REPORT

on

DAYLIGHT WITHIN THE PROPOSED DEVELOPMENT

at

140-146 CAMDEN STREET, LONDON

REF: MC/AJ/RO6842

25th June 2014

TABLE OF CONTENTS

SECTION **PAGE NO.**

APPENDICES

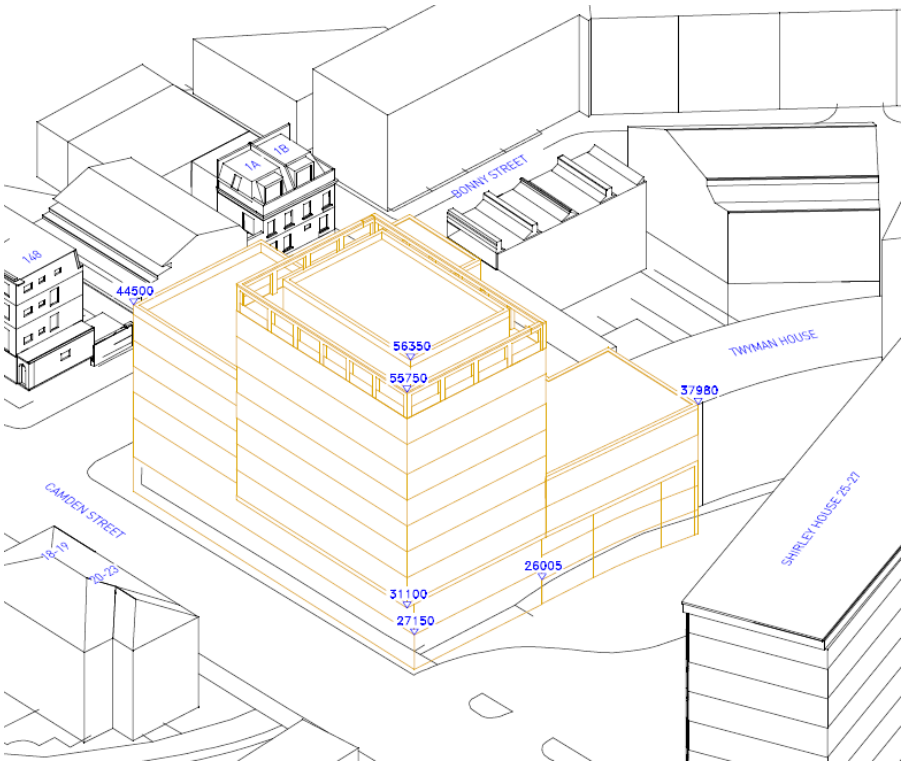


Figure 1: 3D view of computer model looking north

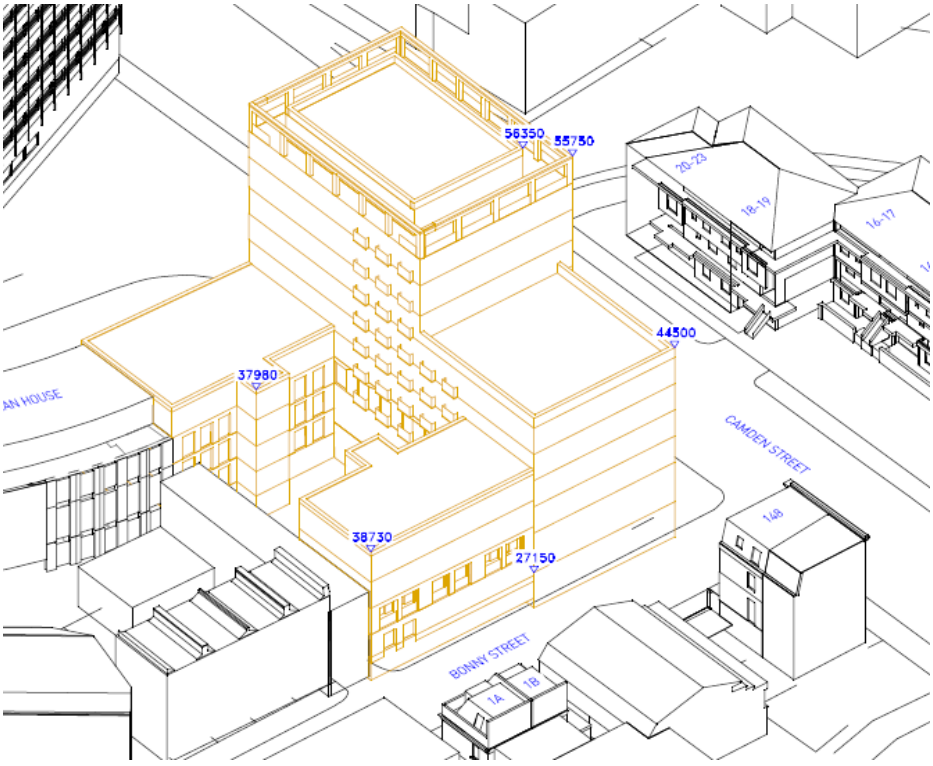


Figure 2: 3D view of computer model looking south

1. INTRODUCTION

1.1 Elebro Limited is proposing a development at 140-146 Camden Street. The site is bounded by the following neighbouring properties, 1a-1b Bonny Street, 148 Camden Street, 12-23 Camden Street and the consented residential proposals at Twyman House.

1.2 Anstey Horne has been commissioned to undertake a formal technical assessment of the daylight levels within the proposed accommodation. We have used 3D computer modelling and our specialist computer software to calculate the levels of daylight that will be available in the proposed habitable rooms. Our 3D model of the proposed scheme is illustrated in our drawings at Appendix A.

1.3 Whilst the Building Regulations do not impose any minimum requirements for daylight provision in buildings, the following guidelines make various recommendations:

- BS8206-2: 2008, 'Lighting for buildings – Part 2: Code of practice for daylighting' (2008)
- BRE Report 209, 'Site layout planning for daylight and sunlight – A guide to good practice' (2011, second edition)
- CIBSE Lighting Guide LG10, *'Daylight and window design'* (1999)

1.4 The abovementioned guides give advice on minimum recommended average daylight factors (ADF) in habitable rooms in dwellings.

1.5 Separately, the Code for Sustainable Homes provides an environmental assessment method for rating and certifying the performance of new homes. Its aim is to encourage best practice in sustainable home building. The Code does not set mandatory daylighting levels and the daylighting credits that are available are entirely optional. An assessment against the Code's daylighting criteria is outside the scope of this report.

1.6 This report summarises the basic principles of daylighting, the methods used to assess the potential levels that will be achieved in the new accommodation, the information used in compiling our 3D computer model and the results of our technical assessment. Drawings and full tables of results of our assessment are attached in the appendices.

2. METHOD OF ASSESSMENT AND NUMERICAL GUIDELINES

Daylight within new development

2.1 Section 2.1 of the BRE guide makes recommendations concerning daylight in new buildings. At the site layout stage of the design process, when window positions and sizes are unknown, the potential for daylight may be checked at a series of reference points on each main face of the building. At each of these reference points the amount of available skylight falling on the vertical wall can be quantified as the vertical sky component (VSC).

2.2 Where window positions and sizes are known, it is more informative to calculate the interior daylighting inside the building. The guidelines recommend calculating the average daylight factor (ADF), which is the mean daylight factor on the horizontal working plane inside the room and is a measure of the overall amount of daylight in a space.

2.3 BS8206 and BRE Report 209 recommend the following minimum values of ADF in housing:-

- 1% for bedrooms
- 1.5% for living rooms
- 2% for kitchens

2.4 BS8206-2: 2008 notes that *"Where one room serves more than one purpose, the minimum average daylight factor should be that for the room type with the highest value. For example, in a space which combines a living room and a kitchen the minimum average daylight factor should be 2%"*.

2.5 There are a number of ways that the ADF can be calculated. We have followed the method described in Appendix C of the BRE guide, which uses the following equation:

$$ADF = \frac{TMA_W\theta}{A(1-R^2)}$$

where,

T is the diffuse visible light transmittance of the glazing;

M is the maintenance factor allowing for the effects of dirt;

$\mathbf{A_w}$ is the net glazed area of the window;

θ is the angle of visible sky;

A is the total area of all the room surfaces (ceilings, floors, walls and windows); and

R is the area-weighted average reflectance for the room surfaces.

2.6 The angle of visible sky (θ) at each window can be directly related to the VSC as described in Appendix C of the BRE guide. The values used in our assessment for the other parameters in the ADF formula are explained in section 5 of this report.

Computer simulation

2.7 The appendices to the BRE guide describe various manual methods for calculating VSC and for plotting the no-sky line on the working plane. However, where the obstructions on the skyline are complex these methods can be difficult to apply and the results can be crude. We therefore prefer to use computer simulation and our specialist software, which is based on the more accurate Waldram method described in Appendix B of the BRE guide.

2.8 Our software calculates the VSC at each window, converts this into an equivalent angle of visible sky (θ) and uses this to calculate ADF in each room.

2.9 The information upon which our computer model was based is explained in the next section of this report.

3. INFORMATION USED IN THE TECHNICAL STUDY

3.1 We undertook our technical study using a 3D computer model of the proposed scheme and its surrounding buildings, which we built from the following information:

- Proposed scheme:
    - Chassay + Last's drawings of the proposed scheme: Drawing nos. D_CSC2-A112-123, A213-216 and 311-314 dated 02/06/2014.
- Surrounding buildings:
    - Plowman Craven's measured survey drawing nos. TWY Survey-18434-001E-01 to TWY Survey-18434-001E-05, TWY Survey-18434-001T-01 and TWY Survey-18434-003E-01 to TWY Survey-18434-003E-05.
    - OS map
    - Aerial photography from Microsoft Bing
    - Site visit, photographs and measurements

3.2 The computer model is illustrated on the drawings at Appendix C.

3.3 In calculating the daylight (ADF) levels the following values were applied in the BRE / BS formula:

- T (diffuse glass transmission): 0.68 for clear double glazing with a low emissivity coating;
- M (maintenance factor for dirt on glass): 0.92 (i.e. 8% loss) for vertical glazing;
- A_w (window aperture area): measured from 3D computer model multiplied by 0.8 for the frame correction factor;
- A (total surface area of room): measured from the 3D computer model; and
- R (area-weighted surface reflectance of room calculated for each room based on the following surface finishes and reflectances:
    - Ceilings: white 0.85
    - Walls: pale cream 0.81
    - Floors: light wood flooring 0.4

4. RESULTS OF TECHNICAL STUDY

4.1 We tested the habitable rooms located in the courtyard area at the lowest floor levels to demonstrate the daylight quality. In all we have tested 23 rooms, of which 3 are living rooms, dining rooms and kitchens (or a combination thereof) and 20 bedrooms. Where windows were set back beneath balconies serving the floor above, we have included the obstructing effect of the balcony within our model.

4.2 The average daylight factor (ADF) results for the proposed habitable rooms tested are shown in the table at Appendix B along with the rooms tested are shown outlined on drawing nos. ROL6842 _6_401 to 403 at Appendix C. The drawings give the use of each room and the room and window references used in our detailed tables of results.

4.3 The technical results show there will only be minor transgressions occurring at ground floor level to Blocks A and D with the living/kitchen/dining areas obtaining ADF results of 1.83% and 1.84% respectively. At first floor level the living/kitchen/dining area obtains an ADF of 1.61%. All the bedrooms tested exceed the BRE guideline recommendations with ADF levels in excess of 1%. The living/kitchen/dining area has been included but it is accepted in design that the kitchen placed to the rear of the room has less of an ability to obtain natural daylight and that for task orientated work artificial lighting will be used.

4.4 The technical results show that when adopting the 1.5% guideline for living/dining/kitchens and 1.0% for bedrooms, all living/kitchen/dining areas and bedrooms demonstrate a good level of daylight will be achieved within the development. The other habitable rooms within the development should obtain even higher levels of daylight.

5. SUMMARY AND CONCLUSION

5.1 There are no mandatory standards for daylight provision within dwellings in the Building Regulations or the Code for Sustainable Homes environmental assessment method; however a number of good practice guides are available.

5.2 The London Borough of Camden's planning policy seeks to provide good living conditions for residents of new housing developments, including the provision of adequate daylight and sunlight and refers to the guidance published in BRE Report 209 '*Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice*', which gives useful advice and recommends various numerical guidelines.

5.3 We assessed daylight levels to a sample number of habitable rooms in the proposed development in accordance with the BRE guide (2011, second edition). Having assessed the ground, mezzanine and first floor level of the proposed development within the courtyard area, a high level of compliance of the BRE target values are achieved. We expect the residential accommodation above to obtain even higher levels of daylight in excess of the BRE guidelines.

5.4 In conclusion, the proposed development follows the BRE guideline principles for good daylight conditions within the proposed accommodation. In our opinion London Borough of Camden's planning policy on daylight will be satisfied.

M. Craske

……..

Matthew Craske BA (Hons)

Director
ANSTEY HORNE

25th June 2014

APPENDIX A
-
PLAN AND 3D VIEWS OF THE COMPUTER MODEL

DRAWING NOS. ROL6842_6_004 TO 006

AnsteyHorne
CHARTERED SURVEYORS
4 Chiswell Street,
London
EC1Y 4UP
Tel: 020 7065 2770
Fax: 020 7065 2779
Web: www.ansteyhorne.co.uk

LEGEND:

- Existing
- Proposed
- Analysed Buildings
- Surrounding
- Site Boundary

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS
ORDNANCE SURVEY

PLOWMAN CRAVEN (PCA)
DRAWINGS RECEIVED 18/01 /13
TWY SURVEY-1834-001/002 E/T

DRAWING RECEIVED FROM GVA 23/01/13
BRE SEPT 2012.DWG

PROPOSED BUILDINGS
CHASSAY + LAST
PROPOSED SCHEME RECEIVED 02/06/14
CSC2-Elevations & Sections-02.06.14-Rev A.dwg
CSC2-Floor Plans-02.06.14-Rev A.dwg

REV	DESCRIPTION	DATE

CLIENT: ELEBRO LTD

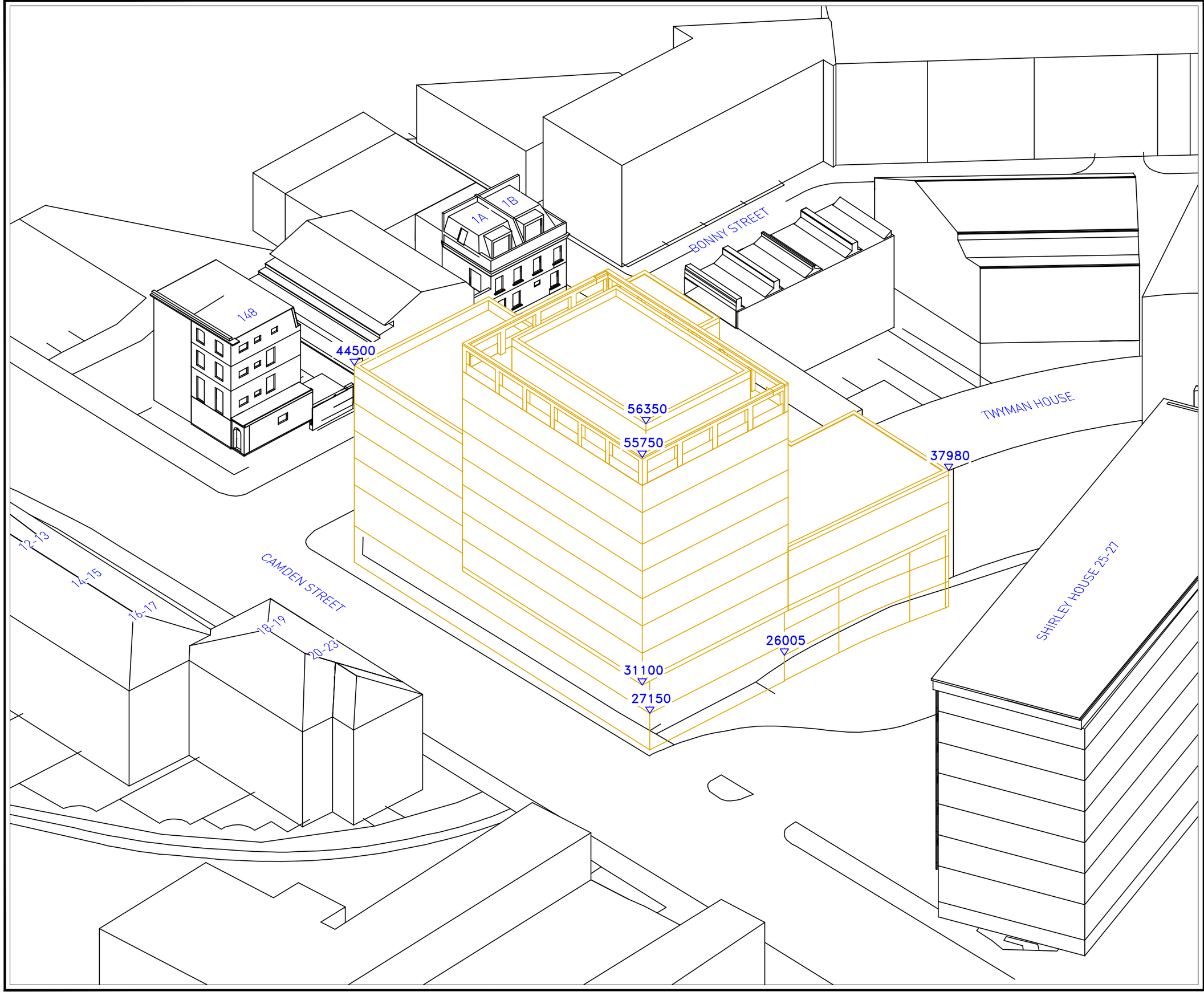
PROJECT TITLE: 140-146 CAMDEN STREET
LONDON, NW1 9PF

DRAWING TITLE: SITE PLAN
PROPOSED SCHEME

PROJECT No:	ROL6842	SCALE:	1:500	DATE:	JUN 14
MODELLED BY:	BW	DRAWN BY:	MDPO	SHEET SIZE:	A3

DRAWING No: ROL_6842_06_004
REVISION: -

Site Plan



AnsteyHorne
CHARTERED SURVEYORS
4 Chiswell Street,
London
EC1Y 4UP
Tel: 020 7065 2770
Fax: 020 7065 2779
Web: www.ansteyhorne.co.uk

LEGEND:

- Existing
- Proposed
- Analysed Buildings
- Surrounding
- Site Boundary

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS
ORDNANCE SURVEY

PLOWMAN CRAVEN (PCA)
DRAWINGS RECEIVED 18/01 /13
TWY SURVEY-1834-001/002 E/T

DRAWING RECEIVED FROM GVA 23/01/13
BRE SEPT 2012.DWG

PROPOSED BUILDINGS
CHASSAY + LAST
PROPOSED SCHEME RECEIVED 02/06/14
CSC2-Elevations & Sections-02.06.14-Rev A.dwg
CSC2-Floor Plans-02.06.14-Rev A.dwg

REV	DESCRIPTION	DATE

CLIENT: ELEBRO LTD

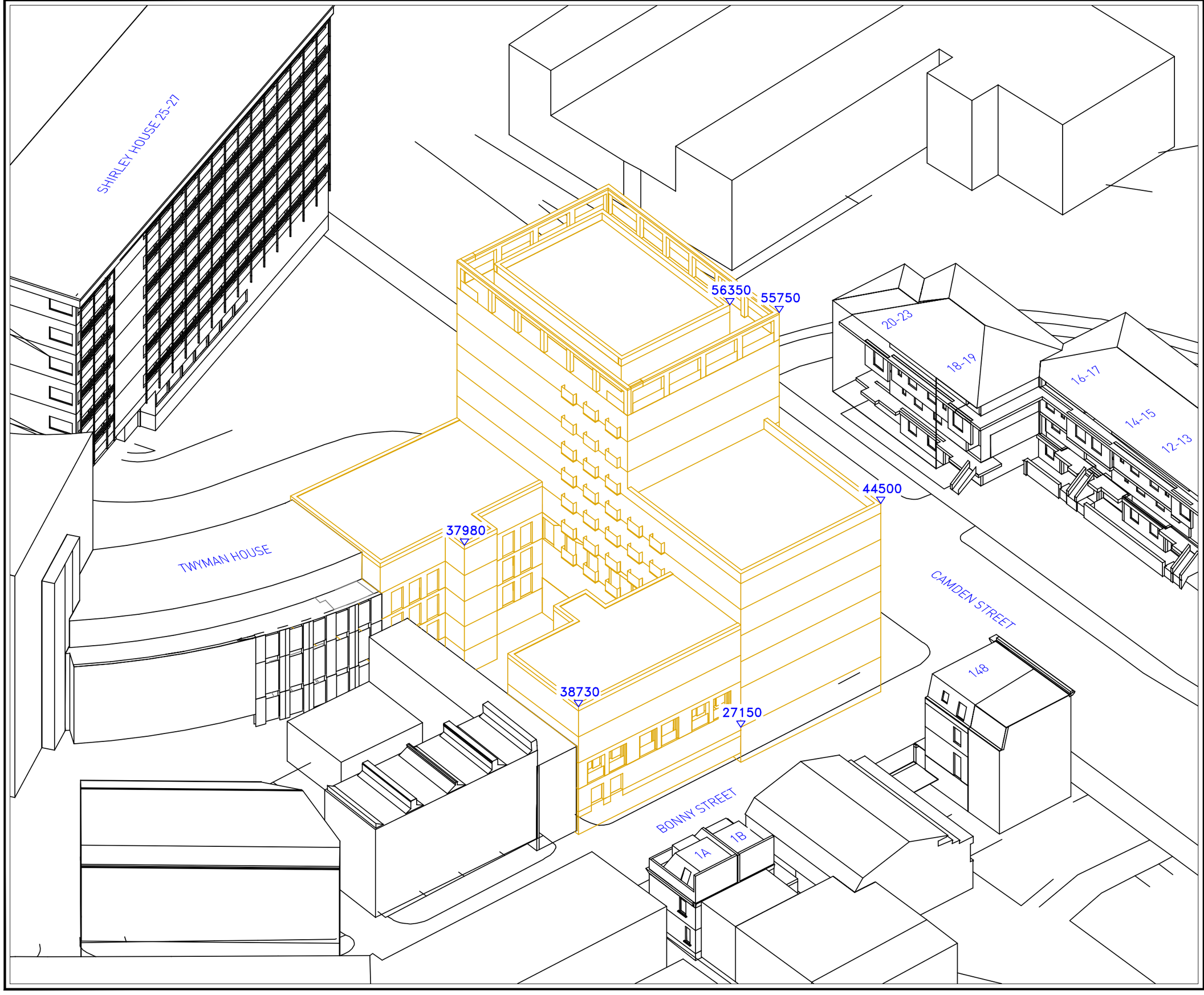
PROJECT TITLE: 140-146 CAMDEN STREET
LONDON, NW1 9PF

DRAWING TITLE: 3D VIEW
PROPOSED SCHEME

PROJECT No:	ROL6842	SCALE:	NTF	DATE:	JUN 14
MODELLED BY:	BW	DRAWN BY:	MDPO	SHEET SIZE:	A3

DRAWING No: ROL_6842_06_005
REVISION: -

3D Massing Model



AnsteyHorne
CHARTERED SURVEYORS
4 Chiswell Street,
London
EC1Y 4UP
Tel: 020 7065 2770
Fax: 020 7065 2779
Web: www.ansteyhorne.co.uk

LEGEND:

- Existing
- Proposed
- Analysed Buildings
- Surrounding
- Site Boundary

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS
ORDNANCE SURVEY

PLOWMAN CRAVEN (PCA)
DRAWINGS RECEIVED 18/01 /13
TWY SURVEY-1834-001/002 E/T

DRAWING RECEIVED FROM GVA 23/01/13
BRE SEPT 2012.DWG

PROPOSED BUILDINGS
CHASSAY + LAST
PROPOSED SCHEME RECEIVED 02/06/14
CSC2-Elevations & Sections-02.06.14-Rev A.dwg
CSC2-Floor Plans-02.06.14-Rev A.dwg

REV	DESCRIPTION	DATE

CLIENT: ELEBRO LTD

PROJECT TITLE: 140-146 CAMDEN STREET
LONDON, NW1 9PF

DRAWING TITLE: 3D VIEW
PROPOSED SCHEME

PROJECT No:	ROL6842	SCALE:	NTF	DATE:	JUN 14
MODELLED BY:	BW	DRAWN BY:	MDPO	SHEET SIZE:	A3

DRAWING No: ROL_6842_06_006
REVISION: -

3D Massing Model

APPENDIX B
-
AVERAGE DAYLIGHT FACTOR ('ADF') TABLE

TABLE P7
AVERAGE DAYLIGHT FACTOR (ADF)
WITHIN PROPOSED ACCOMMODATION

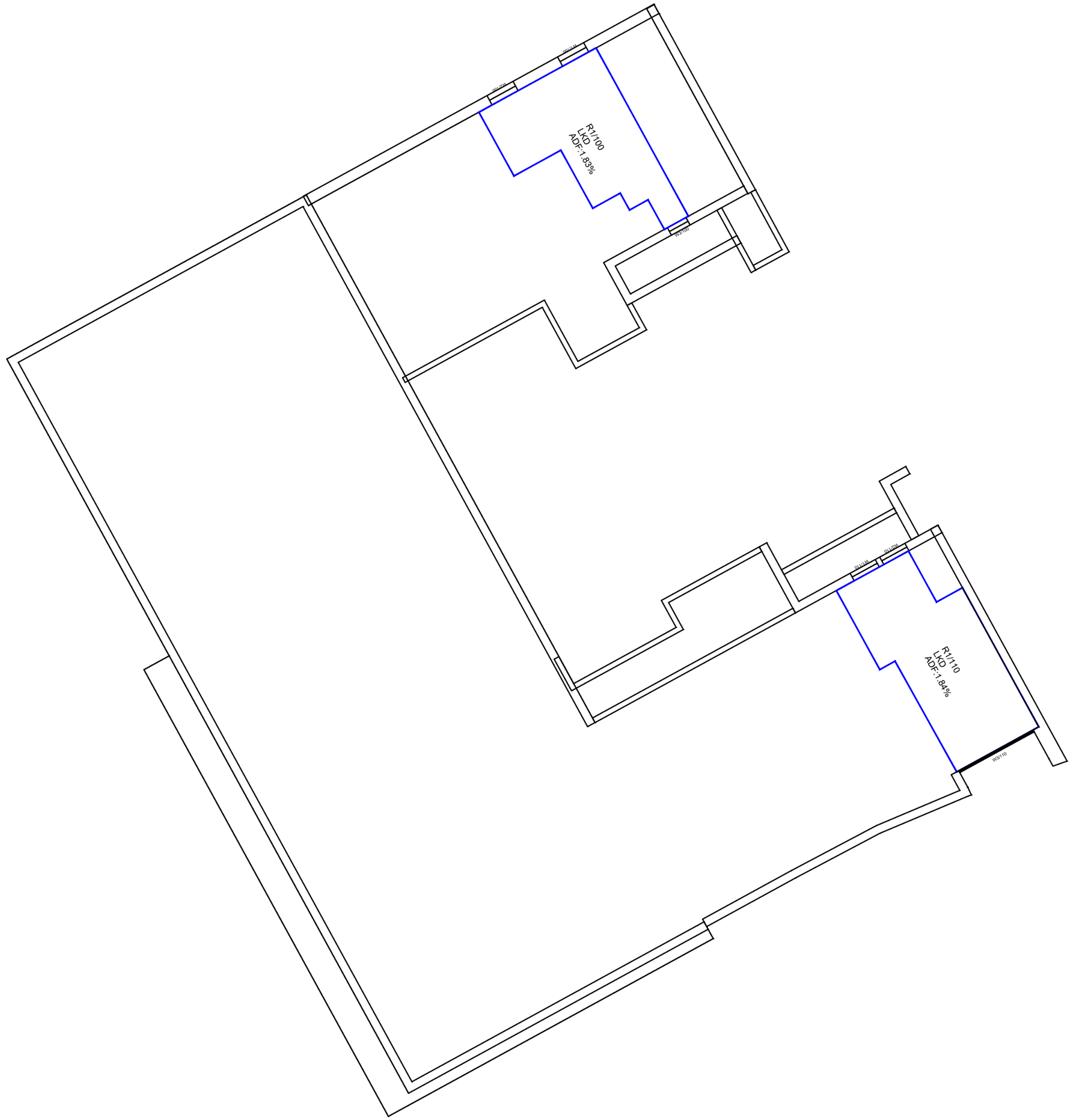
Parameters Used for ADF :
Glazing Transmittance = 0.68
Maintenance Factor = 8%
Glazing bar correction = 0.9
Wall Reflectance = 0.81
Floor Reflectance = 0.4
Ceiling Reflectance = 0.85

Property / room ref.	Property type	Room usage	Window ref.	ADF (%) Contrib.	Total
BLOCK A					
Gnd Floor					
R1/100	RESIDENTIAL	LKD	W1/100	0.78	
R1/100	RESIDENTIAL	LKD	W2/100	0.78	
R1/100	RESIDENTIAL	LKD	W3/100	0.27	1.83
1st Floor					
R1/101	RESIDENTIAL	LKD	W1/101	0.50	
R1/101	RESIDENTIAL	LKD	W2/101	0.51	
R1/101	RESIDENTIAL	LKD	W12/101	0.61	1.61
R2/101	RESIDENTIAL	BEDROOM	W3/101	2.66	2.66
R3/101	RESIDENTIAL	BEDROOM	W4/101	2.98	2.98
R4/101	RESIDENTIAL	BEDROOM	W5/101	1.26	1.26
R5/101	RESIDENTIAL	BEDROOM	W6/101	1.10	1.10
R6/101	RESIDENTIAL	BEDROOM	W7/101	1.68	
R6/101	RESIDENTIAL	BEDROOM	W8/101	1.93	3.61
R7/101	RESIDENTIAL	BEDROOM	W10/101	1.15	
R7/101	RESIDENTIAL	BEDROOM	W11/101	1.36	2.51
BLOCK B					
1st Floor					
R1/121	RESIDENTIAL	BEDROOM	W1/121	1.87	1.87
R2/121	RESIDENTIAL	BEDROOM	W2/121	2.03	2.03
BLOCK C					
1st Floor					
R3/121	RESIDENTIAL	BEDROOM	W3/121	2.03	2.03
R4/121	RESIDENTIAL	BEDROOM	W4/121	2.33	2.33
R5/121	RESIDENTIAL	BEDROOM	W5/121	2.07	2.07
R6/121	RESIDENTIAL	BEDROOM	W6/121	2.17	2.17

TABLE P7
AVERAGE DAYLIGHT FACTOR (ADF)
WITHIN PROPOSED ACCOMMODATION

Property / room ref.	Property type	Room usage	Window ref.	ADF (%) Contrib.	Total
BLOCK D					
Gnd Floor					
R1/110	RESIDENTIAL	LKD	W1/110	0.45	
R1/110	RESIDENTIAL	LKD	W2/110	0.43	
R1/110	RESIDENTIAL	LKD	W3/110	0.96	1.84
1st Floor					
R1/111	RESIDENTIAL	BEDROOM	W1/111	1.77	1.77
R2/111	RESIDENTIAL	BEDROOM	W2/111	2.12	2.12
R3/111	RESIDENTIAL	BEDROOM	W3/111	2.99	2.99
R4/111	RESIDENTIAL	BEDROOM	W4/111	2.58	2.58
Gnd-Mezz Floor					
R1/1100	RESIDENTIAL	BEDROOM	W1/1100	1.57	1.57
R2/1100	RESIDENTIAL	BEDROOM	W2/1100	1.82	1.82
R3/1100	RESIDENTIAL	BEDROOM	W3/1100	2.50	2.50
R4/1100	RESIDENTIAL	BEDROOM	W4/1100	2.01	2.01

APPENDIX C
-
LAYOUT PLANS WITH ADF RESULTS



GROUND FLOOR

AnsteyHorne
CHARTERED SURVEYORS
4 Chiswell Street,
London
EC1Y 4UP
Tel: 020 7065 2770
Fax: 020 7065 2779
Web: www.ansteyhorne.co.uk

LEGEND:

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS
ORDNANCE SURVEY

PLOWMAN CRAVEN (PCA)
DRAWINGS RECEIVED 18/01 /13
TWY SURVEY-1834-001/002 E/T

DRAWING RECEIVED FROM GVA 23/01/13
BRE SEPT 2012.DWG

PROPOSED BUILDINGS
CHASSAY + LAST
PROPOSED SCHEME RECEIVED 02/06/14
CSC2-Elevations & Sections-02.06.14-Rev A.dwg
CSC2-Floor Plans-02.06.14-Rev A.dwg

REV	DESCRIPTION	DATE

CLIENT: ELEBRO LTD

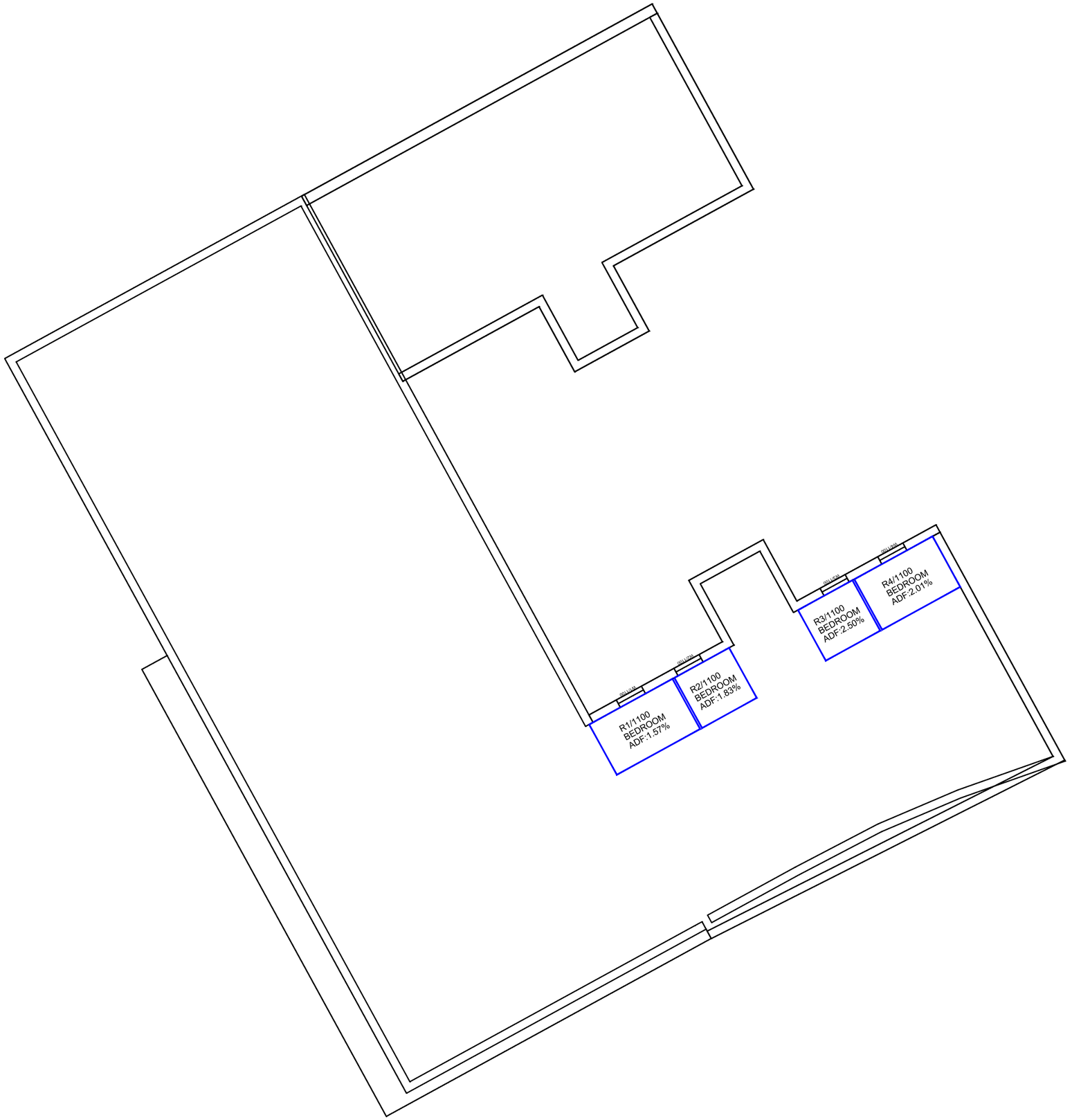
PROJECT TITLE: 140-146 CAMDEN STREET
LONDON, NW1 9PF

DRAWING TITLE: ROOM LAYOUTS & ADF RESULTS
PROPOSED SCHEME
GROUND FLOOR

PROJECT No:	ROL6842	SCALE:	1:500	DATE:	JUN 14
MODELLED BY:	BW	DRAWN BY:	MDPO	SHEET SIZE:	A3

DRAWING No: ROL_6842_06_401
REVISION: -

Daylight & Sunlight



MEZZANINE

AnsteyHorne
CHARTERED SURVEYORS
4 Chiswell Street,
London
EC1Y 4UP
Tel: 020 7065 2770
Fax: 020 7065 2779
Web: www.ansteyhorne.co.uk

LEGEND:

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS
ORDNANCE SURVEY

PLOWMAN CRAVEN (PCA)
DRAWINGS RECEIVED 18/01 /13
TWY SURVEY-1834-001/002 E/T

DRAWING RECEIVED FROM GVA 23/01/13
BRE SEPT 2012.DWG

PROPOSED BUILDINGS
CHASSAY + LAST
PROPOSED SCHEME RECEIVED 02/06/14
CSC2-Elevations & Sections-02.06.14-Rev A.dwg
CSC2-Floor Plans-02.06.14-Rev A.dwg

REV	DESCRIPTION	DATE

CLIENT: ELEBRO LTD

PROJECT TITLE: 140-146 CAMDEN STREET
LONDON, NW1 9PF

DRAWING TITLE: ROOM LAYOUTS & ADF RESULTS
PROPOSED SCHEME
MEZZANINE

PROJECT No:	ROL6842	SCALE:	1:500	DATE:	JUN 14
MODELLED BY:	BW	DRAWN BY:	MDPO	SHEET SIZE:	A3

DRAWING No: ROL_6842_06_402

REVISION: -

Daylight & Sunlight

FIRST FLOOR

AnsteyHorne
CHARTERED SURVEYORS
4 Chiswell Street,
London
EC1Y 4UP
Tel: 020 7065 2770
Fax: 020 7065 2779
Web: www.ansteyhorne.co.uk

LEGEND:

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS
ORDNANCE SURVEY

PLOWMAN CRAVEN (PCA)
DRAWINGS RECEIVED 18/01 /13
TWY SURVEY-1834-001/002 E/T

DRAWING RECEIVED FROM GVA 23/01/13
BRE SEPT 2012.DWG

PROPOSED BUILDINGS
CHASSAY + LAST
PROPOSED SCHEME RECEIVED 02/06/14
CSC2-Elevations & Sections-02.06.14-Rev A.dwg
CSC2-Floor Plans-02.06.14-Rev A.dwg

REV	DESCRIPTION	DATE

CLIENT: ELEBRO LTD

PROJECT TITLE: 140-146 CAMDEN STREET
LONDON, NW1 9PF

DRAWING TITLE: ROOM LAYOUTS & ADF RESULTS
PROPOSED SCHEME
FIRST FLOOR

PROJECT No:	ROL6842	SCALE:	1:500	DATE:	JUN 14
MODELLED BY:	BW	DRAWN BY:	MDPO	SHEET SIZE:	A3

DRAWING No: ROL_6842_06_403
REVISION: -

Daylight & Sunlight

Chartered Surveyors, founded 1795

Rights of Light and Party Wall Consultants
4 Chiswell Street, London EC1Y 4UP

T 020 7065 2770
F 020 7065 2779
www.ansteyhorne.co.uk