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Daylight Report

for the Proposed Development at
132 to 136 Royal College Street, London, NW1 0TA

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1.1 Scope of Service

1.1.1 We have been instructed by GA&A Design Ltd to establish the daylight amenity of the proposed residential accommodation of 132 to 136 Royal College Street, London, NW1 0TA.

1.2 BRE Assessment Criteria

1.2.1 To ensure that this assessment has been appropriately considered, daylight and sunlight assessments have been undertaken in accordance with the Building Research Establishment Report 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' 2011 (the "BRE guide") and also on British Standard 8206 – 2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting', to which the BRE report refers.

1.2.2 The standard assessments for daylight, sunlight and overshadowing are briefly outlined in Appendix A.

1.3 Daylight

1.3.1 GA&A Design Ltd have carefully considered this site and have incorporated elements within the designs to maximise ambient daylighting potential including floor to ceiling windows and rooflights to principal rooms along with light coloured internal finishes.

1.3.2 The proposed accommodation to the ground floor level is in excess of the Average Daylight Factor criteria, being the principal assessment for determining daylight availability, as set out in BS8206, part 2.

1.3.3 The basement kitchen will receive no light, however, this is part of the original design.

2. Introduction

2.1 Scope of Service

2.1.1 We have been instructed by GA&A Design Ltd to establish the daylight amenity of the proposed residential accommodation of 132 to 136 Royal College Street, London, NW1 0TA.

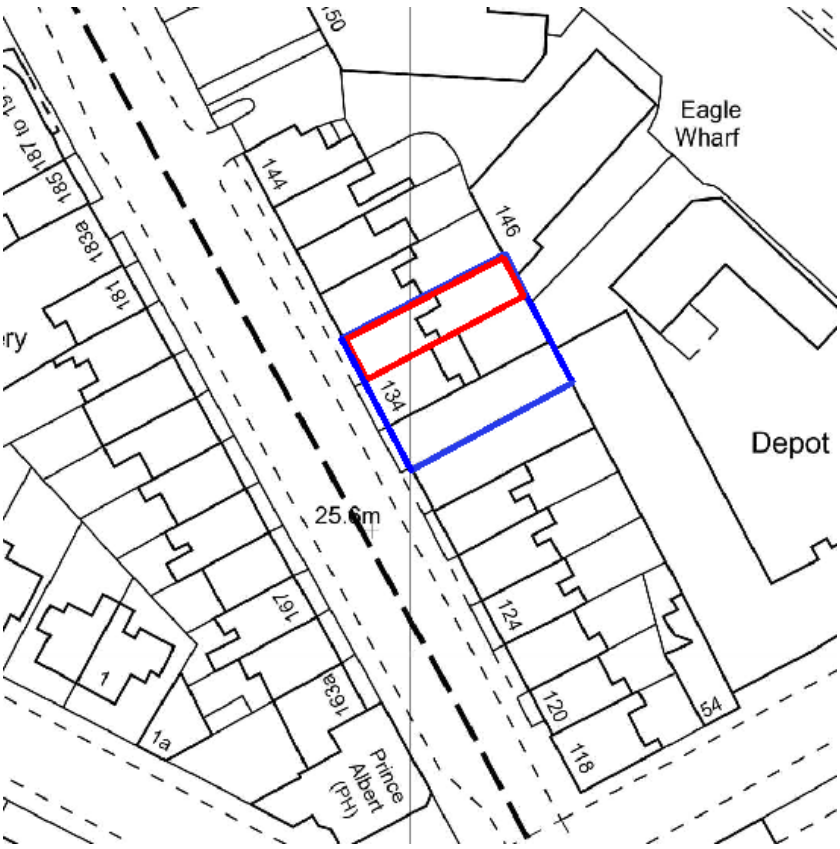
2.2 Assessment

2.2.1 To ensure that this assessment has been appropriately considered, daylight and sunlight assessments have been undertaken in accordance with the Building Research Establishment Report 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' 2011 (the "BRE guide") and also on British Standard 8206 – 2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting', to which the BRE report refers.

2.2.2 The standard assessments for are briefly outlined in Appendix A.

2.2.3 The site and adjacent properties are shown on the Site Location Plan below and on the accompanying context drawings in Appendix B.

Site Location Plan



2.2.4 The proposed accommodation considered for this report is listed in the following table.

Assessment Summary Table		
Building Reference	**Use of Building**	**Location in Relation to the Proposed Development**
136 Royal College Street (Basement and Ground Floor)	Residential	N/A

2.3 Limitations

2.3.1 Our assessment is based on the proposed development drawings by GA&A Design Ltd.

2.3.2 The proposed internal room sizes, layouts and uses were derived from the above mentioned drawings.

2.3.3 Topographical survey information with regard to the existing buildings on site and the positions of the surrounding buildings was provided. Where buildings were not surveyed, the relevant information was derived from photographs, oblique aerial photography and LIDAR height data.

2.3.4 We refer you to the drawings which accompany this report for a list of the third party information relied upon which our 3D computer model and resultant analyses are based.

3. Results and Consideration

3.1 Daylight

3.1.1 The full results can be found in Appendix C.

136 Royal Collage Street (ground floor)

3.1.2 136 Royal College Street form part of a 3 building block 132 to 136 Royal Collage Street.

3.1.3 The proposed residential accommodation is located to the basement and ground floor levels of 136 Royal College Street, see accompanying drawing 1808/D&S/01. The proposed accommodation comprises a reconfiguration of the current interior, with a kitchen to the basement, and at ground floor level, a living room to the front and 2 no. bedrooms to the rear. GA&A Design Ltd have carefully considered this site and have incorporated elements within the designs to maximise ambient daylighting potential. These include: -

- Floor to ceiling windows
- Rooflights
- Light coloured internal finishes

3.1.4 We have assumed generic double glazed units, white walls, white ceilings and medium coloured wood laminate flooring. For clarity, in accordance with BS8206 Part 2:2008, where principal rooms are separate, a kitchen requires 2% ADF and a living room requires 1.5% ADF. For rooms that have both a living area and a kitchen (OPLA or a KLD), we apply the higher threshold of 2% ADF.

3.1.5 The contributions made by each window are recorded in the accompanying ADF Results table in Appendix C along with correction factors for windows frames, dirt and glazed areas.

3.1.6 Turning now to the assessment results: -

3.1.7 Regarding ADFs, the assessments show that all of the rooms assessed to the ground floor will be in excess of the minimum ADF values as set out in BS8206: Part 2 2008.

3.1.8 Regarding Daylight Distribution (DD), all rooms to the ground floor level meet the BRE guidelines, i.e. sky visibility over 80% of the room at working plane level, save for the living room to the front which attains about 50%. Bearing in mind that the front openings cannot be altered, and they face on to tall buildings opposite, this is to be expected. Nonetheless, as stated above, the living room does satisfy the ADF criteria.

3.1.9 The basement level will receive no light, however, this is part of the original design.

4. Conclusion

4.1 Daylight

4.1.1 GA&A Design Ltd have carefully considered this site and have incorporated elements within the designs to maximise ambient daylighting potential including floor to ceiling windows and rooflights to principal rooms along with light coloured internal finishes.

4.1.2 The proposed accommodation to the ground floor level is in excess of the Average Daylight Factor criteria, being the principal assessment for determining daylight availability, as set out in BS8206, part 2.

4.1.3 The basement level will receive no light, however, this is part of the original design.

Appendix A

BRE Assessments

BRE Assessments

Introduction

The Building Research Establishment Report "Site Layout Planning for Daylight and Sunlight – a guide to good practice 1991" ("the BRE Guidelines") provides advice to building designers on site layout planning in order to achieve good daylight and sunlight amenity, not only to the proposed development and the open spaces between the proposed blocks, but also to the existing surrounding properties.

As part of this advice, the Building Research Establishment (BRE) have developed a series of assessments along with numerical guidelines so that the potential for good daylight and sunlight amenity can be achieved.

In general, the application of the BRE Guidelines are more appropriate for low density suburban development sites where there is a greater flexibility for site layout planning. In dense urban areas, however, development sites are usually constrained to a greater degree, often by immediately adjacent buildings etc. Accordingly, when dealing with dense urban areas the guidelines should be applied flexibly. This point is expressly recognised by the BRE Guidelines, which states in the introduction at page 1:

> *'The Guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not been seen as an instrument of planning policy. Its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design… … In special circumstances the developer or Planning Authority may wish to use different target values. For example, in a historic city centre a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings…..'*

Daylight

The criteria for assessing daylight to existing surrounding buildings are outlined at pages 4 to 8 of the BRE Guidelines. Generally, daylight assessments should be undertaken to habitable rooms within dwellings and to principal rooms in non-domestic buildings such as schools, hospitals and offices where the occupants have a reasonable expectation of daylight.

Whilst the BRE Guidelines contain a number of rules of thumb that inform site layout design some relate to specific situations, such as domestic extensions to the rear of a property, which although useful may not be considered appropriate for general site layout design.

The principal assessments used to assess daylight to existing surrounding buildings are outlined in more detail below along with a further daylight assessment, usually applied to proposed dwellings, which is admissible provided it is agreed with the local authority, or there are past precedents.

25° section line assessment

The first assessment is known as the [modified] 25° section line test. It is a simple rule of thumb that determines whether an existing building should still receive adequate daylight with the proposed development in place.

The BRE guide states at page 11:

> "*If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of a lowest window, subtends an angle of more than 25°to the horizontal may be affected.*"

This assessment is most appropriate for well spaced, low-density or low-rise, uniform proposed developments. It is not an appropriate assessment for dense urban environments, where the existing building on the development site already subtends at an angle greater than 25° to the horizontal from the subject window. It is for this reason this 25° assessment is generally dispensed with and the more detailed assessments outlined below are entered into at the outset.

The Vertical Sky Component ("VSC") Assessment

The Vertical Sky Component ("VSC") assessment represents the amount of available daylight received directly from the sky at a particular window. The reference point for this assessment is the centre of the window, on the plane of the outer window wall.

A VSC is expressed as a percentage, being a ratio of that part of illuminance on a vertical plane (a window) that is received from a Standard Overcast Sky (CIE Sky), to the illuminance received on a horizontal plane on an unobstructed hemisphere of Standard Overcast Sky. To put it another way it is simply the amount of direct sky visibility a window receives, howsoever obstructed, expressed as a percentage of the amount of direct sky a horizontal unobstructed roof-light would receive.

The maximum percentage of direct skylight a vertical window can receive from a Standard Overcast Sky is 39.62%, or 40% when rounded. The BRE have determined that where a VSC value of 27% is achieved, then enough skylight (direct daylight) should reach the window of an existing building. This value is roughly equivalent to a uniform obstruction of 25°, with reference to the above assessment. The Guidelines go on to state:

> "*If the vertical sky component, with the new development in place, is both less than 27% and less than 0.8 times its former value, (a 20% reduction), then the occupants of the existing building will notice the difference.*"

Consequently, the daylight to an existing building, as a result of a proposed development, may be reduced by 20% before that loss becomes noticeable.

The Daylight Distribution ("DD") Assessment

The Daylight Distribution Assessment is undertaken at working plane level from within a subject room and represents the change in skyline when viewed through a subject window. The working plane level is set at 0.85m above floor level in dwellings and 0.70m in offices, however, in practice this distinction in height is not normally made, and so the working plane is generally set at 0.85m.

If significant areas beyond the no-sky line i.e. the point beyond the line where no sky can be seen at working plane level, the room will usually appear gloomy and supplementary electric lighting will be required. The BRE Guidance states:

> "*If, following construction of a new development, the no-sky line moves so that the area of the existing room which does not receive direct skylight is reduced to less than 0.8 times its former value, (a 20% reduction), then this will be noticeable to the occupants, and more of the room will be poorly lit.*"

Consequently, the daylight to an existing building, as a result of a proposed development, may be reduced by 20% before that loss becomes noticeable.

The VSC and DD are the 2 principal assessments that are required to be undertaken in order to assess daylight to existing surrounding buildings.

The Average Daylight Factor ("ADF") Assessment

A further daylight assessment, which may be undertaken, provided it is accepted by the local authority, is known as the Average Daylight Factor (ADF). Strictly speaking ADF assessments are used to determine the daylight availability to units within a proposed development, however, in more recent times the ADF assessment has been accepted by local authorities as a valid assessment for existing surrounding buildings.

An ADF assessment takes into account the amount of direct sky visibility incident on a window serving a subject room, the transmittance of the light through the glass, and the reflectance of that resultant light from the entire surface area of the room, which is then expressed as a percentage.

The ADF values recommended in the British Standard BS8206 Part 2 to which the BRE refers are: 2% for kitchens or open plan living areas, 1.5% for living rooms and 1% for bedrooms, if supplementary electric lighting is provided.

Nb. The guidelines outlined in the latest edition of BS8206 Part 2: 2008 are now applied.

Sunlight

Sunlight is valued in both residential and commercial buildings. It is seen as providing warmth and cheerfulness to a room, whilst also giving the occupants a therapeutic effect and a sense of wellbeing.

In residential properties the main requirement for sunlight is in the living room or conservatories, which should be assessed if they have a main window facing within 90° of due south. Sunlight is considered less important in kitchens and bedroom, although care should be taken not to block out too much.

In commercial or non-domestic buildings, the requirement for sunlight varies according to the use of the building. The BRE recommends that for a commercial building any space that has a particular or special requirement for sunlight should be assessed.

Annual Probable Sunlight Hours (APSH) Assessment

The APSH assessment is undertaken to the main window of residential and commercial buildings, where the window faces within 90° of due south. "Probable Sunlight Hours" may be defined as the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness.

At page 17 of the BRE guidelines the criteria for the APSH assessment are as follows: -

> *'If a* ***living room*** *of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely effected. This will be the case if a point at the centre of the window, in the plane of the inner window wall, received in the year less than one quarter (25%) of annual probable sunlight hours including at least 5% of annual probable sunlight hours between 21 September and 21 March, and less than 0.8 times its former sunlight hours during either period.'*

Consequently, the sunlight to an existing building, as a result of a proposed development, may be reduced by 20% in either the annual or winter periods before that loss becomes noticeable.

Overshadowing

The BRE guidance also offers advice on how to preserve sunlight to both existing and proposed open amenity spaces. Areas such as main back gardens of dwellings, parks, playing fields, playgrounds, waterways and public spaces such should be assessed. Small front gardens to dwellings and parking areas need not be assessed.

The permanent overshadowing assessment

The permanent overshadowing assessment is undertaken on 21 March, the spring equinox. This assessment shows areas of a subject amenity area where no sunlight will be available during the winter period, however, the subject area may still receive some sunlight during the summer.

The BRE states at page 20:

> "*for it to appear adequately sunlight throughout the year, at least half of a garden or amenity area should receive at least 2 hours of sunlight on 21 March. If, as a result of new development, an existing garden or amenity area does not meet these guidelines, and the area which can receive 2 hours of sun on 21 March is less than 0.8 times its former value (a 20% reduction), then the loss of sunlight is likely to be noticeable".*

Consequently, if an open amenity area, is more than 50% in shade for more than 2 hours in either existing or proposed situations, and is reduced by more than 20% of its existing value as a result of new development, then that loss is likely to be noticeable.

The transient overshadowing assessment

A further overshadowing assessment, sometimes requested by the local authority for larger schemes, is the temporary, or transient overshadowing assessment. This assessment usually comprises hourly overshadowing images of the existing and proposed situations undertaken on key dates during the year such as 21 March, the spring equinox; 21 June, the summer solstice; and 21 December, the winter solstice.

The BRE guidance offers no express numerical values for this type of assessment, consequently it is purely subjective.

Proposed Accommodation

For the proposed accommodation assessments the ADF, DD and Room Depth Assessments are used, with ADF being the principal assessment.

Regarding the room depth assessment, provided that the depth of the subject room meets the criterion below it meets the BRE guidelines, however, this calculation does not take into reference any exterior obstructions.

$L/W + L/H < 2/1-R$

Where:-
L = Depth of subject room
W = Width of subject room
H = Head of window above floor level
R = Average reflectance value of room

Appendix B

Context Drawings

Appendix C

Daylight Results

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Average Daylight Factor (ADF) Assessment

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value	Meets BRE Criteria
Proposed Accommodation												
Basement	R1	Kitchen	-	-	-	0.00	0.00	0.67	0.15	0.05		
										0.00	2.00	NO
Ground	R1	Living Room	W1-L	0.68	0.45	60.04	90.62	0.67	0.15	0.05		
		Living Room	W1-U	0.68	0.99	60.08	90.62	0.67	1.00	0.80		
		Living Room	W2-L	0.68	0.45	61.36	90.62	0.67	0.15	0.06		
		Living Room	W2-U	0.68	0.99	61.83	90.62	0.67	1.00	0.83		
										1.74	1.50	YES
Ground	R2	Bedroom	W3	0.68	4.53	35.94	82.39	0.67	1.00	2.42		
		Bedroom	W4	0.68	3.01	0.00	82.39	0.67	1.00	0.00		
										2.42	1.00	YES
Ground	R3	Bedroom	W5	0.68	8.10	0.00	89.12	0.67	1.00	0.00		
		Bedroom	W6	0.68	1.28	63.22	89.12	0.67	1.00	1.11		
										1.11	1.00	YES

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Daylight Distribution (DD) Assessment

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.		Room Area	Lit Area Proposed	Meets BRE Criteria
Proposed Accommodation								
Basement	R1		Residential	Kitchen	Area m2	-	-	
					% of room		0.00%	NO
Ground	R1		Residential	Living Room	Area m2	18.26	8.67	
					% of room		47.00%	NO
Ground	R2		Residential	Bedroom	Area m2	17.34	16.89	
					% of room		97.00%	YES
Ground	R3		Residential	Bedroom	Area m2	19.95	19.72	
					% of room		99.00%	YES