

Analysis of site layout for **Sunlight And Daylight**

DATE

AUGUST 2023

ADDRESS

67 LONDON ROAD,
SEVENOAKS TN13 1AU



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67 London Road, Sevenoaks TN13 1AU

Analysis of Site Layout with Regard to Daylight & Sunlight

1. Introduction

An application has been made for the conversion of commercial space Class E, to residential flats Class C3 under the terms of Part 3 Class MA of The Town and Country (General Permitted Development) (England) Order 2015 as amended.

Part 3 Class MA of the Order has the following conditions in respect to daylight:

MA.2.— (1) Development under Class MA is permitted subject to the following conditions.

(2) Before beginning development under Class MA, the developer must apply to the local planning authority for a determination as to whether the prior approval of the authority will be required as to—

(f) the provision of adequate natural light in all habitable rooms of the dwellinghouses.

This daylight and sunlight assessment has been prepared to support the planning application for the proposed development.

The report assesses the proposals in regards to daylight and sunlight matters within habitable rooms in the proposed building and its effects on the nearby buildings. The report concludes that the proposal is acceptable and in accordance with the planning policy requirements in relation to daylight and sunlight for the assessed rooms.

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

surrounding environment. However, the Building Research Establishment publication 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' is the established National guidance to aid the developer to prevent or minimise the impact of a new development on the existing buildings and on the availability of daylight within the new proposals. The BRE guide has been revised and published in a third edition in June 2022. It has been developed in conjunction with daylight and sunlight recommendations in the BS EN 17037:2018.

The 2022 document is referred to as the 'BRE Guide' in this report.

2. Description of Proposed Development

The development is situated on 67 London Road in the town of Sevenoaks in Kent and is located within the administrative boundaries of the Sevenoaks District Council.

The existing is shops on the ground floor with offices on the floors above.

The proposal is for the conversion of the first and second floors to residential use, to provide four units.

The proposal is shown on the following floor plans by UPP Architects.

Location Plan 65-67LO & 6-10VI-A-01-001

Block plans 65-67LO & 6-10VI-A-01-002

Block Plans	65-67LO & 6-10VI-A-01-003
Block plans	65-67LO & 6-10VI-A-01-003
Front Visualization	65-67LO&6-10VI-A-02-101
Rear Visualization	65-67LO & 6-10VI-A-02-102
Ground Floor (67)	65-67LO&6-10VI-A-03-101
First Floor (67)	65-67LO & 6-10VI-A-03-102
Second Floor (67)	65-67LO & 6-10VI-A-03-103
Roof Floor (67)	65-67LO & 6-10VI-A-03-104
Section A-A' (67)	65-67LO&6-10VI-A-05-101
Section B-B'	65-67LO&6-10VI-A-05-102
Elevation East	65-67LO & 6-10VI-A-06-105
Elevation West	65-67LO & 6-10VI-A-06-106
Elevation North	65-67LO & 6-10VI-A-06-107
Elevation South	65-67LO & 6-10VI-A-06-108

3. Daylight and Sunlight Requirements

3.1. General Permitted Development Guidance

Part 3 Class MA of the Order has the following conditions in respect to daylight.

MA.2.— (1) Development under Class MA is permitted subject to the following conditions.

(2) *Before beginning development under Class MA, the developer must apply to the local*

planning authority for a determination as to whether the prior approval of the authority will

be required as to—

(f)the provision of adequate natural light in all habitable rooms of the dwellinghouses

Paragraph (f) does not provide a specific definition for adequate natural light, but local authorities typically refer to the Building Research Establishment publication "Site Layout and Planning for Daylight and Sunlight, a guide to good practice second edition" published in 2022 for guidance on planning requirements.

4. General

The outer envelope of the building is not being changed or extended. There will therefore be no adverse effect on any nearby buildings or gardens.

Daylight and sunlight in rooms within the development are analysed in this report.

5. Daylight Methodology to Rooms within the Development

The BRE Group set out their interior daylight guidelines in Appendix C of the document. They refer to the British Standard Daylight in Buildings BS EN17037 and its UK National Annex which sets out two criteria for assessing interior daylight. One is based on target

illuminances from daylight to be achieved over specified fractions of the reference plane (a plane at tabletop height covering the room) for at least half of the daylight hours in a typical year. The other, alternative, method is based on calculating the daylight factors achieved over specified fractions of the reference plane.

5.1. Illuminance Method

This method involves using climatic data for the location of the site (via the use of an appropriate, typical or average year, weather file within the software) to calculate the illuminance from daylight at each point on an assessment grid on the reference plane at an at least hourly interval for a typical year.

The UK National Annex gives specific minimum recommendations for habitable rooms in dwellings in the United Kingdom. The National Annex therefore provides the UK guidance on minimum daylight provision in all UK dwellings.

The UK National Annex gives illuminance recommendations of:

- 100 lux in bedrooms
- 150 lux in living rooms
- 200 lux in kitchens.

These are the median illuminances, to be exceeded over at least 50% of the assessment points in the room for at least half of the daylight hours. The recommended levels over 95% of a reference plane need not apply to dwellings in the UK.

The BRE Guidelines state in paragraph C17 that:

“Where a room has a shared use, the highest target should apply. For example, in a bed-sitting room in student accommodation, the value for a living room should be used if students would often spend time in their rooms during the day. Local authorities could use discretion here. For example, the target for a living room could be used for a combined living/dining/kitchen area if the kitchens are not treated as habitable spaces, as it may avoid small separate kitchens in a design.”

5.2. Daylight Factor Method

This method involves the computation of the daylight factor at each calculation point on an assessment grid. The daylight factor is the illuminance at a point on the reference plane in a space, divided by the illuminance on an unobstructed horizontal surface outdoors. The CIE standard overcast sky is used, and the ratio is usually expressed as a percentage.

Since the calculation uses an overcast sky model, the daylight factor is independent of orientation and location. For spaces with side windows, equivalent daylight factor targets to achieve a target illuminance over at least half of the daylight hours in a year are based on the formula:

$$D = \text{Target illuminance} / \text{Median external diffuse horizontal illuminance} \times 100 (\%)$$

where the median external diffuse horizontal illuminance ($E_{v,d,med}$) is the illuminance from the sky on an unobstructed horizontal surface achieved for half of the yearly daylight hours at a particular location.

The table below shows the daylight factor targets to be achieved over at least 50% of the assessment grid in domestic habitable rooms with vertical and/or inclined daylight apertures. The UK National Annex gives alternative target values for rooms with diffusing horizontal roof lights. The

recommendations are met if the median of the daylight factors calculated in a room meets or exceeds the specific target for room type and location.

Target daylight factors (DT) to achieve over at least 50% of the assessment grid in UK domestic habitable rooms with vertical and/or inclined daylight apertures			
Location	DT for 100 lx (Bedroom)	DT for 150 lx (Living room)	DT for 200 lx (Kitchen)
St Peter (Jersey)	0.6%	0.9%	1.2%
London (Gatwick Airport)	0.7%	1.1%	1.4%
Birmingham	0.6%	0.9%	1.2%
Hemsby (Norfolk)	0.6%	0.9%	1.3%
Finningley (Yorkshire)	0.7%	1.0%	1.3%
Aughton (Lancashire)	0.7%	1.1%	1.4%
Belfast	0.7%	1.0%	1.4%
Leuchars (Fife)	0.7%	1.1%	1.4%
Oban	0.8%	1.1%	1.5%
Aberdeen	0.7%	1.1%	1.4%

6. Sunlight Method

For internal sunlight, the BRE Guidelines state in paragraph 3.1.15:

“In general, a dwelling, or non-domestic building that has a particular requirement for sunlight, will appear reasonably sunlit provided:

- *at least one main window wall faces within 90° of due south and*
- *a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March. This is assessed at the inside centre of the window(s); sunlight received by different windows can be added provided they occur at different*

times and sunlight hours are not double counted.”

7. Daylight & Sunlight to Rooms within the Proposed Flats

The BRE and BS EN 17037 guidance allows for two alternative methods to assess daylight within new dwellings.

For this report, we have assessed the proposed new accommodation to determine whether the internal spaces will be provided with adequate daylight by reference to Target Illuminance (ET) Factor. This method involves the computation of the illuminance level at each calculation point on an assessment grid.

The targets from London Gatwick have been used as this is the BR 209 location with the latitude nearest to the assessment site.

The following reflectance, transmittance, and maintenance values have been used in the internal daylight calculations:

- Transmittance (T): 0.68
- Reflectance (R): 0.2 for floors, 0.7 for walls and ceilings
- Maintenance Factor: 0.92

All habitable rooms meet the BRE recommended targets for illuminance and sunlight value.

The full results of the internal daylight and sunlight analysis are included in Appendix B.

8. Conclusion

There is no extension to the external envelope of the building and there is therefore no reduction in daylight or sunlight to nearby buildings or gardens.

The proposed flat has good windows. Daylight and sunlight in all rooms within the proposed flat are better than the recommendations of the Building Research Establishment publication ‘Site layout and planning for daylight and sunlight, a guide to good practice’ published in 2022 and the normal planning requirements.

The requirement of the Permitted Development Order for adequate natural light is satisfied for this development.

Harry Morgan

17th August 2023

References:

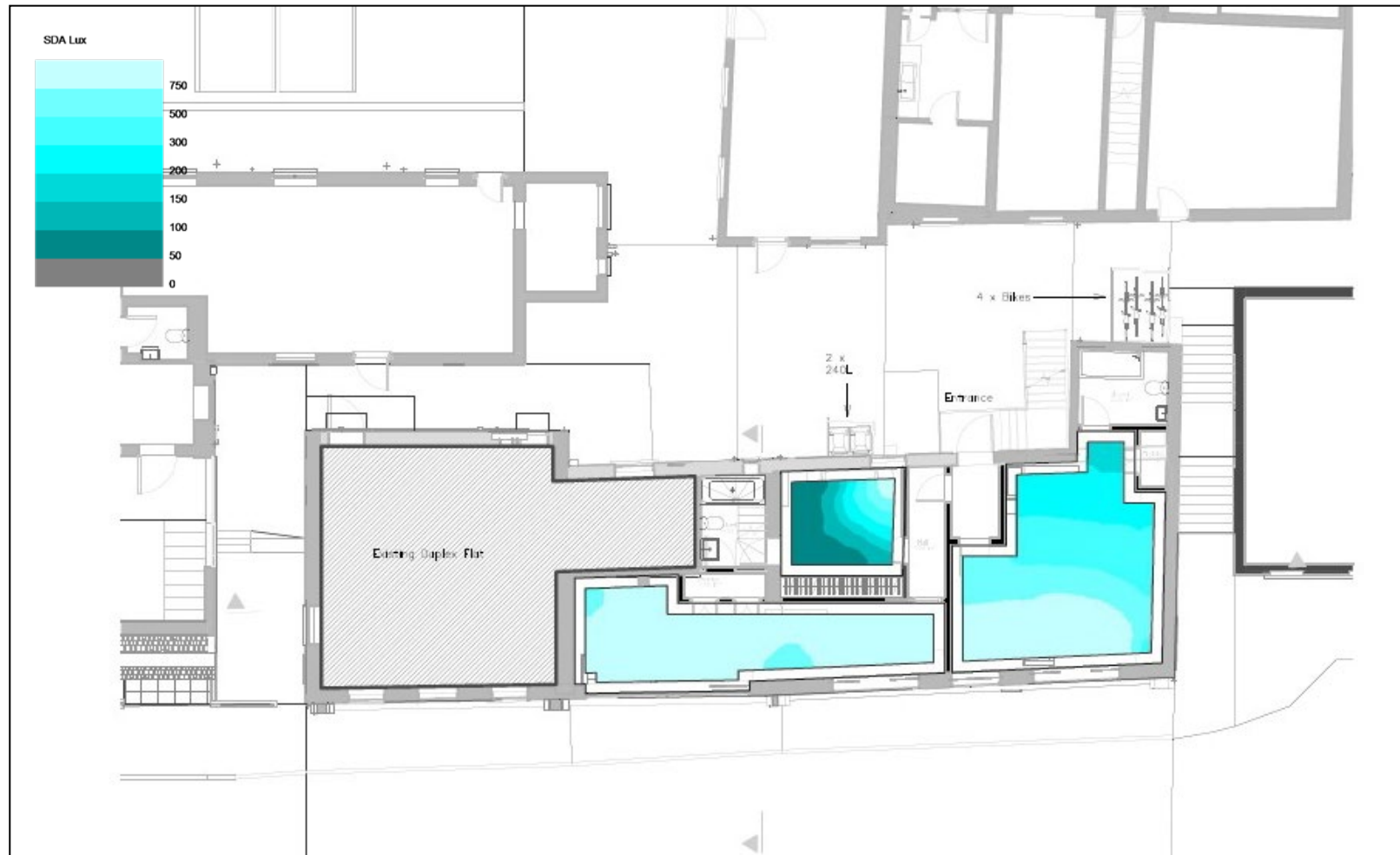
- i. Building Research Establishment publication ‘Site layout and planning for daylight and sunlight, a guide to good practice’ published in 2022
- ii. General Permitted Development order part 3 class MA

Appendix A

Site Plan



Proposed First-floor Internal Illuminance Factor



Proposed Second-floor Internal Illuminance Factor



Appendix B

Detailed Internal Daylight Results

Project Name: 65-67 London Road Class MA Project No.: 1 Report Title: SDA BS En17037 Analysis - Proposed Scheme Date of Analysis: 17/08/2023										Criteria				Meets Criteria
Floor Ref	Room Ref	Room Attribute	Property Type	Room Use	Room Area m2	Effective Area	Median Lux	Area Meeting Req Lux	% of Area Meeting Req Lux	Req Lux	Req % of Effective Area	Req % of Daylight Hours	Daylight Hours	
B1														
First	R1	Flat1	Residential	LKD	29.86	22.88	502	22.10	97%	200	50%	50%	4380	YES
	R2	Flat2	Residential	LKD	24.43	16.89	1244	16.89	100%	200	50%	50%	4380	YES
	R3	Flat2	Residential	Bedroom	9.83	6.41	122	3.82	60%	100	50%	50%	4380	YES
Second	R1	Flat3	Residential	LKD	21.41	15.65	347	15.60	100%	200	50%	50%	4380	YES
	R2	Flat3	Residential	Bedroom	6.58	3.63	999	3.63	100%	100	50%	50%	4380	YES
	R3	Flat4	Residential	LKD	23.63	16.80	312	16.72	100%	200	50%	50%	4380	YES
	R4	Flat4	Residential	Bedroom	12.40	8.33	148	5.74	69%	100	50%	50%	4380	YES

Detailed Sunlight Results

Project Name: 65-67 London Road Class MA Project No.: 1 Report Title: Sunlight Exposure Analysis - Proposed Scheme Date: 17/08/2023								
Floor Ref	Room Ref	Room Attribute	Property Type	Room Use	Window Ref	Window Orientation	Proposed Sunlight Exposure (Hours)	Rating
B1								
First	R1	Flat1	Residential	LKD	W1	64°N	3.1	
					W2	64°N	3.2	
							3.2	Medium
First	R2	Flat2	Residential	LKD	W3	64°N	3.4	
					W4	66°N	3.5	
							3.5	Medium
First	R3	Flat2	Residential	Bedroom	W5	245°	5	
							5	High
Second	R1	Flat3	Residential	LKD	W1	64°N	3.4	
					W2	64°N	3.2	
					W10	245°	5	
							8.4	High
Second	R2	Flat3	Residential	Bedroom	W3	64°N	3.4	
					W4	64°N	3.4	
							3.4	Medium
Second	R3	Flat4	Residential	LKD	W6	66°N	3.5	
					W7	66°N	3.5	
					W8	245°	6.1	
					W9	245°	6.1	
							9.5	High
Second	R4	Flat4	Residential	Bedroom	W5	64°N	3.4	
							3.4	Medium

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