behan partnership LLP
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DAYLIGHT & SHADOW
NEIGHBOURING ASSESSMENT

Of

11A Primrose Hill Road, London NW3 3DG

on behalf of

Undercover Architecture

Revision Reference: **Final**
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Prepared by & Authorised by
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Date: 14 November 2013

1. INTRODUCTION

As part of the redevelopment review process, we have carried out an analysis of the proposals designed by Undercover Architecture for the development scheme proposal to ensure the proposed development meets the BRE minimum standards for daylighting and shadow on the neighbouring properties surrounding the development.

We have been provided with plans, sections and elevations from Adrian Salt and Pang Ltd, Undercover Architecture, On Centre Survey. We understand the extent of the proposed development; we have used the information provided to construct a 3D model of the existing and proposed site and neighbouring properties.

Policy Guidelines

1.1 This study has been carried out in accordance with the recommendations of the Building Research Establishment Report 209 "Site Layout Planning for Daylight & Sunlight, a guide to good practice" 2011 second edition and British Standard 8206:2 Part 2.

1.2 This is the adopted standard within Camden's Unitary Development Plan by which daylight and sunlight are measured. This is the standard identified below:-

METHODOLOGY

1.3 The Daylight & Sunlight assessments have been undertaken by reference to the Building Research Establishment (BRE) Guidelines "Site Layout Planning for Daylight & Sunlight. A Guide to Good Practice" 2011 Second Edition and British Standard 8206:2 Part 2.

1.4 The BRE Report advises that daylight and sunlight levels should be assessed for the main habitable rooms of neighbouring residential properties. Habitable rooms in residential properties are defined as kitchens, living rooms and dining rooms. Bedrooms are less important as they are mainly occupied at night time. The Report also makes reference to other property types, which may be regarded as "sensitive receptors" such as schools, hospitals, hotels and hostels, small workshops and most offices.

Daylight

1.5 The BRE Guide states that:-

"If, for any part of the new development, the angle from the centre of the lowest affected window to the head of the new development is more than 25°, then a more detailed check is needed to find the loss of skylight to the existing buildings."

1.6 The BRE Guidelines propose several methods for calculating daylight. The 3 main methods predominantly used are those involving the measurement of the total amount of skylight available:-

- Vertical sky component (VSC)
- Average Daylight factor (ADF)
- Daylight Distribution (DD) or No-Sky Line

i. The VSC calculation is a general test of potential for daylight to a building, measuring the light available on the outside plane of windows.

ii. The second recognised method of assessment for daylight is the Average Daylight Factor (ADF) calculation which assesses the quality and distribution of light within a room served by a window and takes into account the VSC value, the size and number of the windows and room and the use to which the room is put. The ADF is the effective proportion of sky visibility available as luminance within a room. Rather than simply assessing the external obstructions as seen from a window, as in the VSC analysis, the ADF calculation takes the external sky visibility and incorporates it within a calculation that takes account of window size, number of windows, internal room surface area, glass transmittance and internal surface reflectance.

Where the analysis shows that the VSC results show values outside the BRE standards, we would then analyse the ADF results and this has been provided for completeness.

The ADF is calculated using the following formula:-

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

Where:

- T is the diffuse visible transmittance of the glazing, including corrections for dirt on glass and any blinds or curtains. (For clean clear single glass, a value of 0.8 can be used)

- Aw is the net glazed area of the window (m^2)
- A is the total area of the room surfaces: ceiling, floor, walls, doors and windows (m^2)
- R is their average reflectance. For fairly light-coloured rooms a value of 0.5 can be taken
- Θ is the angle of visible sky in degrees derived from the vertical sky component

The BRE Report advises that, where supplementary electric lighting is available, the minimum standards of ADF that should be attained are 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.

Our workings identify the key data used for the ADF analysis and the results for the rooms, in comparison with the room use. The theta value in the calculation has been derived from the same VSC results also reported in this summary.

1.7 The ADF assesses actual light distribution within defined room areas, whereas the VSC considers potential light. British Standard 8206, Code of Practice for Daylighting recommends ADF values of 1% in bedrooms, 1.5% in living rooms and 2% in kitchens. For other uses, where it is expected that supplementary electric lighting will be used throughout the daytime, such as in offices, the ADF value should be 2%. The Average Daylight Factor is a reliable daylight test. This is because the Average Daylight Factor test takes into account a range of variables, for example, the size of the window and whether the room has more than one window. These are important factors which affect the level of illumination within a room.

1.8 The third method, Daylight Distribution (DD), divides those areas of the working plane (850mm above floor level) which can receive direct skylight, from those which cannot. A room may be adversely affected if; following the development, the area of the working plane that can receive direct skylight is less than 0.8 times its former value.

1.9 At the time of the assessment a planning search was conducted to establish as much information as possible on the neighbouring properties including room usage and layout configurations. A site visit was made to record existing and neighbouring building mass as well as plotting window apertures using the Survey drawings to ensure accuracy. Therefore it has been possible to identify the contentious properties that contain residential elements to be assessed for daylight levels. This is :

- 60 King Henrys Road

1.10 The daylight assessment has been undertaken using all methods were appropriate. All residential windows have been considered for each of these methods.

1.11 All other properties surrounding the site are considered too remote from the development and therefore are excluded from the assessment.

Sunlight

1.12 The BRE have produced sunlight templates for London, Manchester and Edinburgh, indicating the Annual probable Sunlight Hours (APSH) for these regions. The London template has been selected for this study as the London indicator template is the closest of the three available from BRE in terms of latitude.

1.13 Sunlight analysis is undertaken by measuring annual probable sunlight hours (APSH) for the main windows of rooms which face within 90° of due south. The maximum number of annual probable sunlight hours for the London orientation is 1,486 hours. The BRE guidelines propose that the appropriate date for undertaking a sunlight assessment is on 21st March, being the spring equinox. Calculations of both summer and winter availability are made with the winter analysis covering the period from the 21st September to 21st March. For residential accommodation, the main requirement for sunlight is in living rooms and it is regarded as less important in bedrooms and kitchens.

Due to the orientation of the neighbouring property, a sunlight assessment is not required.

Shadow

1.14 It is recommend that for an amenity area to appear adequately sunlit throughout the year at least half the area should receive at least two hours of sunlight on March 21st. 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 Sun on March 21 is less than 0.8 times its former value then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March.

1.15 It follows that if some sun is received on 21st March, then there will be improved levels of sun over the summer months, however this may potentially be reduced by the development proposals.

1.16 We have assessed the following property amenity areas using our digital 3D AutoCAD model used in the daylight study using specialist software to simulate the shadows cast at hourly intervals on March 21st.

Significant Criteria

1.17 In describing the significance criteria as set out below, it should be noted that they have been developed to protect residential properties, which are the most sensitive receptors.

1.18 The Guidance given by BRE has been used as a basis for the criteria to assess the Development's potential impacts. The BRE guidance specifies:

"...In special circumstances the developer or planning authority may wish to use different target values. For example, in an historic city centre a higher degree of obstruction may be unavoidable..."

1.19 The report adds:

"...Different criteria may be used, based on the requirements for daylighting in an area viewed against other site layout constraints."

1.20 In consideration of the above, it is important to note that the Site is located in an urban centre that, in parts, currently experiences daylight levels below the BRE recommendations. This is discussed within the 'Baseline Conditions' section of this report. Thus, in these instances the BRE guidance states that the:

"...guidelines should be applied sensibly and flexibly".

1.21 Under these circumstances, the less stringent, higher BRE target percentage loss values and significance criteria may be justifiable.

Baseline Conditions

1.26 An analysis of the impact of the existing buildings (the baseline conditions) against which to compare any potential impact arising from the development has been undertaken based on the 2D survey information provided by Undercover Architecture, On Centre Survey, and photographic evidence from a site inspection. The detailed results of this analysis are presented in the tables appended at Appendix 1.

2. Results – Proposed Development

Neighbouring Property Assessment

Daylight VSC

2.1 The results of the Vertical Sky Component (VSC) analysis on the relevant residential windows overlooking the development of 11a Primrose Hill Road are presented on the drawings and tables at Appendix 1.

2.2 It can be seen from the VSC table that all of the windows assessed at 60 King Henrys Road will meet BRE criteria by virtue of the fact that the results are unchanged in relation to the baseline figure. Therefore the overall VSC result is considered to be acceptable.

Daylight ADF

2.3 Where appropriate an Average Daylight Factor assessment has been undertaken on the neighbouring property where their internal configuration is understood. The results are presented in Appendix 1.

2.4 It can be seen from the results that the kitchen is left unchanged and meets the BRE criteria. Therefore the overall ADF result is considered to be acceptable.

Daylight Distribution

2.5 The results of the daylight distribution (DD) analysis on the relevant residential rooms overlooking the development of 11a Primrose Hill Road is presented on the drawings and tables at Appendix 1.

2.6 It can be seen from the results on DD table that the kitchen assessed will meet BRE criteria for DD by virtue of the fact that the level of light in the proposed scenario is unchanged.

Sunlight APSH

2.7 Due to the orientation of the neighbouring windows facing in a due north direction the majority has been discounted from the sunlight assessment.

Shadow

2.8 The results are detailed on drawing 20131380/08 and the resultant table at Appendix 1. Two of the neighbouring properties pass the assessment; however, no11 falls slightly short of the target value.

3. Conclusion

3.1 The site is situated in The London Borough of Camden and is in close proximity to the adjacent residential properties 11 Primrose Hill Road, 13 Primrose Hill Road and 60 King Henrys Road which have been assessed for daylight and shadow assessment.

3.2 To assess the development's potential impact on daylight and sunlight on the neighbouring properties a baseline assessment was undertaken using the Vertical Sky Component (VSC), daylight distribution (DD) and where appropriate average daylight factor (ADF) method for daylight analysis using the Waldram diagram template drawings; the sunlight analysis was not required as provided by the Building Research Establishment.

3.3 The VSC, ADF, daylight analysis indicates that all of the neighbouring windows will remain adequately lit as a result of the development proposals and will fully comply with the BRE criteria.

3.4 The sunlight analysis was not required for any windows due to the orientation of the assessed windows facing due north and therefore discounted from the assessment.

3.5 A shadow assessment was undertaken with 21% of the amenity area receiving 2 hours of sunlight. In the existing scenario, the baseline figure fails to meet the target value in any event before any works are undertaken.

3.6 The development should therefore be considered to meet the requirements of The London Borough of Camden Unitary Development Plan in daylight and shadow terms.

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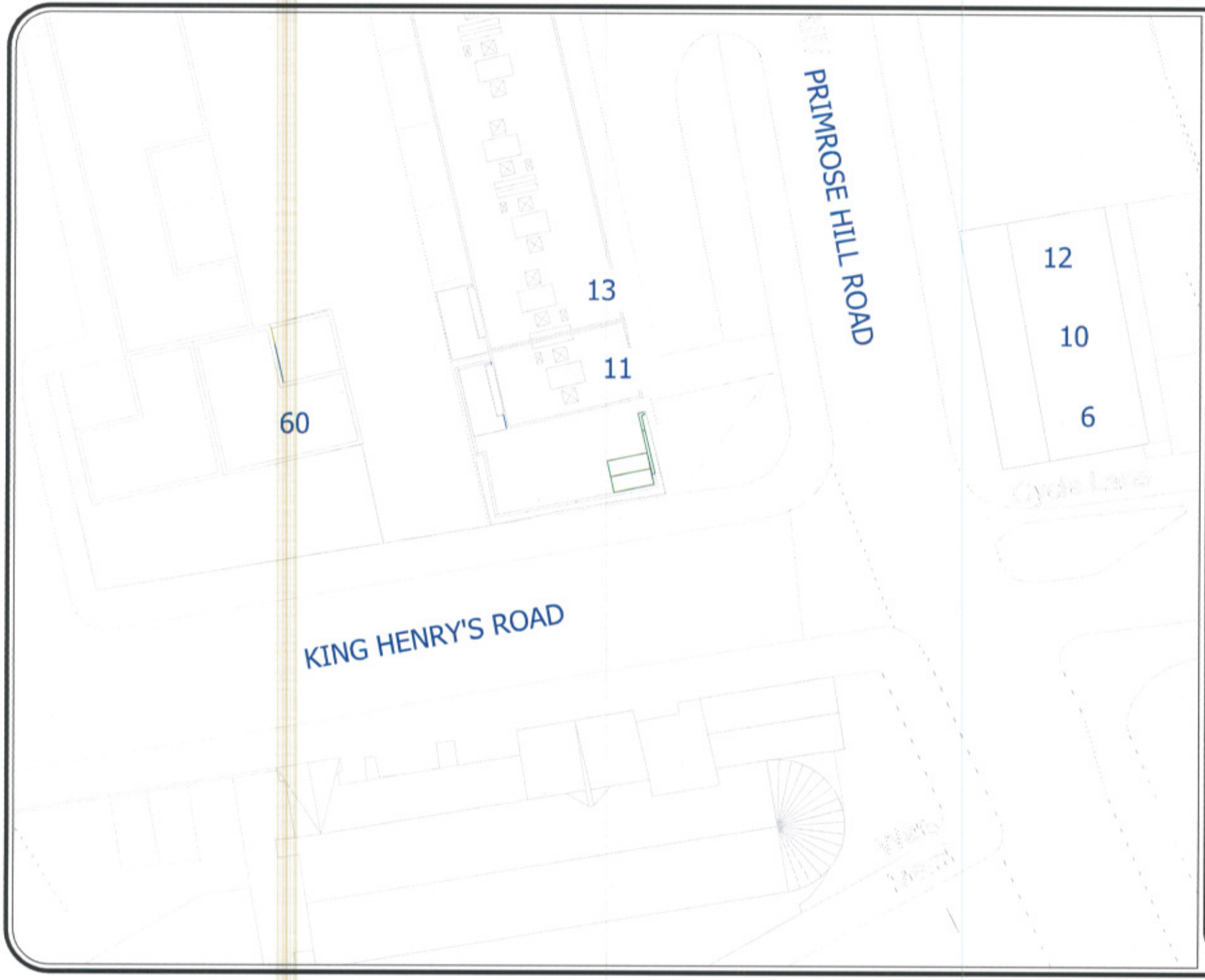
APPENDIX 1

Drawings 20131380/01 to 06	(Existing & Proposed model, views)
Drawing 20131380/07	(Waldram Template Samples)
Drawing 20131380/08	Shadow drawing
Tables; VSC, ADF, DD	



LEGEND

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PROPOSED DEVELOPMENT DRAWINGS
SITE LOCATION PLAN, FLOOR PLANS AND ELEVATION

PRE-APPLICATION DRAWINGS

SITE PHOTOGRAPHS.

No.	Revision/Issue	Date

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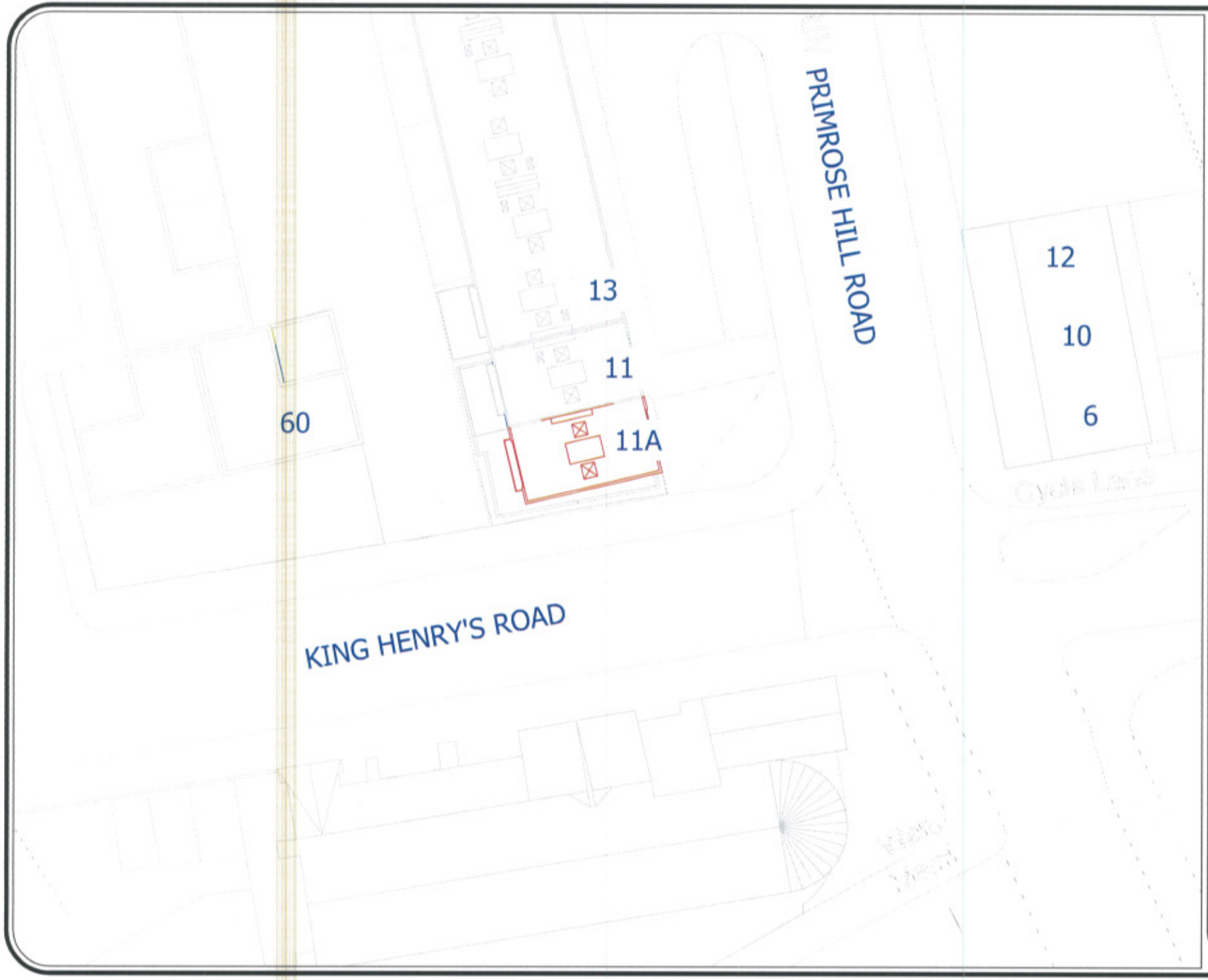
Project Name and Address
11A PRIMROSE HILL ROAD
LONDON

Drawing Description:
SITE LAYOUT PLAN
EXISTING BUILDING

Project Reference	Drawing Sheet No
20131380	1380/01
Date: 11/11/2013	
Scale: NTS	



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SITE LOCATION PLAN, FLOOR PLANS AND ELEVATION

PRE-APPLICATION DRAWINGS

SITE PHOTOGRAPHS.

No.	Revision/Issue	Date

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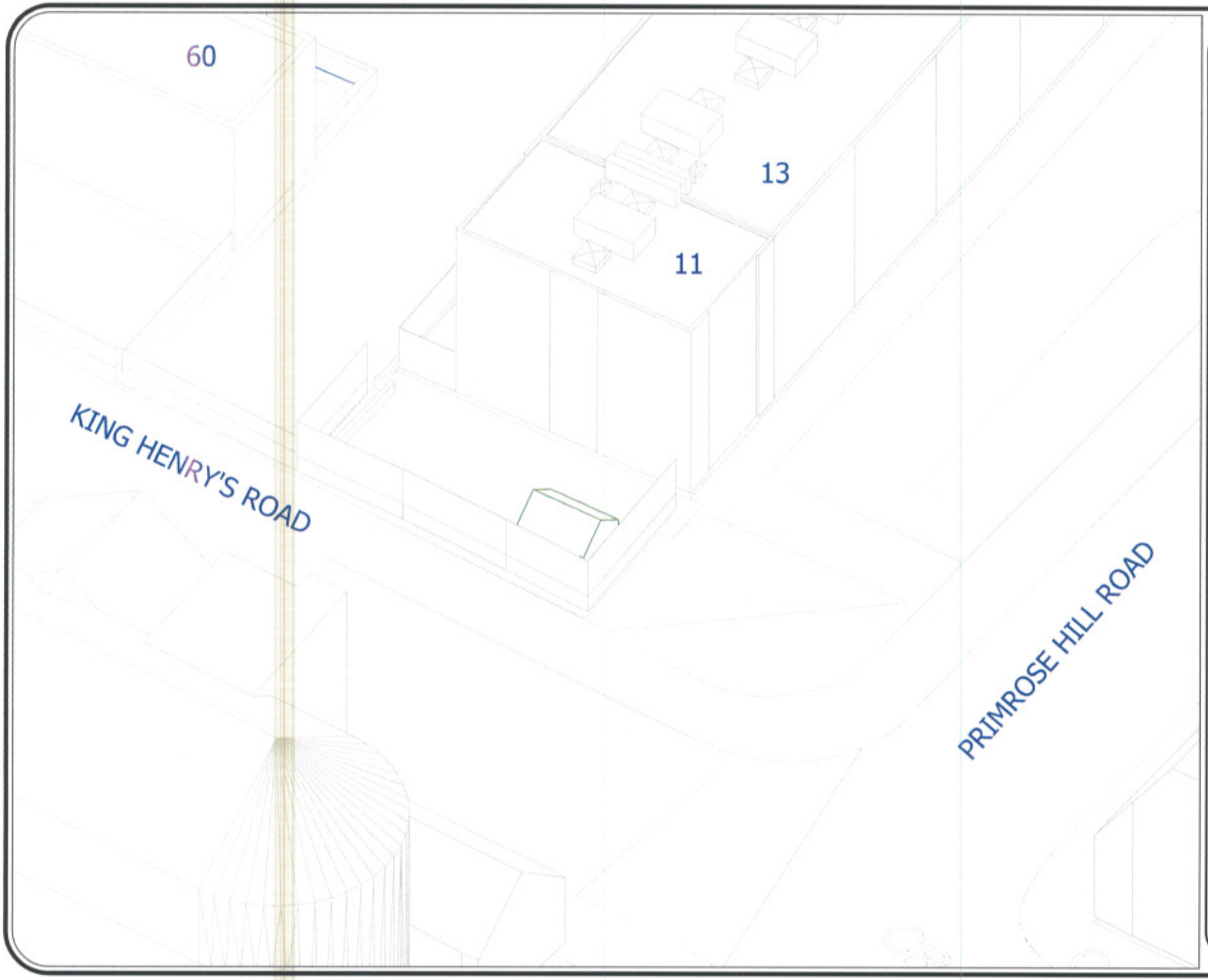
11A PRIMROSE HILL ROAD
LONDON

SITE LAYOUT PLAN
PROPOSED DEVELOPMENT

20131380	1380/02
11/11/2013	
NTS	



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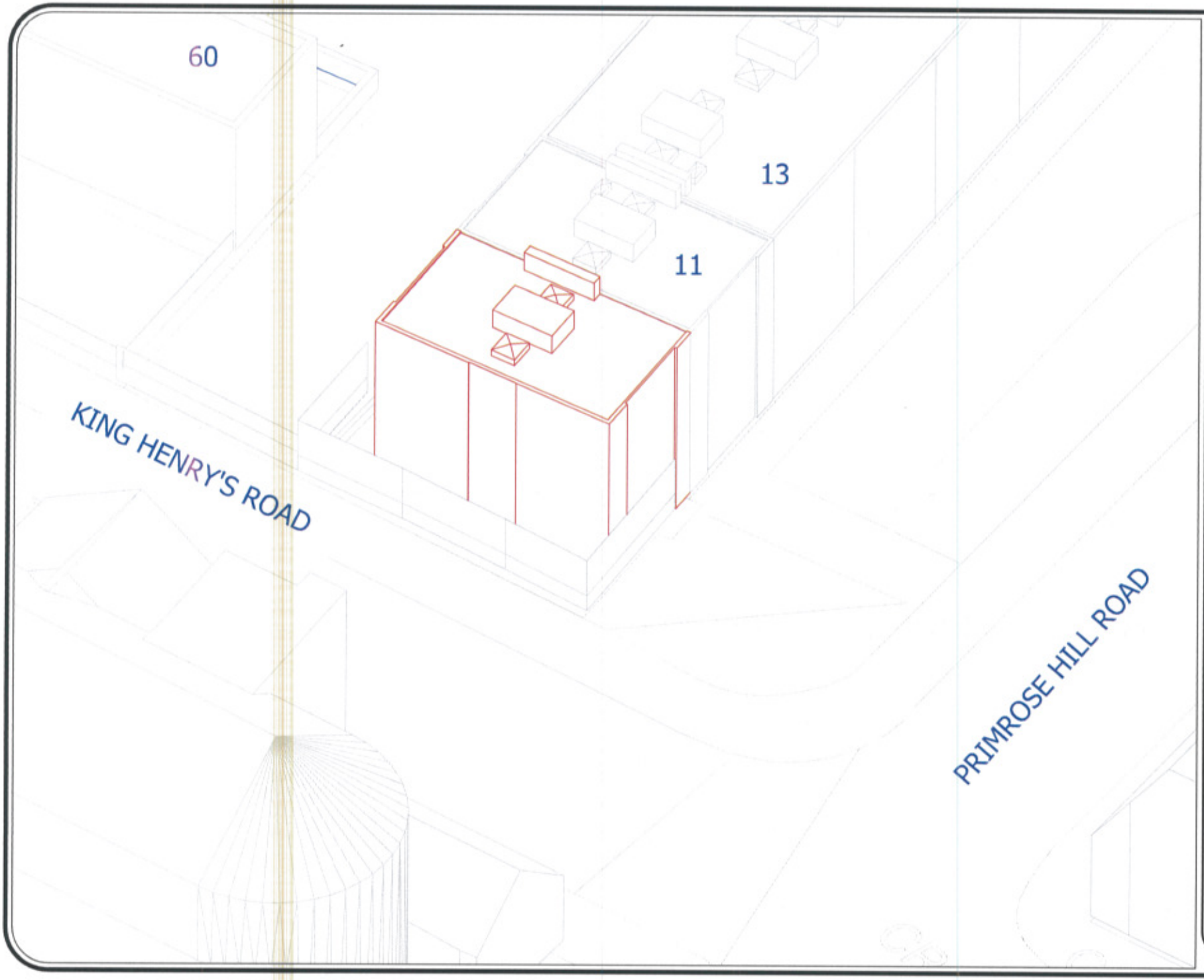
11A PRIMROSE HILL ROAD
LONDON

3D MODEL AERIAL VIEW
EXISTING SITE

20131380	1380/03
11/11/2013	
NTS	



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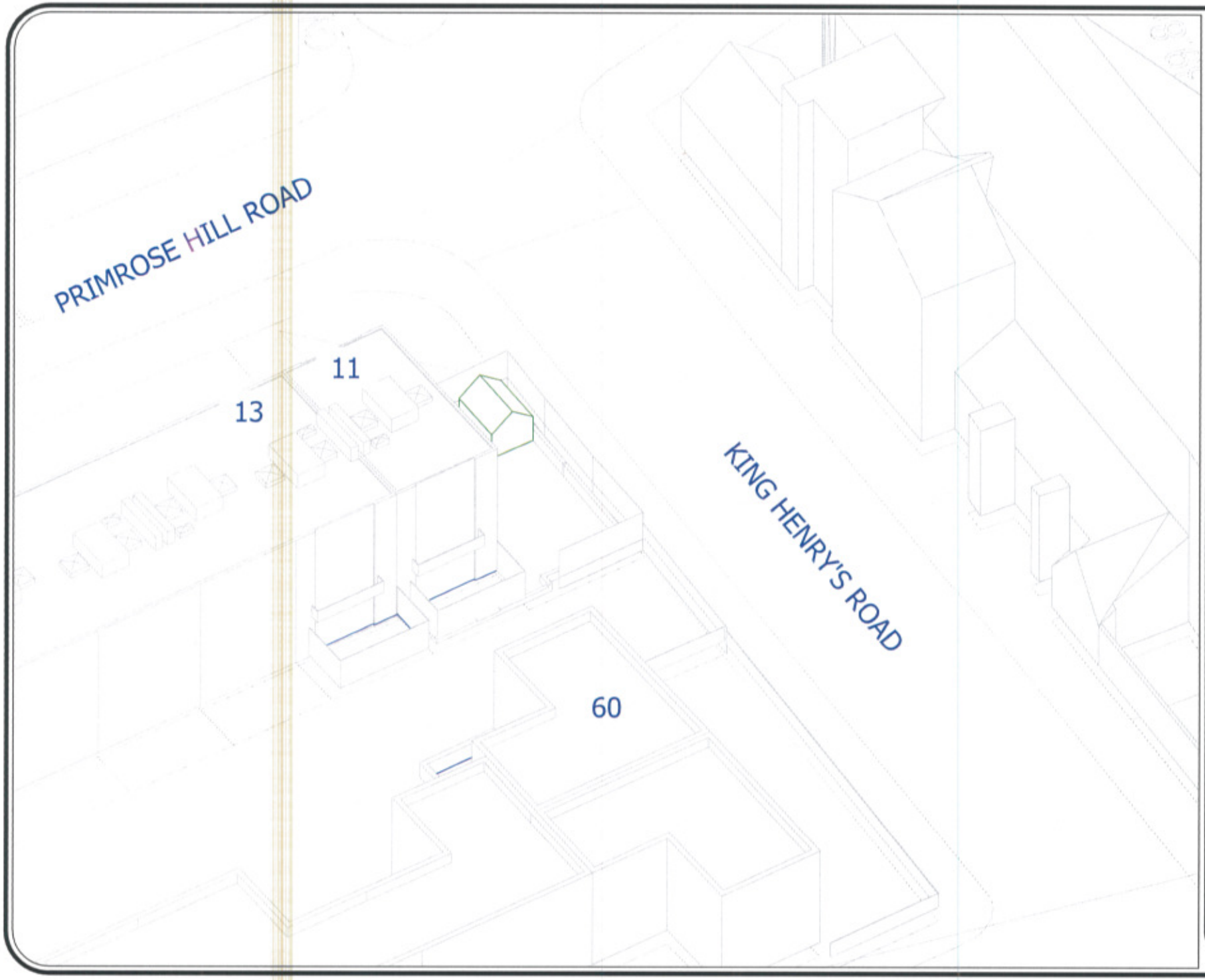
11A PRIMROSE HILL ROAD
LONDON

3D MODEL AERIAL VIEW
PROPOSED DEVELOPMENT

20131380	1380/04
11/11/2013	
NTS	



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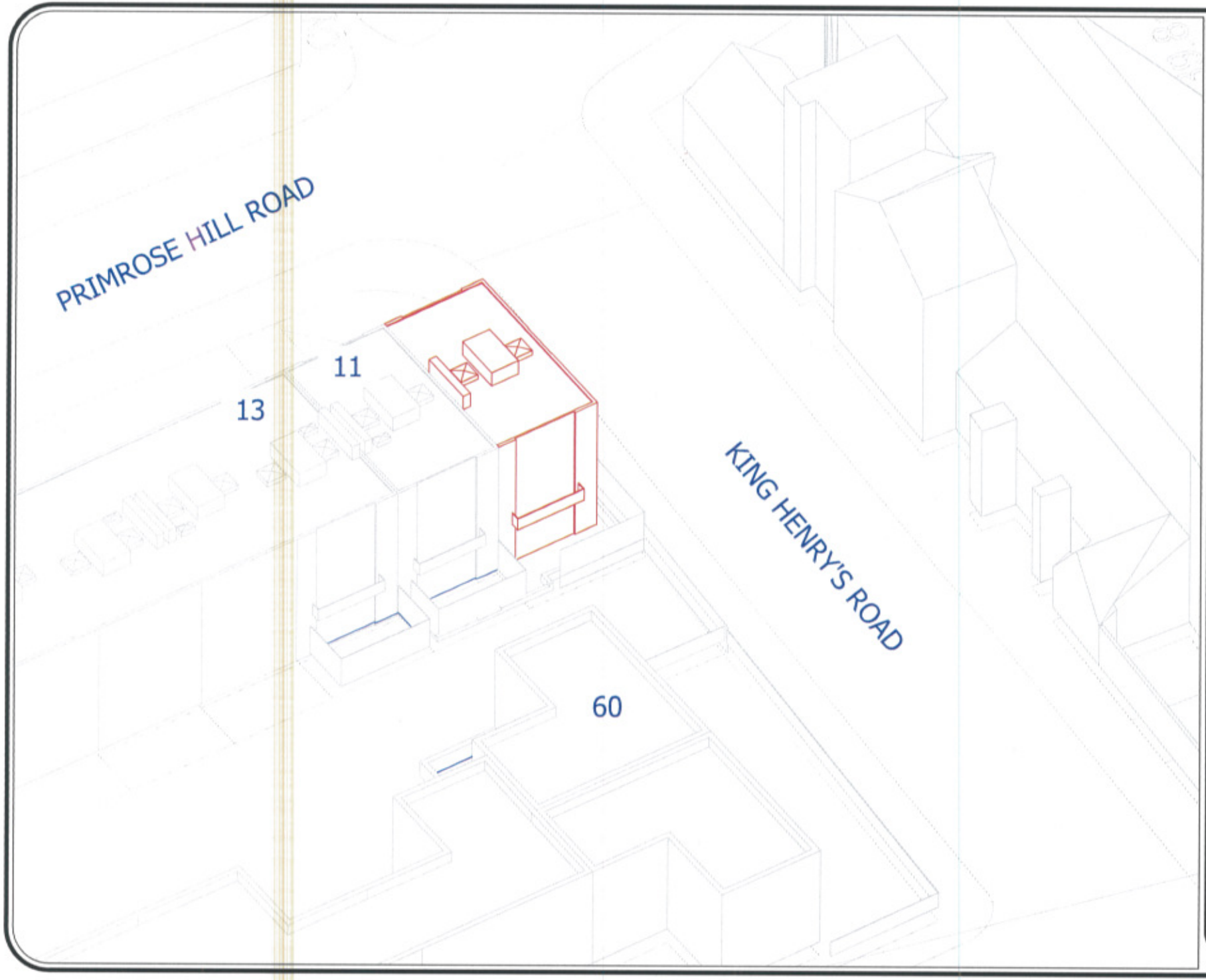
Project Name and Address
11A PRIMROSE HILL ROAD
LONDON

Drawing Description
3D MODEL AERIAL VIEW
EXISTING SITE

Project Reference	Drawing Sheet No
20131380	1380/05
Date: 11/11/2013	
Scale: NTS	



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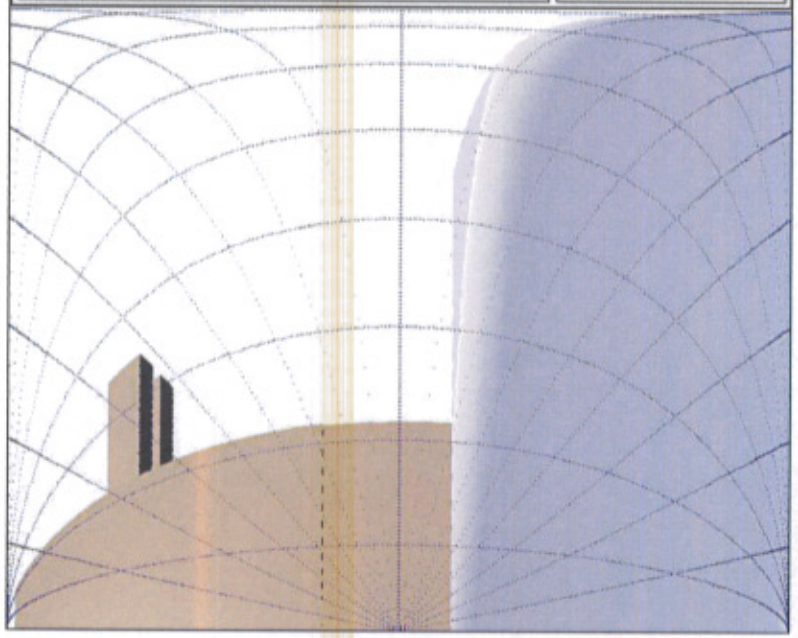
Project Name and Address
11A PRIMROSE HILL ROAD
LONDON

Drawing Description
3D MODEL AERIAL VIEW
PROPOSED DEVELOPMENT

Project Reference	Drawing Sheet No
20131380	1380/06
Date: 11/11/2013	
Scale: NTS	

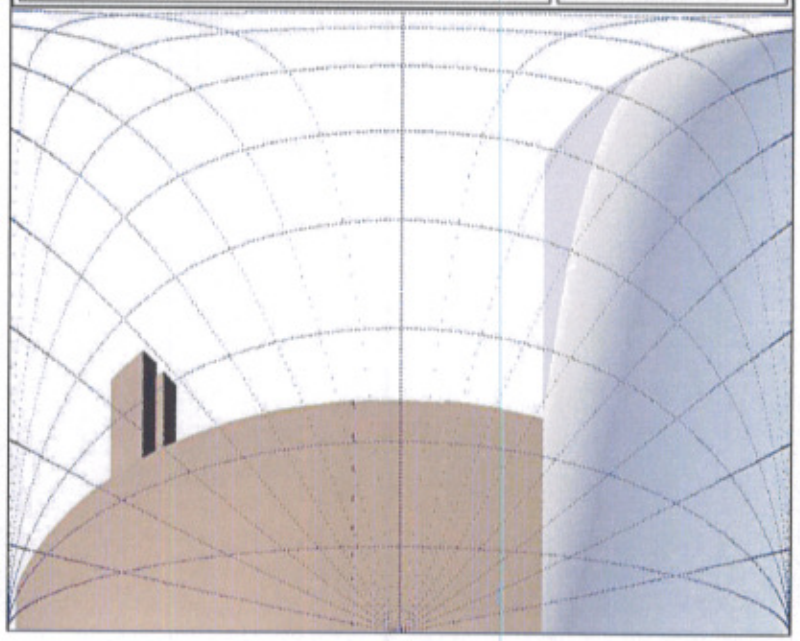
Drawing Ref: 20131380-Master
Window Ref: VSC-60 King Henrys Road_Ground_W1

VSC: Existing: 16.42
Proposed: 16.42



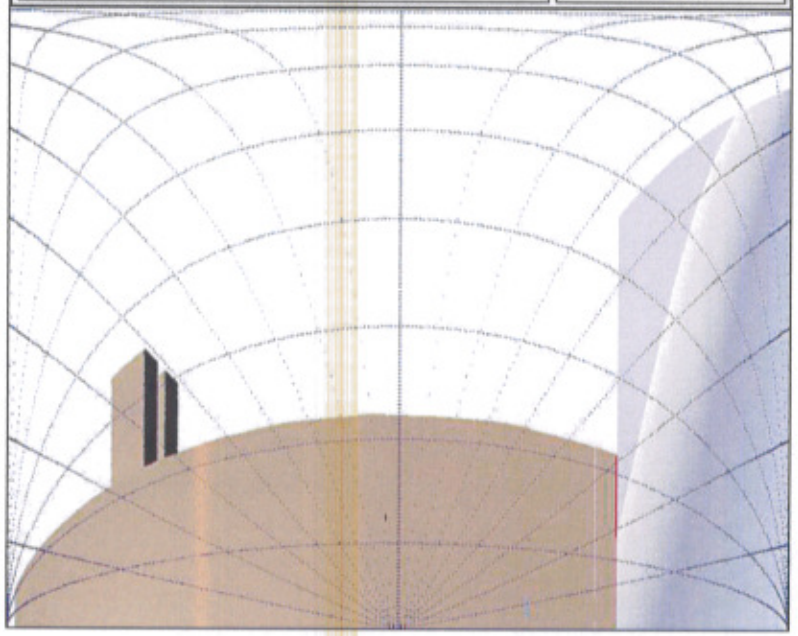
Drawing Ref: 20131380-Master
Window Ref: VSC-60 King Henrys Road_Ground_W2

VSC: Existing: 19.23
Proposed: 19.23



Drawing Ref: 20131380-Master
Window Ref: VSC-60 King Henrys Road_Ground_W3

VSC: Existing: 23.19
Proposed: 23.16



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11A PRIMROSE HILL ROAD
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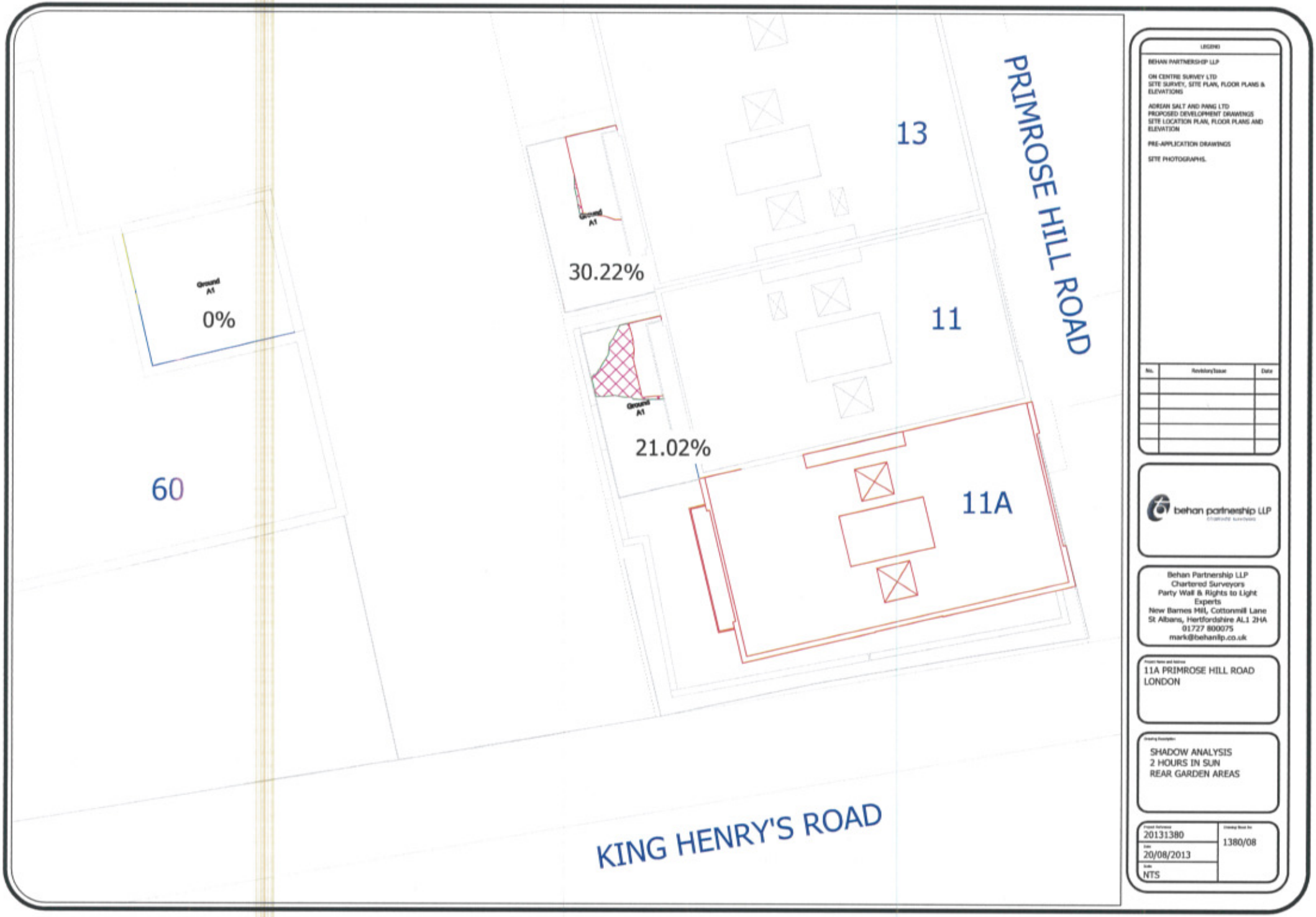
VERTICAL SKY COMPONENT
DAYLIGHT WALDRAM
DIAGRAMS

20131380	1380/07
11/11/2013	
NTS	



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11A PRIMROSE HILL ROAD
LONDON

SHADOW ANALYSIS
2 HOURS IN SUN
REAR GARDEN AREAS

20131380	1380/08
20/08/2013	
NTS	

APPENDIX
DAYLIGHT & SUNLIGHT
NEIGHBOURING PROPERTY ASSESSMENT

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APPENDIX

Daylight VSC & Sunlight APSH and Winter

60 King Henrys Road

Floor Ref.	Room Ref.	Room	Use.	Window Ref.	Scenario	VSC	Difference	Pass / Fail	Available Sunlight Hours: Annual %	Annual Diff %	Annual Pass / Fail	Winter %	Winter Diff %	Winter Pass / Fail
Ground	R1	Kitchen	W1	Existing	16.42	1.00	PASS	*North Facing						
				Proposed	16.42									
Ground	R1	Kitchen	W2	Existing	19.23	1.00	PASS	*North Facing						
				Proposed	19.23									
Ground	R1	Kitchen	W3	Existing	23.19	1.00	PASS	*North Facing						
				Proposed	23.18									

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PROJECT: 20131380-Master
APPENDIX

Average Daylight Factor

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Glazed Area	Clear Sky Angle Existing	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Existing	ADF Proposed	Req'd Value	% Diff	Pass/Fail
60 King Henrys Road															
Ground	R1	Kitchen	W1	0.68	1.00	46.82	46.82	78.00	0.50	1.00	0.54	0.54			
Ground	R1	Kitchen	W2-L	0.68	0.42	49.67	49.67	78.00	0.50	0.15	0.04	0.04			
			W2-U	0.68	0.73	52.52	52.52	78.00	0.50	1.00	0.45	0.45			
Ground	R1	Kitchen	W3	0.68	1.46	58.03	58.01	78.00	0.50	1.00	0.98	0.98			
											2.01	2.01	2.00	1.00	PASS

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PROJECT: 20131380-Master
APPENDIX

Daylight Distribution

60 King Henrys Road

Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Existing	Lit Area Proposed	Difference %	Pass / Fail
Ground	R1	Kitchen	Area m2 % of room	16.18	15.66 97%	15.66 97%	1.00	PASS

APPENDIX
DAYLIGHT & SUNLIGHT
NEIGHBOURING
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PROJECT: 20131380-Master
APPENDIX

Shadow

Floor Ref.	Room Ref.		Room Area	Lit Area Existing	Lit Area Proposed	Difference %	Pass / Fail
60 King Henrys Road							
Ground	A1	Area m2	18.22	0.00	0.00	0.00	PASS
		% of room		0%	0%		
11 Primrose Hill Road							
Ground	A1	Area m2	12.94	4.91	2.72	0.55	FAIL
		% of room		38%	21%		
13 Primrose Hill Road							
Ground	A1	Area m2	14.76	4.56	4.46	0.98	PASS
		% of room		31%	30%		