18 Station Road, Longfield, DA3

Daylight and Sunlight Assessment

Job No: 5371

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Contents

Document Prepared By:	Document Authorised By:
Sam Westover	Bernice Waterman
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Signed:	Signed:

1.0 Introduction

1.1 This daylight and sunlight assessment has been prepared to support a planning application for the proposed redevelopment of the site at 18 Station Road, DA3.

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 broadly acceptable and in line with the BRE guidance and 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' (3rd Edition, 2022) 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 and the assessment of light levels in newly proposed developments.

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.

1.6 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

2.1 The proposal site is at 18 Station Road, Longfield DA3 and it is currently occupied by a part two, part single storey commercial building. The locality of the building is characterised by an urban town centre.

2.2 The proposal is for the demolition of the existing dwelling to be replaced by a part three storey part four storey residential block of flats.

2.3 The impacts of the scheme have been assessed, in line with BRE guidance. Generally, it is the impacts on residential neighbours which are of primary concern.

2.4 Most of the assessed windows are below the proposal, in the existing building, served by three lightwells.

2.5 This means their outlook is extremely "self-limiting" and so even a modest increase in massing, as is proposed here, has a disproportionate impact on these windows.

2.6 Further details on the location of the assessed neighbours and their windows are given in Section 5.0

Site Location

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) and No Sky Line (NSL) for daylight impacts
- Target Daylight Factor (DF_T) for daylight within the proposal
- Annual Probable Sunlight Hours and Winter Probable Sunlight Hours (WPSH) (APSH) for sunlight impacts

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 An additional test that can be undertaken is the No Sky Line (NSL) test, also referred to as Daylight Distribution.

3.5 The NSL test calculates the distribution of daylight within rooms by determining the area of the room at desk / work surface height (the 'working plane') which can and cannot receive a direct view of the sky and hence 'sky light'. The working plane height is set at 850mm above floor level within residential property.

3.6 The NSL test can be carried out where neighbouring room layouts are known.

3.7 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.

3.8 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.

3.9 Only windows which face within 90° of due south need be assessed for sunlight. This is looked at in Section 9.

3.10 APSH can also be used to assess the impact on external spaces such as gardens. In this instance there are no relevant neighbouring amenity spaces.

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 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 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 BRE Guidance Targets

5.1 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.

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

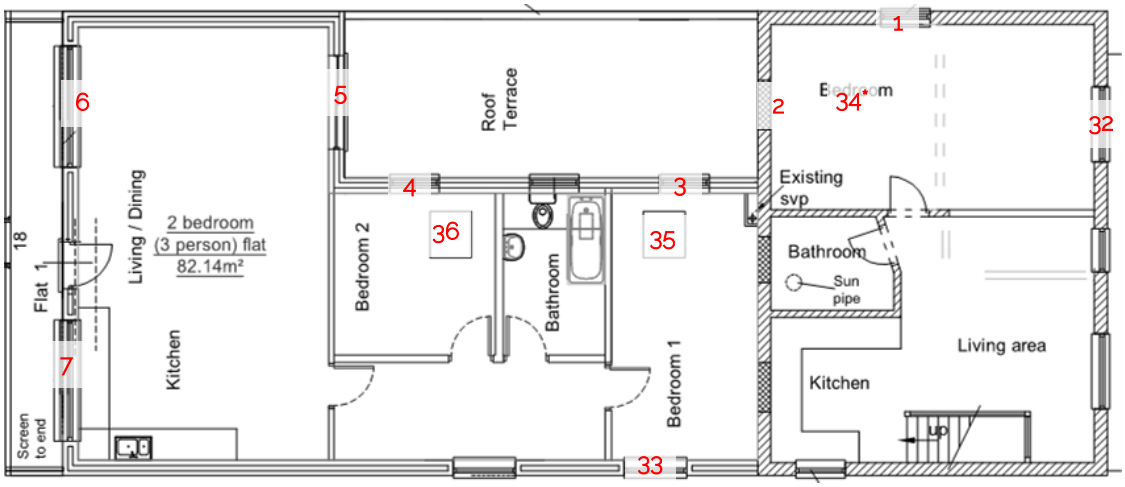
5.3 It is worth noting the following statement in the Guidance introduction:

- "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."

5.4 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 area of the room beyond the No Sky Line should not be reduced to less than 80% of its 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.

6.0 Window Schedules



NB: Window 35 as seen on Google Maps

20 Station Road (First Floor Plan)

68 Essex Road (Side Elevation)

61 – 63 Essex Road (Front Elevation)

6.0 Window Schedules

14 Station Road (Side Elevation)

25 – 29 Station Road (Front Elevation)

7.0 Daylight Impact Results – VSC Test

7.1 The Vertical Sky Component has been calculated for each of the 36 assessed windows for both the existing and proposed conditions.

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

7.3 The windows that fail the BRE guidance value are secondary windows in most cases serving bedrooms which is served by a much larger rear facing window or rooflights so does not provide most of the daylight for the bedrooms. A more detailed calculation of the daylight within the bedroom has been analysed using the more detailed No-Skyline Calculation.

7.4 This is detailed in the following section.

7.5 The remaining windows meet the BRE guidance by virtue of retaining 80% of existing values.

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Vertical Sky Component				
Window	Existing VSC	Proposed VSC	% Retained	Meets BRE Guidance?
1	32.99	3.23	9.79%	No
2	27.33	24.27	88.80%	Yes
3	30.99	20.20	65.18%	No
4	30.97	20.86	67.36%	No
5	28.49	24.63	86.45%	Yes
6	38.44	33.12	86.16%	Yes
7	38.48	37.72	98.02%	Yes
8	35.32	32.23	91.25%	Yes
9	34.26	33.59	98.04%	Yes
10	35.41	34.56	97.60%	Yes
11	36.03	34.88	96.81%	Yes
12	36.24	34.71	95.78%	Yes
13	26.29	24.48	93.12%	Yes
14	35.35	34.45	97.45%	Yes
15	34.79	33.33	95.80%	Yes
16	35.05	29.73	84.82%	Yes

7.0 Daylight Impact Results – VSC Test

Vertical Sky Component				
Window	Existing VSC	Proposed VSC	% Retained	Meets BRE Guidance?
17	34.40	28.79	83.69%	Yes
18	34.00	28.34	83.35%	Yes
19	34.77	28.25	81.25%	Yes
20	34.47	28.29	82.07%	Yes
21	35.56	29.83	83.89%	Yes
22	37.06	35.42	95.57%	Yes
23	35.67	33.85	94.90%	Yes
24	37.32	35.31	94.61%	Yes
25	37.23	35.12	94.33%	Yes
26	37.07	34.79	93.85%	Yes
27	36.89	34.65	93.93%	Yes
28	36.73	34.53	94.01%	Yes
29	36.27	34.19	94.27%	Yes
30	36.95	35.06	94.88%	Yes
31	37.15	35.50	95.56%	Yes
32	36.29	34.78	95.84%	Yes
33	38.16	38.16	100.00%	Yes
34	85.12	77.03	90.50%	Yes
35	87.56	84.37	96.36%	Yes
36	87.78	84.87	96.68%	Yes

8.0 Daylight Impact Results – NSL Test

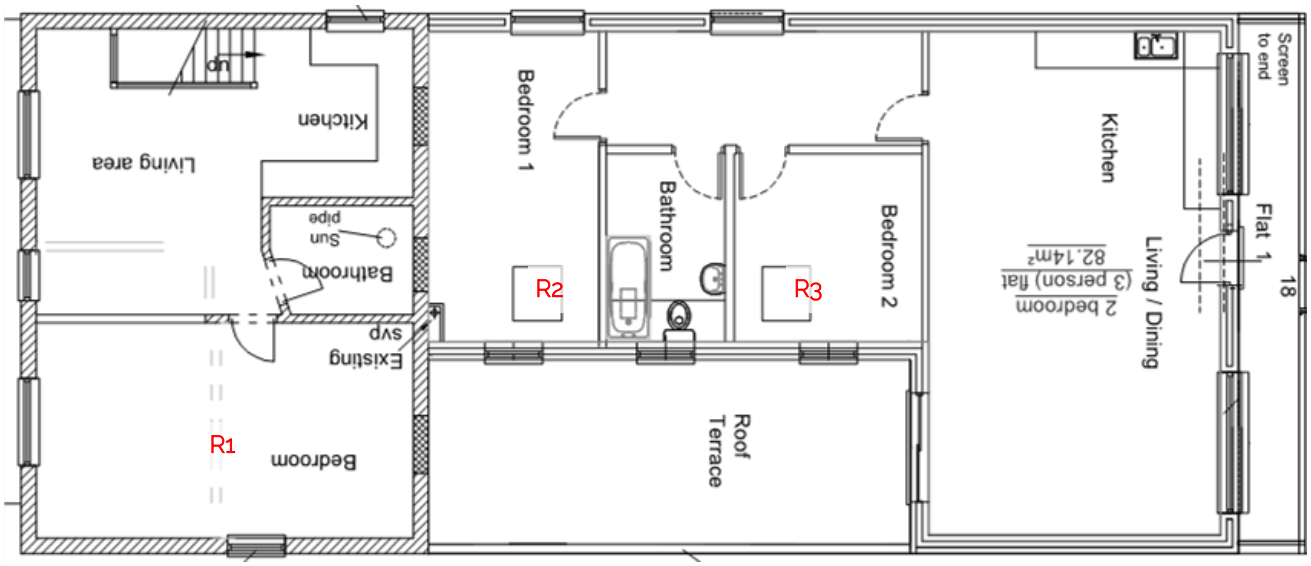
8.1 BRE guidance states that the No Sky Line can additionally be calculated "where neighbouring room layouts are known".

8.2 In this instance floor plans have been sourced for the neighbouring building at 20 Station Road, therefore the No-skyline calculation can be undertaken on the rooms served by the windows which fail to meet less detailed VSC test.

8.3 This test is more detailed and represents better the actual impact on a room, as it considers both the size of the room and the window.

8.4 As can be seen in the results below, the assessed rooms retain in excess of 80% of its area within the No Sky Line. These rooms therefore meet the BRE guidance using this more detailed and representative test.

8.5 The scheme is compliant with BRE guidance when assessed using the No Sky Line test.



20 Station Road (First Floor Plan)

No Sky Line						
Room	Window Ref	Room Served	Existing NSL (%)	Proposed NSL (%)	% Retained	Meets BRE Guidance?
R1	1/2/32/34	Bedroom	100.00%	100.00%	100.00%	Yes
R2	3/33/35	Bedroom	100.00%	98.55%	98.55%	Yes
R3	4/36	Bedroom	100.00%	100.00%	100.00%	Yes

9.0 Sunlight Impact Results

9.1 BRE guidance states that only windows which face within 90° of due south need be assessed for sunlight provision. In this instance, 10 windows fall into this category.

9.2 The Annual Probable Sunlight Hours has been calculated for each of 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)

9.3 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

9.4 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.

9.5 The results below show that all of the assessed windows retain 25% of available sunlight hours annually and 5% over the winter months.

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

9.0 Sunlight Impact Results

	Annual Sunlight Hours			Winter Sunlight Hours			
Window	Ex. Hrs Received (%)	Prop. Hrs Received	% Retained	Ex. Hrs Received	Prop. Hrs Received	% Retained	Meets Guidance?
5	34.51	30.91	N/A	3.88	3.88	100.00%	Yes
8	54.33	48.93	N/A	19.89	19.54	N/A	Yes
9	73.04	69.92	N/A	27.44	24.32	N/A	Yes
10	74.36	70.55	N/A	27.79	23.98	N/A	Yes
11	75.40	70.82	N/A	27.30	22.73	N/A	Yes
12	75.61	70.48	N/A	26.89	21.76	N/A	Yes
13	56.34	51.21	N/A	24.32	19.20	N/A	Yes
14	74.36	69.99	N/A	26.06	21.69	N/A	Yes
15	73.53	68.33	N/A	23.42	18.23	N/A	Yes
16	80.32	64.17	N/A	29.24	13.10	N/A	Yes
17	80.60	63.55	N/A	29.52	12.47	N/A	Yes
18	80.46	63.89	N/A	29.38	12.82	N/A	Yes
19	75.26	65.07	N/A	27.79	17.60	N/A	Yes
20	73.46	63.13	N/A	27.37	17.05	N/A	Yes
21	76.72	67.98	N/A	27.86	19.13	N/A	Yes
33	49.97	49.97	N/A	17.19	17.19	N/A	Yes
34	80.67	80.67	N/A	29.94	29.94	N/A	Yes

10.0 Conclusions

10.1 Using industry standard methodology, we have made numerical analyses to ascertain the effects of the proposal at 18 Station Road, Longfield DA3 and the levels of change in daylight and sunlight for the windows of the neighbouring properties.

10.2 The main criteria used in this analysis to show compliance are the Vertical Sky Component and No Sky Line 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 guidance values for all but one of the neighbouring windows. The windows falling short using this test serves bedrooms and is a secondary window with either larger windows not facing the proposal or rooflights providing the majority of daylight.

10.4 When the rooms which are served by the window which falls short of the VSC test are assessed using the more detailed No Sky Line test, this shows a pass under the BRE guidance.

10.5 We consider that there will therefore be minimal adverse impact on neighbouring residential properties in terms of daylight.

10.6 In terms of sunlight, all of the assessed windows retain 25% of available sunlight hours annually and 5% over the winter months or where this isn't the case retain over 80% of their existing value.

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 has limited impact on existing neighbours, broadly in line with the requirements of the BRE Guidance.

T16 Design Ltd.

T: 01206 572452

E: info@t16design.com

W: www.t16design.com