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223 Gray's Inn Road

Daylight & Sunlight (Surrounding Properties) and Scheme Internal Daylight Report

Overshadowing

• Daylight & Sunlight • Light Pollution •

Solar Glare • Daylight Design

Director:	Liam Dunford
Client:	Create Reit Limited
Date:	May 2018
Version:	Draft
Project:	P1806

Contents

Appendices

1 Introduction

1.1 This report relates to the Freeson & Tee Architects Proposed Scheme for the redevelopment of the 283 Gray's Inn Road insofar as it affects the daylight and sunlight amenity to the surrounding residential properties. The report will also consider the levels of internal daylight amenity that will be received within the proposed habitable units.

1.2 The Local Authority will be informed in this by the BRE document entitled *Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice 2011* (the BRE guidelines). This document is the principal guidance in this area and sets out the methodology for measuring light and recommends what it considers to be permitted or unobtrusive levels of change.

1.3 The BRE guidelines are not mandatory, though local planning authorities and planning inspectors will consider the suitability of a proposed scheme for a site within the context of BRE guidance. Consideration will be given to the urban context within which a scheme is located and the daylight and sunlight will be one of a number of planning considerations which the local authority will weigh.

2 Methodology

2.1 It is usual to assess daylight and sunlight in relation to the guidelines set out in the 2011 Building Research Establishment (BRE) Report 'Site layout planning for daylight and sunlight - A guide to good practice' by Paul Littlefair. This document is most widely accepted by planning authorities as the means by which to judge the acceptability of a scheme. One of the primary sources for the BRE Report is the more detailed guidance contained within 'British Standard 8206 Part 2:2008'.

2.2 In relation to the properties surrounding a site, usually the local planning authority will only be concerned with the impact to main habitable accommodation (i.e. living rooms, bedrooms and kitchens) within residential properties.

2.3 To determine whether a neighbouring existing building may be adversely affected, the initial test provided by the BRE is to establish if any part of the proposal subtends an angle of more than 25˚ from the lowest window serving the existing building. If this is the case then there may be an adverse effect, and more detailed calculations are required to quantify the extent of any impact.

2.4 The BRE guidelines provide two principal measures of daylight for assessing the impact on properties neighbouring a site, namely Vertical Sky Component (VSC) and No-Sky Line (NSL). They also detail a third measure of daylight which is primarily used for assessing amenity within proposed accommodation, namely Average Daylight Factor (ADF).

2.5 In terms of sunlight we examine the BRE Annual Probable Sunlight Hours (APSH); and in relation to sunlight amenity to gardens and amenity spaces, we apply the quantitative BRE overshadowing guidance.

2.6 These measures of daylight and sunlight are discussed in the following paragraphs -

Diffuse Daylight

2.7 **Vertical Sky Component (VSC)** – VSC is a measure of the direct skylight reaching a point from an overcast sky. It is the ratio of the illuminance at a point on a given vertical plane to the illuminance at a point on a horizontal plane due to an unobstructed sky.

2.8 For existing buildings, the BRE guideline is based on the loss of VSC at a point at the centre of a window, on the outer plane of the wall.

2.9 The BRE guidelines state that if the VSC at the centre of a window is less than 27%, and it is less than 0.8 times its former value (i.e. the proportional reduction is greater than 20%), then the reduction in skylight will be noticeable, and the existing building may be adversely affected.

2.10 **No-Sky Line (NSL) -** NSL is a measure of the distribution of daylight within a room. It maps out the region within a room where light can penetrate directly from the sky, and therefore accounts for the size of and number of windows by simple geometry.

2.11 The BRE suggest that the area of the working plane within a room that can receive direct skylight should not be reduced to less than 0.8 times its former value (i.e. the proportional reduction in area should not be greater than 20%).

2.12 **Average Daylight Factor (ADF) -** ADF is a measure of the overall amount of diffuse daylight within a room. It is the average of the daylight factors across the working plane within a room. This equates to the ratio of the average illuminance across the working plane, to the illuminance due to an unobstructed sky.

2.13 In addition to accounting for external obstructions, the ADF accounts for the number of windows and their size in relation to the size of the room, the window transmittance and the reflectance of the internal walls, floor and ceiling.

2.14 While the ADF can be calculated from first principles using a lighting simulation software suite such as Radiance, in simple situations it can approximated using the empirical formula detailed in both British Standard 8206 Part 2:2008 and Appendix C of the BRE Report.

2.15 With reference to BS8206 Part 2:2008 and Appendix C of the BRE Report, in calculating the values, we have assumed light internal finishes giving the following reflectances: floors 0.4 (light wood or cream carpet), ceilings 0.85 (white paint), internal walls 0.81 (pale cream paint). We have assumed double glazing with a transmittance of 0.68, and have allowed for a maintenance factor of 8% (appropriate for urban residential properties).

2.16 This daylight assessment method considers the transmittance of the glazing to the room in question (i.e. how much light gets through the window glass); the net glazed area of the window in question; the total area of the room surfaces (ceiling, walls, floor and windows) and their reflectances; and the angle of visible sky reaching the window/windows in question.

2.17 Both the BRE Report and BS 8206 Part 2:2008 provide guidance for acceptable ADF values in the presence of supplementary electric lighting, depending on the room use. These are 1.0% for a bedroom, 1.5% for a living room and 2.0% for a kitchen.

2.18 With regard to the combined Living/Kitchen/Dining Rooms (LKDs), strictly the presence of a kitchen means that the target ADF value is 2%. However, as is common in modern residential developments, the kitchen areas are located to the rear of these spaces, furthest from the windows. As such they will receive lower levels of daylight and the ADF target of 1.5% for a living room, which is the principal use, is considered appropriate for these combined spaces.

Sunlight

2.19 **Annual Probable Sunlight Hours (APSH) -** In relation to sunlight, the BRE recommends that the APSH received at a given window in the proposed case should be at least 25% of the total available, including at least 5% in winter.

2.20 Where the proposed values fall short of these, and the absolute loss is greater than 4%, then the proposed values should not be less than 0.8 times their previous value in each period (i.e. the proportional reductions should not be greater than 20%).

2.21 The BRE guidelines state that *'...all main living rooms of dwellings, and conservatories, should be checked if they have a window facing within 90 degrees of due south. Kitchens and bedrooms are less important, although care should be taken not to block out too much sun'*.

The APSH figures are calculated for each window, and where a room is served by more than one window the contribution of each is accounted for in the overall figures for the room. The acceptability criteria are applied to overall room based figures.

3 Sources of Information

Point 2 Surveyors	-	Site Photos
Ordnance Survey Limited	-	Digital O/S Extract
Omega Geometrics	-	Survey Info (received 23/05/18) 15-0169 ELEV_02.dwg 15-0169 MBS_03.dwg
Freeson & Tee	-	Proposed Info (received 23/05/18) 22960_Planning.dwg

4 Standard Survey Limitations

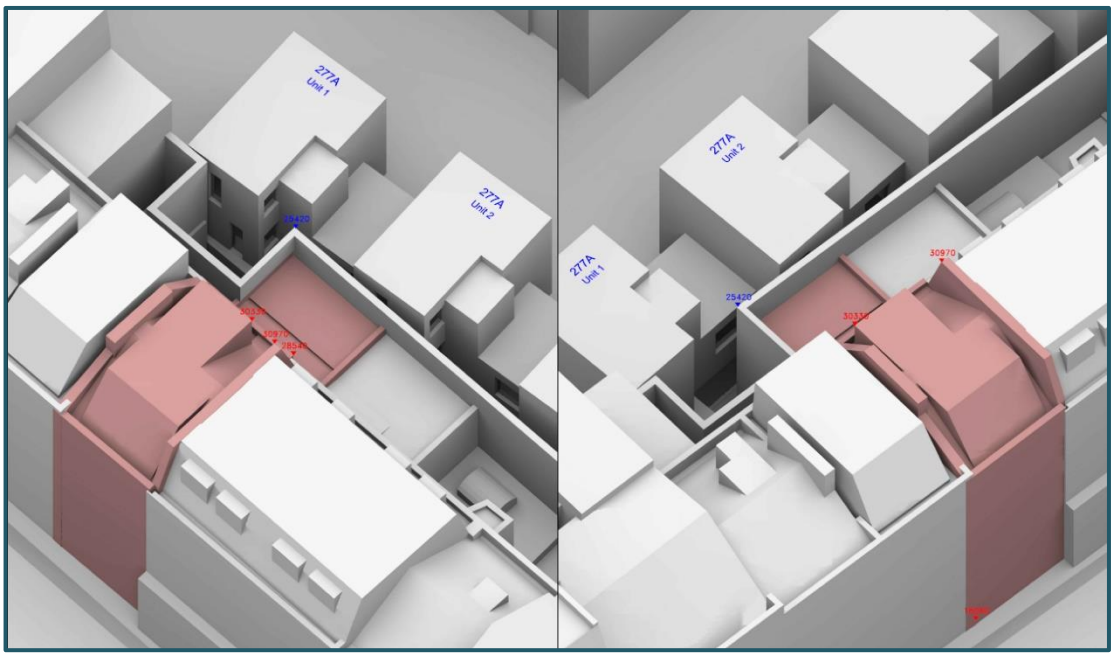
4.1 Although we have undertaken as detailed an inspection as possible, we are required by our professional indemnity insurers to notify you that our report is based upon the Standard Terms and Conditions provided along with our fee proposal. Our understanding of the existing massing, including the surrounding context was established from the sources of information details within Section 3.

4.2 In addition to our standard limitations the following limitations and assumptions also apply.

- Best estimates were made in establishing building use (residential or commercial) and room uses; generally, these were made from external observations and recourse to planning records where available.
- When floor plans of surrounding properties were not available, room depths have been assumed from external observations. Where no indicators of room depth were available a standard of 4m, 6m or 8m depths have been used.
- In accordance with BRE Guidelines[1] balconies, where present have been removed from calculations.

5 The Site

5.1 The site is located in the London Borough of Camden

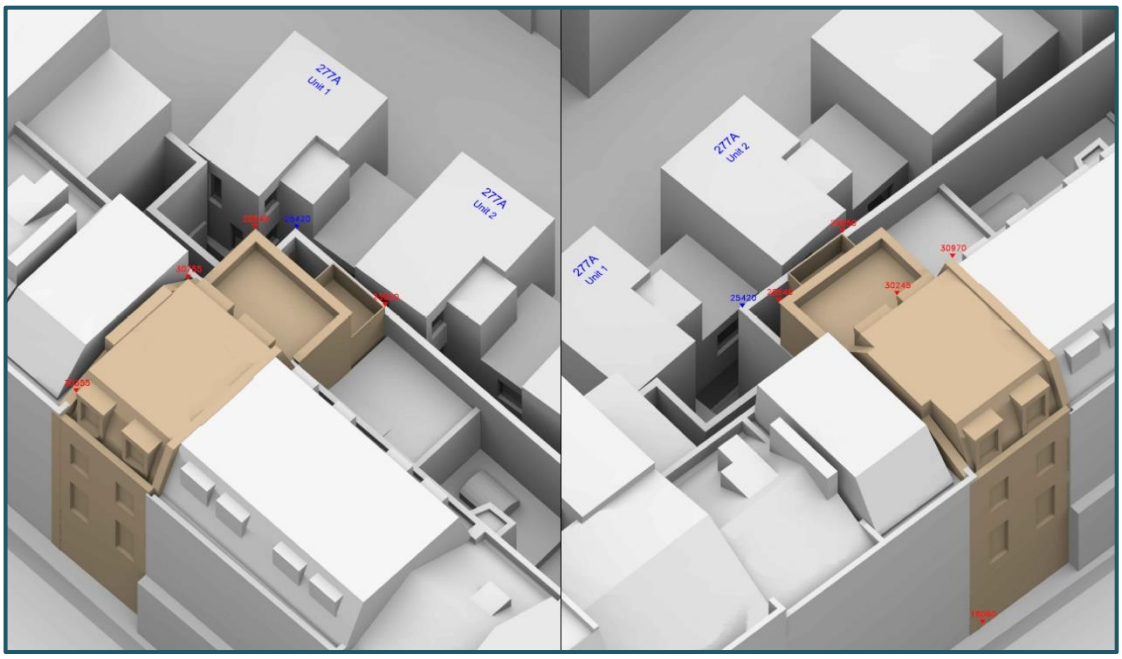


Drawing Number: P1806/02

5.2 Our understanding of the site location and existing building that occupies the site can be seen within drawings P1806/01-02 and can be found within Appendix A.

[1] BRE Guideline 209 Site Layout & Planning A Guide to Good Practice (2011) Paragraph 2.2.11

6 The Proposed Scheme



Drawing Number: P1806/04

6.1 Our understanding of the proposed scheme is illustrated in drawings P1806/05-06 located within Appendix A.

7 The Surrounding Properties

7.1 Owing to the proximity between the development and the recently consented 277A Gray's Inn Road scheme at the rear of the site, we have assessed the most proximate existing habitable rooms against the proposed design. For ease of reference we have labelled the two most closes buildings as 'Unit 1' and 'Unit 2'

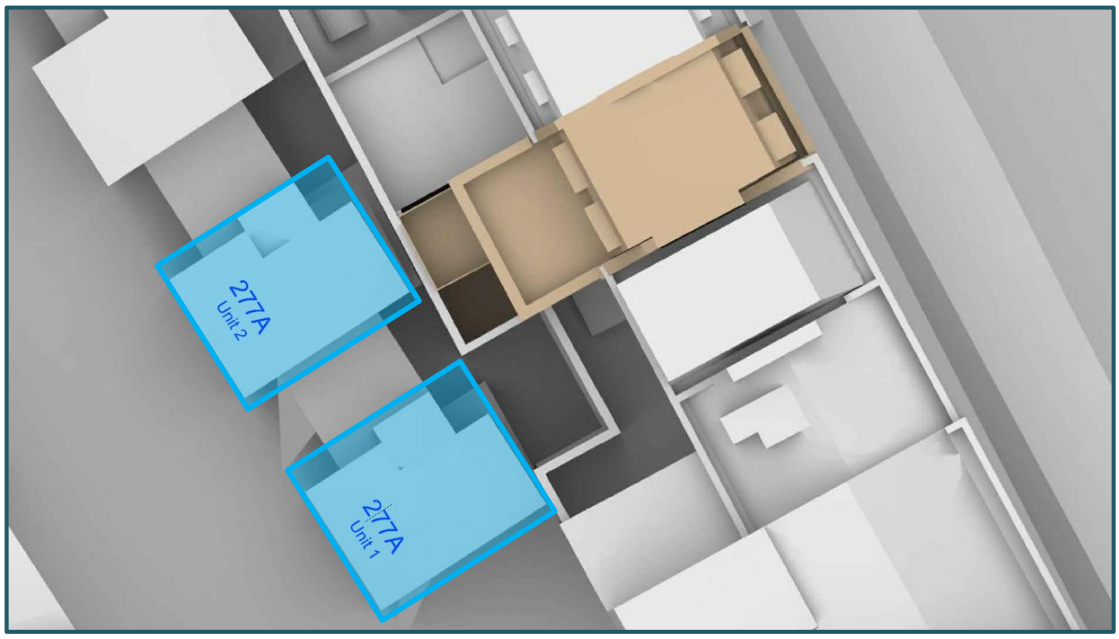
7.2 The location of this property can be seen in the drawings within Appendix A.

7.3 Detailed results for each window/room assessed can be found in Appendix B and are summarised below.

8 Assessment to Surrounding Properties

'Units 1 and 2', 277A Gray's Inn Road

8.1 Located to the west and behind the application site these properties contain habitable rooms which have a view of the site and therefore material for assessment. We are in receipt of layouts for the properties which have been incorporated into our analysis model.



Extract 01 – Proposed Scheme (Beige) & Assessed Buildings (Blue)

8.2 The above drawing illustrates the proposed 283 Gray's Inn Road in beige and the assessed 277A Gray's Inn Road buildings in blue. There are a total 16 windows serving 8 site facing rooms arranged over basement, ground and first floors and comprising of 2 Living/Kitchen/Dining Rooms (LKDs) and 6 Bedrooms.

Daylight

8.3 All windows and associated rooms experience fully BRE compliant alterations in VSC and NSL; the greatest change in VSC being 15.89%.

8.4 BRE Guidance concludes that reductions of up to 20% will be unnoticeable.

Sunlight

8.5 All site facing rooms which have a window orientated within 90 degrees due south experience no changes in Annual Probable Sunlight Hours (APSH) as a result of the proposed scheme.

9 Scheme Internal Daylight Assessment

9.1 Full and detailed analysis annotated upon floor layout plans are provided within Appendix C to show both the locations and configuration of the rooms which have been analysed.

9.2 5 rooms have been analysed to establish the ADF levels within. This represents all of the proposed habitable rooms within the Proposed Development. The analysis takes into account the newly constructed 277A Gray's Inn Road to the rear.

9.3 With reference to the target daylight values detailed in paragraphs 2.17 and 2.18 above, all of the proposed rooms (100%) assessed meet the required ADF value appropriate for the rooms' usage with the majority of the rooms achieving comfortably above above the required minimums.

9.4 The future occupants of these units will enjoy good levels of internal daylight once the scheme is constructed.

10 Conclusion

Daylight and Sunlight to Surrounding Properties

10.1 Based upon the sources of information detailed within section 4, the proposed scheme does not cause any noticeable reductions in daylight or sunlight to the recently constructed Courtyard Terrace (277A Gray's Inn Road) to the rear of the of the development site. The proposed scheme therefore demonstrates compliance with BRE Guidance in this regard.

Internal Daylight Amenity to Proposed Units

10.2 All 5 of the proposed habitable rooms will receive above the target ADF values as detailed within the Methodology (paras 2.17-2.18). It can therefore be concluded that future occupants of the new units will enjoy good levels of daylight after the scheme is implemented.

10.3 We fully support this planning application in terms of daylight and sunlight amenity.

Appendix A – Drawings

Sources: Omega Geomatics
Survey Info (received 23/05/18)
15-0169 ELEV_02.dwg
15-0169 MBS_03.dwg

Freeson & Tee
Proposed Info (received 23/05/18)
22960 - Planning.dwg

Key: Existing Buildings
Proposed Scheme

Project: 283 Grays Inn Road
Camden
London

Title: Site Plan
Existing Buildings

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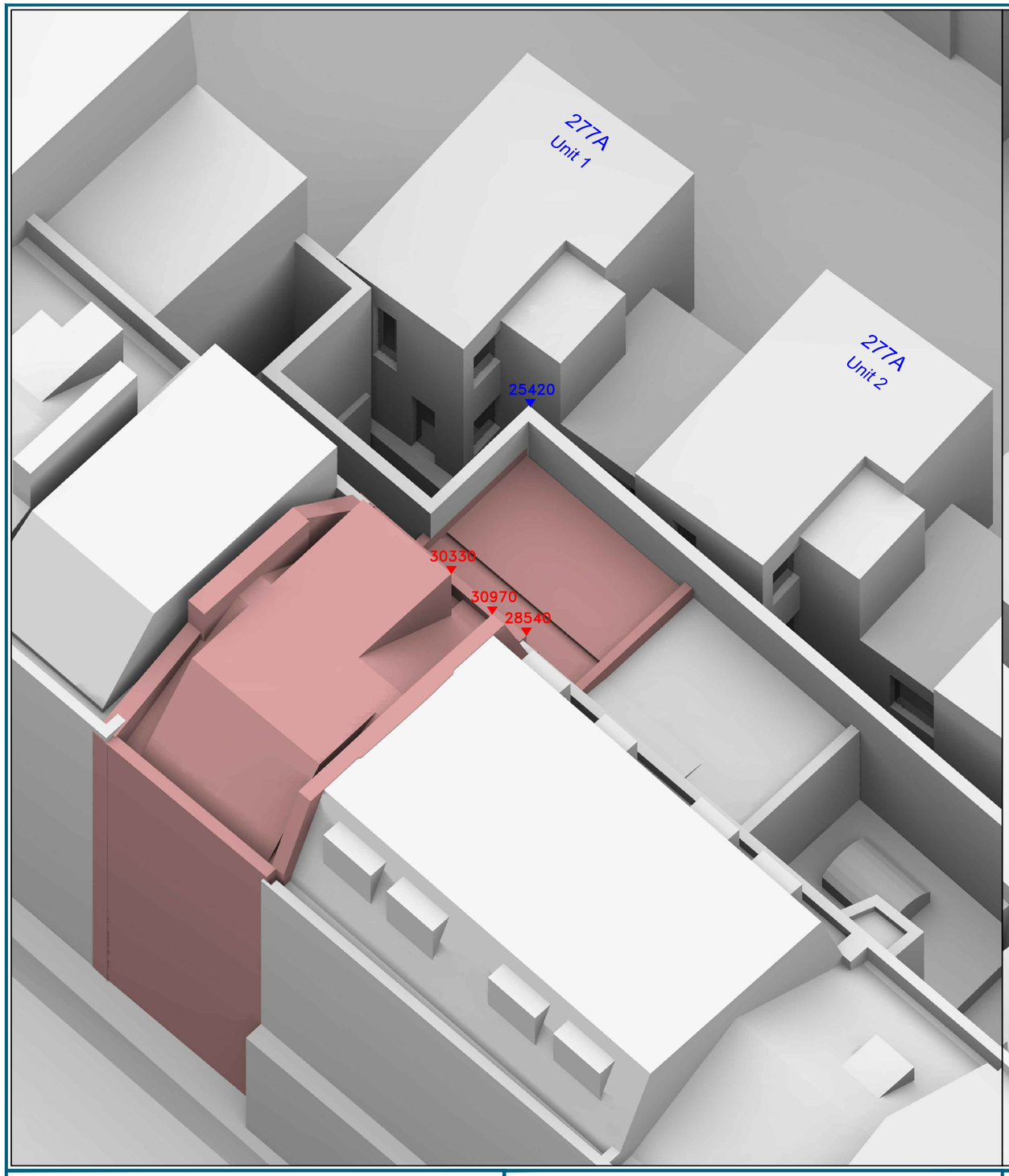
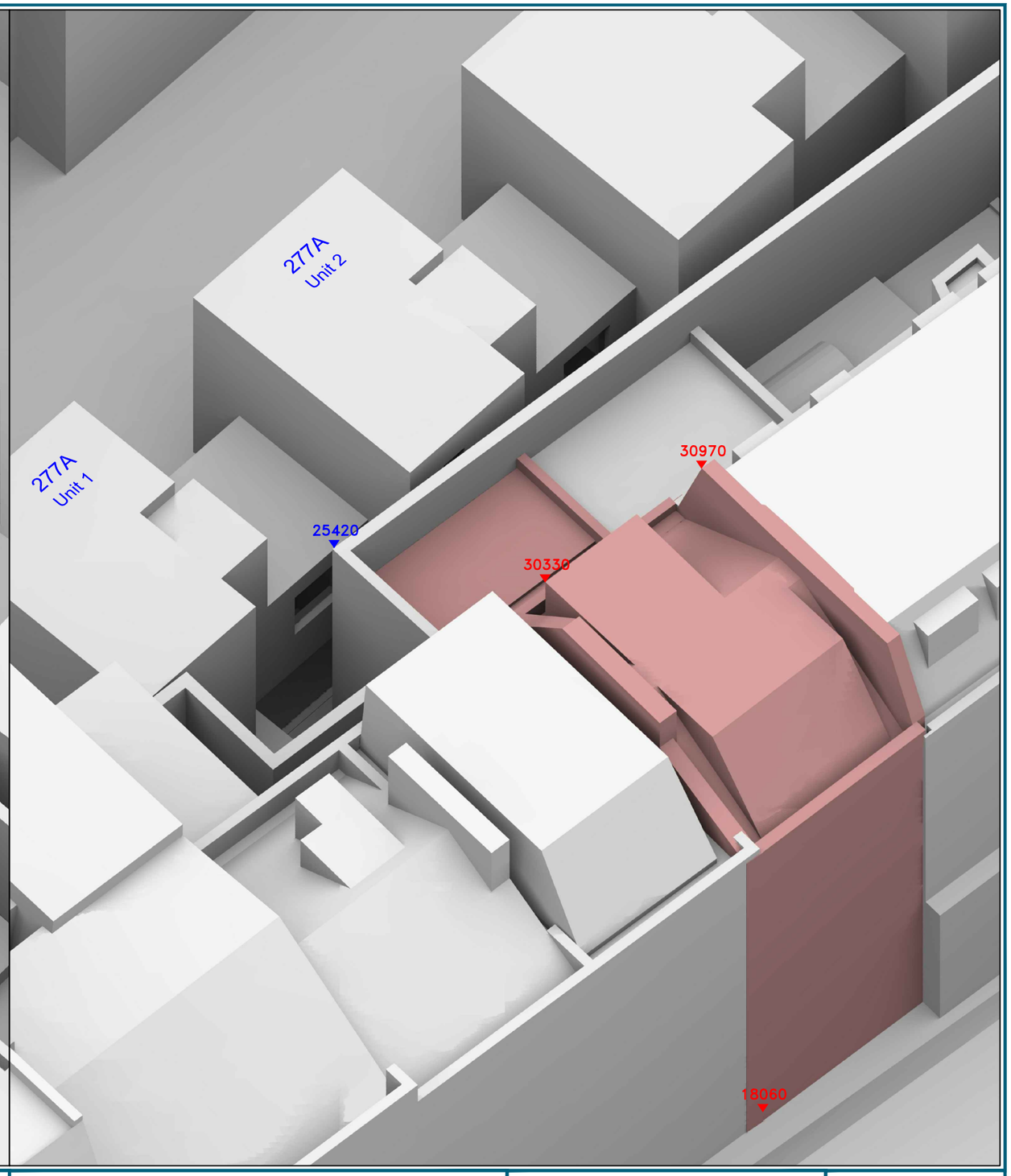
Scheme Confirmed: - Date : -

Drawn By: JB | Scale: 1:200 @ A3 | Date: May 18 | Dwg No: **P1806/01** | Rel: 01





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15-0169 MBS_03.dwg

Freeson & Tee
Proposed Info (received 23/05/18)
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Key: Existing Buildings
Proposed Scheme
All Heights in mm AOD

Project: 283 Grays Inn Road
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London

Title: 3D View
Existing Buildings

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Key: Existing Buildings
Proposed Scheme

Project: 283 Grays Inn Road
Camden
London

Title: Site Plan
Proposed Scheme 23/05/18

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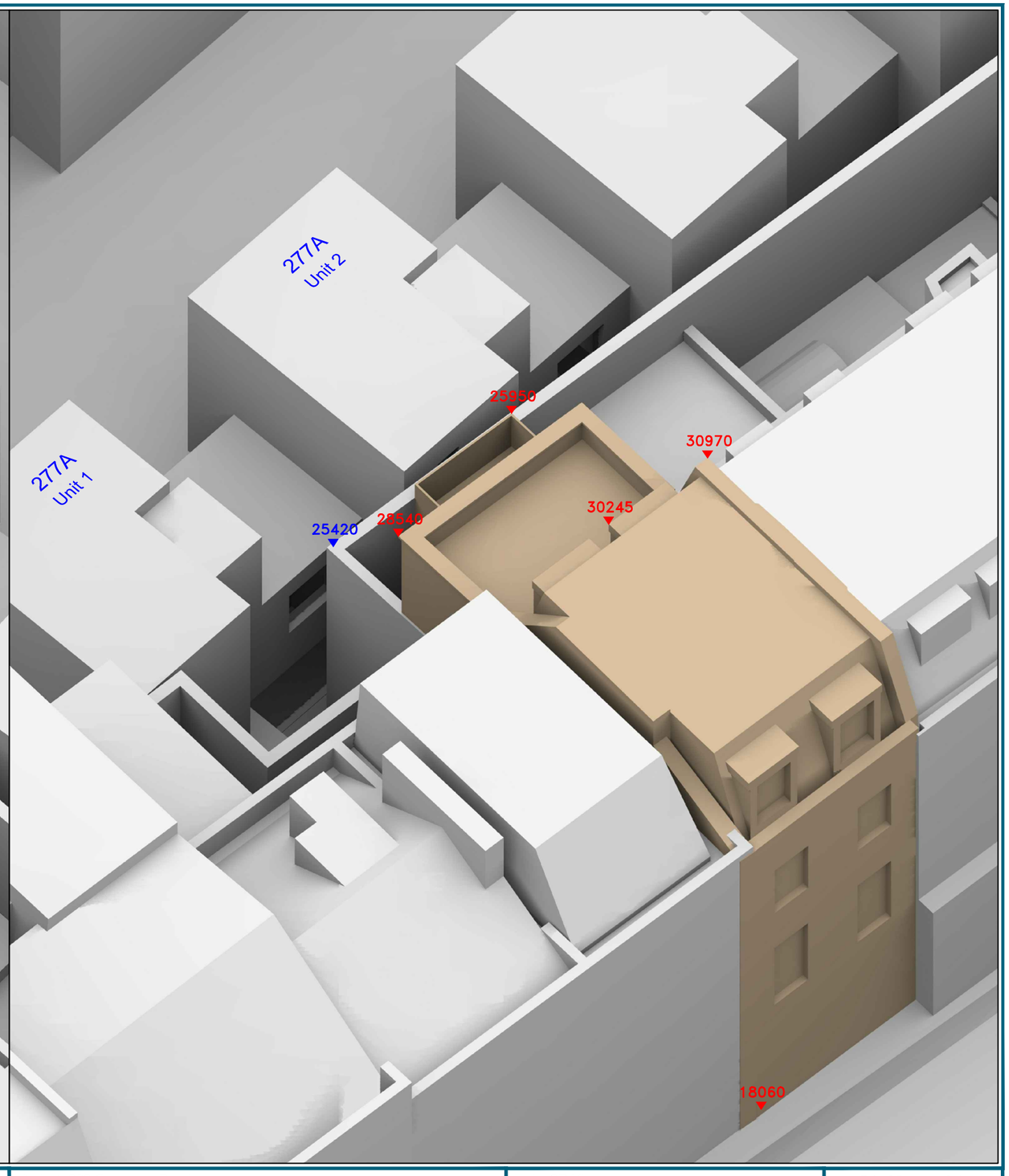

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Key: Existing Buildings
Proposed Scheme
All Heights in mm AOD

Project: 283 Grays Inn Road
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London

Title: 3D View
Proposed Scheme 23/05/18

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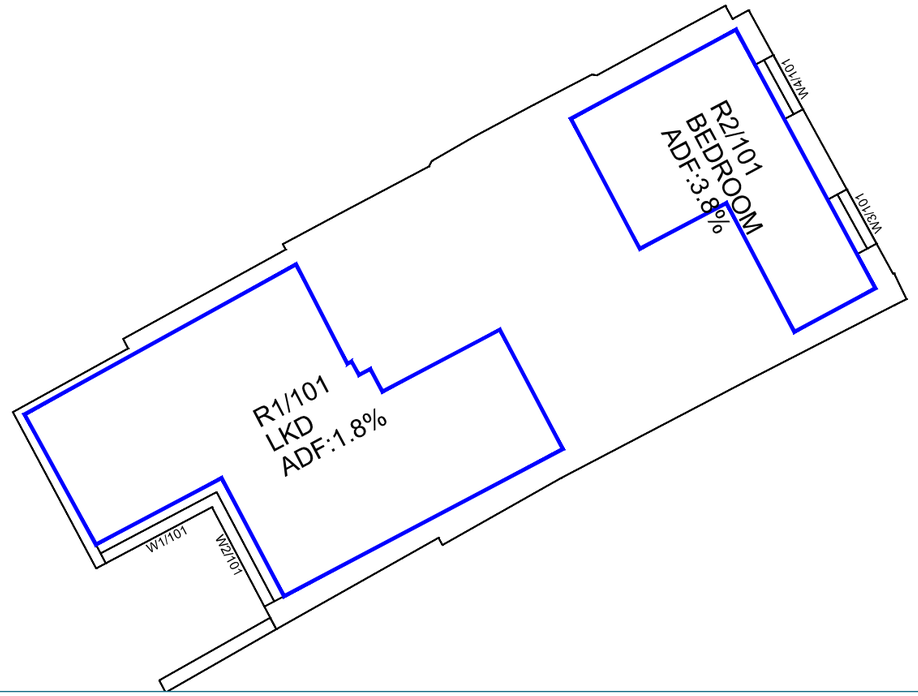
Appendix B – Technical Analysis

Room	Room Use	Window	EXISTING VSC	PROPOSED VSC	LOSS VSC	%LOSS VSC
277A Grays Inn Road, Unit 1						
R1/9	LKD	W1/9	1.30	1.28	0.02	1.54
R1/9	LKD	W2/9	1.86	1.86	0.00	0.00
R1/10	BEDROOM	W1/10	3.77	3.20	0.57	15.12
R1/10	BEDROOM	W2/10	5.18	4.89	0.29	5.60
R2/10	BEDROOM	W3/10	3.44	3.44	0.00	0.00
R1/11	BEDROOM	W1/11	7.09	5.98	1.11	15.66
R1/11	BEDROOM	W2/11	16.08	14.99	1.09	6.78
277A Grays Inn Road, Unit 2						
R2/9	LKD	W3/9	7.80	7.80	0.00	0.00
R2/9	LKD	W4/9	11.00	11.00	0.00	0.00
R2/9	LKD	W5/9	2.66	2.66	0.00	0.00
R2/9	LKD	W6/9	1.07	1.07	0.00	0.00
R3/10	BEDROOM	W4/10	0.67	0.67	0.00	0.00
R3/10	BEDROOM	W5/10	6.02	6.02	0.00	0.00
R4/10	BEDROOM	W6/10	3.59	3.59	0.00	0.00
R2/11	BEDROOM	W3/11	2.16	2.16	0.00	0.00
R2/11	BEDROOM	W4/11	16.71	16.71	0.00	0.00

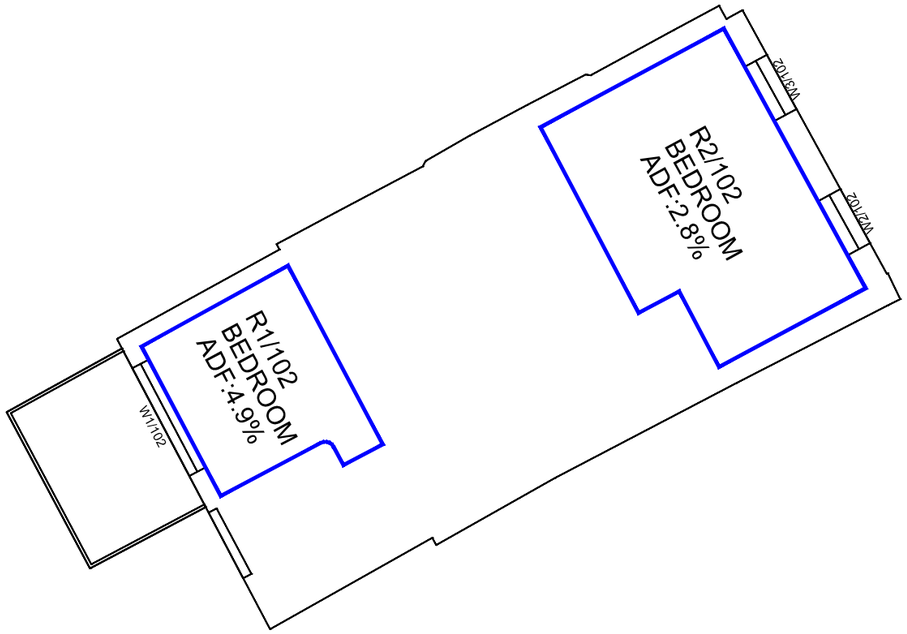
Room/ Floor	Room Use	Whole Room	Prev sq ft	New sq ft	Loss sq ft	%Loss
277A Grays Inn Road, Unit 1						
R1/9	LKD	339.0	75.3	74.6	0.7	0.9
R1/10	BEDROOM	129.6	41.7	40.8	0.8	1.9
R2/10	BEDROOM	84.9	20.8	20.8	0.0	0.0
R1/11	BEDROOM	129.6	74.5	65.2	9.3	12.5
277A Grays Inn Road, Unit 2						
R2/9	LKD	354.8	102.5	102.5	0.0	0.0
R3/10	BEDROOM	128.8	47.6	47.6	0.0	0.0
R4/10	BEDROOM	84.9	11.9	11.9	0.0	0.0
R2/11	BEDROOM	128.8	80.9	80.9	0.0	0.0

			Window						Room					
			Existing		Proposed				Existing		Proposed			
Room	Window	Room Use	Winter APSH	Annual APSH	Winter APSH	Annual APSH	Winter %Loss	Annual %Loss	Winter APSH	Annual APSH	Winter APSH	Annual APSH	Winter %Loss	Annual %Loss
277A Grays Inn Road, Unit 2														
R2/9	**W3/9**	LKD	0	1	0	1	-	0.0						
R2/9	**W4/9**	LKD	0	0	0	0	-	-						
R2/9	**W5/9**	LKD	0	0	0	0	-	-						
R2/9	**W6/9**	LKD	0	0	0	0	-	-	0	1	0	1	-	0.0

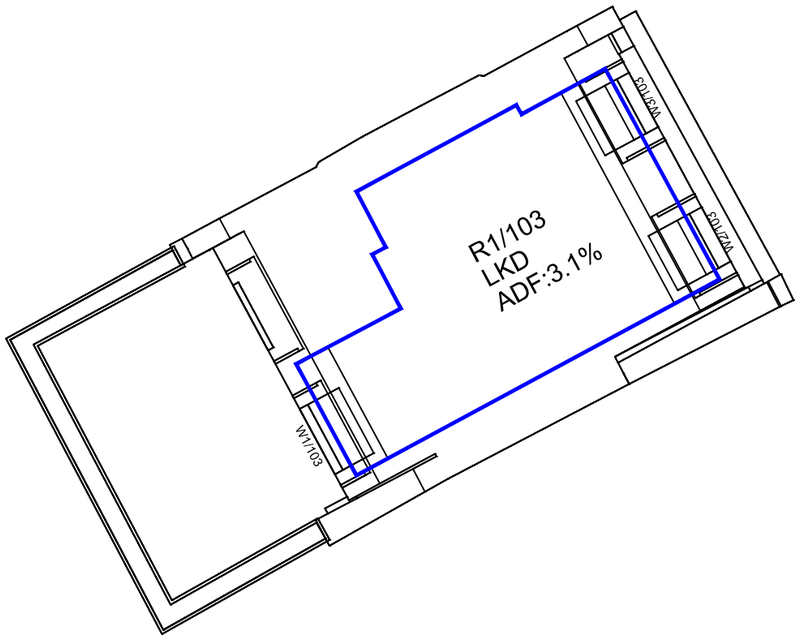
Appendix C – Internal Daylight Amenity Assessment



First Floor



Second Floor



Third Floor

Sources: Omega Geomatics
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15-0169 ELEV_02.dwg
15-0169 MBS_03.dwg

Freeson & Tee
Proposed Info (received 23/05/18)
22960 - Planning.dwg

Key:

Project: 283 Grays Inn Road
Camden
London

Title: Internal ADF Results
Proposed Scheme 23/05/18

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