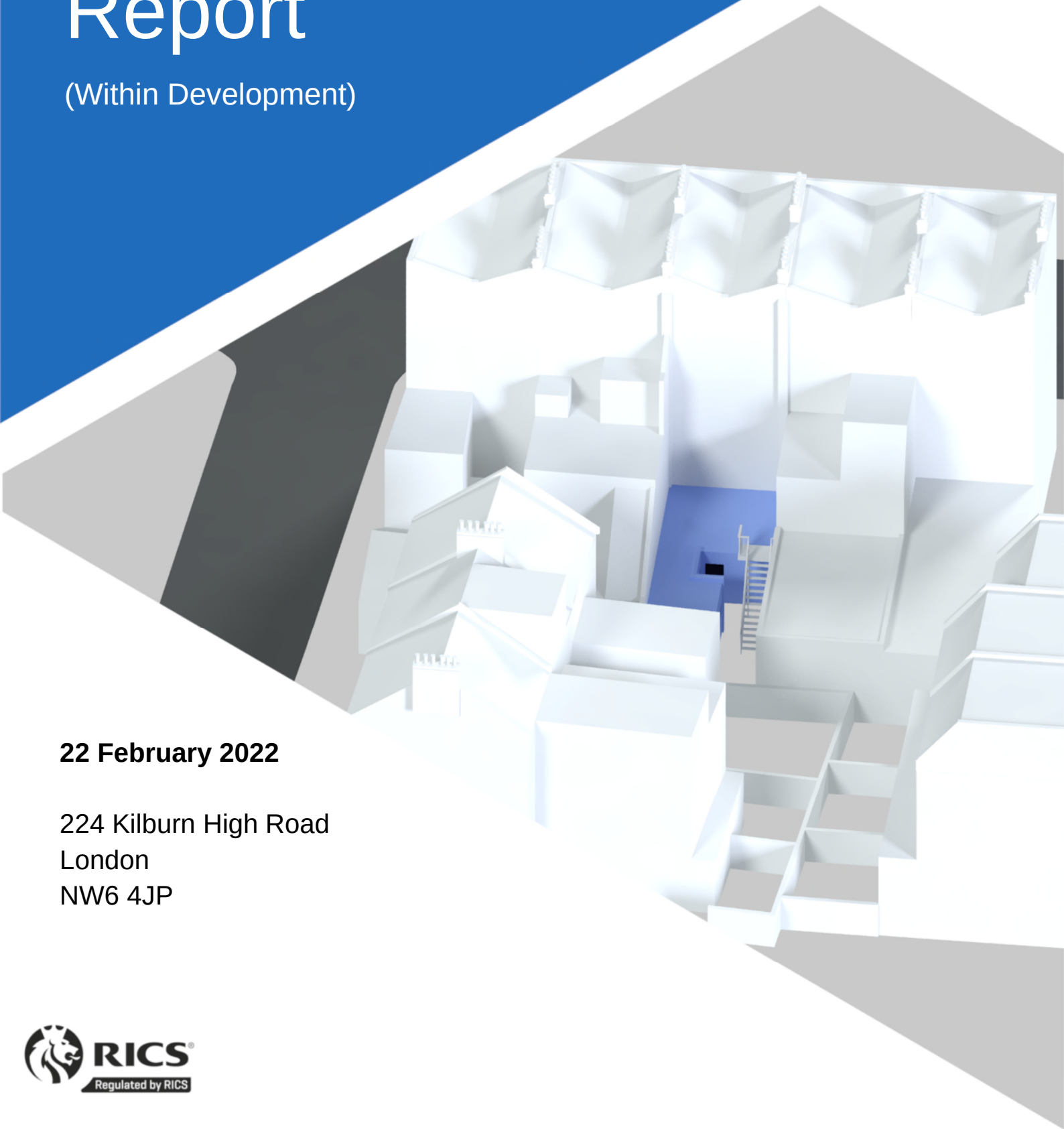
RIGHT OF LIGHT CONSULTING
Chartered Surveyors

Daylight and Sunlight Report

(Within Development)



22 February 2022

224 Kilburn High Road
London
NW6 4JP

RICS
Regulated by RICS

Right of Light Consulting Ltd

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

Tel: 0800 197 4836

www.right-of-light.co.uk

CONTENTS

1 EXECUTIVE SUMMARY

1.1 Overview

1.1.1 Right of Light Consulting has been commissioned by FMFR Limited to undertake a daylight and sunlight study in connection with the development at 224 Kilburn High Road, London NW6 4JP. The aim of the study is to check whether the proposed accommodation will provide its future occupiers with adequate levels of natural light.

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 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.

1.1.4 The numerical results demonstrate that the proposed development design achieves a high level of compliance with the BRE recommendations. 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:

GSS

001	Location Plan	Rev -
004	Proposed Ground Floor Plan	Rev A
006	Proposed Side/Rear Elevation	Rev A

3 METHODOLOGY OF THE STUDY

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. 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 expected sometime in 2021. 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:

"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 (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

3.3.3 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 study, 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 85% 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 study.

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

Test 3 - Position of the no sky line (Daylight Distribution)

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.

4 RESULTS OF THE STUDY

4.1 Window Reference Points and No Sky Line Contours

4.1.1 Appendix 1 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 Daylight & Sunlight Data

4.2.1 The numerical results of the BRE daylight and sunlight tests are provided in Appendix 2.

4.3 Interior Daylighting

4.3.1 All habitable rooms meet or surpass the BRE minimum Average Daylight Factor (ADF) recommendations.

4.3.2 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. In the case of the proposed development, the living room has a window which faces within 90 degrees of due south. Since the design maximises sunlight availability as far as practically possible given the constraints of the site, in our opinion, the proposed development represents good site layout design.

4.5 Conclusion

4.5.1 The numerical results demonstrate that the proposed development design achieves a high level of compliance with the BRE recommendations. 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 study is limited to assessing daylight and sunlight of the proposed development as set out in section 2.1 and 3.1 of the BRE Guide.

5.1.3 The study is based on the information listed in section 2 of this report and a site visit undertaken on 4 November 2021.

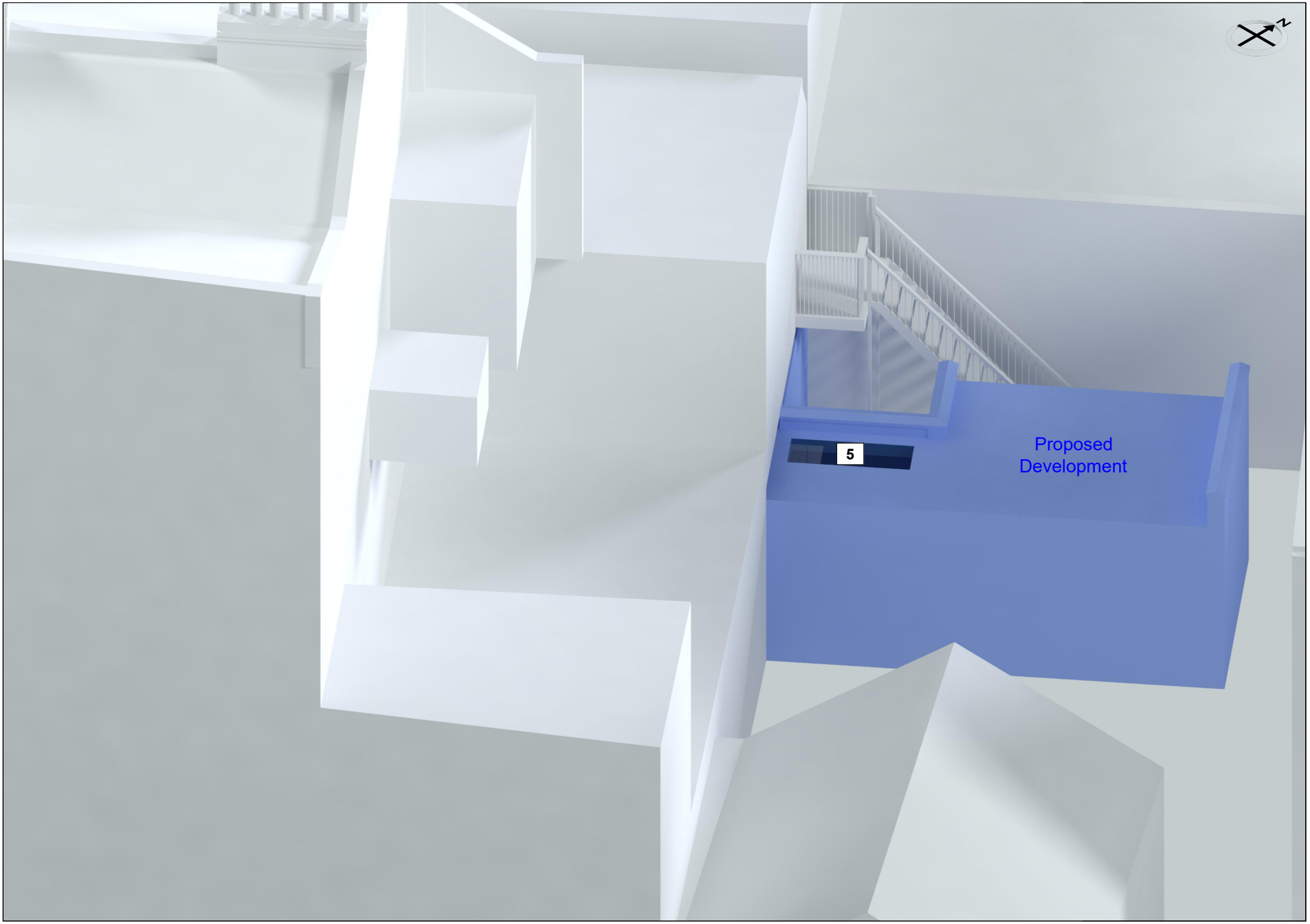
5.1.4 We have undertaken the survey following the guidelines of the RICS publication “Surveying Safely”. Where limited access is available, assumptions will have been made.

5.1.5 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.

APPENDICES

APPENDIX 1

WINDOW KEY & NO SKY LINE CONTOURS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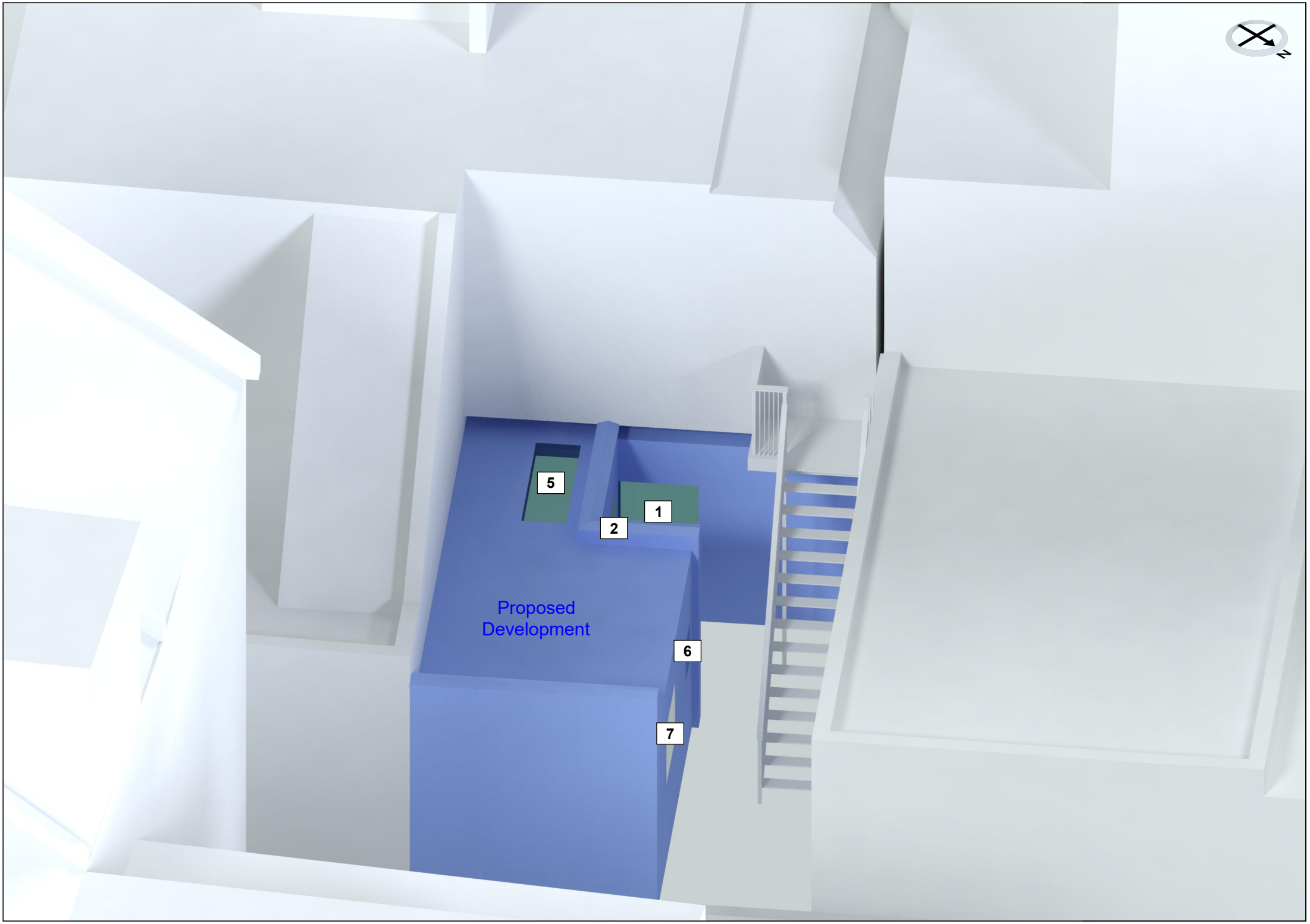
Proposed
Development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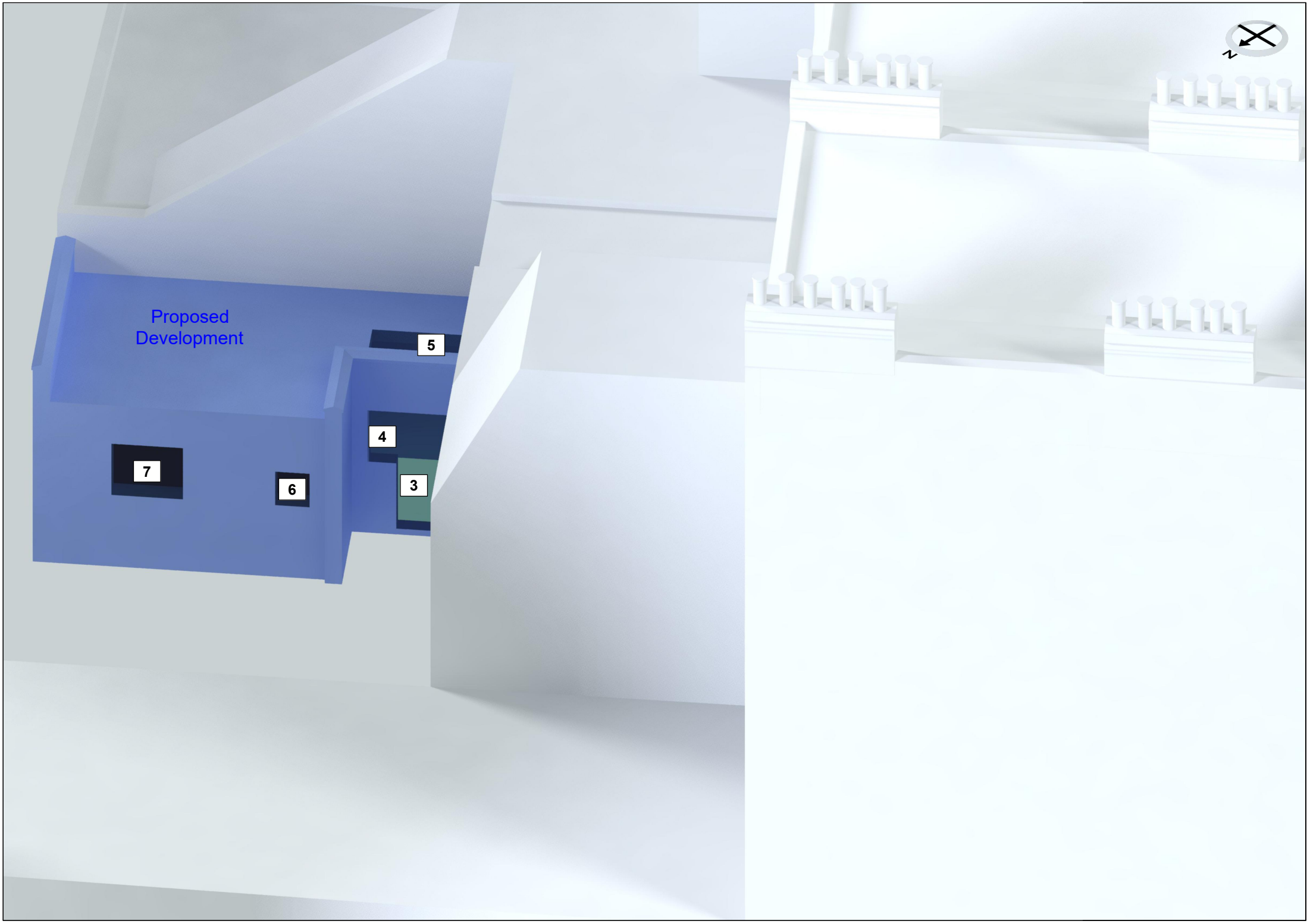
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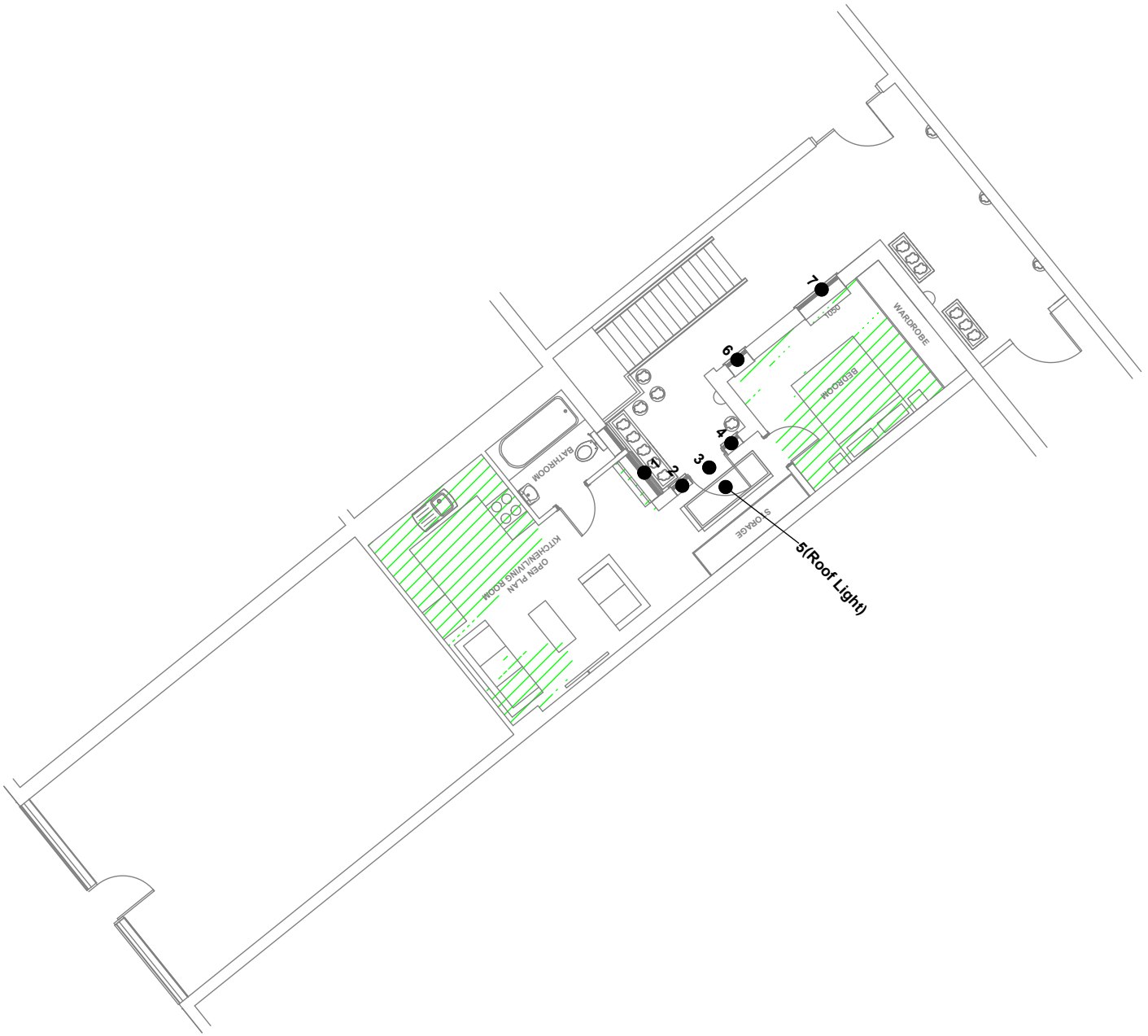
Proposed Ground Floor Plan

Window Key and No Sky Line Contours



Key:

- Window reference
- G1 — Gardens and Amenity Areas
- Area receives no direct sky light (applied to habitable rooms)
- Area does receive direct sky light.
- Light aperture.

Drawing Title:	Window Key and No Sky Line Contours
Scale:	Do not scale
Drawing No:	1 of 1
Rev.	-

Rev	Date	Details of revision

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

APPENDIX 2

DAYLIGHT & SUNLIGHT DATA

Appendix 2 - Average Daylight Factor (ADF)
224 Kilburn High Road, London NW6 4JP

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					ADF
	Primary room use	ADF	T	Aw	A	R	θ	
224 Kilburn High Road								
Ground Floor Plan								
Window 1			0.74	0.83	114.42	0.7	40.4	0.4%
Window 2			0.74	0.31	114.42	0.7	31.0	0.1%
Window 3 (lower)			0.74	0.65	114.42	0.7	21.8	0.1%
Window 3 (upper)			0.74	0.94	114.42	0.7	29.8	0.4%
Window 4			0.74	0.31	114.42	0.7	27.4	0.1%
Window 5			0.74	0.92	114.42	0.7	81.7	0.9%
Total ADF for room	Living/Kitchen	2.0%						**2.0%**
Window 6			0.74	0.26	51.3	0.72	32.1	0.2%
Window 7			0.74	0.82	51.3	0.72	37.4	0.9%
Total ADF for room	Bedroom	1.0%						**1.1%**

Appendix 2 - Sunlight to Windows
224 Kilburn High Road, London NW6 4JP

Reference	Room Use	APSH	
		Total	Winter
224 Kilburn High Road			
Ground Floor Plan			
Window 1	Living/Kitchen	0%	0%
Window 2	Living/Kitchen	0%	0%
Window 3	Living/Kitchen	0%	0%
Window 4	Living/Kitchen	0%	0%
Window 5	Living/Kitchen	0%	0%