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1 EXECUTIVE SUMMARY

1.1 Overview

- 1.1.1 Right of Light Consulting has been commissioned by William Carter Limited to undertake a daylight and sunlight assessment in connection with the development at 118 Malden Road, London NW5 4BY. The aim of the assessment is to check whether the proposed accommodation will provide its future occupiers with adequate levels of natural light.
- 1.1.2 The assessment 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 assessment. The no sky line contours for the habitable rooms are also presented in Appendix 1. The numerical results of the BRE daylight and sunlight tests are provided in Appendix 2. Overshadowing to gardens and opens spaces contour drawings are provided in Appendix 3.
- 1.1.4 The numerical results demonstrate that the proposed development design achieves a very high level of compliance with the BRE recommendations. Whilst a number of outdoor amenity areas do not meet the recommendations, the results are not unusual in the context of an urban location. In our professional opinion, the proposed design will provide the development's future occupiers with adequate levels of natural light. We consider the proposed development to be consistent with the NPPF, which requires developments to provide acceptable living standards whilst making efficient use of land.

2 INFORMATION SOURCES

2.1 Documents Considered

2.1.1 This report is based on the following drawings:

William Carter Ltd

118/MR/PP/P4/2	Front Elevation - Proposed	Rev A
118MR/PP/P1/3	Floor Plans 1 - Proposed	Rev B
118MR/PP/P2/2B	Floor Plans 2 - Proposed	Rev B
118MR/PP/P3/2	Floor Plans 3 - Proposed	Rev A
118MR/PP/P5/2	Rear Elevation - Proposed	Rev A
118MR/PP/P6/2	Section AA - Proposed	Rev A
118MR/PP/P7/2B	Side Elevation Outline	Rev B

3 METHODOLOGY OF THE ASSESSMENT

3.1 Local Planning Policy

- 3.1.1 We understand that the Local Authority takes 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. We have therefore applied the numerical tests within this edition of the BRE guide. 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 was published on 8 June 2022. We anticipate that Local Authorities will begin adopting the updated BRE guidance after a period of transition.
- 3.1.2 The standards set out in the BRE guide are intended to be used flexibly. The BRE guide states:

"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:

"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 the 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

3.3.2 The Average Daylight Factor (ADF) 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 (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 ADF 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 assessment, we have assumed BRE internal reflectance coefficients pertaining to medium wooden floors (0.4), light painted walls (0.8) and matt white painted ceilings (0.85).
- 3.3.5 We have assumed that each window is double-glazed and has a glazed area that equates to 80% of the structural opening size. A glazing transmittance value, inclusive of a maintenance to allow for the effect of dirt and grime on the glazing, of 0.68 has been used.
- 3.3.6 To achieve a predominately daylit appearance, the guide recommends an ADF of 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary lighting is provided. The guide also gives minimum recommendations for dwellings of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. The minimum targets have been adopted for the purpose of this assessment.

- 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 Reflected light can be factored into the ADF calculation. For example, 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

<u>Test 3 - Position of the no sky line (Daylight Distribution)</u>

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 states that, in general, a dwelling or non-domestic building which has a particular requirement for sunlight, will appear reasonably sunlit if:
 - at least one main window wall faces within 90 degrees of due south, and
 - the centre of at least one window to a main living room can receive 25% of annual probable sunlight hours, including at least 5% of the annual probable sunlight hours during the winter months between 21st September and 21st March.
- 3.4.2 The guide states that, where groups of dwellings are planned, site layout design should aim to maximise the number of dwellings with a main living room that meets the above recommendations.
- 3.4.3 The guide states that sunlight is viewed as less important in kitchens and bedrooms.

3.5 Overshadowing to Gardens and Open Spaces

- 3.5.1 The availability of sunlight should be checked for all open spaces where sunlight is required. This would normally include:
 - Gardens, usually the main back garden of a house
 - Parks and playing fields
 - Children's playgrounds
 - Outdoor swimming pools and paddling pools
 - Sitting out areas, such as those between non-domestic buildings and in public squares
 - Focal points for views such as a group of monuments or fountains.
- 3.5.2 The BRE guide recommends that, for an open space to appear adequately lit throughout the year, at least 50% of its area should receive two hours of sunlight on 21st March.

4 RESULTS OF THE ASSESSMENT

4.1 Window Reference Points and No Sky Line Contours

4.1.1 Appendix 1 identifies the positions of the windows analysed in this assessment. The no skyline contours for the habitable rooms are also presented in Appendix 1.

4.2 Daylight & Sunlight Data

- 4.2.1 The numerical results of the BRE daylight and sunlight tests are provided in Appendix
 - 2. Overshadowing to gardens and opens spaces contour drawings are provided in Appendix 3.

4.3 Interior Daylighting

- 4.3.1 All habitable rooms meet or surpass the BRE minimum Average Daylight Factor (ADF) recommendations.
- 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. 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 acknowledges that, in some cases, it may not be possible for every dwelling to achieve ideal levels of sunlight. The guide explains that, where groups of dwellings are planned, the aim should be to maximise the number of dwellings that:
 - have at least one main window that faces within 90 degrees of due south, and
 - have at least one window to a main living room that meets the BRE numerical targets.
- 4.4.2 In the case of the proposed development, 2 of the 4 units have a living room window which faces within 90 degrees of due south. Furthermore, 2 of the 4 units have a living room window which meets the BRE numerical targets.
- 4.4.3 In our opinion, the proposed development represents good site layout design. Since the design maximises sunlight availability, as far as practically possible given the

constraints of the site, the BRE direct sunlight to windows recommendations for groups of dwellings have been met.

4.5 Overshadowing to Gardens and Open Spaces

4.5.1 The results confirm that the gardens do not meet the BRE recommendations. However, the BRE guide is intended to be used flexibly, particularly in urban locations, and in this instance, we are of the opinion that it is unreasonable to expect that the amenity areas will meet the BRE recommendations given the unavoidable constraints of the site and the obstructions created by the existing neighbouring properties.

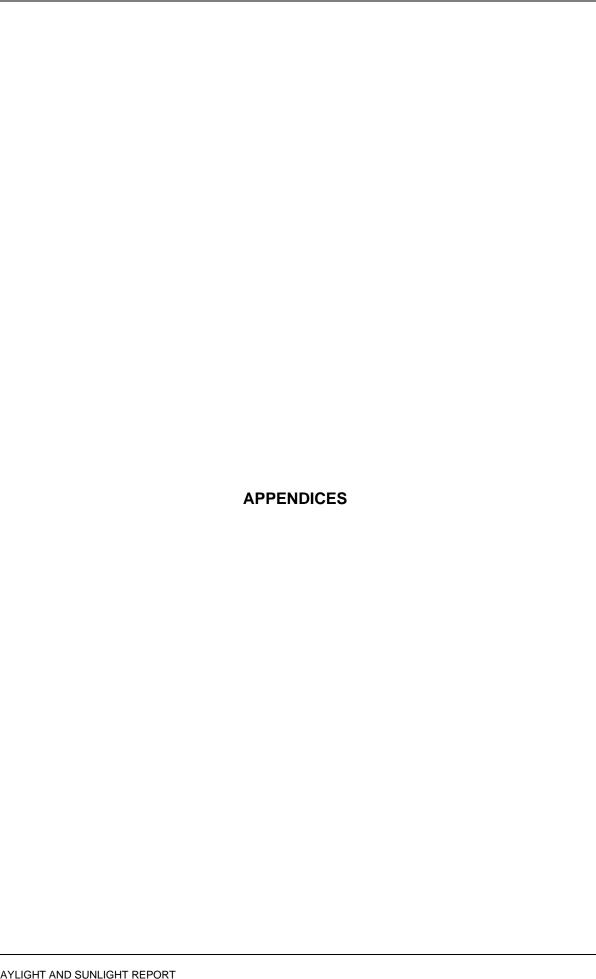
4.6 Conclusion

4.6.1 The numerical results demonstrate that the proposed development design achieves a very high level of compliance with the BRE recommendations. Whilst a number of outdoor amenity areas do not meet the recommendations, the results are not unusual in the context of an urban location. In our professional opinion, the proposed design will provide the development's future occupiers with adequate levels of natural light. We consider the proposed development to be consistent with the NPPF, which requires developments to provide acceptable living standards whilst making efficient use of land.

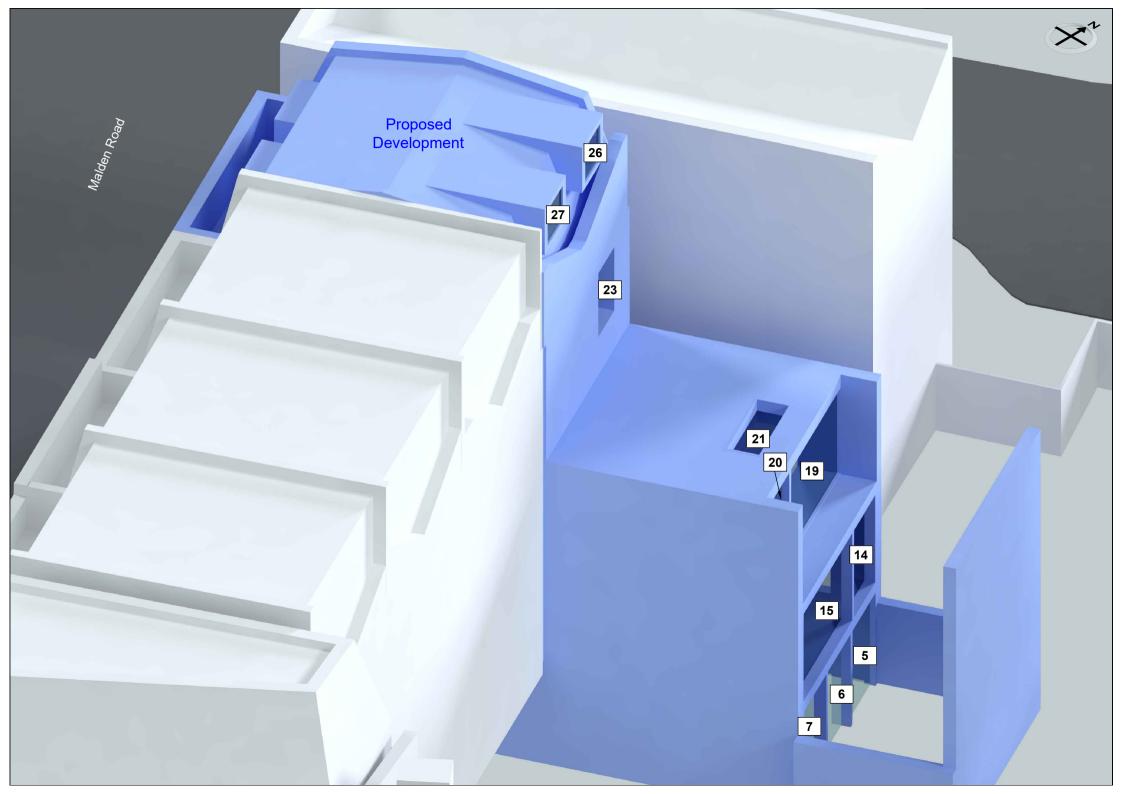
5 CLARIFICATIONS

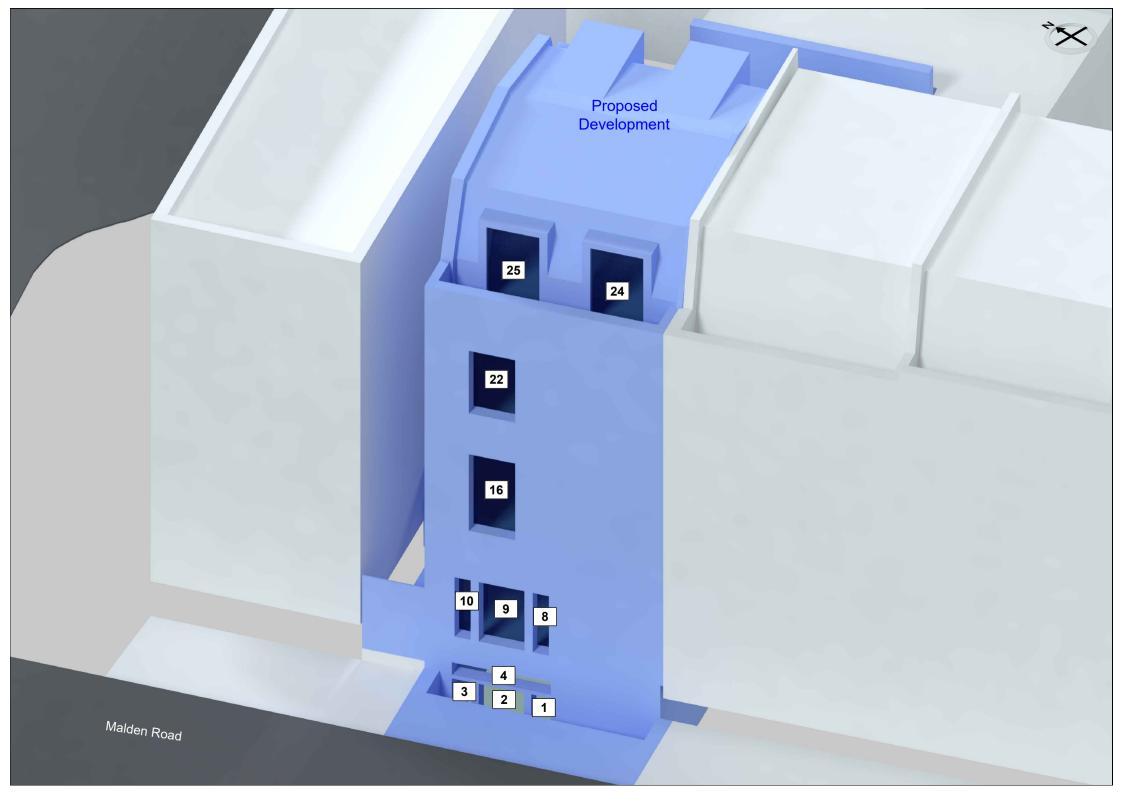
5.1 General

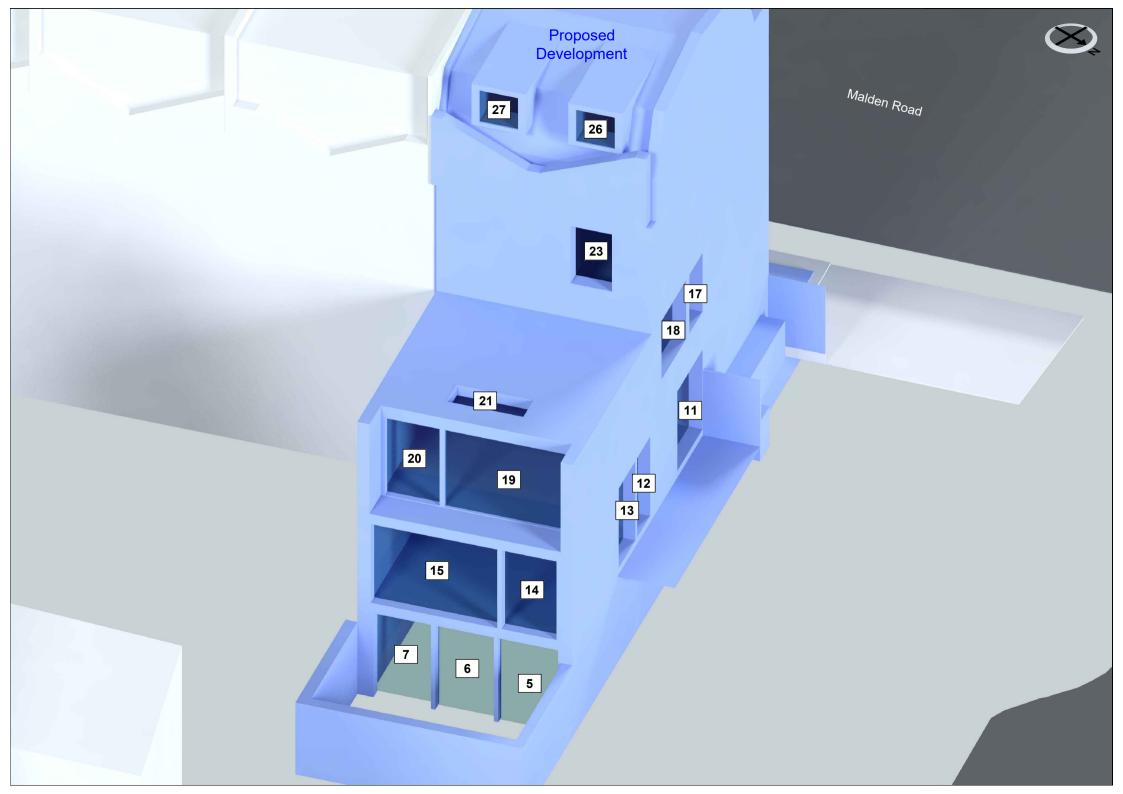
- 5.1.1 The report provided is solely for the use of the client and no liability to anyone else is accepted.
- 5.1.2 The assessment is limited to assessing daylight, sunlight and overshadowing of the proposed development as set out in section 2.1, 3.1 and 3.3 of the BRE Guide.
- 5.1.3 The assessment is based on the information listed in section 2 of this report. The assessment has been undertaken without access to the proposed development site or neighbouring properties.
- 5.1.4 This assessment 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 cut down 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.

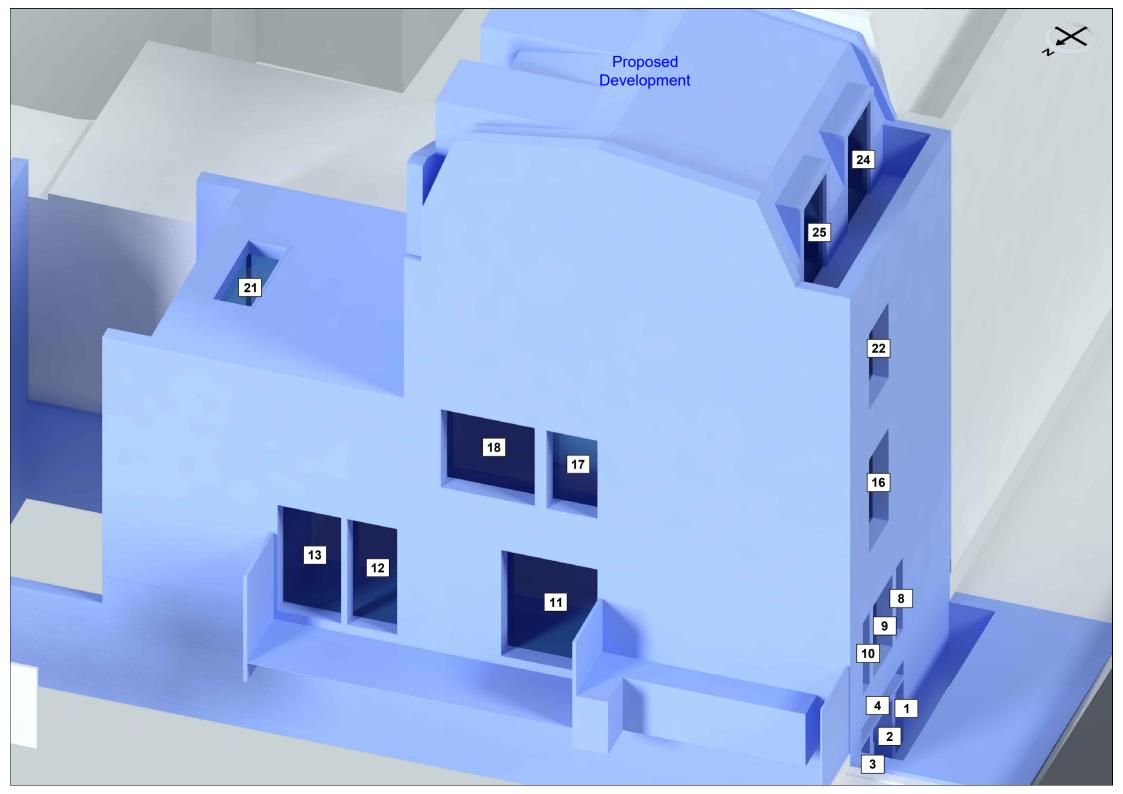


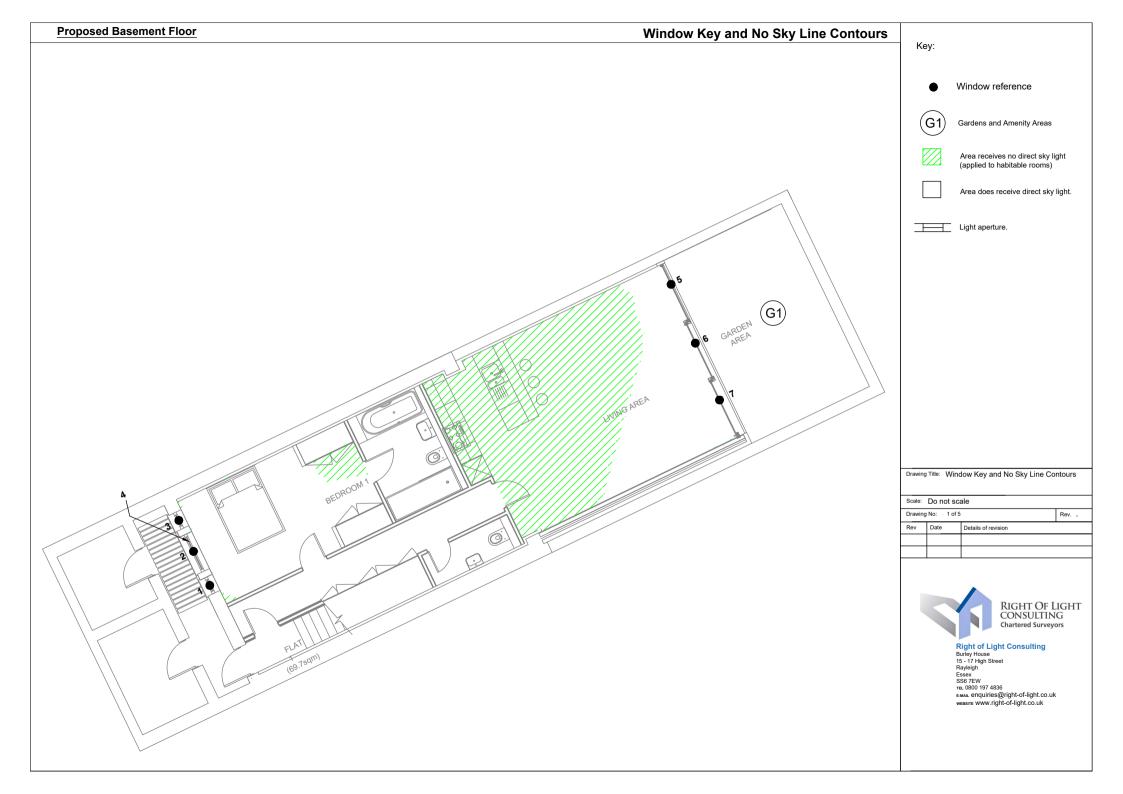
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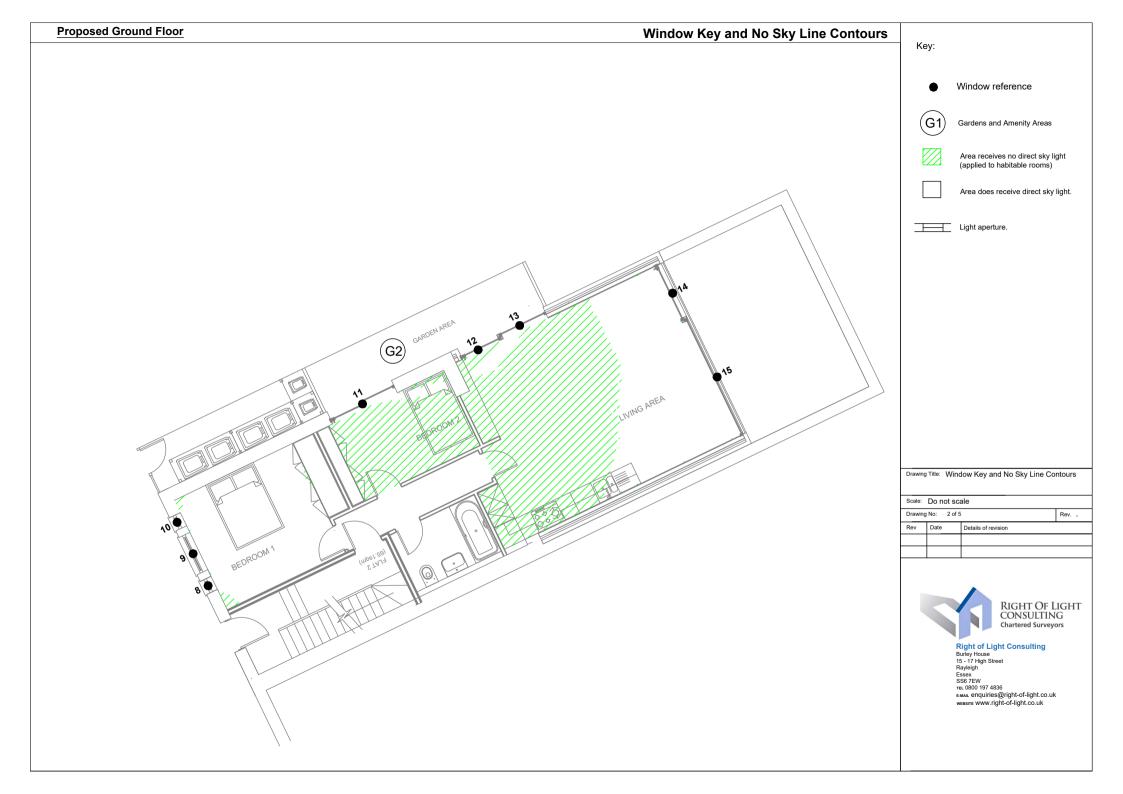


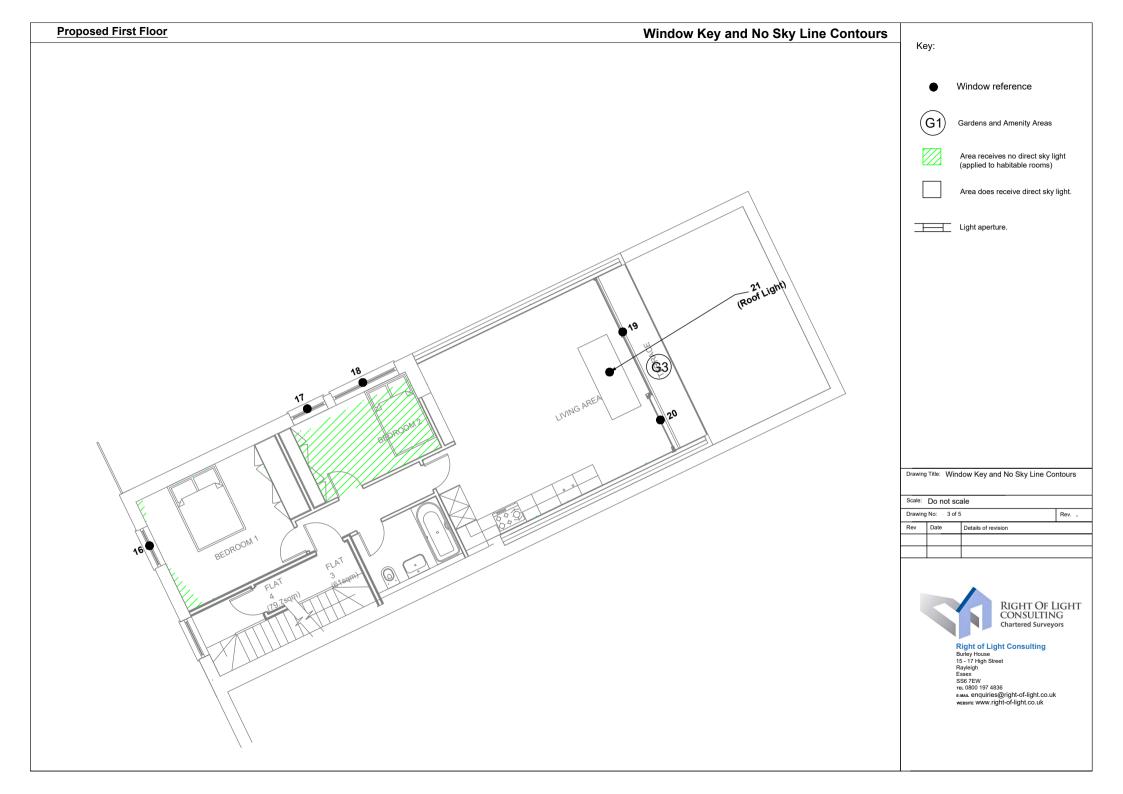


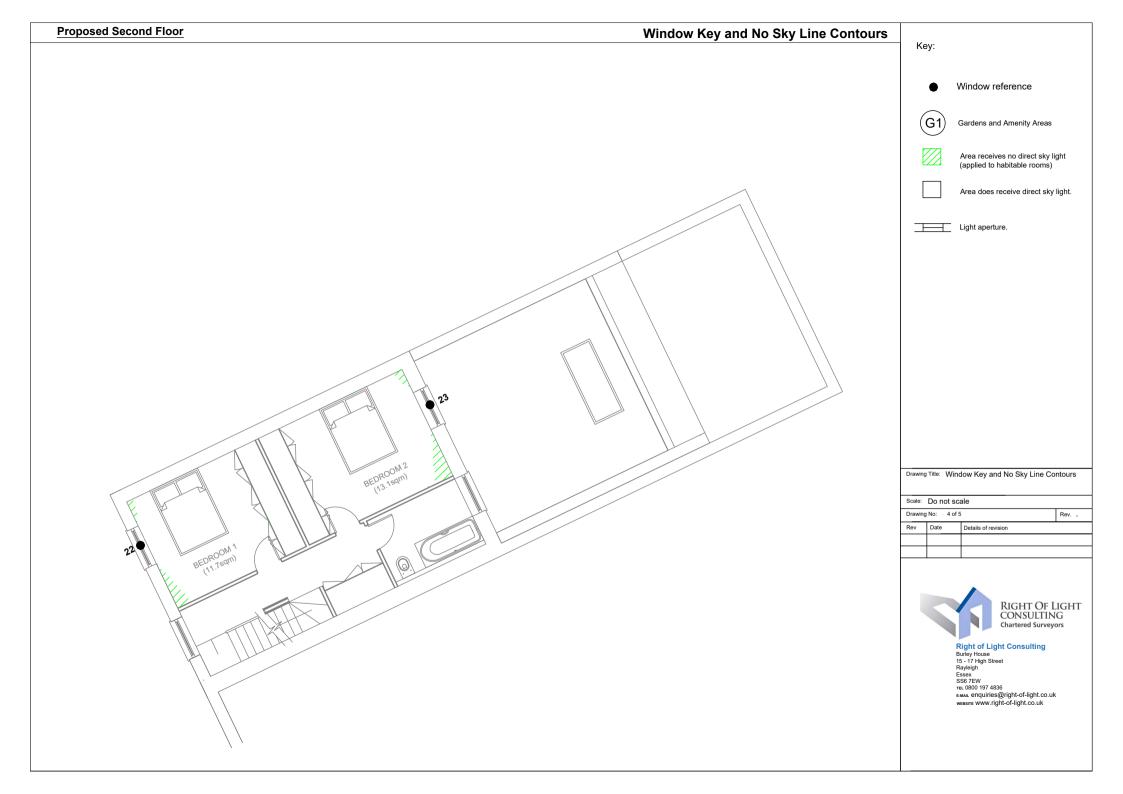


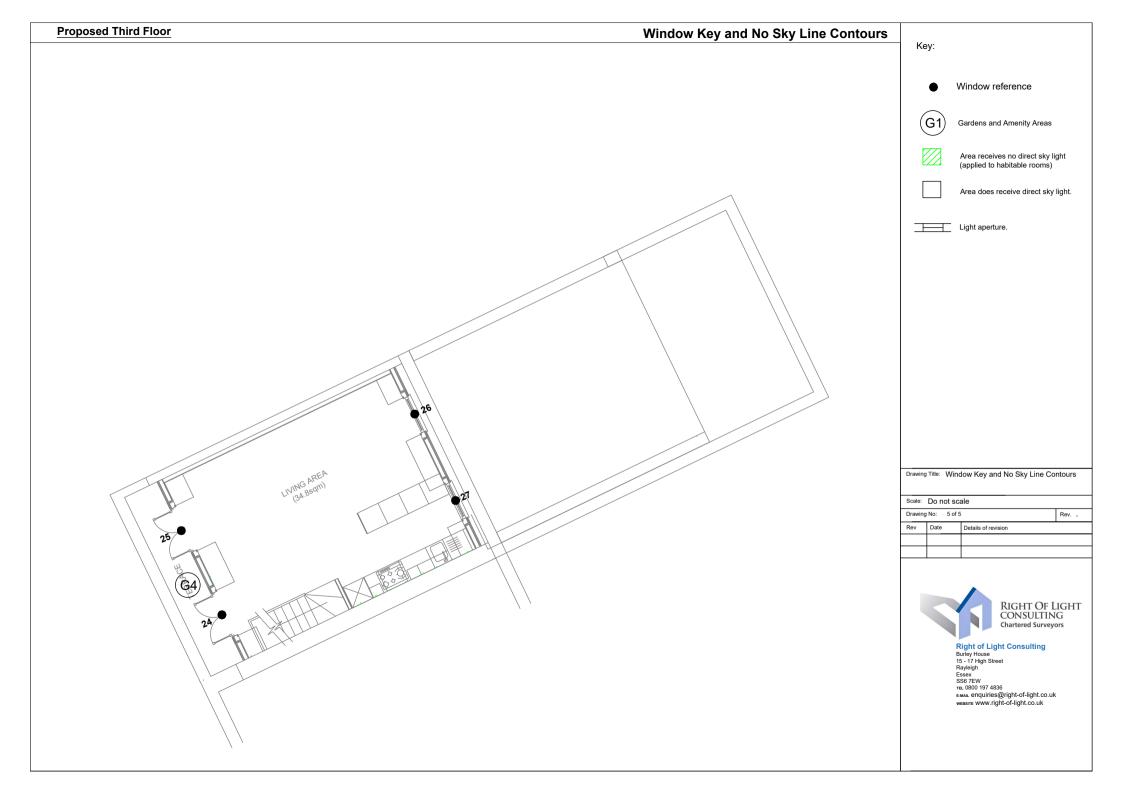












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DAYLIGHT	& SUNLIGHT DATA	
AYLIGHT AND SUNLIGHT REPORT		

Appendix 2 - Average Daylight Factor (ADF)
118 Malden Road, London NW5 4BY

Poforonoe	Target ADF based on roo	m use	Avera	age Dayl	ight Factor	Coefficier	nts	۸۵۶
Reference	Primary room use	ADF	Т	Aw	Α	R	θ	ADF
118 Malden Road (Flat 1)								
Basement Floor								
Window 1 (lower)			0.68	0.15	64.96	0.7	34.8	0.0%
Window 1 (upper)			0.68	0.38	64.96	0.7	56.2	0.4%
Window 2 (lower)			0.68	0.34	64.96	0.7	34.5	0.1%
Window 2 (upper)			0.68	0.87	64.96	0.7	55.8	1.0%
Window 3			0.68	0.66	64.96	0.7	74.3	1.0%
Window 3 (lower)			0.68	0.15	64.96	0.7	29.5	0.0%
Window 4 (upper) Total ADF for room	Bedroom	1.0%	0.68	0.38	64.96	0.7	49.9	0.4% 2.9%
	Dedicom	1.070	0.00	4.00	400.40	0.00	04.0	
Window 5 (lower)			0.68	1.06	128.16	0.66	21.6	0.1%
Window 5 (upper) Window 6 (lower)			0.68 0.68	2.1 1.04	128.16 128.16	0.66 0.66	30.8 24.0	0.6% 0.1%
Window 6 (lower)			0.68	2.06	128.16	0.66	30.0	0.1%
Window 7 (lower)			0.68	1.02	128.16	0.66	22.7	0.0%
Window 7 (lower)			0.68	2.02	128.16	0.66	26.7	0.5%
Total ADF for room	Living/Dining/Kitchen	2.0%	0.00		0	0.00		2.0%
118 Malden Road (Flat 2)								
Ground Floor								
Window 8 (lower)			0.68	0.2	54.21	0.7	77.4	0.1%
Window 8 (upper)			0.68	0.31	54.21	0.7	78.3	0.6%
Window 9 (lower)			0.68	0.56	54.21	0.7	79.8	0.4%
Window 9 (upper)			0.68	0.87	54.21	0.7	80.4	1.7%
Window 10 (lower)			0.68	0.2	54.21	0.7	77.7	0.1%
Window 10 (upper)			0.68	0.31	54.21	0.7	78.5	0.6%
Total ADF for room	Bedroom	1.0%						3.5%
Window 11 (lower)			0.68	1.29	41.57	0.68	14.5	0.2%
Window 11 (upper)			0.68	2.35	41.57	0.68	17.7	1.3%
Total ADF for room	Bedroom	1.0%						1.5%
Window 12 (lower)			0.68	0.95	122.18	0.63	39.1	0.1%
Window 12 (upper)			0.68	1.78	122.18	0.63	45.2	0.7%
Window 13 (lower)			0.68	2.18	122.18	0.63	35.6	0.3%
Window 13 (upper)			0.68	4.1	122.18	0.63	43.2	1.6%
Window 14 (lower)			0.68	0.85	122.18	0.63	8.4	0.0%
Window 14 (upper)			0.68	1.55	122.18	0.63	11.7	0.2%
Window 15 (lower)			0.68	0.67	122.18	0.63	9.7	0.0%
Window 15 (upper)			0.68	1.22	122.18	0.63	10.7	0.1%
Total ADF for room	Living/Dining/Kitchen	2.0%						3.0%
118 Malden Road (Flat 3)								
First Floor			0.00	o o :	F0.00	c =:		0.001
Window 16 (lower)			0.68	0.31	58.23	0.71	83.1	0.2%
Window 16 (upper)	Deduces	4.00/	0.68	1.57	58.23	0.71	84.2	3.1%
Total ADF for room	Bedroom	1.0%						3.3%

Appendix 2 - Average Daylight Factor (ADF)
118 Malden Road, London NW5 4BY

Deference	Target ADF based on ro	om use	Avera	age Dayl	ight Factor	Coefficie	nts	۸۵۲
Reference	Primary room use	ADF	Т	Aw	А	R	θ	ADF
Window 17 (lower)			0.68	0.01	44.91	0.68	14.3	0.0%
Window 17 (upper)			0.68	2.61	44.91	0.68	16.0	1.2%
Window 18 (lower)			0.68	0.0	44.91	0.68	14.8	0.0%
Window 18 (upper)			0.68	1.42	44.91	0.68	16.4	0.7%
Total ADF for room	Bedroom	1.0%						1.9%
Window 19 (lower)			0.68	0.95	112.15	0.65	44.0	0.2%
Window 19 (upper)			0.68	1.72	112.15	0.65	58.7	1.1%
Window 20			0.68	1.2	112.15	0.65	116.0	1.5%
Window 20 (lower)			0.68	2.2	112.15	0.65	46.2	0.4%
Window 21 (upper)			0.56	4.01	112.15	0.65	60.2	2.1%
Total ADF for room	Living/Dining/Kitchen	2.0%						5.3%
118 Malden Road (Flat 4)								
Second Floor								
Window 22 (lower)			0.68	0.1	51.93	0.71	86.6	0.1%
Window 22 (upper)			0.68	1.43	51.93	0.71	87.4	3.3%
Total ADF for room	Bedroom	1.0%						3.4%
Window 23 (lower)			0.68	0.09	56.98	0.71	64.7	0.1%
Window 23 (upper)			0.68	1.4	56.98	0.71	68.7	2.3%
Total ADF for room	Bedroom	1.0%						2.4%
Third Floor								
Window 24 (lower)			0.68	0.86	131.37	0.68	53.8	0.2%
Window 24 (lower) Window 24 (upper)			0.68	1.31	131.37	0.68	89.3	1.1%
Window 25 (lower)			0.68	0.86	131.37	0.68	53.9	0.2%
Window 25 (upper)			0.68	1.31	131.37	0.68	89.3	1.1%
Window 26			0.68	0.78	131.37	0.68	86.8	0.7%
Window 27			0.68	0.78	131.37	0.68	86.5	0.7%
Total ADF for room	Living/Dining/Kitchen	2.0%						4.0%

Appendix 2 - Room Depth Calculation 118 Malden Road, London NW5 4BY

Reference		Room Depth Coefficients				Room Depth Calculation		
Kelelelice	L	W	Н	Rb	L/W + L/H	<=	2/1-Rb	
118 Malden Road (Flat 2)								
Ground Floor								
Window 11	2.2	3.4	2.4	0.68	1.56	<=	6.2	
118 Malden Road (Flat 3)								
First Floor								
Window 16	3.5	3.2	2.6	0.71	2.44	<=	6.92	
118 Malden Road (Flat 4)								
Second Floor								
Window 22	3.2	3.1	2.5	0.71	2.31	<=	6.98	
Window 23	3.6	3.1	2.5	0.71	2.6	<=	6.97	

Appendix 2 - Sunlight to Windows 118 Malden Road, London NW5 4BY

Reference	Room Use	AP	SH
- Keierence	Koom ose	Total	Winter
118 Malden Road (Flat 1)			
Basement Floor			
Window 5	Living/Dining/Kitchen	3%	0%
Window 6	Living/Dining/Kitchen	0%	0%
Window 7	Living/Dining/Kitchen	0%	0%
118 Malden Road (Flat 2)			
Ground Floor			
Window 12	Living/Dining/Kitchen	0%	0%
Window 13	Living/Dining/Kitchen	0%	0%
Window 14	Living/Dining/Kitchen	8%	0%
Window 15	Living/Dining/Kitchen	4%	0%
118 Malden Road (Flat 3)			
First Floor			
Window 19	Living/Dining/Kitchen	23%	0%
Window 20	Living/Dining/Kitchen	7%	0%
Window 21	Living/Dining/Kitchen	39%	6%
118 Malden Road (Flat 4)			
Third Floor			
Window 24	Living/Dining/Kitchen	59%	21%
Window 25	Living/Dining/Kitchen	59%	21%
Window 26	Living/Dining/Kitchen	33%	6%
Window 27	Living/Dining/Kitchen	33%	6%

Appendix 2 - Overshadowing to Gardens and Open Spaces 118 Malden Road, London NW5 4BY

Reference	Total Area	receiving at least 2 hours of su	unlight on 21 N
118 Malden Road (Flat 1)			
Basement Floor Garden 1 118 Malden Road (Flat 2)	17.22 m2	0.0 m2	0%
Ground Floor Garden 2 118 Malden Road (Flat 3)	7.16 m2	0.0 m2	0%
First Floor Garden 3 118 Malden Road (Flat 4)	3.4 m2	0.0 m2	0%
<u>Third Floor</u> Garden 4	4.08 m2	0.39 m2	9%

	APPENDIX 3	
	OVERSHADOWING TO GARDENS & OPEN SPACES	
AYLIGHT AND SUNLI		

