Madron Street

Daylight and Sunlight Assessment

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Contents

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1.0 Introduction

1.1 T16 Design is engaged to produce this report, which is an analysis of the impact on the neighbouring properties, occasioned by the redevelopment of land at the rear of 258 Old Kent Road (also known as Madron Street), London SE1

1.2 Specifically, this report looks at the impacts with regard to the change in daylight received on the windows of the neighbouring dwellings.

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. 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'

1.4 This reference document is accepted as the authoritative work in the field on 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.

1.5 This report has been prepared in support of a planning application, and not a Right to Light dispute. Although the methodology used is similar, this report has not been formulated for Right to Light usage, and must not be used as such.

2.0 Methodology

2.1 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
- Annual Probable Sunlight Hours (APSH) 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 Annual Probable Sunlight Hours (APSH) is 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 in this instance all windows meet this criterion.

2.4 This report also looks at the internal daylight levels that the new units will receive using:

- Average Daylight Factor (ADF)

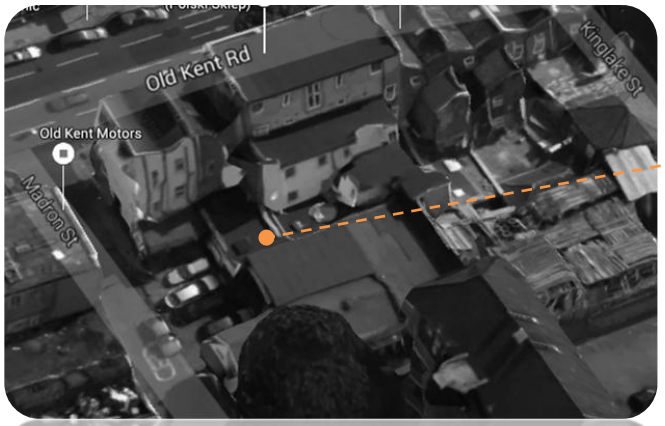
2.5 The ADF is derived from British Standard BS 8206 and is a complex and representative calculation to determine natural internal luminance (daylight). The ADF takes into account such factors as window size, number of windows available to the room, room size and layout, surface reflectance, and the angle of visible sky reaching the window.

3.0 Existing Site and Proposal

3.1 The development site is at currently occupied by an existing car repair workshop. The proposal is to demolish the existing buildings and replace it with a 5 storey residential block consisting of 9 apartments.

3.2 Generally, only the effects on residential properties are considered for planning purposes. In this instance, there appear to be residential neighbours to the North West and North East of the site.

3.3 In accordance with BRE recommendations, trees and foliage have been excluded from the assessment.



Site Location

4.0 Modelling the Site

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 current situation, and compare easily with the proposal.

4.2 The 3D model produced provided by the scheme Architect is exported to the daylight analysis software and calculations are run for both the existing and proposed scenarios.

4.3 The outputs of those calculations can be exported numerically. Using the BRE guidance which gives absolute figures for the acceptable reduction in lighting value, we can then establish if the proposal will have a significant and measurable impact on the enjoyment of the occupiers of the adjacent dwellings.

4.4 Sufficient detail is added to the model for the analysis. It is important to note that not all nearby features have been modelled, only those that will affect the daylighting.

4.5 Drawn information on the properties has been provided to us by the design team in the form of a 3D model of the site as proposed. Window positions have been derived from internet mapping and OS sources.

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 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:

5.3.1 "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.

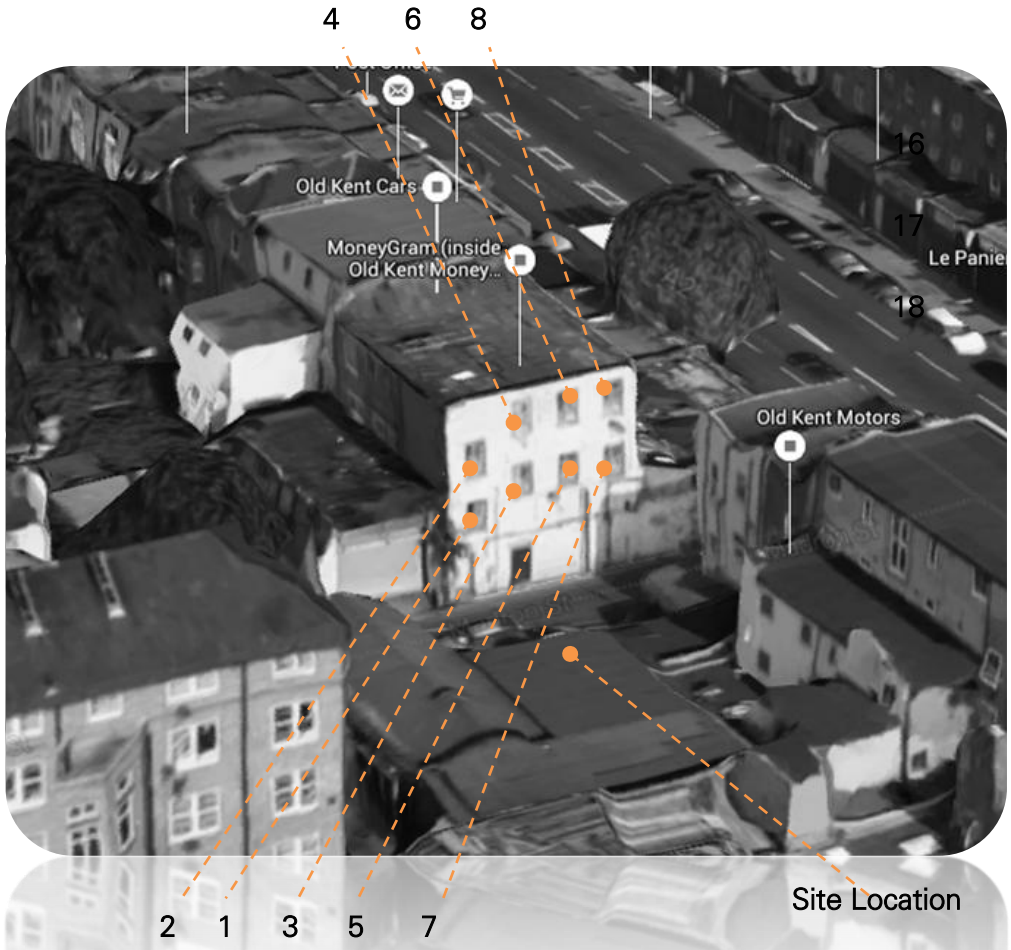
5.3.2 Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design."

5.4 The relevant BRE recommendations for daylight and sunlight are:

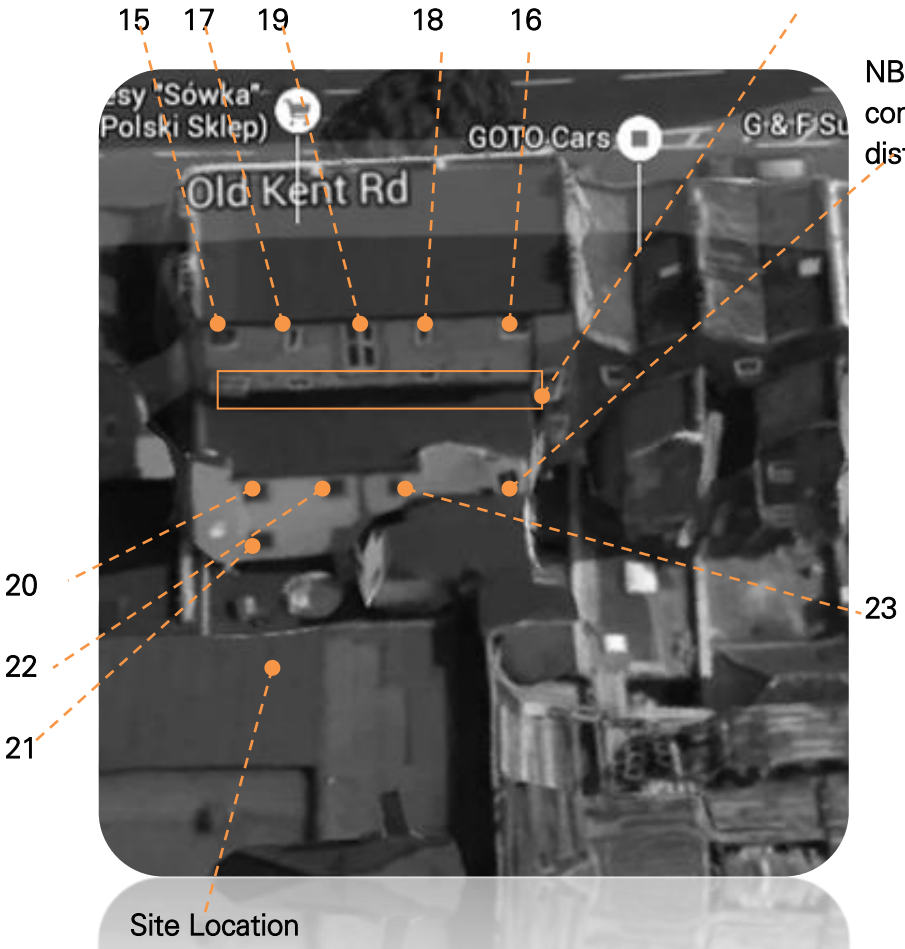
5.4.1 The Vertical Sky Component measured at the centre of a window should be no less than 80% of its former value

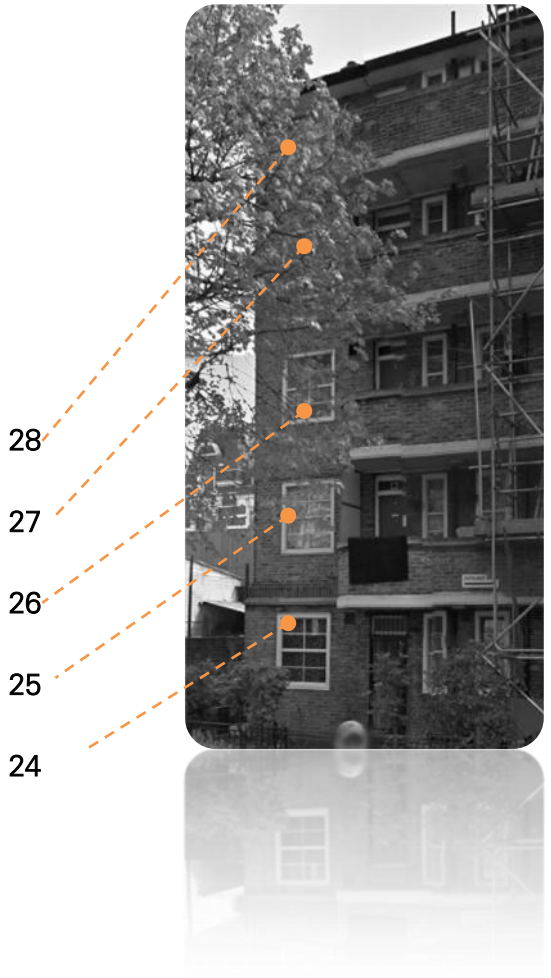
5.4.2 The window should receive at least 25% of available annual sunlight hours and more than 5% during the winter months (September 21st to March 21st), and 80% of its former value.

6.0 Window Schedules



6.0 Window Schedules





7.0 Daylight Results

7.1 The Vertical Sky Component has been calculated for each of the 28 assessed windows for both the existing and proposed conditions.

7.2 As can be seen in the results below, all of the assessed windows meet the 80% criteria for daylight and the scheme is therefore compliant with the BRE guidance for daylight.

Window	Vertical Sky Component		
	Existing	Proposed	% of Existing
1	31.234	26.22	83.95%
2	35.065	28.93	82.50%
3	32.606	27.809	85.29%
4	36.287	33.969	93.61%
5	31.435	28.779	91.55%
6	35.837	34.615	96.59%
7	30.015	28.57	95.19%
8	35.466	34.81	98.15%
9	33.29	27.112	81.44%
10	36.097	33.058	91.58%
11	34.566	28.015	81.05%
12	36.749	33.17	90.26%
13	36.106	34.809	96.41%
14	39.169	38.941	99.42%

Window	Vertical Sky Component		
	Existing	Proposed	% of Existing
15	26.382	24.938	94.53%
16	30.567	30.004	98.16%
17	36.137	36.071	99.82%
18	38.303	33.157	86.57%
19	37.593	36.696	97.61%
20	37.942	37.515	98.87%
21	39.154	39.082	99.82%
22	38.587	38.456	99.66%
23	37.792	37.625	99.56%
24	32.036	26.238	81.90%
25	34.062	28.472	83.59%
26	35.342	33.377	94.44%
27	37.778	37.778	100.00%
28	38.919	38.919	100.00%

8.0 Sunlight Results

8.1 Annual Probable Sunlight hours is a measure of the number of hours of direct sun falling on a surface over a given period. BRE Guidance is that windows should continue to receive in excess of 80% of their pre-development value, 25% of available hours over the year, and 5% of hours in winter.

8.2 Only windows which face within 90° of due south need be assessed for sunlight. In this instance, all 23 windows meet this criterion and are assessed. The results are shown below, the majority of windows meet BRE sunlight requirements over the whole year by virtue of retaining 80% of their current levels.

8.3 In the context of an urban site, this is considered to be acceptable. Only one window will have marginally less than the BRE recommended level of sunlight hours following the development.

Window	APSH - Whole Year			APSH - Winter Months		
1	53.08%	37.76%	**71.14%**	23.53%	10.90%	**46.33%**
2	62.02%	50.46%	**81.36%**	26.98%	15.65%	**58.02%**
3	56.65%	47.25%	**83.41%**	24.70%	15.48%	**62.67%**
4	66.04%	61.89%	**93.71%**	28.55%	24.39%	**85.44%**
5	55.55%	49.66%	**89.40%**	23.78%	17.90%	**75.25%**
6	65.14%	62.92%	**96.59%**	27.80%	25.57%	**92.01%**
7	54.66%	51.48%	**94.18%**	21.38%	18.19%	**85.12%**
8	64.56%	63.80%	**98.82%**	26.04%	25.28%	**97.07%**

8.0 Sunlight Results

Window	APSH - Whole Year			APSH - Winter Months		
	Existing %	Proposed %	% Retained	Existing %	Proposed %	% Retained
9	55.41%	46.97%	**84.75%**	24.56%	16.88%	**68.71%**
10	66.52%	61.05%	**91.77%**	31.11%	25.65%	**82.47%**
11	57.35%	48.30%	**84.22%**	23.12%	15.34%	**66.36%**
12	66.92%	61.85%	**92.42%**	30.20%	25.38%	**84.03%**
13	65.68%	62.18%	**94.68%**	27.16%	24.61%	**90.61%**
14	34.54%	24.62%	**71.29%**	8.93%	2.53%	**28.35%**
15	71.09%	71.07%	**99.97%**	30.98%	30.98%	**99.97%**
16	70.24%	70.23%	**99.99%**	30.14%	30.13%	**99.99%**
17	70.77%	70.76%	**99.99%**	30.66%	30.66%	**100.00%**
18	70.36%	70.36%	**99.99%**	30.27%	30.26%	**100.00%**
19	69.42%	68.95%	**99.32%**	29.46%	29.28%	**99.38%**
20	66.59%	55.87%	**83.90%**	27.87%	22.88%	**82.13%**
21	65.29%	47.59%	**72.89%**	26.88%	20.11%	**74.81%**
22	66.03%	59.25%	**89.73%**	26.84%	23.85%	**88.86%**
23	64.91%	51.41%	**79.20%**	26.08%	21.75%	**83.42%**

9.0 Internal Daylight – Proposed Units

9.1 ADF values have been calculated in accordance with BRE methodology, using a CIE overcast sky at an illuminance value of 8500 lux.

9.2 The calculations have assumed a white ceiling, cream walls and mid-grey carpet or wooden floor.

9.3 The benchmark values recommended by the British Standard and BRE guidance are:

- Kitchens: 2%
- Living Rooms: 1.5%
- Dining Rooms: 1.5%
- Bedrooms: 1%

9.4 It is also worth noting that these figures assume that internal lighting is available to supplement the available daylight. It is considered that if a room has a Daylight Factor of **5%,** then it will be sufficiently well lit, even in the absence of electric lighting.

9.5 All units are in excess of the BRE and British Standard recommended values.

9.0 Internal Daylight – Proposed Units

Floor	Unit	Room	Recommended ADF	Actual ADF - %
Ground	1	Bedroom 1	1.00%	**2.14%**
Ground	1	Kitchen/Living/Dining	2%/1.5%/1.5%	**3.19%**
Ground	2	Bedroom 1	1.00%	**1.86%**
Ground	2	Kitchen/Living/Dining	2%/1.5%/1.5%	**3.25%**
First	3	Bedroom 1	1.00%	**1.97%**
First	3	Bedroom 2	1.00%	**2.03%**
First	3	Kitchen/Living/Dining	2%/1.5%/1.5%	**3.11%**
First	4	Bedroom 1	1.00%	**2.45%**
First	4	Kitchen/Living/Dining	2%/1.5%/1.5%	**3.37%**
Second	5	Bedroom 1	1.00%	**2.17%**
Second	5	Bedroom 2	1.00%	**2.41%**
Second	5	Kitchen/Living/Dining	2%/1.5%/1.5%	**3.55%**

Floor	Unit	Room	Recommended ADF	Actual ADF - %
Second	6	Bedroom 1	1.00%	**2.77%**
Second	6	Kitchen/Living/Dining	2%/1.5%/1.5%	**3.96%**
Third	7	Bedroom 1	1.00%	**2.74%**
Third	7	Bedroom 2	1.00%	**2.71%**
Third	7	Kitchen/Living/Dining	2%/1.5%/1.5%	**3.86%**
Third	8	Bedroom 1	1.00%	**2.84%**
Third	8	Kitchen/Living/Dining	2%/1.5%/1.5%	**4.35%**
Fourth	9	Bedroom 1	1.00%	**2.87%**
Fourth	9	Bedroom 2	1.00%	**2.91%**
Fourth	9	Kitchen/Living/Dining	2%/1.5%/1.5%	**4.58%**

10.0 Conclusions

10.1 Using industry standard methodology, we have made numerical analyses to ensure compliance with the recommended 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 Annual Probable Sunlight Hours and Vertical Sky Component tests.

10.3 The BRE guide is clear in that it is to be used flexibly and not as an instrument of planning policy.

10.4 As has been shown, the effects on daylight and sunlight are broadly compatible with BRE recommendations and in the context of the urban location, it is our considered opinion that this can be considered acceptable and in line with the BRE recommendations.

Appendix 1 - Author Credentials

- This report has been produced by Ollie Westover, Founding Director at T16 Design.
- Ollie has a BSc (Hons.) in Architecture and is a BRE licensed Environmental Consultant with over 10 years experience.
- Although there is no recognised accreditation procedure for daylight consultants, in his capacity as an environmental consultant and assessor, Ollie has amassed a wealth of daylight experience.
- Twenty16 Design have produced or are employed to produce over 100 daylight analyses to date, on schemes ranging from multi-use sites of £10m+ to small extensions.
- We also work as technical consultants to a range of Architects, Surveyors and Developers in the fields of Daylight and Right to Light
- Our clients include:

    - *Taylor Wimpey*
    - *Barratt Homes*
    - *Holden Harper Architects*
    - *David Maycox and Associates*
    - *Rundell Associates*
    - *Broadhaven Estates*
    - *St James/Berkeley Group*
    - *Indigo Developments*
    - *YMCA*