66	3.44		5.97
Window 15	5.7	4.9	2.5	0.66	3.44		5.97
Window 16	4.9	5.7	2.5	0.66	2.82		5.97
Window 17	2.7	2.5	2.5	0.67	2.16		6.11
Window 18	4.0	2.4	2.5	0.68	3.27		6.3
Window 19	4.4	3.6	2.5	0.69	2.98	<=	6.42
Proposed First Floor							
Window 20	5.0	4.0	2.6	0.66	3.17	<=	5.87
Window 21	4.0	5.0	2.6	0.66	2.34	<=	5.87
Window 22	4.3	6.8	2.6	0.67	2.29	<=	6.07

Appendix 2 - Room Depth Calculation 27 West End Lane, London NW6 4QJ

Room	Roc	om Depth C	oefficients		Room Depth Calc	ulation
	L	W	Н	Rb	L/W + L/H <=	2/1-Rb
Window 23	3.6	6.8	2.6	0.67	1.91 <=	6.07
Window 24	6.8	4.3	2.6	0.67	4.2 <=	6.07
Window 25	2.7	2.5	2.6	0.67	2.12 <=	6.11
Window 26	3.9	3.7	2.6	0.69	2.55 <=	6.45
Window 27	5.0	2.5	2.6	0.69	3.92 <=	6.46
Window 28	2.8	2.5	2.6	0.67	2.2 <=	6.12
Proposed Second Floor						
Window 29	7.5	4.5	2.4	0.64	4.79 <=	5.63
Window 30	4.5	7.5	2.4	0.64	2.48 <=	5.63
Window 31	4.5	7.5	2.4	0.64	2.48 <=	5.63
Window 32	7.4	4.5	2.4	0.64	4.73 <=	5.63
Window 33	3.8	3.1	2.4	0.69	2.81 <=	6.36
Window 34	2.7	4.3	2.4	0.71	1.75 <=	6.88
Window 35	2.9	2.3	2.4	0.7	2.47 <=	6.7

Appendix 2 - Sunlight to Windows 27 West End Lane, London NW6 4QJ

Reference	Use Class	Annual Probab	le Sunlight Hours
		Total	Winter
Proposed Lower	Ground Floor		
Window 2	Living/Dining/Kitchen	28%	2%
Window 5	Living/Dining	11%	0%
Window 8	Living/Dining	15%	3%
Proposed Ground	d Floor		
Window 11	Living/Dining/Kitchen	15%	0%
Window 12	Living/Dining/Kitchen	12%	10%
Window 13	Living/Dining/Kitchen	17%	5%
Window 14	Living/Dining/Kitchen	48%	14%
Window 15	Living/Dining/Kitchen	49%	14%
Window 16	Living/Dining/Kitchen	41%	14%
Proposed First FI	<u>oor</u>		
Window 20	Living/Dining	20%	2%
Window 21	Living/Dining	26%	17%
Window 22	Living/Dining/Kitchen	65%	22%
Window 23	Living/Dining/Kitchen	7%	6%
Window 24	Living/Dining/Kitchen	33%	9%
Proposed Second	d Floor		
Window 29	Living/Dining/Kitchen	19%	2%
Window 30	Living/Dining/Kitchen	66%	23%
Window 31	Living/Dining/Kitchen	66%	23%
Window 32	Living/Dining/Kitchen	56%	20%