RIGHT OF LIGHT CONSULTING
Chartered Surveyors

Right of Light Consulting
Burley House
15-17 High Street
Rayleigh
Essex
SS6 7EW
TEL 0800 197 4836
E-MAIL enquiries@right-of-light.co.uk
WEBSITE www.right-of-light.co.uk

Daylight and Sunlight Study

73 Maygrove Road, London NW6 2EG

18 July 2017

Right of Light Consulting

Burley House
15-17 High Street
Rayleigh
Essex SS6 7EW

Tel: 0800 197 4836

CONTENTS

1 EXECUTIVE SUMMARY

1.1 Overview

1.1.1 Right of Light Consulting has been commissioned by Contractual Ltd to undertake a daylight and sunlight study of the proposed development at 73 Maygrove Road, London NW6 2EG.

1.1.2 The aim of the study is to assess the impact of the development on the light receivable by the neighbouring property at 73 Maygrove Road. In particular, we have been asked to consider whether the proposal will unreasonably affect the light receivable by the ground floor bedroom window sited behind the proposed extension. The study is based on 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' by P J Littlefair 2011.

1.1.3 The window key in Appendix 1 identifies the window analysed in this study. Appendix 2 gives the numerical results of the various daylight tests.

1.1.4 The results confirm that the development will have a relatively low impact on the light receivable by the ground floor bedroom. In our opinion there is no daylight or sunlight related reason why planning permission should not be granted for this scheme.

2 INFORMATION SOURCES

2.1 Documents Considered

2.1.1 This report is based on drawings:

Paul + O Architects Limited

PL - 001	OS Map	Rev –
PL - 100	Existing Approved Site Plan	Rev –
PL - 110	Proposed Site Plan	Rev –
PL - 200	Proposed and Existing Elevation / Section Through Courtyard	Rev –
PL - 201	Proposed and Existing Elevation / Section Through Courtyard	Rev –
PL - 202	Proposed and Existing Elevation / Section Through Courtyard	Rev –
PL - 220	Proposed Elevation	Rev –
PL - 221	Proposed Elevation	Rev –
PL - 300	Section	Rev –
PL - 301	Section	Rev –
PL - 302	Section	Rev –
PL - 401	Proposed First Floor Plan	Rev –
PL - 400	Proposed Ground Floor Plan	Rev –
GA - 220	Elevations Proposed	Rev –
GA - 110	Elevations Proposed	Rev –
GA - 200	Existing Elevations	Rev –
GA - 122	Elevations First Floor Proposed	Rev –
GA - 121	First Floor Plan	Rev –

3 METHODOLOGY OF THE STUDY

3.1 BRE Guide : Site Layout Planning for Daylight and Sunlight

3.1.1 The study is based on 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' by P J Littlefair 2011. In general, the BRE tests are based on the requirements of the British Standard, BS 8206 Part 2.

3.1.2 The standards set out in the BRE guide are intended to be used flexibly. 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 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 Daylight to Windows

3.2.1 Diffuse daylight is the light received from the sun which has been diffused through the sky. Even on a cloudy day, when the sun is not visible, a room will continue to be lit with light from the sky. This is diffuse daylight.

Diffuse daylight calculations should be undertaken to all rooms where daylight is required, including living rooms, kitchens and bedrooms. Usually, if a kitchen is less than 13m^2, it is considered to be a non-habitable room and the daylight tests need not be applied. The BRE guide states that windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed.

3.2.2 The BRE guide contains three tests which measure diffuse daylight:

3.2.3 Test 1 <u>Vertical Sky Component</u>

The percentage of the sky visible from the centre of a window is known as the Vertical Sky Component. Diffuse daylight may be adversely affected if after a development the Vertical Sky Component is both less than 27% and less than 0.8 times its former value.

3.2.4 Test 2 Daylight Distribution

The BRE guide states that where room layouts are known, the impact on the daylighting distribution can be found by plotting the 'no sky line' in each of the main rooms. The no sky line is a line which separates areas of the working plane that do and do not have a direct view of the sky. Daylight may be adversely affected if, after the development, the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value.

3.2.5 Test 3 Average Daylight Factor *(df)*

3.2.6 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 (BRE standard of 0.68)
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

3.2.7 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.

3.2.8 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.

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 Sunlight availability to Windows

3.3.1 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 kitchens and bedrooms are less important, although care should be taken not to block too much sunlight.

3.3.2 The BRE guide states that sunlight availability may be adversely affected if the centre of the window:

- receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March and
- receives less than 0.8 times its former sunlight hours during either period and
- has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.

3.4 Overshadowing to Gardens and Open Spaces

3.4.1 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.

3.4.2 The BRE guide recommends that at least 50% of the area of each amenity space listed above should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sunlight on 21 March is less than 0.8 times its former value, then the loss of light is likely to be noticeable.

4 RESULTS OF THE STUDY

4.1 Windows & Amenity Areas Considered

4.1.1 Appendix 1 provides a plan and photograph to indicate the positions of the windows analysed in this study.

4.2 Numerical Results

4.2.1 Appendix 2 lists the detailed numerical daylight and sunlight test results. The results are interpreted below.

4.3 Daylight to Windows

4.3.1 After the development, the bedroom window achieves a Vertical Sky Component (VSC) score of both less than 27% and less than 0.8 times the former value (see Appendix 2). However, there are mitigating factors to mention:

4.3.2 Firstly, where a window does not satisfy the Vertical Sky Component test, it does not automatically follow that daylighting will be of a poor standard. Depending on factors such the size of its window and type of glazing, a room may still receive satisfactory levels of daylight. This can be checked by applying the Average Daylight factor test - which takes into account these additional variables. In the case of this development, the results of the Average Daylight Factor test indicates that the bedroom will not fall below the minimum recommended level of daylight (bedroom achieves and ADF score of 1.1% against the BRE target of 1%).

4.3.3 Secondly, the results confirm that the bedroom passes the Daylight Distribution test.

4.3.4 Finally, we note that the window serves a bedroom. Whilst under the BRE guide a universal test is applied to all room types, the BRE guide explains that daylight in bedrooms is less important than in other habitable rooms such as kitchens and living rooms. We note that the main living room windows are at the rear of the property and will not be affected by the development.

4.3.5 Following the above, whilst the results confirm that the bedroom window falls short of the Vertical Sky Component test, the results of the Daylight Distribution and Average Daylight Factor test confirm that the bedroom will be left with adequate daylight after

the proposed development. We are therefore of the opinion that the impact of the proposed development on the existing ground floor bedroom at 73 Maygrove Road is acceptable.

4.4 Sunlight to Windows

4.4.1 The bedroom window does not face within 90 degrees of due south and does not need to be tested for direct sunlight. The proposed development therefore satisfies the BRE direct sunlight to windows requirements.

4.5 Overshadowing to Gardens and Open Spaces

4.5.1 There are no nearby gardens or amenity areas directly to the north of the development. The proposed development will therefore not create any new areas which receive less than two hours of sunlight on 21 March. The proposed development therefore satisfies the BRE overshadowing to gardens and open spaces requirements.

4.6 Conclusion

4.6.1 The results confirm that the development will have a relatively low impact on the light receivable by the ground floor bedroom. In our opinion there is no daylight or sunlight related reason why planning permission should not be granted for this scheme.

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 We have undertaken the survey following the guidelines of the RICS publication "Surveying Safely".

5.1.3 We have used our best endeavours to ensure all relevant windows within the neighbouring properties have been identified.

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

5.1.5 We have adopted the conventional approach of assessing all habitable rooms within domestic properties.

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.

5.1.7 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.

5.2 Project Specific

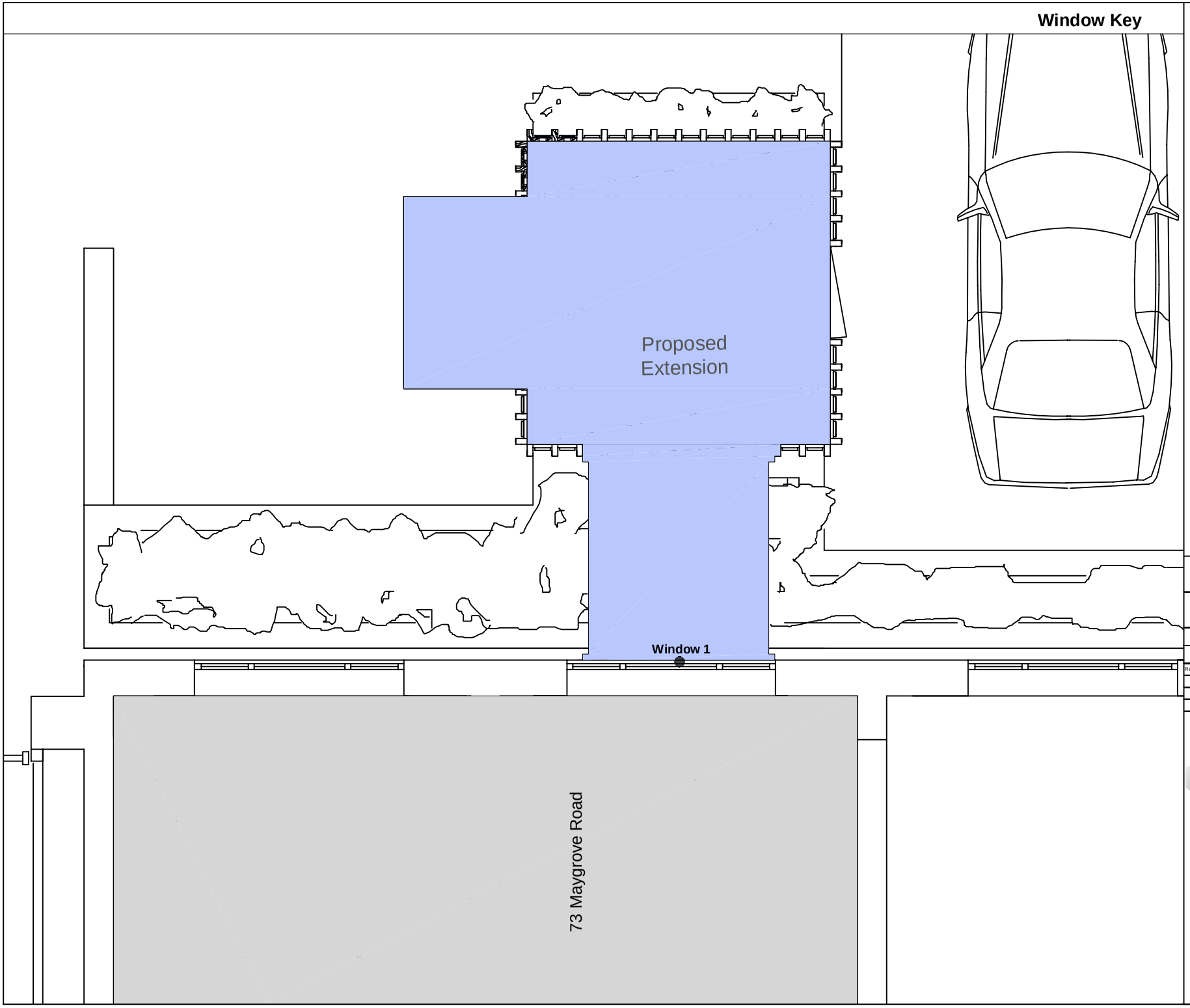
5.2.1 None

APPENDICES

APPENDIX 1

WINDOW KEY

Window Key



Key

Window 1 ● Window reference

Development site

Neighbouring Properties

Project Name: 73 Maygrove Road, London NW6 2EG

Drawing Title: Appendix 1 - Neighbouring Windows

Scale: Do not scale

Drawing No: 1 of 1 Rev: -

Rev	Date	Details of revision

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Neighbouring Windows

73 Maygrove Road

APPENDIX 2

DAYLIGHT AND SUNLIGHT RESULTS

Appendix 2 - Vertical Sky Component
73 Maygrove Road, London NW6 2EG

Reference	Use Class	Vertical Sky Component			
		Before	After	Loss	Ratio
73 Maygrove Road					
Window 1	Bedroom	23.2%	8.4%	14.8%	0.36

Appendix 2 - Daylight Distribution
73 Maygrove Road, London NW6 2EG

Reference	Use Class	Daylight Distribution			
		Before	After	Loss	Ratio
73 Maygrove Road					
Window 1	Bedroom	95%	91%	4.0%	0.96

Appendix 2 - Average Daylight Factor Workings
73 Maygrove Road, London NW6 2EG

Reference	Target ADF based on room use		Average Daylight Factor Coefficients						Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Existing theta	Proposed theta	Existing	Proposed
73 Maygrove Road										
Window 1	Bedroom	1.0%	0.68	2.54	66.54	0.5	57.9	32.3	**2.0%**	**1.1%**