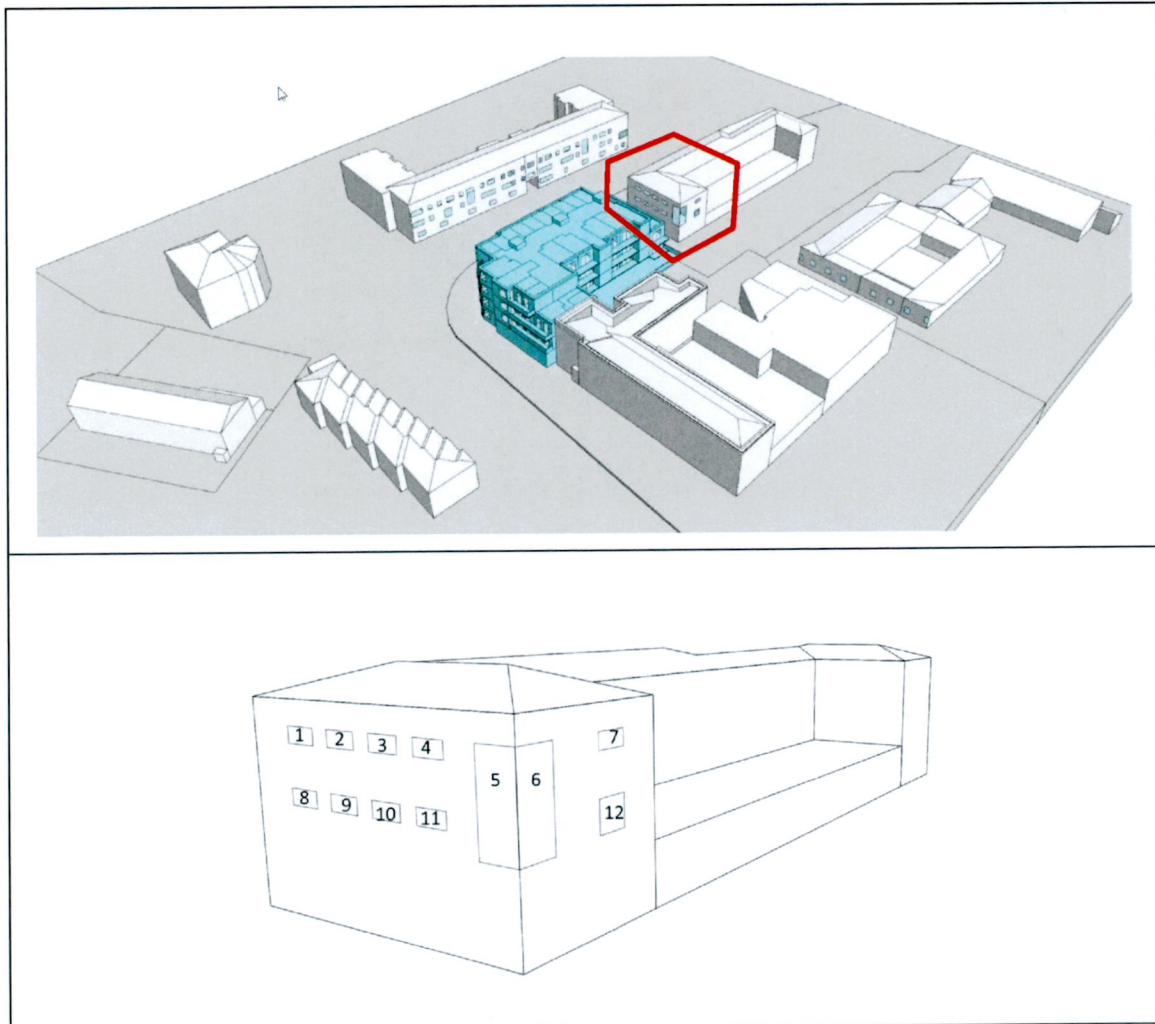


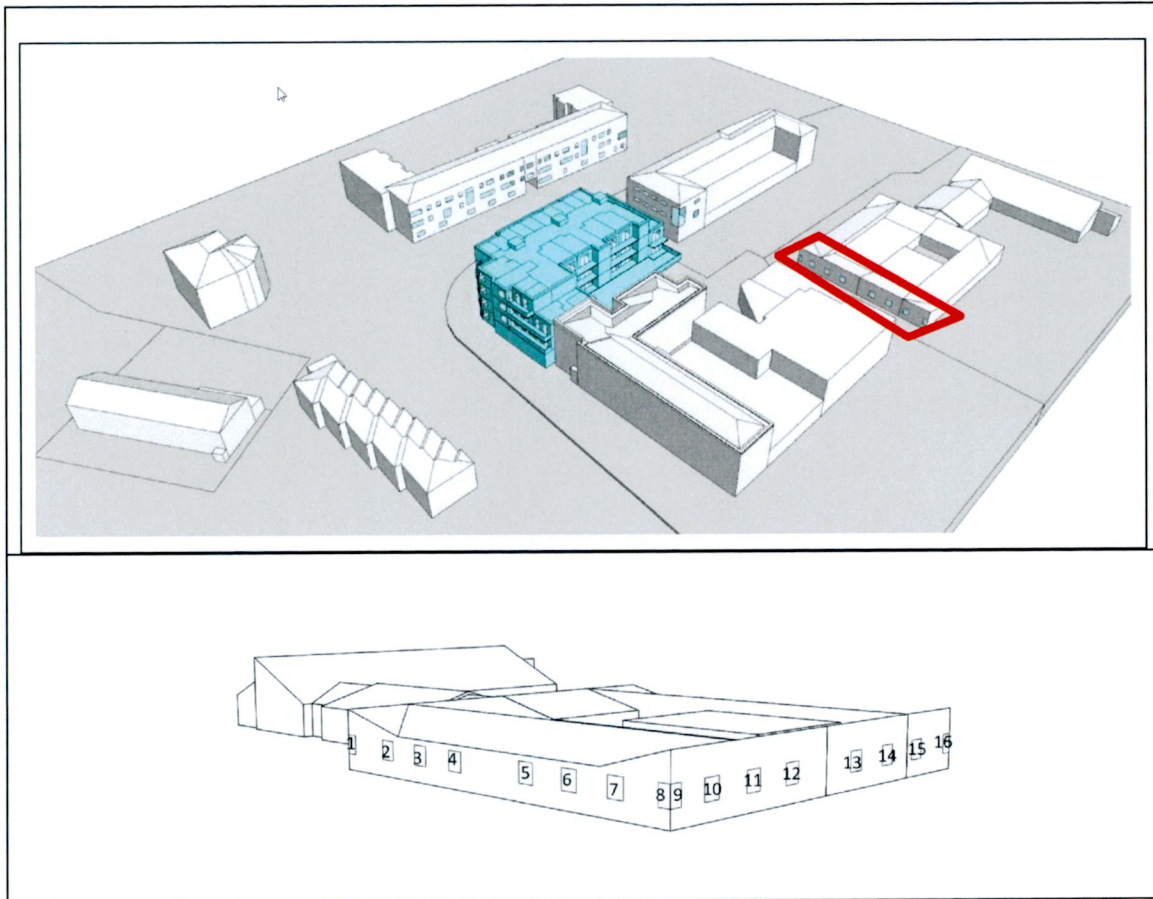
Ref:	Existing VSC	Proposed VSC	Permitted VSC% of Existing	Comment
10	37.98	35.42	93%	✓
11	37.92	35.65	94%	✓
12	37.73	35.60	94%	✓
13	37.70	35.64	95%	✓
14	37.57	35.94	96%	✓
15	37.20	35.67	96%	✓
16	37.16	35.89	97%	✓
17	37.05	35.95	97%	✓
18	35.67	34.50	97%	✓
19	36.44	35.89	98%	✓
20	36.32	35.97	99%	✓
21	36.46	35.89	98%	✓
22	37.70	33.63	89%	✓
23	37.44	33.41	89%	✓
24	37.25	32.66	88%	✓
25	37.22	32.55	87%	✓
26	36.89	32.36	88%	✓
27	36.81	32.71	89%	✓
28	36.39	33.10	91%	✓
29	36.21	33.25	92%	✓
30	35.86	33.27	93%	✓
31	35.40	33.32	94%	✓
32	34.78	33.29	96%	✓
33	34.03	32.92	97%	✓
34	34.01	33.13	97%	✓
35	34.29	33.76	98%	✓
36	36.13	31.73	88%	✓
37	35.76	30.80	86%	✓
38	35.33	29.90	85%	✓
39	35.18	29.83	85%	✓
40	34.87	29.94	86%	✓
41	33.92	30.75	91%	✓
42	33.08	30.84	93%	✓
43	31.85	30.44	96%	✓
44	31.43	30.14	96%	✓
45	30.88	30.19	98%	✓
46	30.88	30.12	98%	✓

9.3.3 VSC View 03 – Colinstown Road – Chaplains Place



Ref:	Existing VSC	Proposed VSC	Permitted VSC% of Existing	Comment
1	38.23	32.67	85%	✓
2	38.37	32.29	84%	✓
3	38.39	31.48	82%	✓
4	38.26	31.64	83%	✓
5	37.42	28.81	77%	✓
6	37.90	37.83	100%	✓
7	38.81	38.62	100%	✓
8	36.95	28.02	76%	✓
9	37.16	26.79	72%	✓1
10	37.15	25.85	70%	✓1
11	37.05	26.04	70%	✓1
12	37.71	37.60	100%	✓

9.3.4 VSC View 04 – Rowlagh Health Centre



Ref:	Existing VSC	Proposed VSC	Permitted VSC% of Existing	Comment
1	34.43	34.14	99%	✓
2	34.08	33.86	99%	✓
3	33.72	33.48	99%	✓
4	33.51	33.05	99%	✓
5	33.34	32.60	98%	✓
6	33.35	32.45	97%	✓
7	33.41	31.99	96%	✓
8	33.29	31.95	96%	✓
9	32.18	30.19	94%	✓
10	31.11	29.54	95%	✓
11	29.83	29.27	98%	✓
12	29.32	28.48	97%	✓
13	28.17	28.17	100%	✓
14	28.38	28.38	100%	✓
15	30.33	30.13	99%	✓
16	32.61	32.42	99%	✓



9.4 VSC Discussion

The Vertical Sky Component for 97% (93 of 96) of the points tested have a value greater than 27% or not less than 0.8 times their former value (that of the Existing Situation). The three values which fall below the criteria are in the range 25.85 – 26.79 and as such are only just below the required 27% and would be classed as a minor adverse impact.

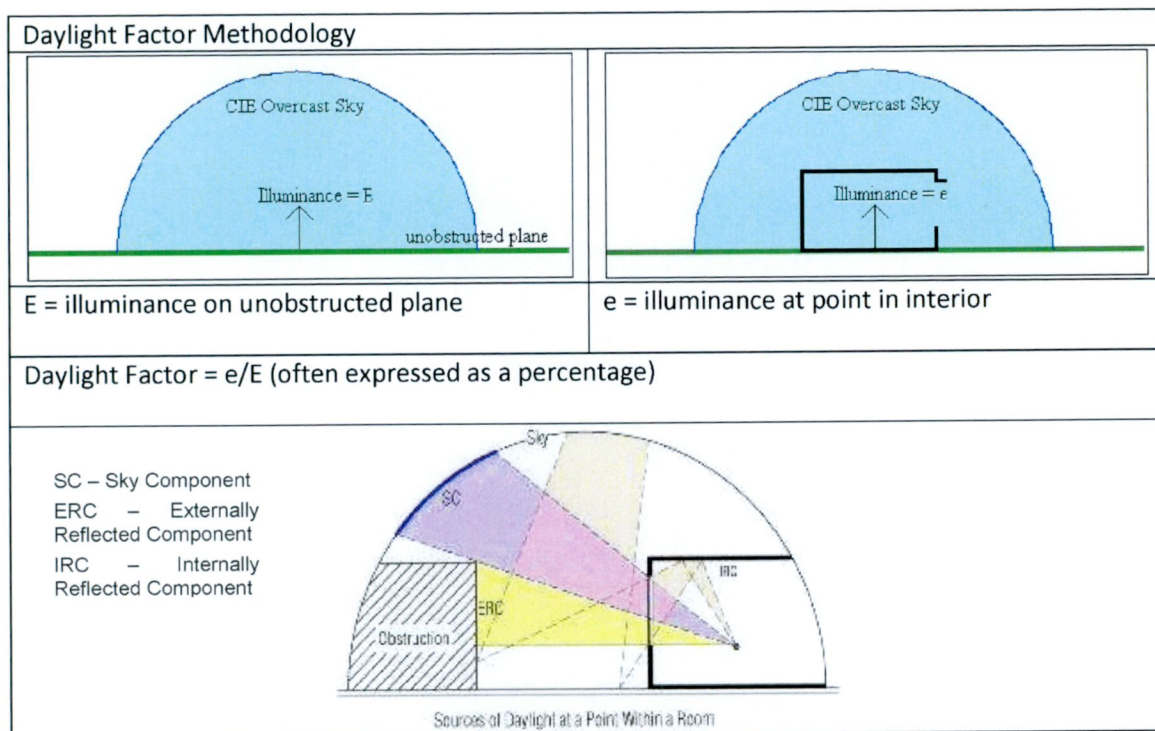
10 Daylight to Proposed Development

This section addresses daylight to the proposed apartments. The purpose of the ADF calculations is to quantify an overall percentage of units which exceeds the BRE recommendations.

10.1 Introduction to ADF

Daylight is constantly changing, so its level at a point in a building is usually defined as an average daylight factor (ADF).

This is the ratio of the indoor illuminance at the point in question to the outdoor unobstructed horizontal illuminance.



Both illuminances are measured under the same standard sky, a CIE overcast sky. Since the sun is in a particular position for only a short period each day, direct sunlight is excluded. Instead diffuse sunlight is used for average daylight calculations. Diffuse sunlight describes the sunlight that has been scattered by molecules and particles in the atmosphere but has still made it down to surface of the earth.

For average daylight factor there are three possible paths along which diffuse light can get into a room through glazed windows.

1. Light from the patch of sky visible at the point considered, is expressed as the sky component.

2. Light reflected from opposing exterior surfaces and then reaches the point, is expressed as the externally reflected component.
3. Light entering through the window but reaching the point only after reflection from internal surfaces, is expressed as the internally reflected component.

Average Daylight Factor is an average of all measured points within the space.

10.2 Reference and Metrics

The BRE guide states the following in Appendix C with respect to Average Daylight Factors (ADF):

C4 If a predominantly daylit appearance is required, then the ADF should be 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary electric lighting is provided. There are additional recommendations for dwellings of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. These additional recommendations are minimum values of ADF which should be attained even if a predominantly daylit appearance is not achievable.

Therefore, the recommended Average Daylight Factors (ADF) are summarized as follows:

- Bedrooms – 1.0%
- Living Rooms – 1.5%
- Kitchens – 2.0%

The BRE guide does not provide explicit guidance for an open space that is a combination of Living/Kitchen/Dining (L/K/D) functions. In addition, a separate document the “BS 8206-2:2008: Lighting for Buildings - Part 2: Code of Practice for Daylighting” focuses on internal daylighting performance and states:

“Where one room serves more than one purpose, the minimum average daylight factor should be that for the room type with the highest value. For example, in a space which combines a living room and a kitchen the minimum average daylight factor should be 2%.”

Although the above target is referenced within BS 8206-2:2008, it also states, “The aim of the standard is to give guidance to architects, builders and others who carry out lighting design. It is recognised that lighting is only one of many matters that influence fenestration. These include other aspects of environmental performance (such as noise, thermal equilibrium and the control of energy use), fire hazards, constructional requirements, the external appearance and the surroundings of the site. The best design for a building does not necessarily

incorporate the ideal solution for any individual function. For this reason, careful judgement should be exercised when using the criteria given in the standard for other purposes, particularly town planning.”

For the purposes of clarity, we have assessed all LKDs against the 2% ADF target. However, we have also assessed the LKDs against an alternative 1.5% ADF target which is outlined in Section 10.8.

10.3 Planning Authority Guidelines

The BRE guide notes that the *“advice is not mandatory and that the guide should not be seen as an instrument of planning policy”*. It should be noted when trying to achieve height and density within a development where deep plan single aspect combine modern flexible living spaces exist (in some situations with a balcony in place as well), it is very difficult to achieve the 2% ADF target across the whole space.

Therefore, when considering the modelling approach noted above, results should be interpreted with flexibility as noted in the BRE guide, *“Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design.”*

It should be noted for completeness, that there is a new standard for the assessment of daylight access within buildings entitled “IS EN 17037:2018: Daylight in Buildings”. This new standard is not currently directly referred within the ‘Urban Development and Building Heights’, guidelines for Planning Authorities 2018.

Whereas the BRE 209 or *BS 8206-2:2008* are currently referred within the Urban Development and Building Heights, guidelines for Planning Authorities 2018 and have been noted to be accepted by An Bord Pleanala.

10.4 Assumptions

The following settings are default settings within the software as prescribed within the “BS 8206-2:2008: Lighting for Buildings - Part 2: Code of Practice for Daylighting”.

- Sky Conditions: Standard CIE overcast sky
- Time (24hr): 12:00
- Date: 21st September
- Working Plane: 0.85m

The following surface reflectance values and model settings are used in the study – these are derived from discussions with the design team and aligned with material properties from “BS 8206-2:2008: Lighting for Buildings - Part 2: Code of Practice for Daylighting”:

Material Surface	Reflectance
External Wall – White Render/External Brick	0.6/0.4
Internal Partition – White Paint	0.85
Roof - Default	0.20
Ground - Default	0.20
Floor/Ceiling (Floor) – Light Veneers	0.40
Floor/Ceiling (Ceiling) - White Paint	0.85

Glazing Transmittance:

- Light Transmittance (default): 70%
- Window Frame thickness (From Architectural Information): 50 mm

10.5 Average Daylight Factor Results

The following floor plans illustrate the rooms that were tested to ascertain the Average Daylight Factors. Note, within the tables the code LKD equates to combined Living, Kitchen and Dining areas.

Please note, the “Comment” symbol in each of the tables represents the following:

BRE Guide / BS 8206-2:2008

- ✓ These rooms have an ADF greater than the recommended minimum values (2.0% for combined L/K/Ds and 1.0% for bedrooms) as stated within the BRE Guide.
- x/✓ The ADF in these rooms falls below the BRE recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with an alternative 1.5% ADF design value.
- x The ADF in these rooms falls below the BRE recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target or in the case of Bedrooms, is less than the 1% ADF target

10.5.1 Level 00



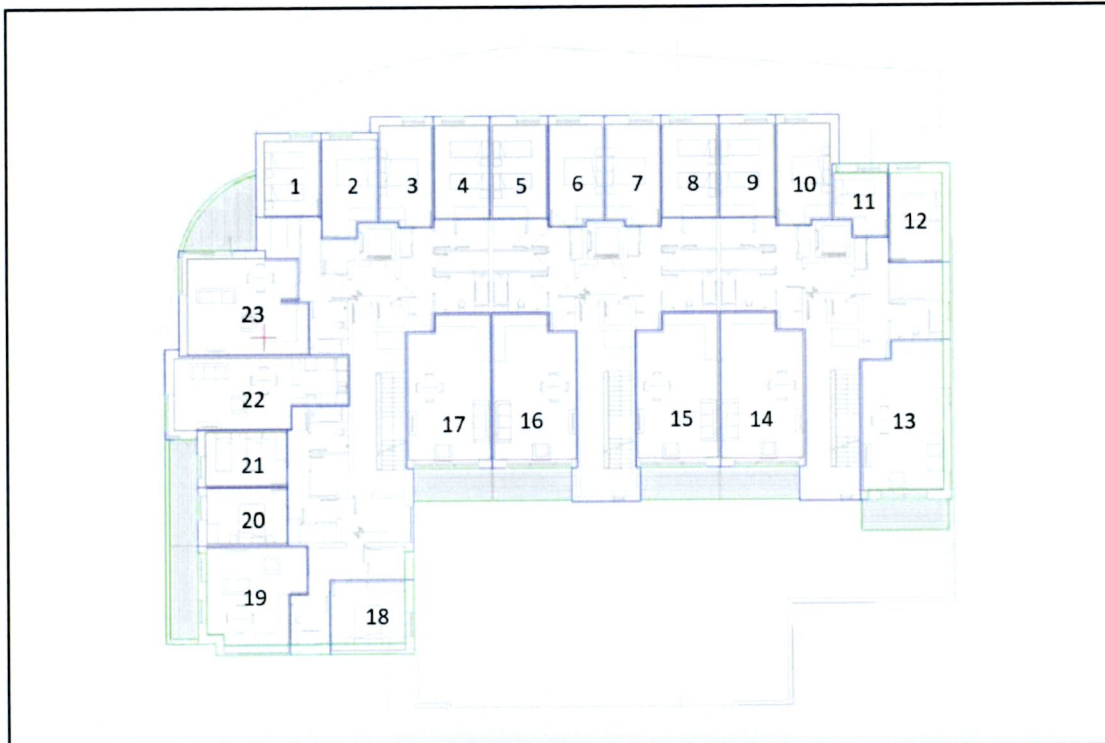
Ref.	Room Reference	Room Activity	Average Daylight Factor (%)	Comment
1	L00: A1_Bedroom	Bedroom	4.76	✓
2	L00: A1_LKD	LKD	2.94	✓
3	L00: A2_Bedroom 01	Bedroom	2.18	✓
4	L00: A2_Bedroom 02	Bedroom	2.23	✓
5	L00: A2_LKD	LKD	2.69	✓
6	L00: A3_Bedroom 01	Bedroom	2.00	✓
7	L00: A3_Bedroom 02	Bedroom	2.23	✓
8	L00: A3_LKD	LKD	2.99	✓
9	L00: A4_LKD	LKD	3.01	✓
10	L00: A4_Bedroom	Bedroom	1.93	✓

10.5.2 Level 01



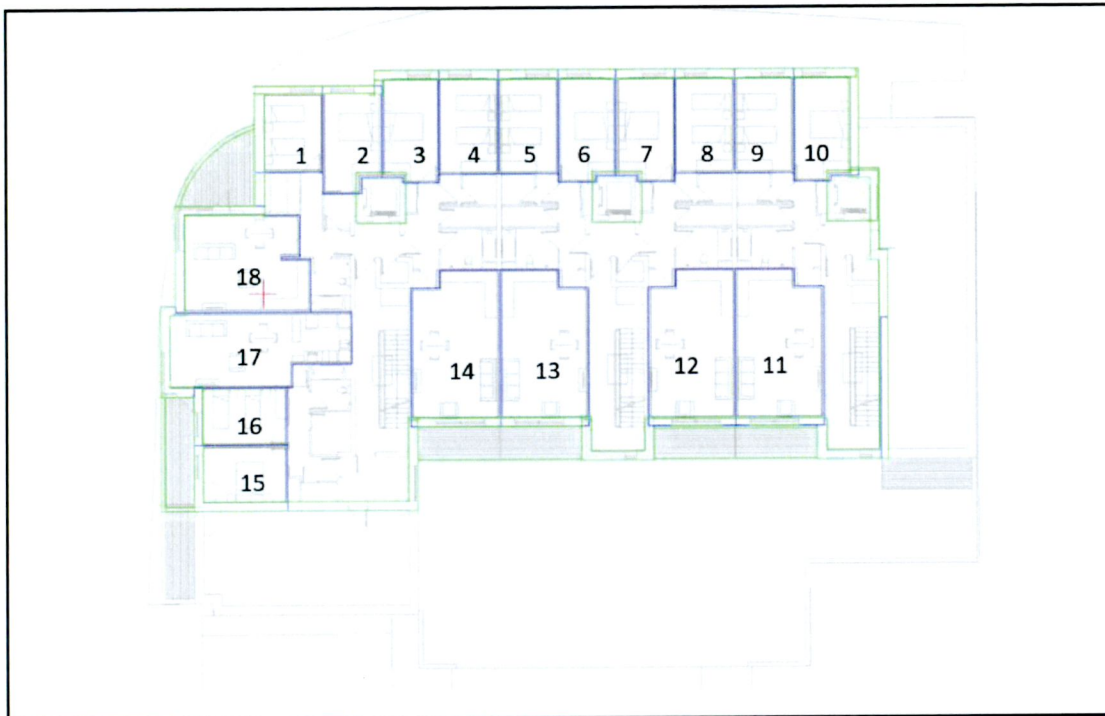
Ref.	Room Reference	Room Activity	Average Daylight Factor (%)	Comment
1	L01: A3_Bedroom 01	Bedroom	3.04	✓
2	L01: A3_Bedroom 02	Bedroom	3.01	✓
3	L01: A4_Bedroom_01	Bedroom	2.56	✓
4	L01: A4_Bedroom 02	Bedroom	2.57	✓
5	L01: A5_Bedroom 01	Bedroom	2.46	✓
6	L01: A5_Bedroom 02	Bedroom	2.66	✓
7	L01: A6_Bedroom 01	Bedroom	2.37	✓
8	L01: A6_Bedroom 02	Bedroom	2.48	✓
9	L01: A7_Bedroom_01	Bedroom	2.46	✓
10	L01: A7_Bedroom 02	Bedroom	2.55	✓
11	L01: A8_Bedroom 01	Bedroom	3.75	✓
12	L01: A8_Bedroom_02	Bedroom	2.54	✓
13	L01: A8_LKD	LKD	2.98	✓
14	L01: A7_LKD	LKD	2.04	✓
15	L01: A6_LKD	LKD	2.13	✓
16	L01: A5_LKD	LKD	1.63	x/✓
17	L01: A4_LKD	LKD	1.50	x/✓
18	L01: A1_Bedroom	Bedroom	1.89	✓
19	L01: A1_LKD	LKD	2.29	✓
20	L01: A2_Bedroom_01	Bedroom	1.86	✓
21	L01: A2_Bedroom_02	Bedroom	1.87	✓
22	L01: A2_LKD	LKD	2.36	✓
23	L01: A3_LKD	LKD	2.92	✓

10.5.3 Level 02



Ref.	Room Reference	Room Activity	Average Daylight Factor (%)	Comment
1	L02: A3_Bedroom 01	Bedroom	3.15	✓
2	L02: A3_Bedroom 02	Bedroom	2.97	✓
3	L02: A4_Bedroom_01	Bedroom	2.69	✓
4	L02: A4_Bedroom 02	Bedroom	2.72	✓
5	L02: A5_Bedroom 01	Bedroom	2.64	✓
6	L02: A5_Bedroom 02	Bedroom	2.60	✓
7	L02: A6_Bedroom 01	Bedroom	2.53	✓
8	L02: A6_Bedroom 02	Bedroom	2.65	✓
9	L02: A7_Bedroom_01	Bedroom	2.66	✓
10	L02: A7_Bedroom 02	Bedroom	2.51	✓
11	L02: A8_Bedroom 01	Bedroom	4.06	✓
12	L02: A8_Bedroom_02	Bedroom	2.77	✓
13	L02: A8_LKD	LKD	4.04	✓
14	L02: A7_LKD	LKD	2.06	✓
15	L02: A6_LKD	LKD	2.08	✓
16	L02: A5_LKD	LKD	2.07	✓
17	L02: A4_LKD	LKD	1.89	x/✓
18	L02: A1_Bedroom	Bedroom	2.14	✓
19	L02: A1_LKD	LKD	2.86	✓
20	L02: A2_Bedroom_01	Bedroom	1.74	✓
21	L02: A2_Bedroom_02	Bedroom	1.73	✓
22	L02: A2_LKD	LKD	2.17	✓
23	L02: A3_LKD	LKD	2.84	✓

10.5.4 Level 03



Ref.	Room Reference	Room Activity	Average Daylight Factor (%)	Comment
1	L03: A3_Bedroom 01	Bedroom	3.31	✓
2	L03: A3_Bedroom 02	Bedroom	3.01	✓
3	L03: A3_Living	Bedroom	2.85	✓
4	L03: A5_Bedroom 01	Bedroom	2.88	✓
5	L03: A5_Bedroom 02	Bedroom	2.82	✓
6	L03: A4_Bedroom 03	Bedroom	2.76	✓
7	L03: A6_Bedroom 01	Bedroom	2.70	✓
8	L03: A6_Bedroom 02	Bedroom	2.83	✓
9	L03: A7_Bedroom_01	Bedroom	2.85	✓
10	L03: A7_Bedroom_02	Bedroom	2.56	✓
11	L03: A7_LKD	LKD	2.92	✓
12	L03: A6_LKD	LKD	2.94	✓
13	L03: A5_LKD	LKD	2.86	✓
14	L03: A4_LKD	LKD	2.72	✓
15	L03: A2_Bedroom 01	Bedroom	2.77	✓
16	L03: A2_Bedroom_02	Bedroom	2.98	✓
17	L03: A2_LKD	LKD	2.69	✓
18	L03: A3_LKD	LKD	4.54	✓