75A BRIDGE ROAD

UXBRIDGE

UB8 2QW

ANALYSIS

OF

SITE LAYOUT FOR

SUNLIGHT AND DAYLIGHT

November 2022.

by

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Contents

1. Introduction....3
2. Description of Proposed Development. 3
3. Daylight and Sunlight Requirements of the General Permitted Development Order....3
4. Calculation Methodology....4
5. Effect on Nearby Buildings 5
6. Daylight to Rooms within the Proposed Flats....5
7 Sunlight....5
8 Conclusion 6

Figure 1 Perspective View from South East....7

Figure 2 Ground and First Floor Plans. 8

Figure 3 Daylight Factor Distribution 9

Figure 4 Sunlight to Windows; 10

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75a Bridge Road Uxbridge
Analysis of Site Layout with Regard to Daylight and Sunlight

1. Introduction

An application has been made to convert a two-storey commercial building to four flats flat under the terms of Part 3 Class MA of The Town and Country (General Permitted Development) (England) Order 2015 as amended.

Developments under Class MA. are permitted subject to the condition that before beginning the works the developer must apply to the local planning authority for determination as to whether prior approval of the authority will be required as to …

MA.2 (2) (f) the provision of adequate natural light in all habitable rooms of the dwellinghouses.

This report analyses the natural light to the proposed flats.

2. Description of Proposed Development.

Conversion of existing commercial premises into four residential flats as units
The existing building is detached with rooms at ground and first floors. The loft is conventional with a pitched roof.
The proposal is to convert the ground and first floors to four flats.
The proposal is shown on the following plans by Homes Design that are submitted with the application.

75ABR-01	Existing and Proposed Ground Floor Plan
75ABR-02	Existing and Proposed First Floor Plan
75ABR-03	Proposed Loft Floor Plan
75ABR-04	Existing and Proposed Roof Plan
75ABR-05	Existing and Proposed Front and Rear Elevations
75ABR-06	Existing and Proposed Side Elevations
75ABR-07	Existing and Proposed Side Elevations

3. Daylight and Sunlight Requirements of the General Permitted Development Order

Part 3 Class M of the Order has the following conditions in respect to daylight and sunlight:

M.2*—(1) Where the development proposed is development under Class M(a) together with development under Class M(b), development is permitted subject to the condition that before beginning the development, 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,

The term habitable rooms excludes bathrooms, corridors and store rooms. The Order makes no reference to adequacy of outlook.
The meaning of the term adequate natural light is not further defined.
A legal definition of adequate light is that used Prescription Act of 1832 relating to Right of Light. The criteria in this Act are commonly used in the assessment of damages that might arise if level of light within an existing building is reduced by an external development to such an extent that the inhabitants suffer loss of daylight.

Litigation cases arising from the Act have created precedents at the level of the Supreme Court that define adequate natural light in terms of an illumination level of 1 foot candle at desk height. A room is considered to suffer loss only if the light level over more than half the room falls below this level. No damage can be claimed if the light level across more than 50% of the room is greater than 1 foot candle. The unit of illumination now used is lux for which 1 foot candle equals 10 lux.

Where a room continues to have illumination level greater than 10 lux over half the floor the light is considered adequate, and the owner can obtain no compensation.

The criteria for daylight under the right of light legislation has evolved from a period when electric lighting was not available. Now that electric lighting is the norm the level used in the legislation is higher than it would otherwise be.

Planning guidance in most UK authorities sets a higher level of illumination than that used by the Courts. as described in the BRE Guide 209. The BRE Guide 209 has been revised in June 2022.

For this development, the Guidance of this later BRE Guide (2022) is used to establish adequacy of natural light. The 2022 revision of the BRE Guide gives a different definition of adequacy of natural light than the previous version that had been used as a bench mark for many years. The new 2022 Guide is considered to achieve a higher standard of natural light than the old version.
The recommendations for daylighting in the new guide exclude the previous recommendations of consideration of the no sky line.

The guidance makes reference to BS EN 17037:2018 with the National Annex NA.

4. Calculation Methodology

For this report the levels of illumination are evaluated using the Computer Programme De Luminae DL Light 14.02.25.

The calculations are in accordance with BRE Guide BR209 Third Edition 2022 Site layout planning for daylight and sunlight. A guide to good practice.

Appendix C of the Guide has recommendations for the interior daylighting and sunlight.

Daylight:
Two methods for establishing adequacy of daylighting levels are described, the illuminance method and the daylight factor method, either can be used.

For this report the Daylight Factor Method described in paragraphs C8 to C33 is used.

The design targets for rooms in the London area are in Appendix C Table C1

Table C3	
Room type	**Target daylight factor DF**
Bedroom	0.7%
Living room	1.1%
Kitchen	1.4%

For satisfactory daylight the target daylight factor is to be exceed for more than 50% of the room.

A 3 dimensional model of the rooms is constructed in the computer Programme Sketchup. The surrounding buildings and trees that affect the daylight to the windows of the rooms are included in the model.

Sunlight

The guide recommends that windows to main living rooms should have sunlight for 1.5 hours on 21st March. The De Luminae programme evaluates the hours of sunshine on any selected surface.

5. Effect on Nearby Buildings

The proposals include no extension or alteration to the external envelope of the building so there will be no change of daylight or sunlight to any nearby building or gardens.

6. Daylight to Rooms within the Proposed Flats

A 3 D model of the building was constructed in the computer programme Sketchup. A perspective view from the south east is shown in Figure 1 of this report. Trees are represented by geometric shapes that envelope the trees. More complex fractal shapes of real trees cannot be used in these computer simulations.

The reports for daylight availability generated by the programme are in Figure 3 of this report.

The results are summarised in the table below.

Surface id	Surface name	Surface area [m2]	Space type	Target	0.0 %	0.7% (100lx)	1.1% (150lx)	1.4% (200lx)	2.1% (300lx)	3.5% (500lx)	5.3% (750lx)	% above target
12131	Flat 4	30.59	Kitchen	200 lux	0.00	13.06	10.07	16.04	31.34	14.18	15.30	76.86
12132	Flat 3	33.37	Kitchen	200 lux	0.00	0.00	1.33	16.61	20.27	25.58	36.21	98.67
12133	Flat 2	26.46	Kitchen	200 lux	2.11	31.22	13.92	19.83	16.88	8.02	8.02	52.75
14119	Flat 1	34.10	Kitchen	200 lux	1.62	9.06	23.95	16.50	15.21	14.24	19.42	65.37

The requirement of the BRE Guide is that all rooms should have a daylight factor above the relevant target for at least 50% of the room. For example Flat 1, living, kitchen, dining room is classified as a kitchen, that being the higher level of daylight. The target is for the room to have a daylight factor above 1.4% over more than 50% of the floor area. The table shows that the daylight factor of 1.4% is exceeded over 65.37% of the floor area.

Thus, all rooms have daylight considerably better than the requirement of the BRE Guide 209 (2022)

7 Sunlight

The requirement for sunlight of the BRE Guide is in Paragraph C34 that refers to sections 3.1 and 3.2.

Section 3.2 is for effects on existing buildings. The requirement for new dwellings is given in section 3.1.

The requirement of 3.1 is that at least one main window faces within 90 degrees of due south and a habitable room, preferably a main living room, should receive at least 1.5 hours of sunlight on 21st March.

Figure 4 of this report shows the distribution of sunlight on 21st March.
The results are summarised in the following table of sun exposure. The table gives percent of surface corresponding to indicated threshold values.

Surface id	Surface name	0h00	1h04	2h09	3h13	4h18	5h22	6h26	7h31	8h36	9h40
14151	Flat 4 West	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00
14152	Flat 2 West	0.00	0.00	0.00	5.85	94.15	0.00	0.00	0.00	0.00	0.00
14153	Flat 2 South	7.08	0.00	0.00	0.00	0.00	18.16	57.04	17.73	0.00	0.00
14154	Flat 3 East	0.00	0.00	0.00	2.25	10.52	87.22	0.00	0.00	0.00	0.00
14155	Flat 4 South	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.43	74.57
14156	Flat 4 South	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.80	44.55	25.66
14157	Flat 4 West	0.00	0.00	4.35	0.00	84.18	11.46	0.00	0.00	0.00	0.00
14158	Flat 3 East	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
14159	Flat 1 East	0.00	0.00	1.77	91.40	6.83	0.00	0.00	0.00	0.00	0.00
14160	Flat 3 East	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
14161	Flat 3 East	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00

The windows of Flat 1 face east and have sunlight over 100% of the window for 4.42 hours on March 21st.

The main window of Flat 2 faces south but is shaded to some extent by the shape of the building. The window has 92% of its surface in sun for more than 3.13hours

Flat 3 windows face east and have sun for 5.52 hours

Flat 4 windows face south and have sun for the whole day.

Thus, all flats have principal windows that enjoy more than the BRE recommended target of 1.5 hours

8 Conclusion

The proposed development will have no effect on the daylight and sunlight to nearby buildings or gardens.

The proposed flats have large windows and are well lit. The windows are of a size to ensure high levels of natural light. Daylight in all cases is better than the recommendations of the Building Research Establishment publication 'Site layout and planning for daylight and sunlight, a guide to good practice' published 2022

The living rooms of each flat have windows facing south or east for which sunlight will be present for more than 4 hours on March 21st. This is much better than the BRE recommended minimum of 1.5 hours.

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10th November 2022

References

1. Building Research Establishment publication 'Site layout and planning for daylight and sunlight, a guide to good practice' published in 2022.

2. BS EN 17037: Daylight in Buildings.

Figure 1 Perspective View from South East

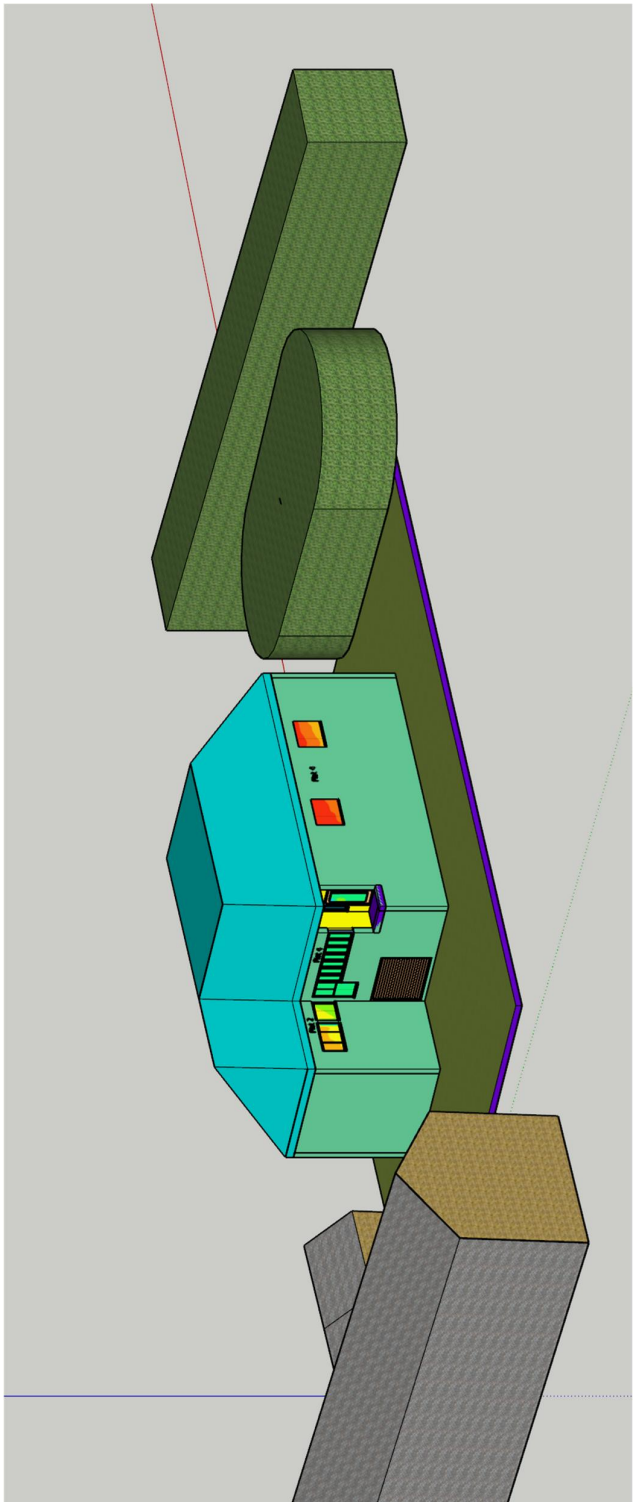


Figure 2 Ground and First Floor Plans.

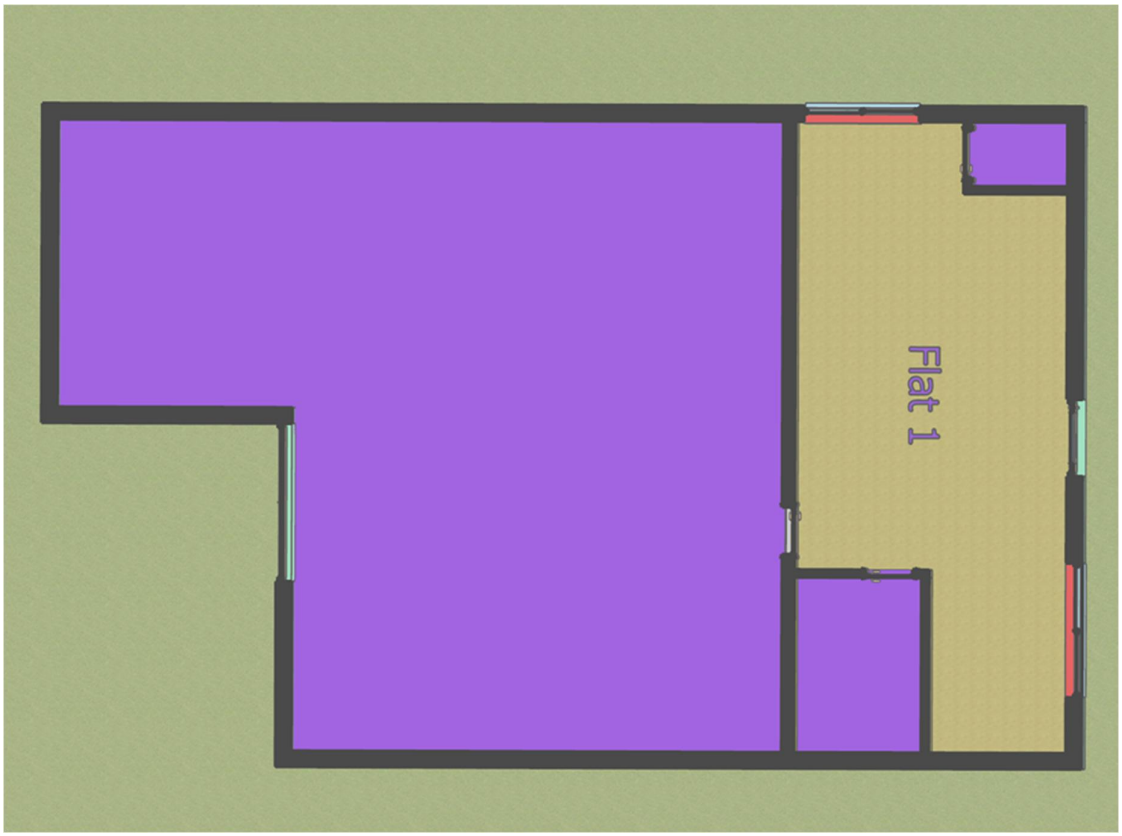
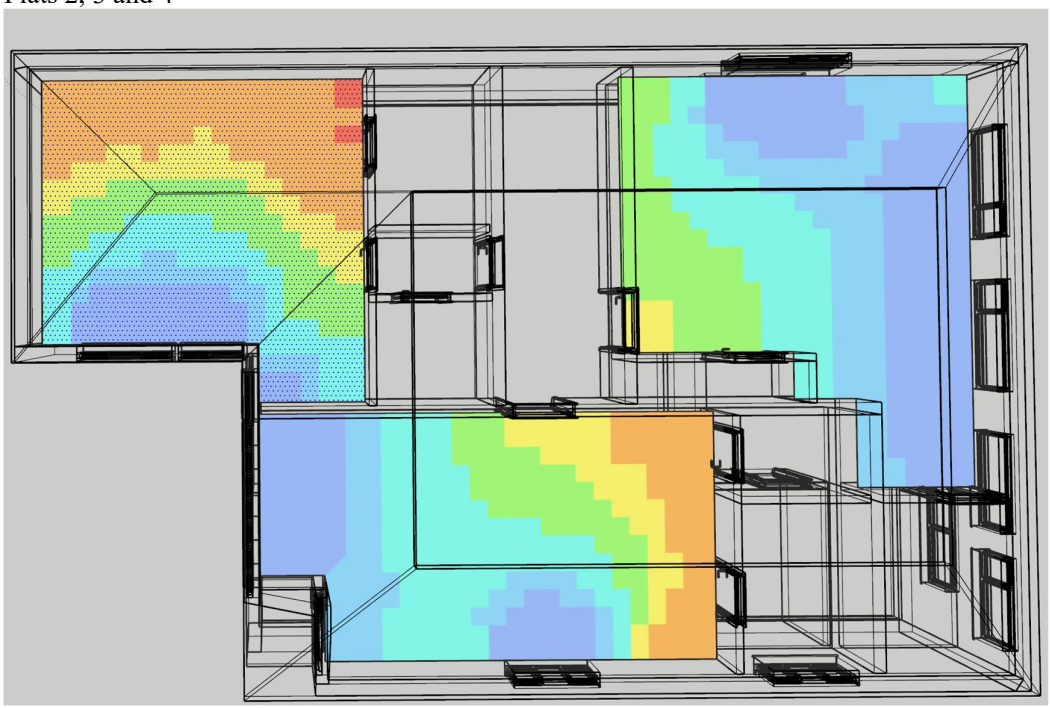


Figure 3 Daylight Factor Distribution

Flats 2, 3 and 4



Flat 1

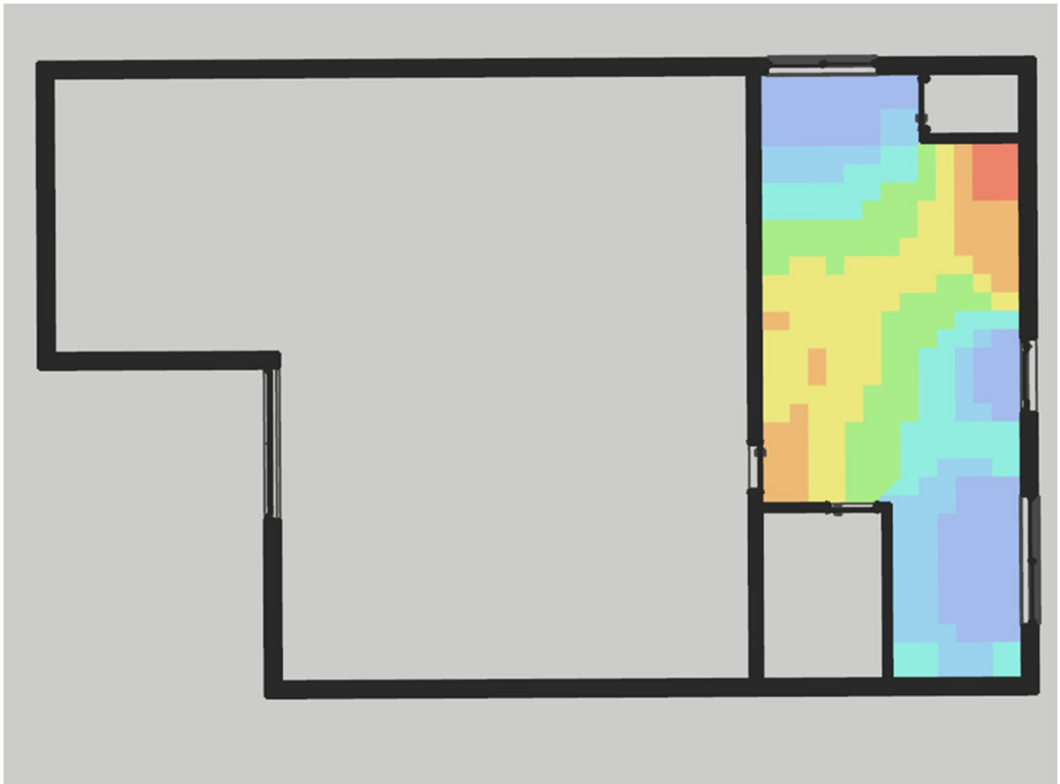
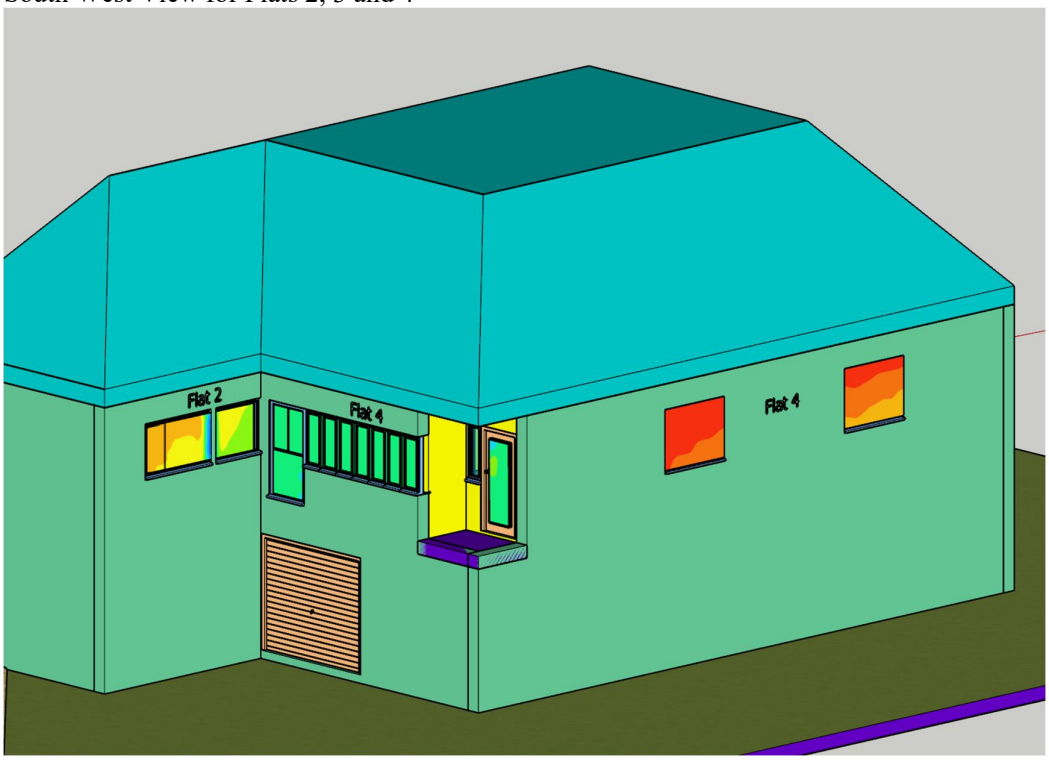


Figure 4 Sunlight to Windows;

South West View for Flats 2, 3 and 4



South East View for Flat 1