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**DAYLIGHT & SUNLIGHT STUDY
NEIGHBOURING ASSESSMENT**

Of

**Camden Town Methodist Church
89 Plender Street
London
NW1 0JN**

on behalf of

Camden Town Methodist Church

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Date: 3 November 2015

1. INTRODUCTION

- 1.1 We have carried out an analysis of the development to be submitted for planning for 89 Plender Street, London NW1 0JN to ensure the proposed buildings meets the BRE minimum standards for daylighting and on the neighbouring properties adjoining the refurbishment site.
- 1.2 We have assessed the scheme comprising the proposed conversion of the Camden Methodist Chapel on the corner of Plender Street and Kings' Terrace into a mixed use building. It is submitted on behalf of the applicant to convert the existing church building into a mixed use development comprising church worship space alongside a 44 key four star accommodation to be managed by THEWESLEY. The exterior is to be largely retained and extended with minor modifications whilst the interior is to be reconfigured for the new uses across lower ground, upper ground, first, second, third and fourth floors.
- 1.3 We have been provided with plans, sections and elevations from Manalo & White and understand the extent of the proposed development; we have used the information provided to construct a 3D model of the existing and proposed site and neighbouring properties.

Policy Guidelines

- 1.4 This study has been carried out in accordance with the recommendations of the Building Research Establishment Report 209 "Site Layout Planning for Daylight & Sunlight, a guide to good practice" 2011 second edition and British Standard 8206:2 Part 2.
- 1.5 This is the adopted standard within Camden's Local Development Framework by which daylight and sunlight are measured. This is the standard identified below:-

We have had regard to the policies set out within Camden's Core Strategy Development Policies, Supplementary Planning Guidance and the further alterations to the London Plan (2015) and National Planning Policy Framework (March 2012).

"6 Daylight and Sunlight

KEY MESSAGES:

- We expect all buildings to receive adequate daylight and sunlight.
- Daylight and sunlight reports will be required where there is potential to reduce existing levels of daylight and sunlight.
- We will base our considerations on the Average Daylight Factor and Vertical Sky Component.

6.1 Access to daylight and sunlight is important for general amenity, health and well-being, for bringing warmth into a property and to save energy from reducing the need for artificial lighting and heating. The Council will carefully assess proposals that have the potential to reduce daylight and sunlight levels for existing and future occupiers.

6.2 This guidance relates to:

- Camden Core Strategy policy CS5 - Managing the Impact of Growth and Development;
- Core Strategy policy CS14 - Promoting high quality places and conserving our heritage; and
- Policy DP26 – Managing the impact of development on occupiers and neighbours of the Camden Development Policies.

DP26 sets out how the Council will protect the quality of life of building occupiers and neighbours by only granting permission for development that does not cause harm to amenity.”

1.6 The Council wishes to protect and improve the amount of sunlight and daylight received by accommodation, particularly residential. Individual applications will therefore be assessed to ensure that they do not result in a material loss of sunlight and daylight. The Council will generally have regard to these standards referred to above. However, there are many residential properties in Camden which fall well below the recommendations made in this document. On these occasions, where principle habitable rooms such as bedsits, living rooms, studies or kitchens are affected, the Council may find some loss of light unacceptable.

1.7 The BRE Guide is intended for building designers and their clients, consultants and planning officials. The advice given is not mandatory and the Report should not be seen as a part of planning policy. Its aim is to assist rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design. In certain circumstances, the developer or planning authority may wish to use alternative target values.

1.8 Whilst technical analysis can be carried out in accordance with numerical guidelines and reported factually by comparison with those guidelines, the final assessment as to whether affected dwellings are left with acceptable amounts of daylight and sunlight in an inner city context where the findings are to be interpreted in a flexible manner is a matter of subjective opinion.

METHODOLOGY

1.9 The BRE Report advises that daylight and sunlight levels should be assessed for the main habitable rooms of neighbouring residential properties. Habitable rooms in residential properties are defined as kitchens, living rooms and dining rooms. Bedrooms are less important as they are mainly occupied at night time. The Report also makes reference to other property types, which may be regarded as "sensitive receptors" such as schools, hospitals, hotels and hostels, small workshops and most offices.

Daylight

1.10 The BRE Guide states that:-

"If, for any part of the new development, the angle from the centre of the lowest affected window to the head of the new development is more than 25°, then a more detailed check is needed to find the loss of skylight to the existing buildings."

1.11 The BRE Guidelines propose several methods for calculating daylight. The 3 main methods predominantly used are those involving the measurement of the total amount of skylight available:-

- Vertical sky component (VSC)
 - Average Daylight factor (ADF)
 - Daylight Distribution (DD) or No-Sky Line
- i. The VSC calculation is a general test of potential for daylight to a building, measuring the light available on the outside plane of windows.
- ii. The second recognised method of assessment for daylight is the Average Daylight Factor (ADF) calculation which assesses the quality and distribution of light within a room served by a window and takes into account the VSC value, the size and number of the windows and room and the use to which the room is put. The ADF is the effective proportion of sky visibility available as luminance within a room. Rather than simply assessing the external obstructions as seen from a window, as in the VSC analysis, the ADF calculation takes the external sky visibility and incorporates it within a calculation that takes account of window size, number of windows, internal room surface area, glass transmittance and internal surface reflectance.

Where the analysis shows that the VSC results show values outside the BRE standards, we would then analyse the ADF results and this has been provided for completeness.

The ADF is calculated using the following formula:-

$$\frac{df}{A(1-R^2)} = \frac{TAw\theta}{A(1-R^2)} \%$$

Where:

- T is the diffuse visible transmittance of the glazing, including corrections for dirt on glass and any blinds or curtains. (For clean clear single glass, a value of 0.8 can be used)
- Aw is the net glazed area of the window (m²)
- A is the total area of the room surfaces: ceiling, floor, walls, doors and windows (m²)
- R is their average reflectance. For fairly light-coloured rooms a value of 0.5 can be taken
- θ is the angle of visible sky in degrees derived from the vertical sky component

The BRE Report advises that, where supplementary electric lighting is available, the minimum standards of ADF that should be attained are 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.

Our workings identify the key data used for the ADF analysis and the results for the rooms, in comparison with the room use. The theta value in the calculation has been derived from the same VSC results also reported in this summary.

- 1.12 The ADF assesses actual light distribution within defined room areas, whereas the VSC considers potential light. British Standard 8206:2-2008, Code of Practice for Daylighting recommends ADF values of 1% in bedrooms, 1.5% in living rooms and 2% in kitchens. For other uses, where it is expected that supplementary electric lighting will be used throughout the daytime, such as in offices, the ADF value should be 2%. The Average Daylight Factor is a reliable daylight test. This is because the Average Daylight Factor test takes into account a range of variables, for example, the size of the window and whether the room has more than one window. These are important factors which affect the level of illumination within a room.
- 1.13 The third method, Daylight Distribution (DD), divides those areas of the working plane (850mm above floor level) which can receive direct skylight, from those which cannot. A room may be adversely affected if; following the development, the area of the working plane that can receive direct skylight is less than 0.8 times its former value.

- 1.14 At the time of the assessment a planning search was conducted to establish as much information as possible on the neighbouring property including room usage and layout configuration. Therefore it has been possible to identify the properties that contain residential elements to be assessed for daylight levels. These are:
- 1-2 Plender Street
 - 3 Plender Street
 - 4 Plender Street
 - 5-6 Plender Street
 - 87-88 Plender Street
 - 8 Kings Terrace
 - 15 Kings Terrace
 - 17-21 Kings Terrace
 - 23-27 Kings Terrace
 - 29 Kings Terrace
 - 21 Bayham Street
 - 23 Bayham Street
- 1.15 The daylight and sunlight assessments have been undertaken using all methods were appropriate. All residential windows have been considered for each of these methods.
- 1.16 All other properties surrounding the site are considered too remote from the development to be affected and therefore are excluded from the assessment.

Sunlight

- 1.17 The BRE have produced sunlight templates for London, Manchester and Edinburgh, indicating the Annual probable Sunlight Hours (APSH) for these regions. The London template has been selected for this study as the London indicator template is the closest of the three available from BRE in terms of latitude.
- 1.18 Sunlight analysis is undertaken by measuring annual probable sunlight hours (APSH) for the main windows of rooms which face within 90° of due south. The maximum number of annual probable sunlight hours for the London orientation is 1,486 hours. The BRE guidelines propose that the appropriate date for undertaking a sunlight assessment is on 21st March, being the spring equinox. Calculations of both summer and winter availability are made with the winter analysis covering the period from the 21st September to 21st March. For residential accommodation, the main requirement for sunlight is in living rooms and it is regarded as less important in bedrooms and kitchens.

Significant Criteria

1.19 In describing the significance criteria as set out below, it should be noted that they have been developed to protect residential properties, which are the most sensitive receptors.

1.20 The Guidance given by BRE has been used as a basis for the criteria to assess the Development's potential impacts. The BRE guidance specifies:

"...In special circumstances the developer or planning authority may wish to use different target values. For example, in an historic city centre a higher degree of obstruction may be unavoidable..."

1.21 The report adds:

"...Different criteria may be used, based on the requirements for daylighting in an area viewed against other site layout constraints."

1.22 In consideration of the above, it is important to note that the Site is located in an urban centre that, in parts, currently experiences daylight levels below the BRE recommendations. This is discussed within the 'Baseline Conditions' section of this report. Thus, in these instances the BRE guidance states that the:

"...guidelines should be applied sensibly and flexibly".

1.23 Under these circumstances, the less stringent, higher BRE target percentage loss values and significance criteria may be justifiable.

Daylight and Sunlight

1.24 The BRE Guidance is summarised in the below table and this has been used as the basis for the criteria used in the assessment of daylight and sunlight impacts.

Test:	Building Research Establishment (BRE) Criteria:
Daylight	<p>A window may be adversely affected if the vertical sky component (VSC) measured at the centre of the window is less than 27% and less than 0.8 times its former value.</p> <p>A room may be adversely affected if the average daylight factor (ADF) is less than 1% for a bedroom, 1.5% for a living room or 2% for a kitchen. For offices a minimum figure of 2% is required.</p> <p>Daylight distribution (DD); a room may be adversely affected if; following the development, the area of the working plane that can receive direct skylight is less than 0.8 times its former value.</p>
Sunlight	<p>A window may be adversely affected if a point at the centre of the window receives in the year less than 25% of the annual probable sunlight hours including at least 5% of the annual probable sunlight hours during the winter months (21 September to 21 March) and less than 0.8 times its former sunlight hours during either period.</p>

1.25 A room within a neighbouring residential property is considered to suffer a materially adverse impact if, as a result of development proposals, the room fails to meet the minimum BRE standard for any of the three assessments. It should be noted that VSC results which can only be viewed as "...a general test of potential for daylight." The BRE Guide intends this assessment to be used as a tool to aid window positioning during the building design process. When testing neighbouring properties it should, be accompanied by an assessment of internal daylight distribution by calculation of the Daylight Distribution (DD). It is noted that the DD form of assessment is an accurate indication of the distribution of light within a room and takes the room and window dimensions into account.

1.26 The BRE guidance has been used to generate significance criteria that have been used to assess the impact of the development.

1.27 For VSC, Sunlight and Daylight Distribution this is:-

- Windows experiencing less than 20% reduction represent acceptable to minor beneficial impacts;
- Windows experiencing between 20 and 29.9% reduction represent minor adverse impacts;
- Windows experiencing between 30 and 39.9% reduction represent moderate adverse impacts; and
- Windows experiencing greater than 40% reduction represents substantial adverse impacts.

1.28 In the BRE report it states that guidelines should be applied sensibly and flexibly, therefore if an urban factor was applied for minimum BRE requirements at 20% below the Sub-urban standards the urban minimum pass rates are considered as the following.

- Vertical Sky Component 21.6%
- Daylight Distribution 50%
- Annual Probable Sunlight Hours 20%
- Winter Sunlight 4%

Baseline Conditions

1.29 An analysis of the impact of the existing buildings (the baseline conditions) against which to compare any potential impact arising from the development has been undertaken based on the information provided by the architect and photographic evidence. The detailed results of this analysis are presented in the tables appended at Appendix 1.

2. Results – Proposed Development

Neighbouring Property Assessment

Daylight VSC

- 2.1 The results of the Vertical Sky Component (VSC) analysis on the relevant residential windows adjacent the refurbishment properties are presented on the drawings and tables at Appendix 1.
- 2.2 It can be seen from the VSC table that ALL windows pass with only 1no kitchen (first floor 23 Bayham Street) marginally below the 80% target rate, achieving 77%. The minor 3% transgression would not be noticeable. In the existing condition, the room only achieves 12.27% which is well below the 27% BRE guide so we consider this is a poor example but clearly functions as a kitchen even with this poor existing level of light.
- 2.3 Of all the 140 windows tested, only 1no fails (99% pass rate) to meet the guide.
- 2.4 With sympathetic design, all other windows fulfil the BRE criteria and the overall VSC result is considered to be acceptable within an urban location such as this.

Daylight ADF

- 2.5 Where appropriate an Average Daylight Factor assessment has been undertaken on properties where their internal configuration is understood. The results are presented in Appendix 1.
- 2.6 It can be seen from the results that ALL of the assessed rooms will either far exceed the target values and achieve an automatic ADF pass or are well within the 0.8 former value criteria. This is typical in an urban environment such as this and the results are widely accepted as a permissible level of reduction for ADF as this reflects the criteria for the VSC and DD assessments. The only room which marginally fails to reach the 80% is a kitchen at 23 Bayham

Street. It achieves 78% so it a minor 2% below the guide. Again, this is poorly lit before any work as it has an ADF of 0.75% when the guide looks to achieve 2%.

2.7 Of the 81 rooms assessed, only 1no is marginally below the target by 2%.

2.8 Therefore the overall ADF result is considered to be acceptable.

Daylight Distribution

2.9 The result of the daylight distribution (DD) analysis on the relevant residential room overlooking the site is presented on the drawings and tables at Appendix 1.

2.10 It can be seen from the result table that all pass with only 1no residential room is below the target value; this is the first floor kitchen at 23 Bayham Street. Again the room clearly functions as a kitchen but does not meet the BRE guidelines in the existing condition before any work is undertaken on the applicant's site. This is considered therefore a "bad neighbour" property and as it fails to meet the BRE guidelines ion any of the tests in the existing condition should be discounted from the assessment.

2.11 All other rooms pass the BRE guidelines.

2.12 Therefore the overall DD result is considered to be acceptable.

Sunlight APSH

2.13 The results of the sunlight analysis (APSH and Winter) on the relevant residential window are presented on the drawings and tables at Appendix 1.

- 2.14 Due to the orientation of some of the neighbouring properties facing in a due north direction they have been discounted from the sunlight assessment.
- 2.15 The sunlight table results show that all but 1no habitable window assessed for the BRE criteria of 25% APSH pass. This is living/diner space on the first floor of 23 Bayham Street. It only achieves 19% in the existing situation and so again before any work is undertaken at the site does not meet the BRE guide of 25%. It is reduced from 19% to 11%.
- 2.16 Therefore the overall APSH result is considered to be acceptable.

Sunlight Winter

- 2.17 The results on the sunlight table show that the same window at 23 Bayham is reduced and is just under the BRE target of 5% by 1%.
- 2.18 The overall effect on the neighbouring windows for winter sunlight is considered to be acceptable.

3. Conclusion

- 3.1 The site is situated in the London Borough of Camden and is in close proximity to the adjacent residential (and commercial) properties which have been assessed for daylight and sunlight.
- 3.2 To assess the development's potential impact on daylight and sunlight on the neighbouring properties a baseline assessment was undertaken using the Vertical Sky Component (VSC), daylight distribution (DD) and where appropriate average daylight factor (ADF) method for daylight analysis using the Waldram diagram template drawings; the sunlight analysis was undertaken by measuring annual probable sunlight hours (APSH) for the main windows of rooms which face within 90° of due south provided by the Building Research Establishment.
- 3.3 The VSC, ADF and No-sky/daylight distribution analysis indicates that all but two windows pass at least one of the BRE studies. The neighbouring windows will automatically remain adequately lit in the majority as a result of the development proposals and will comply with the BRE criteria in the urban context.
- 3.4 The sunlight and winter sunlight assessment results show that they achieve similar results and are considered acceptable when perceived in the urban context.

3.5 Summary

VSC/ DD (Daylight Distribution)/ ADF

- 3.5.1 This confirms that 1no transgression to 1no kitchen

APSH/Winter

- 3.5.2 This confirms that 1no transgression to 1 Living/diner window

- 3.6 The development should therefore be considered to meet the requirements of The London Borough of Camden Local Development Framework in daylight and sunlight.



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APPENDIX 1

Drawings 20151887/Rel01/01-06	(Existing & Proposed model, views)
Drawings 20151887/Rel01/07-41	(VSC Waldram Daylight diagrams)
Drawings 20151887/Rel01/42-76	(Sunlight Waldram diagrams)
Drawings 20151887/Rel01/77-87	(Window maps)
Drawings 20151887/Rel01/88-102	(Daylight distribution contour)
Tables; VSC/Sunlight, DD, ADF, Tables	

DAYLIGHT/SUNLIGHT REPORT - IMAGES

Due to file size the remaining pages of this document have been transferred to the Case Officer electronically.