5 BELSIZE PARK MEWS

CAMDEN

LONDON NW3 5BL

ANALYSIS

of

SITE LAYOUT

for

DAYLIGHT AND SUNLIGHT

FEBRUARY 2021

by

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ANALYSIS OF SITE LAYOUT FOR DAYLIGHT AND SUNLIGHT

1. Introduction

A planning application it to be made for alterations to the mews house. It is proposed to add accommodation at roof level and make internal alterations.

The daylight and sunlight to nearby houses and gardens and the daylight and sunlight to rooms within the development are analysed in this report.

This report is prepared to accord with the planning requirements of London Borough of Camden, current practice, BS8206 Part 2 (2008) and the BRE Guide Site 'Layout Planning for Daylight and Sunlight: a guide to good practice (2011)'

2. Description of the Site.

5 Belsize Park Mews is a terraced house with accommodation at ground and first floors.

It is proposed to add additional accommodation at roof level, fill in an existing light well and make some internal alterations.

The proposals are shown on the following drawings by AS Studio Architectural Services Ltd that are submitted with the planning application:

1005(EXI)001	B	Location Plan
1005(EXI)002	B	Existing Block Plan
1005(EXI)100	B	Existing Ground Floor Plan
1005(EXI)101	B	Existing First Floor Plan
1005(EXI)102	B	Existing Roof Plan
1005(EXI)200	B	Existing Front Elevation
1005(EXI)300	B	Existing Section AA
1005(EXI)301	B	Existing Section CC
1005(PLA)110	F	Proposed Ground Floor Plan
1005(PLA)111	F	Proposed First Floor Plan
1005(PLA)112	F	Proposed Second Floor Plan
1005(PLA)113	F	Proposed Second Floor Plan
1005(PLA)210	F	Proposed Front Elevation
1005(PLA)310	F	Proposed Section AA
1005(PLA)311	F	Proposed Section CC

3. Planning Requirements

Camden Local Plan 2017, Policy A1, Managing the impact of development, says that the Council will seek to protect the amenity of neighbours. Factors to be included are (f) sunlight and daylight.

Paragraph 6.5 gives the following guidance

Sunlight, daylight and overshadowing

6.5 Loss of daylight and sunlight can be caused if spaces are overshadowed by development. To assess whether acceptable levels of daylight and sunlight are available to habitable, outdoor amenity and open spaces, the Council will take into account the most recent guidance published by the Building Research Establishment (currently the Building Research Establishment's Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice 2011).

Camden also publish guidance in Camden Planning Guidance Amenity March 2018. Section 3 includes a key message saying

KEY MESSAGES:

The Council expects applicants to consider the impact of development schemes on daylight and sunlight levels. Where appropriate a daylight and sunlight assessment should submitted which should be follow the guidance in the BRE's Site layout planning for daylight and sunlight: A guide to good practice.

The 45 degree and 25 degree tests cited in the BRE guidance should be used to assess ('screen') whether a sunlight and daylight report is required.

Levels of reported daylight and sunlight will be considered flexibly taking into account site-specific circumstances and context.

The Council may seek independent verification of sunlight and daylight reports if necessary

The current version of the BRE guide is the second edition published in 2011. This document is referred to as the Guide in this report.

4. General Effects of New Development on Light to Nearby Buildings.

The proposed development extends the outer envelope of the building at roof level at the rear.

There is a potential for some loss of sunlight to the garden of 5 Belsize Crescent. Analysis in this report shows there is no significant affect.

Sunlight to the roof gardens of 4 and 6 Belsize Park Mews is also analysed.

There are roof windows on the roofs of the adjacent houses at 4 and 6 Belsize Park Mews and on the roof of 7 Burdetts Mews. Analysis is in this report.

On the roof of 4 Belsize Park Mews is a glass conservatory style extension that accommodates a stair leading to the roof. This extension is not a habitable room and is therefore not analysed.

On the roof of 6 Belsize Park Mews is a glass conservatory that appears to be used as a bar or recreation room. There will be some minimal effect on the daylight and sunlight. Analysis in this report of the shadows cast by the proposed extension shows that there will be no significant loss of daylight or sunlight to this conservatory.

The proposed extension is set back from the building line towards Belsize Park Mews but the possibility of a loss of light to the houses on the other side of the Mews at number 14 is analysed.

5. Daylight and Sunlight to Nearby Roof Windows

Figure 1 of this report is a plan showing the roofs of 4 to 6 Belsize Park Mews and 7 Burdetts Mews with the proposed extension superimposed.

There are two roof windows at 4 Belsize Park Mews. Planning Application 2003/1162 for 4 Belsize Park Mews shows a plan of the first floor of the house. The plan shows that the roof windows serve only passageways and stairs. The BRE Guide recommends that daylight and sunlight to non-habitable rooms need not be analysed.

There are three roof windows at 6 Belsize Park Mews. Planning Application 2007/0415/P shows a plan of the first floor of the house. The roof windows serve only passageways and stairs. The BRE Guide recommends that daylight and sunlight to non-habitable rooms need not be analysed.

There are no available plans of the floor of 7 Burdetts Mews that show the floor plan below the roof window, designated RL7/1. The daylight and sunlight to the roof window is therefore analysed by the methods described in BRE Guide.

The sky component for roof windows is evaluated by the method in Appendix C12 is used. BRE daylight protractor 10.

Sunlight to the roof light RL 7/1 is estimated using the method described in the BRE Guide Appendix A.

The BRE Guide 3.1.10 recommends that rooms for which occupants expect sunlight should receive 25% of annual probable sunlight hours and 5% in winter.

Sunlight to roof window RL7/1 will be 49% annual probable sunlight hours for whole year and 36% in winter.

The results for daylight from sky component are summarised in the following table.

	VSC	BRE VSC Criterion	Pass/Fail BRE Test for VSC
RL 4/1	Roof light not habitable room	-	Pass
RL 4/2	Roof light not habitable room	-	Pass
RL 6/1	Roof light not habitable room	-	Pass
RL 6/2	Roof light not habitable room	-	Pass
RL 6/3	Roof light not habitable room	-	Pass
RL 7/1	90.5% HSC*	27%	Pass
* Note sky component for unobstructed roof window =100%			

The results for sunlight are as the following table:

	Sunlight APSH Whole Yr	BRE Sun Criterion Whole Yr	Sunlight APSH Winter	BRE Sun Criterion Winter	Pass/Fail BRE Test for Sunlight
RL 4/1	Not habitable room				Pass
RL 4/2	Not habitable room				Pass
RL 6/1	Not habitable room				Pass
RL 6/2	Not habitable room				Pass
RL 6/3	Not habitable room				Pass
RL 7/1	49%	25%	36%	5%	Pass

All roof windows near the proposed development will continue to receive daylight and sunlight better than the minimum recommended in the BRE Guide.

6. Sunlight to Garden of 5 Belsize Crescent.

The garden to 5 Belsize Crescent is to the north of the proposed extension and there is possibility of loss of sunlight.

The BRE Guide recommends that sunlight to gardens should be analysed for the 21st March, that being a good guide to sunlight throughout the summer months. The guide recommends gardens should have at least two hours of sunlight over 50% of the area on March 21st. A second criterion is that the sunlight should not fall below 80% of existing.

The garden of 5 Belsize Crescent receives sunlight over only a very small area on March 21st because of the low altitude of the sun resulting in deep shadows from 1 to 9 Burdetts Mews and the existing buildings I Belsize Park Mews.
Analysis is therefore shown in this report for 21st April that being representative of the summer months April to September.

Figure 3 of this report shows the sun shadows from noon to 3 pm on 21st April. The sunlit areas will be greater during the mid-summer period.

Shadow contours for noon, 1pm, 2 pm and 3 pm are shown. Outside these hours there is no sun to the garden with the existing or proposed buildings.

The diagram to the left is for the garden without the proposed extension and the diagram on the right is with the extension.

The results are in the following table:

Sunlight to Garden of 5 Belsize Crescent April 21st Whole Area =59.5m^2					
	Existing		Proposed		Proposed/Existing
12:00	23.0 m^2	38.6%	31.9 m^2	38.6%	82.6%
13.00	30.4 m^2	51.1%	40.9 m^2	40.9%	80.0%
14.00	29.4 m^2	49.4%	40.1 m^2	40.1%	81.1%
15.00	19.3 m^2	32.4%	32.4 m^2	32.4%	100%

The sunlight to the garden with the proposed extension remains better than the BRE Criterion of 80% throughout the summer period when sunlight is available to the garden.

7. Sunlight to Roof Gardens of 4 and 6 Belsize Park Mews.

The roof garden of 4 Belsize Park Mews is to the south west of the proposed extension. There will clearly be no significant loss of sunlight.

Figure 2 of this report is a plan of the roofs with the shadows arising from the proposed extension. Shadows on 21st March at 13:00 and 14:00 are shown. The plan shows that the shadow from 1 pm onwards is a small proportion of the roof area of 6 Belsize Park Mews.

The BRE Guide recommends that amenity areas should receive at least 2 hours of sunlight over 50% of the area on March 21st. This recommendation is clearly satisfied for the roof of number 6.

8. Daylight and Sunlight to 14 Belsize Park Mews.

Figure 4 is a section through the proposed development and 14 Belsize Park Mews.

The windows of 14 Belsize Park Mews face within 90 degrees of north. The BRE Guide recommends that north facing windows will suffer no significant loss of sunlight and no further analysis for sunlight is required.

For daylight the BRE Guide recommends that a development should not reduce daylight to nearby windows by more than 20%. Daylight is measured as the vertical sky component at the centre of the window.

The cross section shows that the angle from roof of extension to the first-floor windows of 14 is 20 degrees above horizontal. The Guide recommends that there is no significant loss of light if the angle is below 25 degrees.

For the ground floor windows the sight line angle to existing building is 28.0 degrees. The angle to highest point of development is 30.1 degrees. By interpolation from Table C1 of the guide the vertical sky component is reduced from 25% to 24%. The vertical sky component is reduced to 96% of former value.

This is much better than the reduction to 80% that is permitted in the Guide.

9. Daylight to Rooms within the House

9.1. Requirements.

The Camden Supplementary Planning Guides, in common with the usual Local Authority requirements and the BRE Guide recommend that new developments satisfy criteria for

- Average daylight factor
- Sunlight.

- Room depth as given by the equation L/W+L/H < 2/(1-R) where the terms have the meanings in the BRE Guide

These requirements are applied to habitable rooms being Living Rooms, Dining Rooms and Bedrooms. Bathrooms, dressing rooms, kitchens and store cupboards are not required to meet the criteria.

9.2 Average Daylight Factor.

The Average Daylight Factor (Df) for rooms within the proposed flats have been calculated by the methods described in BRE Guide Appendix C5 and BS 8206 using the formula:

$Df=Aw\ T\ \Theta\ /\ A(1-R^2)$

Where,

Df = Daylight factor
Aw = window area
A = Sum of areas of walls, floors and ceilings
R = Average reflectance of walls floors and ceilings taken as 0.5.
Θ = Angle from Table C1 of the 2011 Guide
T = Transmittance of the glass taken as 0.68.

The value of Θ is derived from the vertical sky component at the window. The vertical sky component is evaluated from a Waldram Sky Availability diagram using the methods described in Appendix B of the Guide. The value for roof windows is calculated by the method in Appendix C paragraph C12.

The BRE Guide and BS 8206 recommend that average daylight factor exceeds the following values:

For kitchens 2%
For living rooms and dining rooms 1.5%
For bedrooms 1%
Average daylight factor is not applicable to bathrooms, dressing rooms and utility rooms.

The calculations for average daylight factor for all relevant rooms in the development are given in Appendix 2

All rooms have adequate daylight by the criteria of the BRE Guide.

9.3. Room Depth

The BRE Guide C13 recommends that the following is calculated.

L/W + L/H < 2/(1-R)
Where
W is the room width
H is the window head height
R is the average reflectance, taken as 0.5 in this case.

The room is considered adequately lit if L/W + L/H < 2/(1-R)
Rooms with windows on two sides or with roof light are considered to pass the test.

Calculations for the habitable rooms is in included in the Appendix.

All rooms satisfy the recommendations of the BRE Guide for room depth.

9.4 Sunlight

The BRE Guide 3.1.10 recommends that rooms for which occupants expect sunlight should receive 25% of annual probable sunlight hours and 5% in winter.

For the whole flat the sunlight should be better than 25% annual probable sunlight hours for whole year and 5% in winter.

Sunlight to rooms is estimated using the method described in the BRE Guide Appendix A. Results are included in the table in Appendix 2 of this report.

The house has sunlight better than the recommendations of the BRE Guide.

10. Conclusion

10.1 Daylight and Sunlight to Nearby Buildings

This development has no significant affect upon the daylight and sunlight to nearby buildings.

10.2 Sunlight to Nearby Gardens and Amenity Areas

The development has no significant effect on sunlight to nearby gardens or amenity areas.

10.3 Daylight and Sunlight to Rooms within Development.

The Guide recommends that the average daylight factor and room depth criteria are satisfied. As shown in Appendix 2 all rooms have adequate daylight factors as recommended in the BRE Guide, Camden Planning Guidance and the London Plan.

The BRE Guide recommends that residential accommodation should have sunlight for some rooms. For this house, with the proposed alterations, sunlight for the whole year and for winter is better than the recommended minimum.

Terence A Rook Bsc C.Eng., MIMechE, FCIBSE 13th February 2021.

References:

Camden Local Development Framework. Camden Planning Guidance CPG 6.

Building Research Establishment publication ‘Site layout and planning for daylight and sunlight, a guide to good practice’ published in 2011.

List of Attachments:

Figure 1 Roof Plan with Numbers for Nearby Windows

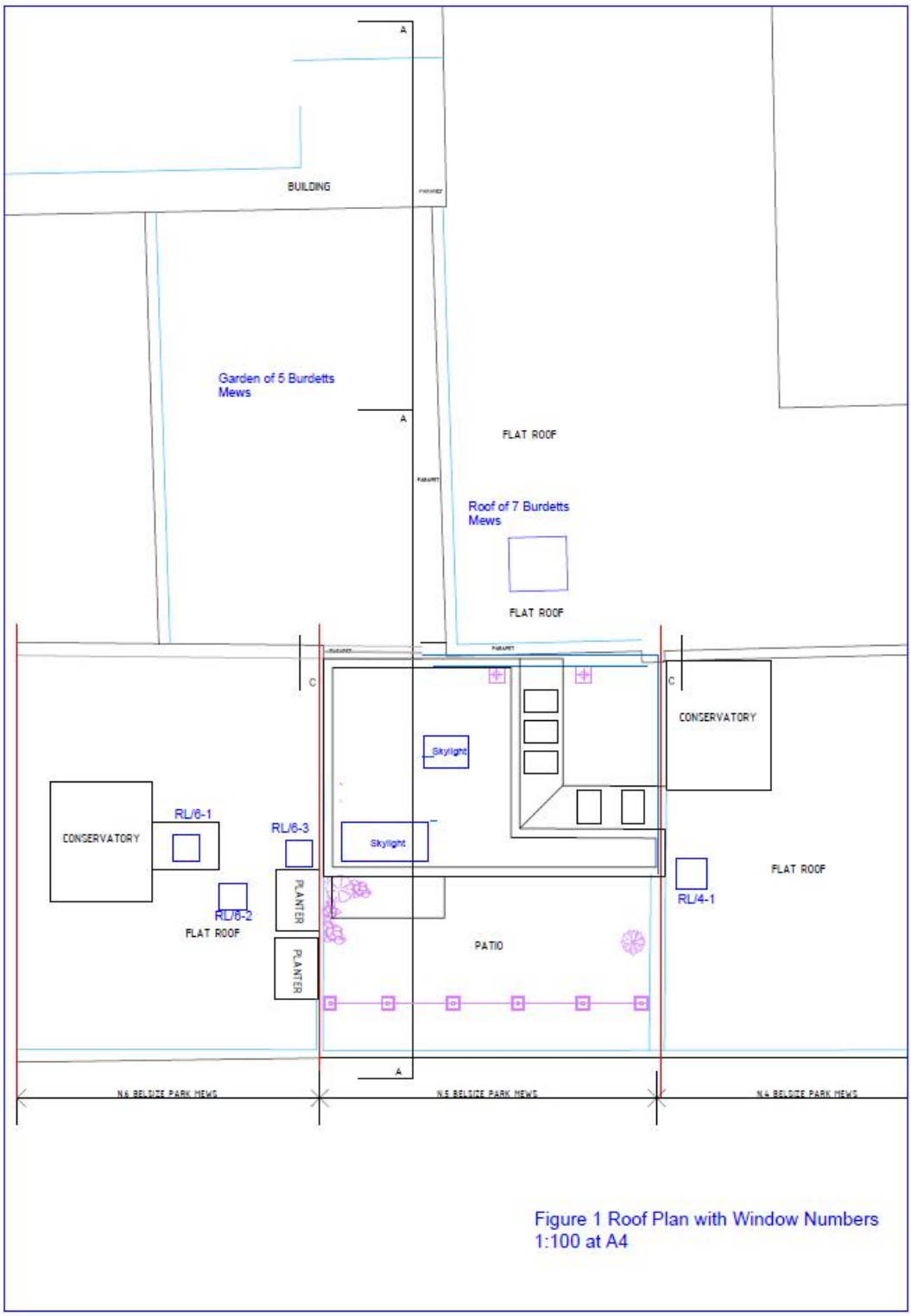
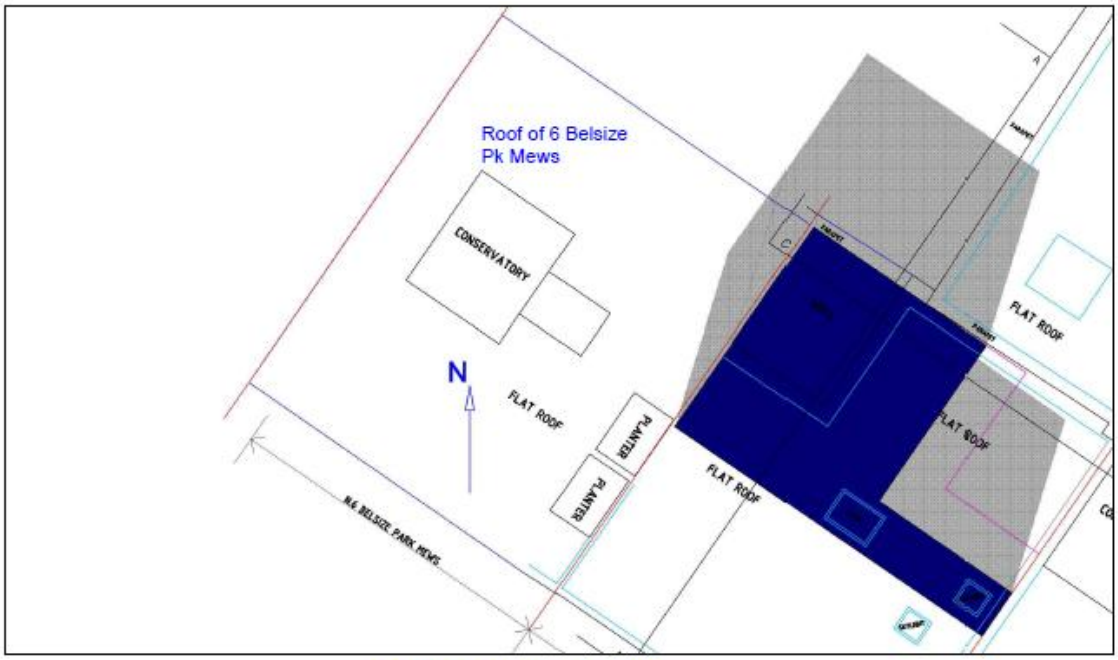
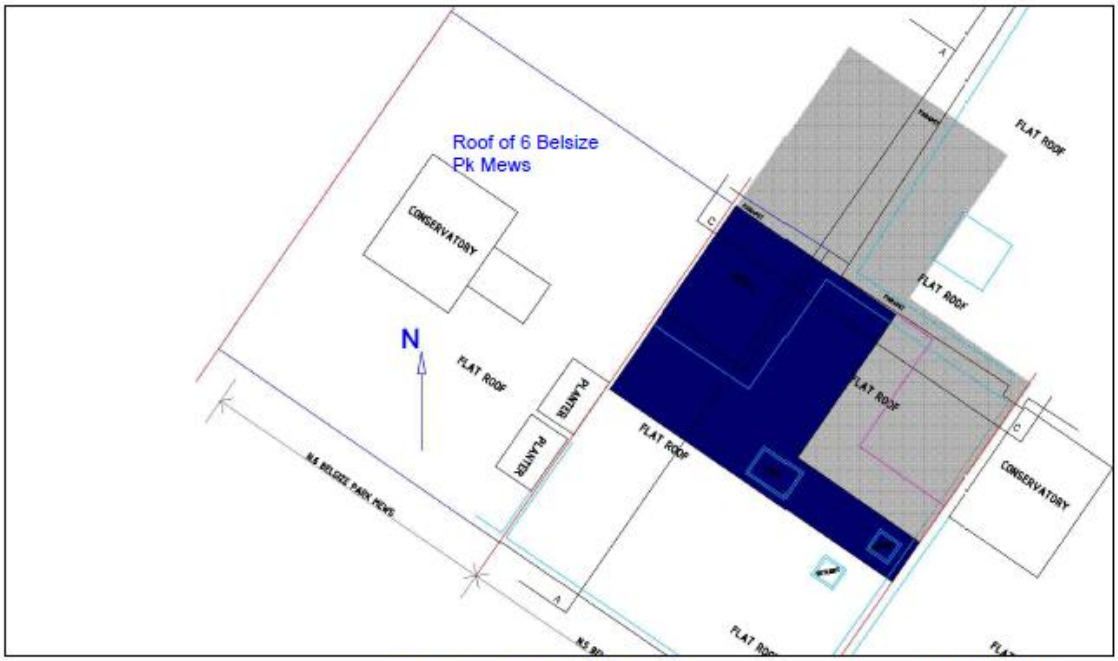


Figure 2 Shadows to Roof of 6 Belsize Park Mews



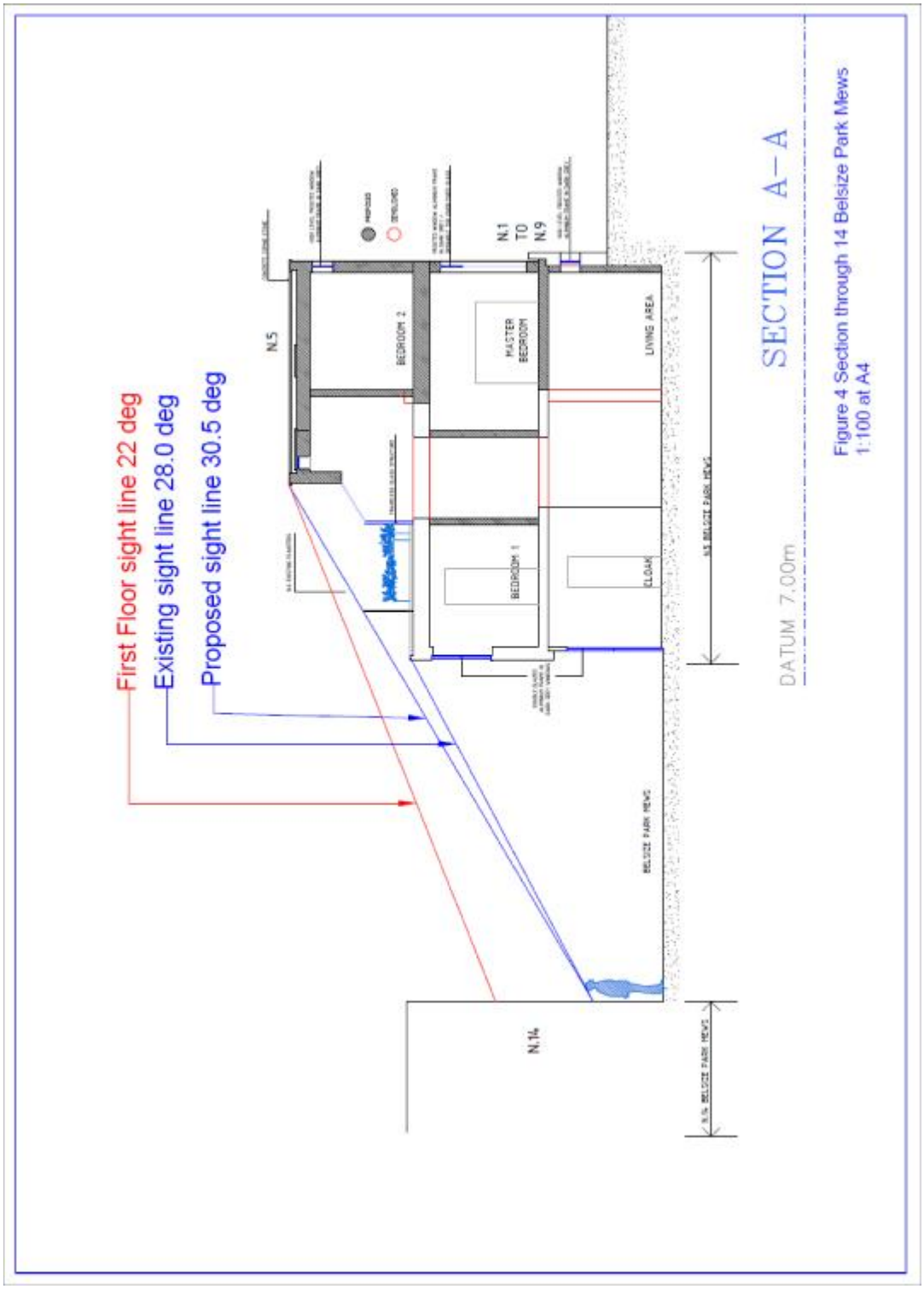
Shadow on Roof of #6 at 1 pm



Shadow on Roof of #6 at 2 pm PROPOSED

Figure 2 Shadows to Roof of 6 Belsize Park Mews 21 March

Figure 4 Section through 14 Belsize Park Mews



Appendix 2 Daylight within Development

Average Daylight Factors

	Window	Room Depth	Room Width	Window Width	Window Head Height	Window H above 0.85	Room Height	TM	AW	As	VSC	θ Table C1	1-R2	ADF	Df by BS 8206 %	ADF Meet BRE Criterion
Living/ Kitchen ground	Front	8.5	7	2.9	2.3	1.3	2.4	0.68	3.77	193.4	24.0%	60.4	0.75	1.07		
	Rear	8.5	7	2.2	2.3	0.45	2.4	0.68	0.99	193.4	4.0%	21.0	0.75	0.10		
	RL	8.5	7	1.5	2.3	2	2.4	0.68	3.00	193.4	10.0%	28.0	0.75	0.39		
Total LKD														1.56	1.5	Yes
Master Bedroom	Window	3	3.5	2.3	2.3	1.4	2.4	0.68	3.22	52.2	9.0%	34.0	0.75	1.90	1.0	Yes
Bedroom 1	Front	2.8	4.8	3.8	2.3	1.4	2.4	0.68	5.32	63.36	27.0%	65.7	0.75	5.00	1.0	Yes
Bedroom 2 2ns Fl	RL	4.2	2.5	0.9	2.3	0.6	2.4	0.68	0.54	53.16	100.0%	180.0	0.75	1.66	1.0	
	Rear	2.5	4.2	3.1	2.3	0.45	2.4	0.68	1.40	53.16	27.0%	65.7	0.75	1.56	1.0	
Total Bedroom 2														3.22	1.0	Yes

Other Factors

		Window Head height.	L/W+ L/H	2/1-R	Meet BRE Criterion L/W+L/H	Window % Floor area		Sunlight% APSH	% APSH Winter	Meet BRE Criteria of sun and sky
Living/ Kitchen ground	Front	2.3				6		41	31	
	Rear	2.3				2		41	31	
	RL	2.3				5		-	-	Yes
Total LKD		Lit two ends			Yes	13				-
Master Bedroom	Window	2.3	2.16	4	Yes	31		-	-	Yes
Bedroom 1	Front	2.3	1.80	4	Yes	40		45	35	Yes
Bedroom 2 2ns Fl	RL	2.3	3.51	4	Yes	5		-	-	-
	Rear	2.3	1.68	4	Yes	13		-	-	-
Total Bedroom 2										Yes