# Lands at ‘St. Teresa’s’ Temple Hill, Monkstown, Blackrock, Co. Dublin

*Daylight, Sunlight and Overshadowing Study*

Report For: Oval Target Limited

Project No: 15464

# Version History

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## Table of Contents

# 1 Executive Summary

This report details the analysis undertaken to quantify the Sunlight and Daylight performance of the proposed St. Teresa's development located at Temple Hill, Monkstown, Blackrock, Co. Dublin. 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.

## 1.1 Shadow Analysis

The following summarises the overshadowing observed when the proposed development is compared to the Existing situation.

**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.

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 as a minor adverse impact.

## 1.2 Sunlight to Amenity Areas

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

**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.

**Proposed Amenities**

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

## 1.3 Daylight Analysis of Existing Buildings

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 (96%) exceed the BRE requirement. The remaining 6 no. 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 as a negligible adverse impact.

## 1.4 Existing Neighbouring Buildings - (APSH) Assessment

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**

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 as a negligible adverse impact.

## 1.5 Proposed Apartments - (APSH) Assessment

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 10.6 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.

## 1.6 Average Daylight Factor

Across the proposed development, 92% of the tested rooms are achieving ADF values 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 from the sample set are extrapolated to account for all spaces within the development.

With regard to internal daylighting, the Sustainable Urban Housing: Design Standards for New Apartments, Section 6.7 states the following:

*"Where an applicant cannot fully meet all of the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment of specific. This may arise due to design constraints associated with the site or location and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing*

*comprehensive urban regeneration and or an effective urban design and streetscape solution."*

Compensatory measures have been incorporated into the design of the proposed development to offset reduced daylight performance in a number of bedrooms and LKDs. The floor areas of 91.68% of all apartment units are above the minimum area requirements set out within national policy. Incorporating larger apartment units makes it more difficult to achieve the recommended internal daylight levels. Furthermore, the number of dual aspect units and communal open space provisions are above minimum recommendations. The incorporation of these compensatory measures more than offset the reduced daylight performance when the proposed development as a whole is considered.

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.

Therefore, when Living/Kitchen/Dining spaces are assessed as whole rooms against a 1.5% ADF target, 95% of the tested rooms are achieving this compliance rate. This increases to 97% when the results from the sample set are extrapolated to account for all spaces within the development

## 1.7 Observations

It should be noted that the guidance in the BRE 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' is not mandatory and the guide itself states *'although it gives numerical guidelines these should be interpreted flexibly because natural lighting is only one of many factors in site layout design'*.

Whilst the results shown relate to the criteria as laid out in the BRE guidance targets it is important to note that the BRE targets have been drafted primarily for use in low density suburban development and should therefore be used with flexibility and caution when dealing other types of sites. Despite the above, the site performs well in relation to the metrics considered in this report.

In addition, the BS 8206-2:2008 it also notes, "*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.*"

The approach within this report is further supported by the national policy guidance noted in the Sustainable Urban Housing: Design Standards for New Apartments, Section 6.7 which states:

"*Where an applicant cannot fully meet all of the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment of specific. This may arise due to design constraints associated with the site or location and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution*."

Taking all of the above information into account, overall the results demonstrate that the proposed development performs well when compared to the BRE recommendations 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".

# 2 Introduction

This report was completed to quantify the Sunlight and Daylight performance of the proposed St. Teresa's development located at Temple Hill, Monkstown, Blackrock, Co. Dublin, both within the development itself and the impact on adjacent buildings.

## 2.1 Analysis Performed

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

- **Sunlight to the Proposed Amenity Spaces** – via sunlight hours simulation.
- **Daylight Analysis of Existing Buildings** - via consideration of the Vertical Sky Component (VSC) results.
- **Annual Probable Sunlight Hours of Existing Buildings (APSH)** - via consideration annual and winter sunlight received to living rooms where applicable.
- **Average Daylight Factors**: via consideration of the Average Daylight Factor (ADF) for the proposed development.
- **Shadow Analysis** - A visual representation analysing any potential changes that may arise when comparing the existing scenario to the scenario with the proposed development in place.

The analysis was completed using the IES VE software.

The assessment is based on recommendations outlined in the BRE *'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice*' guide (BRE Guidelines) which is also referred to as BRE 209.

## 2.2 Development Description

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.

# 3 Methodology

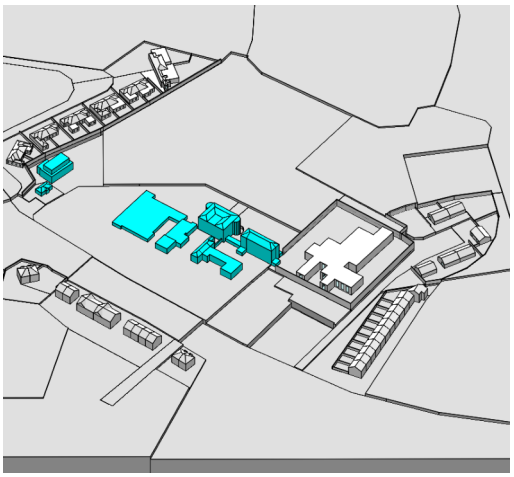
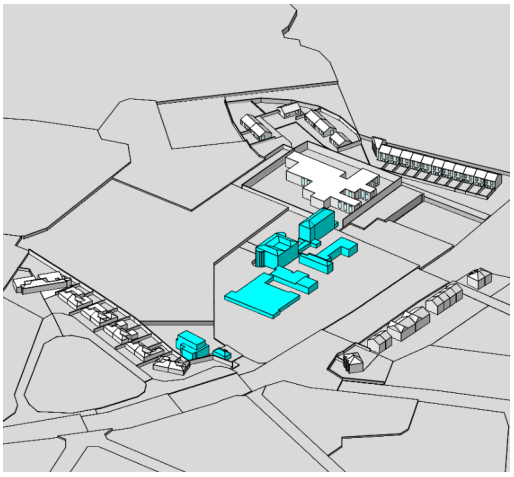
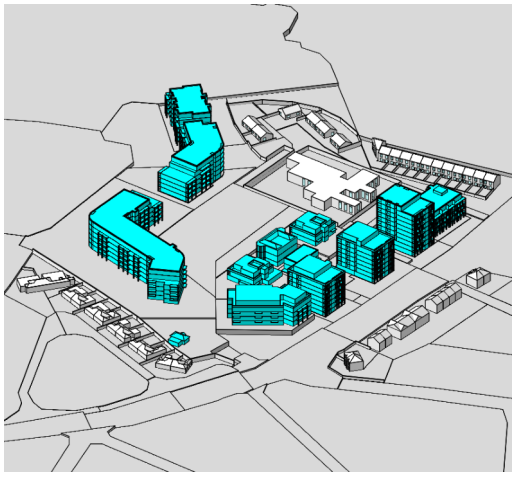
## 3.1 Orientation

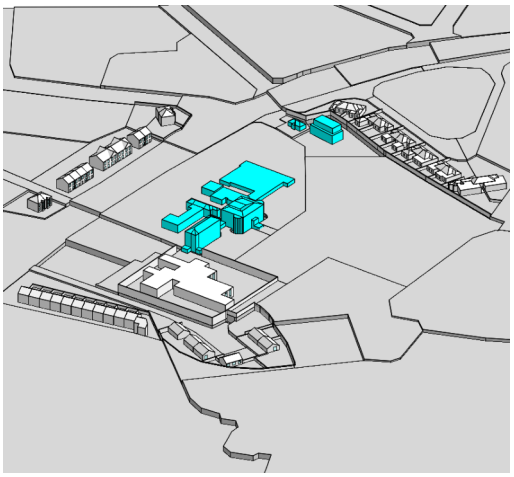
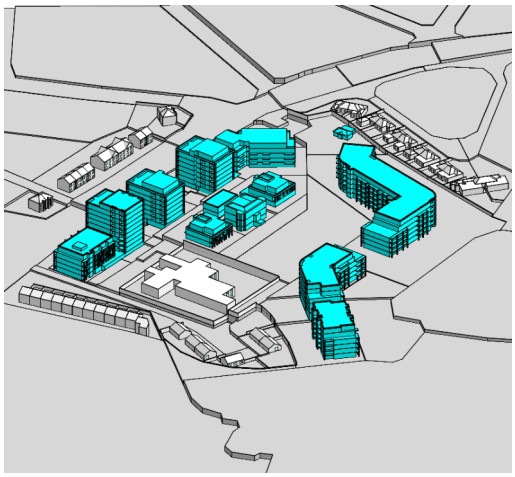
The model orientation has been taken from drawings provided by the Architect and the resulting angle shown below used in the analysis.

| Orientation | |
|---|---|
|  |  |
|  |  |

## 3.2 Proposed Model

The following images illustrate the models created from the architectural information provided and the use of Google/Bing maps.

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

| | | |
|---|---|---|
| **View looking from West of Site** |  |  |

### 3.3 Potential Sensitive Receptors

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

| | |
|---|---|
| | Proposed Site |
| | Alzheimer Society of Ireland |
| | St. Louise's Park |
| | Barclay Court |
| | Temple Road |
| | St. Vincent's Park |

# 4 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 residential developments while not obstructing light to existing homes nearby.

The BRE Guide advises on planning developments for good access to daylight and sunlight and is widely used by local authorities to help determine the performance of new developments.

## 4.1 Impact Classification Discussion

BRE guidance in Appendix I – Environmental Impact Assessment suggests impact classifications as minor, moderate and major adverse. It provides further classifications of these impacts with respect to criteria summarised in the table below.

Where the loss of skylight or sunlight fully meets the guidance in the BRE Guide, the impact is assessed as negligible or minor adverse. Where the loss of skylight or sunlight does not meet the BRE Guide, the impact is assessed as minor, moderate or major adverse.

| Impact | Description |
|---|---|
| *Negligible adverse impact* | • *Loss of light well within guidelines,* ***or***<br>• *only a small number of windows losing light (within the guidelines)* ***or*** *limited area of open space losing light (within the guidelines)* |
| *Minor adverse impact (a)* | • *Loss of light only just within guidelines* ***and***<br>  ○ *a larger number of windows are affected* ***or***<br>  ○ *larger area of open space is affected (within the guidelines)* |
| *Minor adverse impact (b)* | • *only a small number of windows or limited open space areas are affected*<br>• *the loss of light is only marginally outside the guidelines*<br>• *an affected room has other sources of skylight or sunlight*<br>• *the affected building or open space only has a low-level requirement for skylight or sunlight*<br>• *there are particular reasons why an alternative, less stringent, guideline should be applied* |
| *Major adverse impact* | • *large number of windows or large open space areas are affected*<br>• *the loss of light is substantially outside the guidelines*<br>• *all the windows in a particular property are affected*<br>• *the affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight (living rooms / playground)* |

# 5 Daylight Analysis of Existing Buildings

## 5.1 Guidance Requirements

When designing a new development, it is important to safeguard the daylight to nearby buildings. The BRE's 2011 guidance provides 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 determining the vertical sky component at the centre of key reference points. The vertical sky component definition from the BRE guide 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 residential schemes the BRE guide states the following in Section 2.2.7:

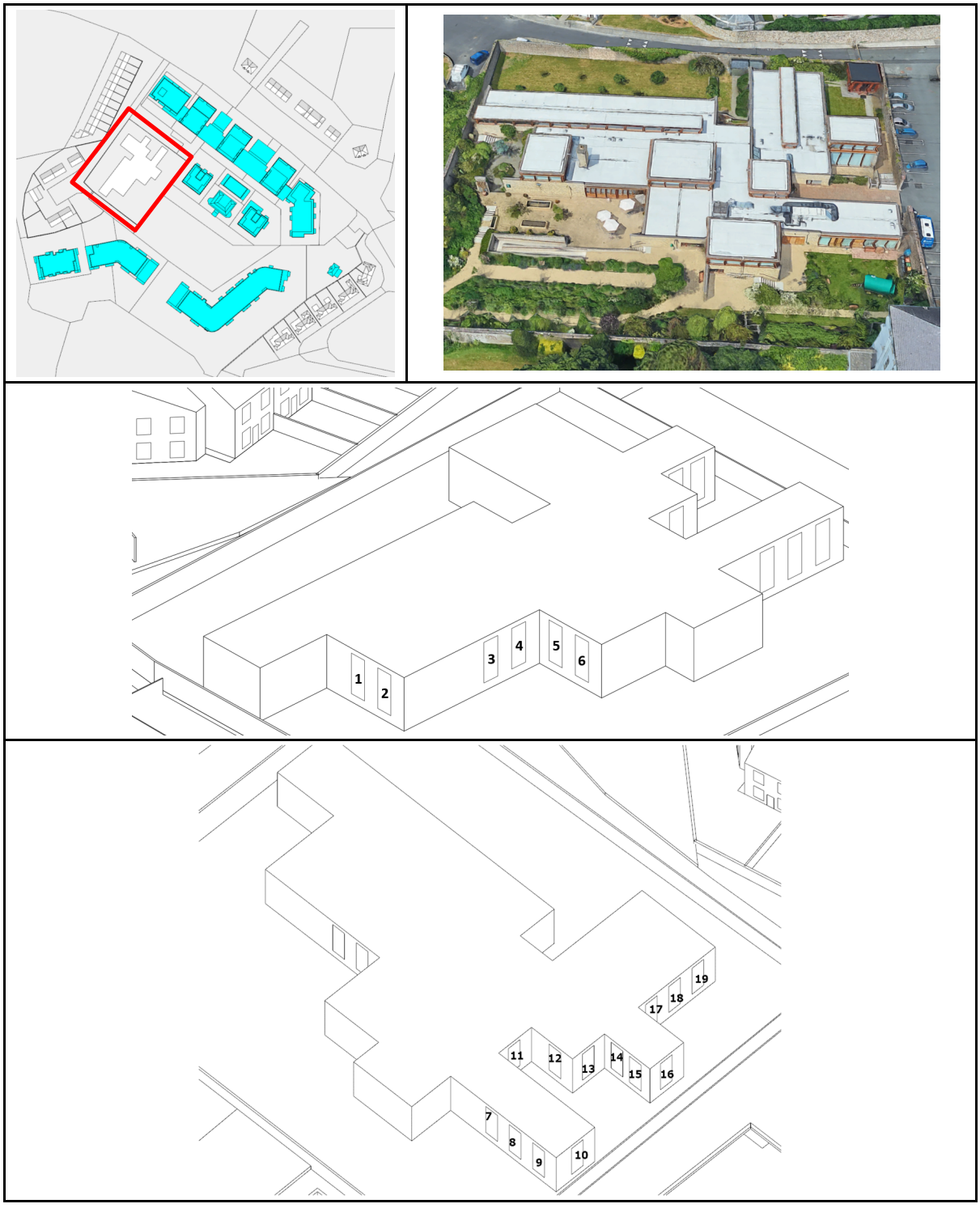
> 2.2.7 If this VSC is greater than 27% then enough skylight should still be reaching the window of the existing building. Any reduction below this level should be kept to a minimum. If the VSC, with the new development in place, is both less than 27% and less than 0.8 times its former value, occupants 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 scheme and Proposed scheme and consider if the values on the existing buildings are above 27% or not less than 0.8 times their former value (that of the Existing scheme).

## 5.2 Assessment

Based on the VSC impact criteria outlined previously, the following locations have been modelled and analysed:

### 5.2.1 Alzheimer Society of Ireland

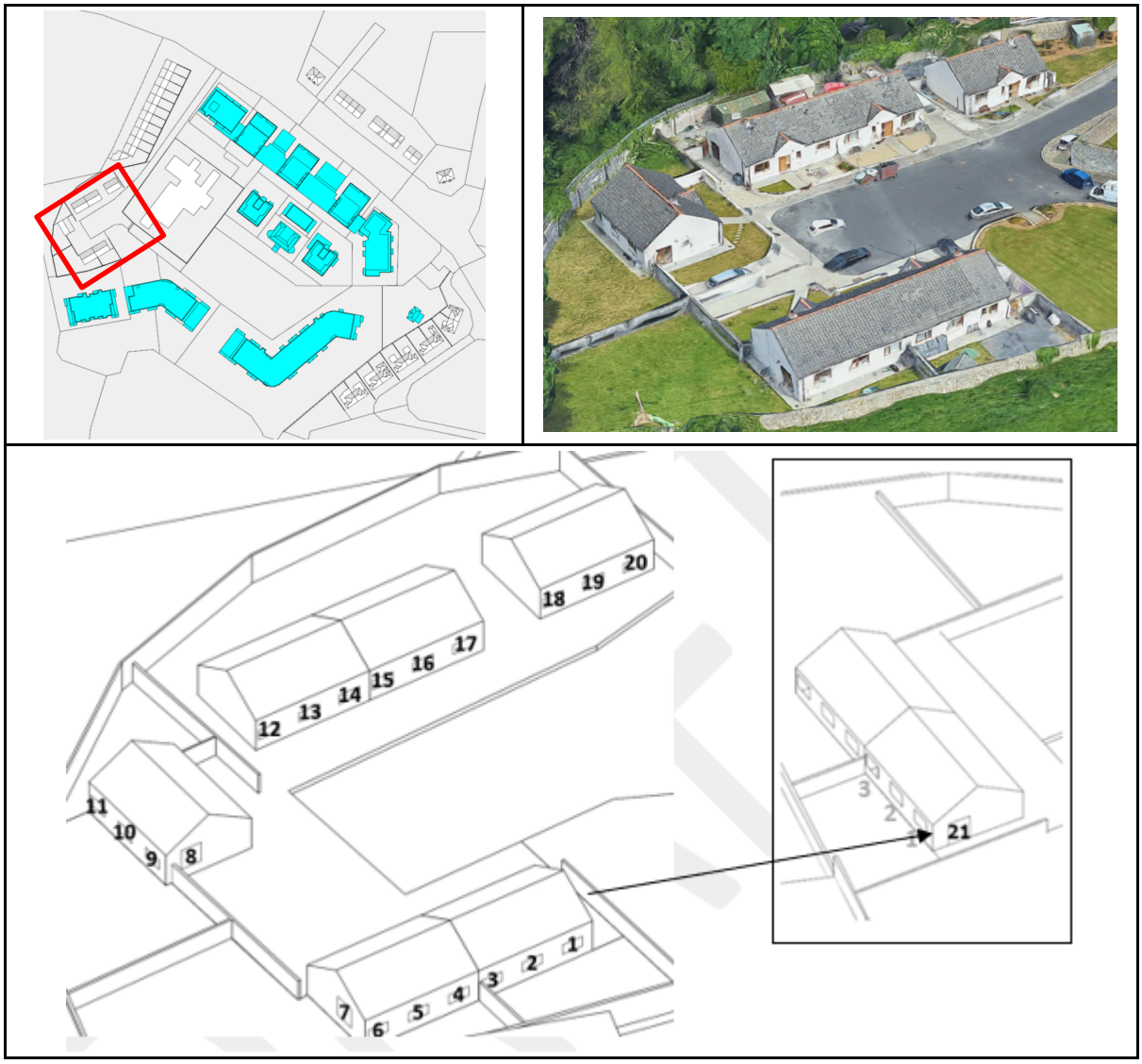


| Points | Existing Situation VSC | Proposed Scheme VSC | Proposed VSC % of Existing Situation | Comment |
|---|---|---|---|---|
| 1 | 32.2 | 27.44 | 85% | ✓ |
| 2 | 34.5 | 29.48 | 86% | ✓ |
| 3 | 35.3 | 31.83 | 90% | ✓ |
| 4 | 31.2 | 28.09 | 90% | ✓ |
| 5 | 29.2 | 24.99 | 86% | ✓ |
| 6 | 34.8 | 30.14 | 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.

### 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% | ✓ |

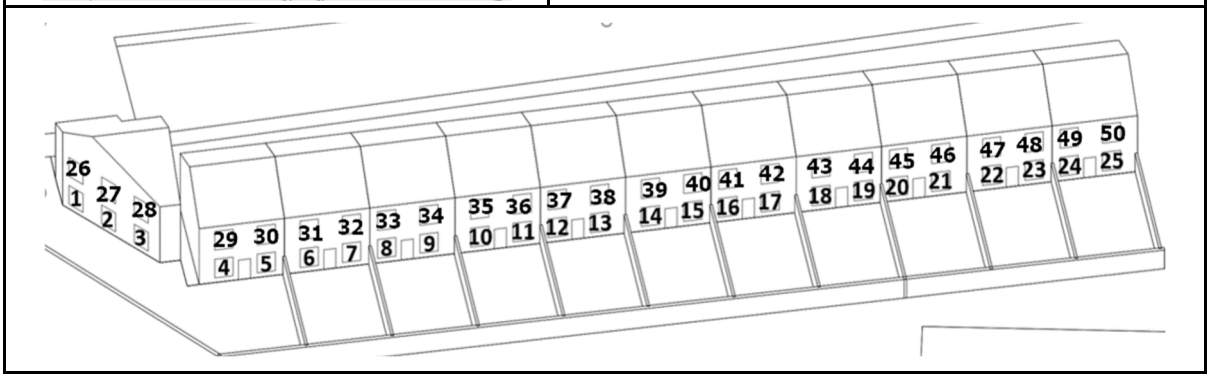
| Points | Existing Situation VSC | Proposed Scheme VSC | Proposed VSC % of Existing Situation | Comment |
|---|---|---|---|---|
| 11 | 32.64 | 30.73 | 94% | ✓ |
| 12 | 35.33 | 31.58 | 89% | ✓ |
| 13 | 35.93 | 32.08 | 89% | ✓ |
| 14 | 35.95 | 32.62 | 91% | ✓ |
| 15 | 35.96 | 32.49 | 90% | ✓ |
| 16 | 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.

### 5.2.3 Barclay Court



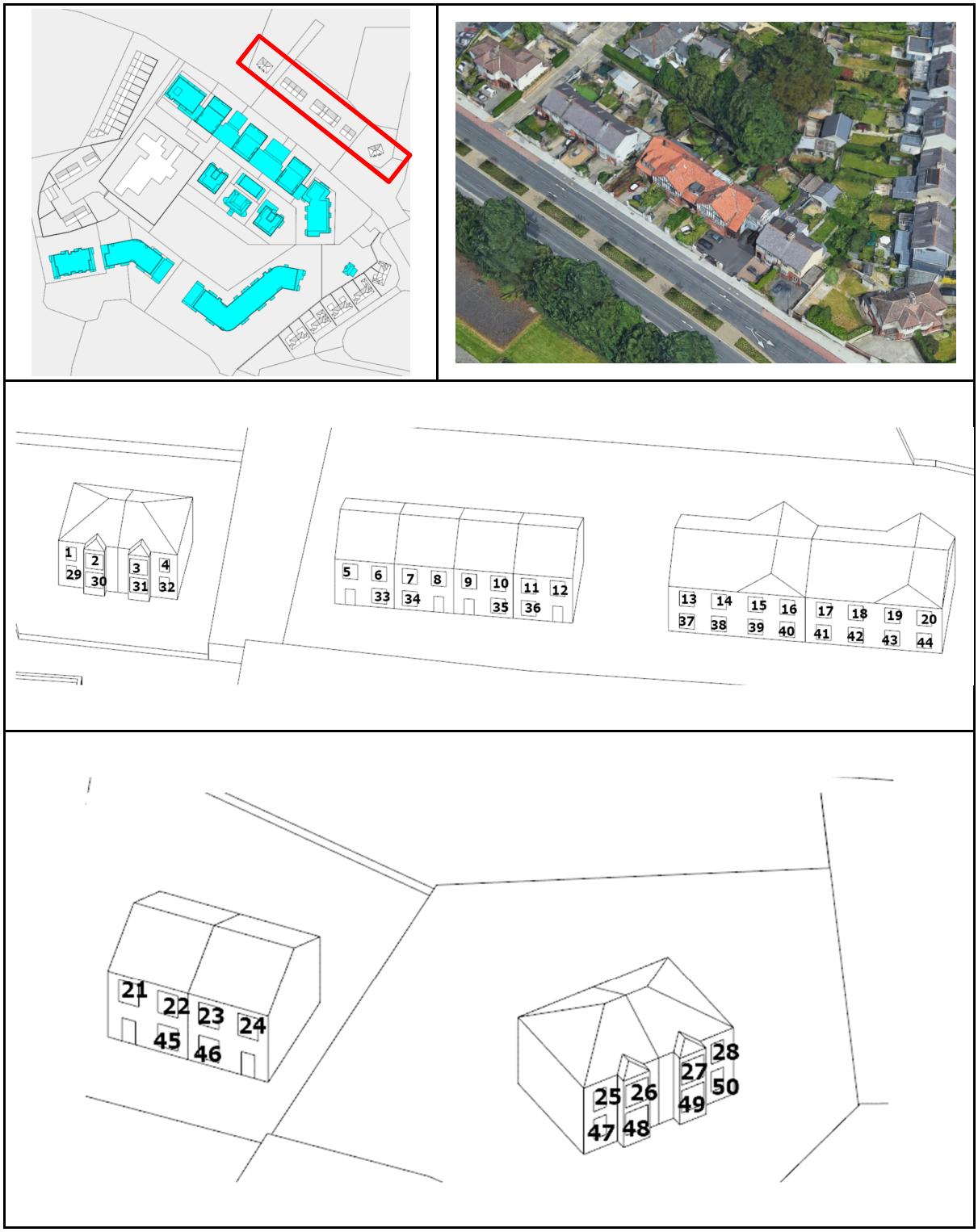

| Points | Existing Situation VSC | Proposed Scheme VSC | Proposed VSC % of Existing Situation | Comment |
|---|---|---|---|---|
| 1 | 30.80 | 31.23 | 100% | ✓ |
| 2 | 31.24 | 31.86 | 100% | ✓ |
| 3 | 31.35 | 32.41 | 100% | ✓ |
| 4 | 30.16 | 31.13 | 100% | ✓ |
| 5 | 29.14 | 30.32 | 100% | ✓ |
| 6 | 30.75 | 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.

### 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% | ✓ |
| 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% | ✓ |

| Points | Existing Situation VSC | Proposed Scheme VSC | Proposed VSC % of Existing Situation | Comment |
|---|---|---|---|---|
| 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% | ✓ |
| 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.

### 5.2.5 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.

## 5.3 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 (96%) exceed the BRE requirement. The remaining 6 no. 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 as a negligible adverse impact.

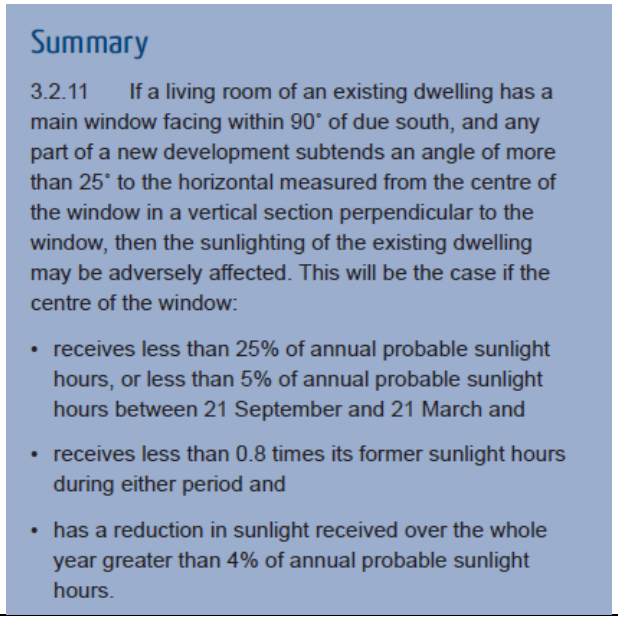
# 6 Existing Building - Annual Probable Sunlight Hours (APSH) Assessment

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 25% 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.

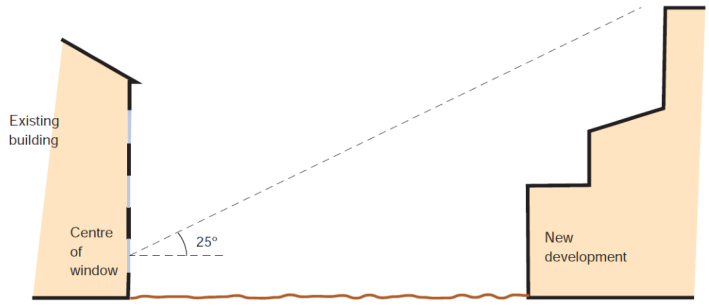
BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight

## 6.1 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 does not require calculation, 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:

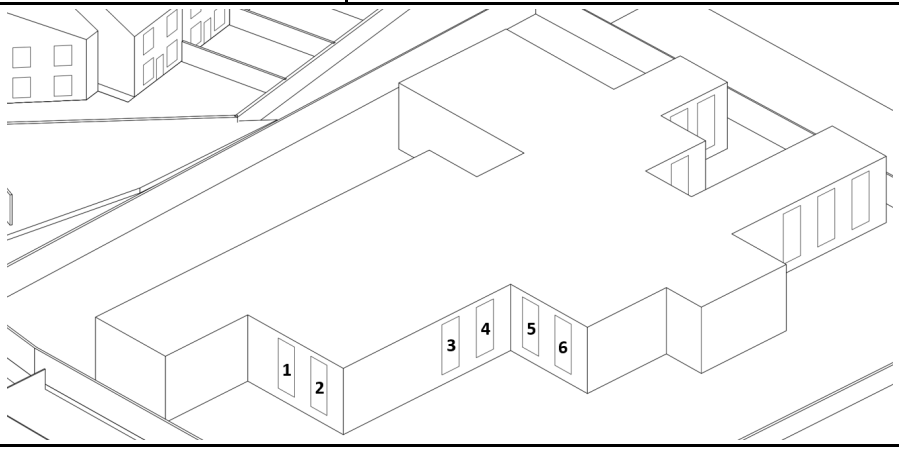
1. The existing building has living room with a main window which faces within 90 degrees of due south (with a line drawn perpendicular to the window).
2. Existing building main living room window is located to the North, East, or West of the Proposed Development (with a line drawn perpendicular to the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

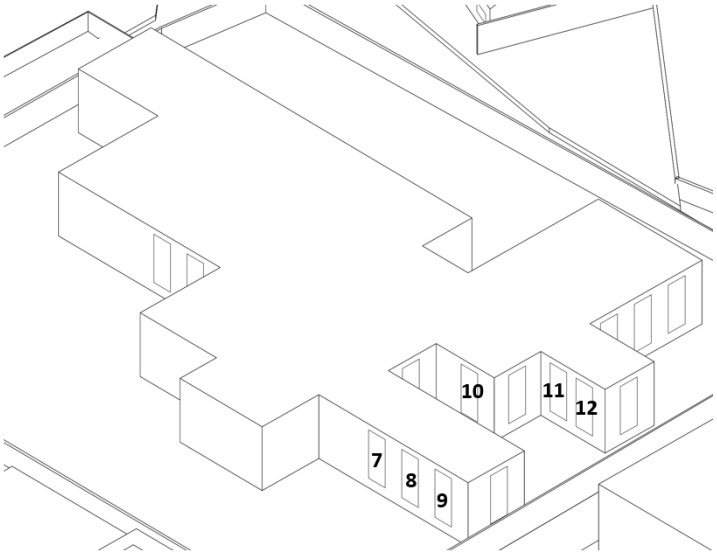
Taking the above into consideration, the existing dwellings on St. Vincent's Park and Carmond House will not be included in the analysis, as they do not have any windows that face the proposed development and are within 90 degrees of due South.

## 6.2 Existing Building APSH Results

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

### 6.2.1 Alzheimer Society of Ireland



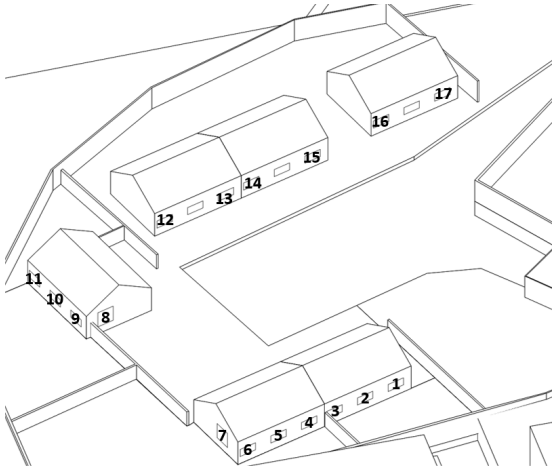



| Points | Existing Scheme APSH | | Proposed Scheme APSH | | Proposed Scheme APSH as a % of the Existing Scheme | | Comment |
|---|---|---|---|---|---|---|---|
| | Annual | Winter | Annual | Winter | Annual | Winter | |
| 1 | 57.57 | 26.66 | 44.55 | 13.64 | 77% | 51% | ✓/✓ |
| 2 | 61.71 | 27.08 | 47.67 | 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

### 6.2.2 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% | ✓/✓ |

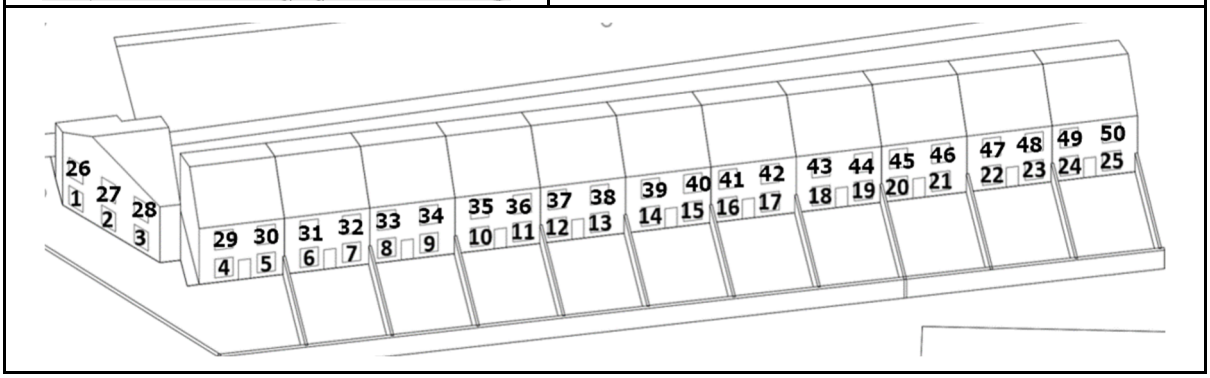
| Points | Existing Scheme APSH | | Proposed Scheme APSH | | Proposed Scheme APSH as a % of the Existing Scheme | | Comment |
|---|---|---|---|---|---|---|---|
| 15 | 67.55 | 28.69 | 59.96 | 21.96 | 89% | 77% | ✓/✓ |
| 16 | 62.61 | 25.05 | 59.08 | 22.01 | 94% | 88% | ✓/✓ |
| 17 | 56.39 | 21.86 | 56.29 | 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

### 6.2.3 Barclay Court



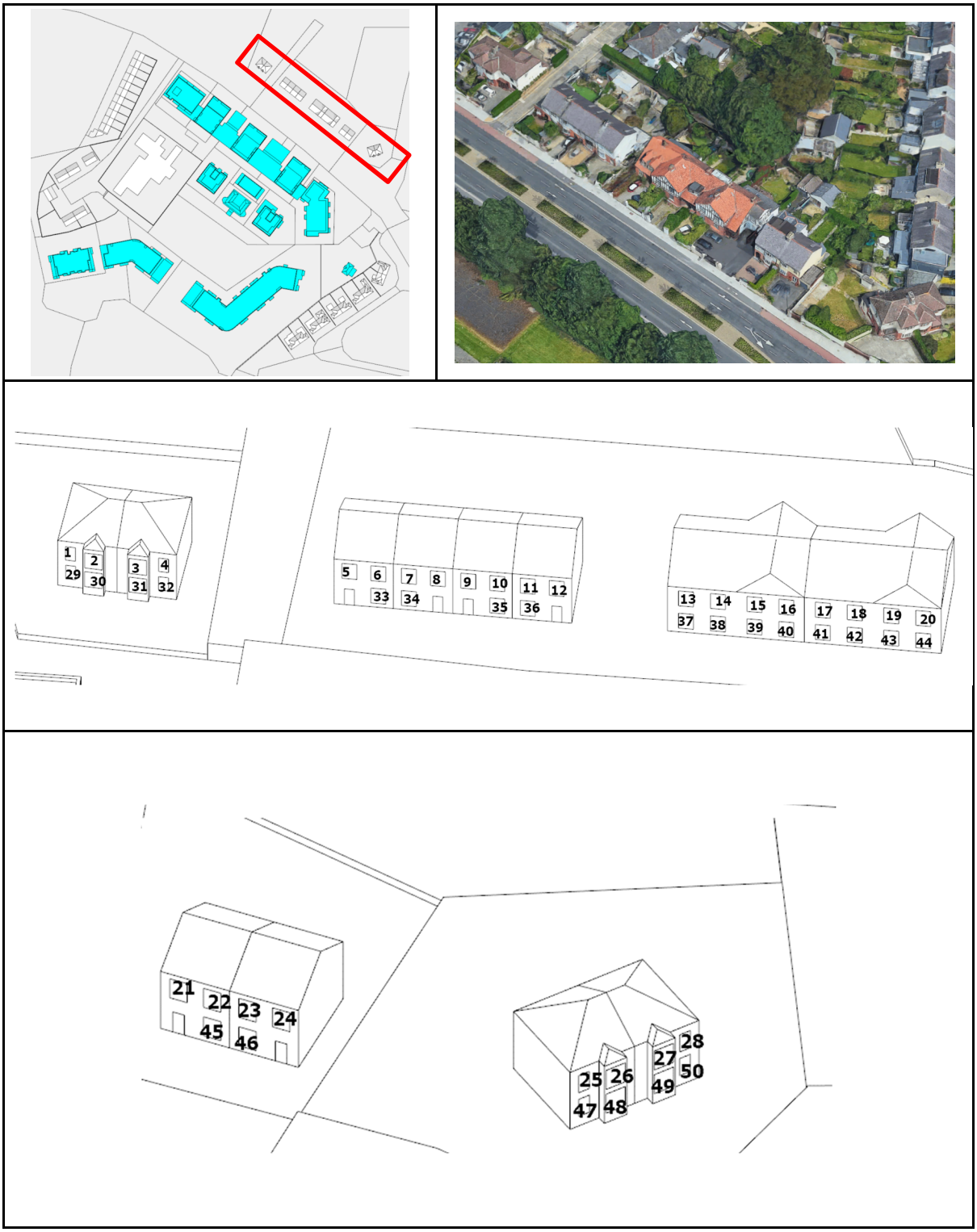

| Points | Existing Scheme APSH | | Proposed Scheme APSH | | Proposed Scheme APSH as a % of the Existing Scheme | | Comment |
|---|---|---|---|---|---|---|---|
| | Annual | Winter | Annual | Winter | Annual | Winter | |
| 1 | 61.23 | 19.27 | 59.05 | 17.79 | 96% | 92% | ✓/✓ |
| 2 | 63.37 | 21.58 | 60.26 | 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% | ✓/✓ |

| Points | Existing Scheme APSH | | Proposed Scheme APSH | | Proposed Scheme APSH as a % of the Existing Scheme | | Comment |
|---|---|---|---|---|---|---|---|
| 18 | 50.40 | 17.07 | 42.95 | 14.59 | 85% | 85% | ✓/✓ |
| 19 | 52.41 | 22.20 | 46.06 | 19.48 | 88% | 88% | ✓/✓ |
| 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

### 6.2.4 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% | ✓/✓ |

| Points | Existing Scheme APSH | | Proposed Scheme APSH | | Proposed Scheme APSH as a % of the Existing Scheme | | Comment |
|---|---|---|---|---|---|---|---|
| 42 | 70.17 | 29.86 | 56.68 | 19.85 | 81% | 66% | ✓/✓ |
| 43 | 70.07 | 29.78 | 56.22 | 19.34 | 80% | 65% | ✓/✓ |
| 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

## 6.3 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.

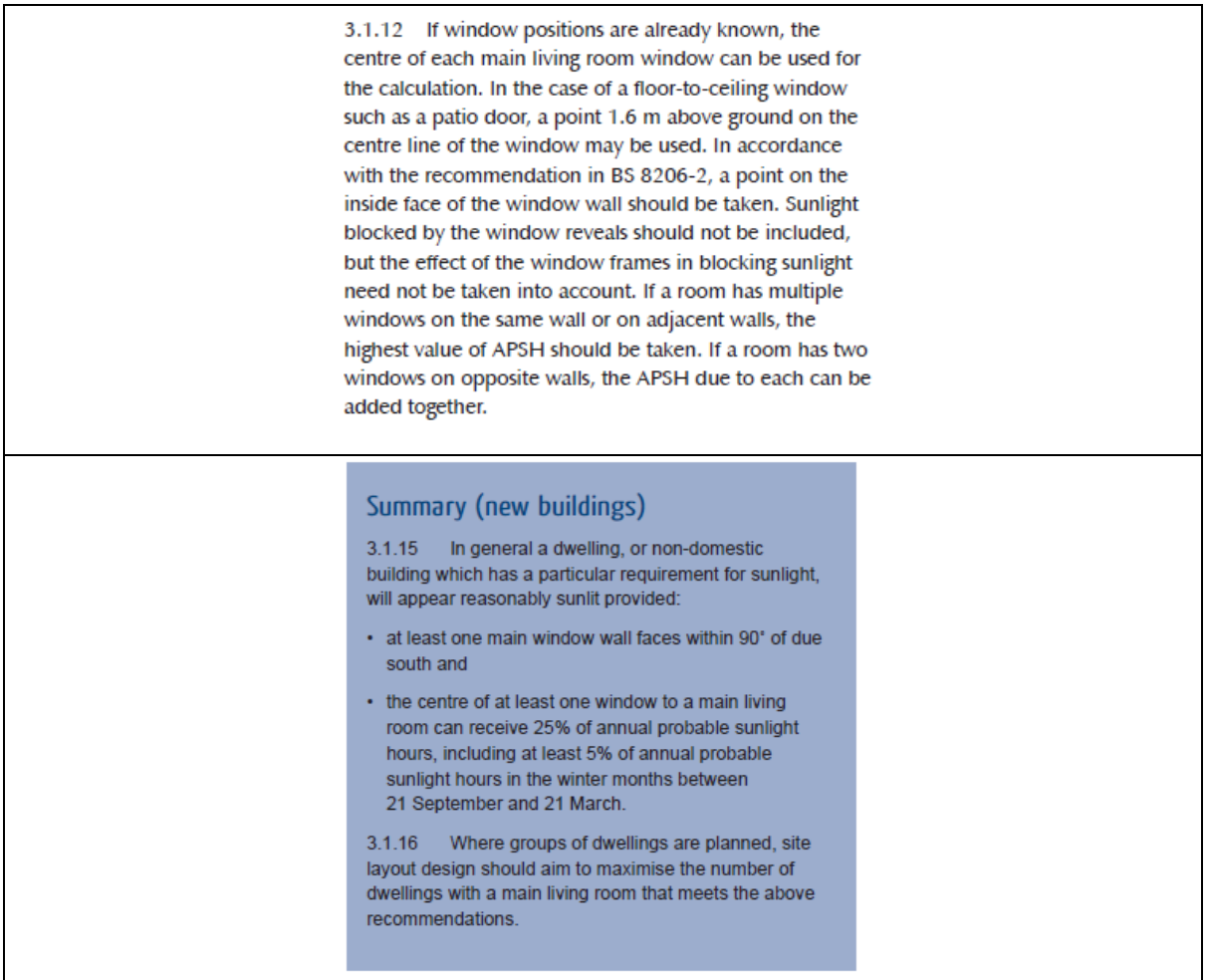
Thus, the overall impact of the proposed development on the surrounding adjacent buildings can be considered as a negligible adverse impact.

# 7 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:

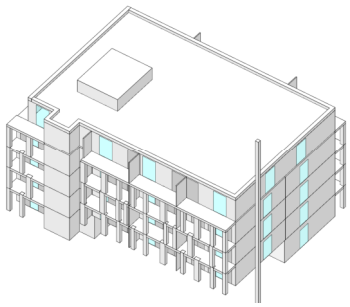
- at least one main window wall faces within 90° of due south and
- the centre of at least one window to a main living room can receive 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months between 21 September and 21 March.

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.

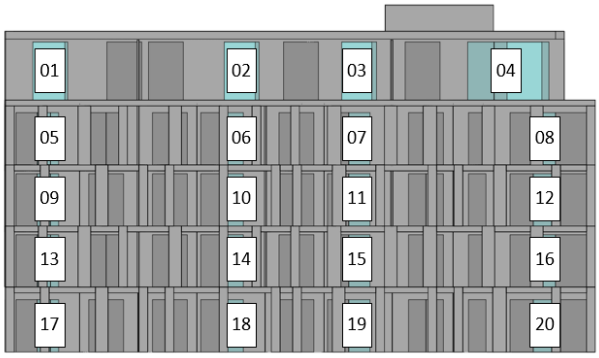
Extract from the BRE 'Site Layout Planning for Daylight and Sunlight' guide

## 7.1 Proposed Building APSH Results

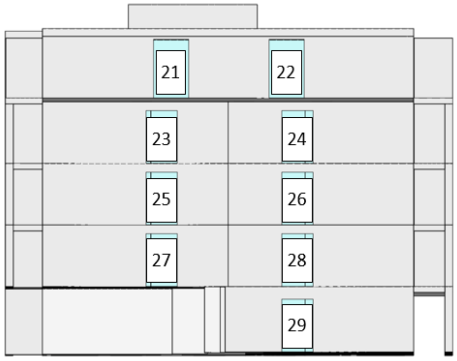
## 7.2 Block A



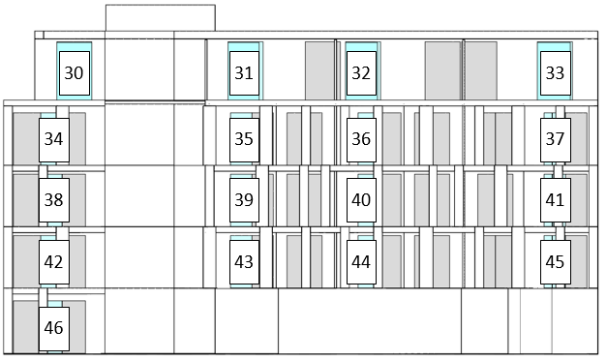
**North / East**



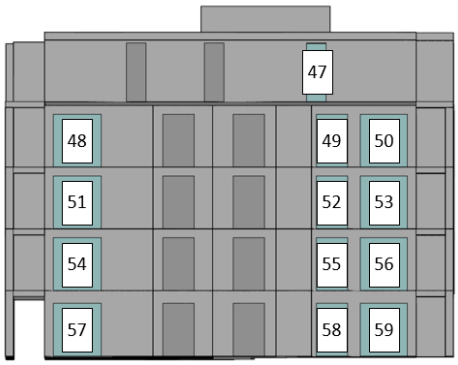

**South / East**




**South / West**




**North / West**




| 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/✓ |

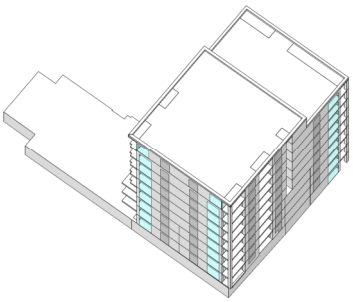
The following conclusions can be made:

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

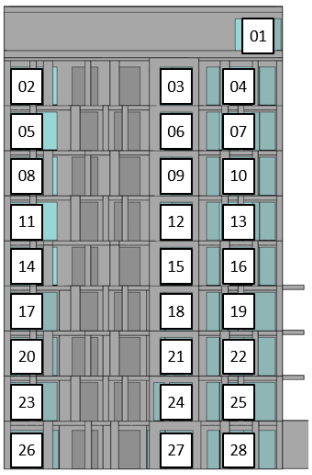
x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.

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 7.12 for more information).

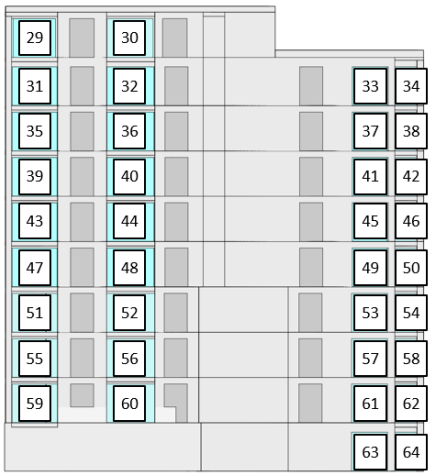
## 7.3 Block B1



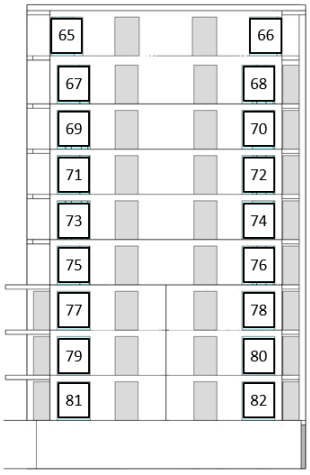
**North / East**



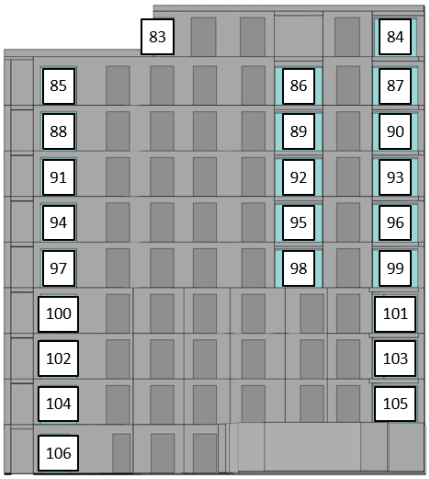

**South / East**




**South / West**




**North / West**



| 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 | South / East | 40.22 | 9.74 | ✓/✓ |
| 62 | | 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 |

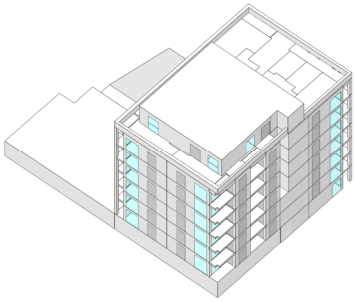
The following conclusions can be made:

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

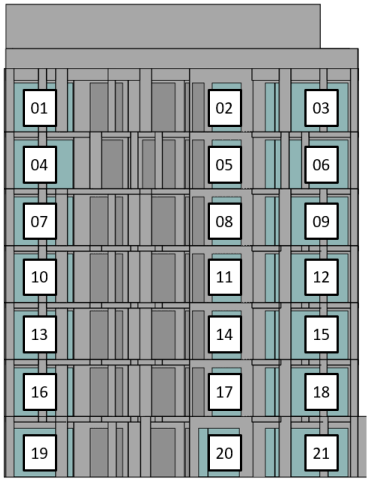
x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.

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 7.12 for more information).

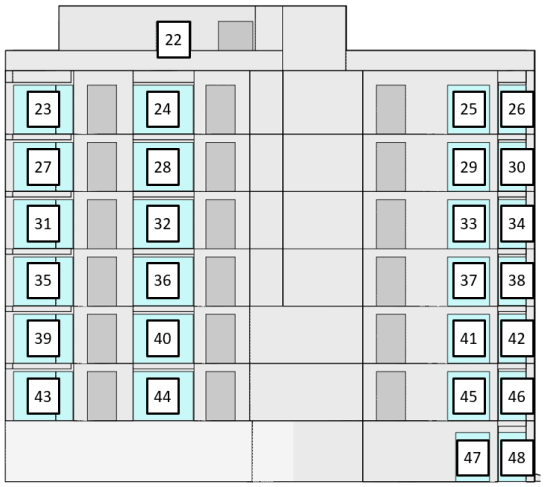
## 7.4 Block B2



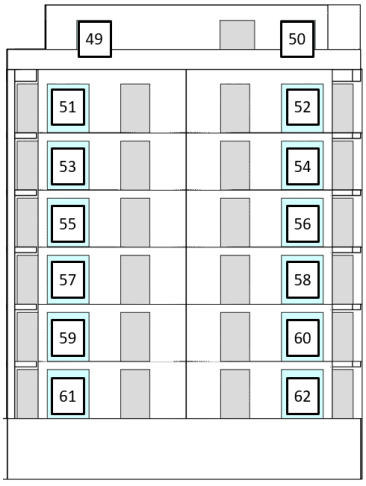
**North / East**



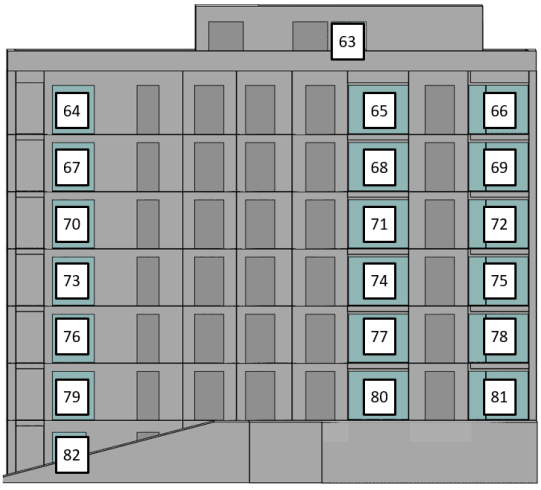

**South / East**




**South / West**




**North / West**




| Ref # | Orientation | Proposed | | Comment |
|---|---|---|---|---|
| | | Annual (%) | Winter (%) | |
| 1 | North / East | 13.84 | 3.60 | x/x |
| 2 | North / East | 23.78 | 4.20 | x/x |
| 3 | North / East | 4.17 | 0.11 | x/x |

| | | | | |
|---|---|---|---|---|
| 4 | North / East | 13.72 | 3.30 | x/x |
| 5 | North / East | 23.78 | 4.20 | x/x |
| 6 | North / East | 3.93 | 0.12 | x/x |
| 7 | North / East | 13.54 | 3.30 | x/x |
| 8 | North / East | 23.78 | 4.20 | x/x |
| 9 | North / East | 4.17 | 0.11 | x/x |
| 10 | North / East | 13.54 | 3.30 | x/x |
| 11 | North / East | 23.78 | 4.20 | x/x |
| 12 | North / East | 4.19 | 0.11 | x/x |
| 13 | North / East | 13.30 | 3.06 | x/x |
| 14 | North / East | 23.78 | 4.20 | x/x |
| 15 | North / East | 4.19 | 0.11 | x/x |
| 16 | North / East | 11.83 | 2.61 | x/x |
| 17 | North / East | 22.55 | 3.57 | x/x |
| 18 | North / East | 3.38 | 0.00 | x/x |
| 19 | North / East | 11.75 | 2.18 | x/x |
| 20 | North / East | 20.53 | 3.07 | x/x |
| 21 | North / East | 2.42 | 0.00 | x/x |
| 22 | South / East | 58.66 | 24.19 | ✓/✓ |
| 23 | South / East | 33.79 | 19.45 | ✓/✓ |
| 24 | South / East | 20.28 | 8.83 | x/✓ |
| 25 | South / East | 64.25 | 26.48 | ✓/✓ |
| 26 | South / East | 10.75 | 0.87 | x/x |
| 27 | South / East | 30.98 | 17.76 | ✓/✓ |
| 28 | South / East | 18.72 | 7.85 | x/✓ |
| 29 | South / East | 60.97 | 23.21 | ✓/✓ |
| 30 | South / East | 8.45 | 0.37 | x/x |
| 31 | South / East | 29.22 | 16.81 | ✓/✓ |
| 32 | South / East | 17.06 | 6.51 | x/✓ |
| 33 | South / East | 58.51 | 20.75 | ✓/✓ |
| 34 | South / East | 10.36 | 0.54 | x/x |
| 35 | South / East | 26.94 | 15.99 | ✓/✓ |
| 36 | South / East | 16.02 | 6.24 | x/✓ |
| 37 | South / East | 57.03 | 19.53 | ✓/✓ |
| 38 | South / East | 10.43 | 0.54 | x/x |
| 39 | South / East | 23.55 | 13.31 | x/✓ |
| 40 | South / East | 14.50 | 5.59 | x/✓ |
| 41 | South / East | 55.06 | 18.06 | ✓/✓ |
| 42 | South / East | 10.43 | 0.54 | x/x |
| 43 | South / East | 18.08 | 8.30 | x/✓ |
| 44 | South / East | 12.43 | 4.73 | x/x |
| 45 | South / East | 50.82 | 15.87 | ✓/✓ |
| 46 | South / East | 9.34 | 0.28 | x/x |
| 47 | South / East | 42.94 | 10.99 | ✓/✓ |
| 48 | South / East | 8.21 | 0.17 | x/x |
| 49 | South / West | 70.29 | 30.49 | ✓/✓ |
| 50 | South / West | 70.33 | 29.33 | ✓/✓ |

| | | | | |
|---|---|---|---|---|
| 51 | South / West | 75.90 | 33.94 | ✓/✓ |
| 52 | South / West | 75.63 | 33.75 | ✓/✓ |
| 53 | South / West | 73.44 | 31.84 | ✓/✓ |
| 54 | South / West | 73.07 | 31.59 | ✓/✓ |
| 55 | South / West | 72.64 | 31.17 | ✓/✓ |
| 56 | South / West | 71.89 | 30.33 | ✓/✓ |
| 57 | South / West | 69.97 | 28.34 | ✓/✓ |
| 58 | South / West | 69.77 | 28.14 | ✓/✓ |
| 59 | South / West | 64.13 | 22.49 | ✓/✓ |
| 60 | South / West | 62.97 | 21.72 | ✓/✓ |
| 61 | South / West | 55.02 | 13.63 | ✓/✓ |
| 62 | South / West | 51.95 | 12.18 | ✓/✓ |
| 63 | North / West | 24.57 | 7.10 | x/✓ |
| 64 | North / West | 20.40 | 7.69 | x/✓ |
| 65 | North / West | 6.17 | 0.65 | x/x |
| 66 | North / West | 20.19 | 6.75 | x/✓ |
| 67 | North / West | 19.65 | 7.32 | x/✓ |
| 68 | North / West | 5.52 | 0.65 | x/x |
| 69 | North / West | 19.73 | 5.93 | x/✓ |
| 70 | North / West | 17.38 | 6.31 | x/✓ |
| 71 | North / West | 5.52 | 0.65 | x/x |
| 72 | North / West | 19.13 | 5.49 | x/✓ |
| 73 | North / West | 17.01 | 6.29 | x/✓ |
| 74 | North / West | 5.52 | 0.65 | x/x |
| 75 | North / West | 19.20 | 4.84 | x/x |
| 76 | North / West | 16.74 | 6.02 | x/✓ |
| 77 | North / West | 5.52 | 0.65 | x/x |
| 78 | North / West | 18.53 | 3.98 | x/x |
| 79 | North / West | 15.77 | 5.12 | x/✓ |
| 80 | North / West | 5.15 | 0.28 | x/x |
| 81 | North / West | 16.63 | 2.39 | x/x |
| 82 | North / West | 13.68 | 3.19 | x/x |

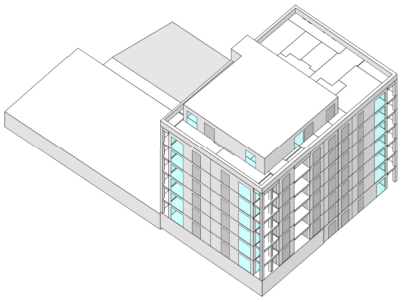
The following conclusions can be made:

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

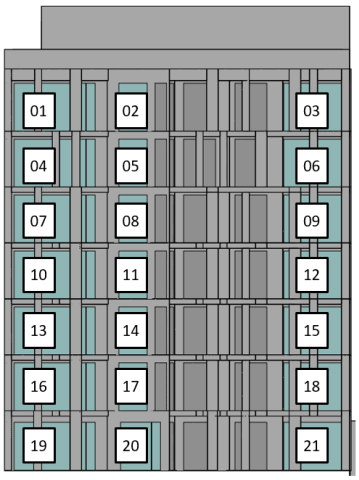
x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.

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 7.12 for more information).

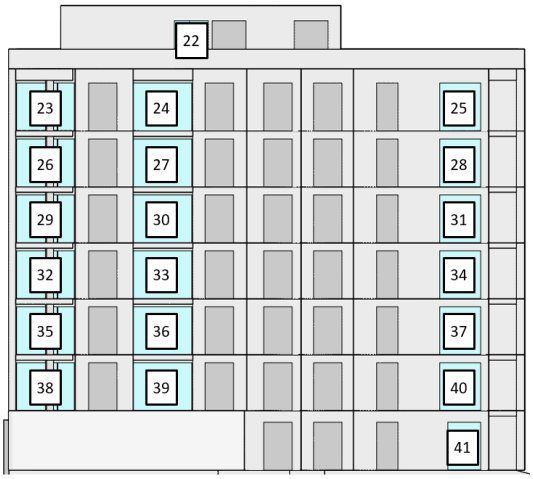
## 7.5 Block B3



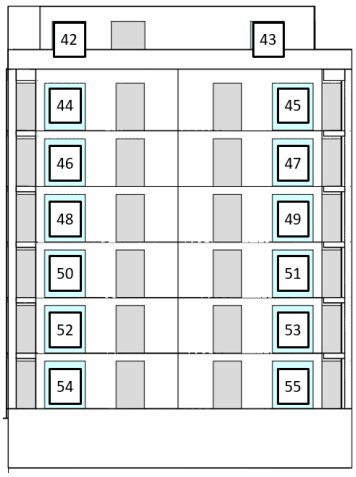
**North / East**



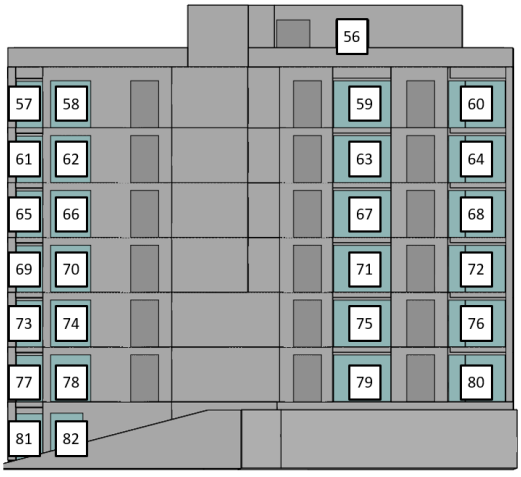

**South / East**




**South / West**




**North / West**




| Ref # | Orientation | Proposed | | Comment |
|---|---|---|---|---|
| | | Annual (%) | Winter (%) | |
| 1 | North / East | 12.04 | 3.39 | x/x |
| 2 | North / East | 23.78 | 4.20 | x/x |
| 3 | North / East | 5.28 | 0.46 | x/x |
| 4 | North / East | 12.69 | 3.54 | x/x |

| | | | | |
|---|---|---|---|---|
| 5 | North / East | 23.78 | 4.20 | x/x |
| 6 | North / East | 6.25 | 0.42 | x/x |
| 7 | North / East | 12.04 | 3.39 | x/x |
| 8 | North / East | 23.78 | 4.20 | x/x |
| 9 | North / East | 5.27 | 0.46 | x/x |
| 10 | North / East | 12.06 | 3.39 | x/x |
| 11 | North / East | 23.78 | 4.20 | x/x |
| 12 | North / East | 5.34 | 0.46 | x/x |
| 13 | North / East | 12.08 | 3.41 | x/x |
| 14 | North / East | 23.78 | 4.20 | x/x |
| 15 | North / East | 5.34 | 0.46 | x/x |
| 16 | North / East | 12.05 | 3.41 | x/x |
| 17 | North / East | 22.94 | 4.20 | x/x |
| 18 | North / East | 4.84 | 0.46 | x/x |
| 19 | North / East | 9.34 | 2.42 | x/x |
| 20 | North / East | 17.16 | 2.88 | x/x |
| 21 | North / East | 3.88 | 0.25 | x/x |
| 22 | South / East | 60.73 | 25.48 | ✓/✓ |
| 23 | South / East | 30.17 | 18.88 | ✓/✓ |
| 24 | South / East | 23.75 | 12.57 | x/✓ |
| 25 | South / East | 66.99 | 30.03 | ✓/✓ |
| 26 | South / East | 26.03 | 15.55 | ✓/✓ |
| 27 | South / East | 16.63 | 7.38 | x/✓ |
| 28 | South / East | 61.89 | 24.83 | ✓/✓ |
| 29 | South / East | 21.43 | 12.71 | x/✓ |
| 30 | South / East | 9.33 | 3.61 | x/x |
| 31 | South / East | 54.41 | 16.71 | ✓/✓ |
| 32 | South / East | 18.80 | 10.89 | x/✓ |
| 33 | South / East | 4.49 | 2.21 | x/x |
| 34 | South / East | 48.14 | 12.00 | ✓/✓ |
| 35 | South / East | 14.21 | 7.50 | x/✓ |
| 36 | South / East | 2.54 | 1.90 | x/x |
| 37 | South / East | 42.75 | 9.60 | ✓/✓ |
| 38 | South / East | 11.46 | 5.53 | x/✓ |
| 39 | South / East | 1.85 | 1.59 | x/x |
| 40 | South / East | 38.35 | 7.94 | ✓/✓ |
| 41 | South / East | 31.80 | 6.13 | ✓/✓ |
| 42 | South / West | 70.51 | 30.42 | ✓/✓ |
| 43 | South / West | 70.97 | 29.91 | ✓/✓ |
| 44 | South / West | 76.15 | 34.20 | ✓/✓ |
| 45 | South / West | 75.87 | 33.91 | ✓/✓ |
| 46 | South / West | 73.72 | 31.76 | ✓/✓ |
| 47 | South / West | 73.00 | 31.04 | ✓/✓ |
| 48 | South / West | 71.93 | 30.13 | ✓/✓ |
| 49 | South / West | 69.82 | 27.89 | ✓/✓ |
| 50 | South / West | 68.06 | 26.89 | ✓/✓ |

| | | | | |
|---|---|---|---|---|
| 51 | South / West | 63.35 | 22.67 | ✓/✓ |
| 52 | South / West | 59.59 | 20.34 | ✓/✓ |
| 53 | South / West | 55.75 | 15.68 | ✓/✓ |
| 54 | South / West | 44.49 | 12.83 | ✓/✓ |
| 55 | South / West | 41.56 | 9.41 | ✓/✓ |
| 56 | North / West | 26.68 | 7.11 | ✓/✓ |
| 57 | North / West | 0.12 | 0.00 | x/x |
| 58 | North / West | 28.18 | 8.34 | ✓/✓ |
| 59 | North / West | 7.17 | 0.58 | x/x |
| 60 | North / West | 20.13 | 6.61 | x/✓ |
| 61 | North / West | 0.02 | 0.02 | x/x |
| 62 | North / West | 25.73 | 7.69 | ✓/✓ |
| 63 | North / West | 7.17 | 0.58 | x/x |
| 64 | North / West | 19.65 | 6.34 | x/✓ |
| 65 | North / West | 0.00 | 0.00 | x/x |
| 66 | North / West | 23.45 | 6.99 | x/✓ |
| 67 | North / West | 6.93 | 0.55 | x/x |
| 68 | North / West | 18.78 | 5.48 | x/✓ |
| 69 | North / West | 0.01 | 0.01 | x/x |
| 70 | North / West | 20.14 | 5.20 | x/✓ |
| 71 | North / West | 6.39 | 0.20 | x/x |
| 72 | North / West | 16.92 | 4.13 | x/x |
| 73 | North / West | 0.02 | 0.02 | x/x |
| 74 | North / West | 19.19 | 4.89 | x/x |
| 75 | North / West | 6.08 | 0.10 | x/x |
| 76 | North / West | 14.34 | 2.44 | x/x |
| 77 | North / West | 0.00 | 0.00 | x/x |
| 78 | North / West | 18.03 | 3.96 | x/x |
| 79 | North / West | 5.59 | 0.00 | x/x |
| 80 | North / West | 11.83 | 2.00 | x/x |
| 81 | North / West | 0.00 | 0.00 | x/x |
| 82 | North / West | 13.42 | 1.76 | x/x |

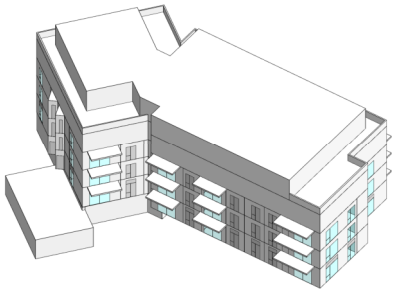
The following conclusions can be made:

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

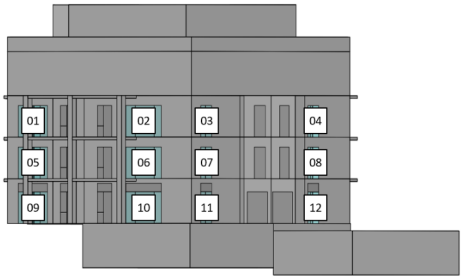
x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.

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 7.12 for more information).

## 7.6 Block B4

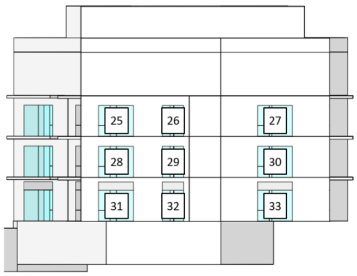


**North**

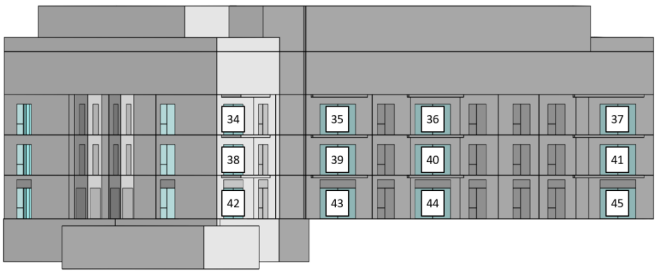



**East**


**South**




**West**




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

| | | | | |
|---|---|---|---|---|
| 17 | East | 40.91 | 18.99 | ✓/✓ |
| 18 | East | 39.33 | 17.94 | ✓/✓ |
| 19 | East | 38.49 | 16.79 | ✓/✓ |
| 20 | South / East | 41.77 | 14.72 | ✓/✓ |
| 21 | East | 39.77 | 16.32 | ✓/✓ |
| 22 | East | 38.40 | 15.86 | ✓/✓ |
| 23 | East | 37.59 | 15.62 | ✓/✓ |
| 24 | South / East | 40.05 | 13.64 | ✓/✓ |
| 25 | South | 71.64 | 28.29 | ✓/✓ |
| 26 | South | 73.10 | 29.70 | ✓/✓ |
| 27 | South | 63.86 | 29.81 | ✓/✓ |
| 28 | South | 70.38 | 27.03 | ✓/✓ |
| 29 | South | 71.85 | 28.49 | ✓/✓ |
| 30 | South | 62.93 | 29.00 | ✓/✓ |
| 31 | South | 64.45 | 21.99 | ✓/✓ |
| 32 | South | 65.91 | 23.45 | ✓/✓ |
| 33 | South | 58.15 | 24.93 | ✓/✓ |
| 34 | South / West | 32.57 | 15.45 | ✓/✓ |
| 35 | West | 26.27 | 8.68 | ✓/✓ |
| 36 | West | 26.70 | 9.70 | ✓/✓ |
| 37 | West | 29.45 | 9.42 | ✓/✓ |
| 38 | South / West | 27.93 | 11.53 | ✓/✓ |
| 39 | West | 23.25 | 6.84 | x/✓ |
| 40 | West | 22.47 | 7.58 | x/✓ |
| 41 | West | 25.19 | 7.02 | ✓/✓ |
| 42 | South / West | 24.83 | 7.95 | x/✓ |
| 43 | West | 21.43 | 5.67 | x/✓ |
| 44 | West | 17.49 | 4.87 | x/x |
| 45 | West | 21.74 | 3.71 | x/x |

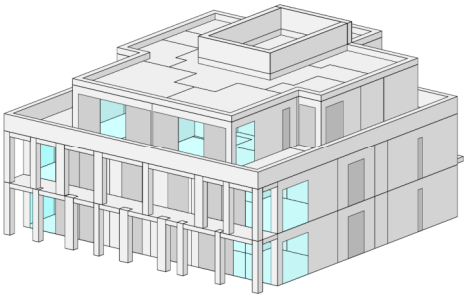
The following conclusions can be made:

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

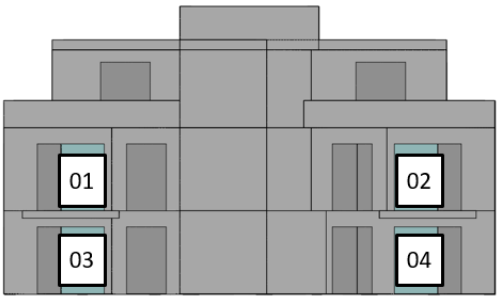
x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.

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 7.12 for more information).

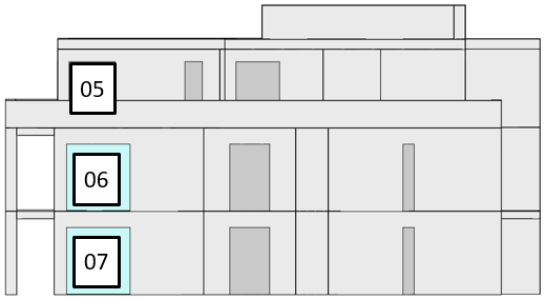
## 7.7 Block C1



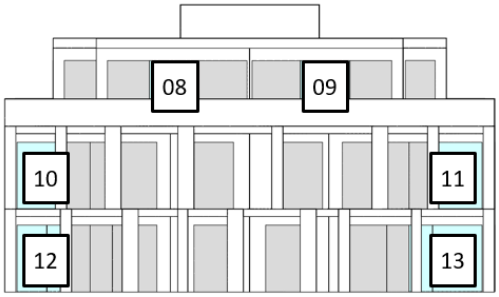
**North / East**



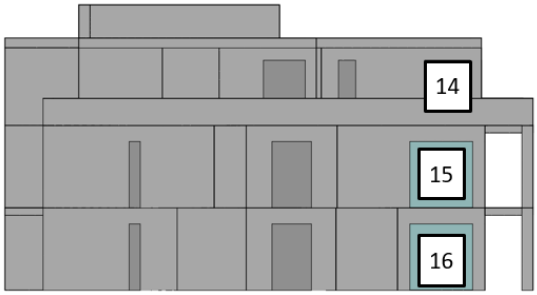

**South / East**




**South / West**




**North / West**




| Ref # | Orientation | Proposed | | Comment |
|---|---|---|---|---|
| | | Annual (%) | Winter (%) | |
| 1 | North / East | 17.00 | 1.62 | x/x |
| 2 | North / East | 9.49 | 0.00 | x/x |
| 3 | North / East | 9.50 | 0.00 | x/x |
| 4 | North / East | 6.04 | 0.00 | x/x |
| 5 | South / East | 57.18 | 21.90 | ✓/✓ |
| 6 | South / East | 46.84 | 17.99 | ✓/✓ |
| 7 | South / East | 37.42 | 15.90 | ✓/✓ |
| 8 | South / West | 64.00 | 23.85 | ✓/✓ |
| 9 | South / West | 63.90 | 23.45 | ✓/✓ |
| 10 | South / West | 27.51 | 11.56 | ✓/✓ |
| 11 | South / West | 30.20 | 16.04 | ✓/✓ |
| 12 | South / West | 27.43 | 11.40 | ✓/✓ |

| | | | | |
|---|---|---|---|---|
| 13 | South / West | 28.04 | 14.20 | ✓/✓ |
| 14 | North / West | 27.02 | 4.72 | ✓/x |
| 15 | North / West | 29.57 | 5.80 | ✓/✓ |
| 16 | North / West | 26.31 | 4.65 | ✓/x |

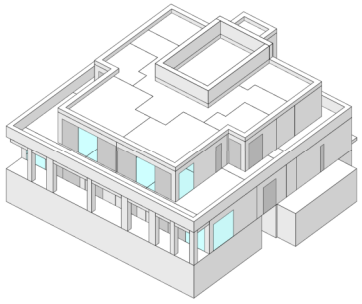
The following conclusions can be made:

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

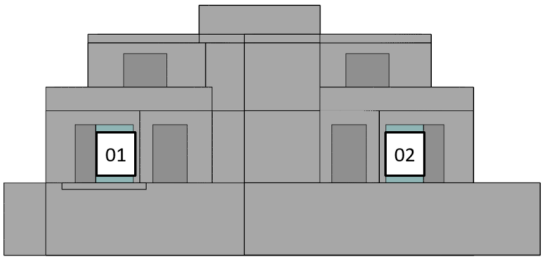
✓/x These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 annual sunlight, but not winter sunlight. This is as a result of their orientation as noted within the guidelines. (See discussions section 8.2 for more information).

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 7.12 for more information).

## 7.8 Block C2

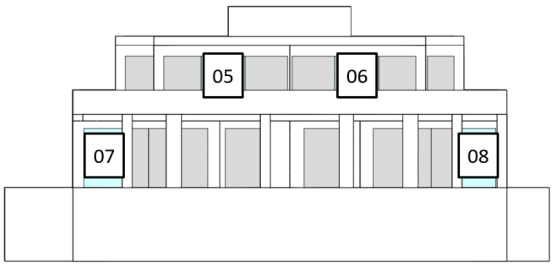


**North / East**

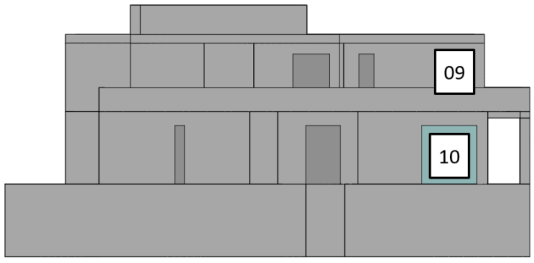



**South / East**


**South / West**




**North / West**




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

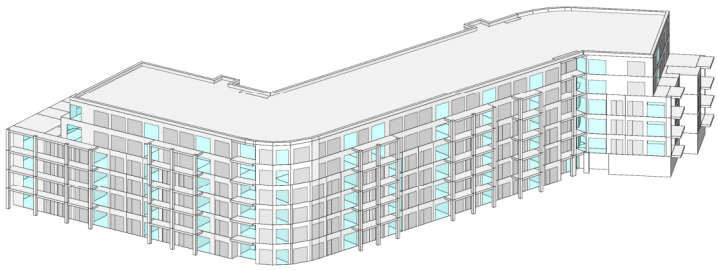
The following conclusions can be made:

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

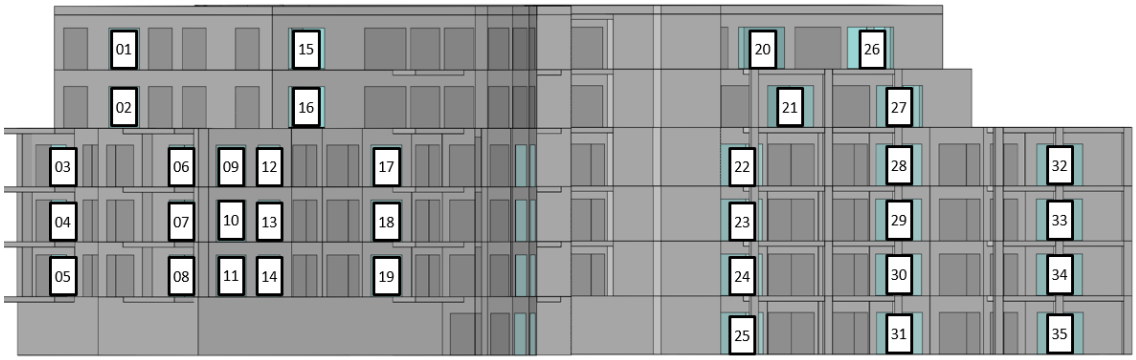
x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.

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 7.12 for more information).

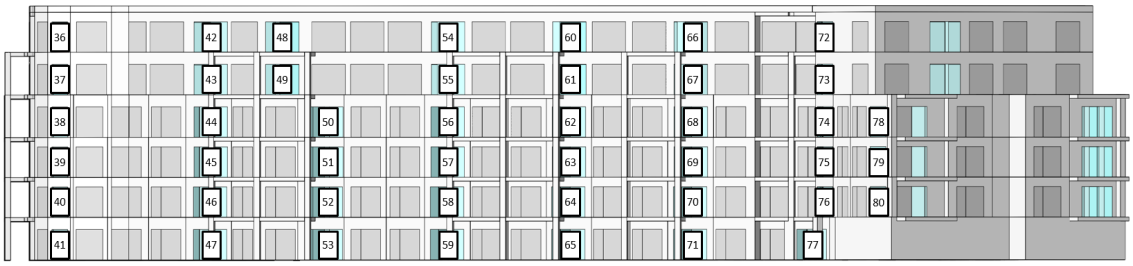
## 7.9 Block D



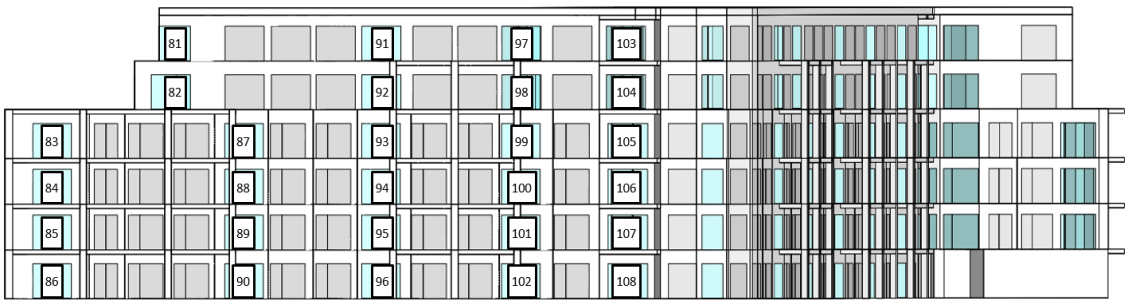
North / East



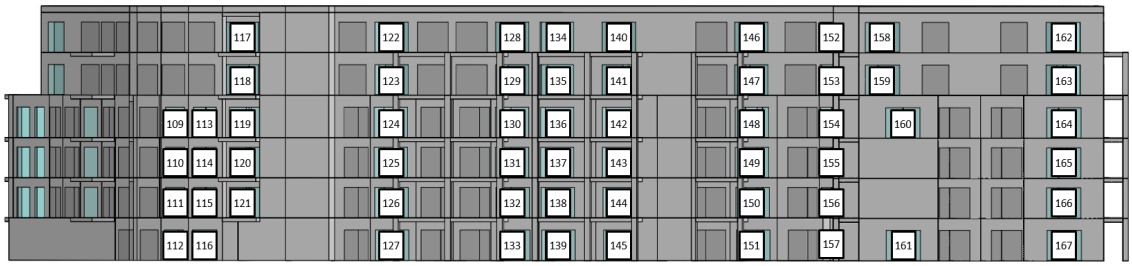

South / East




South / West




North / West




| Ref # | Orientation | Proposed | | Comment |
|---|---|---|---|---|
| | | Annual (%) | Winter (%) | |
| 1 | East | 53.15 | 22.38 | ✓/✓ |
| 2 | East | 53.15 | 22.38 | ✓/✓ |
| 3 | East | 33.21 | 15.69 | ✓/✓ |
| 4 | East | 39.86 | 15.53 | ✓/✓ |
| 5 | East | 42.81 | 15.78 | ✓/✓ |
| 6 | East | 32.95 | 15.35 | ✓/✓ |
| 7 | East | 30.57 | 14.64 | ✓/✓ |
| 8 | East | 41.59 | 15.58 | ✓/✓ |
| 9 | North | 17.67 | 0.70 | x/x |
| 10 | North | 17.65 | 0.71 | x/x |
| 11 | North | 17.69 | 0.70 | x/x |
| 12 | North | 17.22 | 0.70 | x/x |
| 13 | North | 17.22 | 0.70 | x/x |
| 14 | North | 17.42 | 0.91 | x/x |
| 15 | North | 18.18 | 0.70 | x/x |
| 16 | North | 17.10 | 0.70 | x/x |
| 17 | North | 17.97 | 0.70 | x/x |
| 18 | North | 17.78 | 0.70 | x/x |
| 19 | North | 17.78 | 0.70 | x/x |
| 20 | North / East | 11.25 | 0.01 | x/x |
| 21 | North / East | 6.94 | 0.00 | x/x |
| 22 | North / East | 1.47 | 0.00 | x/x |
| 23 | North / East | 0.84 | 0.00 | x/x |
| 24 | North / East | 0.76 | 0.00 | x/x |
| 25 | North / East | 0.42 | 0.00 | x/x |
| 26 | North / East | 21.80 | 1.64 | x/x |
| 27 | North / East | 7.41 | 0.00 | x/x |
| 28 | North / East | 5.88 | 0.00 | x/x |
| 29 | North / East | 3.74 | 0.00 | x/x |
| 30 | North / East | 1.50 | 0.00 | x/x |
| 31 | North / East | 0.15 | 0.00 | x/x |
| 32 | North / East | 7.31 | 0.00 | x/x |
| 33 | North / East | 8.23 | 0.00 | x/x |
| 34 | North / East | 3.56 | 0.00 | x/x |
| 35 | North / East | 4.07 | 0.00 | x/x |
| 36 | South | 81.82 | 38.46 | ✓/✓ |
| 37 | South | 81.82 | 38.46 | ✓/✓ |

| | | | | |
|---|---|---|---|---|
| 38 | South | 81.82 | 38.46 | ✓/✓ |
| 39 | South | 81.82 | 38.46 | ✓/✓ |
| 40 | South | 81.82 | 38.46 | ✓/✓ |
| 41 | South | 80.15 | 36.79 | ✓/✓ |
| 42 | South / East | 74.13 | 33.57 | ✓/✓ |
| 43 | South / East | 59.68 | 30.49 | ✓/✓ |
| 44 | South / East | 59.46 | 30.48 | ✓/✓ |
| 45 | South / East | 57.28 | 30.35 | ✓/✓ |
| 46 | South / East | 57.38 | 30.45 | ✓/✓ |
| 47 | South / East | 57.26 | 29.27 | ✓/✓ |
| 48 | South / East | 74.13 | 33.57 | ✓/✓ |
| 49 | South / East | 39.91 | 23.89 | ✓/✓ |
| 50 | South / East | 49.24 | 22.97 | ✓/✓ |
| 51 | South / East | 48.30 | 22.11 | ✓/✓ |
| 52 | South / East | 47.84 | 21.92 | ✓/✓ |
| 53 | South / East | 46.74 | 20.98 | ✓/✓ |
| 54 | South / East | 73.66 | 33.57 | ✓/✓ |
| 55 | South / East | 58.29 | 29.49 | ✓/✓ |
| 56 | South / East | 56.76 | 28.32 | ✓/✓ |
| 57 | South / East | 53.85 | 27.94 | ✓/✓ |
| 58 | South / East | 54.21 | 28.02 | ✓/✓ |
| 59 | South / East | 55.96 | 26.52 | ✓/✓ |
| 60 | South / East | 72.74 | 33.57 | ✓/✓ |
| 61 | South / East | 45.37 | 21.83 | ✓/✓ |
| 62 | South / East | 43.56 | 21.60 | ✓/✓ |
| 63 | South / East | 42.20 | 20.58 | ✓/✓ |
| 64 | South / East | 41.72 | 20.42 | ✓/✓ |
| 65 | South / East | 48.56 | 21.89 | ✓/✓ |
| 66 | South / East | 71.69 | 33.57 | ✓/✓ |
| 67 | South / East | 44.89 | 22.60 | ✓/✓ |
| 68 | South / East | 42.30 | 21.83 | ✓/✓ |
| 69 | South / East | 40.86 | 20.93 | ✓/✓ |
| 70 | South / East | 40.48 | 20.85 | ✓/✓ |
| 71 | South / East | 40.20 | 20.24 | ✓/✓ |
| 72 | South | 68.43 | 33.96 | ✓/✓ |
| 73 | South | 63.69 | 32.78 | ✓/✓ |
| 74 | South | 62.35 | 32.13 | ✓/✓ |
| 75 | South | 61.41 | 32.13 | ✓/✓ |
| 76 | South | 60.20 | 32.13 | ✓/✓ |
| 77 | South / East | 16.64 | 13.42 | x/✓ |
| 78 | South | 70.41 | 34.93 | ✓/✓ |
| 79 | South | 69.57 | 34.61 | ✓/✓ |
| 80 | South | 68.66 | 34.13 | ✓/✓ |
| 81 | South / West | 75.72 | 34.27 | ✓/✓ |

| | | | | |
|---|---|---|---|---|
| 82 | South / West | 74.54 | 33.40 | ✓/✓ |
| 83 | South / West | 37.67 | 23.42 | ✓/✓ |
| 84 | South / West | 35.72 | 22.11 | ✓/✓ |
| 85 | South / West | 34.25 | 22.11 | ✓/✓ |
| 86 | South / West | 36.71 | 23.45 | ✓/✓ |
| 87 | South / West | 59.54 | 29.24 | ✓/✓ |
| 88 | South / West | 56.88 | 28.97 | ✓/✓ |
| 89 | South / West | 55.59 | 28.91 | ✓/✓ |
| 90 | South / West | 56.03 | 29.03 | ✓/✓ |
| 91 | South / West | 75.83 | 34.27 | ✓/✓ |
| 92 | South / West | 52.00 | 23.61 | ✓/✓ |
| 93 | South / West | 48.86 | 23.56 | ✓/✓ |
| 94 | South / West | 47.72 | 22.64 | ✓/✓ |
| 95 | South / West | 47.69 | 22.64 | ✓/✓ |
| 96 | South / West | 48.71 | 23.46 | ✓/✓ |
| 97 | South / West | 75.90 | 34.27 | ✓/✓ |
| 98 | South / West | 59.45 | 30.36 | ✓/✓ |
| 99 | South / West | 57.28 | 30.28 | ✓/✓ |
| 100 | South / West | 54.77 | 30.07 | ✓/✓ |
| 101 | South / West | 54.75 | 30.08 | ✓/✓ |
| 102 | South / West | 56.12 | 29.99 | ✓/✓ |
| 103 | South / West | 33.05 | 22.53 | ✓/✓ |
| 104 | South / West | 32.30 | 22.82 | ✓/✓ |
| 105 | South / West | 32.70 | 22.54 | ✓/✓ |
| 106 | South / West | 29.68 | 21.41 | ✓/✓ |
| 107 | South / West | 29.68 | 21.41 | ✓/✓ |
| 108 | South / West | 32.42 | 22.54 | ✓/✓ |
| 109 | North | 18.87 | 0.70 | x/x |
| 110 | North | 18.44 | 0.70 | x/x |
| 111 | North | 18.28 | 0.70 | x/x |
| 112 | North | 18.37 | 0.70 | x/x |
| 113 | North / West | 14.14 | 1.31 | x/x |
| 114 | North / West | 13.23 | 0.91 | x/x |
| 115 | North / West | 13.01 | 0.70 | x/x |
| 116 | North / West | 13.56 | 0.70 | x/x |
| 117 | North / West | 8.31 | 0.08 | x/x |
| 118 | North / West | 7.36 | 0.07 | x/x |
| 119 | North / West | 9.25 | 0.00 | x/x |
| 120 | North / West | 8.58 | 0.00 | x/x |
| 121 | North / West | 8.25 | 0.00 | x/x |
| 122 | North / West | 24.35 | 3.37 | x/x |
| 123 | North / West | 10.17 | 1.02 | x/x |
| 124 | North / West | 9.33 | 0.49 | x/x |
| 125 | North / West | 7.26 | 0.00 | x/x |
| 126 | North / West | 6.95 | 0.00 | x/x |
| 127 | North / West | 6.95 | 0.00 | x/x |

| | | | | |
|---|---|---|---|---|
| 128 | North / West | 23.45 | 2.47 | x/x |
| 129 | North / West | 11.36 | 0.21 | x/x |
| 130 | North / West | 8.52 | 0.00 | x/x |
| 131 | North / West | 7.66 | 0.00 | x/x |
| 132 | North / West | 6.59 | 0.00 | x/x |
| 133 | North / West | 5.78 | 0.00 | x/x |
| 134 | North / West | 23.13 | 2.31 | x/x |
| 135 | North / West | 9.00 | 0.20 | x/x |
| 136 | North / West | 8.14 | 0.00 | x/x |
| 137 | North / West | 6.96 | 0.00 | x/x |
| 138 | North / West | 5.74 | 0.00 | x/x |
| 139 | North / West | 4.70 | 0.00 | x/x |
| 140 | North / West | 22.74 | 2.12 | x/x |
| 141 | North / West | 12.57 | 0.34 | x/x |
| 142 | North / West | 8.98 | 0.00 | x/x |
| 143 | North / West | 6.68 | 0.00 | x/x |
| 144 | North / West | 5.16 | 0.00 | x/x |
| 145 | North / West | 3.15 | 0.00 | x/x |
| 146 | North / West | 18.76 | 0.90 | x/x |
| 147 | North / West | 10.48 | 0.00 | x/x |
| 148 | North / West | 2.73 | 0.00 | x/x |
| 149 | North / West | 0.35 | 0.00 | x/x |
| 150 | North / West | 0.05 | 0.00 | x/x |
| 151 | North / West | 0.00 | 0.00 | x/x |
| 152 | North / West | 2.61 | 0.00 | x/x |
| 153 | North / West | 0.00 | 0.00 | x/x |
| 154 | North / West | 0.00 | 0.00 | x/x |
| 155 | North / West | 0.00 | 0.00 | x/x |
| 156 | North / West | 0.00 | 0.00 | x/x |
| 157 | North / West | 0.00 | 0.00 | x/x |
| 158 | North / West | 31.47 | 8.40 | ✓/✓ |
| 159 | North / West | 30.09 | 8.39 | ✓/✓ |
| 160 | North / West | 27.36 | 8.39 | ✓/✓ |
| 161 | North / West | 25.03 | 8.39 | ✓/✓ |
| 162 | North / West | 31.64 | 8.39 | ✓/✓ |
| 163 | North / West | 31.05 | 8.40 | ✓/✓ |
| 164 | North / West | 29.37 | 8.39 | ✓/✓ |
| 165 | North / West | 29.37 | 8.39 | ✓/✓ |
| 166 | North / West | 28.67 | 8.39 | ✓/✓ |
| 167 | North / West | 27.92 | 8.39 | ✓/✓ |

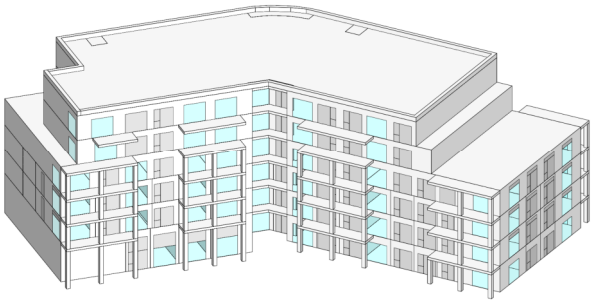
The following conclusions can be made:

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

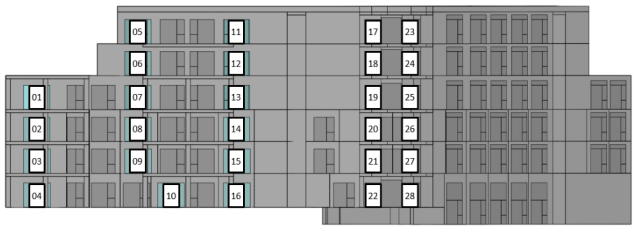
x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.

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 7.12 for more information).

## 7.10 Block E1

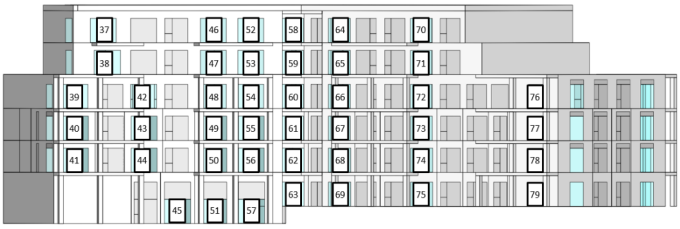


**North / East**

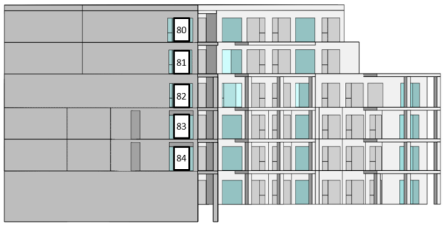


**South / East**

**South / West**



**North / West**



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

| | | | | |
|---|---|---|---|---|
| 20 | North / East | 4.83 | 0.00 | x/x |
| 21 | North / East | 4.71 | 0.00 | x/x |
| 22 | North / East | 4.86 | 0.00 | x/x |
| 23 | North | 7.04 | 0.00 | x/x |
| 24 | North | 7.01 | 0.00 | x/x |
| 25 | North | 6.94 | 0.00 | x/x |
| 26 | North | 6.07 | 0.00 | x/x |
| 27 | North | 5.70 | 0.00 | x/x |
| 28 | North | 5.97 | 0.00 | x/x |
| 29 | South / East | 61.63 | 25.05 | ✓/✓ |
| 30 | South / East | 60.15 | 23.64 | ✓/✓ |
| 31 | South / East | 58.56 | 23.09 | ✓/✓ |
| 32 | South / East | 56.08 | 22.87 | ✓/✓ |
| 33 | South / East | 60.94 | 23.21 | ✓/✓ |
| 34 | South / East | 57.98 | 20.99 | ✓/✓ |
| 35 | South / East | 55.29 | 18.94 | ✓/✓ |
| 36 | South / East | 52.15 | 17.00 | ✓/✓ |
| 37 | South | 79.72 | 36.36 | ✓/✓ |
| 38 | South | 65.31 | 34.25 | ✓/✓ |
| 39 | South | 53.44 | 29.02 | ✓/✓ |
| 40 | South | 47.60 | 26.41 | ✓/✓ |
| 41 | South | 46.12 | 25.86 | ✓/✓ |
| 42 | South | 65.25 | 29.78 | ✓/✓ |
| 43 | South | 59.16 | 28.43 | ✓/✓ |
| 44 | South | 55.99 | 27.82 | ✓/✓ |
| 45 | South | 53.11 | 29.55 | ✓/✓ |
| 46 | South | 78.57 | 36.34 | ✓/✓ |
| 47 | South | 57.22 | 32.06 | ✓/✓ |
| 48 | South | 49.70 | 26.31 | ✓/✓ |
| 49 | South | 46.64 | 25.48 | ✓/✓ |
| 50 | South | 45.29 | 25.48 | ✓/✓ |
| 51 | South | 0.00 | 0.00 | x/x |
| 52 | South | 75.81 | 35.83 | ✓/✓ |
| 53 | South | 57.00 | 30.80 | ✓/✓ |
| 54 | South | 47.67 | 24.08 | ✓/✓ |
| 55 | South | 45.91 | 24.19 | ✓/✓ |
| 56 | South | 43.87 | 24.07 | ✓/✓ |
| 57 | South | 32.70 | 17.94 | ✓/✓ |
| 58 | South | 22.42 | 18.13 | x/✓ |
| 59 | South | 21.16 | 16.89 | x/✓ |
| 60 | South | 20.41 | 15.61 | x/✓ |
| 61 | South | 24.88 | 14.76 | x/✓ |
| 62 | South | 23.40 | 14.78 | x/✓ |
| 63 | South | 23.57 | 15.10 | x/✓ |
| 64 | South / West | 69.92 | 34.27 | ✓/✓ |

| | | | | |
|---|---|---|---|---|
| 65 | South / West | 46.22 | 27.09 | ✓/✓ |
| 66 | South / West | 39.46 | 22.15 | ✓/✓ |
| 67 | South / West | 36.63 | 20.99 | ✓/✓ |
| 68 | South / West | 35.78 | 20.97 | ✓/✓ |
| 69 | South / West | 36.50 | 21.93 | ✓/✓ |
| 70 | South / West | 73.21 | 34.27 | ✓/✓ |
| 71 | South / West | 62.97 | 33.94 | ✓/✓ |
| 72 | South / West | 56.54 | 29.22 | ✓/✓ |
| 73 | South / West | 53.54 | 28.64 | ✓/✓ |
| 74 | South / West | 50.27 | 28.14 | ✓/✓ |
| 75 | South / West | 50.14 | 28.10 | ✓/✓ |
| 76 | South / West | 55.30 | 28.48 | ✓/✓ |
| 77 | South / West | 37.10 | 26.40 | ✓/✓ |
| 78 | South / West | 36.37 | 25.67 | ✓/✓ |
| 79 | South / West | 39.63 | 26.93 | ✓/✓ |
| 80 | West | 56.54 | 23.07 | ✓/✓ |
| 81 | West | 50.64 | 22.00 | ✓/✓ |
| 82 | West | 43.73 | 21.57 | ✓/✓ |
| 83 | West | 39.64 | 20.36 | ✓/✓ |
| 84 | West | 36.70 | 19.76 | ✓/✓ |

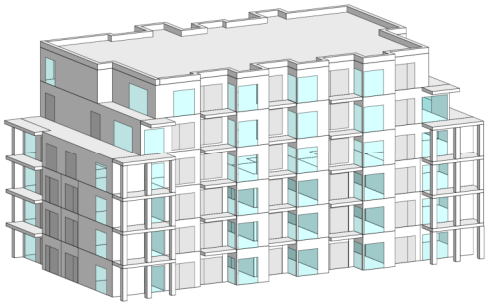
The following conclusions can be made:

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

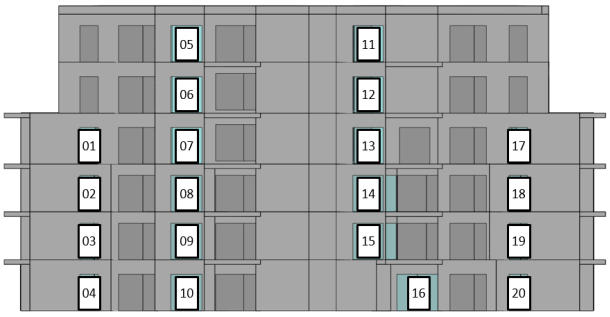
x/✓ These windows meet the recommendations as stated within the BRE Guide / BS 8206-2:2008 winter sunlight, but not annual sunlight. This is as a result of the balconies in place and part of an urban development.

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 7.12 for more information).

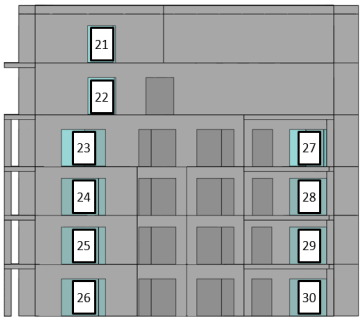
## 7.11 Block E2



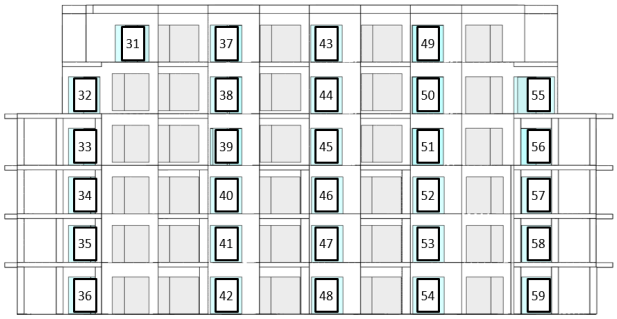
**North**



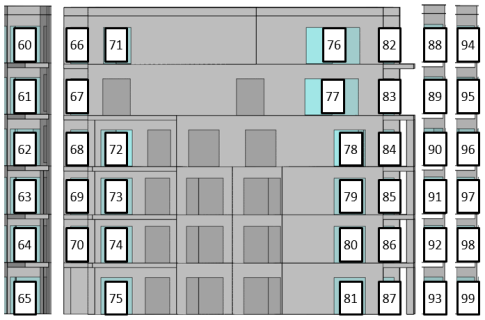

**East**




**South**




**West**




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

| | | | | |
|---|---|---|---|---|
| 15 | North | 14.79 | 0.70 | x/x |
| 16 | North | 3.81 | 0.00 | x/x |
| 17 | North | 15.93 | 1.26 | x/x |
| 18 | North | 14.03 | 0.70 | x/x |
| 19 | North | 13.93 | 0.70 | x/x |
| 20 | North | 13.48 | 0.70 | x/x |
| 21 | East | 32.12 | 13.98 | ✓/✓ |
| 22 | East | 29.05 | 13.75 | ✓/✓ |
| 23 | East | 27.51 | 13.58 | ✓/✓ |
| 24 | East | 25.96 | 12.64 | ✓/✓ |
| 25 | East | 25.94 | 12.60 | ✓/✓ |
| 26 | East | 26.04 | 12.63 | ✓/✓ |
| 27 | East | 6.59 | 3.68 | x/x |
| 28 | East | 4.77 | 3.01 | x/x |
| 29 | East | 3.68 | 3.01 | x/x |
| 30 | East | 3.21 | 2.75 | x/x |
| 31 | South | 77.92 | 37.06 | ✓/✓ |
| 32 | South | 70.50 | 35.95 | ✓/✓ |
| 33 | South | 40.81 | 24.39 | ✓/✓ |
| 34 | South | 35.60 | 23.05 | ✓/✓ |
| 35 | South | 31.17 | 21.42 | ✓/✓ |
| 36 | South | 35.13 | 20.79 | ✓/✓ |
| 37 | South | 80.42 | 37.06 | ✓/✓ |
| 38 | South | 79.15 | 37.06 | ✓/✓ |
| 39 | South | 76.63 | 37.06 | ✓/✓ |
| 40 | South | 74.89 | 37.06 | ✓/✓ |
| 41 | South | 73.04 | 35.99 | ✓/✓ |
| 42 | South | 65.23 | 30.44 | ✓/✓ |
| 43 | South | 73.11 | 36.68 | ✓/✓ |
| 44 | South | 69.81 | 36.57 | ✓/✓ |
| 45 | South | 69.74 | 35.84 | ✓/✓ |
| 46 | South | 70.23 | 36.41 | ✓/✓ |
| 47 | South | 68.91 | 35.15 | ✓/✓ |
| 48 | South | 64.53 | 31.30 | ✓/✓ |
| 49 | South | 77.06 | 36.91 | ✓/✓ |
| 50 | South | 76.87 | 36.82 | ✓/✓ |
| 51 | South | 76.25 | 36.85 | ✓/✓ |
| 52 | South | 74.96 | 36.12 | ✓/✓ |
| 53 | South | 73.78 | 35.79 | ✓/✓ |
| 54 | South | 65.56 | 30.23 | ✓/✓ |
| 55 | South | 63.55 | 33.89 | ✓/✓ |
| 56 | South | 46.55 | 25.86 | ✓/✓ |
| 57 | South | 41.39 | 24.47 | ✓/✓ |
| 58 | South | 40.84 | 24.22 | ✓/✓ |
| 59 | South | 40.00 | 22.39 | ✓/✓ |

| | | | | |
|---|---|---|---|---|
| 60 | West | 18.08 | 0.09 | x/x |
| 61 | West | 10.62 | 0.07 | x/x |
| 62 | West | 9.85 | 0.06 | x/x |
| 63 | West | 9.73 | 0.06 | x/x |
| 64 | West | 9.73 | 0.06 | x/x |
| 65 | West | 9.85 | 0.06 | x/x |
| 66 | West | 19.85 | 0.64 | x/x |
| 67 | West | 13.65 | 0.64 | x/x |
| 68 | West | 13.28 | 0.64 | x/x |
| 69 | West | 13.05 | 0.64 | x/x |
| 70 | West | 13.05 | 0.64 | x/x |
| 71 | West | 55.95 | 23.08 | ✓/✓ |
| 72 | West | 41.70 | 16.44 | ✓/✓ |
| 73 | West | 40.09 | 15.62 | ✓/✓ |
| 74 | West | 39.71 | 15.62 | ✓/✓ |
| 75 | West | 40.91 | 16.44 | ✓/✓ |
| 76 | West | 56.64 | 23.08 | ✓/✓ |
| 77 | West | 56.65 | 23.08 | ✓/✓ |
| 78 | West | 55.94 | 23.08 | ✓/✓ |
| 79 | West | 56.04 | 23.08 | ✓/✓ |
| 80 | West | 56.04 | 23.08 | ✓/✓ |
| 81 | West | 55.75 | 22.88 | ✓/✓ |
| 82 | West | 42.63 | 22.38 | ✓/✓ |
| 83 | West | 34.14 | 22.00 | ✓/✓ |
| 84 | West | 32.33 | 20.70 | ✓/✓ |
| 85 | West | 29.80 | 20.21 | ✓/✓ |
| 86 | West | 29.74 | 20.21 | ✓/✓ |
| 87 | West | 29.42 | 18.86 | ✓/✓ |
| 88 | West | 35.37 | 18.74 | ✓/✓ |
| 89 | West | 30.40 | 18.59 | ✓/✓ |
| 90 | West | 30.40 | 18.59 | ✓/✓ |
| 91 | West | 30.42 | 18.40 | ✓/✓ |
| 92 | West | 30.42 | 18.40 | ✓/✓ |
| 93 | West | 29.50 | 17.57 | ✓/✓ |
| 94 | West | 40.75 | 21.74 | ✓/✓ |
| 95 | West | 37.16 | 21.52 | ✓/✓ |
| 96 | West | 37.10 | 21.52 | ✓/✓ |
| 97 | West | 36.39 | 21.23 | ✓/✓ |
| 98 | West | 36.34 | 21.23 | ✓/✓ |
| 99 | West | 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 7.12 for more information).

## 7.12 Discussions

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 10.6 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) |
|---|---|---|
| | 355 | 433 |
| **%** | 48% | 58% |

# 8 Shadow Analysis

The statistics of Met Eireann, the Irish Meteorological Service, show that the sunniest months in Ireland are May and June, based on 1981-2010 averages or latest: https://www.met.ie/climate/30-year-averages.

The following can also be shown:

- During December a mean daily duration of 1.7 hours of sunlight out of a potential 7.3 hours sunlight each day is received (i.e. only 23% of potential sunlight hours).
- During June a mean daily duration of 5.8 hours of sunlight out of a potential 15.9 hours sunlight each day is received (i.e. only 36% of potential sunlight hours).

Therefore, the impacts caused by overshadowing are generally most noticeable during the summer months and least noticeable during the winter months.

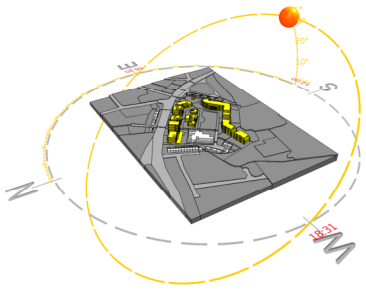
This section will consider the shadows cast by the proposed development on the following dates:

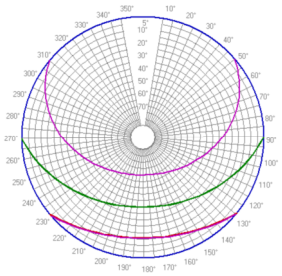
- March 21st / September 21st (Equinox)
- June 21st (Summer Solstice)
- December 21st (Winter Solstice)

These images illustrate shadows cast for 'perfect sunny' conditions with no clouds and assumed that the sun is shining for every hour shown. Based on the information above, it is important to remember that this is not always going to be the case.

## 8.1 Plan View

### 8.1.1 March 21st

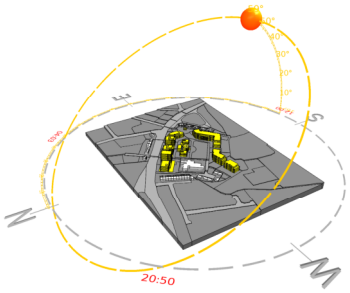


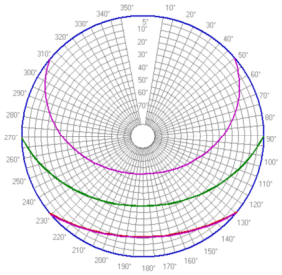


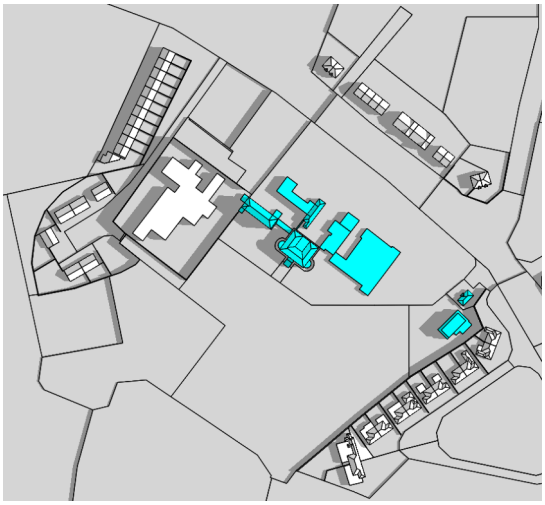
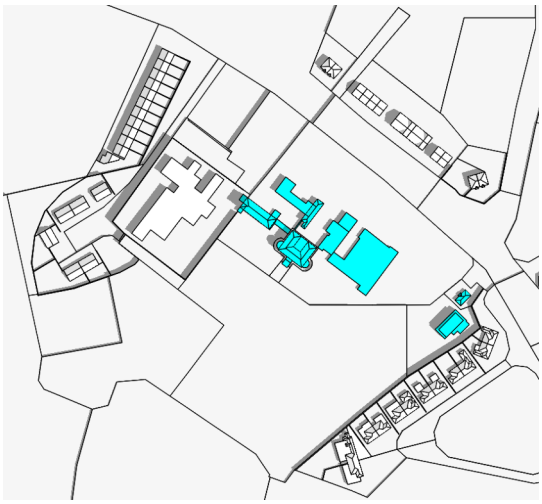
| | Existing | Proposed |
|---|---|---|
| March 21st - 8:00 |  |  |
| March 21st - 10:00 |  |  |

| March 21st - 12:00 | |
|---|---|
|  |  |
| **March 21st - 14:00** | |
|  |  |
| **March 21st - 16:00** | |
|  |  |

### 8.1.2 June 21st

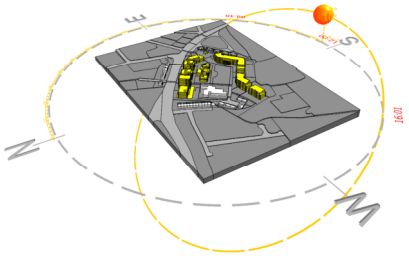


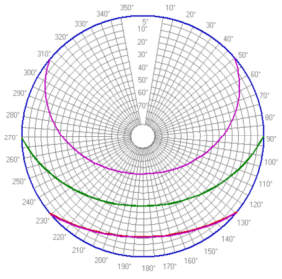



| | Existing | Proposed |
|---|---|---|
| June 21st - 8:00 |  |  |
| June 21st - 10:00 |  |  |

| June 21st - 12:00 | | |
|---|---|---|
| June 21st - 14:00 | | |
| June 21st - 16:00 | | |

### 8.1.3 December 21st



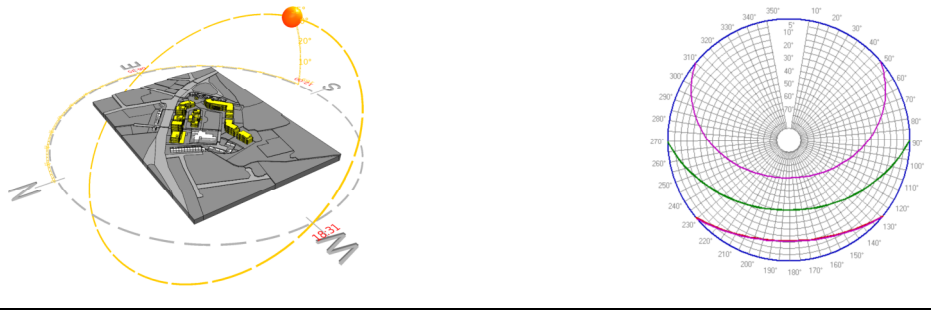


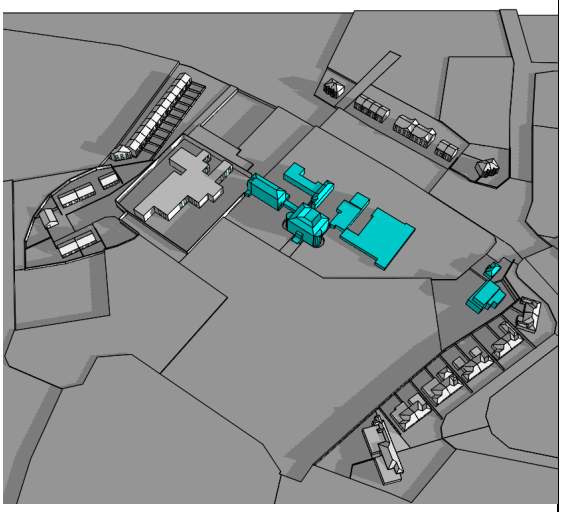
| | Existing | Proposed |
|---|---|---|
| December 21st - 8:00 |  |  |
| December 21st - 10:00 |  |  |

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

## 8.2 3D View

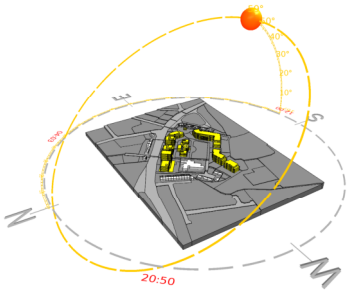
### 8.2.1 March 21st

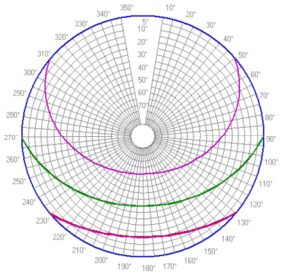


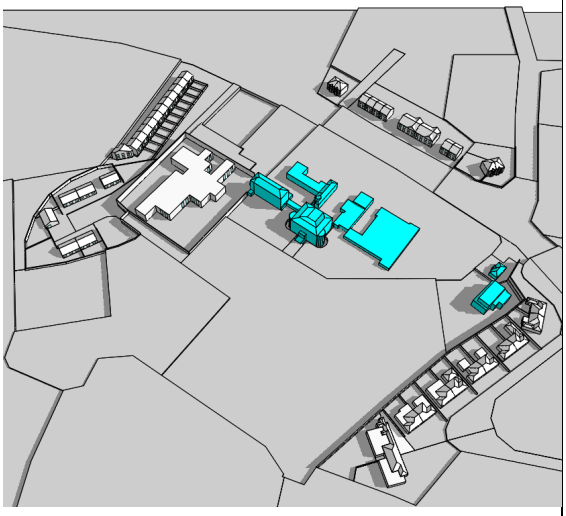
| | Existing | Proposed |
|---|---|---|
| March 21st - 8:00 |  |  |
| March 21st - 10:00 |  |  |

| | | |
|---|---|---|
| March 21st - 12:00 |  |  |
| March 21st - 14:00 |  |  |
| March 21st - 16:00 |  |  |

### 8.2.2 June 21st

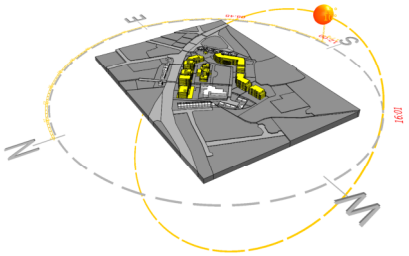


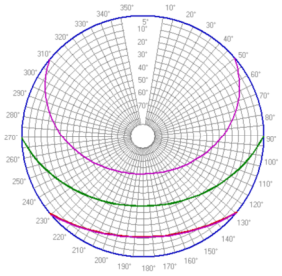



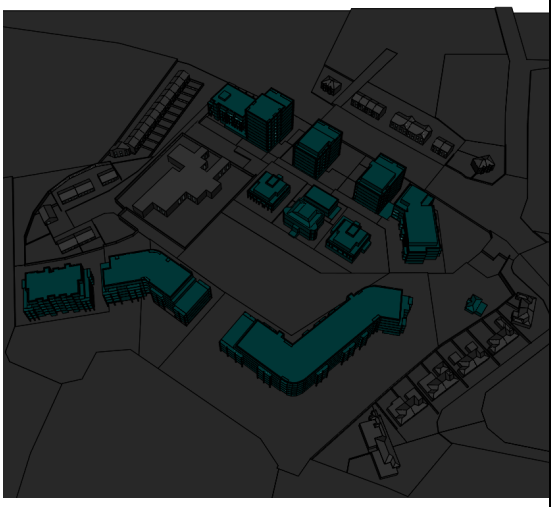
| | Existing | Proposed |
|---|---|---|
| June 21st - 8:00 |  |  |
| June 21st - 10:00 |  |  |

| | | |
|---|---|---|
| June 21st - 12:00 |  |  |
| June 21st - 14:00 |  |  |
| June 21st - 16:00 |  |  |

### 8.2.3 December 21st





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

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

## 8.3 Discussion

The shadow analysis illustrates different shadows being cast at key 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:**

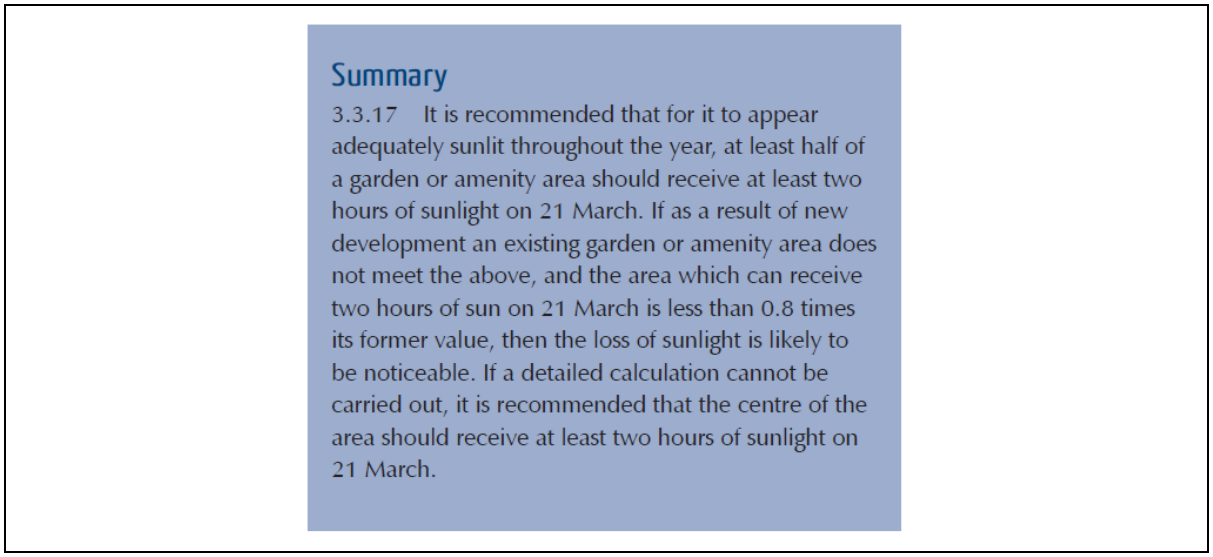
No additional overshadowing noted from the proposed development throughout the year to these existing dwellings.

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 as a minor adverse impact.

# 9 Sunlight to Amenity Spaces

## 9.1 Guidance

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:



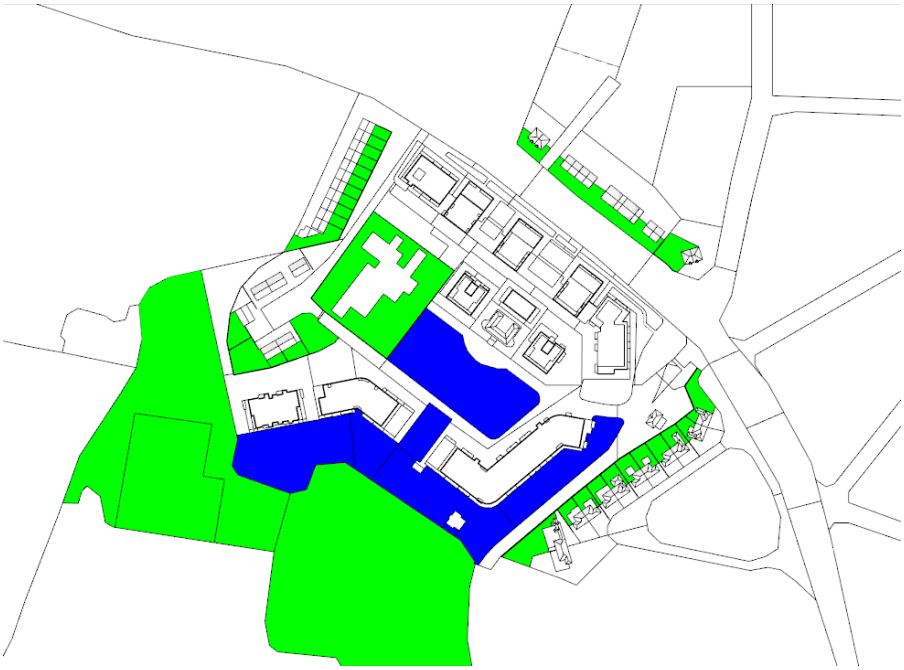
**Summary**

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.

## 9.2 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:

| Amenity Space | |
|---|---|
| Existing Amenity Areas<br><br>Proposed Amenity Areas |  |

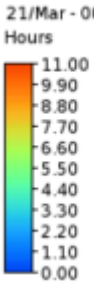
### 9.2.1 Rockfield Park


| | Total Area ($m^2$) | Area Receiving >2hrs ($m^2$) | Percent Receiving >2hrs (%) | Comment |
|---|---|---|---|---|
| **Existing Scheme** | 12,234 | 12,175 | 99% | ✓ |
| **Proposed Scheme** | 12,234 | 12,175 | 99% | ✓ |

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.

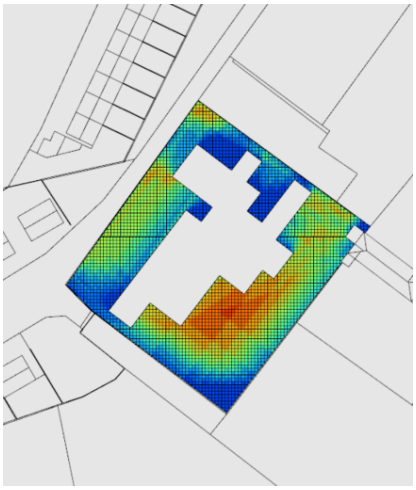
### 9.2.2 Alzheimer's Society

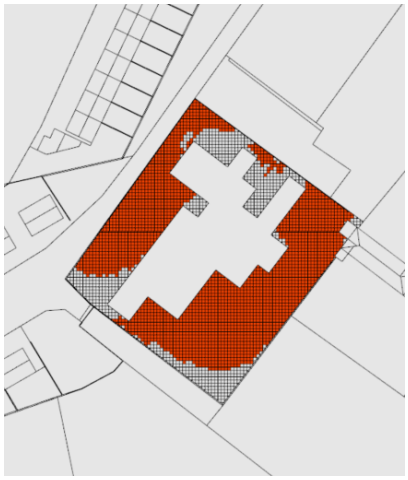



Receives more than 2 hours of sunlight

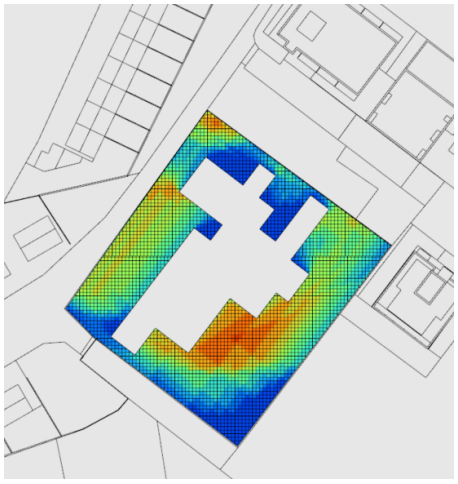
Receives less than 2 hours of sunlight

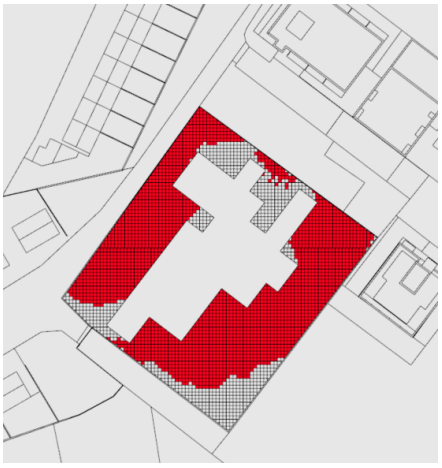
**Existing Scheme**





**Proposed Scheme**



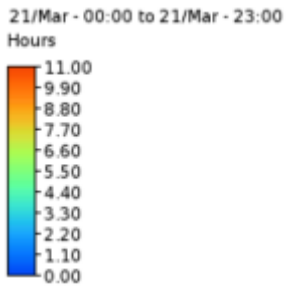
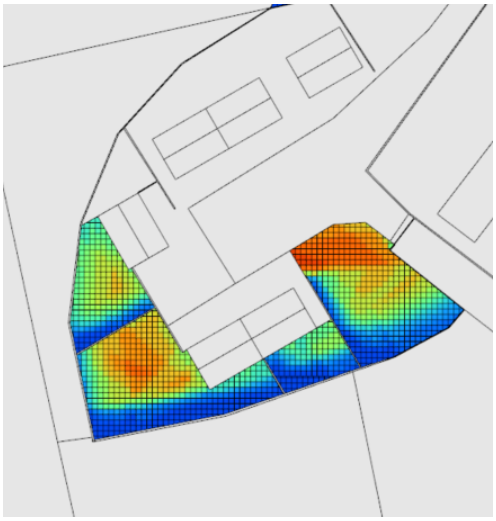
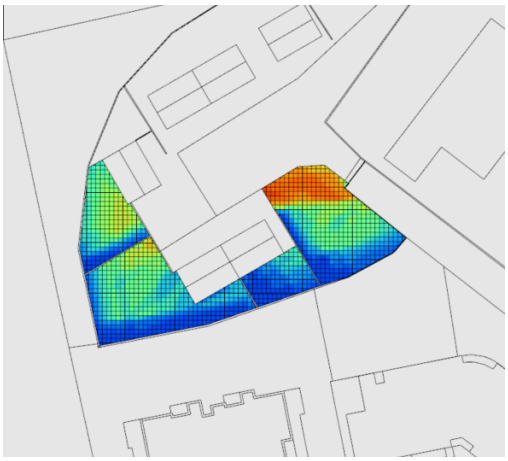


| | Total Area ($m^2$) | Area Receiving >2hrs ($m^2$) | Percent Receiving >2hrs (%) | Comment |
|---|---|---|---|---|
| **Existing Scheme** | 3083 | 2391 | 78% | ✓ |
| **Proposed Scheme** | 3083 | 2380 | 77% | ✓ |

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.

### 9.2.3 St. Louise's Park

| | | |
|---|---|---|
| |  | Receives more than 2 hours of sunlight<br><br>Receives less than 2 hours of sunlight |
| **Existing Scheme** |  |  |
| **Proposed Scheme** |  |  |

Existing

St Louise Park

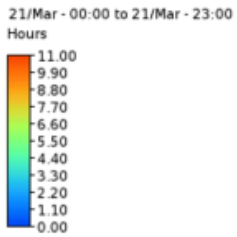
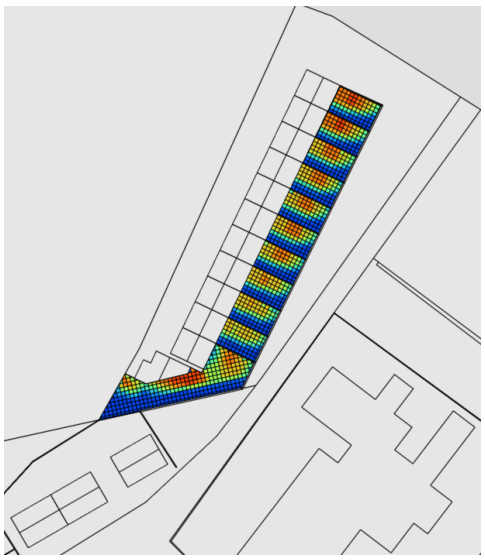
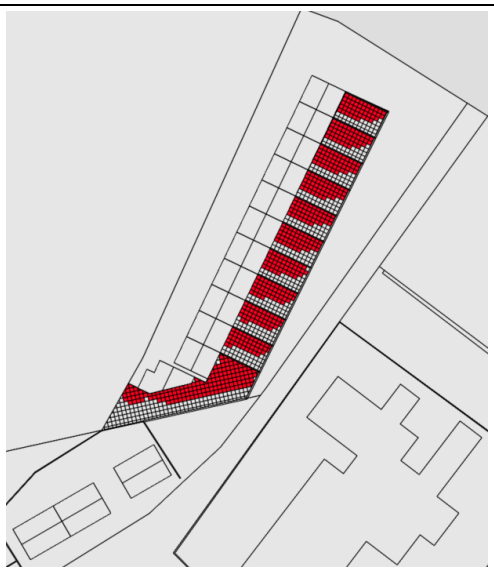
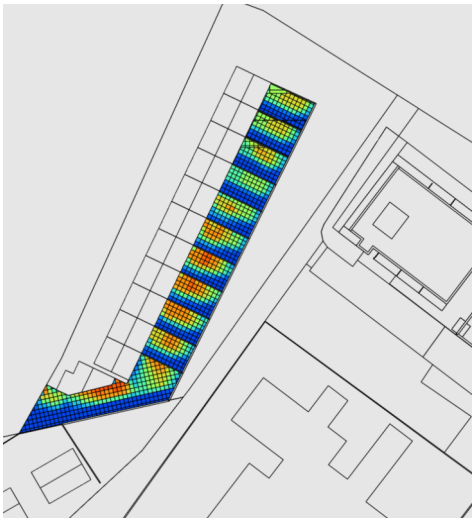
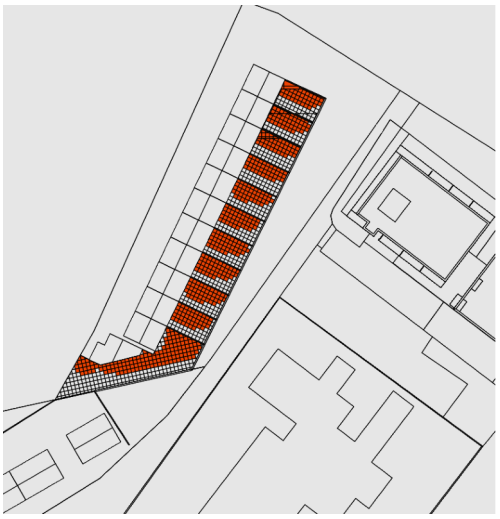

| Ref | Area ($m^2$) | Existing Area >2 hrs ($m^2$) | Proposed Area >2 hrs ($m^2$) | Proposed vs Existing (%) | Comment |
|---|---|---|---|---|---|
| 1 | 223 | 181 | 178 | 98% | ✓ |
| 2 | 477 | 323 | 308 | 95% | ✓ |
| 3 | 132 | 68 | 43 | 63% | x |
| 4 | 463 | 357 | 349 | 98% | ✓ |
| 5 | 1295 | 929 |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

### 9.2.4 Barclay Court

| | | |
|---|---|---|
| |  | Receives more than 2 hours of sunlight<br><br>Receives less than 2 hours of sunlight |
| **Existing Scheme** |  |  |
| **Proposed Scheme** |  |  |

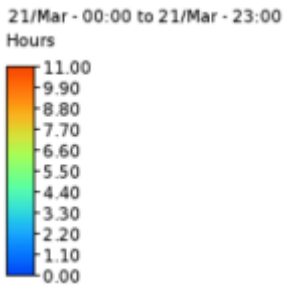
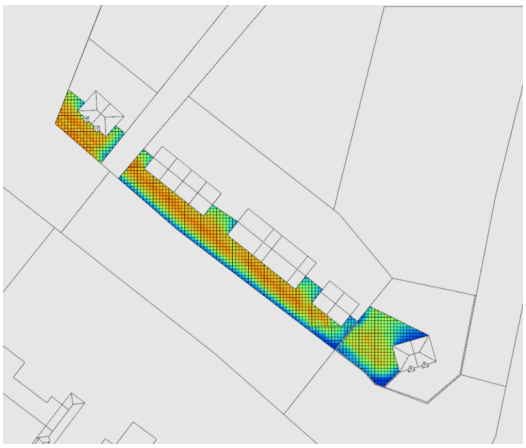
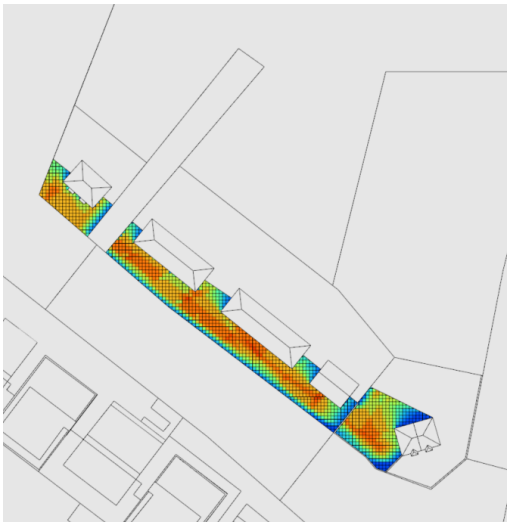
| | |
|---|---|
| Barclay Court Existing Amenity Areas |  |

| 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.

### 9.2.5 Temple Road

| | | |
|---|---|---|
| |  | Receives more than 2 hours of sunlight<br><br>Receives less than 2 hours of sunlight |
| **Existing Scheme** |  |  |
| **Proposed Scheme** |  |  |

Temple Road

Proposed

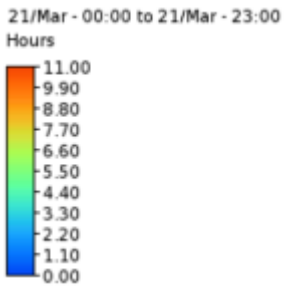
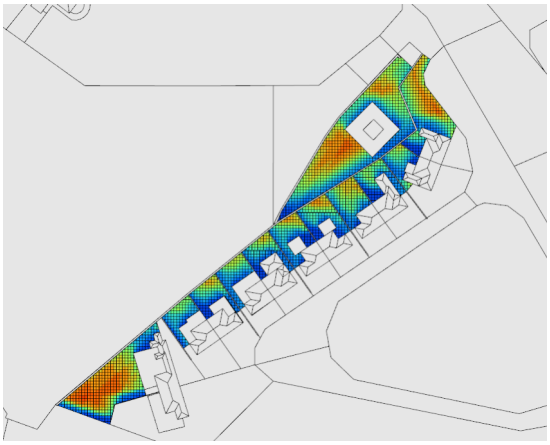
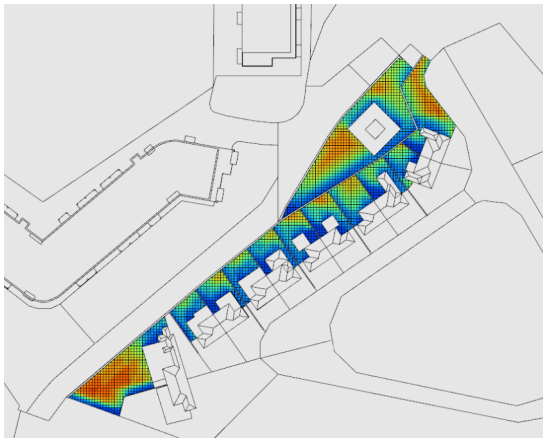
Amenity Areas


| Ref | Area ($m^2$) | Existing Area >2 hrs ($m^2$) | Proposed Area >2 hrs ($m^2$) | Proposed vs Existing (%) | Comment |
|---|---|---|---|---|---|
| 1 | 188 | 188 | 173 | 92% | ✓ |
| 2 | 310 | 293 | 289 | 99% | ✓ |
| 3 | 328 | 306 | 300 | 98% | ✓ |
| 4 | 162 | 140 | 121 | 86% | ✓ |
| 5 | 348 | 300 | 288 | 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.

### 9.2.6 St. Vincent's Park

| | | |
|---|---|---|
| |  | Receives more than 2 hours of sunlight<br><br>Receives less than 2 hours of sunlight |
| **Existing Scheme** |  |  |
| **Proposed Scheme** |  |  |

| | |
|---|---|
| St. Vincent's Park<br>Existing<br>Amenity Areas |  |

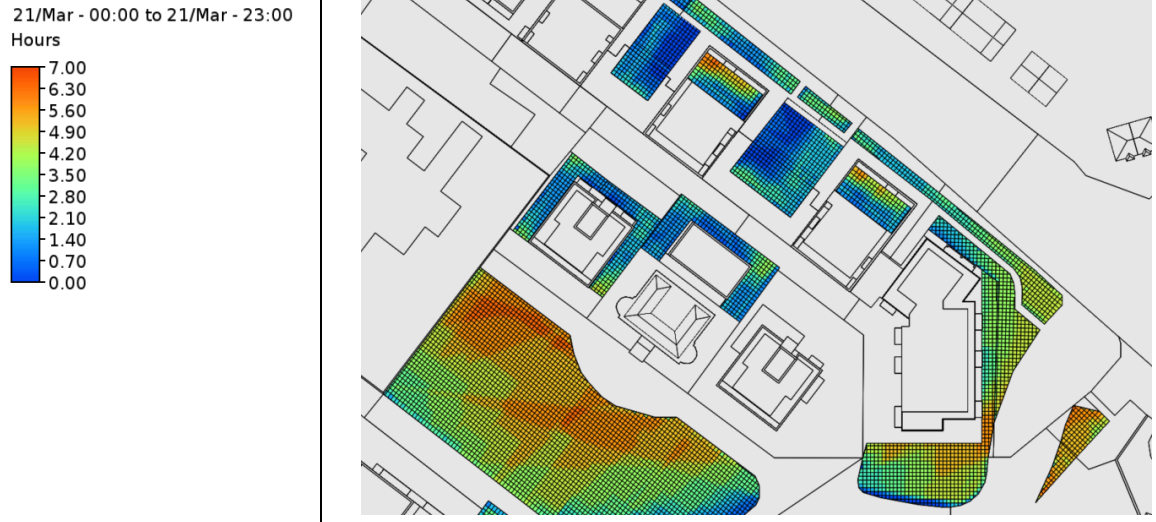
| Ref | Area ($m^2$) | Existing Area >2 hrs ($m^2$) (%) | Proposed Area >2 hrs ($m^2$) (%) | Proposed vs Existing (%) | Comment |
|---|---|---|---|---|---|
| 1 | 429 | 350 | 350 | 100% | ✓ |
| 2 | 94 | 67 | 65 | 97% | ✓ |
| 3 | 113 | 57 | 55 | 96% | ✓ |
| 4 | 105 | 48 | 46 | 96% | ✓ |
| 5 | 115 | 51 | 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:

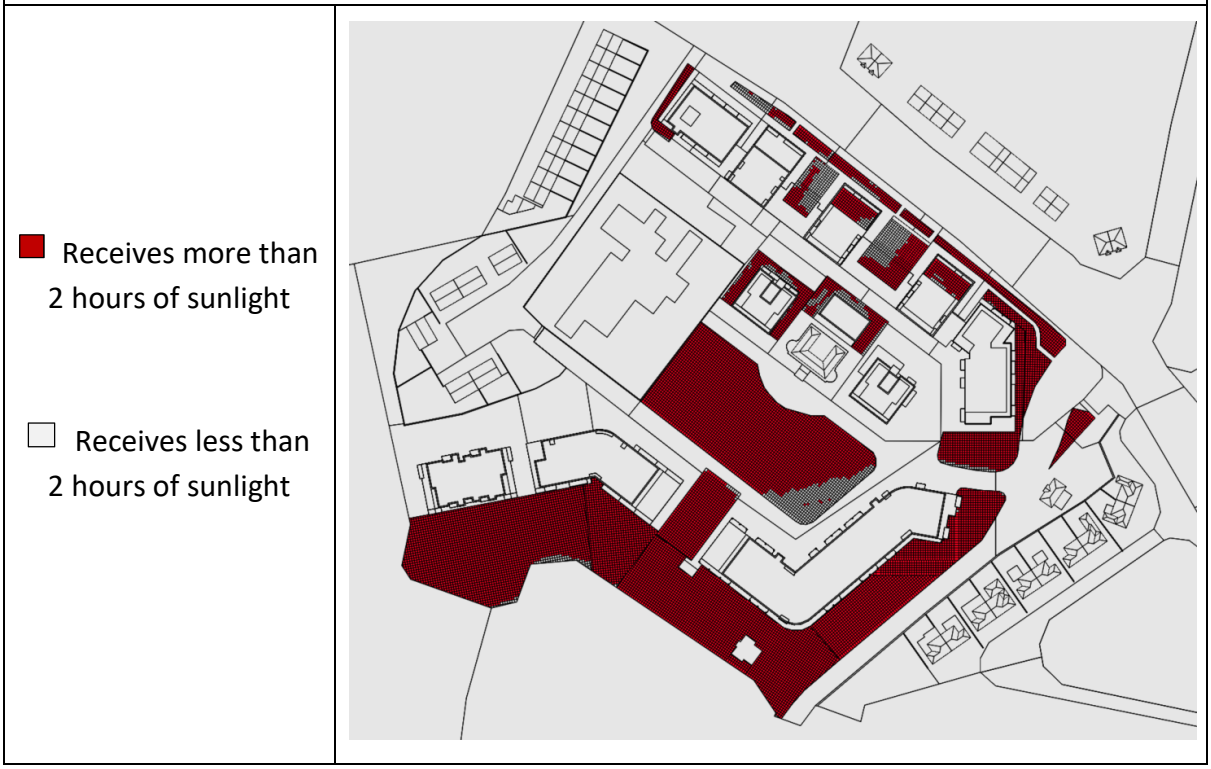
✓ The sunlight to existing amenity gardens achieves at least receive at least 2 hours of sunlight on 21st March or are 0.8 times their former value with the proposed development in place, thus complying with the BRE Guide.

### 9.2.7 Proposed Amenity Areas

**Absolute Scale Showing All Hours of Sunlight Received**

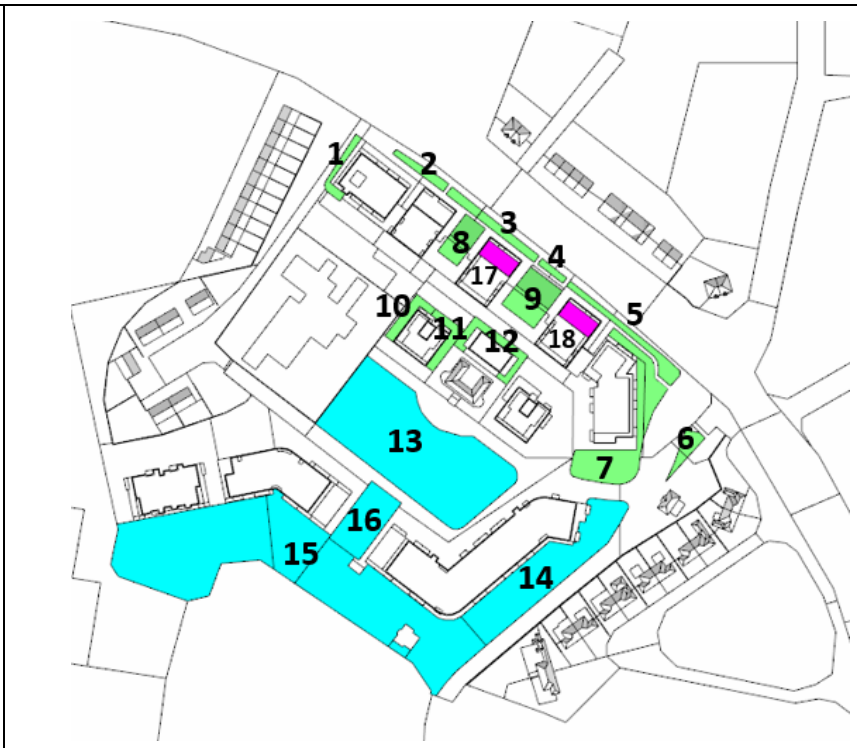



**Area Showing >2 Hours**



**Area Showing >2 Hours**

**Area Showing >2 Hours**

| Area Showing >2 Hours | |
|---|---|
| Public Spaces<br>Communal Spaces<br>Roof Terrace |  |

| Ref. | Total Area ( $m^2$) | Area Receiving >2hrs ($m^2$) | Percent Receiving >2hrs (%) | Comment |
|---|---|---|---|---|
| 1 | 122 | 118 | 97% | ✓ |
| 2 | 119 | 39 | 33% | x |
| 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%** | **✓** |

The following conclusions can be made:

✓ The sunlight to proposed amenity areas achieves at least receive at least 2 hours of sunlight on 21st March, thus complying with the BRE Guide.

X The sunlight to proposed amenity areas does not receive at least 2 hours of sunlight on 21st March

## 9.3 Discussion

**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.

**Proposed Amenities**

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

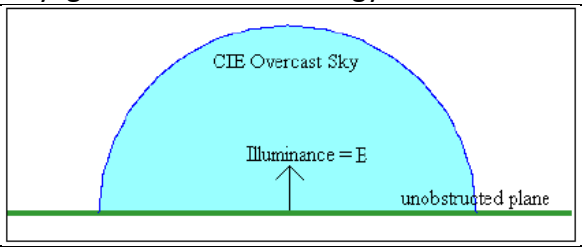
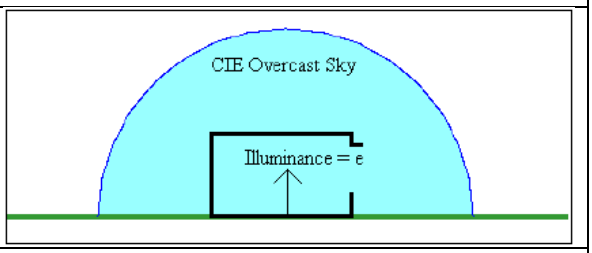
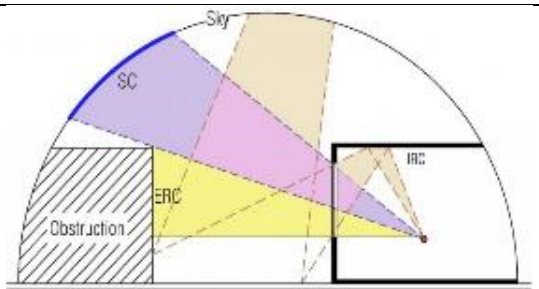
# 10 Average Daylight Factors (ADF)

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.

## 10.1 Introduction to ADF

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

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

<table>
<tr><td colspan="2">Daylight Factor Methodology</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>E = illuminance on unobstructed plane</td><td>e = illuminance at point in interior</td></tr>
<tr><td colspan="2">Daylight Factor = e/E (often expressed as a percentage)</td></tr>
<tr><td colspan="2">SC – Sky Component<br>ERC – Externally Reflected Component<br>IRC – Internally Reflected Component<br> 
<br>Sources of Daylight at a Point Within a Room</td></tr>
</table>

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

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

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

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

### 10.2 Reference and Metrics

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

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

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

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

The BRE guide does not provide explicit guidance for an open space that is a combination of Living/Kitchen/Dining (L/K/D) functions. In addition, a separate document the "*BS 8206-2:2008: Lighting for Buildings - Part 2: Code of Practice for Daylighting*" focuses on internal daylighting performance and states:
*"Where one room serves more than one purpose, the minimum average daylight factor should be that for the room type with the highest value. For example, in a space which combines a living room and a kitchen the minimum average daylight factor should be 2%."*
Although the above target is referenced within BS 8206-2:2008, it also states, "*The aim of the standard is to give guidance to architects, builders and others who carry out lighting design. It is recognised that lighting is only one of many matters that influence fenestration. These*

*include other aspects of environmental performance (such as noise, thermal equilibrium and the control of energy use), fire hazards, constructional requirements, the external appearance and the surroundings of the site. The best design for a building does not necessarily incorporate the ideal solution for any individual function. For this reason, careful judgement should be exercised when using the criteria given in the standard for other purposes, particularly town planning*."
For the purposes of clarity, we have assessed all LKDs against the 2% ADF target. However, we have also assessed the LKDs against an alternative 1.5% ADF target which is outlined in Section 11.9.

## 10.3 Planning Authority Guidelines

The BRE guide notes that the "*advice is not mandatory and that the guide should not be seen as an instrument of planning policy*". It should be noted when trying to achieve height and density within a development (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 Pleanala.

## 10.4 Assumptions

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

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

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

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

**Glazing Transmittance:**

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

## 10.5 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.

## 10.6 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.

## 10.7 Alternative ADF Target for Combined Living, Kitchen and Dining Spaces

As previously stated in Section 10.2, 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:

| 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 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% |

# 11 Conclusion

The following can be concluded based on the studies undertaken:

## 11.1 Shadow Analysis

The following summarises the overshadowing observed when the proposed development is compared to the Existing situation.

**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.

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 as a minor adverse impact.

## 11.2 Daylight Analysis of Existing Buildings

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 (96%) exceed the BRE requirement. The remaining 6 no. 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 as a negligible adverse impact.

## 11.3 Existing Neighbouring Buildings - (APSH) Assessment

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**

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 as a negligible adverse impact.

## 11.4 Proposed Apartments - (APSH) Assessment

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 10.6 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.

## 11.5 Sunlight to Amenity Areas

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

**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.

**Proposed Amenities**

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

## 11.6 Average Daylight Factor

Across the proposed development, 92% of the tested rooms are achieving ADF values 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 from the sample set are extrapolated to account for all spaces within the development.

With regard to internal daylighting, the Sustainable Urban Housing: Design Standards for New Apartments, Section 6.7 states the following:

*"Where an applicant cannot fully meet all of the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment of specific. This may arise due to design constraints associated with the site or location and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution."*

Compensatory measures have been incorporated into the design of the proposed development to offset reduced daylight performance in a number of bedrooms and LKDs. The floor areas of 91.68% of all apartment units are above the minimum area requirements set out within national policy. Incorporating larger apartment units makes it more difficult to achieve the recommended internal daylight levels. Furthermore, the number of dual aspect units and communal open space provisions are above minimum recommendations. The

incorporation of these compensatory measures more than offset the reduced daylight performance when the proposed development as a whole is considered.

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.

Therefore, when Living/Kitchen/Dining spaces are assessed as whole rooms against a 1.5% ADF target, 95% of the tested rooms are achieving this compliance rate. This increases to 97% when the results from the sample set are extrapolated to account for all spaces within the development

### 11.7 Observations

It should be noted that the guidance in the BRE 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' is not mandatory and the guide itself states '*although it gives numerical guidelines these should be interpreted flexibly because natural lighting is only one of many factors in site layout design'*.

Whilst the results shown relate to the criteria as laid out in the BRE guidance targets it is important to note that the BRE targets have been drafted primarily for use in low density suburban development and should therefore be used with flexibility and caution when dealing other types of sites. Despite the above, the site performs well in relation to the metrics considered in this report.

In addition, the BS 8206-2:2008 it also notes, "*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.*"

The approach within this report is further supported by the national policy guidance noted in the Sustainable Urban Housing: Design Standards for New Apartments, Section 6.7 which states:

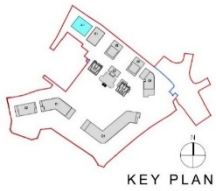
"*Where an applicant cannot fully meet all of the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment of specific. This may arise due to design constraints associated with the site or location and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution*."

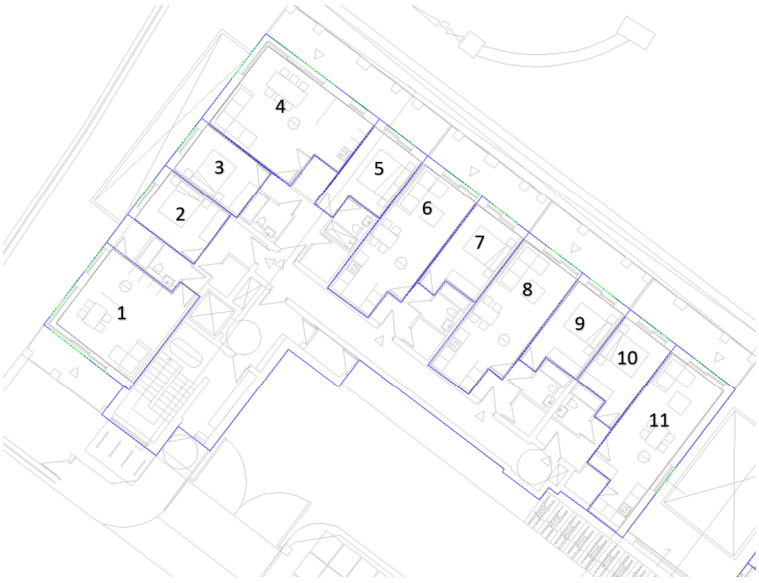
Taking all of the above information into account, overall the results demonstrate that the proposed development performs well when compared to the BRE recommendations in the BRE 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice" by Paul Littlefair, 2011 sometimes referred to as BRE Digest 209 and the "BS 8206-2:2008: Lighting for Buildings - Part 2: Code of Practice for Daylighting".

# 12 Appendix A1 – Average Daylight Factor Results

The following tables illustrated the rooms that were tested for internal daylight levels along with their associated Average Daylight Factors.

## 12.1 ADF – Block A1 – L00



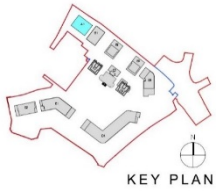

| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L00: A1-01_LKD | LKD | 20.80 | 6.43 | ✓ |
| 2 | L00: A1-01_Bedroom | Bedroom | 4.30 | 4.17 | ✓ |
| 3 | L00: A1-02_Bedroom 01 | Bedroom | 4.30 | 3.93 | ✓ |
| 4 | 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 / ✓ |

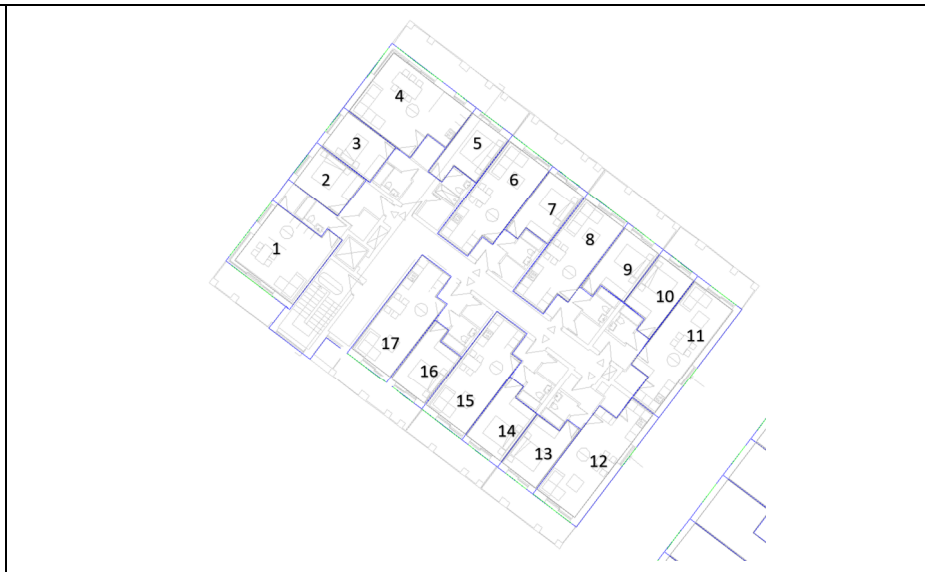
The following conclusions can be made:

✓ 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.

## 12.2 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 |

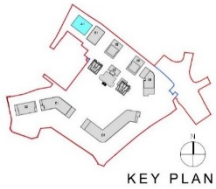
The following conclusions can be made:

✓ 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 recommendation for a L/K/D when the whole space is assessed against the 1.5% ADF target.

## 12.3 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 |

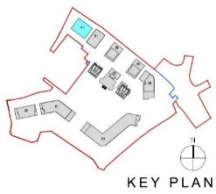
The following conclusions can be made:

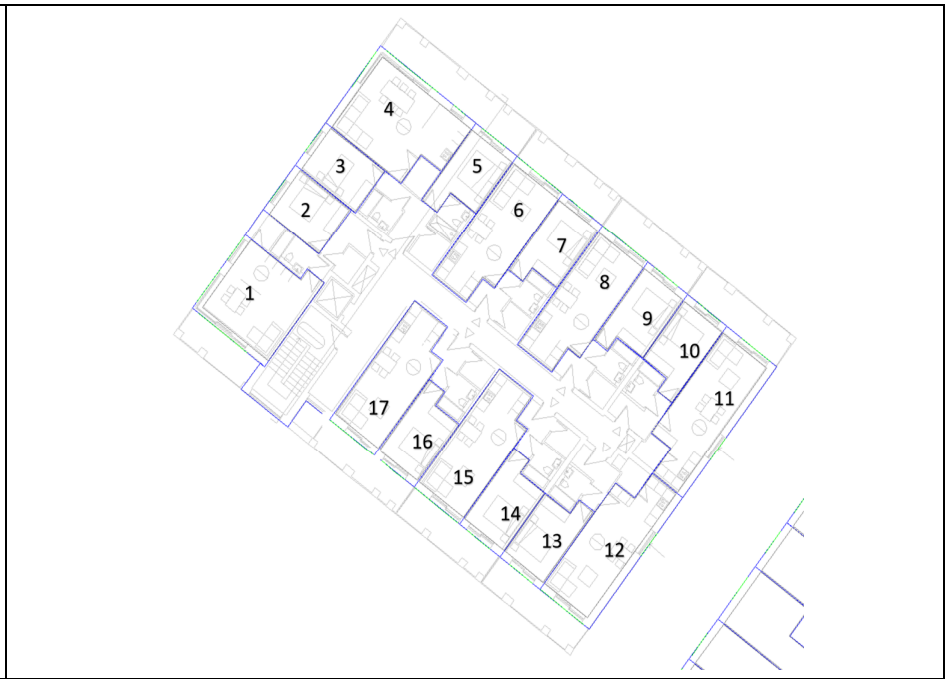
✓ These rooms have an ADF greater than the recommended minimum values (2.0% for combined L/K/Ds and 1.0% for bedrooms) as stated within the BRE/ BS 8206-2:2008 Guidance.

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.

## 12.4 ADF – Block A1 – L03



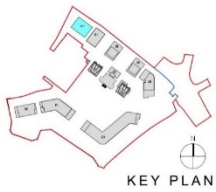

| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 6 | L02: A1-16_LKD | LKD | 8.90 | 1.67 | x / ✓ |
| 8 | L02: A1-17_LKD | LKD | 8.90 | 1.55 | x / ✓ |
| 11 | L02: A1-18_LKD | LKD | 13.20 | 2.17 | ✓ |
| 12 | L02: A1-19_LKD | 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 / ✓ |

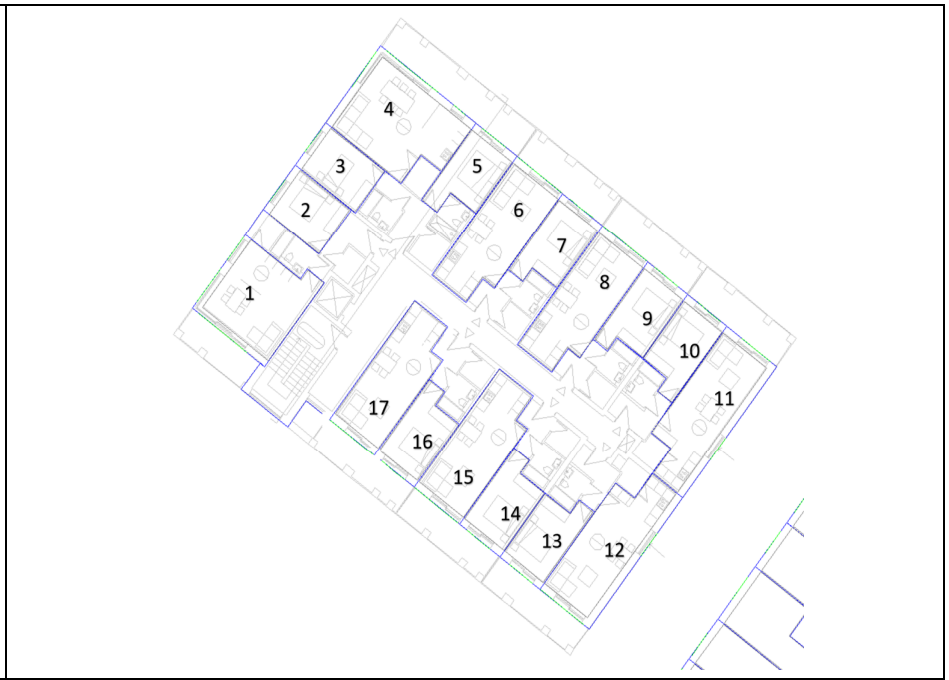
The following conclusions can be made:

✓ 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.

## 12.5 ADF – Block A1 – L04



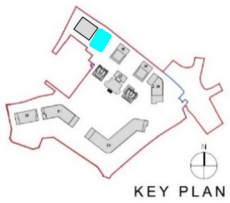




| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 6 | L02: A1-16_LKD | LKD | 8.90 | 3.86 | ✓ |
| 8 | L02: A1-17_LKD | LKD | 8.90 | 3.9 | ✓ |
| 15 | L02: A1-20_LKD | LKD | 8.90 | 3.65 | ✓ |
| 17 | L02: A1-21_LKD | LKD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

The following 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.

## 12.6 ADF – Block B1 – L00





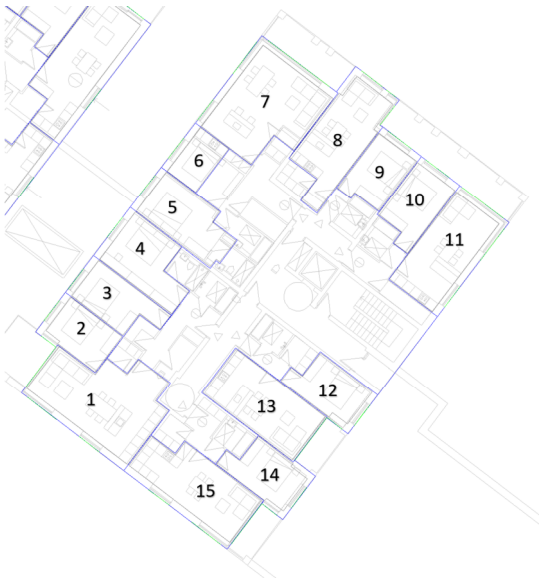
| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L00: B1-38_Bedroom 01 | Bedroom | 6.34 | 0.82 | x |
| 2 | L00: B1-38_Bedroom 02 | Bedroom | 4.30 | 1.09 | ✓ |
| 3 | L00: B1-38_LKD | LKD | 21.60 | 3.24 | ✓ |
| 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 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 Bedrooms with a 1% ADF target.

## 12.7 ADF – Block B1 – L01

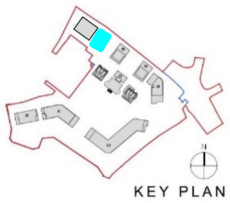

| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L01: B1-41_LKD | LKD | 19.00 | 4.69 | ✓ |
| 2 | L01: B1-41_Bedroom 01 | Bedroom | 7.40 | 1.61 | ✓ |
| 3 | L01: B1-41_Bedroom 02 | Bedroom | 4.30 | 1.41 | ✓ |
| 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 | ✓ |

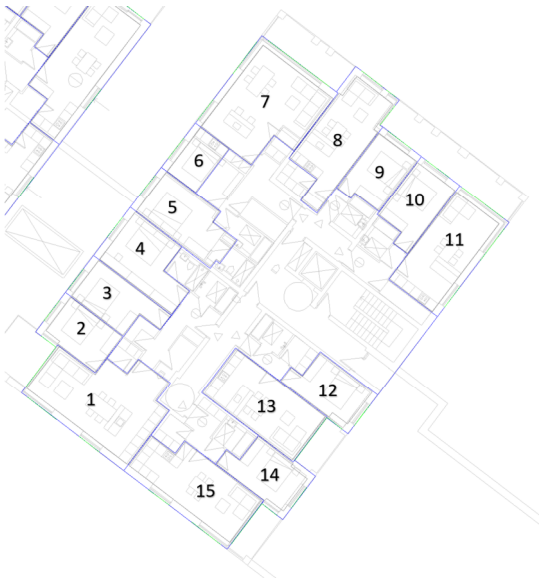
The following conclusions can be made:

✓ 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 and bedrooms when assessed against a 1% ADF target.

## 12.8 ADF – Block B1 – L02



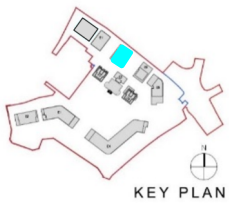

| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L02: B1-47_LKD | LKD | 19.00 | 4.81 | ✓ |
| 2 | L02: B1-47_Bedroom 01 | Bedroom | 7.40 | 1.92 | ✓ |
| 3 | L02: B1-47_Bedroom 02 | Bedroom | 4.30 | 1.16 | ✓ |
| 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.

## 12.9 ADF – Block B2 – L00



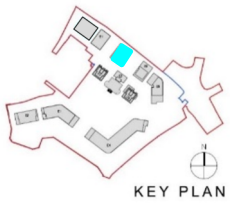


| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L00: B2-01_Bedroom 01 | Bedroom | 4.32 | 1.28 | ✓ |
| 2 | L00: B2-01_Bedroom 02 | Bedroom | 4.32 | 1.35 | ✓ |
| 3 | L00: B2-01_LKD | LKD | 20.57 | 3.00 | ✓ |
| 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.

## 12.10 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 | ✓ |

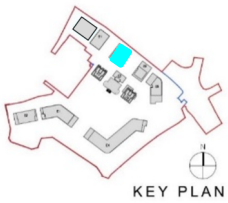
The following conclusions can be made:

✓ 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.

## 12.11 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.

## 12.12 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 Bedrooms with a 1% ADF target.

## 12.13 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 and bedrooms are assessed against a 1% target.

## 12.14 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 | ✓ |

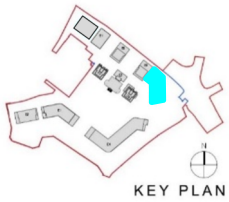
The following conclusions can be made:

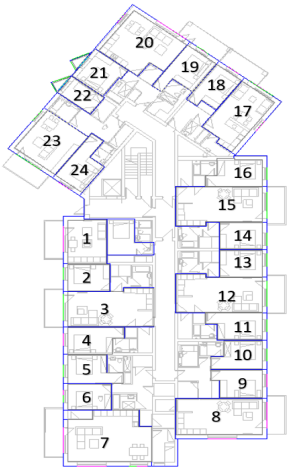
✓ These rooms have an ADF greater than the recommended minimum values (2.0% for combined L/K/Ds and 1.0% for bedrooms) as stated within the BRE/ BS 8206-2:2008 Guidance.

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.

## 12.15 ADF – Block B4 – L00



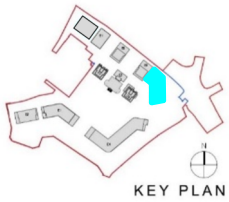

| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L00: B4-01_Studio_Living | Studio | 6.72 | 2.56 | ✓ |
| 2 | L00: B4-02_Bedroom 01 | Bedroom | 3.24 | 2.44 | ✓ |
| 3 | L00: B4-02_Living | LKD | 6.72 | 1.73 | x / ✓ |
| 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 | ✓ |

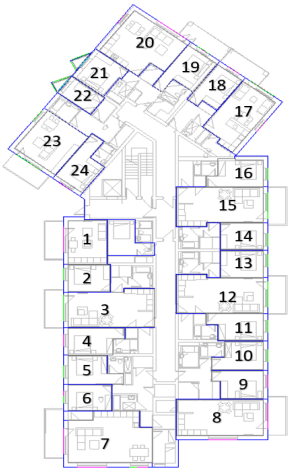
The following conclusions can be made:

✓ 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.

## 12.16 ADF – Block B4 – L01



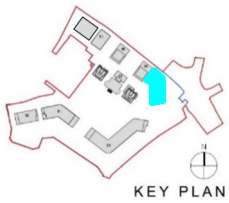

| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L01: B4-01_Studio_Living | Studio | 6.72 | 2.58 | ✓ |
| 2 | L01: B4-02_Bedroom 01 | Bedroom | 3.24 | 2.46 | ✓ |
| 3 | L01: B4-02_Living | LKD | 6.72 | 1.77 | x / ✓ |
| 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 | ✓ |

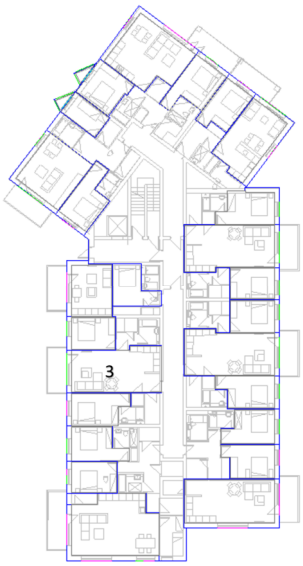
The following conclusions can be made:

✓ 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.

## 12.17 ADF – Block B4 – L02



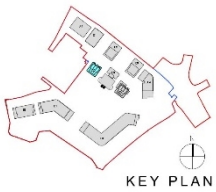




| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 3 | L02: B4-02_Living | LKD | 6.72 | 2.00 | ✓ |

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.

## 12.18 ADF – Block C1 – L00





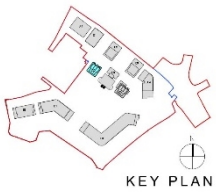
| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L00: C1-223_LKD | LKD | 22.14 | 4.16 | ✓ |
| 2 | L00: C1-223_Bedroom 02 | Bedroom | 4.32 | 4.33 | ✓ |
| 3 | L00: C1-224_Studio | Studio | 12.83 | 2.50 | ✓ |
| 4 | 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.

## 12.19 ADF – Block C1 – L01



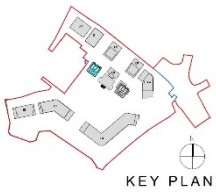


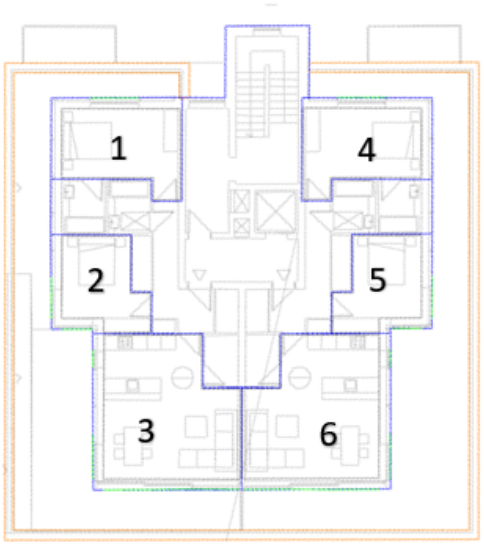
| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L01: C1-227_LKD | LKD | 22.14 | 5.15 | ✓ |
| 2 | L01: C1-227_Bedroom 02 | Bedroom | 4.32 | 4.83 | ✓ |
| 3 | L01: C1-228_LKD | LKD | 8.51 | 3.42 | ✓ |
| 4 | L01: 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.

## 12.20 ADF – Block C1 – L02



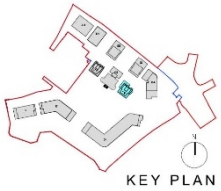




| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L02: C1-231_Bedroom 01 | Bedroom | 5.30 | 3.77 | ✓ |
| 2 | L02: C1-231_Bedroom 02 | Bedroom | 7.95 | 6.20 | ✓ |
| 3 | L02: C1-231_LKD | LKD | 21.73 | 8.15 | ✓ |
| 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.

## 12.21 ADF – Block C2 – L01



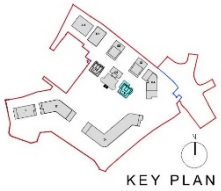


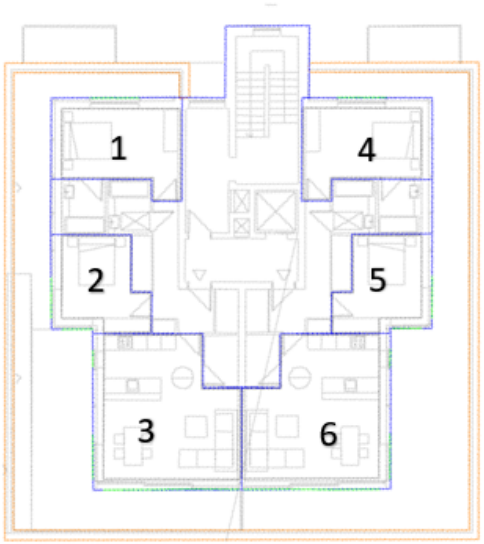
| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L01: C2-233_LKD | LKD | 22.14 | 4.28 | ✓ |
| 2 | L01: C2-233_Bedroom 02 | Bedroom | 4.32 | 3.67 | ✓ |
| 3 | L01: C2-234_LKD | LKD | 8.51 | 3.25 | ✓ |
| 4 | L01: 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.

## 12.22 ADF – Block C2 – L02



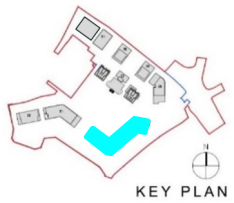



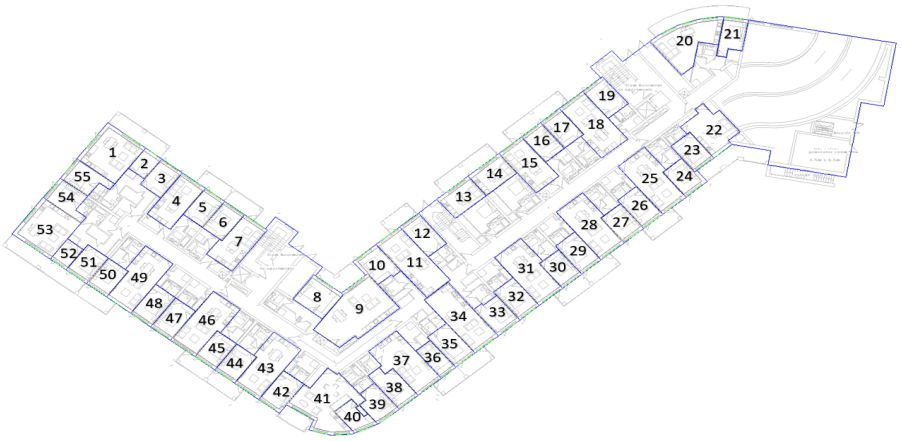

| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L02: C2-237_Bedroom 01 | Bedroom | 5.30 | 3.57 | ✓ |
| 2 | L02: C2-237_Bedroom 02 | Bedroom | 7.95 | 6.04 | ✓ |
| 3 | L02: C2-237_LKD | LKD | 21.73 | 7.78 | ✓ |
| 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.

## 12.23 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 | ✓ |

| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 29 | L00: D1-09_Bedroom 01 | Bedroom | 5.76 | 2.19 | ✓ |
| 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 | ✓ |

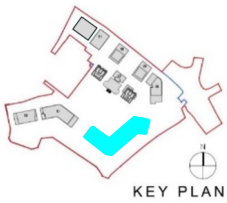
The following conclusions can be made:

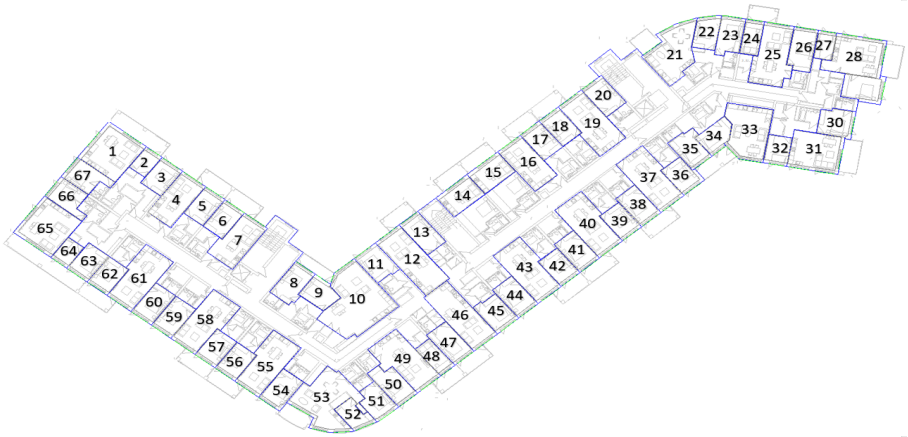
✓ These rooms have an ADF greater than the recommended minimum values (2.0% for combined L/K/Ds and 1.0% for bedrooms) as stated within the BRE/ BS 8206-2:2008 Guidance.

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.

## 12.24 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 | ✓ |

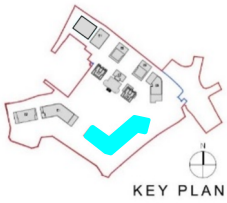
| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 31 | L01: D1-13_LKD | LKD | 18.00 | 6.30 | ✓ |
| 32 | L01: D1-13_Bedroom 02 | Bedroom | 4.32 | 4.50 | ✓ |
| 33 | L01: D1-12_LKD | LKD | 11.42 | 2.75 | ✓ |
| 34 | L01: 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 | ✓ |

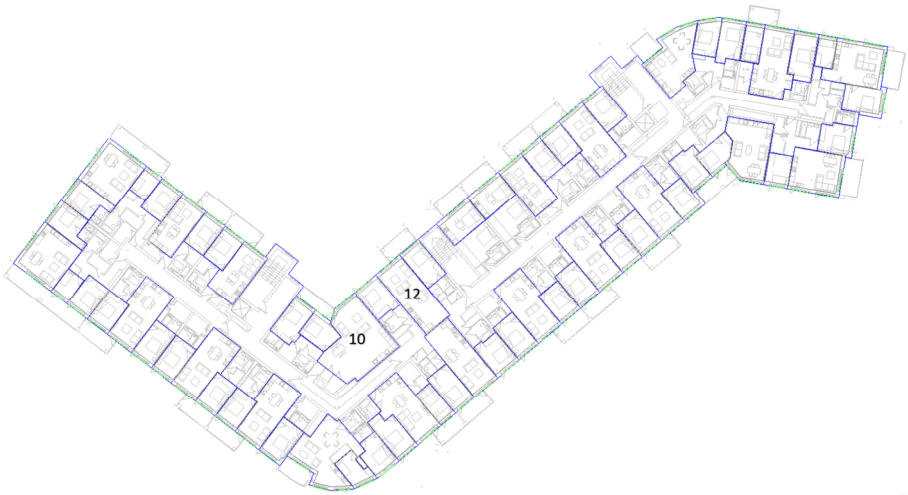
The following conclusions can be made:

✓ 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.

## 12.25 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.

## 12.26 ADF – Block E1 – L00



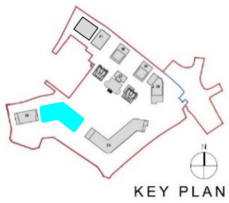
| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L00: E1-375_Bedroom 01 | Bedroom | 5.76 | 5.06 | ✓ |
| 2 | L00: E1-375_Bedroom 02 | Bedroom | 5.64 | 3.49 | ✓ |
| 3 | L00: E1-376_Bedroom 01 | Bedroom | 5.64 | 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.

## 12.27 ADF – Block E1 – L01





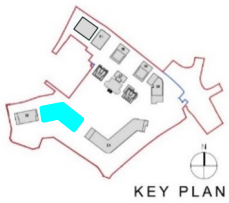
| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L01: E1-385_Bedroom 01 | Bedroom | 5.64 | 4.14 | ✓ |
| 2 | L01: E1-385_Bedroom 02 | Bedroom | 5.76 | 5.63 | ✓ |
| 3 | L01: E1-387_Bedroom 01 | Bedroom | 5.76 | 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 | ✓ |

| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 29 | L01: E1-389_LKD | LKD | 6.27 | 1.07 | x |
| 30 | L01: E1-388_LKD | LKD | 6.48 | 1.18 | x |
| 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 | ✓ |

✓ 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.

## 12.28 ADF – Block E1 – L02





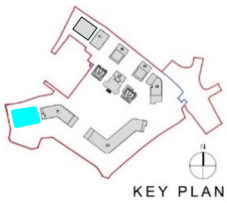
| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 29 | L02: E1-389_LKD | LKD | 6.27 | 1.09 | x |
| 30 | L02: E1-388_LKD | LKD | 6.48 | 1.21 | x |
| 31 | L02: E1-387_LKD | LKD | 6.48 | 1.51 | x / ✓ |

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.

## 12.29 ADF – Block E2 – L00



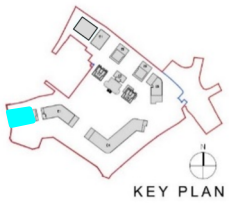


| Ref. | Room Reference | Room Activity | External Window Area ($m^2$) | Average Daylight Factor | Comment |
|---|---|---|---|---|---|
| 1 | L00: E2-01_LKD | LKD | 13.20 | 3.76 | ✓ |
| 2 | L00: E2-01_Bedroom 01 | Bedroom | 5.76 | 7.24 | ✓ |
| 3 | L00: E2-02_LKD | LKD | 6.48 | 2.77 | ✓ |
| 4 | L00: E2-03_Bedroom | 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.

## 12.30 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 | ✓ |

✓ 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.

# 13 Appendix A2 – Average Daylight Factor Result Tables for Individual Blocks

## 13.1 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% |

## 13.2 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% |

## 13.3 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% |

## 13.4 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% |

## 13.5 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% |

## 13.6 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% |

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% |

## 13.7 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% |

## 13.8 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% |

## 13.9 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% |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