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Daylight and Sunlight Study
55 Holmes Road, London NW5 3AN

28th October 2010

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CONTENTS

1 EXECUTIVE SUMMARY

1.1 Overview

1.1.1 Right of Light Consulting has been commissioned to undertake a daylight and sunlight study in connection with the development at 55 Holmes Road, London NW5 3AN. The aim of the study is to check whether or not the proposed basement habitable rooms receive 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' by P J Littlefair 1991.

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 3.

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:

Contemporary Design Solutions

A(GA)P090	Proposed Upper Basement	Rev –
A(GA)P100	Proposed Ground Floor	Rev –
A(GA)P300	Proposed GA Section AA	Rev –
A(GA)P100	Proposed Holmes Road Elevation Section	Rev –

3 METHODOLOGY OF THE STUDY

3.1 BRE Digest 209 : Site Layout Planning for Daylight and Sunlight

3.1.1 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' by P J Littlefair 1991.

3.1.2 The standards set out in the BRE guide are intended to be used flexibly. In instances where there is a special requirement for daylight or sunlight, higher levels may be deemed necessary. In other situations, such as with urban developments, lower daylight and sunlight levels may be unavoidable. The following statement is quoted directly from the BRE guide:

3.1.3 "The guide is intended for building designers and their clients, consultants and planning officials. The advice given is not mandatory and this document should not be considered as an instrument of planning policy. Its aim is to help rather than constrain the developer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design."

3.2 Interior Daylighting

3.2.1 The interior daylighting recommendations set out in BRE 209 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:

3.2.2 Test 1 Average Daylight Factor *(df)*

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
Aw is the net glazed area of the window (m^2)
A is the total area of the room surfaces (m^2)
R is their average reflectance
Θ is the angle of visible sky in degrees

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.

For the purpose of this study we have assumed BRE internal reflectance values pertaining to medium wooden floors, matte white painted walls and ceilings.

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.

3.2.3 Test 2 Room Depth

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

3.2.4 Test 3 Position of the no sky line

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.

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.

3.3 Sunlight to Windows

3.3.1 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.

3.3.2 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.

3.3.3 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

4.1.1 Refer to Appendix 1 for a drawing which identifies the positions of the windows analysed in this study.

4.2 Numerical Results and No Sky Line Contours

4.2.1 The numerical test results including all calculation workings are provided in Appendix 2. No sky line contours for the habitable rooms are presented in Appendix 3.

4.3 Interior Daylighting

4.3.1 All rooms surpass the BRE Average Daylight Factor targets. The results of test are summarised below.

Window (Primary use)	Target	Actual
Window 1 (Bedroom)	1.0%	1.6%
Window 2 (Bedroom)	1.0%	2.3%
Window 3 (Living Room)	1.5%	3.2%
Window 4 (Living Room)	1.5%	2.0%
Window 5 (Bedroom)	1.0%	1.9%
Window 6 (Bedroom)	1.0%	1.5%
Window 7 (Bedroom)	1.0%	1.7%
Window 8 (Living Room)	1.5%	2.2%
Window 9 (Bedroom)	1.0%	2.3%
Window 10 (Living Room)	1.5%	3.2%

4.3.2 All rooms pass the room depth test.

4.3.3 The BRE guide does not give 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 3.

4.4 Sunlight to Windows

4.4.1 All living room windows do not face within 90 degrees of due south and do not need to be tested for direct sunlight. The BRE guide acknowledges that it is not always possible for every dwelling to be well situated to receive direct sunlight. 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 Right of Light Consulting accepts no liability to third parties.

5.1.2 External areas will have been inspected from best vantage points or a standard twelve-foot surveyor's ladder. We shall have undertaken the survey following the guidelines of the RICS publication "Surveying Safely".

5.1.3 Where limited access is available, reasonable assumptions will have been made.

5.1.4 Right of Light Consulting have endeavoured to include in the report those matters, which they have knowledge of or of which they have been made aware, that might adversely affect the validity of the opinion given.

5.1.5 Right of Light Consulting has indicated the sources of all information used in the report.

5.1.6 Right of Light Consulting will notify those instructing them immediately and confirm in writing if for any reason the report requires any correction or qualification.

5.1.7 Right of Light Consulting confirms that they have not entered into any arrangement where the amount or payment of fees is in any way dependent on the outcome of a planning decision.

5.1.8 Right of Light Consulting confirm that they have used their best endeavours to ensure that the facts stated in this report are correct and that the opinions expressed represent a true and complete professional opinion.

5.2 Project Specific

5.2.1 None

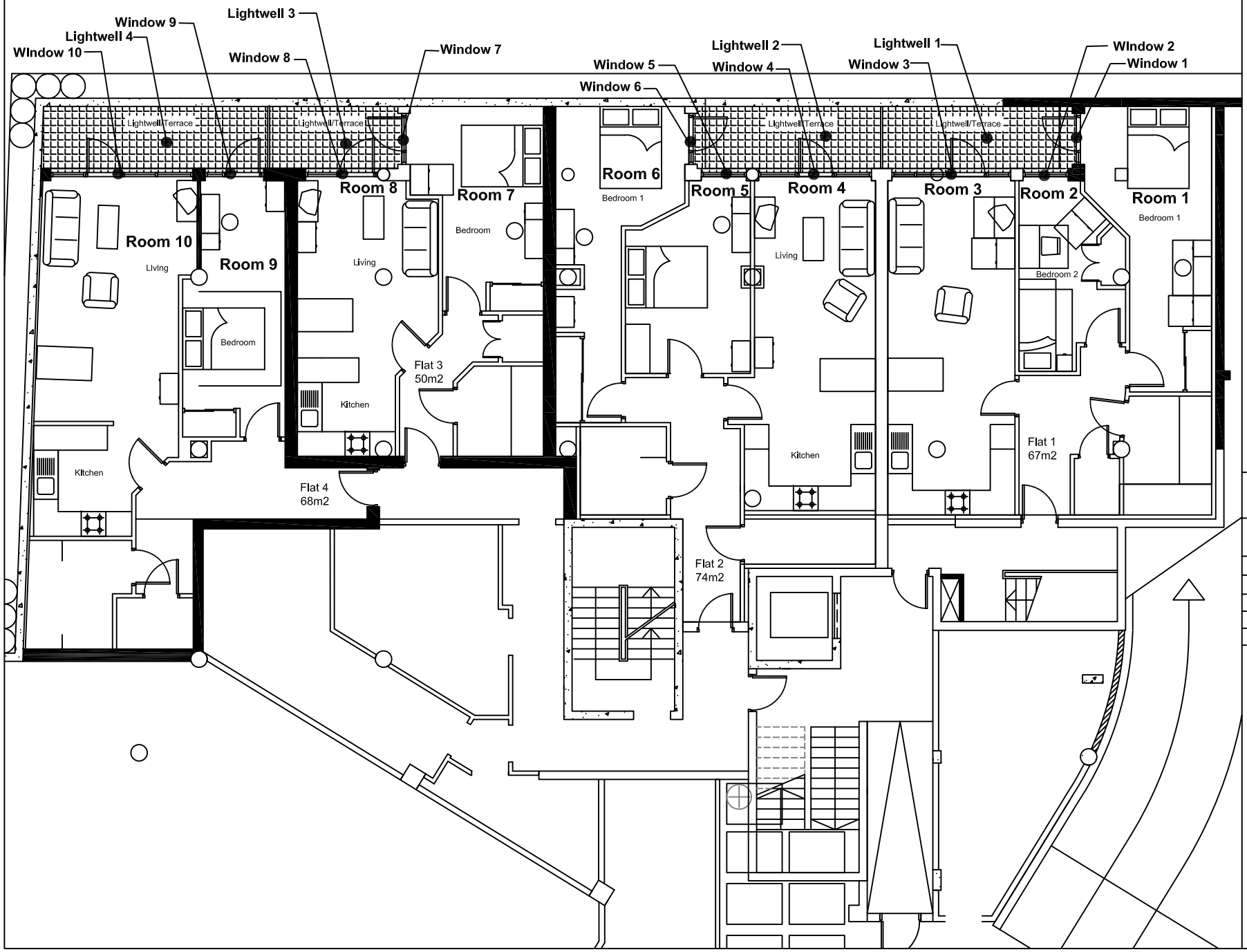
APPENDICES

APPENDIX 1

WINDOW KEY

Proposed Basement Plan

Appendix 1 Window Key



Key:

Window 1 ● Window reference

Project Name: 55 Holmes Road, London, NW5 3AN.

Drawing Title: Window Key

Scale: Do not scale	Date: 28.10.2010
Drawing No: 1 of 1	Rev. -

Rev	Date	Details of revision
-	28.10.10	Window Key

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APPENDIX 2

DAYLIGHT AND SUNLIGHT CALCULATIONS

Appendix 2 - Average Daylight Factor (ADF)
55 Holmes Road, London NW5 3AN

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Proposed Basement Level									
Window 1	Bedroom	1.0%	0.65	2.4	80.11	0.76	34.5	**1.6%**	**Pass**
Window 2	Bedroom	1.0%	0.65	2.08	54.99	0.76	39.1	**2.3%**	**Pass**
Window 3	Living Room	1.5%	0.65	5.48	106.83	0.73	44.3	**3.2%**	**Pass**
Window 4	Living Room	1.5%	0.65	5.2	110.31	0.73	30.4	**2.0%**	**Pass**
Window 5	Bedroom	1.0%	0.65	2.08	64.17	0.76	37.7	**1.9%**	**Pass**
Window 6	Bedroom	1.0%	0.65	2.4	81.03	0.77	31.9	**1.5%**	**Pass**
Window 7	Bedroom	1.0%	0.65	2.4	67.21	0.76	32.4	**1.7%**	**Pass**
Window 8	Living Room	1.5%	0.65	3.23	89.58	0.74	41.5	**2.2%**	**Pass**
Window 9	Bedroom	1.0%	0.65	2.69	70.92	0.75	40.1	**2.3%**	**Pass**
Window 10	Living Room	1.5%	0.65	6.55	129.77	0.73	44.6	**3.2%**	**Pass**

Appendix 2 - Room Depth Calculation
55 Holmes Road, London NW5 3AN

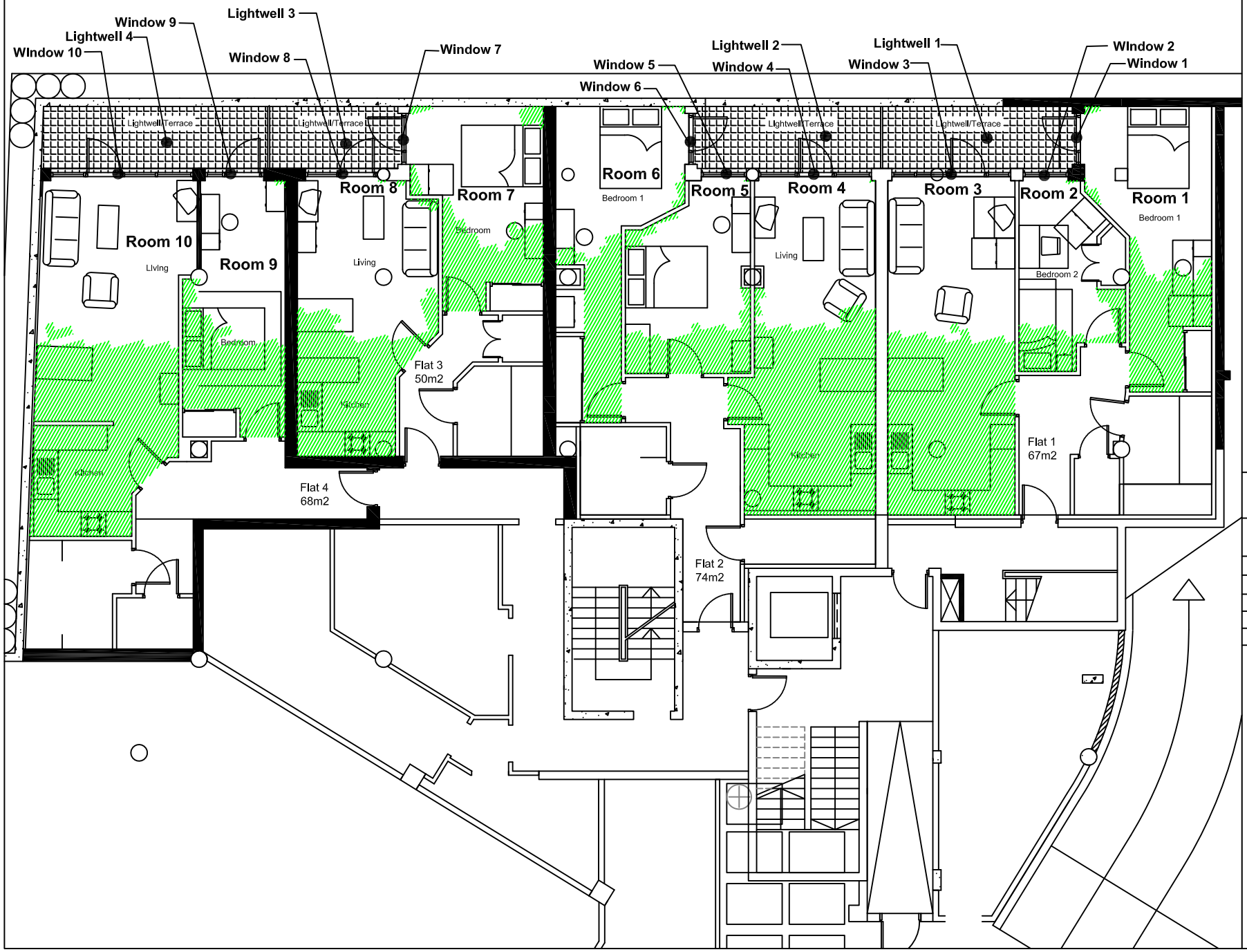
Room	Room Depth Coefficients				Room Depth Calculation			Result
	L	W	H	Rb	L/W + L/H	<=	2/1-Rb	
Proposed Basement Level								
Window 1	3.1	7.0	2.4	0.78	1.73	<=	9.15	Pass
Window 2	4.7	2.6	2.4	0.79	3.77	<=	9.56	Pass
Window 3	8.2	3.1	2.4	0.77	6.06	<=	8.59	Pass
Window 4	8.2	3.6	2.4	0.77	5.69	<=	8.7	Pass
Window 5	4.7	3.1	2.4	0.78	3.47	<=	9.12	Pass
Window 6	3.1	7.7	2.4	0.79	1.69	<=	9.53	Pass
Window 7	3.3	5.0	2.4	0.78	2.04	<=	9.19	Pass
Window 8	6.7	3.4	2.4	0.77	4.76	<=	8.75	Pass
Window 9	6.2	2.5	2.4	0.78	5.06	<=	9.22	Pass
Window 10	8.7	3.8	2.4	0.77	5.91	<=	8.75	Pass

APPENDIX 3

NO SKY LINE CONTOURS

Proposed Basement Plan

Appendix 3 No Sky Line Contours



Key:

1 Window reference

Area receives no direct sky light (applied to habitable rooms)

Area does receive direct sky light.

Light aperture.

Project Name: 55 Holmes Road, London, NW5 3AN.

Drawing Title: No Sky Line Contours

Scale: Do not scale | Date: 28.10.2010

Drawing No: 1 of 1 | Rev. -

Rev	Date	Details of revision
-	28.10.10	No Sky Line Contours

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