

16 Daylight and Sunlight

16.1 Introduction

This chapter details the analysis undertaken to quantify the Sunlight and Daylight performance of the proposed St. Teresa's, Temple Hill, Monkstown, Blackrock, Co. Dublin development. The report focuses on measuring the daylight impact to the surrounding dwellings when compared to the existing situation. It also considers the impact to daylight and sunlight when considering the proposed design itself. The following can be concluded based on the preliminary studies undertaken:

The focus of the study considers the following items with respect to the proposed new development:

- **Shadow Analysis** - A visual representation analysing any potential changes that may arise from the proposed development on to the neighbouring existing developments.
- **Daylight Analysis of Existing Buildings** - via consideration of Vertical Sky Component (VSC).
- **Annual Probable Sunlight Hours** - via consideration of sunlight received to existing properties. (where required) – existing and proposed
- **Sunlight to the Existing Neighbouring & Proposed Amenity Spaces** – via sunlight hours simulation on the 21st of March.
- **Average Daylight Factors**: via consideration of the Average Daylight Factor (ADF) for the proposed development.

The analysis was completed using IES VE software and the assessment based on recommendations outlined in the BRE 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' by Paul Littlefair, 2011 sometimes referred to as BRE Digest 209 and the "BS 8206-2:2008: Lighting for Buildings - Part 2: Code of Practice for Daylighting".

The assessment of impacts on daylight and sunlight access referred to the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* prepared by the Environmental Protection Agency (2017). The list of definitions given below is taken from Table 3.3 in this document. Some commentary is also added on what these definitions might imply in the case of impact on daylight and sunlight access.

Imperceptible Impact: An effect capable of measurement but without noticeable consequences.

Not significant: An effect which causes noticeable changes in the character of the environment but without significant consequences.

Slight Impact: An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate Impact: An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.

Significant Impact: An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.

Very Significant: An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.

Profound Impact: An effect which obliterates sensitive characteristics.

The range of possible impacts listed above are referred to when discussing the results of the daylight analysis.

16.2 Study Methodology

16.2.1 Orientation

The model orientation has been taken from drawings provided by the Architect with the resulting angle illustrated below used in the analysis.

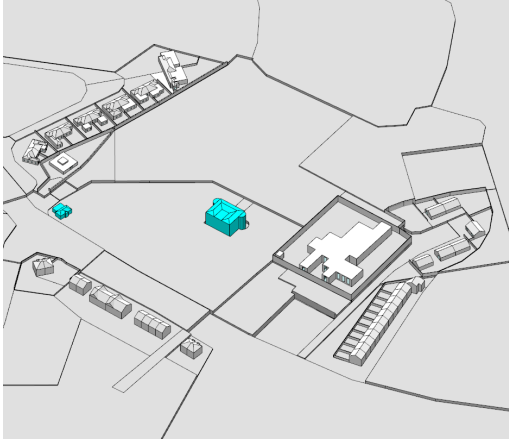

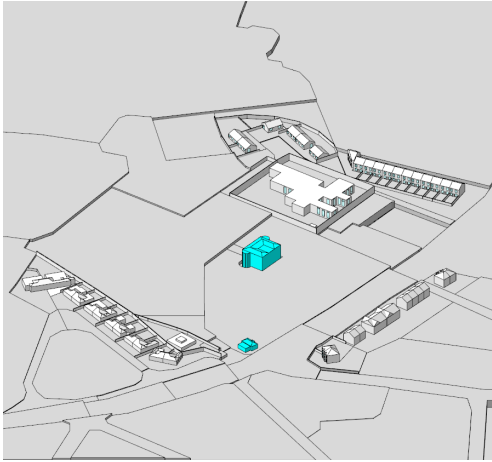
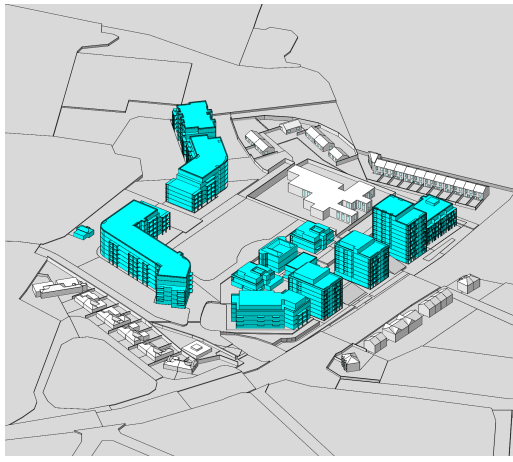


Orientation

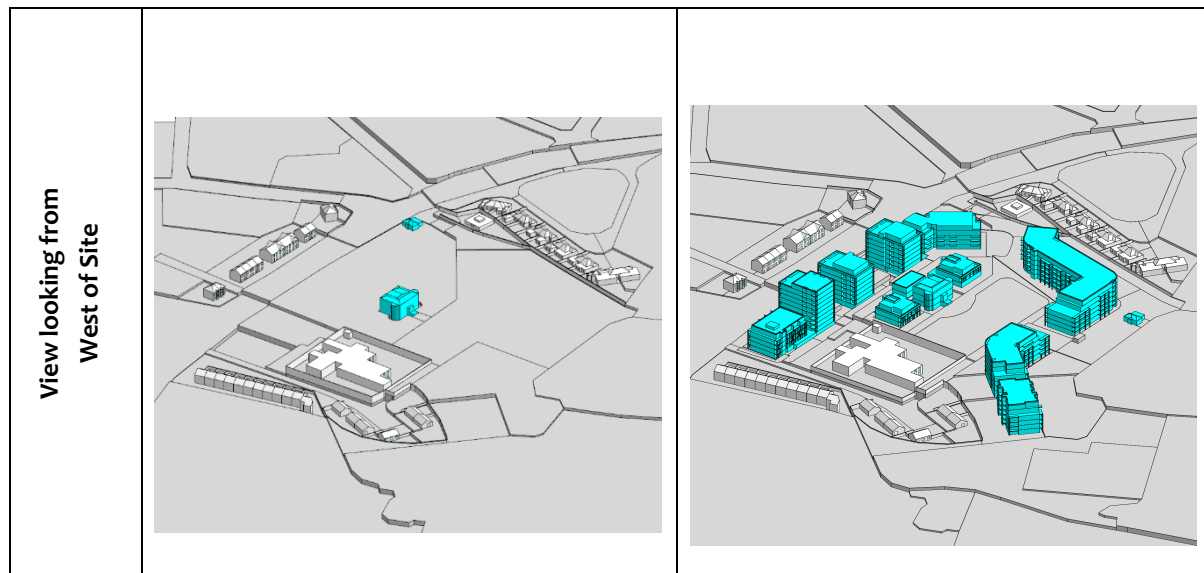




16.2.2 Proposed Model

The following images illustrate the model created for the daylight, sunlight and overshadowing analysis:

	Existing Scheme	Proposed Scheme
View looking from North of Site		
View looking from East of Site		
View looking from South of Site		



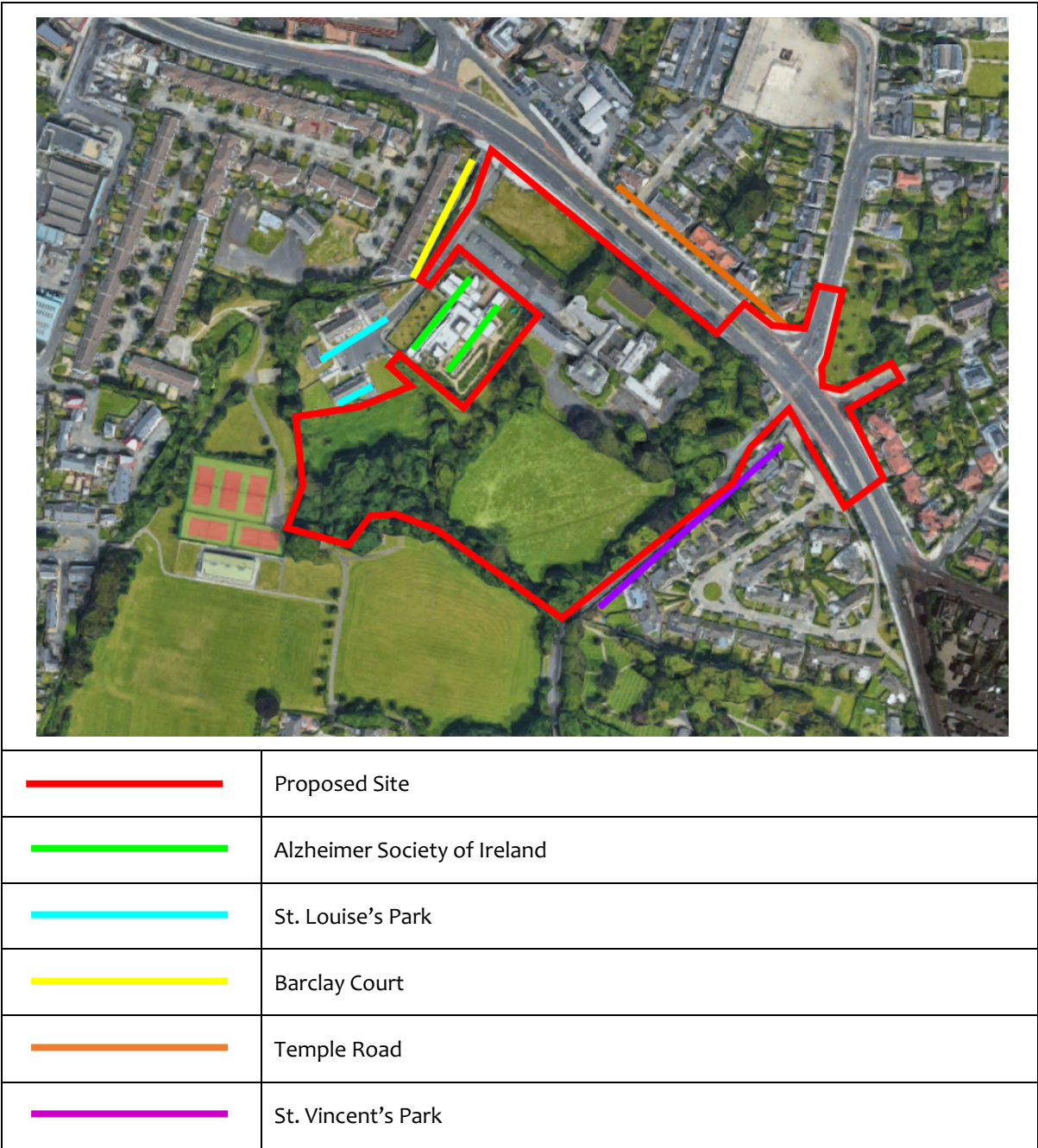
16.2.3 BRE – Site Layout Planning for Daylight and Sunlight (2nd edition)

Access to daylight and sunlight is a vital part of a healthy environment. Sensitive design should provide sufficient daylight and sunlight to new housing while not obstructing light to existing homes nearby.

The BRE Report, Site layout planning for daylight and sunlight: a guide to good practice (BR209), advises on planning developments for good access to daylight and sunlight, and is widely used by local authorities to help determine the impacts of new developments. This guide was used in conjunction with BS 8206-2:2008: Lighting for Buildings - Part 2: Code of Practice for Daylighting. In this context, it should be noted that the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2018) require appropriate and reasonable regard to be had to the BRE & BS 8206-2:2008 guidelines.

16.3 The Existing Receiving Environment (Baseline)

To help understand the potential impact to surrounding buildings, potential sensitive receptors were identified as illustrated below.



16.4 Characteristics of the Proposed Development

We, Oval Target Limited intend to apply to An Bord Pleanála for planning permission for a Strategic Housing Development on a site of c. 3.9 ha at 'St. Teresa's House' (A Protected Structure) and 'St. Teresa's Lodge' (A Protected Structure) Temple Hill, Monkstown, Blackrock, Co. Dublin.

The development will consist of a new residential and mixed use scheme of 493 residential units and associated residential amenities, a childcare facility and café in the form of (a) a combination of new apartment buildings (A1-C2 and D1 – E2); (b) the subdivision, conversion and re-use of 'St. Teresa's House' (Block H); and (c) the dismantling, relocation and change of use from residential to café of 'St. Teresa's Lodge' (Block G) within the site development area. A detailed development description is now set out as follows:

The proposal provides for the demolition (total c. 207 sq m GFA) of (a) a single storey return (approx. 20 sq m) along the boundary with The Alzheimer's Society of Ireland; (b) the ground floor switch room (approx. 24.9sq.m.), (c) ground floor structures northwest of St. Teresa's House (26.8sq.m), (d) basement boiler room northwest of St. Teresa's House (17.0 sq.m), (e) ground floor structures northeast of St. Teresa's house (22.0sq.m.) (f) basement stores northeast of St. Teresa's house (67.8 sq.m.) and (g) a non - original ground floor rear extension (approx. 28.5 sq m) associated with the Gate Lodge.

The new development will provide for the construction of a new mixed use scheme of 487 no. apartment units in the form of 11 no. new residential development blocks (Blocks A1-C2 and D1 – E2) as follows:

- Block A1 (5 storeys) comprising 37 no. apartments (33 no. 1 bed units and 4 no. 2 bed units)
- Block B1 (10 storeys) comprising 55 no. apartments (37 no. 1 bed units, 10 no. 2 bed units, 8 no. 3 bed units)
- Block B2 (8 storeys) comprising 42 no. apartments (28 no. 1 bed units, 9 no. 2 bed units and 5 no. 3 bed units)
- Block B3 (8 storeys) comprising 42 no. apartments (28 no. 1 bed units, 9 no. 2 bed units and 5 no. 3 bed units)
- Block B4 (5 storeys) comprising 41 no. apartments (4 no. studio units, 4 no. 1 bed units, 27 no. 2 bed units and 6 no. 3 bed units)
- Block C1 (3 storeys) comprising 10 no. apartments (1 no. studio units, 3 no. 1 bed units and 6 no. 2 beds)
- Block C2 (3 storeys) comprising 6 no. apartments (2 no. 1 bed units and 4 no. 2 bed units) together with a creche facility of 392 sq m at ground floor level and outdoor play area space of 302 sq m.
- Block C3 (1 storey over basement level) comprising residential amenity space of 451 sq m.
- Block D1 (6 storeys) comprising 134 no. apartments (12 no. studio units, 22 no. 1 bed units, 90 no. 2 bed units and 10 no. 3 bed units).
- Block E1 (6 storeys) comprising 70 no. apartment units (34 no. 1 bed units, 26 no. 2 bed units and 10 no. 3 bed units).
- Block E2 (6 storeys) comprising 50 units (1 no. studio units, 29 no. 1 bed units, 18 no. 2 bed units and 2 no. 3 bed units).

Each new residential unit has associated private open space in the form of a terrace / balcony.

The development also provides for Block H, which relates to the subdivision and conversion of 'St. Teresa's House' (3 storeys) into 6 no. apartments (5 no. 2 bed units and 1 no. 3 bed unit) including the demolition of non-original additions and partitions, removal and relocation of existing doors, re-instatement of blocked up windows, replacement of windows, repair and refurbishment of joinery throughout and the upgrade of roof finishes and rainwater goods where appropriate.

It is also proposed to dismantle and relocate 'St. Teresa's Lodge' (1 storey) from its current location to a new location, 180 m south west within the development adjacent to Rockfield Park. St. Teresa's Lodge (Block G) will be deconstructed in its original location and reconstructed in a new location using original roof timbers, decorative elements and rubble stonework, with original brickwork cleaned and re-used where appropriate.

It is also proposed to dismantle and relocate 'St. Teresa's Lodge' (1 storey - gross floor area 69.63sq m) from its current location to a new location, 180 m south west within the development adjacent to Rockfield Park. St. Teresa's Lodge (Block G) will be deconstructed in its original location and reconstructed in a new location using original roof timbers, decorative elements and rubble stonework, with original brickwork cleaned and re-used where appropriate. A non - original extension (approx. 28.5 sq m) is proposed for demolition. The

current proposal seeks a new extension of this building (approx. 26.8 sq m) and a change of use from residential to café use to deliver a Part M compliant single storey building of approx. 67.4 sq m

Total Open space (approx. 15,099.7 sq m) is proposed as follows: (a) public open space (approx. 11,572.3 sq m) in the form of a central parkland, garden link, woodland parkland (incorporating an existing folly), a tree belt; and (b) residential communal open space (approx. 3,527.4 sq m) in the form of entrance gardens, plazas, terraces, gardens and roof terraces for Blocks B2 and B3. Provision is also made for new pedestrian connections to Rockfield Park on the southern site boundary and Temple Hill along the northern site boundary.

Basement areas are proposed below Blocks A1, B1 to B4 and D1 (c. 7,295 sq. m GFA). A total of 252 residential car parking spaces (161 at basement level and 91 at surface level); 1056 bicycle spaces (656 at basement level and 400 at surface level); and 20 motorcycle spaces at basement level are proposed. 8 no. car spaces for creche use are proposed at surface level.

The proposal also provides for further Bin Storage areas, Bike Storage areas, ESB substations and switch rooms with a combined floor area of 356.2 sq m at surface level.

The development also comprises works to the existing entrance to St. Teresa's; the adjoining property at 'Carmond'; and residential development at St. Vincent's Park from Temple Hill (N31/R113). Works include the realignment and upgrade of the existing signalised junction and associated footpaths to provide for improved and safer vehicular access/egress to the site and improved and safer access/egress for vehicular traffic to/from the property at 'Carmond' and the adjoining residential development at St Vincent's Park.

Emergency vehicular access and pedestrian/cyclist access is also proposed via a secondary long established existing access point along Temple Hill. There are no works proposed to the existing gates (Protected Structure) at this location.

The associated site and infrastructural works include provision for water services; foul and surface water drainage and connections; attenuation proposals; permeable paving; all landscaping works including tree protection; green roofs; boundary treatment; internal roads and footpaths; and electrical services including solar panels at roof level above Blocks A1, B1 - B4, C1-C3, D1, E1, E2.

16.5 Potential Impact of the Proposed Development

Construction Phase

The analysis summarises both the daylight and sunlight access to the proposed development and the impact to existing adjacent properties as a result of the proposed development. It is considered that during the construction phase there will be no impacts experienced in relation to daylight and sunlight to the proposed development, and the impact to the existing adjacent properties will be imperceptible.

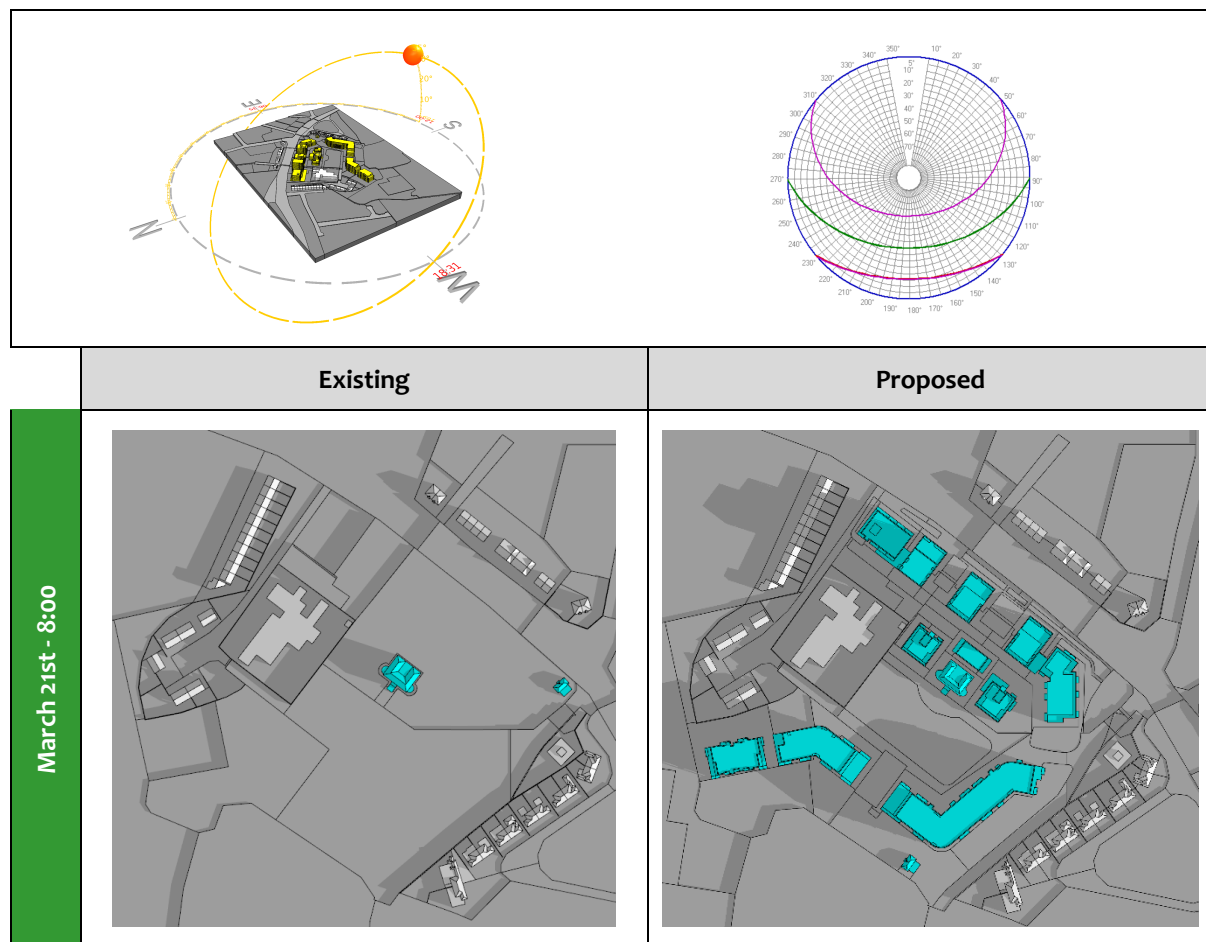
Operational Phase

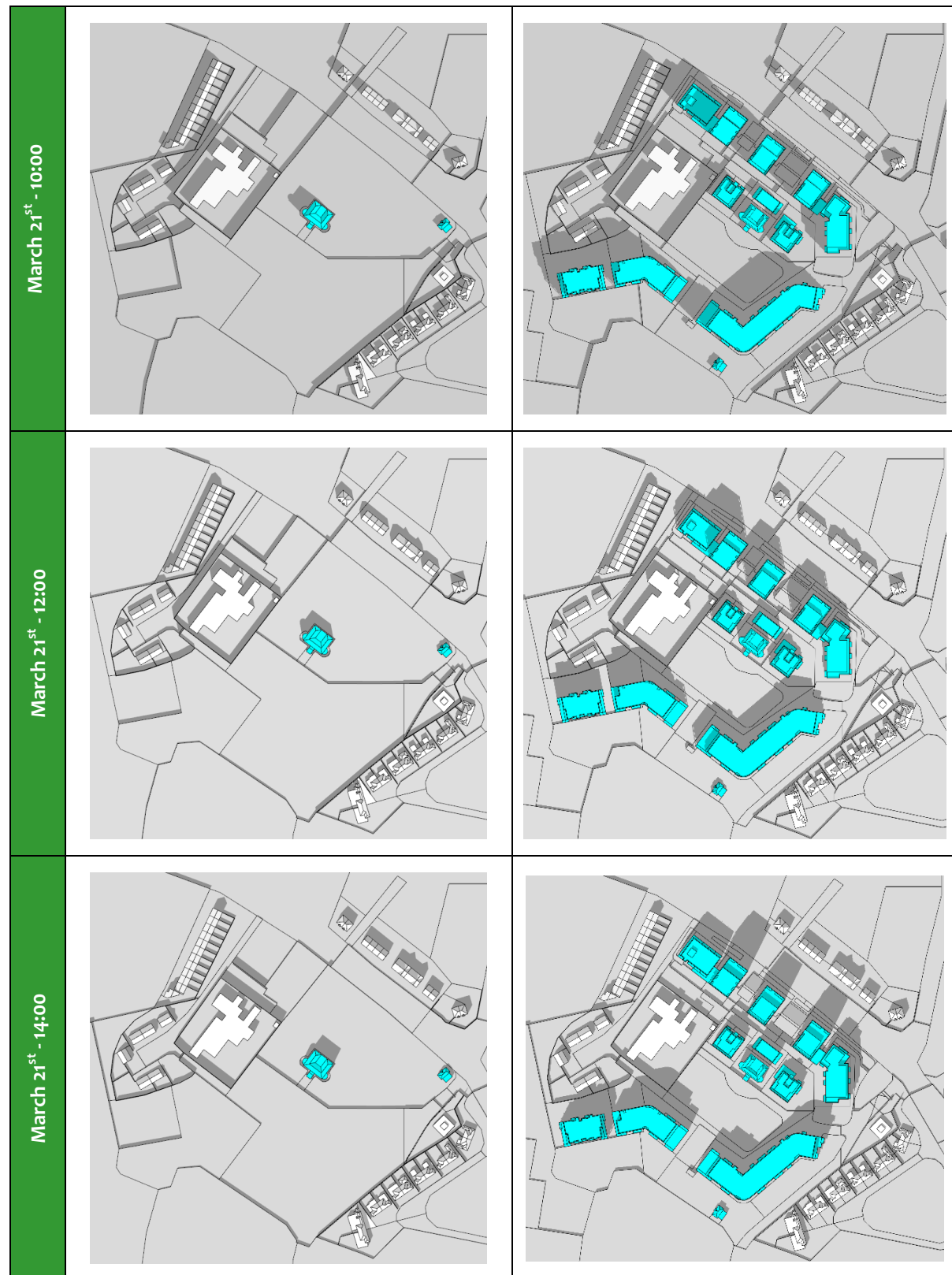
In order to understand the impact the proposed development will have during the operational phase, the following sections summarise the following studies that were undertaken:

- Overshadowing analysis
- Daylight analysis of existing buildings (VSC)
- Annual probably sunlight hours assessment (APSH) – existing and proposed
- Sunlight access to the existing and proposed amenity spaces
- Average Daylight Factor (ADF)

16.5.1 Overshadowing Analysis

16.5.1.1 Plan View – March 21st

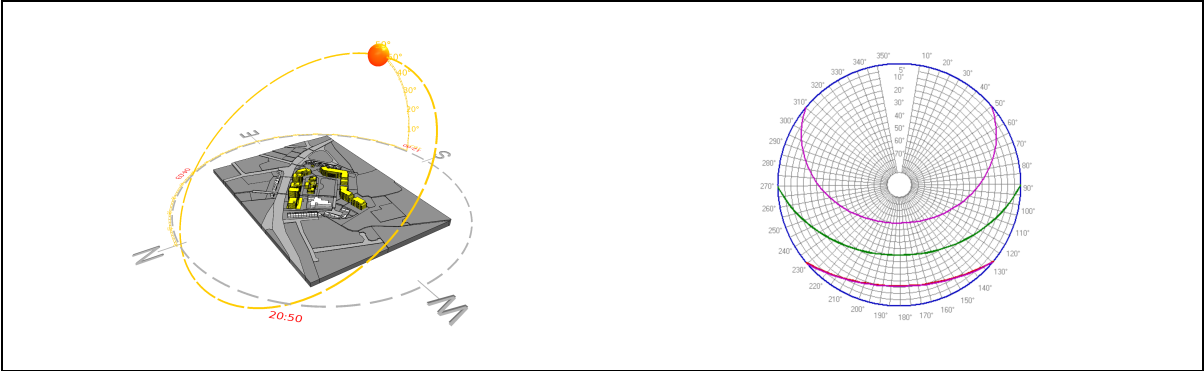




March 21st - 16:00

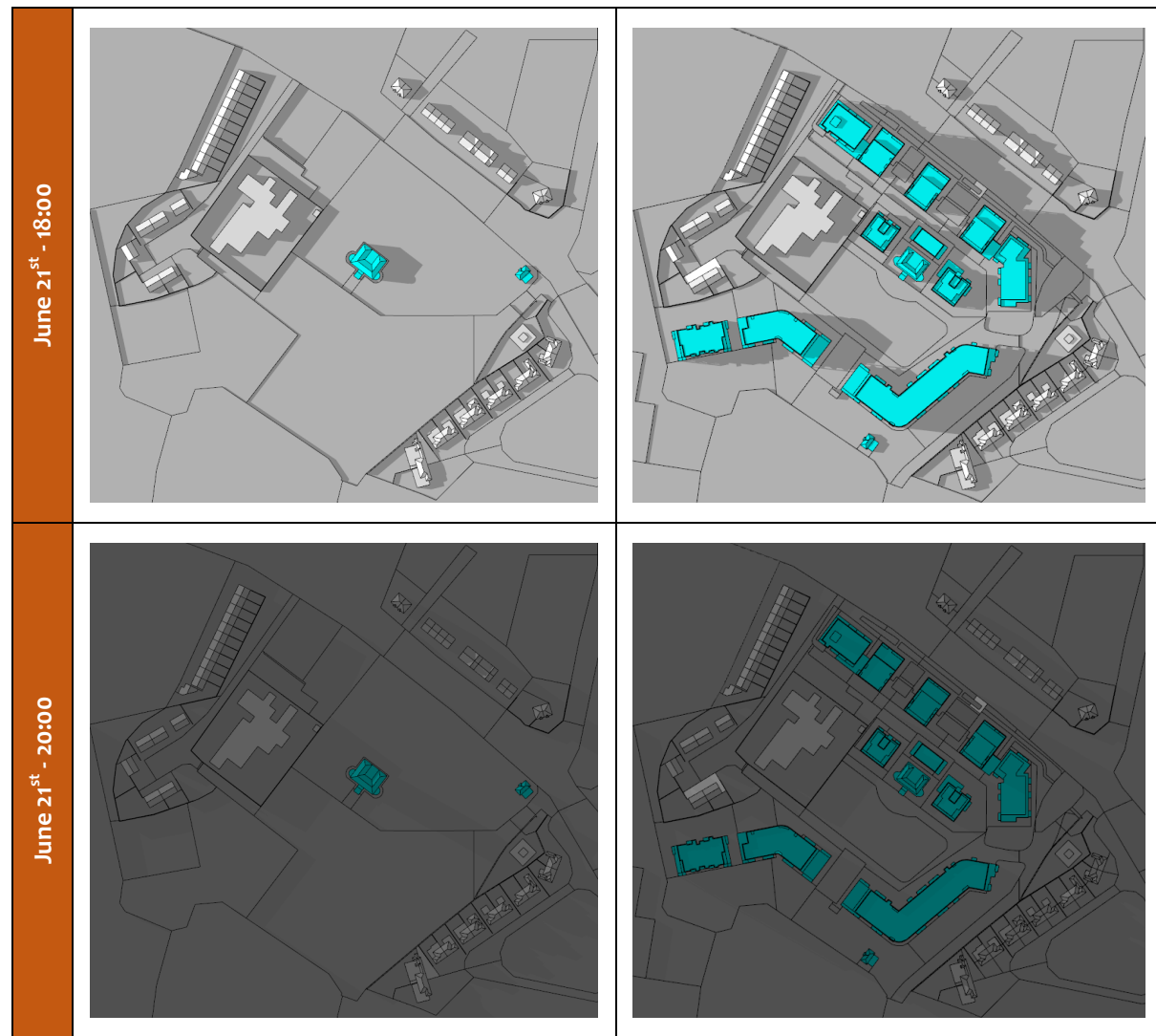


16.5.1.2 June 21st

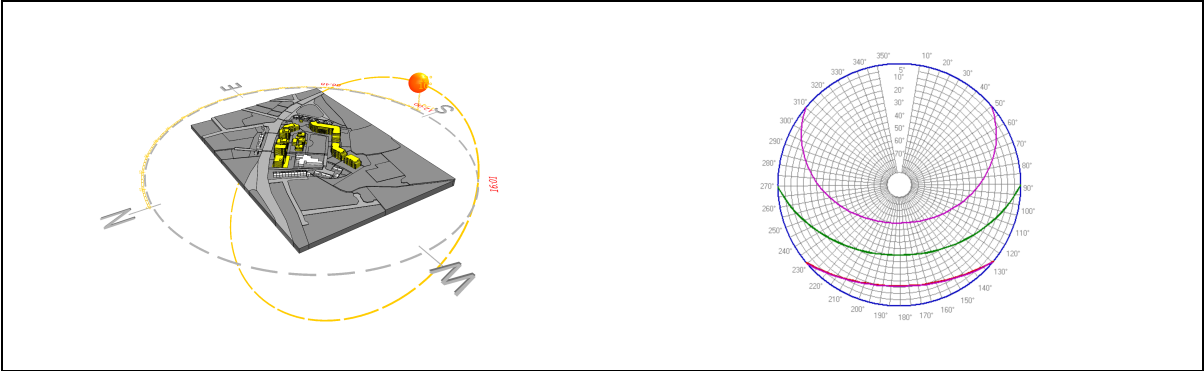


	Existing	Proposed
June 21st - 8:00		
June 21 st - 10:00		

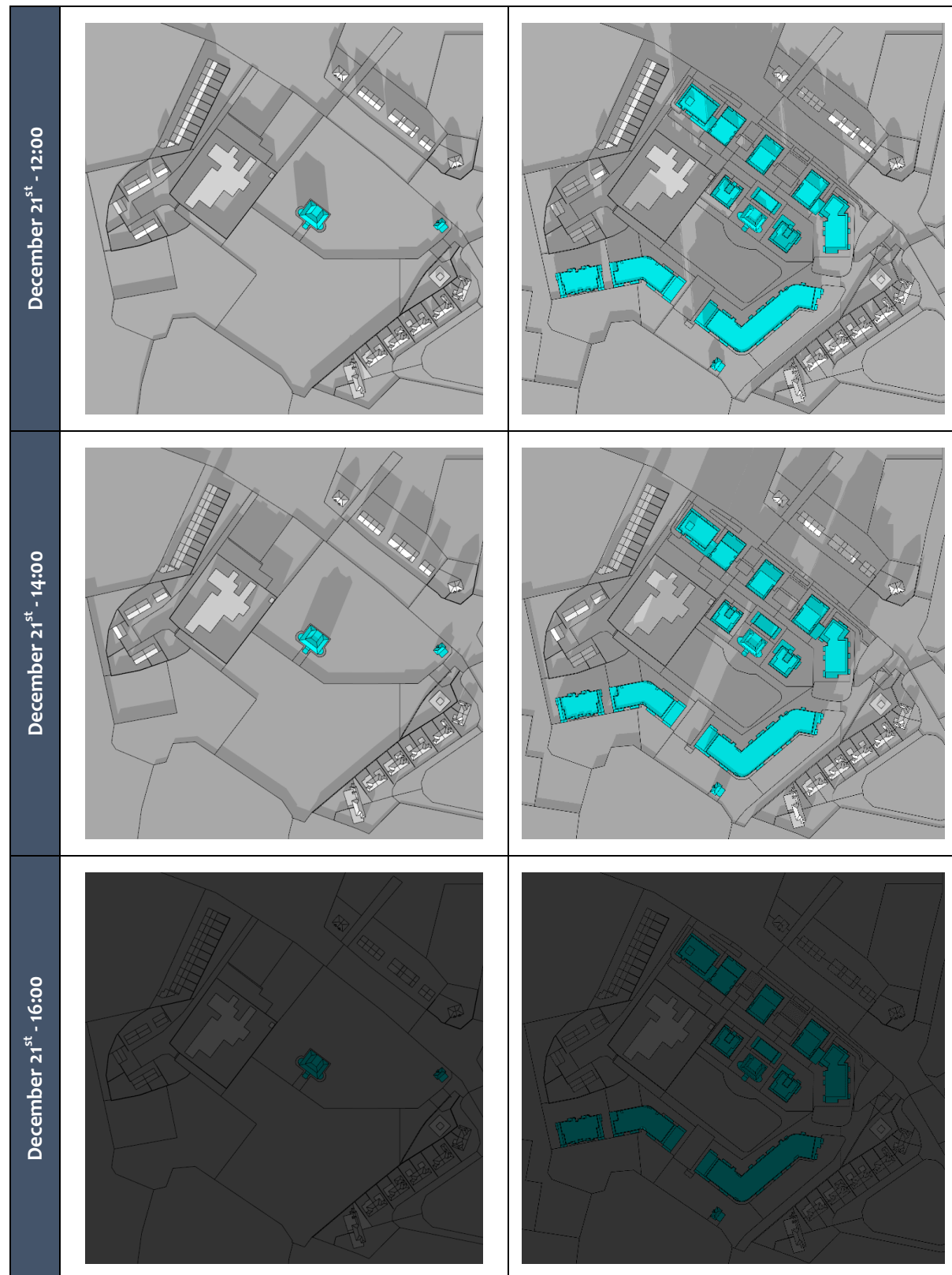




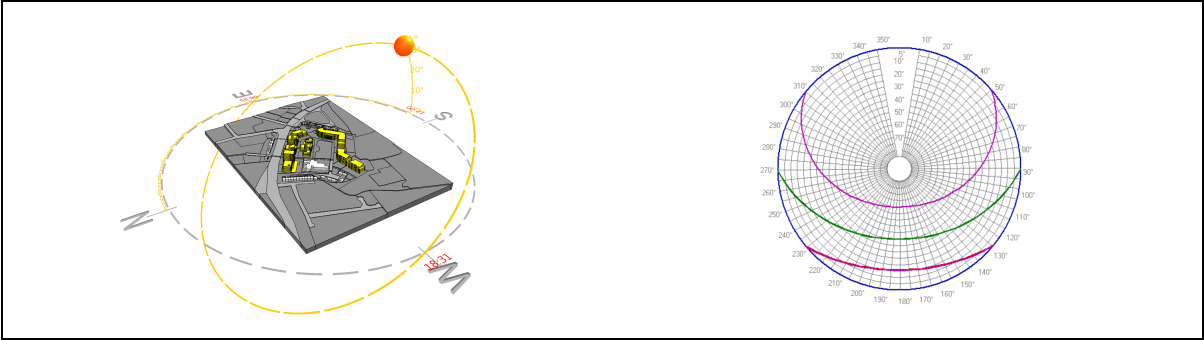
16.5.1.3 December 21st




	Existing	Proposed
December 21st - 8:00		
December 21 st - 10:00		



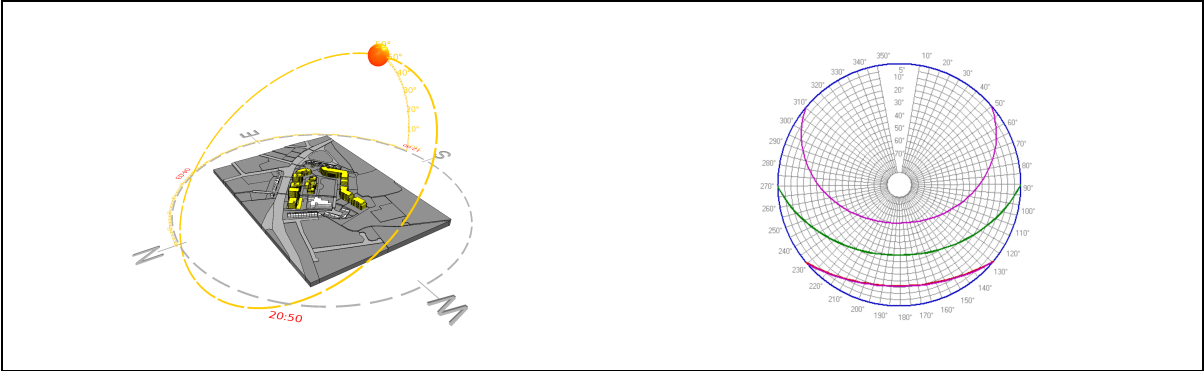
16.5.1.4 3D View – March 21st



	Existing	Proposed
March 21st - 8:00	<p>A 3D perspective view of the existing site at 8:00 on March 21st. The site is mostly flat with some low-rise buildings and a parking lot. A small cyan-colored building is visible in the center.</p>	<p>A 3D perspective view of the proposed site at 8:00 on March 21st. The site is developed with several multi-story buildings, including a large L-shaped building in the foreground. The cyan-colored building is still visible in the center.</p>
March 21 st - 10:00	<p>A 3D perspective view of the existing site at 10:00 on March 21st. The site is mostly flat with some low-rise buildings and a parking lot. A small cyan-colored building is visible in the center.</p>	<p>A 3D perspective view of the proposed site at 10:00 on March 21st. The site is developed with several multi-story buildings, including a large L-shaped building in the foreground. The cyan-colored building is still visible in the center.</p>

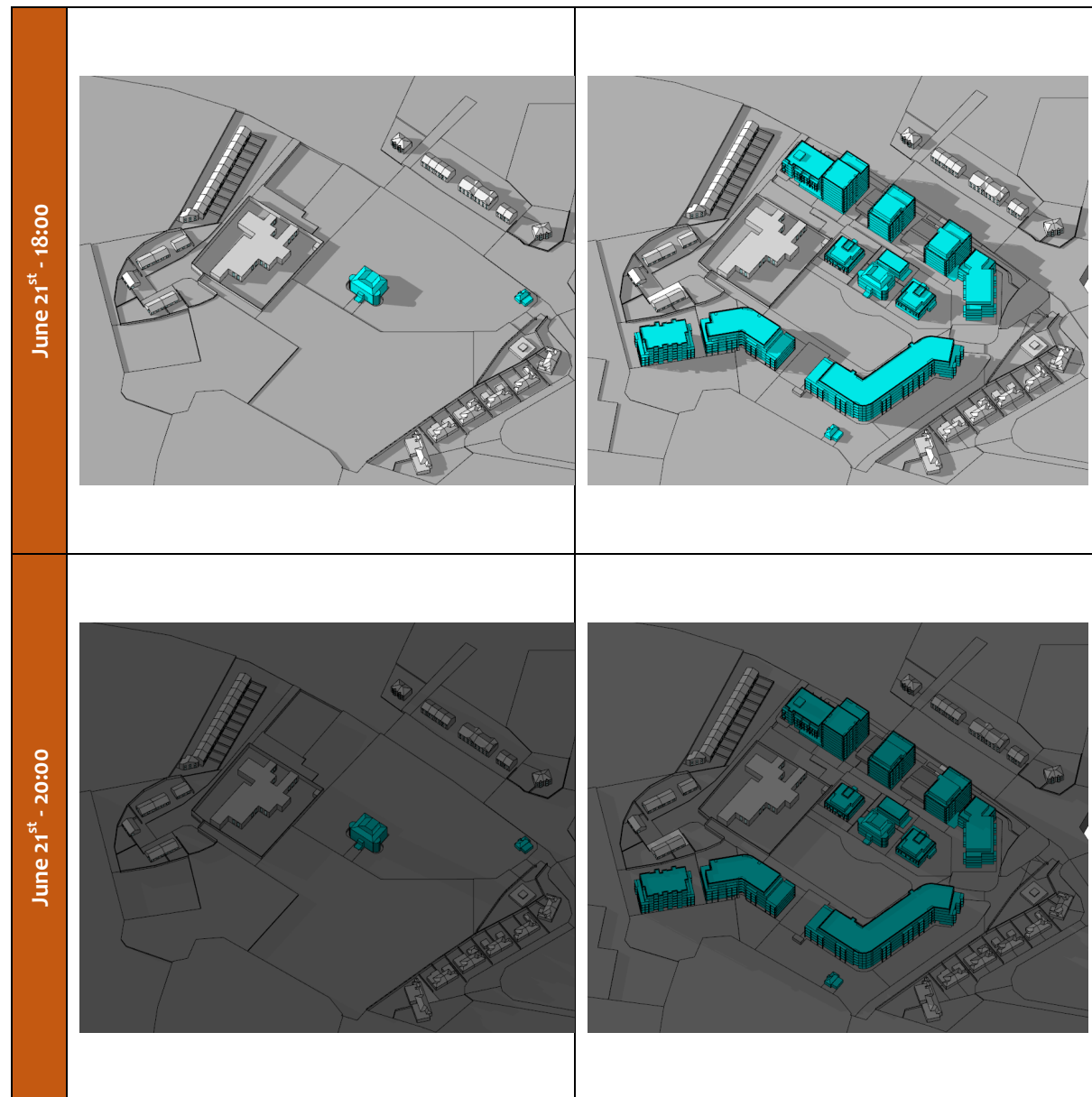
<p>March 21st - 12:00</p>		
<p>March 21st - 14:00</p>		
<p>March 21st - 16:00</p>		

16.5.1.5 June 21st

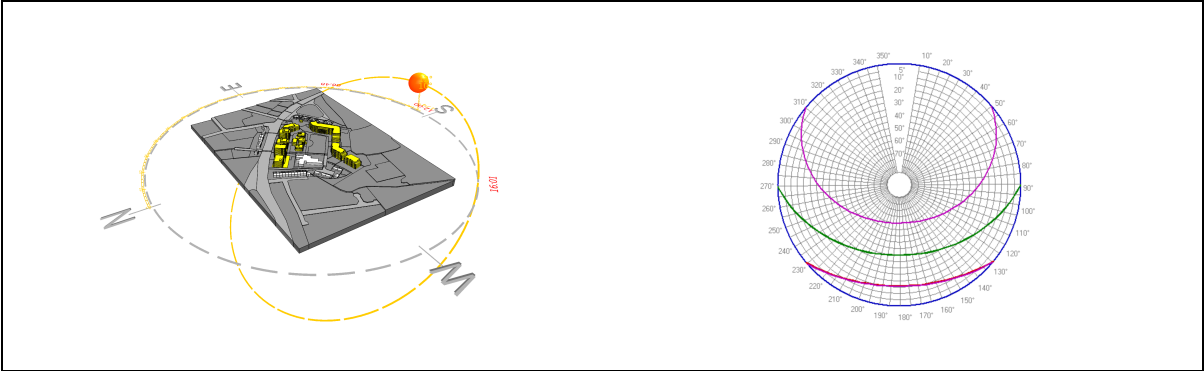


	Existing	Proposed
June 21st - 8:00		
June 21 st - 10:00		





16.5.1.6 December 21st



	Existing	Proposed
December 21st - 8:00	<p>An aerial photograph of the site showing the existing building complex. The buildings are rendered in a dark grey color. The surrounding area is also shown in dark grey, with some lighter grey areas representing roads and parking lots.</p>	<p>An aerial photograph of the site showing the proposed building complex. The buildings are rendered in a dark grey color. The surrounding area is also shown in dark grey, with some lighter grey areas representing roads and parking lots.</p>
December 21st - 10:00	<p>An aerial photograph of the site showing the existing building complex. The buildings are rendered in a dark grey color. The surrounding area is also shown in dark grey, with some lighter grey areas representing roads and parking lots.</p>	<p>An aerial photograph of the site showing the proposed building complex. The buildings are rendered in a dark grey color. The surrounding area is also shown in dark grey, with some lighter grey areas representing roads and parking lots.</p>

December 21 st - 12:00		
December 21 st - 14:00		
December 21 st - 16:00		

16.5.1.7 Discussion

The shadow analysis shows different shadows being cast at some times of the year for the proposed scheme.

St Louise's Park:

Additional overshadowing noted from the proposed development during March and December. No additional shading noted in June during the summer months. As outlined in the sunlight analysis section, the garden amenities and playground will continue to receive above the recommended levels of sunlight and as such, overshadowing should not affect the quality of these amenity spaces.

Alzheimer Society of Ireland:

Additional overshadowing noted from the proposed development during the mornings of March and December. No additional shading noted in June during the summer months. As outlined in the sunlight analysis section, this amenity space will continue to receive above the recommended levels of sunlight and as such, overshadowing should not affect the quality of this amenity space.

Barclay Court:

Additional overshadowing noted from the proposed development during the mornings of March and December. No additional shading noted in June during the summer months. As outlined in the sunlight analysis section, the garden amenities and playground will continue to receive above the recommended levels of sunlight and as such, overshadowing should not affect the quality of these amenity spaces.

Temple Road:

Additional overshadowing noted from the proposed development during the afternoon in March (1600) and December (1200 – 1600). No additional shading noted in June during the summer months. As outlined in the sunlight analysis section, the garden amenities and playground will continue to receive above the recommended levels of sunlight and as such, overshadowing should not affect the quality of these amenity spaces.

St Vincent's Park:

No additional overshadowing noted from the proposed development throughout the year to these existing dwellings. Should we not be analysing 1800 and 2000 during summer months?

The potential impact is quantified via both the Daylight Analysis of Existing Buildings and the Sunlight to Existing amenities sections within this report. When collating the results from the VSC (Daylight to existing buildings) analysis and the Sunlight to Existing dwellings the overall impact of the proposed development on the surrounding adjacent buildings can be considered not significant (See section 16.1 for detailed description).

16.5.2 Daylight Analysis of Existing Buildings

16.5.2.1 Guidance Requirements

When designing a new development, it is important to safeguard the daylight to nearby buildings. The BRE's 2011 guidance provide numerical values that are purely advisory. Different criteria may be used based on the requirements for daylighting in an area viewed against other site layout constraints. Another issue is whether the Existing building is itself a good neighbour, standing a reasonable distance from the boundary and taking no more than its fair share of light. Any reduction in the total amount of skylight can be calculated by finding the vertical sky component at the centre of key reference points. The vertical sky component definition from the BRE's 2011 is described below:

Vertical sky component (VSC)

Ratio of that part of illuminance, at a point on a given vertical plane, that is received directly from a CIE standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. Usually the 'given vertical plane' is the outside of a window wall. The VSC does not include reflected light, either from the ground or from other buildings.

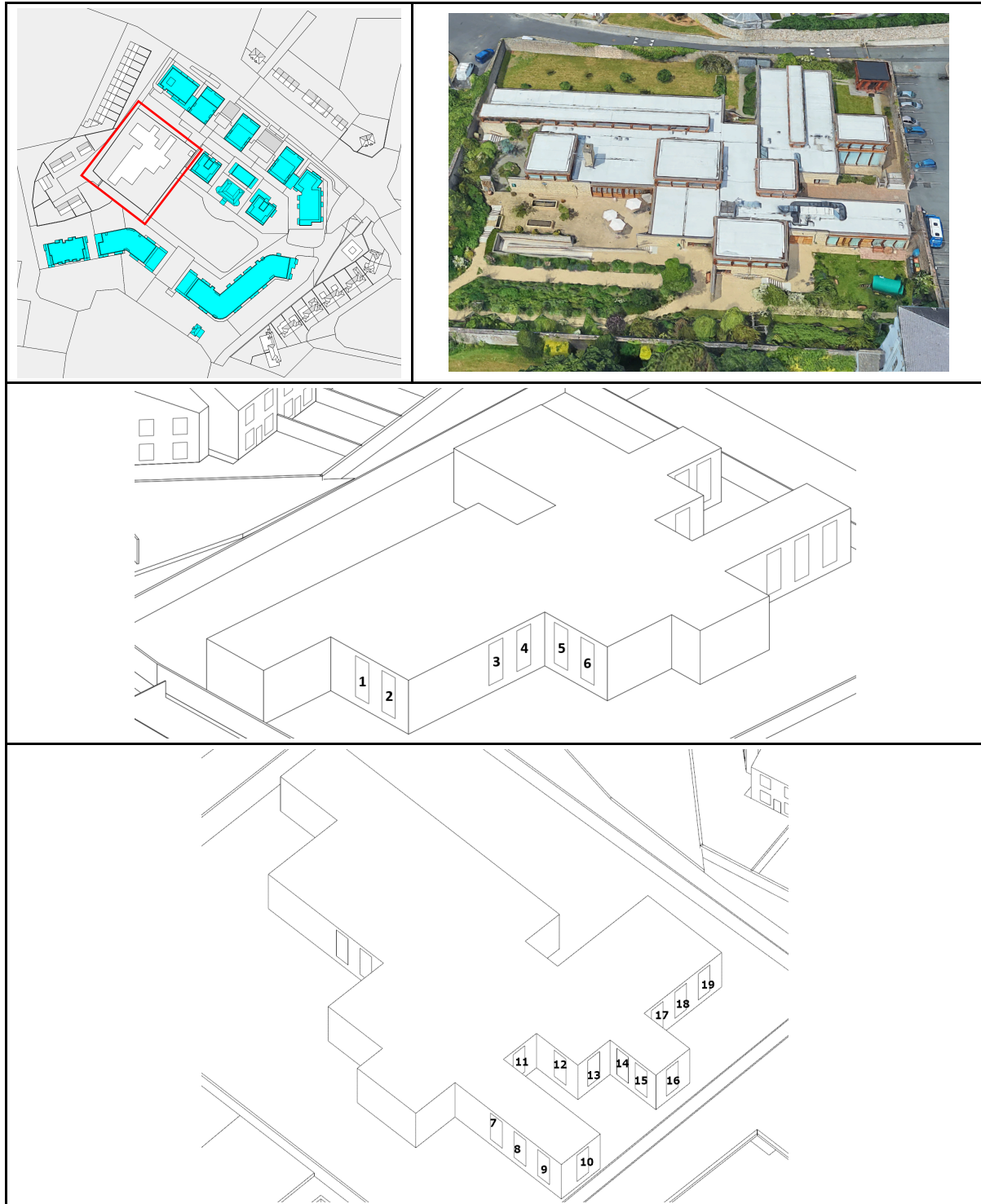
The maximum possible VSC value for an opening in a vertical wall, assuming no obstructions, is 40%. This VSC at any given point can be tested in RadianceIES, a module of IES VE.

For typical Schemes the BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight which states the following in Section 2.2.7:

2.2.7 If this VSC is greater than 27% then enough skylight should still be reaching the window of the existing building. Any reduction below this level should be kept to a minimum. If the VSC, with the new development in place, is both less than 27% and less than 0.8 times its former value, occupants of the existing building will notice the reduction in the amount of skylight. The area lit by the window is likely to appear more gloomy, and electric lighting will be needed more of the time.

As such this study will compare the Existing Situation and Proposed development and consider whether any reduction will be greater than 27% or less than 0.8 times its former value (that of the existing situation).

16.5.2.1 Alzheimer Society of Ireland

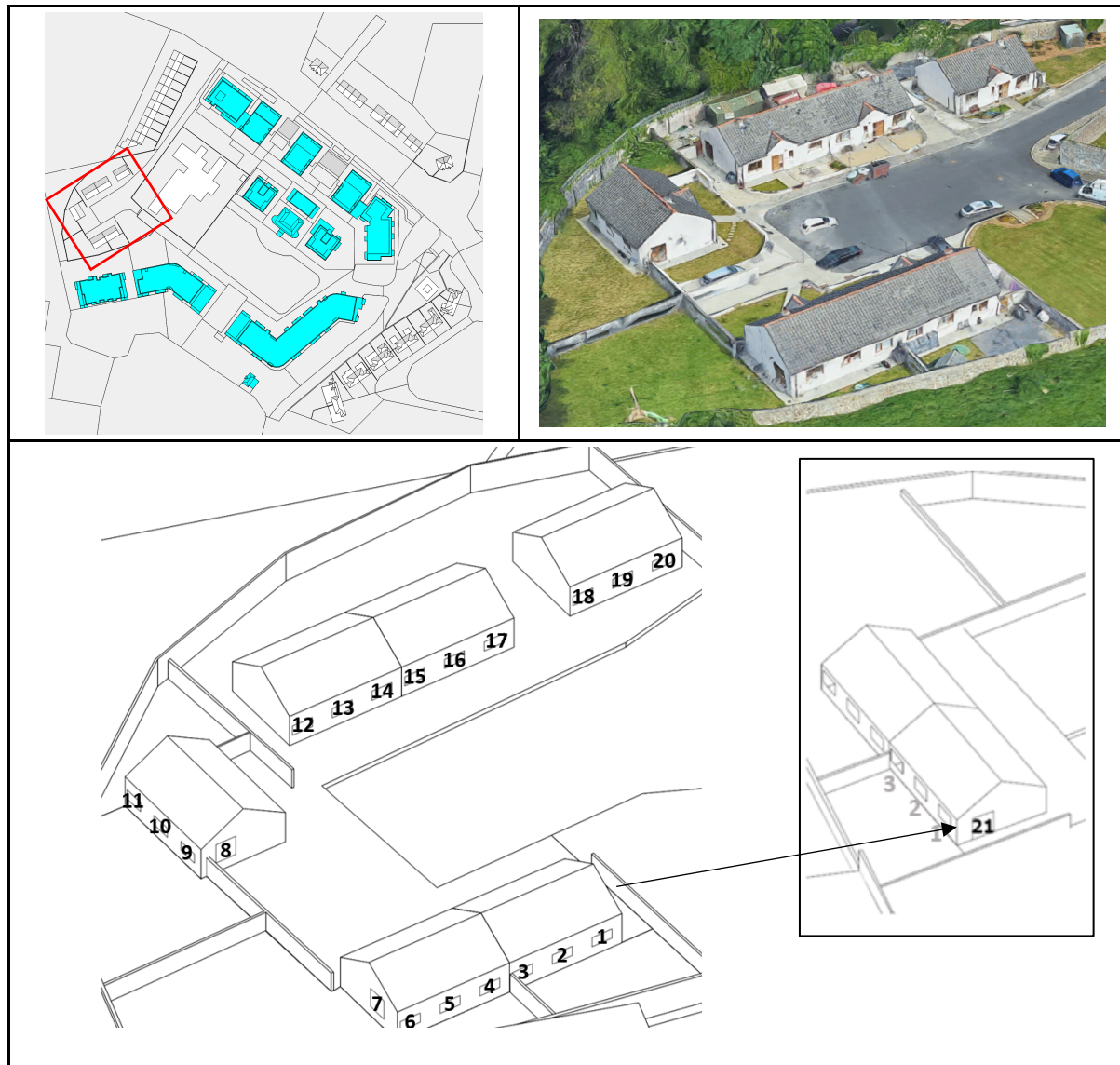


Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
1	32.2	27.44	85%	✓
2	34.5	29.48	86%	✓
3	35.3	31.83	90%	✓
4	31.2	28.09	90%	✓
5	29.2	24.99	86%	✓
6	34.8	30.14	87%	✓
7	32.7	30.47	93%	✓
8	33.4	30.43	91%	✓
9	32.6	30.58	94%	✓
10	15.6	24.81	100%	✓
11	23.0	20.29	88%	✓
12	23.1	22.08	96%	✓
13	27.9	23.40	84%	✓
14	25.8	23.24	90%	✓
15	30.2	27.66	91%	✓
16	23.9	28.02	100%	✓
17	27.4	27.16	99%	✓
18	33.0	30.73	93%	✓
19	34.1	32.22	94%	✓

The following conclusions can be made:

- ✓ The points tested have a VSC value greater than 27%, or their VSC value is greater than 0.8 times their former value, with the proposed development in place. Therefore, these points comply with BRE recommendations.

16.5.2.2 St. Louise's Park



Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
1	34.37	24.53	71%	✓2
2	34.73	23.35	67%	✓2
3	34.53	22.77	66%	✓2
4	34.38	22.18	65%	✓2
5	33.79	20.86	62%	✓2
6	32.94	20.11	61%	✓2
7	35.94	32.32	90%	✓
8	33.37	28.44	85%	✓
9	36.08	35.90	100%	✓
10	35.42	34.23	97%	✓
11	32.64	30.73	94%	✓
12	35.33	31.58	89%	✓
13	35.93	32.08	89%	✓

Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
14	35.95	32.62	91%	✓
15	35.96	32.49	90%	✓
16	35.64	32.75	92%	✓
17	35.71	32.61	91%	✓
18	35.14	32.48	92%	✓
19	32.23	32.17	100%	✓
20	30.24	32.10	106%	✓
21	33.85	31.33	93%	✓

The following conclusions can be made:

- ✓ The points tested have a VSC value greater than 27%, or their VSC value is greater than 0.8 times their former value, with the proposed development in place. Therefore, these points comply with BRE recommendations.
- ✓2 The points tested have a VSC value between 20.11% and 27%, which should still receive adequate internal daylight as these windows are secondary openings to dual aspect spaces that have large main openings on the other elevations.

16.5.2.3 Barclay Court



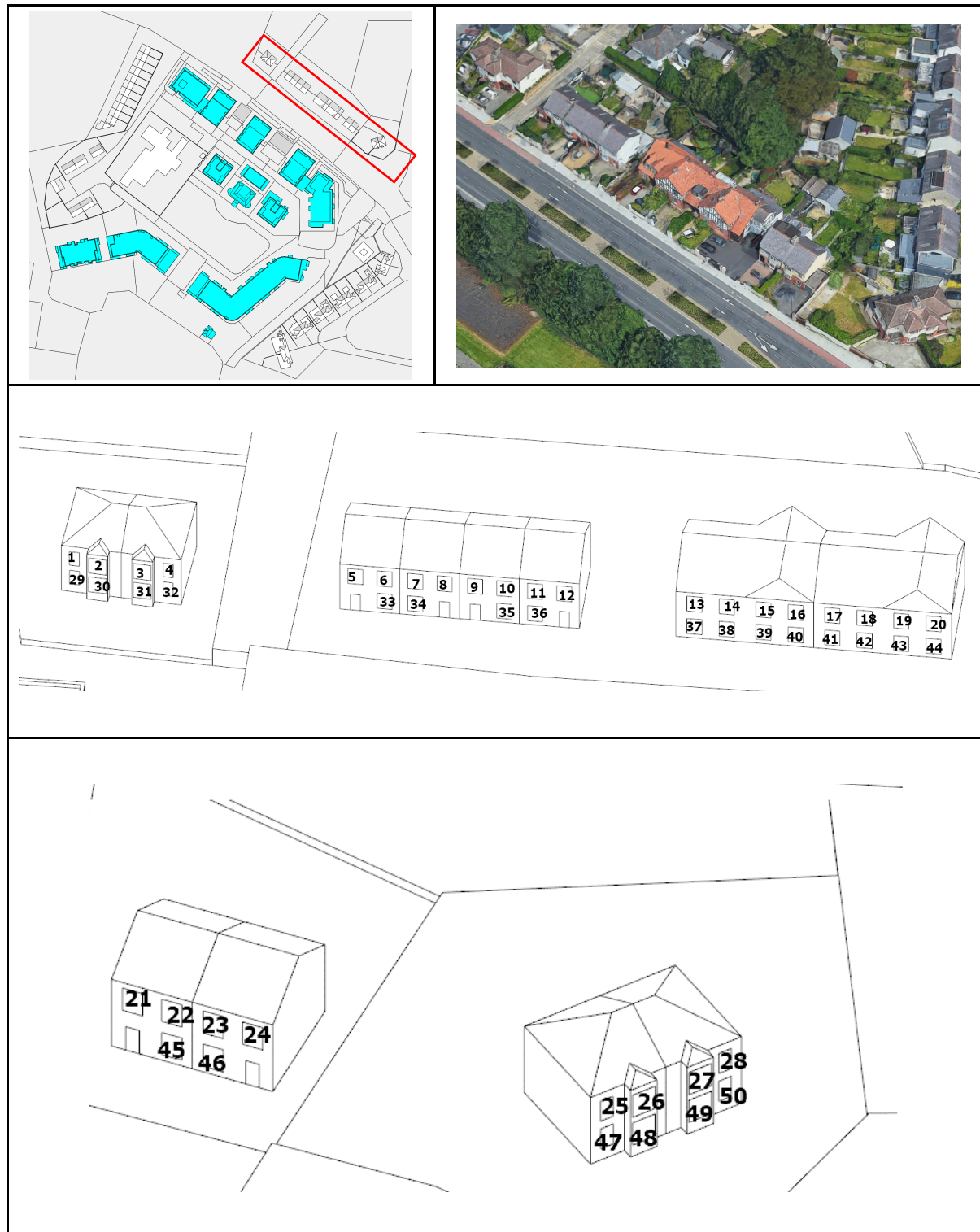
Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
1	30.80	31.23	100%	✓
2	31.24	31.86	100%	✓
3	31.35	32.41	100%	✓
4	30.16	31.13	100%	✓
5	29.14	30.32	100%	✓
6	30.75	31.08	100%	✓
7	30.01	30.58	100%	✓
8	31.51	30.23	96%	✓
9	31.61	30.85	98%	✓
10	33.38	30.98	93%	✓
11	32.41	30.33	94%	✓
12	34.20	30.23	88%	✓
13	34.39	30.82	90%	✓
14	35.60	31.02	87%	✓
15	34.16	30.65	90%	✓
16	35.28	30.49	86%	✓
17	36.43	30.99	85%	✓

Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
18	36.45	31.53	87%	✓
19	35.01	30.38	87%	✓
20	35.43	31.18	88%	✓
21	35.94	31.52	88%	✓
22	36.29	31.85	88%	✓
23	35.30	31.07	88%	✓
24	35.37	31.69	90%	✓
25	36.35	32.24	89%	✓
26	35.87	35.04	98%	✓
27	35.84	35.06	98%	✓
28	35.56	34.71	98%	✓
29	34.56	33.40	97%	✓
30	34.82	33.57	96%	✓
31	35.07	33.25	95%	✓
32	35.22	33.31	95%	✓
33	35.62	33.22	93%	✓
34	35.73	33.30	93%	✓
35	36.26	33.13	91%	✓
36	36.81	33.30	90%	✓
37	36.89	33.30	90%	✓
38	37.31	33.21	89%	✓
39	37.31	33.10	89%	✓
40	37.86	33.18	88%	✓
41	37.71	33.12	88%	✓
42	37.94	33.14	87%	✓
43	37.97	33.34	88%	✓
44	38.00	33.86	89%	✓
45	38.09	33.86	89%	✓
46	38.02	34.09	90%	✓
47	38.10	34.28	90%	✓
48	38.16	34.13	89%	✓
49	38.24	34.52	90%	✓
50	38.26	35.04	92%	✓

The following conclusions can be made:

- ✓ The points tested have a VSC value greater than 27%, or their VSC value is greater than 0.8 times their former value, with the proposed development in place. Therefore, these points comply with BRE recommendations.

16.5.2.4 Temple Road



Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
1	36.43	29.49	81%	✓
2	37.96	31.19	82%	✓
3	38.01	30.66	81%	✓
4	36.17	28.99	80%	✓

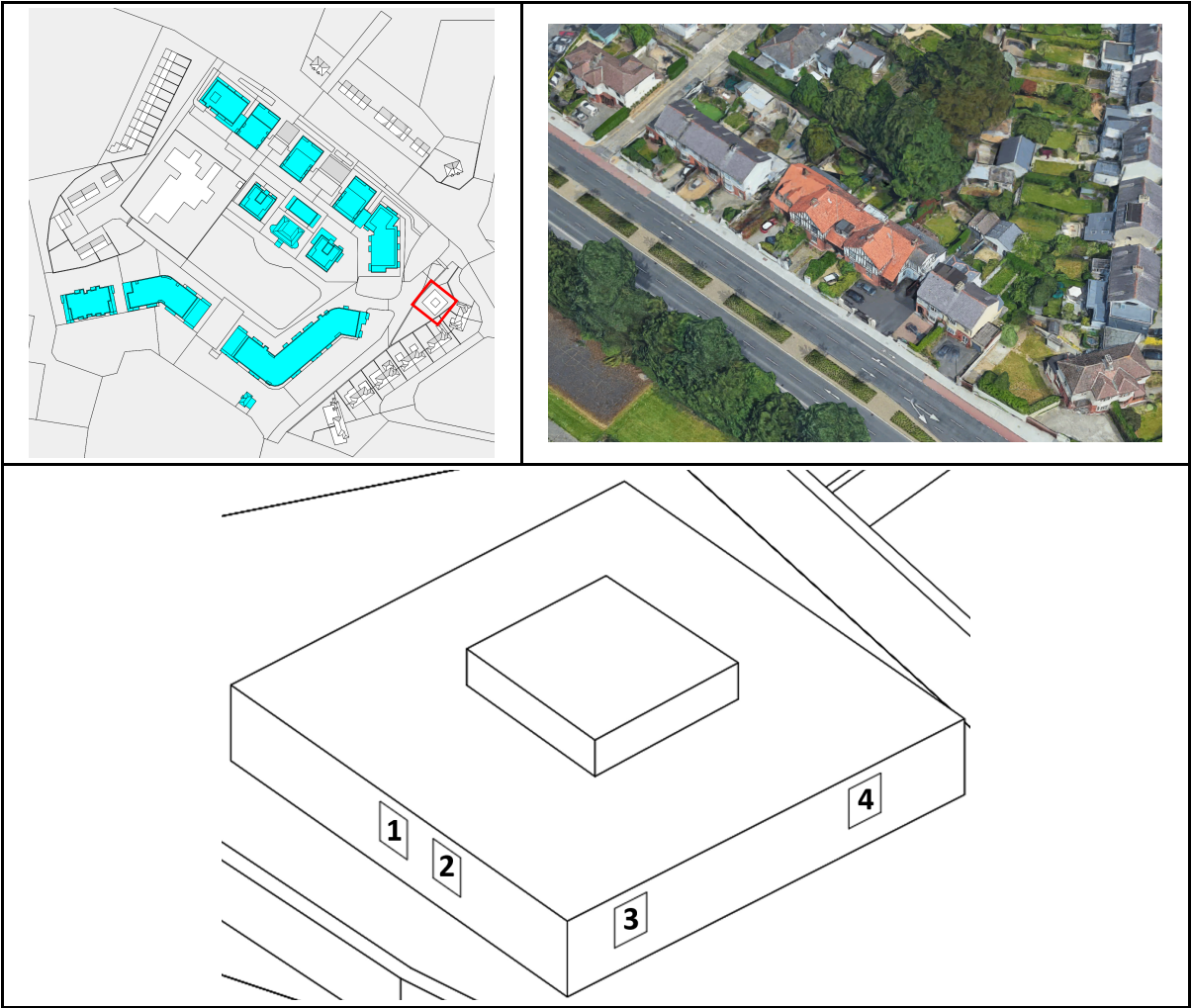
Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
5	38.24	31.30	82%	✓
6	38.17	31.54	83%	✓
7	38.20	31.68	83%	✓
8	38.26	31.24	82%	✓
9	38.22	31.59	83%	✓
10	38.26	31.84	83%	✓
11	38.33	31.47	82%	✓
12	38.46	31.81	83%	✓
13	38.15	31.62	83%	✓
14	38.27	31.87	83%	✓
15	38.18	31.97	84%	✓
16	38.30	31.87	83%	✓
17	38.26	31.75	83%	✓
18	38.36	31.66	83%	✓
19	38.13	31.62	83%	✓
20	38.36	32.07	84%	✓
21	38.34	32.33	84%	✓
22	38.30	32.24	84%	✓
23	38.31	32.28	84%	✓
24	38.42	32.24	84%	✓
25	36.70	35.62	97%	✓
26	38.76	37.79	97%	✓
27	38.75	37.97	98%	✓
28	36.83	36.58	99%	✓
29	35.2	27.54	78%	✓
30	37.67	29.78	79%	✓
31	37.50	29.63	79%	✓
32	35.20	27.31	78%	✓
33	37.54	29.97	80%	✓
34	37.55	30.09	80%	✓
35	37.72	29.88	79%	✓
36	37.58	30.37	81%	✓
37	37.65	30.31	81%	✓
38	37.69	30.62	81%	✓
39	37.67	30.49	81%	✓
40	37.83	30.45	80%	✓
41	37.87	30.51	81%	✓
42	37.81	30.33	80%	✓
43	37.77	30.18	80%	✓
44	37.67	30.58	81%	✓
45	37.77	31.05	82%	✓
46	37.74	31.16	83%	✓
47	35.97	34.67	96%	✓

Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
48	38.17	37.30	98%	✓
49	38.12	37.48	98%	✓
50	35.83	35.59	99%	✓

The following conclusions can be made:

- ✓ The points tested have a VSC value greater than 27%, or their VSC value is greater than 0.8 times their former value, with the proposed development in place. Therefore, these points comply with BRE recommendations.

16.5.2.5 Carmond House



Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
1	36.53	32.53	89%	✓
2	36.32	32.37	89%	✓
3	37.38	35.31	94%	✓
4	35.64	33.55	94%	✓

The following conclusions can be made:

- ✓ The points tested have a VSC value greater than 27% with the proposed development in place. Therefore, these points comply with BRE recommendations.

16.5.2.6 St. Vincent's Park



Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
1	38.40	38.28	100%	✓
2	38.51	38.22	99%	✓
3	38.35	38.22	100%	✓
4	38.13	37.99	100%	✓
5	20.5	20.68	100%	✓
6	31.16	30.72	99%	✓
7	32.59	32.53	100%	✓
8	29.01	29.22	100%	✓
9	27.45	27.79	100%	✓
10	32.97	32.97	100%	✓
11	30.76	31.04	100%	✓
12	31.64	31.55	100%	✓
13	27.32	25.68	94%	✓
14	32.71	32.20	98%	✓
15	35.13	33.83	96%	✓
16	35.67	33.90	95%	✓

Points	Existing Situation VSC	Proposed Scheme VSC	Proposed VSC % of Existing Situation	Comment
17	29.06	26.70	92%	✓
18	28.28	27.82	98%	✓
19	35.01	32.22	92%	✓
20	35.10	32.10	91%	✓
21	30.19	27.31	90%	✓
22	29.75	28.30	95%	✓
23	34.94	30.60	88%	✓
24	34.81	29.77	86%	✓
25	24.87	22.26	90%	✓
26	34.86	28.40	81%	✓
27	34.95	27.81	80%	✓
28	21.87	18.31	84%	✓
29	35.12	27.33	78%	✓
30	35.01	27.56	79%	✓
31	34.78	27.02	78%	✓
32	35.28	27.05	77%	✓
33	35.08	27.01	77%	✓
34	24.68	19.81	80%	✓
35	33.34	28.44	85%	✓
36	34.09	28.59	84%	✓
37	33.71	28.42	85%	✓

The following conclusions can be made:

- ✓ The points tested have a VSC value greater than 27%, or their VSC value is greater than 0.8 times their former value, with the proposed development in place. Therefore, these points comply with BRE recommendations.

16.5.2.7 Discussion

This study considers the Proposed Scheme and tests if the VSC results are greater than either 27% or 0.8 times their former value. Of the 177 tested windows, 171 points exceed the BRE requirement. The remaining 6 windows located in St. Louise's Park have a VSC value between 20.11 and 27%, which should still receive adequate internal daylight as these windows are secondary openings to dual aspect spaces that have large main openings on the other elevations.

Thus, the overall impact of the proposed development on the surrounding adjacent buildings can be considered not significant. (See section 16.1 for detailed description).

16.5.3 Existing Buildings - Annual Probable Sunlight Hours (APSH)

The British Standard BS 8206: Part 2:2008 recommends that interiors where the occupants expect sunlight should receive at least one quarter (25%) of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months, between 21st September and 21st March. Here 'probable sunlight hours' means the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question.

If a window reference point can receive more than one quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months between 21 September and 21 March, then the room should still receive enough sunlight. Any reduction in sunlight access below this level should be kept to a minimum.

If the available sunlight hours are both less than the amount given and less than 0.8 times their former value, either over the whole year or just during the winter months (21st September to 21st March) and reduction in sunlight across the year has a greater reduction than 4%, then the occupants of the existing building will notice the loss of sunlight.

Summary

3.2.11 If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:

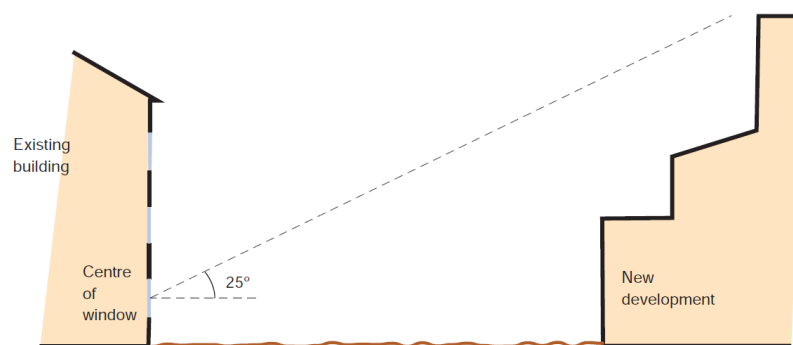
- receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March and
- receives less than 0.8 times its former sunlight hours during either period and
- has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.

BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight

16.5.3.1 APSH Exclusions

The BRE recommendations note that if a new development sits within 90° due south of any main living room window of an existing dwelling, then these should be assessed for APSH. However, there are several exceptional cases in which APSH do not need to be calculated, as indicated below:

- 3.2.7 It is not always necessary to do a full calculation to check sunlight potential. The guideline above is met provided either of the following is true:
- If the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window (NB obstructions within 90° of due north of the existing window need not count here).
 - The window wall faces within 90° of due south and no obstruction, measured in the section perpendicular to the window wall, subtends an angle of more than 25° to the horizontal (Figure 14 in Section 2.2). Again, obstructions within 90° of due north of the existing window need not be counted.
 - The window wall faces within 20° of due south and the reference point has a VSC (section 2.1) of 27% or more.



BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight

Consequently, APSH will only be calculated for adjacent windows which meet the following conditions:

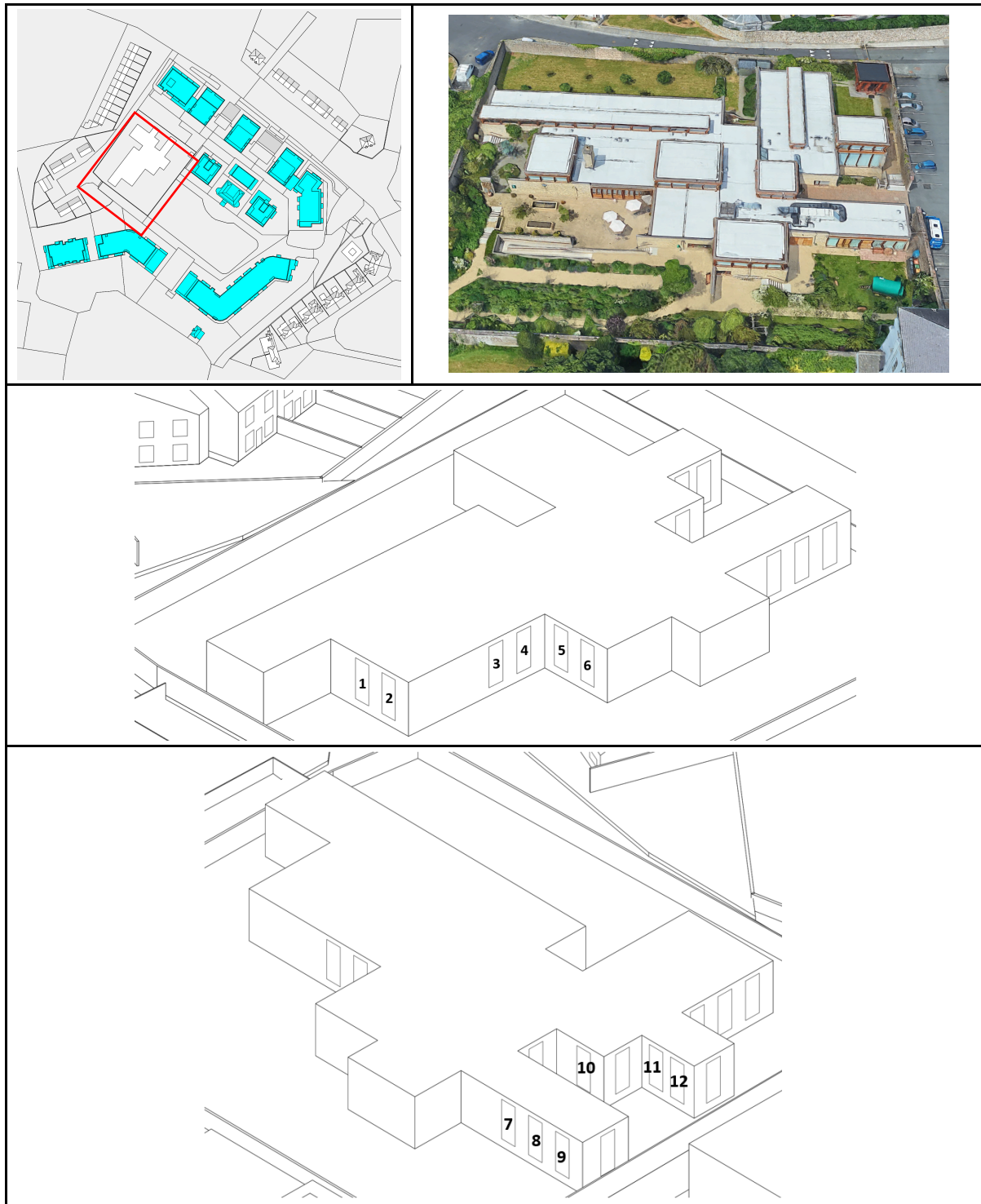
1. The existing building has living room with a main window which faces within 90 degrees of due south (with a line drawn perpendicular to the window).
2. Existing building main living room window is located to the North, East, or West of the Proposed Development (with a line drawn perpendicular to the window).
3. The VSC of the existing window is less than 27% and the window lies within 20 degrees due south.

Taking the above into consideration, the existing dwellings on St. Vincent's Park and Carmond House will not be included in the analysis, as they do not have any windows that face the proposed development and are within 90 degrees of due South.

16.5.3.2 Existing APSH Results

The following results summarise the sunlight available to buildings adjacent to the proposed development via the Annual Probable Sunlight Hours assessment methodology.

16.5.3.3 Alzheimer's Society of Ireland



Points	Existing Scheme APSH		Proposed Scheme APSH		Proposed Scheme APSH as a % of the Existing Scheme		Comment
	Annual	Winter	Annual	Winter	Annual	Winter	
1	57.57	26.66	44.55	13.64	77%	51%	✓/✓
2	61.71	27.08	47.67	13.04	77%	48%	✓/✓
3	58.58	26.96	47.14	16.16	80%	60%	✓/✓
4	53.62	26.75	43.24	16.45	81%	61%	✓/✓
5	53.84	26.98	44.09	17.24	82%	64%	✓/✓
6	61.36	28.73	50.44	17.82	82%	62%	✓/✓
7	50.9	17.37	45.30	14.35	89%	83%	✓/✓
8	53.1	19.91	46.89	16.94	88%	85%	✓/✓
9	52.61	21.04	46.88	17.73	89%	84%	✓/✓
10	30.9	5.73	29.52	5.64	96%	98%	✓/✓
11	31.97	4.79	28.14	4.63	88%	97%	✓/✓
12	43.14	11.56	39.42	10.85	91%	94%	✓/✓

The following conclusions can be made:

- ✓/✓ For the points tested, both the annual and winter APSH results are greater than 25% and 5% respectively or are greater than 0.8 times their former value, with the proposed development in place

16.5.3.4 St. Louise's Park



Points	Existing Scheme APSH		Proposed Scheme APSH		Proposed Scheme APSH as a % of the Existing Scheme		Comment
	Annual	Winter	Annual	Winter	Annual	Winter	
1	66.66	27.40	45.44	7.69	68%	28%	✓/✓
2	67.01	27.69	44.08	6.43	66%	23%	✓/✓
3	63.55	24.71	41.94	5.06	66%	20%	✓/✓
4	65.50	26.08	41.23	4.97	63%	19%	✓/x
5	64.51	24.12	40.36	4.57	63%	19%	✓/x
6	61.85	21.53	40.08	4.85	65%	23%	✓/x
7	54.55	19.45	41.32	7.63	76%	39%	✓/✓
8	57.21	18.70	48.50	10.53	85%	56%	✓/✓
9	55.85	23.36	50.60	18.98	91%	79%	✓/✓
10	53.74	22.59	48.68	18.15	91%	80%	✓/✓
11	49.05	21.06	43.71	16.73	89%	79%	✓/✓
12	65.15	25.23	56.34	16.71	86%	66%	✓/✓
13	68.00	28.79	59.52	20.65	88%	72%	✓/✓
14	69.15	29.99	60.68	22.07	88%	74%	✓/✓
15	67.55	28.69	59.96	21.96	89%	77%	✓/✓
16	62.61	25.05	59.08	22.01	94%	88%	✓/✓
17	56.39	21.86	56.29	21.32	100%	98%	✓/✓

The following conclusions can be made:

- ✓/✓ For the points tested, both the annual and winter APSH results are greater than 25% and 5% respectively or are greater than 0.8 times their former value, with the proposed development in place
- ✓/ x For the points tested, the annual APSH results are greater than 25% or 0.8 times their former value with the proposed development in place, however, the winter results are slightly under the recommended guidelines

16.5.3.5 Barclay Court



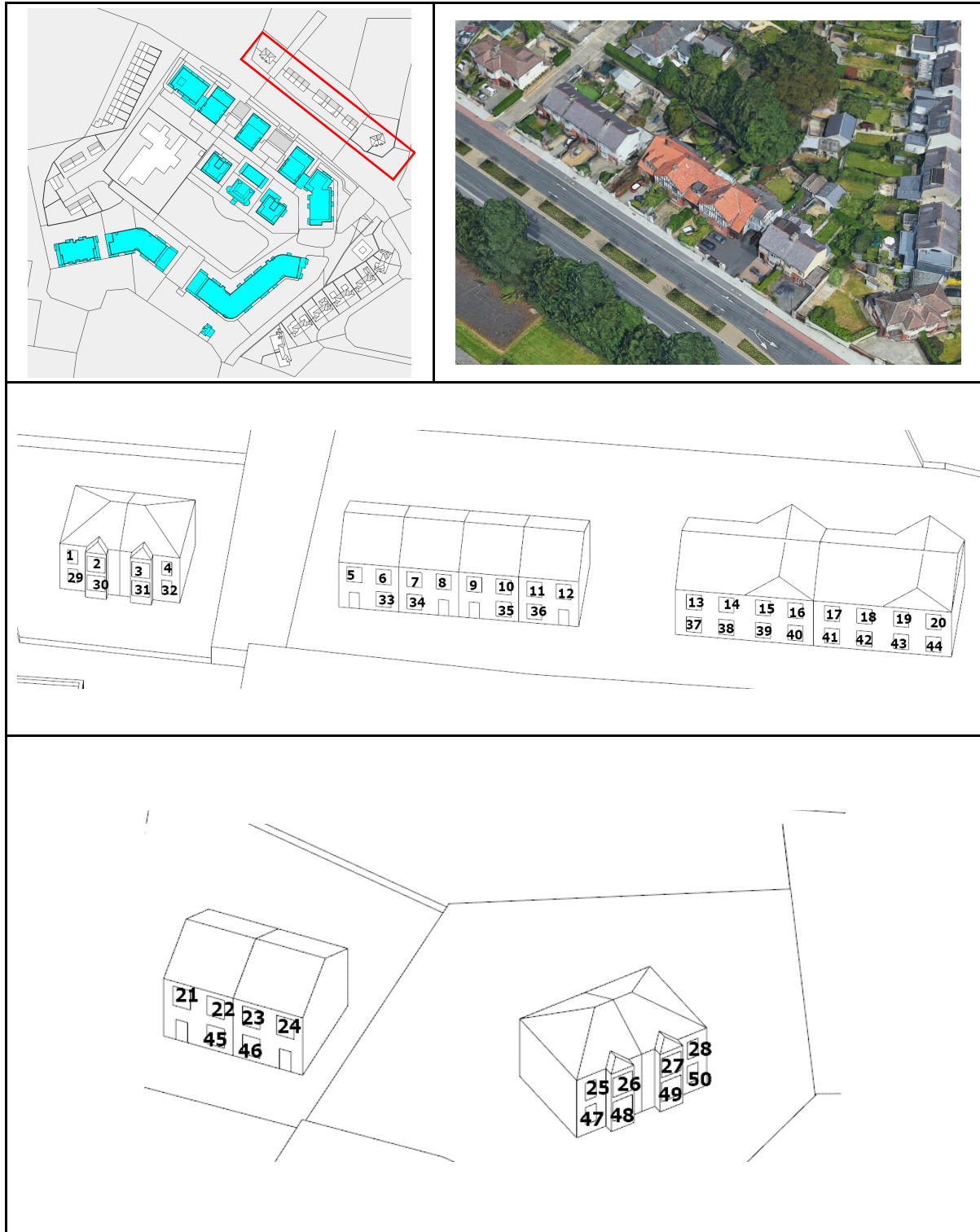
Points	Existing Scheme APSH		Proposed Scheme APSH		Proposed Scheme APSH as a % of the Existing Scheme		Comment
	Annual	Winter	Annual	Winter	Annual	Winter	
1	61.23	19.27	59.05	17.79	96%	92%	✓/✓
2	63.37	21.58	60.26	19.17	95%	89%	✓/✓
3	64.87	23.30	61.59	20.72	95%	89%	✓/✓
4	49.41	18.22	42.81	16.27	87%	89%	✓/✓
5	47.32	18.36	42.54	16.67	90%	91%	✓/✓
6	46.02	14.00	39.60	13.21	86%	94%	✓/✓
7	48.10	18.22	43.43	17.17	90%	94%	✓/✓
8	43.60	11.57	37.10	11.49	85%	99%	✓/✓
9	48.91	17.65	43.78	17.28	90%	98%	✓/✓
10	47.40	14.07	40.92	13.80	86%	98%	✓/✓
11	48.90	18.54	43.88	17.86	90%	96%	✓/✓
12	45.23	12.62	36.91	11.22	82%	89%	✓/✓
13	50.94	19.61	43.19	18.04	85%	92%	✓/✓
14	49.59	16.26	40.40	14.87	81%	91%	✓/✓
15	51.08	20.84	45.16	19.46	88%	93%	✓/✓
16	46.65	13.91	39.35	12.52	84%	90%	✓/✓
17	53.10	21.79	46.53	19.89	88%	91%	✓/✓
18	50.40	17.07	42.95	14.59	85%	85%	✓/✓
19	52.41	22.20	46.06	19.48	88%	88%	✓/✓

Points	Existing Scheme APSH		Proposed Scheme APSH		Proposed Scheme APSH as a % of the Existing Scheme		Comment
20	47.07	14.27	40.77	11.62	87%	81%	✓/✓
21	53.28	21.85	47.13	18.32	88%	84%	✓/✓
22	49.96	16.65	44.37	12.64	89%	76%	✓/✓
23	52.56	22.27	46.16	17.00	88%	76%	✓/✓
24	46.62	13.95	42.21	10.01	91%	72%	✓/✓
25	53.16	21.95	47.05	16.06	89%	73%	✓/✓
26	77.26	34.20	73.82	32.10	96%	94%	✓/✓
27	76.77	33.89	73.09	31.78	95%	94%	✓/✓
28	76.10	33.41	72.84	31.58	96%	95%	✓/✓
29	55.32	21.31	48.80	20.14	88%	95%	✓/✓
30	56.09	21.35	49.17	20.81	88%	97%	✓/✓
31	55.85	21.06	49.38	20.78	88%	99%	✓/✓
32	56.13	21.16	49.58	21.16	88%	100%	✓/✓
33	56.58	21.62	49.38	21.55	87%	100%	✓/✓
34	56.45	21.48	48.53	20.79	86%	97%	✓/✓
35	56.61	21.65	48.72	21.10	86%	97%	✓/✓
36	57.14	22.17	50.11	21.52	88%	97%	✓/✓
37	57.32	22.35	49.88	21.61	87%	97%	✓/✓
38	57.99	23.02	49.74	21.38	86%	93%	✓/✓
39	58.04	23.08	50.43	21.88	87%	95%	✓/✓
40	58.07	23.10	51.08	21.71	88%	94%	✓/✓
41	59.06	24.09	51.51	21.68	87%	90%	✓/✓
42	58.95	23.98	52.59	21.68	89%	90%	✓/✓
43	59.01	24.05	53.47	21.54	91%	90%	✓/✓
44	59.16	24.19	53.75	21.06	91%	87%	✓/✓
45	58.86	23.90	53.98	20.98	92%	88%	✓/✓
46	58.59	23.62	54.08	20.45	92%	87%	✓/✓
47	58.79	23.82	53.75	19.49	91%	82%	✓/✓
48	59.59	24.63	53.04	18.46	89%	75%	✓/✓
49	59.67	24.71	52.97	18.01	89%	73%	✓/✓
50	59.79	24.83	52.80	17.83	88%	72%	✓/✓

The following conclusions can be made:

- ✓/✓ For the points tested, both the annual and winter APSH results are greater than 25% and 5% respectively or are greater than 0.8 times their former value, with the proposed development in place

16.5.3.6 Temple Road



Points	Existing Scheme APSH		Proposed Scheme APSH		Proposed Scheme APSH as a % of the Existing Scheme		Comment
	Annual	Winter	Annual	Winter	Annual	Winter	
1	60.58	23.74	46.91	10.19	77%	43%	✓/✓
2	72.88	32.52	58.16	18.12	80%	56%	✓/✓
3	72.97	32.63	58.18	19.01	80%	58%	✓/✓
4	67.44	32.61	53.20	20.07	79%	62%	✓/✓
5	74.88	33.62	59.63	21.17	80%	63%	✓/✓
6	74.20	32.94	60.10	21.63	81%	66%	✓/✓
7	74.65	33.39	62.21	23.07	83%	69%	✓/✓
8	74.83	33.57	61.50	22.34	82%	67%	✓/✓
9	74.50	33.25	61.85	22.69	83%	68%	✓/✓
10	74.12	32.87	60.80	21.96	82%	67%	✓/✓
11	74.13	32.87	60.58	22.76	82%	69%	✓/✓
12	74.13	32.87	61.80	23.32	83%	71%	✓/✓
13	74.13	32.87	60.94	23.52	82%	72%	✓/✓
14	73.53	32.62	60.99	23.50	83%	72%	✓/✓
15	73.66	32.70	61.77	24.01	84%	73%	✓/✓
16	73.39	32.39	62.01	24.21	84%	75%	✓/✓
17	73.02	31.97	60.92	23.13	83%	72%	✓/✓
18	72.56	31.47	60.39	22.61	83%	72%	✓/✓
19	72.61	31.47	60.44	22.43	83%	71%	✓/✓
20	72.85	31.67	60.01	22.13	82%	70%	✓/✓
21	73.48	32.22	61.83	24.44	84%	76%	✓/✓
22	73.36	32.10	62.45	24.64	85%	77%	✓/✓
23	73.33	32.07	61.82	24.03	84%	75%	✓/✓
24	74.12	32.86	61.03	23.24	82%	71%	✓/✓
25	69.62	35.82	63.33	29.52	91%	82%	✓/✓
26	80.09	36.73	73.79	30.44	92%	83%	✓/✓
27	80.08	36.72	74.33	30.98	93%	84%	✓/✓
28	63.42	28.70	61.36	26.63	97%	93%	✓/✓
29	56.57	22.26	42.83	9.23	76%	41%	✓/✓
30	71.31	30.94	56.22	16.67	79%	54%	✓/✓
31	70.93	30.64	55.80	17.40	79%	57%	✓/✓
32	65.15	30.41	48.96	16.82	75%	55%	✓/✓
33	71.72	31.04	56.57	18.90	79%	61%	✓/✓
34	71.64	30.98	57.27	19.64	80%	63%	✓/✓
35	72.03	31.36	58.61	20.63	81%	66%	✓/✓
36	72.04	31.31	58.51	20.89	81%	67%	✓/✓
37	70.44	29.99	57.62	20.56	82%	69%	✓/✓
38	70.21	29.81	56.79	20.58	81%	69%	✓/✓
39	70.62	30.24	56.97	20.78	81%	69%	✓/✓
40	70.30	29.95	58.19	21.38	83%	71%	✓/✓
41	70.27	29.92	57.59	20.75	82%	69%	✓/✓
42	70.17	29.86	56.68	19.85	81%	66%	✓/✓
43	70.07	29.78	56.22	19.34	80%	65%	✓/✓

Points	Existing Scheme APSH		Proposed Scheme APSH		Proposed Scheme APSH as a % of the Existing Scheme		Comment
44	70.04	29.71	56.06	19.07	80%	64%	✓/✓
45	70.82	30.16	59.16	22.93	84%	76%	✓/✓
46	70.80	30.18	58.67	21.84	83%	72%	✓/✓
47	67.50	34.09	61.18	27.78	91%	81%	✓/✓
48	77.81	34.45	71.51	28.16	92%	82%	✓/✓
49	77.78	34.42	71.48	28.13	92%	82%	✓/✓
50	67.82	31.12	66.38	29.68	98%	95%	✓/✓

The following conclusions can be made:

- ✓/✓ For the points tested, both the annual and winter APSH results are greater than 25% and 5% respectively or are greater than 0.8 times their former value, with the proposed development in place

16.5.3.7 Existing APSH Analysis Discussion

The BRE recommendations note that if a new development sits within 90° due south of any main living room window of an existing dwelling, then these should be assessed for APSH. However, there are several exceptional cases in which APSH is not required to be calculated as outlined in the beginning of this section. The following potential sensitive receptor were assessed and the results summarised as follows:

- **Alzheimer Society of Ireland**

The results for these windows demonstrate they would continue to receive at least 25% of annual probable sunlight hours and at least 5% of winter probable sunlight hours (or 0.8 times their former value), thus complying with the BRE recommendations.

- **St. Louise's Park**

Of the 17 points tested, all points will continue to receive at least 25% of annual probable sunlight hours, or 0.8 times their former value. 14 no. points will continue to receive at least 5% of winter probable sunlight hours, or 0.8 times their former value. Only 3 no. points (17%) will not achieve the recommended sunlight levels during the winter months, however, these points will still receive the recommended sunlight levels over the annual period.

- **Barclay Court**

The results for these windows demonstrate they would continue to receive at least 25% of annual probable sunlight hours and at least 5% of winter probable sunlight hours (or 0.8 times their former value), thus complying with the BRE recommendations.

- **Temple Road**

The results for these windows demonstrate they would continue to receive at least 25% of annual probable sunlight hours and at least 5% of winter probable sunlight hours (or 0.8 times their former value), thus complying with the BRE recommendations.

- **St. Vincent's Park & Carmond House**

These adjacent buildings were not analysed for APSH as their windows do not lie within 90 degrees of due South.

Thus, the overall impact of the proposed development on the surrounding adjacent buildings can be considered not significant. (See section 16.1 for detailed description).

16.5.4 Proposed Buildings - Annual Probable Sunlight Hours (APSH)

The British Standard BS 8206-2:2008 recommends that interiors where the occupants expect sunlight should receive at least one quarter (25%) of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months, between 21st September and 21st March. Here 'probable sunlight hours' means the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question.

If a window reference point can receive more than one quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months between 21st September and 21st March, then the room should still receive enough sunlight. Any reduction in sunlight access below this level should be kept to a minimum.

As stated in Section 3.1.12 of the BRE Guide, "If window positions are already known, the centre of each main living room window can be used for the calculation".

3.1.12 If window positions are already known, the centre of each main living room window can be used for the calculation. In the case of a floor-to-ceiling window such as a patio door, a point 1.6 m above ground on the centre line of the window may be used. In accordance with the recommendation in BS 8206-2, a point on the inside face of the window wall should be taken. Sunlight blocked by the window reveals should not be included, but the effect of the window frames in blocking sunlight need not be taken into account. If a room has multiple windows on the same wall or on adjacent walls, the highest value of APSH should be taken. If a room has two windows on opposite walls, the APSH due to each can be added together.

Summary (new buildings)

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

- at least one main window wall faces within 90° of due south and
- the centre of at least one window to a main living room can receive 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months between 21 September and 21 March.

3.1.16 Where groups of dwellings are planned, site layout design should aim to maximise the number of dwellings with a main living room that meets the above recommendations.

Extract from the BRE 'Site Layout Planning for Daylight and Sunlight' guide

16.5.4.1 Block A



Ref #	Orientation	Proposed		Comment
		Annual (%)	Winter (%)	
1	North / East	10.10	0.20	x/x
2		16.31	0.95	x/x
3		18.40	0.89	x/x
4		20.56	1.50	x/x
5		5.57	0.50	x/x
6		6.61	0.00	x/x
7		4.16	0.17	x/x
8		6.43	0.08	x/x
9		4.79	0.11	x/x
10		6.61	0.09	x/x
11		3.95	0.05	x/x
12		6.71	0.48	x/x
13		3.92	0.00	x/x

14	North / East	6.07	0.00	x/x
15		3.53	0.00	x/x
16		5.45	0.03	x/x
17		3.22	0.00	x/x
18		6.71	0.17	x/x
19		4.03	0.38	x/x
20		6.33	0.09	x/x
21	South / East	13.35	7.97	x/√
22		11.04	6.19	x/√
23		14.92	7.79	x/√
24		11.39	5.40	x/√
25		14.31	7.32	x/√
26		9.15	5.17	x/√
27		13.70	6.83	x/√
28		8.01	4.35	x/x
29		3.05	0.59	x/x
30	South / West	55.75	19.66	√/√
31		60.36	27.22	√/√
32		52.96	26.13	√/√
33		56.59	25.01	√/√
34		31.96	15.00	√/√
35		22.96	15.34	x/√
36		19.84	14.29	x/√
37		25.07	14.47	√/√
38		29.61	15.34	√/√
39		19.57	13.83	x/√
40		20.78	14.88	x/√
41		23.20	13.69	x/√
42		25.42	12.60	√/√
43		18.97	13.36	x/√
44		15.87	11.44	x/√
45		17.87	10.43	x/√
46		24.32	13.64	x/√
47	North / West	32.02	8.24	√/√
48		32.02	8.24	√/√
49		32.09	8.31	√/√
50		32.02	8.24	√/√
51		31.87	8.24	√/√
52		31.95	8.34	√/√
53		31.96	8.34	√/√
54		28.30	6.82	√/√
55		28.03	6.82	√/√
56		27.93	6.78	√/√
57		24.61	5.44	x/√
58		24.83	5.82	x/√
59		24.78	5.83	x/√

The following conclusions can be made:

- ✓/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008.
- x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.
- x/x These windows do not meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual or winter sunlight. This is as a result of their orientation. (See discussions section 16.5.4.11 for more information).

16.5.4.2 Block B1



Ref #	Orientation	Proposed		Comment
		Annual (%)	Winter (%)	
1	North / East	23.32	4.07	x/x
2		15.17	3.88	x/x
3		13.54	3.30	x/x
4		4.51	0.11	x/x
5		13.85	3.68	x/x
6		23.78	4.20	x/x
7		3.91	0.12	x/x

8	North / East	13.09	3.10	x/x
9		23.78	4.20	x/x
10		4.12	0.11	x/x
11		13.09	2.92	x/x
12		23.78	4.20	x/x
13		3.99	0.12	x/x
14		12.49	2.91	x/x
15		23.78	4.20	x/x
16		4.12	0.11	x/x
17		12.66	2.85	x/x
18		23.56	3.98	x/x
19		4.15	0.13	x/x
20		12.23	2.51	x/x
21		23.04	3.46	x/x
22		4.28	0.03	x/x
23		11.71	2.38	x/x
24		21.49	2.80	x/x
25		3.18	0.00	x/x
26		11.45	1.61	x/x
27		20.66	2.93	x/x
28		2.35	0.00	x/x
29	South / East	36.35	22.26	√/√
30		24.45	13.35	x/√
31		37.20	22.56	√/√
32		25.49	13.28	√/√
33		67.78	30.02	√/√
34		12.04	1.48	x/x
35		32.20	19.52	√/√
36		20.54	9.69	x/√
37		65.73	27.96	√/√
38		8.95	0.85	x/x
39		29.73	17.68	√/√
40		17.11	6.76	x/√
41		60.89	23.31	√/√
42		10.46	0.61	x/x
43		26.91	15.89	√/√
44		14.63	5.37	x/√
45		55.72	18.73	√/√
46		8.45	0.35	x/x
47		24.76	15.24	x/√
48		12.30	4.41	x/x
49		51.40	15.74	√/√
50		10.37	0.54	x/x
51		23.36	15.20	x/√
52		11.10	4.41	x/x
53		46.35	12.41	√/√
54		8.54	0.35	x/x
55		21.17	13.98	x/√
56		9.61	4.36	x/x
57		43.97	11.36	√/√
58		10.22	0.28	x/x
59		15.62	9.62	x/√
60		6.84	3.14	x/x
61		40.22	9.74	√/√

62	South / East	7.92	0.11	x/x
63		32.45	6.19	✓/✓
64		9.28	0.15	x/x
65	South / West	75.24	34.20	✓/✓
66		75.81	34.27	✓/✓
67		75.33	34.27	✓/✓
68		75.37	34.01	✓/✓
69		75.86	34.27	✓/✓
70		75.35	33.83	✓/✓
71		76.20	34.27	✓/✓
72		75.41	33.73	✓/✓
73		74.91	33.14	✓/✓
74		74.65	32.70	✓/✓
75		72.99	31.20	✓/✓
76		73.11	31.15	✓/✓
77		71.60	29.80	✓/✓
78		72.70	30.74	✓/✓
79		70.32	28.60	✓/✓
80		69.57	27.61	✓/✓
81		64.97	24.17	✓/✓
82		60.72	20.01	✓/✓
83	North / West	32.17	8.39	✓/✓
84		20.25	6.69	x/✓
85		32.17	8.39	✓/✓
86		10.11	0.67	x/x
87		21.87	7.09	x/✓
88		32.24	8.39	✓/✓
89		9.56	0.66	x/x
90		20.70	6.92	x/✓
91		32.17	8.39	✓/✓
92		9.56	0.66	x/x
93		20.70	6.92	x/✓
94		31.82	8.31	✓/✓
95		9.41	0.66	x/x
96		20.58	6.80	x/✓
97		20.96	5.56	x/✓
98		4.77	0.66	x/x
99		20.22	6.45	x/✓
100		13.47	4.17	x/x
101		20.94	6.23	x/✓
102		9.23	3.36	x/x
103		20.49	5.79	x/✓
104		8.11	2.67	x/x
105		18.25	4.46	x/x
106		7.49	1.89	x/x

The following conclusions can be made:

- ✓/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008.
- x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.
- x/x These windows do not meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual or winter sunlight. This is as a result of their orientation. (See discussions section 16.5.4.11 for more information).

16.5.4.3 Block B2



Ref #	Orientation	Proposed		Comment
		Annual (%)	Winter (%)	
1	North / East	13.84	3.60	x/x
2		23.78	4.20	x/x
3		4.17	0.11	x/x
4		13.72	3.30	x/x
5		23.78	4.20	x/x
6		3.93	0.12	x/x
7		13.54	3.30	x/x

8	North / East	23.78	4.20	x/x
9		4.17	0.11	x/x
10		13.54	3.30	x/x
11		23.78	4.20	x/x
12		4.19	0.11	x/x
13		13.30	3.06	x/x
14		23.78	4.20	x/x
15		4.19	0.11	x/x
16		11.83	2.61	x/x
17		22.55	3.57	x/x
18		3.38	0.00	x/x
19		11.75	2.18	x/x
20		20.53	3.07	x/x
21		2.42	0.00	x/x
22	South / East	58.66	24.19	✓/✓
23		33.79	19.45	✓/✓
24		20.28	8.83	x/✓
25		64.25	26.48	✓/✓
26		10.75	0.87	x/x
27		30.98	17.76	✓/✓
28		18.72	7.85	x/✓
29		60.97	23.21	✓/✓
30		8.45	0.37	x/x
31		29.22	16.81	✓/✓
32		17.06	6.51	x/✓
33		58.51	20.75	✓/✓
34		10.36	0.54	x/x
35		26.94	15.99	✓/✓
36		16.02	6.24	x/✓
37		57.03	19.53	✓/✓
38		10.43	0.54	x/x
39		23.55	13.31	x/✓
40		14.50	5.59	x/✓
41		55.06	18.06	✓/✓
42		10.43	0.54	x/x
43		18.08	8.30	x/✓
44		12.43	4.73	x/x
45		50.82	15.87	✓/✓
46		9.34	0.28	x/x
47		42.94	10.99	✓/✓
48		8.21	0.17	x/x
49	South / West	70.29	30.49	✓/✓
50		70.33	29.33	✓/✓
51		75.90	33.94	✓/✓
52		75.63	33.75	✓/✓
53		73.44	31.84	✓/✓
54		73.07	31.59	✓/✓
55		72.64	31.17	✓/✓
56		71.89	30.33	✓/✓
57		69.97	28.34	✓/✓
58		69.77	28.14	✓/✓
59		64.13	22.49	✓/✓
60		62.97	21.72	✓/✓

61	South / West	55.02	13.63	✓/✓
62		51.95	12.18	✓/✓
63	North / West	24.57	7.10	x/✓
64		20.40	7.69	x/✓
65		6.17	0.65	x/x
66		20.19	6.75	x/✓
67		19.65	7.32	x/✓
68		5.52	0.65	x/x
69		19.73	5.93	x/✓
70		17.38	6.31	x/✓
71		5.52	0.65	x/x
72		19.13	5.49	x/✓
73		17.01	6.29	x/✓
74		5.52	0.65	x/x
75		19.20	4.84	x/x
76		16.74	6.02	x/✓
77		5.52	0.65	x/x
78		18.53	3.98	x/x
79		15.77	5.12	x/✓
80		5.15	0.28	x/x
81		16.63	2.39	x/x
82		13.68	3.19	x/x

The following conclusions can be made:

- ✓/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008.
- x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.
- x/x These windows do not meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual or winter sunlight. This is as a result of their orientation. (See discussions section 16.5.4.11 for more information).

16.5.4.4 Block B3



Ref #	Orientation	Proposed		Comment
		Annual (%)	Winter (%)	
1	North / East	12.04	3.39	x/x
2		23.78	4.20	x/x
3		5.28	0.46	x/x
4		12.69	3.54	x/x
5		23.78	4.20	x/x
6		6.25	0.42	x/x
7		12.04	3.39	x/x
8		23.78	4.20	x/x

9	North / East	5.27	0.46	x/x
10		12.06	3.39	x/x
11		23.78	4.20	x/x
12		5.34	0.46	x/x
13		12.08	3.41	x/x
14		23.78	4.20	x/x
15		5.34	0.46	x/x
16		12.05	3.41	x/x
17		22.94	4.20	x/x
18		4.84	0.46	x/x
19		9.34	2.42	x/x
20		17.16	2.88	x/x
21		3.88	0.25	x/x
22	South / East	60.73	25.48	✓/✓
23		30.17	18.88	✓/✓
24		23.75	12.57	x/✓
25		66.99	30.03	✓/✓
26		26.03	15.55	✓/✓
27		16.63	7.38	x/✓
28		61.89	24.83	✓/✓
29		21.43	12.71	x/✓
30		9.33	3.61	x/x
31		54.41	16.71	✓/✓
32		18.80	10.89	x/✓
33		4.49	2.21	x/x
34		48.14	12.00	✓/✓
35		14.21	7.50	x/✓
36		2.54	1.90	x/x
37		42.75	9.60	✓/✓
38		11.46	5.53	x/✓
39		1.85	1.59	x/x
40		38.35	7.94	✓/✓
41		31.80	6.13	✓/✓
42	South / West	70.51	30.42	✓/✓
43		70.97	29.91	✓/✓
44		76.15	34.20	✓/✓
45		75.87	33.91	✓/✓
46		73.72	31.76	✓/✓
47		73.00	31.04	✓/✓
48		71.93	30.13	✓/✓
49		69.82	27.89	✓/✓
50		68.06	26.89	✓/✓
51		63.35	22.67	✓/✓
52		59.59	20.34	✓/✓
53		55.75	15.68	✓/✓
54		44.49	12.83	✓/✓
55		41.56	9.41	✓/✓
56	North / West	26.68	7.11	✓/✓
57		0.12	0.00	x/x
58		28.18	8.34	✓/✓
59		7.17	0.58	x/x
60		20.13	6.61	x/✓

61		0.02	0.02	x/x
62	North / West	25.73	7.69	✓/✓
63		7.17	0.58	x/x
64		19.65	6.34	x/✓
65		0.00	0.00	x/x
66		23.45	6.99	x/✓
67		6.93	0.55	x/x
68		18.78	5.48	x/✓
69		0.01	0.01	x/x
70		20.14	5.20	x/✓
71		6.39	0.20	x/x
72		16.92	4.13	x/x
73		0.02	0.02	x/x
74		19.19	4.89	x/x
75		6.08	0.10	x/x
76		14.34	2.44	x/x
77		0.00	0.00	x/x
78		18.03	3.96	x/x
79		5.59	0.00	x/x
80		11.83	2.00	x/x
81		0.00	0.00	x/x
82		13.42	1.76	x/x

The following conclusions can be made:

- ✓/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008.
- x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.
- x/x These windows do not meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual or winter sunlight. This is as a result of their orientation. (See discussions section 16.5.4.11 for more information).

16.5.4.5 Block B4



Ref #	Orientation	Proposed		Comment
		Annual (%)	Winter (%)	
1	North / West	23.78	4.20	x/x
2		10.42	1.50	x/x
3		7.87	2.27	x/x
4		17.41	5.04	x/√
5		23.78	4.20	x/x
6		9.36	1.50	x/x
7		6.80	1.47	x/x
8		16.16	3.81	x/x
9		23.28	4.11	x/x
10		9.32	1.62	x/x
11		4.87	0.72	x/x
12		14.29	1.80	x/x
13	East	40.91	18.99	√/√
14		39.95	18.56	√/√
15		39.84	17.92	√/√
16	South / East	41.92	14.79	√/√
17	East	40.91	18.99	√/√
18		39.33	17.94	√/√
19		38.49	16.79	√/√

20	South / East	41.77	14.72	✓/✓
21	East	39.77	16.32	✓/✓
22		38.40	15.86	✓/✓
23		37.59	15.62	✓/✓
24	South / East	40.05	13.64	✓/✓
25	South	71.64	28.29	✓/✓
26		73.10	29.70	✓/✓
27		63.86	29.81	✓/✓
28		70.38	27.03	✓/✓
29		71.85	28.49	✓/✓
30		62.93	29.00	✓/✓
31		64.45	21.99	✓/✓
32		65.91	23.45	✓/✓
33		58.15	24.93	✓/✓
34	South / West	32.57	15.45	✓/✓
35	West	26.27	8.68	✓/✓
36		26.70	9.70	✓/✓
37		29.45	9.42	✓/✓
38	South / West	27.93	11.53	✓/✓
39	West	23.25	6.84	x/✓
40		22.47	7.58	x/✓
41		25.19	7.02	✓/✓
42	South / West	24.83	7.95	x/✓
43	West	21.43	5.67	x/✓
44		17.49	4.87	x/x
45		21.74	3.71	x/x

The following conclusions can be made:

- ✓/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008.
- x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.
- x/x These windows do not meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual or winter sunlight. This is as a result of their orientation. (See discussions section 16.5.4.11 for more information).

16.5.4.6 Block C1


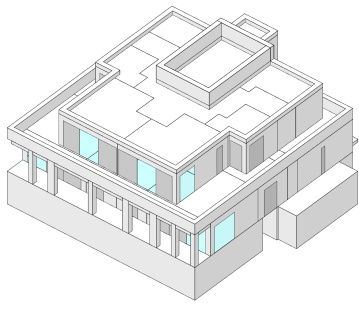
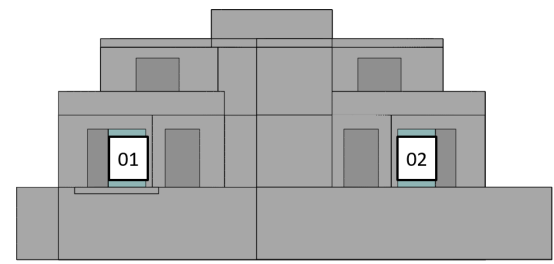
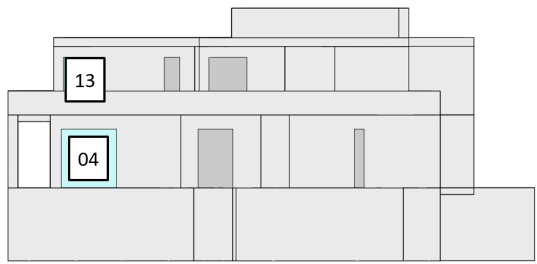
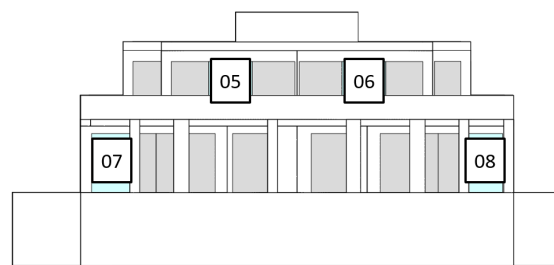
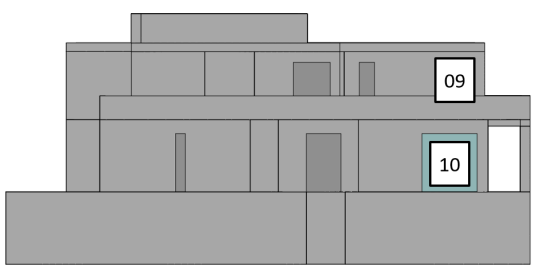


Ref #	Orientation	Proposed		Comment
		Annual (%)	Winter (%)	
1	North / East	17.00	1.62	x/x
2		9.49	0.00	x/x
3		9.50	0.00	x/x
4		6.04	0.00	x/x
5	South / East	57.18	21.90	✓/✓
6		46.84	17.99	✓/✓
7		37.42	15.90	✓/✓
8	South / West	64.00	23.85	✓/✓
9		63.90	23.45	✓/✓
10		27.51	11.56	✓/✓
11		30.20	16.04	✓/✓
12		27.43	11.40	✓/✓
13		28.04	14.20	✓/✓
14	North / West	27.02	4.72	✓/x
15		29.57	5.80	✓/✓
16		26.31	4.65	✓/x

The following conclusions can be made:

- ✓/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008.
- ✓/x These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual sunlight, but not winter sunlight. This is as a result of their orientation as noted within the guidelines. (See discussions section 8.2 for more information).
- x/x These windows do not meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual or winter sunlight. This is as a result of their orientation. (See discussions section 16.5.4.11 for more information).

16.5.4.7 Block C2

				
North / East		South / East		
				
South / West		North / West		
				
Ref #	Orientation	Proposed		Comment
		Annual (%)	Winter(%)	
1	North / East	8.13	0.30	x/x
2		5.98	0.00	x/x
3	South / East	48.94	16.60	✓/✓
4		44.49	14.15	✓/✓
5	South / West	58.49	19.69	✓/✓
6		57.13	17.96	✓/✓
7		24.71	10.56	x/✓
8		23.38	10.33	x/✓
9	North / West	25.89	5.36	✓/✓
10		25.52	6.95	✓/✓

The following conclusions can be made:

- ✓/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008.
- x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.
- x/x These windows do not meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual or winter sunlight. This is as a result of their orientation. (See discussions section 16.5.4.11 for more information).

16.5.4.8 Block D



Ref #	Orientation	Proposed		Comment
		Annual (%)	Winter (%)	
1	East	53.15	22.38	✓/✓
2		53.15	22.38	✓/✓
3		33.21	15.69	✓/✓
4		39.86	15.53	✓/✓
5		42.81	15.78	✓/✓
6		32.95	15.35	✓/✓
7		30.57	14.64	✓/✓
8		41.59	15.58	✓/✓
9	North	17.67	0.70	x/x
10		17.65	0.71	x/x
11		17.69	0.70	x/x
12		17.22	0.70	x/x
13		17.22	0.70	x/x
14		17.42	0.91	x/x
15		18.18	0.70	x/x
16		17.10	0.70	x/x
17		17.97	0.70	x/x
18		17.78	0.70	x/x
19		17.78	0.70	x/x
20	North / East	11.25	0.01	x/x
21		6.94	0.00	x/x
22		1.47	0.00	x/x
23		0.84	0.00	x/x
24		0.76	0.00	x/x
25		0.42	0.00	x/x
26		21.80	1.64	x/x
27		7.41	0.00	x/x
28		5.88	0.00	x/x
29		3.74	0.00	x/x
30		1.50	0.00	x/x
31		0.15	0.00	x/x
32		7.31	0.00	x/x
33		8.23	0.00	x/x
34		3.56	0.00	x/x
35		4.07	0.00	x/x
36	South	81.82	38.46	✓/✓
37		81.82	38.46	✓/✓
38		81.82	38.46	✓/✓
39		81.82	38.46	✓/✓
40		81.82	38.46	✓/✓
41		80.15	36.79	✓/✓
42	South / East	74.13	33.57	✓/✓
43		59.68	30.49	✓/✓
44		59.46	30.48	✓/✓
45		57.28	30.35	✓/✓
46		57.38	30.45	✓/✓
47		57.26	29.27	✓/✓
48		74.13	33.57	✓/✓
49		39.91	23.89	✓/✓
50		49.24	22.97	✓/✓

51	South / East	48.30	22.11	✓/✓
52		47.84	21.92	✓/✓
53		46.74	20.98	✓/✓
54		73.66	33.57	✓/✓
55		58.29	29.49	✓/✓
56		56.76	28.32	✓/✓
57		53.85	27.94	✓/✓
58		54.21	28.02	✓/✓
59		55.96	26.52	✓/✓
60		72.74	33.57	✓/✓
61		45.37	21.83	✓/✓
62		43.56	21.60	✓/✓
63		42.20	20.58	✓/✓
64		41.72	20.42	✓/✓
65		48.56	21.89	✓/✓
66		71.69	33.57	✓/✓
67		44.89	22.60	✓/✓
68		42.30	21.83	✓/✓
69		40.86	20.93	✓/✓
70		40.48	20.85	✓/✓
71		40.20	20.24	✓/✓
72	South	68.43	33.96	✓/✓
73		63.69	32.78	✓/✓
74		62.35	32.13	✓/✓
75		61.41	32.13	✓/✓
76		60.20	32.13	✓/✓
77	South / East	16.64	13.42	x/✓
78	South	70.41	34.93	✓/✓
79		69.57	34.61	✓/✓
80		68.66	34.13	✓/✓
81	South / West	75.72	34.27	✓/✓
82		74.54	33.40	✓/✓
83		37.67	23.42	✓/✓
84		35.72	22.11	✓/✓
85		34.25	22.11	✓/✓
86		36.71	23.45	✓/✓
87		59.54	29.24	✓/✓
88		56.88	28.97	✓/✓
89		55.59	28.91	✓/✓
90		56.03	29.03	✓/✓
91		75.83	34.27	✓/✓
92		52.00	23.61	✓/✓
93		48.86	23.56	✓/✓
94		47.72	22.64	✓/✓
95		47.69	22.64	✓/✓
96		48.71	23.46	✓/✓
97		75.90	34.27	✓/✓
98		59.45	30.36	✓/✓
99		57.28	30.28	✓/✓
100		54.77	30.07	✓/✓
101		54.75	30.08	✓/✓

102	South / West	56.12	29.99	✓/✓
103		33.05	22.53	✓/✓
104		32.30	22.82	✓/✓
105		32.70	22.54	✓/✓
106		29.68	21.41	✓/✓
107		29.68	21.41	✓/✓
108		32.42	22.54	✓/✓
109	North	18.87	0.70	x/x
110		18.44	0.70	x/x
111		18.28	0.70	x/x
112		18.37	0.70	x/x
113	North / West	14.14	1.31	x/x
114		13.23	0.91	x/x
115		13.01	0.70	x/x
116		13.56	0.70	x/x
117		8.31	0.08	x/x
118		7.36	0.07	x/x
119		9.25	0.00	x/x
120		8.58	0.00	x/x
121		8.25	0.00	x/x
122		24.35	3.37	x/x
123		10.17	1.02	x/x
124		9.33	0.49	x/x
125		7.26	0.00	x/x
126		6.95	0.00	x/x
127		6.95	0.00	x/x
128		23.45	2.47	x/x
129		11.36	0.21	x/x
130		8.52	0.00	x/x
131		7.66	0.00	x/x
132		6.59	0.00	x/x
133		5.78	0.00	x/x
134		23.13	2.31	x/x
135		9.00	0.20	x/x
136		8.14	0.00	x/x
137		6.96	0.00	x/x
138		5.74	0.00	x/x
139		4.70	0.00	x/x
140		22.74	2.12	x/x
141		12.57	0.34	x/x
142		8.98	0.00	x/x
143		6.68	0.00	x/x
144		5.16	0.00	x/x
145		3.15	0.00	x/x
146		18.76	0.90	x/x
147		10.48	0.00	x/x
148		2.73	0.00	x/x
149		0.35	0.00	x/x
150		0.05	0.00	x/x
151		0.00	0.00	x/x
152		2.61	0.00	x/x
153		0.00	0.00	x/x
154		0.00	0.00	x/x
155		0.00	0.00	x/x
156		0.00	0.00	x/x

157	North / West	0.00	0.00	x/x
158		31.47	8.40	✓/✓
159		30.09	8.39	✓/✓
160		27.36	8.39	✓/✓
161		25.03	8.39	✓/✓
162		31.64	8.39	✓/✓
163		31.05	8.40	✓/✓
164		29.37	8.39	✓/✓
165		29.37	8.39	✓/✓
166		28.67	8.39	✓/✓
167		27.92	8.39	✓/✓

The following conclusions can be made:

- ✓/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008.
- x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.
- x/x These windows do not meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual or winter sunlight. This is as a result of their orientation. (See discussions section 16.5.4.11 for more information).

16.5.4.9 Block E1



Ref #	Orientation	Proposed		Comment
		Annual (%)	Winter (%)	
1	North / East	12.60	1.66	x/x
2		10.32	1.04	x/x
3		8.35	0.53	x/x
4		8.61	0.59	x/x
5		22.59	3.12	x/x
6		22.17	2.80	x/x
7		17.53	0.54	x/x
8		13.10	0.25	x/x
9		10.09	0.06	x/x
10		7.00	0.03	x/x
11		23.08	3.50	x/x
12		12.34	2.00	x/x
13		9.17	1.28	x/x
14		7.76	0.86	x/x
15		6.93	0.82	x/x
16		6.96	0.58	x/x
17		5.44	0.00	x/x
18		5.38	0.00	x/x
19		5.37	0.00	x/x
20		4.83	0.00	x/x
21		4.71	0.00	x/x
22		4.86	0.00	x/x
23	North	7.04	0.00	x/x

24	North	7.01	0.00	x/x
25		6.94	0.00	x/x
26		6.07	0.00	x/x
27		5.70	0.00	x/x
28		5.97	0.00	x/x
29	South / East	61.63	25.05	✓/✓
30		60.15	23.64	✓/✓
31		58.56	23.09	✓/✓
32		56.08	22.87	✓/✓
33		60.94	23.21	✓/✓
34		57.98	20.99	✓/✓
35		55.29	18.94	✓/✓
36		52.15	17.00	✓/✓
37	South	79.72	36.36	✓/✓
38		65.31	34.25	✓/✓
39		53.44	29.02	✓/✓
40		47.60	26.41	✓/✓
41		46.12	25.86	✓/✓
42		65.25	29.78	✓/✓
43		59.16	28.43	✓/✓
44		55.99	27.82	✓/✓
45		53.11	29.55	✓/✓
46		78.57	36.34	✓/✓
47		57.22	32.06	✓/✓
48		49.70	26.31	✓/✓
49		46.64	25.48	✓/✓
50		45.29	25.48	✓/✓
51		0.00	0.00	x/x
52		75.81	35.83	✓/✓
53		57.00	30.80	✓/✓
54		47.67	24.08	✓/✓
55		45.91	24.19	✓/✓
56		43.87	24.07	✓/✓
57		32.70	17.94	✓/✓
58		22.42	18.13	x/✓
59		21.16	16.89	x/✓
60		20.41	15.61	x/✓
61		24.88	14.76	x/✓
62		23.40	14.78	x/✓
63		23.57	15.10	x/✓
64	South / West	69.92	34.27	✓/✓
65		46.22	27.09	✓/✓
66		39.46	22.15	✓/✓
67		36.63	20.99	✓/✓
68		35.78	20.97	✓/✓
69		36.50	21.93	✓/✓
70		73.21	34.27	✓/✓
71		62.97	33.94	✓/✓
72		56.54	29.22	✓/✓
73		53.54	28.64	✓/✓
74		50.27	28.14	✓/✓

75	South / West	50.14	28.10	✓/✓
76		55.30	28.48	✓/✓
77		37.10	26.40	✓/✓
78		36.37	25.67	✓/✓
79		39.63	26.93	✓/✓
80	West	56.54	23.07	✓/✓
81		50.64	22.00	✓/✓
82		43.73	21.57	✓/✓
83		39.64	20.36	✓/✓
84		36.70	19.76	✓/✓

The following conclusions can be made:

- ✓/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008.
- x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.
- x/x These windows do not meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual or winter sunlight. This is as a result of their orientation. (See discussions section 16.5.4.11 for more information).

16.5.4.10 Block E2



Ref #	Orientation	Proposed		Comment
		Annual (%)	Winter (%)	
1	North	10.23	0.29	x/x
2		9.12	0.00	x/x
3		9.04	0.00	x/x
4		8.41	0.00	x/x
5		16.68	0.70	x/x
6		17.01	0.70	x/x
7		16.55	0.70	x/x
8		15.42	0.70	x/x
9		15.19	0.70	x/x
10		13.80	0.70	x/x
11		16.96	0.70	x/x
12		17.13	0.70	x/x
13		16.38	0.70	x/x
14		15.84	0.70	x/x
15		14.79	0.70	x/x
16		3.81	0.00	x/x
17		15.93	1.26	x/x

18	North	14.03	0.70	x/x
19		13.93	0.70	x/x
20		13.48	0.70	x/x
21	East	32.12	13.98	✓/✓
22		29.05	13.75	✓/✓
23		27.51	13.58	✓/✓
24		25.96	12.64	✓/✓
25		25.94	12.60	✓/✓
26		26.04	12.63	✓/✓
27		6.59	3.68	x/x
28		4.77	3.01	x/x
29		3.68	3.01	x/x
30		3.21	2.75	x/x
31	South	77.92	37.06	✓/✓
32		70.50	35.95	✓/✓
33		40.81	24.39	✓/✓
34		35.60	23.05	✓/✓
35		31.17	21.42	✓/✓
36		35.13	20.79	✓/✓
37		80.42	37.06	✓/✓
38		79.15	37.06	✓/✓
39		76.63	37.06	✓/✓
40		74.89	37.06	✓/✓
41		73.04	35.99	✓/✓
42		65.23	30.44	✓/✓
43		73.11	36.68	✓/✓
44		69.81	36.57	✓/✓
45		69.74	35.84	✓/✓
46		70.23	36.41	✓/✓
47		68.91	35.15	✓/✓
48		64.53	31.30	✓/✓
49		77.06	36.91	✓/✓
50		76.87	36.82	✓/✓
51		76.25	36.85	✓/✓
52		74.96	36.12	✓/✓
53		73.78	35.79	✓/✓
54		65.56	30.23	✓/✓
55		63.55	33.89	✓/✓
56		46.55	25.86	✓/✓
57		41.39	24.47	✓/✓
58		40.84	24.22	✓/✓
59		40.00	22.39	✓/✓
60	West	18.08	0.09	x/x
61		10.62	0.07	x/x
62		9.85	0.06	x/x
63		9.73	0.06	x/x
64		9.73	0.06	x/x
65		9.85	0.06	x/x
66		19.85	0.64	x/x
67		13.65	0.64	x/x
68		13.28	0.64	x/x
69		13.05	0.64	x/x

70	West	13.05	0.64	x/x
71		55.95	23.08	✓/✓
72		41.70	16.44	✓/✓
73		40.09	15.62	✓/✓
74		39.71	15.62	✓/✓
75		40.91	16.44	✓/✓
76		56.64	23.08	✓/✓
77		56.65	23.08	✓/✓
78		55.94	23.08	✓/✓
79		56.04	23.08	✓/✓
80		56.04	23.08	✓/✓
81		55.75	22.88	✓/✓
82		42.63	22.38	✓/✓
83		34.14	22.00	✓/✓
84		32.33	20.70	✓/✓
85		29.80	20.21	✓/✓
86		29.74	20.21	✓/✓
87		29.42	18.86	✓/✓
88		35.37	18.74	✓/✓
89		30.40	18.59	✓/✓
90		30.40	18.59	✓/✓
91		30.42	18.40	✓/✓
92		30.42	18.40	✓/✓
93		29.50	17.57	✓/✓
94		40.75	21.74	✓/✓
95		37.16	21.52	✓/✓
96		37.10	21.52	✓/✓
97		36.39	21.23	✓/✓
98		36.34	21.23	✓/✓
99		35.30	19.82	✓/✓

The following conclusions can be made:

✓/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008.

x/x These windows do not meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual or winter sunlight. This is as a result of their orientation. (See discussions section 16.5.4.11 for more information).

16.5.4.11 Proposed APSH Analysis Discussion

Within the BS 8206-2:2008 standard, when discussing annual probable sunlight hours regarding proposed developments, it is noted that:

“The degree of satisfaction is related to the expectation of sunlight. If a room is necessarily North facing or if the building is in a densely-built urban area, the absence of sunlight is more acceptable than when its exclusion seems arbitrary”.

This is also reflected in the correlating BRE guidance which notes:

“The BS 8206-2 criterion applies to rooms of all orientations, although if a room faces significantly north of due east or west it is unlikely to be met.”

The results of the APSH test note that 47.3% (355 of 750) of main living room windows tested are achieving 25% annual and 5% winter sunlight hours. The windows that do not meet this recommendation are as a result of their orientation and/or the provision of a balcony (refer to Section 16.5.6.6 Compensatory Measures). It can also be noted that in 58% of cases that the winter sunlight target is achieved, which is further evidence of the influence from the balconies as they receive the sunlight target through the winter months when the sun is lower in the sky.

	Windows pass APSH 25 % (annual period)	Windows pass APSH 5% (winter period)
#	357	433
%	48%	58%

16.5.5 Sunlight to the Existing & Proposed Amenity Spaces

16.5.5.1 Requirements

The impact of the development proposal on the sunlight availability in the amenity areas will be considered to determine how they perform when assessed against the BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight which states the following in Section 3.3.17:

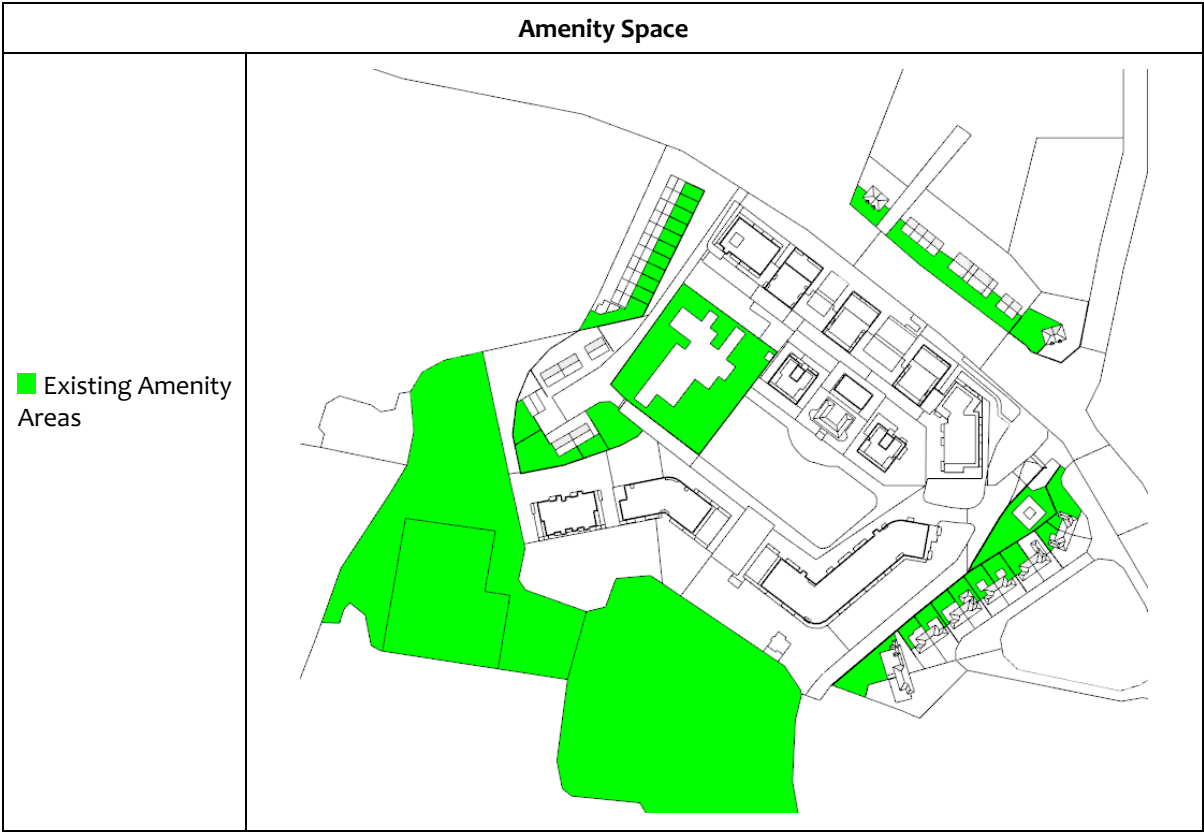
Summary

3.3.17 It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March.

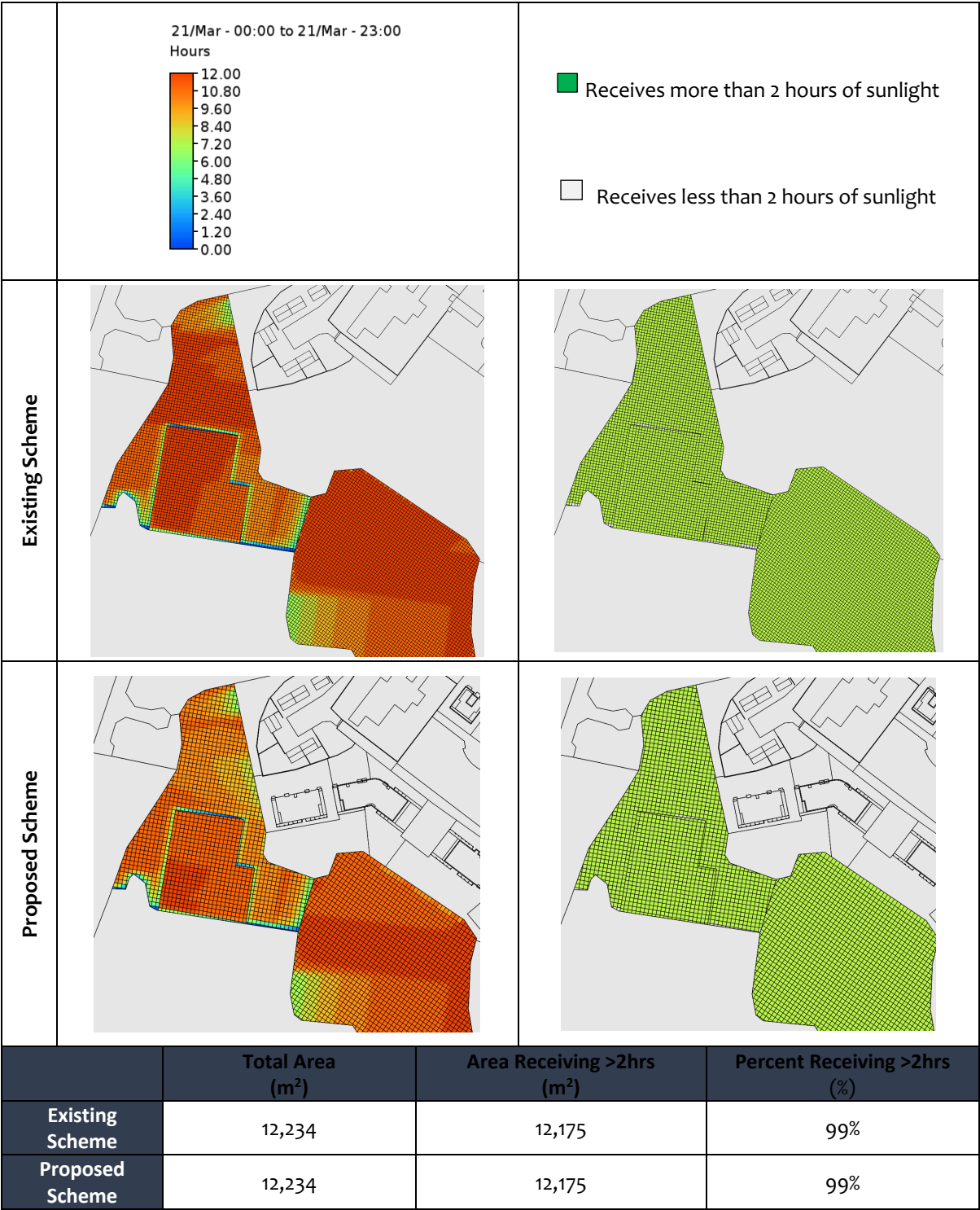
BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight states in 3.3.17 that for a space to, appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least 2 hours of sunlight on 21st March.

16.5.5.2 Existing Amenity Areas

As stated above for a space to, appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least 2 hours of sunlight on 21st March. This analysis performed on the following amenity spaces highlighted below:



16.5.5.3 Rockfield Park



The following conclusions can be made:

- ✓
- The sunlight to existing amenity gardens achieves at least receive at least 2 hours of sunlight on 21st March or are 0.8 times their former value with the proposed development in place, thus complying with the BRE Guide.

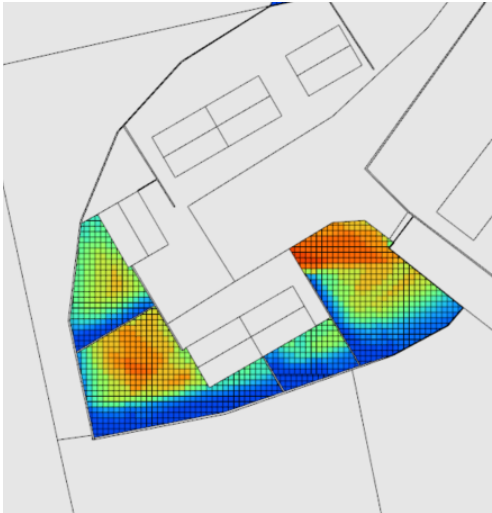

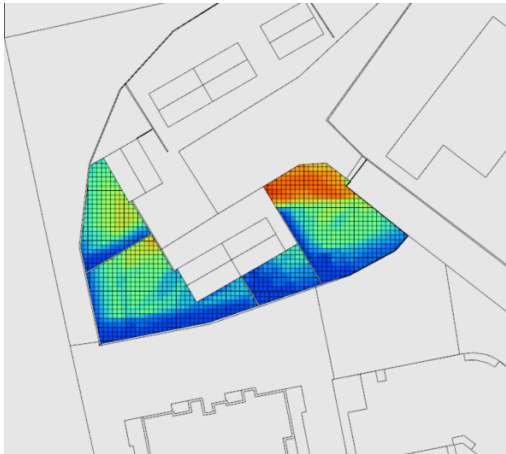

16.5.5.4 Alzheimer's Society

	<p>21/Mar - 00:00 to 21/Mar - 23:00 Hours</p>		<p> Receives more than 2 hours of sunlight</p> <p> Receives less than 2 hours of sunlight</p>	
Existing Scheme				
Proposed Scheme				
	Total Area (m²)	Area Receiving >2hrs (m²)	Percent Receiving >2hrs (%)	
Existing Scheme	3083	2391	78%	✓
Proposed Scheme	3083	2380	77%	✓

The following conclusions can be made:

- ✓ The sunlight to existing amenity gardens achieves at least receive at least 2 hours of sunlight on 21st March or are 0.8 times their former value with the proposed development in place, thus complying with the BRE Guide.

16.5.5.5 St. Louise's Park

	<div>21/Mar - 00:00 to 21/Mar - 23:00 Hours</div> <div><div>11.00</div><div>9.90</div><div>8.80</div><div>7.70</div><div>6.60</div><div>5.50</div><div>4.40</div><div>3.30</div><div>2.20</div><div>1.10</div><div>0.00</div></div>	<div><div>■</div> Receives more than 2 hours of sunlight</div> <div><div>□</div> Receives less than 2 hours of sunlight</div>
Existing Scheme		
Proposed Scheme		

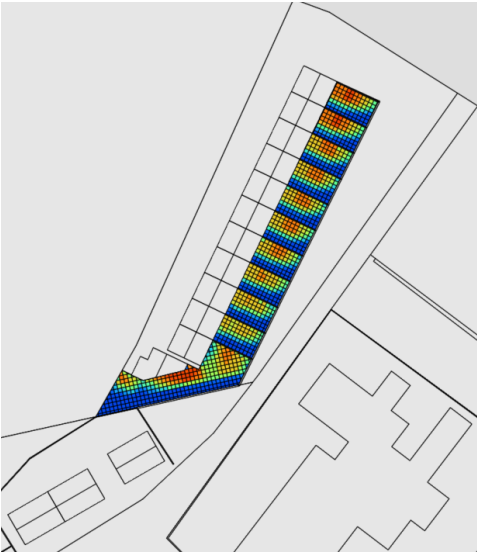
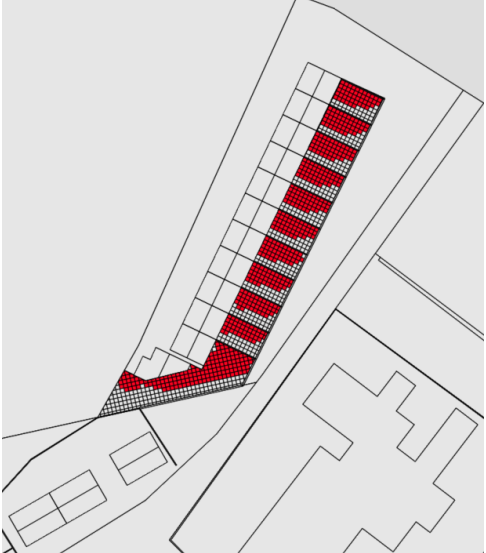
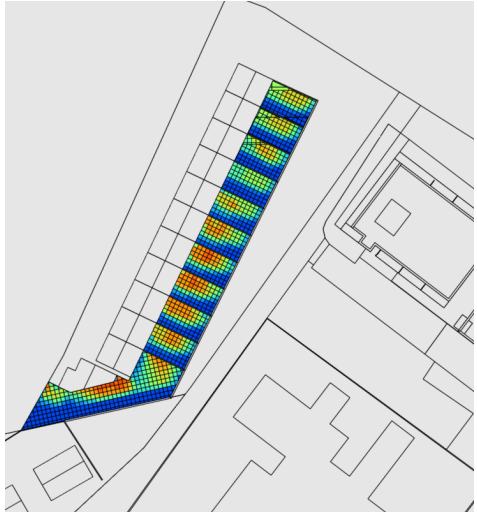
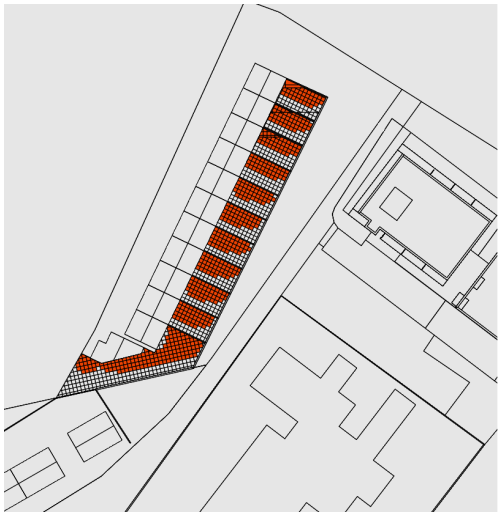


Ref	Area (m ²)	Existing Area >2 hrs (m ²)	Proposed Area >2 hrs (m ²)	Proposed vs Existing (%)	Comment
1	223	181	178	98%	✓
2	477	323	308	95%	✓
3	132	68	43	63%	x
4	463	357	349	98%	✓
5	1295	929	878	95%	✓

The following conclusions can be made:

- ✓ The sunlight to existing amenity gardens achieves at least receive at least 2 hours of sunlight on 21st March or are 0.8 times their former value with the proposed development in place, thus complying with the BRE Guide.
- X The sunlight to existing amenity gardens does not achieve at least 0.8 times their former value with the proposed development in place.

16.5.5.6 Barclay Court

	<div>21/Mar - 00:00 to 21/Mar - 23:00 Hours</div> <div><div>11.00</div><div>9.90</div><div>8.80</div><div>7.70</div><div>6.60</div><div>5.50</div><div>4.40</div><div>3.30</div><div>2.20</div><div>1.10</div><div>0.00</div></div>	<div><div>■</div> Receives more than 2 hours of sunlight</div> <div><div>□</div> Receives less than 2 hours of sunlight</div>
Existing Scheme		
Proposed Scheme		

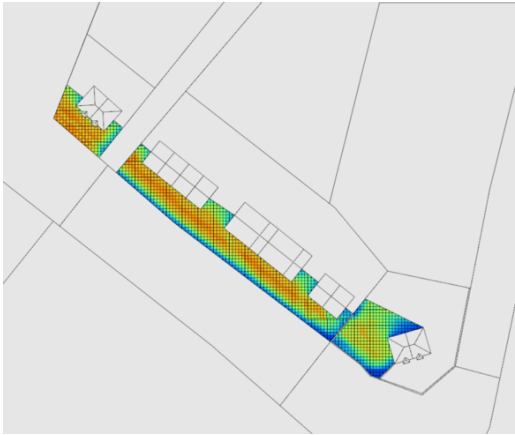

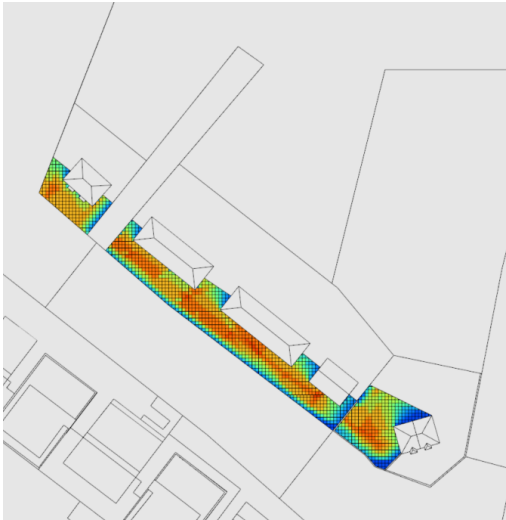



Ref	Area (m ²)	Existing Area >2 hrs (m ²)	Proposed Area >2 hrs (m ²)	Proposed vs Existing (%)	Comment
1	278	149	143	96	✓
2	77	45	45	100	✓
3	77	42	42	100	✓
4	78	44	44	100	✓
5	78	45	45	100	✓
6	78	46	46	100	✓
7	79	47	43	91	✓
8	79	46	40	87	✓
9	80	49	42	86	✓
10	80	47	46	98	✓
11	80	47	46	98	✓
Total	1064	607	582	96	✓

The following conclusions can be made:

- ✓ The sunlight to existing amenity gardens achieves at least receive at least 2 hours of sunlight on 21st March or are 0.8 times their former value with the proposed development in place, thus complying with the BRE Guide.

16.5.5.7 Temple Road

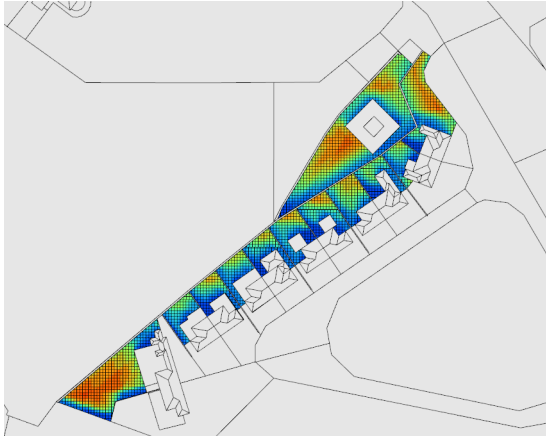

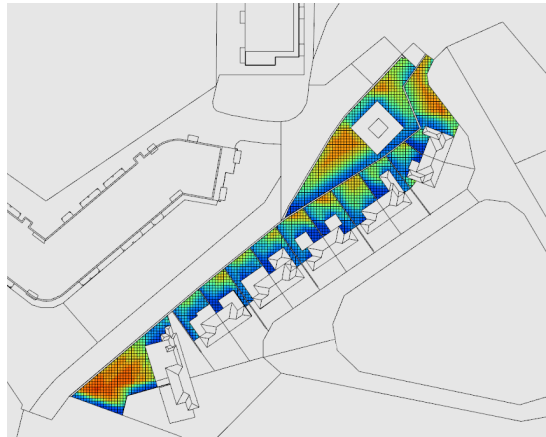

	<div>21/Mar - 00:00 to 21/Mar - 23:00 Hours</div> <div><div>11.00</div><div>9.90</div><div>8.80</div><div>7.70</div><div>6.60</div><div>5.50</div><div>4.40</div><div>3.30</div><div>2.20</div><div>1.10</div><div>0.00</div></div>	<div><div>■</div> Receives more than 2 hours of sunlight</div> <div><div>□</div> Receives less than 2 hours of sunlight</div>
Existing Scheme		
Proposed Scheme		



The following conclusions can be made:

- ✓ The sunlight to existing amenity gardens achieves at least receive at least 2 hours of sunlight on 21st March or are 0.8 times their former value with the proposed development in place, thus complying with the BRE Guide.

16.5.5.8 St. Vincent's Park

	<div>21/Mar - 00:00 to 21/Mar - 23:00 Hours</div> <div><div>11.00</div><div>9.90</div><div>8.80</div><div>7.70</div><div>6.60</div><div>5.50</div><div>4.40</div><div>3.30</div><div>2.20</div><div>1.10</div><div>0.00</div></div>	<div><div></div> Receives more than 2 hours of sunlight</div> <div><div></div> Receives less than 2 hours of sunlight</div>
Existing Scheme		
Proposed Scheme		

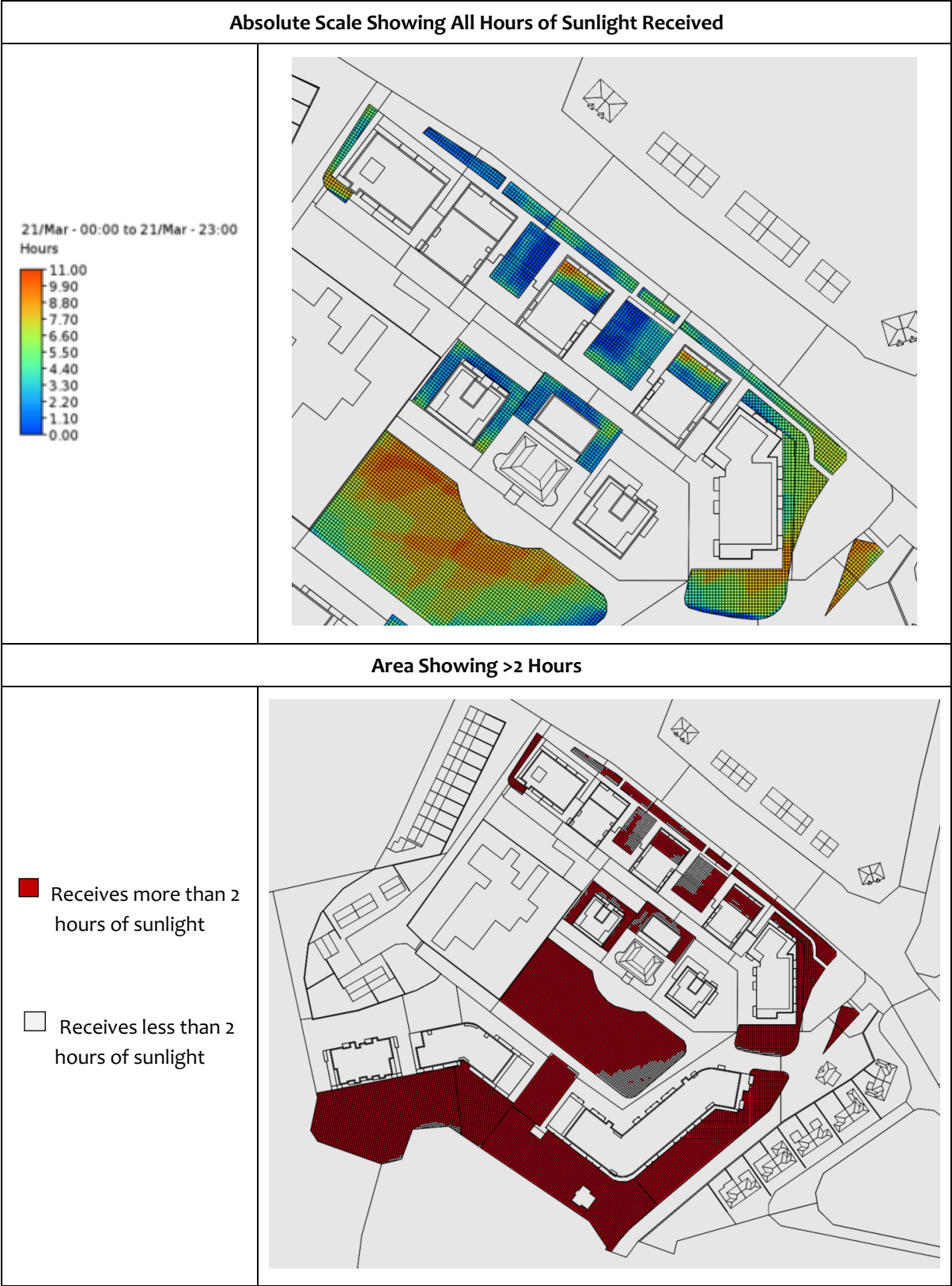


Ref	Area (m ²)	Existing Area >2 hrs (m ²) (%)	Proposed Area >2 hrs (m ²) (%)	Proposed vs Existing (%)	Comment
1	429	350	350	100%	✓
2	94	67	65	97%	✓
3	113	57	55	96%	✓
4	105	48	46	96%	✓
5	115	51	50	98%	✓
6	140	58	55	95%	✓
7	140	85	80	94%	✓
8	151	119	114	96%	✓
9	114	56	52	93%	✓
10	94	54	50	93%	✓
11	291	242	241	100%	✓
12	934	825	801	97%	✓

The following conclusions can be made:

- ✓ The sunlight to existing amenity gardens achieves at least receive at least 2 hours of sunlight on 21st March or are 0.8 times their former value with the proposed development in place, thus complying with the BRE Guide.

16.5.5.9 Proposed Amenity Areas

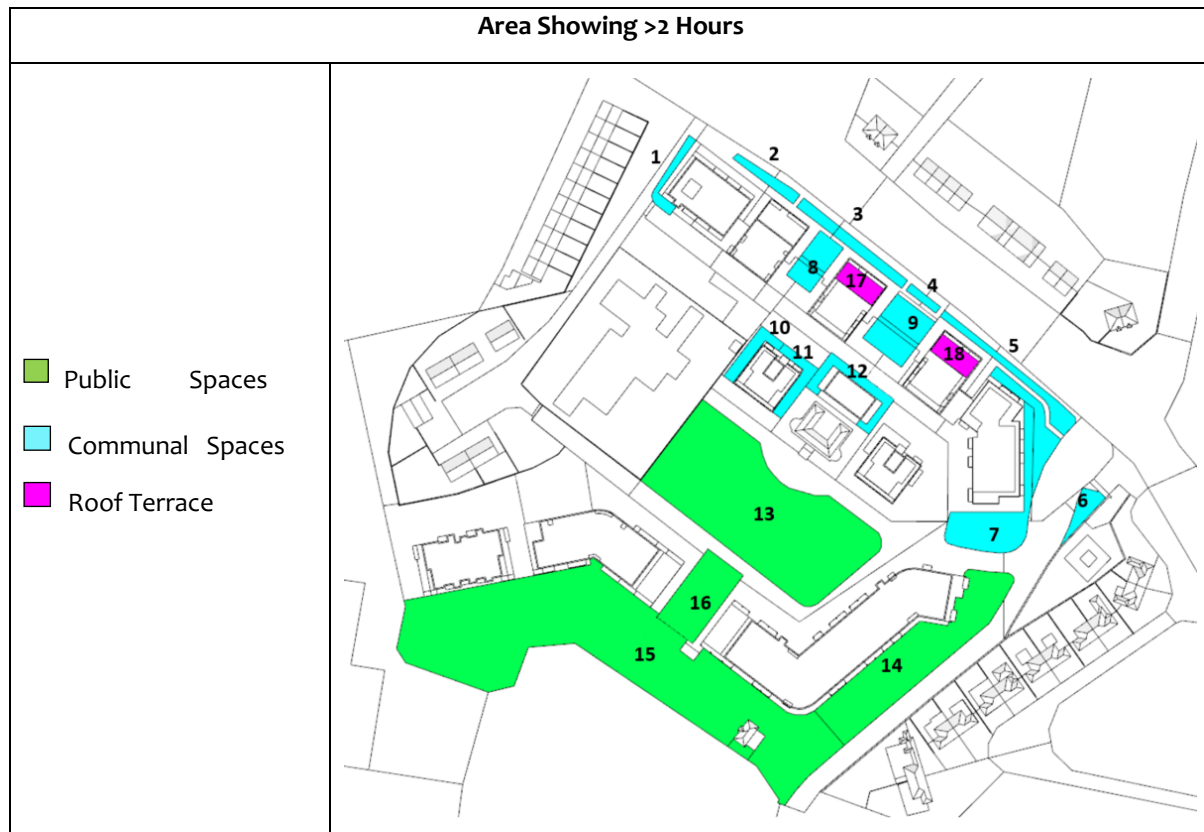


Area Showing >2 Hours



Area Showing >2 Hours





Ref.	Total Area (m ²)	Area Receiving >2hrs (m ²)	Percent Receiving >2hrs (%)	Comment
1	122	118	97%	✓
2	119	39	33%	✓
3	237	210	89%	✓
4	52	51	98%	✓
5	271	271	100%	✓
6	138	138	100%	✓
7	951	918	97%	✓
8	276	100	36%	X
9	454	259	57%	✓
10	149	123	83%	✓
11	166	145	87%	✓
12	299	201	67%	✓
13	3,686	3,239	88%	✓
14	1,649	1,645	99%	✓
15	5,839	5,777	99%	✓
16	635	624	98%	✓
17	156	147	94%	✓
18	156	139	89%	✓
Overall	15,355	14,144	92%	✓

16.5.5.11 Discussions

Existing Amenities

The sunlight to existing amenity gardens achieves at least receive at least 2 hours of sunlight on 21st March on nearly all the surrounding private and public amenity areas. Only one garden area on St Louise Park will notice a moderate impact with all other gardens adjacent to the site having an imperceptible Impact. This equates to 37 out of 38 gardens neighbouring the proposed development. (See section 16.1 for detailed description).

Proposed Amenities

The total proposed amenity provision is of high quality with 92% achieving at least 2 hours of sunlight of sunlight coverage on the 21st of March across 50% of their area, complying with the BRE recommendations.

For the private/communal and roof top areas this equates to 78% of the space provided complying with the BRE recommendations and for the public open spaces provided this equates to 95% of the space provided achieving at least 2 hours of sunlight of sunlight coverage on the 21st of March across 50% of their area. Overall the amenity areas being provided are of a high quality in terms of sunlight.

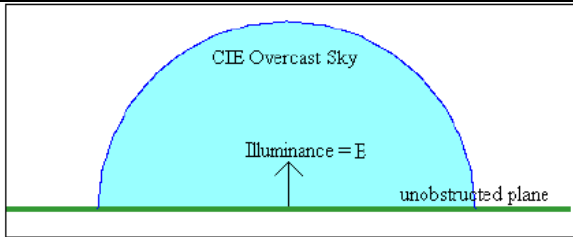
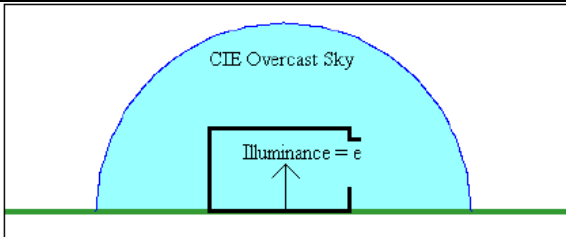
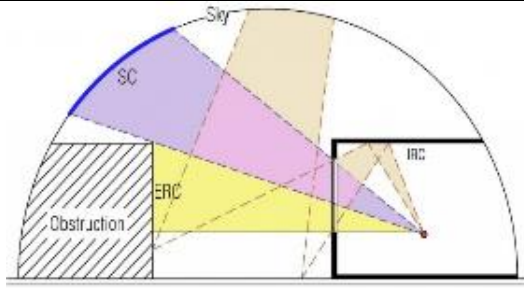
16.5.6 Average Daylight Factors (ADF)

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. The proposed methodology, given the repeat typology as you progress up through the floors, is to complete the ADF calculations for ground, 1st and 2nd floors and carry up any rooms that do not meet recommendations until they are achieved. The objective of the design team was to maximise the number of units which exceed the BRE recommendations.

16.5.6.1 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.

Daylight Factor Methodology	
	
E = illuminance on unobstructed plane	e = illuminance at point in interior
Daylight Factor = e/E (often expressed as a percentage)	
<div> <div> SC – Sky Component ERC – Externally Reflected Component IRC – Internally Reflected Component </div>  <p>Sources of Daylight at a Point Within a Room</p> </div>	

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.

16.5.6.2 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 11.9.

16.5.6.3 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 (Urban Development and Building Heights, Guidelines for Planning Authorities 2018), 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 good levels of daylight 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 Pleanála.

16.5.6.5 Discussions

The purpose of the ADF calculations is to quantify an overall percentage of units which exceeds the BRE recommendations and the BS 8206-2:2008 recommendations. The proposed methodology is to complete the ADF calculations for the whole lower floors given that these are the worst-case locations and continue the analysis up through the building until the results can be qualified 2% targets for L/K/Ds and the 1% for bedrooms. The objective of the design team is to maximise the number of units which exceed the BRE and the BS 8206-2:2008 recommendations.

The results for each block can be found in Appendix A1 and are summarised in tables found in Appendix A2. The total results for the development as a whole are summarised in the tables below:

Total Development Results – 2% Target

Rooms Tested (Total Development)		No. Rooms
Total Bedrooms Tested		364
Total Living/Kitchen/Dining Areas Tested		237
Total Spaces Tested		601
Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in the entire Development)		%
Bedrooms Pass	359	99%
L/K/D Areas Pass	192	81%
Total Overall	551	92%

Based on the results from the rooms tested, the results were extrapolated to all rooms within the entire development which are summarised in the following tables:

Total Rooms in the Development		No. Rooms
Total Bedrooms		742
Total Living/Kitchen/Dining Areas		493
Total Spaces		1,235
Whole Space For L/K/D against 2% ADF Target (Predicted Results for the entire Development)		%
Bedrooms Pass	737	99%
L/K/D Areas Pass	427	87%
Total Overall	1,164	94%

Across the proposed development, 92% of the tested rooms are achieving Average Daylight Factors (ADF) above the BRE and BS 8206-2:2008 guidelines when Living/Kitchen/Dining spaces are assessed as whole rooms against a 2% ADF target. This increases to 94% when the results are project for the development as a whole.

16.5.6.6 Compensatory Measures

Compensatory measures have been incorporated into the design of the proposed development to offset reduced daylight performance in a number of bedrooms and LKDs. These measures are summarised as follows:

- 91.68% of the apartment units have a floor area greater than the minimum floor area requirements. Note, larger apartments make it more difficult to achieve the recommended daylight levels.
- 64.5% of the apartments provided are 10% larger than the minimum requirement. The target here is 51% as noted in the national guideline (Sustainable Urban Housing: Design Standards for New Apartments: Guidelines for Planning Authorities issued under Section 28 of the Planning and Development Act, 2000 (as amended)) that requires 51% (the majority) of apartments areas to be 10% larger than minimum standards. Again, Note, larger apartments make it more difficult to achieve the recommended daylight levels.
- 52.56% of the apartment units are dual aspect which is above the 50% minimum requirement. As a result, more apartment units than the recommended minimum will achieve quality daylight from dual-aspect orientations.
- All apartment units have a balcony and although the provision of a private balcony has a negative impact on internal daylight levels, this is offset by the provision of private amenity space which was deemed of critical importance to the future occupants by the design team.
- 38% of the overall St Teresas development lands are provided as public open space, well in excess of the minimum requirements.
- An additional 15% of communal open space above the minimum requirements is proposed across the development.

The incorporation of the above compensatory measures more than offsets any reduced daylight performance when the proposed development as a whole is considered.

16.5.6.7 Alternative ADF Target for Combined Living, Kitchen and Dining Spaces

As previously stated in Section 16.5.6.6, 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.”

In this context, the living area has been treated as the main activity, with the design constraint of the kitchen being placed at the back of the space. This design decision is understandable as the kitchen area is classed as a “non-habitable transient space” because their functional significant purpose is only to serve as food preparation and not as a long-term sitting area. Additionally, not every space within a commercially viable apartment development can be in direct connection with an exterior elevation, making the kitchen the obvious choice for this position given that it is a transient space that will require supplementary electric lighting. This is strong evidence that the 1.5% average daylight factor is the appropriate target on this basis.

As stated in Section 2.1.14 of the BRE guide: “Non-daylit internal kitchens should be avoided wherever possible, especially if the kitchen is used as a dining area too. If the layout means that a small internal galley-type kitchen is inevitable, it should be directly linked to a well daylit living room”.

Ireland is currently in the midst of a widely recognised housing crisis with a need for quality domestic dwellings. This puts a premium on the number of properties to help overcome the national issue. Modern architectural design maximises the space function by creating open Living/Dining/Kitchen areas. Where previously solid partition walls may have existed to separate these functions, they are now removed to help maximise an open space that creates a more flexible and larger feeling habitable environment.

Therefore, where a kitchen may have been closed off into a cellular space with no access to daylight, the kitchen can now take advantage of daylight distribution from the adjoining living/dining area. Kitchen environments will still typically rely on artificial light, primarily for detail and safety precautions whilst preparing meals, but with this open layout form they will capture daylight that previously would not be available and which will help reduce artificial lighting needs at suitable times. This in turn helps to reduce electrical energy consumption.

With the kitchens positioned at the back of the space where artificial lighting will typically be required, then aspiring to achieve daylight contribution should be seen as the goal and not measuring it to fixed requirements. As the kitchens will be classed as a “non-habitable transient spaces”, the daylight benefit is primary to the habitable spaces of the Living and Dining areas.

The Living/Kitchen/Dining spaces have also been assessed as whole rooms against an alternative 1.5% ADF target. In addition to complying with further Irish Design Standards for New Apartments such as the provision of balconies (which reduce daylight within apartments as noted within the BRE guidelines) as well as the layout of the apartments with respect to Kitchens, the 1.5% ADF target is noted as the more appropriate target. Although the design target value is lower, this is compensated with a much higher valued outdoor private amenity provision which is noted to be a very desirable commodity for occupants to benefit their connection to the outdoors.

The following table summarises the overall compliance rate across the development based on an alternative ADF target of 1.5% for combined Living, Kitchen and Dining areas.

Therefore, when Living/Kitchen/Dining spaces are assessed as whole rooms against a 1.5% ADF target, a 95% compliance rate is achieved across all tested rooms within the proposed development. This increases to 97% when the results are project for the development as a whole.

The results for each block can be found in Appendix A1 and are summarised in tables found in Appendix A2. The total results for the development as a whole are summarised in the tables below:

Total Development Results – 1.5% Target

Rooms Tested (Total Development)		No. Rooms
Total Bedrooms Tested		364
Total Living/Kitchen/Dining Areas Tested		237
Total Spaces Tested		601
Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in the entire Development)		%
Bedrooms Pass	359	99%
L/K/D Areas Pass	214	90%
Total Overall	573	95%

Based on the results from the rooms tested, the results were extrapolated to all rooms within the entire development which are summarised in the following tables:

v		No. Rooms
Total Bedrooms		742
Total Living/Kitchen/Dining Areas		493
Total Spaces		1,235
Whole Space For L/K/D against 1.5% ADF Target (Predicted Results for the entire Development)		%
Bedrooms Pass	737	99%
L/K/D Areas Pass	461	94%
Total Overall	1,198	97%

16.6 Potential Cumulative Impacts

In relation to daylight and sunlight access to the proposed development, the longer-term cumulative impacts are considered not significant as the daylight and sunlight assessment has shown that the vast majority of rooms provided as part of the development comply with the BRE/ BS 8206-2:20 Guidelines for daylight within the proposed development.

In relation to daylight and sunlight access to the existing properties, the longer-term cumulative impacts are considered not significant as the daylight and sunlight assessment has shown that the vast majority of properties comply with the BRE/ BS 8206-2:20 Guidelines for daylight within the proposed development.

16.7 Do Nothing Scenario

In a “Do-Nothing” scenario no new buildings will be constructed, therefore, the existing level of daylight and sunlight access will remain unchanged.

16.8 Avoidance, Remedial and Mitigation Measures

Construction Phase

Remedial measures during the construction phase in relation to daylight and sunlight access are not considered to be required.

Operational Phase

Imperceptible impact is expected in relation to daylight and sunlight access experienced by the future inhabitants of the proposed development and to the existing inhabitants of the adjacent buildings. Therefore no remedial or mitigation measures are considered to be required.

16.9 Residual Impact

Imperceptible impact is expected in relation to daylight and sunlight access experienced by the future inhabitants of the proposed development and to the existing inhabitants of the adjacent buildings. No remedial or mitigation measures are considered to be required, therefore, there will be no residual impacts during the operational stage in respect of daylight and sunlight.

16.10 Monitoring

Construction Phase

No ongoing monitoring of daylight and sunlight is required during the construction phase. The analysis outlined in this chapter is carried out based on the completion of the proposed development.

Operational Phase

No ongoing monitoring of daylight and sunlight is required during the operational phase as long as there is no change to the proposed design.

16.11 Reinstatement

Construction Phase

There is no requirement for reinstatement with regards to daylight and sunlight during the construction phase.

Operational Phase

There is no requirement for reinstatement with regards to daylight and sunlight during the operational phase.

16.12 Interactions

The interactions between the proposed development and its environs and human health have been evaluated within the assessment. The modelling has included the proposed design and existing adjacent buildings which will remain. The combination of all interactions has resulted in excellent daylight and sunlight access to the proposed development with no significant impacts to surrounding existing buildings.

16.13 Difficulties Encountered

No difficulties were encountered in compiling this assessment.

16.14 References

BRE 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice" by Paul Littlefair, 2011 sometimes referred to as BRE Digest 209

British Standard Code of Practice for daylighting, BS 8206-2

Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities

EPA 2017 Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

16.15 Appendix A1 - ADF Results

The following tables illustrated the rooms that were tested for internal daylight levels along with their associated Average Daylight Factors. To note, within the tables the code LKD equates to Living, Kitchen and Dining area.

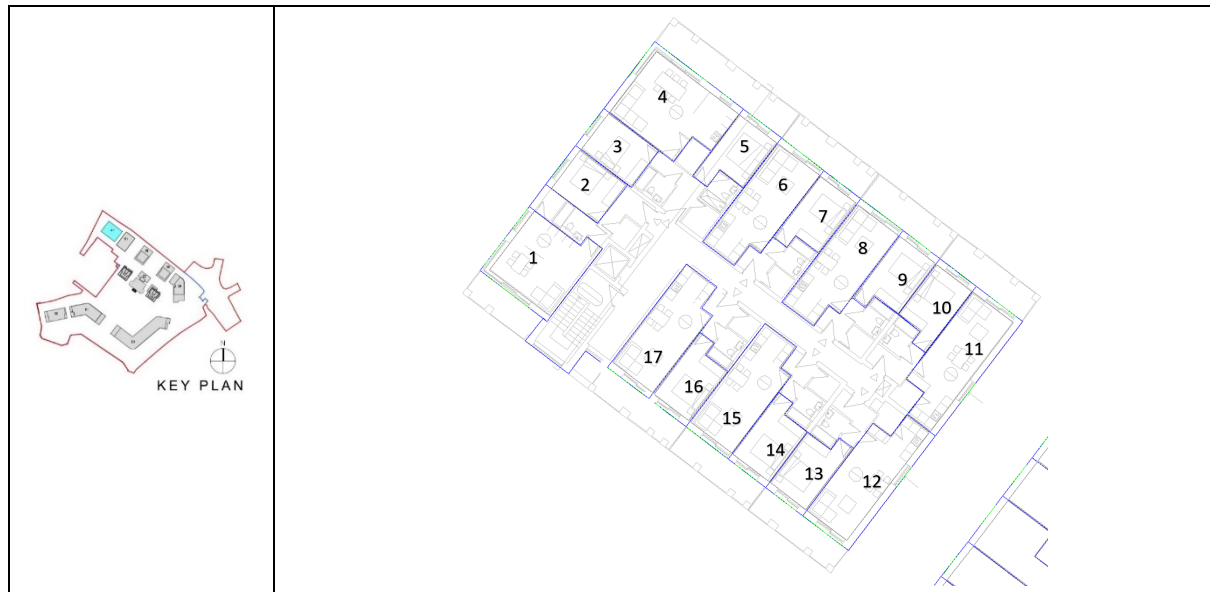
16.15.1.1 ADF – Block A1 – L00



Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L00: A1-01_LKD	LKD	20.80	6.43	✓
2	L00: A1-01_Bedroom	Bedroom	4.30	4.17	✓
3	L00: A1-02_Bedroom 01	Bedroom	4.30	3.93	✓
4	L00: A1-02_LKD	LKD	19.70	4.20	✓
5	L00: A1-02_Bedroom 02	Bedroom	4.90	1.66	✓
6	L00: A1-03_LKD	LKD	8.90	1.61	x / ✓
7	L00: A1-03_Bedroom	Bedroom	4.90	1.45	✓
8	L00: A1-04_LKD	LKD	8.90	1.75	x / ✓
9	L00: A1-04_Bedroom	Bedroom	4.90	1.55	✓
10	L00: A1-05_Bedroom	Bedroom	4.90	1.55	✓
11	L00: A1-05_LKD	LKD	13.20	1.87	x / ✓

The following conclusions can be made:

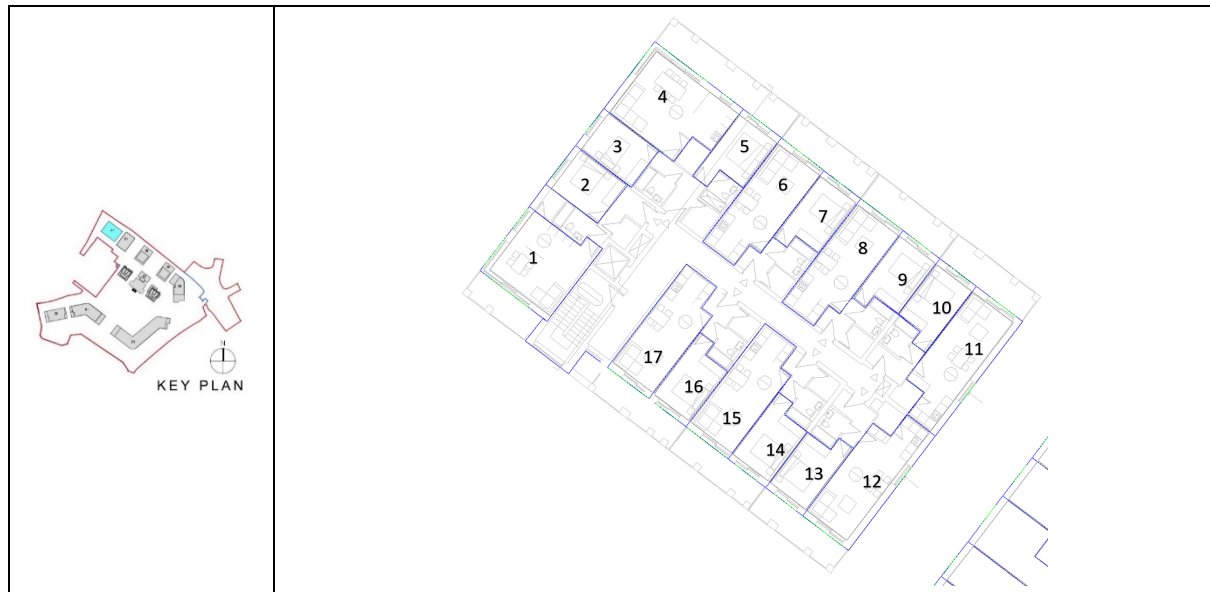
- ✓ These rooms have an ADF greater than the recommended minimum values (2.0% for combined L/K/Ds and 1.0% for bedrooms) as stated within the BRE/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.

16.15.1.2 ADF – Block A1 – L01

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L01: A1-06_LKD	LKD	20.80	7.04	✓
2	L01: A1-06_Bedroom	Bedroom	4.30	4.78	✓
3	L01: A1-07_Bedroom 01	Bedroom	4.30	4.63	✓
4	L01: A1-07_LKD	LKD	19.70	4.77	✓
5	L01: A1-07_Bedroom 07	Bedroom	4.90	1.51	✓
6	L01: A1-08_LKD	LKD	8.90	1.47	x
7	L01: A1-08_Bedroom	Bedroom	4.90	1.46	✓
8	L01: A1-09_LKD	LKD	8.90	1.35	x
9	L01: A1-09_Bedroom	Bedroom	4.90	1.47	✓
10	L01: A1-10_Bedroom	Bedroom	4.90	1.27	✓
11	L01: A1-10_LKD	LKD	13.20	1.39	x
12	L01: A1-11_LKD	LKD	13.20	1.69	x / ✓
13	L01: A1-11_Bedroom	Bedroom	4.90	1.17	✓
14	L01: A1-12_Bedroom	Bedroom	4.90	1.28	✓
15	L01: A1-12_LKD	LKD	8.90	1.24	x
16	L01: A1-13_Bedroom	Bedroom	4.90	1.33	✓
17	L01: A1-13_LKD	LKD	8.90	1.36	x

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

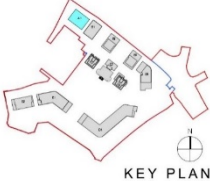
16.15.1.3 ADF – Block A1 – L02

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L02: A1-14_LKD	LKD	20.80	7.29	✓
2	L02: A1-14_Bedroom	Bedroom	4.30	4.90	✓
3	L02: A1-15_Bedroom 01	Bedroom	4.30	4.74	✓
4	L02: A1-15_LKD	LKD	19.70	4.82	✓
5	L02: A1-15_Bedroom 15	Bedroom	4.90	1.66	✓
6	L02: A1-16_LKD	LKD	8.90	1.34	x
7	L02: A1-16_Bedroom	Bedroom	4.90	1.23	✓
8	L02: A1-17_LKD	LKD	8.90	1.71	x / ✓
9	L02: A1-17_Bedroom	Bedroom	4.90	1.45	✓
10	L02: A1-18_Bedroom	Bedroom	4.90	1.50	✓
11	L02: A1-18_LKD	LKD	13.20	2.05	✓
12	L02: A1-19_LKD	LKD	13.20	1.94	x / ✓
13	L02: A1-19_Bedroom	Bedroom	4.90	1.39	✓
14	L02: A1-20_Bedroom	Bedroom	4.90	1.39	✓
15	L02: A1-20_LKD	LKD	8.90	1.62	x / ✓
16	L02: A1-21_Bedroom	Bedroom	4.90	1.17	✓
17	L02: A1-21_LKD	LKD	8.90	1.43	x

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

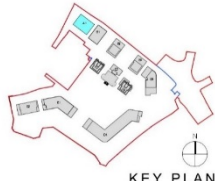
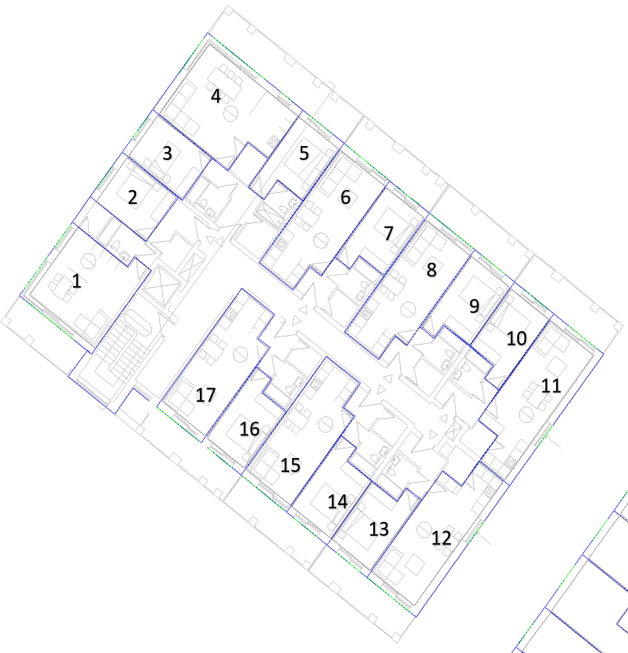
16.15.1.4 ADF – Block A1 – L03

 <p>KEY PLAN</p>					
Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
6	L02: A1-16_LKD	LKD	8.90	1.67	x / ✓
8	L02: A1-17_LKD	LKD	8.90	1.55	x / ✓
11	L02: A1-18_LKD	LKD	13.20	2.17	✓
12	L02: A1-19_LKD	LKD	13.20	2.07	✓
15	L02: A1-20_LKD	LKD	8.90	1.50	x / ✓
17	L02: A1-21_LKD	LKD	8.90	1.64	x / ✓

The following conclusion can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.

16.15.1.5 ADF – Block A1 – L04

					
Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
6	L02: A1-16_LKD	LKD	8.90	3.86	✓
8	L02: A1-17_LKD	LKD	8.90	3.9	✓
15	L02: A1-20_LKD	LKD	8.90	3.65	✓
17	L02: A1-21_LKD	LKD	8.90	3.81	✓

The following conclusion can be made:

- ✓ 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/BS 8206-2:2008 Guidance.

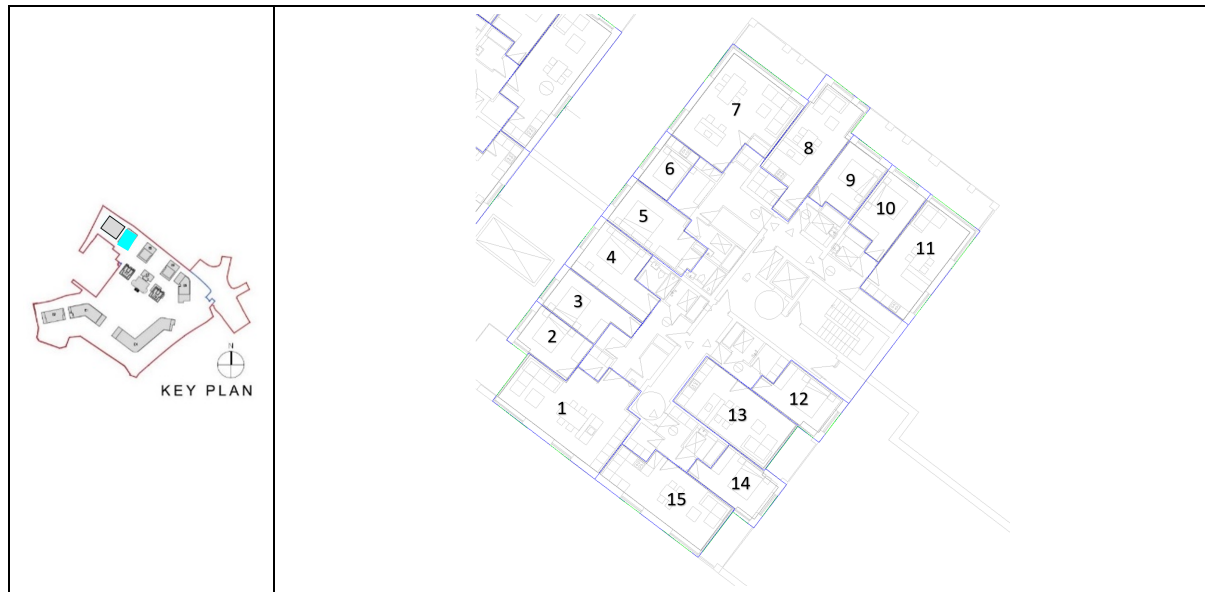
16.15.1.6 ADF – Block B1 – L00



Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L00: B1-38_Bedroom 01	Bedroom	6.34	0.82	x
2	L00: B1-38_Bedroom 02	Bedroom	4.30	1.09	✓
3	L00: B1-38_LKD	LKD	21.60	3.24	✓
4	L00: B1-39_LKD	LKD	10.80	3.45	✓
5	L00: B1-39_Bedroom	Bedroom	4.90	1.69	✓
6	L00: B1-40_Bedroom	Bedroom	4.90	1.63	✓
7	L00: B1-40_LKD	LKD	15.80	3.51	✓

The following conclusion can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

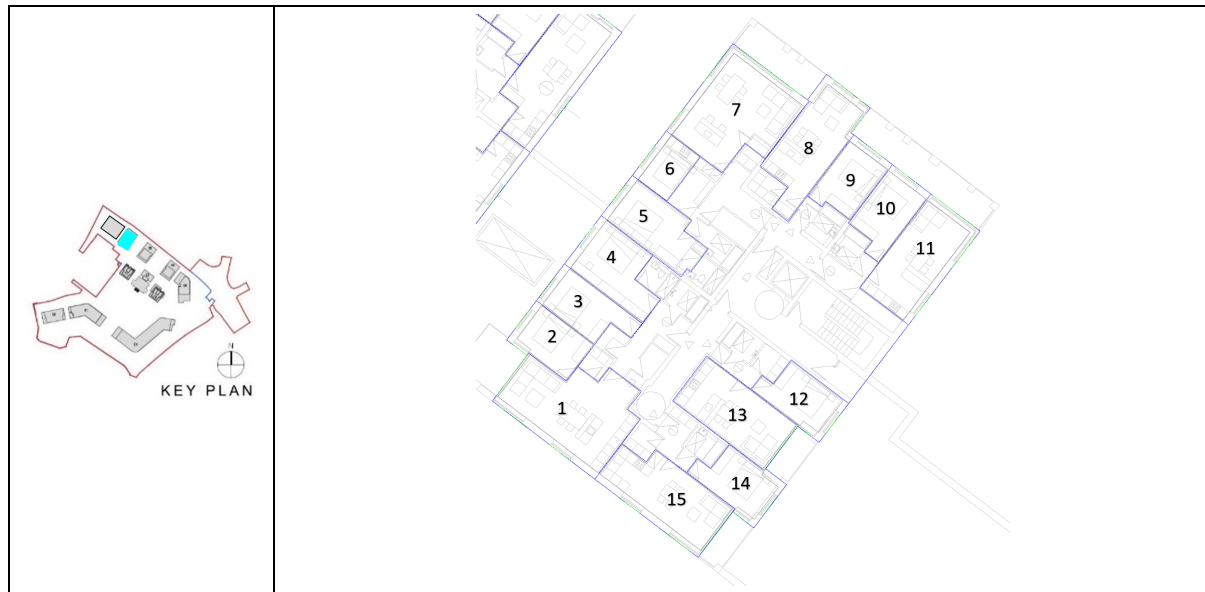
16.15.1.7 ADF – Block B1 – L01

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L01: B1-41_LKD	LKD	19.00	4.69	✓
2	L01: B1-41_Bedroom 01	Bedroom	7.40	1.61	✓
3	L01: B1-41_Bedroom 02	Bedroom	4.30	1.41	✓
4	L01: B1-41_Bedroom 03	Bedroom	4.30	0.85	x
5	L01: B1-42_Bedroom 01	Bedroom	4.30	0.80	x
6	L01: B1-42_Bedroom 02	Bedroom	4.30	1.52	✓
7	L01: B1-42_LKD	LKD	24.00	4.10	✓
8	L01: B1-43_LKD	LKD	10.50	3.43	✓
9	L01: B1-43_Bedroom	Bedroom	4.90	1.59	✓
10	L01: B1-44_Bedroom	Bedroom	4.90	1.50	✓
11	L01: B1-44_LKD	LKD	19.80	5.11	✓
12	L01: B1-45_Bedroom	Bedroom	6.70	2.06	✓
13	L01: B1-45_LKD	LKD	9.00	0.72	x
14	L01: B1-46_Bedroom	Bedroom	5.80	2.67	✓
15	L01: B1-46_LKD	LKD	19.00	6.15	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

16.15.1.8 ADF – Block B1 – L02



Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L02: B1-47_LKD	LKD	19.00	4.81	✓
2	L02: B1-47_Bedroom 01	Bedroom	7.40	1.92	✓
3	L02: B1-47_Bedroom 02	Bedroom	4.30	1.16	✓
4	L02: B1-47_Bedroom 03	Bedroom	4.30	1.20	✓
5	L02: B1-48_Bedroom 01	Bedroom	4.30	1.23	✓
6	L02: B1-48_Bedroom 02	Bedroom	4.30	1.46	✓
7	L02: B1-48_LKD	LKD	24.00	4.31	✓
8	L02: B1-49_LKD	LKD	10.30	3.84	✓
9	L02: B1-49_Bedroom	Bedroom	4.90	1.72	✓
10	L02: B1-50_Bedroom	Bedroom	4.90	1.72	✓
11	L02: B1-50_LKD	LKD	19.80	5.35	✓
12	L02: B1-51_Bedroom	Bedroom	7.60	2.65	✓
13	L02: B1-51_LKD	LKD	9.00	1.13	x
14	L02: B1-52_Bedroom	Bedroom	7.60	3.21	✓
15	L02: B1-52_LKD	LKD	19.00	6.60	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

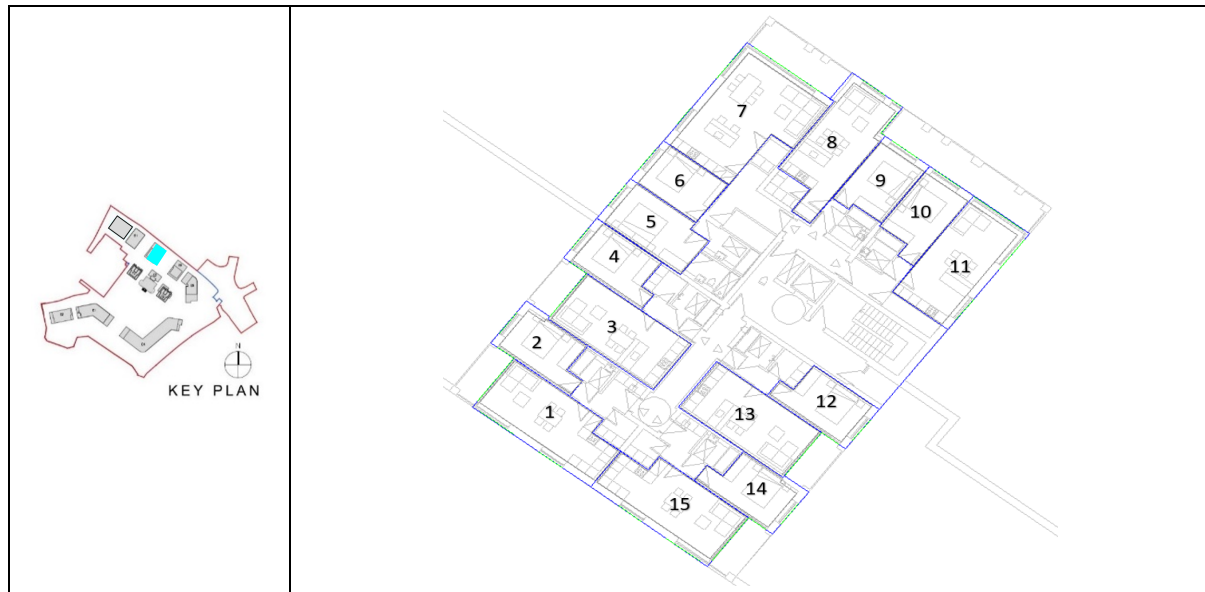
16.15.1.9 ADF – Block B2 – L00



Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L00: B2-01_Bedroom 01	Bedroom	4.32	1.28	✓
2	L00: B2-01_Bedroom 02	Bedroom	4.32	1.35	✓
3	L00: B2-01_LKD	LKD	20.57	3.00	✓
4	L00: B2-02_LKD	LKD	10.90	3.25	✓
5	L00: B2-02_Bedroom	Bedroom	4.86	1.57	✓
6	L00: B2-03_Bedroom	Bedroom	4.86	1.63	✓
7	L00: B2-03_LKD	LKD	14.04	3.19	✓

The following conclusion can be made:

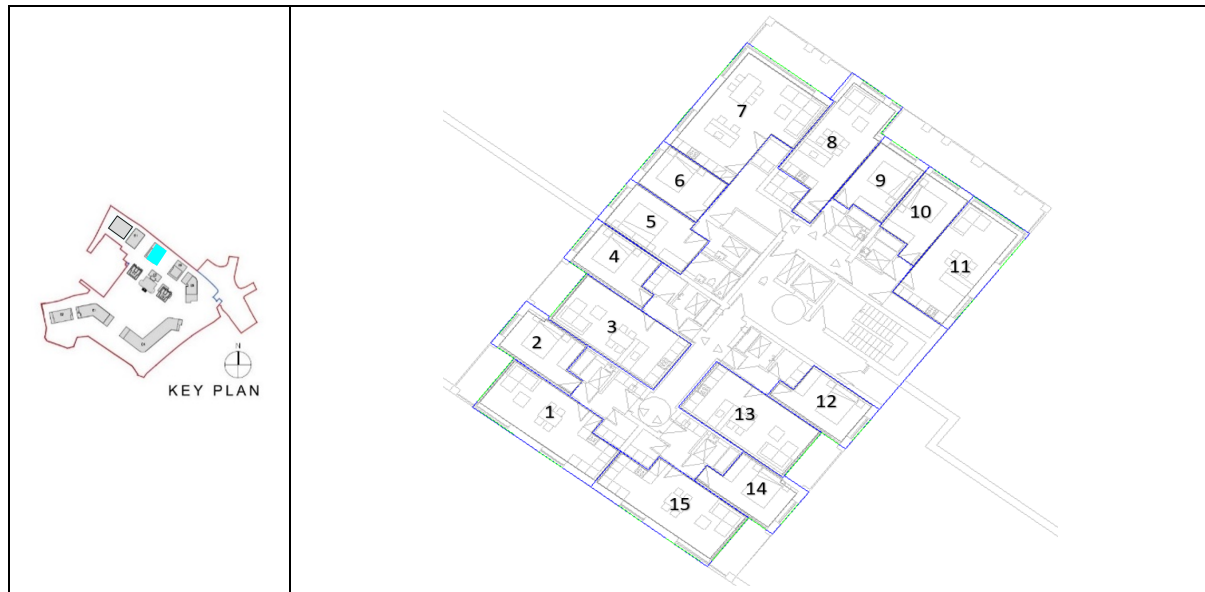
- ✓ These rooms have an ADF greater than the recommended minimum values (2.0% for combined L/K/Ds and 1.0% for bedrooms) as stated within the BRE/BS 8206-2:2008 Guidance.

16.15.1.10 ADF – Block B2 – L01

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L01: B2-05_LKD	LKD	19.31	5.85	✓
2	L01: B2-05_Bedroom	Bedroom	7.42	3.30	✓
3	L01: B2-04_LKD	LKD	8.91	1.02	x
4	L01: B2-03_Bedroom 01	Bedroom	4.32	2.54	✓
5	L01: B2-04_Bedroom	Bedroom	7.43	1.49	✓
6	L01: B2-03_Bedroom 02	Bedroom	4.32	2.43	✓
7	L01: B2-03_LKD	LKD	21.78	4.13	✓
8	L01: B2-02_LKD	LKD	10.90	3.55	✓
9	L01: B2-02_Bedroom	Bedroom	4.86	1.60	✓
10	L01: B2-01_Bedroom	Bedroom	4.86	1.63	✓
11	L01: B2-01_LKD	LKD	19.58	6.10	✓
12	L01: B2-07_Bedroom	Bedroom	7.42	3.68	✓
13	L01: B2-07_LKD	LKD	8.91	1.51	x / ✓
14	L01: B2-06_Bedroom	Bedroom	7.43	3.87	✓
15	L01: B2-06_LKD	LKD	19.30	6.12	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

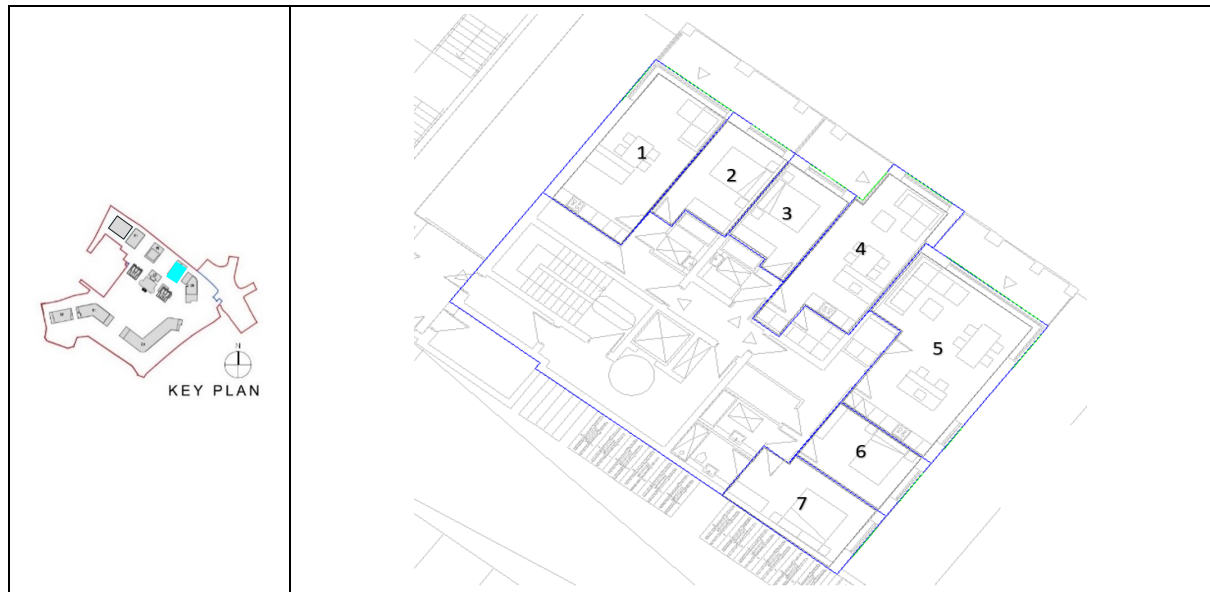
16.15.1.11 ADF – Block B2 – L02

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L02: B2-05_LKD	LKD	19.31	6.71	✓
2	L02: B2-05_Bedroom	Bedroom	7.42	3.60	✓
3	L02: B2-04_LKD	LKD	8.91	1.07	x
4	L02: B2-03_Bedroom 01	Bedroom	4.32	3.07	✓
5	L02: B2-04_Bedroom	Bedroom	7.43	2.13	✓
6	L02: B2-03_Bedroom 02	Bedroom	4.32	2.76	✓
7	L02: B2-03_LKD	LKD	21.78	4.38	✓
8	L02: B2-02_LKD	LKD	10.90	3.66	✓
9	L02: B2-02_Bedroom	Bedroom	4.86	1.68	✓
10	L02: B2-01_Bedroom	Bedroom	4.86	1.71	✓
11	L02: B2-01_LKD	LKD	19.58	6.53	✓
12	L02: B2-07_Bedroom	Bedroom	7.42	4.07	✓
13	L02: B2-07_LKD	LKD	8.91	1.67	x / ✓
14	L02: B2-06_Bedroom	Bedroom	7.43	4.36	✓
15	L02: B2-06_LKD	LKD	19.30	6.95	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

16.15.1.12 ADF – Block B3 – L00



Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L00: B3-01_LKD	LKD	14.03	3.45	✓
2	L00: B3-01_Bedroom 01	Bedroom	4.86	1.43	✓
3	L00: B3-01_Bedroom 02	Bedroom	4.86	1.52	✓
4	L00: B3-02_LKD	LKD	10.94	3.47	✓
5	L00: B3-03_LKD	LKD	20.63	2.99	✓
6	L00: B3-03_Bedroom 02	Bedroom	4.32	1.11	✓
7	L00: B3-03_Bedroom 01	Bedroom	4.32	0.64	x

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

16.15.1.13 ADF – Block B3 – L01

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L01: B3-05_LKD	LKD	19.31	6.05	✓
2	L01: B3-05_Bedroom	Bedroom	7.43	3.95	✓
3	L01: B3-04_LKD	LKD	8.91	1.39	x
4	L01: B3-04_Bedroom	Bedroom	7.42	3.70	✓
5	L01: B3-03_LKD	LKD	19.57	6.27	✓
6	L01: B3-03_Bedroom	Bedroom	4.86	1.63	✓
7	L01: B3-02_Bedroom	Bedroom	4.86	1.68	✓
8	L01: B3-02_LKD	LKD	10.26	3.62	✓
9	L01: B3-01_LKD	LKD	22.92	4.26	✓
10	L01: B3-01_Bedroom 02	Bedroom	4.32	1.28	✓
11	L01: B3-01_Bedroom 01	Bedroom	4.32	0.83	x
12	L01: B3-07_Bedroom	Bedroom	7.43	1.41	✓
13	L01: B3-07_LKD	LKD	8.91	0.43	x
14	L01: B3-06_Bedroom	Bedroom	7.43	2.16	✓
15	L01: B3-06_LKD	LKD	19.31	5.44	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.


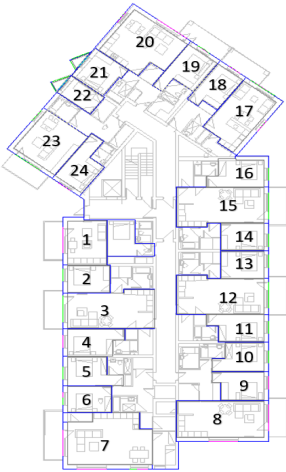
16.15.1.14 ADF – Block B3 – L02

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L02: B3-05_LKD	LKD	19.31	6.99	✓
2	L02: B3-05_Bedroom	Bedroom	7.43	4.44	✓
3	L02: B3-04_LKD	LKD	8.91	1.61	x / ✓
4	L02: B3-04_Bedroom	Bedroom	7.42	4.15	✓
5	L02: B3-03_LKD	LKD	19.57	6.55	✓
6	L02: B3-03_Bedroom	Bedroom	4.86	1.70	✓
7	L02: B3-02_Bedroom	Bedroom	4.86	1.76	✓
8	L02: B3-02_LKD	LKD	10.26	3.72	✓
9	L02: B3-01_LKD	LKD	22.92	4.60	✓
10	L02: B3-01_Bedroom 02	Bedroom	4.32	1.62	✓
11	L02: B3-01_Bedroom 01	Bedroom	4.32	1.10	✓
12	L02: B3-07_Bedroom	Bedroom	7.43	1.77	✓
13	L02: B3-07_LKD	LKD	8.91	0.52	x
14	L02: B3-06_Bedroom	Bedroom	7.43	2.66	✓
15	L02: B3-06_LKD	LKD	19.31	6.28	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.


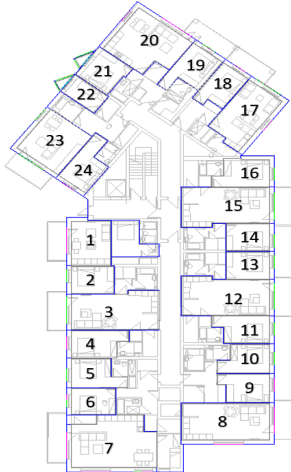
16.15.1.15 ADF – Block B4 – L00

 <p>KEY PLAN</p>					
Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L00: B4-01_Studio_Living	Studio	6.72	2.56	✓
2	L00: B4-02_Bedroom 01	Bedroom	3.24	2.44	✓
3	L00: B4-02_Living	LKD	6.72	1.73	x / ✓
4	L00: B4-02_Bedroom 02	Bedroom	3.24	2.32	✓
5	L00: B4-03_Bedroom 02	Bedroom	3.24	2.66	✓
6	L00: B4-03_Bedroom 01	Bedroom	3.24	2.64	✓
7	L00: B4-03_Living	LKD	17.16	4.21	✓
8	L00: B4-04_Living	LKD	13.20	4.60	✓
9	L00: B4-04_Bedroom 01	Bedroom	3.24	2.74	✓
10	L00: B4-04_Bedroom 02	Bedroom	3.24	3.05	✓
11	L00: B4-05_Bedroom 02	Bedroom	3.24	2.70	✓
12	L00: B4-05_Living	LKD	6.72	2.04	✓
13	L00: B4-05_Bedroom 01	Bedroom	3.24	3.04	✓
14	L00: B4-06_Bedroom 01	Bedroom	3.24	3.04	✓
15	L00: B4-06_Living	LKD	6.72	2.03	✓
16	L00: B4-06_Bedroom 02	Bedroom	3.24	2.72	✓
17	L00: B4-07_Living	LKD	9.96	4.50	✓
18	L00: B4-07_Bedroom	Bedroom	3.24	2.02	✓
19	L00: B4-08_Bedroom 01	Bedroom	3.24	1.83	✓
20	L00: B4-08_Living	LKD	11.40	3.62	✓
21	L00: B4-08_Bedroom 02	Bedroom	6.21	1.03	✓
22	L00: B4-09_Bedroom 01	Bedroom	6.13	1.11	✓
23	L00: B4-09_Living	LKD	9.96	2.20	✓
24	L00: B4-09_Bedroom 02	Bedroom	3.24	1.93	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.

16.15.1.16 ADF – Block B4 – L01

 <p>KEY PLAN</p>					
Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L01: B4-01_Studio_Living	Studio	6.72	2.58	✓
2	L01: B4-02_Bedroom 01	Bedroom	3.24	2.46	✓
3	L01: B4-02_Living	LKD	6.72	1.77	x / ✓
4	L01: B4-02_Bedroom 02	Bedroom	3.24	2.38	✓
5	L01: B4-03_Bedroom 02	Bedroom	3.24	2.69	✓
6	L01: B4-03_Bedroom 01	Bedroom	3.24	2.65	✓
7	L01: B4-03_Living	LKD	17.16	4.26	✓
8	L01: B4-04_Living	LKD	13.20	4.50	✓
9	L01: B4-04_Bedroom 01	Bedroom	3.24	2.68	✓
10	L01: B4-04_Bedroom 02	Bedroom	3.24	2.92	✓
11	L01: B4-05_Bedroom 02	Bedroom	3.24	2.64	✓
12	L01: B4-05_Living	LKD	6.72	2.10	✓
13	L01: B4-05_Bedroom 01	Bedroom	3.24	2.95	✓
14	L01: B4-06_Bedroom 01	Bedroom	3.24	2.95	✓
15	L01: B4-06_Living	LKD	6.72	2.09	✓
16	L01: B4-06_Bedroom 02	Bedroom	3.24	2.66	✓
17	L01: B4-07_Living	LKD	9.96	4.44	✓
18	L01: B4-07_Bedroom	Bedroom	3.24	1.87	✓
19	L01: B4-08_Bedroom 01	Bedroom	3.24	1.72	✓
20	L01: B4-08_Living	LKD	11.40	3.59	✓
21	L01: B4-08_Bedroom 02	Bedroom	6.21	1.21	✓
22	L01: B4-09_Bedroom 01	Bedroom	6.13	1.42	✓
23	L01: B4-09_Living	LKD	9.96	2.26	✓
24	L01: B4-09_Bedroom 02	Bedroom	3.24	1.98	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.

16.15.1.17 ADF – Block B4 – L02



Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
3	L02: B4-02_Living	LKD	6.72	2.00	✓

The following conclusion can be made:

- ✓ 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/BS 8206-2:2008 Guidance.

16.15.1.18 ADF – Block C1 – L00



Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L00: C1-223_LKD	LKD	22.14	4.16	✓
2	L00: C1-223_Bedroom 02	Bedroom	4.32	4.33	✓
3	L00: C1-224_Studio	Studio	12.83	2.50	✓
4	L00: C1-225_Bedroom	Bedroom	4.32	2.07	✓
5	L00: C1-225_LKD	LKD	8.51	1.75	x / ✓
6	L00: C1-226_Bedroom 02	Bedroom	4.32	2.57	✓
7	L00: C1-226_LKD	LKD	22.14	3.50	✓
8	L00: C1-226_Bedroom 01	Bedroom	4.32	1.31	✓
9	L00: C1-223_Bedroom 01	Bedroom	4.32	1.23	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.

16.15.1.19 ADF – Block C1 – L01

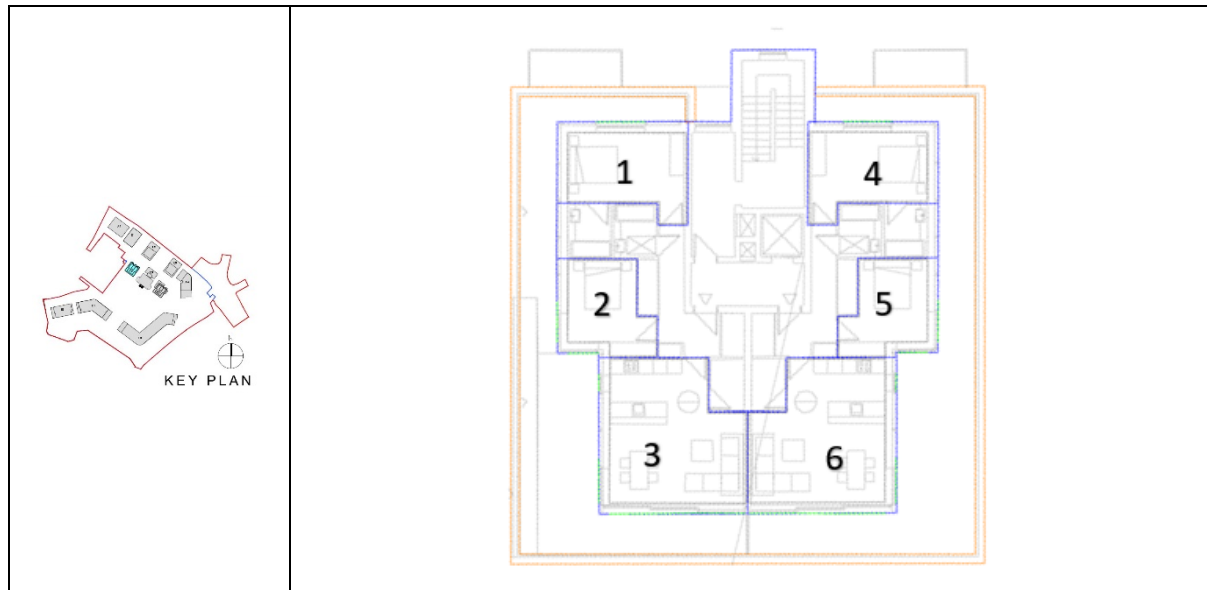


Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L01: C1-227_LKD	LKD	22.14	5.15	✓
2	L01: C1-227_Bedroom 02	Bedroom	4.32	4.83	✓
3	L01: C1-228_LKD	LKD	8.51	3.42	✓
4	L01: C1-228_Bedroom	Bedroom	4.32	3.08	✓
5	L01: C1-229_Bedroom	Bedroom	4.32	2.83	✓
6	L01: C1-229_LKD	LKD	8.51	3.11	✓
7	L01: C1-230_Bedroom 02	Bedroom	4.32	3.67	✓
8	L01: C1-230_LKD	LKD	22.14	4.39	✓
9	L01: C1-230_Bedroom 01	Bedroom	4.32	1.80	✓
10	L01: C1-227_Bedroom 01	Bedroom	4.32	1.75	✓

The following conclusion can be made:

- ✓ 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/BS 8206-2:2008 Guidance.

16.15.1.20 ADF – Block C1 – L02



Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L02: C1-231_Bedroom 01	Bedroom	5.30	3.77	✓
2	L02: C1-231_Bedroom 02	Bedroom	7.95	6.20	✓
3	L02: C1-231_LKD	LKD	21.73	8.15	✓
4	L02: C1-232_Bedroom 01	Bedroom	5.30	3.63	✓
5	L02: C1-232_Bedroom 02	Bedroom	7.83	6.02	✓
6	L02: C1-232_LKD	LKD	21.72	7.99	✓

The following conclusion can be made:

- ✓ 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/BS 8206-2:2008 Guidance.

16.15.1.21 ADF – Block C2 – L01

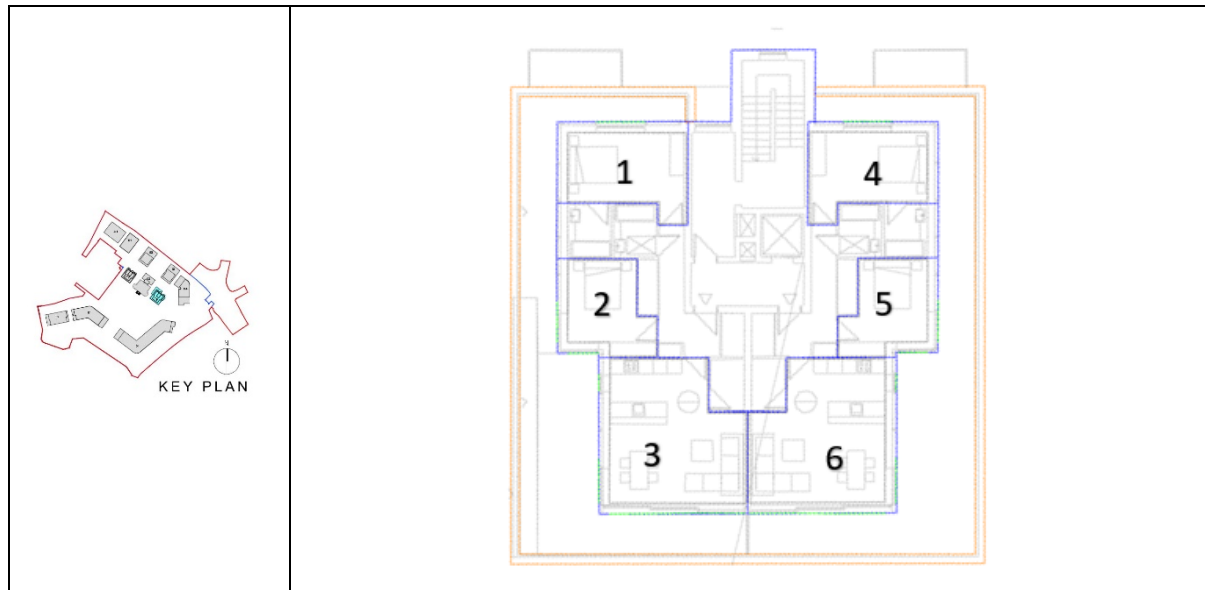


Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L01: C2-233_LKD	LKD	22.14	4.28	✓
2	L01: C2-233_Bedroom 02	Bedroom	4.32	3.67	✓
3	L01: C2-234_LKD	LKD	8.51	3.25	✓
4	L01: C2-234_Bedroom	Bedroom	4.32	2.81	✓
5	L01: C2-235_Bedroom	Bedroom	4.32	3.20	✓
6	L01: C2-235_LKD	LKD	8.51	3.25	✓
7	L01: C2-236_Bedroom 02	Bedroom	4.32	4.43	✓
8	L01: C2-236_LKD	LKD	22.00	4.23	✓
9	L01: C2-236_Bedroom 01	Bedroom	4.32	1.62	✓
10	L01: C2-233_Bedroom 01	Bedroom	4.32	1.67	✓

The following conclusion can be made:

- ✓ 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/BS 8206-2:2008 Guidance.

16.15.1.22 ADF – Block C2 – L02

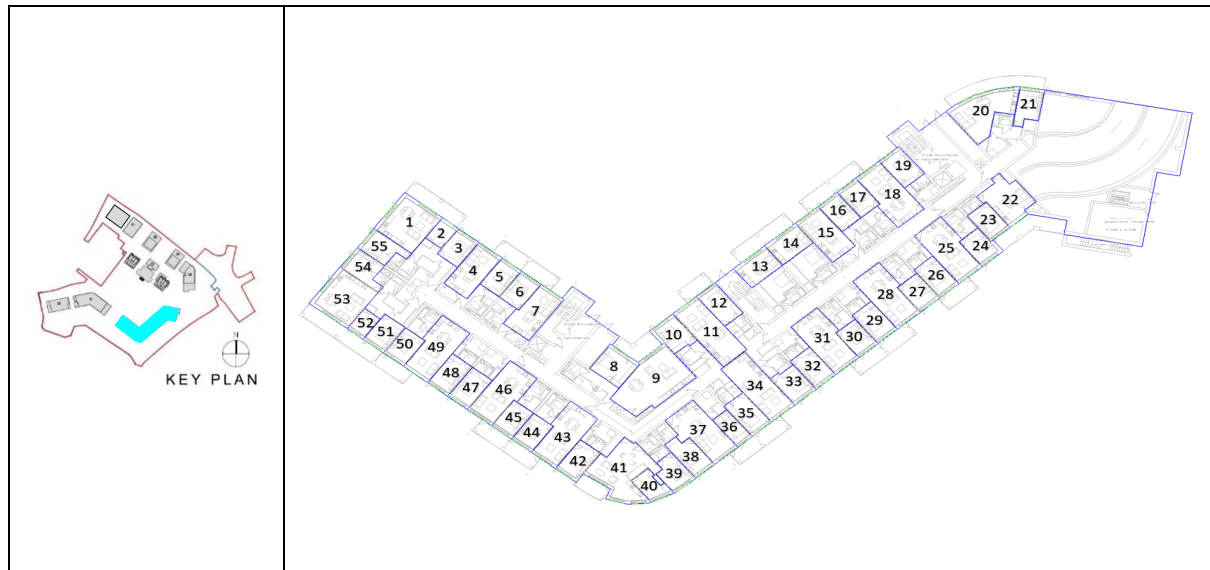


Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L02: C2-237_Bedroom 01	Bedroom	5.30	3.57	✓
2	L02: C2-237_Bedroom 02	Bedroom	7.95	6.04	✓
3	L02: C2-237_LKD	LKD	21.73	7.78	✓
4	L02: C2-238_Bedroom 01	Bedroom	5.30	3.86	✓
5	L02: C2-238_Bedroom 02	Bedroom	7.84	5.78	✓
6	L02: C2-238_LKD	LKD	21.72	7.49	✓

The following conclusion can be made:

- ✓ 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/BS 8206-2:2008 Guidance.

16.15.1.23 ADF – Block D1 – L00



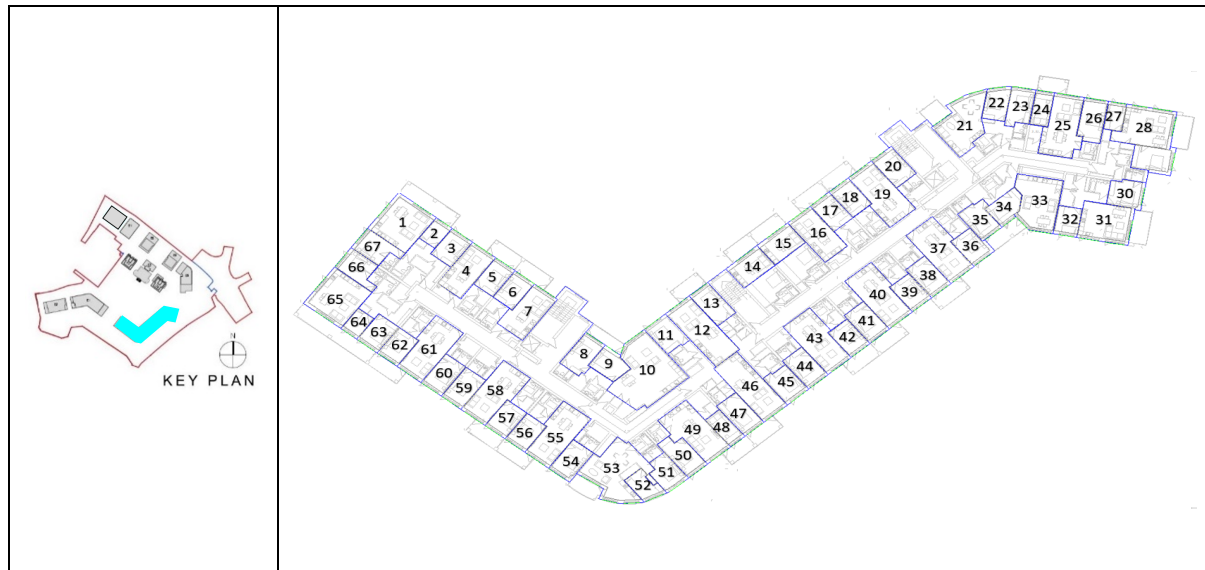
Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L00: D1-25_LKD	LKD	12.24	2.99	✓
2	L00: D1-25_Bedroom 02	Bedroom	3.84	2.32	✓
3	L00: D1-25_Bedroom 01	Bedroom	5.76	3.71	✓
4	L00: D1-24_LKD	LKD	6.48	2.00	✓
5	L00: D1-24_Bedroom	Bedroom	5.76	2.13	✓
6	L00: D1-23_Bedroom	Bedroom	6.48	2.26	✓
7	L00: D1-23_LKD	LKD	6.48	1.86	x / ✓
8	L00: D1-22_Bedroom	Bedroom	5.76	1.12	✓
9	L00: D1-22_LKD	LKD	6.48	0.45	x
10	L00: D1-07_Bedroom 03	Bedroom	5.64	2.98	✓
11	L00: D1-21_LKD	LKD	6.48	1.51	x / ✓
12	L00: D1-21_Bedroom 01	Bedroom	5.76	2.03	✓
13	L00: D1-20_LKD	LKD	6.48	2.34	✓
14	L00: D1-19_LKD	LKD	6.48	2.47	✓
15	L00: D1-18_LKD	LKD	6.48	2.17	✓
16	L00: D1-18_Bedroom	Bedroom	5.76	2.33	✓
17	L00: D1-17_Bedroom 02	Bedroom	5.76	2.32	✓
18	L00: D1-17_LKD	LKD	6.48	2.00	✓
19	L00: D1-17_Bedroom 01	Bedroom	4.68	2.81	✓
20	L00: D1-16_LKD	LKD	13.92	4.55	✓
21	L00: D1-16_Bedroom	Bedroom	5.77	3.88	✓
22	L00: D1-11_LKD	LKD	5.76	0.97	x
23	L00: D1-11_Bedroom	Bedroom	5.76	1.81	✓
24	L00: D1-10_Bedroom 02	Bedroom	5.76	4.57	✓
25	L00: D1-10_LKD	LKD	6.48	2.00	✓
26	L00: D1-10_Bedroom 01	Bedroom	5.76	2.34	✓
27	L00: D1-09_Bedroom 02	Bedroom	5.76	4.03	✓
28	L00: D1-09_LKD	LKD	6.48	2.03	✓
29	L00: D1-09_Bedroom 01	Bedroom	5.76	2.19	✓

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
30	L00: D1-08_Bedroom 02	Bedroom	5.76	2.55	✓
31	L00: D1-08_LKD	LKD	6.48	2.07	✓
32	L00: D1-08_Bedroom 01	Bedroom	5.76	4.07	✓
33	L00: D1-07_Bedroom 02	Bedroom	5.76	4.40	✓
34	L00: D1-07_LKD	LKD	6.48	1.54	x / ✓
35	L00: D1-07_Bedroom 01	Bedroom	5.76	2.09	✓
36	L00: D1-06_Bedroom 02	Bedroom	3.84	1.83	✓
37	L00: D1-06_LKD	LKD	6.48	2.06	✓
38	L00: D1-06_Bedroom 01	Bedroom	5.76	3.92	✓
39	L00: D1-05_Bedroom 02	Bedroom	5.81	4.63	✓
40	L00: D1-05_Bedroom 01	Bedroom	5.76	5.43	✓
41	L00: D1-05_LKD	LKD	15.56	3.19	✓
42	L00: D1-04_Bedroom 02	Bedroom	5.76	4.07	✓
43	L00: D1-04_LKD	LKD	6.48	2.15	✓
44	L00: D1-04_Bedroom 01	Bedroom	5.76	2.61	✓
45	L00: D1-03_Bedroom 02	Bedroom	5.76	2.63	✓
46	L00: D1-03_LKD	LKD	6.48	2.18	✓
47	L00: D1-03_Bedroom 01	Bedroom	5.76	4.18	✓
48	L00: D1-02_Bedroom 02	Bedroom	5.76	4.12	✓
49	L00: D1-02_LKD	LKD	5.76	2.07	✓
50	L00: D1-02_Bedroom 01	Bedroom	5.76	2.69	✓
51	L00: D1-01_Bedroom 03	Bedroom	5.76	2.67	✓
52	L00: D1-01_Bedroom 02	Bedroom	3.84	2.63	✓
53	L00: D1-01_LKD	LKD	12.24	3.25	✓
54	L00: D1-01_Bedroom 01	Bedroom	5.76	3.77	✓
55	L00: D1-25_Bedroom 03	Bedroom	5.76	3.82	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

16.15.1.24 ADF – Block D1 – L01



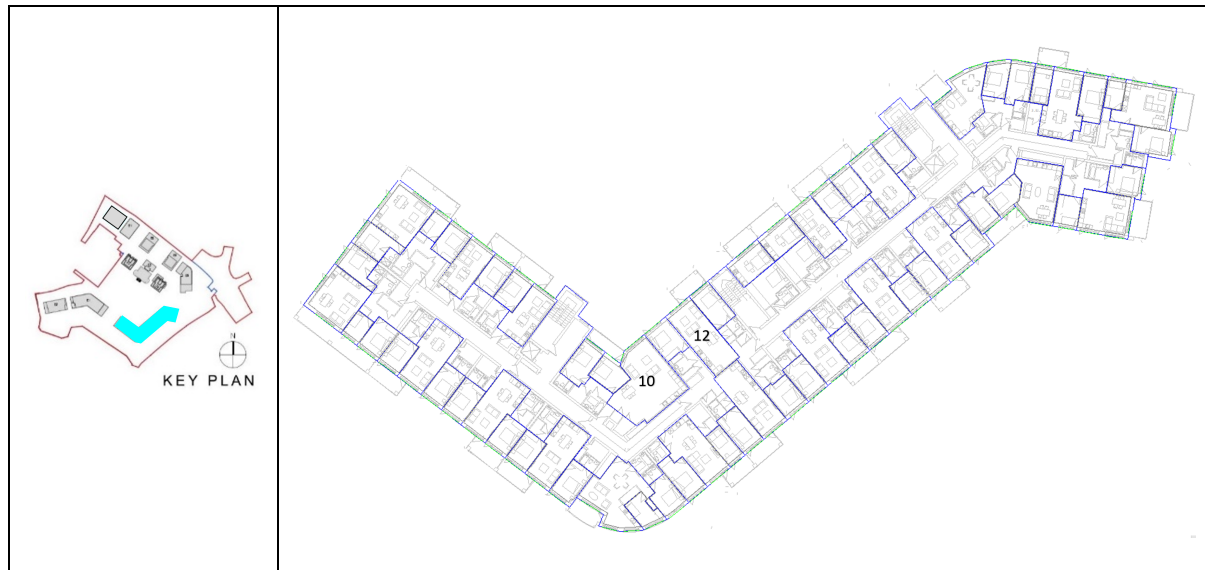
Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L01: D1-25_LKD	LKD	12.24	3.56	✓
2	L01: D1-25_Bedroom 02	Bedroom	3.84	2.41	✓
3	L01: D1-25_Bedroom 01	Bedroom	5.76	4.47	✓
4	L01: D1-24_LKD	LKD	6.48	2.39	✓
5	L01: D1-24_Bedroom	Bedroom	5.76	2.23	✓
6	L01: D1-23_Bedroom	Bedroom	6.48	2.38	✓
7	L01: D1-23_LKD	LKD	6.48	2.06	✓
8	L01: D1-11_Bedroom 02	Bedroom	5.76	1.61	✓
9	L01: D1-11_Bedroom 01	Bedroom	3.84	1.26	✓
10	L01: D1-11_LKD	LKD	8.88	1.52	x / ✓
11	L01: D1-07_Bedroom 01	Bedroom	5.76	3.63	✓
12	L01: D1-21_LKD	LKD	6.48	1.73	x / ✓
13	L01: D1-21_Bedroom 01	Bedroom	5.76	2.18	✓
14	L01: D1-20_LKD	LKD	6.48	2.46	✓
15	L01: D1-19_LKD	LKD	6.48	2.58	✓
16	L01: D1-18_LKD	LKD	6.48	2.13	✓
17	L01: D1-18_Bedroom	Bedroom	5.76	2.42	✓
18	L01: D1-17_Bedroom 02	Bedroom	5.76	2.42	✓
19	L01: D1-17_LKD	LKD	6.48	2.15	✓
20	L01: D1-17_Bedroom 01	Bedroom	4.68	3.41	✓
21	L01: D1-16_LKD	LKD	15.43	2.74	✓
22	L01: D1-16_Bedroom 01	Bedroom	4.80	4.65	✓
23	L01: D1-16_Bedroom 02	Bedroom	6.14	4.48	✓
24	L01: D1-15_Bedroom 01	Bedroom	4.32	2.35	✓
25	L01: D1-15_LKD	LKD	6.48	2.18	✓
26	L01: D1-15_Bedroom 02	Bedroom	5.76	3.81	✓
27	L01: D1-14_Bedroom 01	Bedroom	4.32	5.02	✓
28	L01: D1-14_LKD	LKD	16.56	5.27	✓
29	L01: D1-14_Bedroom 02	Bedroom	5.76	4.73	✓
30	L01: D1-13_Bedroom 01	Bedroom	5.76	5.00	✓

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
31	L01: D1-13_LKD	LKD	18.00	6.30	✓
32	L01: D1-13_Bedroom 02	Bedroom	4.32	4.50	✓
33	L01: D1-12_LKD	LKD	11.42	2.75	✓
34	L01: D1-12_Bedroom 01	Bedroom	4.32	1.38	✓
35	L01: D1-12_Bedroom 02	Bedroom	5.76	1.87	✓
36	L01: D1-10_Bedroom 02	Bedroom	5.76	5.31	✓
37	L01: D1-10_LKD	LKD	6.48	2.12	✓
38	L01: D1-10_Bedroom 01	Bedroom	5.76	2.47	✓
39	L01: D1-09_Bedroom 02	Bedroom	5.76	4.69	✓
40	L01: D1-09_LKD	LKD	6.48	2.23	✓
41	L01: D1-09_Bedroom 01	Bedroom	5.76	2.30	✓
42	L01: D1-08_Bedroom 02	Bedroom	5.76	2.66	✓
43	L01: D1-08_LKD	LKD	6.48	2.14	✓
44	L01: D1-08_Bedroom 01	Bedroom	5.76	4.76	✓
45	L01: D1-21_Bedroom 02	Bedroom	5.76	5.13	✓
46	L01: D1-07_LKD	LKD	6.48	2.12	✓
47	L01: D1-07_Bedroom 01	Bedroom	5.76	2.19	✓
48	L01: D1-06_Bedroom 02	Bedroom	3.84	1.88	✓
49	L01: D1-06_LKD	LKD	6.48	2.16	✓
50	L01: D1-06_Bedroom 01	Bedroom	5.76	4.56	✓
51	L01: D1-05_Bedroom 02	Bedroom	5.81	5.30	✓
52	L01: D1-05_Bedroom 01	Bedroom	5.76	6.15	✓
53	L01: D1-05_LKD	LKD	15.56	3.59	✓
54	L01: D1-04_Bedroom 02	Bedroom	5.76	4.72	✓
55	L01: D1-04_LKD	LKD	6.48	2.24	✓
56	L01: D1-04_Bedroom 01	Bedroom	5.76	2.69	✓
57	L01: D1-03_Bedroom 02	Bedroom	5.76	2.71	✓
58	L01: D1-03_LKD	LKD	6.48	2.19	✓
59	L01: D1-03_Bedroom 01	Bedroom	5.76	4.84	✓
60	L01: D1-02_Bedroom 02	Bedroom	5.76	4.77	✓
61	L01: D1-02_LKD	LKD	5.76	2.14	✓
62	L01: D1-02_Bedroom 01	Bedroom	5.76	2.77	✓
63	L01: D1-01_Bedroom 03	Bedroom	5.76	2.75	✓
64	L01: D1-01_Bedroom 02	Bedroom	3.84	2.65	✓
65	L01: D1-01_LKD	LKD	12.24	3.82	✓
66	L01: D1-01_Bedroom 01	Bedroom	5.76	4.64	✓
67	L01: D1-25_Bedroom 03	Bedroom	5.76	4.68	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.

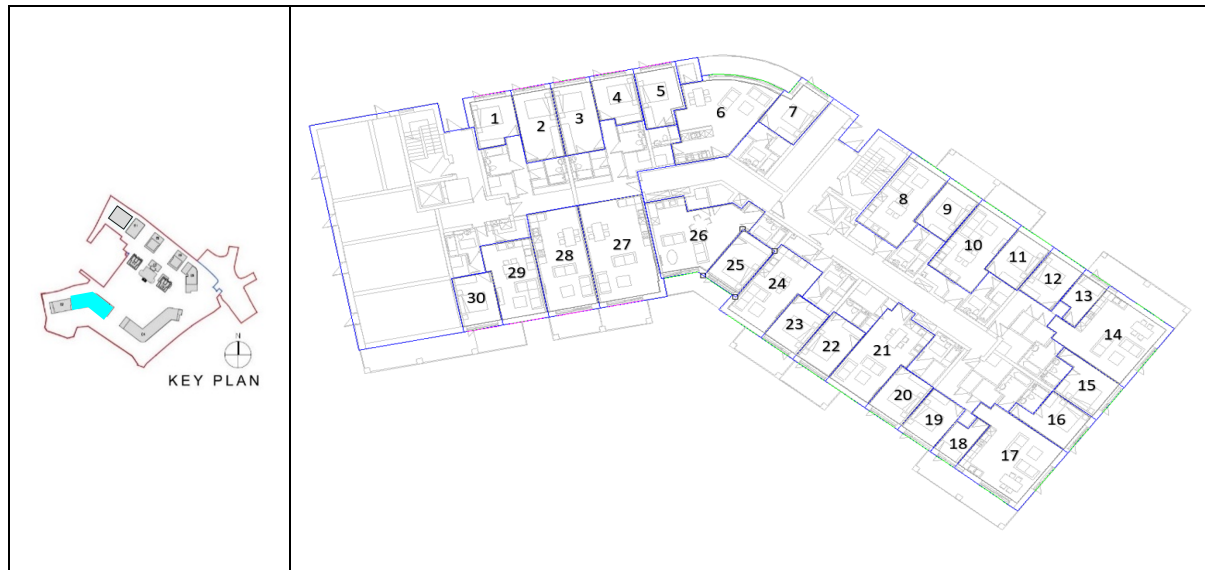
16.15.1.25 ADF – Block D1 – L02



Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
10	L02: D1-11_LKD	LKD	8.88	1.53	x / ✓
12	L02: D1-21_LKD	LKD	6.48	1.83	x / ✓

The following conclusion can be made:

x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.

16.15.1.26 ADF – Block E1 – L00

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L00: E1-375_Bedroom 01	Bedroom	5.76	5.06	✓
2	L00: E1-375_Bedroom 02	Bedroom	5.64	3.49	✓
3	L00: E1-376_Bedroom 01	Bedroom	5.64	3.49	✓
4	L00: E1-376_Bedroom 02	Bedroom	5.64	4.94	✓
5	L00: E1-384_Bedroom 02	Bedroom	5.64	4.31	✓
6	L00: E1-384_LKD	LKD	13.79	3.03	✓
7	L00: E1-384_Bedroom 01	Bedroom	7.68	4.24	✓
8	L00: E1-383_LKD	LKD	6.36	2.22	✓
9	L00: E1-383_Bedroom	Bedroom	5.76	2.57	✓
10	L00: E1-382_LKD	LKD	5.76	1.72	x / ✓
11	L00: E1-382_Bedroom	Bedroom	6.36	3.88	✓
12	L00: E1-381_Bedroom 02	Bedroom	5.64	3.96	✓
13	L00: E1-381_Bedroom 03	Bedroom	3.84	2.46	✓
14	L00: E1-381_LKD	LKD	12.12	3.10	✓
15	L00: E1-381_Bedroom 01	Bedroom	5.76	4.14	✓
16	L00: E1-380_Bedroom 01	Bedroom	5.64	4.19	✓
17	L00: E1-380_LKD	LKD	12.24	3.38	✓
18	L00: E1-380_Bedroom 03	Bedroom	3.72	2.56	✓
19	L00: E1-380_Bedroom 02	Bedroom	5.64	4.26	✓
20	L00: E1-379_Bedroom 02	Bedroom	5.64	4.98	✓
21	L00: E1-379_LKD	LKD	6.48	2.01	✓
22	L00: E1-379_Bedroom 01	Bedroom	5.76	2.28	✓
23	L00: E1-378_Bedroom	Bedroom	5.76	2.49	✓
24	L00: E1-378_LKD	LKD	6.48	2.14	✓
25	L00: E1-377_Bedroom	Bedroom	5.52	2.02	✓
26	L00: E1-377_LKD	LKD	6.27	1.13	x
27	L00: E1-376_LKD	LKD	6.48	0.32	x
28	L00: E1-375_LKD	LKD	6.48	2.01	✓
29	L00: E1-374_LKD	LKD	6.48	2.60	✓
30	L00: E1-374_Bedroom	Bedroom	5.64	3.67	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

16.15.1.27 ADF – Block E1 – L01

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L01: E1-385_Bedroom 01	Bedroom	5.64	4.14	✓
2	L01: E1-385_Bedroom 02	Bedroom	5.76	5.63	✓
3	L01: E1-387_Bedroom 01	Bedroom	5.76	6.17	✓
4	L01: E1-387_Bedroom 02	Bedroom	5.64	4.14	✓
5	L01: E1-388_Bedroom 01	Bedroom	5.64	4.14	✓
6	L01: E1-388_Bedroom 02	Bedroom	5.64	6.02	✓
7	L01: E1-397_Bedroom	Bedroom	5.76	5.67	✓
8	L01: E1-397_LKD	LKD	6.54	2.01	✓
9	L01: E1-396_LKD	LKD	6.64	2.02	✓
10	L01: E1-396_Bedroom	Bedroom	4.80	4.43	✓
11	L01: E1-395_LKD	LKD	6.36	2.28	✓
12	L01: E1-395_Bedroom	Bedroom	5.76	2.43	✓
13	L01: E1-394_Bedroom	Bedroom	5.76	2.35	✓
14	L01: E1-394_LKD	LKD	6.48	2.38	✓
15	L01: E1-393_Bedroom 02	Bedroom	5.64	4.46	✓
16	L01: E1-393_Bedroom 03	Bedroom	3.84	2.39	✓
17	L01: E1-393_LKD	LKD	12.12	3.42	✓
18	L01: E1-393_Bedroom 01	Bedroom	5.76	5.08	✓
19	L01: E1-392_Bedroom 02	Bedroom	5.64	5.11	✓
20	L01: E1-392_LKD	LKD	12.24	3.66	✓
21	L01: E1-392_Bedroom 03	Bedroom	3.72	2.72	✓
22	L01: E1-392_Bedroom 01	Bedroom	5.64	4.83	✓
23	L01: E1-391_Bedroom 02	Bedroom	5.64	5.23	✓
24	L01: E1-391_LKD	LKD	6.48	2.03	✓
25	L01: E1-391_Bedroom 01	Bedroom	5.76	2.29	✓
26	L01: E1-390_Bedroom	Bedroom	5.76	2.47	✓
27	L01: E1-390_LKD	LKD	6.48	2.18	✓
28	L01: E1-389_Bedroom	Bedroom	5.52	1.90	✓
29	L01: E1-389_LKD	LKD	6.27	1.07	x
30	L01: E1-388_LKD	LKD	6.48	1.18	x

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
31	L01: E1-387_LKD	LKD	6.48	1.47	x
32	L01: E1-386_Bedroom 01	Bedroom	5.64	4.04	✓
33	L01: E1-386_LKD	LKD	6.60	2.13	✓
34	L01: E1-386_Bedroom 02	Bedroom	5.64	2.40	✓
35	L01: E1-385_LKD	LKD	14.40	2.75	✓

The following conclusions can be made:

- ✓ 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/BS 8206-2:2008 Guidance.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

16.15.1.28 ADF – Block E1 – L02



Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
29	L02: E1-389_LKD	LKD	6.27	1.09	x
30	L02: E1-388_LKD	LKD	6.48	1.21	x
31	L02: E1-387_LKD	LKD	6.48	1.51	x / ✓

The following conclusions can be made:

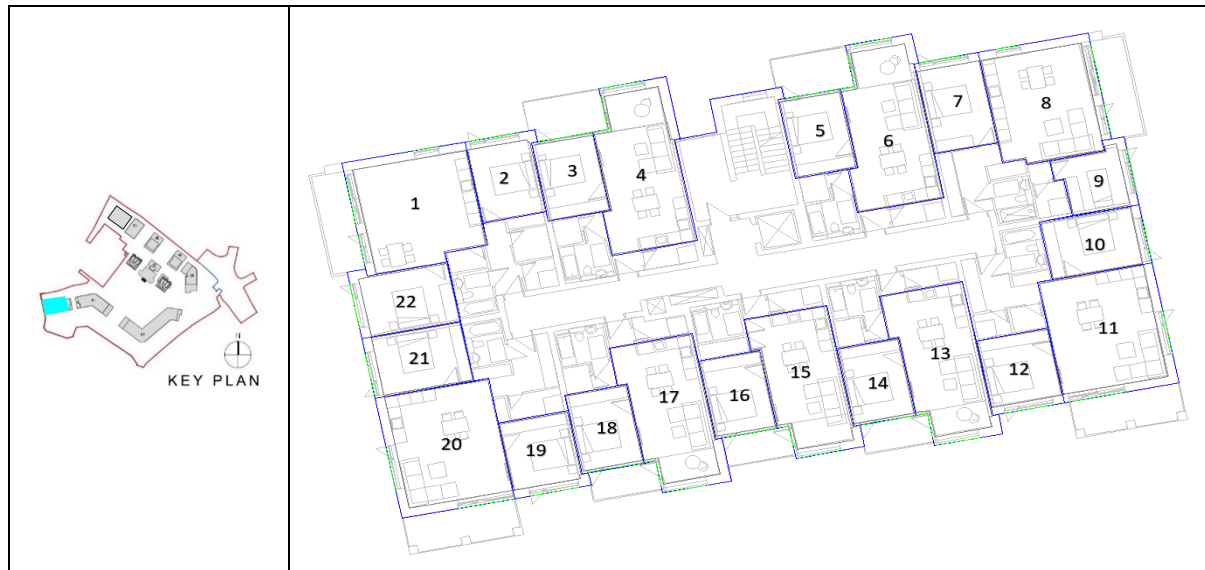
- x/✓ The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 2% ADF target. However, the whole space complies with the 1.5% ADF target.
- x The ADF in these rooms falls below the BRE/BS 8206-2:2008 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

16.15.1.29 ADF – Block E2 – L00

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L00: E2-01_LKD	LKD	13.20	3.76	✓
2	L00: E2-01_Bedroom 01	Bedroom	5.76	7.24	✓
3	L00: E2-02_LKD	LKD	6.48	2.77	✓
4	L00: E2-03_Bedroom	Bedroom	6.36	3.06	✓
5	L00: E2-03_LKD	LKD	11.22	2.26	✓
6	L00: E2-04_Bedroom 01	Bedroom	5.76	3.98	✓
7	L00: E2-04_LKD	LKD	13.20	2.24	✓
8	L00: E2-04_Bedroom 02	Bedroom	5.76	1.50	✓
9	L00: E2-05_Bedroom 01	Bedroom	5.76	1.12	✓
10	L00: E2-05_LKD	LKD	12.24	2.14	✓
11	L00: E2-05_Bedroom 02	Bedroom	5.76	4.24	✓
12	L00: E2-06_LKD	LKD	9.24	2.16	✓
13	L00: E2-06_Bedroom	Bedroom	6.36	3.39	✓
14	L00: E2-07_LKD	LKD	9.24	2.29	✓
15	L00: E2-07_Bedroom	Bedroom	6.36	3.00	✓
16	L00: E2-08_LKD	LKD	9.24	2.23	✓
17	L00: E2-08_Bedroom	Bedroom	6.36	3.57	✓
18	L00: E2-09_Bedroom 01	Bedroom	5.76	4.33	✓
19	L00: E2-09_LKD	LKD	12.24	3.81	✓
20	L00: E2-09_Bedroom 02	Bedroom	5.76	4.73	✓
21	L00: E2-01_Bedroom 02	Bedroom	5.76	4.42	✓

The following conclusion can be made:

- ✓ 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/BS 8206-2:2008 Guidance.

16.15.1.30 ADF – Block E2 – L01

Ref.	Room Reference	Room Activity	External Window Area (m ²)	Average Daylight Factor	Comment
1	L01: E2-01_LKD	LKD	13.20	3.83	✓
2	L01: E2-01_Bedroom 02	Bedroom	5.76	5.34	✓
3	L01: E2-02_Bedroom	Bedroom	6.36	2.94	✓
4	L01: E2-02_LKD	LKD	10.80	2.48	✓
5	L01: E2-03_Bedroom	Bedroom	6.36	2.89	✓
6	L01: E2-03_LKD	LKD	10.79	2.43	✓
7	L01: E2-04_Bedroom 01	Bedroom	5.76	4.13	✓
8	L01: E2-04_LKD	LKD	13.20	2.42	✓
9	L01: E2-04_Bedroom 02	Bedroom	5.76	1.86	✓
10	L01: E2-05_Bedroom 01	Bedroom	5.76	1.22	✓
11	L01: E2-05_LKD	LKD	12.24	2.23	✓
12	L01: E2-05_Bedroom 02	Bedroom	5.76	4.65	✓
13	L01: E2-06_LKD	LKD	9.24	2.53	✓
14	L01: E2-06_Bedroom	Bedroom	6.36	3.42	✓
15	L01: E2-07_LKD	LKD	9.24	2.66	✓
16	L01: E2-07_Bedroom	Bedroom	6.36	3.01	✓
17	L01: E2-08_LKD	LKD	9.24	2.63	✓
18	L01: E2-08_Bedroom	Bedroom	6.36	3.63	✓
19	L01: E2-09_Bedroom 01	Bedroom	5.76	4.99	✓
20	L01: E2-09_LKD	LKD	12.24	3.93	✓
21	L01: E2-09_Bedroom 02	Bedroom	5.76	4.93	✓
22	L01: E2-01_Bedroom 01	Bedroom	5.76	4.95	✓

The following conclusion can be made:

- ✓ 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/BS 8206-2:2008 Guidance.

16.16 Appendix A.2 – Average Daylight Factor Result Tables for Individual Blocks

16.16.1.1 Block A1

Rooms Tested (A1)	No. Rooms
Total Bedrooms Tested	24
Total Living/Kitchen/Dining Areas Tested	31
Total Spaces Tested	55

Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in Block A1)		%
Bedrooms Pass	24	100%
L/K/D Areas Pass	13	35%
Total Overall	37	67%

Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in Block A1)		%
Bedrooms Pass	24	100%
L/K/D Areas Pass	24	77%
Total Overall	48	87%

Based on the results from the rooms tested, the results were extrapolated to all rooms within Block A1 development which are summarised in the following tables:

Total Rooms in Block A1	No. Rooms
Total Bedrooms	42
Total Living/Kitchen/Dining Areas	37
Total Spaces	79

Whole Space For L/K/D against 2% ADF Target (Predicted Results for Total Block A1)		%
Bedrooms Pass	42	100%
L/K/D Areas Pass	20	54%
Total Overall	62	78%

Whole Space For L/K/D against 1.5% ADF Target (Predicted Results for Total Block A1)		%
Bedrooms Pass	42	100%
L/K/D Areas Pass	30	81%
Total Overall	72	91%

16.16.1.2 Block B1

Rooms Tested (B1)	No. Rooms
Total Bedrooms Tested	22
Total Living/Kitchen/Dining Areas Tested	15
Total Spaces Tested	37

Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in Block B1)		%
Bedrooms Pass	19	100%
L/K/D Areas Pass	13	87%
Total Overall	32	86%

Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in Block B1)		%
Bedrooms Pass	19	100%
L/K/D Areas Pass	13	87%
Total Overall	32	86%

Based on the results from the rooms tested, the results were extrapolated to all rooms within Block B1 development which are summarised in the following tables:

Total Rooms in Block B1	No. Rooms
Total Bedrooms	79
Total Living/Kitchen/Dining Areas	54
Total Spaces	133

Whole Space For L/K/D against 2% ADF Target (Predicted Results for Total Block B1)		%
Bedrooms Pass	76	96%
L/K/D Areas Pass	49	91%
Total Overall	125	94%

Whole Space For L/K/D against 1.5% ADF Target (Predicted Results for Total Block B1)		%
Bedrooms Pass	76	96%
L/K/D Areas Pass	49	91%
Total Overall	125	94%

16.16.1.3 Block B2

Rooms Tested (B2)	No. Rooms
Total Bedrooms Tested	20
Total Living/Kitchen/Dining Areas Tested	17
Total Spaces Tested	37

Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in Block B2)		%
Bedrooms Pass	20	100%
L/K/D Areas Pass	13	76%
Total Overall	33	89%

Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in Block B2)		%
Bedrooms Pass	20	100%
L/K/D Areas Pass	15	88%
Total Overall	35	95%

Based on the results from the rooms tested, the results were extrapolated to all rooms within Block B2 development which are summarised in the following tables:

Total Rooms in Block B2	No. Rooms
Total Bedrooms	52
Total Living/Kitchen/Dining Areas	45
Total Spaces	97

Whole Space For L/K/D against 2% ADF Target (Predicted Results for Total Block B2)		%
Bedrooms Pass	52	100%
L/K/D Areas Pass	38	84%
Total Overall	90	93%

Whole Space For L/K/D against 1.5% ADF Target (Predicted Results for Total Block B2)		%
Bedrooms Pass	52	100%
L/K/D Areas Pass	42	93%
Total Overall	94	97%

16.16.1.4 Block B3

Rooms Tested (B3)	No. Rooms
Total Bedrooms Tested	20
Total Living/Kitchen/Dining Areas Tested	17
Total Spaces Tested	37

Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in Block B3)		%
Bedrooms Pass	18	90%
L/K/D Areas Pass	13	76%
Total Overall	31	84%

Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in Block B3)		%
Bedrooms Pass	18	90%
L/K/D Areas Pass	14	82%
Total Overall	32	86%

Based on the results from the rooms tested, the results were extrapolated to all rooms within Block B3 development which are summarised in the following tables:

Total Rooms in Block B3	No. Rooms
Total Bedrooms	52
Total Living/Kitchen/Dining Areas	45
Total Spaces	97

Whole Space For L/K/D against 2% ADF Target (Predicted Results for Total Block B3)		%
Bedrooms Pass	50	96%
L/K/D Areas Pass	36	80%
Total Overall	86	89%

Whole Space For L/K/D against 1.5% ADF Target (Predicted Results for Total Block B3)		%
Bedrooms Pass	50	96%
L/K/D Areas Pass	39	87%
Total Overall	89	92%

16.16.1.5 Block B4

Rooms Tested (B4)	No. Rooms
Total Bedrooms Tested	45
Total Living/Kitchen/Dining Areas Tested	27
Total Spaces Tested	72

Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in Block B4)		%
Bedrooms Pass	45	100%
L/K/D Areas Pass	25	93%
Total Overall	70	97%

Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in Block B4)		%
Bedrooms Pass	45	100%
L/K/D Areas Pass	27	100%
Total Overall	72	100%

Based on the results from the rooms tested, the results were extrapolated to all rooms within Block B4 development which are summarised in the following tables:

Total Rooms in Block B4	No. Rooms
Total Bedrooms	71
Total Living/Kitchen/Dining Areas	41
Total Spaces	112

Whole Space For L/K/D against 2% ADF Target (Predicted Results for Total Block B4)		%
Bedrooms Pass	71	100%
L/K/D Areas Pass	39	95%
Total Overall	110	98%

Whole Space For L/K/D against 1.5% ADF Target (Predicted Results for Total Block B4)		%
Bedrooms Pass	71	100%
L/K/D Areas Pass	41	100%
Total Overall	112	100%

16.16.1.6 Block C1

Rooms Tested (C1)	No. Rooms
Total Bedrooms Tested	15
Total Living/Kitchen/Dining Areas Tested	10
Total Spaces Tested	25

Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in Block C1)		%
Bedrooms Pass	15	100%
L/K/D Areas Pass	9	90%
Total Overall	24	96%

Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in Block C1)		%
Bedrooms Pass	15	100%
L/K/D Areas Pass	10	100%
Total Overall	25	100%

16.16.1.7 Block C2

Rooms Tested (C2)	No. Rooms
Total Bedrooms	10
Total Living/Kitchen/Dining Areas	6
Total Spaces	16

Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in Block C2)		%
Bedrooms Pass	10	100%
L/K/D Areas Pass	6	100%
16	24	100%

Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in Block C2)		%
Bedrooms Pass	10	100%
L/K/D Areas Pass	6	100%
Total Overall	16	100%

16.16.1.8 Block D1

Rooms Tested (D1)	No. Rooms
Total Bedrooms Tested	120
Total Living/Kitchen/Dining Areas Tested	69
Total Spaces Tested	189

Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in Block D1)		%
Bedrooms Pass	120	100%
L/K/D Areas Pass	60	87%
Total Overall	180	95%

Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in Block D1)		%
Bedrooms Pass	120	100%
L/K/D Areas Pass	67	97%
Total Overall	187	99%

Based on the results from the rooms tested, the results were extrapolated to all rooms within Block D1 development which are summarised in the following tables:

Total Rooms in Block D1	No. Rooms
Total Bedrooms	235
Total Living/Kitchen/Dining Areas	135
Total Spaces	370

Whole Space For L/K/D against 2% ADF Target (Predicted Results for Total Block D1)		%
Bedrooms Pass	235	100%
L/K/D Areas Pass	124	92%
Total Overall	359	97%

Whole Space For L/K/D against 1.5% ADF Target (Predicted Results for Total Block D1)		%
Bedrooms Pass	235	100%
L/K/D Areas Pass	133	99%
Total Overall	368	99%

16.16.1.9 Block E1

Rooms Tested (E1)	No. Rooms
Total Bedrooms Tested	63
Total Living/Kitchen/Dining Areas Tested	37
Total Spaces Tested	100

Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in Block E1)		%
Bedrooms Pass	63	100%
L/K/D Areas Pass	28	76%
Total Overall	91	91%

Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in Block E1)		%
Bedrooms Pass	63	100%
L/K/D Areas Pass	30	81%
Total Overall	93	93%

Based on the results from the rooms tested, the results were extrapolated to all rooms within Block E1 development which are summarised in the following tables:

Total Rooms in Block E1	No. Rooms
Total Bedrooms	115
Total Living/Kitchen/Dining Areas	70
Total Spaces	185

Whole Space For L/K/D against 2% ADF Target (Predicted Results for Total Block E1)		%
Bedrooms Pass	115	100%
L/K/D Areas Pass	56	80%
Total Overall	171	92%

Whole Space For L/K/D against 1.5% ADF Target (Predicted Results for Total Block E1)		%
Bedrooms Pass	115	100%
L/K/D Areas Pass	61	87%
Total Overall	176	95%

16.16.1.10 Block E2

Rooms Tested (E2)	No. Rooms
Total Bedrooms Tested	25
Total Living/Kitchen/Dining Areas Tested	18
Total Spaces Tested	43

Whole Space For L/K/D against 2% ADF Target (Results for Rooms Tested in Block E2)		%
Bedrooms Pass	25	100%
L/K/D Areas Pass	18	100%
Total Overall	43	100%

Whole Space For L/K/D against 1.5% ADF Target (Results for Rooms Tested in Block E2)		%
Bedrooms Pass	25	100%
L/K/D Areas Pass	18	100%
Total Overall	43	100%

Based on the results from the rooms tested, the results were extrapolated to all rooms within Block E2 development which are summarised in the following tables:

Total Rooms in Block E2	No. Rooms
Total Bedrooms	71
Total Living/Kitchen/Dining Areas	50
Total Spaces	121

Whole Space For L/K/D against 2% ADF Target (Predicted Results for Total Block E2)		%
Bedrooms Pass	71	100%
L/K/D Areas Pass	50	100%
Total Overall	121	100%

Whole Space For L/K/D against 1.5% ADF Target (Predicted Results for Total Block E2)		%
Bedrooms Pass	71	100%
L/K/D Areas Pass	50	100%
Total Overall	121	100%