50 RIDGEWAY

LONDON NW11 8QN

ANALYSIS

of

SITE LAYOUT

for

DAYLIGHT AND SUNLIGHT

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by

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PLANNING APPLICATION FOR DEVELOPMENT OF 50 THE RIDGEWAY

ANALYSIS OF SITE LAYOUT WITH REGARD TO DAYLIGHT AND SUNLIGHT

1. Introduction

A planning application is to be made for the construction of two semi detached houses at the rear of 50 The Ridgeway.

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

2. Description of Proposed Development.

The site is to be developed in accordance with drawings by Duncan James Design.

P 1069/31 Proposed Site Plan
P 1069/32 Proposed basement floor plan
P 1069/33 Proposed ground and first floor plan
P 1069/34 Proposed second and roof plans
P 1069/35. Proposed elevations

3. Requirements of Planning Authority.

The London Borough of Barnet have the following requirements

- The National Planning Policy Framework and National Planning Practice Guidelines
- The Mayor's London Plan 2016
- Barnet Local Plan (2012) including CSNPPF, CS1, CS4, CS5 and CS15 and Relevant Planning Policies: DM01, DM02, DM17.
- Barnet Supplementary Planning Documents, Residential Design Guidance (2016) and Sustainable Design and Construction (2016)
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The parts of these documents relevant to daylight and sunlight are as follows:
Mayor's London Plan 2016

The London Supplementary Planning Guidance Housing 2016

Standard 29 paragraph 1.3.45 cites Policy 7.6B d requiring developments to avoid harm to surrounding land and buildings and recommends application of BRE Guidelines with flexibility. Standard 32 and Paragraph 2.3.37 recommends dual aspect dwellings so as to include better daylight.

The London Sustainable Design and Construction Guide

Appendix 4 of The Guide cites the Code for Sustainable Homes in suggesting as good practice:

5.5.1: Glazing to be not less than 20% of floor area
5.5.2. Direct sunlight to enter at least one room for part of the day. Living rooms, kitchens and dining rooms should have direct sunlight.

Barnet Local Plan 2012 Core Strategy

CS1 Protection enhancement and consolidation growth
CS5 Protecting Barnet Character.
CS15 Delivering Core Strategy

Barnet Development Management Policies Development Plan Document September 2012.

DM01 Protecting Barnet's Character and Amenity. DM01(e) says development should allow for adequate daylight and sunlight to adjoining premises.

DM02: Development Standards. 2.7.1 and 2.7.2 make reference to the Sustainable Design and Construction SPD

Paragraphs 7.7 and 7.8 give guidance on windows for internal lighting by reference to table 2.4 of the Supplementary Planning Document Sustainable Design and Construction October 2016.

Supplementary Planning Document: Sustainable Design and Construction October 2016.

Paragraph 2.4 gives guidance for privacy, outlook. Design Principles A is as follows:

A. Sun lighting/Daylighting – Ensure that the design takes into account levels of daylight and sunlight that will penetrate into occupied spaces, as measured by Vertical Sky Component (VSC) and the Average Daylight Factor (ADF). The VSC represents the amount of light available on the outside plane of the window as a ratio of the amount of total unobstructed sky viewable following the introduction of visible barriers, such as new buildings. The ADF is a more complex measurement assessing whether the internal daylighting levels in a room are adequate. The measurement takes into account the VSC, the window size, number of windows available in a room, the room size, the room use

and layout and the room surface reflectance. Further details on this and other aspects of sun lighting/ daylighting are set out in

- BRE Site layout: Planning for daylight and sunlight, a guide to good practice.
- British Standard 8206 Part II
- The Applications Manual: Daylighting and Window Design-Lighting Guide LG 10(1999) of The Chartered Institute of Building Services Engineers.

Paragraph 2.4.2 says that gardens of and windows to habitable rooms in adjacent rooms should not be significantly overlooked as Section 7 of the SPD.

Table 2.4: Daylight, Privacy (minimum distance), Outlook and Light Pollution Requirements is as follows:

Glazing to all habitable rooms should not normally be less than 20% of the internal floor area of the room.
Bedrooms and living rooms /kitchens should normally have a reasonable outlook with clear glazed windows

In new residential development there should be a minimum distance of 21 m between properties with facing windows to habitable rooms to avoid overlooking, and 10.5 m to a neighbouring garden.

New development should take into account neighbouring properties to ensure that nuisance will not be caused from lighting during night time hours.

4. General .

4.1. General Effects of New Development on Light to Adjacent Buildings

This development will have no significant adverse affect on daylight or sunlight to nearby buildings.

4.2 Natural lighting to rooms in the development.

Analysis of daylight and sunlight to the rooms is included in this report.

5. Daylight to Rooms within Development.

The BRE Guide recommend that new developments satisfy criteria for

- Average daylight factor
- Room Depth
- No Sky Area

- Sunlight suggested as good practice only.

These requirements are applied to habitable rooms being Living Rooms, Dining Rooms Bedrooms and in kitchens where possible. In cases of houses or flats in densely populated urban areas the requirement for kitchens is sometimes relaxed but in this case the kitchen will be considered with the other rooms.

Bathrooms, dressing rooms, store cupboards are not required to meet the criteria.

6.1 Average Daylight Factor.

The Average Daylight Factor (Df) for rooms within the proposed residential units 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 0.8.

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 the following tables.

House 1 (west)		TM	AW	A	VSC %	θ Table C1	1-R^2	Df %	Df by BS8206 %	ADF Meet BRE Criterion
Kitchen/Diner		0.68	8.265	121.98	37%	84	0.75	5.16	2.0	Yes
Living	Window	0.68	2.465	102.3	40	90	0.75	2.0		
	Glazed door	0.68	2.465	102.3	40	90	0.75	2.0		
	Total for Room				40	90		2.8	1.5	Yes
Study		0.68	3.48	64.5	40	90	0.75	4.4	1.0	Yes
Bedroom 2	Window NE	0.68	2.465	58.52	40	90	0.75	3.4		
	Windows NW	0.68	1.74	58.52	40	90	0.75	2.4		
	Total for Room							5.8	1.0	Yes
Bedroom 3	Windows SW	0.68	3.625	59.5	40	90	0.75	5.0		
	Window NW	0.68	2.465	59.5	40	90	0.75	3.4		
	Total for Room							8.4	1.0	Yes
Bedroom 4	Window NE	0.68	2.465	46.78	40	90	0.75	4.3		
	Window NW	0.68	1.74	46.78	40	90	0.75	3.0		
								7.3	1.0	Yes
Bedroom 1	Window	0.68	2.465	65.9	40	90	0.75	3.1	7.0	
	Roof light	0.68	0.65	65.9	80	160	0.75	1.4	8.0	
	Total for Room							4.5	1.0	Yes

House 2 (east)		TM	AW	A	VSC %	θ Table C1	1-R^2	Df %	Df by BS8206 %	ADF Meet BRE Criterion
Kitchen/Diner		0.68	8.265	121.98	37%	84	0.75	5.16	2.0	Yes
Living	Window	0.68	2.465	102.3	40	90	0.75	2.0		
	Glazed door	0.68	2.465	102.3	40	90	0.75	2.0		
	Window at Side SE	0.68	2.465	102.3	40	90	0.75	2.0		
	Total for Room				40	90		6.0	1.5	Yes
Study		0.68	2.465	59	40	90	0.75	3.4	1.0	Yes
Bedroom 2	Window NE	0.68	2.465	58.52	40	90	0.75	3.4		
	Windows SE	0.68	1.74	58.52	40	90	0.75	2.4		
	Total for Room							5.8	1.0	Yes
Bedroom 3	Windows SW	0.68	2.465	48	40	90	0.75	4.2		
	Window SE	0.68	0.725	48	40	90	0.75	1.2		
	Total for Room							8.4	1.0	Yes
Bedroom 4	Window NE	0.68	2.465	57.18	40	90	0.75	3.5	1.0	Yes
Bedroom 1	Window NE	0.68	2.465	65.9	40	90	0.75	3.1	7.0	
	Roof light	0.68	0.65	65.9	80	160	0.75	1.4	8.0	
	Total for Room							4.5	1.0	Yes

All rooms have satisfactory daylight.

6.3 Room Depth.

The BRE Guide recommends that for rooms illuminated from windows in only one wall the distance from the window to most distant wall should not exceed L in the following formula.

$L/W + L/H < 1/ (1-R)$

Where W is the width of the room, H is height of window lintel and R is average reflectance at rear of room.

Where rooms have windows at two ends this criterion does not apply.

House 1 (west)	L/H +L/W	BRE Recommended	Pass or fail
Kitchen/Diner	3.5	4	Pass
Living	2.7	4	Pass
	2.7	4	Pass
Study	2.0	4	Pass
Bedroom 2	3.3	4	Pass
	1.9	4	Pass
Bedroom 3	1.6	4	Pass
	3.9	4	Pass
Bedroom 4	2.6	4	Pass
	2.2	4	Pass
Bedroom 1	3.4	4	Pass
	3.4	4	Pass

House 2 (east)	L/H +L/W	BRE Recommended	Pass or fail
Kitchen/Diner	3.5	4	Pass
Living	2.7	4	Pass
	2.7	4	Pass
	3.0	5	Pass
Study	3.1	4	Pass
Bedroom 2	3.3	4	Pass
	1.9	4	Pass
Bedroom 3	2.3	4	Pass
	2.3	4	Pass
Bedroom 4	3.4	4	Pass
Bedroom 1	3.4	4	Pass

All habitable rooms have good illumination at depth away from the windows satisfying the criterion.

6.4 No Sky Areas

The BRE Guide C16 recommends that the area of room with no visible sky on a plane 850 mm above floor should not exceed 20%.
All the rooms have a virtually unobstructed view of the sky from all parts with no sky less than 10% of the floor area.

All rooms have a no sky area better than the recommended minimum thereby satisfying the requirements.

6.5 Sunlight

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

Rooms with only north facing windows do not require analysis of sunlight.

Sunlight to rooms is estimated using the method described in the BRE Guide Appendix A. Results are included in the following table .

House 1 (west)	Sunlight%APSH	% APSH Winter	Meet BRE Criteria for sun
Kitchen/Diner	North	North	Yes
Living	North	North	
	North	North	
			Yes
Study	48	28	Yes
Bedroom 2			
	32	19	
			Yes
Bedroom 3			
	32	19	
			Yes
Bedroom 4			
	32	19	
			Yes

Bedroom 1			
	100	60	
			Yes

House 2 (east)	Sunlight%APSH	% APSH Winter	Meet BRE Criteria for sun
Kitchen/Diner	North	North	Yes
Living	North	North	
	North	North	
	42	32	
			Yes
Study	48	28	Yes
Bedroom 2	North	North	
	45	30	
			Yes
Bedroom 3	48	28	
	45	30	
			Yes
Bedroom 4	North	North	Yes
Bedroom 1			
	100	60	
			Yes

All habitable rooms have good sunlight factors in accordance with the recommendations of the BRE Guide

7. Conclusion

The Barnet Planning Guidance, BRE Guide and BS 8206 include recommendations for retention of daylight and sunlight to windows and gardens of nearby houses.

The proposed development will be in compliance with the recommendations of the Planning Requirements of the London Borough of Barnet, the BRE Guide and BS 8206.

Terence A Rook Bsc. C.Eng., MIMechE, FCIBSE 3rd May 2018.

References:

i. Building Research Establishment publication ‘Site layout and planning for daylight and sunlight, a guide to good practice’ published in 2011.
ii. BS 8206 Part 2
iii. Barnet’s Local Plan (Core Strategy): Development Plan Document: Adopted September 2012
iv. Barnet’s Local Plan (Development Management Policies) Development Plan Document September 2012.
v. Barnet Local Plan: Supplementary Planning Document: Residential Design Guidance 2016. Referred to as SPD in this report.
vi. Barnet Local Plan: Supplementary Planning Document: Sustainable Design and Construction: April 2016.