

ROUNDHOUSE CAMPUS

DAYLIGHT & SUNLIGHT ASSESSMENT
(for modification to Container Building)
SEPTEMBER 2016

Keeping Blue

Roundhouse Administration Building, Regent's Park Road, Camden

Daylight & Sunlight Assessment Phase 2

08 March 2016

The Roundhouse Trust

keeping
blue



Document Issue Register

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1 Introduction

This report details a Daylight & Sunlight Assessment (Phase 2) for the proposed extension at the Roundhouse Administration Building, Regent's Park Road, Camden. The building is situated to the south of Regent's Park Road, adjacent to an existing residential building and opposite a mixed-use building. The ground level of the building is positioned slightly above street level, with upper floors partially overhanging an inclined driveway which leads to the Roundhouse.

The existing building is laid out over five storeys, with storage on ground floor, and mixed office space on 1st to 4th floor. The proposed extension consists of an additional level (5th floor) with a similar footprint to the existing 4th floor. A site survey has been conducted on 03/03/2016.

The purpose of this report is to perform a daylight and sunlight assessment for the habitable rooms of the neighbouring properties, and to compare with guidance provided by the BRE (BR209: Site Layout Planning for Daylight and Sunlight 2011).



Figure 1: Roundhouse Administration Building & Neighbouring Property

2 Executive Summary

There are two components of natural light which need to be considered when assessing the impact of a proposed development on the surrounding properties, being the level of daylight and the annual sunlight hours. Both are given as a percentage/proportion of a theoretical maximum, with limits set by the BRE giving guidance on acceptable levels.

In terms of daylight levels to a window, the BRE has set a guideline for a Vertical Sky Component (VSC) of 27%, or a reduction of not worse than 0.8 times the former level. The 27% figure relates to low-density suburban housing. The BRE advises that in inner city locations lower values can be acceptable.

The results of the daylight assessment indicate that all of the assessed windows would retain a VSC of not less than 0.8 times their former level, following the proposed extension. Thus the reduction in daylight levels is not likely to be noticeable, according to the BRE.

In terms of Annual Probable Sunlight Hours (APSH), the BRE guidance advises that a figure of 25% of maximum hours (which is around 1500 hours in London) will be adequate. 151-153 Regent's Park Road and 155 Regent's Park road all achieve annual levels significantly higher than 25%.

The adjacent 210 Regents Park Road falls outside a 45° angle of the furthest projection of the proposed development, and is thus not considered to be obstructed.

The retail units to the north of Chalk Farm Road all are further than 34.0m (25° angle) from the proposed development and thus are not considered to be obstructed.

The values of daylight levels and annual sunlight hours are thus considered to be acceptable for all surrounding properties.

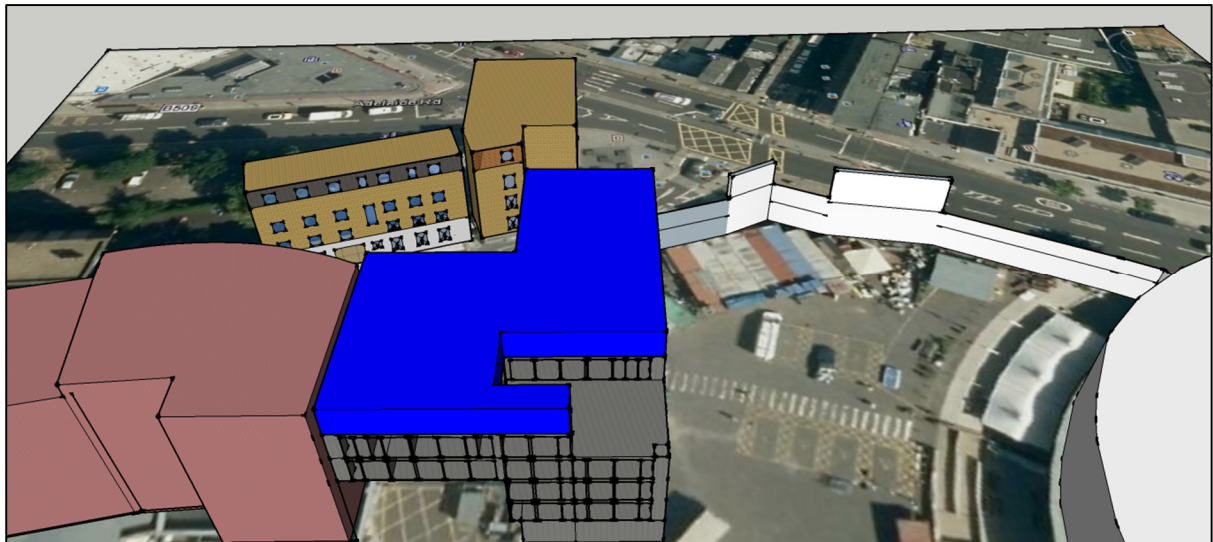


Figure 2: Proposed extension (blue), Roundhouse Administration Building

3 Discussion

The introduction to the BRE document 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' states the following:

'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 be 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 an historic city centre a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings.'

With this in mind, the assessment has been carried out to assess the impact of the development on daylight and sunlight levels to neighbouring residential properties.

3.1 Measurement of Daylight

If a proposed development will fall beneath a 25° angle taken from the centre of the lowest window at an existing property, then no further assessment will be required. Furthermore, if the centre of a main window of the next door property lies on the extension side of a 45° line drawn in plan and elevation, then the extension may well cause a significant reduction in the skylight received by the window.

There are three mechanisms for determining the daylight levels to a window or room:

1. Vertical Sky Component (VSC)
2. No Sky Contours (NSC)
3. Average Daylight Factor (ADF)

The second and third methods (NSC and ADF) require knowledge of the internal layout of the property being assessed, whilst the first method is determined solely on the external skyline obstructions. In this instance it is appropriate to assess the neighbouring properties based on the first method (VSC) in order to avoid disruption to neighbouring properties. The VSC methodology is defined as:

'Ratio of that part of illuminance, at a point on given vertical plane, that is received directly from a CIE Standard Overcast Sky, to illuminate on a horizontal plane due to an unobstructed hemisphere of this sky'.

The VSC for a completely unobstructed CIE Standard Overcast Sky is 39.6%. The BRE guideline VSC for an existing window in a habitable room is 27%, or not less than 0.8 times its former value. This figure has been derived from a low-density suburban housing model. The BRE guide provides flexibility for a 'historic city centre' where the existing skyline does not allow for a figure of 27% to be attained.

3.2 Measurement of Sunlight

The sunlight to a given window is quantified using the Annual Probable Sunlight Hours (APSH) method, which in London equates to approximately 1500 hours. An indicator is provided in the BRE guide which is overlaid with 100 spots, each representing approximately 15 hours. Each spot which is uncovered by an obstruction can thus be counted to provide a percentage of total APSH.

The guideline criteria for assessing annual sunlight at a reference point (centre of window) of an existing building is that it receives 25% of APSH including at least 5% of APSH in winter and not less than 0.8 times its former value.

According to the BRE guidance, it is not always necessary to do a full calculation to check sunlight potential. The guideline above is met if the following is true:

- If the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window (obstructions within 90° of due north of the existing window need not count here)
- The window wall faces within 90° of due south and no obstruction, measured in the section perpendicular to the window wall, subtends an angle of more than 25° to the horizontal (again, obstructions within 90° of due north of the existing window need not be counted).
- The window wall faces within 20° of due south and the reference point has a VSC of 27% or more

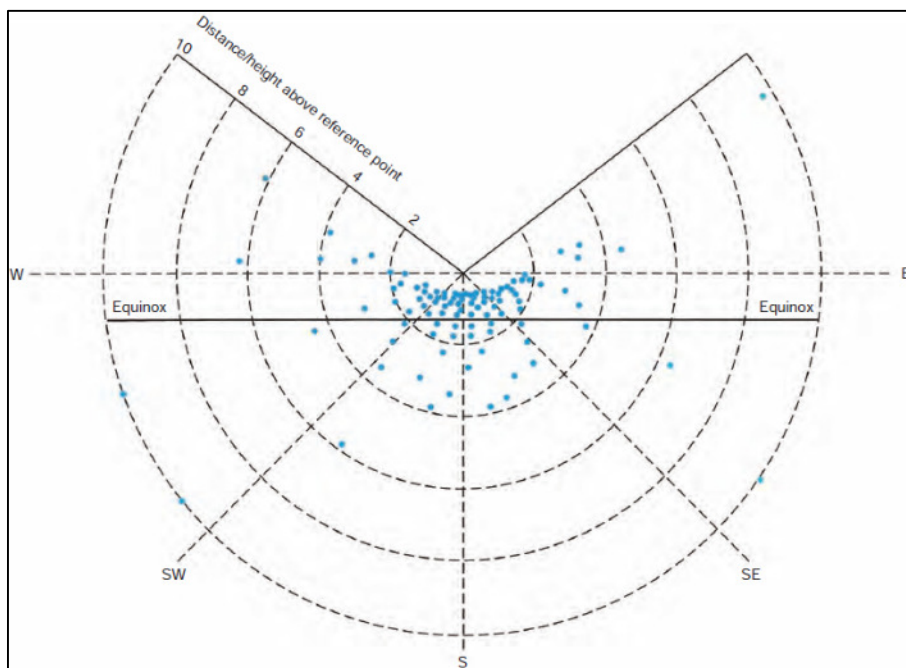


Figure 3: BRE Sunlight Availability Indicator - London

3.3 Daylight & Sunlight Analysis of surrounding properties

The surrounding properties which have been assessed include the following:

- 151 – 153 Regent's Park Road
- 155 Regent's Park Road
- 210 Regent's Park Road
- Chalk Farm Road North Retail Units

3.3.1 151 – 153 & 155 Regent's Park Road

The properties are shown below, with 151-153 Regent's Park Road to the left hand side, and 155 Regent's Park Road to the right hand side. It has been assumed that the properties are mixed-use, comprising both residential & commercial units:



Figure 4: 151 – 153 & 155 Regent's Park Road

A previous study has indicated that all windows would receive significantly more than 25% of Annual Probable Sunlight Hours (APSH), however those on the ground floor may receive less than 5% APSH during the winter.

The previous study has also highlighted the windows that would receive the lowest levels of daylight, under existing conditions. This includes the windows along the ground floor, and those towards the east side of the 1st floor. These windows will be the focus of this study, the results are indicated below:

Results of Daylight Analysis

A Vertical Sky Component (VSC) assessment criteria of 27% is usually adopted, however the BRE advises that in inner city locations lower values can be acceptable. It should be noted that the existing skyline on the south side of the road currently results in a VSC of below 27% for a number of ground and 1st floor windows. Thus the reduction in daylight from existing levels will be assessed against a criteria of 0.8 times the former value.

The results of the daylight assessment indicate that all 7no. ground floor windows and 4no. 1st floor windows would retain a VSC of not less than 0.8 times their former value following the proposed extension. Thus the reduction in daylight levels is not likely to be noticeable, according to the BRE.

Window ID	Floor / Level	VSC existing (%)	VSC proposed (%)	Ratio	Notes:
1	Ground floor	22.70	20.94	0.92	Reduction of 8%
2	Ground floor	22.79	20.96	0.92	Reduction of 8%
3	Ground floor	22.55	20.79	0.92	Reduction of 8%
4	Ground floor	21.91	20.27	0.93	Reduction of 7%
5	Ground floor	21.86	20.32	0.93	Reduction of 7%
6	Ground floor	19.87	18.78	0.95	Reduction of 5%
7	Ground floor	18.92	18.04	0.95	Reduction of 5%
8	1 st floor	27.30	25.11	0.92	Reduction of 8%
9	1 st floor	25.95	23.82	0.92	Reduction of 8%
10	1 st floor	25.67	23.65	0.92	Reduction of 8%
11	1 st floor	25.07	23.21	0.93	Reduction of 7%



Figure 5: 151 – 153 & 155 Regent's Park Road, 3D Model with window ID's

Results of Sunlight Analysis

The previous study has indicated that all windows would receive significantly more than 25% of Annual Probable Sunlight Hours (APSH), however those on the ground floor may receive less than 5% APSH during the winter. For the sake of completeness, the window most affected by the existing building (window ID #2) will be assessed using the BRE sunlight availability indicator for London.

This indicates that window ID #2 would receive 59% of Annual Probable Sunlight Hours (APSH) following the proposed extension. The window currently receives 60% of APSH. Thus the reduction in APSH would not be noticeable, and the window would receive adequate daylight according to the BRE.

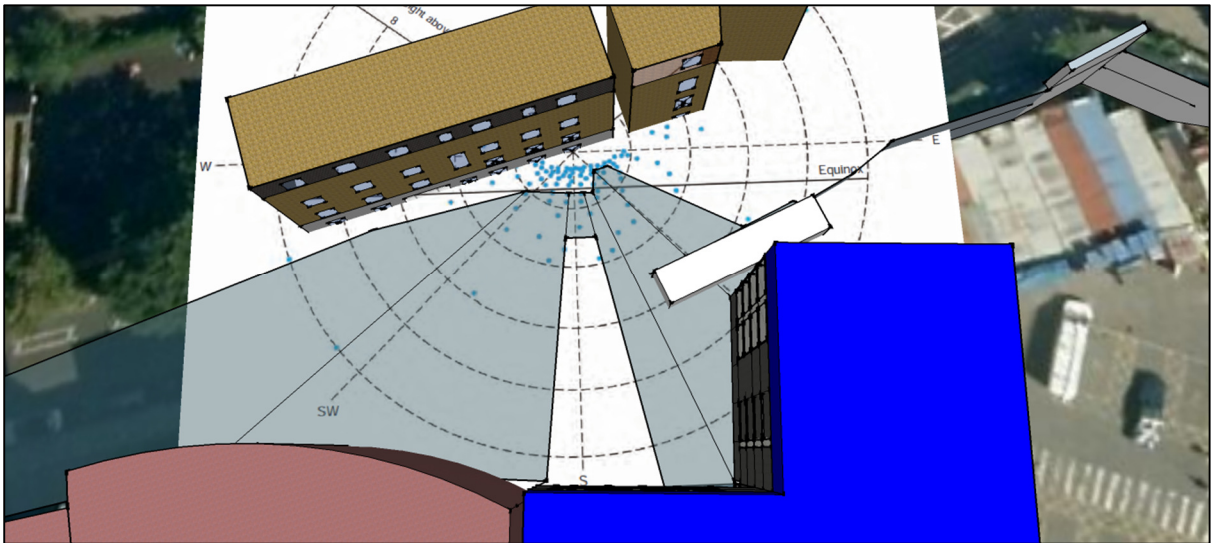


Figure 6: APSH Analysis using Sunlight availability indicator for London

3.3.2 210 Regent's Park Road

This property is shown below, the property is adjacent to the proposed development and consists of residential apartments:



Figure 7: 210 Regent's Park Road

As the proposed extension extends beyond the neighbouring building on the north façade, the 45° rule can be applied to determine whether there will be an adverse effect on these windows. A 45° line is drawn in plan and elevation from the extents of the extension. According to the BRE guidance, if the centre of a main window of the next door property lies on the extension side of these 45° lines then the extension may well cause a significant reduction in the skylight received by the window.

The diagram below shows the 45° lines subtended from the furthest corner of the proposed extension. The darker (overlapping) segment of these 45° lines does not intersect any windows on the north façade of 210 Regent's Park Road, thus there will not be a significant obstruction of light:

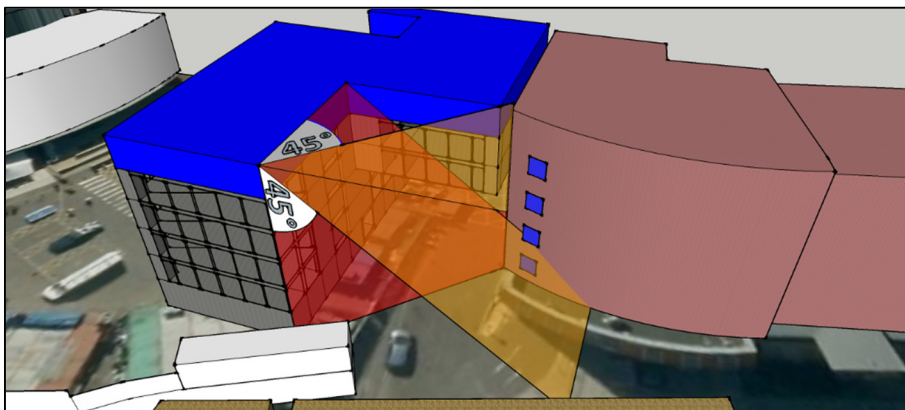


Figure 8: 45° lines, Neighbouring Property

3.3.3 Chalk Farm Road North Retail Units

The retail units to the north of Chalk Farm Road are shown in the picture below:



Figure 9: Retail units, Chalk Farm Road North

Based on the height of the extension (approx. 15.9m), any reference point falling further than 34.0m from the base of the development will have a line of sight of the horizon below the 25° criteria determined by the BRE. In the case of the retail units to the north of Chalk Farm Road, all of these buildings are further than 34.0m from the proposed development and thus no further assessment is required.

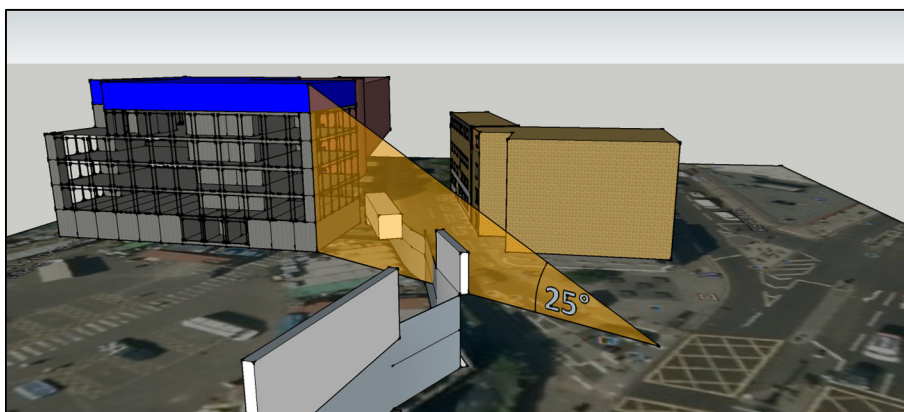


Figure 10: 25° Line, Chalk Farm Road

