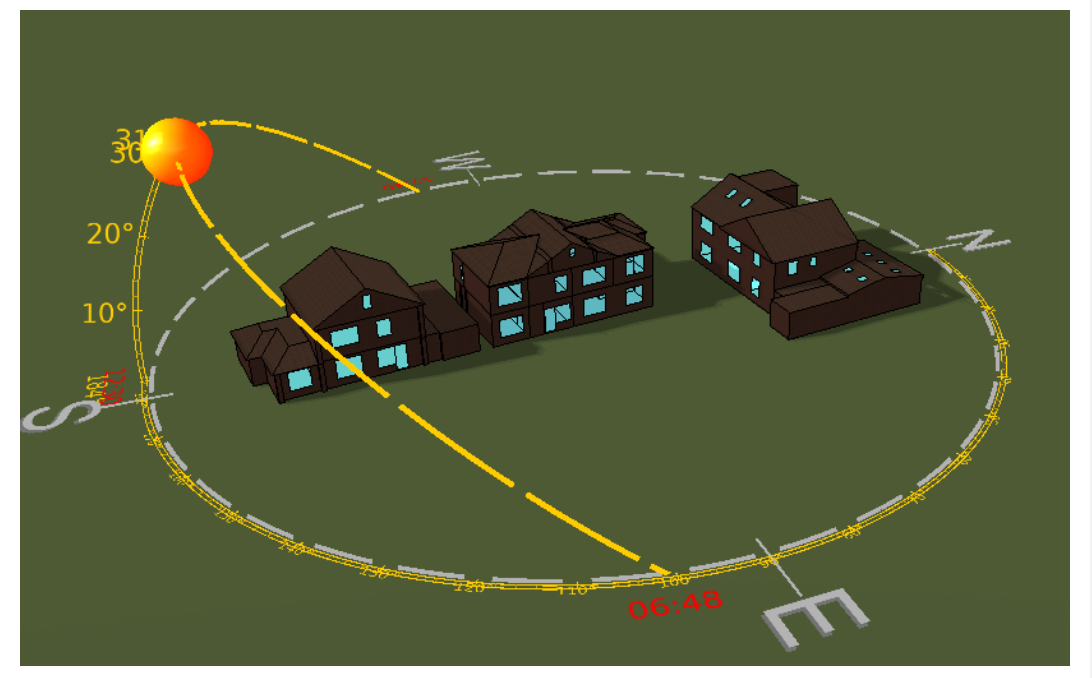
Daylight and Sunlight Assessment Report

5 The Meads, Uxbridge, UB8 3NE

Prepared by Haritha Consultants Limited



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INTRODUCTION

This report has been prepared by Haritha Consultants Limited to deliver a comprehensive Daylight and Sunlight Assessment for the proposed residential development located at:5 The Meads, Uxbridge, UB8 3NE.

The proposed development involves carefully planned modifications to the existing two-storey house, with the objective of improving living spaces while ensuring minimal adverse impact on the surrounding environment. The assessment has been conducted in full compliance with the recommendations and best practice standards outlined in the Building Research Establishment (BRE) Report 209: Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice.

To provide a precise and evidence-based analysis, we have utilized industry-leading environmental simulation software – the Integrated Environmental Solutions Virtual Environment (IES VE) suite – which is widely recognized for its reliability in building performance evaluations. The following advanced modules were employed:

RadianceIES: For detailed daylight analysis, including Vertical Sky Component (VSC), No Sky Line (NSL), and Average Daylight Factor (ADF) assessments.

SunCast: For dynamic solar simulations, enabling the calculation of Annual Probable Sunlight Hours (APSH) and evaluating the overshadowing impacts on neighboring properties, gardens, and shared amenity spaces.

The analysis considers not only the daylight and sunlight performance within the proposed development itself but also its potential influence on the surrounding built environment. In particular, this assessment evaluates:

Vertical Sky Component (VSC): The amount of visible sky available at a given window, which directly influences daylight access.

Annual Probable Sunlight Hours (APSH): A measure of direct sunlight availability over the course of a year, particularly for south-facing windows.

Daylight Factor (DF): An indicator of internal natural light levels compared to external daylight conditions.

Illuminance Level: The adequacy of light levels on reference planes throughout the year, ensuring compliance with modern living standards.

By leveraging advanced simulation technology, this report offers a robust, data-driven analysis that adheres to the highest standards of accuracy and reliability. The results of the study demonstrate that the proposed modifications will maintain acceptable daylight and sunlight conditions for neighboring properties and surrounding spaces, while ensuring that the interior spaces of the redeveloped home achieve excellent levels of natural illumination.

This careful balance between development and environmental impact highlights our commitment to sustainable design principles, ensuring that the project not only meets BRE guidance but also enhances the quality and livability of the built environment.

This assessment underscores Haritha Consultants Limited's dedication to delivering sustainable, well-planned, and environmentally sensitive developments. By integrating advanced simulation techniques with a thorough understanding of industry regulations, we aim to contribute positively to the urban fabric, creating developments that harmonize functionality, aesthetics, and environmental responsibility.

METHODOLOGY

IMPACT ASSESSMENT

This impact assessment will evaluate how the proposed modifications to the property at 5 The Meads, Uxbridge, UB8 3NE may affect the daylight and sunlight availability to the neighboring properties located at 3 The Meads, Uxbridge, UB8 3NE and 7 The Meads, Uxbridge, UB8 3NE.

The study will specifically consider the extent to which the proposed development may alter the levels of natural light received by the adjoining residences, in accordance with relevant guidelines and standards

VERTICAL SKY COMPONENT (VSC)

In accordance with the 2022 BRE guidance (Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice), each main habitable-room window in an existing building should retain a Vertical Sky Component (VSC) of at least 27% following the proposed development. If the post-development VSC falls below 27%, it should remain at no less than 0.80 times its former value.

ANNUAL PROBABLE SUNLIGHT HOURS (APSH)

In accordance with the 2022 BRE guidance (Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice), if a main habitable-room window faces within 90° of due south, it should retain at least 25% of Annual Probable Sunlight Hours (APSH) for the whole year, including 5% in the winter months. Should post-development APSH fall below this recommendation and drop to under 0.80 times.

RIGHT OF LIGHT

As part of this study, a Right of Light assessment will be undertaken to evaluate the impact of the proposed modifications on the internal lighting conditions within 5 The Meads, Uxbridge, UB8 3NE itself.

The assessment will specifically examine the levels and quality of natural light received in key habitable rooms, including the Living Room, Kitchen, and Bedrooms, following the proposed changes. This will ensure that the design complies with the relevant Right of Light principles and maintains acceptable standards of daylight and sunlight within the property.

DAYLIGHT FACTOR (DF)

Target Daylight Factor relative to a given illuminance to be exceeded for more than half of daylight hours, over 50% of the reference Plane.

As per the BS EN 17037 2021 Table NA.1 & NA.5 for Target Day lights Factors should

- ✓ Bedroom Daylight Factor, 0.7 > 50%
- ✓ Living Room Daylight Factor, 1.1> 50%
- ✓ Kitchen Daylight Factor, 1.4 > 50%

Table NA.1 — Values of target illuminance for room types in UK dwellings

Room type	Target illuminance E_T (lx)
Bedroom	100
Living room	150
Kitchen	200

Table 1

Table NA.5 — Supplement to Table A.3 for 10 UK and Channel Islands locations

Location	Geographical latitude φ [°]	Median External Diffuse Illuminance $E_{v,d,med}$	*D* to exceed 100 lx	*D* to exceed 150 lx	*D* to exceed 200 lx	*D* to exceed 300 lx	*D* to exceed 500 lx	*D* to exceed 750 lx
St Peter (Jersey Airport)	49,22	16 600	0,6 %	0,9 %	1,2 %	1,8 %	3,0 %	4,5 %
London (Gatwick Airport)	51,15	14 100	0,7 %	1,1 %	1,4 %	2,1 %	3,5 %	5,3 %
Birmingham	52,45	16 300	0,6 %	0,9 %	1,2 %	1,8 %	3,1 %	4,6 %
Hemsby	52,68	15 800	0,6 %	0,9 %	1,3 %	1,9 %	3,2 %	4,7 %
Finningley	53,48	14 900	0,7 %	1,0 %	1,3 %	2,0 %	3,4 %	5,0 %
Aughton (Lancashire)	53,55	14 200	0,7 %	1,1 %	1,4 %	2,1 %	3,5 %	5,3 %
Belfast	54,65	14 500	0,7 %	1,0 %	1,4 %	2,1 %	3,4 %	5,2 %
Leuchars	56,38	14 000	0,7 %	1,1 %	1,4 %	2,1 %	3,6 %	5,4 %
Oban	56,42	13 100	0,8 %	1,1 %	1,5 %	2,3 %	3,8 %	5,7 %
Aberdeen	57,20	14 100	0,7 %	1,1 %	1,4 %	2,1 %	3,5 %	5,3 %

Table 2

ILLUMINANCE LEVEL

Target illuminance level must be reached by over 50% of the reference plane for a 2190 of the annual daylight hours.

As per table NA.1

Bedroom	> 100 lux
Living Room	> 150 lux
Kitchen	> 200 lux

THE SITE

The Site is located at 5 The Meads, Uxbridge, UB8 3NE

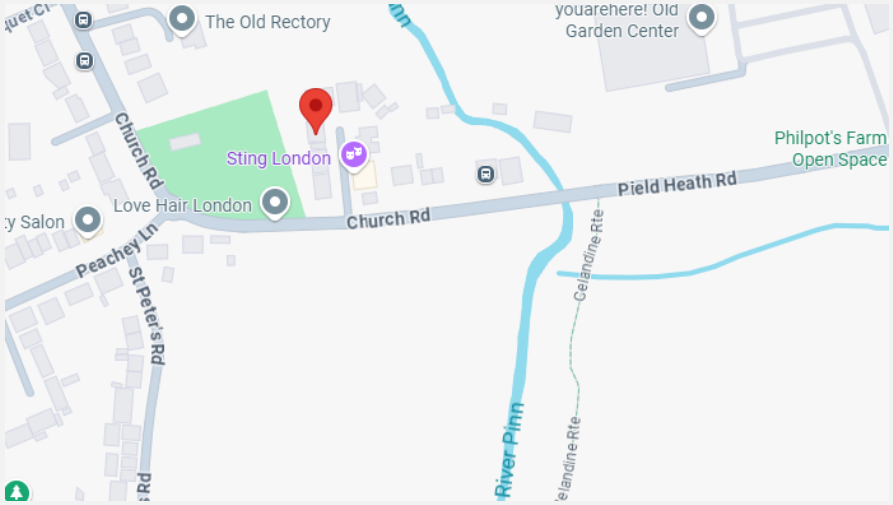


Figure 1

Figure 2

IES VE MODEL

To accurately assess the daylight and sunlight performance of the proposed development at 5 The Meads, Uxbridge, UB8 3NE, a detailed 3D model of the building and its surrounding context was developed using the Integrated Environmental Solutions Virtual Environment (IES VE) software.

The model incorporates the building's architectural design, site layout, and adjacent properties to ensure a precise representation of real-world conditions. The assessment was conducted using the RadianceIES module for daylight analysis and the SunCast module for solar shading and sunlight studies.

These industry-standard tools enable high-resolution simulations of natural light behaviour, allowing for a comprehensive evaluation of the development's impact on surrounding properties and the quality of internal living spaces. The use of IES VE ensures compliance with the guidelines outlined in BRE 209 and supports the delivery of sustainable and well-lit environments.

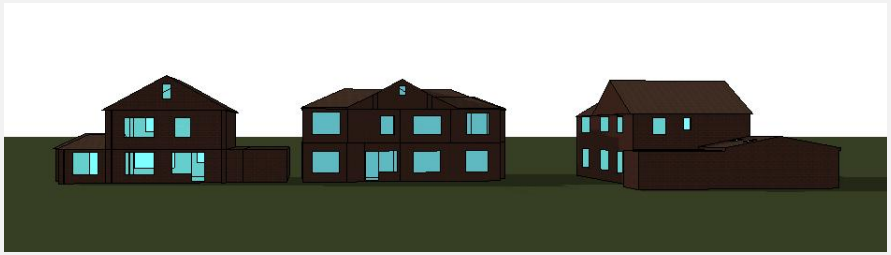


Figure 3

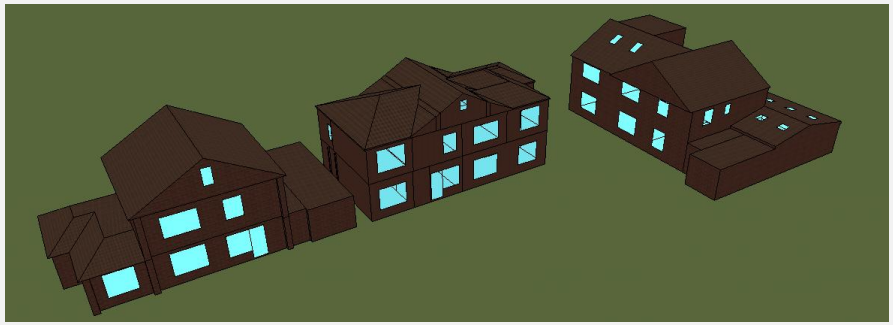


Figure 4

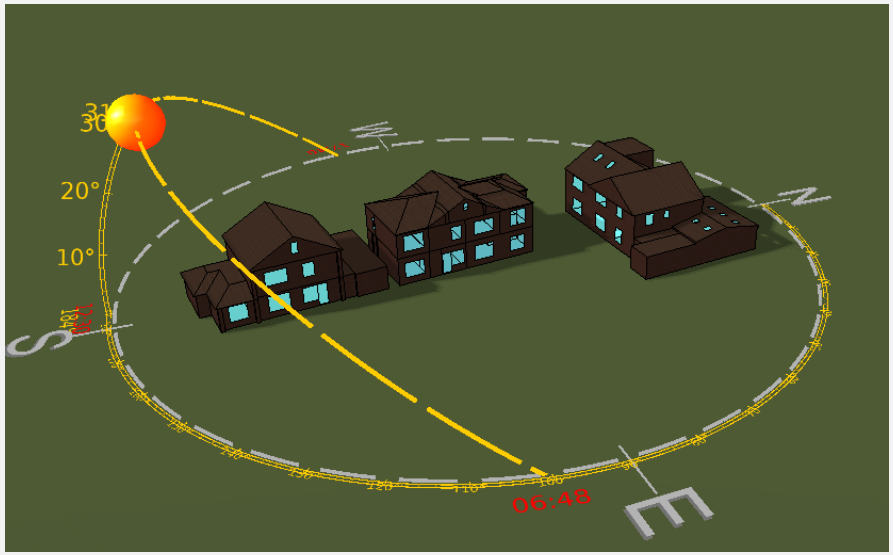


Figure 5

IMPACT ASSESSMENT

VERTICAL SKY COMPONENT

AS AT CURRENT CONDITIONS

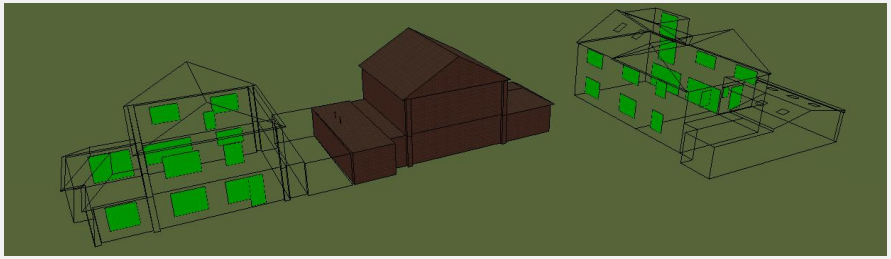


Figure 6

No.	Residence	VSC / SC	Status
1	3	39.93	Pass
2		40.00	Pass
3		39.95	Pass
4		39.74	Pass
5		39.85	Pass
6		38.07	Pass
7		39.38	Pass
8	7	39.50	Pass
9		39.53	Pass
10		34.00	Pass
11		39.52	Pass
12		39.87	Pass
13		38.09	Pass
14		37.46	Pass
15		34.70	Pass
16		35.83	Pass
17		36.75	Pass
18		35.12	Pass
19		36.38	Pass
20		37.61	Pass
21		27.01	Pass
22	3	39.76	Pass
23		39.40	Pass
24		38.60	Pass
25		38.71	Pass
26		39.88	Pass
27		40.01	Pass
28	7	39.88	Pass

Table 3

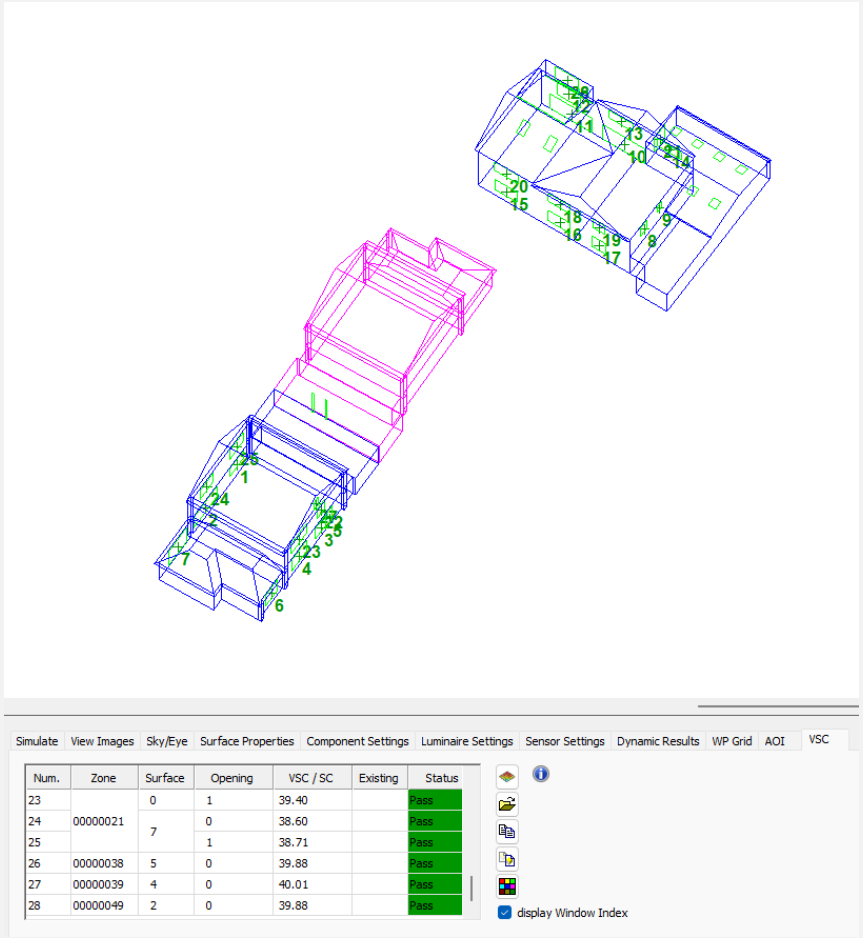


Figure 7

AFTER THE PROPOSED DEVELOPMENT

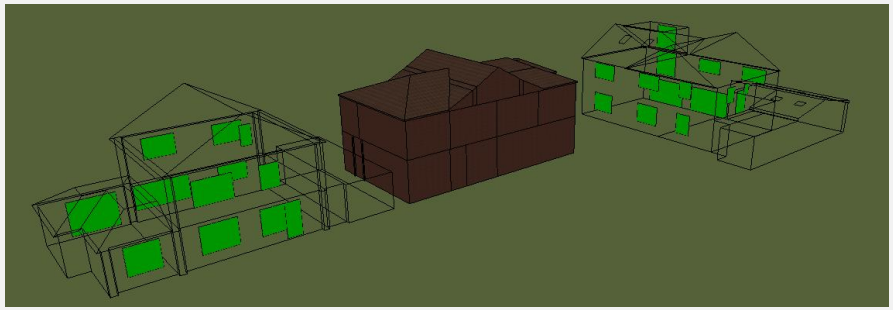


Figure 8

No.	Residence	VSC / SC	Status
1	3	40.03	Pass
2		39.87	Pass
3		39.80	Pass
4		39.87	Pass
5		39.86	Pass
6		38.03	Pass
7		39.08	Pass
8	7	39.51	Pass
9		39.48	Pass
10		33.80	Pass
11		39.41	Pass
12		40.09	Pass
13		38.03	Pass
14		37.46	Pass
15		31.34	Pass

16		33.71	Pass
17		35.26	Pass
18		35.68	Pass
19		36.18	Pass
20		36.74	Pass
21		27.10	Pass
22	3	39.33	Pass
23		39.12	Pass
24		38.66	Pass
25		38.67	Pass
26		39.92	Pass
27		39.96	Pass
28	7	39.91	Pass

Table 4

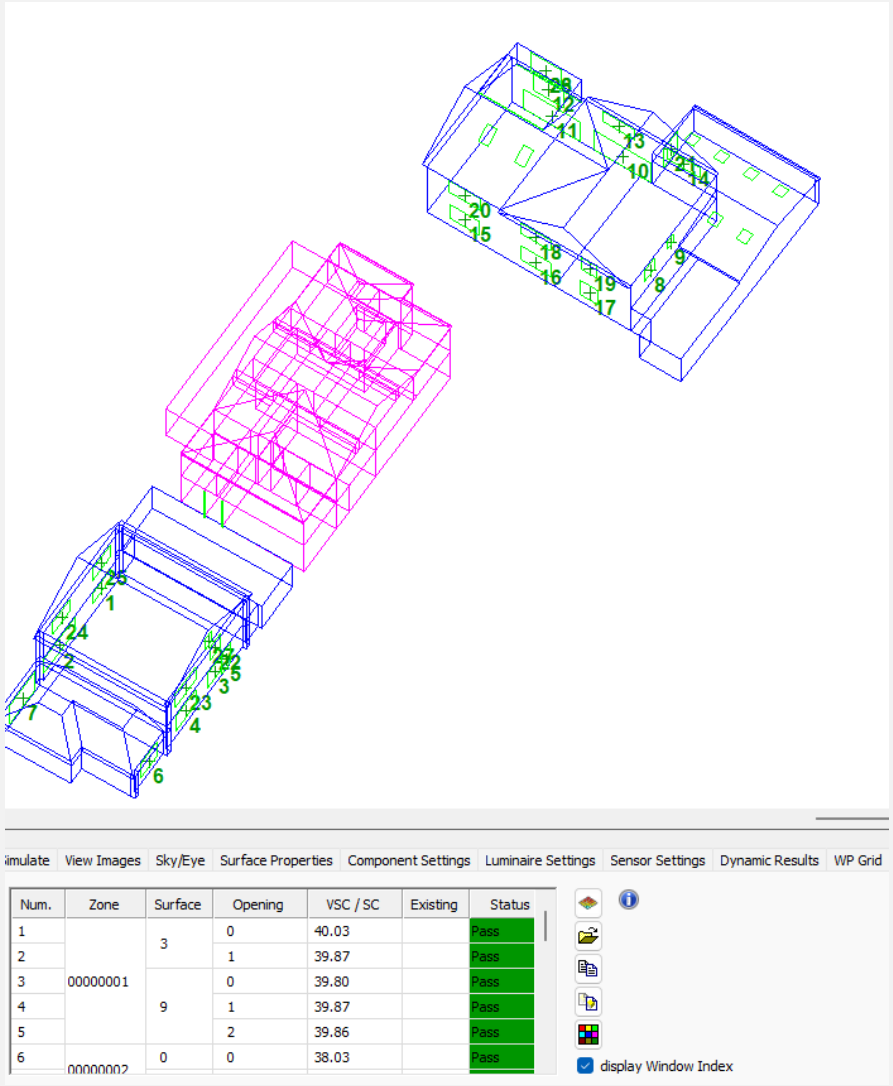


Figure 9

IMPACT ASSESSMENT

No.	Residence	Before Development	After Development	% Change	Status
1	3	39.93	40.03	0.25%	Pass
2		40.00	39.87	0.33%	Pass
3		39.95	39.80	0.38%	Pass
4		39.74	39.87	0.33%	Pass
5		39.85	39.86	0.03%	Pass
6		38.07	38.03	0.11%	Pass
7		39.38	39.08	0.76%	Pass
8	7	39.50	39.51	0.03%	Pass
9		39.53	39.48	0.13%	Pass
10		34.00	33.80	0.59%	Pass
11		39.52	39.41	0.28%	Pass
12		39.87	40.09	0.55%	Pass
13		38.09	38.03	0.16%	Pass
14		37.46	37.46	0.00%	Pass
15		34.70	31.34	9.68%	Pass
16		35.83	33.71	5.92%	Pass
17		36.75	35.26	4.05%	Pass
18		35.12	35.68	1.59%	Pass
19		36.38	36.18	0.55%	Pass
20		37.61	36.74	2.31%	Pass
21		27.01	27.10	0.33%	Pass
22	3	39.76	39.33	1.08%	Pass
23		39.40	39.12	0.71%	Pass
24		38.60	38.66	0.16%	Pass
25		38.71	38.67	0.10%	Pass
26		39.88	39.92	0.10%	Pass
27		40.01	39.96	0.12%	Pass
28	7	39.88	39.91	0.08%	Pass

Table 5

Based on the simulation results, it is found that the Vertical Sky Component (VSC) values at the neighboring properties — 3 The Meads and 7 The Meads, Uxbridge, UB8 3NE — remain below the 25% threshold, in accordance with the recommendations set out in the BRE Guidelines ("Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice").

This indicates that the proposed development at 5 The Meads will not result in a noticeable reduction in daylight to the affected windows of the neighboring dwellings. Therefore, it is concluded that the proposed development will have no adverse impact on the daylight amenity of the neighboring properties in the context of VSC.

ANNUAL PROBABLE SUNLIGHT HOURS

AS AT CURRENT CONDITIONS

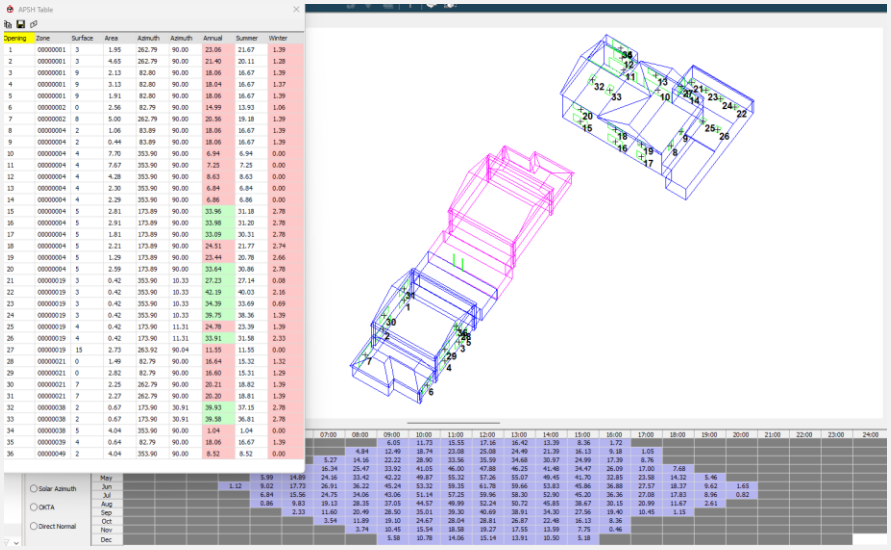


Figure 10

Opening	Residence	Annual	Summer	Winter
1	3	23.06	21.67	1.39
2		21.40	20.11	1.28
3		18.06	16.67	1.39
4		18.04	16.67	1.37
5		18.06	16.67	1.39
6		14.99	13.93	1.06
7		20.56	19.18	1.39
8	5	18.06	16.67	1.39
9		18.06	16.67	1.39
10		6.94	6.94	0.00
11		7.25	7.25	0.00
12		8.63	8.63	0.00
13		6.84	6.84	0.00
14		6.86	6.86	0.00
15		33.96	31.18	2.78
16		33.98	31.20	2.78
17		33.09	30.31	2.78
18		24.51	21.77	2.74
19		23.44	20.78	2.66
20		33.64	30.86	2.78
21		27.23	27.14	0.08
22		42.19	40.03	2.16
23		34.39	33.69	0.69
24		39.75	38.36	1.39
25		24.78	23.39	1.39
26		33.91	31.58	2.33
27	3	11.55	11.55	0.00
28		16.64	15.32	1.32
29		16.60	15.31	1.29
30		20.21	18.82	1.39
31		20.20	18.81	1.39
32	5	39.93	37.15	2.78
33		39.58	36.81	2.78
34		2.08	2.08	0.00
35	3	18.06	16.67	1.39
36	5	8.52	8.52	0.00

Table 6

AFTER THE PROPOSED DEVELOPMENT

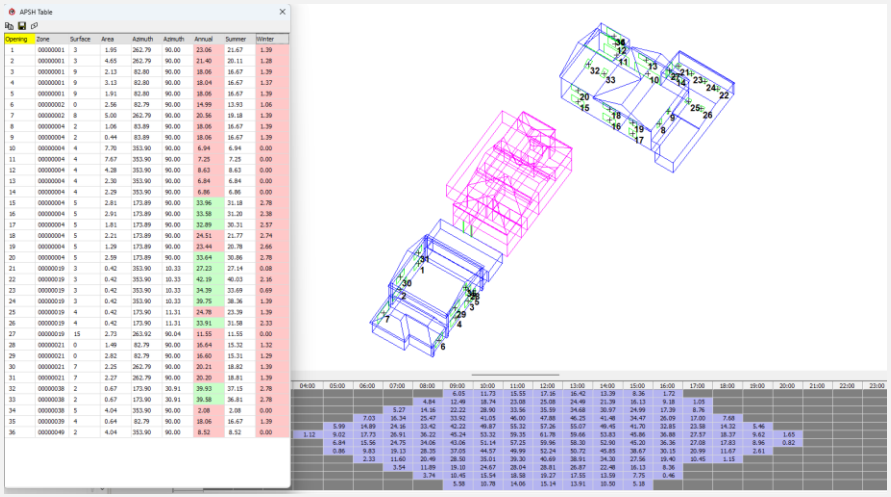


Table 7

Opening	Residence	Annual	Summer	Winter
1	3	23.06	21.67	1.39
2		21.40	20.11	1.28
3		18.06	16.67	1.39
4		18.04	16.67	1.37
5		18.06	16.67	1.39
6		14.99	13.93	1.06
7		20.56	19.18	1.39
8	5	18.06	16.67	1.39
9		18.06	16.67	1.39
10		6.94	6.94	0.00
11		7.25	7.25	0.00
12		8.63	8.63	0.00
13		6.84	6.84	0.00
14		6.86	6.86	0.00
15		33.96	31.18	2.78
16		33.58	31.20	2.38
17		32.89	30.31	2.57
18		24.51	21.77	2.74
19		23.44	20.78	2.66
20		33.64	30.86	2.78
21		27.23	27.14	0.08
22		42.19	40.03	2.16
23		34.39	33.69	0.69
24		39.75	38.36	1.39
25		24.78	23.39	1.39
26		33.91	31.58	2.33
27	3	11.55	11.55	0.00
28		16.64	15.32	1.32
29		16.60	15.31	1.29
30		20.21	18.82	1.39
31		20.20	18.81	1.39
32	5	39.93	37.15	2.78
33		39.58	36.81	2.78
34		2.04	2.04	0.00
35	3	18.06	16.67	1.39
36	5	8.52	8.52	0.00

Table 8

IMPACT ASSESSMENT

Opening	Residence	APSH – As at Current	APSH – After the proposed modification	% of Change	Status
1	3	23.06	23.06	0.00%	Pass
2		21.40	21.40	0.00%	Pass
3		18.06	18.06	0.00%	Pass
4		18.04	18.04	0.00%	Pass
5		18.06	18.06	0.00%	Pass
6		14.99	14.99	0.00%	Pass
7		20.56	20.56	0.00%	Pass
8	5	18.06	18.06	0.00%	Pass
9		18.06	18.06	0.00%	Pass
10		6.94	6.94	0.00%	Pass
11		7.25	7.25	0.00%	Pass
12		8.63	8.63	0.00%	Pass
13		6.84	6.84	0.00%	Pass
14		6.86	6.86	0.00%	Pass
15		33.96	33.96	0.00%	Pass
16		33.98	33.58	1.18%	Pass
17		33.09	32.89	0.60%	Pass
18		24.51	24.51	0.00%	Pass
19		23.44	23.44	0.00%	Pass
20		33.64	33.64	0.00%	Pass
21		27.23	27.23	0.00%	Pass
22		42.19	42.19	0.00%	Pass
23		34.39	34.39	0.00%	Pass
24		39.75	39.75	0.00%	Pass
25		24.78	24.78	0.00%	Pass
26		33.91	33.91	0.00%	Pass
27	3	11.55	11.55	0.00%	Pass
28		16.64	16.64	0.00%	Pass
29		16.60	16.60	0.00%	Pass
30		20.21	20.21	0.00%	Pass
31		20.20	20.20	0.00%	Pass
32	5	39.93	39.93	0.00%	Pass
33		39.58	39.58	0.00%	Pass
34		2.08	2.04	1.92%	Pass
35	3	18.06	18.06	0.00%	Pass
36	5	8.52	8.52	0.00%	Pass

Table 9

Based on the simulation results, it is found that the Annual Probable Sunlight Hours (APSH) for the neighbouring properties — 3 The Meads and 7 The Meads, Uxbridge, UB8 3NE — remain within the acceptable limits defined by the BRE Guidelines ("Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice").

The analysis confirms that the proposed development at 5 The Meads will not cause a significant loss of sunlight to the main habitable rooms of the neighbouring dwellings. As such, it is concluded that the proposed development will have no adverse impact on the sunlight availability of the neighbouring properties in the context of APSH.

RIGHT OF LIGHT

DAYLIGHT FACTOR (METHOD 1)

LIVING ROOM

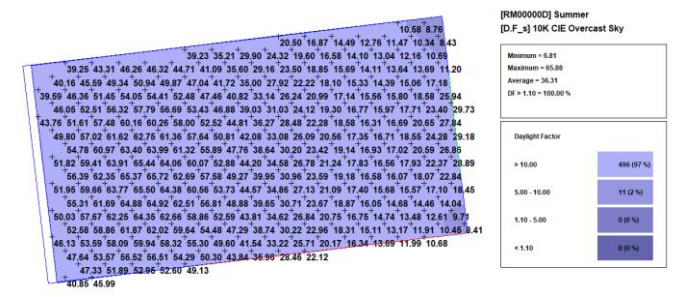


Figure 11

DF > 1.1 = 100% - **PASS**

KITCHEN AND DINING ROOM

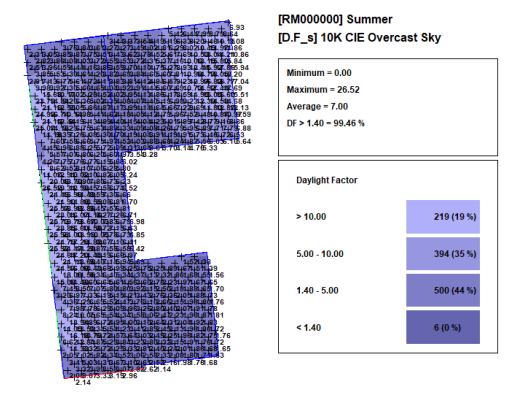


Figure 12

DF > 1.4 = 99.46% - **PASS**

BEDROOM 1

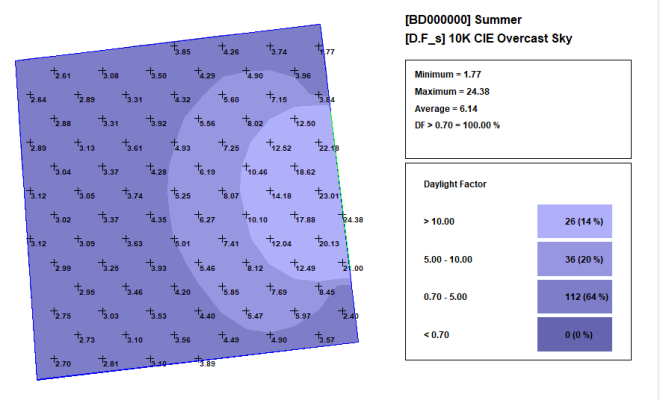


Figure 13

DF > 0.7 = 100% - **PASS**

BEDROOM 2

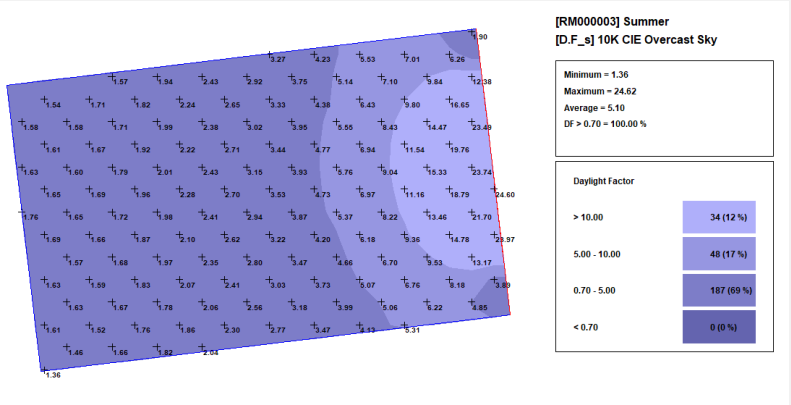


Figure 14

DF > 0.7 = 100% - **PASS**

BEDROOM 3

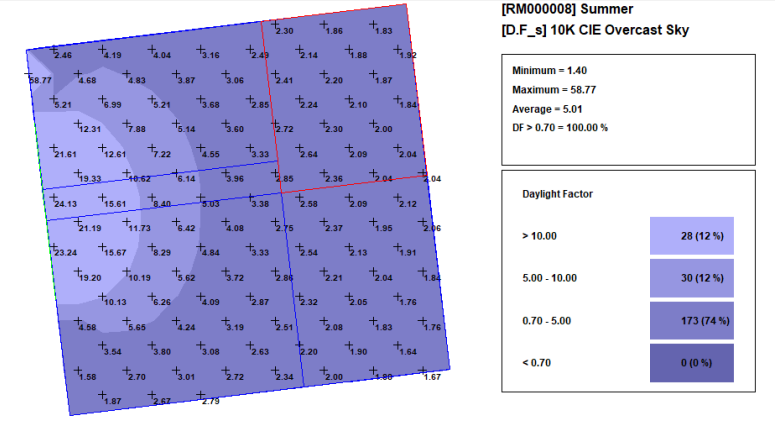


Figure 15

DF > 0.7 = 100% - **PASS**

BEDROOM 4

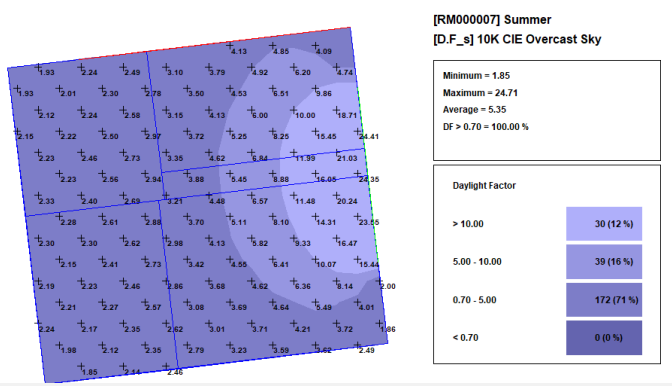


Figure 16

DF > 0.7 = 100% - **PASS**

BEDROOM 5

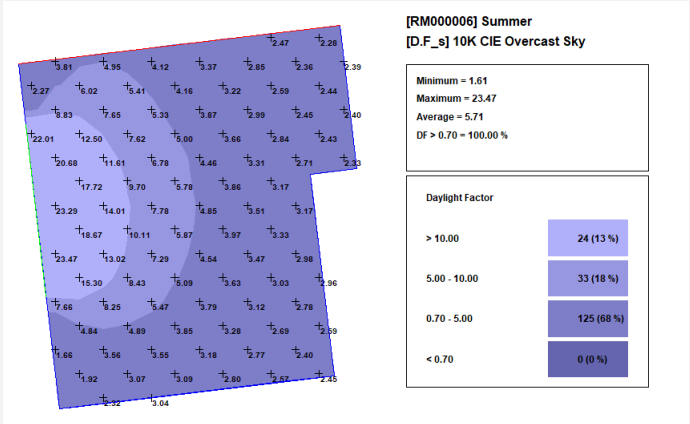


Figure 17

DF > 0.7 = 100% - **PASS**

BEDROOM 6

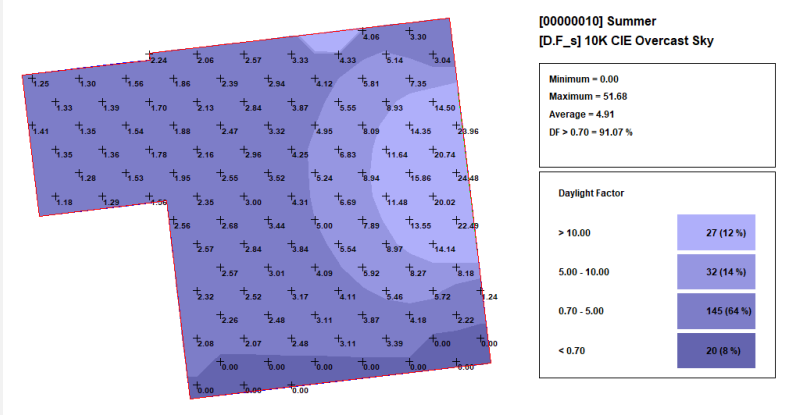


Figure 18

DF > 0.7 = 91.07% - **PASS**

BEDROOM 7

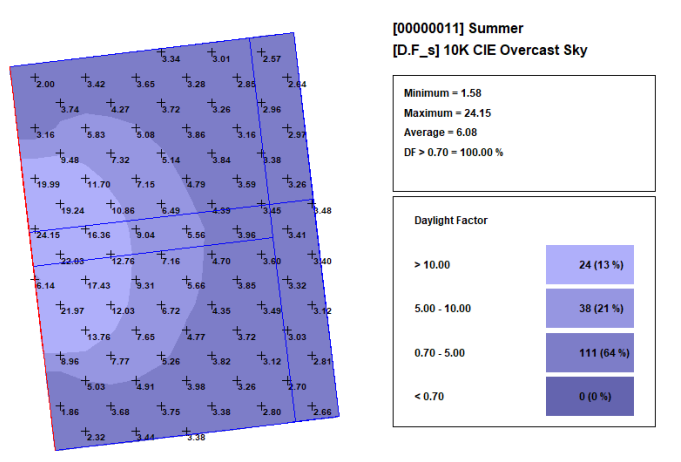
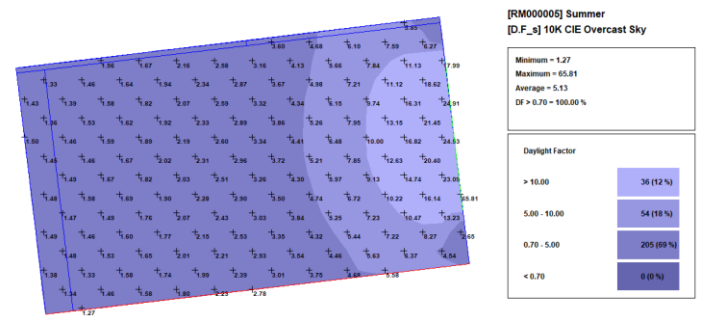


Figure 19

DF > 0.7 = 100% - **PASS**

BEDROOM 8



DF > 0.7 = 100% - **PASS**

As per the summary of the above tables, all the assessed spaces meet the minimum daylight factor criteria specified in BS EN 17037:2021 (Daylight in Buildings). Therefore, the proposed development complies with the daylight requirements in accordance with the current regulations.

ILLUMINANCE LEVEL METHOD [METHOD 2]

LIVING ROOM

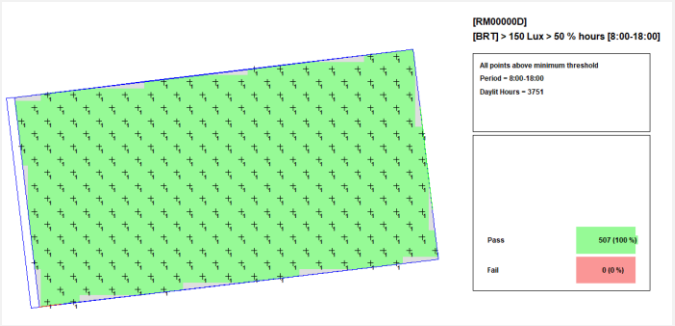


Figure 20

IL > 150 lux = 100% - **PASS**

KITCHEN AND DINING ROOM

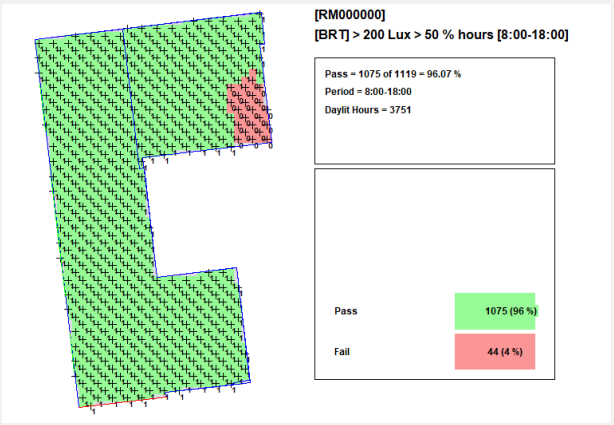


Figure 21

IL > 200 lux = 96% - **PASS**

BEDROOM 1

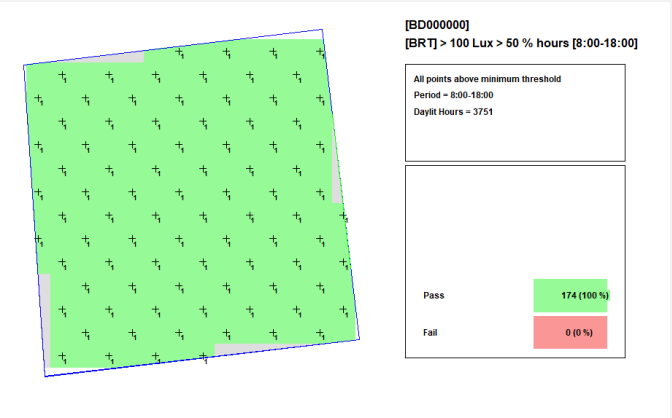


Figure 22

IL > 100 lux = 100% - **PASS**

BEDROOM 2

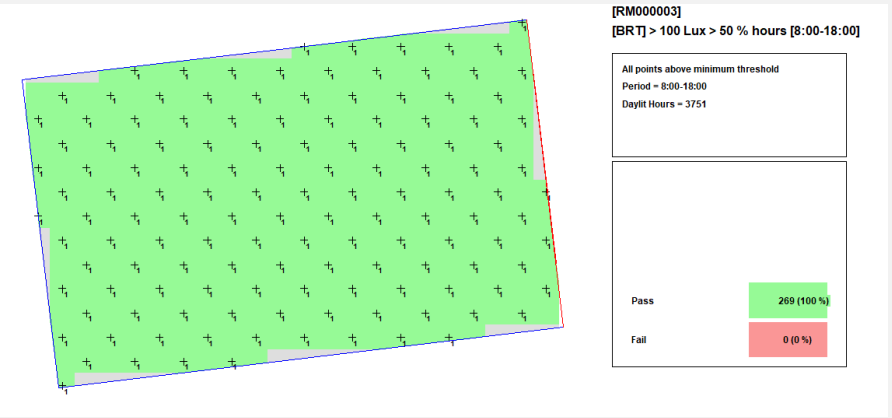


Figure 23

IL > 100 lux = 100% - **PASS**

BEDROOM 3

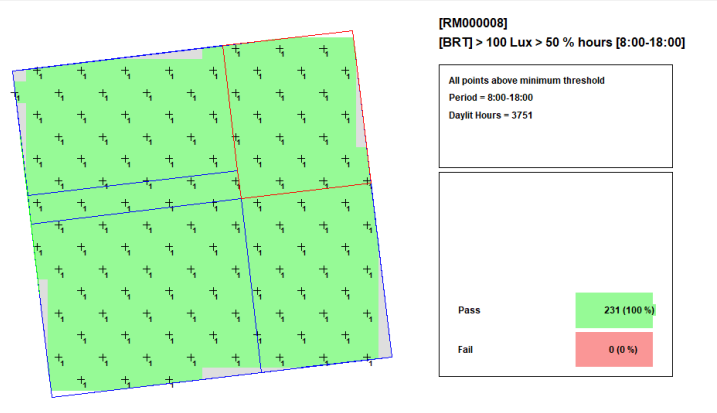


Figure 24

IL > 100 lux = 100% - **PASS**

BEDROOM 4

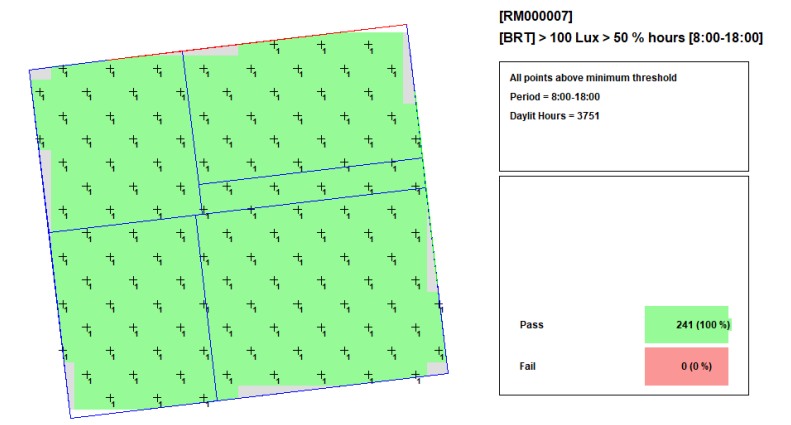


Figure 25

IL > 100 lux = 100% - **PASS**

BEDROOM 5

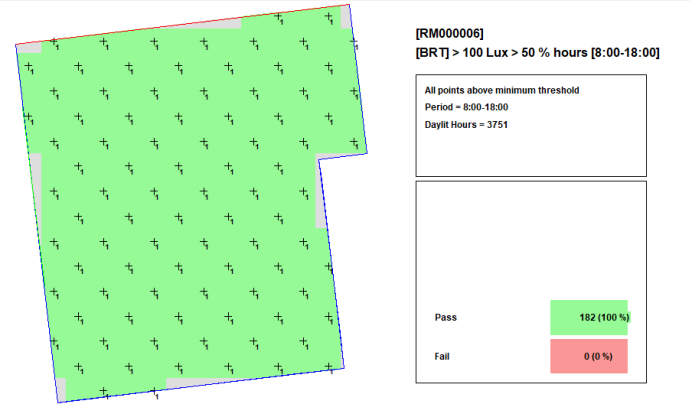


Figure 26

IL > 100 lux = 100% - **PASS**

BEDROOM 6

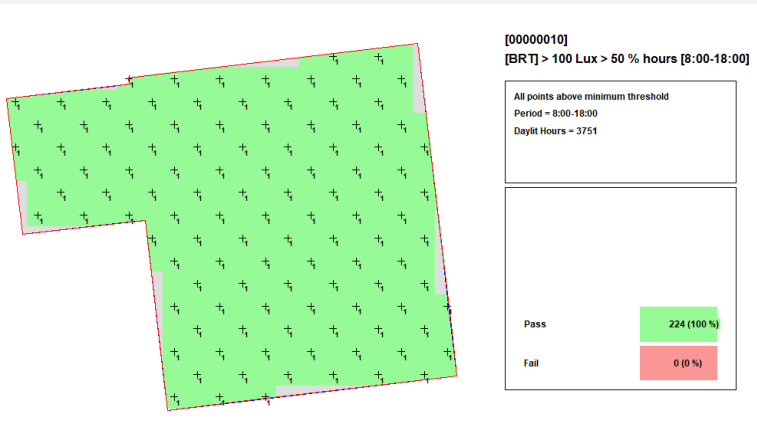


Figure 27

IL > 100 lux = 100% - **PASS**

BEDROOM 7

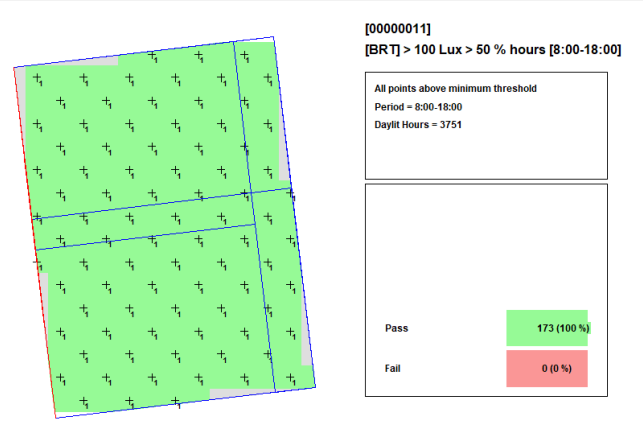


Figure 28

IL > 100 lux = 100% - **PASS**

BEDROOM 8

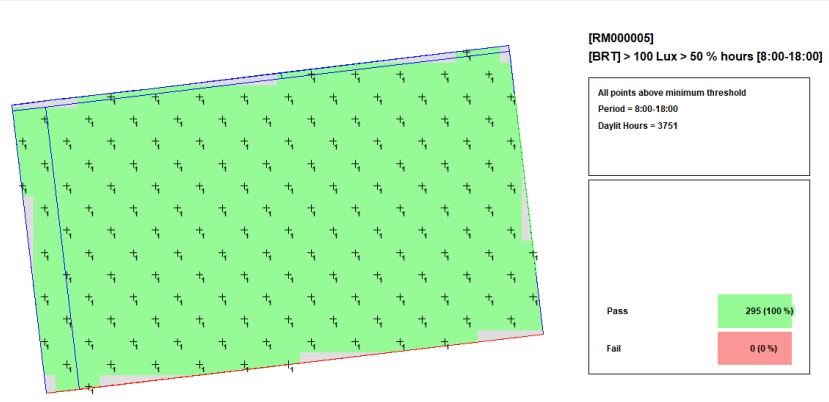


Figure 29

IL > 100 lux = 100% - **PASS**

As per the results of the above, all the assessed spaces achieve the recommended minimum illuminance levels specified in BS EN 17037:2021 (Daylight in Buildings). Therefore, the proposed development satisfies the illuminance level requirements in accordance with the current Standard for daylight provision.

CONCLUSION

The assessment demonstrates that the impact of the proposed development on the neighbouring properties, in terms of both Vertical Sky Component (VSC) and Annual Probable Sunlight Hours (APSH), remains within the acceptable limits set out in the 2022 BRE Guidance (Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice). Furthermore, all habitable spaces achieve adequate levels of daylight and sunlight in accordance with the requirements specified in BS EN 17037:2021 (Daylight in Buildings).

ANNEXTURE 01 – SITE LAYOUT

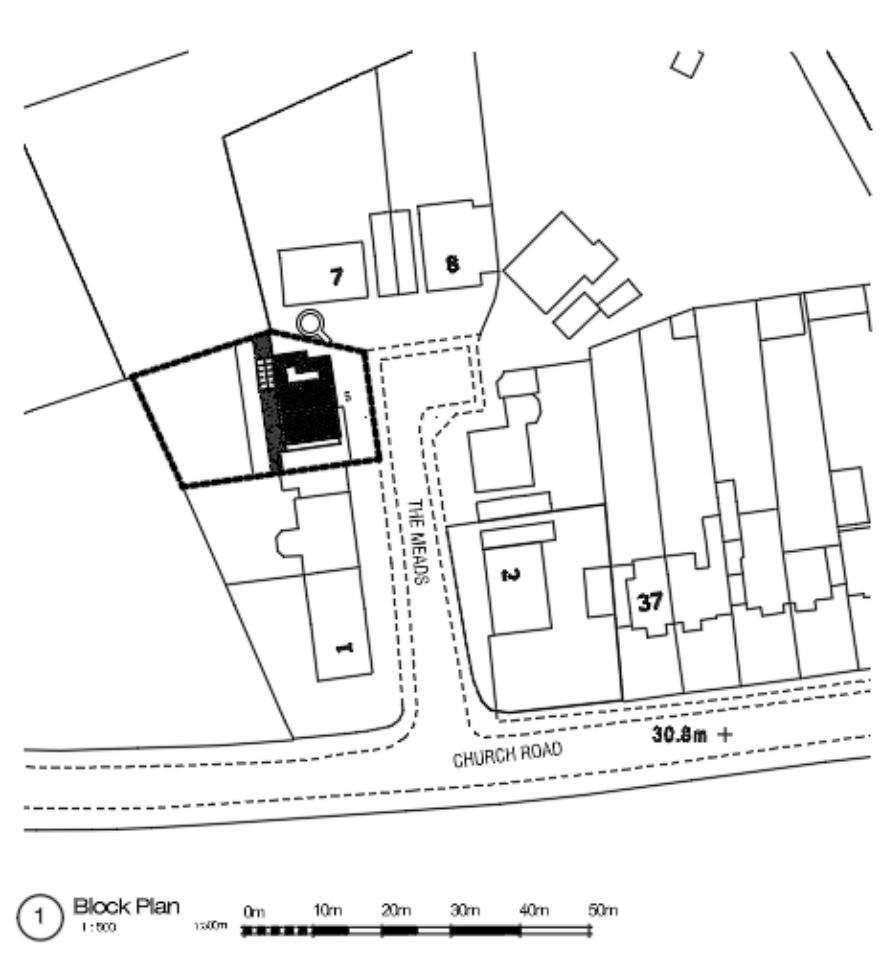


Figure 30

ANNEXTURE 02 – ARCHITECTURAL FLOOR LAYOUTS

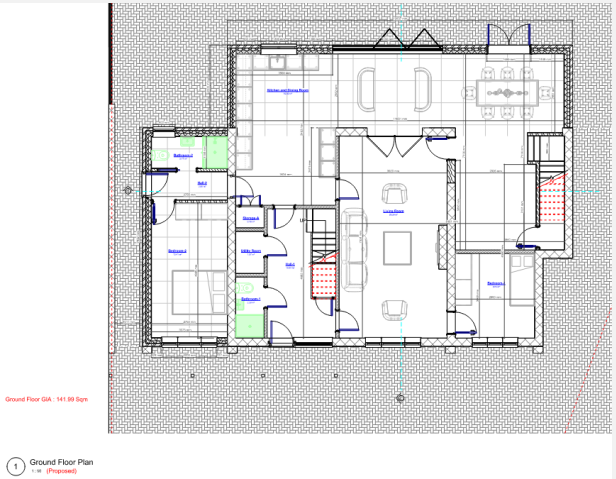


Figure 31

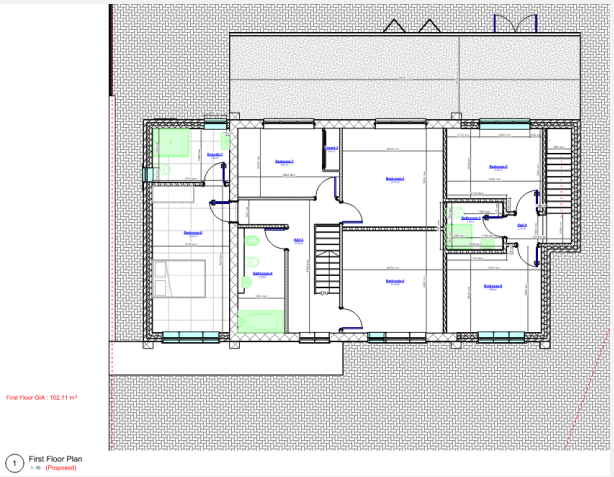


Figure 32

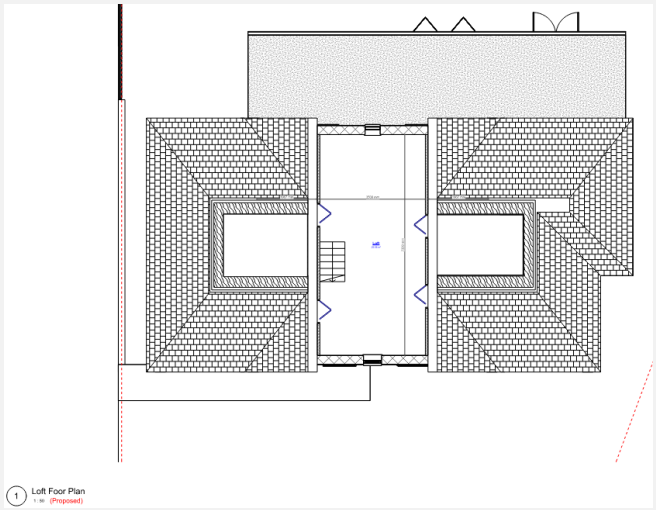


Figure 33

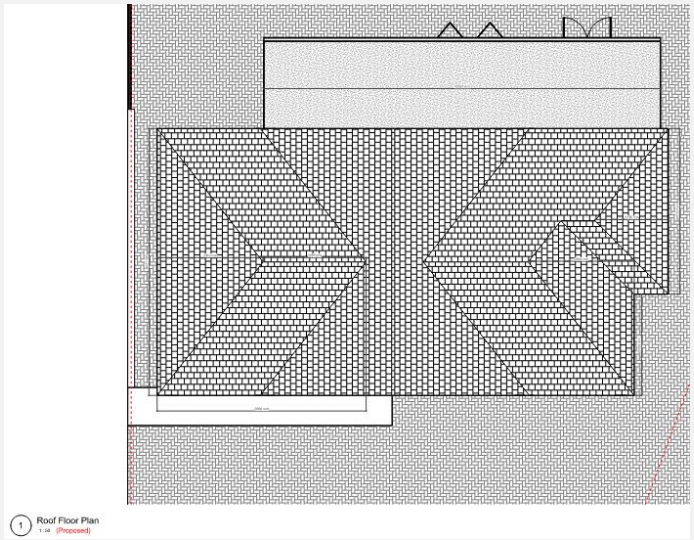


Figure 34

Figure 35

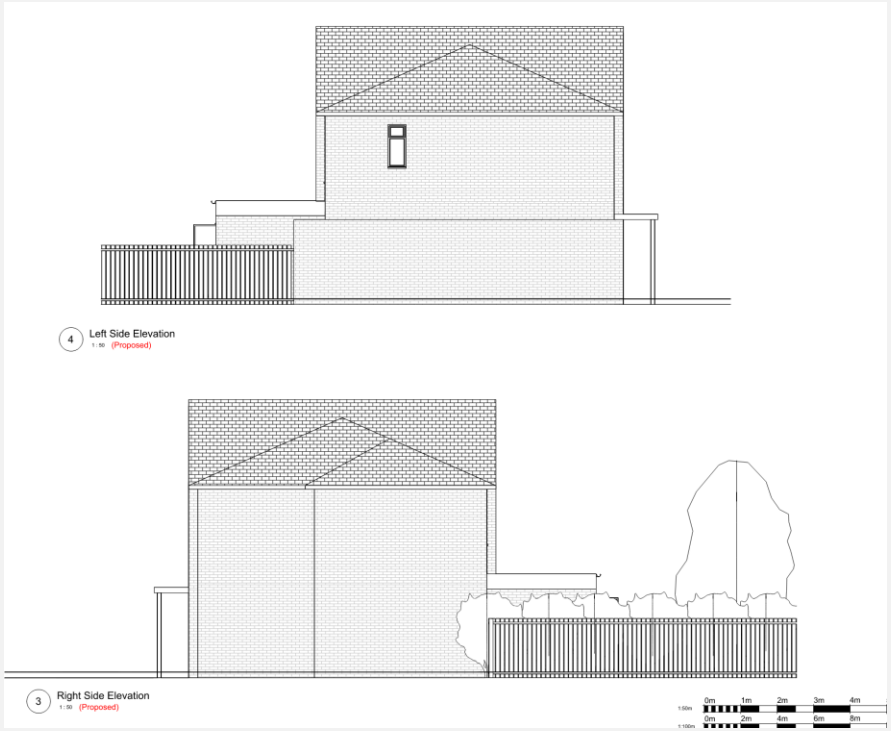


Figure 36

Figure 37