

28 Southampton Street, Reading

Daylight and Sunlight Assessment for Planning

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1.0 Executive Summary

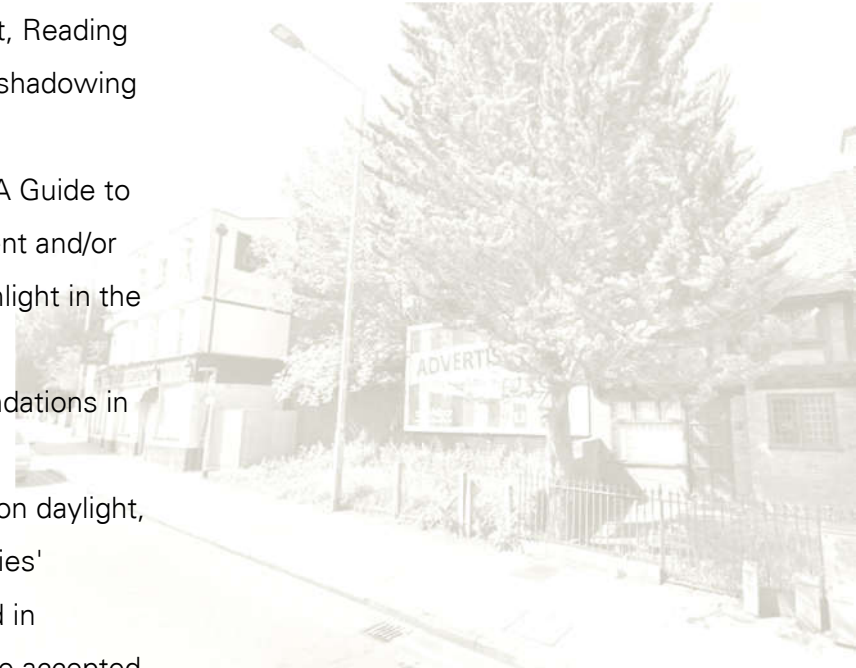
1.1 This daylight and sunlight assessment has been prepared to support a planning application for the proposed redevelopment of the site at 28 Southampton Street, Reading

1.2 The report assesses the proposals in respect of daylight, sunlight and overshadowing matters, having regard to industry standard guidance.

1.3 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.

1.4 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 Methodology

2.1 For this analysis, we have undertaken the following calculations for the change in daylight and sunlight to existing buildings, as considered in BRE Digest 209. These are:

- Vertical Sky Component (VSC), and Average Daylight Factor (ADF) for daylight
- Annual Probable Sunlight Hours (APSH) and Winter Probable Sunlight Hours (WPSH) for sunlight

2.2 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.

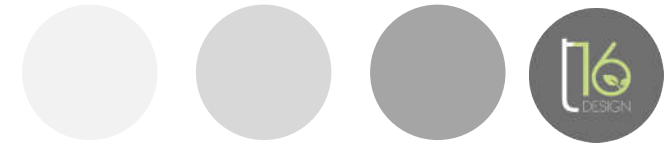
2.3 The VSC is calculated using computer simulation under a CIE overcast sky. This works by simulating the amount of visible sky from the centre point of each window. It is not affected by orientation and so all potentially affected windows are assessed.

2.4 The Average Daylight Factor test is the most sophisticated and representative of the actual daylight experienced within the room. This test considers the size of the room and the sizes and quantities of windows which serve it.

2.5 In addition to considering the room and window sizes, the ADF also uses the reflective nature of the surfaces within the room to establish the percentage of daylight available within the room when compared to an unobstructed view.

2.6 Annual Probable Sunlight Hours (APSH) and Winter Probable Sunlight Hours (WPSH) are a measure of the amount of potential direct sunlight that is available to a given surface. Only windows which face within 90° of due south need be assessed for sunlight.

2.7 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.



2.0 Methodology

2.8 APSH can also be used to assess the impact on external spaces such as gardens. In this instance, no gardens are considered to be at risk of loss of sunlight.

2.9 A 3D model has been produced from 2D drawings provided by the Architect. This model is used within the specialist daylight analysis software where calculations are run, for both existing and proposed scenarios.

2.10 The outputs of those calculations can be exported numerically. Using the BRE guidance which gives recommended limits figures for the reduction in daylighting and sunlighting values, we can then establish the degree to which the proposal will impact on the occupiers of the adjacent dwellings.

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

2.12 Drawn information on the properties has been provided to us by the design team in the form of 2D drawings giving the site as existing and proposed and photographs of the site and surroundings.

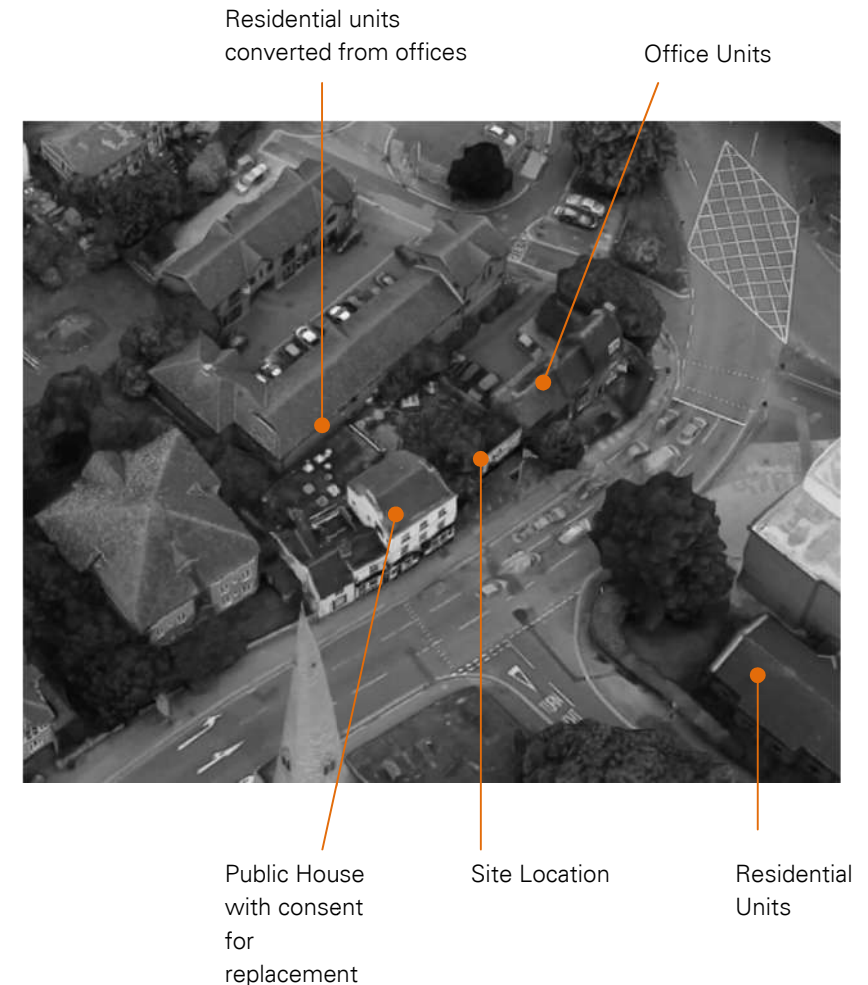
2.13 Planning records and web-based mapping have also been used to establish window positions and room layouts for neighbouring properties.

2.14 Although a full measured survey of the neighbouring windows and buildings has not been undertaken, a good level of detail on the site and neighbours has been made available for the analysis.



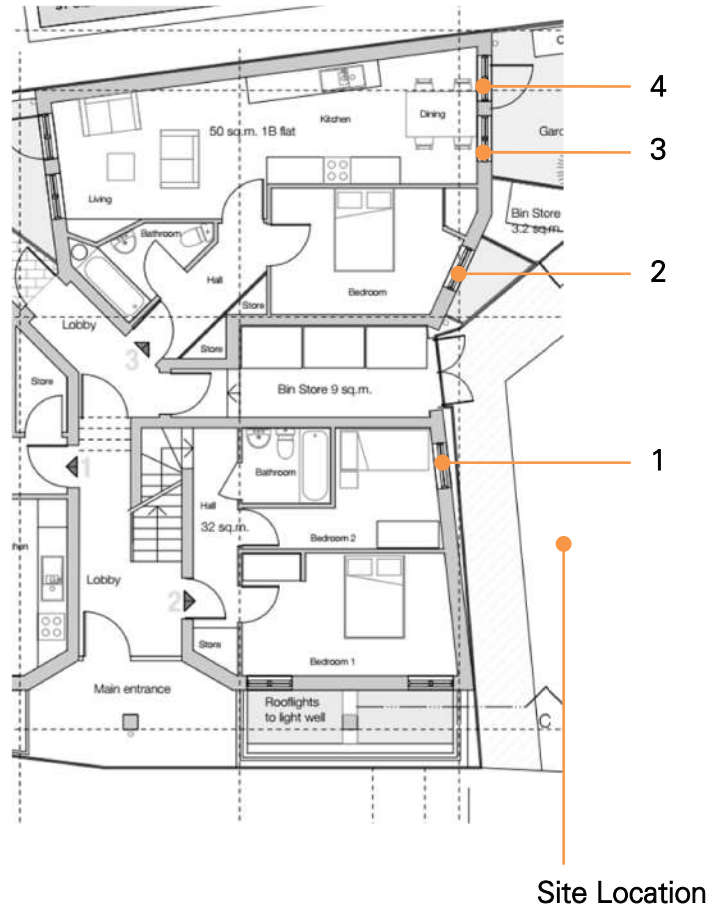
3.0 Existing Site and Proposal

- 3.1 The existing site is at 28 Southampton Street, Reading. The surrounding area is a mix of residential units, offices and buildings constructed as offices but converted to residential.
- 3.2 The proposal is for the clearance of the site and construction of a block of apartments rising to a maximum of 4 storeys.
- 3.3 The purpose of this report is to establish the impact will have on the daylight and sunlight amenity of the neighbouring buildings.
- 3.4 Generally, it is the impact on residential properties that are of primary concern. The BRE guidance states that other uses that have a *particular* requirement for daylight can also be assessed. In this instance, no non-residential neighbours are considered to fall into this category.
- 3.5 The position of the neighbours and their uses is given to the right.
- 3.6 To the south of the site is a disused Public House which has extant consent (Ref 181117) for demolition and replacement with a block of apartments. The impacts of this proposal have been considered as if this development had been constructed.
- 3.7 To the west of the site is a development originally constructed as office units which have been converted into residential units.

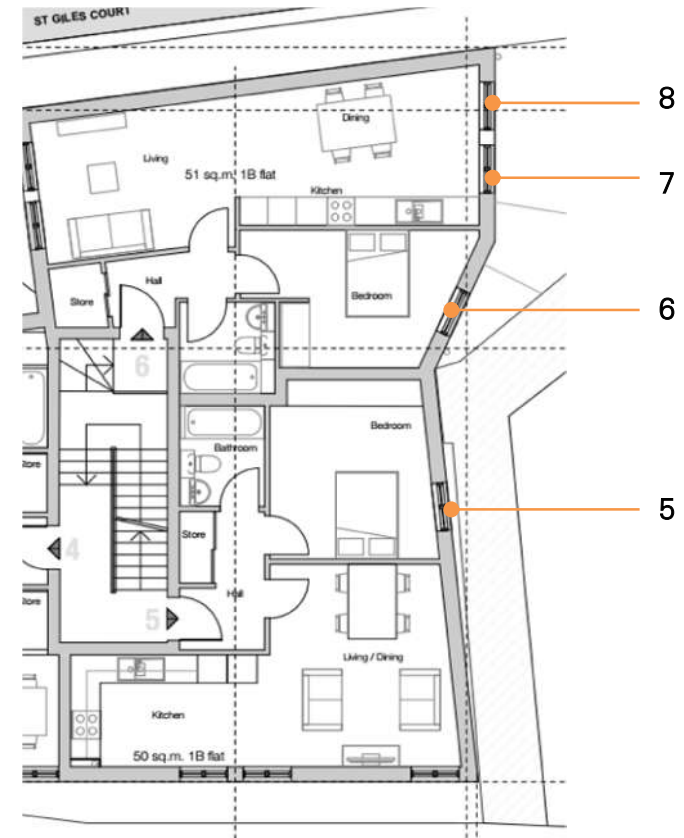




4.0 Window Schedules



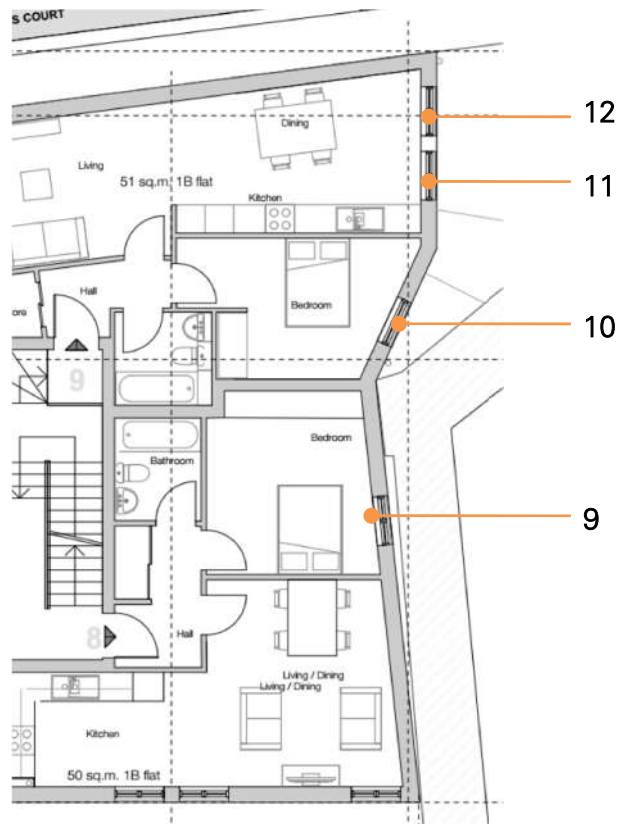
Red Lion PH Proposal - Ground Floor Plan



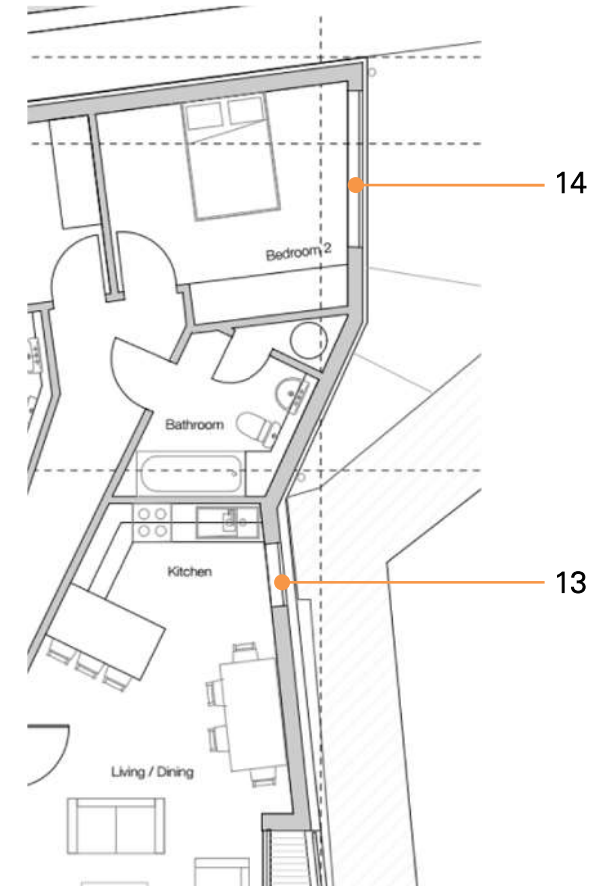
Red Lion PH Proposal - First Floor Plan



4.0 Window Schedules



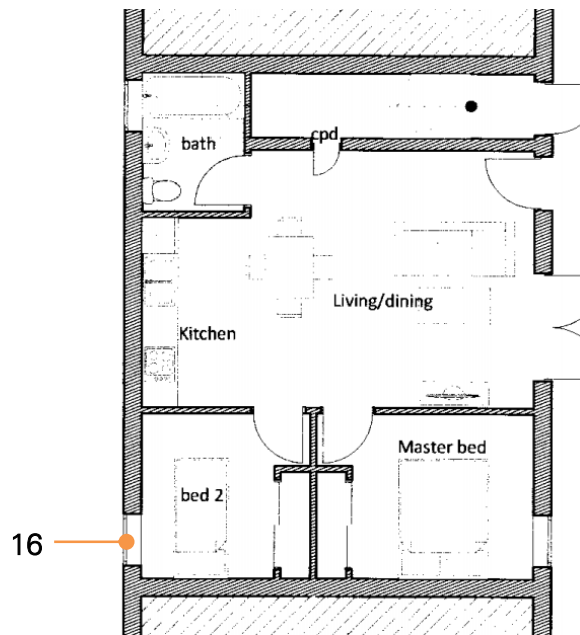
Red Lion PH Proposal - Second Floor Plan



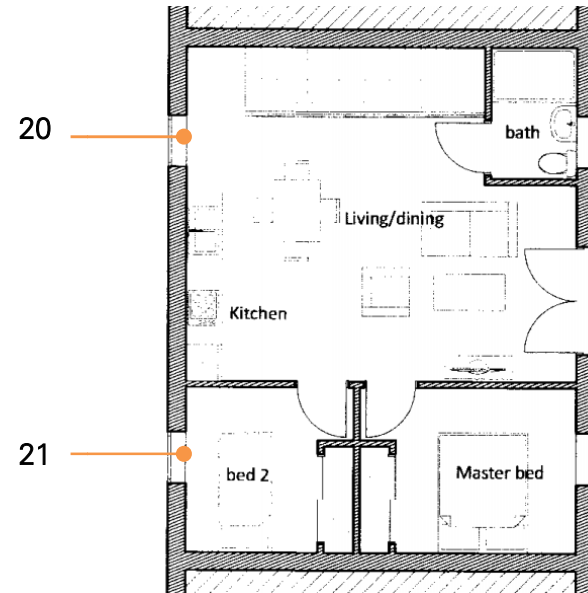
Red Lion PH Proposal - Third Floor Plan



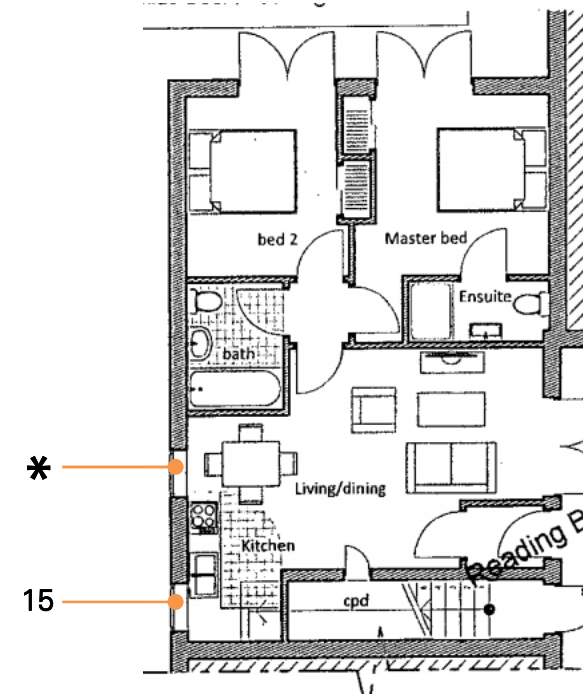
4.0 Window Schedules



St Giles Court - Unit 2 - Ground Floor Plan



St Giles Court - Unit 2 - First Floor Plan

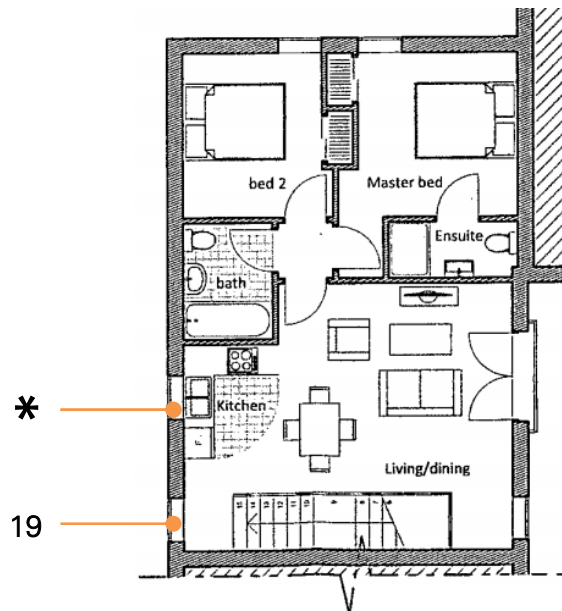


St Giles Court - Unit 3 - Ground Floor Plan

* It is our understanding that this window has not been created.



4.0 Window Schedules



St Giles Court - Unit 3 - First Floor Plan



St Giles Court - Further Windows



Caxton House



5.0 Measurement Criteria

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.

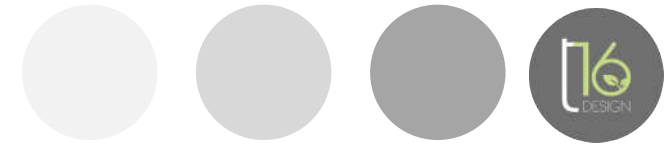
5.3 It is worth noting the following statement in the Guidance introduction:

- *"While this guide supersedes the 1971 Department of the Environment document 'Sunlight and Daylight' which is now withdrawn, the main aim is the same - to help to ensure good conditions in the local environment, considered broadly, with enough sunlight and daylight on or between buildings for good interior and exterior conditions. 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 In this regard, it is noted that the guidance is discretionary and should be applied flexibly, particularly since the BRE guidance applies nationally in both rural and urban areas.

5.5 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 80% of its former value
- The area of the room beyond the No Sky Line should not be reduced to less than 80% of its current area
- 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), and 80% of its former value.



6.0 Vertical Sky Component Results

6.1 The Vertical Sky Component has been calculated for each of the 27 assessed windows for both the existing and proposed conditions.

6.2 As can be seen in the results below, all of the assessed windows retain less than 80% of their current values. This is to be expected in a confined urban site and it should be noted that VSC is a comparatively crude assessment tool which does not consider the size or layout of the room being served, nor the size of the window itself.

6.3 Normal practice where the VSC test does not accord with BRE guidelines is to assess the internal daylight using more sophisticated tests such as the ADF method.

Vertical Sky Component			
Window	Existing	Proposed	Factor Retained
1	33.641	7.325	0.2
2	32.868	8.678	0.3
3	29.944	13.993	0.5
4	27.416	14.049	0.5
5	36.597	11.681	0.3
6	35.569	14.453	0.4
7	35.585	21.985	0.6
8	34.785	23.617	0.7
9	38.436	21.974	0.6
10	37.373	26.656	0.7
11	38.841	32.307	0.8
12	38.773	33.552	0.9
13	39.563	39.081	1.0
14	39.339	38.802	1.0

Vertical Sky Component			
Window	Existing	Proposed	Factor Retained
15	11.398	4.618	0.4
16	31.017	8.515	0.3
17	33.451	27.662	0.8
18	33.627	29.353	0.9
19	12.033	6.23	0.5
20	24.555	13.115	0.5
21	32.278	11.214	0.3
22	36.482	31.488	0.9
23	36.702	33.218	0.9
24	34.595	33.794	1.0
25	36.351	35.781	1.0
26	34.622	33.884	1.0
27	36.617	35.869	1.0



7.0 Average Daylight Factor Results

7.1 Where a window shows a reduction in VSC below the recommendations of the BRE guidance, a more detailed test can be undertaken to give a more realistic account of the impacts on the internal amenity of the occupants.

7.2 Appendix F of the BRE guide gives specific provision for certain circumstances where this is needed and the Average Daylight Factor is a more appropriate test ("*where the existing building is proposed but not built*" - BRE Guidance, Appendix F, Para F8(ii))

7.3 It is also relevant to use the ADF test for the converted building to the west (St Giles Court). Here, as the development was originally used as non-residential, windows (which now form the light source to habitable rooms) are positioned adjacent to the boundary. This means that to rely solely on the VSC method to assess the impacts of a scheme on the neighbouring plt would prejudicially reduce the development potential of the site.

7.4 Rooms which are served by windows which do not meet the BRE guidance for VSC have therefore been assessed using the Average Daylight Factor method. This test is more representative than VSC for the actual daylight levels that will be experienced within the rooms as it considers the angle of visible sky, the size of the room and the windows which serve it, as well as reflected light from the surfaces within.

7.5 The layouts for each room have been sourced from publicly available planning records.

7.6 The British Standard benchmark figures for ADF, taken from BS8206:2 2008, are 1.0% bedrooms, 1.5 for living and dining rooms and 2% for kitchens.

7.7 Although these figures are intended for new-build scenarios, they are relevant here as they demonstrate firstly that the rooms already have sufficient daylight for their intended uses, but more importantly, that they will continue to do so following the development.

7.8 As can be seen, all rooms retain both in excess of their targeted ADF for the room type and also in excess of 80% of their current values.



7.0 Average Daylight Factor Results

Average Daylight Factor							
Building	Floor	Unit Number	Room Use	Window Ref.	Existing	Proposed	% Retained
St Giles Court	Ground	2	Bedroom	16	3.04	2.48	81.58%
St Giles Court	First	2	Bedroom	19	3.53	2.93	83.00%
St Giles Court	First	2	Kitchen/Living/Dining	20	3.16	2.58	81.65%
St Giles Court	Ground	3	Kitchen/Living/Dining	15	3.91	3.77	96.42%
St Giles Court	First	3	Kitchen/Living/Dining	21	3.81	3.6	94.49%
Red Lion PH	Ground	2	Bedroom	1	4.69	4.21	89.77%
Red Lion PH	Ground	3	Bedroom	2	4.52	4.1	90.71%
Red Lion PH	Ground	3	Kitchen/Living/Dining	3 & 4	6.12	5.72	93.46%
Red Lion PH	First	5	Bedroom	5	6.12	4.92	80.39%
Red Lion PH	First	6	Bedroom	6	4.51	4.19	92.90%
Red Lion PH	First	6	Kitchen/Living/Dining	7 & 8	6.35	5.89	92.76%
Red Lion PH	Second	8	Bedroom	9	6.14	5.29	86.16%
Red Lion PH	Second	9	Bedroom	10	5.28	4.6	87.12%



8.0 Sunlight 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, 4 of the assessed windows fall into this category.

8.2 The Annual Probable Sunlight Hours and Winter Probable Sunlight Hours have been calculated for each of these windows for both the existing and proposed conditions using the methodology described previously. The results of this are given below.

8.3 As can be seen, all 4 windows retain in excess of 80% of existing levels and so the scheme is compliant with BRE guidance for sunlight to neighbouring windows.

Window	APSH - Whole Year			APSH - Winter Months		
	Existing %	Proposed %	% of Existing	Existing %	Proposed %	% of Existing
24	76.35%	75.05%	98.30%	31.21%	29.90%	95.83%
25	80.54%	79.58%	98.80%	35.30%	34.34%	97.27%
26	76.61%	76.03%	99.24%	31.43%	30.07%	95.67%
27	81.28%	79.93%	98.34%	35.82%	35.58%	99.33%



9.0 Conclusions

9.1 Using industry standard methodology, we have made numerical analyses to ascertain the effects of the proposal at 28 Southampton Street and the levels of change in daylight and sunlight for the windows the neighbouring properties.

9.2 The main criteria used in this analysis to show compliance are the Vertical Sky Component, Average Daylight Factor and Probable Sunlight Hours tests

9.3 As has been shown, although the effects using the VSC test are beyond the BRE guidance levels for some windows, when assessed using the more sophisticated ADF test, the impact is shown to be within the recommended levels.

9.4 The ADF tests also show that the rooms in both the converted residential units to the west and the as-yet unbuilt scheme to the south would continue to receive sufficient daylight in accordance with the recommendations of BS8206:2 2008.

9.5 In terms of sunlight, all of the assessed windows retain in excess of 80% of their current values and so the scheme accords with BRE guidance in relation to sunlight.

9.6 From a planning perspective therefore, it is the conclusion of this report that the proposed development is acceptable in planning terms.



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