DAYLIGHT AND SUNLIGHT REPORT

Premier Inn Euston

March 2019

CBRE

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APPENDICES

CBRE

1.0 Executive Summary

1.1 CBRE have been instructed to prepare a daylight and sunlight report for the Site at Premier Inn, Euston *"the Site"*. This report is based on a model that has been created using photogrammetry.

1.2 Overall, there will be an 87% Vertical Sky Component (VSC) and a 76% No Sky Line (NSL) compliance rate, following implementation of the Proposed Scheme.

1.3 In relation to Annual Probably Sunlight Hours (APSH), all properties that have windows orientated within 90 degrees of due-south with a view of the Site achieve BRE compliance.

1.4 Although there will be some BRE transgressions to the daylight levels currently enjoyed by the adjoining properties, it should be noted that they all currently enjoy very high levels of skylight availability. In instances where these reductions will occur, the retained daylight levels will still be high, especially when considering the urban context of the Site.

1.5 Somerton House (located from the 6th floor and above on the Premier Inn site) will achieve full NSL compliance, following the implementation of the Proposed Scheme. Although this property will experience some VSC reductions should the Proposed Scheme be implemented, we are of the opinion that the daylight to the rooms will be uncompromised overall.

1.6 The mixed-use properties located to the north of the Site along Euston Road will all achieve full VSC compliance, following the implementation of the Proposed Scheme. Although there will be some NSL reductions beyond BRE guidance, the retained NSL levels will be high for the most part, especially when considering the urban context of the Site.

1.7 We are of the opinion that the Proposed Scheme has been sensitively designed to consider the daylight and sunlight amenity to neighbouring properties, which is demonstrated by the high BRE compliance rates, as summarised in this report.

2.0 Introduction

2.1 CBRE have been instructed to analyse the proposed Premier Inn Euston extension scheme *"the Proposed Scheme"* and advise on the daylight and sunlight impacts that will arise, should this scheme be implemented.

2.2 The primary authority for daylight and sunlight matters is the BRE guide, Site Layout and Planning for Daylight and Sunlight – A Guide to Good Practice (2011). Definitions of daylight and sunlight along with an overview of the BRE are located in Appendix 1.

3.0 Methodology and Assumptions

3.1 The BRE cite two different methods of assessing daylight to existing properties, being:

1. Vertical Sky Component (VSC)
2. No Sky Line (NSL)

3.2 There is a third assessment which is the Average Daylight Factor (ADF). This method of assessment is typically applied on new build residential accommodation. This assessment has not been undertaken in our analysis of the Proposed Scheme.

3.3 There is one further method of assessment for Sunlight, being Annual Probable Sunlight Hours (APSH). Full details of the daylight and sunlight assessments are located in Appendix 3.

3.4 CBRE have created a three-dimensional DWG model of the Site and surrounding properties based on photogrammetry.

3.5 The light levels within each surrounding property have been assessed based on the Site as it currently exists. The Proposed Scheme, issued by CHQ Architects on 27th February 2019, has then been inserted in to our model and the daylight and sunlight levels have been recorded within adjoining properties.

3.6 Partial floor plans have been obtained for the following properties:

- 120 Euston Road
- 126 Euston Road

3.7 Where floor plans not been obtained, we have used reasonable estimates as to the room dimensions behind each fenestration. Typically, unless building form dictates otherwise, a 4.2m deep room is used for residential properties.

3.8 With the absence of internal building dimensions, CBRE have used assumed floor levels which dictates the level of the working plane relevant for NSL assessments within a room.

3.9 It is only those properties that contain residential accommodation that have been considered in this daylight and sunlight report as they have the highest requirement for light. CBRE have made all reasonable endeavors to establish whether a property is commercial or residential. This has been determined by external review and by reference to the Valuation Office Agency (VOA) council tax search. Note that as The Place (located to the south of the Site) appears to be a dance studio and the Unison HQ is a union office building, both have been discounted from our assessments.

4.0 Site and Proposed Scheme

4.1 Our understanding of the existing Site is detailed in the image below (further plots are located in Appendix 2, drawings numbered 01 and 02):

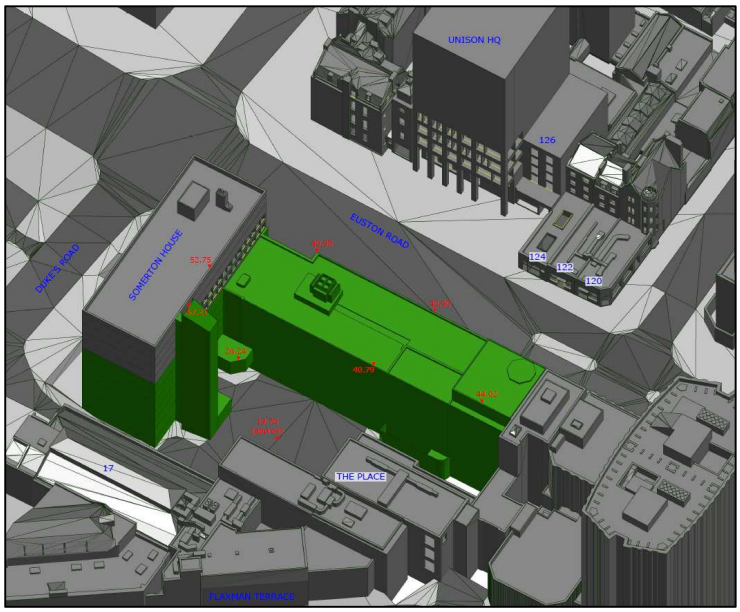


Figure 1 – Existing Site

4.2 Our understanding of the Proposed Scheme is detailed in the image below (further plots are located in Appendix 2, drawings numbered 06 and 07):

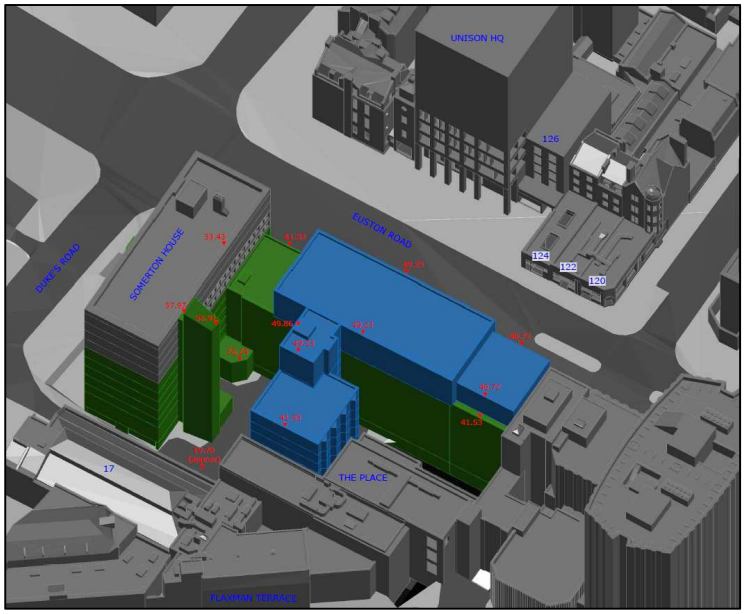


Figure 2 – Proposed Scheme

5.0 Surrounding Properties

5.1 All surrounding properties that have been considered in our assessments are detailed in the tables below, along with a summary of the results.

5.2 As Premier Inn contains hotel accommodation it has not been assessed, given that the occupiers of the rooms are transitory in nature.

5.3 Summary of the impacts to VSC:

Property	Number of Windows	BRE Compliant	BRE Transgressions		
			20-30%	30-40%	40%+
120 Euston Road	15	15	0	0	0
122 Euston Road	6	6	0	0	0
124 Euston Road	6	6	0	0	0
126 Euston Road	8	8	0	0	0
Somerton House	34	25	9	0	0
TOTAL	**69**	**60 (87%)**	**9 (13%)**	**0 (0%)**	**0 (0%)**

5.4 Summary of the impacts to NSL:

Property	Number of Rooms	BRE Compliant	BRE Transgressions		
			20-30%	30-40%	40%+
120 Euston Road	3	3	0	0	0
122 Euston Road	5	3	2	0	0
124 Euston Road	5	2	3	0	0
126 Euston Road	4	2	1	1	0
Somerton House	12	12	0	0	0
TOTAL	**29**	**22 (76%)**	**6 (21%)**	**1 (3%)**	**0 (0%)**

Surrounding Properties

5.5 Summary of the impacts to APSH:

Property	Number of Rooms	Number of Room achieving BRE Compliance
120 Euston Road	3	3
122 Euston Road	5	5
124 Euston Road	5	5
126 Euston Road	4	4
Somerton House	N/A	N/A
TOTAL	**17**	**17 (100%)**

5.6 Please note that it is only rooms with windows orientated within 90 degrees of due-south which are considered in the APSH assessment.

5.7 The residential accommodation located in 120 Euston Road will achieve BRE compliance for both daylight and sunlight, following the implementation of the Proposed Scheme.

5.8 All properties that will experience a BRE transgression to either their daylight and / or sunlight amenity following the implementation of the Proposed Scheme have been discussed in greater detail below:

<u>122 Euston Road</u>

5.9 This property is located to the north of the Site and has commercial use located at ground floor level, with residential units located on the floors above. Of the six windows that have been assessed for VSC, all achieve BRE compliance.

5.10 In relation to NSL, of the five rooms assessed within this property, three will achieve BRE compliance. Two bedrooms located on the second floor will experience NSL reductions in excess of the 20% suggested as acceptable by the BRE guidelines, those being 23.33% and 25.43% respectively. It should be noted that we would not consider these reductions to constitute adverse daylight reductions. In addition, the BRE guidelines explicitly state that daylight to bedrooms is not as important when compared with the daylight requirements of other habitable rooms such as kitchens and living rooms.

5.11 All windows and rooms assessed in this property will achieve BRE compliance for winter and annual APSH, following the implementation of the Proposed Scheme.

<u>124 Euston Road</u>

5.12 This property is located to the north of the Site and has commercial use located at ground floor level, with residential accommodation located on the floors above. Of the six windows in this property that have been assessed for VSC, all will achieve BRE compliance should the Proposed Scheme be implemented.

Surrounding Properties

5.13 Five rooms were assessed in this property for NSL, two of which would achieve BRE compliance, following the implementation of the Proposed Scheme. One room located at first floor level and two rooms located at second floor level will experience reductions of between 21.75% to 29.70%, following the implementation of the Proposed Scheme. We are of the opinion that these NSL reductions would not constitute adverse daylight impacts, especially given that all three of these rooms will still achieve retained NSL levels in excess of 50%, which we would consider to be high.

5.14 All windows and rooms assessed within this property will achieve BRE compliance for winter and annual APSH, following the implementation of the Proposed Scheme.

<u>126 Euston Road</u>

5.15 This property is located to the north of the Site and has commercial use located at ground floor level, with residential units located on the floors above. Of the eight windows assessed in this property for VSC, all will achieve BRE compliance, following the implementation of the Proposed Scheme.

5.16 Four rooms were assessed within this property for NSL, two of which will achieve BRE compliance, should the Proposed Scheme be implemented. One room located at first floor level will experience an NSL reduction of 31.61% and one room located at second floor level will experience an NSL reduction of 21.78%. Although both of these reductions are in excess of the parameters suggested as acceptable by the BRE guidelines, both of these rooms will still achieve retained NSL levels in excess of 50%, which we would consider to be high.

5.17 Given the retained NSL values and the full VSC compliance of this property, we would consider the impact to its daylight amenity to be minor in nature.

5.18 Following the implementation of the Proposed Scheme, all windows and rooms assessed in this property will achieve BRE compliance for winter and annual APSH.

<u>Somerton House</u>

5.19 The residential accommodation at Somerton House is located on the upper floors of Premier Inn, as illustrated in the image below (highlighted in yellow):

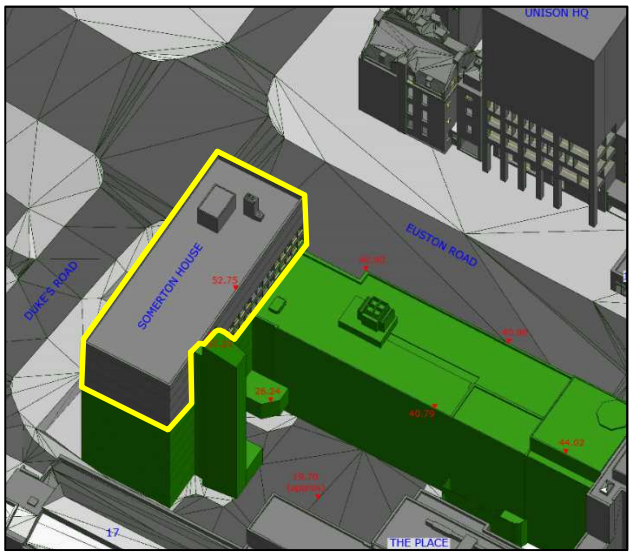


Figure 3 – Residential Accommodation

Surrounding Properties

5.20 Of the 34 windows assessed within this property for VSC, 25 will achieve BRE compliance, should the Proposed Scheme be implemented. Nine windows within this property will experience VSC reductions of between 20-30%, which are only marginally in excess of the 20% parameter suggested as accepted by the BRE guidelines.

5.21 It should be noted that each of the nine windows which will experience VSC reductions beyond the parameters suggested as acceptable by the BRE guidelines will achieve at least 25% VSC, following the implementation of the Proposed Scheme. These retained VSC values are therefore only marginally below the 27% suggested as acceptable by the BRE guidelines and therefore we are of the opinion that they are still relatively high, especially when considering the urban context of the Site.

5.22 All 12 rooms assessed within this property for NSL will achieve BRE compliance, should the Proposed Scheme be implemented. Given the full BRE compliance for NSL and the high retained values for VSC, we are of the opinion that the Proposed Scheme will have a minor impact on the daylight amenity to this property.

5.23 Given the northerly aspect of the Site-facing windows and rooms located within this property, these have not been considered within our APSH analysis.

6.0 Conclusions

6.1 CBRE have carried out a daylight and sunlight analysis to understand the daylight and sunlight impacts associated with the proposed CHQ Architects scheme, received on 27th February 2019.

6.2 Following successful implementation of the Proposed Scheme, 87% of windows and 76% of rooms would achieve BRE compliance when considering the VSC and NSL methods of assessment. Of the windows and rooms assessed for APSH, 100% achieve BRE compliance.

6.3 It should be noted that Somerton House would only experience BRE transgressions to the VSC at the windows, following the implementation of the Proposed Scheme. The vast majority of the rooms assessed within Somerton House would experience only minor alterations in skylight availability.

6.4 In relation to the mixed-use properties located to the north of the Site along Euston Road, all achieve BRE compliance for VSC and it is only in consideration of NSL where there are instances of isolated reductions beyond BRE guidance. All rooms assessed within these properties will achieve very high levels of NSL following the implementation of the Proposed Scheme.

APPENDICES

Appendix 1 – Daylight and Sunlight Summary and Glossary

BRE GUIDE (2011)

The Building Research Establishment "the BRE", Site Layout and Planning for Daylight and Sunlight – A Guide to Good Practice (2011) is the primary guidance on daylight and sunlight matters. The main aim of this guidance is to ensure good daylighting and sunlighting conditions in the local environment. To achieve this, the BRE provides recommendations as to how to achieve adequate light levels within new developments and within neighbouring properties.

However, although it gives guidance on daylight and sunlight levels and degrees of acceptable impacts, it also advises that the recommendations are "not mandatory" and "although it gives numerical guidelines, these should be interpreted flexibly".

The BRE is based on a suburban model so the values contained within this guidance are often hard to achieve in different urban conditions. Challenges therefore occur when developing a site in a densely built up area. The BRE suggests that it is inappropriate to strictly adhere to the BRE guidelines when a designing in a location such as this. Within the BRE's introduction it notes that "in a historic city centre, or in an area of modern high rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings". In addition, it also states that the "numerical values given here are purely advisory". Different criteria may be used based on the requirements for daylighting in an area. The guidance must therefore be treated flexibility and different target values should be adopted based on the special requirements for a site.

The BRE has developed tests in which to quantify whether an occupier would notice a reduction in daylight and sunlight. They have also provided guidance as to the level of light that should be received within new build accommodation. The suggested levels are as follows:

Daylight

The ways in which to assess daylight within existing and proposed developments is set out in Section 2 and Appendix C of the BRE guide. The daylight to an adjoining property may be adversely affected if the obstruction angle is more than 25 degrees from the centre of the lowest window. This however is a very rudimentary test and is more appropriately applied in a low density suburban locations rather than complex urban areas. If the obstruction angle is more than 25 degrees, then further tests are required.

Vertical Sky Component (VSC)

This is an assessment of the amount of skylight that falls on a vertical wall. This assessment is undertaken using a skylight indicator or a Waldram diagram. It is a measurement that is taken at the centre point of each main window. A VSC is expressed as a percentage as it is the ratio of the amount of skylight that falls on a vertical wall to the amount that falls on an unobstructed CIE overcast sky. The maximum VSC for a vertical wall is just less than 40%. The BRE recommends windows should receive a level of 27% or more to achieve good daylighting. However this level is often difficult to achieve within urban environments as it equates to an obstruction of 25% at the centre point of a window.

Appendix 1 – Daylight and Sunlight Summary and Glossary

The VSC test is a useful indicator of expressing skylight availability however has its limitations. It does not take into consideration the size of the window, other windows that may light a space, reflected light (internal and external) or the distribution of the light within a room.

No Sky Line (NSL)

This assessment relates to where within a room the sky can be seen from the working plane (850mm above floor level). The BRE states that areas beyond the NSL appear dark and gloomy as they receive no direct skylight and electric lighting is usually required in these locations. If the NSL is reduced by greater than 20% it will be noticeable to the occupier and can make the room appear poorly lit.

The NSL can be a useful method to understand the distribution of skylight visibility within a room. However, again this test has its limitations as it does not consider reflected light, sky visibility at different heights within a room (it is a measurement at the working plane) and is heavily influenced on a rooms size and shape. In addition, if an existing building contains rooms lit from one only side and are deeper than 5m then the change to the NSL may be unavoidable.

Average Daylight Factor (ADF)

The ADF is a test is the average illuminance on the working plane divided by the illuminance of an unobstructed surface outdoors, using a CIE overcast sky. A room with an ADF of 5% or more will not require supplementary artificial lighting. The guidance recommends 2% is achieved for kitchens, 1.5% for living rooms and 1% for bedrooms. The ADF considers transmittance of the glazing (single or double glazing), maintenance factor (including corrections for dirt), the area of the window, the total areas of the room (floor, ceiling, walls) and their average reflectance. If a room has more than one window, each is calculated and added together. It also equates the VSC on the external window wall.

This test is therefore a significantly more detailed method of assessment than the VSC or NSL methods set out above. As there are many factors that are contained within the formula, this assessment is only recommended for new developments however in certain circumstances, it can supplement the VSC and NSL methods to provide a more qualitative indication of light levels within an existing building.

Room Depth Ratio Test

This is a test for new developments where daylight is only received by one window wall. This assessment considers the dimensions of each room (its depth) and its window(s) to ensure that the rear half of the room will not appear gloomy. There are limitations to this method as external obstructions do not influence this assessment.

Sunlight (Annual Probably Sunlight Hours (APSH))

Sunlight is an amenity that may people enjoy within their homes. The BRE states that the main requirement for sunlight is within a living room where it is most appreciated.

Site layout is the most important factor affecting sunlight and this is divided into two main issues, orientation and overshadowing. In relation to orientation, a south facing window is likely to receive more sunlight than a north facing one. New dwellings should look to achieve one main window wall (to be used as a living room) within 90 degrees of due south otherwise the unit is likely to be perceived as insufficiently sunlit. It is suggested that the living room is placed within the southern or western areas of a unit.

Appendix 1 – Daylight and Sunlight Summary and Glossary

Care should be taken with new developments to ensure that buildings do not overshadow one another. In new accommodation, occupants should expect sunlight 25% annually with 5% in the winter months. Probable sunlight hours equates to the hours when the sun is expected to shine on unobstructed ground allowing for average cloudiness in a specific location.

Sunlight to existing residential buildings should also be considered when a redevelopment is planned opposite. Surrounding residential buildings should be assessed if:

- A development is situated within 90 degrees of due south of a main window wall of an existing building
- If the new development subtends an angle greater than 25 degrees from the centre of the lowest window to a main living room.

Sunlight will be adversely affected if the centre point of a window does not receive 25% annual APSH (5% in winter), receives less than 0.8 times its former value or has a reduction over the whole year of greater than 4%.

Sun-on-Ground

Sunlight in spaces between buildings is of importance and is valuable as it:

- Provides attractive sunlight views
- Makes outdoor activities such as children's play areas more pleasant
- Encourages plant growth
- Dries out ground, reducing moss and slime
- Melts ice, frost and snow
- Dries clothes

Sunlight should be checked in open spaces such as main gardens, parks and playing fields, playgrounds, outdoor swimming pools, sitting out areas in public squares and focal points such as fountains or monuments. Amenity spaces should receive two hours of sunlight to at least half of the area. This assessment is carried out on the 21st March. If an existing amenity area is not achieving this value, it is allowed up to a 20% reduction, anything beyond this could be considered noticeable to an occupier.

Appendix 1 – Daylight and Sunlight Summary and Glossary

GLOSSARY

Vertical Sky Component (VSC) – This is a ratio of the illuminance that is received directly from a standard overcast sky, to the illuminance on an unobstructed horizontal plane. The measurement is taken at the centre point of a window. The diffuse daylight may be adversely affected if the window receives less than 27% and less than 0.8 times its former value.

No Sky Line (NSL) – Illustrates the distribution of skylight in a room. It is the area of a room at working plane height that can and cannot see the sky. The skylight to a room may be adversely affected if a room is reduced to less than 0.8 times its former value.

Average Daylight Factor (ADF) – is a measure of the overall daylight to a space. It is the average illuminance on the working plane which is expressed as a percentage of the outdoor illuminance. The size of the window, transmittance value of the glazing, maintenance factor, the total surface area of the room (i.e. ceiling, walls, floor) and their reflectance is measured.

Annual Probable Sunlight Hours (APSH) – Is the average of the total number of hours during a year in which direct sunlight reaches unobstructed ground. Properties which have a main living room or conservatory that is orientated within 90 degrees of due south should be considered. The assessment is taken at the centre point of a window and if this receives one quarter of APSH with 5% in the winter months, then the room should receive enough sunlight. The sunlight may be adversely affected if the window does not achieve these values, it is reduced more than 0.8 times its former value and it has a reduction received over the whole year greater than 4%.

Sun-on-Ground – For an amenity area to appear adequately sunlit, at least half the area should receive at least 2 hours of direct sunlight on the 21st March. If this is not met, then a 0.8 times reduction is allowed as anything greater than this is deemed noticeable.

Appendix 2 – Existing and Proposed Drawings

SOURCES OF INFORMATION:

CHQ ARCHITECTS
IR01_140617
IR02_150617
IR04_230617

PHOTOGRAMMETRY
IR03_210617
IR05_260617

ORDNANCE SURVEY

SITE PHOTOGRAPHY

N

EXISTING SCENARIO SHOWN IN GREEN

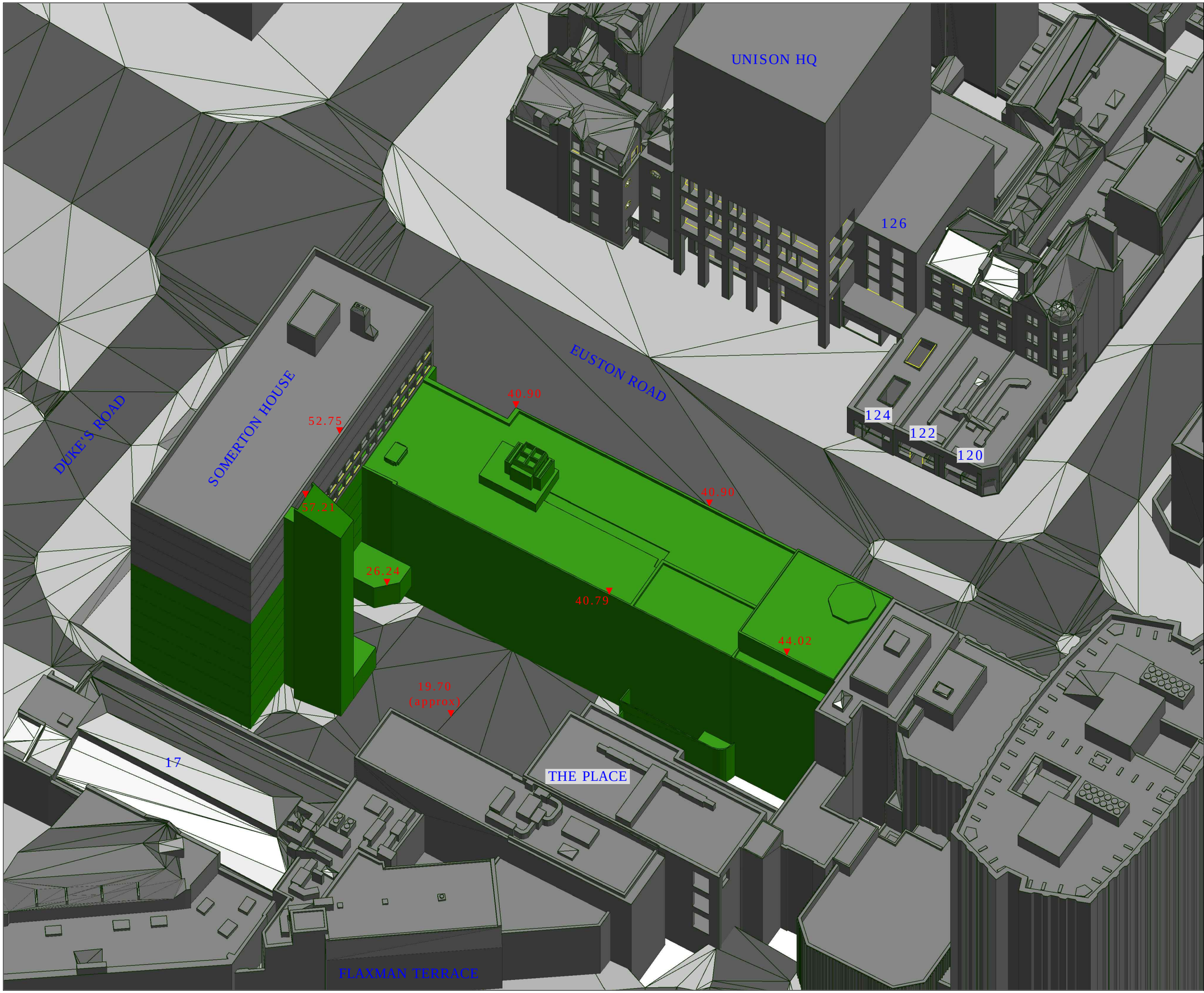
CBRE

PROJECT
PREMIER INN - LONDON EUSTON
1 DUKE'S ROAD
KINGS CROSS
LONDON WC1H 9PJ

DRAWING
PLAN VIEW
EXISTING SCENARIO

DATE	SCALE
30.06.17	NTS
DRAWN BY	REVISION
MF	A

PROJECT No.	DRAWING No.	RELEASE
0108	01	01



SOURCES OF INFORMATION:

CHQ ARCHITECTS
IR01_140617
IR02_150617
IR04_230617

PHOTOGRAMMETRY
IR03_210617
IR05_260617

ORDNANCE SURVEY

SITE PHOTOGRAPHY

AOD HEIGHTS SHOWN IN METRES

EXISTING SCENARIO SHOWN IN GREEN

CBRE

PROJECT
PREMIER INN - LONDON EUSTON
1 DUKE'S ROAD
KINGS CROSS
LONDON WC1H 9PJ

DRAWING
3D VIEW
EXISTING SCENARIO

DATE	SCALE
30.06.17	NTS
DRAWN BY: MF	REVISION: A

PROJECT No.	DRAWING No.	RELEASE
0108	02	01

SOURCES OF INFORMATION:

CHQ ARCHITECTS
IR07_270219 (PROPOSED SCHEME)

PHOTOGRAMMETRY
IR03_210617
IR05_260617

ORDNANCE SURVEY

SITE PHOTOGRAPHY

N

PROPOSED MASSING SHOWN IN BLUE

EXISTING MASSING RETAINED IN GREEN

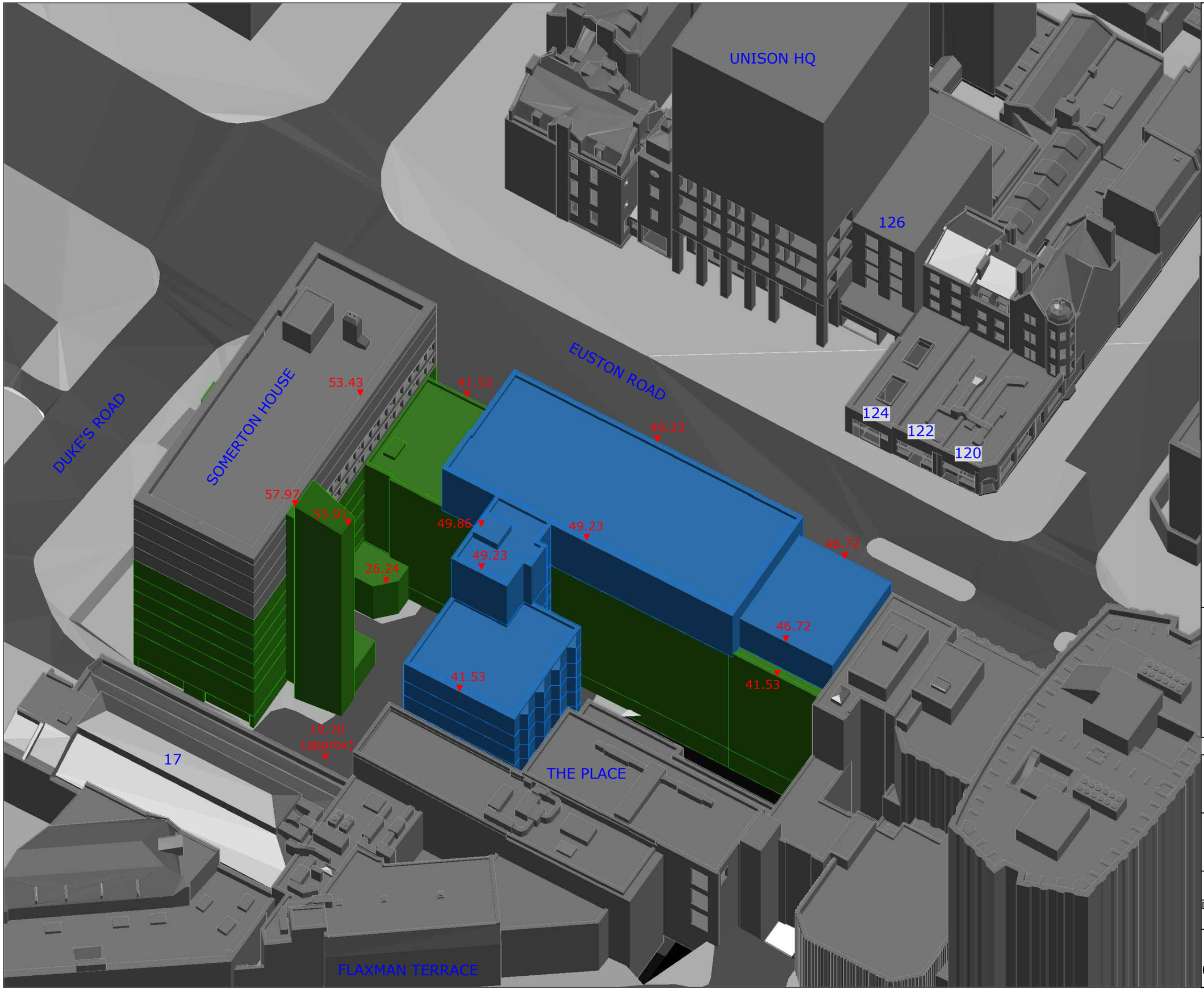
CBRE

PROJECT
PREMIER INN - LONDON EUSTON
1 DUKE'S ROAD
KINGS CROSS
LONDON WC1H 9PJ

DRAWING
PLAN VIEW
PROPOSED SCHEME

DATE	SCALE
02.03.19	NTS
DRAWN BY	REVISION
MF	A

PROJECT No.	DRAWING No.	RELEASE
0218134	06	03



SOURCES OF INFORMATION:

CHQ ARCHITECTS
IR07_270219 (PROPOSED SCHEME)

PHOTOGRAMMETRY
IR03_210617
IR05_260617

ORDNANCE SURVEY

SITE PHOTOGRAPHY

AOD HEIGHTS SHOWN IN METRES

PROPOSED MASSING SHOWN IN BLUE

EXISTING MASSING RETAINED IN GREEN

CBRE

PROJECT
PREMIER INN - LONDON EUSTON
1 DUKE'S ROAD
KINGS CROSS
LONDON WC1H 9PJ

DRAWING
3D VIEW
PROPOSED SCHEME

DATE	SCALE
02.03.19	NTS
DRAWN BY	REVISION
MF	B

PROJECT No.	DRAWING No.	RELEASE
0218134	07	03

Appendix 3 – VSC, APSH and NSL Spreadsheets

Vertical Sky Component						
Room	**Window**	**Room Use**	**Existing**	**Proposed**	**Loss**	**%**
120 Euston Road						
R1/First	**W1/First**	Living Room	25.1	23.4	1.7	6.8
R1/First	**W2/First**	Living Room	25.1	23.4	1.7	6.8
R1/First	**W3/First**	Living Room	25.0	23.4	1.6	6.4
R1/First	**W4/First**	Living Room	19.7	19.0	0.7	3.6
R1/First	**W5/First**	Living Room	19.3	19.3	0.0	0.0
R1/Second	**W1/Second**	Bedroom	27.1	25.4	1.7	6.3
R1/Second	**W2/Second**	Bedroom	27.1	25.4	1.7	6.3
R1/Second	**W3/Second**	Bedroom	27.0	25.5	1.5	5.6
R1/Second	**W4/Second**	Bedroom	21.7	21.0	0.7	3.2
R1/Second	**W5/Second**	Bedroom	21.5	21.5	0.0	0.0
R1/Third	**W1/Third**	Resi-Unknown	29.3	27.6	1.7	5.8
R1/Third	**W2/Third**	Resi-Unknown	29.3	27.6	1.7	5.8
R1/Third	**W3/Third**	Resi-Unknown	29.2	27.7	1.5	5.1
R1/Third	**W4/Third**	Resi-Unknown	23.8	23.1	0.7	2.9
R1/Third	**W5/Third**	Resi-Unknown	23.8	23.7	0.1	0.4
122 Euston Road						
R1/First	**W1/First**	Living Room	25.0	23.1	1.9	7.6
R1/First	**W2/First**	Living Room	25.2	23.3	1.9	7.5
R1/Second	**W1/Second**	Bedroom	26.5	24.6	1.9	7.2
R2/Second	**W2/Second**	Bedroom	26.8	24.9	1.9	7.1
R1/Third	**W1/Third**	Bedroom	27.9	26.0	1.9	6.8
R2/Third	**W2/Third**	Bedroom	27.3	25.4	1.9	7.0
124 Euston Road						
R1/First	**W1/First**	Resi-Unknown	21.6	19.4	2.2	10.2
R1/First	**W2/First**	Resi-Unknown	24.3	22.2	2.1	8.6
R1/Second	**W1/Second**	Resi-Unknown	23.0	20.8	2.2	9.6
R2/Second	**W2/Second**	Resi-Unknown	25.8	23.7	2.1	8.1
R1/Third	**W1/Third**	Resi-Unknown	24.5	22.3	2.2	9.0

Vertical Sky Component						
Room	**Window**	**Room Use**	**Existing**	**Proposed**	**Loss**	**%**
R2/Third	**W2/Third**	Resi-Unknown	27.4	25.4	2.0	7.3
126 Euston Road						
R1/First	**W1/First**	Resi-Unknown	18.9	16.6	2.3	12.2
R1/First	**W2/First**	Resi-Unknown	22.7	20.3	2.4	10.6
R1/Second	**W1/Second**	Resi-Unknown	20.2	17.9	2.3	11.4
R1/Second	**W2/Second**	Resi-Unknown	24.2	21.8	2.4	9.9
R1/Third	**W1/Third**	Resi-Unknown	21.6	19.3	2.3	10.6
R1/Third	**W2/Third**	Resi-Unknown	25.8	23.4	2.4	9.3
R1/Fourth	**W1/Fourth**	Resi-Unknown	22.8	20.7	2.1	9.2
R1/Fourth	**W2/Fourth**	Resi-Unknown	27.3	25.1	2.2	8.1
Somerton House						
R1/Sixth	**W2/Sixth**	Resi-Unknown	30.5	26.3	4.2	13.8
R1/Sixth	**W1/Sixth**	Resi-Unknown	29.0	25.5	3.5	12.1
R2/Sixth	**W5/Sixth**	Resi-Unknown	32.9	26.2	6.7	20.4
R2/Sixth	**W4/Sixth**	Resi-Unknown	32.4	26.4	6.0	18.5
R2/Sixth	**W3/Sixth**	Resi-Unknown	31.6	26.5	5.1	16.1
R3/Sixth	**W7/Sixth**	Resi-Unknown	33.7	25.8	7.9	23.4
R3/Sixth	**W6/Sixth**	Resi-Unknown	33.7	26.2	7.5	22.3
R4/Sixth	**W9/Sixth**	Resi-Unknown	33.7	25.4	8.3	24.6
R4/Sixth	**W8/Sixth**	Resi-Unknown	33.6	25.5	8.1	24.1
R5/Sixth	**W12/Sixth**	Resi-Unknown	33.5	25.1	8.4	25.1
R5/Sixth	**W11/Sixth**	Resi-Unknown	33.6	25.0	8.6	25.6
R5/Sixth	**W10/Sixth**	Resi-Unknown	33.3	25.1	8.2	24.6
R6/Sixth	**W14/Sixth**	Resi-Unknown	33.1	27.1	6.0	18.1
R6/Sixth	**W13/Sixth**	Resi-Unknown	33.4	25.9	7.5	22.5
R6/Sixth	**W17/Sixth**	Resi-Unknown	30.5	30.5	0.0	0.0
R6/Sixth	**W16/Sixth**	Resi-Unknown	30.4	30.4	0.0	0.0
R6/Sixth	**W15/Sixth**	Resi-Unknown	30.3	30.3	0.0	0.0
R1/Seventh	**W2/Seventh**	Resi-Unknown	31.5	30.0	1.5	4.8
R1/Seventh	**W1/Seventh**	Resi-Unknown	30.0	28.8	1.2	4.0

Vertical Sky Component						
Room	**Window**	**Room Use**	**Existing**	**Proposed**	**Loss**	**%**
R2/Seventh	**W5/Seventh**	Resi-Unknown	33.7	30.8	2.9	8.6
R2/Seventh	**W4/Seventh**	Resi-Unknown	33.2	30.8	2.4	7.2
R2/Seventh	**W3/Seventh**	Resi-Unknown	32.5	30.5	2.0	6.2
R3/Seventh	**W7/Seventh**	Resi-Unknown	34.7	31.1	3.6	10.4
R3/Seventh	**W6/Seventh**	Resi-Unknown	34.6	31.2	3.4	9.8
R4/Seventh	**W9/Seventh**	Resi-Unknown	34.9	31.0	3.9	11.2
R4/Seventh	**W8/Seventh**	Resi-Unknown	34.8	31.0	3.8	10.9
R5/Seventh	**W12/Seventh**	Resi-Unknown	34.1	30.1	4.0	11.7
R5/Seventh	**W11/Seventh**	Resi-Unknown	34.2	30.3	3.9	11.4
R5/Seventh	**W10/Seventh**	Resi-Unknown	34.2	30.5	3.7	10.8
R6/Seventh	**W17/Seventh**	Resi-Unknown	31.5	31.5	0.0	0.0
R6/Seventh	**W16/Seventh**	Resi-Unknown	31.3	31.3	0.0	0.0
R6/Seventh	**W15/Seventh**	Resi-Unknown	31.2	31.2	0.0	0.0
R6/Seventh	**W14/Seventh**	Resi-Unknown	33.9	31.0	2.9	8.6
R6/Seventh	**W13/Seventh**	Resi-Unknown	34.1	30.4	3.7	10.9

Room/ Floor	Room Use	Flat Number	Whole Room	Prev sq ft	New sq ft	Loss sq ft	%Loss	%Prev	%New
120 Euston Road									
R1/First	Living Room	FloorPlan	255.32	252.07	248.82	3.25	1.29	98.73	97.46
R1/Second	Bedroom	FloorPlan	244.00	242.74	242.71	0.03	0.01	99.49	99.47
R1/Third	Resi-Unknown	FloorPlan	225.04	221.76	221.76	0.00	0.00	98.54	98.54
122 Euston Road									
R1/First	Living Room	FloorPlan	203.76	195.21	157.26	37.96	19.44	95.81	77.18
R1/Second	Bedroom	FloorPlan	89.25	84.20	64.56	19.64	23.33	94.35	72.34
R2/Second	Bedroom	FloorPlan	96.03	93.24	69.53	23.71	25.43	97.09	72.41
R1/Third	Bedroom	FloorPlan	85.27	74.41	65.16	9.25	12.43	87.26	76.42
R2/Third	Bedroom	FloorPlan	77.33	68.73	56.95	11.78	17.13	88.88	73.65
124 Euston Road									
R1/First	Resi-Unknown	Assumed	236.58	230.52	180.39	50.13	21.75	97.44	76.25
R1/Second	Resi-Unknown	Assumed	103.00	100.01	70.31	29.71	29.70	97.10	68.26
R2/Second	Resi-Unknown	Assumed	129.16	123.83	88.36	35.47	28.64	95.87	68.41
R1/Third	Resi-Unknown	Assumed	103.00	100.13	87.08	13.06	13.04	97.22	84.54
R2/Third	Resi-Unknown	Assumed	129.16	124.87	111.14	13.73	10.99	96.68	86.05
126 Euston Road									
R1/First	Resi-Unknown	Assumed-NoRol	308.12	292.94	200.34	92.61	31.61	95.08	65.02
R1/Second	Resi-Unknown	Assumed-NoRol	308.12	300.82	235.30	65.52	21.78	97.63	76.37
R1/Third	Resi-Unknown	Assumed-NoRol	308.12	300.83	281.88	18.95	6.30	97.63	91.48
R1/Fourth	Resi-Unknown	Estimated-NoRol	308.12	300.83	300.83	0.00	0.00	97.64	97.64
Somerton House									
R1/Sixth	Resi-Unknown	Assumed	135.63	135.63	135.63	0.00	0.00	100.00	100.00
R2/Sixth	Resi-Unknown	Assumed	205.59	205.59	205.59	0.00	0.00	100.00	100.00
R3/Sixth	Resi-Unknown	Assumed	135.63	135.63	132.03	3.60	2.65	100.00	97.35
R4/Sixth	Resi-Unknown	Assumed	135.63	135.63	117.25	18.38	13.55	100.00	86.45
R5/Sixth	Resi-Unknown	Assumed	205.59	205.59	204.62	0.97	0.47	100.00	99.53
R6/Sixth	Resi-Unknown	Assumed	166.05	166.04	166.04	0.00	0.00	100.00	100.00
R1/Seventh	Resi-Unknown	Assumed	135.63	135.63	135.63	0.00	0.00	100.00	100.00
R2/Seventh	Resi-Unknown	Assumed	205.59	205.59	205.59	0.00	0.00	100.00	100.00
R3/Seventh	Resi-Unknown	Assumed	135.63	135.63	135.63	0.00	0.00	100.00	100.00
R4/Seventh	Resi-Unknown	Assumed	135.63	135.63	135.63	0.00	0.00	100.00	100.00
R5/Seventh	Resi-Unknown	Assumed	205.59	205.59	205.59	0.00	0.00	100.00	100.00
R6/Seventh	Resi-Unknown	Assumed	166.05	166.05	166.05	0.00	0.00	100.00	100.00

Room	Window	Room Use	Flat Number	Orientation	Window Existing Winter APSH	Window Existing Annual APSH	Window Proposed Winter APSH	Window Proposed Annual APSH	Window Winter Loss	Window Annual Loss	Window Winter %Loss	Window Annual %Loss	Room Existing Winter APSH	Room Existing Annual APSH	Room Proposed Winter APSH	Room Proposed Annual APSH	Room Winter %Loss	Room Annual %Loss
120 Euston Road																		
R1/First	W1/First	Living Room	FloorPlan	146	12	49	10	47	2	2	16.67	4.08						
R1/First	W2/First	Living Room	FloorPlan	146	13	50	11	48	2	2	15.38	4.00						
R1/First	W3/First	Living Room	FloorPlan	145	13	49	11	47	2	2	15.38	4.08						
R1/First	W4/First	Living Room	FloorPlan	101	9	39	7	37	2	2	22.22	5.13						
R1/First	W5/First	Living Room	FloorPlan	56	1	17	1	17	0	0	0.00	0.00	13	53	11	51	15.4	4
R1/Second	W1/Second	Bedroom	FloorPlan	146	17	55	13	51	4	4	23.53	7.27						
R1/Second	W2/Second	Bedroom	FloorPlan	146	18	57	14	53	4	4	22.22	7.02						
R1/Second	W3/Second	Bedroom	FloorPlan	145	18	58	14	54	4	4	22.22	6.90						
R1/Second	W4/Second	Bedroom	FloorPlan	101	13	46	9	42	4	4	30.77	8.70						
R1/Second	W5/Second	Bedroom	FloorPlan	56	2	20	2	20	0	0	0.00	0.00	19	59	14	54	26.3	8
R1/Third	W1/Third	Resi-Unknown	FloorPlan	146	19	60	16	57	3	3	15.79	5.00						
R1/Third	W2/Third	Resi-Unknown	FloorPlan	146	20	61	17	58	3	3	15.00	4.92						
R1/Third	W3/Third	Resi-Unknown	FloorPlan	145	20	61	17	58	3	3	15.00	4.92						
R1/Third	W4/Third	Resi-Unknown	FloorPlan	101	15	49	12	46	3	3	20.00	6.12						
R1/Third	W5/Third	Resi-Unknown	FloorPlan	56	3	22	3	22	0	0	0.00	0.00	20	62	17	59	15.0	5
122 Euston Road																		
R1/First	W1/First	Living Room	FloorPlan	145	13	51	11	49	2	2	15.38	3.92						
R1/First	W2/First	Living Room	FloorPlan	145	13	52	11	50	2	2	15.38	3.85	13	52	11	50	15.4	4
R1/Second	W1/Second	Bedroom	FloorPlan	145	16	55	12	51	4	4	25.00	7.27	16	55	12	51	25.0	7
R2/Second	W2/Second	Bedroom	FloorPlan	145	15	55	12	52	3	3	20.00	5.45	15	55	12	52	20.0	5
R1/Third	W1/Third	Bedroom	FloorPlan	145	17	56	13	52	4	4	23.53	7.14	17	56	13	52	23.5	7
R2/Third	W2/Third	Bedroom	FloorPlan	145	18	57	14	53	4	4	22.22	7.02	18	57	14	53	22.2	7
124 Euston Road																		
R1/First	W1/First	Resi-Unknown	Assumed	144	7	39	5	37	2	2	28.57	5.13						
R1/First	W2/First	Resi-Unknown	Assumed	144	10	46	8	44	2	2	20.00	4.35	11	48	8	45	27.3	6
R1/Second	W1/Second	Resi-Unknown	Assumed	144	10	42	6	38	4	4	40.00	9.52	10	42	6	38	40.0	10
R2/Second	W2/Second	Resi-Unknown	Assumed	144	13	50	9	46	4	4	30.77	8.00	13	50	9	46	30.8	8

					Window								Room					
					Existing		Proposed						Existing		Proposed			
Room	Window	Room Use	Flat Number	Orientation	Winter APSH	Annual APSH	Winter APSH	Annual APSH	Winter Loss	Annual Loss	Winter %Loss	Annual %Loss	Winter APSH	Annual APSH	Winter APSH	Annual APSH	Winter %Loss	Annual %Loss
R1/Third	W1/Third	Resi-Unknown	Assumed	144	12	45	8	41	4	4	33.33	8.89	12	45	8	41	33.3	9
R2/Third	W2/Third	Resi-Unknown	Assumed	144	15	53	10	48	5	5	33.33	9.43	15	53	10	48	33.3	9
126 Euston Road																		
R1/First	W1/First	Resi-Unknown	Assumed-NoRo	145	4	33	2	31	2	2	50.00	6.06						
R1/First	W2/First	Resi-Unknown	Assumed-NoRo	145	7	39	4	36	3	3	42.86	7.69	7	40	4	37	42.9	8
R1/Second	W1/Second	Resi-Unknown	Assumed-NoRo	145	6	35	3	32	3	3	50.00	8.57						
R1/Second	W2/Second	Resi-Unknown	Assumed-NoRo	145	11	44	7	40	4	4	36.36	9.09	11	44	7	40	36.4	9
R1/Third	W1/Third	Resi-Unknown	Assumed-NoRo	145	8	38	5	35	3	3	37.50	7.89						
R1/Third	W2/Third	Resi-Unknown	Assumed-NoRo	145	12	45	9	42	3	3	25.00	6.67	12	46	9	43	25.0	7
R1/Fourth	W1/Fourth	Resi-Unknown	Estimated-NoRc	145	8	38	7	37	1	1	12.50	2.63						
R1/Fourth	W2/Fourth	Resi-Unknown	Estimated-NoRc	145	12	46	11	45	1	1	8.33	2.17	12	46	11	45	8.3	2