



83 Danson Road, Bexleyheath

Daylight and Sunlight Assessment for Planning

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Contents

1.0	Introduction.....	3
2.0	Project Summary	4
3.0	Methodology	5
4.0	Modelling & Data Sources.....	6
5.0	Window Schedules	7
6.0	BRE Guidance Targets.....	8
7.0	Daylight Impact Results.....	9
8.0	Sunlight Impact Results.....	10
9.0	Sunlight to Neighbouring Gardens	12
10.0	Conclusions.....	13

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1.0 Introduction

1.1 This daylight and sunlight assessment has been prepared to support a planning application for the proposed extension of 83 Danson Road, Bexleyheath.

1.2 The report assesses the proposals in respect of daylight, sunlight and overshadowing matters, having regard to industry standard guidance. The report concludes that the proposal is acceptable and in accordance with planning policy requirements in relation to daylight and sunlight.

1.3 There is no existing specific National Planning Policy relating to the prospective impacts of developments on daylight and sunlight on their surrounding environment.

1.4 However, the BRE Report 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' is the established National guidance to aid the developer to prevent and/or minimise the impact of a new development on the availability of daylight and sunlight in the environs of the site. It has been developed in conjunction with daylight and sunlight recommendations in BS 8206: Part 2: 'Lighting for Buildings - Code of Practice for Daylighting'.

1.5 This reference document is accepted as the authoritative work in the field on daylight, sunlight and overshadowing and is specifically referred to in many Local Authorities' planning policy guidance for daylighting. The methodology therein has been used in numerous lighting analyses and the standards of permissible reduction in light are accepted as the industry standards.

2.0 Project Summary



Site Location as Existing

- 2.1 The proposal site is at 83 Danson Road, Bexleyheath and is currently occupied by a 2-storey detached dwelling.
- 2.2 The proposal is for the extension of the dwelling, to create additional residential accommodation.
- 2.3 The impacts of the scheme on all residential neighbours potentially affected by the scheme have been considered.
- 2.4 Further details on the location of neighbours and their windows are given in Section 5.0.

3.0 Methodology

3.1 For this analysis, we have undertaken the most common calculations for the change in daylight and sunlight to existing buildings, as recommended in BRE Digest 209. These are:

- **Vertical Sky Component (VSC) for daylight impacts**
- **Annual Probable Sunlight Hours and Winter Probable Sunlight Hours (WPSH) (APSH) for sunlight**

3.2 The VSC method measures the general amount of light available on the outside plane of the window as a ratio (%) of the amount of total unobstructed sky viewable following introduction of visible barriers such as buildings. The maximum value is just under 40% for a completely unobstructed vertical wall.

3.3 The VSC is calculated using computer simulation under a CIE overcast sky. This works by simulating the amount of visible sky from the centre point of each window. It is not affected by orientation and so all potentially affected windows are assessed.

3.4 Annual Probable Sunlight Hours (APSH) and Winter Probable Sun light Hours (WPSH) are a measure of the amount of potential direct sunlight that is available to a given surface. APSH covers sunlight over the whole year and WPSH from September 21st to March 21st. The number of total available hours is calculated from a data file in the software, built up over a number of years of actual weather data records.

3.5 Only windows which face within 90° of due south need be assessed for sunlight.

3.6 APSH can also be used to assess the impact on external spaces such as gardens. This is looked at in Section 9.

4.0 Modelling & Data Sources

4.1 The first stage of the analysis is to create the analysis model of the existing site condition and the proposal. This allows us to analyse the impact of the proposal when compared to the existing condition.

4.2 2D drawings and a 3D model have been provided by the design team. These drawings are used to construct a 3D analysis model which is exported into the specialist daylight software. Calculations are then run, for both existing and proposed scenarios.

4.3 Sufficient detail is added to the model for the analysis. In accordance with BRE recommendations, trees and foliage have been omitted from the calculations.

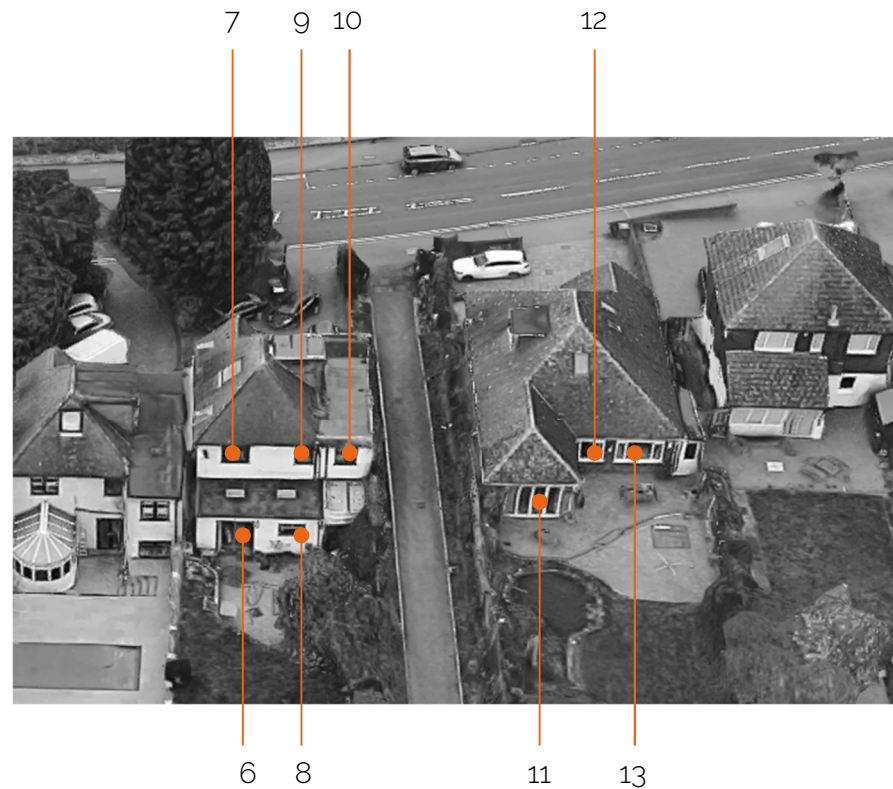
4.4 Information on the properties has been provided to us by the design team in the form of drawings and models giving the site as existing and proposed and photographs of the site and surroundings.

4.5 Web-based mapping sources and planning records for neighbouring buildings have also been used.

5.0 Window Schedules



45 Brasted Close



81A-85 Danson Road

6.0 BRE Guidance Targets

6.1 The reference document for this analysis, BRE Digest 209, gives the methodology for undertaking the calculations. It also provides benchmark figures for the acceptable reduction in the daylight on existing properties which might be affected by development.

6.2 Specifically, the guidance gives figures for the VSC and APSH, as a percentage reduction that is "permissible" for the effect on existing windows.

6.3 It is worth noting the following statement in the Guidance introduction:

- "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 developer.
- Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design."

6.4 The relevant BRE recommendations for daylight and sunlight are:

- The Vertical Sky Component measured at the centre of a window should be no less than 27, or if reduced to below this, no less than 0.8 times the former value.
- The window should receive at least 25% of available annual sunlight hours and more than 5% during the winter months (September 21st to March 21st), or, where this is not the case, 80% of its former value.

7.0 Daylight Impact Results

7.1 The Vertical Sky Component has been calculated for each of the 13 assessed windows for both the existing and proposed conditions.

7.2 As can be seen in the results below, all windows retain 80% of their current values.

7.3 The scheme is therefore compliant with BRE recommendations in relation to daylight impacts.

Vertical Sky Component				
Window	Existing VSC	Proposed VSC	% Retained	Meets BRE Guidance?
1	38.790	38.656	99.65%	Yes
2	36.901	36.536	99.01%	Yes
3	38.768	38.537	99.40%	Yes
4	32.724	31.625	96.64%	Yes
5	37.250	36.552	98.13%	Yes
6	35.382	35.329	99.85%	Yes
7	36.196	36.153	99.88%	Yes
8	32.896	32.842	99.84%	Yes
9	37.815	37.781	99.91%	Yes
10	37.313	37.289	99.93%	Yes
11	36.729	36.661	99.81%	Yes
12	29.717	29.706	99.96%	Yes
13	36.883	36.833	99.86%	Yes

8.0 Sunlight Impact Results

8.1 BRE guidance states that only windows which face within 90° of due south need be assessed for sunlight provision. In this instance, 8 windows fall into this category. The Annual Probable Sunlight Hours has been calculated for these windows for both the existing and proposed conditions using the methodology described previously, both over the whole year, and through the “winter months” (September 21st until March 21st)

8.2 The BRE guidance states that the sun lighting may be adversely affected if the centre of the window:

- Receives less than 25% of annual hours or less than 5% of winter hours
and
- Receives less than 80% of its current sunlight hours during either period
and
- Has a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours.

8.3 It is clear from the wording of the above that all three clauses need to be met to qualify as an adverse impact. Thus, if the window does not meet any one of these criteria, the impact is acceptable.

8.4 The results below show that the assessed windows retain greater than 80% of current sunlight hours, both annually and over the winter months.

8.5 The scheme is therefore compliant with BRE guidance in relation to sunlight impacts.



8.0 Sunlight Impact Results

Annual Probable Sunlight Hours				Winter Probable Sunlight Hours			Meets BRE Guidance?
Window	Existing Hrs Received	Proposed Hrs Received	Percentage Retained	Existing Hrs Received	Proposed Hrs Received	Percentage Retained	
6	46.085	46.085	100.00%	14.622	14.622	100.00%	Yes
7	42.481	42.481	100.00%	10.256	10.256	100.00%	Yes
8	39.848	39.848	100.00%	12.128	12.128	100.00%	Yes
9	47.609	47.609	100.00%	15.315	15.315	100.00%	Yes
10	47.748	47.748	100.00%	15.454	15.454	100.00%	Yes
11	46.015	46.015	100.00%	13.721	13.721	100.00%	Yes
12	28.898	28.898	100.00%	0.208	0.208	100.00%	Yes
13	43.867	43.728	99.68%	11.365	11.227	98.78%	Yes

9.0 Sunlight to Neighbouring Gardens

- 9.1 Residential gardens are generally assessed using the sunlight hours test, but only on March 21st. The guidance describes a well-lit space as being one which receives at least 2 hours of direct sunlight on this date over 50% of its area.
- 9.2 BRE guidance also uses the "80%" rule for this test, whereby the effects are considered acceptable if the remaining sunlight is in excess of 80% of the existing level. This clause applies if the space is reduced to less than 50% of the area well sunlit.
- 9.3 The gardens of the nearest neighbouring dwellings to the site, as identified to the left, were assessed using this method.
- 9.4 As can be seen, the neighbouring gardens retain in excess of 80% of current sunlight levels and so the scheme is compliant with BRE recommendations.



Amenity Sunlight Hours				
Garden	Existing Area Receiving 2 Hours	Proposed Area Receiving 2 Hours	% Retained	Meets BRE Guidance?
G1	84.53%	84.53%	100.00%	Yes
G2	81.04%	80.96%	99.89%	Yes
G3	83.18%	83.26%	100.09%	Yes

10.0 Conclusions

10.1 Using industry standard methodology, we have made numerical analyses to ascertain the effects of the proposal at 83 Danson Road, Bexleyheath and the levels of change in daylight and sunlight for the windows and gardens of the neighbouring properties.

10.2 The main criteria used in this analysis to show compliance are the Vertical Sky Component for daylight impacts and Annual and Winter Probable Sunlight Hours for sunlight impacts.

10.3 As has been shown, the effect on VSC is within the 80% guidance value in all cases.

10.4 There will therefore be no adverse impact on neighbouring residents in terms of daylight.

10.5 In terms of sunlight, the assessed windows retain in excess of 80% of its existing sunlight levels both annually and during the winter months.

10.6 The neighbouring gardens retain in excess of 80% of area receiving 2 hours or more of sunlight on March 21st.

10.7 The scheme is therefore compliant with BRE guidance in relation to sunlight impacts.

10.8 From a planning perspective therefore, it is the conclusion of this report that the proposed development is entirely acceptable for planning, in daylight and sunlight terms.



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