September 2024

# LRD Student Accommodation, Goatstown Road

## Daylight and Sunlight Assessment Report

Applicant: Orchid Residential 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*


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# Report Contents



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

# 1.0 Executive Summary

## 1.1 Summary of Assessment

Following a pre-application meeting with Dun-Laoghaire Rathdown County Council, 3D Design Bureau (3DDB) were commissioned to carry out a comprehensive daylight and sunlight assessment to the amended design of the new application to this subject site, along with an accompanying shadow study for the proposed student accommodation development at Goatstown Road. Key changes from the pre-application stage involved reducing the top floor footprint and adjusting ground floor amenity areas to enhance sunlight access.

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, or that have been previously assessed at the pre-application stage, have been included in the study. A more detailed explanation of the criterion applied can be found in section "4.1 Impact Assessment, Window Selection Criteria" on page 13.

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

The effects were assessed in the baseline state versus the proposed state. For definition of model states, including a visual representation of the model states, please refer to the 'Methodology' section on Page 15.

This impact assessment covers the following metrics:

- Effect on daylight to surrounding properties. The effect to the Vertical Sky Component (VSC) of the windows of the following neighbouring properties was assessed:
  - 2, 4, 6 and 8 Willowfield Park (#1)
  - 157-164 Trimbleston (#2)
  - 165-166 Trimbleston (#3)
  - The Pine (#4)
  - The Sycamore (#5)
- Effect on sunlight to surrounding properties. The effect to the annual and winter probable sunlight hours (APSH/ WPSH) of the windows of the following neighbouring properties was assessed:
  - 157-164 Trimbleston (#2)
  - 165-166 Trimbleston (#3)
  - The Pine (#4)
  - The Sycamore (#5)
- Effect on sun on ground (SOG) to surrounding external amenity spaces such as gardens:
  - 161-164 - terraces (#2)
  - 165-166 Trimbleston (#3)
  - The Pine (roof terrace) (#4)
  - 84-92 Goatstown Road (#6)
  - Trimbleston (shared garden) (#7)

Figure 1.1: Scope of surrounding properties and environment assessed.

The results of the impact assessments can be found in section A.0 on page 28. These results are summarised in section 1.2 and explained in section "5.1 Analysis of Impact Assessment Results" on page 22.

### Scheme Performance

Daylight access for the habitable rooms of the proposed development has been assessed through a Spatial Daylight Autonomy (SDA) study. Sunlight access for the same rooms has been quantified through a Sunlight Exposure (SE) assessment. A Sun On Ground (SOG) study has also been carried out to indicate the level of sunlight on March 21st in the proposed external amenity spaces. The results of these scheme performance assessments, which are in accordance with the BRE Guidelines, can be found in section D.0 on page 57. These results are summarised in section 1.3 and explained in section "5.2 Analysis of Scheme Performance Results" on page 23.

Supplementary scheme performance studies have also been carried out. These include an SDA assessment under the I.S. EN 17037 criterion, and a No Sky Line (NSL) study within proposed habitable rooms. The results of the supplementary scheme performance assessments can be found in section E.0 on page 82.

The conclusion of the studies carried out for the purpose of this report can be found in section 6.0 on page 25. Overall, it is the opinion of 3DDB that the proposed development performs well in regard to daylight and sunlight. Through close collaboration with the design team, following advice from the planning authority, daylight and sunlight provision has been maximised. At the same time, the impact on surrounding properties has been minimised, all without compromising the design intent of this student scheme.

## 1.2 Impact Assessment Results Overview - Neighbouring Properties:

### Effect to Daylight - Vertical Sky Component (VSC) :

| Effect to Vertical Sky Component (VSC) | |
|---|---|
| Windows/Rooms Assessed | 66 |
| Negligible | 48 |
| Minor Adverse | 12 |
| Moderate Adverse | 5 |
| Major Adverse | 1 |
| Beneficial Impact* | 0 |
| n.a.** | 0 |

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

| Effect to Annual Probable Sunlight Hours (APSH) | |
|---|---|
| Windows/Rooms Assessed | 50 |
| Negligible | 44 |
| Minor Adverse | 5 |
| Moderate Adverse | 0 |
| Major Adverse | 0 |
| Beneficial Impact* | 1 |
| n.a.** | 0 |

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

| Effect to Winter Probable Sunlight Hours (WPSH) | |
|---|---|
| Windows/Rooms Assessed | 50 |
| Negligible | 39 |
| Minor Adverse | 3 |
| Moderate Adverse | 3 |
| Major Adverse | 0 |
| Beneficial Impact* | 2 |
| n.a.** | 3 |

### Effect to Sun On Ground (SOG):

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

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

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

# 1.3 Scheme Performance Results Overview:

## Spatial Daylight Autonomy (SDA):

| Spatial Daylight Autonomy (SDA) BRE 209 Criteria | |
|---|---|
| Unit Count | 49 |
| Rooms Assessed | 258 |
| Without Trees | |
| Compliant | 252 |
| Non-compliant | 6 |
| Compliance Rate* | c. 98% |
| Trees in Winter State (Proposed and Existing Trees) | |
| Compliant | 245 |
| Non-compliant | 13 |
| Compliance Rate* | c. 95% |
| Trees in Summer State (Proposed and Existing Trees) | |
| Compliant | 228 |
| Non-compliant | 30 |
| Compliance Rate* | c. 88% |
| 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 student studios, bedrooms and LKDs serving clusters.

## Sunlight Exposure (SE):

| Sunlight Exposure (SE) | |
|---|---|
| Units Assessed | 49 |
| SE with trees as opaque objects | |
| Below Minimum | 12 |
| Minimum | 14 |
| Medium | 7 |
| High | 16 |
| Compliance Rate* | c. 76% |
| SE without deciduous trees | |
| Below Minimum | 10 |
| Minimum | 11 |
| Medium | 6 |
| High | 22 |
| Compliance Rate* | c. 80% |

* Compliance rates stated for the SE analysis are based on the student clusters and studios that have been assessed.

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

| Sun On Ground (SOG) in proposed gardens / amenity areas | |
|---|---|
| Areas Assessed | 2 |
| Areas meeting the guidelines | 2 |
| Areas not meeting the guidelines | 0 |
| Compliance Rate* | 100% |

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

**Note:** A student cluster refers to a group of individual bedrooms sharing common facilities (e.g., kitchen, lounge), providing both private and communal living spaces.

## 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 | 49 |
| Rooms Assessed | 258 |
| Without Trees | |
| Compliant | 215 |
| Non-compliant | 43 |
| Compliance Rate* | c. 83% |
| Trees in Winter State (Proposed and Existing Trees) | |
| Compliant | 194 |
| Non-compliant | 64 |
| Compliance Rate* | c. 75% |
| Trees in Summer State (Proposed and Existing Trees) | |
| Compliant | 182 |
| Non-compliant | 76 |
| Compliance Rate* | c. 71% |
| 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 student studios, bedrooms and Living room serving clusters.

### No Sky Line (NSL):

| No Sky Line (NSL): | |
|---|---|
| Unit Count | 49 |
| Rooms Assessed | 258 |
| Yes | 223 |
| No | 35 |
| Compliance Rate** | c. 86% |
| ** 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 student studios, bedrooms and Living room serving clusters.

**Note:** A student cluster refers to a group of individual bedrooms sharing common facilities (e.g., kitchen, lounge), providing both private and communal living spaces.

# 2.0 Guidelines / Standards

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

**Overview**

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

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

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

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

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

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

Paragraph 6.7 of the 2023 apartment guidelines states:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

A detailed description of the various recommendations for impact assessment and scheme performance is contained in section "4.3 Quantitative Impact Assessment Overview" on page 16 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.

**Dun Laoghaire-Rathdown County Development Plan (2022-2028)**

The guidance provided in the Dun Laoghaire-Rathdown County Development Plan 2022-2028 (DLR) references the 2nd Edition of the BRE guidelines (BR 209).

Section 12.3.4.2 of the DLR 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 DLR 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 after the publication of the DLR Development Plan, 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.

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

Target Illuminance in all habitable rooms: A target illuminance assessment, also known as a Spatial Daylight Autonomy (SDA) assessment, has replaced ADF as the relevant metric for assessing daylight within proposed habitable spaces. The two recommended methodologies for this assessment are detailed in section 4.5.1 on page 19. In a scheme performance assessment, the SDA will be calculated for the habitable rooms of the proposed development.

**Impact on the Surrounding Properties**

Vertical Sky Component (VSC) on all relevant surrounding windows: A VSC impact assessment will be conducted, where appropriate, on the relevant surrounding windows determined by the BRE decision chart as illustrated in Figure 4.1 on page 13.

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

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

# 3.0 Glossary

## 3.1 Terms and Definitions

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

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

**Sunlight**
Direct parallel rays of light emitted from the sun.

**Daylight**
Combined skylight and sunlight.

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

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

**Model State**
The model state is a term used to describe the configuration of the digital model used to run analysis. Model states will typically reflect a baseline state and a proposed or cumulative state. For a definition of the model states used in the analysis carried out in this report, please refer to “Preparing the analytical model” on page 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 "D.3 Sunlight Exposure (SE) in Proposed Units" on page 70. Below is a list of the terms used to categorise the levels of sunlight exposure:

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

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

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

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

## Unit Compliance:

In addition to the level of sunlight exposure expressed for each room, compliance has been stated on a unit-by-unit basis. Within the proposed development, all student bedrooms are served by a communal kitchen/dining/living area (LKD). These are known as clusters, where a number of bedrooms have an adjoining communal LKD. The number of bedrooms within a cluster range from three to eight. As there is no specific guidance under the BRE Guidelines for treatment of such unit types, 3DDB have identified each cluster as a unit for the purposes of compliance. If this was a typical residential scheme, a unit would be deemed compliant if one or more of the habitable rooms is capable of receiving at least 1.5 hours of sunlight on the assessment date, and preferably this would be a living room.

With this in mind, 3DDB have tested each room of every cluster but only deemed a cluster compliant if the LKD meets the Sunlight Exposure (SE) requirements. It is felt that classifying a cluster as complaint if only one bedroom meets the SE requirements, would be too low a threshold for this assessment. The studio apartments have also been assessed and each one identified as a single unit.

**Non-Compliant**
If the LKD within a proposed cluster or the studio cannot receive at least 1.5 hours of sunlight on the assessment date, the unit will be categorised as 'Non-Compliant'.

**Compliant**
If the LKD within a proposed cluster or the studio 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 4.1.

Accordingly, all properties within a distance of three times the height of the proposed development, as illustrated in Figure 4.2, have been considered for impact assessment.

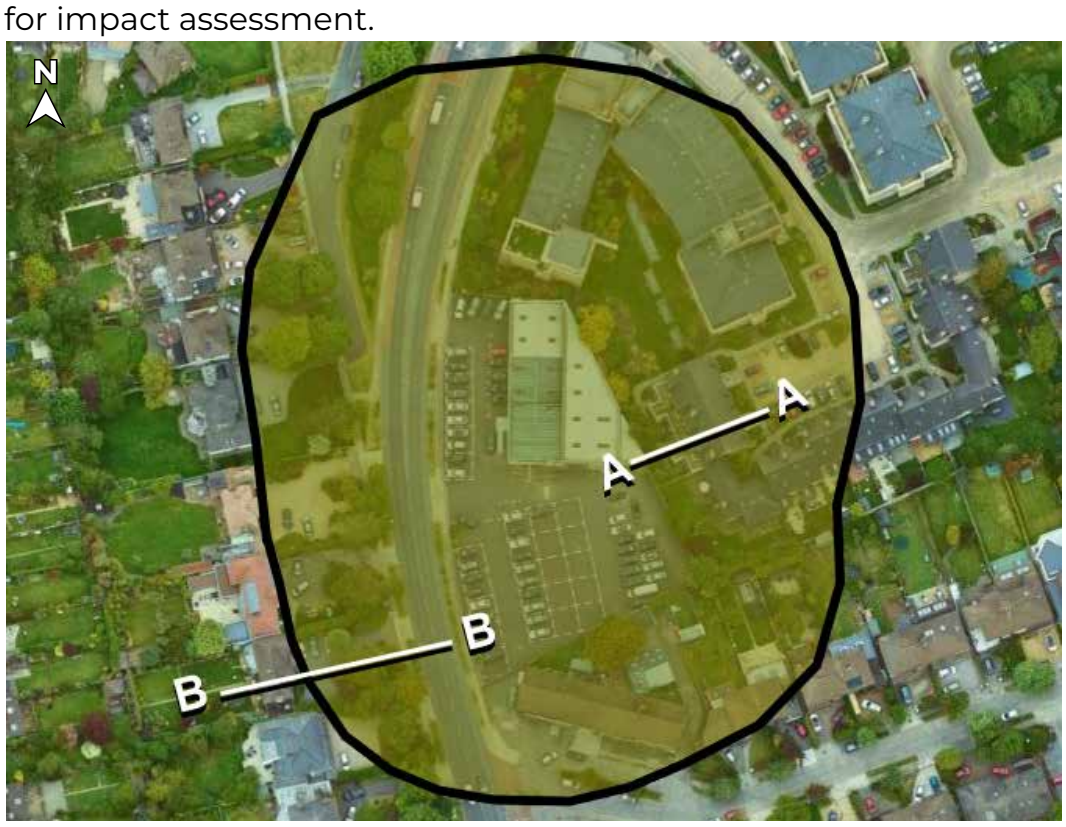


Figure 4.2: Properties within three times the height of the proposed development

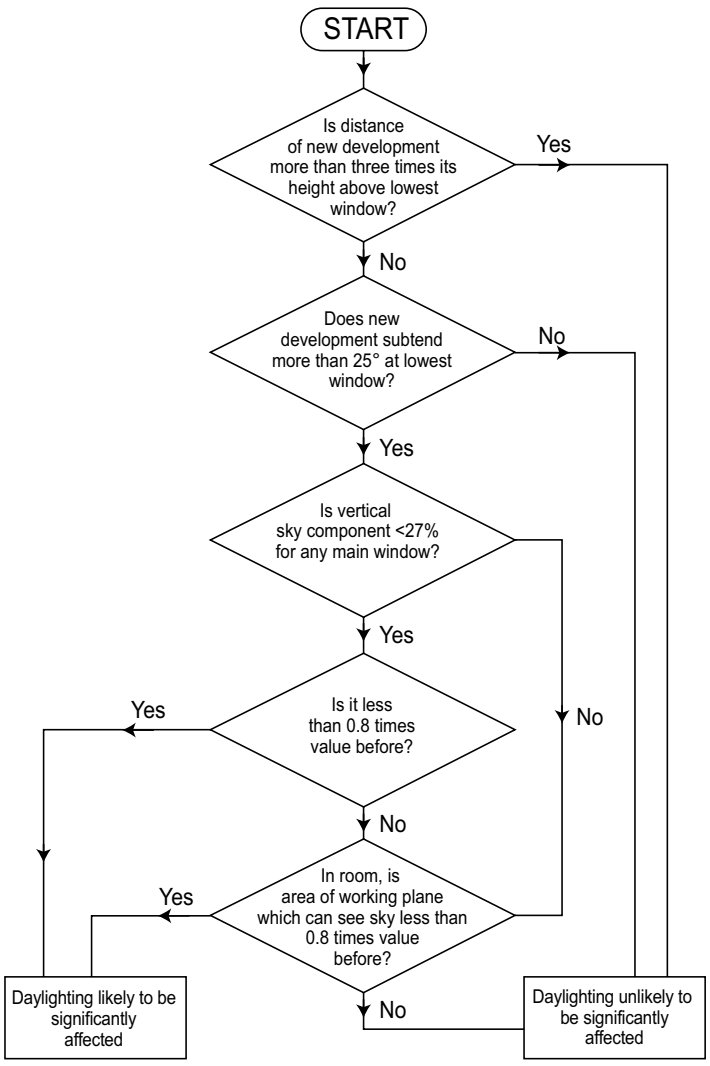


Figure 4.1: VSC decision chart, taken from BR 209.

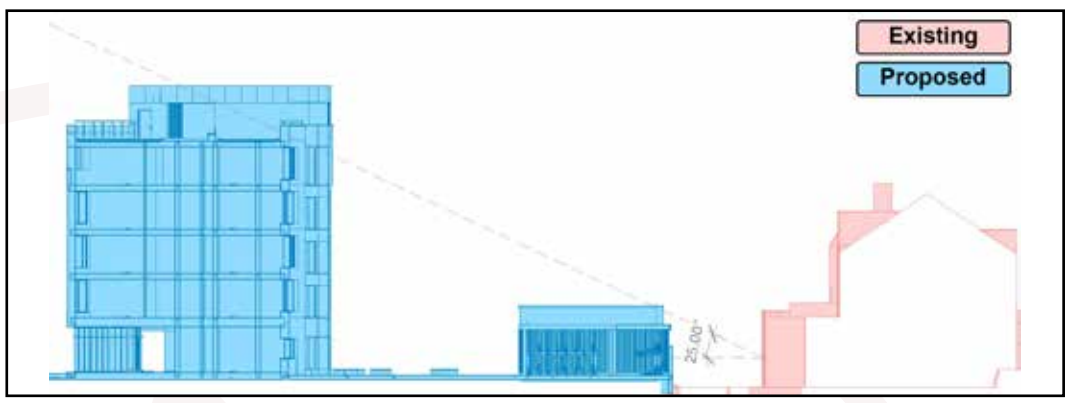


Figure 4.3: Section A-A taken through 160 Trimbleston

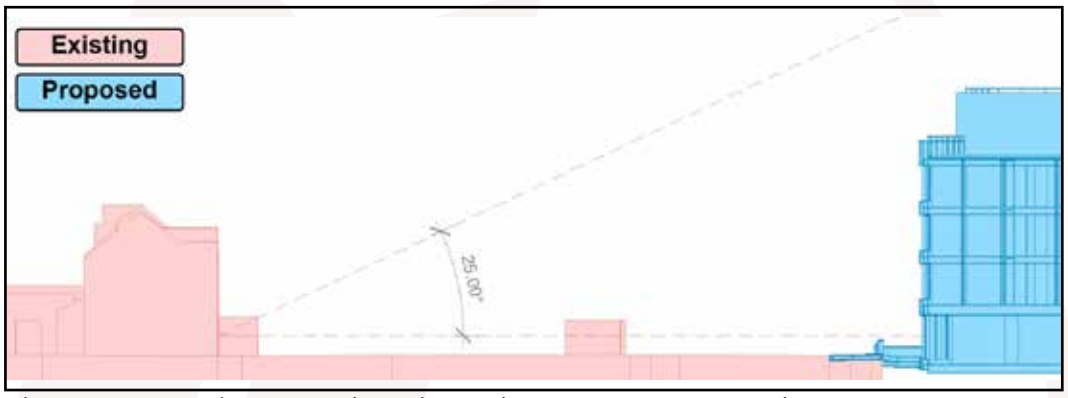


Figure 4.4: Section B-B taken through 84 Goatstown Road

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 160 Trimbleston which provides an example of where the proposed development subtends 25° when measured in a perpendicular section through an existing window.

However, if the proposed development does not subtend 25° in a perpendicular section, daylight is unlikely to be significantly affected and no further assessment will be carried out. Figure 4.4 shows a perpendicular section taken through 84 Goatstown Road which provides an example of where an existing window is within 3 times the height of the proposed development but the proposed development does not subtend 25° when measured in a perpendicular section. Although the window of this property falls outside the assessment crieria, the front garden has been assessed for Sun On Ground impact.

Retail units on the ground floor of 2, 4, 6 and 8 Willowfield Park facing the proposed development, do not require assessment due to the nature of their usage. First floor windows of the same properties have been included as they are of either commercial or residential use. Additionally, floor plans found online of Willowfield Park allowed for the identification of windows that serve non-habitable spaces and therefore these windows have been excluded from the analysis. Such windows serve circulation or bathrooms spaces.

A detailed description regarding the methodology of the VSC assessment can be found in 4.3.1 on page 16.

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

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

In practice, 3DDB 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, all windows facing the proposed development on that property will 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

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

**Baseline model state**

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

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

Figure 4.5: Model view of the baseline model state

Figure 4.6: Model view of the proposed model state

**Proposed model state**

As illustrated in Figure 4.6, the proposed model state reflects the subject site if the development is built as proposed. This includes proposed landscaping on the subject site and the demolition of existing structures, etc. The proposed building (highlighted in blue) has been positioned in its location on the subject site with relevant surrounding context included. Proposed trees, as per the landscape plans, have been included in this model state.

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).

### 4.2.2 Trees

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

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

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

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

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

**Sun On Ground (SOG)**

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

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

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

**Sunlight Exposure (SE)**

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

**Spatial Daylight Autonomy (SDA)**

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

I.S. EN 17037 does not give any guidance on how trees should be represented. For the purpose of this report, the SDA calculation under the I.S. EN 17037 criteria has been carried out with trees represented in 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 have not been included in the No Sky Line assessment model. Evergreen trees may be included in this assessment, particularly if there is a dense belt or group planned for windbreak or for privacy purposes.

**Shadow Study**

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

## 4.3 Quantitative Impact Assessment Overview

### 4.3.1 Effect on Vertical Sky Component (VSC)

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

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

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

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

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

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

The BRE Guidelines state that if the VSC is:

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

The VSC for each window/room will be calculated in the relevant model states, as outlined in section 4.2 on page 15. A comparison between the results generated with these model states will determine the level of effect.

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

- The VSC value drops below the guideline value of 27%; **and**
- The VSC value is less than 0.8 times the existing value.

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

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

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

**Assessment Points**

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

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

**Weighted Averages**

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

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

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

**Project Assessment**

Following the BRE decision chart, as illustrated in Figure 4.1 on page 13, a VSC impact assessment has been carried out on the windows/rooms of the neighbouring properties that could be affected by the proposed development as indicated in Figure 1.1 on page 3.

The results for the VSC assessment can be found in the appendix results section A.1 on page 28, with analysis of the results in section 5.1.1 on page 22.

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

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

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

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

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

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

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

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

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

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

In some circumstances, the available sunlight during the winter period (WPSH) may both drop below the recommended minimum of 5% with a proposed value of less than 0.8 times the baseline value, but the reduction to annual probable sunlight (APSH) is less than 4%. Such occurrences are considered compliant with the BRE Guidelines, and the impact to WPSH will be stated as '*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 have been included in the APSH/WPSH assessment provided they are orientated within 90° of due south and are in relative close proximity to the proposed development.

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

**Assessment Points**

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

**Project Assessment**

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

The results for the APSH/WPSH assessment can be found in the appendix results section A.2 on page 34, with analysis of the results in section 5.1.2 on page 22.

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

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

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

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

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

The percentage of assessed areas which can receive two hours or more of direct sunlight on March 21st will be calculated in the relevant model states, as outlined in section 4.2 on page 15. A comparison between the results generated with these model states will determine the level of effect.

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

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

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

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

**Project Assessment**

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

The results of the impact to sun on ground assessment in the neighbouring gardens/amenity areas (including a visual representation in the form of 2-hour false colour plans) can be found in the appendix results section A.3 on page 43, with analysis of the results in section 5.1.3 on page 23.

## 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 C.0 on page 48.

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

- Spring equinox: March 21st Sunrise 6:32 | Sunset 18:33. (GMT)
- Summer solstice: June 21st. Sunrise 5:04 | Sunset 21:49. (BST)
- Winter solstice: December 21st Sunrise 8:45 | Sunset 16:00. (GMT)

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

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

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

## 4.5 Quantitative Scheme Performance Assessment Overview

### 4.5.1 Spatial Daylight Autonomy in Proposed Habitable Rooms (SDA)

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

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

There are two methods for calculating SDA:

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

It is the opinion of 3DDB that the calculation method using illuminance level better represents a real-world scenario as it accounts for the quality of daylight based on orientation. As such, the illuminance methodology has been adopted for all SDA assessments in this report using a localised EnergyPlus Weather File (IRL_Dublin.039690_IWEC.epw) to apply the relevant climate information.

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

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

Where rooms serve more than one function, the higher SDA target value should been taken. In new developments, some internal spaces (e.g. studio apartments, shared communal areas etc.) can possibly be of a nature that do not have a predefined target value in BR 209. In such instances, 3DDB have applied a target value they deem to be appropriate. In the case of the proposed development there are 3 no. shared amenity areas, 'Kitchen/Tea Room', 'Student Lounge Area 1', and 'Student Lounge Area 2'. 3DDB recommend that an SDA target value of 150 Lux be applied to these spaces. The rationale for this target value is that these areas are likely to be used as living spaces. These rooms have not been included in the calculated compliance rates.

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

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

**Defining Rooms**

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

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

Indication of the assessed space in each room is provided in the floor plans that correspond to the SDA results in the appendix section "Proposed Floor Plans" on page 57.

**Working Plane**

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

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

**Material Palette**

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

Table No. 4.5.1 - Material Palette for SDA Calculations

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

**Project Assessment**

The results for the study on SDA can be found in the appendix results section D.2 on page 60.

Analysis of the results can be found in section 5.2.1 on page 23.

The results of the supplementary SDA study under the I.S. EN 17037 criterion can be found in section E.0 on page 82.

## 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. In the case of the proposed development the communal student lounges and tea room have not been included in this SE study.

**Project Assessment**

The results for the study on sunlight exposure can be found in the appendix results section D.3 on page 70, with analysis of the results in section 5.2.2 on page 24.

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

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

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

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

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

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

**Project Assessment**

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

The results for the study on sun on ground in the proposed outdoor amenity areas (including a visual representation in the form of 2-hour false colour plans) can be found in the appendix results section D.4 on page 80, with analysis of the results in section 5.2.3 on page 24.

### 4.5.4 No Sky Line in Proposed Habitable Rooms (NSL)

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

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

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

All advice 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 located within Dublin City, the NSL study has been included to provide consistency across 3DDB daylight and sunlight assessments.

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

The results of the supplementary NSL study can be found in section E.0 on page 82.

# 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 66 no. windows/rooms across the surrounding properties along 2, 4, 6 and 8 Willowfield Park, 157-164 Trimbleston, 165-166 Trimbleston, The Pine, The Sycamore.

Using the rationale explained in section 3.2 on page 11, the effect to VSC on 48 no. of these windows/rooms would be considered *'negligible'*, 12 no. '*minor adverse'*, 5 no. '*moderate adverse'* and 1 no. '*major adverse'*.

This shows that circa 73% of the assessed windows would experience a 'negligible' level of effect.


Figure 5.1: Assessed windows on 2 Willowfield Park

The 'major adverse' level of impact recorded in this study occurs to the window tagged as 'W2d' that serves a commercial property (a real estate agency on 2 Willowfield Park). Another window on the same property (W2a) recorded a 'moderate adverse' level of impact. It is important to note that depending on the commercial nature of the room which is served by the affected window, it could be deemed of less importance than a habitable residential room. See Figure 5.1 for reference.

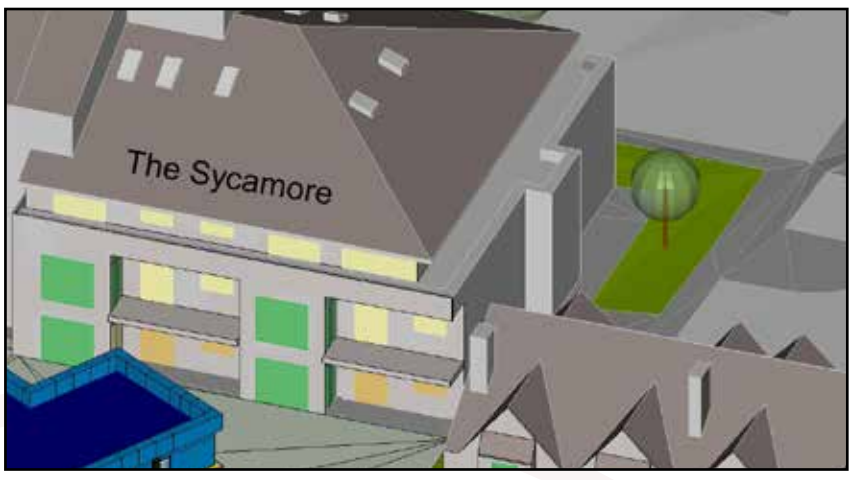


Figure 5.2: Assessed windows on The Sycamore

Other 4 no. 'moderate adverse' results occur on The Sycamore, on Trimbleston building. As can be seen in Figure 5.2 (in orange), all these windows are located on the ground floor and below balconies, therefore are self-constrained by the overhang. As per the BRE Guidelines, a supplementary 'No Balcony Study' has been carried out and showed that if it was not for the overhangs, all windows on The Sycamore would present a 'negligible' level of impact, as can be see on section "B.0 Supplementary No Balcony Study" on page 45.

'Minor adverse' levels of impact occur on other windows of The Sycamore (yellow windows in Figure 5.2), 165 Trimbleston and 4 Willowfield Park. Windows on The Sycamore building in green in Figure 5.2 recorded a 'negligible level of effect.

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

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

The effect on APSH/WPSH has been assessed for 50 no. windows/rooms of the surrounding existing properties across 157-164 Trimbleston, 165-166 Trimbleston, The Pine, The Sycamore. Only windows that have an orientation within 90 degrees of due south have been included in this assessment.

No APSH/WPSH assessment has been carried out on the windows of Willowfield Park on the basis that the windows of these properties that face the proposed development are not orientated within 90° of due south.

Using the rationale explained in section 3.2 on page 11, the effect on the APSH of 45 no. of these windows/rooms would be considered BRE-compliant, with 44 no. presenting a *'negligible'* level of effect and 1 no. 'beneficial impact'. Furthermore, 5 no. windows/rooms presented a *'minor adverse'* level of impact.

90% of these windows have met the criteria for effect on APSH as set out in the BRE Guidelines.

The effect on the WPSH of 41 no. of these windows/rooms would be considered BRE-compliant, with 39 no. presenting a *'negligible'* level of impact and 2 no. *'beneficial impact'*. 3 no. windows/rooms have been classified as *'n.a.'* - one due to the very low baseline value, and the others because the annual reduction was less than 4%, therefore the WPSH can be deemed compliant on that basis. FInally, 3 no. windows/rooms presented a *'minor adverse'* level of effect and 1 no. *'moderate adverse'*.

Circa 88% of these windows have met the criteria for effect on WPSH as set out in the BRE Guidelines.

All the affected windows on both APSH and WPSH are located on The Sycamore (Trimbleston building). See Figure 5.2 above for reference. The windows that presented a 'moderate adverse' level of impact are located below balconies, therefore are self-constrained. The 'No Balcony Study' demonstrated that all the affected windows would have 'negligible' level of impact to the APSH, whilst the WPSH showed 3 no. windows classified as 'minor adverse' and one as 'moderate adverse'.

The results of the study on APSH/WPSH can be found in Section A.2 on page 34.

### 5.1.3 Effect on Sun On Ground in Existing Gardens

This study has assessed the effect the proposed development would have on the level of sunlight on March 21st in the rear gardens of the neighbouring properties that are located along 157-160 Trimbleston, 161-164, Trimbleston courtyard, the front garden of properties 84, 86, 88, 90 & 92 Goatstown Road, and the roof terrace at The Pine (see "Figure 1.1: Scope of surrounding properties and environment assessed." on page 3 for property locations).

In total 13 no. spaces have been assessed. Using the rationale explained in section 3.2 on page 11, all gardens would experience a *'negligible'* level of effect.

100% of these outdoor spaces have met the criteria for effect on sunlighting as set out in the BRE Guidelines.

The results of the Sun On Ground study (SOG) on the neighbouring gardens can be found In section A.3 on page 43.

A visual representation of these readings can be seen in the 2 hour false colour plans in section A.3 and in the hourly shadow diagrams for March 21st in section C.1 on page 48.

## 5.2 Analysis of Scheme Performance Results

### 5.2.1 Spatial Daylight Autonomy (SDA)

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

This proposed development consists of 49 no. units, which makes up approximately 258 no. habitable rooms.

Under the criteria as set out in the BR 209, the SDA value in 228 & 245 no. habitable rooms meets or exceeds the appropriate target values in the summer & winter time calculations respectively. This gives a circa compliance rate of 88% with summer trees & 95% with the trees represented in the winter state. For a scheme of this size, this could be considered an a good level of compliance.

The additional SDA assessment that does not include trees has shown a compliance rate of 98%. This indicates that the presence of existing trees (along the north, east and west boundaries), along with the proposal of new ones, will have an impact on SDA, which is to be expected. The landscape architects worked closely with 3DDB to mitigate trees having a higher impact on the scheme performance, adjusting tree placement and species based on our initial findings. However, trees are an integral part of any scheme with regard to environmental and planning grounds along with biodiversity. Therefore achieving compliance rates of c. 88% (summer) and c. 95% (winter) with trees in place should be considered favourable. Whilst trees can contribute towards a reduction of daylight in rooms/clusters during certain times of the year, they also help mitigate potential heat gain. Additionally, trees can be considered to provide a favourable outlook for occupants, helping to integrate the proposed building to the surrounding environment.

I.S. EN 17037 sets out more onerous recommendations for SDA. As such, the number of habitable rooms achieving compliance under this standard is 182 with summer trees & 194 with the trees represented in the winter state. This gives a reduced circa compliance rate of 71% & 75% in the summer & winter time calculations respectively. The additional SDA assessment, under this standard, that does not include trees has shown a compliance rate of c. 83%.

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, a rationale has been provided by the project architect where rooms do not achieve the daylight provision targets as set out in the BRE Guidelines:

*"The scheme provides high quality internal and external amenity space. The café area at ground floor has an East-West orientation and direct access to the courtyard. All Units have access to a number of high quality rooftop amenity areas varying in size and orientation giving residents a broad range of options."*

The rationale for all instances of non-compliance with the BR 209 criteria that can be attributed to the effect that trees have on daylight, is that the provision of trees is an important aspect of the proposed site layout. Where trees affect daylight potential, a conscious decision has been made by the design team in balancing daylight provision with an appropriate level of foliage.

Given the site constraints on the proposed site and the fact that an appropriate level of density is being targeted, the results of the SDA study could be considered to be favourable.

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.

The results for the study on SDA can be seen in section D.2 on page 60.

### 5.2.2 Sunlight Exposure (SE)

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

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

This approach is in accordance with the BRE Guidelines.

In total, 49 no. units have been assessed, between clusters and studios. Using the rationale explained in section 3.3 on page 12, the level of sunlight exposure for the assessed units is as follows:

In the assessment carried out with all trees considered as opaque objects, 16 no. units are considered *high*, 7 no. *medium*, 14 no. have reached the *minimum* recommendation with 12 units below the *minimum* recommendation.

When deciduous trees are not factored into the assessment model, 22 no. units are considered *high*, 6 no. *medium*, 11 no. have reached the *minimum* recommendation with 10 units below the *minimum* recommendation.

The SE assessment has shown that, depending on effect of trees, the circa compliance rate for the assessed units, in accordance with the BRE Guidelines, is between 76% & 80%. **Note:** For a cluster to be compliant, the LKD of that cluster needs to meet the guideline values.

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

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

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 adequately in this regard.

The results for the study on SE in the habitable rooms of the proposed units can be seen in section D.3 on page 70.

### 5.2.3 Sun On Ground in Proposed Outdoor Amenity Areas

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

In total two main amenity spaces have been assessed: the ground floor amenity area, and the roof terraces. Both areas meet the criteria as set out in the BRE Guidelines.

The ground floor amenity area consists of two sub-spaces, while the roof terraces are divided into four sub-areas. Although divided into smaller sections, these are considered part of the two overall amenity spaces tested.

Future occupants will have access to adequately sunlit spaces, ensuring variety and choice.

The detailed results for the study on sunlighting in the proposed outdoor amenity spaces can be found in section D.4 on page 80.

A visual representation of these readings can be seen in the false colour plan in section D.4 and in the hourly shadow diagrams for March 21st in section C.1 on page 48 of the appendix section of this report.

# 6.0 Conclusion

3D Design Bureau (3DDB) were commissioned to carry out a daylight assessment, sunlight assessment and shadow study for the proposed student accommodation development at Goatstown Road.

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

With regard to VSC, there has been some instances of 'minor adverse' levels of impact and, whilst some greater levels have been recorded, especially on property 2 Willowfield Park, it is important to note that the affected windows on that property are of commercial use, with no indication of the exact use of the specific rooms.

Windows on The Sycamore, that are located below balconies, will also experience some level of impact to the daylight (VSC) due to their self-constrained location underneath these balconies/overhangs. The supplementary 'no balcony study' has proven this to be the case. Similarly, the level of sunlight to the same windows is impacted (APSH & WPSH). The 'no balcony study' has again shown that without the balconies these windows would meet the BRE criteria for annual sunlight access (APSH).

The SOG impact assessment has yielded BRE-compliant results for all assessed properties.

The scheme performance assessment for this report has quantified the level of daylight and sunlight within the proposed development.

Under the SDA study, the proposed development will receive adequate levels of daylight in the majority (98% in the assessment without trees) of the habitable spaces. For this proposed student scheme, and considering the somewhat constrained nature of the subject site, it is the opinion of 3DDB that the results can be considered favourable.

Sunlight provision has also yielded acceptable results for the habitable rooms/clusters and to the outdoor proposed amenity spaces.

Overall, it is the opinion of 3DDB that the proposed development performs well in regard to daylight and sunlight. Close collaboration with the design team has maximised daylight and sunlight provision, and minimised impact to the surrounding properties, without compromising on the design intent of this student scheme that will be in close proximity to the UCD campus.

# Appendix - Results

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# Appendix Contents



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

# A.0 Impact Assessment Results

## A.1 Effect on Vertical Sky Component (VSC)

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

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

**A: Window Number**

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

**B: Baseline VSC Value**

The *Baseline VSC Value* represents the VSC value of the assessed window which is calculated in the existing baseline model state (as explained in the "Building the Model States" on page 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 11.

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

## A.1.1 2, 4, 6 and 8 Willowfield Park

| Table No. A.1.1 - VSC Results: 2, 4, 6 and 8 Willowfield Park | | | | | | |
|---|---|---|---|---|---|---|
| Window Number | Baseline VSC Value | Proposed VSC Value | Ratio of Proposed VSC to Baseline VSC | Recommended minimum VSC* | Level of Compliance with BRE Guidelines | Effect of Proposed Development** |
| W2a | 35.35% | 21.34% | 0.60 | 27.00% | 79% | Moderate Adverse |
| W2d | 37.22% | 12.58% | 0.34 | 27.00% | 47% | Major Adverse |
| W4a | 31.26% | 27.71% | 0.89 | 25.01% | BRE Compliant | Negligible |
| W4d | 30.50% | 21.58% | 0.71 | 24.40% | 88% | Minor Adverse |
| W6a | 35.09% | 33.71% | 0.96 | 27.00% | BRE Compliant | Negligible |
| W6d | 32.68% | 30.48% | 0.93 | 26.14% | BRE Compliant | Negligible |
| W8a | 37.06% | 35.84% | 0.97 | 27.00% | BRE Compliant | Negligible |
| W8d | 36.32% | 34.99% | 0.96 | 27.00% | BRE Compliant | Negligible |

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

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


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

## A.1.2 157-164 Trimbleston

| Table No. A.1.2 - VSC Results: 157-164 Trimbleston | | | | | | |
|---|---|---|---|---|---|---|
| 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** |
| 157Ta | 16.47% | 14.53% | 0.88 | 13.18% | BRE Compliant | Negligible |
| 157Tb | 18.70% | 18.79% | 1.00 | 14.96% | BRE Compliant | Negligible |
| 158Ta | 19.15% | 19.56% | 1.02 | 15.32% | BRE Compliant | Negligible |
| 158Tb | 17.60% | 18.45% | 1.05 | 14.08% | BRE Compliant | Negligible |
| 159Ta | 18.84% | 17.96% | 0.95 | 15.07% | BRE Compliant | Negligible |
| 159Tb | 22.46% | 21.77% | 0.97 | 17.97% | BRE Compliant | Negligible |
| 160Ta | 22.04% | 19.79% | 0.90 | 17.63% | BRE Compliant | Negligible |
| 160Tb | 20.25% | 17.29% | 0.85 | 16.20% | BRE Compliant | Negligible |
| 161Ta | 36.35% | 27.02% | 0.74 | 27.00% | BRE Compliant | Negligible |
| 161Tb | 38.78% | 29.08% | 0.75 | 27.00% | BRE Compliant | Negligible |
| 162Ta | 36.43% | 28.01% | 0.77 | 27.00% | BRE Compliant | Negligible |
| 162Tb | 38.66% | 30.00% | 0.78 | 27.00% | BRE Compliant | Negligible |
| 163Ta | 36.89% | 28.88% | 0.78 | 27.00% | BRE Compliant | Negligible |
| 163Tb | 38.76% | 30.84% | 0.80 | 27.00% | BRE Compliant | Negligible |
| 164Ta | 37.45% | 29.60% | 0.79 | 27.00% | BRE Compliant | Negligible |
| 164Tb | 38.74% | 31.53% | 0.81 | 27.00% | BRE Compliant | Negligible |

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the VSC of an existing window, the value needs to both drop below the stated target value of 27% **and** be less than 0.8 times the baseline value.
** For the interpretation of level of effects please refer to"3.2 Definition of Effects" on page 11.

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

## A.1.3 165-166 Trimbleston

| Table No. A.1.3 - VSC Results: 165-166 Trimbleston | | | | | | |
|---|---|---|---|---|---|---|
| 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** |
| 165Ta | 32.87% | 25.96% | 0.79 | 26.30% | 99% | Minor Adverse |
| 165Tb | 33.47% | 25.79% | 0.77 | 26.78% | 96% | Minor Adverse |
| 165Tc | 37.38% | 30.39% | 0.81 | 27.00% | BRE Compliant | Negligible |
| 165Td | 37.78% | 31.04% | 0.82 | 27.00% | BRE Compliant | Negligible |
| 165Te | 37.75% | 31.21% | 0.83 | 27.00% | BRE Compliant | Negligible |
| 166Ta | 31.13% | 26.66% | 0.86 | 24.90% | BRE Compliant | Negligible |
| 166Tb | 35.09% | 28.32% | 0.81 | 27.00% | BRE Compliant | Negligible |
| 166Td | 25.18% | 21.92% | 0.87 | 20.14% | BRE Compliant | Negligible |
| 166Te#1 | 31.27% | 26.83% | 0.86 | 25.02% | BRE Compliant | - |
| 166Te#2 | 26.96% | 26.93% | 1.00 | 21.57% | BRE Compliant | - |
| 166Te# | 27.82% | 26.91% | 0.97 | 22.26% | BRE Compliant | Negligible |
| 166Tf | 37.74% | 31.59% | 0.84 | 27.00% | BRE Compliant | Negligible |
| 166Tg | 37.70% | 31.89% | 0.85 | 27.00% | BRE Compliant | Negligible |
| 166Ti | 33.47% | 31.19% | 0.93 | 26.78% | BRE Compliant | Negligible |

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

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

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

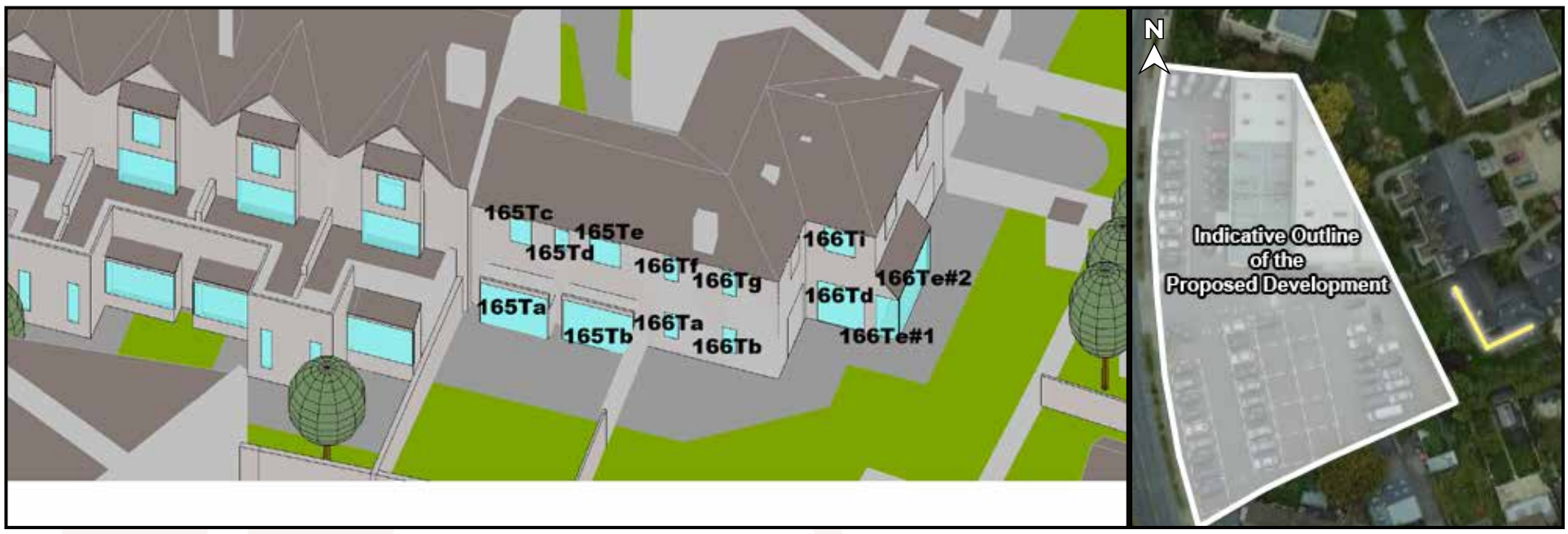



Figure A.3: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

## A.1.4 The Pine

| Table No. A.1.4 - VSC Results: The Pine | | | | | | |
|---|---|---|---|---|---|---|
| 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** |
| Pa#1 | 37.53% | 37.46% | 1.00 | 27.00% | BRE Compliant | - |
| Pa#2 | 8.09% | 5.84% | 0.72 | 6.47% | 90% | - |
| Pa# | 30.27% | 29.66% | 0.98 | 24.22% | BRE Compliant | Negligible |
| Pb | 11.59% | 11.25% | 0.97 | 9.27% | BRE Compliant | Negligible |
| Pc | 19.09% | 16.96% | 0.89 | 15.27% | BRE Compliant | Negligible |
| Pd#1 | 38.54% | 38.48% | 1.00 | 27.00% | BRE Compliant | - |
| Pd#2 | 8.93% | 6.35% | 0.71 | 7.14% | 89% | - |
| Pd# | 31.24% | 30.56% | 0.98 | 24.99% | BRE Compliant | Negligible |
| Pe | 12.55% | 12.21% | 0.97 | 10.04% | BRE Compliant | Negligible |
| Pf | 20.70% | 18.40% | 0.89 | 16.56% | BRE Compliant | Negligible |
| Pg#1 | 39.37% | 39.32% | 1.00 | 27.00% | BRE Compliant | - |
| Pg#2 | 9.49% | 6.75% | 0.71 | 7.59% | 89% | - |
| Pg# | 32.00% | 31.29% | 0.98 | 25.60% | BRE Compliant | Negligible |
| Ph | 13.23% | 12.87% | 0.97 | 10.58% | BRE Compliant | Negligible |
| Pi | 21.92% | 19.86% | 0.91 | 17.54% | BRE Compliant | Negligible |
| Pj#1 | 39.61% | 39.54% | 1.00 | 27.00% | BRE Compliant | - |
| Pj#2 | 12.88% | 9.49% | 0.74 | 10.30% | 92% | - |
| Pj# | 33.02% | 32.13% | 0.97 | 26.42% | BRE Compliant | Negligible |
| Pk | 16.87% | 16.59% | 0.98 | 13.50% | BRE Compliant | Negligible |
| Pl | 23.58% | 22.02% | 0.93 | 18.86% | BRE Compliant | Negligible |
| Pm#1 | 39.61% | 38.95% | 0.98 | 27.00% | BRE Compliant | - |
| Pm#2 | 39.54% | 32.49% | 0.82 | 27.00% | BRE Compliant | - |
| Pm# | 39.56% | 34.63% | 0.88 | 27.00% | BRE Compliant | Negligible |

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

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

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

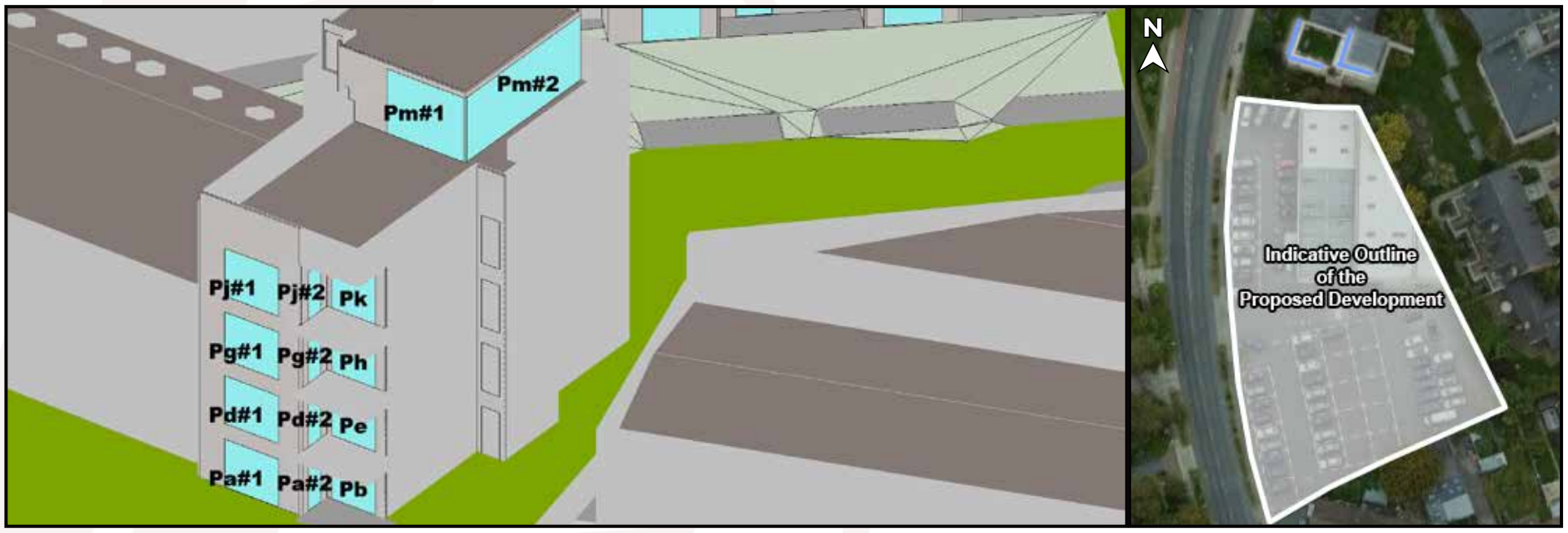



Figure A.4: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

## A.1.5 The Sycamore

| Table No. A.1.5 - VSC Results: The Sycamore | | | | | | |
|---|---|---|---|---|---|---|
| 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** |
| Sa#1 | 28.97% | 25.15% | 0.87 | 23.18% | BRE Compliant | - |
| Sa#2 | 5.02% | 3.92% | 0.78 | 4.02% | 98% | - |
| Sa# | 22.44% | 19.36% | 0.86 | 17.95% | BRE Compliant | Negligible |
| Sb | 8.99% | 5.25% | 0.58 | 7.19% | 73% | Moderate Adverse |
| Sc | 8.61% | 4.81% | 0.56 | 6.89% | 70% | Moderate Adverse |
| Sd#1 | 29.11% | 25.17% | 0.86 | 23.29% | BRE Compliant | - |
| Sd#2 | 2.76% | 2.31% | 0.84 | 2.21% | BRE Compliant | - |
| Sd# | 21.92% | 18.94% | 0.86 | 17.54% | BRE Compliant | Negligible |
| Se | 8.92% | 5.36% | 0.60 | 7.14% | 75% | Moderate Adverse |
| Sf | 7.80% | 4.37% | 0.56 | 6.24% | 70% | Moderate Adverse |
| Sg#1 | 32.78% | 28.49% | 0.87 | 26.22% | BRE Compliant | - |
| Sg#2 | 8.72% | 7.44% | 0.85 | 6.98% | BRE Compliant | - |
| Sg# | 26.22% | 22.75% | 0.87 | 20.97% | BRE Compliant | Negligible |
| Sh | 15.37% | 11.16% | 0.73 | 12.30% | 91% | Minor Adverse |
| Si | 15.13% | 10.83% | 0.72 | 12.10% | 89% | Minor Adverse |
| Sj#1 | 33.20% | 28.57% | 0.86 | 26.56% | BRE Compliant | - |
| Sj#2 | 6.58% | 6.00% | 0.91 | 5.26% | BRE Compliant | - |
| Sj# | 25.94% | 22.41% | 0.86 | 20.75% | BRE Compliant | Negligible |
| Sk | 14.53% | 10.42% | 0.72 | 11.62% | 90% | Minor Adverse |
| Sl | 13.99% | 10.03% | 0.72 | 11.19% | 90% | Minor Adverse |
| Sm | 19.14% | 15.15% | 0.79 | 15.31% | 99% | Minor Adverse |
| Sn | 14.88% | 10.73% | 0.72 | 11.90% | 90% | Minor Adverse |
| So | 15.04% | 10.77% | 0.72 | 12.03% | 90% | Minor Adverse |
| Sp | 19.50% | 15.10% | 0.77 | 15.60% | 97% | Minor Adverse |
| Sq | 18.93% | 14.69% | 0.78 | 15.14% | 97% | Minor Adverse |

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

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

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


Figure A.5: 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 11.

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

## A.2.1 157-164 Trimbleston - Annual Probable Sunlight Hours

| Table No. A.2.1 - APSH Results: 157-164 Trimbleston | | | | | | |
|---|---|---|---|---|---|---|
| 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 |
| 157Ta | 14.26% | 17.64% | 1.24 | 10.26% | BRE Compliant | Beneficial Impact |
| 157Tb | 30.79% | 35.04% | 1.14 | 24.63% | BRE Compliant | Negligible |
| 158Ta | 34.06% | 37.67% | 1.11 | 25.00% | BRE Compliant | Negligible |
| 158Tb | 36.30% | 36.14% | 1.00 | 25.00% | BRE Compliant | Negligible |
| 159Ta | 20.61% | 20.51% | 1.00 | 16.49% | BRE Compliant | Negligible |
| 159Tb | 40.85% | 41.93% | 1.03 | 25.00% | BRE Compliant | Negligible |
| 160Ta | 37.52% | 37.89% | 1.01 | 25.00% | BRE Compliant | Negligible |
| 160Tb | 34.26% | 31.55% | 0.92 | 25.00% | BRE Compliant | Negligible |
| 161Ta | 61.46% | 51.13% | 0.83 | 25.00% | BRE Compliant | Negligible |
| 161Tb | 61.69% | 54.08% | 0.88 | 25.00% | BRE Compliant | Negligible |
| 162Ta | 60.45% | 52.21% | 0.86 | 25.00% | BRE Compliant | Negligible |
| 162Tb | 60.92% | 55.87% | 0.92 | 25.00% | BRE Compliant | Negligible |
| 163Ta | 60.45% | 53.30% | 0.88 | 25.00% | BRE Compliant | Negligible |
| 163Tb | 61.07% | 56.80% | 0.93 | 25.00% | BRE Compliant | Negligible |
| 164Ta | 61.69% | 54.78% | 0.89 | 25.00% | BRE Compliant | Negligible |
| 164Tb | 61.69% | 57.58% | 0.93 | 25.00% | 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 11.


Figure A.6: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

## A.2.2 157-164 Trimbleston - Winter Probable Sunlight Hours

| Table No. A.2.2 - WPSH Results: 157-164 Trimbleston | | | | | | |
|---|---|---|---|---|---|---|
| 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 |
| 157Ta | 0.48% | 0.98% | 2.03 | n.a | n.a | n.a. |
| 157Tb | 10.33% | 12.53% | 1.21 | 5.00% | BRE Compliant | Beneficial Impact |
| 158Ta | 9.15% | 11.09% | 1.21 | 5.00% | BRE Compliant | Beneficial Impact |
| 158Tb | 6.83% | 6.13% | 0.90 | 5.00% | BRE Compliant | Negligible |
| 159Ta | 3.13% | 1.01% | 0.32 | 2.50% | BRE Compliant | n.a.† |
| 159Tb | 13.73% | 9.53% | 0.69 | 5.00% | BRE Compliant | Negligible |
| 160Ta | 12.93% | 10.63% | 0.82 | 5.00% | BRE Compliant | Negligible |
| 160Tb | 5.74% | 2.33% | 0.41 | 4.59% | BRE Compliant | n.a.† |
| 161Ta | 21.06% | 16.94% | 0.80 | 5.00% | BRE Compliant | Negligible |
| 161Tb | 21.29% | 18.73% | 0.88 | 5.00% | BRE Compliant | Negligible |
| 162Ta | 20.28% | 16.24% | 0.80 | 5.00% | BRE Compliant | Negligible |
| 162Tb | 20.51% | 17.87% | 0.87 | 5.00% | BRE Compliant | Negligible |
| 163Ta | 20.28% | 16.01% | 0.79 | 5.00% | BRE Compliant | Negligible |
| 163Tb | 20.67% | 18.03% | 0.87 | 5.00% | BRE Compliant | Negligible |
| 164Ta | 21.29% | 17.17% | 0.81 | 5.00% | BRE Compliant | Negligible |
| 164Tb | 21.29% | 18.65% | 0.88 | 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 11.

† Windows that have a reduction of less than 4% in the APSH assessment may be indicated as “n.a.” in the WPSH assessment regardless of values.


Figure A.7: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

## A.2.3 165-166 Trimbleston - Annual Probable Sunlight Hours

| Table No. A.2.3 - APSH Results: 165-166 Trimbleston | | | | | | |
|---|---|---|---|---|---|---|
| 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 |
| 165Ta | 59.18% | 51.07% | 0.86 | 25.00% | BRE Compliant | Negligible |
| 165Tb | 50.58% | 42.04% | 0.83 | 25.00% | BRE Compliant | Negligible |
| 165Tc | 61.69% | 57.65% | 0.93 | 25.00% | BRE Compliant | Negligible |
| 165Td | 61.63% | 57.89% | 0.94 | 25.00% | BRE Compliant | Negligible |
| 165Te | 61.50% | 58.22% | 0.95 | 25.00% | BRE Compliant | Negligible |
| 166Ta | 58.79% | 53.81% | 0.92 | 25.00% | BRE Compliant | Negligible |
| 166Tb | 59.98% | 54.93% | 0.92 | 25.00% | BRE Compliant | Negligible |
| 166Td | 52.49% | 50.08% | 0.95 | 25.00% | BRE Compliant | Negligible |
| 166Te# | 82.53% | 79.58% | 0.96 | 25.00% | BRE Compliant | Negligible |
| 166Tf | 61.37% | 58.50% | 0.95 | 25.00% | BRE Compliant | Negligible |
| 166Tg | 61.38% | 58.74% | 0.96 | 25.00% | BRE Compliant | Negligible |
| 166Ti | 59.78% | 59.15% | 0.99 | 25.00% | 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 11.

# 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.

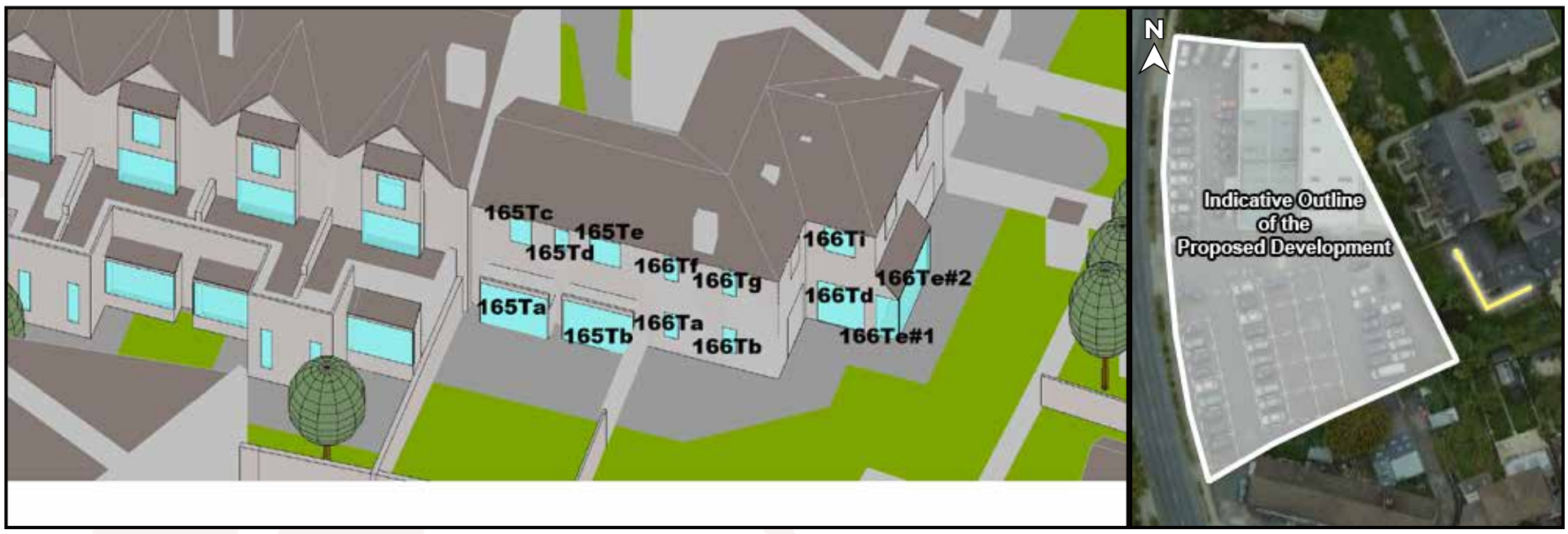



Figure A.8: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

## A.2.4 165-166 Trimbleston - Winter Probable Sunlight Hours

| Table No. A.2.4 - WPSH Results: 165-166 Trimbleston | | | | | | |
|---|---|---|---|---|---|---|
| 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 |
| 165Ta | 20.02% | 16.18% | 0.81 | 5.00% | BRE Compliant | Negligible |
| 165Tb | 10.49% | 7.23% | 0.69 | 5.00% | BRE Compliant | Negligible |
| 165Tc | 21.29% | 18.88% | 0.89 | 5.00% | BRE Compliant | Negligible |
| 165Td | 21.23% | 18.96% | 0.89 | 5.00% | BRE Compliant | Negligible |
| 165Te | 21.09% | 19.29% | 0.91 | 5.00% | BRE Compliant | Negligible |
| 166Ta | 20.33% | 17.99% | 0.89 | 5.00% | BRE Compliant | Negligible |
| 166Tb | 19.57% | 18.56% | 0.95 | 5.00% | BRE Compliant | Negligible |
| 166Td | 16.44% | 15.74% | 0.96 | 5.00% | BRE Compliant | Negligible |
| 166Te# | 18.23% | 17.76% | 0.97 | 5.00% | BRE Compliant | Negligible |
| 166Tf | 20.97% | 19.49% | 0.93 | 5.00% | BRE Compliant | Negligible |
| 166Tg | 20.98% | 20.13% | 0.96 | 5.00% | BRE Compliant | Negligible |
| 166Ti | 20.38% | 20.15% | 0.99 | 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 11.

† Windows that have a reduction of less than 4% in the APSH assessment may be indicated as “n.a.” in the WPSH assessment regardless of values.

# 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.

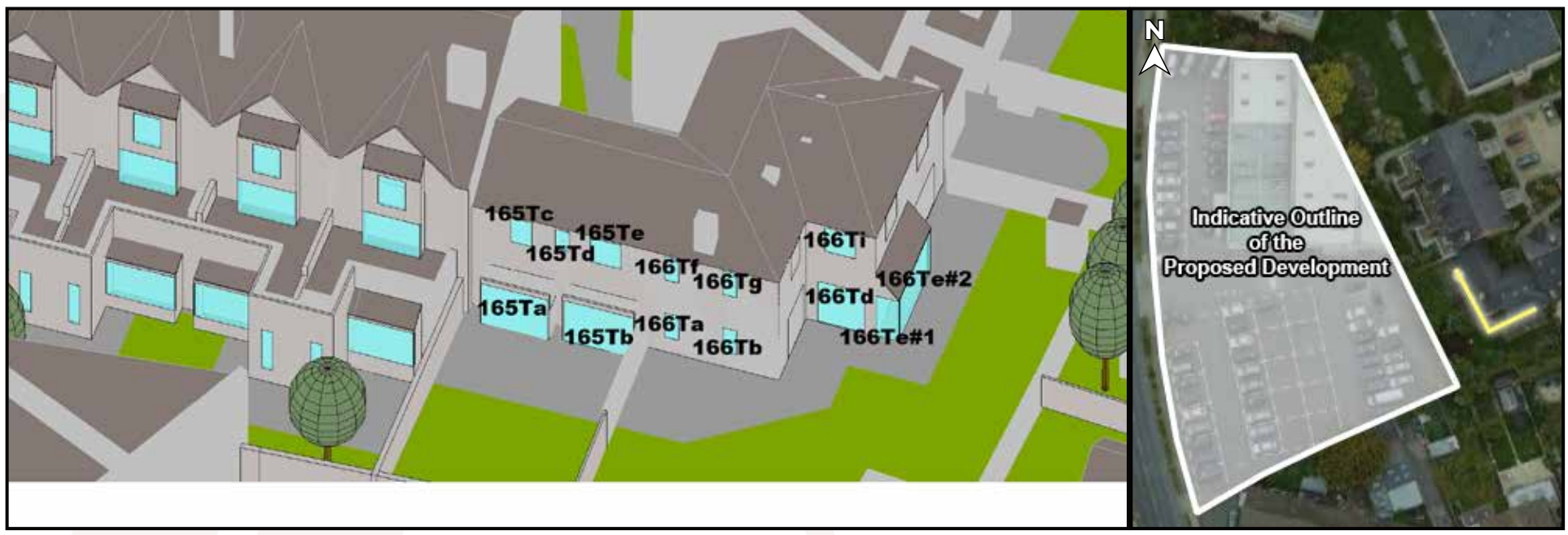



Figure A.9: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

## A.2.5 The Pine - Annual Probable Sunlight Hours

| Table No. A.2.5 - APSH Results: The Pine | | | | | | |
|---|---|---|---|---|---|---|
| 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 |
| Pa# | 37.45% | 34.27% | 0.91 | 25.00% | BRE Compliant | Negligible |
| Pd# | 37.45% | 34.27% | 0.91 | 25.00% | BRE Compliant | Negligible |
| Pg# | 37.45% | 34.27% | 0.91 | 25.00% | BRE Compliant | Negligible |
| Pj# | 39.16% | 35.04% | 0.89 | 25.00% | BRE Compliant | Negligible |
| Pm# | 85.94% | 78.32% | 0.91 | 25.00% | 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 11.

# 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.

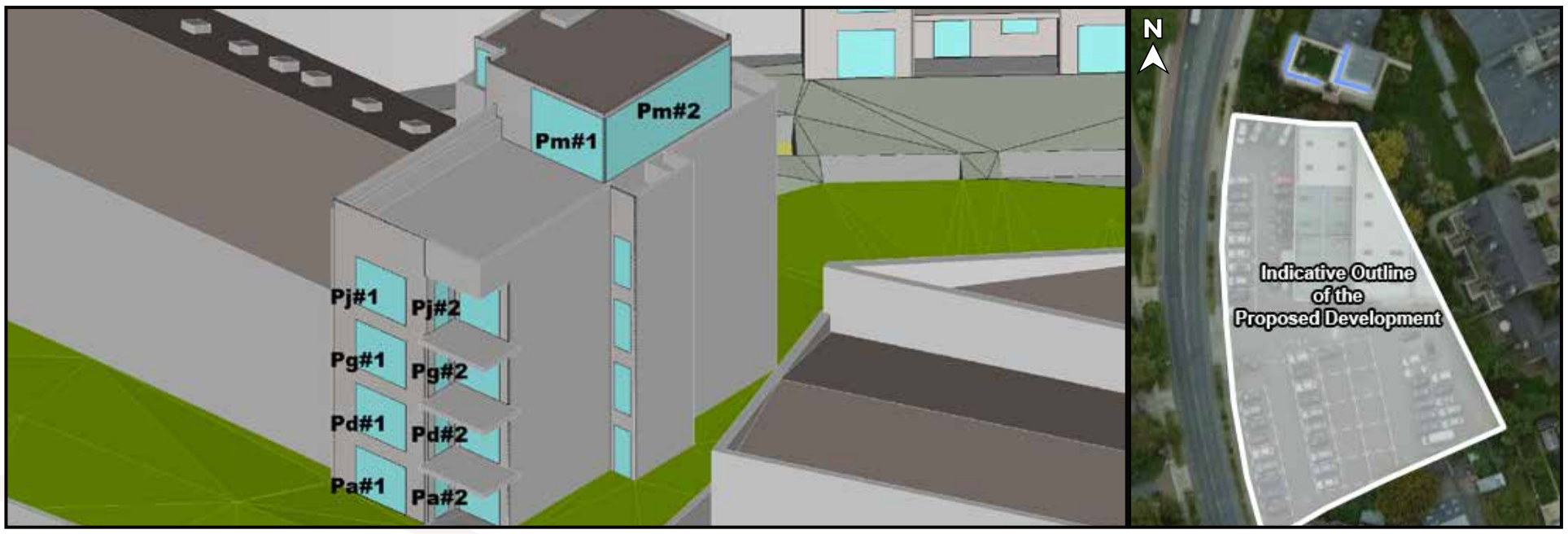



Figure A.10: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

## A.2.6 The Pine - Winter Probable Sunlight Hours

| Table No. A.2.6 - WPSH Results: The Pine | | | | | | |
|---|---|---|---|---|---|---|
| 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 |
| Pa# | 9.40% | 6.22% | 0.66 | 5.00% | BRE Compliant | Negligible |
| Pd# | 9.40% | 6.22% | 0.66 | 5.00% | BRE Compliant | Negligible |
| Pg# | 9.40% | 6.22% | 0.66 | 5.00% | BRE Compliant | Negligible |
| Pj# | 11.11% | 6.99% | 0.63 | 5.00% | BRE Compliant | Negligible |
| Pm# | 31.86% | 24.24% | 0.76 | 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 11.

† Windows that have a reduction of less than 4% in the APSH assessment may be indicated as "n.a." in the WPSH assessment regardless of values.

# 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.

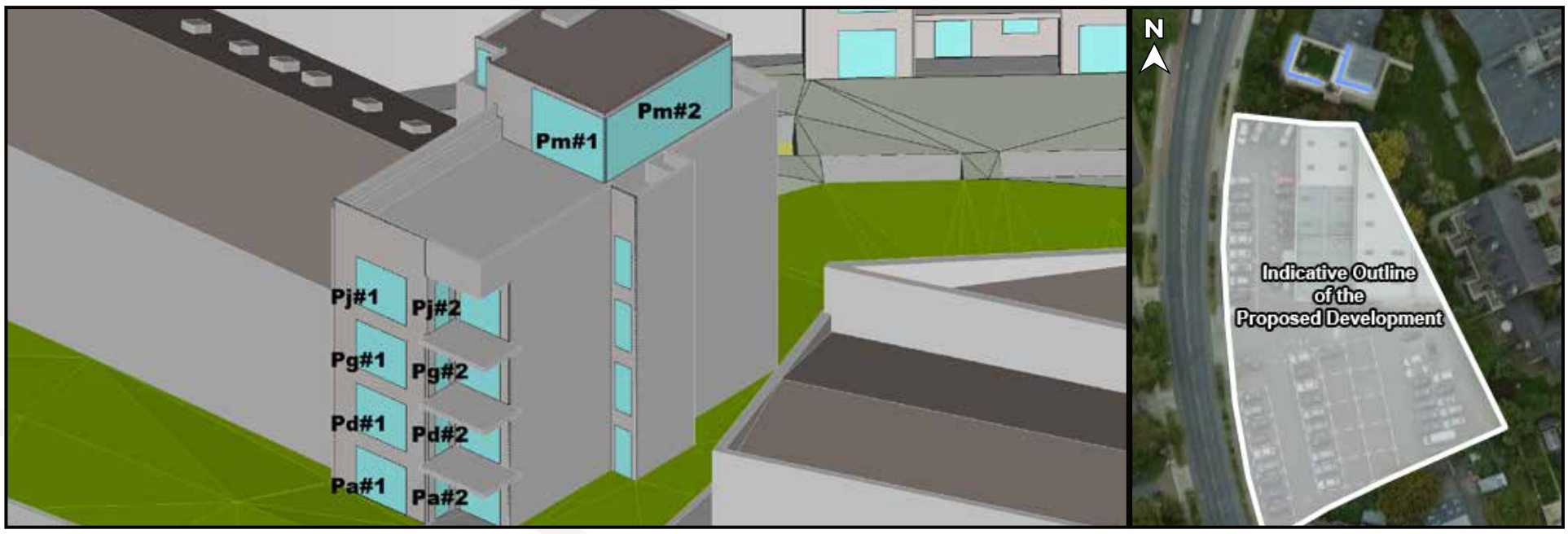



Figure A.11: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

## A.2.7 The Sycamore - Annual Probable Sunlight Hours

| Table No. A.2.7 - APSH Results: The Sycamore | | | | | | |
|---|---|---|---|---|---|---|
| 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 |
| Sa# | 45.30% | 39.94% | 0.88 | 25.00% | BRE Compliant | Negligible |
| Sb | 16.97% | 11.11% | 0.65 | 12.97% | 86% | Minor Adverse |
| Sc | 13.82% | 7.93% | 0.57 | 9.82% | 81% | Minor Adverse |
| Sd# | 44.69% | 38.85% | 0.87 | 25.00% | BRE Compliant | Negligible |
| Se | 15.70% | 10.02% | 0.64 | 11.70% | 86% | Minor Adverse |
| Sf | 15.09% | 9.56% | 0.63 | 11.09% | 86% | Minor Adverse |
| Sg# | 55.71% | 51.44% | 0.92 | 25.00% | BRE Compliant | Negligible |
| Sh | 26.65% | 21.60% | 0.81 | 21.32% | BRE Compliant | Negligible |
| Si | 23.00% | 17.87% | 0.78 | 18.40% | 97% | Minor Adverse |
| Sj# | 54.47% | 49.65% | 0.91 | 25.00% | BRE Compliant | Negligible |
| Sk | 25.35% | 20.98% | 0.83 | 20.28% | BRE Compliant | Negligible |
| Sl | 24.63% | 21.06% | 0.85 | 19.70% | BRE Compliant | Negligible |
| Sm | 31.70% | 28.83% | 0.91 | 25.00% | BRE Compliant | Negligible |
| Sn | 22.69% | 19.81% | 0.87 | 18.15% | BRE Compliant | Negligible |
| So | 22.53% | 19.81% | 0.88 | 18.03% | BRE Compliant | Negligible |
| Sp | 31.00% | 28.36% | 0.91 | 24.80% | BRE Compliant | Negligible |
| Sq | 30.07% | 27.43% | 0.91 | 24.06% | 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 11.

# 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.12: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

## A.2.8 The Sycamore - Winter Probable Sunlight Hours

| Table No. A.2.8 - WPSH Results: The Sycamore | | | | | | |
|---|---|---|---|---|---|---|
| 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 |
| Sa# | 13.36% | 9.09% | 0.68 | 5.00% | BRE Compliant | Negligible |
| Sb | 7.49% | 3.50% | 0.47 | 5.00% | 70% | Moderate Adverse |
| Sc | 6.51% | 2.87% | 0.44 | 5.00% | 57% | Moderate Adverse |
| Sd# | 6.54% | 4.20% | 0.64 | 5.00% | 84% | Minor Adverse |
| Se | 3.11% | 1.79% | 0.58 | 2.49% | 72% | Moderate Adverse |
| Sf | 4.44% | 3.03% | 0.68 | 3.56% | 85% | Minor Adverse |
| Sg# | 19.43% | 15.46% | 0.80 | 5.00% | BRE Compliant | Negligible |
| Sh | 10.96% | 6.68% | 0.61 | 5.00% | BRE Compliant | Negligible |
| Si | 8.55% | 4.51% | 0.53 | 5.00% | 90% | Minor Adverse |
| Sj# | 14.37% | 11.42% | 0.79 | 5.00% | BRE Compliant | Negligible |
| Sk | 6.85% | 4.97% | 0.73 | 5.00% | >99% | Negligible |
| Sl | 7.93% | 6.60% | 0.83 | 5.00% | BRE Compliant | Negligible |
| Sm | 13.99% | 11.11% | 0.79 | 5.00% | BRE Compliant | Negligible |
| Sn | 10.72% | 7.85% | 0.73 | 5.00% | BRE Compliant | Negligible |
| So | 10.10% | 7.69% | 0.76 | 5.00% | BRE Compliant | Negligible |
| Sp | 12.35% | 10.33% | 0.84 | 5.00% | BRE Compliant | Negligible |
| Sq | 11.42% | 9.56% | 0.84 | 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 11.

† Windows that have a reduction of less than 4% in the APSH assessment may be indicated as “n.a.” in the WPSH assessment regardless of values.

# 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.13: Highlighted areas indicate the position of assessed windows (L), Aerial view of assessed location (R)

## A.3 Effect on Sun On Ground (SOG) in Existing Gardens/Amenity Areas

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

| Table Example. A.3 - SOG Impact Assessment | | | | | | | |
|---|---|---|---|---|---|---|---|
| Assigned Area Number | Address | % of Area to Receive Above 2 Hours Sunlight on March 21st (Target >50%) | | | | Level of Compliance with BRE Guidelines | Effect of Proposed Development |
| | | Baseline | Proposed | Ratio of Proposed to Baseline | Recommended Minimum as per BRE Guidelines | | |
| **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** |

**A: Assigned Area Number**

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

**B: Address**

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

**C: Baseline**

*Baseline* represents the percentage of the assessed space's area that can receive more than 2 hours of sunlight on March 21st, calculated in the existing baseline model state (as explained in the "Building the Model States" on page 15).

**D: Proposed**

*Proposed* represents the percentage of the assessed space's area that can receive more than 2 hours of sunlight on March 21st, calculated in the proposed model state (as explained in the "Building the Model States" on page 15).

**E: Ratio of Proposed to Baseline**

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

**F: Recommended Minimum as per the BRE Guidelines**

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

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

**G: Level of BRE Compliance**

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

**H: Effect of Proposed Development**

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

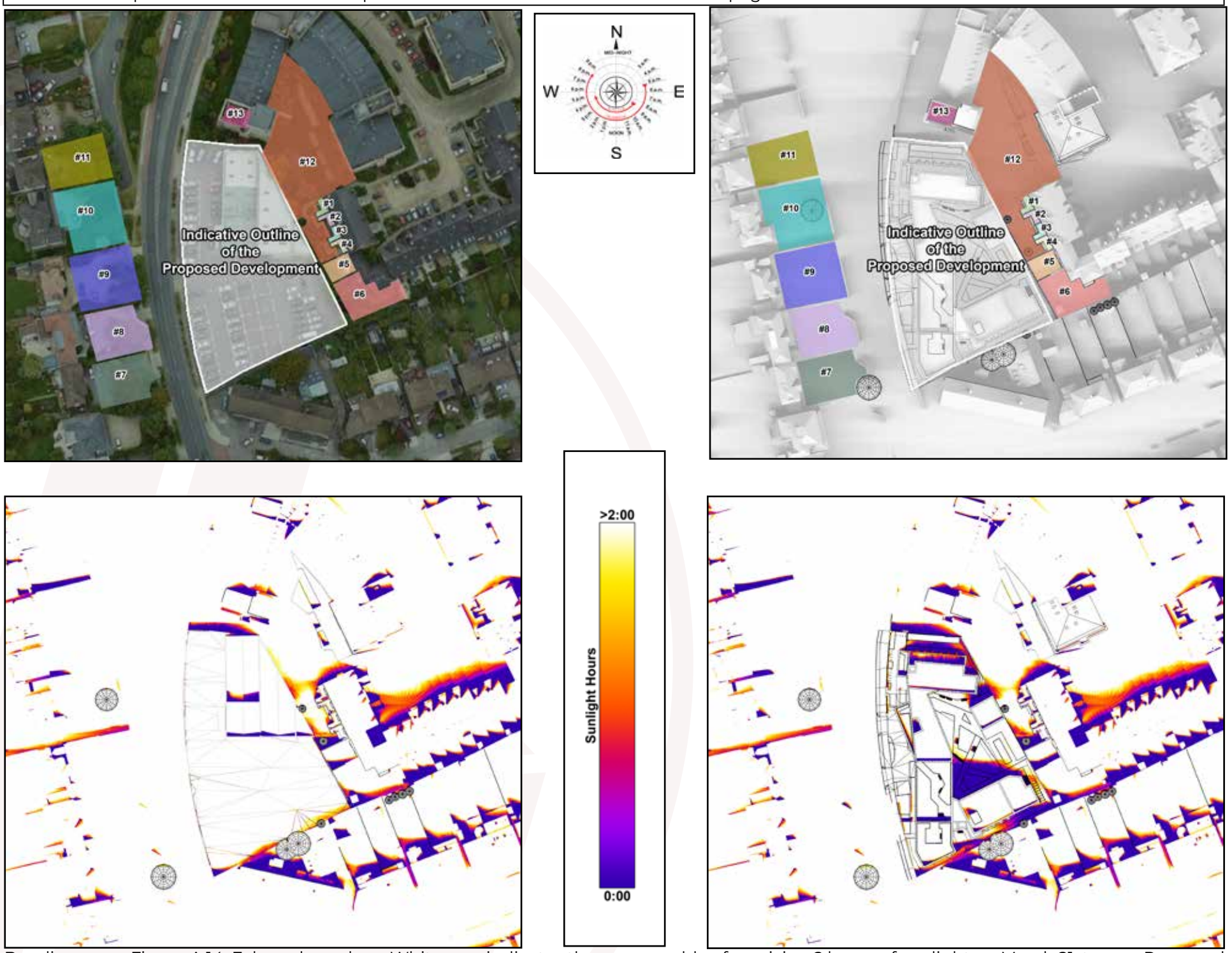
It should be noted that the figures displayed in the table of results have been rounded off. A manual calculation of these figures may yield a negligible difference and should not be considered an error.

## A.3.1 161-164 & 165-166 Trimbleston, 84-92 Goatstown Rd, Trimbleston (shared garden)

| Table No. A.3.1 - SOG Results: 161-164 & 165-166 Trimbleston, 84-92 Goatstown Rd, Trimbleston - shared garden | | | | | | | |
|---|---|---|---|---|---|---|---|
| Assigned Area Number | Address | % of Area to Receive Above 2 Hours Sunlight on March 21st (Target >50%) | | | | Level of Compliance with BRE Guidelines* | Effect of Proposed Development** |
| | | Baseline | Proposed | Ratio of Proposed to Baseline | Recommended minimum | | |
| 1 | 161 Trimbleston | 66.47% | 64.45% | 0.97 | 50.00% | BRE Compliant | Negligible |
| 2 | 162 Trimbleston | 76.15% | 73.76% | 0.97 | 50.00% | BRE Compliant | Negligible |
| 3 | 163 Trimbleston | 79.72% | 74.53% | 0.93 | 50.00% | BRE Compliant | Negligible |
| 4 | 164 Trimbleston | 89.03% | 87.56% | 0.98 | 50.00% | BRE Compliant | Negligible |
| 5 | 165 Trimbleston | 72.52% | 63.83% | 0.88 | 50.00% | BRE Compliant | Negligible |
| 6 | 166 Trimbleston | 71.85% | 70.76% | 0.98 | 50.00% | BRE Compliant | Negligible |
| 7 | 84 Goatstown Rd. | 99.12% | 99.12% | 1.00 | 50.00% | BRE Compliant | Negligible |
| 8 | 86 Goatstown Rd. | 100.00% | 100.00% | 1.00 | 50.00% | BRE Compliant | Negligible |
| 9 | 88 Goatstown Rd. | 100.00% | 99.98% | 1.00 | 50.00% | BRE Compliant | Negligible |
| 10 | 90 Goatstown Rd. | 91.40% | 91.02% | 1.00 | 50.00% | BRE Compliant | Negligible |
| 11 | 92 Goatstown Rd. | 96.78% | 96.49% | 1.00 | 50.00% | BRE Compliant | Negligible |
| 12 | Trimbleston Amenity | 82.46% | 84.09% | 1.02 | 50.00% | BRE Compliant | Negligible |
| 13 | Roof Terrace | 93.77% | 93.77% | 1.00 | 50.00% | BRE Compliant | Negligible |

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

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




Baseline Figure A.14: False colour plans. White area indicates the area capable of receiving 2 hours of sunlight on March 21st. Proposed

# B.0 Supplementary No Balcony Study

## B.1 Effect on Vertical Sky Component (VSC) - The Sycamore windows

| Table No. B.1.1 - VSC Results: The Sycamore | | | | | | |
|---|---|---|---|---|---|---|
| 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** |
| Sb | 25.43% | 21.69% | 0.85 | 20.34% | BRE Compliant | Negligible |
| Sc | 26.53% | 22.73% | 0.86 | 21.22% | BRE Compliant | Negligible |
| Se | 24.32% | 20.75% | 0.85 | 19.46% | BRE Compliant | Negligible |
| Sf | 25.85% | 22.42% | 0.87 | 20.68% | BRE Compliant | Negligible |
| Sh | 30.39% | 26.18% | 0.86 | 24.31% | BRE Compliant | Negligible |
| Si | 31.33% | 27.03% | 0.86 | 25.06% | BRE Compliant | Negligible |
| Sk | 29.59% | 25.47% | 0.86 | 23.67% | BRE Compliant | Negligible |
| Sl | 30.76% | 26.80% | 0.87 | 24.61% | BRE Compliant | Negligible |
| Sq | 35.85% | 31.86% | 0.89 | 27.00% | BRE Compliant | Negligible |
| Sp | 36.43% | 32.28% | 0.89 | 27.00% | BRE Compliant | Negligible |
| So | 36.59% | 32.32% | 0.88 | 27.00% | BRE Compliant | Negligible |
| Sn | 36.35% | 31.96% | 0.88 | 27.00% | BRE Compliant | Negligible |
| Sm | 35.67% | 31.44% | 0.88 | 27.00% | BRE Compliant | Negligible |

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

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


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

## B.2 Effect on Annual Probable Sunlight Hours - The Sycamore windows

| Table No. B.2.1 - APSH Results: The Sycamore | | | | | | |
|---|---|---|---|---|---|---|
| Window 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 |
| Sb | 44.63% | 38.77% | 0.87 | 25.00% | BRE Compliant | Negligible |
| Sc | 31.77% | 25.87% | 0.81 | 25.00% | BRE Compliant | Negligible |
| Se | 44.68% | 39.01% | 0.87 | 25.00% | BRE Compliant | Negligible |
| Sf | 41.35% | 35.82% | 0.87 | 25.00% | BRE Compliant | Negligible |
| Sh | 52.06% | 47.01% | 0.90 | 25.00% | BRE Compliant | Negligible |
| Si | 44.13% | 39.01% | 0.88 | 25.00% | BRE Compliant | Negligible |
| Sk | 51.30% | 46.93% | 0.91 | 25.00% | BRE Compliant | Negligible |
| Sl | 48.25% | 44.68% | 0.93 | 25.00% | BRE Compliant | Negligible |
| Sm | 60.68% | 57.81% | 0.95 | 25.00% | BRE Compliant | Negligible |
| Sn | 60.61% | 57.73% | 0.95 | 25.00% | BRE Compliant | Negligible |
| So | 60.45% | 57.73% | 0.96 | 25.00% | BRE Compliant | Negligible |
| Sp | 59.98% | 57.34% | 0.96 | 25.00% | BRE Compliant | Negligible |
| Sq | 56.41% | 53.77% | 0.95 | 25.00% | BRE Compliant | Negligible |

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

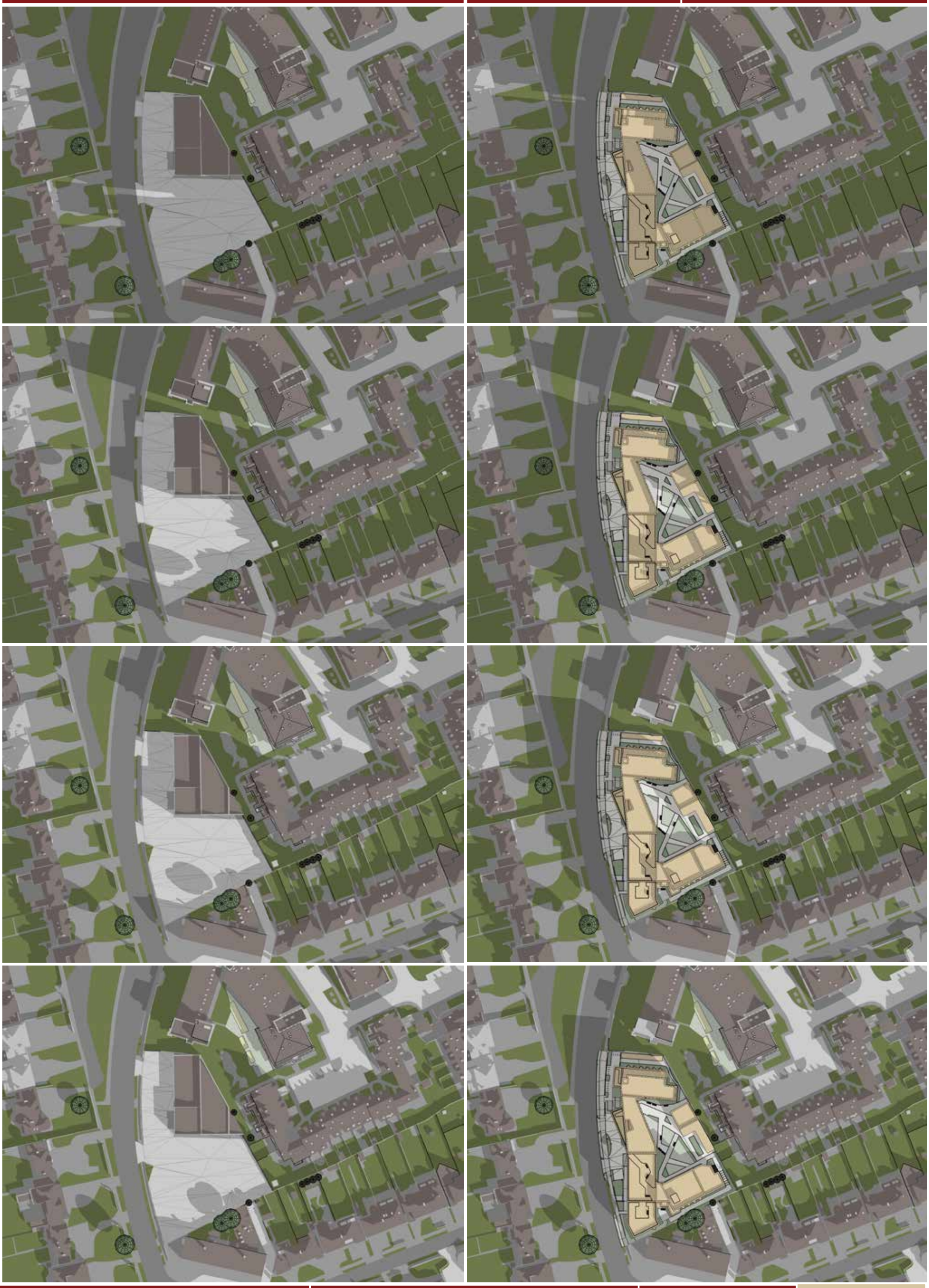
## B.3 Effect on Winter Probable Sunlight Hours - The Sycamore windows

| Table No. B.3.1 - WPSH Results: The Sycamore | | | | | | |
|---|---|---|---|---|---|---|
| Window 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 |
| Sb | 9.83% | 5.83% | 0.59 | 5.00% | BRE Compliant | Negligible |
| Sc | 7.13% | 3.50% | 0.49 | 5.00% | 70% | Moderate Adverse |
| Se | 5.44% | 4.12% | 0.76 | 4.35% | 95% | Minor Adverse |
| Sf | 4.60% | 3.19% | 0.69 | 3.68% | 87% | Minor Adverse |
| Sh | 15.00% | 10.72% | 0.72 | 5.00% | BRE Compliant | Negligible |
| Si | 8.55% | 4.51% | 0.53 | 5.00% | 90% | Minor Adverse |
| Sk | 11.20% | 9.32% | 0.83 | 5.00% | BRE Compliant | Negligible |
| Sl | 8.31% | 6.99% | 0.84 | 5.00% | BRE Compliant | Negligible |
| Sm | 21.45% | 18.57% | 0.87 | 5.00% | BRE Compliant | Negligible |
| Sn | 20.90% | 18.03% | 0.86 | 5.00% | BRE Compliant | Negligible |
| So | 20.28% | 17.87% | 0.88 | 5.00% | BRE Compliant | Negligible |
| Sp | 19.81% | 17.79% | 0.90 | 5.00% | BRE Compliant | Negligible |
| Sq | 16.24% | 14.37% | 0.89 | 5.00% | BRE Compliant | Negligible |

Figure B.3: 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 | |



| | | | | |
|---|---|---|---|---|
| C.0<br>C.1 | Shadow Studies<br>Shadow Study 21 March | Project: LRD Student Accommodation, Goatstown Road | | Proposed |
| | March 21st<br>Sunrise 6:32 \| Sunset 18:33 | Applicant: Orchid Residential 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 Student Accommodation, Goatstown Road** | | **Proposed** |
| **March 21st<br>Sunrise 6:32 \| Sunset 18:33** | **Applicant: Orchid Residential Limited** | | 3D DESIGN BUREAU |

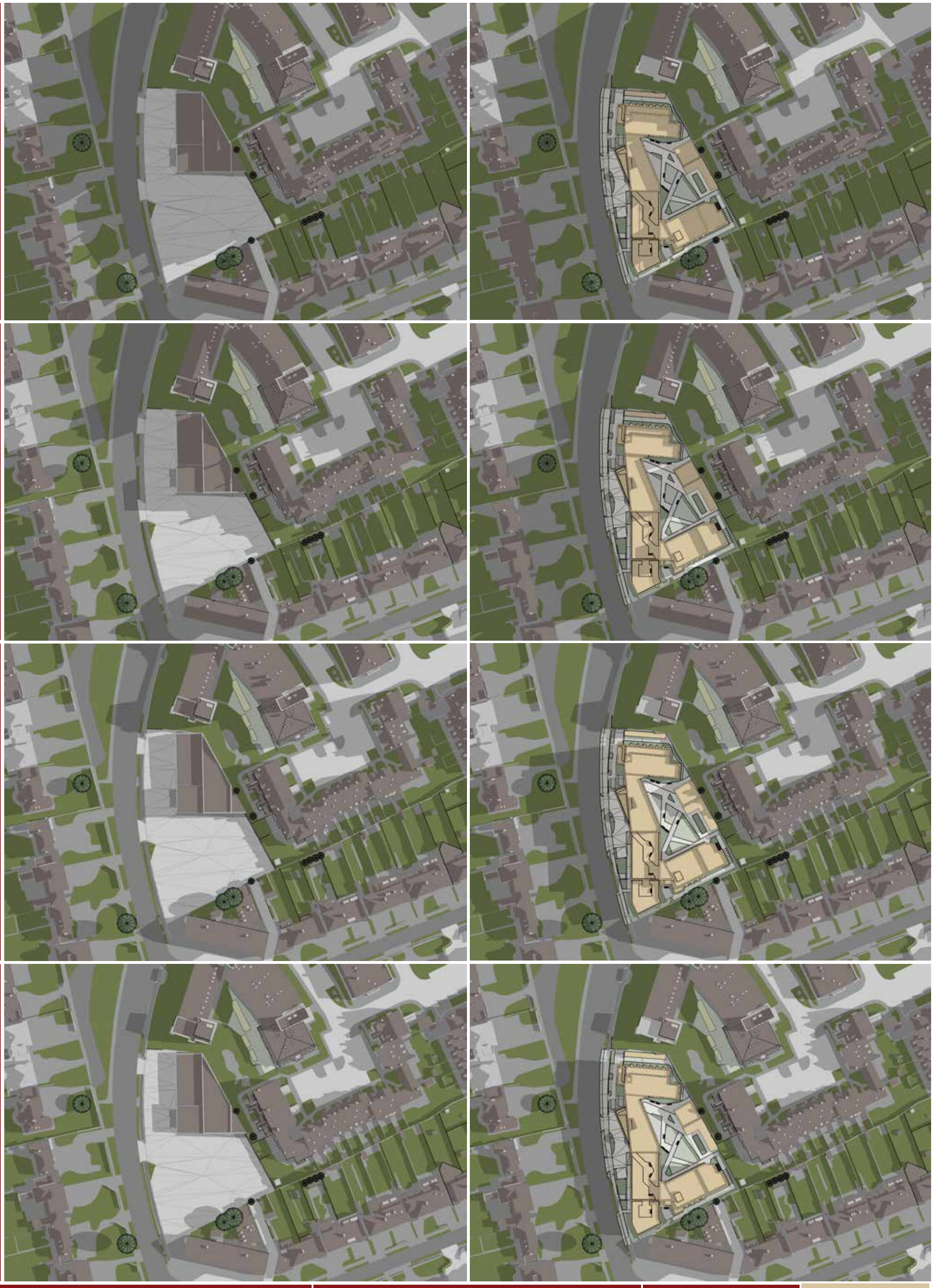
N

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

| | | | |
|---|---|---|---|
| | **Project: LRD Student Accommodation, Goatstown Road** | | **Proposed** |
| **March 21st<br>Sunrise 6:32 \| Sunset 18:33** | **Applicant: Orchid Residential Limited** | | 3D DESIGN BUREAU |

N

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



| | | | |
|---|---|---|---|
| C.2 Shadow Study 21 June | Project: LRD Student Accommodation, Goatstown Road | | Proposed |
| June 21st<br>Sunrise 5:04 \| Sunset 21:49 | Applicant: Orchid Residential Limited | | 3D DESIGN BUREAU |

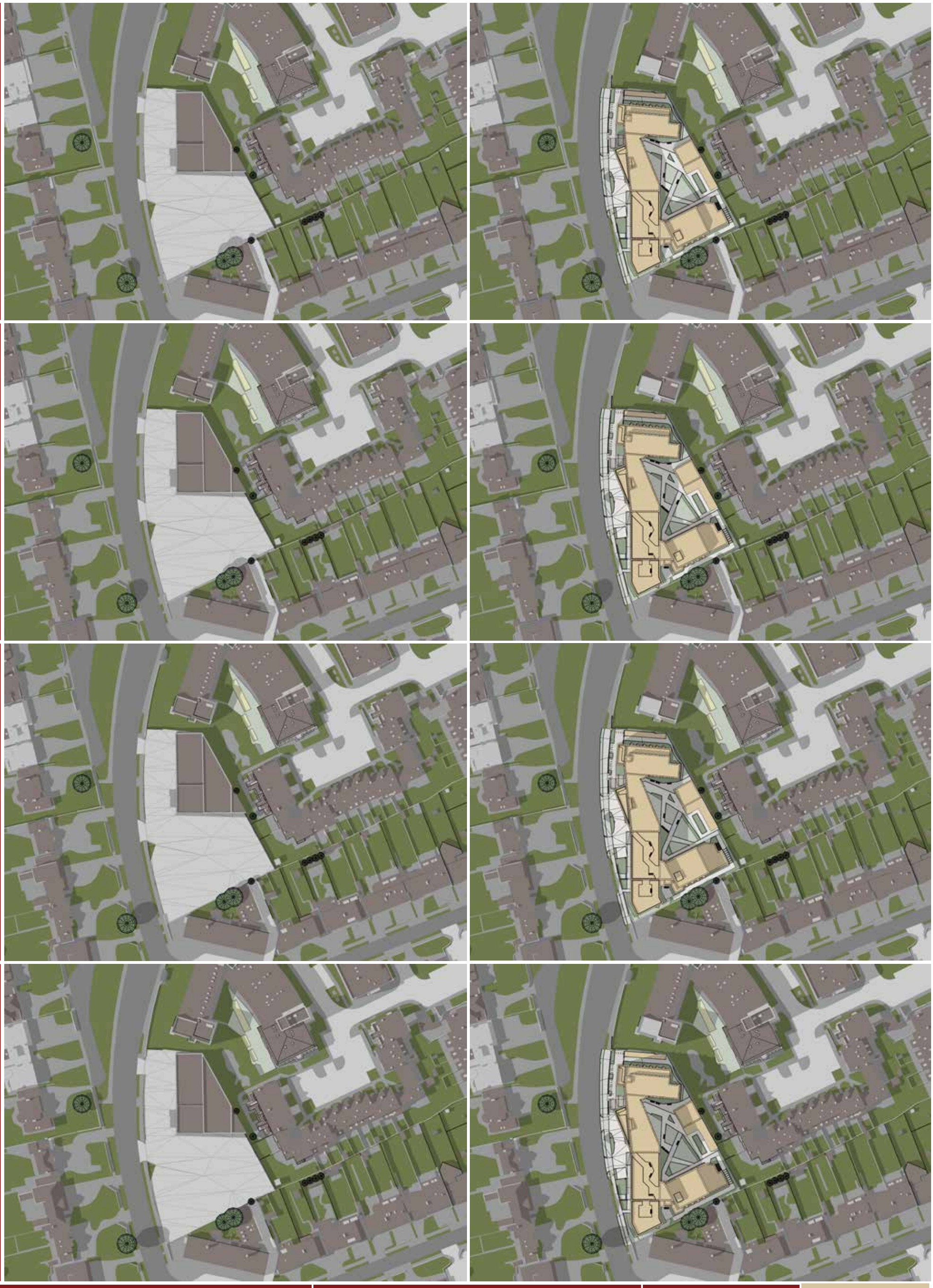
N

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

| | | | |
|---|---|---|---|
| | **Project: LRD Student Accommodation, Goatstown Road** | | **Proposed** |
| **June 21st<br>Sunrise 5:04 \| Sunset 21:49** | **Applicant: Orchid Residential Limited** | | 3D DESIGN BUREAU |

N

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



| | | | |
|---|---|---|---|
| | **Project: LRD Student Accommodation, Goatstown Road** | | **Proposed** |
| **June 21st<br>Sunrise 5:04 \| Sunset 21:49** | **Applicant: Orchid Residential 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 Student Accommodation, Goatstown Road** | | **Proposed** |
| **June 21st<br>Sunrise 5:04 \| Sunset 21:49** | **Applicant: Orchid Residential Limited** | | 3D DESIGN BUREAU |

N

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

| | | | | |
|---|---|---|---|---|
| C.3 | Shadow Study 21 December | Project: LRD Student Accommodation, Goatstown Road | | Proposed |
| | December 21st<br>Sunrise 8:45 \| Sunset 16:00 | Applicant: Orchid Residential Limited | | 3D DESIGN BUREAU |

N

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

| | | | |
|---|---|---|---|
| | **Project: LRD Student Accommodation, Goatstown Road** | | **Proposed** |
| **December 21st<br>Sunrise 8:45 \| Sunset 16:00** | **Applicant: Orchid Residential Limited** | | 3D DESIGN BUREAU |

# D.0 Scheme Performance

## D.1 Proposed Floor Plans

Figure D.1: Proposed Block - Level 0


Figure D.2: Proposed Block - Level 1

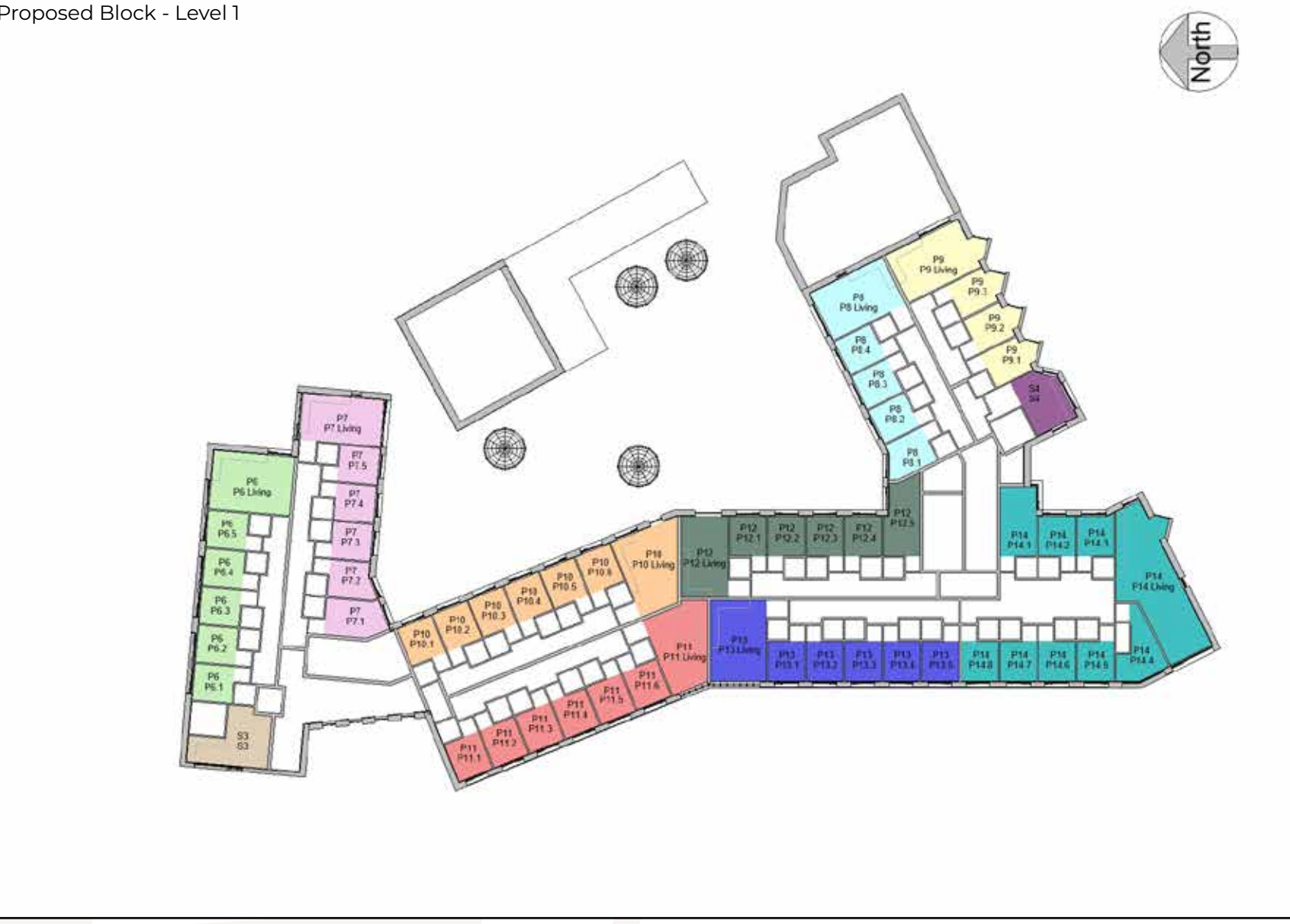


Figure D.3: Proposed Block - Level 2

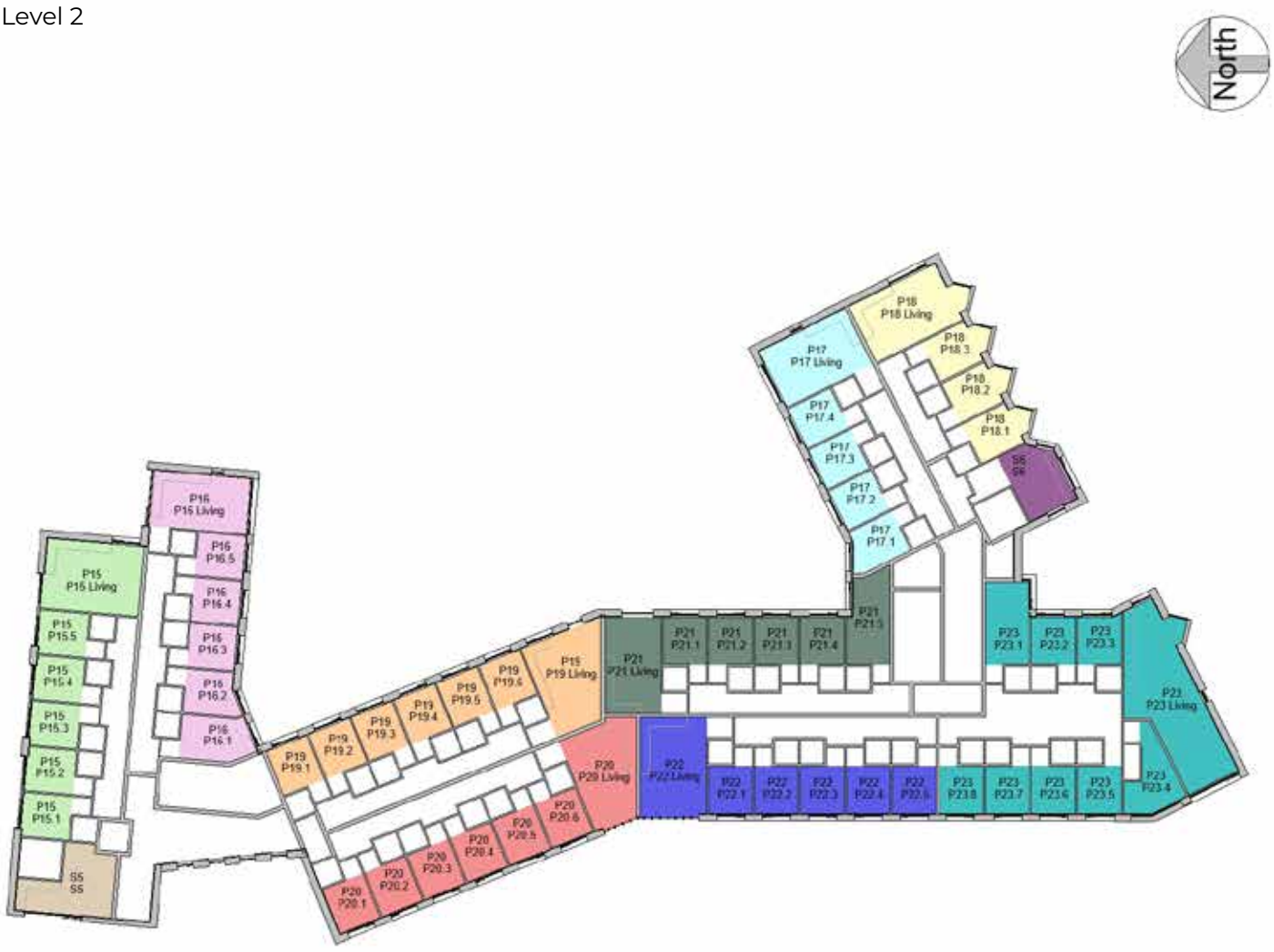



Figure D.4: Proposed Block - Level 3

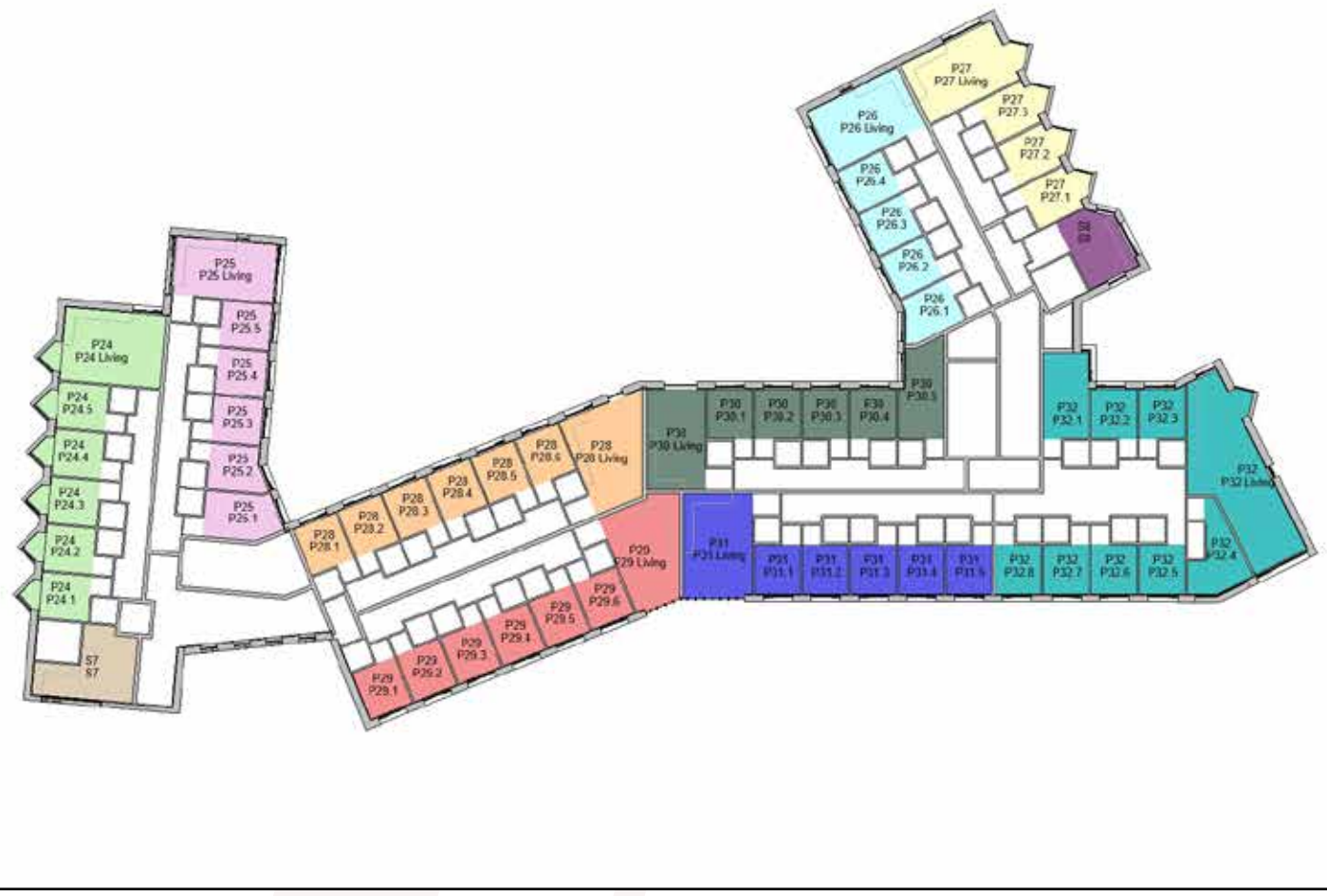


Figure D.5: Proposed Block - Level 4

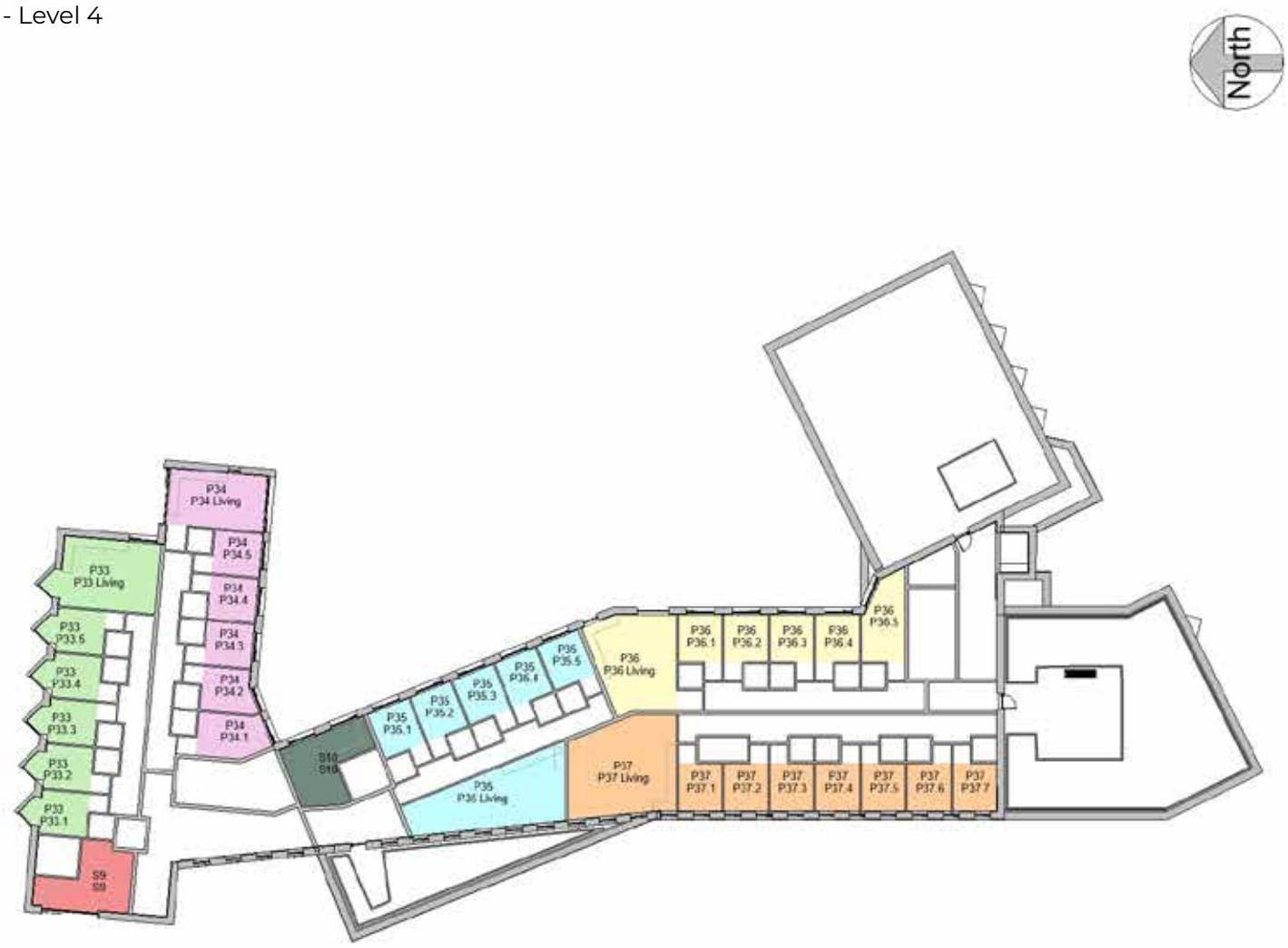
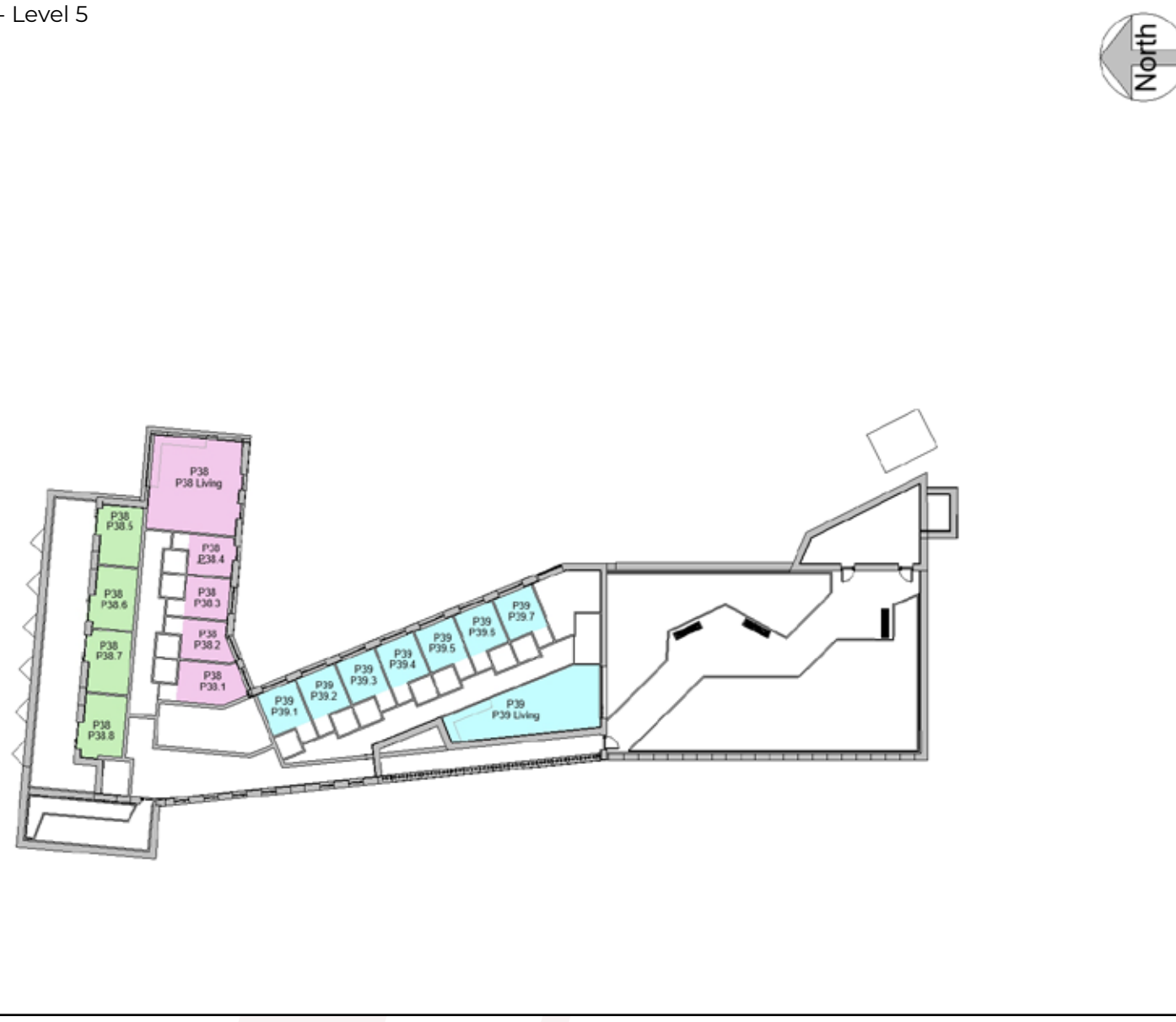



Figure D.6: Proposed Block - Level 5



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

**A: Unit Number**

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

**B: Room Description**

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

**C: Target Lux**

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

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

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

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

**E: % of area above target Lux (Winter)**

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

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

**F: % of area above target Lux (Summer)**

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

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

**G: Compliance with BR 209 Criteria**

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

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

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

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

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

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

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

## D.2.1 SDA Results: Ground Floor

| Table No. D.2.1 - SDA Results: Ground Floor | | | | | | |
|---|---|---|---|---|---|---|
| Unit Number | Room Description | Target Lux* | % of area above target Lux* (recommendation >50%) | | | Compliance with BR 209 Criteria* |
| | | | Without Trees*** | Winter** | Summer** | |
| P1 | P1 Living | 200 | 97% | 67% | 25% | Trees affecting compliance (summer only) |
| P1 | P1.1 | 150 | 100% | 100% | 97% | Compliant |
| P1 | P1.2 | 150 | 98% | 92% | 84% | Compliant |
| P1 | P1.3 | 150 | 97% | 66% | 49% | Trees affecting compliance (summer only) |
| P1 | P1.4 | 150 | 93% | 85% | 72% | Compliant |
| P1 | P1.5 | 150 | 95% | 79% | 66% | Compliant |
| P2 | P2 Living | 200 | 100% | 89% | 35% | Trees affecting compliance (summer only) |
| P2 | P2.1 | 150 | 39% | 35% | 30% | Non-compliant |
| P2 | P2.2 | 150 | 34% | 28% | 14% | Non-compliant |
| P2 | P2.3 | 150 | 64% | 54% | 41% | Trees affecting compliance (summer only) |
| P2 | P2.4 | 150 | 79% | 54% | 32% | Trees affecting compliance (summer only) |
| P2 | P2.5 | 150 | 88% | 79% | 68% | Compliant |
| S1 | S1 | 200 | 100% | 98% | 76% | Compliant |
| Communal | Kitchen/Tea Room | 200 | 100% | 99% | 91% | Compliant |
| P3 | P3 Living | 200 | 55% | 42% | 30% | Trees affecting compliance |
| P3 | P3.1 | 150 | 52% | 43% | 34% | Trees affecting compliance |
| P3 | P3.2 | 150 | 64% | 52% | 43% | Trees affecting compliance (summer only) |
| P3 | P3.3 | 150 | 79% | 68% | 55% | Compliant |
| P3 | P3.4 | 150 | 86% | 70% | 55% | Compliant |
| P3 | P3.5 | 150 | 96% | 80% | 61% | Compliant |
| P4 | P4 Living | 200 | 62% | 45% | 31% | Trees affecting compliance |
| P4 | P4.1 | 150 | 100% | 70% | 52% | Compliant |
| P4 | P4.2 | 150 | 100% | 61% | 46% | Trees affecting compliance (summer only) |
| P4 | P4.3 | 150 | 100% | 52% | 39% | Trees affecting compliance (summer only) |
| P4 | P4.4 | 150 | 100% | 50% | 38% | Trees affecting compliance (summer only) |
| P4 | P4.5 | 150 | 100% | 59% | 43% | Trees affecting compliance (summer only) |
| P4 | P4.6 | 150 | 100% | 100% | 77% | Compliant |
| P5 | P5 Living | 200 | 43% | 24% | 15% | Non-compliant |
| P5 | P5.1 | 150 | 100% | 88% | 52% | Compliant |
| P5 | P5.2 | 150 | 89% | 75% | 50% | Compliant |
| P5 | P5.3 | 150 | 66% | 52% | 43% | Trees affecting compliance (summer only) |
| P5 | P5.4 | 150 | 43% | 34% | 25% | Non-compliant |
| P5 | P5.5 | 150 | 23% | 20% | 16% | Non-compliant |
| S2 | S2 | 200 | 93% | 65% | 48% | Trees affecting compliance (summer only) |
| Communal | Student Lounge Area 1 | 150 | 100% | 100% | 100% | Compliant |
| Communal | Student Lounge Area 2 | 150 | 100% | 90% | 68% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 23.

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.2.2 SDA Results: First Floor

| Table No. D.2.2 - SDA Results: First Floor | | | | | | |
|---|---|---|---|---|---|---|
| Unit Number | Room Description | Target Lux* | % of area above target Lux* (recommendation >50%) | | | Compliance with BR 209 Criteria* |
| | | | Without Trees*** | Winter** | Summer** | |
| P6 | P6 Living | 200 | 93% | 86% | 54% | Compliant |
| P6 | P6.1 | 150 | 100% | 100% | 100% | Compliant |
| P6 | P6.2 | 150 | 100% | 100% | 100% | Compliant |
| P6 | P6.3 | 150 | 100% | 100% | 100% | Compliant |
| P6 | P6.4 | 150 | 100% | 100% | 100% | Compliant |
| P6 | P6.5 | 150 | 100% | 100% | 100% | Compliant |
| P7 | P7 Living | 200 | 100% | 100% | 100% | Compliant |
| P7 | P7.1 | 150 | 51% | 47% | 43% | Trees affecting compliance |
| P7 | P7.2 | 150 | 65% | 55% | 49% | Trees affecting compliance (summer only) |
| P7 | P7.3 | 150 | 100% | 100% | 95% | Compliant |
| P7 | P7.4 | 150 | 100% | 100% | 98% | Compliant |
| P7 | P7.5 | 150 | 100% | 100% | 100% | Compliant |
| P8 | P8 Living | 200 | 66% | 62% | 57% | Compliant |
| P8 | P8.1 | 150 | 80% | 72% | 65% | Compliant |
| P8 | P8.2 | 150 | 96% | 89% | 82% | Compliant |
| P8 | P8.3 | 150 | 100% | 98% | 95% | Compliant |
| P8 | P8.4 | 150 | 100% | 100% | 100% | Compliant |
| P9 | P9 Living | 200 | 99% | 88% | 66% | Compliant |
| P9 | P9.1 | 150 | 100% | 32% | 18% | Trees affecting compliance |
| P9 | P9.2 | 150 | 100% | 47% | 18% | Trees affecting compliance |
| P9 | P9.3 | 150 | 100% | 88% | 49% | Trees affecting compliance (summer only) |
| P10 | P10 Living | 200 | 73% | 61% | 52% | Compliant |
| P10 | P10.1 | 150 | 91% | 84% | 75% | Compliant |
| P10 | P10.2 | 150 | 100% | 100% | 96% | Compliant |
| P10 | P10.3 | 150 | 100% | 100% | 100% | Compliant |
| P10 | P10.4 | 150 | 100% | 100% | 100% | Compliant |
| P10 | P10.5 | 150 | 100% | 100% | 100% | Compliant |
| P10 | P10.6 | 150 | 100% | 100% | 100% | Compliant |
| P11 | P11 Living | 200 | 82% | 53% | 39% | Trees affecting compliance (summer only) |
| P11 | P11.1 | 150 | 100% | 100% | 100% | Compliant |
| P11 | P11.2 | 150 | 100% | 100% | 100% | Compliant |
| P11 | P11.3 | 150 | 100% | 100% | 100% | Compliant |
| P11 | P11.4 | 150 | 100% | 100% | 100% | Compliant |
| P11 | P11.5 | 150 | 100% | 100% | 100% | Compliant |
| P11 | P11.6 | 150 | 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 19.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 23.

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.2.3 SDA Results: First Floor

| Table No. D.2.3 - SDA Results: First Floor | | | | | | |
|---|---|---|---|---|---|---|
| Unit Number | Room Description | Target Lux* | % of area above target Lux* (recommendation >50%) | | | Compliance with BR 209 Criteria* |
| | | | Without Trees*** | Winter** | Summer** | |
| P12 | P12 Living | 200 | 60% | 47% | 37% | Trees affecting compliance |
| P12 | P12.1 | 150 | 100% | 100% | 100% | Compliant |
| P12 | P12.2 | 150 | 100% | 100% | 100% | Compliant |
| P12 | P12.3 | 150 | 100% | 98% | 96% | Compliant |
| P12 | P12.4 | 150 | 82% | 77% | 68% | Compliant |
| P12 | P12.5 | 150 | 48% | 48% | 44% | Non-compliant |
| P13 | P13 Living | 200 | 100% | 96% | 64% | Compliant |
| P13 | P13.1 | 150 | 100% | 100% | 100% | Compliant |
| P13 | P13.2 | 150 | 100% | 100% | 100% | Compliant |
| P13 | P13.3 | 150 | 100% | 100% | 100% | Compliant |
| P13 | P13.4 | 150 | 100% | 100% | 100% | Compliant |
| P13 | P13.5 | 150 | 100% | 100% | 100% | Compliant |
| P14 | P14 Living | 200 | 100% | 99% | 84% | Compliant |
| P14 | P14.1 | 150 | 62% | 57% | 57% | Compliant |
| P14 | P14.2 | 150 | 91% | 68% | 63% | Compliant |
| P14 | P14.3 | 150 | 100% | 100% | 100% | Compliant |
| P14 | P14.4 | 150 | 100% | 100% | 100% | Compliant |
| P14 | P14.5 | 150 | 100% | 100% | 100% | Compliant |
| P14 | P14.6 | 150 | 100% | 100% | 100% | Compliant |
| P14 | P14.7 | 150 | 100% | 100% | 100% | Compliant |
| P14 | P14.8 | 150 | 100% | 100% | 100% | Compliant |
| S3 | S3 | 200 | 100% | 100% | 96% | Compliant |
| S4 | S4 | 200 | 100% | 100% | 96% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 23.

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.2.4 SDA Results: Second Floor

| Table No. D.2.4 - SDA Results: Second Floor | | | | | | |
|---|---|---|---|---|---|---|
| Unit Number | Room Description | Target Lux* | % of area above target Lux* (recommendation >50%) | | | Compliance with BR 209 Criteria* |
| | | | Without Trees*** | Winter** | Summer** | |
| P15 | P15 Living | 200 | 94% | 91% | 88% | Compliant |
| P15 | P15.1 | 150 | 100% | 100% | 100% | Compliant |
| P15 | P15.2 | 150 | 100% | 100% | 100% | Compliant |
| P15 | P15.3 | 150 | 100% | 100% | 100% | Compliant |
| P15 | P15.4 | 150 | 100% | 100% | 100% | Compliant |
| P15 | P15.5 | 150 | 100% | 100% | 100% | Compliant |
| P16 | P16 Living | 200 | 100% | 100% | 100% | Compliant |
| P16 | P16.1 | 150 | 61% | 59% | 55% | Compliant |
| P16 | P16.2 | 150 | 85% | 74% | 66% | Compliant |
| P16 | P16.3 | 150 | 100% | 100% | 100% | Compliant |
| P16 | P16.4 | 150 | 100% | 100% | 100% | Compliant |
| P16 | P16.5 | 150 | 100% | 100% | 100% | Compliant |
| P17 | P17 Living | 200 | 74% | 71% | 70% | Compliant |
| P17 | P17.1 | 150 | 89% | 86% | 86% | Compliant |
| P17 | P17.2 | 150 | 100% | 100% | 98% | Compliant |
| P17 | P17.3 | 150 | 100% | 100% | 100% | Compliant |
| P17 | P17.4 | 150 | 100% | 100% | 100% | Compliant |
| P18 | P18 Living | 200 | 100% | 100% | 94% | Compliant |
| P18 | P18.1 | 150 | 100% | 67% | 47% | Trees affecting compliance (summer only) |
| P18 | P18.2 | 150 | 100% | 88% | 52% | Compliant |
| P18 | P18.3 | 150 | 100% | 100% | 79% | Compliant |
| P19 | P19 Living | 200 | 87% | 82% | 78% | Compliant |
| P19 | P19.1 | 150 | 96% | 93% | 93% | Compliant |
| P19 | P19.2 | 150 | 100% | 100% | 100% | Compliant |
| P19 | P19.3 | 150 | 100% | 100% | 100% | Compliant |
| P19 | P19.4 | 150 | 100% | 100% | 100% | Compliant |
| P19 | P19.5 | 150 | 100% | 100% | 100% | Compliant |
| P19 | P19.6 | 150 | 100% | 100% | 100% | Compliant |
| P20 | P20 Living | 200 | 95% | 71% | 58% | Compliant |
| P20 | P20.1 | 150 | 100% | 100% | 100% | Compliant |
| P20 | P20.2 | 150 | 100% | 100% | 100% | Compliant |
| P20 | P20.3 | 150 | 100% | 100% | 100% | Compliant |
| P20 | P20.4 | 150 | 100% | 100% | 100% | Compliant |
| P20 | P20.5 | 150 | 100% | 100% | 100% | Compliant |
| P20 | P20.6 | 150 | 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 19.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 23.

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.2.5 SDA Results: Second Floor

| Table No. D.2.5 - SDA Results: Second Floor | | | | | | |
|---|---|---|---|---|---|---|
| Unit Number | Room Description | Target Lux* | % of area above target Lux* (recommendation >50%) | | | Compliance with BR 209 Criteria* |
| | | | Without Trees*** | Winter** | Summer** | |
| P21 | P21 Living | 200 | 67% | 61% | 58% | Compliant |
| P21 | P21.1 | 150 | 100% | 100% | 100% | Compliant |
| P21 | P21.2 | 150 | 100% | 100% | 100% | Compliant |
| P21 | P21.3 | 150 | 100% | 100% | 100% | Compliant |
| P21 | P21.4 | 150 | 95% | 95% | 91% | Compliant |
| P21 | P21.5 | 150 | 51% | 50% | 48% | Trees affecting compliance (summer only) |
| P22 | P22 Living | 200 | 100% | 100% | 93% | Compliant |
| P22 | P22.1 | 150 | 100% | 100% | 100% | Compliant |
| P22 | P22.2 | 150 | 100% | 100% | 100% | Compliant |
| P22 | P22.3 | 150 | 100% | 100% | 100% | Compliant |
| P22 | P22.4 | 150 | 100% | 100% | 100% | Compliant |
| P22 | P22.5 | 150 | 100% | 100% | 100% | Compliant |
| P23 | P23 Living | 200 | 100% | 100% | 100% | Compliant |
| P23 | P23.1 | 150 | 80% | 72% | 71% | Compliant |
| P23 | P23.2 | 150 | 100% | 100% | 98% | Compliant |
| P23 | P23.3 | 150 | 100% | 100% | 100% | Compliant |
| P23 | P23.4 | 150 | 100% | 100% | 100% | Compliant |
| P23 | P23.5 | 150 | 100% | 100% | 100% | Compliant |
| P23 | P23.6 | 150 | 100% | 100% | 100% | Compliant |
| P23 | P23.7 | 150 | 100% | 100% | 100% | Compliant |
| P23 | P23.8 | 150 | 100% | 100% | 100% | Compliant |
| S5 | S5 | 200 | 100% | 100% | 100% | Compliant |
| S6 | S6 | 200 | 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 19.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 23.

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.2.6 SDA Results: Third Floor

| Table No. D.2.6 - SDA Results: Third Floor | | | | | | |
|---|---|---|---|---|---|---|
| Unit Number | Room Description | Target Lux* | % of area above target Lux* (recommendation >50%) | | | Compliance with BR 209 Criteria* |
| | | | Without Trees*** | Winter** | Summer** | |
| P24 | P24 Living | 200 | 95% | 94% | 92% | Compliant |
| P24 | P24.1 | 150 | 100% | 100% | 100% | Compliant |
| P24 | P24.2 | 150 | 100% | 100% | 100% | Compliant |
| P24 | P24.3 | 150 | 100% | 100% | 100% | Compliant |
| P24 | P24.4 | 150 | 100% | 100% | 100% | Compliant |
| P24 | P24.5 | 150 | 100% | 100% | 99% | Compliant |
| P25 | P25 Living | 200 | 100% | 100% | 100% | Compliant |
| P25 | P25.1 | 150 | 67% | 64% | 62% | Compliant |
| P25 | P25.2 | 150 | 94% | 94% | 92% | Compliant |
| P25 | P25.3 | 150 | 100% | 100% | 100% | Compliant |
| P25 | P25.4 | 150 | 100% | 100% | 100% | Compliant |
| P25 | P25.5 | 150 | 100% | 100% | 100% | Compliant |
| P26 | P26 Living | 200 | 83% | 83% | 82% | Compliant |
| P26 | P26.1 | 150 | 96% | 96% | 96% | Compliant |
| P26 | P26.2 | 150 | 100% | 100% | 100% | Compliant |
| P26 | P26.3 | 150 | 100% | 100% | 100% | Compliant |
| P26 | P26.4 | 150 | 100% | 100% | 100% | Compliant |
| P27 | P27 Living | 200 | 100% | 100% | 100% | Compliant |
| P27 | P27.1 | 150 | 100% | 100% | 100% | Compliant |
| P27 | P27.2 | 150 | 100% | 100% | 100% | Compliant |
| P27 | P27.3 | 150 | 100% | 100% | 100% | Compliant |
| P28 | P28 Living | 200 | 97% | 96% | 96% | Compliant |
| P28 | P28.1 | 150 | 100% | 100% | 100% | Compliant |
| P28 | P28.2 | 150 | 100% | 100% | 100% | Compliant |
| P28 | P28.3 | 150 | 100% | 100% | 100% | Compliant |
| P28 | P28.4 | 150 | 100% | 100% | 100% | Compliant |
| P28 | P28.5 | 150 | 100% | 100% | 100% | Compliant |
| P28 | P28.6 | 150 | 100% | 100% | 100% | Compliant |
| P29 | P29 Living | 200 | 94% | 78% | 65% | Compliant |
| P29 | P29.1 | 150 | 100% | 100% | 100% | Compliant |
| P29 | P29.2 | 150 | 100% | 100% | 100% | Compliant |
| P29 | P29.3 | 150 | 100% | 100% | 100% | Compliant |
| P29 | P29.4 | 150 | 100% | 100% | 100% | Compliant |
| P29 | P29.5 | 150 | 100% | 100% | 100% | Compliant |
| P29 | P29.6 | 150 | 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 19.
** Under the BR 209 study the SDA has been calculated with trees represented with both winter and summer foliage.
*** The SDA assessment without trees indicates the level of daylight within the proposed development when trees are not included in the analytical model. This study provides an understanding of how trees affect daylight within the proposed development.
The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 23.
For floor plans of the assessed units please refer to section D.1 on page 57.

## D.2.7 SDA Results: Third Floor

| Table No. D.2.7 - SDA Results: Third Floor | | | | | | |
|---|---|---|---|---|---|---|
| Unit Number | Room Description | Target Lux* | % of area above target Lux* (recommendation >50%) | | | Compliance with BR 209 Criteria* |
| | | | Without Trees*** | Winter** | Summer** | |
| P30 | P30 Living | 200 | 83% | 76% | 73% | Compliant |
| P30 | P30.1 | 150 | 100% | 100% | 100% | Compliant |
| P30 | P30.2 | 150 | 100% | 100% | 100% | Compliant |
| P30 | P30.3 | 150 | 100% | 100% | 100% | Compliant |
| P30 | P30.4 | 150 | 100% | 100% | 100% | Compliant |
| P30 | P30.5 | 150 | 55% | 54% | 53% | Compliant |
| P31 | P31 Living | 200 | 100% | 100% | 100% | Compliant |
| P31 | P31.1 | 150 | 100% | 100% | 100% | Compliant |
| P31 | P31.2 | 150 | 100% | 100% | 100% | Compliant |
| P31 | P31.3 | 150 | 100% | 100% | 100% | Compliant |
| P31 | P31.4 | 150 | 100% | 100% | 100% | Compliant |
| P31 | P31.5 | 150 | 100% | 100% | 100% | Compliant |
| P32 | P32 Living | 200 | 100% | 100% | 100% | Compliant |
| P32 | P32.1 | 150 | 100% | 100% | 100% | Compliant |
| P32 | P32.2 | 150 | 100% | 100% | 100% | Compliant |
| P32 | P32.3 | 150 | 100% | 100% | 100% | Compliant |
| P32 | P32.4 | 150 | 100% | 100% | 100% | Compliant |
| P32 | P32.5 | 150 | 100% | 100% | 100% | Compliant |
| P32 | P32.6 | 150 | 100% | 100% | 100% | Compliant |
| P32 | P32.7 | 150 | 100% | 100% | 100% | Compliant |
| P32 | P32.8 | 150 | 100% | 100% | 100% | Compliant |
| S7 | S7 | 200 | 100% | 100% | 100% | Compliant |
| S8 | S8 | 200 | 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 19.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 23.

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.2.8 SDA Results: Fourth Floor

| Table No. D.2.8 - SDA Results: Fourth Floor | | | | | | |
|---|---|---|---|---|---|---|
| Unit Number | Room Description | Target Lux* | % of area above target Lux* (recommendation >50%) | | | Compliance with BR 209 Criteria* |
| | | | Without Trees*** | Winter** | Summer** | |
| P33 | P33 Living | 200 | 96% | 96% | 95% | Compliant |
| P33 | P33.1 | 150 | 100% | 100% | 100% | Compliant |
| P33 | P33.2 | 150 | 100% | 100% | 100% | Compliant |
| P33 | P33.3 | 150 | 100% | 100% | 100% | Compliant |
| P33 | P33.4 | 150 | 100% | 100% | 100% | Compliant |
| P33 | P33.5 | 150 | 100% | 100% | 100% | Compliant |
| P34 | P34 Living | 200 | 100% | 100% | 100% | Compliant |
| P34 | P34.1 | 150 | 80% | 77% | 77% | Compliant |
| P34 | P34.2 | 150 | 98% | 98% | 98% | Compliant |
| P34 | P34.3 | 150 | 100% | 100% | 100% | Compliant |
| P34 | P34.4 | 150 | 100% | 100% | 100% | Compliant |
| P34 | P34.5 | 150 | 100% | 100% | 100% | Compliant |
| P35 | P35 Living | 200 | 100% | 100% | 100% | Compliant |
| P35 | P35.1 | 150 | 100% | 100% | 100% | Compliant |
| P35 | P35.2 | 150 | 100% | 100% | 100% | Compliant |
| P35 | P35.3 | 150 | 100% | 100% | 100% | Compliant |
| P35 | P35.4 | 150 | 100% | 100% | 100% | Compliant |
| P35 | P35.5 | 150 | 100% | 100% | 100% | Compliant |
| P36 | P36 Living | 200 | 100% | 100% | 100% | Compliant |
| P36 | P36.1 | 150 | 100% | 100% | 100% | Compliant |
| P36 | P36.2 | 150 | 100% | 100% | 100% | Compliant |
| P36 | P36.3 | 150 | 100% | 100% | 100% | Compliant |
| P36 | P36.4 | 150 | 100% | 100% | 100% | Compliant |
| P36 | P36.5 | 150 | 100% | 100% | 100% | Compliant |
| P37 | P37 Living | 200 | 100% | 100% | 100% | Compliant |
| P37 | P37.1 | 150 | 100% | 100% | 100% | Compliant |
| P37 | P37.2 | 150 | 100% | 100% | 100% | Compliant |
| P37 | P37.3 | 150 | 100% | 100% | 100% | Compliant |
| P37 | P37.4 | 150 | 100% | 100% | 100% | Compliant |
| P37 | P37.5 | 150 | 100% | 100% | 100% | Compliant |
| P37 | P37.6 | 150 | 100% | 100% | 100% | Compliant |
| P37 | P37.7 | 150 | 100% | 100% | 100% | Compliant |
| S9 | S9 | 200 | 100% | 100% | 100% | Compliant |
| S10 | S10 | 200 | 96% | 96% | 96% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 23.

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.2.9 SDA Results: Fifth Floor

| Table No. D.2.9 - SDA Results: Fifth Floor | | | | | | |
|---|---|---|---|---|---|---|
| Unit Number | Room Description | Target Lux* | % of area above target Lux* (recommendation >50%) | | | Compliance with BR 209 Criteria* |
| | | | Without Trees*** | Winter** | Summer** | |
| P38 | P38 Living | 200 | 100% | 100% | 100% | Compliant |
| P38 | P38.1 | 150 | 92% | 90% | 90% | Compliant |
| P38 | P38.2 | 150 | 100% | 100% | 100% | Compliant |
| P38 | P38.3 | 150 | 100% | 100% | 100% | Compliant |
| P38 | P38.4 | 150 | 98% | 98% | 98% | Compliant |
| P38 | P38.5 | 150 | 94% | 94% | 94% | Compliant |
| P38 | P38.6 | 150 | 99% | 99% | 99% | Compliant |
| P38 | P38.7 | 150 | 98% | 98% | 98% | Compliant |
| P38 | P38.8 | 150 | 96% | 96% | 96% | Compliant |
| P39 | P39 Living | 200 | 85% | 83% | 79% | Compliant |
| P39 | P39.1 | 150 | 100% | 100% | 100% | Compliant |
| P39 | P39.2 | 150 | 100% | 100% | 100% | Compliant |
| P39 | P39.3 | 150 | 100% | 100% | 100% | Compliant |
| P39 | P39.4 | 150 | 100% | 100% | 100% | Compliant |
| P39 | P39.5 | 150 | 100% | 100% | 100% | Compliant |
| P39 | P39.6 | 150 | 100% | 100% | 100% | Compliant |
| P39 | P39.7 | 150 | 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 19.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 5.2.1 on page 23.

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.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. D.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.

## D.3.1 SE Results: Ground Floor

| Table No. D.3.1 - Sunlight Exposure Results: Ground Floor | | | | | | | |
|---|---|---|---|---|---|---|---|
| Unit Number | Room Description | Deciduous Trees as Opaque Objects* | | | Without Deciduous Trees* | | |
| | | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** |
| P1 | P1 Living | 0.00 | Below Minimum | Non-Compliant | 1.20 | Below Minimum | Non-Compliant |
| P1 | P1.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P1 | P1.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P1 | P1.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P1 | P1.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P1 | P1.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P2 | P2 Living | 0.90 | Below Minimum | - | 1.60 | Minimum | - |
| P2 | P2.1 | 2.80 | Minimum | Compliant | 3.50 | Medium | - |
| P2 | P2.2 | 0.30 | Below Minimum | - | 3.80 | Medium | Compliant |
| P2 | P2.3 | 2.70 | Minimum | - | 3.40 | Medium | - |
| P2 | P2.4 | 0.30 | Below Minimum | - | 3.70 | Medium | - |
| P2 | P2.5 | 2.10 | Minimum | - | 3.40 | Medium | - |
| S1 | S1 | 2.70 | Minimum | Compliant | 4.00 | High | Compliant |
| P3 | P3 Living | 0.00 | Below Minimum | Non-Compliant | 0.00 | Below Minimum | Non-Compliant |
| P3 | P3.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P3 | P3.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P3 | P3.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P3 | P3.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P3 | P3.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P4 | P4 Living | 2.50 | Minimum | Compliant | 5.10 | High | Compliant |
| P4 | P4.1 | 0.40 | Below Minimum | - | 0.80 | Below Minimum | - |
| P4 | P4.2 | 0.50 | Below Minimum | - | 0.50 | Below Minimum | - |
| P4 | P4.3 | 0.00 | Below Minimum | - | 0.20 | Below Minimum | - |
| P4 | P4.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P4 | P4.5 | 0.80 | Below Minimum | - | 0.90 | Below Minimum | - |
| P4 | P4.6 | 1.50 | Minimum | - | 3.10 | Medium | - |
| P5 | P5 Living | 0.00 | Below Minimum | Non-Compliant | 0.70 | Below Minimum | Non-Compliant |
| P5 | P5.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P5 | P5.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P5 | P5.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P5 | P5.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P5 | P5.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| S2 | S2 | 3.20 | Medium | Compliant | 4.40 | 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 24.

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

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.3.2 SE Results: First Floor

| Table No. D.3.2 - Sunlight Exposure Results: First Floor | | | | | | | |
|---|---|---|---|---|---|---|---|
| Unit Number | Room Description | Deciduous Trees as Opaque Objects* | | | Without Deciduous Trees* | | |
| | | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** |
| P6 | P6 Living | 0.00 | Below Minimum | Non-Compliant | 0.00 | Below Minimum | Non-Compliant |
| P6 | P6.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P6 | P6.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P6 | P6.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P6 | P6.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P6 | P6.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P7 | P7 Living | 5.70 | High | Compliant | 5.70 | High | Compliant |
| P7 | P7.1 | 3.60 | Medium | - | 3.60 | Medium | - |
| P7 | P7.2 | 4.00 | High | - | 4.00 | High | - |
| P7 | P7.3 | 3.50 | Medium | - | 3.50 | Medium | - |
| P7 | P7.4 | 4.00 | High | - | 4.00 | High | - |
| P7 | P7.5 | 4.40 | High | - | 4.40 | High | - |
| P8 | P8 Living | 0.00 | Below Minimum | Non-Compliant | 0.00 | Below Minimum | Non-Compliant |
| P8 | P8.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P8 | P8.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P8 | P8.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P8 | P8.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P9 | P9 Living | 1.60 | Minimum | Compliant | 4.60 | High | Compliant |
| P9 | P9.1 | 0.00 | Below Minimum | - | 0.10 | Below Minimum | - |
| P9 | P9.2 | 0.00 | Below Minimum | - | 1.50 | Minimum | - |
| P9 | P9.3 | 1.10 | Below Minimum | - | 3.10 | Medium | - |
| P10 | P10 Living | 2.00 | Minimum | - | 2.10 | Minimum | Compliant |
| P10 | P10.1 | 2.10 | Minimum | Compliant | 2.10 | Minimum | - |
| P10 | P10.2 | 1.00 | Below Minimum | - | 2.10 | Minimum | - |
| P10 | P10.3 | 1.20 | Below Minimum | - | 2.10 | Minimum | - |
| P10 | P10.4 | 1.40 | Below Minimum | - | 2.10 | Minimum | - |
| P10 | P10.5 | 1.90 | Minimum | - | 2.10 | Minimum | - |
| P10 | P10.6 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P11 | P11 Living | 3.80 | Medium | - | 4.10 | High | - |
| P11 | P11.1 | 4.60 | High | Compliant | 4.60 | High | Compliant |
| P11 | P11.2 | 4.20 | High | - | 4.60 | High | - |
| P11 | P11.3 | 2.60 | Minimum | - | 4.60 | High | - |
| P11 | P11.4 | 1.80 | Minimum | - | 4.60 | High | - |
| P11 | P11.5 | 2.00 | Minimum | - | 4.30 | High | - |
| P11 | P11.6 | 3.00 | Medium | - | 4.60 | High | - |

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates can be found in section 5.2.2 on page 24.
*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 12.
For floor plans of the assessed units please refer to section D.1 on page 57.

## D.3.3 SE Results: First Floor

| Table No. D.3.3 - Sunlight Exposure Results: First Floor | | | | | | | |
|---|---|---|---|---|---|---|---|
| Unit Number | Room Description | Deciduous Trees as Opaque Objects* | | | Without Deciduous Trees* | | |
| | | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** |
| P12 | P12 Living | 1.70 | Minimum | Compliant | 1.90 | Minimum | Compliant |
| P12 | P12.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P12 | P12.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P12 | P12.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P12 | P12.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P12 | P12.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P13 | P13 Living | 2.80 | Minimum | Compliant | 2.90 | Minimum | - |
| P13 | P13.1 | 1.00 | Below Minimum | - | 3.40 | Medium | Compliant |
| P13 | P13.2 | 0.90 | Below Minimum | - | 3.40 | Medium | - |
| P13 | P13.3 | 0.60 | Below Minimum | - | 3.40 | Medium | - |
| P13 | P13.4 | 0.70 | Below Minimum | - | 3.40 | Medium | - |
| P13 | P13.5 | 0.00 | Below Minimum | - | 3.40 | Medium | - |
| P14 | P14 Living | 4.60 | High | Compliant | 8.10 | High | Compliant |
| P14 | P14.1 | 2.90 | Minimum | - | 2.90 | Minimum | - |
| P14 | P14.2 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P14 | P14.3 | 2.40 | Minimum | - | 2.40 | Minimum | - |
| P14 | P14.4 | 2.00 | Minimum | - | 4.00 | High | - |
| P14 | P14.5 | 1.40 | Below Minimum | - | 1.90 | Minimum | - |
| P14 | P14.6 | 0.00 | Below Minimum | - | 2.70 | Minimum | - |
| P14 | P14.7 | 0.80 | Below Minimum | - | 3.40 | Medium | - |
| P14 | P14.8 | 0.60 | Below Minimum | - | 3.40 | Medium | - |
| S3 | S3 | 0.90 | Below Minimum | Non-Compliant | 3.90 | Medium | Compliant |
| S4 | S4 | 2.90 | Minimum | Compliant | 2.90 | Minimum | 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 24.
*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 12.
For floor plans of the assessed units please refer to section D.1 on page 57.

## D.3.4 SE Results: Second Floor

| Table No. D.3.4 - Sunlight Exposure Results: Second Floor | | | | | | | |
|---|---|---|---|---|---|---|---|
| Unit Number | Room Description | Deciduous Trees as Opaque Objects* | | | Without Deciduous Trees* | | |
| | | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** |
| P15 | P15 Living | 0.00 | Below Minimum | Non-Compliant | 0.00 | Below Minimum | Non-Compliant |
| P15 | P15.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P15 | P15.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P15 | P15.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P15 | P15.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P15 | P15.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P16 | P16 Living | 6.40 | High | Compliant | 6.40 | High | Compliant |
| P16 | P16.1 | 3.70 | Medium | - | 3.70 | Medium | - |
| P16 | P16.2 | 4.10 | High | - | 4.10 | High | - |
| P16 | P16.3 | 3.80 | Medium | - | 3.80 | Medium | - |
| P16 | P16.4 | 4.30 | High | - | 4.30 | High | - |
| P16 | P16.5 | 4.90 | High | - | 4.90 | High | - |
| P17 | P17 Living | 0.00 | Below Minimum | Non-Compliant | 0.00 | Below Minimum | Non-Compliant |
| P17 | P17.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P17 | P17.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P17 | P17.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P17 | P17.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P18 | P18 Living | 2.60 | Minimum | Compliant | 4.60 | High | Compliant |
| P18 | P18.1 | 0.00 | Below Minimum | - | 1.30 | Below Minimum | - |
| P18 | P18.2 | 0.40 | Below Minimum | - | 2.60 | Minimum | - |
| P18 | P18.3 | 0.90 | Below Minimum | - | 4.60 | High | - |
| P19 | P19 Living | 2.10 | Minimum | Compliant | 2.10 | Minimum | Compliant |
| P19 | P19.1 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P19 | P19.2 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P19 | P19.3 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P19 | P19.4 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P19 | P19.5 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P19 | P19.6 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P20 | P20 Living | 4.10 | High | - | 4.10 | High | - |
| P20 | P20.1 | 4.60 | High | Compliant | 4.60 | High | Compliant |
| P20 | P20.2 | 4.60 | High | - | 4.60 | High | - |
| P20 | P20.3 | 4.60 | High | - | 4.60 | High | - |
| P20 | P20.4 | 3.50 | Medium | - | 4.60 | High | - |
| P20 | P20.5 | 3.60 | Medium | - | 4.60 | High | - |
| P20 | P20.6 | 3.70 | Medium | - | 4.60 | High | - |

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates can be found in section 5.2.2 on page 24.
*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 12.
For floor plans of the assessed units please refer to section D.1 on page 57.

## D.3.5 SE Results: Second Floor

| Table No. D.3.5 - Sunlight Exposure Results: Second Floor | | | | | | | |
|---|---|---|---|---|---|---|---|
| Unit Number | Room Description | Deciduous Trees as Opaque Objects* | | | Without Deciduous Trees* | | |
| | | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** |
| P21 | P21 Living | 4.00 | High | Compliant | 4.00 | High | Compliant |
| P21 | P21.1 | 1.70 | Minimum | - | 1.70 | Minimum | - |
| P21 | P21.2 | 0.10 | Below Minimum | - | 0.10 | Below Minimum | - |
| P21 | P21.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P21 | P21.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P21 | P21.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P22 | P22 Living | 2.90 | Minimum | Compliant | 2.90 | Minimum | - |
| P22 | P22.1 | 2.60 | Minimum | - | 3.40 | Medium | Compliant |
| P22 | P22.2 | 2.30 | Minimum | - | 3.40 | Medium | - |
| P22 | P22.3 | 2.40 | Minimum | - | 3.40 | Medium | - |
| P22 | P22.4 | 2.10 | Minimum | - | 3.40 | Medium | - |
| P22 | P22.5 | 2.90 | Minimum | - | 3.40 | Medium | - |
| P23 | P23 Living | 5.10 | High | Compliant | 8.60 | High | Compliant |
| P23 | P23.1 | 3.30 | Medium | - | 3.30 | Medium | - |
| P23 | P23.2 | 3.20 | Medium | - | 3.20 | Medium | - |
| P23 | P23.3 | 3.10 | Medium | - | 3.10 | Medium | - |
| P23 | P23.4 | 4.20 | High | - | 4.30 | High | - |
| P23 | P23.5 | 1.40 | Below Minimum | - | 3.00 | Medium | - |
| P23 | P23.6 | 0.10 | Below Minimum | - | 3.40 | Medium | - |
| P23 | P23.7 | 2.30 | Minimum | - | 3.40 | Medium | - |
| P23 | P23.8 | 1.20 | Below Minimum | - | 3.40 | Medium | - |
| S5 | S5 | 3.60 | Medium | Compliant | 3.90 | Medium | Compliant |
| S6 | S6 | 2.60 | Minimum | Compliant | 2.60 | Minimum | 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 24.

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

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.3.6 SE Results: Third Floor

| Table No. D.3.6 - Sunlight Exposure Results: Third Floor | | | | | | | |
|---|---|---|---|---|---|---|---|
| Unit Number | Room Description | Deciduous Trees as Opaque Objects* | | | Without Deciduous Trees* | | |
| | | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** |
| P24 | P24 Living | 0.00 | Below Minimum | Non-Compliant | 0.00 | Below Minimum | Non-Compliant |
| P24 | P24.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P24 | P24.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P24 | P24.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P24 | P24.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P24 | P24.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P25 | P25 Living | 7.20 | High | Compliant | 7.20 | High | Compliant |
| P25 | P25.1 | 3.70 | Medium | - | 3.70 | Medium | - |
| P25 | P25.2 | 4.30 | High | - | 4.30 | High | - |
| P25 | P25.3 | 4.30 | High | - | 4.30 | High | - |
| P25 | P25.4 | 5.00 | High | - | 5.00 | High | - |
| P25 | P25.5 | 5.60 | High | - | 5.60 | High | - |
| P26 | P26 Living | 0.00 | Below Minimum | Non-Compliant | 0.00 | Below Minimum | Non-Compliant |
| P26 | P26.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P26 | P26.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P26 | P26.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P26 | P26.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P27 | P27 Living | 4.60 | High | Compliant | 4.60 | High | Compliant |
| P27 | P27.1 | 4.60 | High | - | 4.60 | High | - |
| P27 | P27.2 | 4.60 | High | - | 4.60 | High | - |
| P27 | P27.3 | 4.60 | High | - | 4.60 | High | - |
| P28 | P28 Living | 2.10 | Minimum | Compliant | 2.10 | Minimum | Compliant |
| P28 | P28.1 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P28 | P28.2 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P28 | P28.3 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P28 | P28.4 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P28 | P28.5 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P28 | P28.6 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P29 | P29 Living | 4.10 | High | - | 4.10 | High | - |
| P29 | P29.1 | 4.60 | High | Compliant | 4.60 | High | Compliant |
| P29 | P29.2 | 4.60 | High | - | 4.60 | High | - |
| P29 | P29.3 | 4.60 | High | - | 4.60 | High | - |
| P29 | P29.4 | 4.60 | High | - | 4.60 | High | - |
| P29 | P29.5 | 4.60 | High | - | 4.60 | High | - |
| P29 | P29.6 | 4.60 | High | - | 4.60 | High | - |

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates can be found in section 5.2.2 on page 24.
*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 12.
For floor plans of the assessed units please refer to section D.1 on page 57.

## D.3.7 SE Results: Third Floor

| Table No. D.3.7 - Sunlight Exposure Results: Third Floor | | | | | | | |
|---|---|---|---|---|---|---|---|
| Unit Number | Room Description | Deciduous Trees as Opaque Objects* | | | Without Deciduous Trees* | | |
| | | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** |
| P30 | P30 Living | 4.00 | High | Compliant | 4.00 | High | Compliant |
| P30 | P30.1 | 3.40 | Medium | - | 3.40 | Medium | - |
| P30 | P30.2 | 3.30 | Medium | - | 3.30 | Medium | - |
| P30 | P30.3 | 1.90 | Minimum | - | 1.90 | Minimum | - |
| P30 | P30.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P30 | P30.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P31 | P31 Living | 2.90 | Minimum | - | 2.90 | Minimum | - |
| P31 | P31.1 | 3.40 | Medium | Compliant | 3.40 | Medium | Compliant |
| P31 | P31.2 | 3.40 | Medium | - | 3.40 | Medium | - |
| P31 | P31.3 | 3.40 | Medium | - | 3.40 | Medium | - |
| P31 | P31.4 | 3.40 | Medium | - | 3.40 | Medium | - |
| P31 | P31.5 | 3.40 | Medium | - | 3.40 | Medium | - |
| P32 | P32 Living | 9.10 | High | Compliant | 9.10 | High | Compliant |
| P32 | P32.1 | 4.70 | High | - | 4.70 | High | - |
| P32 | P32.2 | 3.20 | Medium | - | 3.20 | Medium | - |
| P32 | P32.3 | 3.30 | Medium | - | 3.30 | Medium | - |
| P32 | P32.4 | 5.00 | High | - | 5.30 | High | - |
| P32 | P32.5 | 2.80 | Minimum | - | 3.30 | Medium | - |
| P32 | P32.6 | 2.80 | Minimum | - | 3.40 | Medium | - |
| P32 | P32.7 | 3.40 | Medium | - | 3.40 | Medium | - |
| P32 | P32.8 | 3.40 | Medium | - | 3.40 | Medium | - |
| S7 | S7 | 3.90 | Medium | Compliant | 3.90 | Medium | Compliant |
| S8 | S8 | 7.90 | High | Compliant | 8.40 | 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 24.
*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 12.
For floor plans of the assessed units please refer to section D.1 on page 57.

## D.3.8 SE Results: Fourth Floor

| Table No. D.3.8 - Sunlight Exposure Results: Fourth Floor | | | | | | | |
|---|---|---|---|---|---|---|---|
| Unit Number | Room Description | Deciduous Trees as Opaque Objects* | | | Without Deciduous Trees* | | |
| | | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** |
| P33 | P33 Living | 0.00 | Below Minimum | Non-Compliant | 0.00 | Below Minimum | Non-Compliant |
| P33 | P33.1 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P33 | P33.2 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P33 | P33.3 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P33 | P33.4 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P33 | P33.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P34 | P34 Living | 8.30 | High | Compliant | 8.30 | High | Compliant |
| P34 | P34.1 | 3.80 | Medium | - | 3.80 | Medium | - |
| P34 | P34.2 | 4.80 | High | - | 4.80 | High | - |
| P34 | P34.3 | 5.20 | High | - | 5.20 | High | - |
| P34 | P34.4 | 6.10 | High | - | 6.10 | High | - |
| P34 | P34.5 | 6.70 | High | - | 6.70 | High | - |
| P35 | P35 Living | 3.50 | Medium | Compliant | 3.50 | Medium | Compliant |
| P35 | P35.1 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P35 | P35.2 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P35 | P35.3 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P35 | P35.4 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P35 | P35.5 | 2.10 | Minimum | - | 2.10 | Minimum | - |
| P36 | P36 Living | 4.10 | High | Compliant | 4.10 | High | Compliant |
| P36 | P36.1 | 3.40 | Medium | - | 3.40 | Medium | - |
| P36 | P36.2 | 3.40 | Medium | - | 3.40 | Medium | - |
| P36 | P36.3 | 3.30 | Medium | - | 3.30 | Medium | - |
| P36 | P36.4 | 2.00 | Minimum | - | 2.00 | Minimum | - |
| P36 | P36.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P37 | P37 Living | 3.50 | Medium | Compliant | 3.50 | Medium | Compliant |
| P37 | P37.1 | 3.10 | Medium | - | 3.10 | Medium | - |
| P37 | P37.2 | 3.10 | Medium | - | 3.10 | Medium | - |
| P37 | P37.3 | 3.10 | Medium | - | 3.10 | Medium | - |
| P37 | P37.4 | 3.10 | Medium | - | 3.10 | Medium | - |
| P37 | P37.5 | 3.10 | Medium | - | 3.10 | Medium | - |
| P37 | P37.6 | 3.10 | Medium | - | 3.10 | Medium | - |
| P37 | P37.7 | 3.10 | Medium | - | 3.10 | Medium | - |
| S9 | S9 | 3.90 | Medium | Compliant | 3.90 | Medium | Compliant |
| S10 | S10 | 2.10 | Minimum | Compliant | 2.10 | Minimum | 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 24.
*** For the interpretation of levels of Sunlight Exposure please refer to “3.3 Definition of Levels of Sunlight Exposure” on page 12.
For floor plans of the assessed units please refer to section D.1 on page 57.

## D.3.9 SE Results: Fifth Floor

| Table No. D.3.9 - Sunlight Exposure Results: Fifth Floor | | | | | | | |
|---|---|---|---|---|---|---|---|
| Unit Number | Room Description | Deciduous Trees as Opaque Objects* | | | Without Deciduous Trees* | | |
| | | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** | SE Hours on March 21st | Level of SE on March 21st*** | Unit compliance based on highest performing room** |
| P38 | P38 Living | 8.70 | High | Compliant | 8.70 | High | Compliant |
| P38 | P38.1 | 4.30 | High | - | 4.30 | High | - |
| P38 | P38.2 | 6.50 | High | - | 6.50 | High | - |
| P38 | P38.3 | 7.80 | High | - | 7.80 | High | - |
| P38 | P38.4 | 7.20 | High | - | 7.20 | High | - |
| P38 | P38.5 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P38 | P38.6 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P38 | P38.7 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P38 | P38.8 | 0.00 | Below Minimum | - | 0.00 | Below Minimum | - |
| P39 | P39 Living | 8.20 | High | Compliant | 9.40 | High | Compliant |
| P39 | P39.1 | 2.50 | Minimum | - | 2.50 | Minimum | - |
| P39 | P39.2 | 2.50 | Minimum | - | 2.50 | Minimum | - |
| P39 | P39.3 | 2.50 | Minimum | - | 2.50 | Minimum | - |
| P39 | P39.4 | 2.50 | Minimum | - | 2.50 | Minimum | - |
| P39 | P39.5 | 2.50 | Minimum | - | 2.50 | Minimum | - |
| P39 | P39.6 | 2.50 | Minimum | - | 2.50 | Minimum | - |
| P39 | P39.7 | 2.50 | Minimum | - | 2.50 | Minimum | - |

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

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

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

For floor plans of the assessed units please refer to section D.1 on page 57.

## D.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. D.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.

## D.4.1 Sun On Ground in Proposed Outdoor Amenity Areas

| Table No. D.4.1 - SOG in Proposed Outdoor Amenity Areas Results: | | | | | |
|---|---|---|---|---|---|
| Assigned Area Number | Assessed Area | Area Capable of Receiving 2 Hours of Sunlight on March 21st | Recommended minimum | Level of Compliance with BRE Guidelines* | Meets BR 209 Criteria* |
| 1 | Ground Floor | 55.09% | 50.00% | BRE Compliant | Yes |
| 2 | Roof Terraces | 89.88% | 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.

** Average values have been calculated by considering all the relevant areas as a singular area and calculating what portion of the spaces as a whole can receive at least two hours of sunlight on March 21st.



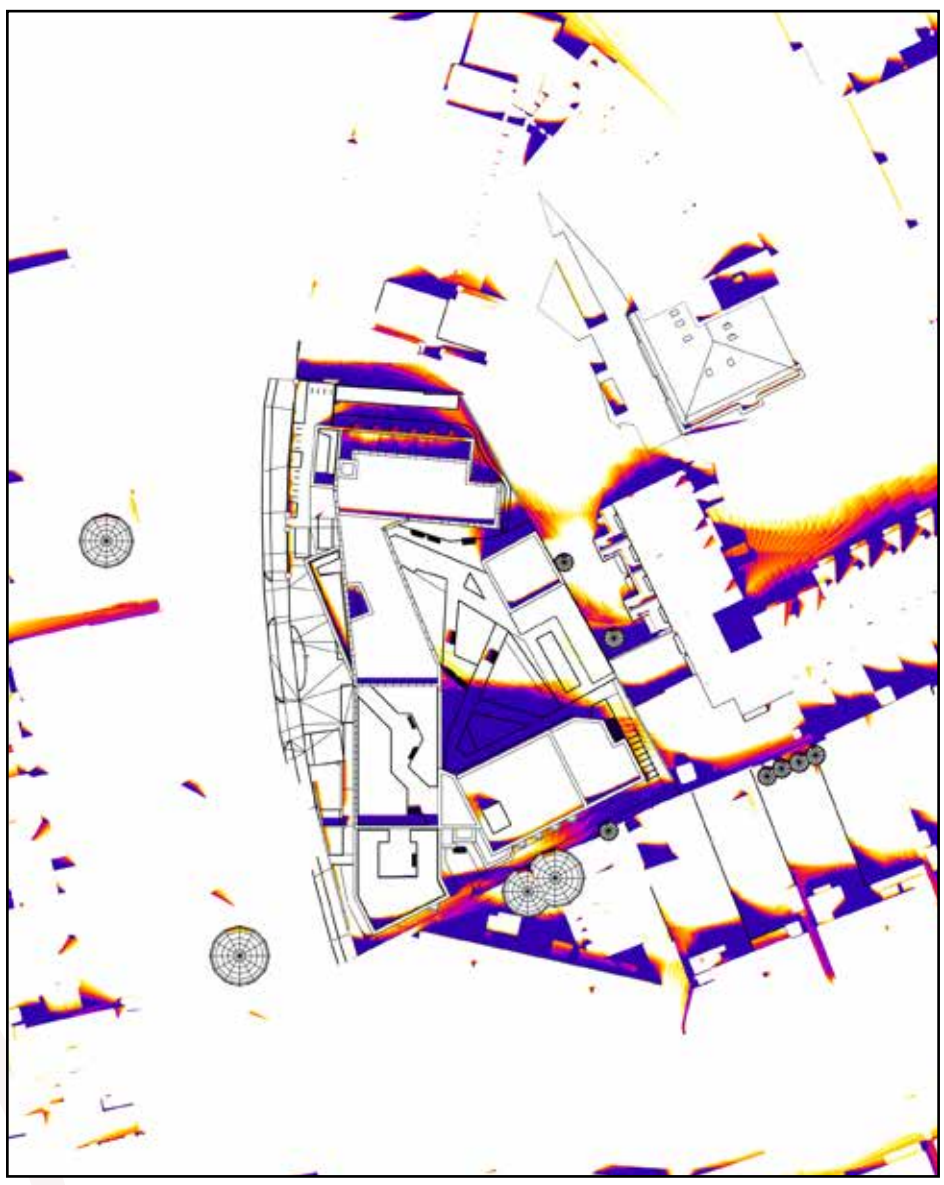


Figure D.7: Indication of the amenity areas that have been analysed (L), Area capable of receiving 2 hours of sunlight on March 21st shown in white (R)

# E.0 Supplementary Study Results

## E.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. E.1 - Supplementary SDA Results (I.S. EN 17037 criteria)

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

**A: Unit Number**

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

**B: Room Description**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**I: Compliance with I.S. EN 17037 Criteria**

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

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

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

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

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

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

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

## E.1.1 Supplementary SDA Results (I.S. EN 17037 criteria): Ground Floor

| Table No. E.1.1 - Supplementary SDA Results (I.S. EN 17037 criteria): Ground Floor | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Unit Number | Room Description | No Trees | | Winter Trees | | Summer Trees | | Compliance with I.S. EN 17037 Criteria* |
| | | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | |
| P1 | P1 Living | 69% | 100% | 36% | 100% | 7% | 70% | Trees affecting compliance |
| P1 | P1.1 | 60% | 100% | 50% | 100% | 48% | 100% | Trees affecting compliance (summer only) |
| P1 | P1.2 | 60% | 100% | 48% | 100% | 35% | 100% | Trees affecting compliance |
| P1 | P1.3 | 45% | 100% | 33% | 100% | 20% | 88% | Non-compliant |
| P1 | P1.4 | 48% | 100% | 40% | 100% | 38% | 100% | Non-compliant |
| P1 | P1.5 | 40% | 100% | 38% | 100% | 33% | 100% | Non-compliant |
| P2 | P2 Living | 81% | 100% | 41% | 100% | 14% | 99% | Trees affecting compliance |
| P2 | P2.1 | 23% | 50% | 17% | 46% | 14% | 43% | Non-compliant |
| P2 | P2.2 | 15% | 52% | 13% | 33% | 2% | 15% | Non-compliant |
| P2 | P2.3 | 29% | 90% | 24% | 79% | 19% | 57% | Non-compliant |
| P2 | P2.4 | 36% | 98% | 19% | 83% | 10% | 45% | Non-compliant |
| P2 | P2.5 | 50% | 100% | 40% | 100% | 33% | 95% | Trees affecting compliance |
| S1 | S1 | 77% | 100% | 58% | 100% | 45% | 100% | Trees affecting compliance (summer only) |
| Communal | Kitchen/Tea Room | 99% | 100% | 93% | 100% | 72% | 100% | Compliant |
| P3 | P3 Living | 34% | 100% | 27% | 100% | 17% | 79% | Non-compliant |
| P3 | P3.1 | 14% | 88% | 7% | 64% | 7% | 57% | Non-compliant |
| P3 | P3.2 | 26% | 95% | 21% | 83% | 17% | 67% | Non-compliant |
| P3 | P3.3 | 36% | 100% | 31% | 100% | 21% | 81% | Non-compliant |
| P3 | P3.4 | 45% | 100% | 36% | 98% | 26% | 81% | Non-compliant |
| P3 | P3.5 | 52% | 100% | 40% | 100% | 29% | 88% | Trees affecting compliance |
| P4 | P4 Living | 44% | 100% | 29% | 91% | 21% | 62% | Non-compliant |
| P4 | P4.1 | 86% | 100% | 17% | 98% | 5% | 88% | Trees affecting compliance |
| P4 | P4.2 | 81% | 100% | 14% | 98% | 0% | 79% | Trees affecting compliance |
| P4 | P4.3 | 67% | 100% | 19% | 83% | 7% | 55% | Trees affecting compliance |
| P4 | P4.4 | 50% | 100% | 24% | 57% | 2% | 45% | Trees affecting compliance |
| P4 | P4.5 | 64% | 100% | 26% | 95% | 14% | 60% | Trees affecting compliance |
| P4 | P4.6 | 86% | 100% | 52% | 100% | 36% | 100% | Trees affecting compliance (summer only) |
| P5 | P5 Living | 30% | 98% | 16% | 56% | 8% | 24% | Non-compliant |
| P5 | P5.1 | 60% | 100% | 33% | 100% | 19% | 86% | Trees affecting compliance |
| P5 | P5.2 | 43% | 100% | 29% | 98% | 21% | 83% | Non-compliant |
| P5 | P5.3 | 26% | 93% | 17% | 76% | 14% | 62% | Non-compliant |
| P5 | P5.4 | 12% | 62% | 10% | 43% | 5% | 33% | Non-compliant |
| P5 | P5.5 | 0% | 33% | 0% | 31% | 0% | 21% | Non-compliant |
| S2 | S2 | 82% | 100% | 34% | 98% | 9% | 92% | Trees affecting compliance |
| Communal | Student Lounge Area 1 | 100% | 100% | 100% | 100% | 98% | 100% | Compliant |
| Communal | Student Lounge Area 2 | 81% | 100% | 46% | 100% | 32% | 92% | Trees affecting compliance |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.
For floor plans of the assessed units please refer to section D.1 on page 57.

## E.1.2 Supplementary SDA Results (I.S. EN 17037 criteria): First Floor

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

| Unit Number | Room Description | No Trees | | Winter Trees | | Summer Trees | | Compliance with I.S. EN 17037 Criteria* |
|---|---|---|---|---|---|---|---|---|
| | | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | |
| P6 | P6 Living | 47% | 100% | 36% | 100% | 28% | 100% | Non-compliant |
| P6 | P6.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P6 | P6.2 | 100% | 100% | 100% | 100% | 98% | 100% | Compliant |
| P6 | P6.3 | 100% | 100% | 100% | 100% | 95% | 100% | Compliant |
| P6 | P6.4 | 98% | 100% | 95% | 100% | 93% | 100% | Compliant |
| P6 | P6.5 | 95% | 100% | 88% | 100% | 76% | 100% | Compliant |
| P7 | P7 Living | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P7 | P7.1 | 27% | 85% | 24% | 76% | 23% | 71% | Non-compliant |
| P7 | P7.2 | 26% | 100% | 23% | 100% | 19% | 100% | Non-compliant |
| P7 | P7.3 | 50% | 100% | 48% | 100% | 43% | 100% | Trees affecting compliance |
| P7 | P7.4 | 83% | 100% | 79% | 100% | 76% | 100% | Compliant |
| P7 | P7.5 | 93% | 100% | 86% | 100% | 86% | 100% | Compliant |
| P8 | P8 Living | 55% | 100% | 52% | 99% | 45% | 88% | Trees affecting compliance (summer only) |
| P8 | P8.1 | 44% | 100% | 40% | 100% | 38% | 100% | Non-compliant |
| P8 | P8.2 | 36% | 100% | 36% | 100% | 33% | 100% | Non-compliant |
| P8 | P8.3 | 67% | 100% | 60% | 100% | 50% | 100% | Compliant |
| P8 | P8.4 | 71% | 100% | 64% | 100% | 57% | 100% | Compliant |
| P9 | P9 Living | 84% | 100% | 67% | 100% | 49% | 99% | Trees affecting compliance (summer only) |
| P9 | P9.1 | 84% | 100% | 14% | 52% | 7% | 27% | Trees affecting compliance |
| P9 | P9.2 | 76% | 100% | 16% | 82% | 4% | 24% | Trees affecting compliance |
| P9 | P9.3 | 76% | 100% | 33% | 100% | 16% | 76% | Trees affecting compliance |
| P10 | P10 Living | 49% | 100% | 39% | 99% | 31% | 88% | Non-compliant |
| P10 | P10.1 | 29% | 100% | 26% | 100% | 24% | 100% | Non-compliant |
| P10 | P10.2 | 67% | 100% | 60% | 100% | 55% | 100% | Compliant |
| P10 | P10.3 | 86% | 100% | 81% | 100% | 71% | 100% | Compliant |
| P10 | P10.4 | 100% | 100% | 93% | 100% | 64% | 100% | Compliant |
| P10 | P10.5 | 100% | 100% | 98% | 100% | 93% | 100% | Compliant |
| P10 | P10.6 | 100% | 100% | 100% | 100% | 95% | 100% | Compliant |
| P11 | P11 Living | 48% | 100% | 36% | 100% | 28% | 87% | Non-compliant |
| P11 | P11.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P11 | P11.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P11 | P11.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P11 | P11.4 | 100% | 100% | 100% | 100% | 90% | 100% | Compliant |
| P11 | P11.5 | 100% | 100% | 100% | 100% | 71% | 100% | Compliant |
| P11 | P11.6 | 100% | 100% | 100% | 100% | 90% | 100% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.
For floor plans of the assessed units please refer to section D.1 on page 57.

## E.1.3 Supplementary SDA Results (I.S. EN 17037 criteria): First Floor

Table No. E.1.3 - Supplementary SDA Results (I.S. EN 17037 criteria): First Floor

| Unit Number | Room Description | No Trees | | Winter Trees | | Summer Trees | | Compliance with I.S. EN 17037 Criteria* |
|---|---|---|---|---|---|---|---|---|
| | | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | |
| P12 | P12 Living | 37% | 100% | 29% | 94% | 24% | 73% | Non-compliant |
| P12 | P12.1 | 100% | 100% | 100% | 100% | 95% | 100% | Compliant |
| P12 | P12.2 | 90% | 100% | 83% | 100% | 76% | 100% | Compliant |
| P12 | P12.3 | 69% | 100% | 62% | 100% | 57% | 100% | Compliant |
| P12 | P12.4 | 29% | 100% | 26% | 100% | 24% | 98% | Non-compliant |
| P12 | P12.5 | 31% | 64% | 27% | 62% | 24% | 59% | Non-compliant |
| P13 | P13 Living | 89% | 100% | 61% | 100% | 43% | 100% | Trees affecting compliance (summer only) |
| P13 | P13.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P13 | P13.2 | 100% | 100% | 100% | 100% | 90% | 100% | Compliant |
| P13 | P13.3 | 100% | 100% | 100% | 100% | 57% | 100% | Compliant |
| P13 | P13.4 | 100% | 100% | 100% | 100% | 55% | 100% | Compliant |
| P13 | P13.5 | 100% | 100% | 100% | 100% | 52% | 100% | Compliant |
| P14 | P14 Living | 99% | 100% | 66% | 100% | 41% | 100% | Trees affecting compliance (summer only) |
| P14 | P14.1 | 45% | 85% | 42% | 74% | 42% | 71% | Non-compliant |
| P14 | P14.2 | 36% | 100% | 26% | 100% | 24% | 100% | Non-compliant |
| P14 | P14.3 | 86% | 100% | 50% | 100% | 48% | 100% | Trees affecting compliance (summer only) |
| P14 | P14.4 | 100% | 100% | 100% | 100% | 98% | 100% | Compliant |
| P14 | P14.5 | 100% | 100% | 100% | 100% | 45% | 100% | Trees affecting compliance (summer only) |
| P14 | P14.6 | 100% | 100% | 100% | 100% | 98% | 100% | Compliant |
| P14 | P14.7 | 100% | 100% | 100% | 100% | 50% | 100% | Compliant |
| P14 | P14.8 | 100% | 100% | 100% | 100% | 67% | 100% | Compliant |
| S3 | S3 | 100% | 100% | 98% | 100% | 71% | 100% | Compliant |
| S4 | S4 | 100% | 100% | 90% | 100% | 80% | 100% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.
For floor plans of the assessed units please refer to section D.1 on page 57.

## E.1.4 Supplementary SDA Results (I.S. EN 17037 criteria): Second Floor

Table No. E.1.4 - Supplementary SDA Results (I.S. EN 17037 criteria): Second Floor

| Unit Number | Room Description | No Trees | | Winter Trees | | Summer Trees | | Compliance with I.S. EN 17037 Criteria* |
|---|---|---|---|---|---|---|---|---|
| | | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | |
| P15 | P15 Living | 65% | 100% | 54% | 100% | 43% | 100% | Trees affecting compliance (summer only) |
| P15 | P15.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P15 | P15.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P15 | P15.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P15 | P15.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P15 | P15.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P16 | P16 Living | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P16 | P16.1 | 33% | 98% | 33% | 95% | 30% | 88% | Non-compliant |
| P16 | P16.2 | 26% | 100% | 26% | 100% | 23% | 100% | Non-compliant |
| P16 | P16.3 | 74% | 100% | 71% | 100% | 69% | 100% | Compliant |
| P16 | P16.4 | 86% | 100% | 86% | 100% | 86% | 100% | Compliant |
| P16 | P16.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P17 | P17 Living | 59% | 100% | 59% | 100% | 57% | 100% | Compliant |
| P17 | P17.1 | 46% | 100% | 42% | 100% | 42% | 100% | Non-compliant |
| P17 | P17.2 | 62% | 100% | 60% | 100% | 55% | 100% | Compliant |
| P17 | P17.3 | 76% | 100% | 74% | 100% | 69% | 100% | Compliant |
| P17 | P17.4 | 95% | 100% | 90% | 100% | 86% | 100% | Compliant |
| P18 | P18 Living | 99% | 100% | 93% | 100% | 75% | 100% | Compliant |
| P18 | P18.1 | 98% | 100% | 30% | 98% | 20% | 72% | Trees affecting compliance |
| P18 | P18.2 | 100% | 100% | 38% | 100% | 20% | 86% | Trees affecting compliance |
| P18 | P18.3 | 98% | 100% | 60% | 100% | 32% | 100% | Trees affecting compliance (summer only) |
| P19 | P19 Living | 59% | 100% | 56% | 100% | 53% | 100% | Compliant |
| P19 | P19.1 | 48% | 100% | 48% | 100% | 45% | 100% | Non-compliant |
| P19 | P19.2 | 71% | 100% | 71% | 100% | 69% | 100% | Compliant |
| P19 | P19.3 | 98% | 100% | 98% | 100% | 95% | 100% | Compliant |
| P19 | P19.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P19 | P19.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P19 | P19.6 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P20 | P20 Living | 58% | 100% | 47% | 100% | 39% | 100% | Trees affecting compliance |
| P20 | P20.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P20 | P20.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P20 | P20.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P20 | P20.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P20 | P20.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P20 | P20.6 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.
For floor plans of the assessed units please refer to section D.1 on page 57.

## E.1.5 Supplementary SDA Results (I.S. EN 17037 criteria): Second Floor

Table No. E.1.5 - Supplementary SDA Results (I.S. EN 17037 criteria): Second Floor

| Unit Number | Room Description | No Trees | | Winter Trees | | Summer Trees | | Compliance with I.S. EN 17037 Criteria* |
|---|---|---|---|---|---|---|---|---|
| | | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | |
| P21 | P21 Living | 43% | 100% | 42% | 100% | 39% | 100% | Non-compliant |
| P21 | P21.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P21 | P21.2 | 100% | 100% | 100% | 100% | 98% | 100% | Compliant |
| P21 | P21.3 | 86% | 100% | 83% | 100% | 79% | 100% | Compliant |
| P21 | P21.4 | 57% | 100% | 55% | 100% | 52% | 100% | Compliant |
| P21 | P21.5 | 32% | 68% | 32% | 67% | 31% | 64% | Non-compliant |
| P22 | P22 Living | 98% | 100% | 78% | 100% | 64% | 100% | Compliant |
| P22 | P22.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P22 | P22.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P22 | P22.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P22 | P22.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P22 | P22.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P23 | P23 Living | 100% | 100% | 97% | 100% | 78% | 100% | Compliant |
| P23 | P23.1 | 52% | 100% | 50% | 100% | 50% | 100% | Compliant |
| P23 | P23.2 | 71% | 100% | 60% | 100% | 60% | 100% | Compliant |
| P23 | P23.3 | 100% | 100% | 93% | 100% | 93% | 100% | Compliant |
| P23 | P23.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P23 | P23.5 | 100% | 100% | 100% | 100% | 48% | 100% | Trees affecting compliance (summer only) |
| P23 | P23.6 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P23 | P23.7 | 100% | 100% | 100% | 100% | 95% | 100% | Compliant |
| P23 | P23.8 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| S5 | S5 | 100% | 100% | 100% | 100% | 89% | 100% | Compliant |
| S6 | S6 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.
For floor plans of the assessed units please refer to section D.1 on page 57.

## E.1.6 Supplementary SDA Results (I.S. EN 17037 criteria): Third Floor

Table No. E.1.6 - Supplementary SDA Results (I.S. EN 17037 criteria): Third Floor

| Unit Number | Room Description | No Trees | | Winter Trees | | Summer Trees | | Compliance with I.S. EN 17037 Criteria* |
|---|---|---|---|---|---|---|---|---|
| | | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | |
| P24 | P24 Living | 47% | 100% | 44% | 100% | 40% | 100% | Non-compliant |
| P24 | P24.1 | 94% | 100% | 82% | 100% | 74% | 100% | Compliant |
| P24 | P24.2 | 77% | 100% | 68% | 100% | 66% | 100% | Compliant |
| P24 | P24.3 | 70% | 100% | 68% | 100% | 62% | 100% | Compliant |
| P24 | P24.4 | 68% | 100% | 62% | 100% | 56% | 100% | Compliant |
| P24 | P24.5 | 62% | 100% | 56% | 100% | 56% | 100% | Compliant |
| P25 | P25 Living | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P25 | P25.1 | 35% | 100% | 33% | 100% | 32% | 100% | Non-compliant |
| P25 | P25.2 | 32% | 100% | 32% | 100% | 30% | 100% | Non-compliant |
| P25 | P25.3 | 86% | 100% | 86% | 100% | 86% | 100% | Compliant |
| P25 | P25.4 | 100% | 100% | 100% | 100% | 98% | 100% | Compliant |
| P25 | P25.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P26 | P26 Living | 66% | 100% | 65% | 100% | 64% | 100% | Compliant |
| P26 | P26.1 | 63% | 100% | 63% | 100% | 62% | 100% | Compliant |
| P26 | P26.2 | 79% | 100% | 76% | 100% | 76% | 100% | Compliant |
| P26 | P26.3 | 98% | 100% | 95% | 100% | 93% | 100% | Compliant |
| P26 | P26.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P27 | P27 Living | 99% | 100% | 97% | 100% | 94% | 100% | Compliant |
| P27 | P27.1 | 98% | 100% | 92% | 100% | 88% | 100% | Compliant |
| P27 | P27.2 | 100% | 100% | 98% | 100% | 88% | 100% | Compliant |
| P27 | P27.3 | 100% | 100% | 98% | 100% | 92% | 100% | Compliant |
| P28 | P28 Living | 63% | 100% | 62% | 100% | 59% | 100% | Compliant |
| P28 | P28.1 | 60% | 100% | 55% | 100% | 52% | 100% | Compliant |
| P28 | P28.2 | 90% | 100% | 90% | 100% | 90% | 100% | Compliant |
| P28 | P28.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P28 | P28.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P28 | P28.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P28 | P28.6 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P29 | P29 Living | 57% | 100% | 48% | 100% | 43% | 100% | Trees affecting compliance |
| P29 | P29.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P29 | P29.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P29 | P29.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P29 | P29.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P29 | P29.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P29 | P29.6 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.
For floor plans of the assessed units please refer to section D.1 on page 57.

## E.1.7 Supplementary SDA Results (I.S. EN 17037 criteria): Third Floor

Table No. E.1.7 - Supplementary SDA Results (I.S. EN 17037 criteria): Third Floor

| Unit Number | Room Description | No Trees | | Winter Trees | | Summer Trees | | Compliance with I.S. EN 17037 Criteria* |
|---|---|---|---|---|---|---|---|---|
| | | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | |
| P30 | P30 Living | 54% | 100% | 52% | 100% | 50% | 100% | Compliant |
| P30 | P30.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P30 | P30.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P30 | P30.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P30 | P30.4 | 93% | 100% | 90% | 100% | 86% | 100% | Compliant |
| P30 | P30.5 | 35% | 73% | 35% | 73% | 35% | 71% | Non-compliant |
| P31 | P31 Living | 97% | 100% | 83% | 100% | 70% | 100% | Compliant |
| P31 | P31.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P31 | P31.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P31 | P31.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P31 | P31.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P31 | P31.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P32 | P32 Living | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P32 | P32.1 | 65% | 100% | 63% | 100% | 63% | 100% | Compliant |
| P32 | P32.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P32 | P32.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P32 | P32.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P32 | P32.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P32 | P32.6 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P32 | P32.7 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P32 | P32.8 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| S7 | S7 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| S8 | S8 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.
For floor plans of the assessed units please refer to section D.1 on page 57.

## E.1.8 Supplementary SDA Results (I.S. EN 17037 criteria): Fourth Floor

Table No. E.1.8 - Supplementary SDA Results (I.S. EN 17037 criteria): Fourth Floor

| Unit Number | Room Description | No Trees | | Winter Trees | | Summer Trees | | Compliance with I.S. EN 17037 Criteria* |
|---|---|---|---|---|---|---|---|---|
| | | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | |
| P33 | P33 Living | 52% | 100% | 49% | 100% | 45% | 100% | Trees affecting compliance |
| P33 | P33.1 | 94% | 100% | 94% | 100% | 82% | 100% | Compliant |
| P33 | P33.2 | 87% | 100% | 79% | 100% | 74% | 100% | Compliant |
| P33 | P33.3 | 79% | 100% | 75% | 100% | 70% | 100% | Compliant |
| P33 | P33.4 | 76% | 100% | 70% | 100% | 68% | 100% | Compliant |
| P33 | P33.5 | 70% | 100% | 64% | 100% | 62% | 100% | Compliant |
| P34 | P34 Living | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P34 | P34.1 | 38% | 100% | 38% | 100% | 38% | 100% | Non-compliant |
| P34 | P34.2 | 38% | 100% | 36% | 100% | 36% | 100% | Non-compliant |
| P34 | P34.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P34 | P34.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P34 | P34.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P35 | P35 Living | 98% | 100% | 98% | 100% | 97% | 100% | Compliant |
| P35 | P35.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P35 | P35.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P35 | P35.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P35 | P35.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P35 | P35.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P36 | P36 Living | 100% | 100% | 99% | 100% | 97% | 100% | Compliant |
| P36 | P36.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P36 | P36.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P36 | P36.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P36 | P36.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P36 | P36.5 | 69% | 100% | 69% | 100% | 68% | 100% | Compliant |
| P37 | P37 Living | 76% | 100% | 72% | 100% | 65% | 100% | Compliant |
| P37 | P37.1 | 100% | 100% | 98% | 100% | 95% | 100% | Compliant |
| P37 | P37.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P37 | P37.3 | 100% | 100% | 98% | 100% | 93% | 100% | Compliant |
| P37 | P37.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P37 | P37.5 | 100% | 100% | 98% | 100% | 98% | 100% | Compliant |
| P37 | P37.6 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P37 | P37.7 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| S9 | S9 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| S10 | S10 | 86% | 100% | 84% | 100% | 84% | 100% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.
For floor plans of the assessed units please refer to section D.1 on page 57.

## E.1.9 Supplementary SDA Results (I.S. EN 17037 criteria): Fifth Floor

Table No. E.1.9 - Supplementary SDA Results (I.S. EN 17037 criteria): Fifth Floor

| Unit Number | Room Description | No Trees | | Winter Trees | | Summer Trees | | Compliance with I.S. EN 17037 Criteria* |
|---|---|---|---|---|---|---|---|---|
| | | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | Area above 300 Lux* | Area above 100 Lux* | |
| P38 | P38 Living | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P38 | P38.1 | 53% | 100% | 53% | 100% | 53% | 100% | Compliant |
| P38 | P38.2 | 98% | 100% | 98% | 100% | 98% | 100% | Compliant |
| P38 | P38.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P38 | P38.4 | 92% | 100% | 92% | 100% | 92% | 100% | Compliant |
| P38 | P38.5 | 93% | 100% | 93% | 100% | 93% | 100% | Compliant |
| P38 | P38.6 | 99% | 100% | 99% | 100% | 99% | 100% | Compliant |
| P38 | P38.7 | 97% | 100% | 97% | 100% | 97% | 100% | Compliant |
| P38 | P38.8 | 94% | 100% | 94% | 100% | 94% | 100% | Compliant |
| P39 | P39 Living | 74% | 100% | 72% | 100% | 68% | 100% | Compliant |
| P39 | P39.1 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P39 | P39.2 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P39 | P39.3 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P39 | P39.4 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P39 | P39.5 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P39 | P39.6 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |
| P39 | P39.7 | 100% | 100% | 100% | 100% | 100% | 100% | Compliant |

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.5.1 on page 19.
For floor plans of the assessed units please refer to section D.1 on page 57.

## E.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. E.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.

## E.2.1 Supplementary NSL Results: Ground Floor

| Table No. E.2.1 - Supplementary NSL Results: Ground Floor | | | |
|---|---|---|---|
| Unit Number | Room Description | No Sky Line (NSL) | |
| | | % of room where the sky is visible from the working plane | Above 80%* |
| P1 | P1 Living | 99% | Yes |
| P1 | P1.1 | 91% | Yes |
| P1 | P1.2 | 90% | Yes |
| P1 | P1.3 | 79% | No |
| P1 | P1.4 | 77% | No |
| P1 | P1.5 | 78% | No |
| P2 | P2 Living | 100% | Yes |
| P2 | P2.1 | 58% | No |
| P2 | P2.2 | 43% | No |
| P2 | P2.3 | 69% | No |
| P2 | P2.4 | 77% | No |
| P2 | P2.5 | 85% | Yes |
| S1 | S1 | 98% | Yes |
| Communal | Kitchen/Tea Room | 100% | Yes |
| P3 | P3 Living | 84% | Yes |
| P3 | P3.1 | 75% | No |
| P3 | P3.2 | 75% | No |
| P3 | P3.3 | 91% | Yes |
| P3 | P3.4 | 88% | Yes |
| P3 | P3.5 | 95% | Yes |
| P4 | P4 Living | 77% | No |
| P4 | P4.1 | 100% | Yes |
| P4 | P4.2 | 100% | Yes |
| P4 | P4.3 | 100% | Yes |
| P4 | P4.4 | 94% | Yes |
| P4 | P4.5 | 99% | Yes |
| P4 | P4.6 | 100% | Yes |
| P5 | P5 Living | 97% | Yes |
| P5 | P5.1 | 95% | Yes |
| P5 | P5.2 | 83% | Yes |
| P5 | P5.3 | 72% | No |
| P5 | P5.4 | 57% | No |
| P5 | P5.5 | 54% | No |
| S2 | S2 | 98% | Yes |
| Communal | Student Lounge Area 1 | 100% | Yes |
| Communal | Student Lounge Area 2 | 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 D.1 on page 57.

## E.2.2 Supplementary NSL Results: First Floor

| Table No. E.2.2 - Supplementary NSL Results: First Floor | | | |
|---|---|---|---|
| Unit Number | Room Description | No Sky Line (NSL) | |
| | | % of room where the sky is visible from the working plane | Above 80%* |
| P6 | P6 Living | 97% | Yes |
| P6 | P6.1 | 99% | Yes |
| P6 | P6.2 | 99% | Yes |
| P6 | P6.3 | 99% | Yes |
| P6 | P6.4 | 99% | Yes |
| P6 | P6.5 | 99% | Yes |
| P7 | P7 Living | 100% | Yes |
| P7 | P7.1 | 59% | No |
| P7 | P7.2 | 45% | No |
| P7 | P7.3 | 75% | No |
| P7 | P7.4 | 85% | Yes |
| P7 | P7.5 | 94% | Yes |
| P8 | P8 Living | 84% | Yes |
| P8 | P8.1 | 68% | No |
| P8 | P8.2 | 82% | Yes |
| P8 | P8.3 | 91% | Yes |
| P8 | P8.4 | 97% | Yes |
| P9 | P9 Living | 98% | Yes |
| P9 | P9.1 | 94% | Yes |
| P9 | P9.2 | 96% | Yes |
| P9 | P9.3 | 96% | Yes |
| P10 | P10 Living | 98% | Yes |
| P10 | P10.1 | 65% | No |
| P10 | P10.2 | 78% | No |
| P10 | P10.3 | 89% | Yes |
| P10 | P10.4 | 98% | Yes |
| P10 | P10.5 | 99% | Yes |
| P10 | P10.6 | 99% | Yes |
| P11 | P11 Living | 100% | Yes |
| P11 | P11.1 | 99% | Yes |
| P11 | P11.2 | 99% | Yes |
| P11 | P11.3 | 99% | Yes |
| P11 | P11.4 | 99% | Yes |
| P11 | P11.5 | 99% | Yes |
| P11 | P11.6 | 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 D.1 on page 57.

## E.2.3 Supplementary NSL Results: First Floor

| Table No. E.2.3 - Supplementary NSL Results: First Floor | | | |
|---|---|---|---|
| Unit Number | Room Description | No Sky Line (NSL) | |
| | | % of room where the sky is visible from the working plane | Above 80%* |
| P12 | P12 Living | 99% | Yes |
| P12 | P12.1 | 99% | Yes |
| P12 | P12.2 | 98% | Yes |
| P12 | P12.3 | 91% | Yes |
| P12 | P12.4 | 72% | No |
| P12 | P12.5 | 67% | No |
| P13 | P13 Living | 100% | Yes |
| P13 | P13.1 | 99% | Yes |
| P13 | P13.2 | 99% | Yes |
| P13 | P13.3 | 99% | Yes |
| P13 | P13.4 | 99% | Yes |
| P13 | P13.5 | 99% | Yes |
| P14 | P14 Living | 100% | Yes |
| P14 | P14.1 | 71% | No |
| P14 | P14.2 | 64% | No |
| P14 | P14.3 | 89% | Yes |
| P14 | P14.4 | 100% | Yes |
| P14 | P14.5 | 99% | Yes |
| P14 | P14.6 | 99% | Yes |
| P14 | P14.7 | 99% | Yes |
| P14 | P14.8 | 99% | Yes |
| S3 | S3 | 99% | Yes |
| S4 | S4 | 100% | Yes |

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For floor plans of the assessed units please refer to section D.1 on page 57.

## E.2.4 Supplementary NSL Results: Second Floor

| Table No. E.2.4 - Supplementary NSL Results: Second Floor | | | |
|---|---|---|---|
| Unit Number | Room Description | No Sky Line (NSL) | |
| | | % of room where the sky is visible from the working plane | Above 80%* |
| P15 | P15 Living | 96% | Yes |
| P15 | P15.1 | 99% | Yes |
| P15 | P15.2 | 99% | Yes |
| P15 | P15.3 | 98% | Yes |
| P15 | P15.4 | 99% | Yes |
| P15 | P15.5 | N/A | Yes |
| P16 | P16 Living | 100% | Yes |
| P16 | P16.1 | 61% | No |
| P16 | P16.2 | 47% | No |
| P16 | P16.3 | 82% | Yes |
| P16 | P16.4 | 92% | Yes |
| P16 | P16.5 | 98% | Yes |
| P17 | P17 Living | 95% | Yes |
| P17 | P17.1 | 70% | No |
| P17 | P17.2 | 89% | Yes |
| P17 | P17.3 | 95% | Yes |
| P17 | P17.4 | 99% | Yes |
| P18 | P18 Living | 99% | Yes |
| P18 | P18.1 | 97% | Yes |
| P18 | P18.2 | 97% | Yes |
| P18 | P18.3 | 97% | Yes |
| P19 | P19 Living | 98% | Yes |
| P19 | P19.1 | 68% | No |
| P19 | P19.2 | 81% | Yes |
| P19 | P19.3 | 94% | Yes |
| P19 | P19.4 | 98% | Yes |
| P19 | P19.5 | 99% | Yes |
| P19 | P19.6 | 99% | Yes |
| P20 | P20 Living | 100% | Yes |
| P20 | P20.1 | 99% | Yes |
| P20 | P20.2 | 99% | Yes |
| P20 | P20.3 | 99% | Yes |
| P20 | P20.4 | 99% | Yes |
| P20 | P20.5 | 99% | Yes |
| P20 | P20.6 | 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 D.1 on page 57.

## E.2.5 Supplementary NSL Results: Second Floor

| Table No. E.2.5 - Supplementary NSL Results: Second Floor | | | |
|---|---|---|---|
| Unit Number | Room Description | No Sky Line (NSL) | |
| | | % of room where the sky is visible from the working plane | Above 80%* |
| P21 | P21 Living | 99% | Yes |
| P21 | P21.1 | 99% | Yes |
| P21 | P21.2 | 99% | Yes |
| P21 | P21.3 | 99% | Yes |
| P21 | P21.4 | 87% | Yes |
| P21 | P21.5 | 69% | No |
| P22 | P22 Living | 99% | Yes |
| P22 | P22.1 | 99% | Yes |
| P22 | P22.2 | 99% | Yes |
| P22 | P22.3 | 99% | Yes |
| P22 | P22.4 | 99% | Yes |
| P22 | P22.5 | 99% | Yes |
| P23 | P23 Living | 100% | Yes |
| P23 | P23.1 | 72% | No |
| P23 | P23.2 | 83% | Yes |
| P23 | P23.3 | 96% | Yes |
| P23 | P23.4 | 100% | Yes |
| P23 | P23.5 | 99% | Yes |
| P23 | P23.6 | 99% | Yes |
| P23 | P23.7 | 99% | Yes |
| P23 | P23.8 | 99% | Yes |
| S5 | S5 | 99% | Yes |
| S6 | S6 | 95% | Yes |

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For floor plans of the assessed units please refer to section D.1 on page 57.

## E.2.6 Supplementary NSL Results: Third Floor

| Table No. E.2.6 - Supplementary NSL Results: Third Floor | | | |
|---|---|---|---|
| Unit Number | Room Description | No Sky Line (NSL) | |
| | | % of room where the sky is visible from the working plane | Above 80%* |
| P24 | P24 Living | 95% | Yes |
| P24 | P24.1 | 96% | Yes |
| P24 | P24.2 | 96% | Yes |
| P24 | P24.3 | 96% | Yes |
| P24 | P24.4 | 96% | Yes |
| P24 | P24.5 | 96% | Yes |
| P25 | P25 Living | 100% | Yes |
| P25 | P25.1 | 62% | No |
| P25 | P25.2 | 53% | No |
| P25 | P25.3 | 92% | Yes |
| P25 | P25.4 | 99% | Yes |
| P25 | P25.5 | 99% | Yes |
| P26 | P26 Living | 100% | Yes |
| P26 | P26.1 | 81% | Yes |
| P26 | P26.2 | 98% | Yes |
| P26 | P26.3 | 99% | Yes |
| P26 | P26.4 | 99% | Yes |
| P27 | P27 Living | 99% | Yes |
| P27 | P27.1 | 97% | Yes |
| P27 | P27.2 | 97% | Yes |
| P27 | P27.3 | 97% | Yes |
| P28 | P28 Living | 98% | Yes |
| P28 | P28.1 | 74% | No |
| P28 | P28.2 | 91% | Yes |
| P28 | P28.3 | 98% | Yes |
| P28 | P28.4 | 99% | Yes |
| P28 | P28.5 | 99% | Yes |
| P28 | P28.6 | 99% | Yes |
| P29 | P29 Living | 100% | Yes |
| P29 | P29.1 | 99% | Yes |
| P29 | P29.2 | 99% | Yes |
| P29 | P29.3 | 99% | Yes |
| P29 | P29.4 | 99% | Yes |
| P29 | P29.5 | 99% | Yes |
| P29 | P29.6 | 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 D.1 on page 57.

## E.2.7 Supplementary NSL Results: Third Floor

| Table No. E.2.7 - Supplementary NSL Results: Third Floor | | | |
|---|---|---|---|
| Unit Number | Room Description | No Sky Line (NSL) | |
| | | % of room where the sky is visible from the working plane | Above 80%* |
| P30 | P30 Living | 99% | Yes |
| P30 | P30.1 | 99% | Yes |
| P30 | P30.2 | 99% | Yes |
| P30 | P30.3 | 99% | Yes |
| P30 | P30.4 | 98% | Yes |
| P30 | P30.5 | 75% | No |
| P31 | P31 Living | 99% | Yes |
| P31 | P31.1 | 99% | Yes |
| P31 | P31.2 | 99% | Yes |
| P31 | P31.3 | 99% | Yes |
| P31 | P31.4 | 99% | Yes |
| P31 | P31.5 | 99% | Yes |
| P32 | P32 Living | 100% | Yes |
| P32 | P32.1 | 91% | Yes |
| P32 | P32.2 | 95% | Yes |
| P32 | P32.3 | 97% | Yes |
| P32 | P32.4 | 100% | Yes |
| P32 | P32.5 | 99% | Yes |
| P32 | P32.6 | 99% | Yes |
| P32 | P32.7 | 99% | Yes |
| P32 | P32.8 | 99% | Yes |
| S7 | S7 | 99% | Yes |
| S8 | S8 | 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 D.1 on page 57.

## E.2.8 Supplementary NSL Results: Fourth Floor

| Table No. E.2.8 - Supplementary NSL Results: Fourth Floor | | | |
|---|---|---|---|
| Unit Number | Room Description | No Sky Line (NSL) | |
| | | % of room where the sky is visible from the working plane | Above 80%* |
| P33 | P33 Living | 96% | Yes |
| P33 | P33.1 | 96% | Yes |
| P33 | P33.2 | 98% | Yes |
| P33 | P33.3 | 98% | Yes |
| P33 | P33.4 | 99% | Yes |
| P33 | P33.5 | 98% | Yes |
| P34 | P34 Living | 100% | Yes |
| P34 | P34.1 | 68% | No |
| P34 | P34.2 | 62% | No |
| P34 | P34.3 | 99% | Yes |
| P34 | P34.4 | 99% | Yes |
| P34 | P34.5 | 99% | Yes |
| P35 | P35 Living | 99% | Yes |
| P35 | P35.1 | 99% | Yes |
| P35 | P35.2 | 99% | Yes |
| P35 | P35.3 | 99% | Yes |
| P35 | P35.4 | 99% | Yes |
| P35 | P35.5 | 99% | Yes |
| P36 | P36 Living | 98% | Yes |
| P36 | P36.1 | 99% | Yes |
| P36 | P36.2 | 99% | Yes |
| P36 | P36.3 | 99% | Yes |
| P36 | P36.4 | 98% | Yes |
| P36 | P36.5 | 96% | Yes |
| P37 | P37 Living | 99% | Yes |
| P37 | P37.1 | 95% | Yes |
| P37 | P37.2 | 97% | Yes |
| P37 | P37.3 | 94% | Yes |
| P37 | P37.4 | 97% | Yes |
| P37 | P37.5 | 94% | Yes |
| P37 | P37.6 | 93% | Yes |
| P37 | P37.7 | 93% | Yes |
| S9 | S9 | 98% | Yes |
| S10 | S10 | 94% | 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 D.1 on page 57.

## E.2.9 Supplementary NSL Results: Fifth Floor

| Table No. E.2.9 - Supplementary NSL Results: Fifth Floor | | | |
|---|---|---|---|
| Unit Number | Room Description | No Sky Line (NSL) | |
| | | % of room where the sky is visible from the working plane | Above 80%* |
| P38 | P38 Living | 100% | Yes |
| P38 | P38.1 | 92% | Yes |
| P38 | P38.2 | 92% | Yes |
| P38 | P38.3 | 97% | Yes |
| P38 | P38.4 | 93% | Yes |
| P38 | P38.5 | 85% | Yes |
| P38 | P38.6 | 88% | Yes |
| P38 | P38.7 | 89% | Yes |
| P38 | P38.8 | 85% | Yes |
| P39 | P39 Living | 100% | Yes |
| P39 | P39.1 | 97% | Yes |
| P39 | P39.2 | 97% | Yes |
| P39 | P39.3 | 97% | Yes |
| P39 | P39.4 | 97% | Yes |
| P39 | P39.5 | 97% | Yes |
| P39 | P39.6 | 97% | Yes |
| P39 | P39.7 | 97% | 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 D.1 on page 57.