August 2024

Large-Scale Residential Development in Blessington, Co. Wicklow

Daylight and Sunlight Assessment Report

Applicant: Marshall Yards Development Company Ltd

"The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design." - BR 209

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Report Contents

The following report has been prepared by 3D Design Bureau (3DDB). 3DDB have over 7 years experience in producing daylight and sunlight assessments for large scale planning applications and are recognised as experts in the field. This report has been reviewed and overseen by Nicholas Polley and Richard Dalton. Nicholas is CEO of 3D Design Bureau and is a qualified Building Services Engineer (B.Sc.(Eng) Dip Eng) with over 25 years experience in the industry. Richard is Associate Director of 3DDB and has a bachelors degree in Building Information Modelling (BIM) with over 20 years experience in the industry.

1.0 Executive Summary

1.1 Summary of Assessment

Following a pre-planning meeting held with Wicklow County Council in June 2024, 3D Design Bureau (3DDB) were commissioned to carry out a comprehensive daylight and sunlight assessment, along with an accompanying shadow study for the proposed large-scale residential development in Blessington, Co. Wicklow.

Following the full suite of assessments that were carried out, the results presented as favourable for the proposed scheme.

Assessments carried out have been broken down into the following two main categories, 'Impact Assessment' and 'Scheme Performance', of which there are subcategories as summarised below:

Impact Assessment

The impact assessment that was carried out for the purpose of this report is in accordance with the BRE Guidelines. The potential levels of effect that the proposed development would have on the surrounding existing environment and/or properties has been assessed. The assessed properties in the impact assessment are indicated in Figure 1.1 below.

The effects were assessed in the baseline state versus the proposed state. For definition of model states, including a visual representation of the model states, please refer to the 'Methodology' section on Page 14.

This impact assessment covers the following metrics:

- Effect on daylight to surrounding properties. The effect to the Vertical Sky Component (VSC) of the windows of the following neighbouring properties was assessed:
  - 1 - Cocoon Childcare Facility.
  - 2 - The Avenue, Newtown Square, Main Street
  - 3 - The Close, Downshire Park
- Effect on sunlight to surrounding properties (Annual and Winter Probable Sunlight Hours - APSH/WPSH): For this assessment, only windows with an orientation within 90 degrees of due south and falling within the 25-degree window criteria warrant assessment; consequently, no windows qualified for assessment.
- Effect on sun on ground (SOG) to surrounding external amenity spaces such as gardens:
  - 4 - 1 Oak Drive - Back Garden
  - 5 - 1 Oak Drive - Front Garden
  - 6 - 32 Oak Drive
  - 7 - 33 Oak Drive
  - 8 - 34 Oak Drive
  - 9 - 35 Oak Drive
  - 10 - 36 Oak Drive
  - 11 - 37 Oak Drive
  - 12 - 38 Oak Drive
  - 13 - 39 Oak Drive
  - 14 - 40 Oak Drive
  - 15 - 41 Oak Drive
  - 16 - Saint Mary's Senior National School - Garden

Figure 1.1: Scope of surrounding properties and environment assessed.

Following advice within the BRE Guidelines, the surrounding context was carefully considered to ensure all properties and amenity spaces that may potentially experience a level of effect have been included in the study. A more detailed explanation of the criterion applied can be found in section "4.1 Impact Assessment, Window Selection Criteria" on page 13. It's worth noting that properties 4-15 did not fall within the 25-degree criteria and were therefore excluded from both the VSC and APSH studies. The results of the impact assessments can be found in section A.0 on page 28. These results are summarised in section 1.2 and explained in section "5.1 Analysis of Impact Assessment Results" on page 21.

Scheme Performance

Daylight access for the habitable rooms of the residential portion of the proposed duplexes and apartment block has been assessed through a Spatial Daylight Autonomy (SDA) study. Sunlight access for the same rooms has been quantified through a Sunlight Exposure (SE) assessment. A Sun On Ground (SOG) study has also been carried out to indicate the level of sunlight on March 21st in the proposed external amenity spaces. The results of these scheme performance assessments, which are in accordance with the BRE Guidelines, can be found in section C.0 on page 43. These results are summarised in section 1.3 and explained in section "5.2 Analysis of Scheme Performance Results" on page 22.

Supplementary scheme performance studies have also been carried out. These include an SDA assessment under the I.S. EN 17037 criterion, and a No Sky Line (NSL) study within proposed habitable rooms. The results of the supplementary scheme performance assessments can be found in section D.0 on page 64. In the Apartment block the commercial ground floor rooms were tested but do not form part of the compliance rates.

1.2 Impact Assessment Results Overview - Neighbouring Properties:

Effect to Daylight - Vertical Sky Component (VSC) :

Effect to Vertical Sky Component (VSC)	
Windows/Rooms Assessed	39
Negligible	36
Minor Adverse	3
Moderate Adverse	0
Major Adverse	0
Beneficial Impact*	0
n.a.**	0

Effect to Sun On Ground (SOG):

Effect to Sun On Ground (SOG)	
Areas Assessed	13
Negligible	12
Minor Adverse	0
Moderate Adverse	0
Major Adverse	0
Beneficial Impact*	0
n.a.**	1

*'Beneficial Impact' will only be stated if the ratio of change is greater than 1.20 (an improvement of 20%). Should less perceptible improvements occur a 'Negligible' level of effect will be stated.

**In instances where a baseline value is particularly low, levels of effects can appear exaggerated. To mitigate such occurrences, If the baseline value in the VSC, or SOG studies is below 1%, 3DDB have categorised the level of effect as n.a. (not applicable). Where windows/gardens/amenity areas are considered non-applicable, these instances are not included in the compliance rates calculation.

Note: As explained in the executive summary and further detailed in section "4.1 Impact Assessment, Window Selection Criteria" on page 13, no windows on the surrounding properties qualified for testing under the APSH/WPSH criteria..

1.3 Scheme Performance Results Overview:

Spatial Daylight Autonomy (SDA):

Spatial Daylight Autonomy (SDA) BRE 209 Criteria	
Unit Count	72
Rooms Assessed	228
Without Trees	
Compliant	226
Non-compliant	2
Compliance Rate*	c. 99%
Trees in Winter State (Proposed and Existing Trees)	
Compliant	223
Non-compliant	5
Compliance Rate*	c. 98%
Trees in Summer State (Proposed and Existing Trees)	
Compliant	222
Non-compliant	6
Compliance Rate*	c. 97%
Note: It is the expert opinion of 3DDB that the appropriate criteria for SDA assessments are that of the BRE Guidelines (BRE 209)	

* Compliance rates stated for the SDA analysis are based on the rooms that have been assessed.

Sunlight Exposure (SE):

Sunlight Exposure (SE)	
Units Assessed	72
SE with trees as opaque objects	
Non-Compliant	3
Minimum	5
Medium	12
High	52
Compliance Rate*	c. 96%
SE without deciduous trees	
Non-Compliant	2
Minimum	3
Medium	11
High	56
Compliance Rate*	c. 97%

* Compliance rates stated for the SE analysis are based on the units that have been assessed.

Sun On Ground (SOG) in proposed gardens / amenity areas:

Sun On Ground (SOG) in proposed gardens / amenity areas	
Areas Assessed	8
Areas meeting the guidelines	8
Areas not meeting the guidelines	0
Compliance Rate*	100%

* Compliance rates stated for the SOG assessment are based on the public and communal open spaces only.

1.4 Supplementary Assessment Results Overview

Spatial Daylight Autonomy (SDA) under I.S. EN 17037 Criterion:

Spatial Daylight Autonomy (SDA) under I.S. EN 17037 Criterion	
Unit Count	72
Rooms Assessed	228
Without Trees	
Compliant	215
Non-compliant	13
Compliance Rate*	c. 94%
Trees in Winter State (Proposed and Existing Trees)	
Compliant	210
Non-compliant	18
Compliance Rate*	c. 92%
Trees in Summer State (Proposed and Existing Trees)	
Compliant	205
Non-compliant	23
Compliance Rate*	c. 90%
Note: The study under the I.S. EN 17037 criterion should be considered a supplementary assessment. It is the expert opinion of 3DDB that the appropriate criteria are that of the BRE Guidelines (BRE 209)	

* Compliance rates stated for the SDA analysis are based on the rooms that have been assessed.

No Sky Line (NSL):

No Sky Line (NSL):	
Unit Count	72
Rooms Assessed	228
Yes	225
No	3
Compliance Rate**	c. 99%
** As the BRE Guidelines do not provide a recommended minimum for NSL in proposed developments, compliance rates for NSL are calculated using a criteria applied by 3DDB.	

* Compliance rates stated for the NSL analysis are based on the rooms that have been assessed.

2.0 Guidelines / Standards

This section refers to guidelines and standards for daylight and sunlight assessment for both impact assessment and scheme performance.

Overview

Neither the British Standard, European Standard, British Annex to the European Standard nor the BRE Guide set out rigid standards or limits. They are all considered advisory documents. The BRE Guide is preceded by the following very clear statement as to how the design advice contained therein should be used:

"*The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design.*"

That the recommendations of the BRE Guide are not suitable for rigid application to all developments in all contexts, is of particular importance in the context of national and local policies for the consolidation and densification of urban areas or when assessing applications for highly constrained sites (e.g. lands in close proximity or immediately to the south of residential lands). A compromise may have to be made concerning daylight and sunlight compliance to achieve national or local planning objectives.

It is the expert opinion of 3D Design Bureau, that the BRE Guidelines (*BR 209*) are the most appropriate guiding document for daylight and sunlight assessment. For daylight within proposed developments, a supplementary study has also been carried out under the criteria of *I.S. EN 17037*. The rationale for this opinion is outlined below.

Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities. (2023)

In July 2023, the Department of Housing, Planning and Local Government published an updated guidance document for new apartments, *Sustainable Urban Housing: Design Standards for New Apartments*. This document makes reference to, *EN 17037:2018: Daylight in Buildings* (the European Standard), *BS EN 17037:2018: Daylight in Buildings* (the UK National Annex to the European Standard) and to the 3rd edition of Building Research Establishment's *Site Layout Planning for Daylight and Sunlight: a Guide to Good Practice* (BR 209 2022).

Paragraph 6.7 of the 2023 apartment guidelines 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 a design constraints [sic] 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."

As such, this report identifies where daylight and sunlight recommendations have and have not been achieved. Rationale and compensatory design solutions are the remits of the planning consultant and/or the project architect, these will also be included in this report where applicable.

Note: Section 3.2 of the Urban Development and Building Height Guidelines 2018, provides similar guidance as above. However, it should be noted that at the time of publication of the *Urban Development and Building Height Guidelines (2018)*, BR 209 was in the 2nd edition, first published in 2011. Since then, a 3rd edition of BR 209 has been published (June 2022) and the 2nd edition has been withdrawn. BR 209 no longer references *BS 8206-2:2008*, which has also been withdrawn. The standard used as reference in BR 209 edition 3 is *BS EN 17037*.

BR 209 - Site Layout Planning for Daylight and Sunlight: a Guide to Good Practice (2022)

This document will be referred to as *the BRE Guidelines* in this report.

At the time of writing this report, the BRE Guidelines are in the third edition (BR 209). The BRE Guidelines set out recommendations for appropriate levels of daylight and sunlight within a proposed development, as well as providing guidance on impacts arising from a proposed development to surrounding properties and amenity areas.

Upon publication of the 3rd Edition of the BR 209 (2022), the 2nd edition (2011) has been withdrawn. Among the updates from the 2nd to the 3rd edition are some changes in the recommended metrics to use for carrying out scheme performance assessments.

Daylight within proposed developments was previously assessed under the 2011 guidelines using an 'Average Daylight Factor' assessment (ADF). This has been replaced with a 'target illuminance assessment', also known as a 'Spatial Daylight Autonomy' assessment (SDA).

Sunlight within proposed developments was previously assessed under the 2011 guidelines using an 'Annual / Winter Probable Sunlight Hours' assessment (APSH/WPSH). This has been replaced with a 'Sunlight Exposure' assessment (SE). However, APSH/WPSH is still recommended for sunlight impact assessments.

As such, no ADF or APSH/WPSH assessment will be included as part of a scheme performance assessment under the updated guidelines.

Details of the criteria for new metrics, and all other relevant metrics, can be found in the methodology section on Page 13 of this report.

It is the expert opinion of 3D Design Bureau that the BRE Guidelines are the most appropriate guiding document for assessing daylight potential within a proposed development. The rationale for this opinion is outlined in the Dublin City Council development plan (2022-2028), which states:

"Prior to 2018, Ireland had no standard for daylight. In 2018, the National Standards Authority of Ireland adopted EN 17037 to directly become IS EN 17037. It is important to note that no amendments were made to this document and unlike BS EN 317037, it does not contain a national annex. It offers only a single target for new buildings (there are no space by space targets – e.g. a kitchen would have the same target as a warehouse or office). It does not offer guidance on how new developments will impact on surrounding existing environments. These limitations make it unsuitable for use in planning policy or during planning applications. BR 209 must still be used for this purpose."

Whilst BRE Guidelines draws reference from BS EN 17037, there are some subtle differences between BR 209 and BS EN 17037. For the purposes of this report, the BRE Guidelines (BR 209) is considered the appropriate reference document.

A detailed description of the various recommendations for impact assessment and scheme performance is contained in section "4.3 Quantitative Impact Assessment Overview" on page 15 of this report.

EN 17037:2018: Daylight in Buildings (2018)

*EN 17037 i*s a European Standard that provides recommendations for daylight within spaces. (Emphasis added)

EN 17037:2018 recommends that 300 lux should be received across 50% of a hypothetical reference plane of any room for half of the daylight hours of the year, with no less than 100 lux received across 95% of the reference plane. No distinction is made for the function of the room for target lux levels within this standard.

It is the opinion of 3D Design Bureau that these target values are less appropriate for proposed residential developments than the recommendations made in the BRE Guidelines, which apply room-specific target values for appropriate LUX levels.

Recommendations made in EN 17037 regarding Sunlight Exposure for proposed developments have been incorporated into the BRE Guidelines. As such, Sunlight Exposure is deemed the appropriate assessment for sunlight within habitable rooms of the proposed development.

EN 17037 also makes recommendations related to glare and quality of view out. These aspects are not addressed in this report as these assessments have less relevance in a residential context where occupants have the freedom to move about in order to improve level of glare or alter the view out.

I.S. EN 17037:2018 Daylight in Buildings (2018)

*I.S. EN 17037 i*s a direct adoption of the European Standard *EN 17037:2018* that provides recommendations for daylight within spaces.

The target values given within *I.S. EN 17037* are directly adopted from *EN 17037*. As such, there are no room-specific recommendations for daylight. Because of these limitations, it is the expert opinion of 3D Design Bureau, that the recommendations made in the *BRE Guidelines* are more appropriate to use than those within *I.S. EN 17037*.

Regardless, a supplementary SDA study has been carried out on the proposed development using the criterion of *I.S. EN 17037*, with compliance rates stated. However, this should be considered a supplementary study.

BS EN 17037:2018: Daylight in Buildings (2018)

BS EN 17037 is the British Annex to the European Standard (see above). The British Annex acknowledges that a rigid application of the European Standard "may not be achievable". It states *"... it is the opinion of the UK committee that the recommendations for daylight provision in a space [...] may not be achievable for some buildings, particularly dwellings."*

In BS EN 17037, daylight recommendations differ depending on the function of a room. Target lux levels are applied across 50% of the reference plane of a room for half of the daylight hours. The target lux levels are:

- 200 Lux for kitchens
- 150 Lux for living rooms
- 100 Lux for bedrooms

No minimum is stated to be achieved across 95% of the working plane. If a space has dual purposes it is advised that the higher target value should be applied.

The Compact Growth Guidelines (2024)

The Compact Growth Guidelines offers guidance on compact growth principles as a means to promote sustainable development, efficient land use, and infrastructure while minimizing sprawl and environmental degradation, contributing to sustainable urban growth, enhance liveability and support broader planning objectives.

In regard to daylight, section 5.3.7 states:

"The provision of acceptable levels of daylight in new residential developments is an important planning consideration, in the interests of ensuring a high quality living environment for future residents. It is also important to safeguard against a detrimental impact on the amenity of other sensitive occupiers of adjacent properties.

(...)

(b) In cases where a technical assessment of daylight performance is considered by the planning authority to be necessary regard should be had to quantitative performance approaches to daylight provision outlined in guides like A New European Standard for Daylighting in Buildings IS EN17037:2018, UK National Annex BS EN17037:2019 and the associated BRE Guide 209 2022 Edition (June 2022), or any relevant future standards or guidance specific to the Irish context.

In drawing conclusions in relation to daylight performance, planning authorities must weigh up the overall quality of the design and layout of the scheme and the measures proposed to maximise daylight provision, against the location of the site and the general presumption in favour of increased scales of urban residential development. Poor performance may arise due to design constraints associated with the site or location and there is a need to balance 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."

The Compact Growth Guidelines should be applied within statutory development plans and during the consideration of individual planning applications. Flexibility in interpretation allows planning authorities to tailor recommendations to specific local contexts and planning objectives.

Summary

According to the aforementioned guiding documents, the following assessments are typically conducted for a daylight and sunlight study, depending on the specific requirements of the project.

Performance of the Proposed Development

Annual Probable Sunlight Hours (APSH) and Winter Probable Sunlight Hours (WPSH) on all relevant windows: APSH and WPSH are no longer recommended for scheme performance assessments under BR 209. They have been replaced with Sunlight Exposure (SE). When conducting a scheme performance assessment for sunlight in the habitable rooms of the proposed development, Sunlight Exposure is the relevant metric. An APSH/WPSH assessment will not be carried out in the scheme performance assessment of the proposed development.

Sunlight on Ground (SOG) in all amenity spaces: A SOG assessment will be carried out, where appropriate, for the amenity spaces of the proposed development.

Average Daylight Factor (ADF) in all habitable rooms: BR 209 (2022) states that ADF is no longer recommended as a relevant method of assessment. ADF has been replaced with a target illuminance assessment. (See below). As such, no ADF assessment will be carried out on the proposed development.

No Sky Line (NSL) in all habitable rooms: An NSL assessment will be conducted for the habitable rooms of the proposed development as a supplementary study as part of a scheme performance assessment.

Target Illuminance in all habitable rooms: A target illuminance assessment, also known as a Spatial Daylight Autonomy (SDA) assessment, has replaced ADF as the relevant metric for assessing daylight within proposed habitable spaces. The two recommended methodologies for this assessment are detailed in section 4.5.1 on page 18. In a scheme performance assessment, the SDA will be calculated for the habitable rooms of the proposed development.

Impact on the Surrounding Properties

Vertical Sky Component (VSC) on all relevant surrounding windows: A VSC impact assessment will be conducted, where appropriate, on the relevant surrounding windows determined by the BRE decision chart as illustrated in Figure 4.2 on page 13.

Annual Probable Sunlight Hours (APSH) and Winter Probable Sunlight Hours (WPSH) on all relevant surrounding windows: An APSH/WPSH impact assessment will be conducted, where appropriate, on the relevant surrounding windows/rooms that have an orientation within 90° of due south.

Sunlight on Ground (SOG) in all surrounding amenity spaces: A SOG impact assessment will be carried out, where appropriate, on the neighbouring gardens/ amenity spaces located within close proximity and to the north of the subject site.

3.0 Glossary

3.1 Terms and Definitions

Below is a list of daylight and sunlight terminology that may be used in this report depending on the assessments carried out.

Skylight
Non directional ambient light cast from the sky and environment.

Sunlight
Direct parallel rays of light emitted from the sun.

Daylight
Combined skylight and sunlight.

Overcast sky model
A completely overcast sky model, used for daylight calculation.

Cloudless sky model
A completely cloudless sky model, used for sunlight exposure calculation.

Model State
The model state is a term used to describe the configuration of the digital model used to run analysis. Model states will typically reflect a baseline state and a proposed or cumulative state. For a definition of the model states used in the analysis carried out in this report, please refer to “Preparing the analytical model” on page 14.

Vertical Sky Component (VSC)
Ratio of that part of illuminance, at a point on a given vertical plane, that is received directly from an overcast sky model, 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.

Annual Probable Sunlight Hours (APSH) / Winter Probable Sunlight Hours (WPSH)
Annual Probable Sunlight Hours (APSH) and Winter Probable Sunlight Hours (WPSH) are a measure of sunlight that a given window may expect over a year period (1 Jan - 31 Dec), or the winter period (21 Sep - 21 Mar) respectively.

North facing windows may receive sunlight on only a handful of occasions in a year, and windows facing eastwards or westwards will receive sunlight only at certain times of the day. Taking this into account, the BRE Guidelines suggest that windows with an orientation within 90 degrees of due south should be assessed.

Sun On Ground (SOG)
Assessment of what portion of a garden or amenity space is capable of receiving 2 hours or more of direct sunlight on March 21st.

Sunlight Exposure (SE)
The number of hours of direct sunlight a room can expect to receive on a given date between February 1st and March 21st at a determined point on the windows.

Spatial Daylight Autonomy (SDA)
Spatial Daylight Autonomy assesses whether a space receives sufficient daylight on a working plane during standard operating hours on an annual basis. For compliance, the target value is achieved across 50% of the working plane for half of the occupied period.

No Sky Line (NSL)
The no sky line divides points on the working plane which can and cannot see the sky.

Working plane
Horizontal, vertical or inclined plane in which a visual task lies. Normally the working plane may be taken to be horizontal, 850 mm above the floor in houses and factories, 700 mm above the floor in offices. The plane is offset 300mm from the room boundaries under BR 209 criteria, and 500mm from the room boundaries under I.S. EN 17037 criteria.

LKD
Living / Kitchen / Dining room.

BRE Target Value
When assessing the effect a proposed development would have on a neighbouring property, a target value will be applied. This applied target value is generated as per the criteria set out for each study in the BRE Guidelines.

Alternative Target Value
It could be appropriate to use alternative target values when conducting assessment of effect on existing properties. If such instances occur the rationale will be clearly explained and the instances where the alternative target values have been applied will be clearly identified.

Level of BRE Compliance
Each table in the study that has a column identified as “Level of BRE Compliance”, identifies how an assessed instance performs in relation to the appropriate target value. If the instance is in compliance with the recommendations as made in the BRE Guidelines the value will be expressed as “BRE Compliant”. If the instance does not meet the criteria as set out in the BRE Guidelines a percentage will be expressed to determine the level of compliance with the recommendation. This value determines the definition of effect.

LUX
Lux is a standardised unit of measurement of light level intensity. A measurement of 1 lux is equal to the illumination of a one metre square surface that is one metre away from a single candle.

3.2 Definition of Effects

The BRE Guidelines state that:

"Adverse impacts occur when there is a significant decrease in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space. The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied."

As such, planning authorities should consider a range of localised factors when making decisions. The terminology suggested in the BRE Guidelines is as listed below, whilst the assessment of impact should depend on a combination of factors. The BRE Guidelines also state:

"Where a new development affects a number of existing buildings or open spaces, the clearest approach is usually to assess the impact on each one separately. It is also clearer to assess skylight and sunlight impacts separately."

Taking this advice, 3DDB have categorised the level of effect on each window/room/open space on an individual basis. In quantifying the levels of effect, 3DDB have assigned numerical values to the levels of compliance with the BRE recommendations. By applying a numerical logic to the terminology used in defining the levels of effect there is no ambiguity regarding how the levels of effect have been categorised within this report.

The list of definitions given below is taken from '*Appendix H: Environmental impact assessment*' of the BR 209 with a clear indication of how they have been applied in the context of this report.

Negligible
For the purposes of this Sunlight and Daylight Assessment Report a '*Negligible*' level of effect will be stated if the level of effect is within the criteria as recommended in the BRE Guidelines and the applied target value has been achieved.

Minor Adverse
For the purposes of this Sunlight and Daylight Assessment Report, a '*Minor Adverse*' level of effect will be stated if the level of effect is marginally outside of the criteria as stated in the BRE Guidelines. Typically a '*Minor Adverse*' level of effect will be applied if the level of daylight or sunlight is reduced to equal or greater than 80% and less than 100% of the applied target value.

Moderate Adverse
For the purposes of this Sunlight and Daylight Assessment Report, a 'Moderate Adverse' level of effect will be stated if the level of daylight or sunlight is reduced to equal or greater than 50% and less than 80% of the applied target value. '*Moderate Adverse*' levels of effect are quite typical in instances where a proposed development is planned on an under-developed plot of land.

Major Adverse
An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment. For the purposes of this Sunlight and Daylight Assessment Report a '*Major Adverse*' level of effect will be stated if the proposed development reduces the availability of daylight or sunlight of a neighbouring property to significantly below a baseline level. A '*Major Adverse*' level of effect will be stated if the level of daylight or sunlight is reduced to less than 50% of the applied target value.

Beneficial Impact
In relation to sunlight or daylight access, it is conceivable that a proposed development could yield positive effects on the neighbouring properties. In such circumstances the development would typically involve a reduction to the size or scale of built form (e.g. such as the demolition of a building or the removal of a large belt of evergreen trees, which might result in an increase in light access). Where such improvements occur, a '*Beneficial Impact*' will only be stated if the ratio of change is greater than 1.20 (an improvement of 20%). Should less perceptible improvements occur a '*Negligible*' level of effect will be stated.

Not Applicable (n.a.)
In instances where a baseline value is particularly low, levels of effects can appear exaggerated. To mitigate such occurrences, if the baseline value in the VSC, APSH/WPSH or SOG studies is below 1%, 3DDB have categorised the level of effect as n.a. (not applicable).

Averaged Windows (-)
If it can be determined or reasonably assumed that multiple windows are servicing the same room, each window will be assessed and a weighted average will be calculated. In such instances the level of effect for the room will be stated, but the level of effect for the individual windows contributing towards the average will be left blank in the table. This will be indicated in the tables with the dash symbol. (-)

3.3 Definition of Levels of Sunlight Exposure

For interiors, access to sunlight can be quantified. BR 209 recommends that a space should receive a minimum of 1.5 hours of direct sunlight on a selected date between 1 February and 21 March with cloudless conditions. It is suggested that 21 March (equinox) be used. The medium level of recommendation is three hours and the high level of recommendation four hours. For dwellings, at least one habitable room, preferably a main living room, should meet at least the minimum criterion.

Level of Sunlight Exposure:

The level of sunlight exposure will be stated for each assessed room in the tables under section "C.3 Sunlight Exposure (SE) in Proposed Units" on page 55. Below is a list of the terms used to categorise the levels of sunlight exposure:

Below Minimum
Sunlight exposure will be categorised as 'below minimum' if the potential sunlight for the assessed room is less than 1.5 hours on March 21st. Note: the recommendation is that a room within a proposed unit is capable of receiving 1.5 hours of direct sunlight on March 21st. If an individual room does not achieve this recommendation, it does not mean that the unit is non compliant.

Minimum
A 'minimum' level of sunlight exposure will be stated if the potential sunlight for the assessed room is between 1.5 hours and 3 hours on March 21st.

Medium
A 'medium' level of sunlight exposure will be stated if the potential sunlight for the assessed room is between 3 hours and 4 hours on March 21st.

High
A 'high' level of sunlight exposure will be stated if the potential sunlight for the assessed room is greater than 4 hours on March 21st.

Unit Compliance:

In addition to the level of sunlight exposure expressed for each room, compliance will be stated on a unit-by-unit basis. A proposed unit is considered to be compliant if any habitable room within the unit is capable of receiving at least 1.5 hours of sunlight on the assessment date.

Non-Compliant
If no habitable rooms within a proposed unit can receive 1.5 hours of sunlight on the assessment date, the unit will be categorised as 'Non-Compliant'.

Compliant
If at least one habitable room within a proposed unit can receive 1.5 hours or more of sunlight on the assessment date, the unit will be categorised as 'Compliant'.

Typically unit compliance will be stated for the best performing room per unit only, with lesser performing rooms indicated with a dash (-). However, if more than one room in a given unit is considered to be the best performing room (i.e. they have the same number of SE hours on March 21st), then the unit compliance column will be populated in the first instance only.

4.0 Methodology

4.1 Impact Assessment, Window Selection Criteria

To determine the properties to be included in the impact assessment, the decision chart taken from the BRE Guidelines has been followed, as shown in Figure 4.2.

Accordingly, all properties within a distance of three times the height of the proposed development, as illustrated in Figure 4.1, have been considered for impact assessment.

Figure 4.1: Properties within three times the height of the proposed development

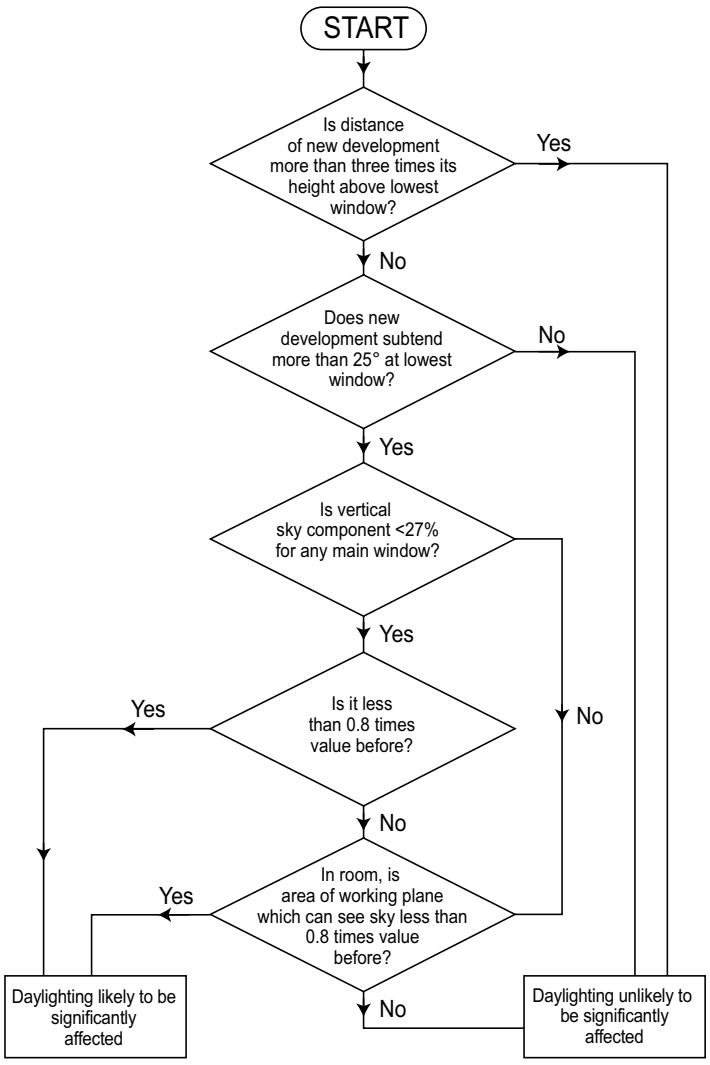

Figure 4.2: VSC decision chart, taken from BR 209.

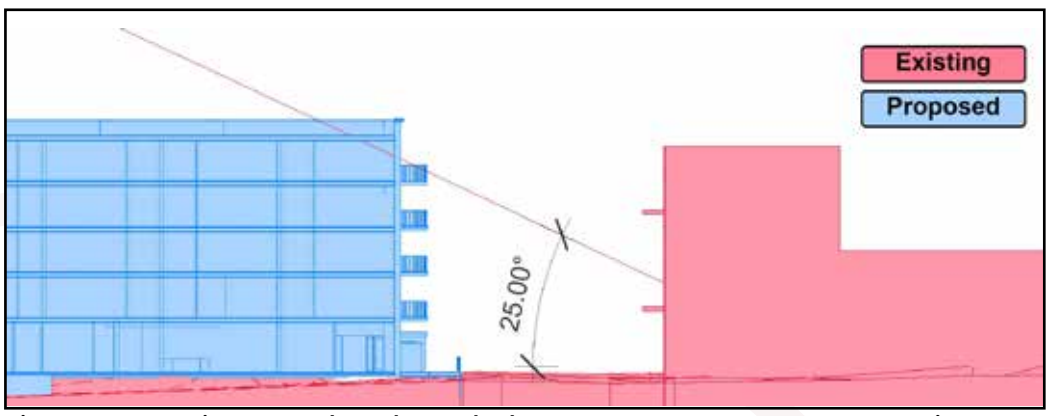

Figure 4.3: Section A-A taken through The Avenue, Newtown Square, Main Street

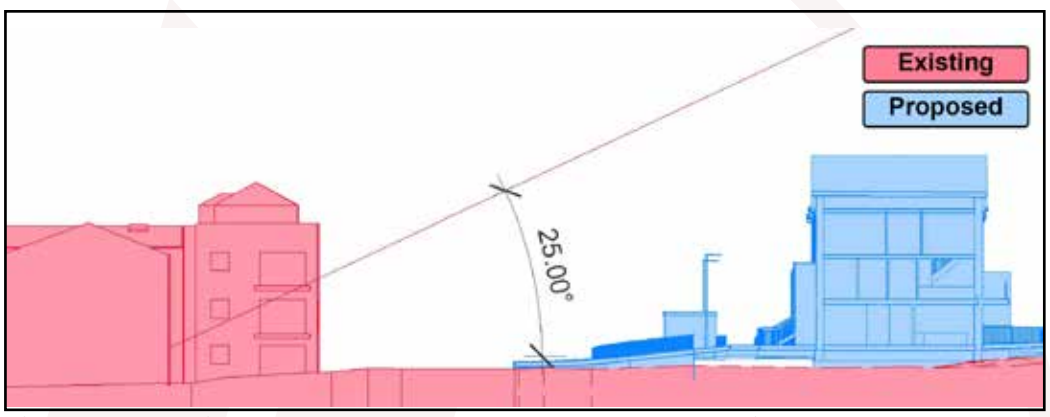

Figure 4.4: Section B-B taken through The Close, Downshire Park

As per the BRE Guidelines, a perpendicular section has been drawn from the main window wall of the potentially affected properties to determine if the proposed development subtends an angle of more than 25˚ at the lowest window.

If the proposed development subtends 25˚ in this section, then a VSC assessment should be conducted. Figure 4.3 shows a perpendicular section taken through The Avenue, Newtown Square, Main Street which provides an example of where the proposed development subtends 25˚ when measured in a perpendicular section through an existing window.

However, if the proposed development does not subtend 25˚ in a perpendicular section, daylight is unlikely to be significantly affected and no further assessment will be carried out. Figure 4.4 shows a perpendicular section taken through The Close, Downshire Park which provides an example of where an existing window is within 3 times the height of the proposed development but the proposed development does not subtend 25˚ when measured in a perpendicular section.

A detailed description regarding the methodology of the VSC assessment can be found in 4.3.1 on page 15.

It is advisable that if a window/room does not meet the BRE criteria in the VSC impact assessment that a no sky line (NSL) assessment should then be carried out. However, a NSL assessment requires accurate dimensions and layouts of the existing rooms and windows. Due to common lack of availability regarding the required information, it is not common practice to carry out a no sky line study when assessing impact on existing properties.

The BRE Guidelines also apply the 25˚ rule to determine the need for an impact assessment for loss of sunlight (APSH/WPSH). They also advise that only windows with an orientation within 90˚ of due south should be assessed. It is recommended to assess the main living rooms of dwellings and conservatories, while APSH/WPSH assessments are typically not required for kitchens and bedrooms.

In practice, 3DDB includes all windows that meet the proximity criteria in their APSH/WPSH assessments if they are reasonably assumed to serve habitable spaces. This approach avoids distinguishing between whether the windows serve bedrooms or living areas, thereby eliminating the need to make assumptions about the specific functions of rooms in existing dwellings.

While the BRE Guidelines recommend conducting an impact assessment on the lowest window where daylight/sunlight is needed, if a property is found to have a window potentially affected by the proposed development, based on the previously explained criteria, all windows facing the proposed development on that property will be assessed. This approach provides

4.2 Preparing the analytical model

4.2.1 Building the Model States

The project architect, Deady Gahan Architects supplied 3DDB with AutoCAD drawings and 3D models of the proposed buildings from which a detailed 3D analytical model was created. Landscape drawings were issued by Ilsa Rutgers Landscape Architects. A combination of survey information, aerial photography, available online photography and/or ordnance survey information were used to model the surrounding context and assessed buildings. **Note:** as the information gathered from online sources is not as accurate as surveyed information, a reasonable tolerance should be allowed to the placement of windows, boundary treatments and the results generated.

Baseline model state

As illustrated in Figure 4.5, the baseline model state reflects the existing environment. It includes the surrounding context and the subject site in their current standing. This includes any structures that are to be demolished as part of this application. Existing trees were placed using photogrammetry information, with assumptions made regarding exact size, position and species.

The BRE Guidelines recommend that impact assessments should be carried out if any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal. This criteria has been used to ensure all windows that could possibly sustain an adverse level of effect have been included in the model when running VSC and APSH/WPSH assessments.

Figure 4.5: Model view of the baseline model state

Figure 4.6: Model view of the proposed model state

Proposed model state

As illustrated in Figure 4.6, the proposed model state reflects the subject site if the development is built as proposed. This includes proposed landscaping on the subject site and the demolition of existing structures, etc. Proposed buildings have been positioned in their location on the subject site with relevant surrounding context included. Proposed trees were placed following the landscape plans prepared by Ilsa Rutgers Landscape Architects.

All of the above information was subsequently used to prepare a digital analytical model in software specifically designed for daylight and sunlight analysis.

Relevant weather and climatic data has been obtained for this report using a localised EnergyPlus Weather File (IRL_EM_Casement.AP.039670_TMYx.epw).

4.2.2 Trees

It is generally not possible to accurately represent trees in a digital 3D model as the size and shape will differ greatly from tree to tree. When modelling trees for this assessment assumptions have been made and tree geometry has been simplified.

For the purpose of the analysis carried out in this report, the position and size of existing trees have been estimated using photogrammetry information. The shape of the trees have been simplified and the species of each tree has been assumed. Simplified models of proposed trees within the development have also been included according to the information provided by the landscape architect.

BR 209 provides guidance on how trees should be treated depending on the study being carried out, as summarised below:

Impact to Vertical Sky Component (VSC) and Annual / Winter Probable Sunlight Hours (APSH / WPSH)

The BRE Guidelines state that when assessing the effect a new development would have on existing buildings, it is usual to ignore the effect of deciduous trees. This is because daylight is at its scarcest and most valuable in winter when most trees will not be in leaf. Evergreen trees should be included, particularly where a dense belt or group of evergreens is specifically planned as a windbreak or for privacy purposes.

Sun On Ground (SOG)

The BRE Guidelines states that when assessing the impact of buildings on sunlight in gardens:

"...trees and shrubs are not normally included in the calculation unless a dense belt or group of evergreens is specifically planned as a windbreak or for privacy purposes. This is partly because the dappled shade of a tree is more pleasant than the deep shadow of a building (this applies especially to deciduous trees)."

As such, deciduous trees have not been included in the calculation of SOG, unless there is a dense belt present or a group of trees specifically planned as a windbreak or for privacy purposes. Evergreen trees are included in the SOG assessment.

Sunlight Exposure (SE)

The BRE Guidelines state that as deciduous trees would not be in full leaf on the recommended assessment date (March 21st), sunlight would be expected to penetrate deciduous trees. However, as trees have so many variables, it is impossible to accurately represent how they would affect sunlight at a given time. The suggested methodology (BR 209) to allow for this is to run the sunlight exposure study in two states. Once with trees as opaque objects and secondly without deciduous trees in the assessment model. This gives a range of potential sunlight hours.

Spatial Daylight Autonomy (SDA)

BR 209 recommends when assessing daylight in a proposed building, it is appropriate to run the assessment with trees represented in both winter and summer conditions. Light transmittance values of 60% and 20% have been applied to deciduous tree canopies for winter and summer assessments respectively. A light transmittance value of 20% has been applied to evergreen trees throughout the year. Units have also been assessed without trees to give an understanding of how the architecture performs should trees not be factored into the calculation.

I.S. EN 17037 does not give any guidance on how trees should be represented. For the purpose of this report, the SDA calculation under the I.S. EN 17037 criteria has been carried out with trees represented in both winter and summer conditions. Light transmittance values of 60% and 20% have been applied to deciduous tree canopies for winter and summer assessments respectively. A light transmittance value of 20% has been applied to evergreen trees throughout the year. Units have also been assessed without trees to give an understanding of how the architecture performs should trees not be factored into the calculation.

No Sky Line (NSL)

Because some sky can usually be seen through a tree canopy, deciduous trees have not been included in the No Sky Line assessment model. Evergreen trees may be included in this assessment, particularly if there is a dense belt or group planned for windbreak or for privacy purposes.

Shadow Study

The hourly renderings of the shadow study have been generated with evergreen trees represented as opaque objects, where applicable, and without deciduous trees. This method best represents the methodology used for the impact assessment and allows for a better understanding of potential shadows cast by the proposed development through the tree canopy.

4.3 Quantitative Impact Assessment Overview

4.3.1 Effect on Vertical Sky Component (VSC)

A proposed development could potentially have a negative effect on the level of daylight that a neighbouring property receives, if the obstructing building is large in relation to their distance from the existing dwelling.

Section 4.1 outlines the decision process which was used to determine the appropriate properties to be included in the VSC impact assessment.

For the proposed development, all properties within a radius of three times the height of the proposed development have been considered for impact assessment. Should the angle from the windows to the proposed development subtend 25˚ in a perpendicular section, then VSC is calculated in both the baseline and proposed model states, and a comparison made.

A no skyline assessment requires accurate dimensions and layouts of both rooms and windows. However, the required information is rarely available for existing dwellings. As such, it is not common practice to carry out a no sky line (NSL) impact assessment.

VSC can be defined as the amount of skylight that falls on a vertical wall or window.

This report assesses the percentage of direct sky illuminance that falls on the assessment point of neighbouring windows that could be affected by the proposed development.

The BRE Guidelines state that if the VSC is:

- At least 27%, then conventional window design will usually give reasonable results;
- Between 15% and 27%, then special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight;
- Between 5% and 15%, then it is very difficult to provide adequate daylight unless very large windows are used;
- Less than 5%, then it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed.

The VSC for each window/room will be calculated in the relevant model states, as outlined in section 4.2 on page 14. A comparison between the results generated with these model states will determine the level of effect.

A proposed development could possibly have a noticeable effect on the daylight received by an existing window, if the following occurs:

- The VSC value drops below the guideline value of 27%; **and**

- The VSC value is less than 0.8 times the existing value.

In instances where a baseline value is less than 1%, the impact will be considered '*non-applicable*' (n.a.)

Under BRE Guidelines, only habitable rooms need to be assessed for effect to VSC. In the absence of design layouts or floor plans, or information pertaining to the internal 'as-built' layouts, assumptions have been made regarding the function of the windows of the existing surrounding properties (i.e. what room type is served by the window being assessed).

Typically, the effect on ground floor windows is greater than the effect on windows of subsequent floors. However, floors above ground floor level have been included in this study to give a more comprehensive assessment.

Assessment Points

The VSC impact assessment has been carried out on the windows/rooms of the neighbouring properties that could be affected by the proposed development as highlighted in Figure 1.1 on page 3.

The assessment points for measuring VSC are taken from the centre point of a standard window. If the window being assessed is a full height window, the assessment point is taken at 1600 mm above the finished floor level.

Weighted Averages

If it can be determined or reasonably assumed that multiple windows are servicing the same room, each window has been assessed and a room VSC has been calculated by applying a weighted average calculation to the results.

When calculating weighted averages the proportion of the total glazing area represented for each window is taken into account. It should be noted that assumptions typically need to be made regarding window sizes, so a tolerance should be applied regarding calculated weighted averages.

In instances where weighted averages have been calculated, the VSC figures will be stated for each window on an individual basis as well as the calculated figure to be applied to the room, but the level of effect will only be stated for the room.

Project Assessment

Following the BRE decision chart, as illustrated in Figure 4.2 on page 13, a VSC impact assessment has been carried out on the windows/rooms of the neighbouring properties that could be affected by the proposed development as indicated in Figure 1.1 on page 3.

The results for the VSC assessment can be found in the appendix results section A.1 on page 28, with analysis of the results in section 5.1.1 on page 21.

4.3.2 Effect on Annual/Winter Probable Sunlight Hours (APSH/WPSH)

Annual/Winter Probable Sunlight Hours (APSH/WPSH) is a measure of sunlight that a given window may expect to receive over the period of a year. The percentage of APSH/WPSH that windows in existing properties receive might be affected by a proposed development.

A proposed development could potentially have a negative effect on the level of sunlight that a neighbouring property receives, if the obstructing building is located to the south and is large in relation to their distance from the existing dwelling. This can be determined if the distance of a proposed development is less than three times its height from an existing dwelling, or if the angle from an existing window to the proposed development subtends 25° to the horizontal when measured in a perpendicular section.

Whether a window is considered for APSH/WPSH impact assessment is based on its orientation. A south-facing window will, in general, receive the most sunlight. North facing windows may receive sunlight on only a handful of occasions in a year, and windows facing eastwards or westwards will receive sunlight only at certain times of the day. Taking this into account, the BRE Guidelines suggest that windows with an orientation within 90 degrees of due south should be assessed.

Section 4.1 outlines the decision process which was used to determine the appropriate properties to be included in the APSH/WPSH impact assessment.

The APSH/WPSH for each of the assessed windows will be calculated in the relevant model states, as outlined in section 4.2 on page 14. A comparison between the results generated with these model states will determine the level of effect.

If it can be determined or reasonably assumed that multiple windows are servicing the same room, the APSH/WPSH has been assessed for the room as opposed to each individual window. When APSH/WPSH is assessed for a room it considers sunlight coming from all windows, but does not double count if sunlight is reaching multiple windows at the same time.

If a room can receive more than 25% of APSH, including at least 5% of the WPSH, then the room should receive enough sunlight.

A proposed development could possibly have a noticeable effect on the sunlight received by an existing window/room, if the following occurs:

- The APSH value drops below the annual (25%) or winter (5%) guidelines; **and**
- The APSH value is less than 0.8 times the baseline value; **and**
- There is a reduction of more than 4% to the annual APSH.

In some circumstances, the available sunlight during the winter period (WPSH) may both drop below the recommended minimum of 5% with a proposed value of less than 0.8 times the baseline value, but the reduction to annual probable sunlight (APSH) is less than 4%. Such occurrences are considered compliant with the BRE Guidelines, and the impact to WPSH will be stated as '*negligible*' on that basis.

Additionally, where a baseline value is less than 1%, the impact will be considered '*non-applicable*' (n.a.)

Under BRE Guidelines, only main living-rooms need to be assessed for effect on sunlight. In the absence of design layouts or floor plans, or information pertaining to the internal 'as-built' layouts, all windows assumed to be servicing habitable rooms have been included in the APSH/WPSH assessment provided they are orientated within 90˚ of due south and are in relative close proximity to the proposed development.

Typically, the effect on ground floor windows is greater than the effect on windows of subsequent floors. However, floors above ground floor level have been included in this study to give a more comprehensive assessment.

Assessment Points

The assessment points for measuring APSH/WPSH are taken from the centre point of a standard window. If the window being assessed is a full height window, the assessment point is taken at 1600 mm above the finished floor level.

Project Assessment

The APSH/WPSH impact assessment has been carried out on the windows/rooms of the neighbouring properties that could be affected by the proposed development as indicated in Figure 1.1 on page 3, with an orientation within 90 degrees of due south.

The results for the APSH/WPSH assessment can be found in the appendix results section A.2 on page 31, with analysis of the results in section 5.1.2 on page 21.

4.3.3 Effect on Sun On Ground in Existing Gardens/Amenity Areas (SOG)

The BRE Guidelines recommend that for a garden or amenity area to appear adequately sunlit throughout the year, at least half the area should receive at least two hours of sunlight on March 21st. As the BRE Guidelines does not provide a clear criteria on which neighbouring properties should be included in an impact on SOG study, 3DDB have carefully considered the neighbouring properties that may be affected when running the impact assessment. Gardens or amenity areas included in this study are typically located within close proximity, to the north of the proposed development.

Where a quantitative assessment has not been carried out it is on the basis that the omitted areas are unlikely to be adversely affected. Such instances may be because the areas are not deemed to be in close proximity to the proposed development or because they are located to the south. Should there be any concerns over the potential impact on any areas that have not been included in the quantitative assessment, a qualitative assessment may be carried out using the shadow study and false colour plans included in the report.

March 21st, also known as the spring equinox, is chosen as the assessment date as daytime and night-time are of approximately equal duration on this date.

The analytical model for SOG impact assessment includes evergreen trees, where applicable, in accordance with the BRE Guidelines. Typically deciduous trees will not be included unless there is a particularly dense belt.

The percentage of assessed areas which can receive two hours or more of direct sunlight on March 21st will be calculated in the relevant model states, as outlined in section 4.2 on page 14. A comparison between the results generated with these model states will determine the level of effect.

A proposed development could possibly have a noticeable effect on the sunlight received by an existing garden and/or amenity area, if the following occurs:

- Half the area of the space does not receive at least two hours of sunlight during the spring equinox; **and**
- The area that receives more than two hours of sun on the spring equinox is less than 0.8 times its former value.

In instances where a baseline value is less than 1%, the impact will be considered '*non-applicable*' (n.a.)

Effect on sunlight to existing neighbouring gardens and/or amenity areas has been assessed to the north of the proposed development, as areas located to the south are unlikely to be affected due to sun direction. Overshadowing is highly unlikely to occur in areas that are due south of any proposed development.

Project Assessment

The SOG impact assessment has been carried out on the neighbouring gardens/amenity areas that could be affected by the proposed development as outlined above.

The results of the impact to sun on ground assessment in the neighbouring gardens/amenity areas (including a visual representation in the form of 2-hour false colour plans) can be found in the appendix results section A.2 on page 32, with analysis of the results in section 5.1.3 on page 21.

4.4 Qualitative Assessment - Shadow Study

A shadow study has been carried out to allow a qualitative comparison between the relevant model states, as outlined in section 4.2 on page 14. This visual representation of the shadows cast by the proposed development can be found in the hourly shadow diagrams in the appendix results section B.0 on page 34.

Hourly renderings have been shown from sunrise to sunset on the following dates in 2024:

- Spring equinox: March 21st Sunrise 6:32 | Sunset 18:32. (GMT)
- Summer solstice: June 21st. Sunrise 5:04 | Sunset 21:49. (BST)
- Winter solstice: December 21st Sunrise 8:45 | Sunset 16:00. (GMT)

The shadow study has been generated using the same model states as described in section 4.2.1. In certain cases, assumptions or estimations may have been made when modelling elements of the surrounding context and/or proposed site details when creating the various model states. Therefore, it is advisable for a reasonable tolerance to be applied when interpreting shadows in the qualitative assessment.

The hourly renderings of the shadow study will be generated without deciduous trees and with evergreen trees, where applicable, represented as opaque objects when present in the model states.

Note: The spring equinox (March 21st) and autumn equinox (21st September) yield similar shadows, albeit with a one hour difference as daylight saving time (BST) would be in effect. Only the spring equinox was included in the shadow study images in accordance with the BRE Guidelines.

4.5 Quantitative Scheme Performance Assessment Overview

4.5.1 Spatial Daylight Autonomy in Proposed Habitable Rooms (SDA)

Since the publication of the 3rd edition of the BRE Guidelines (BR 209 - 2022), Spatial Daylight Autonomy (SDA) is the recommended metric for assessing daylight access within a proposed development. Spatial Daylight Autonomy replaces Average Daylight Factor (ADF) in this regard, which was the recommended metric under the 2nd edition of the BRE Guidelines (BR 209 - 2011).

Spatial Daylight Autonomy assesses whether a room receives sufficient daylight on a working plane during standard operating hours on an annual basis. A given target value should be achieved across 50% of the working plane for half of the daylight hours.

There are two methods for calculating SDA:

- **Calculation method using illuminance level:** This requires the use of a detailed daylight calculation method where hourly (or sub-hourly) internal daylight illuminance values for a typical year are computed using hourly (or sub-hourly) sky and sun conditions derived from climate data appropriate to the site. This calculation method determines daylight provision directly from simulated illuminance values on the reference plane. The illuminance value of at least half the required area of the space should equal or exceed the target values.
- **Calculation method using daylight factor:** The daylight factor method assumes a constant ratio between internal and external illuminance. The daylight factors in the space shall be calculated by any reliable method that is based on the ISO 15469:2004 standard overcast sky (TYPE 1 or TYPE 16). Daylight factors are to be predicted across grid of points on a plane 0.85m above the floor of the space. The daylight factor of at least half the required area of the space should equal or exceed the target values.

It is the opinion of 3DDB that the calculation method using illuminance level better represents a real-world scenario as it accounts for the quality of daylight based on orientation. As such, the illuminance methodology has been adopted for all SDA assessments in this report using a localised EnergyPlus Weather File (IRL_EM_Casement.AP.039670_TMYx.epw) to apply the relevant climate information.

In terms of housing, *BR 209* provides target SDA values to be received across at least 50% of the working plane for at least half the daylight hours. The target values differ based on the function of the room assessed:

• 200 Lux for kitchens • 150 Lux for living rooms • 100 Lux for bedrooms

Where rooms serve more than one function, the higher SDA target value should been taken. In new developments, some internal spaces (e.g. studio apartments, shared communal areas etc.) can possibly be of a nature that do not have a predefined target value in BR 209. In such instances, 3DDB have applied a target value they deem to be appropriate. For the proposed development, several commercial spaces are located on the ground floor of the apartment block. These spaces were assessed using a target value of 150 lux; however, they have not been included in the calculated compliance rates.

Under I.S. EN 17037 at least 50% of the working plane should receive above 300 lux for at least half the daylight hours, with 95% of the working plane receiving above 100 Lux for all rooms. The target SDA values do not vary depending on the room function under this criteria.

This study has assessed the Spatial Daylight Autonomy (SDA) received in the habitable rooms of the proposed development under the BR 209 criterion. The SDA of the proposed development has been calculated under the I.S. EN 17037 criterion as part of a supplementary assessment.

Defining Rooms

Definition of rooms has been taken directly from the architectural drawings supplied by the project architect.

In accordance with the BRE Guidelines circulation spaces, corridors, bathrooms etc. have not been assessed.

Indication of the assessed space in each room is provided in the floor plans that correspond to the SDA results in the appendix section “Proposed Floor Plans” on page 43.

Working Plane

The calculation of SDA is carried out on a hypothetical working plane which lies 850 mm from the finished floor level in residential units and 700 mm in academic and office spaces.

In the BR 209 study the working plane is offset 300 mm from the room boundaries. Under the I.S. EN 17037 criteria the working plane is offset 500 mm from the room boundaries. The working plane has a grid density of c. 300 mm.

Material Palette

Following consultation with the design team, material values used for SDA calculations are as per the table below:

Table No. 4.5.1 - Material Palette for SDA Calculations

Object	Material	Reflectance	Object	Material	Reflectance / Transmittance
Exterior walls	Standard Brick	0.3	Interior Walls	Pastel paint	0.70
	Light Brick	0.4	Interior Ceiling	White paint	0.8
	Dark Brick	0.15	Interior Floor	Light timber	0.4
	Render	0.6	Miscellaneous	Miscellaneous	0.5
	Concrete	0.4	Glass	Double glazing	0.68
Ground cover	Paving	0.4		Maintenance factor	0.91
	Tarmac	0.2		Glass adjusted for maintenance	0.62
	Grass	0.2		Frosted glass	0.5

Project Assessment

The results for the study on SDA can be found in the appendix results section C.2 on page 48.

Analysis of the results can be found in section 5.2.1 on page 22.

The results of the supplementary SDA study under the I.S. EN 17037 criterion can be found in section D.0 on page 64.

4.5.2 Sunlight Exposure in Proposed Habitable Rooms (SE)

Since the publication of the 3rd edition of the BRE Guidelines (BR 209 - 2022), Sunlight Exposure (SE) is the recommended metric for assessing sunlight access within a proposed development. Sunlight Exposure replaces APSH/WPSH in this regard, which was the recommended metric under the 2nd edition of the BRE Guidelines (BR 209 - 2011).

Sunlight exposure (SE) is a measure of sunlight that a given window may expect to receive on a given date between the 1st of February and the 21st of March. The BRE guidelines suggest that March 21st (equinox) is used as the assessment date.

In the presence of trees, SE results have been generated, both with deciduous trees as opaque objects and without the inclusion of deciduous trees, in accordance with the BRE Guidelines. Evergreen trees have been included as opaque objects, where applicable, in both states.

The level of sunlight exposure is categorised as follows:

- 1.5 Hours - Minimum
- 3 Hours - Medium
- 4 Hours - High

The recommendation for dwellings is that at least one habitable room, preferably a main living room, should receive at least the minimum criterion. Should no room within a given unit meet the recommended minimum level of sunlight exposure, it will be stated as non-compliant.

Sunlight exposure is carried out on habitable rooms within a proposed development. The assessment point for windows is 1.2m above the finished floor level, or 0.3m above the sill level (which ever is higher). If a room has multiple windows, the amount of sunlight received by each can be added together provided they occur at different times and sunlight hours are not double counted.

The 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. As such, it is not always possible to achieve full compliance, especially in developments that contain single aspect units.

The sunlight exposure assessment focuses on habitable residential rooms. Unless sunlight access is deemed important for the functionality of a non-residential room in a proposed development, it will not be included in the study, which remains limited to residential rooms. For the proposed development, several commercial spaces are located on the ground floor of the apartment block. These spaces were assessed but have not been included in the calculated compliance rates.

Project Assessment

The results for the study on sunlight exposure can be found in the appendix results section C.3 on page 55, with analysis of the results in section 5.2.2 on page 24.

4.5.3 Sun On Ground in Proposed Outdoor Amenity Areas (SOG)

The BRE Guidelines recommend that for a garden or amenity area to appear adequately sunlit throughout the year, at least half of it should receive at least two hours of sunlight on March 21st.

March 21st, also known as the spring equinox, is chosen as the assessment date as daytime and night-time are of approximately equal duration on this date.

The analytical model for SOG assessment in proposed amenity areas includes evergreen trees, where applicable, as per the BRE Guidelines. Typically deciduous trees will not be included unless there is a particularly dense belt.

A quantitative SOG assessment has been carried out on the areas as indicated by the project architect. The shadow study and false colour plans allow for a qualitative assessment for all other areas.

The portion of each assessed space capable of receiving 2 hours of direct sunlight on March 21st has been calculated individually. These areas can be combined to give the development average where appropriate.

Project Assessment

The levels of sunlighting to proposed amenity areas, as indicated by the architect, have been assessed. However, it should be noted that the numbering of these spaces in the Daylight and Sunlight Assessment Report has been assigned by 3DDB specifically for the purposes of this report. If other consultants are referencing these spaces in their own reports, it is unlikely they will be numbered the same.

The results for the study on sun on ground in the proposed outdoor amenity areas (including a visual representation in the form of 2-hour false colour plans) can be found in the appendix results section C.4 on page 62, with analysis of the results in section 5.2.3 on page 24.

4.5.4 No Sky Line in Proposed Habitable Rooms (NSL)

The no sky line divides the areas of the working plane which can receive direct skylight, from those which cannot. It indicates the distribution of direct daylight within a room.

The BRE Guidelines recommend the No Sky Line study as an appropriate metric for an impact assessment to daylight, but only where room layouts are known.

“The calculation can only be carried out where room layouts are known. Using estimated room layouts is likely to give inaccurate results and is not recommended.“

All advice given for NSL in the BRE Guidelines are in relation to impact assessments. NSL is not mentioned in the BRE section regarding daylight in new developments. Regardless, a NSL assessment was carried out on the proposed development as a supplementary study as it is requested in the DCC development plan 2022-2028. Although the proposed development is not located within Dublin City, the NSL study has been included to provide consistency across 3DDB daylight and sunlight assessments.

As the BRE Guidelines does not give advice on target NSL values for proposed rooms, no compliance rate has been stated. However a no skyline of 80% could be considered an appropriate figure given that the BRE Guidelines state that supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the no sky line.

The results of the supplementary NSL study can be found in section D.0 on page 64.

5.0 Analysis of Results

5.1 Analysis of Impact Assessment Results

5.1.1 Effect on Vertical Sky Component (VSC)

The effect on VSC has been assessed for 39 no. windows/rooms across the surrounding properties along Main Street and Downshire Park.

Using the rationale explained in section 3.2 on page 11, the effect to VSC on 36 no. of these windows would be considered *'negligible'*, 3 no. '*minor adverse*'.

This shows that c.92% of the assessed windows would experience a 'negligible' level of effect.

Figure 5.1: The Avenue, Newtown Square, minor adverse windows highlighted in yellow.

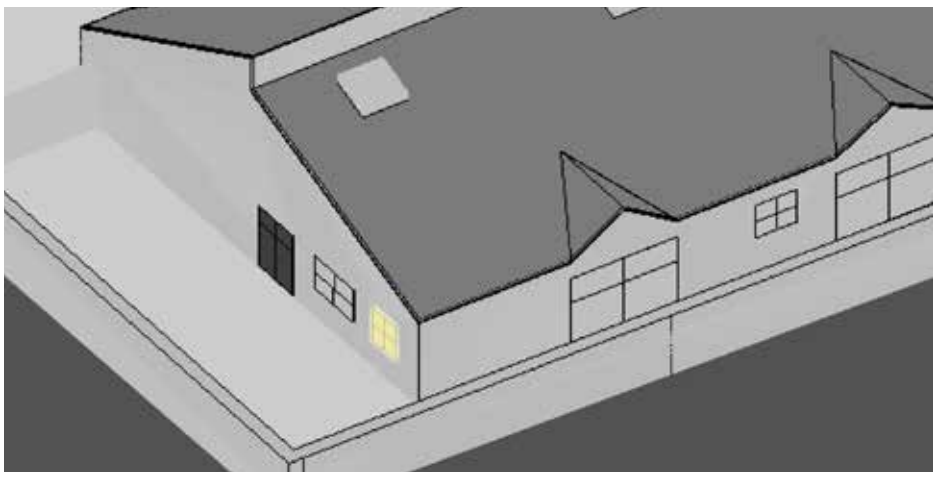

Figure 5.2: Cocoon Childcare Facility, minor adverse window highlighted in yellow.

To further understand the results, it's important to note that 2 no. of the affected windows at The Avenue, Newtown Square are located under existing balconies (see Figure 5.1). A "No Balcony" study, in which the geometry of the existing balconies was removed from the calculation, was conducted. The results of this study are compliant with the BRE Guidelines. The VSC "No Balcony" results for the affected windows are as follows:

- Window TA2a: Baseline 39.54% vs Proposed 33.70%
- Window TA2b: Baseline 39.53% vs Proposed 33.08%

The "No Balcony" study demonstrated that the existing balconies are causing an exaggerated effect on the VSC (Vertical Sky Component) study. This aligns with the BRE Guidelines, which state: "Because the balcony cuts out light from the top part of the sky, even a modest obstruction opposite may result in a large relative impact on the VSC." This analysis demonstrates that the balconies, rather than the new construction, are primarily responsible for the reduced VSC values observed in the assessment.

The other minor adverse instance is located in the Cocoon Childcare Facility (see Figure 5.2). At the time this report was published, it was not possible to locate plans to confirm what type of space this window serves. However, it is reasonable to assume, based on the size and location of this window, that it either serves the same space as the adjacent window, which would allow the results to be averaged, or serves a bathroom, which would classify it as a non-habitable room.

Assuming that this window is serving a non habitable space, or serving the same room as the window adjacent to it, this level of effect should not be a cause for concern.

The results of the study on VSC can be found in section A.1 on page 28.

5.1.2 Effect on Sun On Ground in Existing Gardens

This study has assessed the effect the proposed development would have on the level of sunlight on March 21st in the rear gardens of the neighbouring properties that are located along Main Street and Oak Drive.

In total 13 no. spaces have been assessed. Using the rationale explained in section 3.2 on page 11, 12 no. of which would experience a *'negligible'* level of effect, with a further one recording a *'n.a.'* (not applicable). In instances where a baseline value is particularly low, levels of effects can appear exaggerated. To mitigate such occurrences, if the baseline value is below 1%, 3DDB have categorised the level of effect as *'n.a.'* (not applicable).

The results of the Sun On Ground study (SOG) on the neighbouring gardens can be found In section A.2 on page 32.

A visual representation of these readings can be seen in the 2 hour false colour plans in section A.3 and in the hourly shadow diagrams for March 21st in section B.1 on page 34.

5.2 Analysis of Scheme Performance Results

5.2.1 Spatial Daylight Autonomy (SDA)

This study has assessed the Spatial Daylight Autonomy (SDA) received in all habitable rooms within the residential portion of the duplexes and apartment block of the proposed development. This has ensured that a clear understanding has been obtained regarding the daylight performance of the proposed development.

The study comprises of 72 no. units, which makes up approximately 228 no. habitable rooms.

Under the criteria as set out in the BR 209, the SDA value in 222 & 223 no. habitable rooms meets or exceeds the appropriate target values in the summer & winter time calculations respectively. This gives a circa compliance rate of 97% with summer trees & 98% with the trees represented in the winter state. For a scheme of this size, this could be considered an favourable level of compliance.

The additional SDA assessment that does not include trees has shown a compliance rate of 99%. This indicates that the architectural design performs favourably specially if the large scale of the development is taken into account.

I.S. EN 17037 sets out more onerous recommendations for SDA. As such, the number of habitable rooms achieving compliance under this standard is 205 with summer trees & 210 with the trees represented in the winter state. This gives a reduced circa compliance rate of 90% & 92% in the summer & winter time calculations respectively. The additional SDA assessment, under this standard, that does not include trees has shown a compliance rate of c. 94%.

In cases where rooms comply with the criteria of BR 209 but do not meet the criteria of I.S. EN 17037, it is the recommendation of 3D Design Bureau that these rooms will appear adequately daylit. This recommendation is based on the fact that BR 209 provides room-specific criteria, unlike I.S. EN 17037. BR 209 considers the varying daylight requirements for different room types, which I.S. EN 17037 does not account for.

With regards to internal daylighting, Section 6.7 of the Sustainable Urban Housing: Design Standards for New Apartments July 2023, 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 a design constraints [sic] 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."

Based on the above statements, compensatory design solutions have been provided by the project architect where rooms do not achieve the daylight provision targets as set out in the BRE Guidelines.

"Unit 19 – GF 1 bed apartment

- *The apartment floor area is 57.1sqm, which exceeds the target gross floor area for a one bedroom, 2-person apartment, with a minimum 45.0sqm required in the 2023 Apartment Guidelines*
- *The unit is oversized by 26.9%*
- *This unit directly overlooks a generous public open space in the form of an urban plaza*
- *The open plan Kitchen/Living/Dining area is south-east facing*
- *The unit is dual-aspect and the open plan Kitchen/Living/Dining area accesses directly onto a 12.0sqm terrace space via large patio doors. The area of the terrace significantly exceeds the minimum required area of 5.0sqm*
- *The 2023 apartment guidelines suggest a 2.4m floor to ceiling height it generally considered good building practice. In line with the guidance, the floor to ceiling height for GF apartment units has been increased to 2.7m in order to provide a more generous sense of living space*
- *Ground floor own-door access apartment units have been provided with terrace areas to the front and rear, each of these spaces is further protected by a generous planted buffer zone of 1m depth. This will provide increased privacy for the unit and a higher level of amenity*

Unit 21 – GF 1 bed apartment

- *The apartment floor area is 57.1sqm, which exceeds the target gross floor area for a one bedroom, 2-person apartment, with a minimum 45.0sqm required in the 2023 Apartment Guidelines*
- *The unit is oversized by 26.9%*
- *This unit directly overlooks a generous public open space in the form of an urban plaza*
- *The open plan Kitchen/Living/Dining area is south-east facing*
- *The unit is dual-aspect and the open plan Kitchen/Living/Dining area accesses directly onto a 12.0sqm terrace space via large patio doors. The area of the terrace significantly exceeds the minimum required area of 5.0sqm*
- *The 2023 apartment guidelines suggest a 2.4m floor to ceiling height it generally considered good building practice. In line with the guidance, the floor to ceiling height for GF apartment units has been increased to 2.7m in order to provide a more generous sense of living space*
- *Ground floor own-door access apartment units have been provided with terrace areas to the front and rear, each of these spaces is further protected by a generous planted buffer zone of 1m depth. This will provide increased privacy for the unit and a higher level of amenity*

Unit 27 – GF 1 bed apartment

- *The apartment floor area is 57.1sqm, which exceeds the target gross floor area for a one bedroom, 2-person apartment, with a minimum 45.0sqm required in the 2023 Apartment Guidelines*
- *The unit is oversized by 26.9%*
- *This unit directly overlooks a generous public open space in the form of an urban plaza*
- *The unit is dual-aspect and the open plan Kitchen/Living/Dining area accesses directly onto a 12.0sqm terrace space via large patio doors. The area of the terrace significantly exceeds the minimum required area of 5.0sqm*
- *The 2023 apartment guidelines suggest a 2.4m floor to ceiling height it generally considered good building practice. In line with the guidance, the floor to ceiling height for GF apartment units has been increased to 2.7m in order to provide a more generous sense of living space*
- *Ground floor own-door access apartment units have been provided with terrace areas to the front and rear, each of these spaces is further protected by a generous planted buffer zone of 1m depth. This will provide increased privacy for the unit and a higher level of amenity*

Unit 29 – GF 1 bed apartment

- *The apartment floor area is 57.1sqm, which exceeds the target gross floor area for a one bedroom, 2-person apartment, with a minimum 45.0sqm required in the 2023 Apartment Guidelines*
- *The unit is oversized by 26.9%*
- *This unit directly overlooks a generous public open space in the form of an urban plaza*
- *The unit is dual-aspect and the open plan Kitchen/Living/Dining area accesses directly onto a 12.0sqm terrace space via large patio doors. The area of the terrace significantly exceeds the minimum required area of 5.0sqm*
- *The 2023 apartment guidelines suggest a 2.4m floor to ceiling height it generally considered good building practice. In line with the guidance, the floor to ceiling height for GF apartment units has been increased to 2.7m in order to provide a more generous sense of living space*
- *Ground floor own-door access apartment units have been provided with terrace areas to the front and rear, each of these spaces is further protected by a generous planted buffer zone of 1m depth. This will provide increased privacy for the unit and a higher level of amenity*

Unit 43 – GF 1 bed apartment

- *The apartment floor area is 57.1sqm, which exceeds the target gross floor area for a one bedroom, 2-person apartment, with a minimum 45.0sqm required in the 2023 Apartment Guidelines*
- *The unit is oversized by 26.9%*
- *The unit is dual-aspect and the open plan Kitchen/Living/Dining area accesses directly onto a 12.0sqm terrace space via large patio doors. The area of the terrace significantly exceeds the minimum required area of 5.0sqm*
- *The open plan Kitchen/Living/Dining area is south-east facing and overlooks a public tree lined walkway/plaza space*
- *The 2023 apartment guidelines suggest a 2.4m floor to ceiling height it generally considered good building practice. In line with the guidance, the floor to ceiling height for GF apartment units has been increased to 2.7m in order to provide a more generous sense of living space*
- *Ground floor own-door access apartment units have been provided with terrace areas to the front and rear, each of these spaces is further protected by a generous planted buffer zone of 1m depth. This will provide increased privacy for the unit and a higher level of amenity*

Unit 45 – GF 1 bed apartment

- *The apartment floor area is 57.1sqm, which exceeds the target gross floor area for a one bedroom, 2-person apartment, with a minimum 45.0sqm required in the 2023 Apartment Guidelines*
- *The unit is oversized by 26.9%*
- *The open plan Kitchen/Living/Dining area is south-east facing and overlooks a public tree lined walkway/plaza space*
- *The unit is dual-aspect and the open plan Kitchen/Living/Dining area accesses directly onto a 12.0sqm terrace space via large patio doors. The area of the terrace significantly exceeds the minimum required area of 5.0sqm*
- *The 2023 apartment guidelines suggest a 2.4m floor to ceiling height it generally considered good building practice. In line with the guidance, the floor to ceiling height for GF apartment units has been increased to 2.7m in order to provide a more generous sense of living space*
- *Ground floor own-door access apartment units have been provided with terrace areas to the front and rear, each of these spaces is further protected by a generous planted buffer zone of 1m depth. This will provide increased privacy for the unit and a higher level of amenity. "*

The results for the study on SDA can be seen in section C.2 on page 48.

5.2.2 Sunlight Exposure (SE)

A sunlight exposure assessment has been carried out on all habitable rooms within the residential portion of the duplexes and apartment block of the proposed development. For these assessments, trees have been included in the analytical model as opaque objects. The assessments have been carried out in two states:

- All trees included in assessment model.
- Only evergreen trees included in the assessment model.

This approach is in accordance with the BRE Guidelines.

In total, 72 no. units have been assessed. Using the rationale explained in section 3.3 on page 12, the level of sunlight exposure for the assessed units is as follows:

In the assessment carried out with all trees considered as opaque objects, 52 no. units are considered *high*, 12 no. *medium*, 5 no. have reached the *minimum* recommendation with 3 units below the *minimum* recommendation.

When deciduous trees are not factored into the assessment model, 56 no. units are considered *high*, 11 no. *medium*, 3 no. have reached the *minimum* recommendation with 2 units below the *minimum* recommendation.

The SE assessment has shown that, depending on effect of trees, the circa compliance rate for the assessed units, in accordance with the BRE Guidelines, is between 96% & 97%.

Note: For a unit to be compliant under BR 209, only one habitable room within the unit needs to meet the guideline values.

Whilst the criterion applies to rooms of all orientations, it should be noted that if a room faces significantly north of due east or west it is unlikely to be met. As such, it is not always possible to achieve full compliance, especially in developments that contain single aspect units.

No recommendation is made regarding the performance of a development as a whole for SE performance within the BRE Guidelines. However, it is the opinion of 3DDB that the proposed development performs favourably in this regard.

The results for the study on SE in the habitable rooms of the proposed units can be seen in section C.3 on page 55.

5.2.3 Sun On Ground in Proposed Outdoor Amenity Areas

This study has assessed the level of sunlight on March 21st within the proposed amenity areas.

In total 8 no. spaces have been assessed, all of which would meet the criteria as set out in the BRE Guidelines.

The results for the study on sunlighting in the proposed outdoor amenity spaces can be found in section C.4 on page 62.

A visual representation of these readings can be seen in the false colour plan in section C.4 and in the hourly shadow diagrams for March 21st in section B.1 on page 34 of the appendix section of this report.

6.0 Conclusion

3D Design Bureau (3DDB) were commissioned to carry out a daylight assessment, sunlight assessment and shadow study for proposed large-scale residential development in Blessington, Co. Wicklow.

The impact assessment for this report has quantified the effect the proposed development would have on the level of daylight and sunlight received by neighbouring properties/environment that are in close proximity to the proposed development.

As explained in the analysis of results, although 3 no. windows registered a '*minor adverse*' level of effect, in the VSC (Vertical Sky Component) study, the "No Balcony" study, on two of these windows, demonstrated that existing balconies were causing an exaggerated impact effect, thereby exacerbating any potential impact generated by the proposed development. As for the remaining '*minor adverse*' result, it is reasonable to assume that the affected window may serve a non-habitable room, rendering the presented results not of concern.

Regarding the SOG (Sunlight on Ground) assessment, all assessed gardens are compliant except for one that is not applicable due to its low baseline level.

It is the opinion of 3DDB that the impact assessment results can be considered acceptable.

The scheme performance assessment for this report has quantified the level of daylight and sunlight within the duplex units and residential units of the apartment block.

The high compliance rates achieved for Spatial Daylight Autonomy (SDA) in all three states demonstrate the design team's careful consideration of daylight provision within the assessed units. Although some reduction was registered in the summer and winter tree states, these form an integral part of the proposed development with regards to environmental and planning grounds, as well as biodiversity.

The same design diligence appears to have been applied to Sunlight Exposure (SE). The scheme achieves approximately 97% compliance without deciduous trees included in the calculation and approximately 96% compliance with all trees included in the calculation, so orientation of habitable rooms within the assessed units has been considered to ensure exposure to sunlight.

Furthermore, the Sun On Ground (SOG) analysis of the proposed scheme has quantified sunlight levels within all eight amenity spaces, all of which registered compliance.

In conclusion, it is the opinion of 3DDB that although there are some localized levels of impact on neighbouring properties, all of which have been explained and rationalized, the scheme has performed very well from both an impact and scheme performance point of view..

Appendix - Results

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Appendix Contents

Assessment criteria and detailed analysis of results can be found in the accompanying report.

A.0 Impact Assessment Results

A.1 Effect on Vertical Sky Component (VSC)

Below is an example of the table used to describe the effect on VSC.

Table Example. A.1 - VSC Impact Assessment						
Window Number	Baseline VSC Value	Proposed VSC Value	Ratio of Proposed VSC to Baseline VSC	Recommended Minimum VSC	Level of Compliance with BRE Guidelines	Effect of Proposed Development
A	**B**	**C**	**D**	**E**	**F**	**G**

A: Window Number

The number in this column will identify the assessed window. All windows are represented visually in the corresponding figure.

B: Baseline VSC Value

The *Baseline VSC Value* represents the VSC value of the assessed window which is calculated in the existing baseline model state (as explained in the "Building the Model States" on page 14).

C: Proposed VSC Value

The *Proposed VSC Value* represents the VSC value of the assessed window which is calculated in the proposed model state (as explained in the "Building the Model States" on page 14).

D: Ratio of Proposed VSC to Baseline VSC

This column expresses the ratio of change between the baseline VSC value and the proposed VSC value. The BRE Guidelines recommend that if the proposed value is less than 0.8 times the baseline value, then the reduction in daylight is more likely to be perceptible.

E: Recommended minimum VSC

The *BRE Target Value* for each window has been set according to the BRE Guidelines. The Guidelines state that a proposed development could possibly have a noticeable effect on the daylight received by an existing window, if the VSC value **both** drops below the guideline value of 27% **and** the VSC value is less than 0.8 times the baseline value.

Therefore, to determine the *recommended minimum Value*, 80% of the *Baseline VSC value* has been calculated. If this value is above the 27% threshold, a target value of 27% will be applied. If 80% of the baseline value is below 27%, then 80% of the baseline value is the appropriate target value.

F: Level of Compliance with the BRE Guidelines

This column states the compliance of the *Proposed VSC Value* with the *recommended minimum VSC* as per the BRE Guidelines. In essence, it shows whether or not the assessed window would experience a perceptible level of impact. If the window complies with the BRE Guidelines this cell will state "*BRE Compliant*". If the window does not meet the criteria as set out in the BRE Guidelines, a percentage of compliance with the *recommended minimum* will be stated.

G: Effect of Proposed Development

The levels of effect in this column describe the effect an assessed window will experience, based on its compliance with the *BRE Target Value*. A full list of definitions and a numerical rationale for each can be found in the section *"Definition of Effects"* on page 11.

It should be noted that the figures displayed in the table of results have been rounded off. A manual calculation of these figures may yield a negligible difference and should not be considered an error.

A.1.1 Cocoon Childcare Facility

Table No. A.1.1 - VSC Results: Cocoon Childcare Facility						
Window Number	Baseline VSC Value	Proposed VSC Value	Ratio of Proposed VSC to Baseline VSC	Recommended minimum VSC*	Level of Compliance with BRE Guidelines	Effect of Proposed Development**
NTCa	36.31%	27.13%	0.75	27.00%	BRE Compliant	Negligible
NTCb	35.99%	25.00%	0.69	27.00%	93%	Minor Adverse
NTCc	28.20%	26.80%	0.95	22.56%	BRE Compliant	Negligible
NTCd	35.43%	29.07%	0.82	27.00%	BRE Compliant	Negligible
NTCe	28.89%	26.76%	0.93	23.11%	BRE Compliant	Negligible
NTCf	35.66%	28.04%	0.79	27.00%	BRE Compliant	Negligible
NTCg	29.45%	26.73%	0.91	23.56%	BRE Compliant	Negligible
NTCh	36.06%	28.10%	0.78	27.00%	BRE Compliant	Negligible

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the VSC of an existing window, the value needs to both drop below the stated target value of 27% **and** be less than 0.8 times the baseline value.

** For the interpretation of level of effects please refer to"3.2 Definition of Effects" on page 11.

If it can be determined or reasonably assumed that multiple windows are servicing the same room, each window has been assessed and a weighted average has been calculated to determine the level of effect of the room. In such instances, the 'effect of proposed development' column will have the symbol "-" for the individual windows, with the level effect stated in the row associated with the corresponding room.

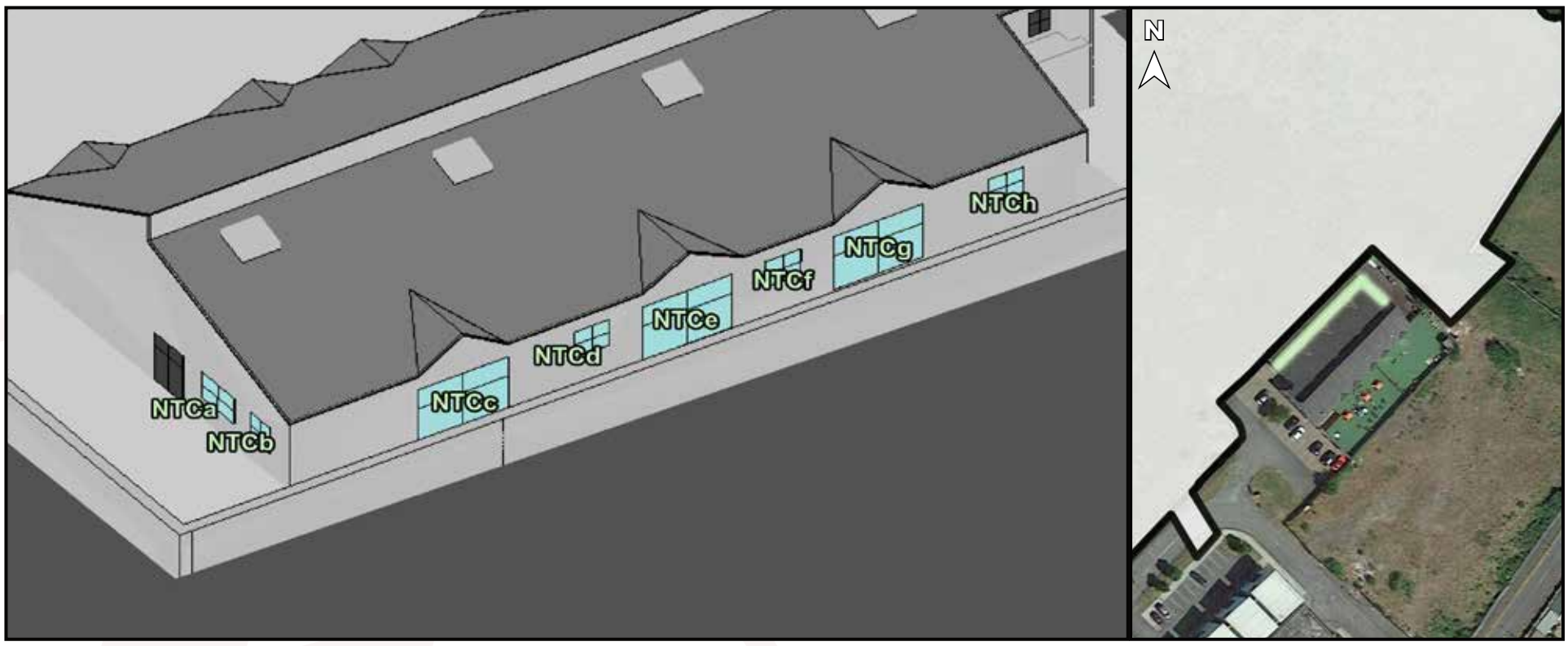


Figure A.1: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

A.1.2 The Avenue, Newtown Square, Main Street

Table No. A.1.2 - VSC Results: The Avenue, Newtown Square, Main Street						
Window Number	Baseline VSC Value	Proposed VSC Value	Ratio of Proposed VSC to Baseline VSC	Recommended minimum VSC*	Level of Compliance with BRE Guidelines	Effect of Proposed Development**
TA1a	38.07%	30.78%	0.81	27.00%	BRE Compliant	Negligible
TA1b#1	38.05%	29.10%	0.76	27.00%	BRE Compliant	-
TA1b#2	36.91%	29.00%	0.79	27.00%	BRE Compliant	-
TA1b#	37.93%	29.09%	0.77	27.00%	BRE Compliant	Negligible
TA1c	37.97%	29.06%	0.77	27.00%	BRE Compliant	Negligible
TA1d#1	38.14%	28.58%	0.75	27.00%	BRE Compliant	-
TA1d#2	37.11%	28.89%	0.78	27.00%	BRE Compliant	-
TA1d#	38.03%	28.61%	0.75	27.00%	BRE Compliant	Negligible
TA1e	38.75%	30.05%	0.78	27.00%	BRE Compliant	Negligible
TA1f	39.13%	31.48%	0.80	27.00%	BRE Compliant	Negligible
TA2a	25.28%	19.45%	0.77	20.22%	96%	Minor Adverse
TA2b	25.35%	18.90%	0.75	20.28%	93%	Minor Adverse
TA2c	38.08%	31.83%	0.84	27.00%	BRE Compliant	Negligible
TA2d	39.36%	34.01%	0.86	27.00%	BRE Compliant	Negligible
TA3a	39.61%	36.83%	0.93	27.00%	BRE Compliant	Negligible
TA3b#1	39.61%	35.93%	0.91	27.00%	BRE Compliant	-
TA3b#2	39.61%	37.06%	0.94	27.00%	BRE Compliant	-
TA3b#	39.61%	36.05%	0.91	27.00%	BRE Compliant	Negligible
TA3c	39.61%	36.04%	0.91	27.00%	BRE Compliant	Negligible
TA3d#1	39.61%	35.60%	0.90	27.00%	BRE Compliant	-
TA3d#2	39.61%	36.94%	0.93	27.00%	BRE Compliant	-
TA3d#	39.61%	35.74%	0.90	27.00%	BRE Compliant	Negligible
TA3e	39.61%	35.95%	0.91	27.00%	BRE Compliant	Negligible
TA3f	39.61%	36.64%	0.93	27.00%	BRE Compliant	Negligible

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the VSC of an existing window, the value needs to both drop below the stated target value of 27% **and** be less than 0.8 times the baseline value.

** For the interpretation of level of effects please refer to"3.2 Definition of Effects" on page 11.

If it can be determined or reasonably assumed that multiple windows are servicing the same room, each window has been assessed and a weighted average has been calculated to determine the level of effect of the room. In such instances, the 'effect of proposed development' column will have the symbol "-" for the individual windows, with the level effect stated in the row associated with the corresponding room.

Figure A.2: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

A.1.3 The Close, Downshire Park

Table No. A.1.3 - VSC Results: The Close, Downshire Park						
Window Number	Baseline VSC Value	Proposed VSC Value	Ratio of Proposed VSC to Baseline VSC	Recommended minimum VSC*	Level of Compliance with BRE Guidelines	Effect of Proposed Development**
TC0a	36.46%	29.29%	0.80	27.00%	BRE Compliant	Negligible
TC0b	36.66%	29.42%	0.80	27.00%	BRE Compliant	Negligible
TC0c	36.84%	29.64%	0.80	27.00%	BRE Compliant	Negligible
TC0d	36.99%	29.92%	0.81	27.00%	BRE Compliant	Negligible
TC0e	37.13%	30.32%	0.82	27.00%	BRE Compliant	Negligible
TC0f	37.21%	30.67%	0.82	27.00%	BRE Compliant	Negligible
TC1a	37.04%	30.95%	0.84	27.00%	BRE Compliant	Negligible
TC1b	37.22%	31.08%	0.84	27.00%	BRE Compliant	Negligible
TC1c	37.38%	31.28%	0.84	27.00%	BRE Compliant	Negligible
TC1d	37.50%	31.53%	0.84	27.00%	BRE Compliant	Negligible
TC1e	37.62%	31.89%	0.85	27.00%	BRE Compliant	Negligible
TC1f	37.69%	32.22%	0.85	27.00%	BRE Compliant	Negligible
TC2a	37.54%	32.34%	0.86	27.00%	BRE Compliant	Negligible
TC2b	37.88%	32.80%	0.87	27.00%	BRE Compliant	Negligible
TC2c	38.12%	33.54%	0.88	27.00%	BRE Compliant	Negligible

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the VSC of an existing window, the value needs to both drop below the stated target value of 27% **and** be less than 0.8 times the baseline value.

** For the interpretation of level of effects please refer to"3.2 Definition of Effects" on page 11.

If it can be determined or reasonably assumed that multiple windows are servicing the same room, each window has been assessed and a weighted average has been calculated to determine the level of effect of the room. In such instances, the 'effect of proposed development' column will have the symbol "-" for the individual windows, with the level effect stated in the row associated with the corresponding room.

Figure A.3: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

A.2 Effect on Sun On Ground (SOG) in Existing Gardens

Below is an example of the table used to describe the effect on SOG in existing gardens and amenity spaces.

Table Example. A.2 - SOG Impact Assessment							
Assigned Area Number	Address	% of Area to Receive Above 2 Hours Sunlight on March 21st (Target >50%)				Level of Compliance with BRE Guidelines	Effect of Proposed Development
		Baseline	Proposed	Ratio of Proposed to Baseline	Recommended Minimum as per BRE Guidelines		
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**

A: Assigned Area Number

This column indicates the number that 3DDB have assigned to the assessed areas, which is included for the sole purpose of aiding in the identification of the corresponding space shown in the corresponding figure.

B: Address

This column contains the address of the assessed garden/amenity space. The locations of the gardens and amenity spaces assessed are visually represented in the corresponding figure.

C: Baseline

Baseline represents the percentage of the assessed space's area that can receive more than 2 hours of sunlight on March 21st, calculated in the existing baseline model state (as explained in the "Building the Model States" on page 14).

D: Proposed

Proposed represents the percentage of the assessed space's area that can receive more than 2 hours of sunlight on March 21st, calculated in the proposed model state (as explained in the "Building the Model States" on page 14).

E: Ratio of Proposed to Baseline

This column expresses the ratio of change between the baseline and the proposed values. The BRE Guidelines recommend that if the proposed value is less than 0.8 times the baseline value, then the reduction to sunlight is more likely to be perceptible.

F: Recommended Minimum as per the BRE Guidelines

The BRE Guidelines indicate that a proposed development could possibly have a noticeable effect on the sunlight received by an existing garden and/or amenity area, if half the area of the space does not receive at least two hours of sunlight during the spring equinox; **and** the area that receives more than two hours of sun on the spring equinox is less than 0.8 times its former value.

To determine the *recommended minimum*, 80% of the *Baseline* value has been calculated. If this value is above the 50% threshold, a target value of 50% will be applied. If 80% of the baseline value is below 50%, then 80% of the baseline value is the appropriate target value.

G: Level of BRE Compliance

This column states the compliance of the *Proposed* sunlight value with the *recommended minimum as per the BRE Guidelines*. In essence, it shows whether or not the assessed garden or amenity area would experience a perceptible level of impact. If the garden or amenity area complies with the BRE Guidelines this cell will state "*BRE Compliant*". If the garden or amenity area does not meet the criteria as set out in the BRE Guidelines, a percentage of compliance with the *recommended minimum* will be stated.

H: Effect of Proposed Development

The levels of effect in this column describe the effect an assessed area will experience, based on its compliance with the *BRE Target Value*. A full list of definitions and a numerical rationale for each can be found in the section *"Definition of Effects"* on page 11.

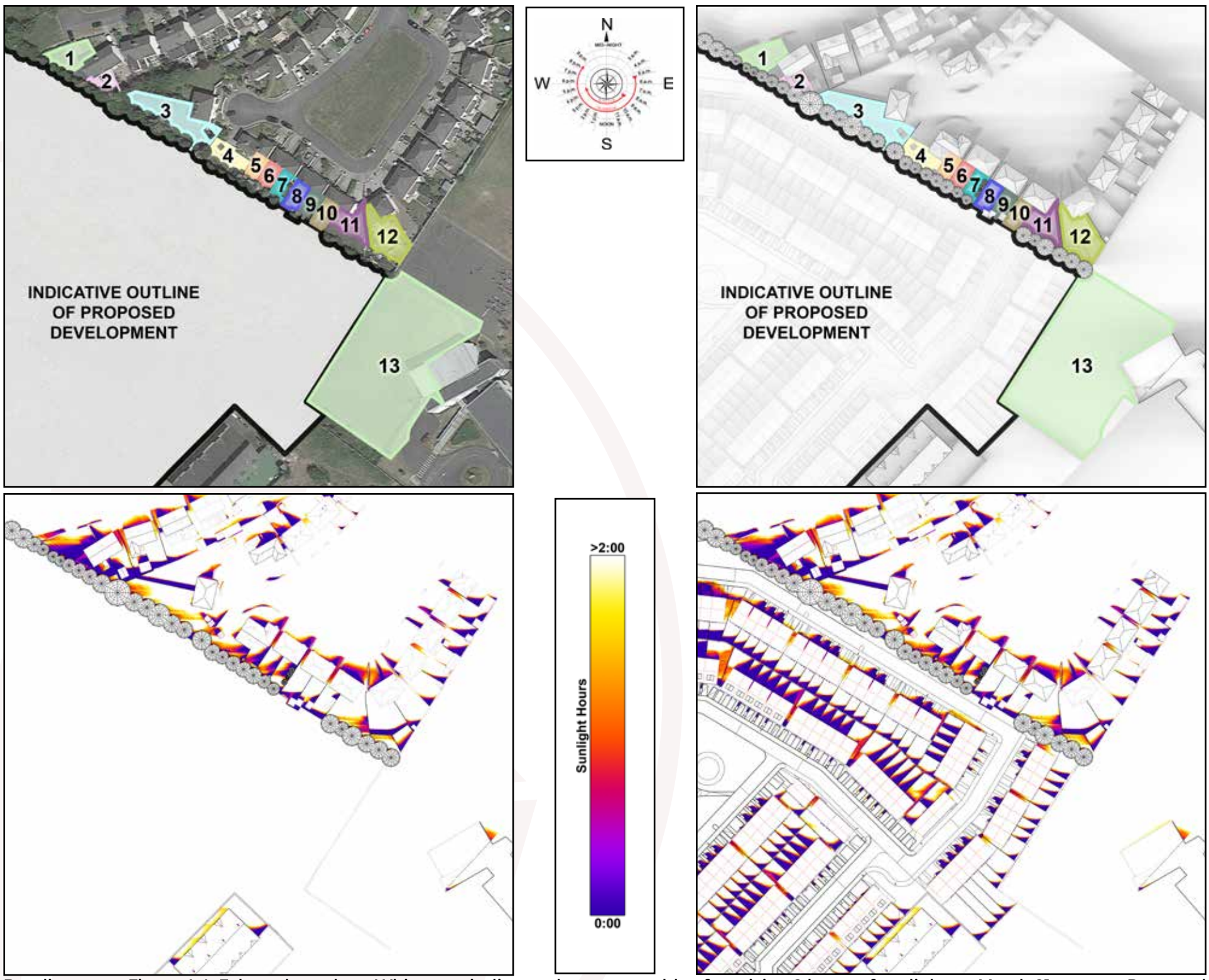
It should be noted that the figures displayed in the table of results have been rounded off. A manual calculation of these figures may yield a negligible difference and should not be considered an error.

A.2.1 Oak Drive and Main Street

Table No. A.2.1 - SOG Results: Oak Drive and Main Street							
Assigned Area Number	Address	% of Area to Receive Above 2 Hours Sunlight on March 21st (Target >50%)				Level of Compliance with BRE Guidelines*	Effect of Proposed Development**
		Baseline	Proposed	Ratio of Proposed to Baseline	Recommended minimum		
1	1 Oak Drive Rear Garden	18.49%	18.03%	0.98	14.79%	BRE Compliant	Negligible
2	1 Oak Drive Front Garden	0.52%	0.52%	1.00	0.42%	BRE Compliant	n.a.
3	32 Oak Drive	63.88%	63.96%	1.00	50.00%	BRE Compliant	Negligible
4	33 Oak Drive Rear Garden	30.23%	30.83%	1.02	24.18%	BRE Compliant	Negligible
5	34 Oak Drive Rear Garden	35.05%	35.12%	1.00	28.04%	BRE Compliant	Negligible
6	35 Oak Drive Rear Garden	39.75%	39.72%	1.00	31.80%	BRE Compliant	Negligible
7	36 Oak Drive Rear Garden	41.29%	41.67%	1.01	33.03%	BRE Compliant	Negligible
8	37 Oak Drive Rear Garden	77.93%	77.76%	1.00	50.00%	BRE Compliant	Negligible
9	38 Oak Drive Rear Garden	71.32%	71.87%	1.01	50.00%	BRE Compliant	Negligible
10	39 Oak Drive Rear Garden	69.80%	69.73%	1.00	50.00%	BRE Compliant	Negligible
11	40 Oak Drive Rear Garden	70.10%	67.02%	0.96	50.00%	BRE Compliant	Negligible
12	41 Oak Drive Rear Garden	73.81%	70.47%	0.95	50.00%	BRE Compliant	Negligible
13	Saint Mary's Senior National School	100.00%	99.79%	1.00	50.00%	BRE Compliant	Negligible

* The BRE guidelines state that in order for a proposed development to have a noticeable effect on the amount of sunlight received in an existing garden or amenity area, the value needs to both drop below the stated target value of 50% **and** be reduced by more than 20% of the existing value.

** For the interpretation of level of effects please refer to "3.2 Definition of Effects" on page 11.



Baseline Figure A.4: False colour plans. White area indicates the area capable of receiving 2 hours of sunlight on March 21st. Proposed

	Baseline	Proposed
March 21st 7:00		
March 21st 8:00		
March 21st 9:00		
March 21st 10:00		

B.0 Shadow Studies B.1 Shadow Study 21 March	Project: Proposed Residential Development in Blessington, Co. Wicklow	Proposed
March 21st Sunrise 6:32 | Sunset 18:32	Applicant: Marshall Yards Development Company Ltd	3D DESIGN BUREAU

	Baseline	Proposed
March 21st 11:00		
March 21st 12:00		
March 21st 13:00		
March 21st 14:00		

	Project: Proposed Residential Development in Blessington, Co. Wicklow	**Proposed**
March 21st Sunrise 6:32 | Sunset 18:32	**Applicant: Marshall Yards Development Company Ltd**	3D DESIGN BUREAU

	Baseline	Proposed
March 21st 15:00		
March 21st 16:00		
March 21st 17:00		
March 21st 18:00		

	Project: Proposed Residential Development in Blessington, Co. Wicklow	**Proposed**
March 21st Sunrise 6:32 | Sunset 18:32	**Applicant: Marshall Yards Development Company Ltd**	3D DESIGN BUREAU

	Baseline	Proposed
June 21st 6:00		
June 21st 7:00		
June 21st 8:00		
June 21st 9:00		

B.2 Shadow Study 21 June	**Project: Proposed Residential Development in Blessington, Co. Wicklow**	**Proposed**
June 21st Sunrise 5:04 | Sunset 21:49	**Applicant: Marshall Yards Development Company Ltd**	3D DESIGN BUREAU

	Baseline	Proposed
June 21st 10:00		
June 21st 11:00		
June 21st 12:00		
June 21st 13:00		

	Project: Proposed Residential Development in Blessington, Co. Wicklow	**Proposed**
June 21st Sunrise 5:04 | Sunset 21:49	**Applicant: Marshall Yards Development Company Ltd**	3D DESIGN BUREAU

	Baseline	Proposed
June 21st 14:00		
June 21st 15:00		
June 21st 16:00		
June 21st 17:00		

	Project: Proposed Residential Development in Blessington, Co. Wicklow	**Proposed**
June 21st Sunrise 5:04 | Sunset 21:49	**Applicant: Marshall Yards Development Company Ltd**	3D DESIGN BUREAU

	Baseline	Proposed
June 21st 18:00		
June 21st 19:00		
June 21st 20:00		
June 21st 21:00		

	Project: Proposed Residential Development in Blessington, Co. Wicklow	**Proposed**
June 21st Sunrise 5:04 | Sunset 21:49	**Applicant: Marshall Yards Development Company Ltd**	3D DESIGN BUREAU

	Baseline	Proposed
December 21st 9:00		
December 21st 10:00		
December 21st 11:00		
December 21st 12:00		

B.3 Shadow Study 21 December	Project: Proposed Residential Development in Blessington, Co. Wicklow	Proposed
December 21st Sunrise 8:45 | Sunset 16:00	Applicant: Marshall Yards Development Company Ltd	3D DESIGN BUREAU

	Baseline	Proposed
December 21st 13:00		
December 21st 14:00		
December 21st 15:00		
December 21st 16:00		

	Project: Proposed Residential Development in Blessington, Co. Wicklow	**Proposed**
December 21st Sunrise 8:45 | Sunset 16:00	**Applicant: Marshall Yards Development Company Ltd**	3D DESIGN BUREAU

C.0 Scheme Performance

C.1 Proposed Floor Plans

C.1.1 Proposed Apartment Block Floor Plans

Figure C.1: Apartment Block - Site Location

Figure C.2: Apartment Block - Ground Floor

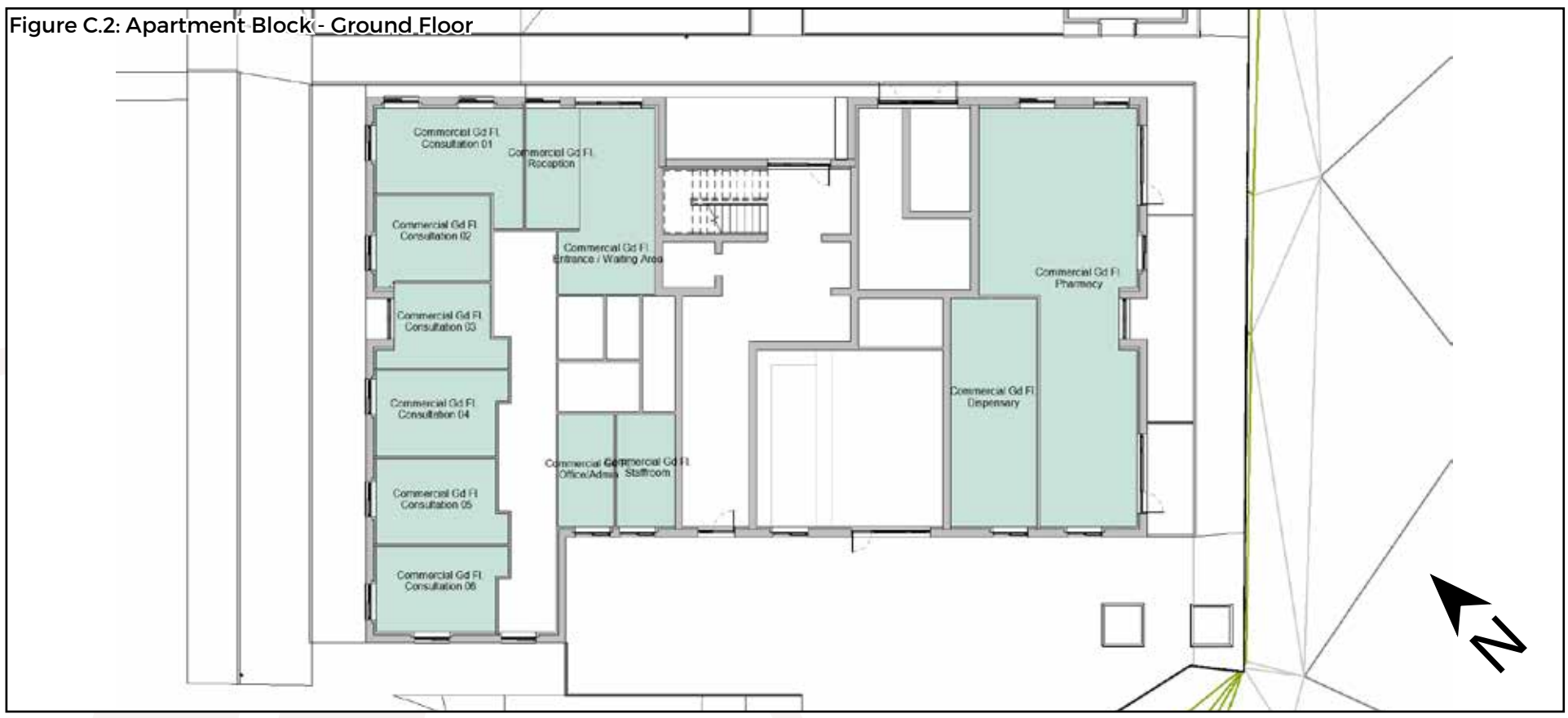


Figure C.3: Apartment Block - 1st Floor

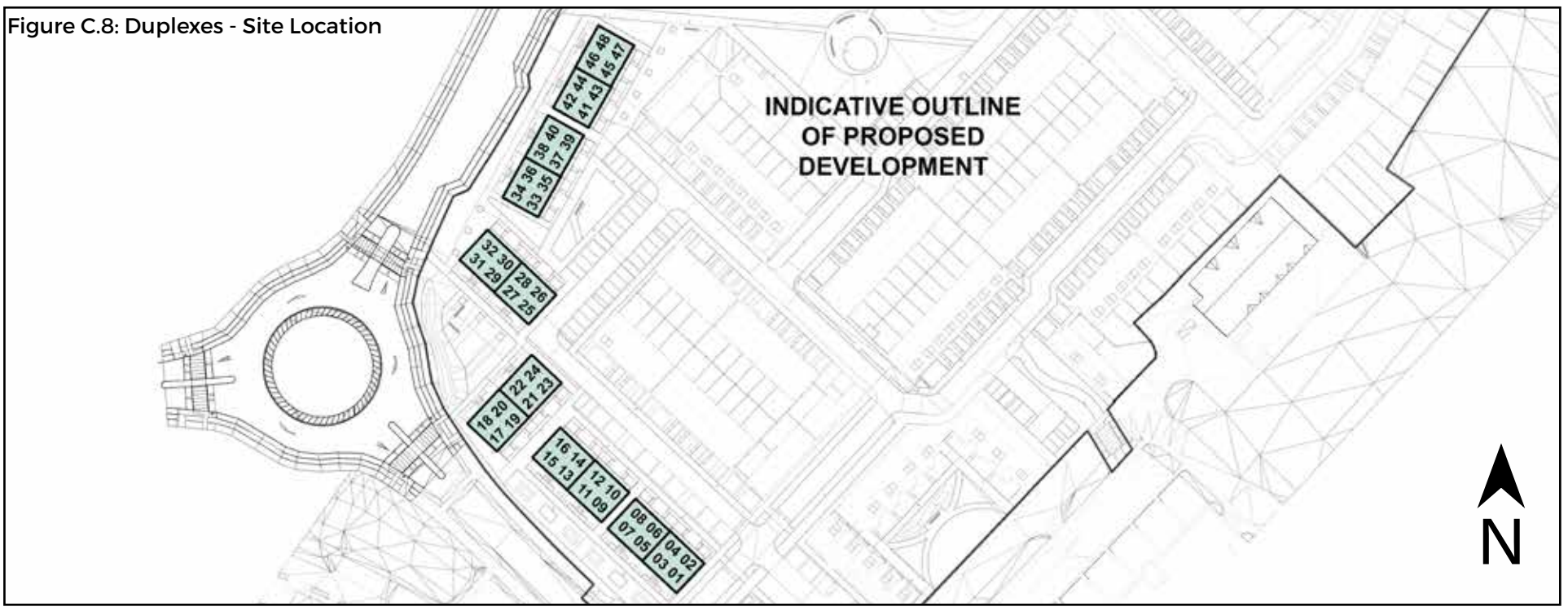
Figure C.4: Block XYZ - Level XYZ

Figure C.5: Block XYZ - Level XYZ

Figure C.6: Block XYZ - Level XYZ

C.1.2 Proposed Duplexes Floor Plans

Figure C.8: Duplexes - Site Location



Note: Duplexes numbers and duplexes types may vary. Typical plans below.

Figure C.7: Duplexes 01 and 03 - Ground Floor

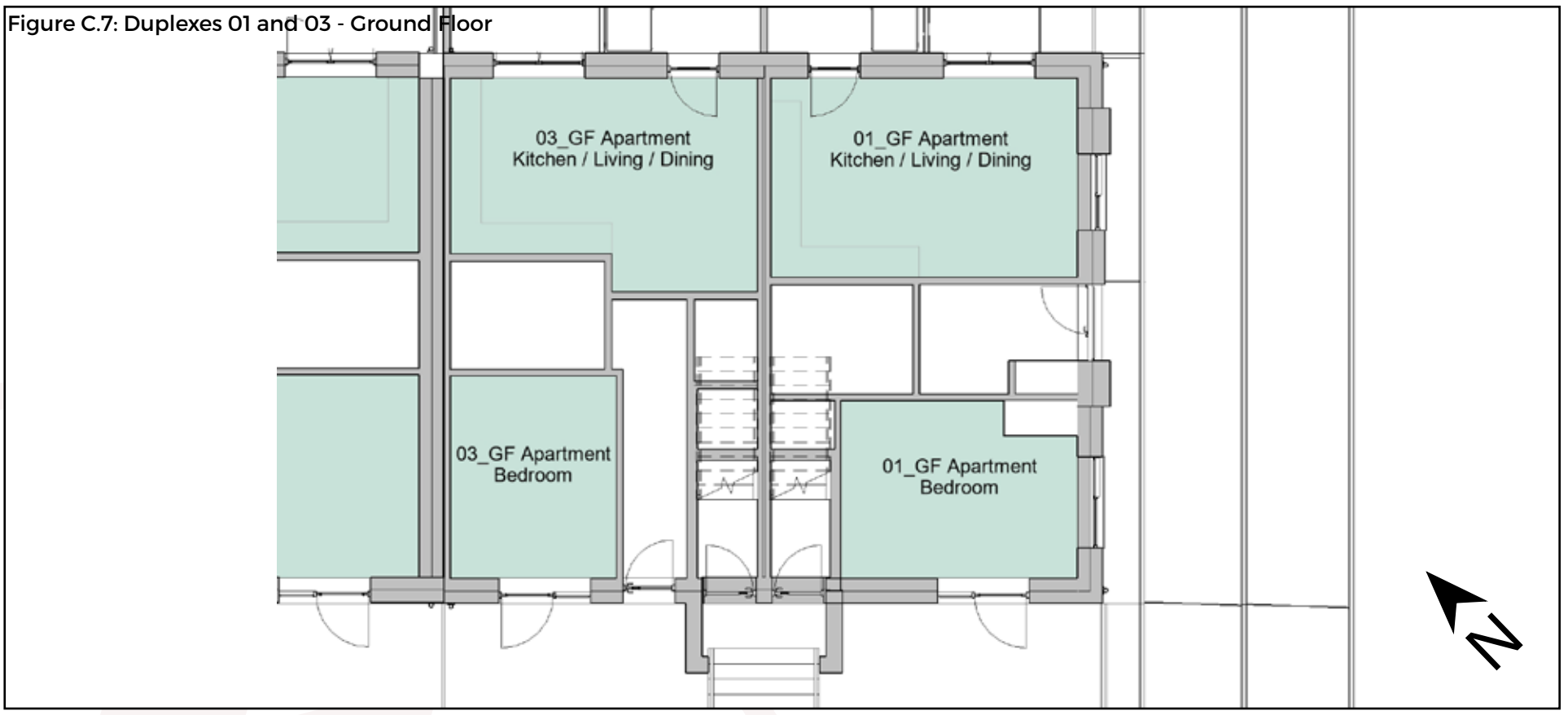


Figure C.9: Duplexes 02 and 04 - First Floor

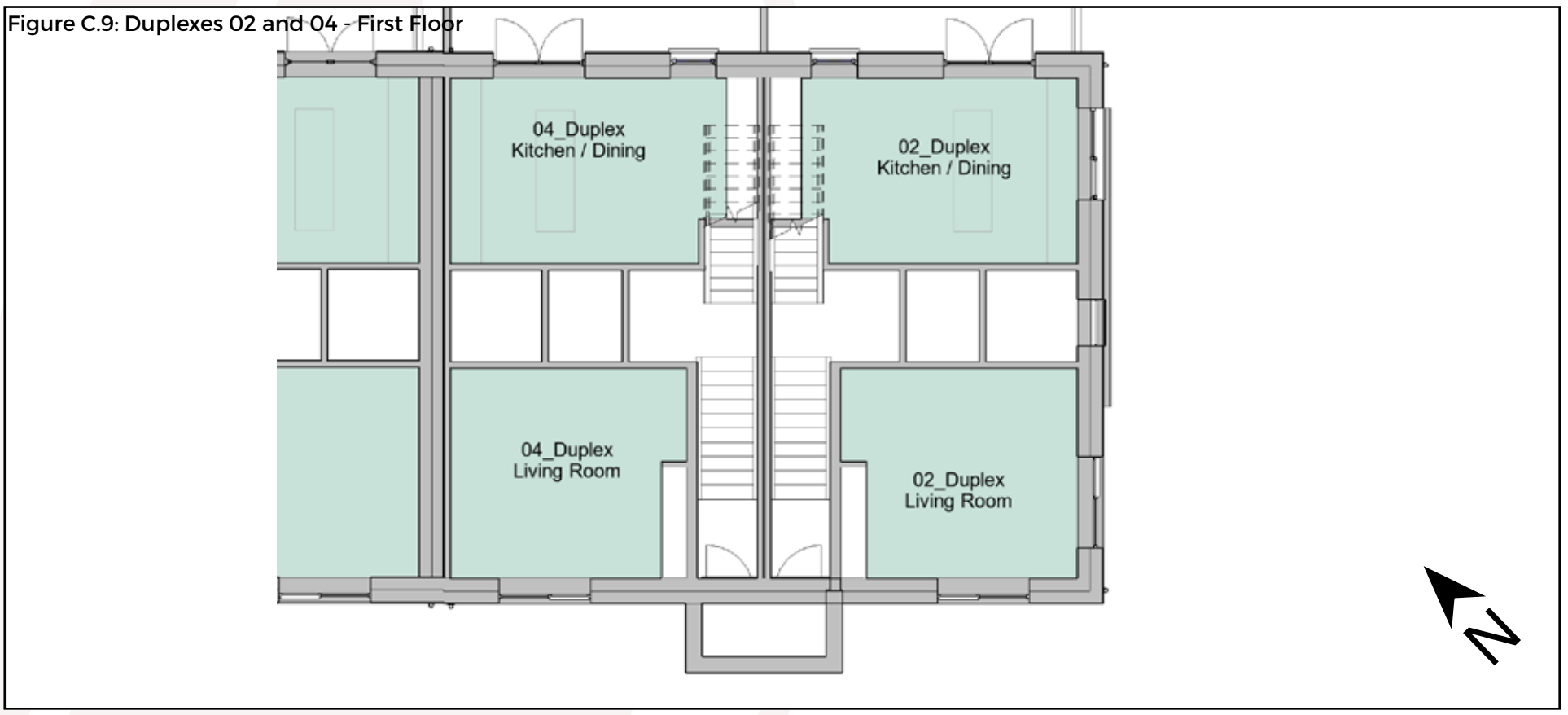


Figure C.10: Duplexes 02 and 04 - Second Floor

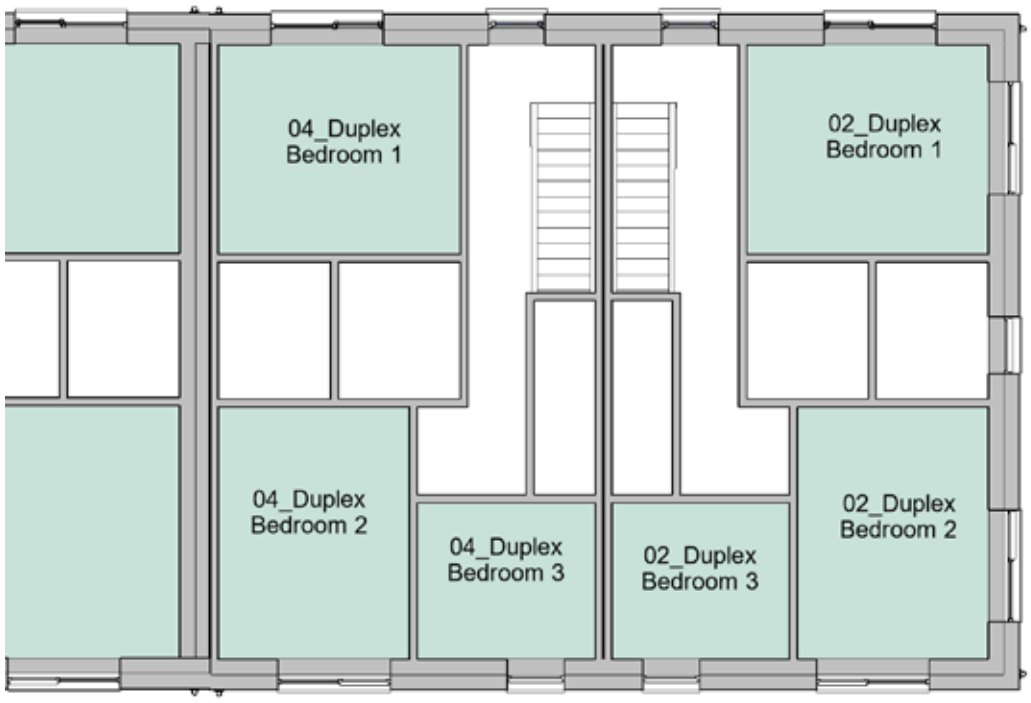


Figure C.11: Duplexes 05 and 07 - Ground Floor

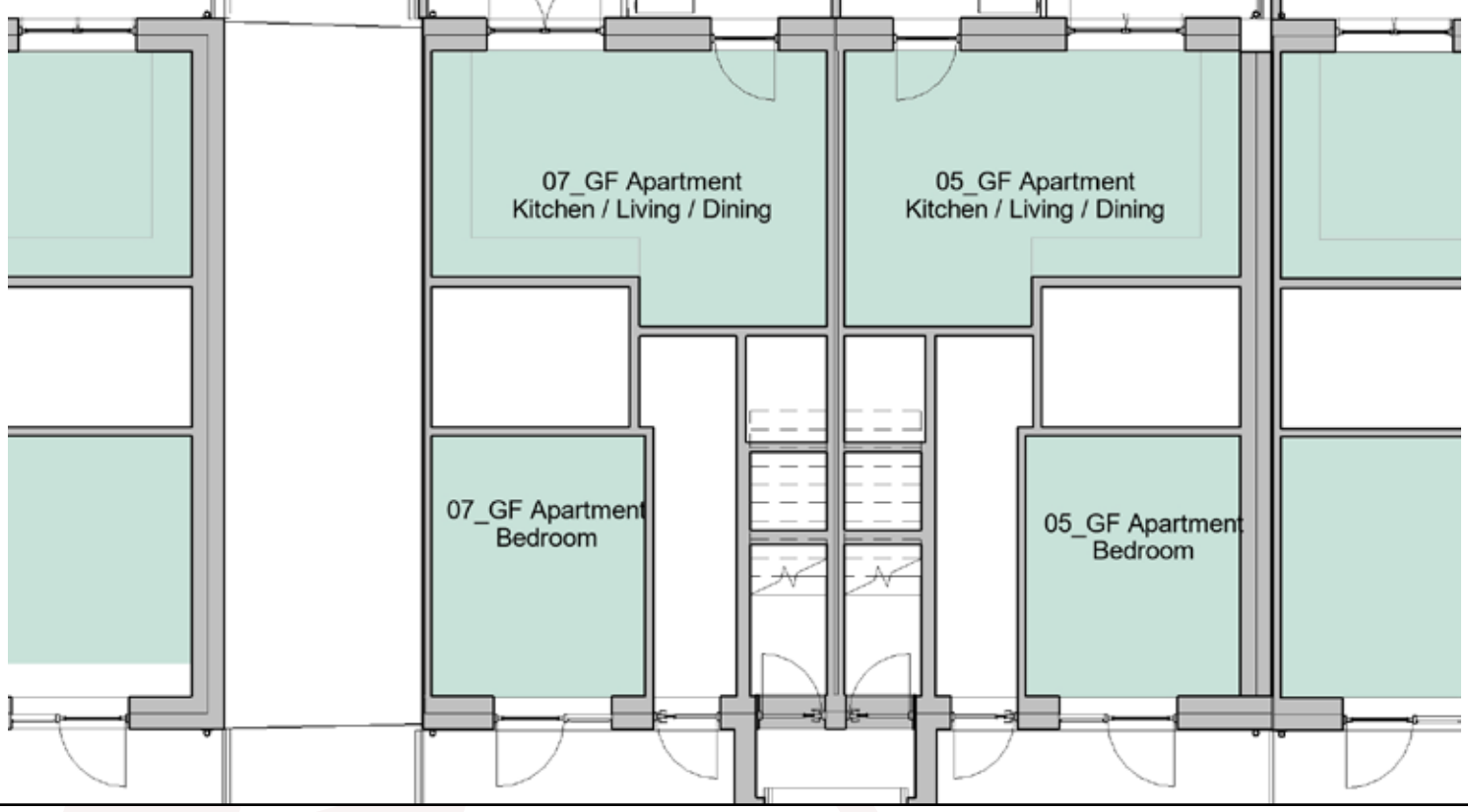


Figure C.12: Duplexes 06 and 07 - First Floor

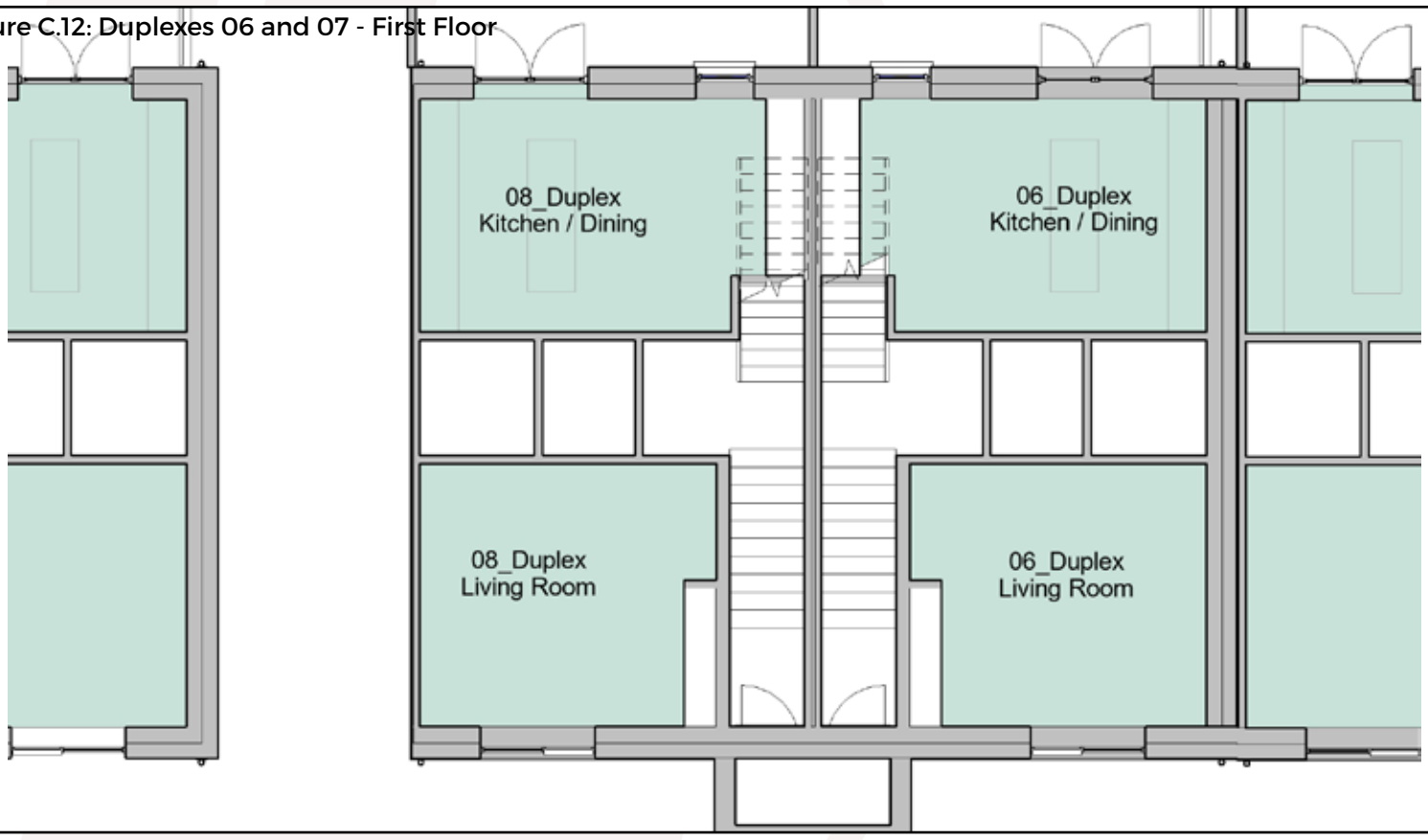
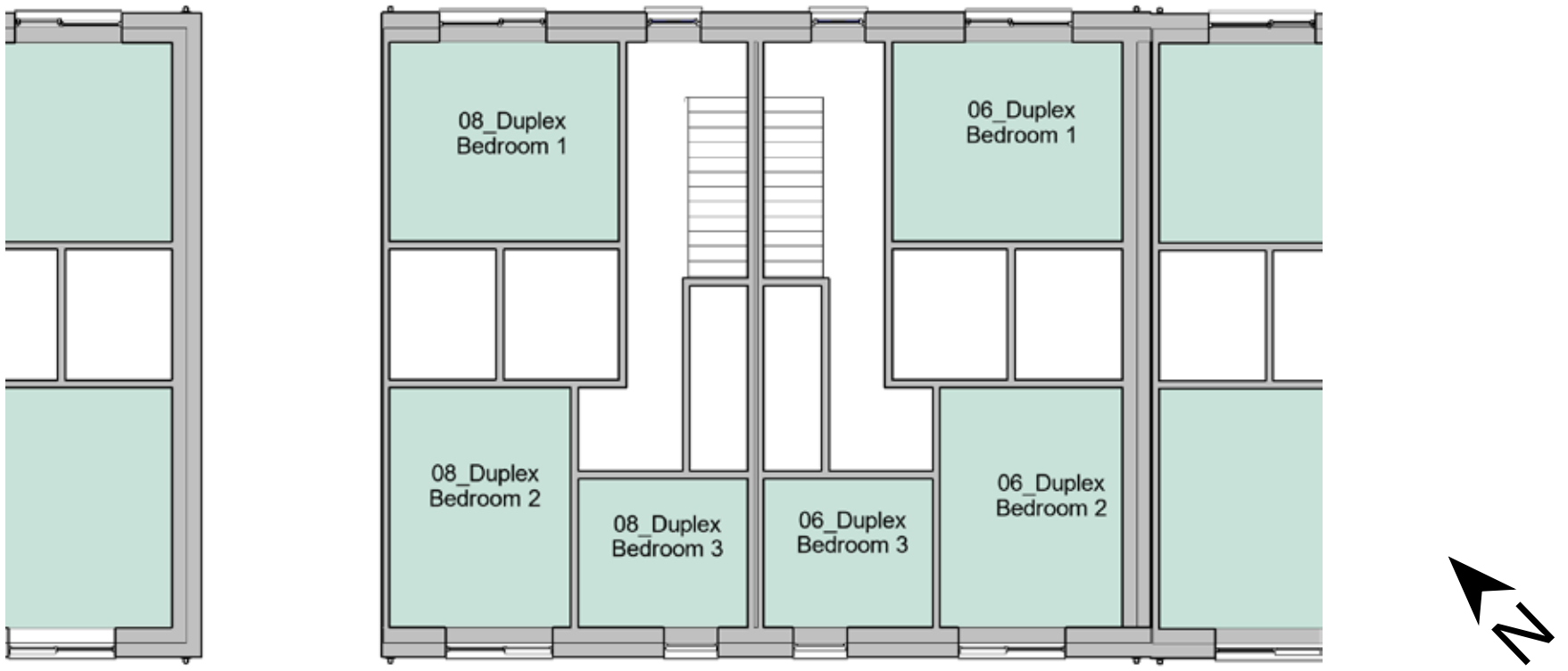


Figure C.13: Duplexes 06 and 07 - Second Floor



C.2 Spatial Daylight Autonomy (SDA) in Proposed Units

Below is an example of the table used to describe the spatial daylight autonomy results in proposed units.

Table Example. C.2 - Scheme Performance SDA						
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)			Compliance with BR 209 Criteria
			Without Trees	Winter	Summer	
A	**B**	**C**	**D**	**E**	**F**	**G**

A: Unit Number

This column identifies the assessed unit. All unit numbers are determined by the architect's drawings, unless otherwise stated.

B: Room Description

Room Description details which room in the unit has been assessed, e.g. bedroom, LKD, etc.

C: Target Lux

Under BR 209 the appropriate target lux levels to be achieved across 50% of the working plane of a room differ depending on the room type. Kitchens have a target lux of 200, living rooms have a target lux of 150 and bedrooms have a target lux of 100. In a room providing more than one function, such as an LKD, the higher target value should be taken i.e. 200 Lux.

D: % of area above target Lux (Without Trees)

BR 209 recommends target lux levels to be achieved across at least 50% of the working plane for at least half the daylight hours. The target values differ depending on the room function, 200 lux for Kitchens, 150 lux for Living Rooms or 100 lux for Bedrooms.

This column states percentage of the working plane of the assessed room that is capable of receiving more than the appropriate target lux for at least half the daylight hours with trees excluded from the analytical model. The figures shown in this column should be considered part of a supplementary study that helps identify if trees are having an effect on daylight within the proposed units.

E: % of area above target Lux (Winter)

BR 209 recommends target lux levels to be achieved across at least 50% of the working plane for at least half the daylight hours. The target values differ depending on the room function, 200 lux for Kitchens, 150 lux for Living Rooms or 100 lux for Bedrooms.

This column states percentage of the working plane of the assessed room that is capable of receiving more than the appropriate target lux for at least half the daylight hours with deciduous trees in the winter state, i.e. bare branch.

F: % of area above target Lux (Summer)

BR 209 recommends target lux levels to be achieved across at least 50% of the working plane for at least half the daylight hours. The target values differ depending on the room function, 200 lux for Kitchens, 150 lux for Living Rooms or 100 lux for Bedrooms.

This column states percentage of the working plane of the assessed room that is capable of receiving more than the appropriate target lux for at least half the daylight hours with deciduous trees in full foliage.

G: Compliance with BR 209 Criteria

This column states if the assessed room achieves the recommended level of daylight as per BR 209 with consideration to the various tree states.

If the target lux level is achieved across more than 50% of the working plane, for half the daylight hours, both with and without trees, this column will state: *'Compliant'*.

If the target lux level is not achieved across more than 50% of the working plane, for half the daylight hours, both with and without trees, this column will state: *'Non-compliant'*.

If the target lux level is achieved across more than 50% of the working plane, for half the daylight hours, without trees but is not achieved with trees, this column will state: *'Trees affecting compliance'*.

If the target lux level is achieved across more than 50% of the working plane, for half the daylight hours, with the trees in the winter state but is not achieved with trees in the summer state, this column will state: *'Trees affecting compliance (summer only)'*.

Compliance rates will be stated for SDA compliance with trees in all of the above states.

It should be noted that the figures displayed in the table of results have been rounded off. A manual calculation of these figures may yield a negligible difference and should not be considered an error.

C.2.1 SDA Results: Duplexes 01 - 12

Table No. C.2.1 - SDA Results: Duplexes 01 - 12						
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)			Compliance with BR 209 Criteria*
			Without Trees***	Winter**	Summer**	
01_GF Apartment	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
01_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
02_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
02_Duplex	Living Room	150	100%	100%	100%	Compliant
02_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
02_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
02_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
03_GF Apartment	Kitchen / Living / Dining	200	54%	54%	54%	Compliant
03_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
04_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
04_Duplex	Living Room	150	100%	100%	100%	Compliant
04_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
04_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
04_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
05_GF Apartment	Kitchen / Living / Dining	200	64%	64%	64%	Compliant
05_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
06_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
06_Duplex	Living Room	150	100%	100%	100%	Compliant
06_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
06_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
06_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
07_GF Apartment	Kitchen / Living / Dining	200	55%	55%	55%	Compliant
07_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
08_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
08_Duplex	Living Room	150	100%	100%	100%	Compliant
08_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
08_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
08_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
09_GF Apartment	Kitchen / Living / Dining	200	74%	74%	74%	Compliant
09_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
10_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
10_Duplex	Living Room	150	100%	100%	100%	Compliant
10_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
10_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
10_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
11_GF Apartment	Kitchen / Living / Dining	200	51%	51%	51%	Compliant
11_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
12_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
12_Duplex	Living Room	150	100%	100%	100%	Compliant
12_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
12_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
12_Duplex	Bedroom 3	100	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.

** Under the BR 209 study the SDA has been calculated with trees represented with both winter and summer foliage.

*** The SDA assessment without trees indicates the level of daylight within the proposed development when trees are not included in the analytical model. This study provides an understanding of how trees affect daylight within the proposed development.

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 22.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.2.2 SDA Results: Duplexes 13 - 24

Table No. C.2.2 - SDA Results: Duplexes 13 - 24						
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)			Compliance with BR 209 Criteria*
			Without Trees***	Winter**	Summer**	
13_GF Apartment	Kitchen / Living / Dining	200	51%	51%	51%	Compliant
13_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
14_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
14_Duplex	Living Room	150	100%	100%	100%	Compliant
14_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
14_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
14_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
15_GF Apartment	Kitchen / Living / Dining	200	64%	64%	64%	Compliant
15_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
16_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
16_Duplex	Living Room	150	100%	100%	100%	Compliant
16_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
16_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
16_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
17_GF Apartment	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
17_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
18_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
18_Duplex	Living Room	150	100%	100%	100%	Compliant
18_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
18_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
18_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
19_GF Apartment	Kitchen / Living / Dining	200	46%	46%	46%	Non-compliant
19_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
20_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
20_Duplex	Living Room	150	100%	100%	100%	Compliant
20_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
20_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
20_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
21_GF Apartment	Kitchen / Living / Dining	200	44%	30%	23%	Non-compliant
21_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
22_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
22_Duplex	Living Room	150	100%	100%	100%	Compliant
22_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
22_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
22_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
23_GF Apartment	Kitchen / Living / Dining	200	100%	100%	98%	Compliant
23_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
24_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
24_Duplex	Living Room	150	100%	100%	100%	Compliant
24_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
24_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
24_Duplex	Bedroom 3	100	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.

** Under the BR 209 study the SDA has been calculated with trees represented with both winter and summer foliage.

*** The SDA assessment without trees indicates the level of daylight within the proposed development when trees are not included in the analytical model. This study provides an understanding of how trees affect daylight within the proposed development.

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 22.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.2.3 SDA Results: Duplexes 25 - 36

Table No. C.2.3 - SDA Results: Duplexes 25 - 36						
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)			Compliance with BR 209 Criteria*
			Without Trees***	Winter**	Summer**	
25_GF Apartment	Kitchen / Living / Dining	200	100%	100%	99%	Compliant
25_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
26_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
26_Duplex	Living Room	150	100%	100%	100%	Compliant
26_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
26_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
26_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
27_GF Apartment	Kitchen / Living / Dining	200	58%	41%	25%	Trees affecting compliance
27_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
28_Duplex	Kitchen / Dining	200	100%	99%	99%	Compliant
28_Duplex	Living Room	150	100%	100%	100%	Compliant
28_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
28_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
28_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
29_GF Apartment	Kitchen / Living / Dining	200	50%	37%	28%	Trees affecting compliance
29_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
30_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
30_Duplex	Living Room	150	100%	100%	100%	Compliant
30_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
30_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
30_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
31_GF Apartment	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
31_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
32_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
32_Duplex	Living Room	150	100%	100%	100%	Compliant
32_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
32_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
32_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
33_GF Apartment	Kitchen / Living / Dining	200	100%	90%	62%	Compliant
33_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
34_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
34_Duplex	Living Room	150	100%	100%	100%	Compliant
34_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
34_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
34_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
35_GF Apartment	Kitchen / Living / Dining	200	97%	82%	50%	Compliant
35_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
36_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
36_Duplex	Living Room	150	100%	100%	100%	Compliant
36_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
36_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
36_Duplex	Bedroom 3	100	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.

** Under the BR 209 study the SDA has been calculated with trees represented with both winter and summer foliage.

*** The SDA assessment without trees indicates the level of daylight within the proposed development when trees are not included in the analytical model. This study provides an understanding of how trees affect daylight within the proposed development.

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 22.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.2.4 SDA Results: Duplexes 37 - 48

Table No. C.2.4 - SDA Results: Duplexes 37 - 48						
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)			Compliance with BR 209 Criteria*
			Without Trees***	Winter**	Summer**	
37_GF Apartment	Kitchen / Living / Dining	200	95%	83%	71%	Compliant
37_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
38_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
38_Duplex	Living Room	150	100%	100%	100%	Compliant
38_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
38_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
38_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
39_GF Apartment	Kitchen / Living / Dining	200	99%	98%	84%	Compliant
39_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
40_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
40_Duplex	Living Room	150	100%	100%	100%	Compliant
40_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
40_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
40_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
41_GF Apartment	Kitchen / Living / Dining	200	100%	99%	85%	Compliant
41_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
42_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
42_Duplex	Living Room	150	100%	100%	100%	Compliant
42_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
42_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
42_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
43_GF Apartment	Kitchen / Living / Dining	200	84%	62%	41%	Trees affecting compliance (summer only)
43_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
44_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
44_Duplex	Living Room	150	100%	100%	100%	Compliant
44_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
44_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
44_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
45_GF Apartment	Kitchen / Living / Dining	200	70%	49%	28%	Trees affecting compliance
45_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
46_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
46_Duplex	Living Room	150	100%	100%	100%	Compliant
46_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
46_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
46_Duplex	Bedroom 3	100	100%	100%	100%	Compliant
47_GF Apartment	Kitchen / Living / Dining	200	100%	100%	68%	Compliant
47_GF Apartment	Bedroom	100	100%	100%	100%	Compliant
48_Duplex	Kitchen / Dining	200	100%	100%	100%	Compliant
48_Duplex	Living Room	150	100%	100%	100%	Compliant
48_Duplex	Bedroom 1	100	100%	100%	100%	Compliant
48_Duplex	Bedroom 2	100	100%	100%	100%	Compliant
48_Duplex	Bedroom 3	100	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.

** Under the BR 209 study the SDA has been calculated with trees represented with both winter and summer foliage.

*** The SDA assessment without trees indicates the level of daylight within the proposed development when trees are not included in the analytical model. This study provides an understanding of how trees affect daylight within the proposed development.

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 22.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.2.5 SDA Results: Apartment Block - Ground Floor, 1st Floor and 2nd Floor

Table No. C.2.5 - SDA Results: Apartment Block - Ground Floor, 1st Floor and 2nd Floor

Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)			Compliance with BR 209 Criteria*
			Without Trees***	Winter**	Summer**	
Commercial Gd Fl.	Consultation 01	150	100%	97%	95%	Compliant
Commercial Gd Fl.	Consultation 02	150	99%	27%	15%	Trees affecting compliance
Commercial Gd Fl.	Consultation 03	150	93%	33%	18%	Trees affecting compliance
Commercial Gd Fl.	Consultation 04	150	98%	27%	14%	Trees affecting compliance
Commercial Gd Fl.	Consultation 05	150	98%	41%	21%	Trees affecting compliance
Commercial Gd Fl.	Consultation 06	150	100%	100%	100%	Compliant
Commercial Gd Fl.	Office/Admin	150	100%	100%	100%	Compliant
Commercial Gd Fl.	Staffroom	150	100%	100%	100%	Compliant
Commercial Gd Fl.	Reception	150	100%	100%	99%	Compliant
Commercial Gd Fl.	Entrance / Waiting Area	150	68%	48%	43%	Trees affecting compliance
Commercial Gd Fl.	Pharmacy	150	100%	100%	100%	Compliant
Commercial Gd Fl.	Dispensary	150	66%	49%	42%	Trees affecting compliance
Apt. 01	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 01	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 01	Bedroom 02	100	100%	100%	100%	Compliant
Apt. 02	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 02	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 02	Bedroom 02	100	100%	100%	100%	Compliant
Apt. 03	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 03	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 04	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 04	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 05	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 05	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 06	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 06	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 06	Bedroom 02	100	100%	100%	100%	Compliant
Apt. 07	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 07	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 07	Bedroom 02	100	100%	100%	100%	Compliant
Apt. 08	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 08	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 08	Bedroom 02	100	100%	100%	100%	Compliant
Apt. 09	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 09	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 10	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 10	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 11	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 11	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 12	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 12	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 12	Bedroom 02	100	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.

** Under the BR 209 study the SDA has been calculated with trees represented with both winter and summer foliage.

*** The SDA assessment without trees indicates the level of daylight within the proposed development when trees are not included in the analytical model. This study provides an understanding of how trees affect daylight within the proposed development.

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 22.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.2.6 SDA Results: Apartment Block - 3rd Floor and 4th Floor

Table No. C.2.6 - SDA Results: Apartment Block - 3rd Floor and 4th Floor						
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)			Compliance with BR 209 Criteria*
			Without Trees***	Winter**	Summer**	
Apt. 13	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 13	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 13	Bedroom 02	100	100%	100%	100%	Compliant
Apt. 14	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 14	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 14	Bedroom 02	100	100%	100%	100%	Compliant
Apt. 15	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 15	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 16	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 16	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 17	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 17	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 18	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 18	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 18	Bedroom 02	100	100%	100%	100%	Compliant
Apt. 19	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 19	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 19	Bedroom 02	100	100%	100%	100%	Compliant
Apt. 20	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 20	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 20	Bedroom 02	100	100%	100%	100%	Compliant
Apt. 21	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 21	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 22	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 22	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 23	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 23	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 24	Kitchen / Living / Dining	200	100%	100%	100%	Compliant
Apt. 24	Bedroom 01	100	100%	100%	100%	Compliant
Apt. 24	Bedroom 02	100	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.

** Under the BR 209 study the SDA has been calculated with trees represented with both winter and summer foliage.

*** The SDA assessment without trees indicates the level of daylight within the proposed development when trees are not included in the analytical model. This study provides an understanding of how trees affect daylight within the proposed development.

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 22.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.3 Sunlight Exposure (SE) in Proposed Units

Below is an example of the table used to describe the SE performance of proposed habitable rooms.

Table Example. C.3 - Scheme Performance Sunlight Exposure							
Unit Number	Room Description	Deciduous Trees as Opaque Objects			Without Deciduous Trees		
		SE Hours on March 21st	Level of SE on March 21st	Unit compliance based on highest performing room	SE Hours on March 21st	Level of SE on March 21st	Unit compliance based on highest performing room
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**

A: Unit Number

This column identifies the assessed unit. All unit numbers are determined by the architect's drawings, unless otherwise stated.

B: Room Description

Room Description details which room of the unit has been assessed, e.g. bedroom, living room, etc.

C: SE Hours on March 21st (Deciduous Trees as Opaque Objects)

This column will state the number of hours the assessed room can expect to receive on March 21st with the assessment carried out with deciduous trees as opaque objects.

D: Level of SE on March 21st (Deciduous Trees as Opaque Objects)

BR 209 recommends a minimum sunlight exposure of 1.5 hours for a proposed unit with preference given to main living rooms. BR 209 categorise sunlight exposure as minimum, medium and high, this column will categorise the level of sunlight exposure with deciduous trees as opaque objects based on the following:

- Less than 1.5 hours: *Below minimum*,
- Between 1.5 hours and 3 hours: *Minimum*
- Between 3 hours and 4 hours: *Medium*
- More than 4 hours: *High*

E: Unit compliance based on highest performing room (Deciduous Trees as Opaque Objects)

A proposed unit is considered to be compliant provided any habitable room within the unit is capable of receiving at least 1.5 hours of sunlight on the assessment date. This column will identify the highest performing room within a unit and state compliance for the associated unit based on that room with the assessment carried out with deciduous trees as opaque objects.

Typically unit compliance will be stated for the best performing room per unit only, with lesser performing rooms indicated with a dash (-).

F: SE Hours on March 21st (Without Deciduous Trees)

This column will state the number of hours the assessed room can expect to receive on March 21st with the assessment carried out without deciduous trees.

G: Level of SE on March 21st (Without Deciduous Trees)

BR 209 recommends a minimum sunlight exposure of 1.5 hours for a proposed unit with preference given to main living rooms. BR 209 categorise sunlight exposure as minimum, medium and high, this column will categorise the level of sunlight exposure without deciduous trees using the same criteria as the study with deciduous trees as opaque objects.

H: Unit compliance based on highest performing room (Without Deciduous Trees)

A proposed unit is considered to be compliant provided any habitable room within the unit is capable of receiving at least 1.5 hours of sunlight on March 21st. This column will identify the highest performing room within a unit and state compliance for the associated unit based on that room with the assessment carried out without deciduous trees. Typically only one room per unit will be populated in this column, with lesser performing rooms indicated with a dash (-).

It should be noted that the figures displayed in the table of results have been rounded off. A manual calculation of these figures may yield a negligible difference and should not be considered an error.

C.3.1 SE Results: Duplexes 01 - 12

Table No. C.3.1 - Sunlight Exposure Results: Duplexes 01 - 12							
Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
01_GF Apartment	Kitchen / Living / Dining	0.50	Below Minimum	-	3.50	Medium	-
01_GF Apartment	Bedroom	2.60	Minimum	Compliant	6.10	High	Compliant
02_Duplex	Kitchen / Dining	3.30	Medium	-	3.90	Medium	-
02_Duplex	Living Room	6.30	High	-	6.30	High	-
02_Duplex	Bedroom 1	4.60	High	-	4.60	High	-
02_Duplex	Bedroom 2	6.80	High	Compliant	6.80	High	Compliant
02_Duplex	Bedroom 3	6.00	High	-	6.00	High	-
03_GF Apartment	Kitchen / Living / Dining	0.00	Below Minimum	-	0.10	Below Minimum	-
03_GF Apartment	Bedroom	5.20	High	Compliant	5.80	High	Compliant
04_Duplex	Kitchen / Dining	1.00	Below Minimum	-	1.00	Below Minimum	-
04_Duplex	Living Room	6.20	High	Compliant	6.20	High	Compliant
04_Duplex	Bedroom 1	1.20	Below Minimum	-	1.20	Below Minimum	-
04_Duplex	Bedroom 2	6.20	High	-	6.20	High	-
04_Duplex	Bedroom 3	6.00	High	-	6.00	High	-
05_GF Apartment	Kitchen / Living / Dining	0.00	Below Minimum	-	0.00	Below Minimum	-
05_GF Apartment	Bedroom	6.60	High	Compliant	7.00	High	Compliant
06_Duplex	Kitchen / Dining	1.00	Below Minimum	-	1.00	Below Minimum	-
06_Duplex	Living Room	6.80	High	Compliant	6.80	High	Compliant
06_Duplex	Bedroom 1	1.20	Below Minimum	-	1.20	Below Minimum	-
06_Duplex	Bedroom 2	6.70	High	-	6.70	High	-
06_Duplex	Bedroom 3	6.00	High	-	6.00	High	-
07_GF Apartment	Kitchen / Living / Dining	0.10	Below Minimum	-	0.10	Below Minimum	-
07_GF Apartment	Bedroom	5.40	High	Compliant	5.80	High	Compliant
08_Duplex	Kitchen / Dining	1.00	Below Minimum	-	1.00	Below Minimum	-
08_Duplex	Living Room	6.20	High	Compliant	6.20	High	Compliant
08_Duplex	Bedroom 1	1.20	Below Minimum	-	1.20	Below Minimum	-
08_Duplex	Bedroom 2	6.20	High	-	6.20	High	-
08_Duplex	Bedroom 3	6.00	High	-	6.00	High	-
09_GF Apartment	Kitchen / Living / Dining	0.40	Below Minimum	-	0.40	Below Minimum	-
09_GF Apartment	Bedroom	6.30	High	Compliant	7.00	High	Compliant
10_Duplex	Kitchen / Dining	1.00	Below Minimum	-	1.00	Below Minimum	-
10_Duplex	Living Room	6.80	High	Compliant	6.80	High	Compliant
10_Duplex	Bedroom 1	1.20	Below Minimum	-	1.20	Below Minimum	-
10_Duplex	Bedroom 2	6.80	High	-	6.80	High	-
10_Duplex	Bedroom 3	6.00	High	-	6.00	High	-
11_GF Apartment	Kitchen / Living / Dining	0.10	Below Minimum	-	0.10	Below Minimum	-
11_GF Apartment	Bedroom	4.70	High	Compliant	5.80	High	Compliant
12_Duplex	Kitchen / Dining	1.00	Below Minimum	-	1.00	Below Minimum	-
12_Duplex	Living Room	6.10	High	-	6.20	High	Compliant
12_Duplex	Bedroom 1	1.20	Below Minimum	-	1.20	Below Minimum	-
12_Duplex	Bedroom 2	6.20	High	Compliant	6.20	High	-
12_Duplex	Bedroom 3	6.00	High	-	6.00	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.

** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates can be found in section 5.2.2 on page 24.

*** For the interpretation of levels of Sunlight Exposure please refer to "3.3 Definition of Levels of Sunlight Exposure" on page 12.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.3.2 SE Results: Duplexes 13 - 24

Table No. C.3.2 - Sunlight Exposure Results: Duplexes 13 - 24							
Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
13_GF Apartment	Kitchen / Living / Dining	0.00	Below Minimum	-	0.00	Below Minimum	-
13_GF Apartment	Bedroom	4.30	High	Compliant	6.80	High	Compliant
14_Duplex	Kitchen / Dining	0.40	Below Minimum	-	0.40	Below Minimum	-
14_Duplex	Living Room	6.80	High	Compliant	6.80	High	Compliant
14_Duplex	Bedroom 1	1.20	Below Minimum	-	1.20	Below Minimum	-
14_Duplex	Bedroom 2	6.80	High	-	6.80	High	-
14_Duplex	Bedroom 3	6.00	High	-	6.00	High	-
15_GF Apartment	Kitchen / Living / Dining	0.10	Below Minimum	-	0.10	Below Minimum	-
15_GF Apartment	Bedroom	3.60	Medium	Compliant	5.80	High	Compliant
16_Duplex	Kitchen / Dining	1.00	Below Minimum	-	1.00	Below Minimum	-
16_Duplex	Living Room	6.20	High	Compliant	6.20	High	Compliant
16_Duplex	Bedroom 1	1.20	Below Minimum	-	1.20	Below Minimum	-
16_Duplex	Bedroom 2	6.20	High	-	6.20	High	-
16_Duplex	Bedroom 3	6.00	High	-	6.00	High	-
17_GF Apartment	Kitchen / Living / Dining	5.20	High	Compliant	7.70	High	Compliant
17_GF Apartment	Bedroom	2.50	Minimum	-	6.20	High	-
18_Duplex	Kitchen / Dining	8.00	High	-	8.40	High	-
18_Duplex	Living Room	5.70	High	-	6.20	High	-
18_Duplex	Bedroom 1	9.20	High	Compliant	9.20	High	Compliant
18_Duplex	Bedroom 2	6.20	High	-	6.20	High	-
18_Duplex	Bedroom 3	0.70	Below Minimum	-	0.70	Below Minimum	-
19_GF Apartment	Kitchen / Living / Dining	0.40	Below Minimum	Non-Compliant	0.40	Below Minimum	Non-Compliant
19_GF Apartment	Bedroom	0.40	Below Minimum	-	0.40	Below Minimum	-
20_Duplex	Kitchen / Dining	3.80	Medium	-	3.80	Medium	-
20_Duplex	Living Room	0.00	Below Minimum	-	0.00	Below Minimum	-
20_Duplex	Bedroom 1	4.20	High	Compliant	4.20	High	Compliant
20_Duplex	Bedroom 2	1.00	Below Minimum	-	1.00	Below Minimum	-
20_Duplex	Bedroom 3	0.70	Below Minimum	-	0.70	Below Minimum	-
21_GF Apartment	Kitchen / Living / Dining	1.60	Minimum	Compliant	2.30	Minimum	Compliant
21_GF Apartment	Bedroom	1.50	Minimum	-	1.50	Minimum	-
22_Duplex	Kitchen / Dining	6.30	High	-	6.30	High	-
22_Duplex	Living Room	1.90	Minimum	-	1.90	Minimum	-
22_Duplex	Bedroom 1	6.40	High	Compliant	6.40	High	Compliant
22_Duplex	Bedroom 2	1.70	Minimum	-	1.70	Minimum	-
22_Duplex	Bedroom 3	0.70	Below Minimum	-	0.70	Below Minimum	-
23_GF Apartment	Kitchen / Living / Dining	3.50	Medium	Compliant	3.50	Medium	Compliant
23_GF Apartment	Bedroom	0.30	Below Minimum	-	1.80	Minimum	-
24_Duplex	Kitchen / Dining	6.30	High	-	6.30	High	-
24_Duplex	Living Room	1.40	Below Minimum	-	1.40	Below Minimum	-
24_Duplex	Bedroom 1	6.40	High	Compliant	6.40	High	Compliant
24_Duplex	Bedroom 2	2.30	Minimum	-	2.30	Minimum	-
24_Duplex	Bedroom 3	0.70	Below Minimum	-	0.70	Below Minimum	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.

** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates can be found in section 5.2.2 on page 24.

*** For the interpretation of levels of Sunlight Exposure please refer to "3.3 Definition of Levels of Sunlight Exposure" on page 12.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.3.3 SE Results: Duplexes 25 - 36

Table No. C.3.3 - Sunlight Exposure Results: Duplexes 25 - 36							
Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
25_GF Apartment	Kitchen / Living / Dining	5.40	High	-	5.40	High	-
25_GF Apartment	Bedroom	7.00	High	Compliant	8.70	High	Compliant
26_Duplex	Kitchen / Dining	6.40	High	-	6.40	High	-
26_Duplex	Living Room	7.50	High	-	9.20	High	-
26_Duplex	Bedroom 1	6.00	High	-	6.00	High	-
26_Duplex	Bedroom 2	9.40	High	Compliant	9.40	High	Compliant
26_Duplex	Bedroom 3	5.70	High	-	6.00	High	-
27_GF Apartment	Kitchen / Living / Dining	0.00	Below Minimum	-	0.10	Below Minimum	-
27_GF Apartment	Bedroom	3.90	Medium	Compliant	5.80	High	Compliant
28_Duplex	Kitchen / Dining	1.00	Below Minimum	-	1.00	Below Minimum	-
28_Duplex	Living Room	4.70	High	-	6.20	High	Compliant
28_Duplex	Bedroom 1	1.20	Below Minimum	-	1.20	Below Minimum	-
28_Duplex	Bedroom 2	6.20	High	Compliant	6.20	High	-
28_Duplex	Bedroom 3	5.90	High	-	6.00	High	-
29_GF Apartment	Kitchen / Living / Dining	0.00	Below Minimum	-	0.00	Below Minimum	-
29_GF Apartment	Bedroom	3.70	Medium	Compliant	6.60	High	Compliant
30_Duplex	Kitchen / Dining	0.40	Below Minimum	-	0.40	Below Minimum	-
30_Duplex	Living Room	5.00	High	-	6.80	High	Compliant
30_Duplex	Bedroom 1	1.20	Below Minimum	-	1.20	Below Minimum	-
30_Duplex	Bedroom 2	6.40	High	Compliant	6.80	High	-
30_Duplex	Bedroom 3	6.00	High	-	6.00	High	-
31_GF Apartment	Kitchen / Living / Dining	1.80	Minimum	-	1.90	Minimum	-
31_GF Apartment	Bedroom	4.60	High	Compliant	5.80	High	Compliant
32_Duplex	Kitchen / Dining	2.40	Minimum	-	2.40	Minimum	-
32_Duplex	Living Room	6.20	High	Compliant	6.20	High	Compliant
32_Duplex	Bedroom 1	2.10	Minimum	-	2.10	Minimum	-
32_Duplex	Bedroom 2	6.20	High	-	6.20	High	-
32_Duplex	Bedroom 3	6.00	High	-	6.00	High	-
33_GF Apartment	Kitchen / Living / Dining	2.00	Minimum	-	3.60	Medium	Compliant
33_GF Apartment	Bedroom	2.70	Minimum	Compliant	2.70	Minimum	-
34_Duplex	Kitchen / Dining	5.50	High	Compliant	5.50	High	Compliant
34_Duplex	Living Room	2.80	Minimum	-	2.80	Minimum	-
34_Duplex	Bedroom 1	5.50	High	-	5.50	High	-
34_Duplex	Bedroom 2	2.40	Minimum	-	2.40	Minimum	-
34_Duplex	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
35_GF Apartment	Kitchen / Living / Dining	2.00	Minimum	Compliant	3.10	Medium	Compliant
35_GF Apartment	Bedroom	1.40	Below Minimum	-	1.40	Below Minimum	-
36_Duplex	Kitchen / Dining	5.50	High	Compliant	5.50	High	Compliant
36_Duplex	Living Room	1.60	Minimum	-	1.60	Minimum	-
36_Duplex	Bedroom 1	5.50	High	-	5.50	High	-
36_Duplex	Bedroom 2	1.90	Minimum	-	1.90	Minimum	-
36_Duplex	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.

** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates can be found in section 5.2.2 on page 24.

*** For the interpretation of levels of Sunlight Exposure please refer to "3.3 Definition of Levels of Sunlight Exposure" on page 12.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.3.4 SE Results: Duplexes 37 - 48

Table No. C.3.4 - Sunlight Exposure Results: Duplexes 37 - 48							
Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
37_GF Apartment	Kitchen / Living / Dining	3.10	Medium	Compliant	3.10	Medium	Compliant
37_GF Apartment	Bedroom	2.70	Minimum	-	2.70	Minimum	-
38_Duplex	Kitchen / Dining	5.50	High	Compliant	5.50	High	Compliant
38_Duplex	Living Room	2.80	Minimum	-	2.80	Minimum	-
38_Duplex	Bedroom 1	5.50	High	-	5.50	High	-
38_Duplex	Bedroom 2	2.40	Minimum	-	2.40	Minimum	-
38_Duplex	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
39_GF Apartment	Kitchen / Living / Dining	3.10	Medium	Compliant	3.10	Medium	Compliant
39_GF Apartment	Bedroom	1.40	Below Minimum	-	1.40	Below Minimum	-
40_Duplex	Kitchen / Dining	5.50	High	Compliant	5.50	High	Compliant
40_Duplex	Living Room	1.60	Minimum	-	1.60	Minimum	-
40_Duplex	Bedroom 1	5.50	High	-	5.50	High	-
40_Duplex	Bedroom 2	1.90	Minimum	-	1.90	Minimum	-
40_Duplex	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
41_GF Apartment	Kitchen / Living / Dining	3.00	Medium	Compliant	3.60	Medium	Compliant
41_GF Apartment	Bedroom	2.70	Minimum	-	2.70	Minimum	-
42_Duplex	Kitchen / Dining	5.50	High	Compliant	5.50	High	Compliant
42_Duplex	Living Room	2.80	Minimum	-	2.80	Minimum	-
42_Duplex	Bedroom 1	5.50	High	-	5.50	High	-
42_Duplex	Bedroom 2	2.40	Minimum	-	2.40	Minimum	-
42_Duplex	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
43_GF Apartment	Kitchen / Living / Dining	1.20	Below Minimum	-	2.50	Minimum	Compliant
43_GF Apartment	Bedroom	1.40	Below Minimum	Non-Compliant	1.40	Below Minimum	-
44_Duplex	Kitchen / Dining	4.30	High	-	5.00	High	-
44_Duplex	Living Room	1.60	Minimum	-	1.60	Minimum	-
44_Duplex	Bedroom 1	5.50	High	Compliant	5.50	High	Compliant
44_Duplex	Bedroom 2	1.90	Minimum	-	1.90	Minimum	-
44_Duplex	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
45_GF Apartment	Kitchen / Living / Dining	0.90	Below Minimum	-	1.10	Below Minimum	-
45_GF Apartment	Bedroom	2.70	Minimum	Compliant	2.70	Minimum	Compliant
46_Duplex	Kitchen / Dining	4.50	High	-	4.80	High	-
46_Duplex	Living Room	2.80	Minimum	-	2.80	Minimum	-
46_Duplex	Bedroom 1	5.40	High	Compliant	5.40	High	Compliant
46_Duplex	Bedroom 2	2.40	Minimum	-	2.40	Minimum	-
46_Duplex	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
47_GF Apartment	Kitchen / Living / Dining	1.00	Below Minimum	-	1.40	Below Minimum	Non-Compliant
47_GF Apartment	Bedroom	1.40	Below Minimum	Non-Compliant	1.40	Below Minimum	-
48_Duplex	Kitchen / Dining	4.40	High	-	4.80	High	-
48_Duplex	Living Room	1.60	Minimum	-	1.60	Minimum	-
48_Duplex	Bedroom 1	5.60	High	Compliant	5.60	High	Compliant
48_Duplex	Bedroom 2	1.90	Minimum	-	1.90	Minimum	-
48_Duplex	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.

** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates can be found in section 5.2.2 on page 24.

*** For the interpretation of levels of Sunlight Exposure please refer to "3.3 Definition of Levels of Sunlight Exposure" on page 12.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.3.5 SE Results: Apartment Block - Ground Floor, 1st Floor and 2nd Floor

Table No. C.3.5 - Sunlight Exposure Results: Apartment Block - Ground Floor, 1st Floor and 2nd Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
Commercial Gd Fl.	Consultation 01	2.50	Minimum	-	3.20	Medium	-
Commercial Gd Fl.	Consultation 02	0.10	Below Minimum	-	0.80	Below Minimum	-
Commercial Gd Fl.	Consultation 03	0.00	Below Minimum	-	0.00	Below Minimum	-
Commercial Gd Fl.	Consultation 04	0.30	Below Minimum	-	0.70	Below Minimum	-
Commercial Gd Fl.	Consultation 05	0.80	Below Minimum	-	0.80	Below Minimum	-
Commercial Gd Fl.	Consultation 06	6.10	High	Compliant	6.10	High	-
Commercial Gd Fl.	Office/Admin	3.70	Medium	-	3.70	Medium	-
Commercial Gd Fl.	Staffroom	6.00	High	-	6.10	High	-
Commercial Gd Fl.	Reception	0.80	Below Minimum	-	0.80	Below Minimum	-
Commercial Gd Fl.	Entrance / Waiting Area	1.30	Below Minimum	-	1.30	Below Minimum	-
Commercial Gd Fl.	Pharmacy	4.60	High	-	6.80	High	Compliant
Commercial Gd Fl.	Dispensary	1.80	Minimum	-	6.00	High	-
Apt. 01	Kitchen / Living / Dining	3.20	Medium	Compliant	3.20	Medium	Compliant
Apt. 01	Bedroom 01	1.50	Minimum	-	1.50	Minimum	-
Apt. 01	Bedroom 02	0.80	Below Minimum	-	0.80	Below Minimum	-
Apt. 02	Kitchen / Living / Dining	6.10	High	Compliant	6.10	High	Compliant
Apt. 02	Bedroom 01	0.70	Below Minimum	-	0.70	Below Minimum	-
Apt. 02	Bedroom 02	6.10	High	-	6.10	High	-
Apt. 03	Kitchen / Living / Dining	5.10	High	-	5.10	High	-
Apt. 03	Bedroom 01	6.10	High	Compliant	6.10	High	Compliant
Apt. 04	Kitchen / Living / Dining	5.50	High	Compliant	5.50	High	Compliant
Apt. 04	Bedroom 01	4.70	High	-	4.70	High	-
Apt. 05	Kitchen / Living / Dining	4.30	High	-	6.60	High	Compliant
Apt. 05	Bedroom 01	6.10	High	Compliant	6.10	High	-
Apt. 06	Kitchen / Living / Dining	3.90	Medium	Compliant	3.90	Medium	Compliant
Apt. 06	Bedroom 01	1.50	Minimum	-	1.50	Minimum	-
Apt. 06	Bedroom 02	3.90	Medium	-	3.90	Medium	-
Apt. 07	Kitchen / Living / Dining	3.20	Medium	Compliant	3.20	Medium	Compliant
Apt. 07	Bedroom 01	1.50	Minimum	-	1.50	Minimum	-
Apt. 07	Bedroom 02	0.80	Below Minimum	-	0.80	Below Minimum	-
Apt. 08	Kitchen / Living / Dining	6.10	High	Compliant	6.10	High	Compliant
Apt. 08	Bedroom 01	0.70	Below Minimum	-	0.70	Below Minimum	-
Apt. 08	Bedroom 02	6.10	High	-	6.10	High	-
Apt. 09	Kitchen / Living / Dining	5.10	High	-	5.10	High	-
Apt. 09	Bedroom 01	6.10	High	Compliant	6.10	High	Compliant
Apt. 10	Kitchen / Living / Dining	5.50	High	Compliant	5.50	High	Compliant
Apt. 10	Bedroom 01	4.70	High	-	4.70	High	-
Apt. 11	Kitchen / Living / Dining	8.30	High	Compliant	8.30	High	Compliant
Apt. 11	Bedroom 01	6.10	High	-	6.10	High	-
Apt. 12	Kitchen / Living / Dining	5.50	High	Compliant	5.50	High	Compliant
Apt. 12	Bedroom 01	1.50	Minimum	-	1.50	Minimum	-
Apt. 12	Bedroom 02	5.10	High	-	5.10	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.

** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates can be found in section 5.2.2 on page 24.

*** For the interpretation of levels of Sunlight Exposure please refer to "3.3 Definition of Levels of Sunlight Exposure" on page 12.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.3.6 SE Results: Apartment Block - 3rd Floor and 4th Floor

Table No. C.3.6 - Sunlight Exposure Results: Apartment Block - 3rd Floor and 4th Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
Apt. 13	Kitchen / Living / Dining	3.20	Medium	Compliant	3.20	Medium	Compliant
Apt. 13	Bedroom 01	1.50	Minimum	-	1.50	Minimum	-
Apt. 13	Bedroom 02	0.80	Below Minimum	-	0.80	Below Minimum	-
Apt. 14	Kitchen / Living / Dining	6.10	High	Compliant	6.10	High	Compliant
Apt. 14	Bedroom 01	0.70	Below Minimum	-	0.70	Below Minimum	-
Apt. 14	Bedroom 02	6.10	High	-	6.10	High	-
Apt. 15	Kitchen / Living / Dining	4.70	High	-	5.40	High	-
Apt. 15	Bedroom 01	6.10	High	Compliant	6.10	High	Compliant
Apt. 16	Kitchen / Living / Dining	5.50	High	Compliant	5.50	High	Compliant
Apt. 16	Bedroom 01	4.70	High	-	4.70	High	-
Apt. 17	Kitchen / Living / Dining	9.40	High	Compliant	9.40	High	Compliant
Apt. 17	Bedroom 01	6.10	High	-	6.10	High	-
Apt. 18	Kitchen / Living / Dining	5.50	High	-	5.50	High	-
Apt. 18	Bedroom 01	1.50	Minimum	-	1.50	Minimum	-
Apt. 18	Bedroom 02	6.60	High	Compliant	6.60	High	Compliant
Apt. 19	Kitchen / Living / Dining	3.20	Medium	Compliant	3.20	Medium	Compliant
Apt. 19	Bedroom 01	1.50	Minimum	-	1.50	Minimum	-
Apt. 19	Bedroom 02	0.80	Below Minimum	-	0.80	Below Minimum	-
Apt. 20	Kitchen / Living / Dining	6.10	High	Compliant	6.10	High	Compliant
Apt. 20	Bedroom 01	0.80	Below Minimum	-	0.80	Below Minimum	-
Apt. 20	Bedroom 02	6.10	High	-	6.10	High	-
Apt. 21	Kitchen / Living / Dining	6.80	High	Compliant	6.80	High	Compliant
Apt. 21	Bedroom 01	6.10	High	-	6.10	High	-
Apt. 22	Kitchen / Living / Dining	6.90	High	Compliant	6.90	High	Compliant
Apt. 22	Bedroom 01	6.10	High	-	6.10	High	-
Apt. 23	Kitchen / Living / Dining	9.40	High	Compliant	9.40	High	Compliant
Apt. 23	Bedroom 01	6.10	High	-	6.10	High	-
Apt. 24	Kitchen / Living / Dining	6.60	High	Compliant	6.60	High	Compliant
Apt. 24	Bedroom 01	1.50	Minimum	-	1.50	Minimum	-
Apt. 24	Bedroom 02	6.60	High	-	6.60	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.

** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates can be found in section 5.2.2 on page 24.

*** For the interpretation of levels of Sunlight Exposure please refer to "3.3 Definition of Levels of Sunlight Exposure" on page 12.

For floor plans of the assessed units please refer to section C.1 on page 43.

C.4 Sun On Ground (SOG) in Proposed Outdoor Amenity Areas

Below is an example of the table used to describe SOG in proposed gardens and amenity spaces.

	Table Example. C.4 - Scheme Performance SOG				
Assigned Area Number	Assessed Area	Area Capable of Receiving 2 Hours of Sunlight on March 21st	Recommended Minimum	Level of Compliance with BRE Guidelines	Meets BR 209 Criteria
A	**B**	**C**	**D**	**E**	**F**

A: Assigned Area Number

This column indicates the number that 3DDB have assigned to the assessed areas, which is included for the sole purpose of aiding in the identification of the corresponding space shown in the corresponding figure.

B: Assessed Area

This column identifies the assessed garden/amenity area.

C: Area Capable of Receiving 2 Hours of Sunlight on March 21st

The percentage of the proposed area that can receive more than 2 hours of sunlight on March 21st.

D: Recommended Minimum

The BRE Guidelines state that the percentage of a garden/amenity area that can receive more than 2 hours of sunlight on March 21st should be 50%. The target value for all spaces is set to 50%.

E: Level of Compliance with BRE Guidelines

This column states the compliance of the assessed space with the *BRE Target Value*. If the assessed garden or amenity area complies with the BRE Guidelines this cell will state "*BRE Compliant*". If the garden or amenity area does not meet the criteria as set out in the BRE Guidelines, a percentage of compliance with the *recommended minimum* will be stated.

F: Meets BR 209 Criteria

This column states if the assessed area achieves the recommended level of sunlight on March 21st as per BR 209.

It should be noted that the figures displayed in the table of results have been rounded off. A manual calculation of these figures may yield a negligible difference and should not be considered an error.

C.4.1 Sun On Ground in Proposed Outdoor Amenity Areas

Table No. C.4.1 - SOG in Proposed Outdoor Amenity Areas Results:					
Assigned Area Number	Assessed Area	Area Capable of Receiving 2 Hours of Sunlight on March 21st	Recommended minimum	Level of Compliance with BRE Guidelines*	Meets BR 209 Criteria*
1	1 Public Open Space	95.46%	50.00%	BRE Compliant	Yes
2	2 Public Open Space	99.22%	50.00%	BRE Compliant	Yes
3	3 Public Open Space	99.10%	50.00%	BRE Compliant	Yes
4	4 Public Open Space	97.14%	50.00%	BRE Compliant	Yes
5	5 Public Open Space	100.00%	50.00%	BRE Compliant	Yes
6	6 Communal Open Space	97.70%	50.00%	BRE Compliant	Yes
7	7 Public/Comunal Open Space	99.39%	50.00%	BRE Compliant	Yes
8	8 Public/Comunal Open Space	100.00%	50.00%	BRE Compliant	Yes
* The BRE Guidelines recommend that for a garden or amenity 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 March 21st.					

Figure C.14: Indication of the amenity areas that have been analysed (L), Area capable of receiving 2 hours of sunlight on March 21st shown in white (R)

D.0 Supplementary Study Results

D.1 SDA study, under the I.S. EN 17037 criteria

Below is an example of the table used to describe the supplementary study results for proposed units in the assessment of SDA under the I.S. EN 17037 criteria.

Table Example. D.1 - Supplementary SDA Results (I.S. EN 17037 criteria)

Unit Number	Room Description	No Trees		Winter Trees		Summer Trees		Compliance with I.S. EN 17037 Criteria
		Area above 300 Lux	Area above 100 Lux	Area above 300 Lux	Area above 100 Lux	Area above 300 Lux	Area above 100 Lux	
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**

A: Unit Number

This column identifies the assessed unit. All unit numbers are determined by the architect's drawings, unless otherwise stated.

B: Room Description

Room Description details which room in the unit has been assessed, e.g. bedroom, LKD, etc.

C: % of area above 300 Lux (No Trees)

I.S. EN 17037 recommends at least 50% of the working plane receives above 300 lux for at least half the daylight hours.

This column states percentage of the working plane of the assessed room that is capable of receiving more than 300 lux for at least half the daylight hours when the assessment is carried out without trees in the analytical model.

D: % of area above 100 Lux (No Trees)

I.S. EN 17037 recommends at least 95% of the working plane receives above 100 lux for at least half the daylight hours.

This column states percentage of the working plane of the assessed room that is capable of receiving more than 100 lux for at least half the daylight hours when the assessment is carried out without trees in the analytical model.

E: % of area above 300 Lux (Winter Trees)

I.S. EN 17037 recommends at least 50% of the working plane receives above 300 lux for at least half the daylight hours.

This column states percentage of the working plane of the assessed room that is capable of receiving more than 300 lux for at least half the daylight hours when the trees in the analytical model are configured in the winter state i.e. bare branch.

F: % of area above 100 Lux (Winter Trees)

I.S. EN 17037 recommends at least 95% of the working plane receives above 100 lux for at least half the daylight hours.

This column states percentage of the working plane of the assessed room that is capable of receiving more than 100 lux for at least half the daylight hours when the trees in the analytical model are configured in the winter state i.e. bare branch.

G: % of area above 300 Lux (Summer Trees)

I.S. EN 17037 recommends at least 50% of the working plane receives above 300 lux for at least half the daylight hours.

This column states percentage of the working plane of the assessed room that is capable of receiving more than 300 lux for at least half the daylight hours when the trees in the analytical model are configured in the summer state i.e. full leaf.

H: % of area above 100 Lux (Summer Trees)

I.S. EN 17037 recommends at least 95% of the working plane receives above 100 lux for at least half the daylight hours.

This column states percentage of the working plane of the assessed room that is capable of receiving more than 100 lux for at least half the daylight hours when the trees in the analytical model are configured in the summer state i.e. full leaf.

I: Compliance with I.S. EN 17037 Criteria

This column states if the assessed room achieves the recommended level of daylight as per I.S. EN 17037 with consideration to the various tree states.

If the recommended lux levels are achieved on the working plane, for half the daylight hours, both with and without trees, this column will state: *'Compliant'*.

If the recommended lux levels are not achieved on the working plane, for half the daylight hours, both with and without trees, this column will state: *'Non-compliant'*.

If the recommended lux levels are achieved on the working plane, for half the daylight hours, without trees but are not achieved with trees, this column will state: *'Trees affecting compliance'*.

If the recommended lux levels are achieved on the working plane, for half the daylight hours, with the trees in the winter state but are not achieved with trees in the summer state, this column will state: *'Trees affecting compliance (summer only)'*.

Compliance rates will be stated for SDA compliance with trees in all of the above states.

It should be noted that the figures displayed in the table of results have been rounded off. A manual calculation of these figures may yield a negligible difference and should not be considered an error.

D.1.1 Supplementary SDA Results (I.S. EN 17037 criteria): Duplexes 01 - 12

Table No. D.1.1 - Supplementary SDA Results (I.S. EN 17037 criteria): Duplexes 01 - 12

Unit Number	Room Description	No Trees		Winter Trees		Summer Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
01_GF Apartment	Kitchen / Living / Dining	84%	100%	43%	100%	12%	100%	Trees affecting compliance
01_GF Apartment	Bedroom	100%	100%	98%	100%	50%	100%	Compliant
02_Duplex	Kitchen / Dining	100%	100%	100%	100%	91%	100%	Compliant
02_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
02_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
02_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
02_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
03_GF Apartment	Kitchen / Living / Dining	15%	100%	13%	100%	10%	100%	Non-compliant
03_GF Apartment	Bedroom	100%	100%	100%	100%	75%	100%	Compliant
04_Duplex	Kitchen / Dining	92%	100%	91%	100%	86%	100%	Compliant
04_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
04_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
04_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
04_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
05_GF Apartment	Kitchen / Living / Dining	16%	100%	14%	100%	11%	100%	Non-compliant
05_GF Apartment	Bedroom	100%	100%	100%	100%	94%	100%	Compliant
06_Duplex	Kitchen / Dining	95%	100%	91%	100%	88%	100%	Compliant
06_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
06_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
06_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
06_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
07_GF Apartment	Kitchen / Living / Dining	17%	100%	14%	100%	12%	100%	Non-compliant
07_GF Apartment	Bedroom	100%	100%	100%	100%	98%	100%	Compliant
08_Duplex	Kitchen / Dining	92%	100%	92%	100%	91%	100%	Compliant
08_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
08_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
08_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
08_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
09_GF Apartment	Kitchen / Living / Dining	19%	100%	17%	100%	14%	100%	Non-compliant
09_GF Apartment	Bedroom	100%	100%	100%	100%	94%	100%	Compliant
10_Duplex	Kitchen / Dining	95%	100%	94%	100%	91%	100%	Compliant
10_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
10_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
10_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
10_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
11_GF Apartment	Kitchen / Living / Dining	14%	100%	11%	100%	10%	100%	Non-compliant
11_GF Apartment	Bedroom	100%	100%	100%	100%	89%	100%	Compliant
12_Duplex	Kitchen / Dining	93%	100%	92%	100%	92%	100%	Compliant
12_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
12_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
12_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
12_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.
For floor plans of the assessed units please refer to section C.1 on page 43.

D.1.2 Supplementary SDA Results (I.S. EN 17037 criteria): Duplexes 13 - 24

Table No. D.1.2 - Supplementary SDA Results (I.S. EN 17037 criteria): Duplexes 13 - 24								
Unit Number	Room Description	No Trees		Winter Trees		Summer Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
13_GF Apartment	Kitchen / Living / Dining	12%	100%	12%	100%	10%	100%	Non-compliant
13_GF Apartment	Bedroom	100%	100%	100%	100%	63%	100%	Compliant
14_Duplex	Kitchen / Dining	92%	100%	90%	100%	89%	100%	Compliant
14_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
14_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
14_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
14_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
15_GF Apartment	Kitchen / Living / Dining	18%	100%	14%	100%	10%	100%	Non-compliant
15_GF Apartment	Bedroom	100%	100%	100%	100%	58%	100%	Compliant
16_Duplex	Kitchen / Dining	92%	100%	92%	100%	90%	100%	Compliant
16_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
16_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
16_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
16_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
17_GF Apartment	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
17_GF Apartment	Bedroom	100%	100%	100%	100%	100%	100%	Compliant
18_Duplex	Kitchen / Dining	100%	100%	100%	100%	100%	100%	Compliant
18_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
18_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
18_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
18_Duplex	Bedroom 3	97%	100%	97%	100%	93%	100%	Compliant
19_GF Apartment	Kitchen / Living / Dining	10%	100%	5%	100%	3%	98%	Non-compliant
19_GF Apartment	Bedroom	84%	100%	64%	100%	48%	100%	Trees affecting compliance (summer only)
20_Duplex	Kitchen / Dining	98%	100%	95%	100%	91%	100%	Compliant
20_Duplex	Living Room	87%	100%	82%	100%	62%	100%	Compliant
20_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
20_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
20_Duplex	Bedroom 3	97%	100%	97%	100%	90%	100%	Compliant
21_GF Apartment	Kitchen / Living / Dining	13%	100%	10%	99%	5%	94%	Non-compliant
21_GF Apartment	Bedroom	85%	100%	65%	100%	53%	100%	Compliant
22_Duplex	Kitchen / Dining	95%	100%	91%	100%	88%	100%	Compliant
22_Duplex	Living Room	95%	100%	91%	100%	76%	100%	Compliant
22_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
22_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
22_Duplex	Bedroom 3	97%	100%	93%	100%	83%	100%	Compliant
23_GF Apartment	Kitchen / Living / Dining	98%	100%	69%	100%	51%	100%	Compliant
23_GF Apartment	Bedroom	100%	100%	98%	100%	73%	100%	Compliant
24_Duplex	Kitchen / Dining	100%	100%	100%	100%	100%	100%	Compliant
24_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
24_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
24_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
24_Duplex	Bedroom 3	97%	100%	93%	100%	93%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.
For floor plans of the assessed units please refer to section C.1 on page 43.

D.1.3 Supplementary SDA Results (I.S. EN 17037 criteria): Duplexes 25 - 36

Table No. D.1.3 - Supplementary SDA Results (I.S. EN 17037 criteria): Duplexes 25 - 36								
Unit Number	Room Description	No Trees		Winter Trees		Summer Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
25_GF Apartment	Kitchen / Living / Dining	99%	100%	89%	100%	69%	100%	Compliant
25_GF Apartment	Bedroom	100%	100%	100%	100%	100%	100%	Compliant
26_Duplex	Kitchen / Dining	100%	100%	100%	100%	100%	100%	Compliant
26_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
26_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
26_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
26_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
27_GF Apartment	Kitchen / Living / Dining	18%	100%	7%	99%	0%	81%	Non-compliant
27_GF Apartment	Bedroom	100%	100%	100%	100%	69%	100%	Compliant
28_Duplex	Kitchen / Dining	92%	100%	71%	100%	56%	100%	Compliant
28_Duplex	Living Room	100%	100%	100%	100%	91%	100%	Compliant
28_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
28_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
28_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
29_GF Apartment	Kitchen / Living / Dining	12%	100%	4%	99%	0%	64%	Non-compliant
29_GF Apartment	Bedroom	100%	100%	100%	100%	68%	100%	Compliant
30_Duplex	Kitchen / Dining	91%	100%	65%	100%	51%	100%	Compliant
30_Duplex	Living Room	100%	100%	100%	100%	92%	100%	Compliant
30_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
30_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
30_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
31_GF Apartment	Kitchen / Living / Dining	100%	100%	91%	100%	79%	100%	Compliant
31_GF Apartment	Bedroom	100%	100%	100%	100%	100%	100%	Compliant
32_Duplex	Kitchen / Dining	100%	100%	100%	100%	100%	100%	Compliant
32_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
32_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
32_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
32_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
33_GF Apartment	Kitchen / Living / Dining	68%	100%	29%	100%	12%	100%	Trees affecting compliance
33_GF Apartment	Bedroom	100%	100%	100%	100%	100%	100%	Compliant
34_Duplex	Kitchen / Dining	100%	100%	100%	100%	100%	100%	Compliant
34_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
34_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
34_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
34_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
35_GF Apartment	Kitchen / Living / Dining	51%	100%	26%	100%	14%	100%	Trees affecting compliance
35_GF Apartment	Bedroom	100%	100%	100%	100%	100%	100%	Compliant
36_Duplex	Kitchen / Dining	100%	100%	100%	100%	100%	100%	Compliant
36_Duplex	Living Room	98%	100%	98%	100%	98%	100%	Compliant
36_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
36_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
36_Duplex	Bedroom 3	97%	100%	97%	100%	97%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.
For floor plans of the assessed units please refer to section C.1 on page 43.

D.1.4 Supplementary SDA Results (I.S. EN 17037 criteria): Duplexes 37 - 48

Table No. D.1.4 - Supplementary SDA Results (I.S. EN 17037 criteria): Duplexes 37 - 48								
Unit Number	Room Description	No Trees		Winter Trees		Summer Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
37_GF Apartment	Kitchen / Living / Dining	51%	100%	33%	100%	21%	100%	Trees affecting compliance
37_GF Apartment	Bedroom	99%	100%	99%	100%	99%	100%	Compliant
38_Duplex	Kitchen / Dining	100%	100%	100%	100%	100%	100%	Compliant
38_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
38_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
38_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
38_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
39_GF Apartment	Kitchen / Living / Dining	59%	100%	42%	100%	31%	100%	Trees affecting compliance
39_GF Apartment	Bedroom	100%	100%	100%	100%	100%	100%	Compliant
40_Duplex	Kitchen / Dining	100%	100%	100%	100%	100%	100%	Compliant
40_Duplex	Living Room	99%	100%	99%	100%	99%	100%	Compliant
40_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
40_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
40_Duplex	Bedroom 3	97%	100%	97%	100%	97%	100%	Compliant
41_GF Apartment	Kitchen / Living / Dining	71%	100%	50%	100%	34%	100%	Trees affecting compliance (summer only)
41_GF Apartment	Bedroom	100%	100%	100%	100%	100%	100%	Compliant
42_Duplex	Kitchen / Dining	100%	100%	100%	100%	100%	100%	Compliant
42_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
42_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
42_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
42_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
43_GF Apartment	Kitchen / Living / Dining	31%	100%	18%	100%	6%	100%	Non-compliant
43_GF Apartment	Bedroom	100%	100%	100%	100%	100%	100%	Compliant
44_Duplex	Kitchen / Dining	100%	100%	100%	100%	92%	100%	Compliant
44_Duplex	Living Room	98%	100%	98%	100%	98%	100%	Compliant
44_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
44_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
44_Duplex	Bedroom 3	97%	100%	97%	100%	97%	100%	Compliant
45_GF Apartment	Kitchen / Living / Dining	19%	100%	8%	100%	3%	88%	Non-compliant
45_GF Apartment	Bedroom	99%	100%	99%	100%	99%	100%	Compliant
46_Duplex	Kitchen / Dining	100%	100%	99%	100%	69%	100%	Compliant
46_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
46_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
46_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
46_Duplex	Bedroom 3	100%	100%	100%	100%	100%	100%	Compliant
47_GF Apartment	Kitchen / Living / Dining	96%	100%	55%	100%	19%	100%	Trees affecting compliance (summer only)
47_GF Apartment	Bedroom	100%	100%	100%	100%	99%	100%	Compliant
48_Duplex	Kitchen / Dining	100%	100%	100%	100%	95%	100%	Compliant
48_Duplex	Living Room	100%	100%	100%	100%	100%	100%	Compliant
48_Duplex	Bedroom 1	100%	100%	100%	100%	100%	100%	Compliant
48_Duplex	Bedroom 2	100%	100%	100%	100%	100%	100%	Compliant
48_Duplex	Bedroom 3	100%	100%	100%	100%	97%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.
For floor plans of the assessed units please refer to section C.1 on page 43.

D.1.5 Supplementary SDA Results (I.S. EN 17037 criteria): Apartment Block - Ground Floor, 1st Floor and 2nd Floor

Table No. D.1.5 - Supplementary SDA Results (I.S. EN 17037 criteria): **Apartment Block - Ground Floor, 1st Floor and 2nd Floor**

Unit Number	Room Description	No Trees		Winter Trees		Summer Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Commercial Gd Fl.	Consultation 01	98%	100%	96%	100%	92%	100%	Compliant
Commercial Gd Fl.	Consultation 02	35%	100%	15%	92%	5%	35%	Non-compliant
Commercial Gd Fl.	Consultation 03	34%	100%	12%	94%	2%	44%	Non-compliant
Commercial Gd Fl.	Consultation 04	30%	100%	13%	81%	6%	30%	Non-compliant
Commercial Gd Fl.	Consultation 05	44%	100%	19%	99%	7%	49%	Non-compliant
Commercial Gd Fl.	Consultation 06	100%	100%	100%	100%	100%	100%	Compliant
Commercial Gd Fl.	Office/Admin	81%	100%	65%	100%	52%	100%	Compliant
Commercial Gd Fl.	Staffroom	100%	100%	88%	100%	65%	100%	Compliant
Commercial Gd Fl.	Reception	67%	100%	58%	100%	48%	100%	Trees affecting compliance (summer only)
Commercial Gd Fl.	Entrance / Waiting Area	33%	97%	28%	94%	25%	89%	Non-compliant
Commercial Gd Fl.	Pharmacy	100%	100%	99%	100%	96%	100%	Compliant
Commercial Gd Fl.	Dispensary	34%	100%	29%	82%	19%	68%	Non-compliant
Apt. 01	Kitchen / Living / Dining	97%	100%	93%	100%	86%	100%	Compliant
Apt. 01	Bedroom 01	77%	100%	75%	100%	66%	100%	Compliant
Apt. 01	Bedroom 02	77%	100%	60%	100%	48%	100%	Trees affecting compliance (summer only)
Apt. 02	Kitchen / Living / Dining	99%	100%	97%	100%	94%	100%	Compliant
Apt. 02	Bedroom 01	92%	100%	67%	100%	48%	100%	Trees affecting compliance (summer only)
Apt. 02	Bedroom 02	100%	100%	100%	100%	100%	100%	Compliant
Apt. 03	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 03	Bedroom 01	97%	100%	92%	100%	85%	100%	Compliant
Apt. 04	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 04	Bedroom 01	96%	100%	93%	100%	89%	100%	Compliant
Apt. 05	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 05	Bedroom 01	99%	100%	92%	100%	84%	100%	Compliant
Apt. 06	Kitchen / Living / Dining	95%	100%	94%	100%	91%	100%	Compliant
Apt. 06	Bedroom 01	75%	100%	70%	100%	70%	100%	Compliant
Apt. 06	Bedroom 02	58%	100%	57%	100%	53%	100%	Compliant
Apt. 07	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 07	Bedroom 01	89%	100%	87%	100%	83%	100%	Compliant
Apt. 07	Bedroom 02	95%	100%	88%	100%	77%	100%	Compliant
Apt. 08	Kitchen / Living / Dining	100%	100%	100%	100%	98%	100%	Compliant
Apt. 08	Bedroom 01	98%	100%	95%	100%	83%	100%	Compliant
Apt. 08	Bedroom 02	100%	100%	100%	100%	100%	100%	Compliant
Apt. 09	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 09	Bedroom 01	100%	100%	97%	100%	89%	100%	Compliant
Apt. 10	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 10	Bedroom 01	99%	100%	99%	100%	95%	100%	Compliant
Apt. 11	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 11	Bedroom 01	100%	100%	99%	100%	99%	100%	Compliant
Apt. 12	Kitchen / Living / Dining	100%	100%	99%	100%	99%	100%	Compliant
Apt. 12	Bedroom 01	89%	100%	87%	100%	85%	100%	Compliant
Apt. 12	Bedroom 02	83%	100%	78%	100%	77%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.
For floor plans of the assessed units please refer to section C.1 on page 43.

D.1.6 Supplementary SDA Results (I.S. EN 17037 criteria): Apartment Block - 3rd Floor and 4th Floor

Table No. D.1.6 - Supplementary SDA Results (I.S. EN 17037 criteria): Apartment Block - 3rd Floor and 4th Floor

Unit Number	Room Description	No Trees		Winter Trees		Summer Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Apt. 13	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 13	Bedroom 01	92%	100%	91%	100%	91%	100%	Compliant
Apt. 13	Bedroom 02	100%	100%	98%	100%	97%	100%	Compliant
Apt. 14	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 14	Bedroom 01	100%	100%	98%	100%	98%	100%	Compliant
Apt. 14	Bedroom 02	100%	100%	100%	100%	100%	100%	Compliant
Apt. 15	Kitchen / Living / Dining	100%	100%	98%	100%	95%	100%	Compliant
Apt. 15	Bedroom 01	100%	100%	100%	100%	97%	100%	Compliant
Apt. 16	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 16	Bedroom 01	100%	100%	100%	100%	96%	100%	Compliant
Apt. 17	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 17	Bedroom 01	100%	100%	100%	100%	99%	100%	Compliant
Apt. 18	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 18	Bedroom 01	92%	100%	92%	100%	91%	100%	Compliant
Apt. 18	Bedroom 02	100%	100%	100%	100%	100%	100%	Compliant
Apt. 19	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 19	Bedroom 01	94%	100%	94%	100%	92%	100%	Compliant
Apt. 19	Bedroom 02	100%	100%	100%	100%	100%	100%	Compliant
Apt. 20	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 20	Bedroom 01	100%	100%	100%	100%	100%	100%	Compliant
Apt. 20	Bedroom 02	100%	100%	100%	100%	100%	100%	Compliant
Apt. 21	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 21	Bedroom 01	100%	100%	100%	100%	100%	100%	Compliant
Apt. 22	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 22	Bedroom 01	100%	100%	100%	100%	100%	100%	Compliant
Apt. 23	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 23	Bedroom 01	100%	100%	100%	100%	99%	100%	Compliant
Apt. 24	Kitchen / Living / Dining	100%	100%	100%	100%	100%	100%	Compliant
Apt. 24	Bedroom 01	96%	100%	94%	100%	92%	100%	Compliant
Apt. 24	Bedroom 02	100%	100%	100%	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 18.
For floor plans of the assessed units please refer to section C.1 on page 43.

D.2 Supplementary No Sky Line (NSL) assessment in proposed units.

Below is an example of the table used to describe the supplementary assessment results for 'No Sky Line' in proposed units.

Table Example. D.2 - Supplementary NSL Results:			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%
A	**B**	**C**	**D**

A: Unit Number

This column identifies the assessed unit. All unit numbers are determined by the architect's drawings, unless otherwise stated.

B: Room Description

Room Description details which room in the unit has been assessed, e.g. bedroom, LKD, etc.

C: % of room where the sky is visible from the working plane

This column states the percentage of the room from which there is a direct line of sight to the sky when assessed at the working plane height, which is 850mm above the finished floor level in residential rooms or 700mm above the finished floor level in offices or classrooms.

D: Above 80%

Whilst the BRE Guidelines only provide recommendations for NSL in the context of an impact analysis, it states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the no sky line."

If this column states: *'Yes'*, it signifies that the sky will be visible from more than 80% of the working plane.

If this column states: *'No'*, it signifies that the sky will be visible from less than 80% of the working plane and supplementary electric lighting may be required.

D.2.1 Supplementary NSL Results: Duplexes 01 - 12

Table No. D.2.1 - Supplementary NSL Results: Duplexes 01 - 12			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
01_GF Apartment	Kitchen / Living / Dining	99%	Yes
01_GF Apartment	Bedroom	99%	Yes
02_Duplex	Kitchen / Dining	100%	Yes
02_Duplex	Living Room	100%	Yes
02_Duplex	Bedroom 1	99%	Yes
02_Duplex	Bedroom 2	100%	Yes
02_Duplex	Bedroom 3	92%	Yes
03_GF Apartment	Kitchen / Living / Dining	96%	Yes
03_GF Apartment	Bedroom	100%	Yes
04_Duplex	Kitchen / Dining	98%	Yes
04_Duplex	Living Room	97%	Yes
04_Duplex	Bedroom 1	98%	Yes
04_Duplex	Bedroom 2	99%	Yes
04_Duplex	Bedroom 3	91%	Yes
05_GF Apartment	Kitchen / Living / Dining	96%	Yes
05_GF Apartment	Bedroom	98%	Yes
06_Duplex	Kitchen / Dining	99%	Yes
06_Duplex	Living Room	99%	Yes
06_Duplex	Bedroom 1	98%	Yes
06_Duplex	Bedroom 2	99%	Yes
06_Duplex	Bedroom 3	92%	Yes
07_GF Apartment	Kitchen / Living / Dining	96%	Yes
07_GF Apartment	Bedroom	100%	Yes
08_Duplex	Kitchen / Dining	98%	Yes
08_Duplex	Living Room	97%	Yes
08_Duplex	Bedroom 1	98%	Yes
08_Duplex	Bedroom 2	99%	Yes
08_Duplex	Bedroom 3	91%	Yes
09_GF Apartment	Kitchen / Living / Dining	97%	Yes
09_GF Apartment	Bedroom	100%	Yes
10_Duplex	Kitchen / Dining	99%	Yes
10_Duplex	Living Room	99%	Yes
10_Duplex	Bedroom 1	98%	Yes
10_Duplex	Bedroom 2	99%	Yes
10_Duplex	Bedroom 3	92%	Yes
11_GF Apartment	Kitchen / Living / Dining	96%	Yes
11_GF Apartment	Bedroom	100%	Yes
12_Duplex	Kitchen / Dining	98%	Yes
12_Duplex	Living Room	97%	Yes
12_Duplex	Bedroom 1	98%	Yes
12_Duplex	Bedroom 2	99%	Yes
12_Duplex	Bedroom 3	91%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, it states that “Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the no sky line.”

For floor plans of the assessed units please refer to section C.1 on page 43.

D.2.2 Supplementary NSL Results: Duplexes 13 - 24

Table No. D.2.2 - Supplementary NSL Results: Duplexes 13 - 24			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
13_GF Apartment	Kitchen / Living / Dining	96%	Yes
13_GF Apartment	Bedroom	98%	Yes
14_Duplex	Kitchen / Dining	99%	Yes
14_Duplex	Living Room	98%	Yes
14_Duplex	Bedroom 1	98%	Yes
14_Duplex	Bedroom 2	99%	Yes
14_Duplex	Bedroom 3	92%	Yes
15_GF Apartment	Kitchen / Living / Dining	96%	Yes
15_GF Apartment	Bedroom	99%	Yes
16_Duplex	Kitchen / Dining	98%	Yes
16_Duplex	Living Room	97%	Yes
16_Duplex	Bedroom 1	98%	Yes
16_Duplex	Bedroom 2	99%	Yes
16_Duplex	Bedroom 3	91%	Yes
17_GF Apartment	Kitchen / Living / Dining	99%	Yes
17_GF Apartment	Bedroom	100%	Yes
18_Duplex	Kitchen / Dining	100%	Yes
18_Duplex	Living Room	100%	Yes
18_Duplex	Bedroom 1	100%	Yes
18_Duplex	Bedroom 2	100%	Yes
18_Duplex	Bedroom 3	92%	Yes
19_GF Apartment	Kitchen / Living / Dining	83%	Yes
19_GF Apartment	Bedroom	98%	Yes
20_Duplex	Kitchen / Dining	98%	Yes
20_Duplex	Living Room	97%	Yes
20_Duplex	Bedroom 1	98%	Yes
20_Duplex	Bedroom 2	99%	Yes
20_Duplex	Bedroom 3	91%	Yes
21_GF Apartment	Kitchen / Living / Dining	85%	Yes
21_GF Apartment	Bedroom	98%	Yes
22_Duplex	Kitchen / Dining	99%	Yes
22_Duplex	Living Room	96%	Yes
22_Duplex	Bedroom 1	98%	Yes
22_Duplex	Bedroom 2	99%	Yes
22_Duplex	Bedroom 3	92%	Yes
23_GF Apartment	Kitchen / Living / Dining	99%	Yes
23_GF Apartment	Bedroom	100%	Yes
24_Duplex	Kitchen / Dining	100%	Yes
24_Duplex	Living Room	100%	Yes
24_Duplex	Bedroom 1	100%	Yes
24_Duplex	Bedroom 2	100%	Yes
24_Duplex	Bedroom 3	91%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, it states that “Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the no sky line.”

For floor plans of the assessed units please refer to section C.1 on page 43.

D.2.3 Supplementary NSL Results: Duplexes 25 - 36

Table No. D.2.3 - Supplementary NSL Results: Duplexes 25 - 36			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
25_GF Apartment	Kitchen / Living / Dining	99%	Yes
25_GF Apartment	Bedroom	100%	Yes
26_Duplex	Kitchen / Dining	100%	Yes
26_Duplex	Living Room	100%	Yes
26_Duplex	Bedroom 1	100%	Yes
26_Duplex	Bedroom 2	100%	Yes
26_Duplex	Bedroom 3	91%	Yes
27_GF Apartment	Kitchen / Living / Dining	94%	Yes
27_GF Apartment	Bedroom	99%	Yes
28_Duplex	Kitchen / Dining	98%	Yes
28_Duplex	Living Room	97%	Yes
28_Duplex	Bedroom 1	98%	Yes
28_Duplex	Bedroom 2	99%	Yes
28_Duplex	Bedroom 3	91%	Yes
29_GF Apartment	Kitchen / Living / Dining	92%	Yes
29_GF Apartment	Bedroom	98%	Yes
30_Duplex	Kitchen / Dining	99%	Yes
30_Duplex	Living Room	98%	Yes
30_Duplex	Bedroom 1	98%	Yes
30_Duplex	Bedroom 2	99%	Yes
30_Duplex	Bedroom 3	92%	Yes
31_GF Apartment	Kitchen / Living / Dining	99%	Yes
31_GF Apartment	Bedroom	100%	Yes
32_Duplex	Kitchen / Dining	100%	Yes
32_Duplex	Living Room	100%	Yes
32_Duplex	Bedroom 1	100%	Yes
32_Duplex	Bedroom 2	100%	Yes
32_Duplex	Bedroom 3	91%	Yes
33_GF Apartment	Kitchen / Living / Dining	97%	Yes
33_GF Apartment	Bedroom	98%	Yes
34_Duplex	Kitchen / Dining	99%	Yes
34_Duplex	Living Room	96%	Yes
34_Duplex	Bedroom 1	98%	Yes
34_Duplex	Bedroom 2	99%	Yes
34_Duplex	Bedroom 3	91%	Yes
35_GF Apartment	Kitchen / Living / Dining	96%	Yes
35_GF Apartment	Bedroom	98%	Yes
36_Duplex	Kitchen / Dining	99%	Yes
36_Duplex	Living Room	97%	Yes
36_Duplex	Bedroom 1	98%	Yes
36_Duplex	Bedroom 2	99%	Yes
36_Duplex	Bedroom 3	91%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, it states that “Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the no sky line.”

For floor plans of the assessed units please refer to section C.1 on page 43.

D.2.4 Supplementary NSL Results: Duplexes 37 - 48

Table No. D.2.4 - Supplementary NSL Results: Duplexes 37 - 48			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
37_GF Apartment	Kitchen / Living / Dining	96%	Yes
37_GF Apartment	Bedroom	98%	Yes
38_Duplex	Kitchen / Dining	99%	Yes
38_Duplex	Living Room	96%	Yes
38_Duplex	Bedroom 1	98%	Yes
38_Duplex	Bedroom 2	99%	Yes
38_Duplex	Bedroom 3	91%	Yes
39_GF Apartment	Kitchen / Living / Dining	98%	Yes
39_GF Apartment	Bedroom	98%	Yes
40_Duplex	Kitchen / Dining	98%	Yes
40_Duplex	Living Room	97%	Yes
40_Duplex	Bedroom 1	98%	Yes
40_Duplex	Bedroom 2	99%	Yes
40_Duplex	Bedroom 3	91%	Yes
41_GF Apartment	Kitchen / Living / Dining	97%	Yes
41_GF Apartment	Bedroom	98%	Yes
42_Duplex	Kitchen / Dining	99%	Yes
42_Duplex	Living Room	96%	Yes
42_Duplex	Bedroom 1	98%	Yes
42_Duplex	Bedroom 2	99%	Yes
42_Duplex	Bedroom 3	91%	Yes
43_GF Apartment	Kitchen / Living / Dining	90%	Yes
43_GF Apartment	Bedroom	98%	Yes
44_Duplex	Kitchen / Dining	99%	Yes
44_Duplex	Living Room	97%	Yes
44_Duplex	Bedroom 1	98%	Yes
44_Duplex	Bedroom 2	99%	Yes
44_Duplex	Bedroom 3	91%	Yes
45_GF Apartment	Kitchen / Living / Dining	86%	Yes
45_GF Apartment	Bedroom	98%	Yes
46_Duplex	Kitchen / Dining	99%	Yes
46_Duplex	Living Room	96%	Yes
46_Duplex	Bedroom 1	98%	Yes
46_Duplex	Bedroom 2	99%	Yes
46_Duplex	Bedroom 3	91%	Yes
47_GF Apartment	Kitchen / Living / Dining	99%	Yes
47_GF Apartment	Bedroom	100%	Yes
48_Duplex	Kitchen / Dining	100%	Yes
48_Duplex	Living Room	100%	Yes
48_Duplex	Bedroom 1	100%	Yes
48_Duplex	Bedroom 2	100%	Yes
48_Duplex	Bedroom 3	91%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, it states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the no sky line."

For floor plans of the assessed units please refer to section C.1 on page 43.

D.2.5 Supplementary NSL Results: Apartment Block - Ground Floor, 1st Floor and 2nd Floor

Table No. D.2.5 - Supplementary NSL Results: **Apt Block - Ground Fl., 1st Fl. and 2nd Fl.**

Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Commercial Gd Fl.	Consultation 01	98%	Yes
Commercial Gd Fl.	Consultation 02	83%	Yes
Commercial Gd Fl.	Consultation 03	89%	Yes
Commercial Gd Fl.	Consultation 04	80%	Yes
Commercial Gd Fl.	Consultation 05	89%	Yes
Commercial Gd Fl.	Consultation 06	100%	Yes
Commercial Gd Fl.	Office/Admin	100%	Yes
Commercial Gd Fl.	Staffroom	96%	Yes
Commercial Gd Fl.	Reception	99%	Yes
Commercial Gd Fl.	Entrance / Waiting Area	79%	No
Commercial Gd Fl.	Pharmacy	100%	Yes
Commercial Gd Fl.	Dispensary	99%	Yes
Apt. 01	Kitchen / Living / Dining	98%	Yes
Apt. 01	Bedroom 01	96%	Yes
Apt. 01	Bedroom 02	99%	Yes
Apt. 02	Kitchen / Living / Dining	100%	Yes
Apt. 02	Bedroom 01	96%	Yes
Apt. 02	Bedroom 02	99%	Yes
Apt. 03	Kitchen / Living / Dining	99%	Yes
Apt. 03	Bedroom 01	98%	Yes
Apt. 04	Kitchen / Living / Dining	100%	Yes
Apt. 04	Bedroom 01	98%	Yes
Apt. 05	Kitchen / Living / Dining	99%	Yes
Apt. 05	Bedroom 01	97%	Yes
Apt. 06	Kitchen / Living / Dining	95%	Yes
Apt. 06	Bedroom 01	97%	Yes
Apt. 06	Bedroom 02	55%	No
Apt. 07	Kitchen / Living / Dining	100%	Yes
Apt. 07	Bedroom 01	96%	Yes
Apt. 07	Bedroom 02	99%	Yes
Apt. 08	Kitchen / Living / Dining	100%	Yes
Apt. 08	Bedroom 01	96%	Yes
Apt. 08	Bedroom 02	99%	Yes
Apt. 09	Kitchen / Living / Dining	99%	Yes
Apt. 09	Bedroom 01	98%	Yes
Apt. 10	Kitchen / Living / Dining	100%	Yes
Apt. 10	Bedroom 01	98%	Yes
Apt. 11	Kitchen / Living / Dining	99%	Yes
Apt. 11	Bedroom 01	97%	Yes
Apt. 12	Kitchen / Living / Dining	95%	Yes
Apt. 12	Bedroom 01	97%	Yes
Apt. 12	Bedroom 02	86%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, it states that “Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the no sky line.”

For floor plans of the assessed units please refer to section C.1 on page 43.

D.2.6 Supplementary NSL Results: Apartment Block - 3rd Floor and 4th Floor

Table No. D.2.6 - Supplementary NSL Results: **Apt Block - 3rd Fl. and 4th Fl.**

Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Apt. 13	Kitchen / Living / Dining	100%	Yes
Apt. 13	Bedroom 01	96%	Yes
Apt. 13	Bedroom 02	99%	Yes
Apt. 14	Kitchen / Living / Dining	100%	Yes
Apt. 14	Bedroom 01	96%	Yes
Apt. 14	Bedroom 02	99%	Yes
Apt. 15	Kitchen / Living / Dining	0%	No
Apt. 15	Bedroom 01	98%	Yes
Apt. 16	Kitchen / Living / Dining	0%	No
Apt. 16	Bedroom 01	98%	Yes
Apt. 17	Kitchen / Living / Dining	100%	Yes
Apt. 17	Bedroom 01	97%	Yes
Apt. 18	Kitchen / Living / Dining	98%	Yes
Apt. 18	Bedroom 01	97%	Yes
Apt. 18	Bedroom 02	99%	Yes
Apt. 19	Kitchen / Living / Dining	100%	Yes
Apt. 19	Bedroom 01	96%	Yes
Apt. 19	Bedroom 02	99%	Yes
Apt. 20	Kitchen / Living / Dining	100%	Yes
Apt. 20	Bedroom 01	96%	Yes
Apt. 20	Bedroom 02	99%	Yes
Apt. 21	Kitchen / Living / Dining	100%	Yes
Apt. 21	Bedroom 01	98%	Yes
Apt. 22	Kitchen / Living / Dining	100%	Yes
Apt. 22	Bedroom 01	98%	Yes
Apt. 23	Kitchen / Living / Dining	100%	Yes
Apt. 23	Bedroom 01	97%	Yes
Apt. 24	Kitchen / Living / Dining	100%	Yes
Apt. 24	Bedroom 01	97%	Yes
Apt. 24	Bedroom 02	99%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, it states that “Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the no sky line.”

For floor plans of the assessed units please refer to section C.1 on page 43.