June 2025

LRD Forest Road, Forrest Great, Swords, Co. Dublin

Daylight and Sunlight Assessment Report

Applicant: Golden Port Homes Limited

"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

+353 (0) 1 288 0186

info@3ddesignbureau.com

www.3ddesignbureau.com

3D DESIGN BUREAU

Creative & Technical 3D Solutions in Design, Planning & Marketing.

3D DESIGN BUREAU

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 bachelor's degree in Building Information Modelling (BIM) with over 20 years experience in the industry.

1.0 Executive Summary

1.1 Summary of Assessment

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 (LRD) at Forest Road, Forrest Great, Swords, Co. Dublin.

The proposal consists of 26 no. house-type units, 42 no. duplex units, and 41 no. units within two four-to-five-storey apartment buildings (Blocks A and B), along with associated private, communal and public amenity open spaces.

Assessments 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

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 were 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 14.

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 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 15.

Based on the above criteria, the only assessed property in the impact assessment is indicated in Figure 1.1 below:

- Ridgewood Grove (1)

The impact assessment, in accordance with the BRE Guidelines, covered the following metrics:

- Effect on daylight through the effect to the Vertical Sky Component (VSC) to the windows of this property.
- Effect on sunlight through the effect to the Annual and Winter Probable Sunlight Hours (APSH/WPSH) to the windows of this property that are oriented within 90° of due south.

No quantitative Sun on Ground (SOG) impact assessment was conducted on any surrounding areas. The rear gardens of the properties across Ridgewood Green, to the north of the subject site, have sufficient separation distance from the proposed dwellings, making overshadowing highly unlikely.

Supplementary VSC Assessments

- 'No-Balcony' Study: In this additional assessment, existing overhanging balconies of Ridgewood Grove were excluded from the analytical model to isolate their impact on daylight levels and better understand their contribution to any adverse effects.
- Belt of existing trees considered in the assessment: In the primary VSC study, the effect of the belt of deciduous trees along the northern boundary of the site, in front of Ridgewood Grove, was not taken into account as per the BRE Guidelines. However, to provide a more detailed understanding of the potential impacts, a supplementary VSC assessment was undertaken, this time including the tree belt in the analysis to reflect the obstruction posed by the existing vegetation.

Figure 1.1: Scope of surrounding properties and environment assessed.

The results of the primary impact assessment and the supplementary VSC studies can be found in section A.0 on page 32. These results are summarised in section 1.2 and explained in section "5.1 Analysis of Impact Assessment Results" on page 24.

Scheme Performance

- **Daylight access:** Assessed for the habitable rooms of the proposed apartment buildings and duplex units across the LRD development through a Spatial Daylight Autonomy (SDA) study.
- **Sunlight access:** Quantified through a Sunlight Exposure (SE) assessment for the same habitable rooms.
- **A Sun On Ground (SOG):** Assessed to indicate the level of sunlight on March 21st in the proposed public and communal 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 47. These results are summarised in section 1.3 and explained in section “5.2 Analysis of Scheme Performance Results” on page 25.

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 of the apartment buildings and duplex units. The results of the supplementary scheme performance assessments can be found in section D.0 on page 72.

Figure 1.2: Apartment blocks (in blue) and duplex units (in red) assessed for scheme performance.

Qualitative Assessment

In addition to the quantitative assessments detailed in the ‘Impact Assessment’ and ‘Scheme Performance’ sections, this report includes a qualitative assessment. This is provided through the false colour plans of the proposed SOG assessment (section C.4 on page 70) and the hourly renderings of the shadow study (section B.0 on page 38).

1.2 Impact Assessment Results Overview - Neighbouring Properties:

1.2.1 Primary Study

Effect to Daylight - Vertical Sky Component (VSC):

Effect to Vertical Sky Component (VSC)	
Windows/Rooms Assessed	6
Negligible	4
Minor Adverse	1
Moderate Adverse	1
Major Adverse	0

Effect to Sunlight - Annual Probable Sunlight Hours (APSH):

Effect to Annual Probable Sunlight Hours (APSH)	
Windows/Rooms Assessed	6
Negligible	6
Minor Adverse	0
Moderate Adverse	0
Major Adverse	0

Effect to Sunlight - Winter Probable Sunlight Hours (WPSH):

Effect to Winter Probable Sunlight Hours (WPSH)	
Windows/Rooms Assessed	6
Negligible	6
Minor Adverse	0
Moderate Adverse	0
Major Adverse	0

1.2.2 Supplementary VSC Assessments

‘No-Balcony’ Study

Effect to Vertical Sky Component (VSC)*	
Windows/Rooms Assessed	6
Negligible	6
Minor Adverse	0
Moderate Adverse	0
Major Adverse	0

Belt of existing trees considered in the assessment

Effect to Vertical Sky Component (VSC)**	
Windows/Rooms Assessed	6
Negligible	6
Minor Adverse	0
Moderate Adverse	0
Major Adverse	0

*In the additional ‘No-Balcony’ Study, overhanging balconies of Ridgewood Grove were excluded from the analytical model to isolate their impact on daylight levels and better understand their contribution to any adverse effects.

**The belt of deciduous trees along the northern boundary of the site, in front of Ridgewood Grove, was included.

1.3 Scheme Performance Results Overview:

Spatial Daylight Autonomy (SDA):

Spatial Daylight Autonomy (SDA) BRE 209 Criteria	
Unit Count	83
Rooms Assessed	231
Without Trees	
Compliant	230
Non-compliant	1
Compliance Rate*	> 99%
With Trees (Proposed and Existing Trees)	
Compliant	229
Non-compliant	2
Compliance Rate*	c. 99%
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 (apartment and duplex units). Units which contain non-compliant rooms will have Compensatory Design Solutions provided by the project architects.

Sunlight Exposure (SE):

Sunlight Exposure (SE)	
Units Assessed	83
SE without deciduous trees	
Non-Compliant	0
Minimum	15
Medium	5
High	63
Compliance Rate*	100%
SE with trees as opaque objects	
Non-Compliant	0
Minimum	17
Medium	3
High	63
Compliance Rate*	100%

* Compliance rates stated for the SE analysis are based on the units that have been assessed (apartment and duplex units).

Sun On Ground (SOG) in proposed amenity areas:

Sun On Ground (SOG) in proposed amenity areas	
Areas Assessed	10
Areas meeting the guidelines	7
Areas not meeting the guidelines	3*

* Non-compliant spaces are limited to 3 no. small “Communal Open Space - Zones” 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	83
Rooms Assessed	231
Without Trees	
Compliant	161
Non-compliant	70
Compliance Rate*	c. 70%
With Trees (Proposed and Existing Trees)	
Compliant	151
Non-compliant	80
Compliance Rate*	c. 65%
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 (apartment and duplex units).

No Sky Line (NSL):

No Sky Line (NSL):	
Unit Count	83
Rooms Assessed	231
Yes	212
No	19
Compliance Rate*	c. 92%
Note: 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 (apartment and duplex units).

2.0 Guidelines / Standards

Overview

Neither the British Standard, European Standard, British Annex to the European Standard nor the BRE Guidelines (BR 209) 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 Guidelines 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 when applicable.

Note: Section 3.2 of the Urban Development and Building Height Guidelines 2020, provides similar guidance as above. However, it should be noted that at the time of publication of the *Urban Development and Building Height Guidelines (2020),* 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*, the *BRE Guide* or *BR 209* 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 14 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 18 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.

Fingal Development Plan (2023-2029)

The guidance provided in the Fingal County Council Development Plan 2023-2029 references the 2nd Edition of the BRE guidelines (BR 209).

Section 14.6.6.1 of the Fingal Development Plan states:

"*Development shall be guided by the principles of Site Layout Planning for Daylight and Sunlight, A guide to good practice (Building Research Establishment Report, 2011) and/or any updated, or subsequent guidance, in this regard.*"

The Fingal Development Plan allows for consideration of any updated or subsequent guidance and, therefore, the 3rd edition of the BRE guidelines (BR 209), which was released in 2022 and supersedes the 2nd edition is considered as the primary document.

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.

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 21. In a scheme performance assessment, the SDA will be calculated for the habitable rooms of 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.

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 14.

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 15.

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 63. 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 of a proposed unit 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.

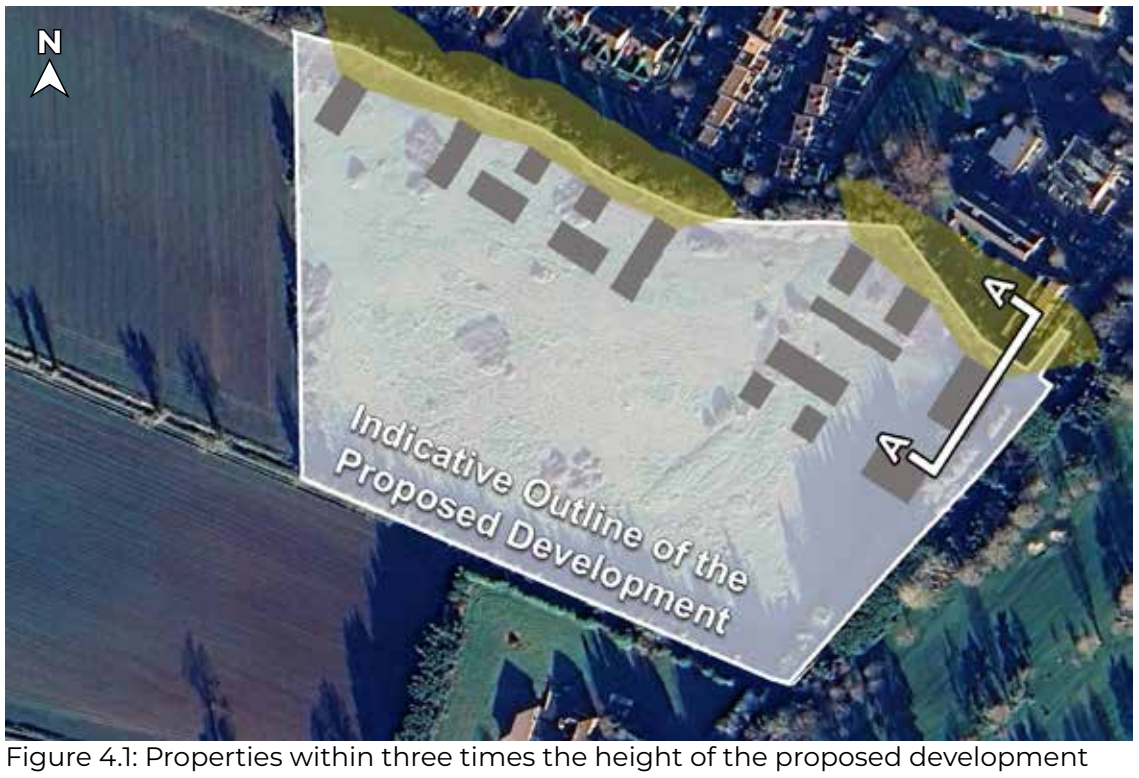


Figure 4.1: Properties within three times the height of the proposed development

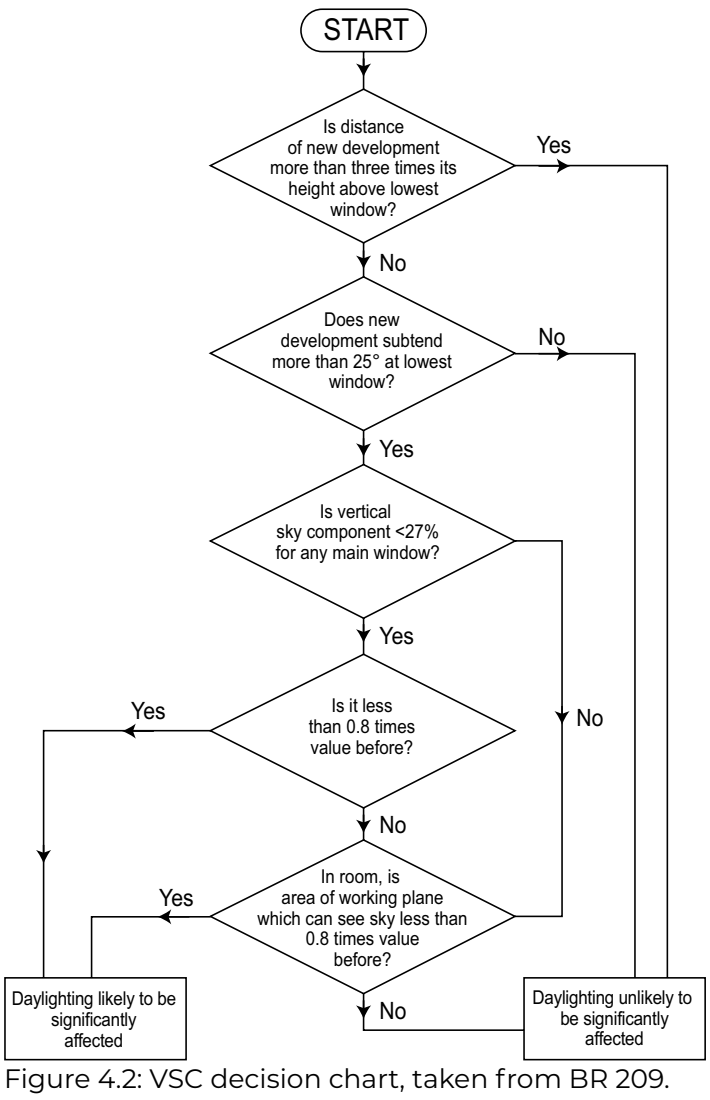


Figure 4.2: VSC decision chart, taken from BR 209.

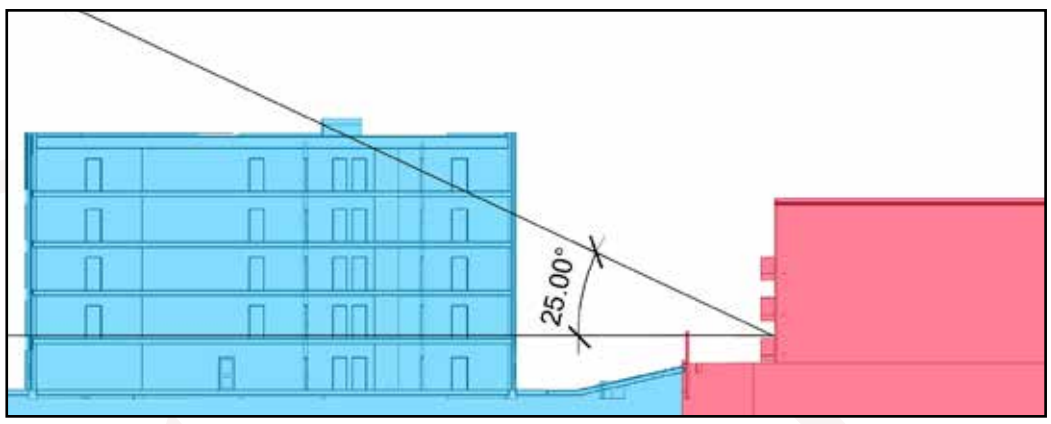


Figure 4.3: Section A-A taken through Ridgewood Grove

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 Ridgewood Grove 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. In this case, Ridgewood Grove is the only property within three times the height of the proposed development in the surrounding context. Since no other properties lie within this distance, no further 25° test is required under BRE guidance.

A detailed description regarding the methodology of the VSC assessment can be found in 4.3.1 on page 18.

It is advisable that where VSC assessments are conducted, that a no sky line (NSL) assessment should also be carried out. However, an NSL assessment requires accurate dimensions and layouts of the existing rooms and windows. Due to common lack of availability regarding the required information, NSL assessments are often not feasible 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 include all windows meeting the proximity criteria in an APSH/WPSH assessment if they are reasonably assumed to serve habitable spaces. This approach avoids distinguishing 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, other windows facing the proposed development on that property may also be assessed. This approach provides a more comprehensive understanding of the overall impact on the property.

4.2 Preparing the analytical model

4.2.1 Building the Model States

The design lead, Crawford Architecture, supplied 3DDB with AutoCAD drawings and a 3D models of the proposed buildings from which a 3D analytical model was created. Landscape drawings were issued by RMDA Landscape Architects.

A site visit has not been conducted. 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 4.4, 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 a combination of survey data and photogrammetry. The survey data, produced by Charles McCorkell Arboricultural Consultancy and made available to 3DDB, was used to determine the location, size and species of individual trees within the site. However, for groups of trees where the survey data did not specify the exact position of each tree, or for trees located outside the subject site, photogrammetry was used to estimate their placement. In these cases, assumptions were made regarding their exact location, size, and species.

As explained in section 4.1, 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 4.4: Model view of the baseline model state

Proposed model state

As illustrated in Figure 4.5, 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 within the development have also been included according to the information provided by the landscape architect.

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_Dublin.039690_IWEC.epw).

Figure 4.5: Model view of the proposed model state

4.2.2 Trees

As referenced in the BRE Guidelines, the exact shapes of trees are “almost impossible to predict”. When modelling trees for this assessment tree geometry has been simplified. For the purpose of the analysis carried out in this report, a combination of survey data and photogrammetry was used to model the existing trees. Where tree survey information was not provided, the position and size of existing trees have been estimated using photogrammetry information. The shape of the trees have been simplified and an average transmittance value has been applied using information from table G1 from the BRE Guidelines

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)

Regarding SOG assessments, the BRE Guidelines states:

“...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 over the course of the whole year. Light transmittance values for the modelled trees are varied to account for summer and winter foliage.

Taking average dates from *BRE Digest 350*, appropriate light transmittance values have been applied to deciduous trees to represent the ‘full leaf’ and ‘bare branch’ states.

Evergreen trees are represented as ‘full leaf’ throughout the year.

The BRE Guidelines also state:

“The calculation model should account for the obstruction to daylight caused by the trees. This needs to be done by modelling a representative shape of the trees. Often trees are irregularly shaped and simple modelling, using height and spread data and assuming a circular tree, will give inaccurate results. A special survey on site is generally required to produce the required data on the tree profile, using a clinometer or other device to measure tree height. Buildings and other solid objects should also be taken into account.”

In the absence of a ‘special survey’ being conducted, as mentioned above, simplified models representing trees have been used. The information for these trees has been taken from photogrammetry information and an arborist report when available. A reasonable tolerance should be applied to the results generated to account for trees not being represented exactly as they appear on site.

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 the same manner as the BR 209 assessment. 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 are not 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 will be 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 proposed developments, all properties within a radius of three times the height of the proposed development are considered with regards to an 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.

Where applicable, 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.

Where a VSC assessment is warranted, the values for each relevant window/room may be calculated in the corresponding model states, as outlined in section 4.2 on page 15. A comparison of these results can be used to indicate 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 may be included in this study to give a more comprehensive assessment.

Assessment Points

The VSC impact assessment are 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 will be 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 14, 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 assessed property is Ridgewood Grove.

No VSC impact assessment was conducted for any other properties, as no additional buildings lie within three times the height of the proposed development, beyond which a 25° test is not required under BRE guidance.

Additional 'No-Balcony' Study

In the additional 'No-Balcony' Study, overhanging balconies were excluded from the analytical model to isolate their impact on daylight levels and better understand their contribution to any adverse effects.

The results for the VSC assessment can be found in the appendix results section A.1 on page 32, with analysis of the results in section 5.1.1 on page 24.

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 is used to determine the appropriate properties to be included in a APSH/WPSH impact assessment.

The APSH/WPSH for each of the assessed windows should be calculated in the relevant model states, as outlined in section 4.2 on page 15. A comparison between the results generated using these model states can be used to determine the level of effect.

If it can be determined or reasonably assumed that multiple windows are servicing the same room, the APSH/WPSH will be 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 '*n.a.*' 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 will be 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 may be 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 assessed property is Ridgewood Grove.

No APSH/WPSH impact assessment was conducted for any other properties, as no additional buildings lie within three times the height of the proposed development, beyond which a 25° test is not required under BRE guidance.

The results for the APSH/WPSH assessment can be found in the appendix results section A.2 on page 36, with analysis of the results in section 5.1.2 on page 25.

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 a shadow study and/or false colour plans.

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.

Where applicable, the percentage of assessed areas which can receive two hours or more of direct sunlight on March 21st is calculated in the relevant model states, as outlined in section 4.2 on page 15. A comparison between the results generated with these model states can be used to 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.

No quantitative Sun on Ground (SOG) impact assessment was conducted on any surrounding areas. In particular, the rear gardens of the properties across Ridgewood Green, to the north of the subject site, have sufficient separation distance from the proposed dwellings, making overshadowing highly unlikely.

The false colour plans of the proposed SOG assessment section C.4 on page 70 and the hourly renderings of the shadow study in section B.0 on page 38, allow for a qualitative sunlight assessment of the surrounding areas.

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 15. 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 38.

Hourly renderings have been shown from sunrise to sunset on the following dates in 2025:

- 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 as the preferred SDA assessment methodology by 3DDB. A localised EnergyPlus Weather File is used to apply to apply the relevant climate information. In the case of this report, the weather file used is IRL_Dublin.039690_IWEC.epw.

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 be taken.

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 are typically taken directly from the architectural drawings supplied by the project architect. Sometimes, the applied names of rooms may differ slightly. e.g. A “Kitchen / Living / Dining room (KLD)” may be referred to as a “Living / Kitchen / Dining room (LKD).

In accordance with the BRE Guidelines circulation spaces, corridors, bathrooms etc. need not be assessed.

Where and SDA assessment has been conducted, an indication of the assessed space in each room will be indicated in the floor plans that correspond to the SDA results in the appendix section “Proposed Apartment and Duplex Unit Floor Plans” on page 47.

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	0.7
	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	Glass transmittance value	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 56.

Analysis of the results can be found in section 5.2.1 on page 25.

The results of the supplementary SDA study under the I.S. EN 17037 criterion can be found in section D.0 on page 72.

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. However, in the case of the proposed development, there are not such spaces.

Project Assessment

The results for the study on sunlight exposure can be found in the appendix results section C.3 on page 63, with analysis of the results in section 5.2.2 on page 27.

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 may be carried out on the areas as indicated by the project architect. Shadow studies and false colour plans can 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 should be 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 70, with analysis of the results in section 5.2.3 on page 28.

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 regarding NSL in the BRE Guidelines is in relation to impact assessments. NSL is not mentioned in the BRE section regarding daylight in new developments. Nevertheless, an NSL assessment was carried out on the proposed development as a supplementary study as it is requested in the DCC Development Plan 2022-2028 (Section 5.1, Appendix 16). Although the proposed development is not under Dublin City Council's jurisdiction, 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 72.

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 6 no. rooms at Ridgewood Grove, which is the only assessed property in the impact assessment. Using pictures available in an online listing (daft.ie), 3DDB were able to confirm that specific windows of this property serve the same room, allowing to calculate the weighted average results for these rooms.

Primary Study

Using the rationale explained in section 3.2 on page 12, the effect on the VSC of these rooms (based on the average value calculated from multiple windows) would be considered:

- negligible: 4 no.
- minor adverse: 1 no.
- moderate adverse: 1 no.

The proposed development would impact the daylight levels of all individual windows on the ground and first floors that face the development. However, since these windows serve the same rooms as those on the perpendicular facades, an average level of effect for each room could be calculated. The overall reduction in daylight for the room is therefore less than that indicated by individual windows and, in some cases, an adverse impact is not recorded.

Where an adverse impact is recorded despite the average calculation, it applies to two rooms categorised as *'moderate adverse'* on the ground floor (0a#) and *'minor adverse'* on the first floor (1a#). Both rooms are serviced by windows located behind an overhanging balcony. Two of the three windows serving the rooms already have low baseline VSC values, ranging from 11.70% to 16.66%, which is well below the recommended minimum of 27%. Consequently, the reduction in daylight caused by the proposed development may appear exaggerated for these windows and, therefore, for the room.

The extent of these effects can therefore be partially attributed to the presence of balconies, as evidenced by the *'negligible'* effect on rooms 0b# and 1b# (see Figure 5.1 below), which have no balconies above. This is further demonstrated by the 'No-Balcony' study illustrated in the paragraph below.

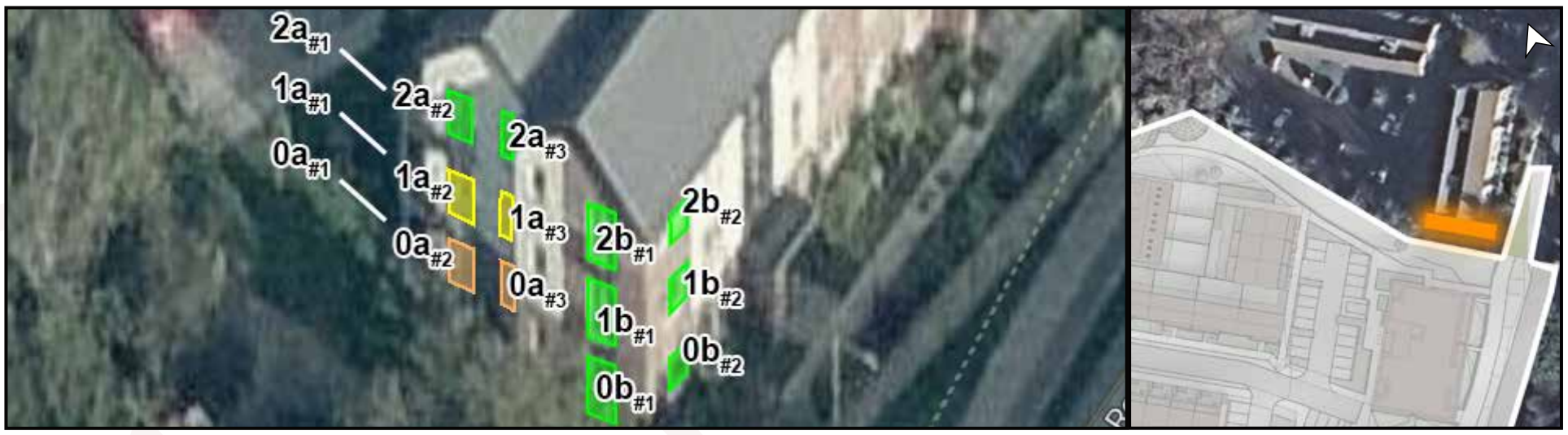


Figure 5.1: Windows at Ridgewood Grove categorised as *'negligible'* in green, *'minor adverse'* in yellow, and *'moderate adverse'* in orange. Where multiple windows serve the same room, the averaged effect for the room was indicated.

Supplementary VSC Assessments

- **'No-Balcony' Study**

  In this additional assessment, existing overhanging balconies of Ridgewood Grove were excluded from the analytical model to isolate their impact on daylight levels and better understand their contribution to any adverse effects.

  Under these conditions, and using the rationale explained in section 3.2 on page 12, the effect on the VSC of all these rooms (based on the average value calculated from multiple windows) would be considered *'negligible'*.

  This supplementary study evidenced that the impacts would be eliminated, confirming that the overhanging balconies are a contributing factor to the adverse impacts recorded.

- **Belt of existing trees considered in the assessment**

  In the primary VSC study, the effect of the existing belt of deciduous trees along the northern boundary of the site, in front of Ridgewood Grove, was not taken into account. However, to provide a more detailed understanding of the potential impacts, a supplementary VSC assessment was undertaken, this time including these trees in the analysis to reflect the obstruction posed by the existing vegetation.

  The results of this supplementary study shows lower baseline VSC values for windows than those presented in the primary study, as the existing vegetation would act as an obstruction in the existing state. In this context, the perceived impact to the daylight, caused by the proposed development, would appear *'negligible'* for all the rooms.

  This supplementary study indicates that in the real scenario, where the existing vegetation partially obstructs light, the impact of the proposed development on daylight levels is likely to lie between the primary study (which excluded the trees) and this supplementary assessment (which fully included them). Therefore, the existing trees in front of Ridgewood Grove partially mitigate the daylight reduction caused by the proposed development.

  The results of the primary VSC study and the supplementary VSC studies can be found in section A.1 on page 32.

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

The effect on APSH/WPSH has been assessed for 6 no. rooms at Ridgewood Grove, which is the only assessed property in the impact assessment.

Using the rationale explained in section 3.2 on page 12, the effect on both the APSH and the WPSH of these rooms would be considered:

- negligible: 6 no.

The rooms at Ridgewood Grove would continue to receive compliant levels of direct sunlight throughout the year, including during winter. Although the proposed development would partially obstruct sunlight to the windows facing south towards the development, the sunlight available to windows on the side facades reduces the overall impact. As a result, the calculated reduction in sunlight for the rooms is considered '*negligible*', with APSH and WPSH values remaining well above the minimum recommended guideline values.

The results of the study on APSH/WPSH can be found in Section A.2 on page 36.

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 of the proposed apartment buildings and duplex units across the proposed development, both with and without trees. This has ensured that a clear understanding has been obtained regarding the daylight performance of these unit types.

Within the proposed development there are 42 no. duplex units and 41 no. apartment units (within Blocks A and B). This makes up approximately 231 no. habitable rooms within these unit types.

Figure 5.2: Apartment blocks (in blue) and duplex units (in red) assessed for scheme performance

Under the criteria as set out in the BR 209 considering trees, the SDA value in 229 no. habitable rooms meets or exceeds the appropriate target values, with only 2 no. rooms falling slightly below the recommended thresholds. This gives a circa compliance rate of 99%, which is considered an excellent outcome.

The additional SDA assessment that does not include trees has shown an even higher compliance, with only 1 no. room falling short of the minimum recommendation, resulting in a compliance rate exceeding 99%.

Initially, prior to design revisions and excluding trees, 20 no. rooms did not meet the recommended SDA levels. These included 4 no. rooms, located behind recessed balconies, within the apartment blocks, and 16 no. ground floor LKD rooms in Duplex Types P1 and P3, where glazing was insufficient relative to room size. At this stage, the overall compliance rate was circa 91%, which dropped slightly to circa 90% when the impact of trees was considered, affecting an additional 4 no. rooms. Through design collaboration and refinement, including modifications to the apartment block facades and balcony configurations, the number of non-compliant apartment rooms was reduced to just one. Additionally, the size of ground floor windows in duplex units was significantly increased, resulting in full compliance for these units.

At present, the only room affected by existing trees is the LKD of Unit B-03, where the SDA is reduced to 44%. However, this is considered acceptable due to the benefits and importance of tree retention. The only remaining non-compliant room is the LKD of ground floor Unit B-09 in Block B. In the 'no-tree' scenario, this room achieves an SDA of 47%, slightly below the 50% minimum, while with trees, it records an SDA of 42%. Given the marginal non-compliance and overall design improvements, this outcome is considered an excellent result in the context of the 99% compliance rate achieved.

I.S. EN 17037 sets out more onerous recommendations for SDA. As such, the number of habitable rooms achieving compliance under this standard is 150 in the assessment that includes trees. This gives a reduced circa compliance rate of c. 65%. The additional SDA assessment, under this standard, that does not include trees has shown a compliance rate of c. 70%.

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. Where non-compliance can be attributed to the impact of existing or proposed trees, the rationale presented highlights the importance of tree provision as an integral element of the site's overall layout.

The project architect's design statement outlines this approach in further detail:

Care has been taken in the design of the Apartment units to receive an excellent rating of compliance with SDA requirements. B03 and B09 are also UD compliant, providing an enhanced level of living spaces. The design of the individual units has exercised every opportunity to maximize quality where possible. This includes providing generous living room areas, storage areas, private open space, exceeding the minimum width of living /dining spaces, and maximizing the amount of glazing and natural light. All design measures result in generous and positive living spaces for future residents.

Block B has been carefully orientated north-south. This ensures there are no single aspect apartment units facing only north, allowing for a high level of sunlight and an excellent level of Sunlight or Daylight to most units, which all primarily face east or west. The design and layout of the floor plans ensures that most of the living spaces will receive a high quality of sunlight.

Given that the proposed development has a number of existing trees to be retained on the site which will affect the compliance of any proposal, the compliance rate is positive for the scale of the apartment units. The orientation of the apartment block also ensures that these spaces are not overshadowed. Both the Communal Open Space and Public Open Space receive abundant light, and the landscape proposal will ensure there is a high quality of amenity within these areas.

A careful collaboration between the architects, landscape architects and daylighting consultants helped to inform design changes at both a macro and micro level to ensure compliance whilst also ensuring that the design intent and expression of the built form would not be negatively impacted.

This collaboration is particularly evident in the landscaping proposal, where the addition of new trees have been strategically placed near the apartment building to minimize overshadowing, provide screening for residents, and create focal points in the landscape, enhancing the visual appeal along paths and roads.

While every effort has been made to ensure compliance among as many units as possible, the Living Kitchen Dining rooms in units B03, and B09 are non-compliant under the BR 209 standards.

Compensatory design measures (CDMs) act as compensation for the entire unit. The compensatory measures proposed for the units can be summarised as follows:

Unit B03 - Specific CDMs

Trees are affecting compliance

- ***Daylight adjacency:*** *Adjacent bedroom within the apartment is 100% compliant. Therefore, this unit has rooms that are well daylit, despite the room being slightly below target.*
- ***Dual Aspect:*** *B-03 LKD has the added benefit of dual aspect ensuring multiple options for aspect and sunlight / daylight availability.*
- ***Aspect:*** *B-03 has west facing aspect directly out onto a landscaped buffer providing a good view.*
- ***Balconies:*** *The balcony achieves the minimum area & is designed to be inset into façade for additional shelter and privacy. Large full height door/window onto terrace from LKD, designed for direct door access to private terrace.*
- ***Ceiling Heights:*** *The unit is provided with a 2.7m floor to ceiling height in order to increase daylight penetration and provide a more generous sense of living space.*
- ***Buffer zones:*** *The unit is provided with a private amenity space which is surrounded by a further 1.5m planted buffer zone.*
- ***Public Open Space:*** *The unit benefits from a large area of public open space to the south of the site. The area of 23,107sq.m. is in addition to the 12% of the overall site area required in FDP 2023-2029.*
- ***Floor Area:*** *LKD floor area achieves 0.7m2 above minimum standard area and is 340mm wider than the minimum, to allow more daylight in. Bedroom is 1.8m2 above minimum.*

Unit B09 - Specific CDMs

- ***Daylight adjacency:*** *Adjacent bedroom within the apartment is 100% compliant. Therefore, this unit has rooms that are well daylit, despite the room being slightly below target.*
- ***Aspect:*** *B-09 has direct aspect facing west down a tree lined avenue, benefiting from it's amenity value.*
- ***Balconies:*** *The balcony achieves the minimum area & is designed to be inset into façade for additional shelter and privacy. Large full height door/window onto terrace from LKD, designed for direct door access to private terrace.*
- ***Ceiling Heights:*** *The unit is provided with a 2.475m floor to ceiling height in order to increase daylight penetration and provide a more generous sense of living space.*
- ***Public Open Space:*** *The unit benefits from a large area of public open space to the south of the site. The area of 23,107sq.m. is in addition to the 12% of the overall site area required in FDP 2023-2029.*
- ***Floor Area:*** *LKD floor area achieves 0.7m2 above minimum standard area and is 340mm wider than the minimum, to allow more daylight in. Bedroom is 1.8m2 above minimum.*

In conclusion, it is the opinion of 3DDB that the achieved compliance rate of circa 99% demonstrates a thoughtful approach to daylight considerations and highlights the importance of collaborative design.

The results for the study on SDA can be seen in section C.2 on page 56.

5.2.2 Sunlight Exposure (SE)

A sunlight exposure assessment has been carried out on all habitable rooms of the proposed apartment buildings and duplex units across 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 (evergreen and deciduous) included in assessment model.
- Only evergreen trees included in the assessment model.

This approach is in accordance with the BRE Guidelines.

In total, 83 no. units have been assessed. Using the rationale explained in section 3.3 on page 13, the level of sunlight exposure for the assessed units is as follows:

In the assessment carried out with all trees considered as opaque objects, 63 no. units are considered *high*, 3 no. *medium*, and 17 no. have reached the *minimum* recommendation.

When deciduous trees are not factored into the assessment model, 63 no. units are considered *high*, 5 no. *medium*, and 15 no. have reached the *minimum* recommendation.

The SE assessment has shown that, in both tree states, the compliance rate for the assessed units, in accordance with the BRE Guidelines, is 100%.

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.

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 exceptionally in this regard, particularly considering that the vast majority of the units achieved a '*high*' level of sunlight exposure.

The high level of compliance is largely due to the predominance of dual-aspect units, particularly within the duplex types, and the compact layout of the apartment blocks, which ensures good access to sunlight throughout. While a few central single-aspect units, typically more constrained, are present in Block B, their orientation avoids strong northerly exposure, allowing them to meet the guideline requirements and further supporting the success of the overall design approach.

The results for the study on SE in the habitable rooms of the proposed units can be seen in section C.3 on page 63.

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.

This study has assessed the level of sunlight received on March 21st across the proposed outdoor public and communal amenity areas within the development.

A total of 10 no. spaces were evaluated, comprising 2 no. public open spaces, 7 no. communal open spaces, and the landscaped greenbelt open space located to the south of the development.

The assessment has shown that the 2 no. public open spaces, along with the landscaped park to the south, receive very good levels of sunlight, with the majority of their area exceeding the minimum recommended thresholds. Among the communal open spaces, 4 no. meet compliance standards.

However, the communal open spaces located in Zones B, C, and D (as illustrated in Figure 5.3 below) fall below the recommended levels. This is primarily due to their positioning directly to the north of duplex units, which naturally obstructs sunlight penetration, combined with their narrow layout that further limits their potential to meet the standards.

It is important to note that the development has been designed with a variety of unit types and orientations, which inherently affects how adjoining outdoor spaces perform in terms of sunlight. Despite the shortfalls in these specific areas, all future residents will benefit from access to high-quality public open spaces, particularly the extensive, unconstrained landscaped park to the south, which provides excellent sunlight levels and represents an important amenity asset for the wider community.

Figure 5.3: Public (in orange) and communal (in yellow) open spaces, and the greenbelt open space (in green) assessed for Sun on Ground.

The results for the study on sunlighting in the proposed outdoor amenity spaces can be found in section C.4 on page 70.

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 38 of the appendix section of this report.

6.0 Conclusion

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 (LRD) at Forest Road, Forrest Great, Swords, Co. Dublin.

The proposal consists of 26 no. house-type units, 42 no. duplex units, and 41 no. units within two four-to-five-storey apartment buildings (Blocks A and B), along with associated private, communal and public amenity open spaces.

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 fall under the criteria outlined in section "4.1 Impact Assessment, Window Selection Criteria" on page 14. Based on this criteria, Ridgewood Grove was identified as the only neighbouring property requiring assessment (indicated in Figure 6.1 below).

Figure 6.1: Scope of surrounding properties and environment assessed.

The daylight impact assessment (VSC) identified an adverse effect in two of the six neighbouring rooms assessed. Existing overhanging balconies contributed to this perceived impact, as evidenced by the fact that adjacent neighbouring rooms on the same facade experienced no such reduction, and further supported by a supplementary assessment carried out with the exclusion of balconies from the model.

Additionally, a supplementary assessment that included existing vegetation in front of the neighbouring property demonstrated that, in a real-world scenario where such vegetation is present and not completely 'invisible' as in the analytical model, it would partially mitigate the daylight reduction attributed to the proposed development.

In terms of sunlight, all assessed rooms experienced a '*negligible*' level of effect both in the annual (APSH) and the winter (WPSH) calculations, indicating no adverse impacts.

The scheme performance assessment for this report has quantified the level of daylight and sunlight within the proposed apartment buildings and duplex units across the proposed development.

Circa 99% of habitable rooms achieve the recommended daylight levels (SDA), presenting an excellent level of compliance across the scheme. Regarding sunlight exposure (SE), the full compliance of the units assessed demonstrated an excellent performance in this regard, especially in light of the '*high*' level of sunlight exposure achieved by the vast majority of units.

With regard to sun on ground (SOG), future residents will benefit from access to public and communal amenity spaces, most of which will receive very good levels of sunlight, particularly the large landscaped park to the south.

In summary, the scheme performs strongly in terms of both daylight and sunlight impact and overall performance. Adverse impacts to neighbouring properties are limited to two rooms within a single property, Ridgewood Grove, which was the only building warranting assessment due to its proximity. The presence of existing vegetation suggests that these impacts may be further mitigated in real-world conditions. In terms of performance of the proposed development, the scheme demonstrates excellent levels of daylight and sunlight in the units assessed, supporting enhanced residential amenity and aligning with the broader vision for the area.

Appendix - Results

+353 (0) 1 288 0186
info@3ddesignbureau.com
www.3ddesignbureau.com

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 15).

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 15).

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 12.

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 Ridgewood Grove - Primary Study

Table No. A.1.1 - VSC Results:						
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**
0a#1	11.69%	9.96%	0.85	9.35%	BRE Compliant	-
0a#2	16.10%	5.72%	0.36	12.88%	44%	-
0a#3	31.07%	20.10%	0.65	24.86%	81%	-
0a#	16.04%	9.66%	0.60	12.83%	75%	Moderate Adverse
0b#1	32.88%	21.88%	0.67	26.30%	83%	-
0b#2	33.33%	33.29%	1.00	26.66%	BRE Compliant	-
0b#	33.06%	26.52%	0.80	26.45%	BRE Compliant	Negligible
1a#1	12.69%	11.48%	0.90	10.15%	BRE Compliant	-
1a#2	16.66%	7.69%	0.46	13.33%	58%	-
1a#3	32.38%	23.06%	0.71	25.90%	89%	-
1a#	16.91%	11.55%	0.68	13.52%	85%	Minor Adverse
1b#1	33.52%	24.57%	0.73	26.82%	92%	-
1b#2	34.19%	34.17%	1.00	27.00%	BRE Compliant	-
1b#	33.79%	28.48%	0.84	27.00%	BRE Compliant	Negligible
2a#1	37.75%	36.87%	0.98	27.00%	BRE Compliant	-
2a#2	37.80%	31.25%	0.83	27.00%	BRE Compliant	-
2a#3	35.64%	28.72%	0.81	27.00%	BRE Compliant	-
2a#	37.49%	33.56%	0.90	27.00%	BRE Compliant	Negligible
2b#1	37.33%	30.80%	0.83	27.00%	BRE Compliant	-
2b#2	35.50%	35.49%	1.00	27.00%	BRE Compliant	-
2b#	36.59%	32.71%	0.89	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 12.

If it can be determined or reasonably assumed that multiple windows serve the same room, each individual window is labelled with a hash-tag and a serial number (e.g. Xa#1, Xa#2). Each window is assessed, and a weighted average is calculated to determine the level of effect on the room. Rooms are identified with a hash-tag at the end (e.g. Xa#). In such cases, the 'effect of proposed development' column will display a dash (-) for the individual windows, with the overall level of effect indicated in the row corresponding to the room.

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

A.1.2 Ridgewood Grove - Supplementary 'No-Balcony' Study

Table No. A.1.2 - Supplementary VSC Results:

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**
0a#1	35.90%	33.76%	0.94	27.00%	BRE Compliant	-
0a#2	36.33%	25.28%	0.70	27.00%	94%	-
0a#3	32.83%	21.86%	0.67	26.26%	83%	-
0a#	35.66%	28.82%	0.81	27.00%	BRE Compliant	Negligible
0b#1	35.90%	24.90%	0.69	27.00%	92%	-
0b#2	33.33%	33.29%	1.00	26.66%	BRE Compliant	-
0b#	34.85%	28.31%	0.81	27.00%	BRE Compliant	Negligible
1a#1	36.85%	35.35%	0.96	27.00%	BRE Compliant	-
1a#2	36.99%	28.02%	0.76	27.00%	BRE Compliant	-
1a#3	33.89%	24.56%	0.72	27.00%	91%	-
1a#	36.51%	31.01%	0.85	27.00%	BRE Compliant	Negligible
1b#1	36.53%	27.57%	0.75	27.00%	BRE Compliant	-
1b#2	34.19%	34.17%	1.00	27.00%	BRE Compliant	-
1b#	35.58%	30.25%	0.85	27.00%	BRE Compliant	Negligible
2a#1	37.75%	36.87%	0.98	27.00%	BRE Compliant	-
2a#2	37.80%	31.25%	0.83	27.00%	BRE Compliant	-
2a#3	35.64%	28.72%	0.81	27.00%	BRE Compliant	-
2a#	37.49%	33.56%	0.90	27.00%	BRE Compliant	Negligible
2b#1	37.33%	30.80%	0.83	27.00%	BRE Compliant	-
2b#2	35.50%	35.49%	1.00	27.00%	BRE Compliant	-
2b#	36.59%	32.71%	0.89	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 12.

If it can be determined or reasonably assumed that multiple windows serve the same room, each individual window is labelled with a hash-tag and a serial number (e.g. Xa#1, Xa#2). Each window is assessed, and a weighted average is calculated to determine the level of effect on the room. Rooms are identified with a hash-tag at the end (e.g. Xa#). In such cases, the 'effect of proposed development' column will display a dash (-) for the individual windows, with the overall level of effect indicated in the row corresponding to the room.

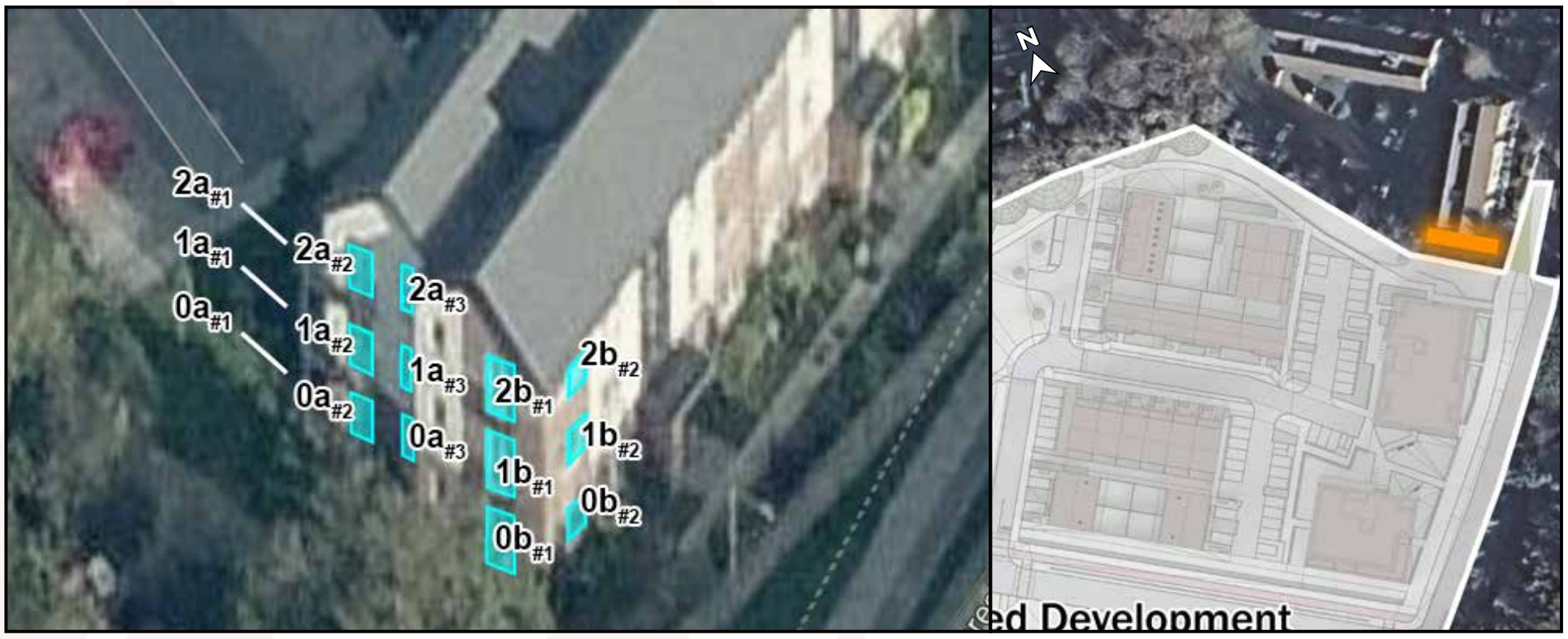


Figure A.2: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

A.1.3 Ridgewood Grove - Belt of existing trees considered in the assessment

Table No. A.1.3 - Supplementary VSC Results:

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**
0a#1	6.11%	8.69%	1.42	4.89%	BRE Compliant	-
0a#2	3.21%	1.17%	0.36	2.57%	46%	-
0a#3	10.23%	10.15%	0.99	8.18%	BRE Compliant	-
0a#	5.53%	5.93%	1.07	4.42%	BRE Compliant	Negligible
0b#1	5.33%	5.61%	1.05	4.26%	BRE Compliant	-
0b#2	19.30%	19.71%	1.02	15.44%	BRE Compliant	-
0b#	11.01%	11.35%	1.03	8.81%	BRE Compliant	Negligible
1a#1	7.35%	10.51%	1.43	5.88%	BRE Compliant	-
1a#2	5.91%	2.63%	0.45	4.73%	56%	-
1a#3	17.16%	15.74%	0.92	13.73%	BRE Compliant	-
1a#	8.11%	8.12%	1.00	6.49%	BRE Compliant	Negligible
1b#1	8.72%	8.85%	1.01	6.98%	BRE Compliant	-
1b#2	29.31%	29.51%	1.01	23.45%	BRE Compliant	-
1b#	17.10%	17.25%	1.01	13.68%	BRE Compliant	Negligible
2a#1	31.45%	35.28%	1.12	25.16%	BRE Compliant	-
2a#2	28.78%	26.61%	0.92	23.02%	BRE Compliant	-
2a#3	26.69%	23.97%	0.90	21.35%	BRE Compliant	-
2a#	29.76%	30.35%	1.02	23.81%	BRE Compliant	Negligible
2b#1	21.50%	20.79%	0.97	17.20%	BRE Compliant	-
2b#2	32.47%	32.59%	1.00	25.98%	BRE Compliant	-
2b#	25.96%	25.59%	0.99	20.77%	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 12.

If it can be determined or reasonably assumed that multiple windows serve the same room, each individual window is labelled with a hash-tag and a serial number (e.g. Xa#1, Xa#2). Each window is assessed, and a weighted average is calculated to determine the level of effect on the room. Rooms are identified with a hash-tag at the end (e.g. Xa#). In such cases, the 'effect of proposed development' column will display a dash (-) for the individual windows, with the overall level of effect indicated in the row corresponding to the room.

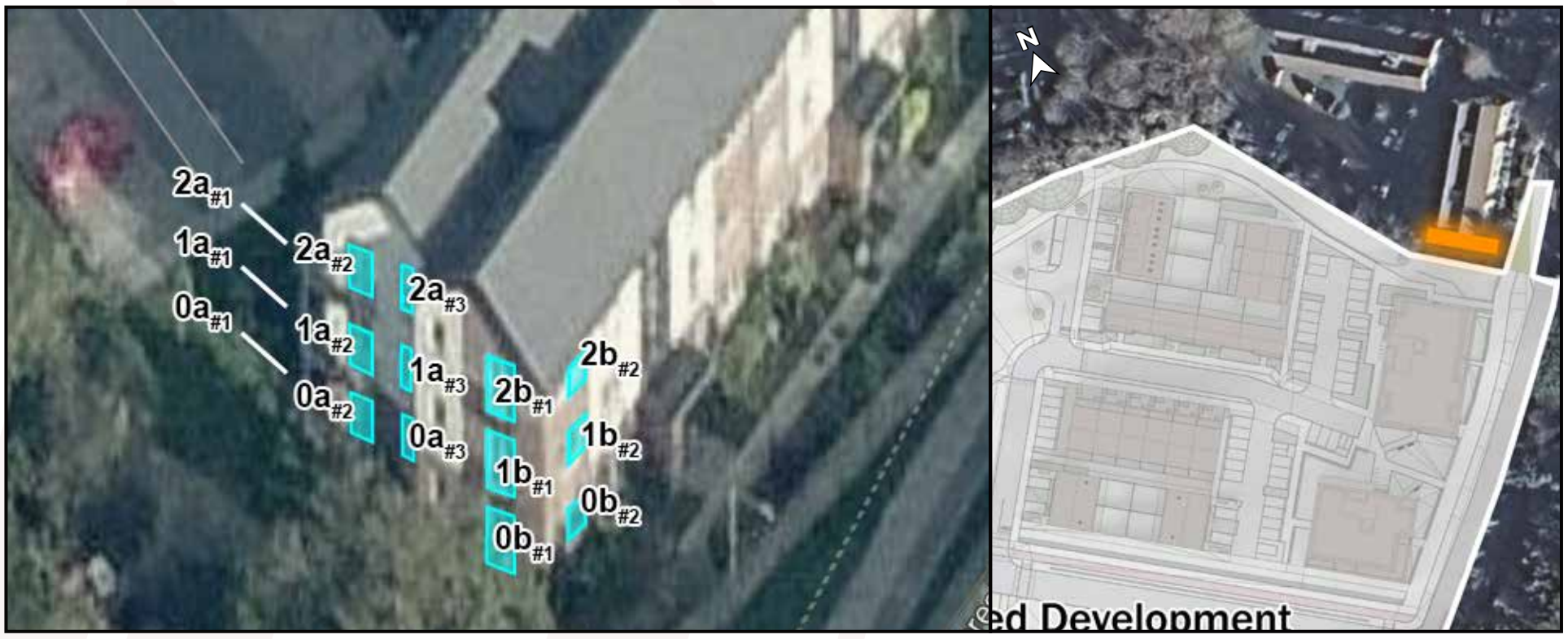


Figure A.3: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

A.2 Effect on Annual/Winter Probable Sunlight Hours (APSH/WPSH)

Below is an example of the table used to describe the effect to the APSH/WPSH of existing windows / rooms.

Table Example. A.2 - APSH/WPSH Impact Assessment						
Window / Room Number	Baseline APSH/WPSH	Proposed APSH/WPSH	Ratio of Proposed to Baseline APSH/ WPSH	Recommended Minimum APSH/WPSH	Level of Compliance with BRE Guidelines	Effect of Proposed Development
A	**B**	**C**	**D**	**E**	**F**	**G**

A: Window / Room Number

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

B: Baseline APSH/WPSH

The *Baseline APSH/WPSH Value* represents the percentage of the probable sunlight hours that the assessed window / room can receive, calculated in the existing baseline model state (as explained in the "Building the Model States" on page 15). The annual and winter assessments will be represented in separate tables.

C: Proposed APSH/WPSH

The *Proposed APSH/WPSH Value* represents the percentage of probable sunlight hours that the assessed window / room can receive, calculated in the proposed model state (as explained in the "Building the Model States" on page 15).

D: Ratio of Proposed to Baseline APSH/WPSH

This column expresses the ratio of change between the baseline APSH/WPSH value and the proposed APSH/WPSH value. 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.

E: Recommended Minimum APSH/WPSH

The *BRE Target Value* for each window / room has been set according to the BRE Guidelines. The Guidelines state that a proposed development could possibly have a noticeable effect on the sunlight received by an existing window / room, if the APSH value drops below the annual (25%) or WPSH value below the winter (5%) guidelines; **and** the APSH/WPSH value is less than 0.8 times the baseline value; **and** there is a reduction of more than 4% to the APSH.

Therefore, to determine the *recommended minimum APSH Value* for the annual study, 80% of the *Baseline APSH value* has been calculated. If this value is above the 25% threshold, a target value of 25% will be applied. If 80% of the baseline value is below 25%, then 80% of the baseline value is the appropriate target value.

To determine the *recommended minimum WPSH Value* for the winter study, 80% of the *Baseline winter APSH value* has been calculated. If this value is above the 5% threshold, a target value of 5% will be applied. If 80% of the baseline value is below 5%, then 80% of the baseline value is the appropriate target value.

F: Level of Compliance with BRE Guidelines

This column states the compliance of the *Proposed APSH/WPSH Value* with the *recommended minimum APSH/WPSH* as per the BRE Guidelines. In essence, it shows whether or not the assessed window / room would experience a perceptible level of impact. If the window / room complies with the BRE Guidelines this cell will state "*BRE Compliant*". If the window / room 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 /room 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 12.

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 Ridgewood Grove

Annual Probable Sunlight Hours

Table No. A.2.1 - APSH Results:						
Window / Room Number	Baseline APSH	Proposed APSH	Ratio of Proposed APSH to Baseline APSH	Recommended minimum APSH*	Level of Compliance with BRE Guidelines**	Effect of Proposed Development
0a#	60.96%	46.83%	0.77	25.00%	BRE Compliant	Negligible
0b#	90.57%	79.96%	0.88	25.00%	BRE Compliant	Negligible
1a#	62.38%	52.05%	0.83	25.00%	BRE Compliant	Negligible
1b#	91.64%	84.73%	0.92	25.00%	BRE Compliant	Negligible
2a#	74.09%	66.01%	0.89	25.00%	BRE Compliant	Negligible
2b#	94.87%	90.05%	0.95	25.00%	BRE Compliant	Negligible

Winter Probable Sunlight Hours

Table No. A.2.1 - WPSH Results:						
Window / Room Number	Baseline WPSH	Proposed WPSH	Ratio of Proposed WPSH to Baseline WPSH	Recommended minimum WPSH*	Level of Compliance with BRE Guidelines**	Effect of Proposed Development
0a#	20.78%	9.46%	0.45	5.00%	BRE Compliant	Negligible
0b#	22.80%	17.56%	0.77	5.00%	BRE Compliant	Negligible
1a#	22.21%	12.42%	0.56	5.00%	BRE Compliant	Negligible
1b#	23.81%	19.54%	0.82	5.00%	BRE Compliant	Negligible
2a#	24.51%	16.43%	0.67	5.00%	BRE Compliant	Negligible
2b#	27.03%	22.99%	0.85	5.00%	BRE Compliant	Negligible

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the APSH/WPSH of an existing window / room, the value needs to drop below the stated target value of 25% (annual) / 5% (winter) **and** be less than 0.8 times the baseline value **and** it has to have a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.

** For the interpretation of level of effects please refer to “3.2 Definition of Effects” on page 12.

If it can be determined or reasonably assumed that multiple windows are servicing the same room, APSH/WPSH has been calculated for the room rather than the individual windows.

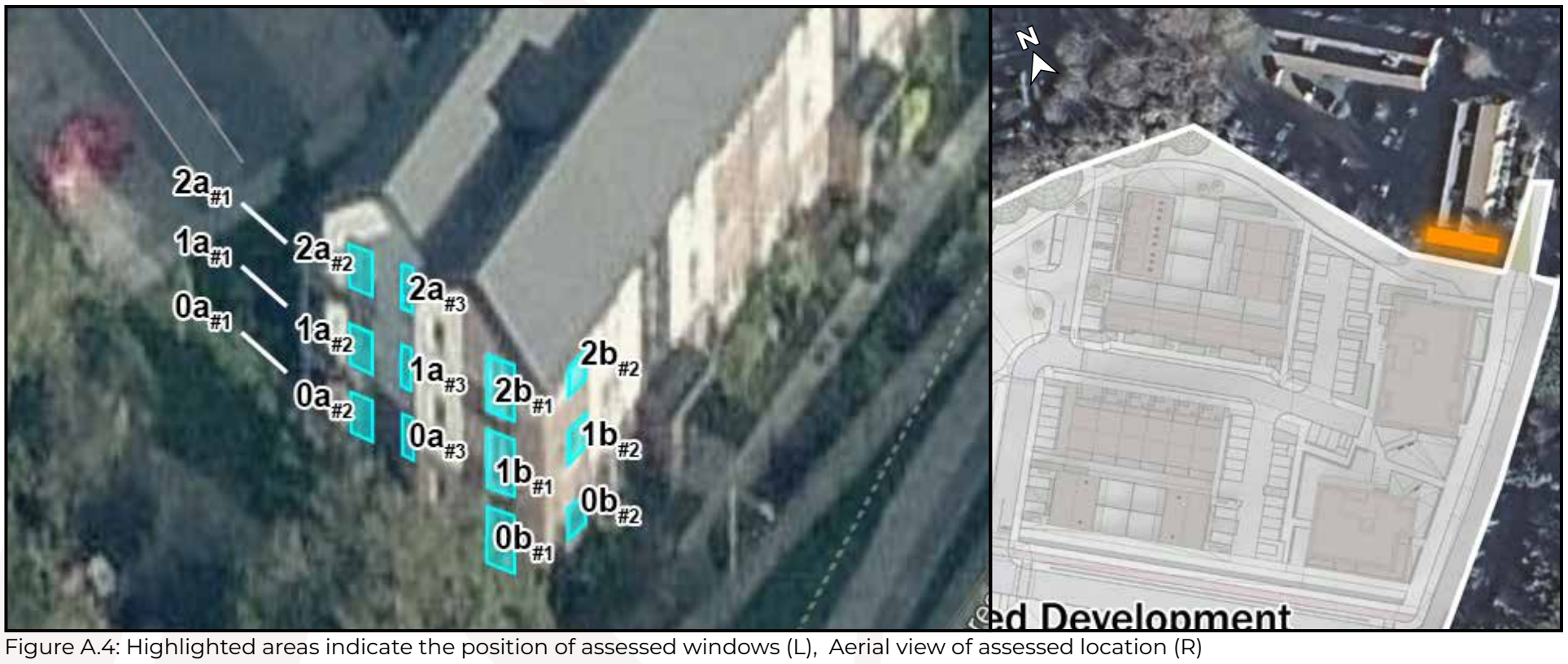


Figure A.4: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

N

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

B.0 B.1	Shadow Studies Shadow Study 21 March	Project: LRD Forest Road, Forrest Great, Swords, Co. Dublin		Proposed
	March 21st Sunrise 6:32 | Sunset 18:32	Applicant: Golden Port Homes Limited		3D DESIGN BUREAU

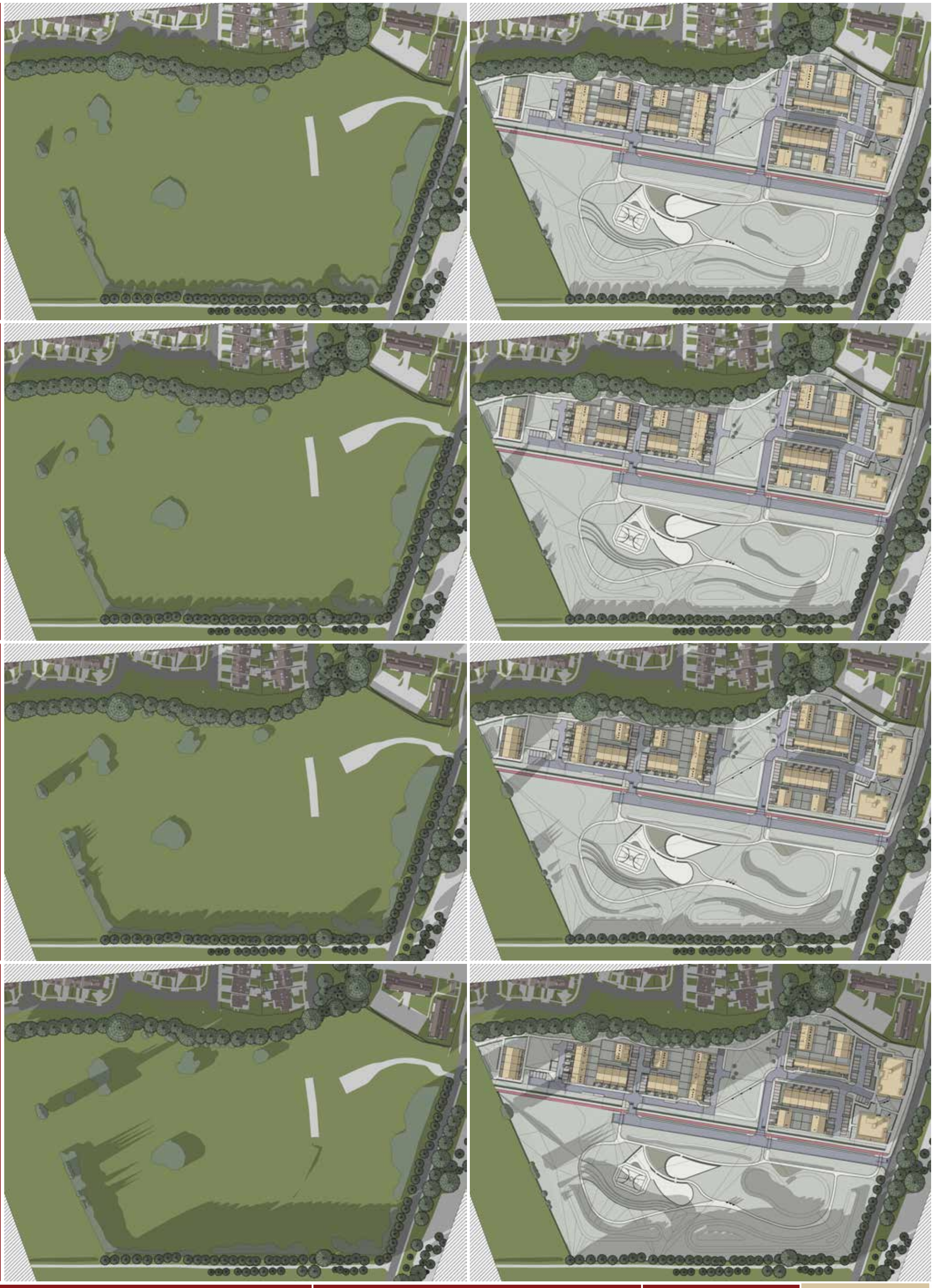
N

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

	Project: LRD Forest Road, Forrest Great, Swords, Co. Dublin		**Proposed**
March 21st Sunrise 6:32 | Sunset 18:32	**Applicant: Golden Port Homes Limited**		3D DESIGN BUREAU

N

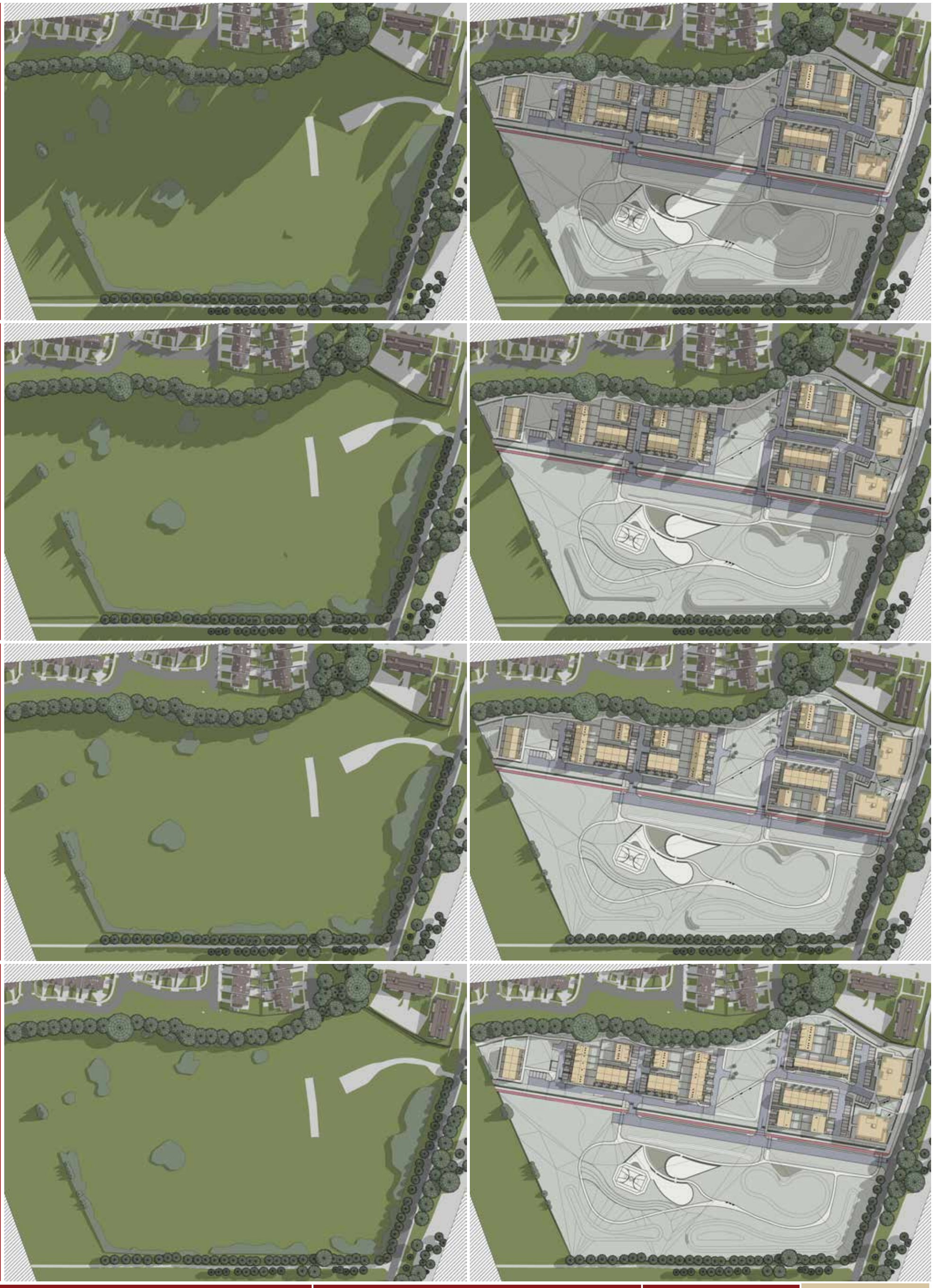
Baseline	Proposed
March 21st 15:00	
March 21st 16:00	
March 21st 17:00	
March 21st 18:00	



	Project: LRD Forest Road, Forrest Great, Swords, Co. Dublin		**Proposed**
March 21st Sunrise 6:32 | Sunset 18:32	**Applicant: Golden Port Homes Limited**		3D DESIGN BUREAU

N

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: LRD Forest Road, Forrest Great, Swords, Co. Dublin**	**Proposed**
	June 21st Sunrise 5:04 | Sunset 21:49	**Applicant: Golden Port Homes Limited**	**3D DESIGN BUREAU**

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

	Project: LRD Forest Road, Forrest Great, Swords, Co. Dublin		**Proposed**
June 21st Sunrise 5:04 | Sunset 21:49	**Applicant: Golden Port Homes Limited**		3D DESIGN BUREAU

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

	Project: LRD Forest Road, Forrest Great, Swords, Co. Dublin		**Proposed**
June 21st Sunrise 5:04 | Sunset 21:49	**Applicant: Golden Port Homes Limited**		3D DESIGN BUREAU

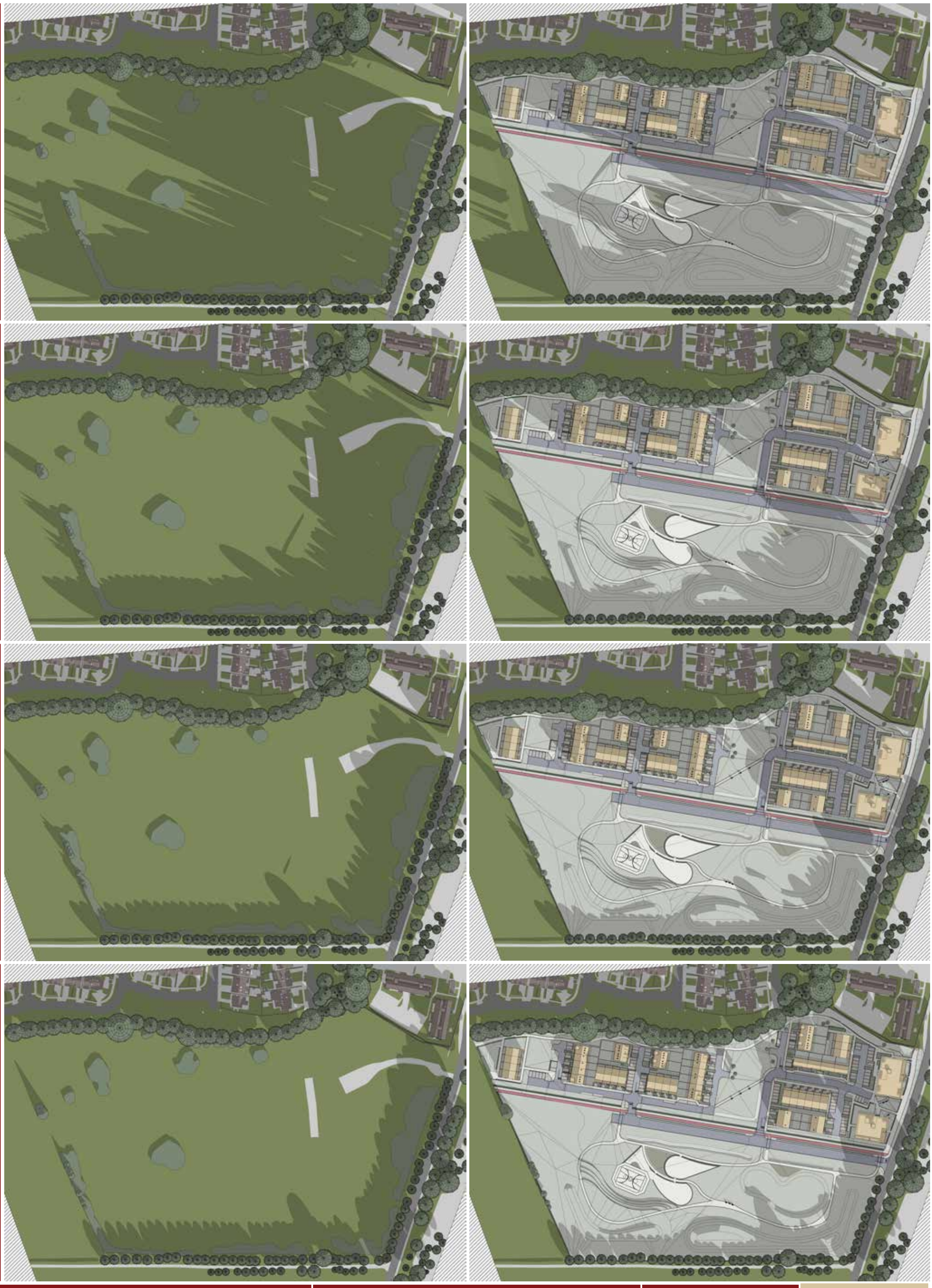
N

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

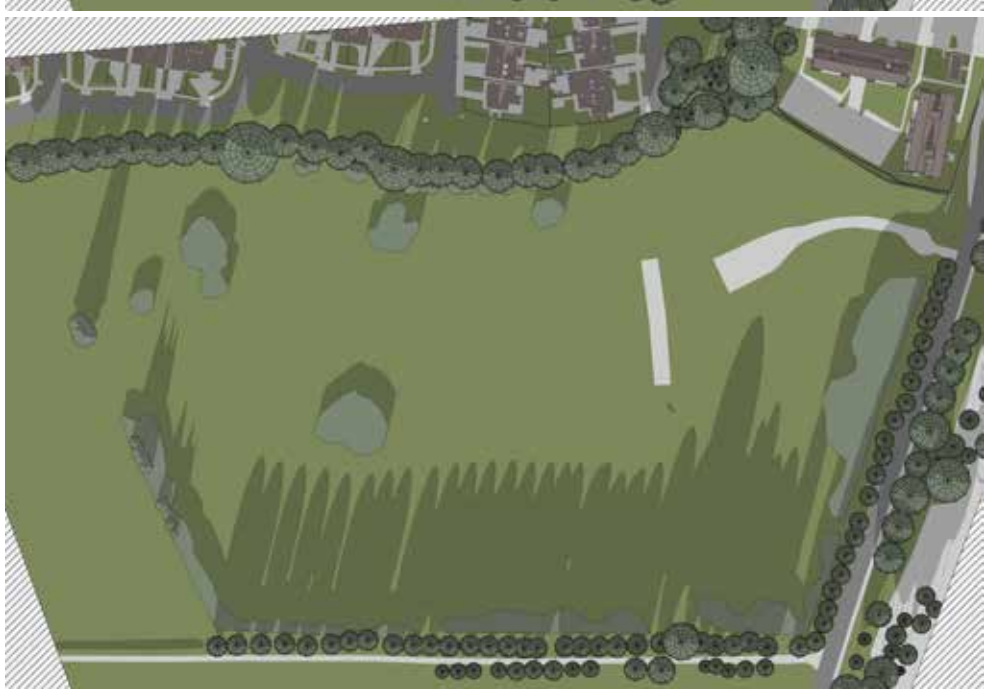
	Project: LRD Forest Road, Forrest Great, Swords, Co. Dublin		**Proposed**
June 21st Sunrise 5:04 | Sunset 21:49	**Applicant: Golden Port Homes Limited**		3D DESIGN BUREAU

N

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: LRD Forest Road, Forrest Great, Swords, Co. Dublin	Proposed
	December 21st Sunrise 8:45 | Sunset 16:00	Applicant: Golden Port Homes Limited	3D DESIGN BUREAU

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

	Project: LRD Forest Road, Forrest Great, Swords, Co. Dublin		**Proposed**
December 21st Sunrise 8:45 | Sunset 16:00	**Applicant: Golden Port Homes Limited**		3D DESIGN BUREAU

C.0 Scheme Performance

C.1 Proposed Apartment and Duplex Unit Floor Plans

C.1.1 Proposed Apartment Floor Plans - Block A

Figure C.1: Block A - Site Location

Figure C.2: Block A - Ground Floor

Figure C.3: Block A - First Floor

Figure C.4: Block A - Second Floor

Figure C.5: Block A - Third Floor

C.1.2 Proposed Apartment Floor Plans - Block B

Figure C.6: Block B - Site Location

Figure C.7: Block B - Ground Floor

Figure C.8: Block B - First Floor

Figure C.9: Block B - Second Floor

Figure C.10: Block B - Third Floor

Figure C.11: Block B - Fourth Floor

C.1.3 Proposed Duplex Unit Floor Plans - Duplex Type P1

Figure C.12: Duplex Type P1 - Site Location

Figure C.13: Duplex Type P1 - Ground Floor

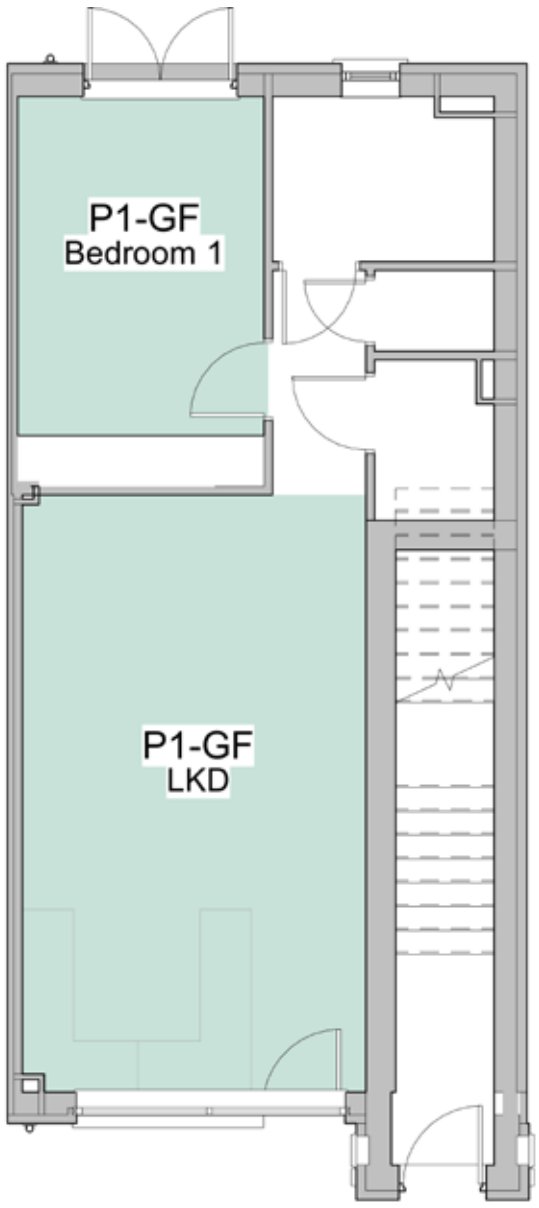


Figure C.14: Duplex Type P1 - First Floor

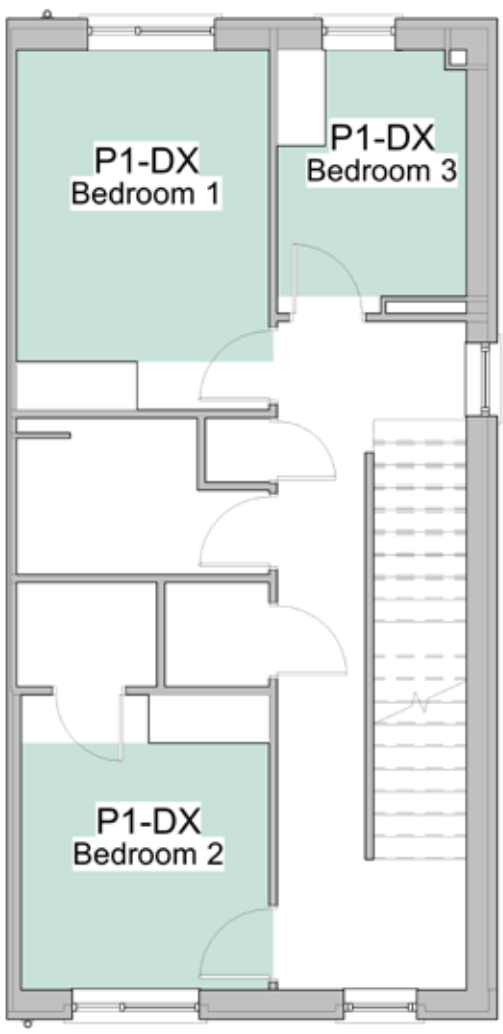
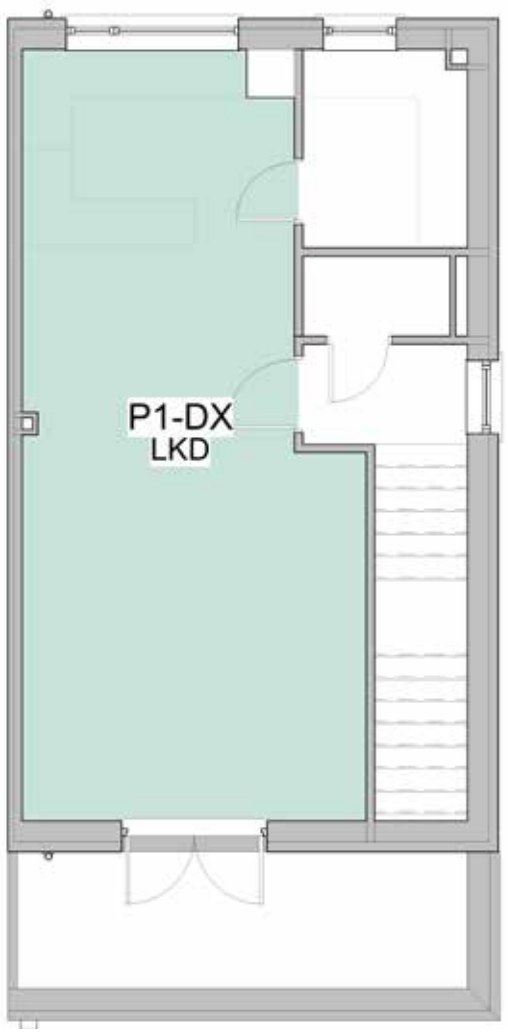


Figure C.15: Duplex Type P1 - Second Floor



C.1.4 Proposed Duplex Unit Floor Plans - Duplex Type P2

Figure C.16: Duplex Type P2 - Site Location

Figure C.17: Duplex Type P2 - Ground Floor

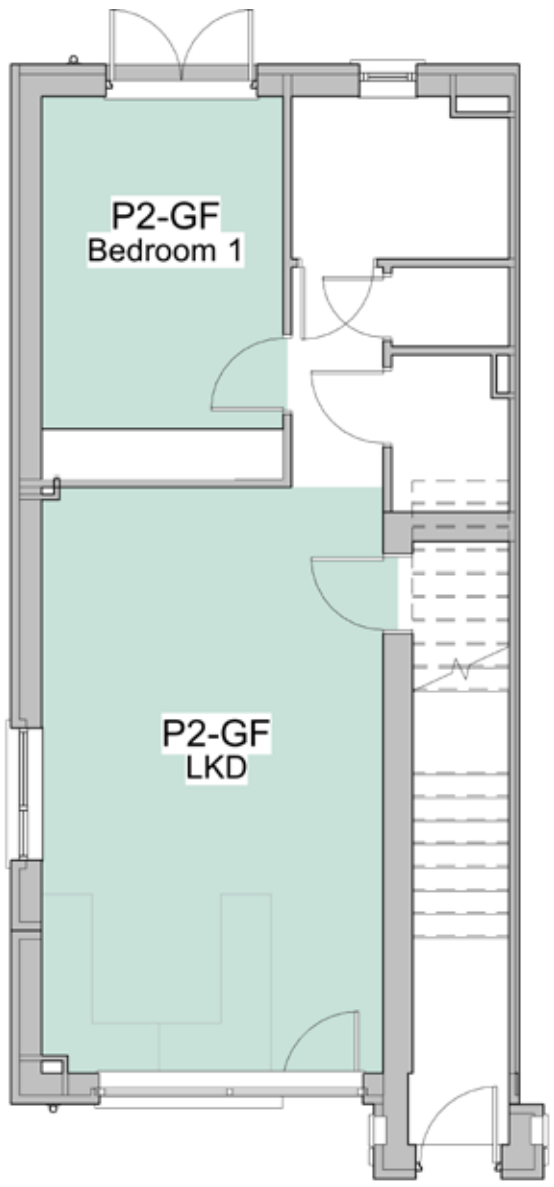


Figure C.18: Duplex Type P2 - First Floor

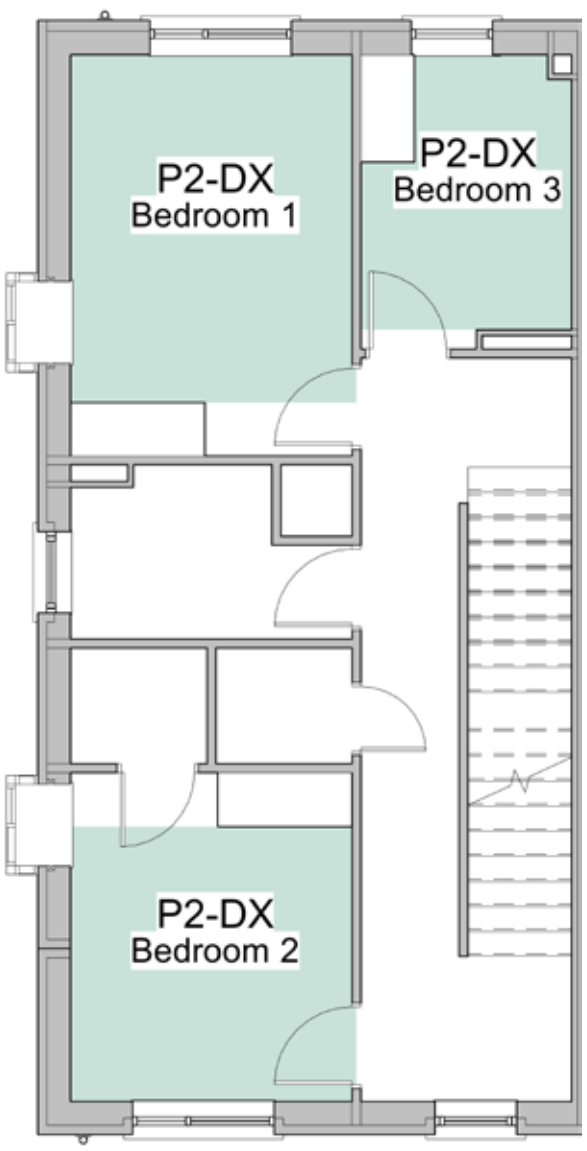
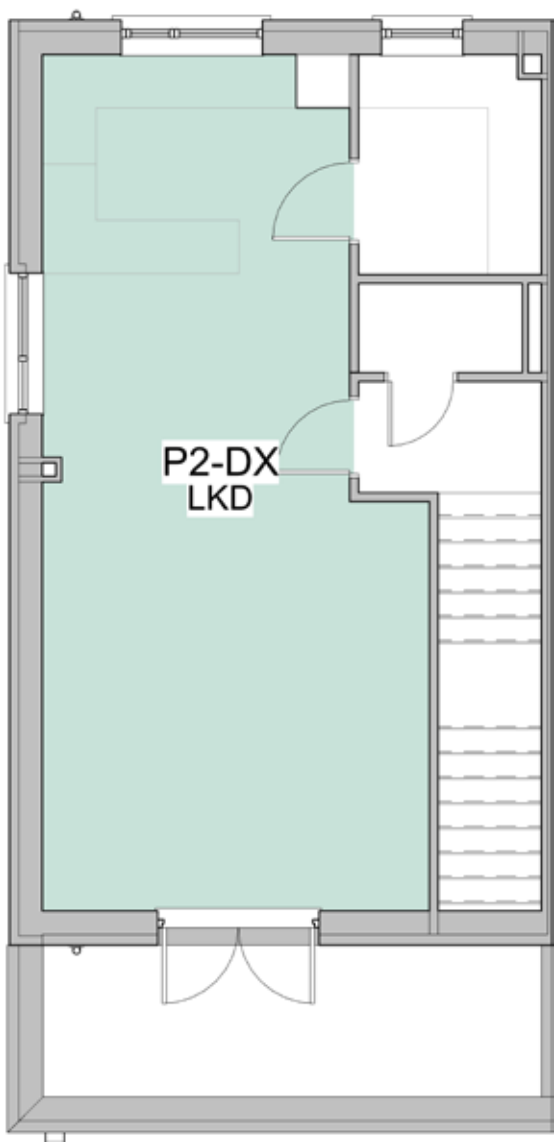


Figure C.19: Duplex Type P2 - Second Floor



C.1.5 Proposed Duplex Unit Floor Plans - Duplex Type P3

Figure C.20: Duplex Type P3 - Site Location

Figure C.21: Duplex Type P3 - Ground Floor

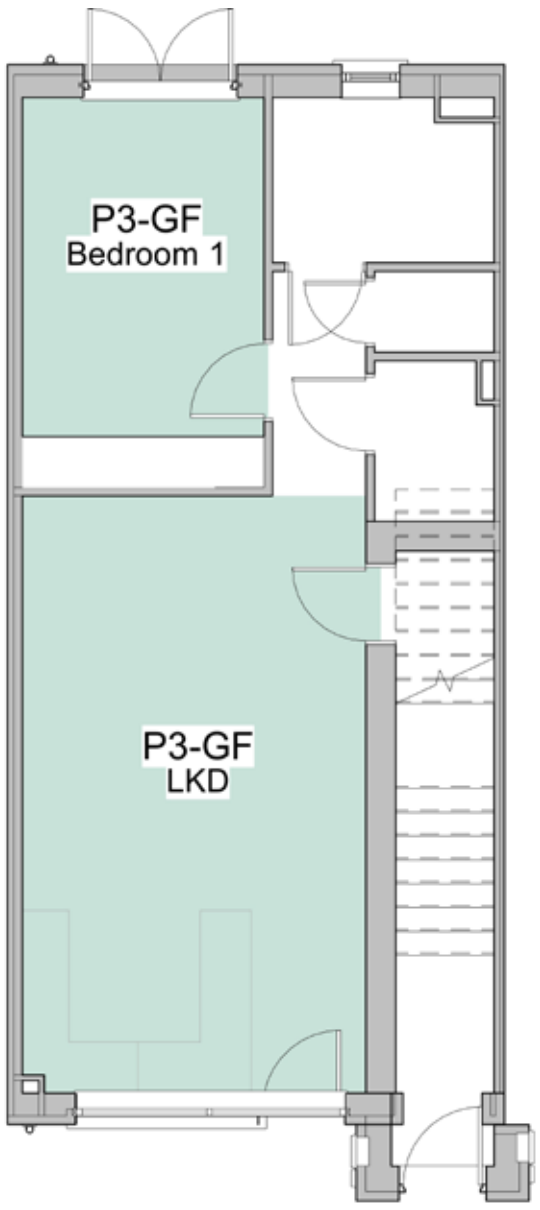


Figure C.22: Duplex Type P3 - First Floor

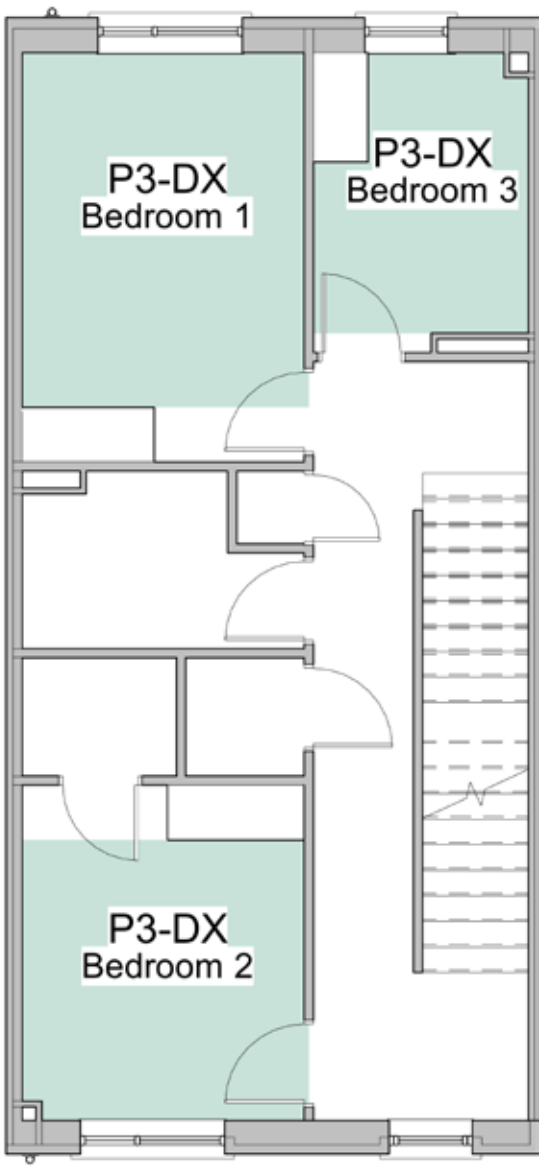
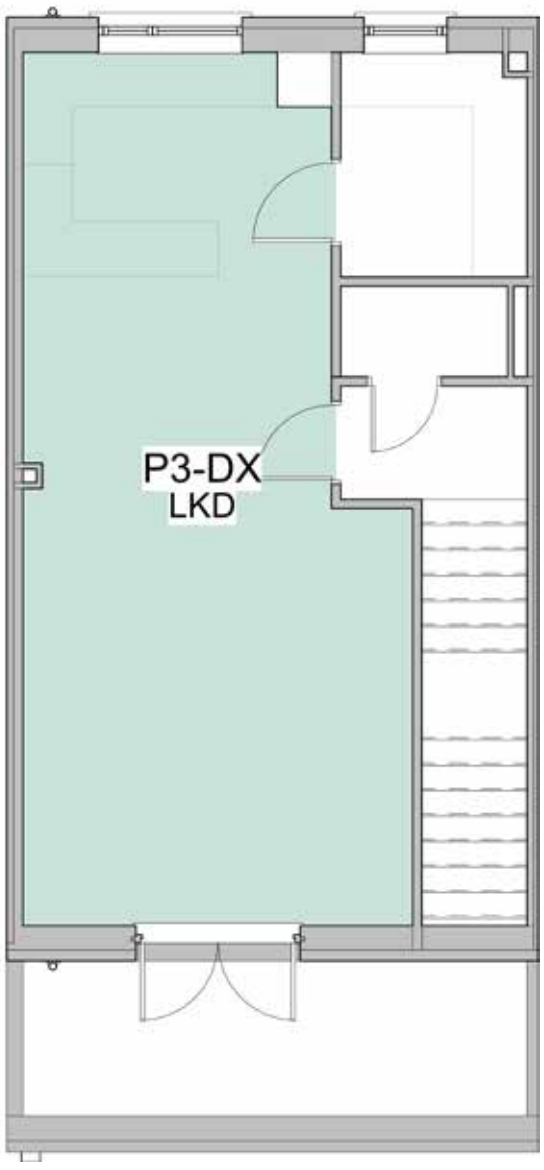


Figure C.23: Duplex Type P3 - Second Floor



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	With Trees	
A	**B**	**C**	**D**	**E**	**F**

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 (With 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 the foliage of deciduous trees varied to account for summer and winter conditions, i.e. full leaf and bare branch.

F: 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'*.

Compliance rates will be stated for SDA, both with and without trees.

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: Block A

Table No. C.2.1 - SDA Results:					
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
Block A_A-01	LKD	200	100%	81%	Compliant
Block A_A-01	Bedroom 1	100	100%	100%	Compliant
Block A_A-01	Bedroom 2	100	100%	100%	Compliant
Block A_A-02	LKD	200	100%	94%	Compliant
Block A_A-02	Bedroom 1	100	100%	75%	Compliant
Block A_A-03	LKD	200	100%	97%	Compliant
Block A_A-03	Bedroom 1	100	100%	100%	Compliant
Block A_A-03	Bedroom 2	100	100%	100%	Compliant
Block A_A-04	LKD	200	59%	51%	Compliant
Block A_A-04	Bedroom 1	100	100%	100%	Compliant
Block A_A-04	Bedroom 2	100	100%	100%	Compliant
Block A_A-05	LKD	200	100%	98%	Compliant
Block A_A-05	Bedroom 1	100	100%	94%	Compliant
Block A_A-06	LKD	200	100%	100%	Compliant
Block A_A-06	Bedroom	100	100%	100%	Compliant
Block A_A-06	Bedroom 1	100	100%	100%	Compliant
Block A_A-07	LKD	200	100%	94%	Compliant
Block A_A-07	Bedroom 1	100	100%	100%	Compliant
Block A_A-07	Bedroom 2	100	100%	100%	Compliant
Block A_A-08	LKD	200	74%	67%	Compliant
Block A_A-08	Bedroom 1	100	100%	100%	Compliant
Block A_A-08	Bedroom 2	100	100%	100%	Compliant
Block A_A-09	LKD	200	100%	99%	Compliant
Block A_A-09	Bedroom 1	100	100%	100%	Compliant
Block A_A-10	LKD	200	100%	100%	Compliant
Block A_A-10	Bedroom 1	100	100%	100%	Compliant
Block A_A-10	Bedroom 2	100	100%	100%	Compliant
Block A_A-11	LKD	200	100%	100%	Compliant
Block A_A-11	Bedroom 1	100	100%	100%	Compliant
Block A_A-11	Bedroom 2	100	100%	100%	Compliant
Block A_A-12	LKD	200	79%	72%	Compliant
Block A_A-12	Bedroom 1	100	100%	100%	Compliant
Block A_A-12	Bedroom 2	100	100%	100%	Compliant
Block A_A-13	LKD	200	100%	100%	Compliant
Block A_A-13	Bedroom 1	100	100%	100%	Compliant
Block A_A-14	LKD	200	100%	100%	Compliant
Block A_A-14	Bedroom 1	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 21.
** Under the BR 209 study the SDA has been calculated with indicative trees represented accounting for annual 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 25.
For floor plans of the assessed units please refer to section C.1 on page 47.

C.2.2 SDA Results: Block B

Table No. C.2.2 - SDA Results:					
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
Block B_B-01	LKD	200	96%	56%	Compliant
Block B_B-01	Bedroom 1	100	100%	100%	Compliant
Block B_B-01	Bedroom 2	100	100%	100%	Compliant
Block B_B-02	LKD	200	100%	73%	Compliant
Block B_B-02	Bedroom 1	100	100%	100%	Compliant
Block B_B-02	Bedroom 2	100	100%	100%	Compliant
Block B_B-03	LKD	200	86%	44%	Trees affecting compliance
Block B_B-03	Bedroom 1	100	100%	100%	Compliant
Block B_B-04	LKD	200	79%	61%	Compliant
Block B_B-04	Bedroom 1	100	100%	100%	Compliant
Block B_B-05	LKD	200	100%	95%	Compliant
Block B_B-05	Bedroom 1	100	100%	100%	Compliant
Block B_B-05	Bedroom 2	100	100%	100%	Compliant
Block B_B-06	LKD	200	100%	71%	Compliant
Block B_B-06	Bedroom 1	100	100%	100%	Compliant
Block B_B-06	Bedroom 2	100	100%	100%	Compliant
Block B_B-07	LKD	200	90%	59%	Compliant
Block B_B-07	Bedroom 1	100	100%	100%	Compliant
Block B_B-08	LKD	200	72%	66%	Compliant
Block B_B-08	Bedroom 1	100	100%	100%	Compliant
Block B_B-08	Bedroom 2	100	100%	100%	Compliant
Block B_B-09	LKD	200	47%	42%	Non-compliant
Block B_B-09	Bedroom 1	100	100%	100%	Compliant
Block B_B-10	LKD	200	92%	67%	Compliant
Block B_B-10	Bedroom 1	100	100%	100%	Compliant
Block B_B-11	LKD	200	100%	97%	Compliant
Block B_B-11	Bedroom 1	100	100%	100%	Compliant
Block B_B-11	Bedroom 2	100	100%	100%	Compliant
Block B_B-12	LKD	200	100%	99%	Compliant
Block B_B-12	Bedroom 1	100	100%	100%	Compliant
Block B_B-12	Bedroom 2	100	100%	100%	Compliant
Block B_B-13	LKD	200	100%	100%	Compliant
Block B_B-13	Bedroom 1	100	100%	100%	Compliant
Block B_B-14	LKD	200	89%	80%	Compliant
Block B_B-14	Bedroom 1	100	100%	100%	Compliant
Block B_B-14	Bedroom 2	100	100%	100%	Compliant
Block B_B-15	LKD	200	53%	51%	Compliant
Block B_B-15	Bedroom 1	100	100%	100%	Compliant
Block B_B-16	LKD	200	95%	74%	Compliant
Block B_B-16	Bedroom 1	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 21.

** Under the BR 209 study the SDA has been calculated with indicative trees represented accounting for annual 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 25.

For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. C.2.2 - SDA Results:					
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
Block B_B-17	LKD	200	100%	92%	Compliant
Block B_B-17	Bedroom 1	100	100%	100%	Compliant
Block B_B-17	Bedroom 2	100	100%	100%	Compliant
Block B_B-18	LKD	200	100%	99%	Compliant
Block B_B-18	Bedroom 1	100	100%	100%	Compliant
Block B_B-18	Bedroom 2	100	100%	100%	Compliant
Block B_B-19	LKD	200	100%	100%	Compliant
Block B_B-19	Bedroom 1	100	100%	100%	Compliant
Block B_B-20	LKD	200	99%	97%	Compliant
Block B_B-20	Bedroom 1	100	100%	100%	Compliant
Block B_B-20	Bedroom 2	100	100%	100%	Compliant
Block B_B-21	LKD	200	60%	58%	Compliant
Block B_B-21	Bedroom 1	100	100%	100%	Compliant
Block B_B-22	LKD	200	80%	69%	Compliant
Block B_B-22	Bedroom 1	100	100%	100%	Compliant
Block B_B-23	LKD	200	100%	100%	Compliant
Block B_B-23	Bedroom 1	100	100%	100%	Compliant
Block B_B-23	Bedroom 2	100	100%	100%	Compliant
Block B_B-24	LKD	200	100%	100%	Compliant
Block B_B-24	Bedroom 1	100	100%	100%	Compliant
Block B_B-24	Bedroom 2	100	100%	100%	Compliant
Block B_B-25	LKD	200	100%	100%	Compliant
Block B_B-25	Bedroom 1	100	100%	100%	Compliant
Block B_B-26	LKD	200	99%	97%	Compliant
Block B_B-26	Bedroom 1	100	100%	100%	Compliant
Block B_B-26	Bedroom 2	100	100%	100%	Compliant
Block B_B-27	LKD	200	58%	57%	Compliant
Block B_B-27	Bedroom 1	100	100%	100%	Compliant

C.2.3 SDA Results: Duplex Units

Table No. C.2.3 - SDA Results:					
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
Duplex 3&4_P1-GF	LKD	200	58%	52%	Compliant
Duplex 3&4_P1-GF	Bedroom 1	100	100%	97%	Compliant
Duplex 3&4_P1-DX	LKD	200	100%	100%	Compliant
Duplex 3&4_P1-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 3&4_P1-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 3&4_P1-DX	Bedroom 3	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 21.

** Under the BR 209 study the SDA has been calculated with indicative trees represented accounting for annual 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 25.

For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. C.2.3 - SDA Results:					
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
Duplex 5&6_P3-GF	LKD	200	55%	51%	Compliant
Duplex 5&6_P3-GF	Bedroom 1	100	100%	100%	Compliant
Duplex 5&6_P3-DX	LKD	200	100%	100%	Compliant
Duplex 5&6_P3-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 5&6_P3-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 5&6_P3-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 7&8_P3-GF	LKD	200	56%	51%	Compliant
Duplex 7&8_P3-GF	Bedroom 1	100	100%	100%	Compliant
Duplex 7&8_P3-DX	LKD	200	100%	100%	Compliant
Duplex 7&8_P3-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 7&8_P3-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 7&8_P3-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 9&10_P3-GF	LKD	200	57%	51%	Compliant
Duplex 9&10_P3-GF	Bedroom 1	100	100%	100%	Compliant
Duplex 9&10_P3-DX	LKD	200	100%	100%	Compliant
Duplex 9&10_P3-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 9&10_P3-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 9&10_P3-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 11&12_P3-GF	LKD	200	60%	52%	Compliant
Duplex 11&12_P3-GF	Bedroom 1	100	100%	100%	Compliant
Duplex 11&12_P3-DX	LKD	200	100%	100%	Compliant
Duplex 11&12_P3-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 11&12_P3-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 11&12_P3-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 13&14_P2-GF	LKD	200	100%	87%	Compliant
Duplex 13&14_P2-GF	Bedroom 1	100	98%	91%	Compliant
Duplex 13&14_P2-DX	LKD	200	100%	100%	Compliant
Duplex 13&14_P2-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 13&14_P2-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 13&14_P2-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 15&16_P2-GF	LKD	200	100%	65%	Compliant
Duplex 15&16_P2-GF	Bedroom 1	100	100%	100%	Compliant
Duplex 15&16_P2-DX	LKD	200	100%	100%	Compliant
Duplex 15&16_P2-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 15&16_P2-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 15&16_P2-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 17&18_P3-GF	LKD	200	65%	50%	Compliant
Duplex 17&18_P3-GF	Bedroom 1	100	100%	100%	Compliant
Duplex 17&18_P3-DX	LKD	200	93%	84%	Compliant
Duplex 17&18_P3-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 17&18_P3-DX	Bedroom 2	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 21.

** Under the BR 209 study the SDA has been calculated with indicative trees represented accounting for annual 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 25.

For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. C.2.3 - SDA Results:					
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
Duplex 17&18_P3-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 19&20_P1-GF	LKD	200	59%	50%	Compliant
Duplex 19&20_P1-GF	Bedroom 1	100	100%	99%	Compliant
Duplex 19&20_P1-DX	LKD	200	100%	100%	Compliant
Duplex 19&20_P1-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 19&20_P1-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 19&20_P1-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 36&37_P1-GF	LKD	200	99%	77%	Compliant
Duplex 36&37_P1-GF	Bedroom 1	100	100%	93%	Compliant
Duplex 36&37_P1-DX	LKD	200	100%	100%	Compliant
Duplex 36&37_P1-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 36&37_P1-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 36&37_P1-DX	Bedroom 3	100	100%	97%	Compliant
Duplex 38&39_P3-GF	LKD	200	99%	81%	Compliant
Duplex 38&39_P3-GF	Bedroom 1	100	100%	88%	Compliant
Duplex 38&39_P3-DX	LKD	200	100%	99%	Compliant
Duplex 38&39_P3-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 38&39_P3-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 38&39_P3-DX	Bedroom 3	100	100%	97%	Compliant
Duplex 40&41_P3-GF	LKD	200	99%	85%	Compliant
Duplex 40&41_P3-GF	Bedroom 1	100	91%	78%	Compliant
Duplex 40&41_P3-DX	LKD	200	100%	98%	Compliant
Duplex 40&41_P3-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 40&41_P3-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 40&41_P3-DX	Bedroom 3	100	100%	97%	Compliant
Duplex 42&43_P2-GF	LKD	200	100%	100%	Compliant
Duplex 42&43_P2-GF	Bedroom 1	100	99%	84%	Compliant
Duplex 42&43_P2-DX	LKD	200	100%	100%	Compliant
Duplex 42&43_P2-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 42&43_P2-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 42&43_P2-DX	Bedroom 3	100	97%	95%	Compliant
Duplex 48&49_P2-GF	LKD	200	100%	100%	Compliant
Duplex 48&49_P2-GF	Bedroom 1	100	99%	89%	Compliant
Duplex 48&49_P2-DX	LKD	200	100%	100%	Compliant
Duplex 48&49_P2-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 48&49_P2-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 48&49_P2-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 50&51_P3-GF	LKD	200	97%	85%	Compliant
Duplex 50&51_P3-GF	Bedroom 1	100	83%	73%	Compliant
Duplex 50&51_P3-DX	LKD	200	100%	98%	Compliant
Duplex 50&51_P3-DX	Bedroom 1	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 21.
** Under the BR 209 study the SDA has been calculated with indicative trees represented accounting for annual 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 25.
For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. C.2.3 - SDA Results:					
Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation >50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
Duplex 50&51_P3-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 50&51_P3-DX	Bedroom 3	100	100%	97%	Compliant
Duplex 52&53_P3-GF	LKD	200	97%	86%	Compliant
Duplex 52&53_P3-GF	Bedroom 1	100	100%	83%	Compliant
Duplex 52&53_P3-DX	LKD	200	100%	98%	Compliant
Duplex 52&53_P3-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 52&53_P3-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 52&53_P3-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 54&55_P1-GF	LKD	200	98%	84%	Compliant
Duplex 54&55_P1-GF	Bedroom 1	100	100%	90%	Compliant
Duplex 54&55_P1-DX	LKD	200	100%	100%	Compliant
Duplex 54&55_P1-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 54&55_P1-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 54&55_P1-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 61&62_P2-GF	LKD	200	100%	100%	Compliant
Duplex 61&62_P2-GF	Bedroom 1	100	100%	100%	Compliant
Duplex 61&62_P2-DX	LKD	200	100%	100%	Compliant
Duplex 61&62_P2-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 61&62_P2-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 61&62_P2-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 63&64_P3-GF	LKD	200	97%	70%	Compliant
Duplex 63&64_P3-GF	Bedroom 1	100	100%	100%	Compliant
Duplex 63&64_P3-DX	LKD	200	100%	100%	Compliant
Duplex 63&64_P3-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 63&64_P3-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 63&64_P3-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 65&66_P3-GF	LKD	200	94%	67%	Compliant
Duplex 65&66_P3-GF	Bedroom 1	100	100%	99%	Compliant
Duplex 65&66_P3-DX	LKD	200	100%	100%	Compliant
Duplex 65&66_P3-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 65&66_P3-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 65&66_P3-DX	Bedroom 3	100	100%	100%	Compliant
Duplex 67&68_P2-GF	LKD	200	100%	85%	Compliant
Duplex 67&68_P2-GF	Bedroom 1	100	100%	99%	Compliant
Duplex 67&68_P2-DX	LKD	200	100%	100%	Compliant
Duplex 67&68_P2-DX	Bedroom 1	100	100%	100%	Compliant
Duplex 67&68_P2-DX	Bedroom 2	100	100%	100%	Compliant
Duplex 67&68_P2-DX	Bedroom 3	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 21.

** Under the BR 209 study the SDA has been calculated with indicative trees represented accounting for annual 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 25.

For floor plans of the assessed units please refer to section C.1 on page 47.

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: Block A

Table No. C.3.1 - Sunlight Exposure Results:							
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**
Block A_A-01	LKD	2.70	Minimum	-	4.10	High	-
Block A_A-01	Bedroom 1	2.80	Minimum	-	6.30	High	-
Block A_A-01	Bedroom 2	4.00	High	Compliant	6.70	High	Compliant
Block A_A-02	LKD	2.40	Minimum	Compliant	2.50	Minimum	Compliant
Block A_A-02	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Block A_A-03	LKD	4.00	High	-	4.00	High	-
Block A_A-03	Bedroom 1	7.40	High	Compliant	7.40	High	Compliant
Block A_A-03	Bedroom 2	7.40	High	-	7.40	High	-
Block A_A-04	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block A_A-04	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Block A_A-04	Bedroom 2	2.20	Minimum	Compliant	2.20	Minimum	Compliant
Block A_A-05	LKD	3.40	Medium	Compliant	3.40	Medium	Compliant
Block A_A-05	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Block A_A-06	LKD	6.90	High	-	6.90	High	-
Block A_A-06	Bedroom	7.40	High	Compliant	7.40	High	Compliant
Block A_A-06	Bedroom 1	7.30	High	-	7.30	High	-
Block A_A-07	LKD	1.90	Minimum	-	1.90	Minimum	-
Block A_A-07	Bedroom 1	7.40	High	Compliant	7.40	High	Compliant
Block A_A-07	Bedroom 2	7.40	High	-	7.40	High	-
Block A_A-08	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block A_A-08	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Block A_A-08	Bedroom 2	2.50	Minimum	Compliant	2.50	Minimum	Compliant
Block A_A-09	LKD	4.20	High	Compliant	4.20	High	Compliant
Block A_A-09	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Block A_A-10	LKD	5.60	High	-	5.60	High	-
Block A_A-10	Bedroom 1	7.40	High	Compliant	7.40	High	Compliant
Block A_A-10	Bedroom 2	7.40	High	-	7.40	High	-
Block A_A-11	LKD	7.90	High	Compliant	7.90	High	Compliant
Block A_A-11	Bedroom 1	7.30	High	-	7.30	High	-
Block A_A-11	Bedroom 2	7.30	High	-	7.30	High	-
Block A_A-12	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block A_A-12	Bedroom 1	0.40	Below Minimum	-	0.40	Below Minimum	-
Block A_A-12	Bedroom 2	2.60	Minimum	Compliant	2.60	Minimum	Compliant
Block A_A-13	LKD	5.00	High	Compliant	5.00	High	Compliant
Block A_A-13	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Block A_A-14	LKD	9.10	High	Compliant	9.10	High	Compliant
Block A_A-14	Bedroom 1	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 27.
*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 13.
For floor plans of the assessed units please refer to section C.1 on page 47.

C.3.2 SE Results: Block B

Table No. C.3.2 - Sunlight Exposure Results:							
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**
Block B_B-01	LKD	0.70	Below Minimum	-	0.70	Below Minimum	-
Block B_B-01	Bedroom 1	5.80	High	Compliant	5.80	High	Compliant
Block B_B-01	Bedroom 2	4.90	High	-	4.90	High	-
Block B_B-02	LKD	0.00	Below Minimum	-	0.10	Below Minimum	-
Block B_B-02	Bedroom 1	3.40	Medium	-	3.40	Medium	-
Block B_B-02	Bedroom 2	3.90	Medium	Compliant	3.90	Medium	Compliant
Block B_B-03	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block B_B-03	Bedroom 1	1.50	Minimum	Compliant	1.50	Minimum	Compliant
Block B_B-04	LKD	3.20	Medium	-	3.20	Medium	-
Block B_B-04	Bedroom 1	6.40	High	Compliant	6.40	High	Compliant
Block B_B-05	LKD	1.90	Minimum	-	1.90	Minimum	-
Block B_B-05	Bedroom 1	5.20	High	-	5.20	High	-
Block B_B-05	Bedroom 2	5.80	High	Compliant	5.80	High	Compliant
Block B_B-06	LKD	0.20	Below Minimum	-	0.20	Below Minimum	-
Block B_B-06	Bedroom 1	3.40	Medium	-	3.40	Medium	-
Block B_B-06	Bedroom 2	3.80	Medium	Compliant	3.80	Medium	Compliant
Block B_B-07	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block B_B-07	Bedroom 1	2.30	Minimum	Compliant	2.30	Minimum	Compliant
Block B_B-08	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block B_B-08	Bedroom 1	1.90	Minimum	-	2.30	Minimum	Compliant
Block B_B-08	Bedroom 2	2.30	Minimum	Compliant	2.30	Minimum	-
Block B_B-09	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block B_B-09	Bedroom 1	4.70	High	Compliant	6.80	High	Compliant
Block B_B-10	LKD	3.20	Medium	-	3.20	Medium	-
Block B_B-10	Bedroom 1	8.90	High	Compliant	8.90	High	Compliant
Block B_B-11	LKD	2.10	Minimum	-	2.10	Minimum	-
Block B_B-11	Bedroom 1	5.30	High	-	5.30	High	-
Block B_B-11	Bedroom 2	5.80	High	Compliant	5.80	High	Compliant
Block B_B-12	LKD	2.20	Minimum	-	2.20	Minimum	-
Block B_B-12	Bedroom 1	4.00	High	-	4.00	High	-
Block B_B-12	Bedroom 2	4.20	High	Compliant	4.20	High	Compliant
Block B_B-13	LKD	0.40	Below Minimum	-	0.40	Below Minimum	-
Block B_B-13	Bedroom 1	2.30	Minimum	Compliant	2.30	Minimum	Compliant
Block B_B-14	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block B_B-14	Bedroom 1	2.30	Minimum	Compliant	2.30	Minimum	Compliant
Block B_B-14	Bedroom 2	2.30	Minimum	-	2.30	Minimum	-
Block B_B-15	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block B_B-15	Bedroom 1	7.30	High	Compliant	7.30	High	Compliant
Block B_B-16	LKD	3.20	Medium	-	3.20	Medium	-
Block B_B-16	Bedroom 1	9.40	High	Compliant	9.40	High	Compliant

* 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 27.

*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 13.

For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. C.3.3 - Sunlight Exposure Results:							
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**
Block B_B-17	LKD	1.40	Below Minimum	-	1.40	Below Minimum	-
Block B_B-17	Bedroom 1	5.60	High	-	5.60	High	-
Block B_B-17	Bedroom 2	5.80	High	Compliant	5.80	High	Compliant
Block B_B-18	LKD	1.90	Minimum	-	1.90	Minimum	-
Block B_B-18	Bedroom 1	5.60	High	Compliant	5.60	High	Compliant
Block B_B-18	Bedroom 2	5.00	High	-	5.00	High	-
Block B_B-19	LKD	0.50	Below Minimum	-	0.50	Below Minimum	-
Block B_B-19	Bedroom 1	2.30	Minimum	Compliant	2.30	Minimum	Compliant
Block B_B-20	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block B_B-20	Bedroom 1	2.30	Minimum	Compliant	2.30	Minimum	Compliant
Block B_B-20	Bedroom 2	2.30	Minimum	-	2.30	Minimum	-
Block B_B-21	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block B_B-21	Bedroom 1	7.30	High	Compliant	7.30	High	Compliant
Block B_B-22	LKD	1.80	Minimum	-	1.80	Minimum	-
Block B_B-22	Bedroom 1	9.40	High	Compliant	9.40	High	Compliant
Block B_B-23	LKD	3.90	Medium	-	3.90	Medium	-
Block B_B-23	Bedroom 1	5.80	High	Compliant	5.80	High	Compliant
Block B_B-23	Bedroom 2	5.80	High	-	5.80	High	-
Block B_B-24	LKD	6.10	High	Compliant	6.10	High	Compliant
Block B_B-24	Bedroom 1	5.80	High	-	5.80	High	-
Block B_B-24	Bedroom 2	5.80	High	-	5.80	High	-
Block B_B-25	LKD	0.50	Below Minimum	-	0.50	Below Minimum	-
Block B_B-25	Bedroom 1	2.30	Minimum	Compliant	2.30	Minimum	Compliant
Block B_B-26	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block B_B-26	Bedroom 1	2.30	Minimum	Compliant	2.30	Minimum	Compliant
Block B_B-26	Bedroom 2	2.30	Minimum	-	2.30	Minimum	-
Block B_B-27	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Block B_B-27	Bedroom 1	7.30	High	Compliant	7.30	High	Compliant

C.3.3 SE Results: Duplex Units

Table No. C.3.3 - Sunlight Exposure Results:							
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**
Duplex 3&4_P1-GF	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 3&4_P1-GF	Bedroom 1	2.60	Minimum	Compliant	2.60	Minimum	Compliant
Duplex 3&4_P1-DX	LKD	7.40	High	Compliant	7.40	High	Compliant
Duplex 3&4_P1-DX	Bedroom 1	4.50	High	-	4.50	High	-
Duplex 3&4_P1-DX	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 3&4_P1-DX	Bedroom 3	4.60	High	-	4.60	High	-
Duplex 5&6_P3-GF	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 5&6_P3-GF	Bedroom 1	2.50	Minimum	Compliant	3.90	Medium	Compliant

* 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 27.
*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 13.
For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. C.3.3 - Sunlight Exposure Results:							
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**
Duplex 5&6_P3-DX	LKD	7.20	High	Compliant	7.20	High	Compliant
Duplex 5&6_P3-DX	Bedroom 1	7.20	High	-	7.20	High	-
Duplex 5&6_P3-DX	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 5&6_P3-DX	Bedroom 3	6.50	High	-	6.60	High	-
Duplex 7&8_P3-GF	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 7&8_P3-GF	Bedroom 1	5.00	High	Compliant	6.60	High	Compliant
Duplex 7&8_P3-DX	LKD	7.20	High	Compliant	7.20	High	Compliant
Duplex 7&8_P3-DX	Bedroom 1	7.20	High	-	7.20	High	-
Duplex 7&8_P3-DX	Bedroom 2	0.10	Below Minimum	-	0.10	Below Minimum	-
Duplex 7&8_P3-DX	Bedroom 3	6.60	High	-	6.60	High	-
Duplex 9&10_P3-GF	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 9&10_P3-GF	Bedroom 1	5.00	High	Compliant	5.80	High	Compliant
Duplex 9&10_P3-DX	LKD	7.20	High	Compliant	7.20	High	Compliant
Duplex 9&10_P3-DX	Bedroom 1	6.70	High	-	6.70	High	-
Duplex 9&10_P3-DX	Bedroom 2	0.10	Below Minimum	-	0.10	Below Minimum	-
Duplex 9&10_P3-DX	Bedroom 3	6.40	High	-	6.40	High	-
Duplex 11&12_P3-GF	LKD	0.10	Below Minimum	-	0.10	Below Minimum	-
Duplex 11&12_P3-GF	Bedroom 1	2.70	Minimum	Compliant	3.60	Medium	Compliant
Duplex 11&12_P3-DX	LKD	7.20	High	Compliant	7.20	High	Compliant
Duplex 11&12_P3-DX	Bedroom 1	5.30	High	-	5.30	High	-
Duplex 11&12_P3-DX	Bedroom 2	0.10	Below Minimum	-	0.10	Below Minimum	-
Duplex 11&12_P3-DX	Bedroom 3	5.60	High	-	5.60	High	-
Duplex 13&14_P2-GF	LKD	0.70	Below Minimum	-	2.10	Minimum	-
Duplex 13&14_P2-GF	Bedroom 1	2.70	Minimum	Compliant	2.70	Minimum	Compliant
Duplex 13&14_P2-DX	LKD	7.20	High	Compliant	7.20	High	Compliant
Duplex 13&14_P2-DX	Bedroom 1	6.10	High	-	6.10	High	-
Duplex 13&14_P2-DX	Bedroom 2	1.30	Below Minimum	-	3.10	Medium	-
Duplex 13&14_P2-DX	Bedroom 3	3.50	Medium	-	3.50	Medium	-
Duplex 15&16_P2-GF	LKD	4.50	High	Compliant	5.80	High	Compliant
Duplex 15&16_P2-GF	Bedroom 1	1.20	Below Minimum	-	1.80	Minimum	-
Duplex 15&16_P2-DX	LKD	7.60	High	Compliant	7.60	High	Compliant
Duplex 15&16_P2-DX	Bedroom 1	2.80	Minimum	-	3.30	Medium	-
Duplex 15&16_P2-DX	Bedroom 2	4.40	High	-	5.60	High	-
Duplex 15&16_P2-DX	Bedroom 3	1.40	Below Minimum	-	1.40	Below Minimum	-
Duplex 17&18_P3-GF	LKD	4.30	High	Compliant	5.40	High	Compliant
Duplex 17&18_P3-GF	Bedroom 1	1.00	Below Minimum	-	1.30	Below Minimum	-
Duplex 17&18_P3-DX	LKD	6.90	High	Compliant	7.60	High	Compliant
Duplex 17&18_P3-DX	Bedroom 1	2.10	Minimum	-	2.10	Minimum	-
Duplex 17&18_P3-DX	Bedroom 2	4.50	High	-	5.60	High	-
Duplex 17&18_P3-DX	Bedroom 3	1.40	Below Minimum	-	1.40	Below Minimum	-
Duplex 19&20_P1-GF	LKD	4.60	High	Compliant	4.90	High	Compliant
Duplex 19&20_P1-GF	Bedroom 1	0.00	Below Minimum	-	0.00	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 27.

*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 13.

For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. C.3.3 - Sunlight Exposure Results:							
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**
Duplex 19&20_P1-DX	LKD	7.50	High	Compliant	7.80	High	Compliant
Duplex 19&20_P1-DX	Bedroom 1	1.90	Minimum	-	1.90	Minimum	-
Duplex 19&20_P1-DX	Bedroom 2	4.40	High	-	4.80	High	-
Duplex 19&20_P1-DX	Bedroom 3	0.80	Below Minimum	-	0.80	Below Minimum	-
Duplex 36&37_P1-GF	LKD	6.50	High	Compliant	6.90	High	Compliant
Duplex 36&37_P1-GF	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 36&37_P1-DX	LKD	7.50	High	Compliant	7.50	High	Compliant
Duplex 36&37_P1-DX	Bedroom 1	0.10	Below Minimum	-	0.10	Below Minimum	-
Duplex 36&37_P1-DX	Bedroom 2	7.20	High	-	7.20	High	-
Duplex 36&37_P1-DX	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 38&39_P3-GF	LKD	6.90	High	Compliant	6.90	High	Compliant
Duplex 38&39_P3-GF	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 38&39_P3-DX	LKD	7.20	High	Compliant	7.20	High	Compliant
Duplex 38&39_P3-DX	Bedroom 1	0.10	Below Minimum	-	0.10	Below Minimum	-
Duplex 38&39_P3-DX	Bedroom 2	7.20	High	-	7.20	High	-
Duplex 38&39_P3-DX	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 40&41_P3-GF	LKD	6.90	High	Compliant	6.90	High	Compliant
Duplex 40&41_P3-GF	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 40&41_P3-DX	LKD	7.20	High	Compliant	7.20	High	Compliant
Duplex 40&41_P3-DX	Bedroom 1	0.10	Below Minimum	-	0.10	Below Minimum	-
Duplex 40&41_P3-DX	Bedroom 2	7.20	High	-	7.20	High	-
Duplex 40&41_P3-DX	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 42&43_P2-GF	LKD	6.90	High	Compliant	6.90	High	Compliant
Duplex 42&43_P2-GF	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 42&43_P2-DX	LKD	7.20	High	Compliant	7.20	High	Compliant
Duplex 42&43_P2-DX	Bedroom 1	3.10	Medium	-	3.10	Medium	-
Duplex 42&43_P2-DX	Bedroom 2	7.20	High	-	7.20	High	-
Duplex 42&43_P2-DX	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 48&49_P2-GF	LKD	7.90	High	Compliant	7.90	High	Compliant
Duplex 48&49_P2-GF	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 48&49_P2-DX	LKD	9.40	High	Compliant	9.40	High	Compliant
Duplex 48&49_P2-DX	Bedroom 1	6.40	High	-	6.40	High	-
Duplex 48&49_P2-DX	Bedroom 2	8.50	High	-	8.50	High	-
Duplex 48&49_P2-DX	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 50&51_P3-GF	LKD	7.00	High	Compliant	7.00	High	Compliant
Duplex 50&51_P3-GF	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 50&51_P3-DX	LKD	7.20	High	Compliant	7.20	High	Compliant
Duplex 50&51_P3-DX	Bedroom 1	0.10	Below Minimum	-	0.10	Below Minimum	-
Duplex 50&51_P3-DX	Bedroom 2	7.20	High	-	7.20	High	-
Duplex 50&51_P3-DX	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 52&53_P3-GF	LKD	7.00	High	Compliant	7.00	High	Compliant
Duplex 52&53_P3-GF	Bedroom 1	0.00	Below Minimum	-	0.00	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 27.

*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 13.

For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. C.3.3 - Sunlight Exposure Results:							
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**
Duplex 52&53_P3-DX	LKD	7.20	High	Compliant	7.20	High	Compliant
Duplex 52&53_P3-DX	Bedroom 1	0.10	Below Minimum	-	0.10	Below Minimum	-
Duplex 52&53_P3-DX	Bedroom 2	7.20	High	-	7.20	High	-
Duplex 52&53_P3-DX	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 54&55_P1-GF	LKD	7.60	High	Compliant	7.60	High	Compliant
Duplex 54&55_P1-GF	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 54&55_P1-DX	LKD	7.30	High	Compliant	7.30	High	Compliant
Duplex 54&55_P1-DX	Bedroom 1	0.10	Below Minimum	-	0.10	Below Minimum	-
Duplex 54&55_P1-DX	Bedroom 2	7.20	High	-	7.20	High	-
Duplex 54&55_P1-DX	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
Duplex 61&62_P2-GF	LKD	8.80	High	Compliant	9.40	High	Compliant
Duplex 61&62_P2-GF	Bedroom 1	1.30	Below Minimum	-	1.80	Minimum	-
Duplex 61&62_P2-DX	LKD	9.40	High	Compliant	9.40	High	Compliant
Duplex 61&62_P2-DX	Bedroom 1	8.20	High	-	8.20	High	-
Duplex 61&62_P2-DX	Bedroom 2	9.40	High	-	9.40	High	-
Duplex 61&62_P2-DX	Bedroom 3	1.40	Below Minimum	-	1.40	Below Minimum	-
Duplex 63&64_P3-GF	LKD	5.40	High	Compliant	5.40	High	Compliant
Duplex 63&64_P3-GF	Bedroom 1	1.40	Below Minimum	-	1.40	Below Minimum	-
Duplex 63&64_P3-DX	LKD	7.60	High	Compliant	7.60	High	Compliant
Duplex 63&64_P3-DX	Bedroom 1	2.10	Minimum	-	2.10	Minimum	-
Duplex 63&64_P3-DX	Bedroom 2	5.60	High	-	5.60	High	-
Duplex 63&64_P3-DX	Bedroom 3	1.40	Below Minimum	-	1.40	Below Minimum	-
Duplex 65&66_P3-GF	LKD	5.80	High	Compliant	5.80	High	Compliant
Duplex 65&66_P3-GF	Bedroom 1	0.90	Below Minimum	-	2.00	Minimum	-
Duplex 65&66_P3-DX	LKD	7.60	High	Compliant	7.60	High	Compliant
Duplex 65&66_P3-DX	Bedroom 1	2.10	Minimum	-	2.10	Minimum	-
Duplex 65&66_P3-DX	Bedroom 2	5.60	High	-	5.60	High	-
Duplex 65&66_P3-DX	Bedroom 3	1.40	Below Minimum	-	1.40	Below Minimum	-
Duplex 67&68_P2-GF	LKD	5.10	High	Compliant	6.10	High	Compliant
Duplex 67&68_P2-GF	Bedroom 1	0.90	Below Minimum	-	2.00	Minimum	-
Duplex 67&68_P2-DX	LKD	7.60	High	Compliant	7.60	High	Compliant
Duplex 67&68_P2-DX	Bedroom 1	3.30	Medium	-	3.30	Medium	-
Duplex 67&68_P2-DX	Bedroom 2	5.60	High	-	5.60	High	-
Duplex 67&68_P2-DX	Bedroom 3	1.40	Below Minimum	-	1.40	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 27.

*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 13.

For floor plans of the assessed units please refer to section C.1 on page 47.

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 Public and Communal Amenity Areas

Table No. C.4.1 - SOG in Proposed Outdoor Public and Communal 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	Public Open Space 1	99.54%	50.00%	BRE Compliant	Yes
2	Public Open Space 2	100.00%	50.00%	BRE Compliant	Yes
3	Communal Open Space - Block A	71.54%	50.00%	BRE Compliant	Yes
4	Communal Open Space - Block B	89.06%	50.00%	BRE Compliant	Yes
5	Communal Open Space - Zone A	72.68%	50.00%	BRE Compliant	Yes
6	Communal Open Space - Zone B	39.96%	50.00%	80%	No
7	Communal Open Space - Zone C	16.76%	50.00%	34%	No
8	Communal Open Space - Zone D	4.68%	50.00%	9%	No
9	Communal Open Space - Zone E	99.24%	50.00%	BRE Compliant	Yes
10	Greenbelt - Open Space	96.78%	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.

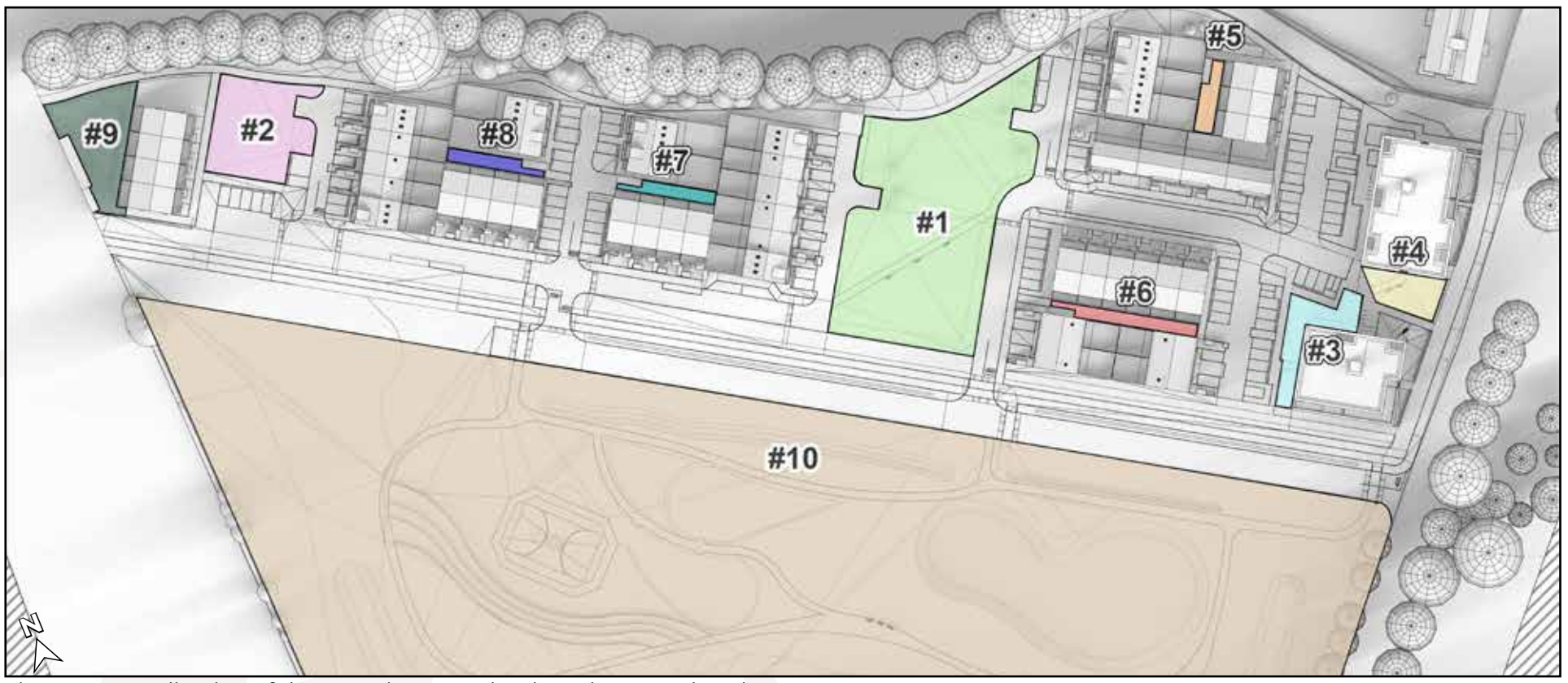


Figure C.24: Indication of the amenity areas that have been analysed.

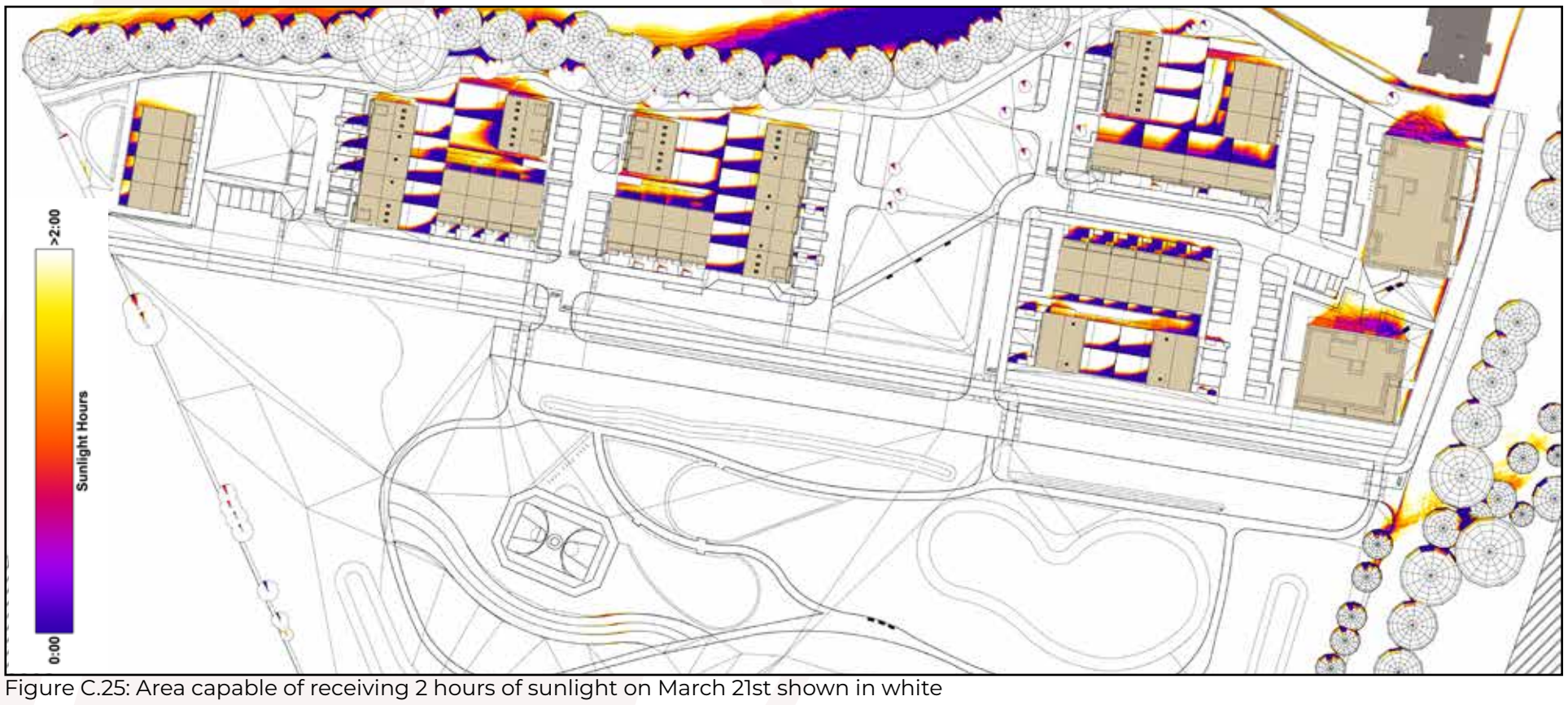


Figure C.25: Area capable of receiving 2 hours of sunlight on March 21st shown in white

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		With Trees		Compliance with I.S. EN 17037 Criteria
		Area above 300 Lux	Area above 100 Lux	Area above 300 Lux	Area above 100 Lux	
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: % 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 with the foliage of deciduous trees varied to account for summer and winter conditions, i.e. full leaf and 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 with the foliage of deciduous trees varied to account for summer and winter conditions.

G: 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'*.

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): Block A

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

Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Block A_A-01	LKD	100%	100%	60%	100%	Compliant
Block A_A-01	Bedroom 1	100%	100%	54%	100%	Compliant
Block A_A-01	Bedroom 2	99%	100%	59%	100%	Compliant
Block A_A-02	LKD	100%	100%	47%	100%	Trees affecting compliance
Block A_A-02	Bedroom 1	38%	100%	21%	82%	Non-compliant
Block A_A-03	LKD	85%	100%	67%	100%	Compliant
Block A_A-03	Bedroom 1	100%	100%	97%	100%	Compliant
Block A_A-03	Bedroom 2	100%	100%	100%	100%	Compliant
Block A_A-04	LKD	35%	100%	26%	100%	Non-compliant
Block A_A-04	Bedroom 1	60%	100%	53%	100%	Compliant
Block A_A-04	Bedroom 2	100%	100%	90%	100%	Compliant
Block A_A-05	LKD	100%	100%	78%	100%	Compliant
Block A_A-05	Bedroom 1	45%	100%	35%	100%	Non-compliant
Block A_A-06	LKD	100%	100%	87%	100%	Compliant
Block A_A-06	Bedroom	94%	100%	73%	100%	Compliant
Block A_A-06	Bedroom 1	100%	100%	80%	100%	Compliant
Block A_A-07	LKD	66%	100%	51%	100%	Compliant
Block A_A-07	Bedroom 1	100%	100%	99%	100%	Compliant
Block A_A-07	Bedroom 2	100%	100%	100%	100%	Compliant
Block A_A-08	LKD	48%	100%	42%	100%	Non-compliant
Block A_A-08	Bedroom 1	67%	100%	61%	100%	Compliant
Block A_A-08	Bedroom 2	100%	100%	100%	100%	Compliant
Block A_A-09	LKD	100%	100%	87%	100%	Compliant
Block A_A-09	Bedroom 1	55%	100%	45%	100%	Trees affecting compliance
Block A_A-10	LKD	100%	100%	85%	100%	Compliant
Block A_A-10	Bedroom 1	100%	100%	100%	100%	Compliant
Block A_A-10	Bedroom 2	94%	100%	84%	100%	Compliant
Block A_A-11	LKD	100%	100%	100%	100%	Compliant
Block A_A-11	Bedroom 1	100%	100%	100%	100%	Compliant
Block A_A-11	Bedroom 2	100%	100%	100%	100%	Compliant
Block A_A-12	LKD	49%	100%	47%	100%	Non-compliant
Block A_A-12	Bedroom 1	77%	100%	71%	100%	Compliant
Block A_A-12	Bedroom 2	100%	100%	100%	100%	Compliant
Block A_A-13	LKD	100%	100%	99%	100%	Compliant
Block A_A-13	Bedroom 1	64%	100%	61%	100%	Compliant
Block A_A-14	LKD	100%	100%	100%	100%	Compliant
Block A_A-14	Bedroom 1	100%	100%	73%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 21.
For floor plans of the assessed units please refer to section C.1 on page 47.

D.1.2 Supplementary SDA Results (I.S. EN 17037 criteria): Block B

Table No. D.1.2 - Supplementary SDA Results (I.S. EN 17037 criteria):

Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Block B_B-01	LKD	49%	100%	23%	100%	Non-compliant
Block B_B-01	Bedroom 1	100%	100%	79%	100%	Compliant
Block B_B-01	Bedroom 2	84%	100%	67%	100%	Compliant
Block B_B-02	LKD	87%	100%	32%	100%	Trees affecting compliance
Block B_B-02	Bedroom 1	100%	100%	56%	100%	Compliant
Block B_B-02	Bedroom 2	84%	100%	51%	100%	Compliant
Block B_B-03	LKD	39%	100%	11%	100%	Non-compliant
Block B_B-03	Bedroom 1	64%	100%	58%	100%	Compliant
Block B_B-04	LKD	50%	100%	36%	100%	Trees affecting compliance
Block B_B-04	Bedroom 1	100%	100%	100%	100%	Compliant
Block B_B-05	LKD	98%	100%	56%	100%	Compliant
Block B_B-05	Bedroom 1	100%	100%	96%	100%	Compliant
Block B_B-05	Bedroom 2	100%	100%	79%	100%	Compliant
Block B_B-06	LKD	100%	100%	36%	100%	Trees affecting compliance
Block B_B-06	Bedroom 1	100%	100%	70%	100%	Compliant
Block B_B-06	Bedroom 2	96%	100%	61%	100%	Compliant
Block B_B-07	LKD	48%	100%	18%	100%	Non-compliant
Block B_B-07	Bedroom 1	67%	100%	64%	100%	Compliant
Block B_B-08	LKD	45%	100%	41%	100%	Non-compliant
Block B_B-08	Bedroom 1	64%	100%	52%	100%	Compliant
Block B_B-08	Bedroom 2	55%	100%	46%	100%	Trees affecting compliance
Block B_B-09	LKD	26%	100%	22%	98%	Non-compliant
Block B_B-09	Bedroom 1	100%	100%	100%	100%	Compliant
Block B_B-10	LKD	57%	100%	43%	100%	Trees affecting compliance
Block B_B-10	Bedroom 1	100%	100%	100%	100%	Compliant
Block B_B-11	LKD	100%	100%	66%	100%	Compliant
Block B_B-11	Bedroom 1	100%	100%	99%	100%	Compliant
Block B_B-11	Bedroom 2	100%	100%	86%	100%	Compliant
Block B_B-12	LKD	100%	100%	68%	100%	Compliant
Block B_B-12	Bedroom 1	100%	100%	80%	100%	Compliant
Block B_B-12	Bedroom 2	100%	100%	70%	100%	Compliant
Block B_B-13	LKD	91%	100%	81%	100%	Compliant
Block B_B-13	Bedroom 1	73%	100%	71%	100%	Compliant
Block B_B-14	LKD	51%	100%	49%	100%	Trees affecting compliance
Block B_B-14	Bedroom 1	71%	100%	69%	100%	Compliant
Block B_B-14	Bedroom 2	63%	100%	59%	100%	Compliant
Block B_B-15	LKD	29%	100%	28%	100%	Non-compliant
Block B_B-15	Bedroom 1	100%	100%	100%	100%	Compliant
Block B_B-16	LKD	61%	100%	48%	100%	Trees affecting compliance
Block B_B-16	Bedroom 1	100%	100%	100%	100%	Compliant
Block B_B-17	LKD	85%	100%	54%	100%	Compliant
Block B_B-17	Bedroom 1	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 21.
For floor plans of the assessed units please refer to section C.1 on page 47.

D.1.3 Supplementary SDA Results (I.S. EN 17037 criteria): Block B

Table No. D.1.3 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Block B_B-17	Bedroom 2	100%	100%	90%	100%	Compliant
Block B_B-18	LKD	100%	100%	73%	100%	Compliant
Block B_B-18	Bedroom 1	100%	100%	94%	100%	Compliant
Block B_B-18	Bedroom 2	100%	100%	79%	100%	Compliant
Block B_B-19	LKD	90%	100%	79%	100%	Compliant
Block B_B-19	Bedroom 1	80%	100%	74%	100%	Compliant
Block B_B-20	LKD	60%	100%	57%	100%	Compliant
Block B_B-20	Bedroom 1	75%	100%	73%	100%	Compliant
Block B_B-20	Bedroom 2	64%	100%	63%	100%	Compliant
Block B_B-21	LKD	37%	100%	35%	100%	Non-compliant
Block B_B-21	Bedroom 1	100%	100%	100%	100%	Compliant
Block B_B-22	LKD	54%	100%	46%	100%	Trees affecting compliance
Block B_B-22	Bedroom 1	100%	100%	100%	100%	Compliant
Block B_B-23	LKD	100%	100%	100%	100%	Compliant
Block B_B-23	Bedroom 1	100%	100%	100%	100%	Compliant
Block B_B-23	Bedroom 2	100%	100%	96%	100%	Compliant
Block B_B-24	LKD	100%	100%	100%	100%	Compliant
Block B_B-24	Bedroom 1	100%	100%	100%	100%	Compliant
Block B_B-24	Bedroom 2	100%	100%	100%	100%	Compliant
Block B_B-25	LKD	99%	100%	95%	100%	Compliant
Block B_B-25	Bedroom 1	83%	100%	80%	100%	Compliant
Block B_B-26	LKD	60%	100%	58%	100%	Compliant
Block B_B-26	Bedroom 1	82%	100%	79%	100%	Compliant
Block B_B-26	Bedroom 2	71%	100%	67%	100%	Compliant
Block B_B-27	LKD	37%	100%	37%	100%	Non-compliant
Block B_B-27	Bedroom 1	100%	100%	100%	100%	Compliant

D.1.4 Supplementary SDA Results (I.S. EN 17037 criteria): Duplex Units

Table No. D.1.4 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Duplex 3&4_P1-GF	LKD	41%	97%	38%	89%	Non-compliant
Duplex 3&4_P1-GF	Bedroom 1	32%	100%	27%	100%	Non-compliant
Duplex 3&4_P1-DX	LKD	75%	100%	71%	100%	Compliant
Duplex 3&4_P1-DX	Bedroom 1	57%	100%	53%	100%	Compliant
Duplex 3&4_P1-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 3&4_P1-DX	Bedroom 3	35%	100%	35%	100%	Non-compliant
Duplex 5&6_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 5&6_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 5&6_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 5&6_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 21.
For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. D.1.4 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Duplex 5&6_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 5&6_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 7&8_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 7&8_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 7&8_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 7&8_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant
Duplex 7&8_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 7&8_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 9&10_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 9&10_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 9&10_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 9&10_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant
Duplex 9&10_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 9&10_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 11&12_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 11&12_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 11&12_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 11&12_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant
Duplex 11&12_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 11&12_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 13&14_P2-GF	LKD	82%	100%	72%	100%	Compliant
Duplex 13&14_P2-GF	Bedroom 1	27%	100%	23%	95%	Non-compliant
Duplex 13&14_P2-DX	LKD	100%	100%	100%	100%	Compliant
Duplex 13&14_P2-DX	Bedroom 1	100%	100%	100%	100%	Compliant
Duplex 13&14_P2-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 13&14_P2-DX	Bedroom 3	23%	100%	23%	100%	Non-compliant
Duplex 15&16_P2-GF	LKD	82%	100%	72%	100%	Compliant
Duplex 15&16_P2-GF	Bedroom 1	27%	100%	23%	95%	Non-compliant
Duplex 15&16_P2-DX	LKD	100%	100%	100%	100%	Compliant
Duplex 15&16_P2-DX	Bedroom 1	100%	100%	100%	100%	Compliant
Duplex 15&16_P2-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 15&16_P2-DX	Bedroom 3	23%	100%	23%	100%	Non-compliant
Duplex 17&18_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 17&18_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 17&18_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 17&18_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant
Duplex 17&18_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 17&18_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 19&20_P1-GF	LKD	41%	97%	38%	89%	Non-compliant
Duplex 19&20_P1-GF	Bedroom 1	32%	100%	27%	100%	Non-compliant
Duplex 19&20_P1-DX	LKD	75%	100%	71%	100%	Compliant
Duplex 19&20_P1-DX	Bedroom 1	57%	100%	53%	100%	Compliant
Duplex 19&20_P1-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 19&20_P1-DX	Bedroom 3	35%	100%	35%	100%	Non-compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 21.
For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. D.1.4 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Duplex 36&37_P1-GF	LKD	41%	97%	38%	89%	Non-compliant
Duplex 36&37_P1-GF	Bedroom 1	32%	100%	27%	100%	Non-compliant
Duplex 36&37_P1-DX	LKD	75%	100%	71%	100%	Compliant
Duplex 36&37_P1-DX	Bedroom 1	57%	100%	53%	100%	Compliant
Duplex 36&37_P1-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 36&37_P1-DX	Bedroom 3	35%	100%	35%	100%	Non-compliant
Duplex 38&39_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 38&39_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 38&39_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 38&39_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant
Duplex 38&39_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 38&39_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 40&41_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 40&41_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 40&41_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 40&41_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant
Duplex 40&41_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 40&41_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 42&43_P2-GF	LKD	82%	100%	72%	100%	Compliant
Duplex 42&43_P2-GF	Bedroom 1	27%	100%	23%	95%	Non-compliant
Duplex 42&43_P2-DX	LKD	100%	100%	100%	100%	Compliant
Duplex 42&43_P2-DX	Bedroom 1	100%	100%	100%	100%	Compliant
Duplex 42&43_P2-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 42&43_P2-DX	Bedroom 3	23%	100%	23%	100%	Non-compliant
Duplex 48&49_P2-GF	LKD	82%	100%	72%	100%	Compliant
Duplex 48&49_P2-GF	Bedroom 1	27%	100%	23%	95%	Non-compliant
Duplex 48&49_P2-DX	LKD	100%	100%	100%	100%	Compliant
Duplex 48&49_P2-DX	Bedroom 1	100%	100%	100%	100%	Compliant
Duplex 48&49_P2-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 48&49_P2-DX	Bedroom 3	23%	100%	23%	100%	Non-compliant
Duplex 50&51_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 50&51_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 50&51_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 50&51_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant
Duplex 50&51_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 50&51_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 52&53_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 52&53_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 52&53_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 52&53_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant
Duplex 52&53_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 52&53_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 54&55_P1-GF	LKD	41%	97%	38%	89%	Non-compliant
Duplex 54&55_P1-GF	Bedroom 1	32%	100%	27%	100%	Non-compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 21.
For floor plans of the assessed units please refer to section C.1 on page 47.

Table No. D.1.4 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Duplex 54&55_P1-DX	LKD	75%	100%	71%	100%	Compliant
Duplex 54&55_P1-DX	Bedroom 1	57%	100%	53%	100%	Compliant
Duplex 54&55_P1-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 54&55_P1-DX	Bedroom 3	35%	100%	35%	100%	Non-compliant
Duplex 61&62_P2-GF	LKD	82%	100%	72%	100%	Compliant
Duplex 61&62_P2-GF	Bedroom 1	27%	100%	23%	95%	Non-compliant
Duplex 61&62_P2-DX	LKD	100%	100%	100%	100%	Compliant
Duplex 61&62_P2-DX	Bedroom 1	100%	100%	100%	100%	Compliant
Duplex 61&62_P2-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 61&62_P2-DX	Bedroom 3	23%	100%	23%	100%	Non-compliant
Duplex 63&64_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 63&64_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 63&64_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 63&64_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant
Duplex 63&64_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 63&64_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 65&66_P3-GF	LKD	40%	95%	37%	84%	Non-compliant
Duplex 65&66_P3-GF	Bedroom 1	40%	100%	35%	100%	Non-compliant
Duplex 65&66_P3-DX	LKD	59%	100%	57%	100%	Compliant
Duplex 65&66_P3-DX	Bedroom 1	76%	100%	67%	100%	Compliant
Duplex 65&66_P3-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 65&66_P3-DX	Bedroom 3	42%	100%	38%	100%	Non-compliant
Duplex 67&68_P2-GF	LKD	82%	100%	72%	100%	Compliant
Duplex 67&68_P2-GF	Bedroom 1	27%	100%	23%	95%	Non-compliant
Duplex 67&68_P2-DX	LKD	100%	100%	100%	100%	Compliant
Duplex 67&68_P2-DX	Bedroom 1	100%	100%	100%	100%	Compliant
Duplex 67&68_P2-DX	Bedroom 2	100%	100%	100%	100%	Compliant
Duplex 67&68_P2-DX	Bedroom 3	23%	100%	23%	100%	Non-compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 21.
For floor plans of the assessed units please refer to section C.1 on page 47.

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: Block A

Table No. D.2.1 - Supplementary NSL Results:			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Block A_A-01	LKD	100%	Yes
Block A_A-01	Bedroom 1	99%	Yes
Block A_A-01	Bedroom 2	99%	Yes
Block A_A-02	LKD	97%	Yes
Block A_A-02	Bedroom 1	49%	No
Block A_A-03	LKD	99%	Yes
Block A_A-03	Bedroom 1	99%	Yes
Block A_A-03	Bedroom 2	100%	Yes
Block A_A-04	LKD	94%	Yes
Block A_A-04	Bedroom 1	95%	Yes
Block A_A-04	Bedroom 2	100%	Yes
Block A_A-05	LKD	97%	Yes
Block A_A-05	Bedroom 1	52%	No
Block A_A-06	LKD	100%	Yes
Block A_A-06	Bedroom	99%	Yes
Block A_A-06	Bedroom 1	99%	Yes
Block A_A-07	LKD	99%	Yes
Block A_A-07	Bedroom 1	99%	Yes
Block A_A-07	Bedroom 2	100%	Yes
Block A_A-08	LKD	98%	Yes
Block A_A-08	Bedroom 1	98%	Yes
Block A_A-08	Bedroom 2	100%	Yes
Block A_A-09	LKD	97%	Yes
Block A_A-09	Bedroom 1	64%	No
Block A_A-10	LKD	100%	Yes
Block A_A-10	Bedroom 1	99%	Yes
Block A_A-10	Bedroom 2	99%	Yes
Block A_A-11	LKD	100%	Yes
Block A_A-11	Bedroom 1	98%	Yes
Block A_A-11	Bedroom 2	100%	Yes
Block A_A-12	LKD	99%	Yes
Block A_A-12	Bedroom 1	99%	Yes
Block A_A-12	Bedroom 2	100%	Yes
Block A_A-13	LKD	98%	Yes
Block A_A-13	Bedroom 1	99%	Yes
Block A_A-14	LKD	100%	Yes
Block A_A-14	Bedroom 1	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 47.

D.2.2 Supplementary NSL Results: Block B

Table No. D.2.2 - Supplementary NSL Results:			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Block B_B-01	LKD	99%	Yes
Block B_B-01	Bedroom 1	99%	Yes
Block B_B-01	Bedroom 2	99%	Yes
Block B_B-02	LKD	100%	Yes
Block B_B-02	Bedroom 1	99%	Yes
Block B_B-02	Bedroom 2	99%	Yes
Block B_B-03	LKD	100%	Yes
Block B_B-03	Bedroom 1	99%	Yes
Block B_B-04	LKD	99%	Yes
Block B_B-04	Bedroom 1	99%	Yes
Block B_B-05	LKD	99%	Yes
Block B_B-05	Bedroom 1	99%	Yes
Block B_B-05	Bedroom 2	99%	Yes
Block B_B-06	LKD	100%	Yes
Block B_B-06	Bedroom 1	99%	Yes
Block B_B-06	Bedroom 2	99%	Yes
Block B_B-07	LKD	100%	Yes
Block B_B-07	Bedroom 1	99%	Yes
Block B_B-08	LKD	99%	Yes
Block B_B-08	Bedroom 1	99%	Yes
Block B_B-08	Bedroom 2	99%	Yes
Block B_B-09	LKD	99%	Yes
Block B_B-09	Bedroom 1	99%	Yes
Block B_B-10	LKD	99%	Yes
Block B_B-10	Bedroom 1	99%	Yes
Block B_B-11	LKD	99%	Yes
Block B_B-11	Bedroom 1	99%	Yes
Block B_B-11	Bedroom 2	99%	Yes
Block B_B-12	LKD	100%	Yes
Block B_B-12	Bedroom 1	99%	Yes
Block B_B-12	Bedroom 2	99%	Yes
Block B_B-13	LKD	100%	Yes
Block B_B-13	Bedroom 1	99%	Yes
Block B_B-14	LKD	99%	Yes
Block B_B-14	Bedroom 1	99%	Yes
Block B_B-14	Bedroom 2	99%	Yes
Block B_B-15	LKD	99%	Yes
Block B_B-15	Bedroom 1	99%	Yes
Block B_B-16	LKD	99%	Yes
Block B_B-16	Bedroom 1	99%	Yes
Block B_B-17	LKD	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 47.

Table No. D.2.2 - Supplementary NSL Results:			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Block B_B-17	Bedroom 1	99%	Yes
Block B_B-17	Bedroom 2	99%	Yes
Block B_B-18	LKD	100%	Yes
Block B_B-18	Bedroom 1	99%	Yes
Block B_B-18	Bedroom 2	99%	Yes
Block B_B-19	LKD	100%	Yes
Block B_B-19	Bedroom 1	99%	Yes
Block B_B-20	LKD	99%	Yes
Block B_B-20	Bedroom 1	99%	Yes
Block B_B-20	Bedroom 2	99%	Yes
Block B_B-21	LKD	99%	Yes
Block B_B-21	Bedroom 1	99%	Yes
Block B_B-22	LKD	100%	Yes
Block B_B-22	Bedroom 1	99%	Yes
Block B_B-23	LKD	100%	Yes
Block B_B-23	Bedroom 1	99%	Yes
Block B_B-23	Bedroom 2	99%	Yes
Block B_B-24	LKD	100%	Yes
Block B_B-24	Bedroom 1	97%	Yes
Block B_B-24	Bedroom 2	98%	Yes
Block B_B-25	LKD	100%	Yes
Block B_B-25	Bedroom 1	99%	Yes
Block B_B-26	LKD	100%	Yes
Block B_B-26	Bedroom 1	99%	Yes
Block B_B-26	Bedroom 2	99%	Yes
Block B_B-27	LKD	100%	Yes
Block B_B-27	Bedroom 1	99%	Yes

D.2.3 Supplementary NSL Results: Duplex Units

Table No. D.2.3 - Supplementary NSL Results:			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Duplex 3&4_P1-GF	LKD	96%	Yes
Duplex 3&4_P1-GF	Bedroom 1	53%	No
Duplex 3&4_P1-DX	LKD	100%	Yes
Duplex 3&4_P1-DX	Bedroom 1	85%	Yes
Duplex 3&4_P1-DX	Bedroom 2	99%	Yes
Duplex 3&4_P1-DX	Bedroom 3	94%	Yes
Duplex 5&6_P3-GF	LKD	94%	Yes
Duplex 5&6_P3-GF	Bedroom 1	84%	Yes
Duplex 5&6_P3-DX	LKD	100%	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 47.

Table No. D.2.3 - Supplementary NSL Results:			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Duplex 5&6_P3-DX	Bedroom 1	99%	Yes
Duplex 5&6_P3-DX	Bedroom 2	99%	Yes
Duplex 5&6_P3-DX	Bedroom 3	88%	Yes
Duplex 7&8_P3-GF	LKD	94%	Yes
Duplex 7&8_P3-GF	Bedroom 1	84%	Yes
Duplex 7&8_P3-DX	LKD	100%	Yes
Duplex 7&8_P3-DX	Bedroom 1	99%	Yes
Duplex 7&8_P3-DX	Bedroom 2	99%	Yes
Duplex 7&8_P3-DX	Bedroom 3	88%	Yes
Duplex 9&10_P3-GF	LKD	94%	Yes
Duplex 9&10_P3-GF	Bedroom 1	84%	Yes
Duplex 9&10_P3-DX	LKD	100%	Yes
Duplex 9&10_P3-DX	Bedroom 1	99%	Yes
Duplex 9&10_P3-DX	Bedroom 2	99%	Yes
Duplex 9&10_P3-DX	Bedroom 3	88%	Yes
Duplex 11&12_P3-GF	LKD	94%	Yes
Duplex 11&12_P3-GF	Bedroom 1	84%	Yes
Duplex 11&12_P3-DX	LKD	100%	Yes
Duplex 11&12_P3-DX	Bedroom 1	99%	Yes
Duplex 11&12_P3-DX	Bedroom 2	99%	Yes
Duplex 11&12_P3-DX	Bedroom 3	88%	Yes
Duplex 13&14_P2-GF	LKD	100%	Yes
Duplex 13&14_P2-GF	Bedroom 1	50%	No
Duplex 13&14_P2-DX	LKD	100%	Yes
Duplex 13&14_P2-DX	Bedroom 1	99%	Yes
Duplex 13&14_P2-DX	Bedroom 2	99%	Yes
Duplex 13&14_P2-DX	Bedroom 3	74%	No
Duplex 15&16_P2-GF	LKD	100%	Yes
Duplex 15&16_P2-GF	Bedroom 1	50%	No
Duplex 15&16_P2-DX	LKD	100%	Yes
Duplex 15&16_P2-DX	Bedroom 1	99%	Yes
Duplex 15&16_P2-DX	Bedroom 2	99%	Yes
Duplex 15&16_P2-DX	Bedroom 3	74%	No
Duplex 17&18_P3-GF	LKD	94%	Yes
Duplex 17&18_P3-GF	Bedroom 1	84%	Yes
Duplex 17&18_P3-DX	LKD	100%	Yes
Duplex 17&18_P3-DX	Bedroom 1	99%	Yes
Duplex 17&18_P3-DX	Bedroom 2	99%	Yes
Duplex 17&18_P3-DX	Bedroom 3	88%	Yes
Duplex 19&20_P1-GF	LKD	96%	Yes
Duplex 19&20_P1-GF	Bedroom 1	53%	No
Duplex 19&20_P1-DX	LKD	100%	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 47.

Table No. D.2.3 - Supplementary NSL Results:			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Duplex 19&20_P1-DX	Bedroom 1	85%	Yes
Duplex 19&20_P1-DX	Bedroom 2	99%	Yes
Duplex 19&20_P1-DX	Bedroom 3	94%	Yes
Duplex 36&37_P1-GF	LKD	96%	Yes
Duplex 36&37_P1-GF	Bedroom 1	53%	No
Duplex 36&37_P1-DX	LKD	100%	Yes
Duplex 36&37_P1-DX	Bedroom 1	85%	Yes
Duplex 36&37_P1-DX	Bedroom 2	99%	Yes
Duplex 36&37_P1-DX	Bedroom 3	94%	Yes
Duplex 38&39_P3-GF	LKD	94%	Yes
Duplex 38&39_P3-GF	Bedroom 1	84%	Yes
Duplex 38&39_P3-DX	LKD	100%	Yes
Duplex 38&39_P3-DX	Bedroom 1	99%	Yes
Duplex 38&39_P3-DX	Bedroom 2	99%	Yes
Duplex 38&39_P3-DX	Bedroom 3	88%	Yes
Duplex 40&41_P3-GF	LKD	94%	Yes
Duplex 40&41_P3-GF	Bedroom 1	84%	Yes
Duplex 40&41_P3-DX	LKD	100%	Yes
Duplex 40&41_P3-DX	Bedroom 1	99%	Yes
Duplex 40&41_P3-DX	Bedroom 2	99%	Yes
Duplex 40&41_P3-DX	Bedroom 3	88%	Yes
Duplex 42&43_P2-GF	LKD	100%	Yes
Duplex 42&43_P2-GF	Bedroom 1	50%	No
Duplex 42&43_P2-DX	LKD	100%	Yes
Duplex 42&43_P2-DX	Bedroom 1	99%	Yes
Duplex 42&43_P2-DX	Bedroom 2	99%	Yes
Duplex 42&43_P2-DX	Bedroom 3	74%	No
Duplex 48&49_P2-GF	LKD	100%	Yes
Duplex 48&49_P2-GF	Bedroom 1	50%	No
Duplex 48&49_P2-DX	LKD	100%	Yes
Duplex 48&49_P2-DX	Bedroom 1	99%	Yes
Duplex 48&49_P2-DX	Bedroom 2	99%	Yes
Duplex 48&49_P2-DX	Bedroom 3	74%	No
Duplex 50&51_P3-GF	LKD	94%	Yes
Duplex 50&51_P3-GF	Bedroom 1	84%	Yes
Duplex 50&51_P3-DX	LKD	100%	Yes
Duplex 50&51_P3-DX	Bedroom 1	99%	Yes
Duplex 50&51_P3-DX	Bedroom 2	99%	Yes
Duplex 50&51_P3-DX	Bedroom 3	88%	Yes
Duplex 52&53_P3-GF	LKD	94%	Yes
Duplex 52&53_P3-GF	Bedroom 1	84%	Yes
Duplex 52&53_P3-DX	LKD	100%	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 47.

Table No. D.2.3 - Supplementary NSL Results:			
Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Duplex 52&53_P3-DX	Bedroom 1	99%	Yes
Duplex 52&53_P3-DX	Bedroom 2	99%	Yes
Duplex 52&53_P3-DX	Bedroom 3	88%	Yes
Duplex 54&55_P1-GF	LKD	96%	Yes
Duplex 54&55_P1-GF	Bedroom 1	53%	No
Duplex 54&55_P1-DX	LKD	100%	Yes
Duplex 54&55_P1-DX	Bedroom 1	85%	Yes
Duplex 54&55_P1-DX	Bedroom 2	99%	Yes
Duplex 54&55_P1-DX	Bedroom 3	94%	Yes
Duplex 61&62_P2-GF	LKD	100%	Yes
Duplex 61&62_P2-GF	Bedroom 1	50%	No
Duplex 61&62_P2-DX	LKD	100%	Yes
Duplex 61&62_P2-DX	Bedroom 1	99%	Yes
Duplex 61&62_P2-DX	Bedroom 2	99%	Yes
Duplex 61&62_P2-DX	Bedroom 3	74%	No
Duplex 63&64_P3-GF	LKD	94%	Yes
Duplex 63&64_P3-GF	Bedroom 1	84%	Yes
Duplex 63&64_P3-DX	LKD	100%	Yes
Duplex 63&64_P3-DX	Bedroom 1	99%	Yes
Duplex 63&64_P3-DX	Bedroom 2	99%	Yes
Duplex 63&64_P3-DX	Bedroom 3	88%	Yes
Duplex 65&66_P3-GF	LKD	94%	Yes
Duplex 65&66_P3-GF	Bedroom 1	84%	Yes
Duplex 65&66_P3-DX	LKD	100%	Yes
Duplex 65&66_P3-DX	Bedroom 1	99%	Yes
Duplex 65&66_P3-DX	Bedroom 2	99%	Yes
Duplex 65&66_P3-DX	Bedroom 3	88%	Yes
Duplex 67&68_P2-GF	LKD	100%	Yes
Duplex 67&68_P2-GF	Bedroom 1	50%	No
Duplex 67&68_P2-DX	LKD	100%	Yes
Duplex 67&68_P2-DX	Bedroom 1	99%	Yes
Duplex 67&68_P2-DX	Bedroom 2	99%	Yes
Duplex 67&68_P2-DX	Bedroom 3	74%	No

* 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 47.