

Naas Racecourse, Co. Kildare

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

1.0 Executive Summary

1.1 Summary of Assessment

3D Design Bureau (3DDB) were commissioned to carry out a comprehensive daylight and sunlight assessment, along with an accompanying shadow study for the proposed Large-Scale Residential Development (LRD) situated on c. 8.7 hectares of land west of Naas Racecourse, Naas, Co. Kildare. The scheme comprises a total of 234 residential units, featuring 115 houses, 21 apartment units within a three-storey apartment block, 80 own-door apartment units within duplex-type buildings, and 18 own-door apartment units within triplex-type buildings. The development also includes essential supporting infrastructure such as open spaces, landscaping, roads, parking, refuse storage, drainage, utilities (including 2 ESB kiosks), and a childcare facility with an outdoor play area and associated parking..

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

Explanations of key terms and the relevant daylight and sunlight assessment standards are included in the sections E.0 & F.0 at the end of this report.

Impact Assessment

Following advice within section 2.2 of the BRE Guidelines (BR 209 - 2022), a thorough screening assessment of the surrounding context was conducted to identify properties and amenity spaces potentially affected by the proposed development. This initial screening, based on BRE criteria, confirmed that no adverse impacts are anticipated on windows, as none fall within the BRE's defined selection criteria (e.g., 25/45-degree subtend angles). Consequently, detailed quantitative assessments such as VSC and APSH/WPSH are not required for windows in this report as daylight and sunlight is unlikely to be materially affected.

However, for robustness and completeness, a detailed sunlight to gardens (SOG) assessment was undertaken for the rear amenity gardens of properties located to the north of the proposed development. This assessment is critical to determine if the development diminishes direct sunlight access to these private outdoor spaces, especially considering their north-facing locations relative to the potential obstruction, and to ensure the continued amenity value of these gardens, consistent with BRE 209 recommendations.

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 have been assessed in the 'baseline state' versus the 'proposed state'. For definition of model states, including a visual representation of the model states, please refer section "2.2 Preparing the analytical model" on page 9.

The assessed properties, indicated in Figure 1.1 below, include:

- | | | |
|-------------------------------|---------------------------------|---------------------------------|
| • 1 King's Ct, Kingsfurze (1) | • 6 King's Ct, Kingsfurze (6) | • 11 King's Ct, Kingsfurze (11) |
| • 2 King's Ct, Kingsfurze (2) | • 7 King's Ct, Kingsfurze (7) | • 12 King's Ct, Kingsfurze (12) |
| • 3 King's Ct, Kingsfurze (3) | • 8 King's Ct, Kingsfurze (8) | • 14 King's Ct, Kingsfurze (13) |
| • 4 King's Ct, Kingsfurze (4) | • 9 King's Ct, Kingsfurze (9) | • 15 King's Ct, Kingsfurze (14) |
| • 5 King's Ct, Kingsfurze (5) | • 10 King's Ct, Kingsfurze (10) | • 16 King's Ct, Kingsfurze (15) |

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

- **Sun on Ground (SOG):** Assessment of the potential effect on sunlight availability to the rear gardens of 1-16 King's Ct, Kingsfurze. The results of the SOG impact assessments can be found in section A.1 on page 25. These results are summarised in section 1.2 and explained in section "3.1 Effect on Sun On Ground in Existing Gardens" on page 18.



Figure 1.1: Scope of surrounding properties and environment assessed.

Scheme Performance

- **Spatial Daylight Autonomy (SDA):** Assessed for the habitable rooms of the proposed apartment block, duplex and triplex units (highlighted in Figure 1.2 below) through a Spatial Daylight Autonomy (SDA) study. While creche classrooms were also assessed, their results are not included in the compliance rates.
- **Sunlight Exposure (SE):** Quantified through a Sunlight Exposure (SE) assessment for the same habitable rooms.
- **Sun on Ground (SOG):** Assessment of sunlight availability across the proposed external amenity spaces on March 21st. This date corresponds to the spring equinox, when day and night are of approximately equal duration, and is commonly used as a representative assessment date.

The results of these scheme performance assessments, which are in accordance with the BRE Guidelines, can be found in section C.0 on page 37. These results are summarised in section 1.3 and explained in section “3.2 Analysis of Scheme Performance Results” on page 19.

Supplementary scheme performance studies have also been carried out. These include an SDA assessment under the I.S. EN 17037 criterion, and a No Sky Line (NSL) study within proposed habitable rooms. The results of the supplementary scheme performance assessments can be found in section D.0 on page 81.



Figure 1.2: Model View of the proposed development.

Qualitative Assessment

In addition to the quantitative assessments detailed in the ‘Impact Assessment’ and ‘Scheme Performance’ sections, a qualitative assessment has been undertaken to provide further understanding of the variation in sunlight across the surrounding environment. This includes:

- **Shadow Study:** Hourly renderings illustrating the movement and extent of shadow on three key dates: the spring equinox (March 21st), the summer solstice (June 21st), and the winter solstice (December 21st) (section B.0 on page 28).

The false colour plans produced as part of the Sun on Ground (SOG) assessment (section C.4 on page 79) also provide a qualitative indication of sunlight distribution across the amenity areas.

1.2 Impact Assessment Results Overview - Neighbouring Properties:

Following the BRE Guidelines methodology, all surrounding properties were evaluated to determine if detailed impact assessment was required. Based on the assessment criteria (25-degree rule, separation distances and orientation), no neighbouring properties qualified for detailed Vertical Sky Component (VSC), Annual Probable Sunlight Hours (APSH/WPSH) and Sun On Ground (SOG) impact analysis.

As outlined in section “2.1 Impact Assessment, Window Selection Criteria” on page 8, all of the surrounding properties’ windows fall outside the assessment criteria due to their position and sufficient separation distances between the proposed development and existing neighbouring properties. Therefore, no quantitative impact assessment results are presented, as none were required under the BRE Guidelines.

The levels of effect in the tables below describe the effect the proposed development would have, based on its compliance with the various BRE Target Values. A full list of definitions and a numerical rationale for each can be found in the section “Definition of Effects” on page 109 of this report.

Effect to Sun On Ground (SOG):

Effect to Sun On Ground (SOG)	
Areas Assessed	15
Compliant	15
Beneficial Impact*	0
Negligible	15
Minor Adverse	0
Moderate Adverse	0
Major Adverse	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 SOG studies is below 1%, 3DDB have categorised the level of effect as n.a. (not applicable).

1.3 Scheme Performance Results Overview:

Spatial Daylight Autonomy (SDA):

Spatial Daylight Autonomy (SDA) BRE 209 Criteria	
Unit Count	Check Count
Rooms Assessed	404
Without Trees	
Compliant	404
Non-compliant	0
Compliance Rate*	100%
With Trees (Proposed and Existing Trees)	
Compliant	402
Non-compliant	2
Compliance Rate*	> 99%

Note: It is the expert opinion of 3DDB that the appropriate criteria for SDA assessments are that of the BRE Guidelines (BRE 209)

* Compliance rates stated for the SDA analysis are based on the rooms that have been assessed within the apartment block, duplex and triplex units. Units which contain non-compliant rooms have had Compensatory Design Solutions provided by the project architects.

Sunlight Exposure (SE):

Sunlight Exposure (SE)	
Units Assessed	Check Count
SE without deciduous trees	
Non-Compliant	0
Minimum	7
Medium	4
High	109
Compliance Rate*	0%
SE with all trees	
Non-Compliant	2
Minimum	8
Medium	10
High	100
Compliance Rate*	0%

For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.

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

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

Sun On Ground (SOG)	
Areas Assessed	10
Areas meeting the guidelines	10
Areas not meeting the guidelines	0

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	Check Count
Rooms Assessed	404
Without Trees	
Compliant	333
Non-compliant	71
Compliance Rate*	c. 82%
With Trees (Proposed and Existing Trees)	
Compliant	307
Non-compliant	97
Compliance Rate*	c. 76%
Note: The study under the I.S. EN 17037 criterion should be considered a supplementary assessment. It is the expert opinion of 3DDB that the appropriate criteria are that of the BRE Guidelines (BRE 209)	

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

No Sky Line (NSL):

No Sky Line (NSL):	
Unit Count	Check Count
Rooms Assessed	404
Yes	379
No	25
Compliance Rate*	c. 94%
Note: As the BRE Guidelines do not provide a recommended minimum for NSL in proposed developments, compliance rates for NSL are calculated using a criteria applied by 3DDB.	

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

2.0 Methodology

2.1 Impact Assessment, Window Selection Criteria

To determine the properties to be included in the impact assessment, the decision chart taken from Figure 20 of the BRE Guidelines has been followed, as shown in Figure 2.2.

Accordingly, all properties within a distance of three times the height of the proposed development, as illustrated in Figure 2.1, have been considered for impact assessment.



Figure 2.1: Properties within three times the height of the proposed development

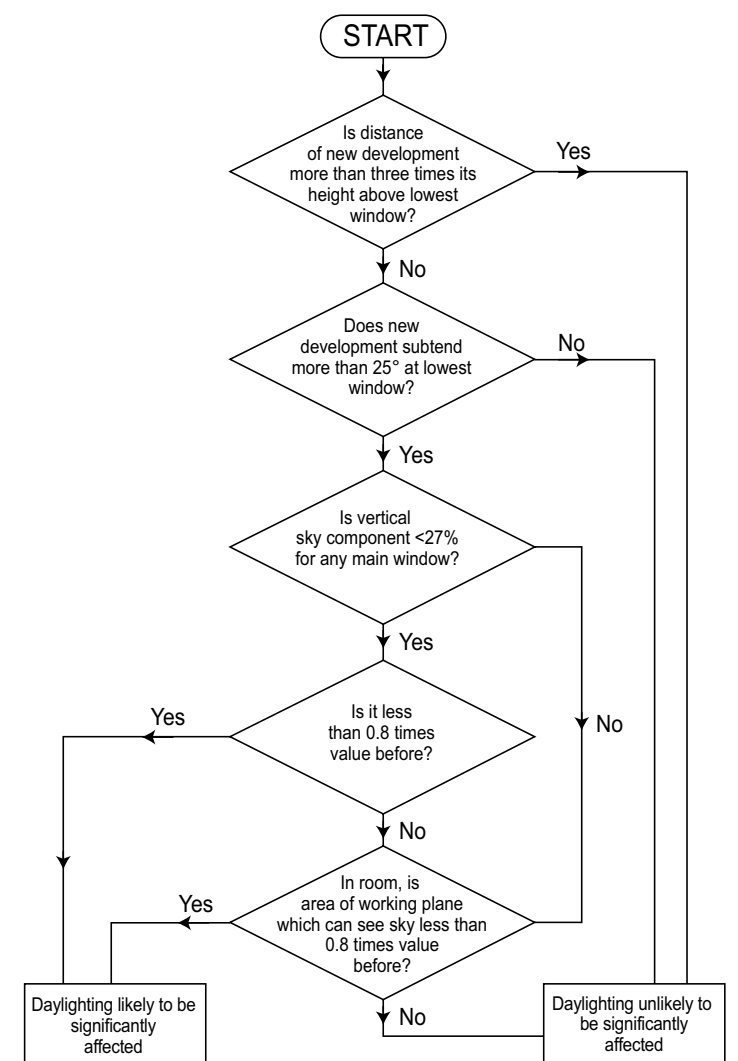


Figure 2.2: VSC decision chart, taken from BR 209.

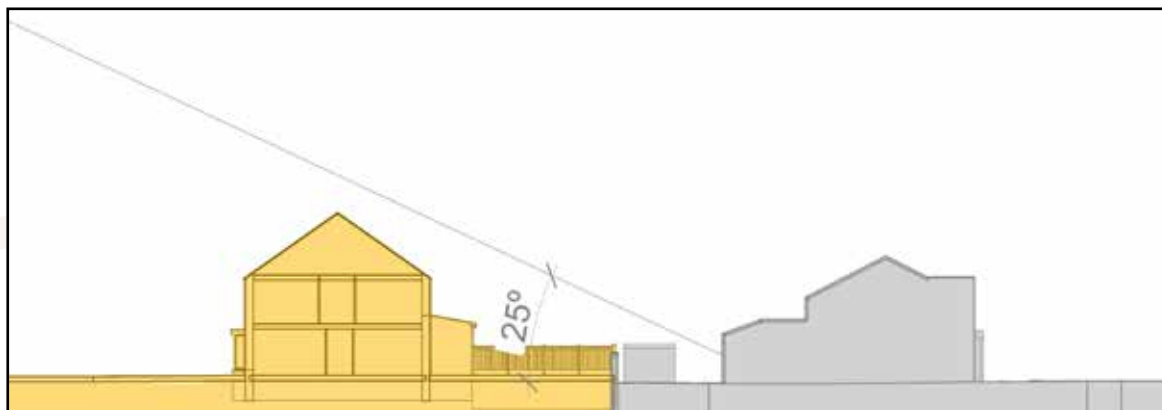


Figure 2.3: Section A-A taken through 10 King's Ct, Kingsfurze.

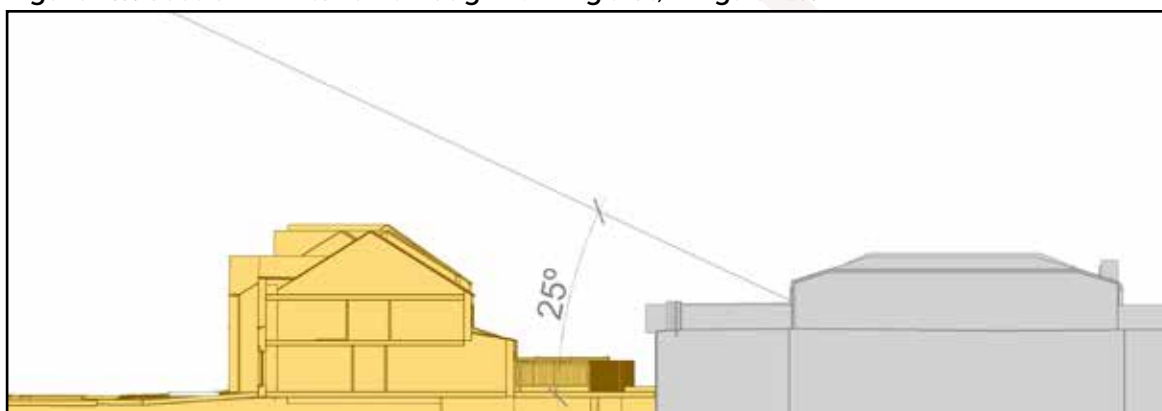


Figure 2.4: Section B-B taken through 24 Woodlands.



Figure 2.5: '45° approach' applied to 14 King's Ct, Kingsfurze Section C-C (L), Plan view

As per the recommendation made in section 2.2.5 of 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. However, if the proposed development does not subtend 25° in a perpendicular section, daylight is unlikely to be significantly affected and no further assessment is needed.

Figure 2.3 and Figure 2.4 show a perpendicular section taken through 10 King's Ct, Kingsfurze, and 24 Woodlands respectively which provides an example of where an existing window is within three times the height of the proposed development but the proposed development does not subtend 25° when measured in a perpendicular section.

Furthermore, if a proposed obstruction falls within 45° when measured both in a plan and elevation view, then it is also appropriate to conduct a VSC impact assessment to determine if daylight will be affected. This is referred to in section 2.2.17 of the BRE Guidelines as the '45° approach'. The 45° approach has been taken into consideration when determining which properties to include in the impact assessment.

Figure 2.5 shows both a plan view and a section through 14 King's Ct, Kingsfurze, illustrating that the proposed development does not obstruct a 45° line of sight from the existing window, both in plan and elevation. As such, no detailed impact assessment has been conducted on this property, and other properties where appropriate, taking account of the 45° approach.

2.2 Preparing the analytical model

2.2.1 Building the Model States

The project architect, Reddy's Architects, supplied 3DDB with AutoCAD drawings and 3D models of the proposed development from which a detailed 3D analytical model was created. Landscape drawings were provided by Murphy Sheanon Landscape Architects.

In line with standard practice, a desktop-based approach has been adopted to gather information regarding the existing subject site and its surroundings. In lieu of a bespoke on-site survey, a combination of available survey information, aerial photography, and ordnance survey data was used to model the context and assessed buildings. As information gathered from online sources is not as precise as a physical survey, a reasonable tolerance should be allowed for the placement of windows, boundary treatments, and the results generated.

Baseline model state

As illustrated in Figure 2.6, 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 arborist report and photogrammetry information, with assumptions made regarding exact size, position and species in the ones not covered by the arborist report.



Figure 2.6: Model view of the baseline model state

As explained in section 2.1 of this report, section 2.2.5 of 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. Since no windows fall within the BRE's defined selection criteria (e.g., 25/45-degree subtend angles) no further quantitative assessment is required.

Proposed model state

As illustrated in Figure 2.7, the proposed model state reflects the subject site if the development is built as proposed. This includes proposed landscaping on the subject site and the demolition of existing structures, etc. Proposed buildings have been accurately positioned in their location on the subject site with relevant surrounding context included. Proposed trees were placed according to the information provided by the landscape architect.

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



Figure 2.7: Model view of the proposed model state

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

2.2.2 Trees

As stated in section 3.3.9 of the BRE Guidelines, the exact shapes of trees are “almost impossible to predict”. When modelling trees for this assessment tree geometry has been simplified. Where tree survey information was not provided, the position and size of existing trees have been estimated using photogrammetry information. The shape of the trees have been simplified and an average transmittance value has been applied using information from table G1 from the BRE Guidelines. 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)

Section G1.2 of the BRE Guidelines states that when assessing the effect a new development would have on existing buildings, “it is usual to ignore the effect of deciduous trees”. This is because daylight is at its scarcest and most valuable in winter when most trees will not be in leaf. Evergreen trees should be included, particularly where a dense belt or group of evergreens is specifically planned as a windbreak or for privacy purposes.

Sun On Ground (SOG)

Regarding SOG assessments, section G4.1 of the BRE Guidelines states:

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

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

Sunlight Exposure (SE)

Section G3.1 of the BRE Guidelines states 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. First, with trees as opaque objects and secondly, without deciduous trees in the assessment model. This gives a range of potential sunlight hours.

Spatial Daylight Autonomy (SDA)

BR 209 recommends when assessing daylight in a proposed building, it is appropriate to run the assessment with trees represented over the course of the whole year. Light transmittance values for the modelled trees are varied to account for summer and winter foliage.

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

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

The BRE Guidelines (section G2.3) also state:

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

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

Units have also been assessed without trees to give an understanding of how the architecture performs should trees not be factored into the calculation.

I.S. EN 17037 does not give any guidance on how trees should be represented. For the purpose of this report, the SDA calculation under the I.S. EN 17037 criteria has been carried out with trees represented in the same manner as the BR 209 assessment. Units have also been assessed without trees to give an understanding of how the architecture performs should trees not be factored into the calculation.

No Sky Line (NSL)

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

Shadow Study

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

2.3 Quantitative Impact Assessment Overview

2.3.1 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 2.1 outlines the decision process which was used to determine the appropriate properties to be included in the VSC impact assessment.

For proposed developments, all properties within a distance of three times the height of the proposed development are considered with regards to an impact assessment. Should the angle from the windows to the proposed development subtend 25° in a perpendicular section, then VSC is calculated in both the baseline and proposed model states, and a comparison made.

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

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

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

Section 2.1.6 of the BRE Guidelines states that if the VSC is:

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

Where a VSC assessment is warranted, the values for each relevant window/room may be calculated in the corresponding model states, as outlined in section 2.2 on page 9. A comparison of these results can be used to indicate the level of effect.

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

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

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

Under BRE Guidelines (section 2.2.2), only habitable rooms need to be assessed for effect to VSC. In the absence of design layouts or floor plans, or information pertaining to the internal 'as-built' layouts, assumptions have been made regarding the function of the windows of the existing surrounding properties (i.e. what room type is served by the window being assessed).

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

Assessment Points

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

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

Weighted Averages

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

When calculating weighted averages the proportion of the total glazing area represented for each window is taken into account. It should be noted that estimations 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 2.2 on page 8, no VSC impact assessment has been carried out on the windows/rooms of the neighbouring properties as the proposed development does not subtend 25° when measured in a perpendicular section from any of the existing windows.

This indicates that the proposed development is highly unlikely to have any adverse effect on the daylight of any of the existing properties.

2.3.2 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 its 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 an angle of 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, section 3.2.3 of the BRE Guidelines suggest that windows with an orientation within 90 degrees of due south should be assessed.

Section 2.1 outlines the decision process which is used to determine the appropriate properties to be included in an APSH/WPSH impact assessment.

The APSH/WPSH for each of the assessed windows should be calculated in the relevant model states, as outlined in section 2.2 on page 9. A comparison between the results generated using these model states can be used to determine the level of effect.

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

If a room can receive more than 25% of APSH, including at least 5% of the WPSH, then the room should receive enough sunlight. Despite being two components of the same technical study, the results for APSH and WPSH are presented separately in this report. This approach distinguishes between annual and winter sunlight impacts, thereby facilitating a more detailed analysis of the effect of the proposed development.

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 (Section 3.2.6), 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.)

According to section 3.2.3 of the BRE Guidelines, only main living-rooms, or rooms comprising living space, need to be assessed for effect on sunlight. In the absence of design layouts or floor plans, or information pertaining to the internal 'as-built' layouts, all windows assumed to be servicing habitable rooms will be included in the APSH/WPSH assessment provided they are orientated within 90° of due south and are in relative close proximity to the proposed development.

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

Assessment Points

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

Project Assessment

Following the BRE decision chart, as illustrated in Figure 2.2 on page 8, no APSH/WPSH impact assessment has been carried out on the windows/rooms of the neighbouring properties as the proposed development does not subtend 25° when measured in a perpendicular section from any of the existing windows.

This indicates that the proposed development is highly unlikely to have any adverse effect on the sunlight of any of the existing properties.

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

Section 3.3.17 of 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 do not provide clear criteria on which neighbouring properties should be included in an impact on SOG study, 3DDB have carefully considered the neighbouring properties that may be affected when running the impact assessment. Gardens or amenity areas included in this study are typically located within close proximity, to the north of the proposed development.

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

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

In accordance with section 3.3.9 of the BRE Guidelines, typically deciduous trees will not be included unless there is a particularly dense belt. The analytical model for SOG impact assessment includes evergreen trees, where applicable.

Where applicable, the percentage of assessed areas which can receive two hours or more of direct sunlight on March 21st is calculated in the relevant model states, as outlined in section 2.2 on page 9. A comparison between the results generated with these model states can be used to determine the level of effect.

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

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

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

Effect on sunlight to existing neighbouring gardens and/or amenity areas has been assessed north of the proposed development, as areas located to the south are unlikely to be affected as the sun does not cast shadows in this 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 assessed properties are as indicated in Figure 1.1 on page 3:

- | | | |
|-------------------------------|---------------------------------|---------------------------------|
| • 1 King's Ct, Kingsfurze (1) | • 6 King's Ct, Kingsfurze (6) | • 11 King's Ct, Kingsfurze (11) |
| • 2 King's Ct, Kingsfurze (2) | • 7 King's Ct, Kingsfurze (7) | • 12 King's Ct, Kingsfurze (12) |
| • 3 King's Ct, Kingsfurze (3) | • 8 King's Ct, Kingsfurze (8) | • 14 King's Ct, Kingsfurze (13) |
| • 4 King's Ct, Kingsfurze (4) | • 9 King's Ct, Kingsfurze (9) | • 15 King's Ct, Kingsfurze (14) |
| • 5 King's Ct, Kingsfurze (5) | • 10 King's Ct, Kingsfurze (10) | • 16 King's Ct, Kingsfurze (15) |

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.0 on page 25, with analysis of the results in section 3.1 on page 18.

2.4 Qualitative Assessment - Shadow Study

2.4.1 Shadow Study

A shadow study has been carried out to allow a qualitative comparison between the relevant model states, as outlined in section 2.2 on page 9. This visual representation of the shadows cast by the proposed development can be found in the hourly shadow diagrams in the appendix results section B.0 on page 28.

Hourly renderings have been shown from sunrise to sunset on the following dates in 2026:

- | | | |
|--------------------|---------------|---|
| • Spring equinox: | March 21st | Sunrise 6:32 Sunset 18:32. (GMT) |
| • Summer solstice: | June 21st | Sunrise 5:04 Sunset 21:49. (BST) (Daylight savings) |
| • 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 2.2.1. 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 section 3.3.14 of the BRE Guidelines.

2.5 Quantitative Scheme Performance Assessment Overview

2.5.1 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 a grid of points on a plane 0.85m above the floor of the space. The daylight factor of at least half the required area of the space should equal or exceed the target values.

It is the opinion of 3DDB that the calculation method using illuminance level better represents a real-world scenario as it accounts for the quality of daylight based on orientation. As such, the illuminance methodology has been adopted as the preferred SDA assessment methodology by 3DDB. A localised EnergyPlus Weather File is used to apply the relevant climate information. In the case of this report, the weather file used is IRL_EM_Casement.AP.039670_TMYx.epw.

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

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

Where rooms serve more than one function, the higher SDA target value should be taken. In new developments, some internal spaces (e.g. studio apartments, shared communal areas, creche classrooms 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 5 no. creche classrooms. 3DDB recommend that an SDA target value of 200 Lux be applied to the creche classrooms. The rationale for this target value is that classrooms are task orientated rooms. 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 are typically taken directly from the architectural drawings supplied by the project architect. Sometimes, the applied names of rooms may differ slightly. e.g. A "Kitchen / Living / Dining room (KLD)" may be referred to as a "Living / Kitchen / Dining room (LKD).

According to section 2.1.14 of the BRE Guidelines areas like bathrooms, stairwells, garages, and storage areas do not have a special requirement for daylight. As such these spaces have not been assessed.

Where an SDA assessment has been conducted, an indication of the assessed space in each room will be indicated in the floor plans that correspond to the SDA results in the appendix section "Proposed Floor Plans" on page 37.

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. 2.5.1 - Material Palette for SDA Calculations					
Object	Material	Reflectance	Object	Material	Reflectance
					Transmittance
Exterior walls	Standard Brick	0.3	Interior Walls	Pastel paint	0.7
	Light Brick	0.4	Interior Ceiling	White paint	0.8
	Dark Brick	0.15	Interior Floor	Light timber	0.4
	Render	0.6	Miscellaneous	Miscellaneous	0.5
	Concrete	0.4	Glass	Glass transmittance value	0.68
Ground cover	Paving	0.4		Maintenance factor	0.91
	Tarmac	0.2		Glass adjusted for maintenance	0.62
	Grass	0.2		Frosted glass	0.5

Project Assessment

The results for the study on SDA can be found in the appendix results section C.2 on page 51.

Analysis of the results can be found in section 3.2.1 on page 19.

The results of the supplementary SDA study under the I.S. EN 17037 criterion can be found in section D.0 on page 81.

This study indicates the daylight potential of the proposed development. As-built daylight performance within the occupied development may vary from the results of this assessment due to changes to the exterior context, weather conditions and/or occupiers choice of interior finishes and furniture placement.

2.5.2 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. Section 3.1.10 of the BRE guidelines suggests 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 section G3 of 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 assessed 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 (whichever 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 we assessed 5 no. creche classrooms, but these rooms have not been included in the calculated compliance rates.

Project Assessment

The results for the study on sunlight exposure can be found in the appendix results section C.3 on page 65, with analysis of the results in section 3.2.2 on page 20.

This study predicts the sunlight potential of the proposed units. Real-world performance post-construction can vary based on actual weather patterns and any alterations to the external environment.

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

Section 3.3.17 of the BRE Guidelines recommends 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 section G4.1 of the BRE Guidelines. Typically deciduous trees will not be included unless there is a particularly dense belt.

A quantitative SOG assessment may be carried out on the areas as indicated by the project architect. Shadow studies and false colour plans can allow for a qualitative assessment for all other areas.

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

Project Assessment

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

The results for the study on sun on ground in the proposed outdoor amenity areas (including a visual representation in the form of 2-hour false colour plans) can be found in the appendix results section C.4 on page 79, with analysis of the results in section 3.2.3 on page 21.

This analysis quantifies the anticipated sunlight levels within the assessed amenity areas. The as-built outcome is subject to variation, depending on real-world weather and any changes to the exterior setting.

2.5.4 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.

Section D3 of the BRE Guidelines recommends 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 (section 2.2) is in relation to impact assessments. NSL is not mentioned in the BRE section regarding daylight in new developments. Nevertheless, an NSL assessment was carried out on the proposed development as a supplementary study as it is requested in the DCC Development Plan 2022-2028 (Section 5.1, Appendix 16). Although the proposed development is not under Dublin City Council's jurisdiction, the NSL study has been included to provide consistency across 3DDB daylight and sunlight assessments.

As the BRE Guidelines does not give advice on target NSL values for proposed rooms, no compliance rate has been stated. However a No Sky Line of 80% could be considered an appropriate figure given that section 2.2.10 of the BRE Guidelines state that supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line.

The results of the supplementary NSL study can be found in section D.0 on page 81.

3.0 Analysis of Results

Following the screening exercise detailed in section “2.1 Impact Assessment, Window Selection Criteria” on page 8, no surrounding properties met the BRE Guidelines criteria requiring further quantitative impact assessment. All existing windows in the vicinity of the proposed development fall outside the 25-degree assessment threshold due to sufficient separation distances between the proposed development and neighbouring properties.

As outlined in the same methodology section, the BRE Guidelines specify that quantitative impact assessment should only be conducted for windows where the proposed development subtends an angle of 25 degrees or more when measured in a perpendicular section.

This outcome demonstrates that the proposed development has been appropriately positioned and designed to minimize potential impacts on the existing surrounding context.

Qualitative assessment of shadow patterns and sun on ground distribution can be reviewed through the false colour plans and hourly shadow study renderings provided in the appendix of this report. section C.4 on page 79.

3.1 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 King’s Ct, Kingsfurze.



Figure 3.1: Scope of surrounding gardens and environment assessed.

In total 15 no. spaces have been assessed. Using the rationale explained in section E.2 on page 109, effect on the SOG of these spaces would be considered:

- negligible: 15 no.

The findings indicate that the proposed development’s massing and separation distance maintain sunlight access to the neighbouring gardens in accordance with the BRE guidelines, registering a strictly ‘negligible’ impact across all spaces and demonstrating that sunlight levels remain well above BRE target thresholds.

The results of the Sun On Ground study (SOG) on the neighbouring gardens can be found in section A.0 on page 25.

A visual representation of these readings can be seen in the 2 hour false colour plans in section A.0 and in the hourly shadow diagrams for March 21st in section B.1 on page 28.

3.2 Analysis of Scheme Performance Results

3.2.1 Spatial Daylight Autonomy (SDA)

This study has assessed the Spatial Daylight Autonomy (SDA) for the habitable rooms within the proposed apartment block, duplex and triplex units of the proposed development both with and without trees. This has ensured that a clear understanding has been obtained regarding the daylight potential of the proposed development.

The proposed apartment block, duplex and triplex units consist of 119 no. units, which makes up approximately 404 no. habitable rooms.

Under the criteria as set out in the BR 209, considering trees, the SDA value in 402 no. habitable rooms meets or exceeds the appropriate target values. This gives a circa compliance rate of 99.5% with 2 non-compliant rooms. As highlighted in Figure 3.2 and Figure 3.3 below, two single-aspect rooms, 023-LKD and 043-Bedroom 2, exhibit non-compliance with BR 209 criteria in the annual tree assessment. This non-compliance is attributed to the impact of both existing and proposed

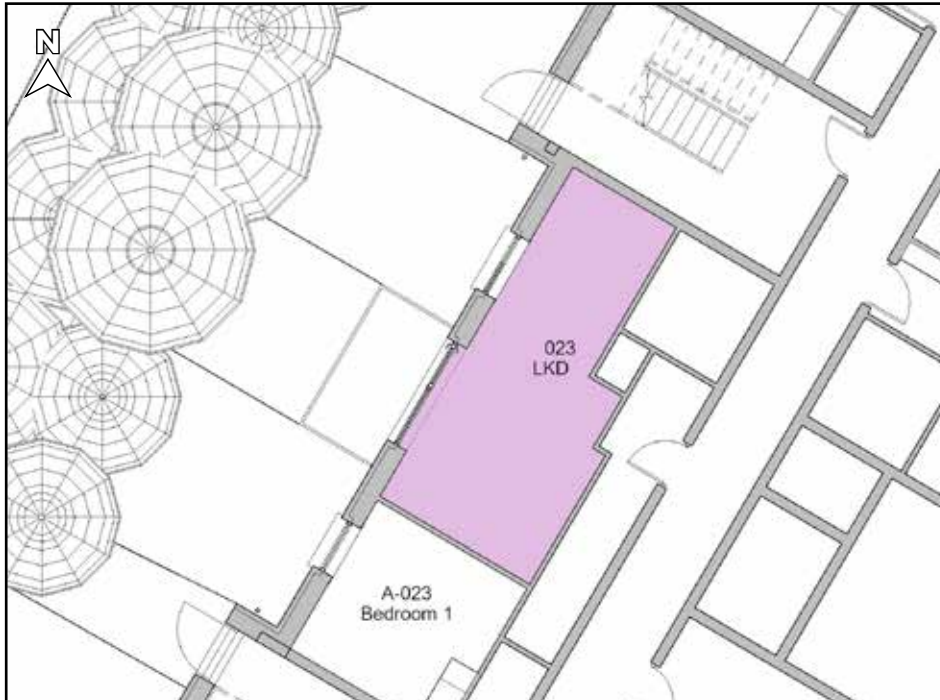


Figure 3.2: Apartment Block Ground floor non-compliant LKD in annual trees state.

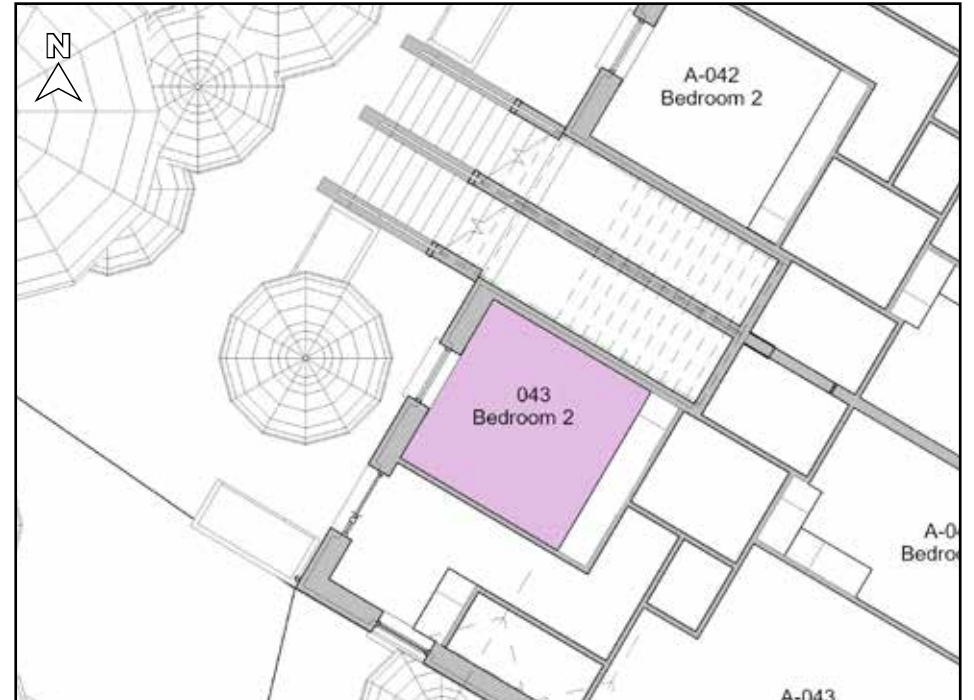


Figure 3.3: Duplex Unit Ground floor non-compliant Bedroom in annual trees state.

trees on daylight provision when incorporated into the calculation.

The analysis demonstrates that the trees contribute to a minor reduction in daylight compliance. However, mitigating this by removing trees would be counterproductive to the overall environmental quality of the development. Integrating a green infrastructure is a fundamental planning requirement, essential for urban biodiversity, climate resilience, and high-quality landscape design. Consequently, the design team has made a conscious, balanced decision to prioritize these ecological and aesthetic benefits over achieving absolute daylight maximization.

The additional SDA assessment that does not include trees has shown a compliance rate of 100%. This indicates that existing and proposed trees are reducing the daylight provision to the two non-compliant rooms. However, despite not achieving full compliance, the 99.5% and 100% compliance rates (across both states/assessments) demonstrate the design team's commitment to daylight provision. For a scheme of this size, this could be considered an excellent level of compliance.

I.S. EN 17037 sets out more onerous recommendations for SDA. As such, the number of residential habitable rooms achieving compliance under this standard is 307 in the assessment that includes trees. This gives a reduced circa compliance rate of 76%. The additional SDA assessment, under this standard, that does not include trees has shown a compliance rate of c. 82%.

This report identifies where assessed rooms do not meet the daylight targets set in section 2.1 of the BRE Guidelines. It is intended to inform the planning authority's discretionary review, which is based on an assessment of the project's specific circumstances.

Spatial Daylight Autonomy (SDA)

The following list details each unit and room that does not achieve the recommended daylight levels in BR 209. For each instance, the project architect has provided a rationale and/or a compensatory design solution:

- “ Units 023 and 043 will directly face a high-quality communal open space/landscaped area.
- 023 is 53.41 sqm and 043 is 87.48 sqm; both are more than 15% larger than the minimum apartment size standards.
- 043 is a dual-aspect unit.”

The rationale for any instances of non-compliance with BR 209 criteria, when attributed to tree-induced daylight reduction, is that trees constitute an important aspect of the proposed site layout. Where trees impact daylight potential, the design team has made a conscious decision to balance daylight provision with an appropriate level of foliage.

Floor plans indicating unit numbers can be found in section C.1 on page 37. The results for the study on SDA can be seen in section C.2 on page 51.

3.2.2 Sunlight Exposure (SE)

A sunlight exposure assessment has been carried out on the habitable rooms within the proposed apartment block, duplex and triplex units of the proposed development. As part of this assessment, both existing surrounding trees and proposed trees have been incorporated into the analytical model and treated as opaque elements.

The assessments have been carried out in two states:

- All trees (evergreen and deciduous) included in the assessment model.
- Only evergreen trees included in the assessment model.

This approach provides a range of potential sunlight hours, accounting for the seasonal variability of deciduous trees and is in accordance with section G3 of the BRE Guidelines.

In total, 119 no. units have been assessed. Using the rationale explained in section E.3 on page 110, the level of sunlight exposure for the assessed units is as follows:

In the assessment carried out with all tree types:

- high: 99 no. (at least 4 hours)
- medium: 10 no. (at least 3 hours)
- minimum: 8 no. (at least 1.5 hours)
- below minimum recommendation: 2 no. (less than 1.5 hours)

With only evergreen trees included in the assessment model:

- high: 108 no. (at least 4 hours)
- medium: 4 no. (at least 3 hours)
- minimum: 7 no. (at least 1.5 hours)

The SE assessment has shown that, depending on the effect of trees, the compliance rate for the assessed units, in accordance with the BRE Guidelines, is between c.98% & 100%.

Note: For a unit to be compliant under BR 209, at least 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. In the case of this development, only two units in the northern apartment block do not achieve compliance when all trees are included in the calculation. Both non-compliant units are located at the north boundary where existing and proposed trees create a privacy screen. These are Unit 023, which is single-aspect and northwest oriented, and Unit 024, a dual-aspect unit located in the corner of the building (See Figure 3.4).

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 very favourably in this regard.

The results for the study on SE in the habitable rooms of the proposed units can be seen in section C.3 on page 65.

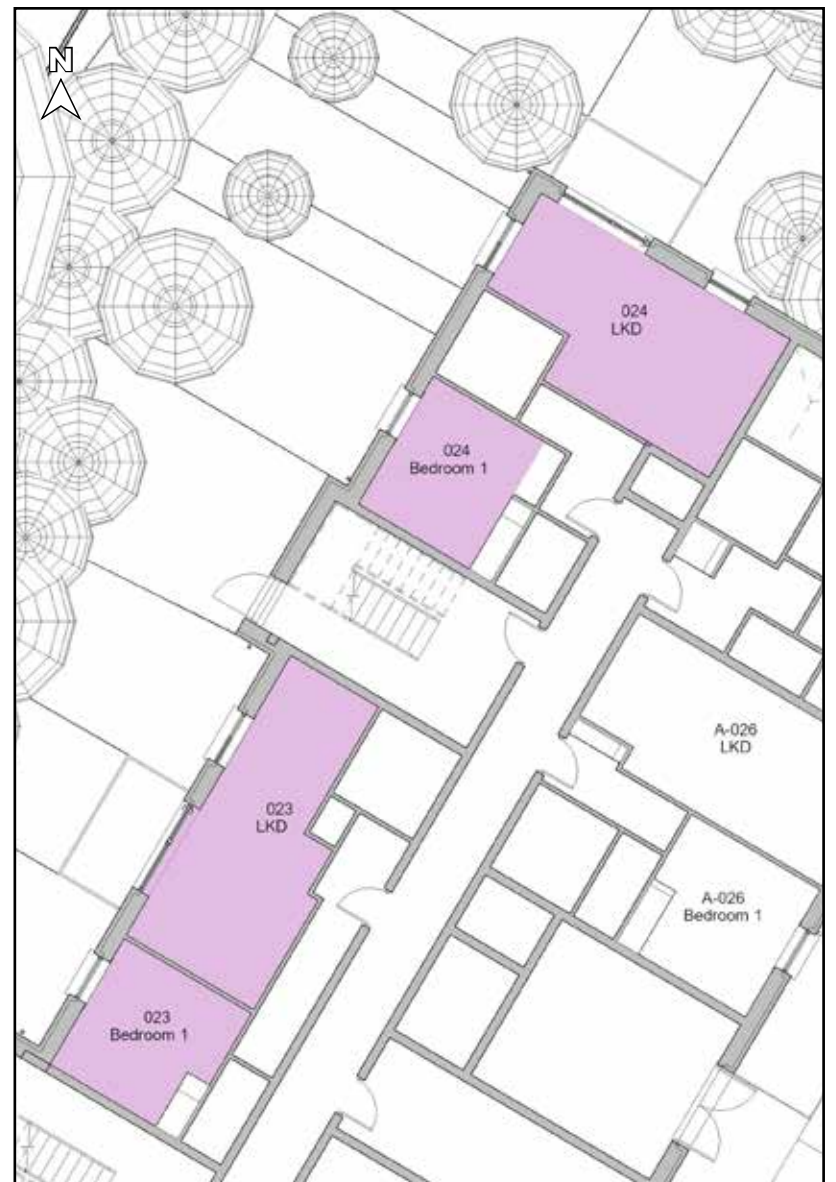


Figure 3.4: Apartment Block Ground floor non-compliant units 023 and 024 with all trees included in the calculation.

3.2.3 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 10 no. spaces have been assessed, all of which would meet the criteria as set out in section 3.3 of the BRE Guidelines.

The full compliance is a demonstration of the design team's commitment to sunlight provision for the future residents. Considering the low-rise nature of the development, this full compliance is to be expected.

The results for the study on sunlighting in the proposed outdoor amenity spaces can be found in section C.4 on page 79.

A visual representation of these readings can be seen in the false colour plan in section C.4 and in the hourly shadow

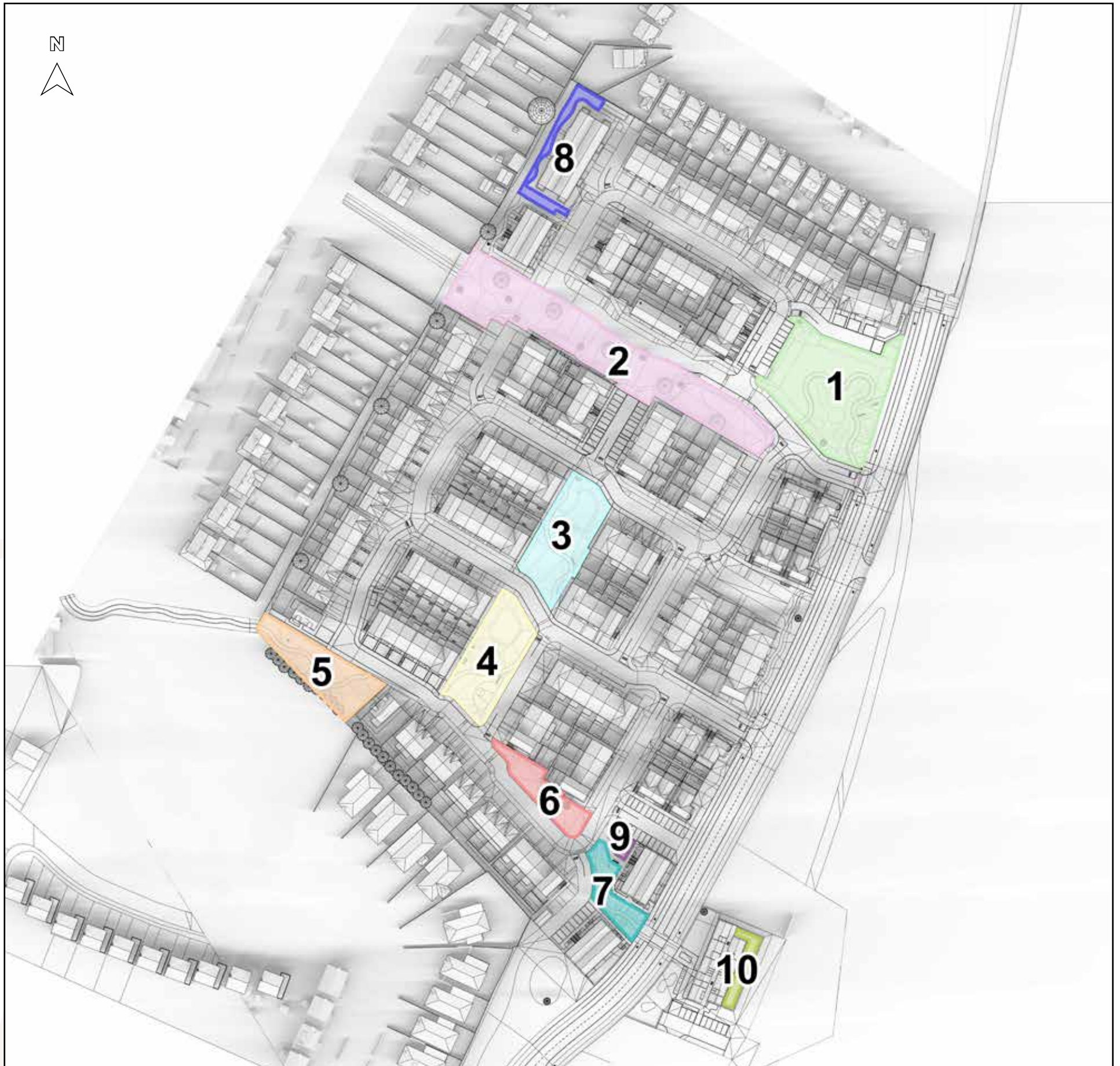


Figure 3.5: Indication of the proposed public and communal amenity spaces included in the SOG analysis (10 - Creche Outdoor Space).

4.0 Conclusion

3D Design Bureau (3DDB) were commissioned to carry out a daylight assessment, sunlight assessment and shadow study for Large-Scale Residential Development (LRD) at Naas Racecourse, Naas, Co. Kildare.

The BRE decision chart, as outlined in section “2.1 Impact Assessment, Window Selection Criteria,” was utilised to screen neighbouring properties and amenity spaces for potential daylight and sunlight impacts. This screening identified no surrounding properties, within 3x times the height, that meet the windows selection criteria. Therefore, aligning with BRE Guidance, no further quantitative window analysis is required as daylight is unlikely to be significantly affected.

The impact assessment for this report has only quantified the effect the proposed development would have on the level of sunlight received by neighbouring gardens.

A Sun On Ground study assessment of the effect on sunlight in the rear gardens of 15 neighbouring properties along King’s Ct, Kingsfurze, was conducted. The findings consistently show that the proposed development’s massing and separation distance maintain sunlight access to these gardens, resulting in a ‘negligible’ impact on all 15 assessed spaces.



Figure 4.6: Scope of surrounding properties and environment assessed.

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

For Spatial Daylight Autonomy (SDA), considering existing and proposed trees, 402 out of 404 habitable rooms assessed within the apartment units, duplex and triplex units, achieve the recommended daylight levels, resulting in a near full compliance rate of 99.5% with trees included in the calculation. Furthermore, full compliance in the no-trees state demonstrates the design team’s strong commitment to daylight provision, achieving an excellent level of compliance for a scheme of this size.

Regarding Sunlight Exposure (SE), the assessment, conducted for both ‘all trees’ and ‘evergreen-only trees’ scenarios, shows a robust compliance rate of between c.98% and 100% across the 119 assessed units, in accordance with BRE Guidelines. The two units that fall below minimum recommendation (in the ‘all trees’ state) are located in the northern apartment block near the boundary, where existing and proposed trees form a privacy screen. These include Unit 023 (single-aspect, northwest-oriented) and Unit 024 (dual-aspect, corner unit), which align with the BRE’s acknowledgement that full compliance can be challenging. The proposed development performs very favourably in terms of sunlight exposure.

Finally, for Sun On Ground in Proposed Outdoor Amenity Areas, all 10 no. proposed outdoor amenity areas meet the BRE recommended sunlight criteria, ensuring excellent levels of sunlight and high-quality outdoor amenity for future residents.

In conclusion, 3DDB confirms that the proposed development achieves an excellent standard of daylight and sunlight performance. Externally, the scheme safeguards the amenity of neighbouring properties, registering ‘negligible’ impact on all adjacent gardens. Internally, it secures excellent daylight and sunlight levels for future residents, alongside fully compliant, well-lit outdoor amenity spaces. Overall, the development demonstrates robust alignment with BRE Guidelines.

Appendix - Results



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

A.0 Impact Assessment Results

A.1 Effect on Sun On Ground (SOG) in Existing Back Gardens

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

Table Example. A.1 - 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 9).

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 9).

E: Ratio of Proposed to Baseline

This column expresses the ratio of change between the baseline and the proposed values. Section 3.3.17 of the BRE Guidelines recommends 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

Section 3.3.17 of 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 109.

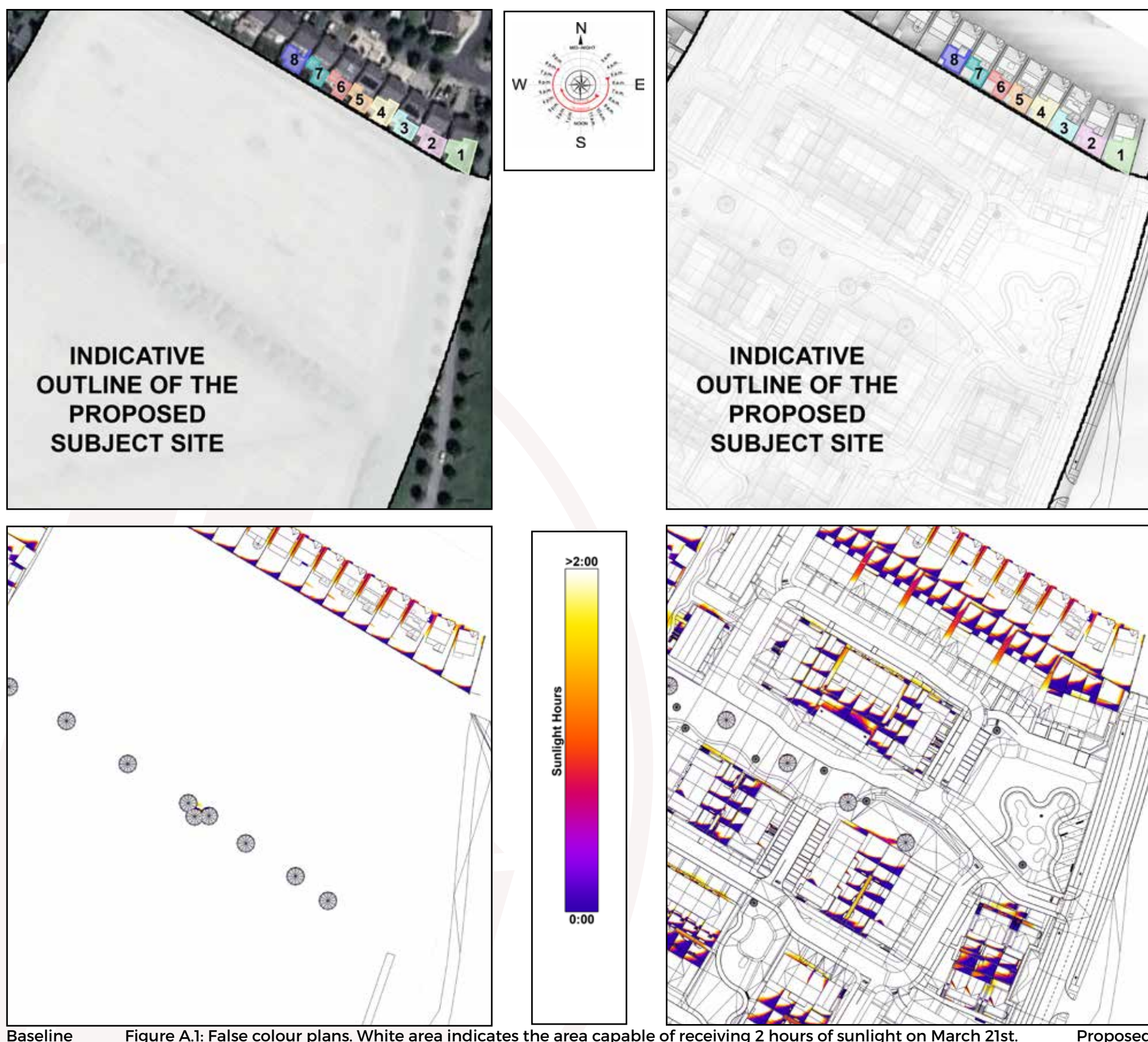
It should be noted that the figures displayed in the table of results have been rounded off. A manual calculation of these figures may yield a negligible difference and should not be considered an error.

A.1.1 1-8 King's Ct, Kingsfurze

Table No. A.1.1 - SOG Results:							
Assigned Area Number	Address	% of Area to Receive Above 2 Hours Sunlight on March 21st (Target ≥50%)				Level of Compliance with BRE Guidelines*	Effect of Proposed Development**
		Baseline	Proposed	Ratio of Proposed to Baseline	Recommended minimum		
1	1 King's Ct, Kingsfurze	91.60%	89.70%	0.98	50.00%	BRE Compliant	Negligible
2	2 King's Ct, Kingsfurze	86.82%	81.80%	0.94	50.00%	BRE Compliant	Negligible
3	3 King's Ct, Kingsfurze	82.86%	82.54%	1.00	50.00%	BRE Compliant	Negligible
4	4 King's Ct, Kingsfurze	86.60%	80.53%	0.93	50.00%	BRE Compliant	Negligible
5	5 King's Ct, Kingsfurze	83.01%	83.10%	1.00	50.00%	BRE Compliant	Negligible
6	6 King's Ct, Kingsfurze	78.90%	71.13%	0.90	50.00%	BRE Compliant	Negligible
7	7 King's Ct, Kingsfurze	80.56%	80.10%	0.99	50.00%	BRE Compliant	Negligible
8	8 King's Ct, Kingsfurze	83.86%	76.03%	0.91	50.00%	BRE Compliant	Negligible

* Section 3.3.17 of the BRE Guidelines states 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 "E.2 Definition of Effects" on page 109.

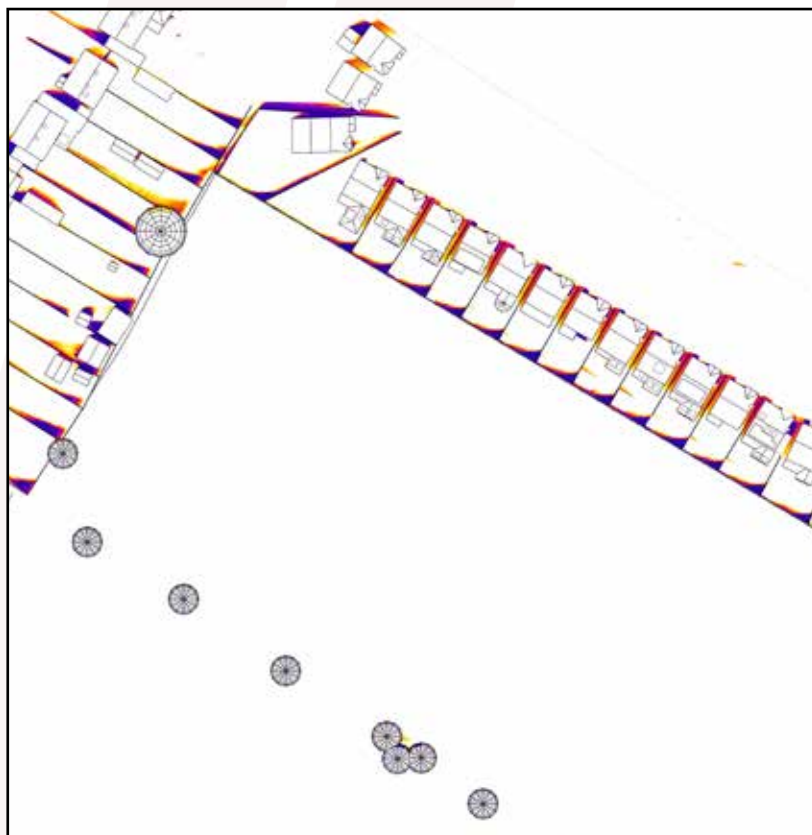
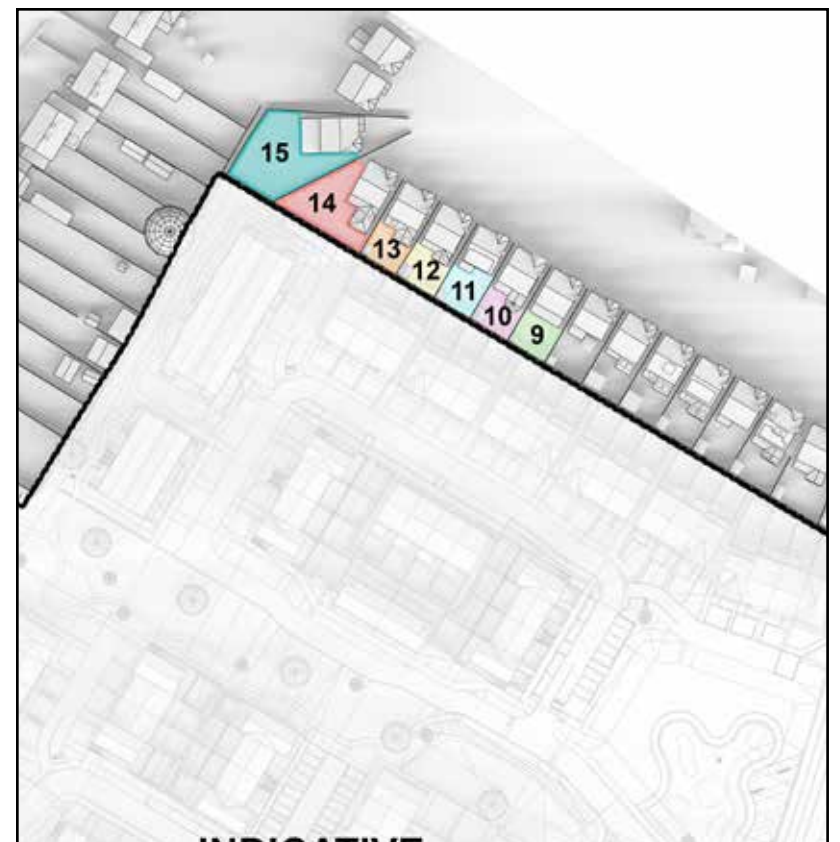
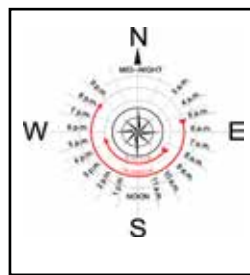


A.1.2 9-15 King's Ct, Kingsfurze

Table No. A.1.2 - SOC Results:							
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		
9	9 King's Ct, Kingsfurze	84.59%	84.79%	1.00	50.00%	BRE Compliant	Negligible
10	10 King's Ct, Kingsfurze	84.59%	78.82%	0.93	50.00%	BRE Compliant	Negligible
11	11 King's Ct, Kingsfurze	87.62%	87.38%	1.00	50.00%	BRE Compliant	Negligible
12	12 King's Ct, Kingsfurze	84.04%	83.65%	1.00	50.00%	BRE Compliant	Negligible
13	14 King's Ct, Kingsfurze	82.71%	75.45%	0.91	50.00%	BRE Compliant	Negligible
14	15 King's Ct, Kingsfurze	91.69%	89.45%	0.98	50.00%	BRE Compliant	Negligible
15	16 King's Ct, Kingsfurze	90.20%	88.63%	0.98	50.00%	BRE Compliant	Negligible

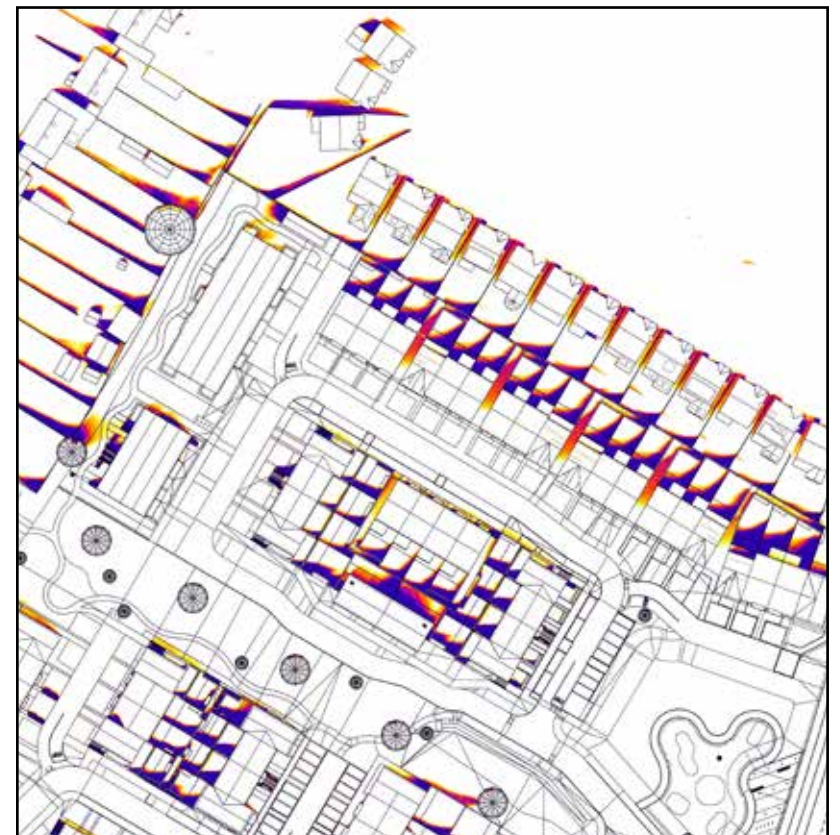
* Section 3.3.17 of the BRE Guidelines states that in order for a proposed development to have a noticeable effect on the amount of sunlight received in an existing garden or amenity area, the value needs to both drop below the stated target value of 50% **and** be reduced by more than 20% of the existing value.

** For the interpretation of level of effects please refer to "E.2 Definition of Effects" on page 109.



Baseline

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



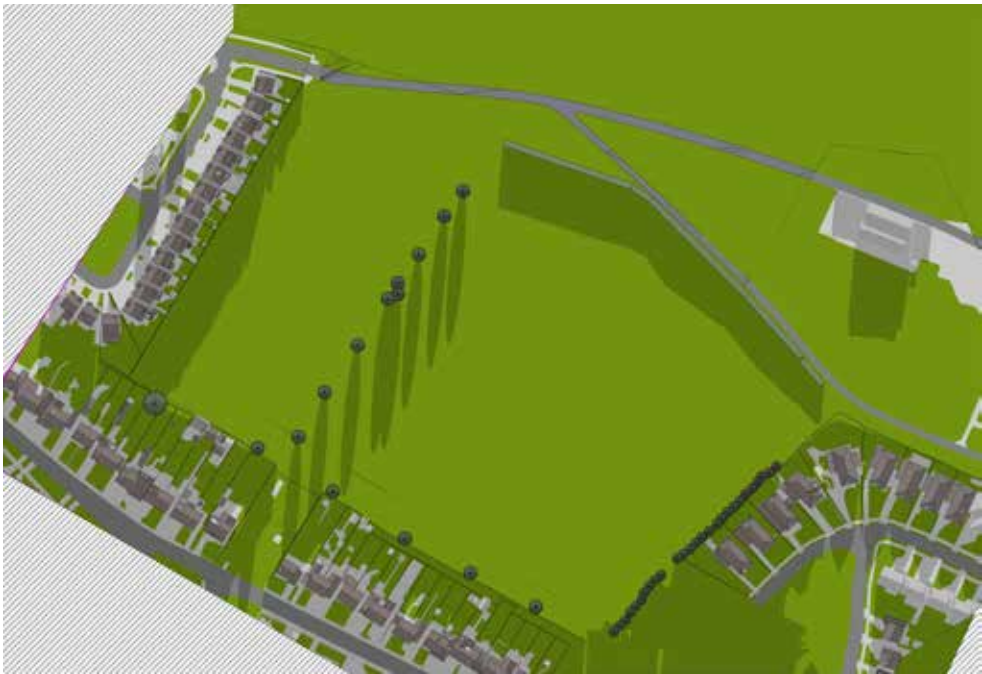
Proposed



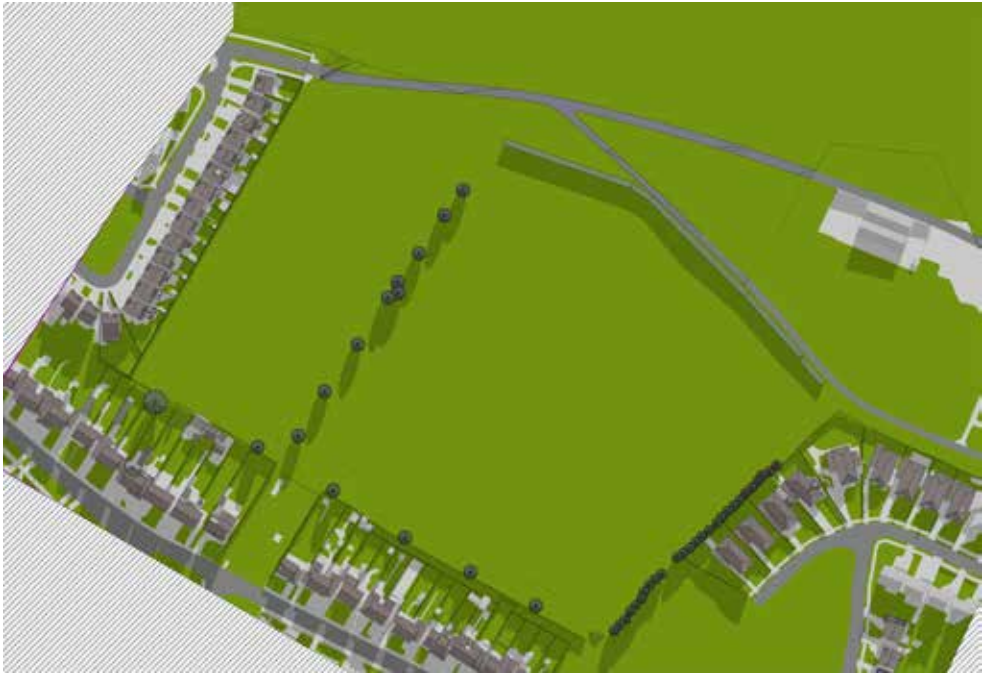
Baseline

Proposed

March 21st 7:00



March 21st 8:00



March 21st 9:00



March 21st 10:00



B.0
B.1

Shadow Studies
Shadow Study 21 March

Project: Naas Racecourse, Co. Kildare

Proposed

March 21st
Sunrise 6:32 | Sunset 18:32

Applicant: Ballymore Developments Limited





Baseline

Proposed

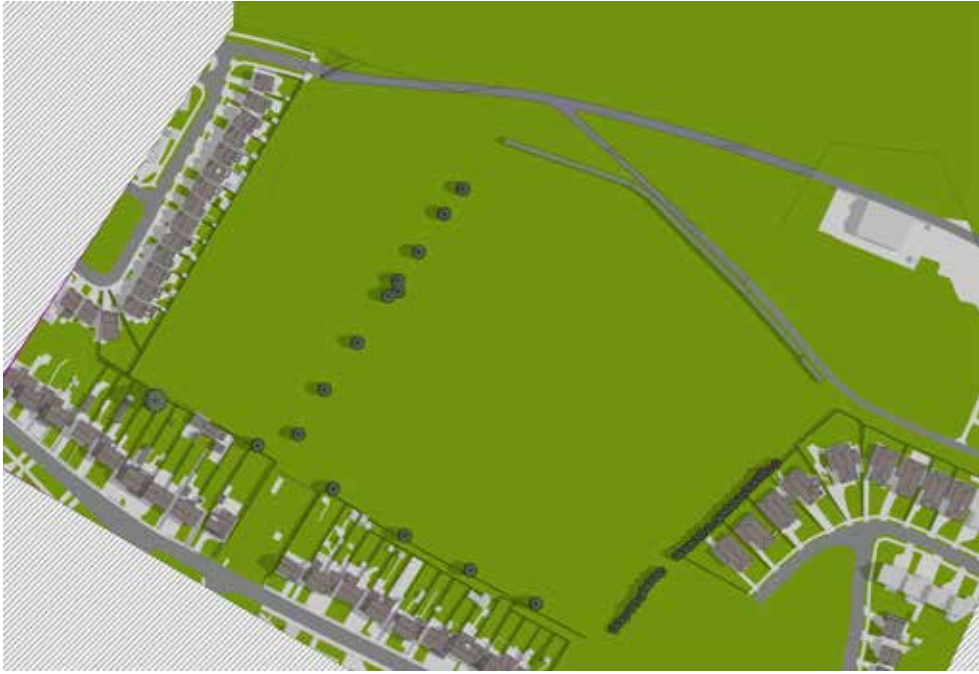
March 21st 11:00



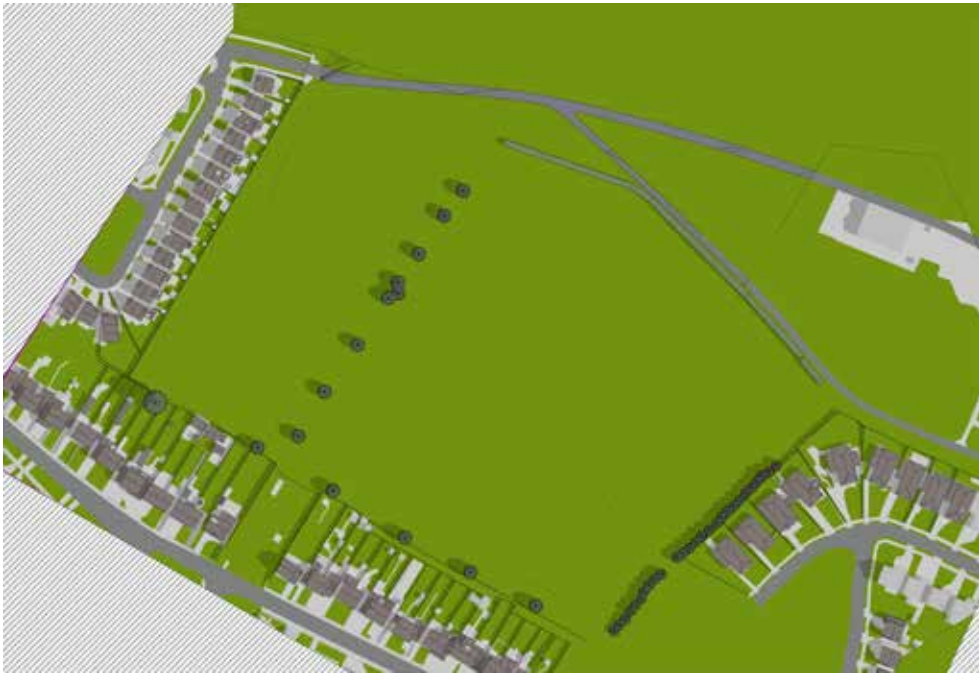
March 21st 12:00



March 21st 13:00



March 21st 14:00



Project: Naas Racecourse, Co. Kildare

Proposed

March 21st
Sunrise 6:32 | Sunset 18:32

Applicant: Ballymore Developments Limited





Baseline

Proposed

March 21st 15:00



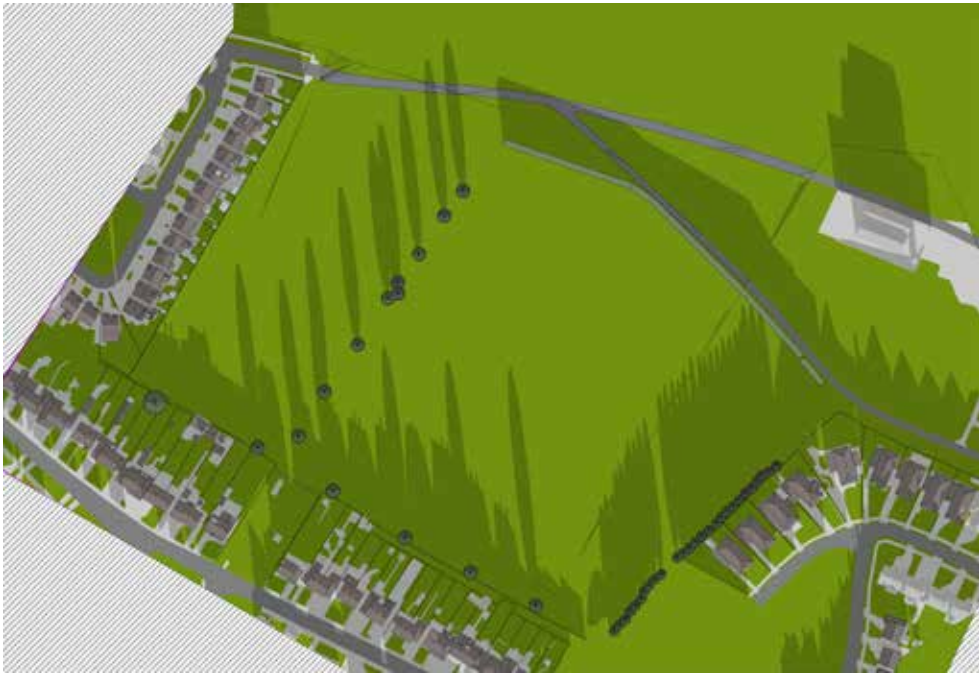
March 21st 16:00



March 21st 17:00



March 21st 18:00



Project: Naas Racecourse, Co. Kildare

Proposed

March 21st
Sunrise 6:32 | Sunset 18:32

Applicant: Ballymore Developments Limited

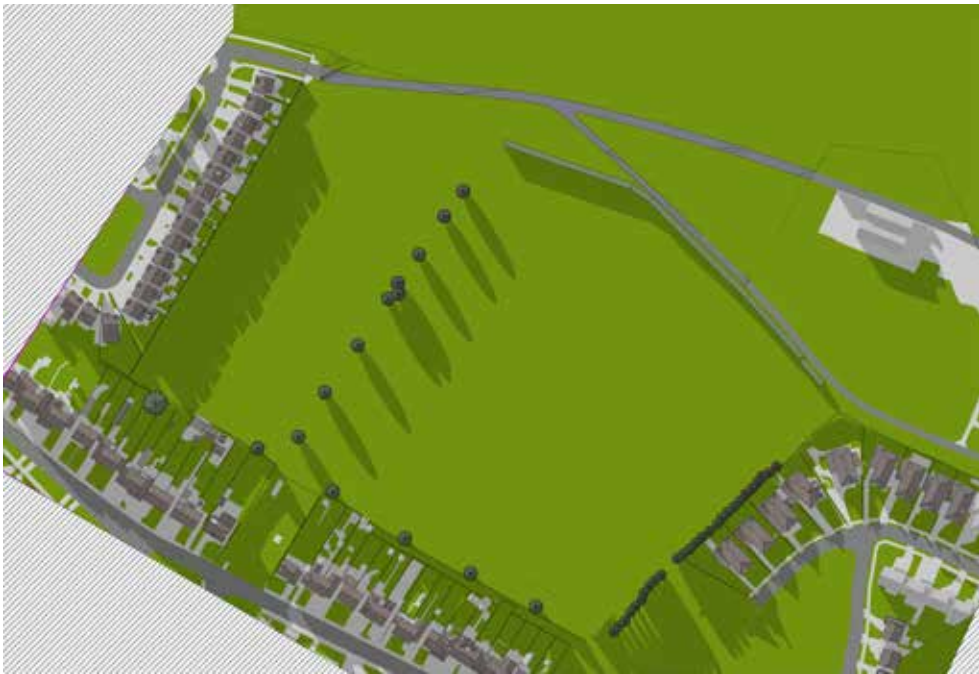




Baseline

Proposed

June 21st 6:00



June 21st 7:00



June 21st 8:00



June 21st 9:00



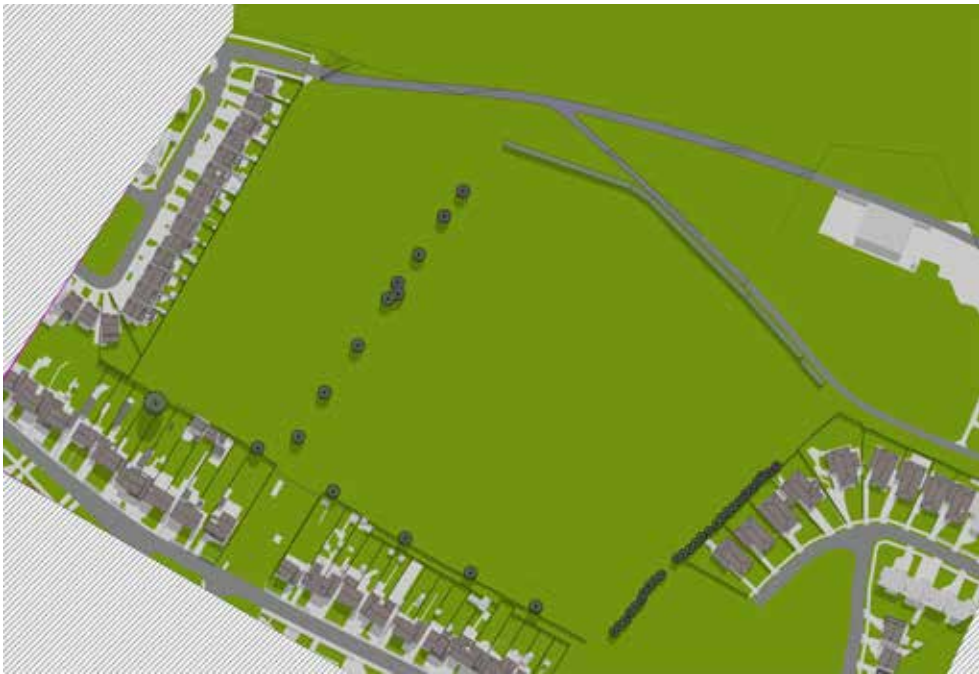
B.2	Shadow Study 21 June	Project: Naas Racecourse, Co. Kildare	Proposed
June 21st Sunrise 5:04 Sunset 21:49		Applicant: Ballymore Developments Limited	 3D DESIGN BUREAU



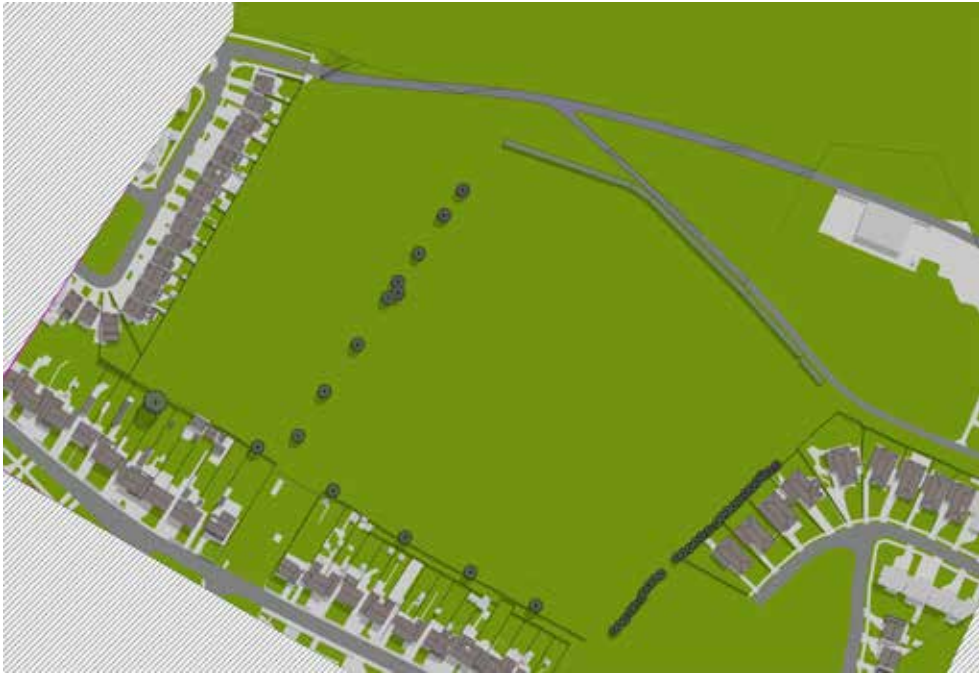
Baseline

Proposed

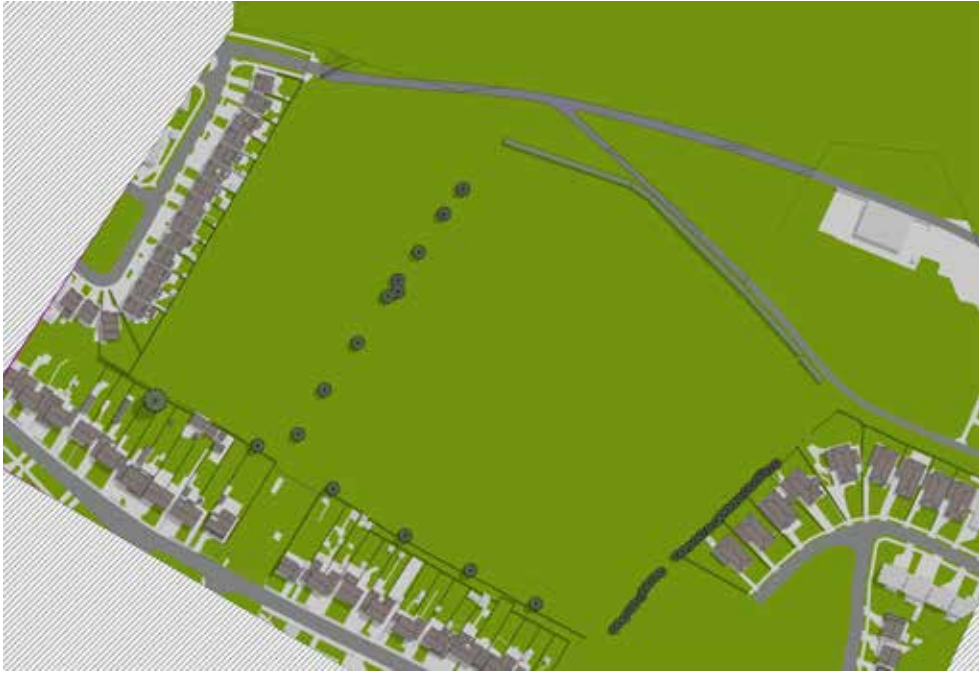
June 21st 10:00



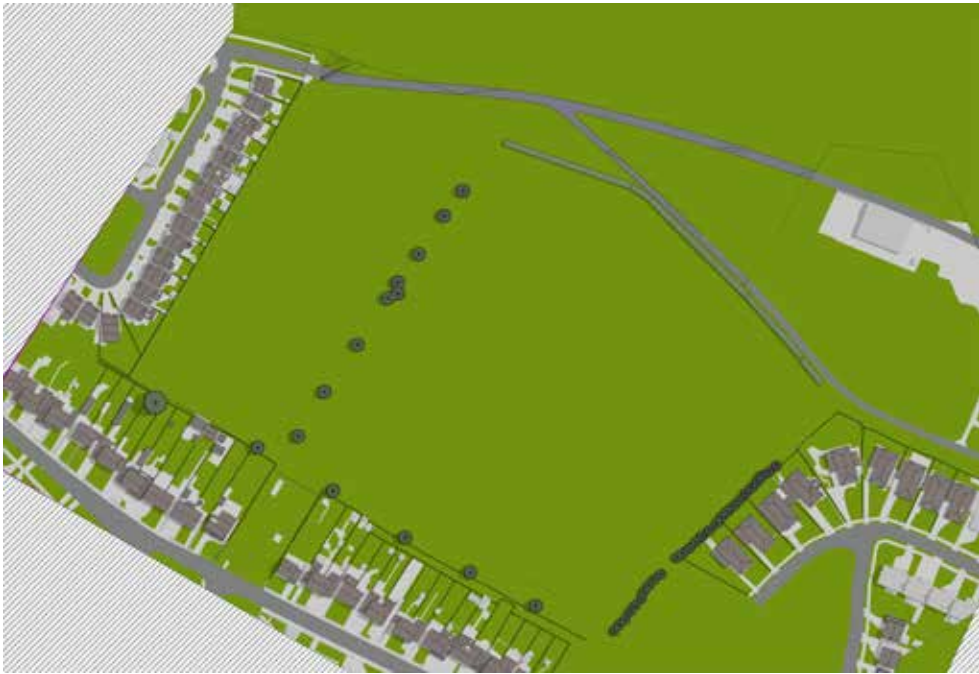
June 21st 11:00



June 21st 12:00



June 21st 13:00



Project: Naas Racecourse, Co. Kildare

Proposed

June 21st
Sunrise 5:04 | Sunset 21:49

Applicant: Ballymore Developments Limited





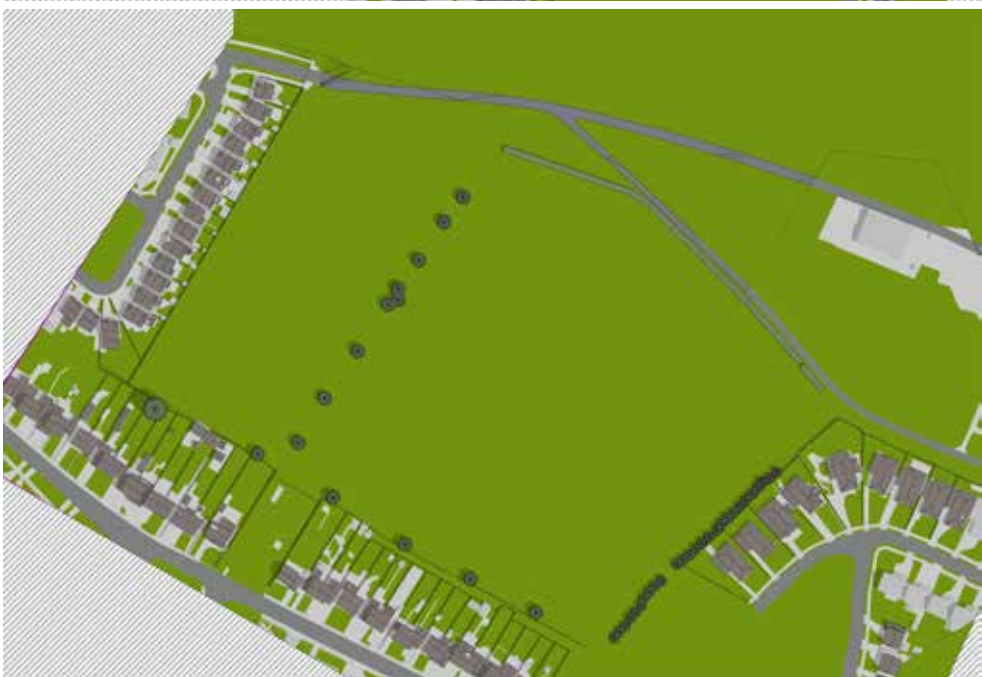
Baseline

Proposed

June 21st 14:00



June 21st 15:00



June 21st 16:00



June 21st 17:00



Project: Naas Racecourse, Co. Kildare

Proposed

June 21st
Sunrise 5:04 | Sunset 21:49

Applicant: Ballymore Developments Limited





Baseline

Proposed

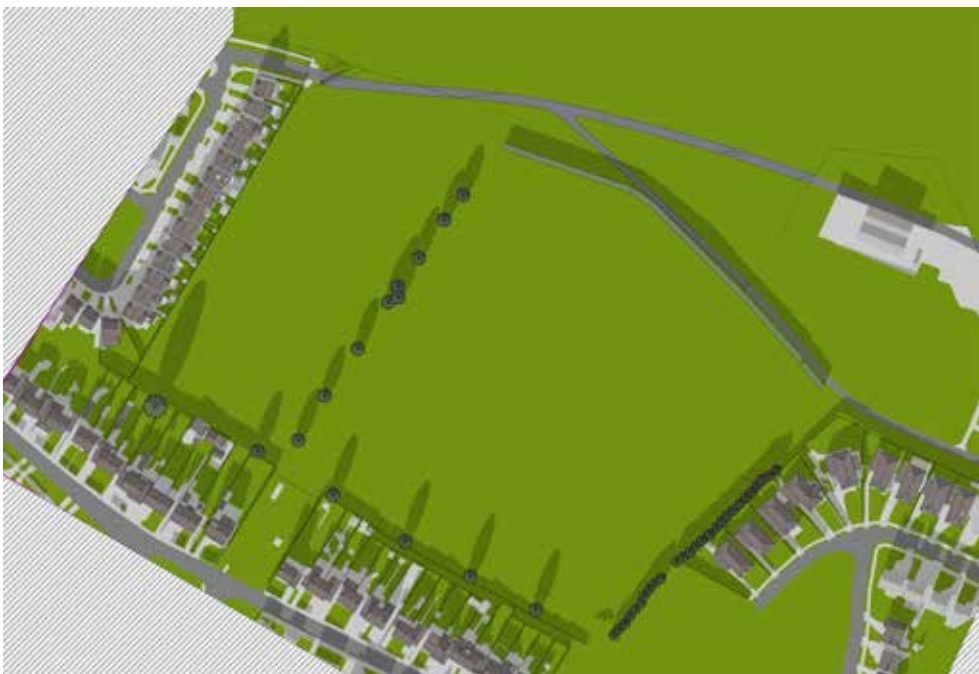
June 21st 18:00



June 21st 19:00



June 21st 20:00



June 21st 21:00



Project: Naas Racecourse, Co. Kildare

Proposed

June 21st
Sunrise 5:04 | Sunset 21:49

Applicant: Ballymore Developments Limited

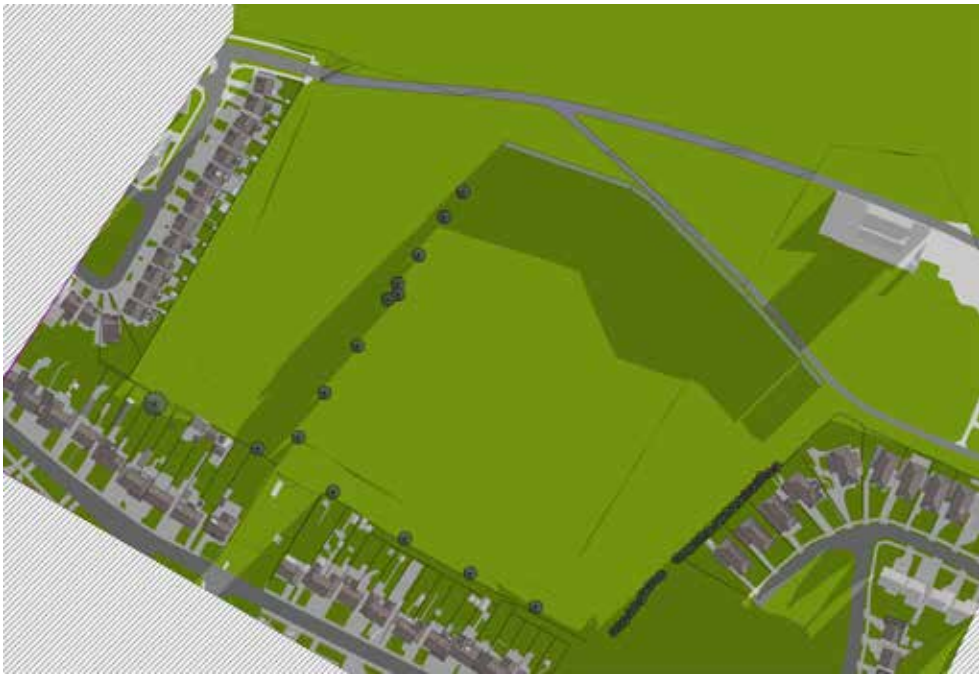




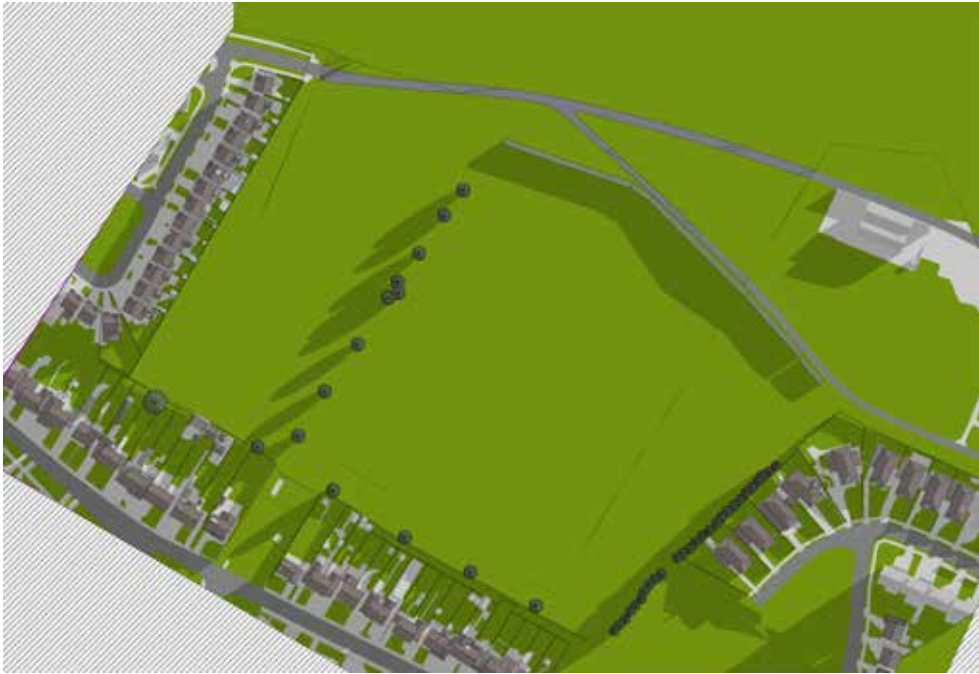
Baseline

Proposed

December 21st 9:00



December 21st 10:00



December 21st 11:00



December 21st 12:00





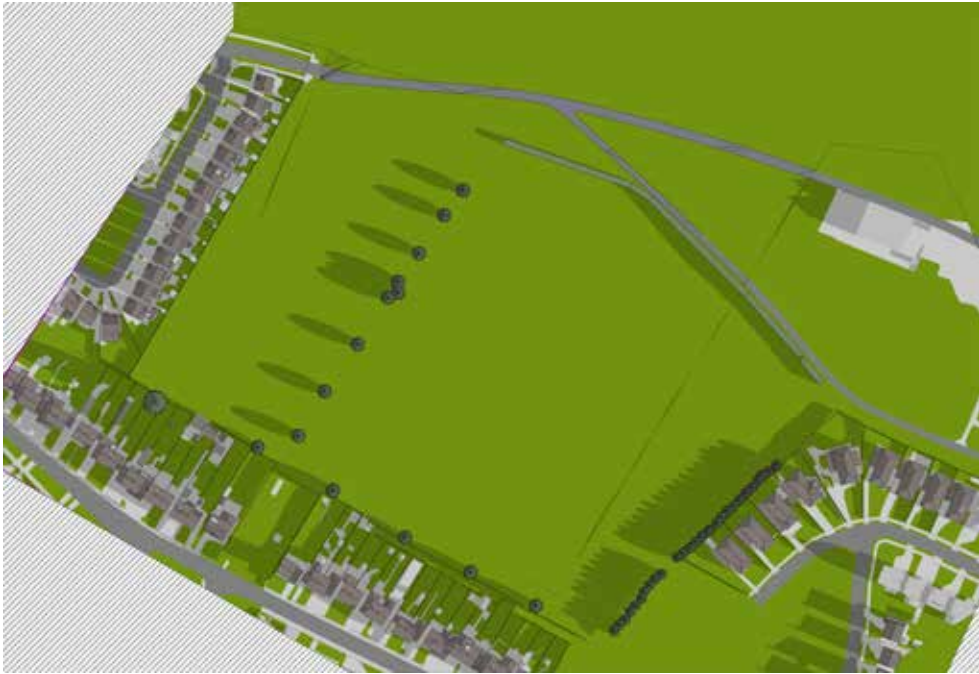
Baseline

Proposed

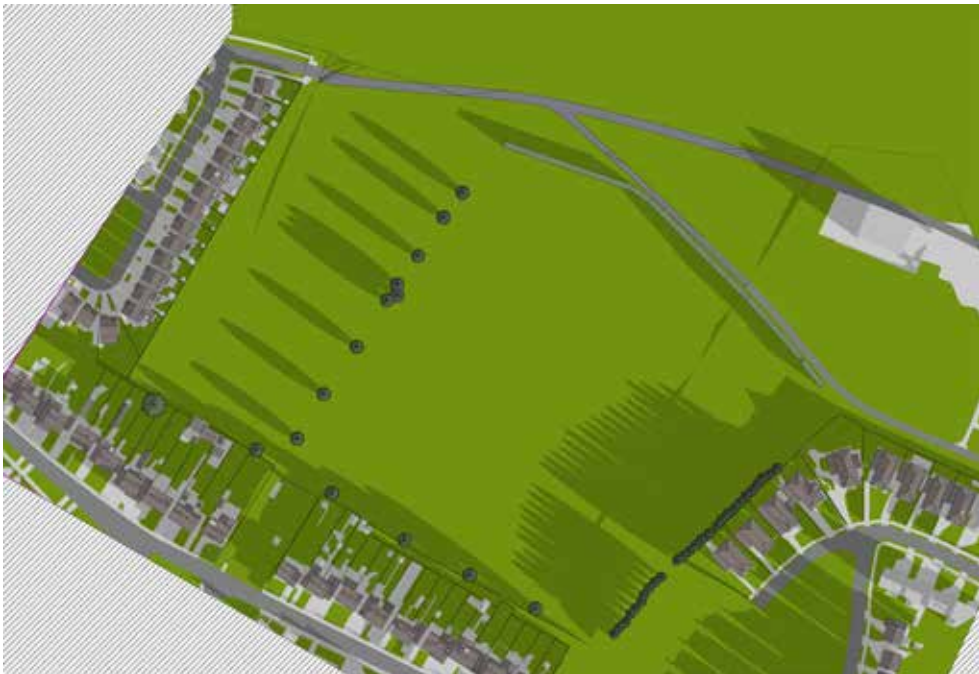
December 21st 13:00



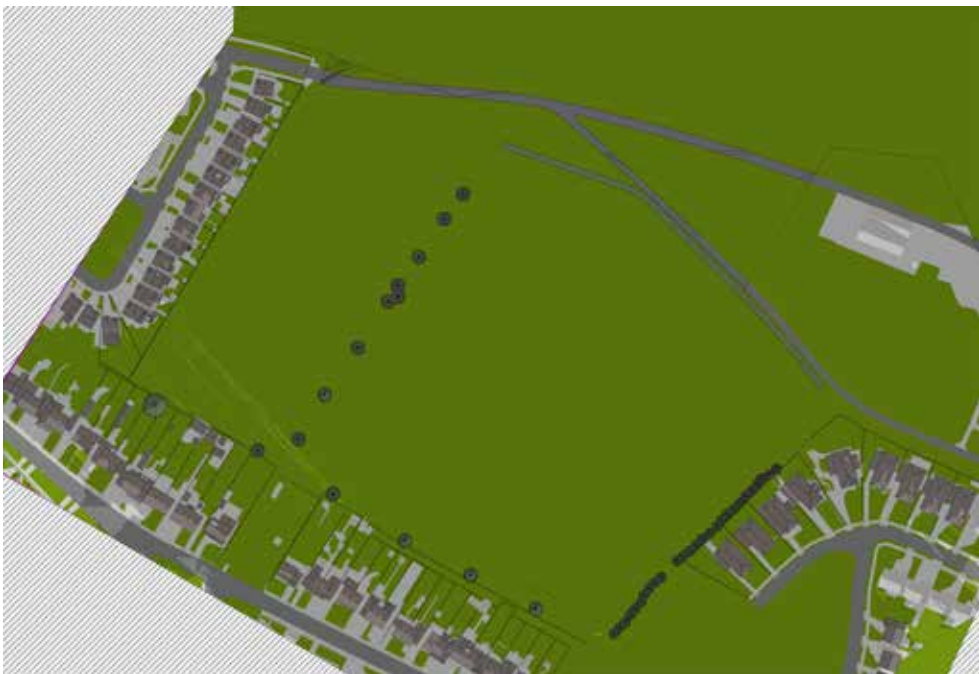
December 21st 14:00



December 21st 15:00



December 21st 16:00



Project: Naas Racecourse, Co. Kildare

Proposed

December 21st
Sunrise 8:45 | Sunset 16:00

Applicant: Ballymore Developments Limited



C.0 Scheme Performance

C.1 Proposed Floor Plans

C.1.1 Proposed Apartment Floor Plans - APT-01

Figure C.1: APT-01 - Site Location



Figure C.2: APT-01 - Ground Floor



Figure C.3: APT-01 - First Floor



Figure C.4: APT-01 - Second Floor



C.1.2 Proposed Duplex Floor Plans - HT-05 Typical

Figure C.6: HT-05 - Site Location



Figure C.5: HT-05 - Ground Floor Typical

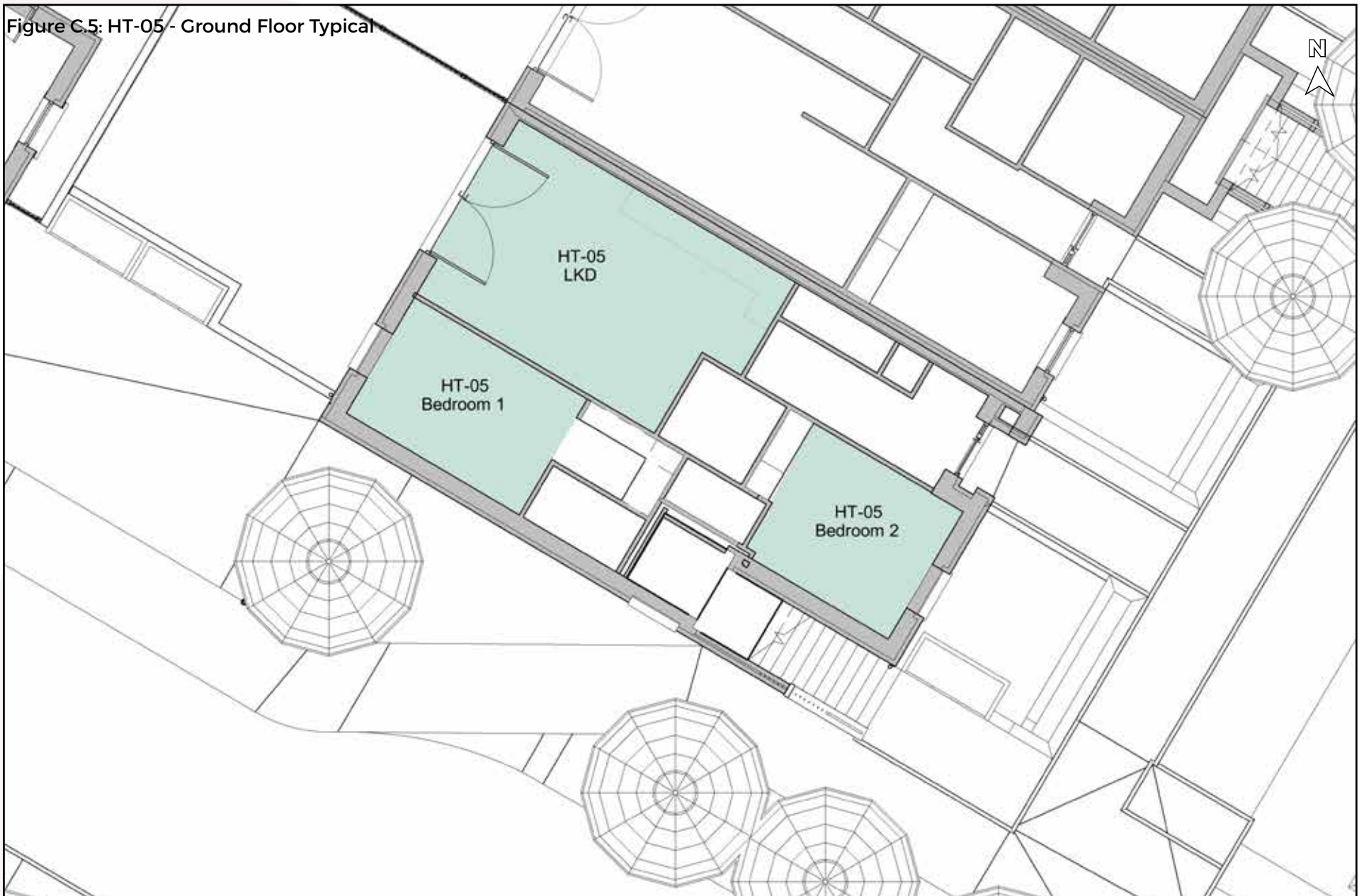


Figure C.7: HT-05 - First Floor Typical

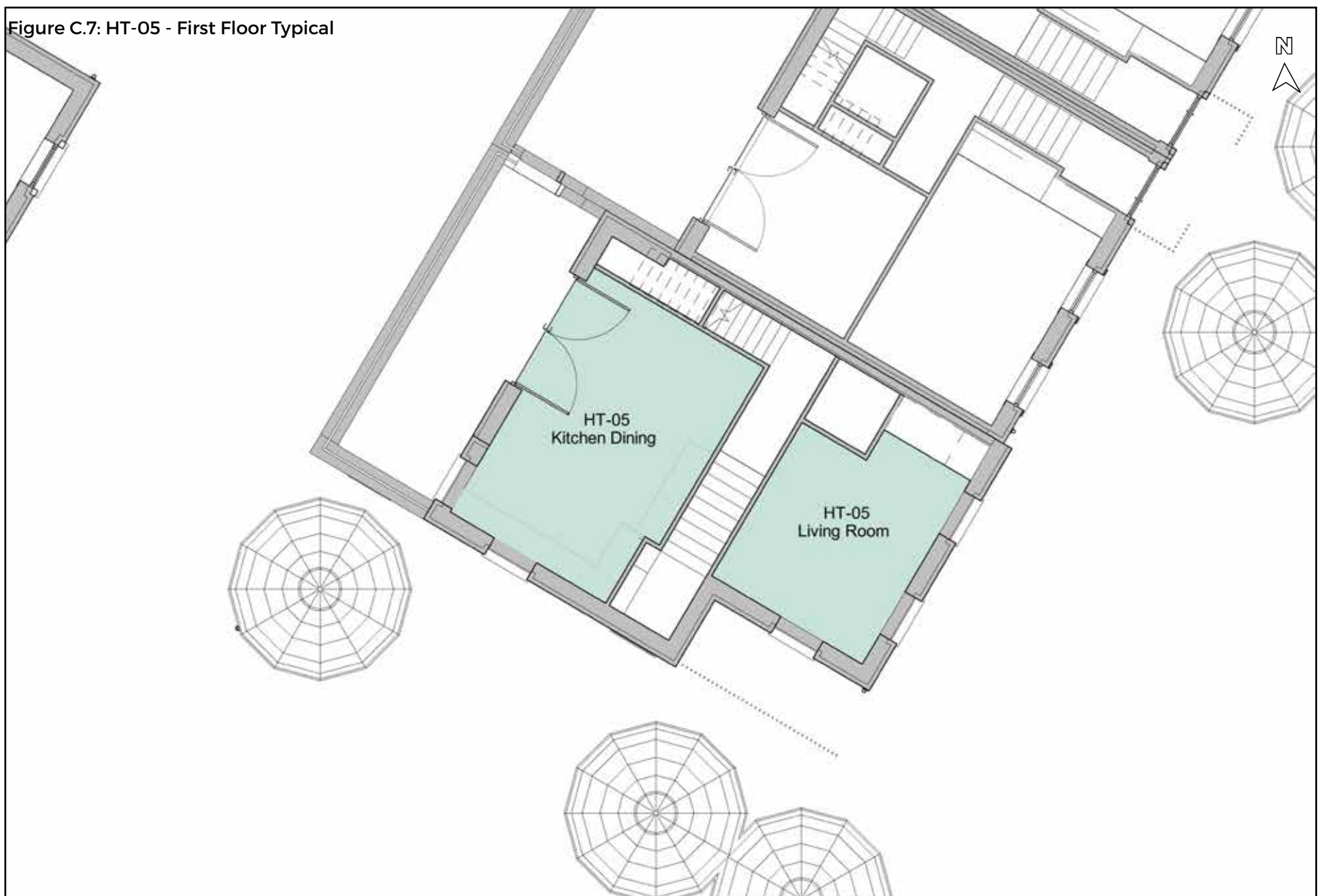
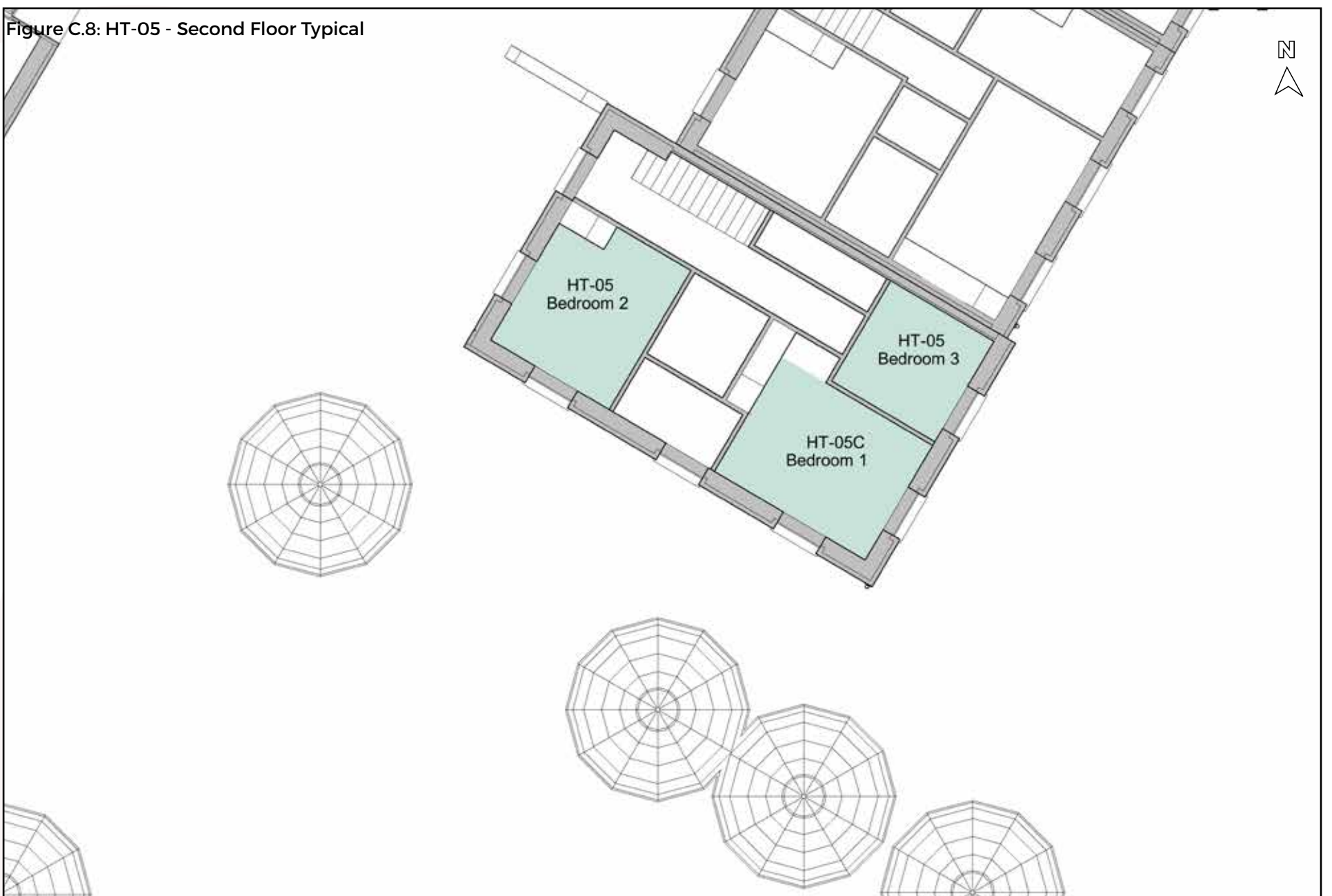


Figure C.8: HT-05 - Second Floor Typical



C.1.3 Proposed Duplex Floor Plans - HT-06 Typical

Figure C.10: HT-06 - Site Location



Figure C.9: HT-06 - Ground Floor Typical

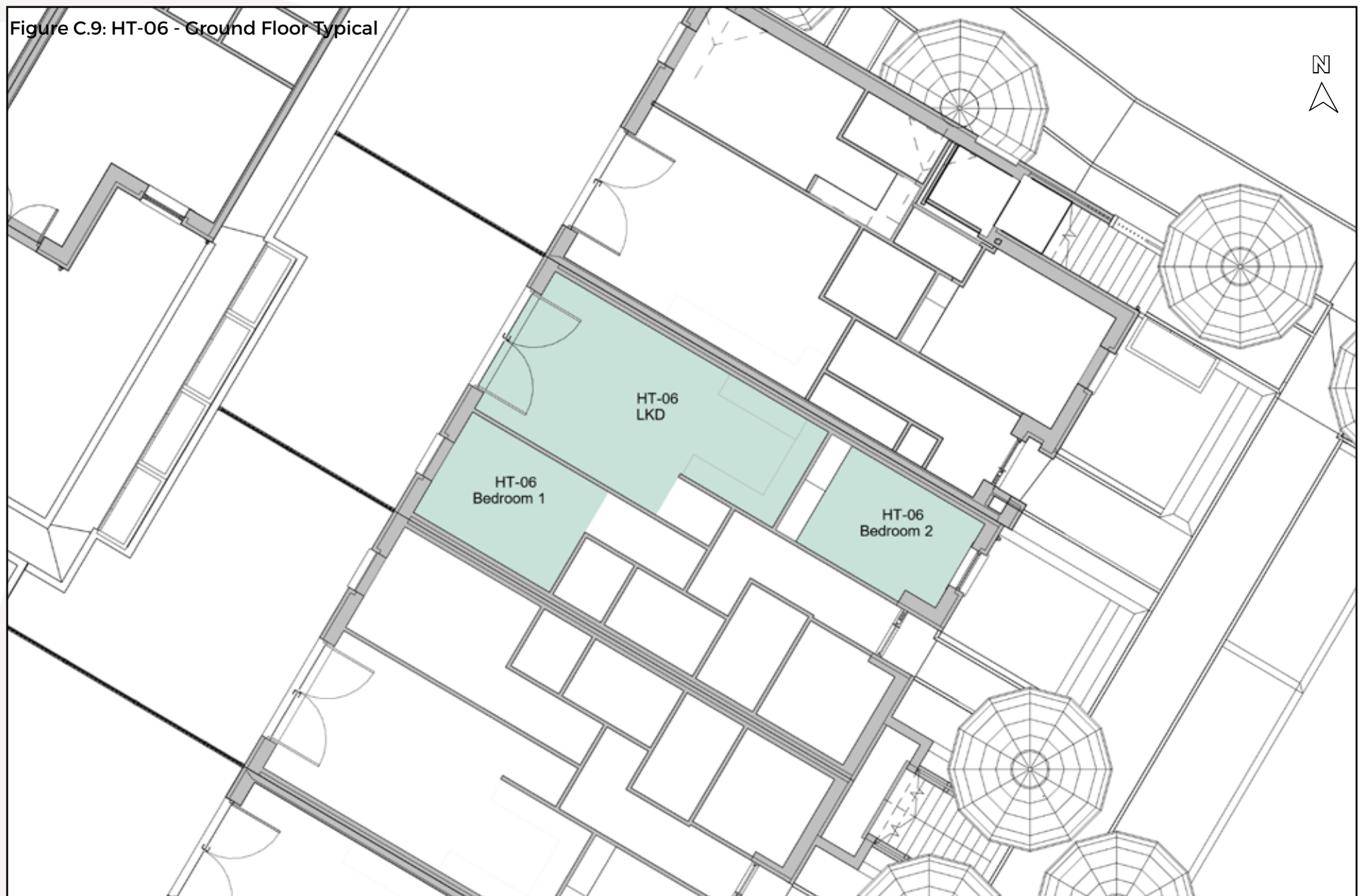


Figure C.11: HT-06 - First Floor Typical

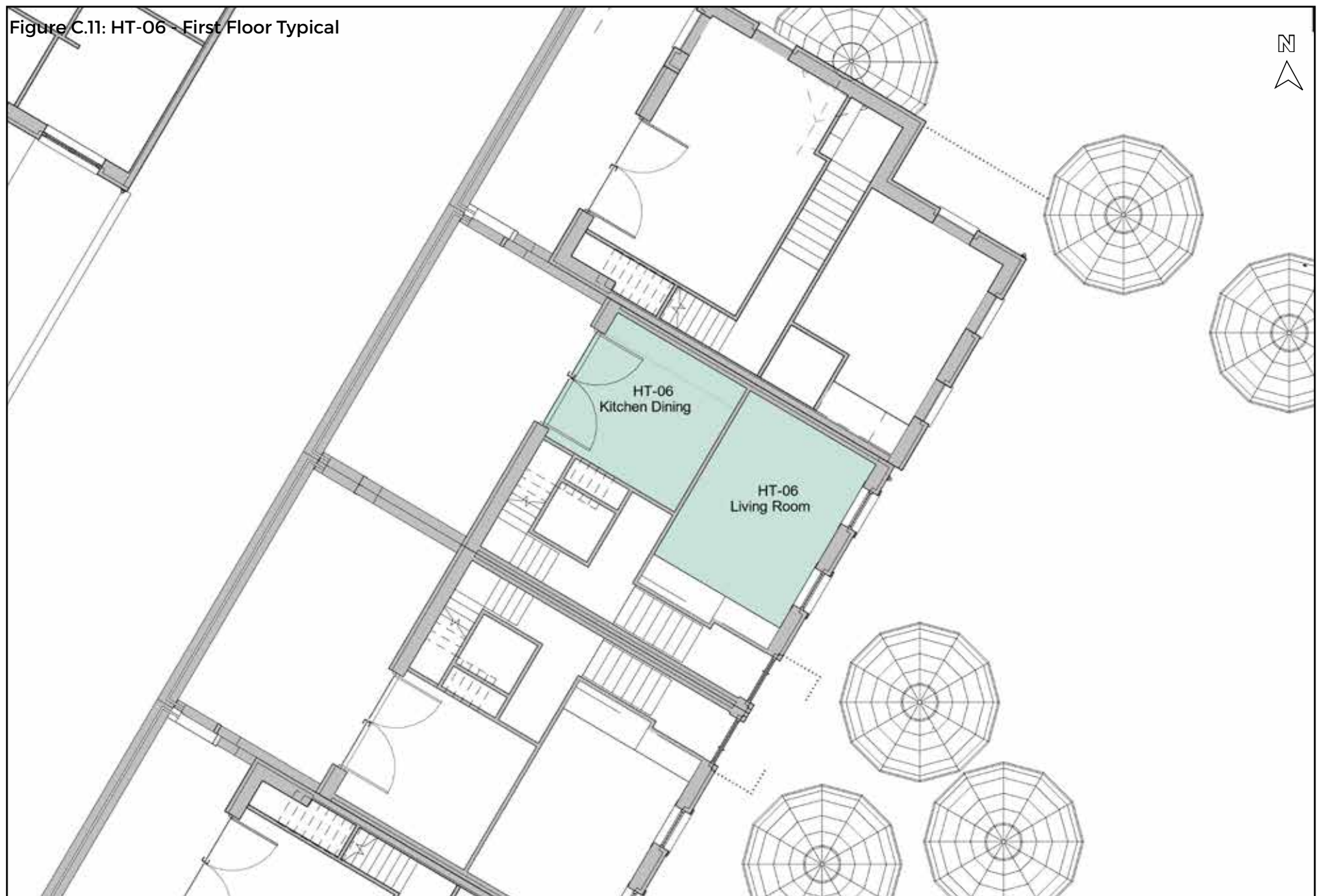
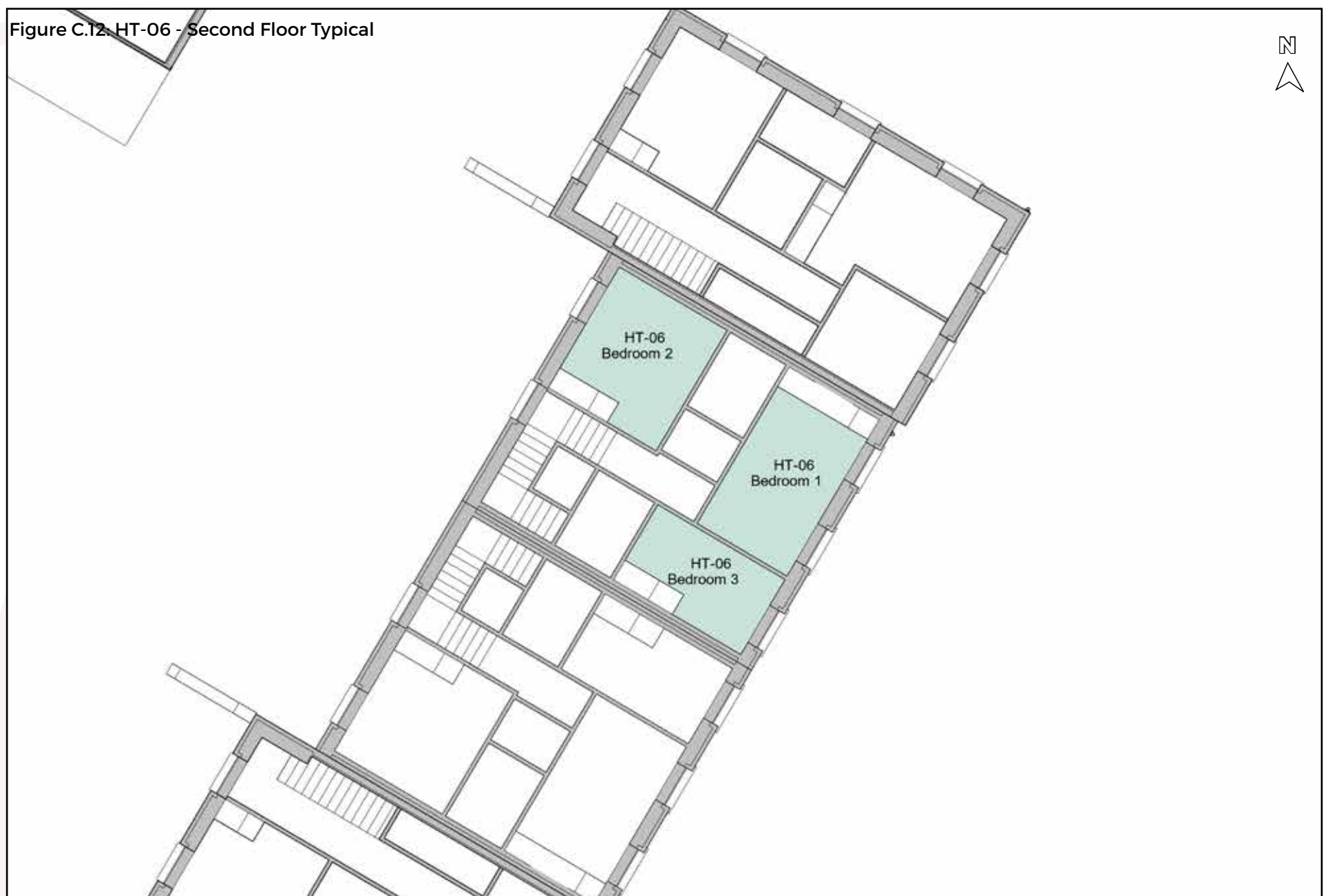


Figure C.12: HT-06 - Second Floor Typical



C.1.4 Proposed Duplex Floor Plans - HT-07 Typical

Figure C.14: HT-07 - Site Location



Figure C.13: HT-07 - Ground Floor Typical

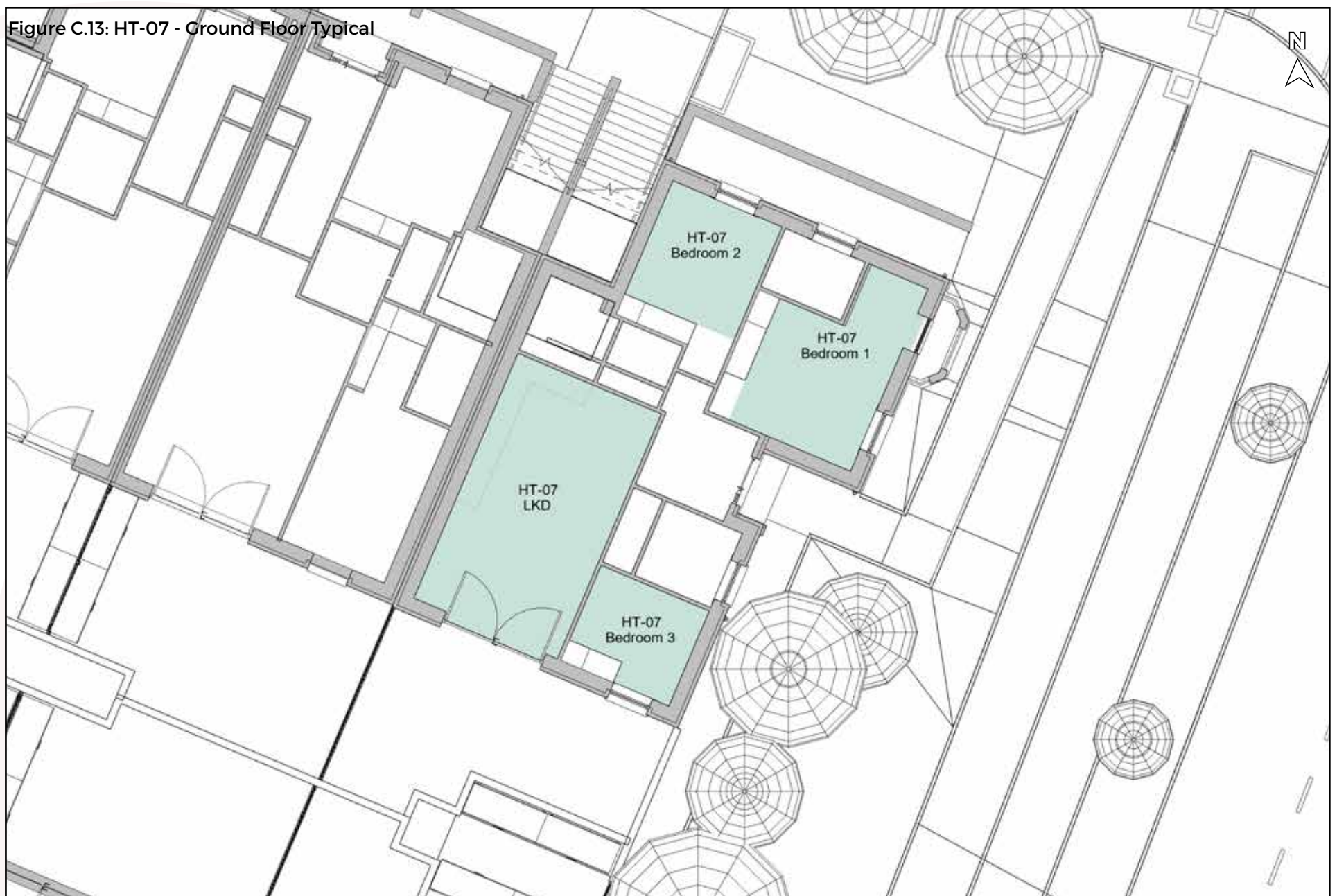


Figure C.15: HT-07 - First Floor Typical

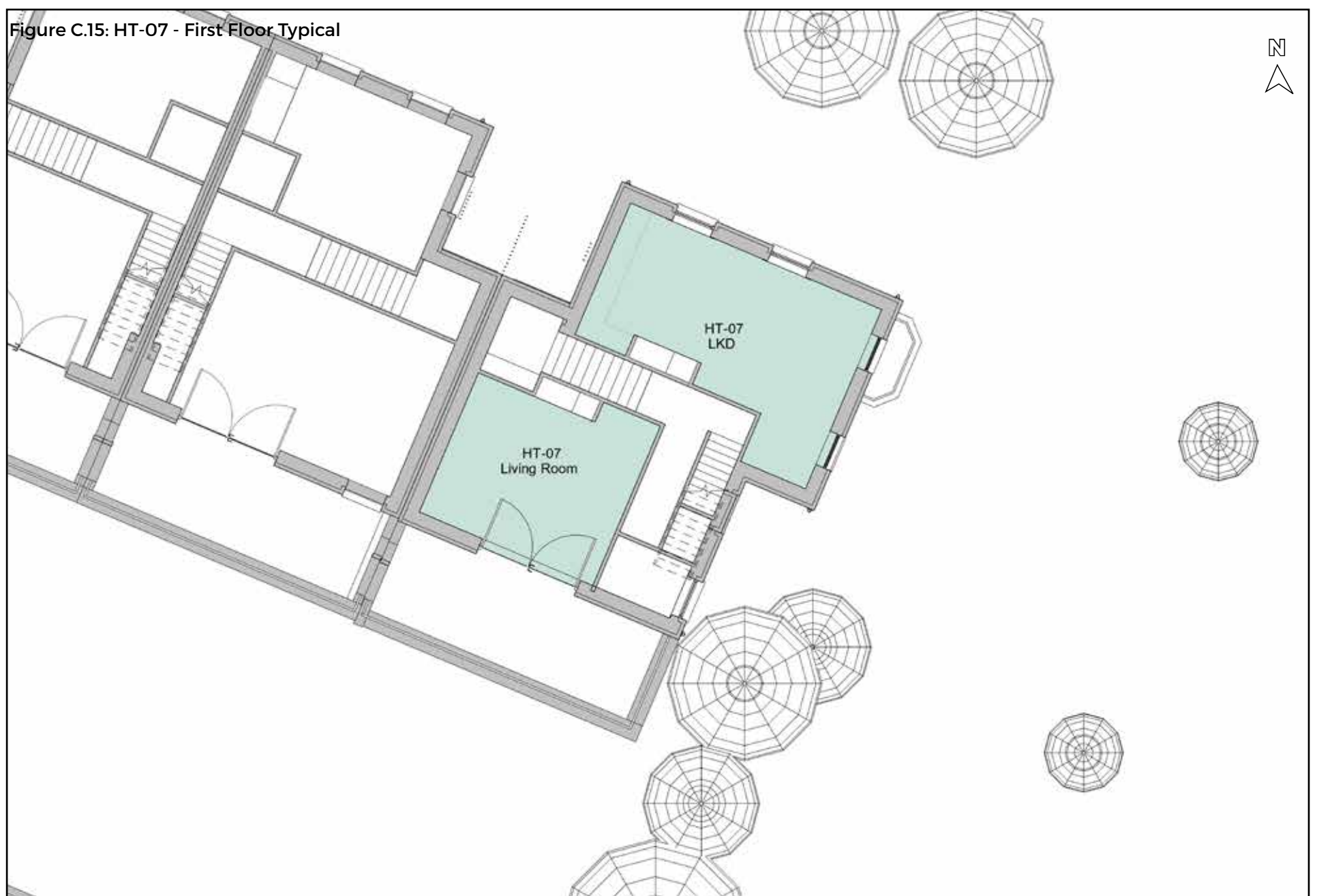
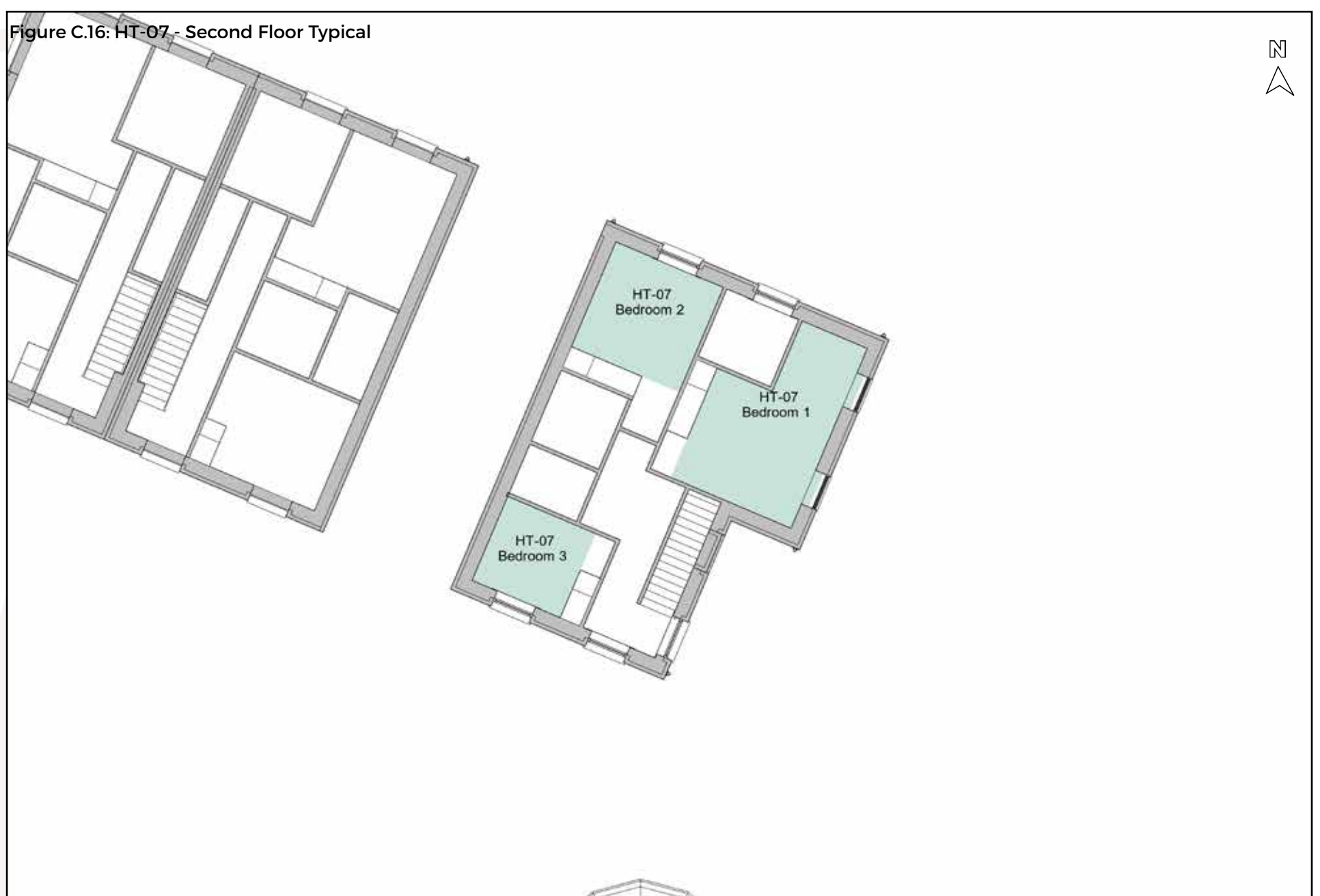


Figure C.16: HT-07 - Second Floor Typical



C.1.5 Proposed Triplex Floor Plans - HT-10 Typical

Figure C.18: HT-10 - Site Location



Figure C.17: HT-10 - Ground Floor Typical

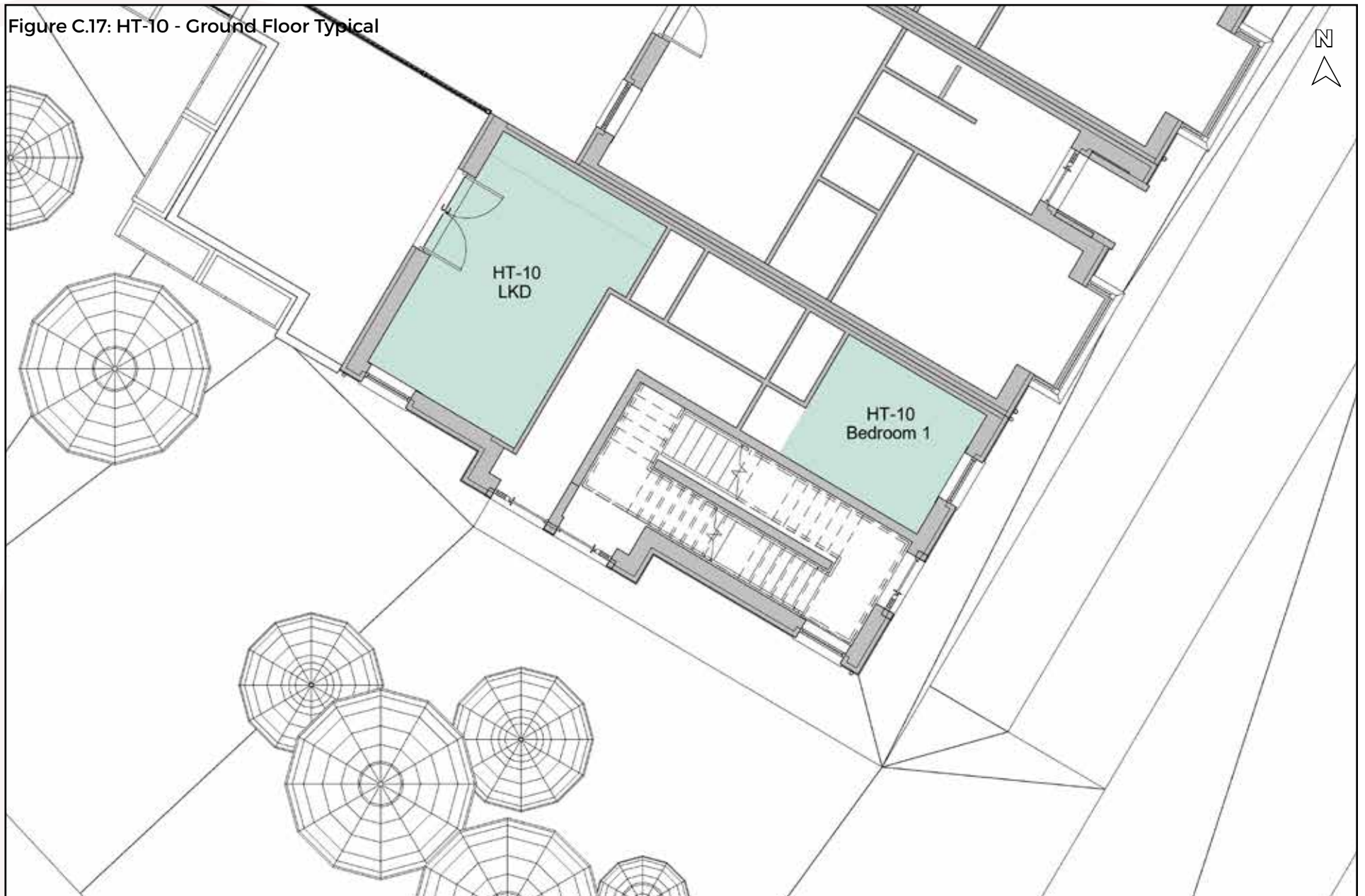


Figure C.19: HT-10 - First Floor Typical

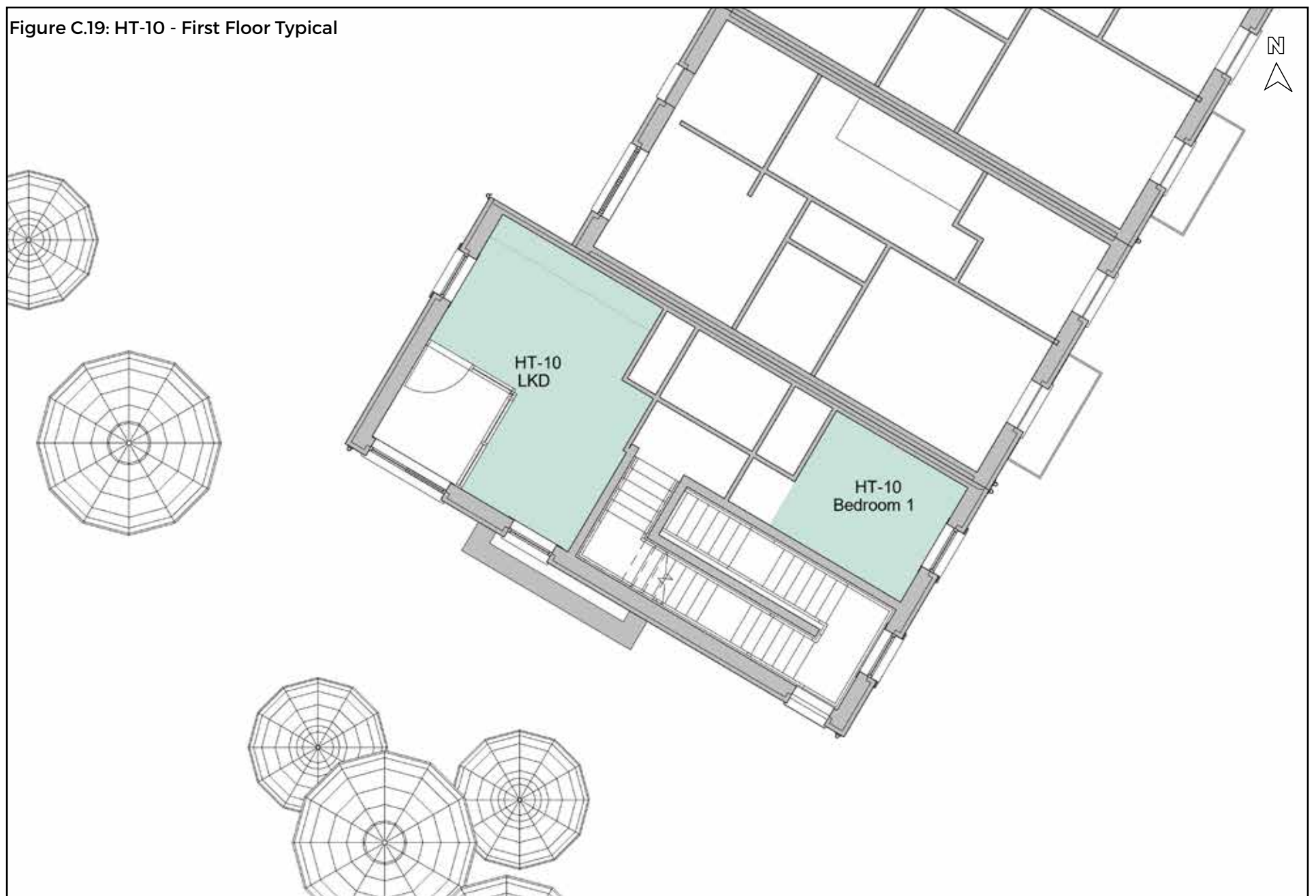
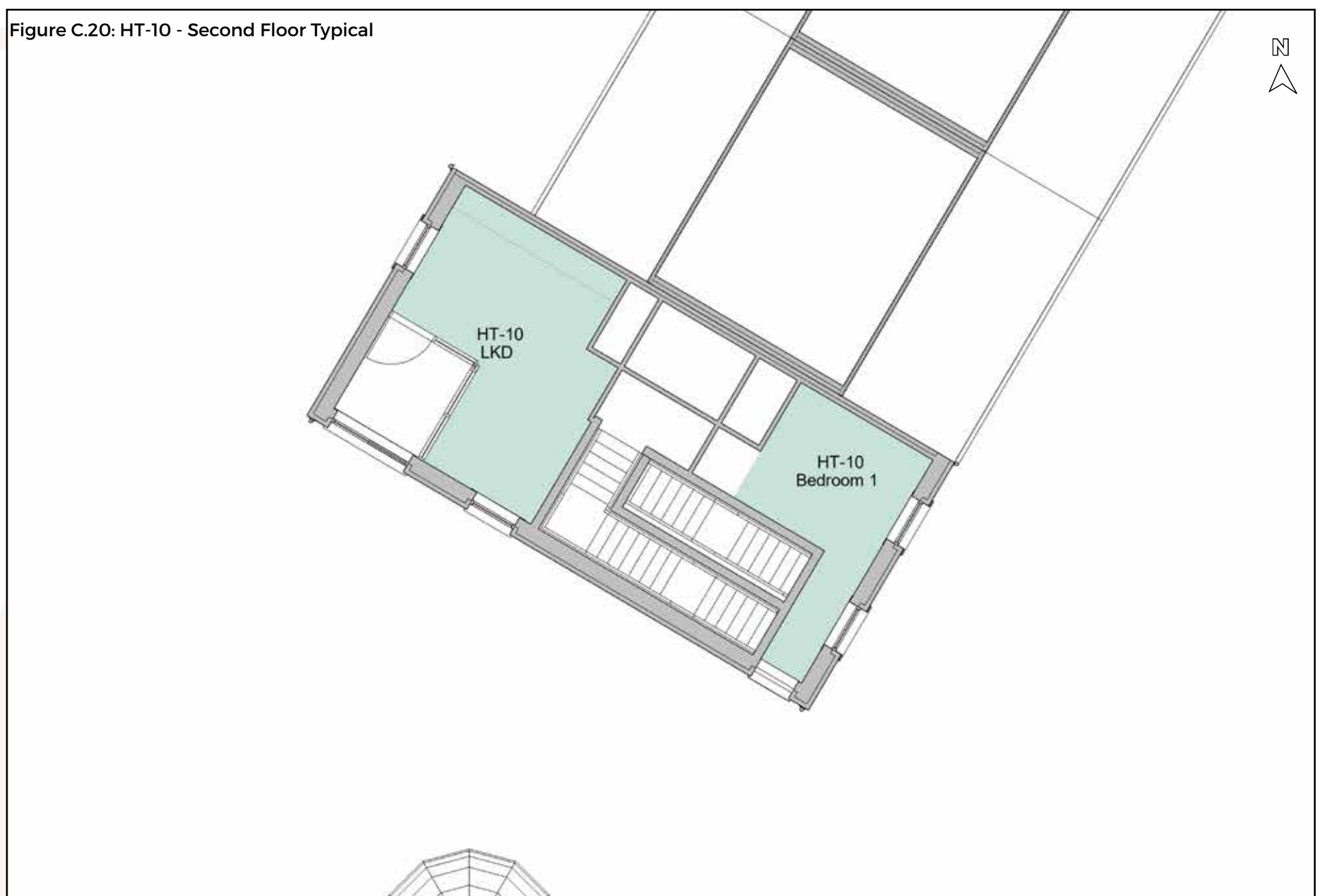


Figure C.20: HT-10 - Second Floor Typical



C.1.6 Proposed Triplex Floor Plans - HT-12 Typical

Figure C.22: HT-12 - Site Location



Figure C.21: HT-12 - Ground Floor Typical

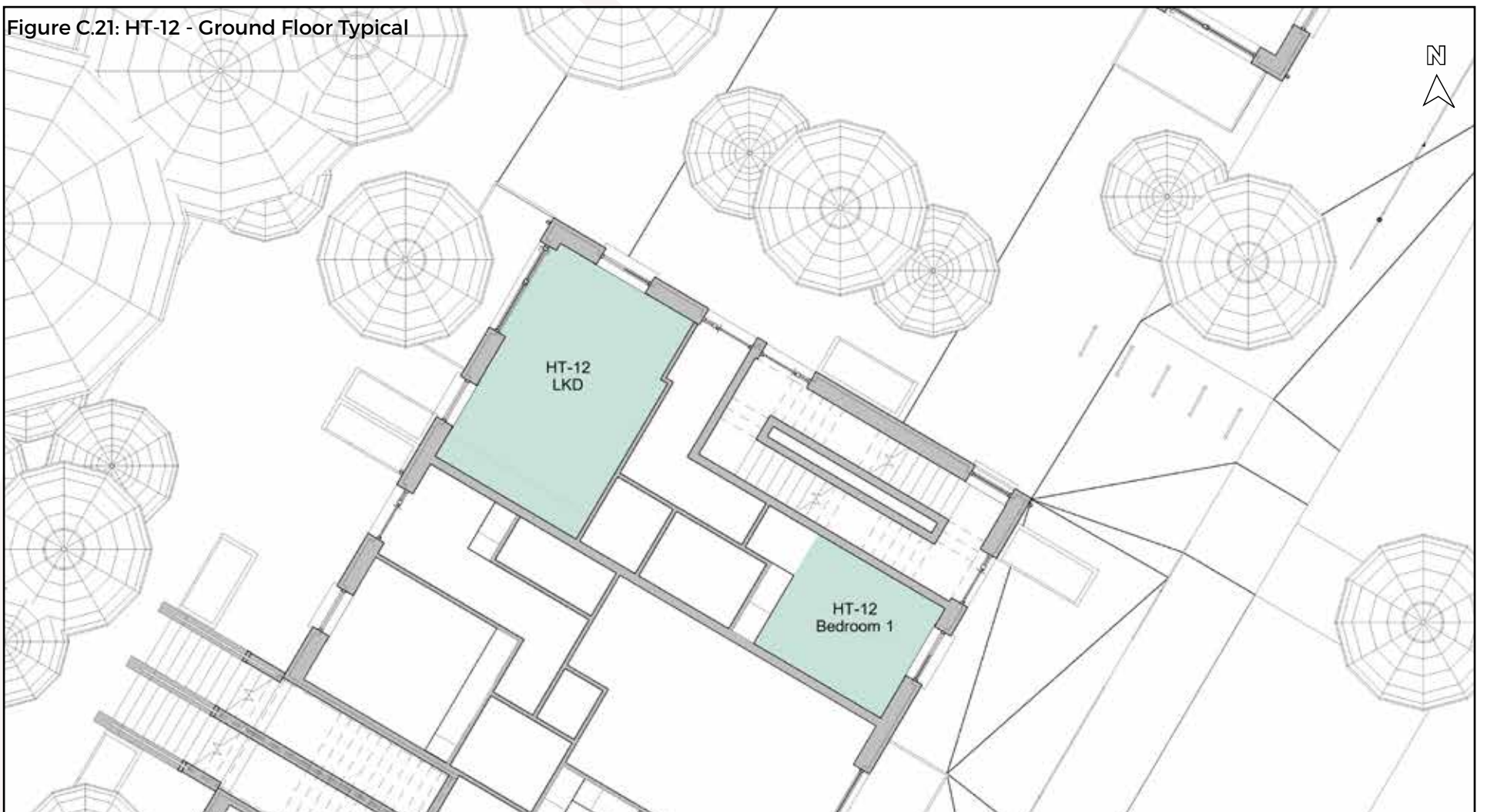


Figure C.23: HT-12 - First Floor Typical

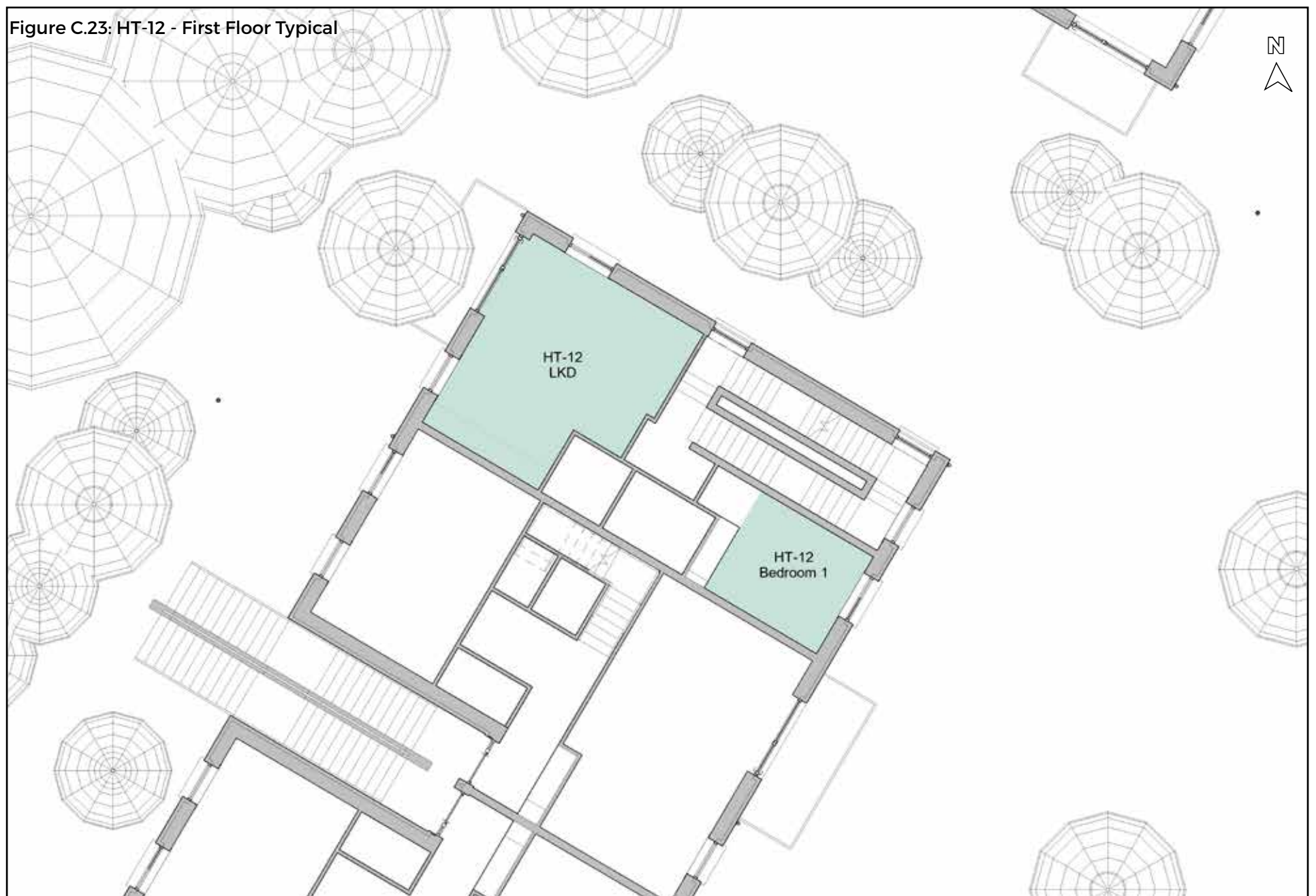
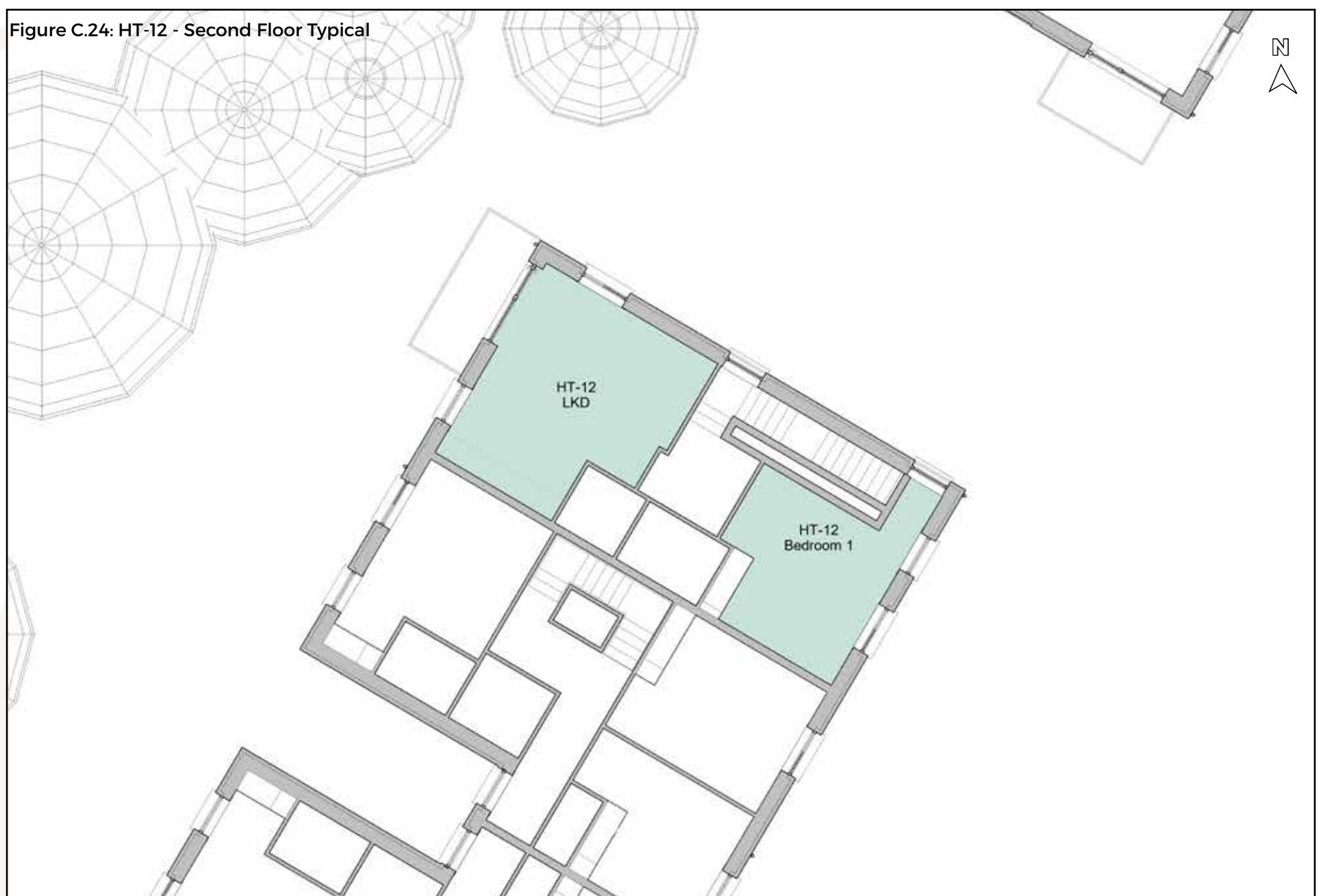


Figure C.24: HT-12 - Second Floor Typical



C.1.7 Proposed Duplex Floor Plans - HT-13 Typical

Figure C.26: HT-13 - Site Location



Figure C.25: HT-13 - Ground Floor Typical



Figure C.27: HT-13 - First Floor Typical

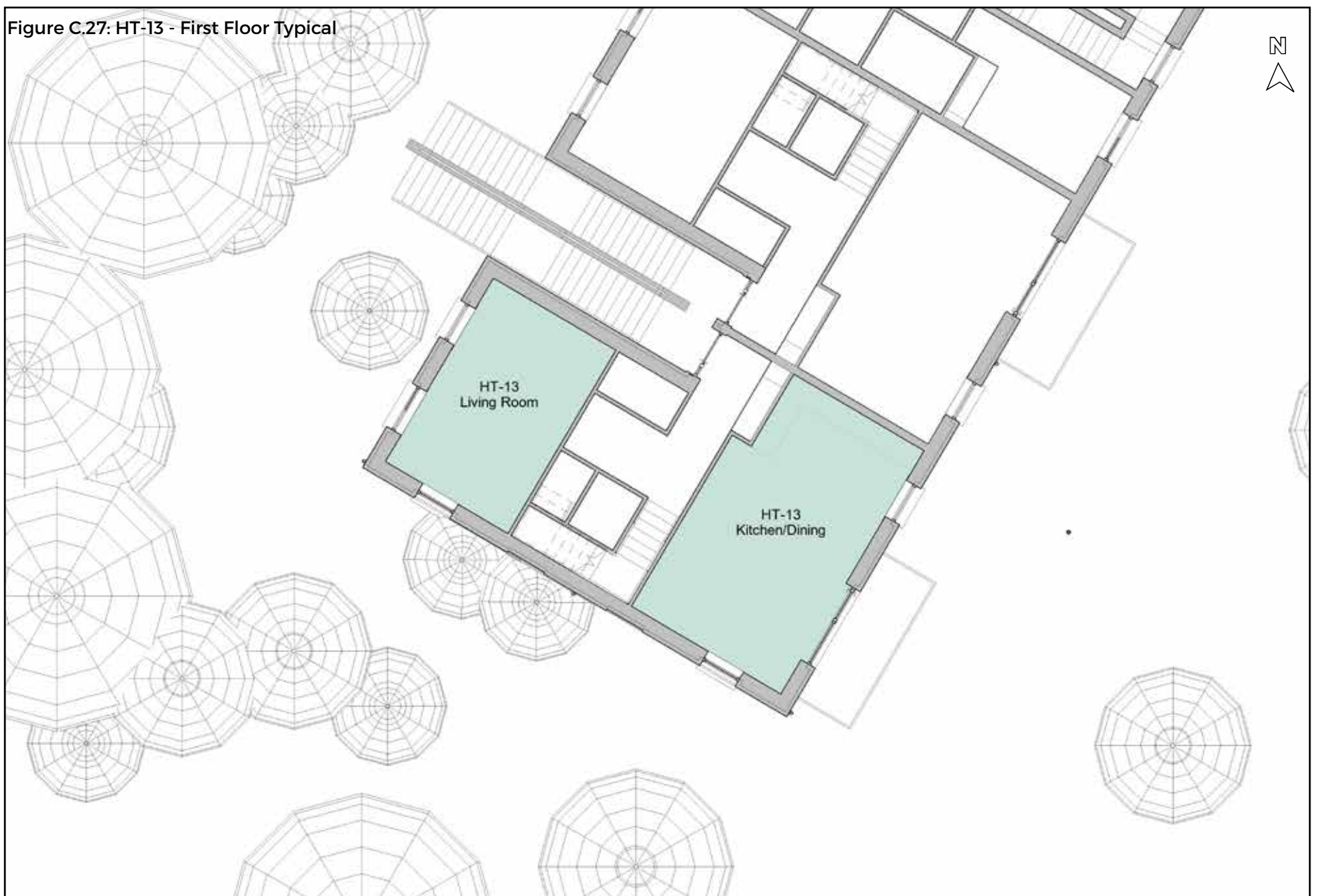
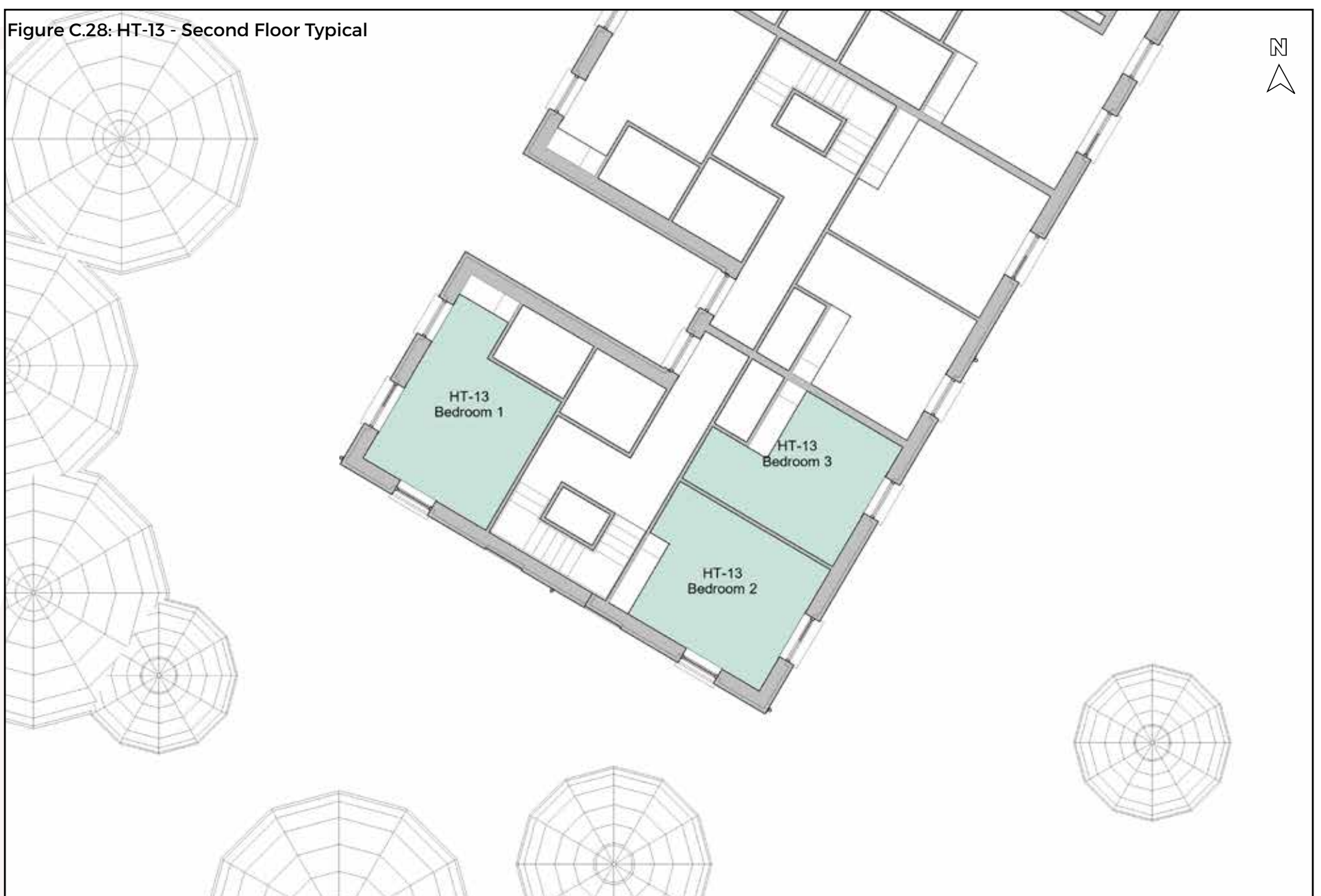


Figure C.28: HT-13 - Second Floor Typical



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

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

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

A: Unit Type / Number

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

B: Room Description

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

C: Target Lux

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

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

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

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

E: % of area above target Lux (With Trees)

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

This column states percentage of the working plane of the assessed room that is capable of receiving more than the appropriate target lux for at least half the daylight hours with the foliage of deciduous trees varied to account for summer and winter conditions, i.e. full leaf and bare branch.

F: Compliance with BR 209 Criteria

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

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

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

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

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

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

C.2.1 SDA Results: Apartment Units

Table No. C.2.1 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
Apartment / 020	LKD	200	98%	85%	Compliant
Apartment / 020	Bedroom 1	100	100%	100%	Compliant
Apartment / 021	LKD	200	100%	80%	Compliant
Apartment / 021	Bedroom 1	100	100%	100%	Compliant
Apartment / 022	LKD	200	100%	60%	Compliant
Apartment / 022	Bedroom 1	100	99%	79%	Compliant
Apartment / 023	LKD	200	98%	46%	Trees affecting compliance
Apartment / 023	Bedroom 1	100	98%	50%	Compliant
Apartment / 024	LKD	200	100%	60%	Compliant
Apartment / 024	Bedroom 1	100	100%	53%	Compliant
Apartment / 025	LKD	200	89%	82%	Compliant
Apartment / 025	Bedroom 1	100	100%	100%	Compliant
Apartment / 026	LKD	200	91%	77%	Compliant
Apartment / 026	Bedroom 1	100	100%	100%	Compliant
Apartment / 027	LKD	200	99%	97%	Compliant
Apartment / 027	Bedroom 1	100	100%	100%	Compliant
Apartment / 028	LKD	200	100%	100%	Compliant
Apartment / 028	Bedroom 1	100	100%	100%	Compliant
Apartment / 029	LKD	200	100%	100%	Compliant
Apartment / 029	Bedroom 1	100	100%	99%	Compliant
Apartment / 030	LKD	200	100%	95%	Compliant
Apartment / 030	Bedroom 1	100	100%	94%	Compliant
Apartment / 031	LKD	200	100%	100%	Compliant
Apartment / 031	Bedroom 1	100	100%	96%	Compliant
Apartment / 032	LKD	200	99%	93%	Compliant
Apartment / 032	Bedroom 1	100	100%	100%	Compliant
Apartment / 033	LKD	200	100%	94%	Compliant
Apartment / 033	Bedroom 1	100	100%	100%	Compliant
Apartment / 033	Bedroom 2	100	100%	100%	Compliant
Apartment / 034	LKD	200	100%	100%	Compliant
Apartment / 034	Bedroom 1	100	100%	100%	Compliant
Apartment / 035	LKD	200	100%	100%	Compliant
Apartment / 035	Bedroom 1	100	100%	100%	Compliant
Apartment / 036	LKD	200	100%	100%	Compliant
Apartment / 036	Bedroom 1	100	100%	100%	Compliant
Apartment / 037	LKD	200	100%	100%	Compliant
Apartment / 037	Bedroom 1	100	100%	100%	Compliant
Apartment / 038	LKD	200	100%	100%	Compliant
Apartment / 038	Bedroom 1	100	100%	100%	Compliant
Apartment / 039	LKD	200	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19.

For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.2 SDA Results: Apartment Units

Table No. C.2.2 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
Apartment / 039	Bedroom 1	100	100%	100%	Compliant
Apartment / 040	LKD	200	100%	100%	Compliant
Apartment / 040	Bedroom 1	100	100%	100%	Compliant
Apartment / 040	Bedroom 2	100	100%	100%	Compliant
* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15. ** Under the BR 209 study the SDA has been calculated with indicative trees represented accounting for annual foliage. *** The SDA assessment without trees indicates the level of daylight within the proposed development when trees are not included in the analytical model. This study provides an understanding of how trees affect daylight within the proposed development. The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19. For floor plans of the assessed units please refer to section C.1 on page 37.					

C.2.3 SDA Results: Duplex and Triplex Units

Table No. C.2.3 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
HT-12 / 041	LKD	200	100%	58%	Compliant
HT-12 / 041	Bedroom 1	100	100%	100%	Compliant
HT-13 / 042	LKD	200	86%	69%	Compliant
HT-13 / 042	Bedroom 1	100	99%	83%	Compliant
HT-13 / 042	Bedroom 2	100	100%	59%	Compliant
HT-13 / 043	LKD	200	100%	93%	Compliant
HT-13 / 043	Bedroom 1	100	100%	84%	Compliant
HT-13 / 043	Bedroom 2	100	100%	32%	Trees affecting compliance
HT-12 / 044	LKD	200	100%	94%	Compliant
HT-12 / 044	Bedroom 1	100	100%	100%	Compliant
HT-13 / 045	Kitchen Dining	200	100%	100%	Compliant
HT-13 / 045	Living Room	150	100%	100%	Compliant
HT-13 / 045	Bedroom 1	100	100%	100%	Compliant
HT-13 / 045	Bedroom 2	100	100%	100%	Compliant
HT-13 / 045	Bedroom 3	100	100%	100%	Compliant
HT-13 / 046	Kitchen Dining	200	100%	100%	Compliant
HT-13 / 046	Living Room	150	100%	100%	Compliant
HT-13 / 046	Bedroom 1	100	100%	100%	Compliant
HT-13 / 046	Bedroom 2	100	100%	100%	Compliant
HT-13 / 046	Bedroom 3	100	100%	100%	Compliant
HT-12 / 047	LKD	200	100%	100%	Compliant
HT-12 / 047	Bedroom 1	100	100%	100%	Compliant
HT-05 / 048	LKD	200	97%	95%	Compliant
HT-05 / 048	Bedroom 1	100	100%	100%	Compliant
HT-05 / 048	Bedroom 2	100	100%	100%	Compliant
HT-05 / 049	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 049	Living Room	150	100%	100%	Compliant
HT-05 / 049	Bedroom 1	100	100%	100%	Compliant
HT-05 / 049	Bedroom 2	100	100%	100%	Compliant
HT-05 / 049	Bedroom 3	100	100%	100%	Compliant
HT-06 / 050	LKD	200	80%	79%	Compliant
HT-06 / 050	Bedroom 1	100	90%	89%	Compliant
HT-06 / 050	Bedroom 2	100	100%	100%	Compliant
HT-06 / 051	Kitchen Dining	200	100%	100%	Compliant
HT-06 / 051	Living Room	150	100%	100%	Compliant
HT-06 / 051	Bedroom 1	100	100%	100%	Compliant
HT-06 / 051	Bedroom 2	100	100%	100%	Compliant
HT-06 / 051	Bedroom 3	100	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19.

For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.4 SDA Results: Duplex Units

Table No. C.2.4 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
HT-06 / 052	LKD	200	72%	72%	Compliant
HT-06 / 052	Bedroom 1	100	88%	88%	Compliant
HT-06 / 052	Bedroom 2	100	100%	100%	Compliant
HT-06 / 053	Kitchen Dining	200	100%	100%	Compliant
HT-06 / 053	Living Room	150	100%	100%	Compliant
HT-06 / 053	Bedroom 1	100	100%	100%	Compliant
HT-06 / 053	Bedroom 2	100	100%	100%	Compliant
HT-06 / 053	Bedroom 3	100	100%	100%	Compliant
HT-05 / 054	LKD	200	72%	71%	Compliant
HT-05 / 054	Bedroom 1	100	100%	100%	Compliant
HT-05 / 054	Bedroom 2	100	100%	100%	Compliant
HT-05 / 055	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 055	Living Room	150	100%	100%	Compliant
HT-05 / 055	Bedroom 1	100	100%	100%	Compliant
HT-05 / 055	Bedroom 2	100	100%	100%	Compliant
HT-05 / 055	Bedroom 3	100	100%	100%	Compliant
HT-05 / 060	LKD	200	52%	51%	Compliant
HT-05 / 060	Bedroom 1	100	88%	85%	Compliant
HT-05 / 060	Bedroom 2	100	100%	100%	Compliant
HT-05 / 061	Kitchen Dining	200	100%	98%	Compliant
HT-05 / 061	Living Room	150	100%	100%	Compliant
HT-05 / 061	Bedroom 1	100	100%	100%	Compliant
HT-05 / 061	Bedroom 2	100	100%	100%	Compliant
HT-05 / 061	Bedroom 3	100	100%	100%	Compliant
HT-06 / 062	LKD	200	58%	58%	Compliant
HT-06 / 062	Bedroom 1	100	100%	100%	Compliant
HT-06 / 062	Bedroom 2	100	100%	100%	Compliant
HT-06 / 063	Kitchen Dining	200	100%	100%	Compliant
HT-06 / 063	Living Room	150	100%	100%	Compliant
HT-06 / 063	Bedroom 1	100	100%	100%	Compliant
HT-06 / 063	Bedroom 2	100	100%	100%	Compliant
HT-06 / 063	Bedroom 3	100	100%	100%	Compliant
HT-06 / 064	LKD	200	70%	69%	Compliant
HT-06 / 064	Bedroom 1	100	100%	100%	Compliant
HT-06 / 064	Bedroom 2	100	100%	100%	Compliant
HT-06 / 065	Kitchen Dining	200	100%	100%	Compliant
HT-06 / 065	Living Room	150	100%	100%	Compliant
HT-06 / 065	Bedroom 1	100	100%	100%	Compliant
HT-06 / 065	Bedroom 2	100	100%	100%	Compliant
HT-06 / 065	Bedroom 3	100	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

*** The SDA assessment without trees indicates the level of daylight within the proposed development when trees are not included in the analytical model. This study provides an understanding of how trees affect daylight within the proposed development. The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19. For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.5 SDA Results: Duplex Units

Table No. C.2.5 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
HT-05 / 066	LKD	200	86%	85%	Compliant
HT-05 / 066	Bedroom 1	100	95%	93%	Compliant
HT-05 / 066	Bedroom 2	100	100%	100%	Compliant
HT-05 / 067	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 067	Living Room	150	100%	100%	Compliant
HT-05 / 067	Bedroom 1	100	100%	100%	Compliant
HT-05 / 067	Bedroom 2	100	100%	100%	Compliant
HT-05 / 067	Bedroom 3	100	100%	100%	Compliant
HT-07 / 070	LKD	200	91%	72%	Compliant
HT-07 / 070	Bedroom 1	100	100%	100%	Compliant
HT-07 / 070	Bedroom 2	100	100%	98%	Compliant
HT-07 / 070	Bedroom 3	100	100%	91%	Compliant
HT-07 / 071	LKD	200	100%	100%	Compliant
HT-07 / 071	Living Room	150	100%	100%	Compliant
HT-07 / 071	Bedroom 1	100	100%	100%	Compliant
HT-07 / 071	Bedroom 2	100	100%	100%	Compliant
HT-07 / 071	Bedroom 3	100	100%	100%	Compliant
HT-05 / 072	LKD	200	84%	79%	Compliant
HT-05 / 072	Bedroom 1	100	100%	99%	Compliant
HT-05 / 072	Bedroom 2	100	100%	100%	Compliant
HT-05 / 073	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 073	Living Room	150	100%	100%	Compliant
HT-05 / 073	Bedroom 1	100	100%	100%	Compliant
HT-05 / 073	Bedroom 2	100	100%	100%	Compliant
HT-05 / 073	Bedroom 3	100	100%	100%	Compliant
HT-05 / 074	LKD	200	83%	75%	Compliant
HT-05 / 074	Bedroom 1	100	100%	100%	Compliant
HT-05 / 074	Bedroom 2	100	100%	100%	Compliant
HT-05 / 075	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 075	Living Room	150	100%	100%	Compliant
HT-05 / 075	Bedroom 1	100	100%	100%	Compliant
HT-05 / 075	Bedroom 2	100	100%	100%	Compliant
HT-05 / 075	Bedroom 3	100	100%	100%	Compliant
HT-07 / 076	LKD	200	68%	59%	Compliant
HT-07 / 076	Bedroom 1	100	100%	100%	Compliant
HT-07 / 076	Bedroom 2	100	100%	100%	Compliant
HT-07 / 076	Bedroom 3	100	88%	75%	Compliant
HT-07 / 077	LKD	200	100%	100%	Compliant
HT-07 / 077	Living Room	150	100%	100%	Compliant
HT-07 / 077	Bedroom 1	100	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19.

For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.6 SDA Results: Duplex Units

Table No. C.2.6 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
HT-07 / 077	Bedroom 2	100	100%	100%	Compliant
HT-07 / 077	Bedroom 3	100	100%	100%	Compliant
HT-05 / 078	LKD	200	77%	73%	Compliant
HT-05 / 078	Bedroom 1	100	98%	96%	Compliant
HT-05 / 078	Bedroom 2	100	100%	100%	Compliant
HT-05 / 079	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 079	Living Room	150	100%	100%	Compliant
HT-05 / 079	Bedroom 1	100	100%	100%	Compliant
HT-05 / 079	Bedroom 2	100	100%	100%	Compliant
HT-05 / 079	Bedroom 3	100	100%	100%	Compliant
HT-05 / 080	LKD	200	71%	69%	Compliant
HT-05 / 080	Bedroom 1	100	98%	94%	Compliant
HT-05 / 080	Bedroom 2	100	100%	100%	Compliant
HT-05 / 081	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 081	Living Room	150	100%	100%	Compliant
HT-05 / 081	Bedroom 1	100	100%	100%	Compliant
HT-05 / 081	Bedroom 2	100	100%	100%	Compliant
HT-05 / 081	Bedroom 3	100	100%	100%	Compliant
HT-05 / 082	LKD	200	93%	89%	Compliant
HT-05 / 082	Bedroom 1	100	100%	100%	Compliant
HT-05 / 082	Bedroom 2	100	100%	100%	Compliant
HT-05 / 083	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 083	Living Room	150	100%	100%	Compliant
HT-05 / 083	Bedroom 1	100	100%	100%	Compliant
HT-05 / 083	Bedroom 2	100	100%	100%	Compliant
HT-05 / 083	Bedroom 3	100	100%	100%	Compliant
HT-05 / 092	LKD	200	100%	92%	Compliant
HT-05 / 092	Bedroom 1	100	100%	100%	Compliant
HT-05 / 092	Bedroom 2	100	100%	100%	Compliant
HT-05 / 093	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 093	Living Room	150	100%	100%	Compliant
HT-05 / 093	Bedroom 1	100	100%	100%	Compliant
HT-05 / 093	Bedroom 2	100	100%	100%	Compliant
HT-05 / 093	Bedroom 3	100	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19.

For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.7 SDA Results: Triplex and Duplex Units

Table No. C.2.7 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
HT-10 / 094	LKD	200	99%	89%	Compliant
HT-10 / 094	Bedroom 1	100	100%	100%	Compliant
HT-10 / 095	LKD	200	100%	95%	Compliant
HT-10 / 095	Bedroom 1	100	100%	100%	Compliant
HT-10 / 096	LKD	200	100%	100%	Compliant
HT-10 / 096	Bedroom 1	100	100%	100%	Compliant
HT-06 / 097	LKD	200	63%	62%	Compliant
HT-06 / 097	Bedroom 1	100	82%	82%	Compliant
HT-06 / 097	Bedroom 2	100	100%	77%	Compliant
HT-06 / 098	Kitchen Dining	200	100%	100%	Compliant
HT-06 / 098	Living Room	150	100%	100%	Compliant
HT-06 / 098	Bedroom 1	100	100%	100%	Compliant
HT-06 / 098	Bedroom 2	100	100%	100%	Compliant
HT-06 / 098	Bedroom 3	100	100%	100%	Compliant
HT-06 / 099	LKD	200	62%	62%	Compliant
HT-06 / 099	Bedroom 1	100	84%	84%	Compliant
HT-06 / 099	Bedroom 2	100	100%	54%	Compliant
HT-06 / 100	Kitchen Dining	200	100%	100%	Compliant
HT-06 / 100	Living Room	150	100%	100%	Compliant
HT-06 / 100	Bedroom 1	100	100%	100%	Compliant
HT-06 / 100	Bedroom 2	100	100%	100%	Compliant
HT-06 / 100	Bedroom 3	100	100%	100%	Compliant
HT-10 / 101	LKD	200	100%	100%	Compliant
HT-10 / 101	Bedroom 1	100	100%	100%	Compliant
HT-10 / 102	LKD	200	100%	100%	Compliant
HT-10 / 102	Bedroom 1	100	100%	100%	Compliant
HT-10 / 103	LKD	200	100%	100%	Compliant
HT-10 / 103	Bedroom 1	100	100%	100%	Compliant
HT-05 / 104	LKD	200	89%	85%	Compliant
HT-05 / 104	Bedroom 1	100	100%	100%	Compliant
HT-05 / 104	Bedroom 2	100	100%	100%	Compliant
HT-05 / 105	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 105	Living Room	150	100%	100%	Compliant
HT-05 / 105	Bedroom 1	100	100%	100%	Compliant
HT-05 / 105	Bedroom 2	100	100%	100%	Compliant
HT-05 / 105	Bedroom 3	100	100%	100%	Compliant
HT-05 / 108	LKD	200	96%	94%	Compliant
HT-05 / 108	Bedroom 1	100	100%	100%	Compliant
HT-05 / 108	Bedroom 2	100	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19.

For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.8 SDA Results: Duplex Units

Table No. C.2.8 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
HT-05 / 109	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 109	Living Room	150	100%	100%	Compliant
HT-05 / 109	Bedroom 1	100	100%	100%	Compliant
HT-05 / 109	Bedroom 2	100	100%	100%	Compliant
HT-05 / 109	Bedroom 3	100	100%	100%	Compliant
HT-05 / 130	LKD	200	91%	88%	Compliant
HT-05 / 130	Bedroom 1	100	100%	100%	Compliant
HT-05 / 130	Bedroom 2	100	100%	100%	Compliant
HT-05 / 131	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 131	Living Room	150	100%	100%	Compliant
HT-05 / 131	Bedroom 1	100	100%	100%	Compliant
HT-05 / 131	Bedroom 2	100	100%	100%	Compliant
HT-05 / 131	Bedroom 3	100	100%	100%	Compliant
HT-05 / 142	LKD	200	88%	81%	Compliant
HT-05 / 142	Bedroom 1	100	100%	100%	Compliant
HT-05 / 142	Bedroom 2	100	100%	100%	Compliant
HT-05 / 143	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 143	Living Room	150	100%	100%	Compliant
HT-05 / 143	Bedroom 1	100	100%	100%	Compliant
HT-05 / 143	Bedroom 2	100	100%	100%	Compliant
HT-05 / 143	Bedroom 3	100	100%	100%	Compliant
HT-05 / 144	LKD	200	91%	89%	Compliant
HT-05 / 144	Bedroom 1	100	100%	100%	Compliant
HT-05 / 144	Bedroom 2	100	100%	100%	Compliant
HT-05 / 145	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 145	Living Room	150	100%	100%	Compliant
HT-05 / 145	Bedroom 1	100	100%	100%	Compliant
HT-05 / 145	Bedroom 2	100	100%	100%	Compliant
HT-05 / 145	Bedroom 3	100	100%	100%	Compliant
HT-05 / 156	LKD	200	87%	81%	Compliant
HT-05 / 156	Bedroom 1	100	100%	100%	Compliant
HT-05 / 156	Bedroom 2	100	100%	100%	Compliant
HT-05 / 157	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 157	Living Room	150	100%	100%	Compliant
HT-05 / 157	Bedroom 1	100	100%	100%	Compliant
HT-05 / 157	Bedroom 2	100	100%	100%	Compliant
HT-05 / 157	Bedroom 3	100	100%	100%	Compliant
HT-05 / 161	LKD	200	91%	84%	Compliant
HT-05 / 161	Bedroom 1	100	100%	93%	Compliant
HT-05 / 161	Bedroom 2	100	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19.

For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.9 SDA Results: Duplex Units

Table No. C.2.9 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
HT-05 / 162	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 162	Living Room	150	100%	100%	Compliant
HT-05 / 162	Bedroom 1	100	100%	100%	Compliant
HT-05 / 162	Bedroom 2	100	100%	100%	Compliant
HT-05 / 162	Bedroom 3	100	100%	100%	Compliant
HT-05 / 163	LKD	200	90%	88%	Compliant
HT-05 / 163	Bedroom 1	100	100%	96%	Compliant
HT-05 / 163	Bedroom 2	100	100%	100%	Compliant
HT-05 / 164	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 164	Living Room	150	100%	100%	Compliant
HT-05 / 164	Bedroom 1	100	100%	100%	Compliant
HT-05 / 164	Bedroom 2	100	100%	100%	Compliant
HT-05 / 164	Bedroom 3	100	100%	100%	Compliant
HT-07 / 178	LKD	200	80%	65%	Compliant
HT-07 / 178	Bedroom 1	100	100%	100%	Compliant
HT-07 / 178	Bedroom 2	100	100%	83%	Compliant
HT-07 / 178	Bedroom 3	100	98%	89%	Compliant
HT-07 / 179	LKD	200	100%	100%	Compliant
HT-07 / 179	Living Room	150	100%	100%	Compliant
HT-07 / 179	Bedroom 1	100	100%	100%	Compliant
HT-07 / 179	Bedroom 2	100	100%	100%	Compliant
HT-07 / 179	Bedroom 3	100	100%	100%	Compliant
HT-05 / 180	LKD	200	74%	71%	Compliant
HT-05 / 180	Bedroom 1	100	98%	97%	Compliant
HT-05 / 180	Bedroom 2	100	100%	100%	Compliant
HT-05 / 181	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 181	Living Room	150	100%	100%	Compliant
HT-05 / 181	Bedroom 1	100	100%	100%	Compliant
HT-05 / 181	Bedroom 2	100	100%	100%	Compliant
HT-05 / 181	Bedroom 3	100	100%	100%	Compliant
HT-05 / 182	LKD	200	64%	62%	Compliant
HT-05 / 182	Bedroom 1	100	92%	89%	Compliant
HT-05 / 182	Bedroom 2	100	100%	100%	Compliant
HT-05 / 183	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 183	Living Room	150	100%	100%	Compliant
HT-05 / 183	Bedroom 1	100	100%	100%	Compliant
HT-05 / 183	Bedroom 2	100	100%	100%	Compliant
HT-05 / 183	Bedroom 3	100	100%	100%	Compliant
HT-07 / 184	LKD	200	67%	61%	Compliant
HT-07 / 184	Bedroom 1	100	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19.

For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.10 SDA Results: Duplex Units

Table No. C.2.10 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
HT-07 / 184	Bedroom 2	100	100%	100%	Compliant
HT-07 / 184	Bedroom 3	100	88%	76%	Compliant
HT-07 / 185	LKD	200	100%	100%	Compliant
HT-07 / 185	Living Room	150	100%	100%	Compliant
HT-07 / 185	Bedroom 1	100	100%	100%	Compliant
HT-07 / 185	Bedroom 2	100	100%	100%	Compliant
HT-07 / 185	Bedroom 3	100	100%	100%	Compliant
HT-05 / 186	LKD	200	74%	72%	Compliant
HT-05 / 186	Bedroom 1	100	98%	97%	Compliant
HT-05 / 186	Bedroom 2	100	100%	100%	Compliant
HT-05 / 187	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 187	Living Room	150	100%	100%	Compliant
HT-05 / 187	Bedroom 1	100	100%	100%	Compliant
HT-05 / 187	Bedroom 2	100	100%	100%	Compliant
HT-05 / 187	Bedroom 3	100	100%	100%	Compliant
HT-05 / 188	LKD	200	73%	73%	Compliant
HT-05 / 188	Bedroom 1	100	100%	100%	Compliant
HT-05 / 188	Bedroom 2	100	100%	100%	Compliant
HT-05 / 189	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 189	Living Room	150	100%	100%	Compliant
HT-05 / 189	Bedroom 1	100	100%	100%	Compliant
HT-05 / 189	Bedroom 2	100	100%	100%	Compliant
HT-05 / 189	Bedroom 3	100	100%	100%	Compliant
HT-12 / 190	LKD	200	100%	100%	Compliant
HT-12 / 190	Bedroom 1	100	100%	100%	Compliant
HT-13 / 191	LKD	200	98%	88%	Compliant
HT-13 / 191	Bedroom 1	100	100%	100%	Compliant
HT-13 / 191	Bedroom 2	100	100%	100%	Compliant
HT-13 / 192	LKD	200	100%	99%	Compliant
HT-13 / 192	Bedroom 1	100	100%	99%	Compliant
HT-13 / 192	Bedroom 2	100	100%	100%	Compliant
HT-12 / 193	LKD	200	100%	100%	Compliant
HT-12 / 193	Bedroom 1	100	100%	100%	Compliant
HT-13 / 194	Kitchen Dining	200	100%	100%	Compliant
HT-13 / 194	Living Room	150	100%	100%	Compliant
HT-13 / 194	Bedroom 1	100	100%	100%	Compliant
HT-13 / 194	Bedroom 2	100	100%	100%	Compliant
HT-13 / 194	Bedroom 3	100	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19.

For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.11 SDA Results: Duplex and Triplex Units

Table No. C.2.11 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
HT-13 / 195	Kitchen Dining	200	100%	100%	Compliant
HT-13 / 195	Living Room	150	100%	100%	Compliant
HT-13 / 195	Bedroom 1	100	100%	100%	Compliant
HT-13 / 195	Bedroom 2	100	100%	100%	Compliant
HT-13 / 195	Bedroom 3	100	100%	100%	Compliant
HT-12 / 196	LKD	200	100%	100%	Compliant
HT-12 / 196	Bedroom 1	100	100%	100%	Compliant
HT-12 / 197	LKD	200	100%	100%	Compliant
HT-12 / 197	Bedroom 1	100	100%	100%	Compliant
HT-13 / 198	LKD	200	100%	95%	Compliant
HT-13 / 198	Bedroom 1	100	100%	100%	Compliant
HT-13 / 198	Bedroom 2	100	100%	96%	Compliant
HT-13 / 199	LKD	200	100%	100%	Compliant
HT-13 / 199	Bedroom 1	100	100%	100%	Compliant
HT-13 / 199	Bedroom 2	100	100%	100%	Compliant
HT-12 / 200	LKD	200	100%	100%	Compliant
HT-12 / 200	Bedroom 1	100	100%	100%	Compliant
HT-13 / 201	Kitchen Dining	200	100%	100%	Compliant
HT-13 / 201	Living Room	150	100%	100%	Compliant
HT-13 / 201	Bedroom 1	100	100%	100%	Compliant
HT-13 / 201	Bedroom 2	100	100%	100%	Compliant
HT-13 / 201	Bedroom 3	100	100%	100%	Compliant
HT-13 / 202	LKD	200	100%	100%	Compliant
HT-13 / 202	Bedroom 1	100	100%	100%	Compliant
HT-12 / 203	Kitchen Dining	200	100%	100%	Compliant
HT-12 / 203	Living Room	150	100%	100%	Compliant
HT-12 / 203	Bedroom 1	100	100%	100%	Compliant
HT-12 / 203	Bedroom 2	100	100%	100%	Compliant
HT-12 / 203	Bedroom 3	100	100%	100%	Compliant
HT-05 / 204	LKD	200	94%	79%	Compliant
HT-05 / 204	Bedroom 1	100	100%	100%	Compliant
HT-05 / 204	Bedroom 2	100	100%	100%	Compliant
HT-05 / 205	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 205	Living Room	150	100%	100%	Compliant
HT-05 / 205	Bedroom 1	100	100%	100%	Compliant
HT-05 / 205	Bedroom 2	100	100%	100%	Compliant
HT-05 / 205	Bedroom 3	100	100%	100%	Compliant
HT-05 / 219	LKD	200	97%	93%	Compliant
HT-05 / 219	Bedroom 1	100	100%	100%	Compliant
HT-05 / 219	Bedroom 2	100	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19.

For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.12 SDA Results: Duplex Units

Table No. C.2.12 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
HT-05 / 220	Kitchen Dining	200	100%	100%	Compliant
HT-05 / 220	Living Room	150	100%	100%	Compliant
HT-05 / 220	Bedroom 1	100	100%	100%	Compliant
HT-05 / 220	Bedroom 2	100	100%	100%	Compliant
HT-05 / 220	Bedroom 3	100	100%	100%	Compliant
HT-10 / 232	LKD	200	100%	100%	Compliant
HT-10 / 232	Bedroom 1	100	100%	100%	Compliant
HT-10 / 233	LKD	200	100%	100%	Compliant
HT-10 / 233	Bedroom 1	100	100%	100%	Compliant
HT-10 / 234	LKD	200	100%	100%	Compliant
HT-10 / 234	Bedroom 1	100	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.

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

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

The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19.

For floor plans of the assessed units please refer to section C.1 on page 37.

C.2.13 SDA Results: Creche

Table No. C.2.13 - SDA Results:					
Unit Type / Unit Number	Room Description	Target Lux*	% of area above target Lux* (recommendation ≥50%)		Compliance with BR 209 Criteria*
			Without Trees***	With Trees**	
Creche	Classroom 1	200	100%	100%	Compliant
Creche	Classroom 2	200	75%	58%	Compliant
Creche	Classroom 3	200	100%	100%	Compliant
Creche	Classroom 4	200	100%	100%	Compliant
Creche	Classroom 5	200	100%	100%	Compliant
* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15. ** Under the BR 209 study the SDA has been calculated with indicative trees represented accounting for annual foliage. *** The SDA assessment without trees indicates the level of daylight within the proposed development when trees are not included in the analytical model. This study provides an understanding of how trees affect daylight within the proposed development. The SDA circa compliance rates across the entire scheme can be found in section 3.2.1 on page 19. For floor plans of the assessed units please refer to section C.1 on page 37.					

C.3 Sunlight Exposure (SE) in Proposed Units

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

Table Example. C.3 - Scheme Performance Sunlight Exposure							
Unit Type / 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 type first and unit number second. All unit type and unit numbers are determined by the architect's drawings, unless otherwise stated.

B: Room Description

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

C.3.1 SE Results: Apartment Units

Table No. C.3.1 - Sunlight Exposure Results:							
Unit Type / 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**
Apartment / 020	LKD	5.60	High	Compliant	5.60	High	Compliant
Apartment / 020	Bedroom 1	3.80	Medium	-	3.80	Medium	-
Apartment / 021	LKD	3.60	Medium	-	5.60	High	Compliant
Apartment / 021	Bedroom 1	4.00	High	Compliant	5.10	High	-
Apartment / 022	LKD	4.10	High	Compliant	6.20	High	Compliant
Apartment / 022	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
Apartment / 023	LKD	1.30	Below Minimum	Non-Compliant	2.30	Minimum	Compliant
Apartment / 023	Bedroom 1	1.00	Below Minimum	-	1.00	Below Minimum	-
Apartment / 024	LKD	1.10	Below Minimum	Non-Compliant	2.00	Minimum	Compliant
Apartment / 024	Bedroom 1	0.10	Below Minimum	-	1.60	Minimum	-
Apartment / 025	LKD	4.70	High	Compliant	4.70	High	Compliant
Apartment / 025	Bedroom 1	0.00	Below Minimum	-	2.40	Minimum	-
Apartment / 026	LKD	2.20	Minimum	-	2.30	Minimum	-
Apartment / 026	Bedroom 1	4.30	High	Compliant	4.30	High	Compliant
Apartment / 027	LKD	4.70	High	Compliant	4.70	High	Compliant
Apartment / 027	Bedroom 1	3.90	Medium	-	3.90	Medium	-
Apartment / 028	LKD	7.70	High	Compliant	7.70	High	Compliant
Apartment / 028	Bedroom 1	5.10	High	-	5.10	High	-
Apartment / 029	LKD	7.20	High	Compliant	7.50	High	Compliant
Apartment / 029	Bedroom 1	1.60	Minimum	-	1.60	Minimum	-
Apartment / 030	LKD	2.30	Minimum	Compliant	2.30	Minimum	Compliant
Apartment / 030	Bedroom 1	1.00	Below Minimum	-	1.00	Below Minimum	-
Apartment / 031	LKD	1.80	Minimum	Compliant	2.00	Minimum	Compliant
Apartment / 031	Bedroom 1	1.60	Minimum	-	1.60	Minimum	-
Apartment / 032	LKD	5.30	High	Compliant	5.30	High	Compliant
Apartment / 032	Bedroom 1	4.40	High	-	4.40	High	-
Apartment / 033	LKD	5.00	High	-	5.00	High	-
Apartment / 033	Bedroom 1	5.10	High	Compliant	5.10	High	Compliant
Apartment / 033	Bedroom 2	5.10	High	-	5.10	High	-
Apartment / 034	LKD	5.70	High	Compliant	5.70	High	Compliant
Apartment / 034	Bedroom 1	5.10	High	-	5.10	High	-
Apartment / 035	LKD	9.40	High	Compliant	9.40	High	Compliant
Apartment / 035	Bedroom 1	5.10	High	-	5.10	High	-
Apartment / 036	LKD	7.50	High	Compliant	7.50	High	Compliant
Apartment / 036	Bedroom 1	1.60	Minimum	-	1.60	Minimum	-
Apartment / 037	LKD	2.20	Minimum	Compliant	2.20	Minimum	Compliant
Apartment / 037	Bedroom 1	1.00	Below Minimum	-	1.00	Below Minimum	-
Apartment / 038	LKD	2.00	Minimum	Compliant	2.00	Minimum	Compliant
Apartment / 038	Bedroom 1	1.60	Minimum	-	1.60	Minimum	-
Apartment / 039	LKD	5.30	High	Compliant	5.30	High	Compliant

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** Section 3.1.15 of the BRE Guidelines recommends 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 3.2.2 on page 20.
 *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.
 For floor plans of the assessed units please refer to section C.1 on page 37.

C.3.2 SE Results: Apartment Units

Table No. C.3.2 - Sunlight Exposure Results:							
Unit Type / 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**
Apartment / 039	Bedroom 1	5.10	High	-	5.10	High	-
Apartment / 040	LKD	5.70	High	Compliant	5.70	High	Compliant
Apartment / 040	Bedroom 1	5.10	High	-	5.10	High	-
Apartment / 040	Bedroom 2	5.10	High	-	5.10	High	-
* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours. ** Section 3.1.15 of the BRE Guidelines recommends 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 3.2.2 on page 20. *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110. For floor plans of the assessed units please refer to section C.1 on page 37.							

C.3.3 SE Results: Duplex and Triplex Units

Table No. C.3.3 - Sunlight Exposure Results:							
Unit Type / 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**
HT-12 / 041	LKD	1.40	Below Minimum	-	1.50	Minimum	-
HT-12 / 041	Bedroom 1	3.40	Medium	Compliant	3.40	Medium	Compliant
HT-13 / 042	LKD	2.20	Minimum	-	2.30	Minimum	-
HT-13 / 042	Bedroom 1	4.20	High	Compliant	4.20	High	Compliant
HT-13 / 042	Bedroom 2	0.20	Below Minimum	-	0.20	Below Minimum	-
HT-13 / 043	LKD	4.20	High	Compliant	7.70	High	Compliant
HT-13 / 043	Bedroom 1	1.80	Minimum	-	3.00	Medium	-
HT-13 / 043	Bedroom 2	0.00	Below Minimum	-	1.60	Minimum	-
HT-12 / 044	LKD	2.30	Minimum	-	2.30	Minimum	-
HT-12 / 044	Bedroom 1	5.10	High	Compliant	5.10	High	Compliant
HT-13 / 045	Kitchen Dining	5.60	High	Compliant	5.60	High	Compliant
HT-13 / 045	Living Room	1.70	Minimum	-	1.70	Minimum	-
HT-13 / 045	Bedroom 1	1.80	Minimum	-	1.80	Minimum	-
HT-13 / 045	Bedroom 2	5.30	High	-	5.30	High	-
HT-13 / 045	Bedroom 3	5.10	High	-	5.10	High	-
HT-13 / 046	Kitchen Dining	9.20	High	-	9.40	High	Compliant
HT-13 / 046	Living Room	6.50	High	-	6.70	High	-
HT-13 / 046	Bedroom 1	6.70	High	-	6.70	High	-
HT-13 / 046	Bedroom 2	9.40	High	Compliant	9.40	High	-
HT-13 / 046	Bedroom 3	5.10	High	-	5.10	High	-
HT-12 / 047	LKD	2.30	Minimum	-	2.30	Minimum	-
HT-12 / 047	Bedroom 1	5.30	High	Compliant	5.30	High	Compliant
HT-05 / 048	LKD	5.20	High	Compliant	5.20	High	Compliant
HT-05 / 048	Bedroom 1	3.00	Medium	-	3.00	Medium	-
HT-05 / 048	Bedroom 2	0.00	Below Minimum	-	1.70	Minimum	-
HT-05 / 049	Kitchen Dining	9.40	High	Compliant	9.40	High	Compliant
HT-05 / 049	Living Room	6.10	High	-	6.10	High	-
HT-05 / 049	Bedroom 1	6.80	High	-	6.80	High	-
HT-05 / 049	Bedroom 2	9.40	High	-	9.40	High	-
HT-05 / 049	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
HT-06 / 050	LKD	5.80	High	Compliant	5.80	High	Compliant
HT-06 / 050	Bedroom 1	5.10	High	-	5.10	High	-
HT-06 / 050	Bedroom 2	1.60	Minimum	-	1.60	Minimum	-
HT-06 / 051	Kitchen Dining	4.10	High	Compliant	4.10	High	Compliant
HT-06 / 051	Living Room	1.60	Minimum	-	1.60	Minimum	-
HT-06 / 051	Bedroom 1	1.70	Minimum	-	1.70	Minimum	-
HT-06 / 051	Bedroom 2	3.80	Medium	-	3.80	Medium	-
HT-06 / 051	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** Section 3.1 of 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 3.2.2 on page 20.
 *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.
 For floor plans of the assessed units please refer to section C.1 on page 37.

C.3.4 SE Results: Duplex Units

Table No. C.3.4 - Sunlight Exposure Results:							
Unit Type / 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**
HT-06 / 052	LKD	4.00	High	-	4.00	High	-
HT-06 / 052	Bedroom 1	4.50	High	Compliant	4.50	High	Compliant
HT-06 / 052	Bedroom 2	1.40	Below Minimum	-	1.40	Below Minimum	-
HT-06 / 053	Kitchen Dining	5.30	High	Compliant	5.30	High	Compliant
HT-06 / 053	Living Room	1.60	Minimum	-	1.60	Minimum	-
HT-06 / 053	Bedroom 1	1.70	Minimum	-	1.70	Minimum	-
HT-06 / 053	Bedroom 2	5.10	High	-	5.10	High	-
HT-06 / 053	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 054	LKD	3.10	Medium	Compliant	3.10	Medium	Compliant
HT-05 / 054	Bedroom 1	2.80	Minimum	-	2.80	Minimum	-
HT-05 / 054	Bedroom 2	1.40	Below Minimum	-	1.40	Below Minimum	-
HT-05 / 055	Kitchen Dining	5.60	High	Compliant	5.60	High	Compliant
HT-05 / 055	Living Room	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 055	Bedroom 1	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 055	Bedroom 2	5.10	High	-	5.10	High	-
HT-05 / 055	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 060	LKD	2.10	Minimum	-	2.10	Minimum	-
HT-05 / 060	Bedroom 1	1.10	Below Minimum	-	1.10	Below Minimum	-
HT-05 / 060	Bedroom 2	5.10	High	Compliant	5.10	High	Compliant
HT-05 / 061	Kitchen Dining	2.40	Minimum	-	2.40	Minimum	-
HT-05 / 061	Living Room	5.10	High	Compliant	5.10	High	Compliant
HT-05 / 061	Bedroom 1	5.10	High	-	5.10	High	-
HT-05 / 061	Bedroom 2	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 061	Bedroom 3	5.10	High	-	5.10	High	-
HT-06 / 062	LKD	1.40	Below Minimum	-	1.40	Below Minimum	-
HT-06 / 062	Bedroom 1	0.30	Below Minimum	-	0.30	Below Minimum	-
HT-06 / 062	Bedroom 2	2.70	Minimum	Compliant	5.10	High	Compliant
HT-06 / 063	Kitchen Dining	2.40	Minimum	-	2.40	Minimum	-
HT-06 / 063	Living Room	5.10	High	Compliant	5.10	High	Compliant
HT-06 / 063	Bedroom 1	5.10	High	-	5.10	High	-
HT-06 / 063	Bedroom 2	1.70	Minimum	-	1.70	Minimum	-
HT-06 / 063	Bedroom 3	5.10	High	-	5.10	High	-
HT-06 / 064	LKD	1.60	Minimum	-	1.60	Minimum	-
HT-06 / 064	Bedroom 1	0.60	Below Minimum	-	0.60	Below Minimum	-
HT-06 / 064	Bedroom 2	5.10	High	Compliant	5.10	High	Compliant
HT-06 / 065	Kitchen Dining	0.20	Below Minimum	-	0.20	Below Minimum	-
HT-06 / 065	Living Room	5.10	High	Compliant	5.10	High	Compliant
HT-06 / 065	Bedroom 1	5.10	High	-	5.10	High	-
HT-06 / 065	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-06 / 065	Bedroom 3	5.10	High	-	5.10	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** Section 3.1 of 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 3.2.2 on page 20.
 *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.
 For floor plans of the assessed units please refer to section C.1 on page 37.

C.3.5 SE Results: Duplex Units

Table No. C.3.5 - Sunlight Exposure Results:							
Unit Type / 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**
HT-05 / 066	LKD	2.40	Minimum	-	2.40	Minimum	-
HT-05 / 066	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 066	Bedroom 2	5.00	High	Compliant	5.10	High	Compliant
HT-05 / 067	Kitchen Dining	6.80	High	-	6.80	High	-
HT-05 / 067	Living Room	9.40	High	Compliant	9.40	High	Compliant
HT-05 / 067	Bedroom 1	9.40	High	-	9.40	High	-
HT-05 / 067	Bedroom 2	6.80	High	-	6.80	High	-
HT-05 / 067	Bedroom 3	5.10	High	-	5.10	High	-
HT-07 / 070	LKD	3.30	Medium	-	5.10	High	Compliant
HT-07 / 070	Bedroom 1	5.10	High	Compliant	5.10	High	-
HT-07 / 070	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-07 / 070	Bedroom 3	1.50	Minimum	-	4.30	High	-
HT-07 / 071	LKD	4.60	High	-	4.60	High	-
HT-07 / 071	Living Room	7.90	High	Compliant	7.90	High	Compliant
HT-07 / 071	Bedroom 1	5.10	High	-	5.10	High	-
HT-07 / 071	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-07 / 071	Bedroom 3	7.20	High	-	7.20	High	-
HT-05 / 072	LKD	6.00	High	Compliant	6.00	High	Compliant
HT-05 / 072	Bedroom 1	4.80	High	-	4.80	High	-
HT-05 / 072	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 073	Kitchen Dining	8.00	High	Compliant	8.00	High	Compliant
HT-05 / 073	Living Room	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 073	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 073	Bedroom 2	7.30	High	-	7.30	High	-
HT-05 / 073	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 074	LKD	6.20	High	Compliant	7.10	High	Compliant
HT-05 / 074	Bedroom 1	5.20	High	-	5.30	High	-
HT-05 / 074	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 075	Kitchen Dining	8.00	High	Compliant	8.00	High	Compliant
HT-05 / 075	Living Room	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 075	Bedroom 1	2.20	Minimum	-	2.20	Minimum	-
HT-05 / 075	Bedroom 2	7.30	High	-	7.30	High	-
HT-05 / 075	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-07 / 076	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-07 / 076	Bedroom 1	5.10	High	-	5.10	High	-
HT-07 / 076	Bedroom 2	6.70	High	Compliant	7.10	High	Compliant
HT-07 / 076	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** Section 3.1 of 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 3.2.2 on page 20.
 *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.
 For floor plans of the assessed units please refer to section C.1 on page 37.

C.3.6 SE Results: Duplex Units

Table No. C.3.6 - Sunlight Exposure Results:							
Unit Type / 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**
HT-07 / 077	LKD	9.40	High	Compliant	9.40	High	Compliant
HT-07 / 077	Living Room	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-07 / 077	Bedroom 1	5.10	High	-	5.10	High	-
HT-07 / 077	Bedroom 2	7.20	High	-	7.20	High	-
HT-07 / 077	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 078	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 078	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 078	Bedroom 2	5.20	High	Compliant	7.10	High	Compliant
HT-05 / 079	Kitchen Dining	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 079	Living Room	7.30	High	Compliant	7.30	High	Compliant
HT-05 / 079	Bedroom 1	7.30	High	-	7.30	High	-
HT-05 / 079	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 079	Bedroom 3	7.30	High	-	7.30	High	-
HT-05 / 080	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 080	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 080	Bedroom 2	5.00	High	Compliant	7.30	High	Compliant
HT-05 / 081	Kitchen Dining	2.20	Minimum	-	2.20	Minimum	-
HT-05 / 081	Living Room	7.30	High	Compliant	7.30	High	Compliant
HT-05 / 081	Bedroom 1	7.30	High	-	7.30	High	-
HT-05 / 081	Bedroom 2	2.20	Minimum	-	2.20	Minimum	-
HT-05 / 081	Bedroom 3	7.30	High	-	7.30	High	-
HT-05 / 082	LKD	1.30	Below Minimum	-	2.40	Minimum	-
HT-05 / 082	Bedroom 1	0.00	Below Minimum	-	0.40	Below Minimum	-
HT-05 / 082	Bedroom 2	2.50	Minimum	Compliant	4.70	High	Compliant
HT-05 / 083	Kitchen Dining	6.10	High	-	6.80	High	-
HT-05 / 083	Living Room	9.40	High	Compliant	9.40	High	Compliant
HT-05 / 083	Bedroom 1	9.40	High	-	9.40	High	-
HT-05 / 083	Bedroom 2	6.80	High	-	6.80	High	-
HT-05 / 083	Bedroom 3	5.10	High	-	5.10	High	-
HT-05 / 092	LKD	3.30	Medium	Compliant	4.00	High	Compliant
HT-05 / 092	Bedroom 1	1.90	Minimum	-	4.00	High	-
HT-05 / 092	Bedroom 2	1.40	Below Minimum	-	1.40	Below Minimum	-
HT-05 / 093	Kitchen Dining	7.60	High	-	9.40	High	Compliant
HT-05 / 093	Living Room	6.10	High	-	6.10	High	-
HT-05 / 093	Bedroom 1	6.80	High	-	6.80	High	-
HT-05 / 093	Bedroom 2	9.40	High	Compliant	9.40	High	-
HT-05 / 093	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** Section 3.1 of 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 3.2.2 on page 20.
 *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.
 For floor plans of the assessed units please refer to section C.1 on page 37.

C.3.7 SE Results: Duplex and Triplex Units

Table No. C.3.7 - Sunlight Exposure Results:							
Unit Type / 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**
HT-10 / 094	LKD	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-10 / 094	Bedroom 1	3.60	Medium	Compliant	4.40	High	Compliant
HT-10 / 095	LKD	1.30	Below Minimum	-	1.30	Below Minimum	-
HT-10 / 095	Bedroom 1	4.90	High	Compliant	5.10	High	Compliant
HT-10 / 096	LKD	1.60	Minimum	-	1.60	Minimum	-
HT-10 / 096	Bedroom 1	5.10	High	Compliant	5.10	High	Compliant
HT-06 / 097	LKD	2.00	Minimum	-	2.00	Minimum	-
HT-06 / 097	Bedroom 1	1.50	Minimum	-	1.50	Minimum	-
HT-06 / 097	Bedroom 2	2.10	Minimum	Compliant	4.70	High	Compliant
HT-06 / 098	Kitchen Dining	2.40	Minimum	-	2.40	Minimum	-
HT-06 / 098	Living Room	4.40	High	-	5.10	High	Compliant
HT-06 / 098	Bedroom 1	5.10	High	Compliant	5.10	High	-
HT-06 / 098	Bedroom 2	1.70	Minimum	-	1.70	Minimum	-
HT-06 / 098	Bedroom 3	5.10	High	-	5.10	High	-
HT-06 / 099	LKD	2.10	Minimum	Compliant	2.40	Minimum	Compliant
HT-06 / 099	Bedroom 1	1.60	Minimum	-	1.60	Minimum	-
HT-06 / 099	Bedroom 2	0.00	Below Minimum	-	2.40	Minimum	-
HT-06 / 100	Kitchen Dining	0.40	Below Minimum	-	0.40	Below Minimum	-
HT-06 / 100	Living Room	2.50	Minimum	-	4.20	High	-
HT-06 / 100	Bedroom 1	5.10	High	Compliant	5.10	High	Compliant
HT-06 / 100	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-06 / 100	Bedroom 3	5.10	High	-	5.10	High	-
HT-10 / 101	LKD	6.10	High	Compliant	6.10	High	Compliant
HT-10 / 101	Bedroom 1	4.50	High	-	4.50	High	-
HT-10 / 102	LKD	6.70	High	Compliant	6.70	High	Compliant
HT-10 / 102	Bedroom 1	5.10	High	-	5.10	High	-
HT-10 / 103	LKD	6.70	High	-	6.70	High	-
HT-10 / 103	Bedroom 1	9.40	High	Compliant	9.40	High	Compliant
HT-05 / 104	LKD	4.20	High	Compliant	4.20	High	Compliant
HT-05 / 104	Bedroom 1	3.60	Medium	-	3.60	Medium	-
HT-05 / 104	Bedroom 2	1.50	Minimum	-	1.50	Minimum	-
HT-05 / 105	Kitchen Dining	5.60	High	Compliant	5.60	High	Compliant
HT-05 / 105	Living Room	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 105	Bedroom 1	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 105	Bedroom 2	5.10	High	-	5.10	High	-
HT-05 / 105	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 108	LKD	3.60	Medium	Compliant	3.60	Medium	Compliant
HT-05 / 108	Bedroom 1	3.60	Medium	-	3.60	Medium	-
HT-05 / 108	Bedroom 2	0.00	Below Minimum	-	1.10	Below Minimum	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** Section 3.1 of 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 3.2.2 on page 20.
 *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.
 For floor plans of the assessed units please refer to section C.1 on page 37.

C.3.8 SE Results: Duplex Units

Table No. C.3.8 - Sunlight Exposure Results:							
Unit Type / 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**
HT-05 / 109	Kitchen Dining	9.10	High	-	9.10	High	-
HT-05 / 109	Living Room	6.10	High	-	6.10	High	-
HT-05 / 109	Bedroom 1	6.80	High	-	6.80	High	-
HT-05 / 109	Bedroom 2	9.40	High	Compliant	9.40	High	Compliant
HT-05 / 109	Bedroom 3	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 130	LKD	0.30	Below Minimum	-	0.30	Below Minimum	-
HT-05 / 130	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 130	Bedroom 2	3.10	Medium	Compliant	6.80	High	Compliant
HT-05 / 131	Kitchen Dining	0.10	Below Minimum	-	1.70	Minimum	-
HT-05 / 131	Living Room	6.80	High	Compliant	6.80	High	Compliant
HT-05 / 131	Bedroom 1	6.80	High	-	6.80	High	-
HT-05 / 131	Bedroom 2	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 131	Bedroom 3	6.80	High	-	6.80	High	-
HT-05 / 142	LKD	5.40	High	Compliant	6.60	High	Compliant
HT-05 / 142	Bedroom 1	4.80	High	-	5.70	High	-
HT-05 / 142	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 143	Kitchen Dining	7.50	High	Compliant	7.50	High	Compliant
HT-05 / 143	Living Room	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 143	Bedroom 1	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 143	Bedroom 2	6.80	High	-	6.80	High	-
HT-05 / 143	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 144	LKD	0.30	Below Minimum	-	0.30	Below Minimum	-
HT-05 / 144	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 144	Bedroom 2	4.10	High	Compliant	6.80	High	Compliant
HT-05 / 145	Kitchen Dining	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 145	Living Room	6.80	High	Compliant	6.80	High	Compliant
HT-05 / 145	Bedroom 1	6.80	High	-	6.80	High	-
HT-05 / 145	Bedroom 2	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 145	Bedroom 3	6.80	High	-	6.80	High	-
HT-05 / 156	LKD	5.90	High	Compliant	6.70	High	Compliant
HT-05 / 156	Bedroom 1	4.80	High	-	5.70	High	-
HT-05 / 156	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 157	Kitchen Dining	7.50	High	Compliant	7.50	High	Compliant
HT-05 / 157	Living Room	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 157	Bedroom 1	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 157	Bedroom 2	6.80	High	-	6.80	High	-
HT-05 / 157	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 161	LKD	3.90	Medium	Compliant	5.70	High	Compliant
HT-05 / 161	Bedroom 1	1.50	Minimum	-	3.40	Medium	-
HT-05 / 161	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** Section 3.1 of 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 3.2.2 on page 20.
 *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.
 For floor plans of the assessed units please refer to section C.1 on page 37.

C.3.9 SE Results: Duplex Units

Table No. C.3.9 - Sunlight Exposure Results:							
Unit Type / 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**
HT-05 / 162	Kitchen Dining	9.40	High	Compliant	9.40	High	Compliant
HT-05 / 162	Living Room	4.30	High	-	4.30	High	-
HT-05 / 162	Bedroom 1	4.30	High	-	4.30	High	-
HT-05 / 162	Bedroom 2	9.40	High	-	9.40	High	-
HT-05 / 162	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 163	LKD	0.00	Below Minimum	-	0.30	Below Minimum	-
HT-05 / 163	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 163	Bedroom 2	4.80	High	Compliant	5.90	High	Compliant
HT-05 / 164	Kitchen Dining	4.30	High	-	4.30	High	-
HT-05 / 164	Living Room	9.40	High	Compliant	9.40	High	Compliant
HT-05 / 164	Bedroom 1	9.40	High	-	9.40	High	-
HT-05 / 164	Bedroom 2	4.30	High	-	4.30	High	-
HT-05 / 164	Bedroom 3	5.90	High	-	5.90	High	-
HT-07 / 178	LKD	3.40	Medium	-	4.10	High	-
HT-07 / 178	Bedroom 1	5.50	High	Compliant	5.50	High	Compliant
HT-07 / 178	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-07 / 178	Bedroom 3	1.10	Below Minimum	-	3.30	Medium	-
HT-07 / 179	LKD	5.00	High	-	5.00	High	-
HT-07 / 179	Living Room	6.30	High	-	6.30	High	-
HT-07 / 179	Bedroom 1	5.50	High	-	5.50	High	-
HT-07 / 179	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-07 / 179	Bedroom 3	6.60	High	Compliant	6.60	High	Compliant
HT-05 / 180	LKD	3.80	Medium	Compliant	3.80	Medium	Compliant
HT-05 / 180	Bedroom 1	3.40	Medium	-	3.40	Medium	-
HT-05 / 180	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 181	Kitchen Dining	7.50	High	Compliant	7.50	High	Compliant
HT-05 / 181	Living Room	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 181	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 181	Bedroom 2	6.80	High	-	6.80	High	-
HT-05 / 181	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 182	LKD	5.20	High	Compliant	5.20	High	Compliant
HT-05 / 182	Bedroom 1	3.90	Medium	-	3.90	Medium	-
HT-05 / 182	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 183	Kitchen Dining	7.50	High	Compliant	7.50	High	Compliant
HT-05 / 183	Living Room	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 183	Bedroom 1	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 183	Bedroom 2	6.80	High	-	6.80	High	-
HT-05 / 183	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** Section 3.1 of 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 3.2.2 on page 20.
 *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.
 For floor plans of the assessed units please refer to section C.1 on page 37.

C.3.10 SE Results: Duplex and Triplex Units

Table No. C.3.10 - Sunlight Exposure Results:							
Unit Type / 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**
HT-07 / 184	LKD	0.00	Below Minimum	-	0.30	Below Minimum	-
HT-07 / 184	Bedroom 1	5.50	High	-	5.50	High	-
HT-07 / 184	Bedroom 2	5.60	High	Compliant	6.70	High	Compliant
HT-07 / 184	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-07 / 185	LKD	9.40	High	Compliant	9.40	High	Compliant
HT-07 / 185	Living Room	0.30	Below Minimum	-	0.30	Below Minimum	-
HT-07 / 185	Bedroom 1	5.50	High	-	5.50	High	-
HT-07 / 185	Bedroom 2	6.70	High	-	6.70	High	-
HT-07 / 185	Bedroom 3	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 186	LKD	0.10	Below Minimum	-	0.30	Below Minimum	-
HT-05 / 186	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 186	Bedroom 2	5.70	High	Compliant	6.80	High	Compliant
HT-05 / 187	Kitchen Dining	0.30	Below Minimum	-	0.30	Below Minimum	-
HT-05 / 187	Living Room	6.80	High	Compliant	6.80	High	Compliant
HT-05 / 187	Bedroom 1	6.80	High	-	6.80	High	-
HT-05 / 187	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 187	Bedroom 3	6.80	High	-	6.80	High	-
HT-05 / 188	LKD	0.30	Below Minimum	-	0.30	Below Minimum	-
HT-05 / 188	Bedroom 1	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-05 / 188	Bedroom 2	5.80	High	Compliant	6.80	High	Compliant
HT-05 / 189	Kitchen Dining	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 189	Living Room	6.80	High	Compliant	6.80	High	Compliant
HT-05 / 189	Bedroom 1	6.80	High	-	6.80	High	-
HT-05 / 189	Bedroom 2	1.70	Minimum	-	1.70	Minimum	-
HT-05 / 189	Bedroom 3	6.80	High	-	6.80	High	-
HT-12 / 190	LKD	5.90	High	Compliant	6.30	High	Compliant
HT-12 / 190	Bedroom 1	4.70	High	-	5.30	High	-
HT-13 / 191	LKD	3.40	Medium	Compliant	4.30	High	Compliant
HT-13 / 191	Bedroom 1	3.30	Medium	-	3.60	Medium	-
HT-13 / 191	Bedroom 2	1.10	Below Minimum	-	1.50	Minimum	-
HT-13 / 192	LKD	3.60	Medium	-	3.60	Medium	-
HT-13 / 192	Bedroom 1	4.00	High	Compliant	5.10	High	Compliant
HT-13 / 192	Bedroom 2	0.50	Below Minimum	-	0.50	Below Minimum	-
HT-12 / 193	LKD	6.90	High	Compliant	6.90	High	Compliant
HT-12 / 193	Bedroom 1	5.20	High	-	5.30	High	-
HT-13 / 194	Kitchen Dining	5.70	High	Compliant	5.70	High	Compliant
HT-13 / 194	Living Room	1.60	Minimum	-	1.60	Minimum	-
HT-13 / 194	Bedroom 1	1.80	Minimum	-	1.80	Minimum	-
HT-13 / 194	Bedroom 2	5.30	High	-	5.30	High	-
HT-13 / 194	Bedroom 3	5.10	High	-	5.10	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** Section 3.1 of 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 3.2.2 on page 20.
 *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.
 For floor plans of the assessed units please refer to section C.1 on page 37.

C.3.11 SE Results: Duplex and Triplex Units

Table No. C.3.11 - Sunlight Exposure Results:							
Unit Type / 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**
HT-13 / 195	Kitchen Dining	5.70	High	Compliant	5.70	High	Compliant
HT-13 / 195	Living Room	1.80	Minimum	-	1.80	Minimum	-
HT-13 / 195	Bedroom 1	1.80	Minimum	-	1.80	Minimum	-
HT-13 / 195	Bedroom 2	5.30	High	-	5.30	High	-
HT-13 / 195	Bedroom 3	5.10	High	-	5.10	High	-
HT-12 / 196	LKD	6.90	High	Compliant	6.90	High	Compliant
HT-12 / 196	Bedroom 1	5.30	High	-	5.30	High	-
HT-12 / 197	LKD	0.00	Below Minimum	-	2.10	Minimum	-
HT-12 / 197	Bedroom 1	4.80	High	Compliant	5.10	High	Compliant
HT-13 / 198	LKD	4.10	High	-	4.70	High	-
HT-13 / 198	Bedroom 1	5.50	High	Compliant	6.00	High	Compliant
HT-13 / 198	Bedroom 2	0.00	Below Minimum	-	0.00	Below Minimum	-
HT-13 / 199	LKD	8.40	High	Compliant	9.40	High	Compliant
HT-13 / 199	Bedroom 1	3.50	Medium	-	4.40	High	-
HT-13 / 199	Bedroom 2	0.30	Below Minimum	-	0.30	Below Minimum	-
HT-12 / 200	LKD	1.30	Below Minimum	-	2.10	Minimum	-
HT-12 / 200	Bedroom 1	6.20	High	Compliant	6.20	High	Compliant
HT-13 / 201	Kitchen Dining	6.70	High	Compliant	6.70	High	Compliant
HT-13 / 201	Living Room	0.00	Below Minimum	-	0.60	Below Minimum	-
HT-13 / 201	Bedroom 1	0.60	Below Minimum	-	0.60	Below Minimum	-
HT-13 / 201	Bedroom 2	6.20	High	-	6.20	High	-
HT-13 / 201	Bedroom 3	6.00	High	-	6.00	High	-
HT-13 / 202	LKD	2.10	Minimum	-	2.10	Minimum	-
HT-13 / 202	Bedroom 1	6.20	High	Compliant	6.20	High	Compliant
HT-12 / 203	Kitchen Dining	9.40	High	Compliant	9.40	High	Compliant
HT-12 / 203	Living Room	5.70	High	Compliant	5.70	High	Compliant
HT-12 / 203	Bedroom 1	5.70	High	-	5.70	High	-
HT-12 / 203	Bedroom 2	9.40	High	-	9.40	High	-
HT-12 / 203	Bedroom 3	6.00	High	-	6.00	High	-
HT-05 / 204	LKD	3.00	Medium	Compliant	4.90	High	Compliant
HT-05 / 204	Bedroom 1	2.70	Minimum	-	4.30	High	-
HT-05 / 204	Bedroom 2	0.00	Below Minimum	-	0.50	Below Minimum	-
HT-05 / 205	Kitchen Dining	7.30	High	-	9.40	High	Compliant
HT-05 / 205	Living Room	5.60	High	-	5.60	High	-
HT-05 / 205	Bedroom 1	6.10	High	-	6.10	High	-
HT-05 / 205	Bedroom 2	9.40	High	Compliant	9.40	High	-
HT-05 / 205	Bedroom 3	0.70	Below Minimum	-	0.70	Below Minimum	-
HT-05 / 219	LKD	4.40	High	Compliant	4.40	High	Compliant
HT-05 / 219	Bedroom 1	0.50	Below Minimum	-	2.00	Minimum	-
HT-05 / 219	Bedroom 2	0.00	Below Minimum	-	0.10	Below Minimum	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** Section 3.1 of 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 3.2.2 on page 20.
 *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110.
 For floor plans of the assessed units please refer to section C.1 on page 37.

C.3.12 SE Results: Duplex and Triplex Units

Table No. C.3.12 - Sunlight Exposure Results:							
Unit Type / 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**
HT-05 / 220	Kitchen Dining	8.40	High	-	9.40	High	Compliant
HT-05 / 220	Living Room	5.60	High	-	5.90	High	-
HT-05 / 220	Bedroom 1	5.80	High	-	5.90	High	-
HT-05 / 220	Bedroom 2	9.40	High	Compliant	9.40	High	-
HT-05 / 220	Bedroom 3	0.30	Below Minimum	-	0.50	Below Minimum	-
HT-10 / 232	LKD	6.20	High	Compliant	6.70	High	Compliant
HT-10 / 232	Bedroom 1	5.10	High	-	5.10	High	-
HT-10 / 233	LKD	6.70	High	Compliant	6.70	High	Compliant
HT-10 / 233	Bedroom 1	5.10	High	-	5.10	High	-
HT-10 / 234	LKD	6.70	High	-	6.70	High	-
HT-10 / 234	Bedroom 1	9.40	High	Compliant	9.40	High	Compliant
* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours. ** Section 3.1 of 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 3.2.2 on page 20. *** For the interpretation of levels of Sunlight Exposure please refer to "E.3 Definition of Levels of Sunlight Exposure" on page 110. For floor plans of the assessed units please refer to section C.1 on page 37.							

C.3.13 SE Results: Creche

Table No. C.3.13 - Sunlight Exposure Results:							
Unit Type / 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**
Creche	Classroom 1	1.50	Minimum	-	2.10	Minimum	-
Creche	Classroom 2	0.70	Below Minimum	-	2.10	Minimum	-
Creche	Classroom 3	4.60	High	-	4.60	High	-
Creche	Classroom 4	4.60	High	-	4.60	High	-
Creche	Classroom 5	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. ** Section 3.1 of 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 3.2.2 on page 20. *** For the interpretation of levels of Sunlight Exposure please refer to “E.3 Definition of Levels of Sunlight Exposure” on page 110. For floor plans of the assessed units please refer to section C.1 on page 37.							

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

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

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

- A: Assigned Area Number**
This column indicates the number that 3DDB have assigned to the assessed areas, which is included for the sole purpose of aiding in the identification of the corresponding space shown in the corresponding figure.
- B: Assessed Area**
This column identifies the assessed garden/amenity area.
- C: Area Capable of Receiving 2 Hours of Sunlight on March 21st**
The percentage of the proposed area that can receive more than 2 hours of sunlight on March 21st.
- D: Recommended Minimum**
Section 3.3.17 of the BRE Guidelines state that the percentage of a garden/amenity area that can receive more than 2 hours of sunlight on March 21st should be 50%. The target value for all spaces is set to 50%.
- E: Level of Compliance with BRE Guidelines**
This column states the compliance of the assessed space with the *BRE Target Value*. If the assessed garden or amenity area complies with the BRE Guidelines this cell will state “*BRE Compliant*”. If the garden or amenity area does not meet the criteria as set out in the BRE Guidelines, a percentage of compliance with the *recommended minimum* will be stated.
- F: Meets BR 209 Criteria**
This column states if the assessed area achieves the recommended level of sunlight on March 21st as per BR 209.

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

C.4.1 Sun On Ground in Proposed Outdoor Amenity Areas

Table No. C.4.1 - SOG in Proposed Outdoor Amenity Areas Results:					
Assigned Area Number	Assessed Area	Area Capable of Receiving 2 Hours of Sunlight on March 21st	Recommended minimum	Level of Compliance with BRE Guidelines*	Meets BR 209 Criteria*
1	Public Open Space 1	93.87%	50.00%	BRE Compliant	Yes
2	Public Open Space 2	89.89%	50.00%	BRE Compliant	Yes
3	Public Open Space 3	91.39%	50.00%	BRE Compliant	Yes
4	Public Open Space 4	92.73%	50.00%	BRE Compliant	Yes
5	Public Open Space 5	85.98%	50.00%	BRE Compliant	Yes
6	Public Open Space 6	93.93%	50.00%	BRE Compliant	Yes
7	Public Open Space 7	84.32%	50.00%	BRE Compliant	Yes
8	Communal Amenity Space 1	86.76%	50.00%	BRE Compliant	Yes
9	Communal Amenity Space 2	93.67%	50.00%	BRE Compliant	Yes
10	Creche Open Space	97.68%	50.00%	BRE Compliant	Yes

* Section 2.2.23 of the BRE Guidelines recommends that for a garden or amenity to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on March 21st.

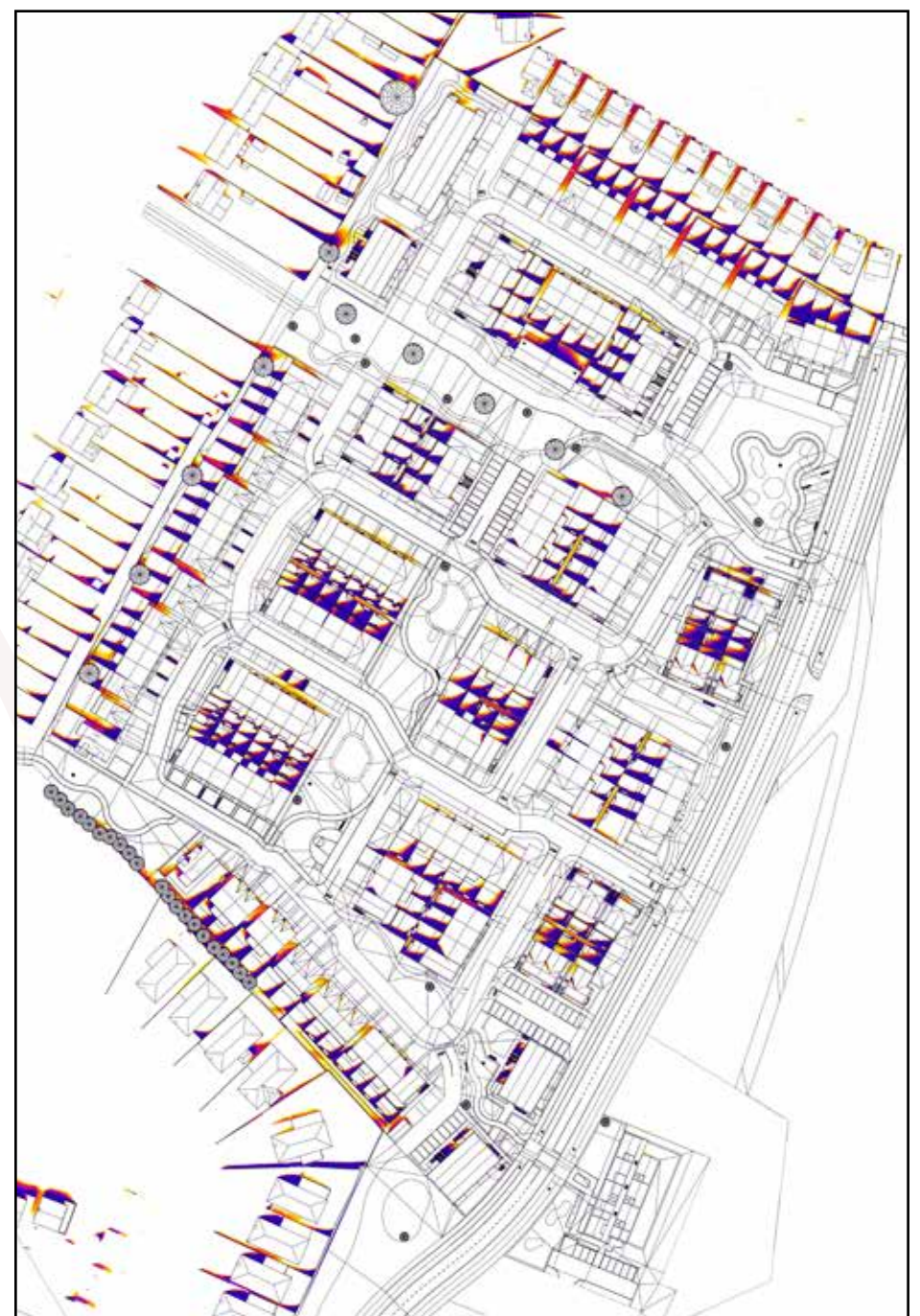


Figure C.29: Indication of the amenity areas that have been analysed (L), Area capable of receiving 2 hours of sunlight on March 21st shown in white (R)

D.0 Supplementary Study Results

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

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

Table Example. D.1 - Supplementary Scheme Performance SDA (I.S. EN 17037 criteria)						
Unit Type / Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria
		Area above 300 Lux	Area above 100 Lux	Area above 300 Lux	Area above 100 Lux	
A	B	C	D	E	F	G

A: Unit Type / Unit Number

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

B: Room Description

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

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

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

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

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

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

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

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

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

This column states percentage of the working plane of the assessed room that is capable of receiving more than 300 lux for at least half the daylight hours with the foliage of deciduous trees varied to account for summer and winter conditions, i.e. full leaf and bare branch.

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

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

This column states percentage of the working plane of the assessed room that is capable of receiving more than 100 lux for at least half the daylight hours with the foliage of deciduous trees varied to account for summer and winter conditions.

G: Compliance with I.S. EN 17037 Criteria

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

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

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

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

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

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

D.1.1 Supplementary SDA Results (I.S. EN 17037 criteria): Apartment Units

Table No. D.1.1 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Apartment / 020	LKD	64%	100%	59%	100%	Compliant
Apartment / 020	Bedroom 1	80%	100%	74%	100%	Compliant
Apartment / 021	LKD	82%	100%	67%	100%	Compliant
Apartment / 021	Bedroom 1	79%	100%	71%	100%	Compliant
Apartment / 022	LKD	100%	100%	38%	100%	Trees affecting compliance
Apartment / 022	Bedroom 1	34%	100%	20%	86%	Non-compliant
Apartment / 023	LKD	96%	100%	15%	98%	Trees affecting compliance
Apartment / 023	Bedroom 1	35%	100%	11%	67%	Non-compliant
Apartment / 024	LKD	100%	100%	28%	100%	Trees affecting compliance
Apartment / 024	Bedroom 1	39%	100%	7%	63%	Non-compliant
Apartment / 025	LKD	75%	100%	70%	100%	Compliant
Apartment / 025	Bedroom 1	81%	100%	50%	100%	Compliant
Apartment / 026	LKD	62%	100%	52%	100%	Compliant
Apartment / 026	Bedroom 1	67%	100%	62%	100%	Compliant
Apartment / 027	LKD	71%	100%	69%	100%	Compliant
Apartment / 027	Bedroom 1	93%	100%	85%	100%	Compliant
Apartment / 028	LKD	88%	100%	83%	100%	Compliant
Apartment / 028	Bedroom 1	87%	100%	87%	100%	Compliant
Apartment / 029	LKD	100%	100%	94%	100%	Compliant
Apartment / 029	Bedroom 1	41%	100%	32%	100%	Non-compliant
Apartment / 030	LKD	98%	100%	82%	100%	Compliant
Apartment / 030	Bedroom 1	46%	100%	26%	100%	Non-compliant
Apartment / 031	LKD	100%	100%	91%	100%	Compliant
Apartment / 031	Bedroom 1	45%	100%	18%	100%	Non-compliant
Apartment / 032	LKD	82%	100%	78%	100%	Compliant
Apartment / 032	Bedroom 1	92%	100%	81%	100%	Compliant
Apartment / 033	LKD	85%	100%	78%	100%	Compliant
Apartment / 033	Bedroom 1	80%	100%	77%	100%	Compliant
Apartment / 033	Bedroom 2	40%	100%	40%	100%	Non-compliant
Apartment / 034	LKD	83%	100%	82%	100%	Compliant
Apartment / 034	Bedroom 1	100%	100%	100%	100%	Compliant
Apartment / 035	LKD	100%	100%	100%	100%	Compliant
Apartment / 035	Bedroom 1	100%	100%	94%	100%	Compliant
Apartment / 036	LKD	100%	100%	100%	100%	Compliant
Apartment / 036	Bedroom 1	63%	100%	48%	100%	Trees affecting compliance
Apartment / 037	LKD	100%	100%	99%	100%	Compliant
Apartment / 037	Bedroom 1	63%	100%	48%	100%	Trees affecting compliance
Apartment / 038	LKD	100%	100%	100%	100%	Compliant
Apartment / 038	Bedroom 1	66%	100%	27%	100%	Trees affecting compliance
Apartment / 039	LKD	90%	100%	88%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.
For floor plans of the assessed units please refer to section C.1 on page 37.

D.1.2 Supplementary SDA Results (I.S. EN 17037 criteria): Apartment Units

Table No. D.1.2 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
Apartment / 039	Bedroom 1	100%	100%	100%	100%	Compliant
Apartment / 040	LKD	97%	100%	97%	100%	Compliant
Apartment / 040	Bedroom 1	87%	100%	86%	100%	Compliant
Apartment / 040	Bedroom 2	53%	100%	50%	100%	Compliant
* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15. For floor plans of the assessed units please refer to section C.1 on page 37.						

D.1.3 Supplementary SDA Results (I.S. EN 17037 criteria): Duplex and Triplex Units

Table No. D.1.3 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
HT-12 / 041	LKD	100%	100%	23%	100%	Trees affecting compliance
HT-12 / 041	Bedroom 1	71%	100%	63%	100%	Compliant
HT-13 / 042	LKD	55%	100%	45%	100%	Trees affecting compliance
HT-13 / 042	Bedroom 1	37%	100%	29%	87%	Non-compliant
HT-13 / 042	Bedroom 2	34%	100%	8%	64%	Non-compliant
HT-13 / 043	LKD	98%	100%	77%	100%	Compliant
HT-13 / 043	Bedroom 1	36%	100%	28%	86%	Non-compliant
HT-13 / 043	Bedroom 2	33%	100%	0%	31%	Non-compliant
HT-12 / 044	LKD	100%	100%	60%	100%	Compliant
HT-12 / 044	Bedroom 1	86%	100%	82%	100%	Compliant
HT-13 / 045	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-13 / 045	Living Room	100%	100%	45%	100%	Trees affecting compliance
HT-13 / 045	Bedroom 1	100%	100%	100%	100%	Compliant
HT-13 / 045	Bedroom 2	72%	100%	66%	100%	Compliant
HT-13 / 045	Bedroom 3	73%	100%	62%	100%	Compliant
HT-13 / 046	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-13 / 046	Living Room	100%	100%	100%	100%	Compliant
HT-13 / 046	Bedroom 1	100%	100%	100%	100%	Compliant
HT-13 / 046	Bedroom 2	100%	100%	100%	100%	Compliant
HT-13 / 046	Bedroom 3	66%	100%	56%	100%	Compliant
HT-12 / 047	LKD	100%	100%	100%	100%	Compliant
HT-12 / 047	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 048	LKD	83%	100%	78%	100%	Compliant
HT-05 / 048	Bedroom 1	50%	100%	44%	100%	Trees affecting compliance
HT-05 / 048	Bedroom 2	54%	100%	43%	100%	Trees affecting compliance
HT-05 / 049	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 049	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 049	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 049	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 049	Bedroom 3	100%	100%	100%	100%	Compliant
HT-06 / 050	LKD	65%	100%	65%	100%	Compliant
HT-06 / 050	Bedroom 1	51%	93%	51%	93%	Non-compliant
HT-06 / 050	Bedroom 2	35%	100%	32%	100%	Non-compliant
HT-06 / 051	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-06 / 051	Living Room	72%	100%	64%	100%	Compliant
HT-06 / 051	Bedroom 1	100%	100%	100%	100%	Compliant
HT-06 / 051	Bedroom 2	92%	100%	92%	100%	Compliant
HT-06 / 051	Bedroom 3	75%	100%	71%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.
For floor plans of the assessed units please refer to section C.1 on page 37.

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

Table No. D.1.4 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
HT-06 / 052	LKD	55%	100%	55%	100%	Compliant
HT-06 / 052	Bedroom 1	40%	91%	40%	91%	Non-compliant
HT-06 / 052	Bedroom 2	33%	100%	33%	100%	Non-compliant
HT-06 / 053	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-06 / 053	Living Room	77%	100%	68%	100%	Compliant
HT-06 / 053	Bedroom 1	100%	100%	100%	100%	Compliant
HT-06 / 053	Bedroom 2	98%	100%	98%	100%	Compliant
HT-06 / 053	Bedroom 3	79%	100%	75%	100%	Compliant
HT-05 / 054	LKD	54%	100%	53%	100%	Compliant
HT-05 / 054	Bedroom 1	36%	100%	36%	100%	Non-compliant
HT-05 / 054	Bedroom 2	43%	100%	36%	100%	Non-compliant
HT-05 / 055	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 055	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 055	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 055	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 055	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 060	LKD	35%	92%	34%	91%	Non-compliant
HT-05 / 060	Bedroom 1	23%	87%	20%	85%	Non-compliant
HT-05 / 060	Bedroom 2	84%	100%	55%	100%	Compliant
HT-05 / 061	Kitchen Dining	100%	100%	95%	100%	Compliant
HT-05 / 061	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 061	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 061	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 061	Bedroom 3	100%	100%	100%	100%	Compliant
HT-06 / 062	LKD	40%	93%	40%	92%	Non-compliant
HT-06 / 062	Bedroom 1	29%	100%	29%	100%	Non-compliant
HT-06 / 062	Bedroom 2	58%	100%	44%	100%	Trees affecting compliance
HT-06 / 063	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-06 / 063	Living Room	100%	100%	98%	100%	Compliant
HT-06 / 063	Bedroom 1	100%	100%	100%	100%	Compliant
HT-06 / 063	Bedroom 2	72%	100%	72%	100%	Compliant
HT-06 / 063	Bedroom 3	100%	100%	96%	100%	Compliant
HT-06 / 064	LKD	51%	100%	50%	100%	Compliant
HT-06 / 064	Bedroom 1	31%	100%	31%	100%	Non-compliant
HT-06 / 064	Bedroom 2	58%	100%	44%	100%	Trees affecting compliance
HT-06 / 065	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-06 / 065	Living Room	100%	100%	100%	100%	Compliant
HT-06 / 065	Bedroom 1	100%	100%	100%	100%	Compliant
HT-06 / 065	Bedroom 2	73%	100%	73%	100%	Compliant
HT-06 / 065	Bedroom 3	100%	100%	96%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.
For floor plans of the assessed units please refer to section C.1 on page 37.

D.1.5 Supplementary SDA Results (I.S. EN 17037 criteria): Duplex Units

Table No. D.1.5 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
HT-05 / 066	LKD	61%	100%	60%	100%	Compliant
HT-05 / 066	Bedroom 1	32%	94%	29%	92%	Non-compliant
HT-05 / 066	Bedroom 2	85%	100%	61%	100%	Compliant
HT-05 / 067	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 067	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 067	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 067	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 067	Bedroom 3	100%	100%	100%	100%	Compliant
HT-07 / 070	LKD	59%	100%	47%	100%	Trees affecting compliance
HT-07 / 070	Bedroom 1	92%	100%	77%	100%	Compliant
HT-07 / 070	Bedroom 2	36%	100%	18%	100%	Non-compliant
HT-07 / 070	Bedroom 3	47%	100%	25%	97%	Non-compliant
HT-07 / 071	LKD	99%	100%	96%	100%	Compliant
HT-07 / 071	Living Room	100%	100%	100%	100%	Compliant
HT-07 / 071	Bedroom 1	100%	100%	100%	100%	Compliant
HT-07 / 071	Bedroom 2	55%	100%	51%	100%	Compliant
HT-07 / 071	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 072	LKD	59%	100%	56%	100%	Compliant
HT-05 / 072	Bedroom 1	38%	100%	37%	100%	Non-compliant
HT-05 / 072	Bedroom 2	41%	100%	20%	100%	Non-compliant
HT-05 / 073	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 073	Living Room	100%	100%	98%	100%	Compliant
HT-05 / 073	Bedroom 1	47%	100%	43%	100%	Non-compliant
HT-05 / 073	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 073	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 074	LKD	59%	100%	55%	100%	Compliant
HT-05 / 074	Bedroom 1	42%	100%	38%	100%	Non-compliant
HT-05 / 074	Bedroom 2	43%	100%	22%	100%	Non-compliant
HT-05 / 075	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 075	Living Room	100%	100%	99%	100%	Compliant
HT-05 / 075	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 075	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 075	Bedroom 3	100%	100%	100%	100%	Compliant
HT-07 / 076	LKD	45%	100%	37%	100%	Non-compliant
HT-07 / 076	Bedroom 1	95%	100%	77%	100%	Compliant
HT-07 / 076	Bedroom 2	86%	100%	73%	100%	Compliant
HT-07 / 076	Bedroom 3	25%	97%	13%	88%	Non-compliant
HT-07 / 077	LKD	100%	100%	100%	100%	Compliant
HT-07 / 077	Living Room	97%	100%	89%	100%	Compliant
HT-07 / 077	Bedroom 1	100%	100%	100%	100%	Compliant
HT-07 / 077	Bedroom 2	100%	100%	100%	100%	Compliant
HT-07 / 077	Bedroom 3	100%	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.
For floor plans of the assessed units please refer to section C.1 on page 37.

D.1.6 Supplementary SDA Results (I.S. EN 17037 criteria): Duplex and Triplex Units

Table No. D.1.6 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
HT-05 / 078	LKD	54%	100%	53%	100%	Compliant
HT-05 / 078	Bedroom 1	31%	99%	27%	98%	Non-compliant
HT-05 / 078	Bedroom 2	89%	100%	73%	100%	Compliant
HT-05 / 079	Kitchen Dining	92%	100%	90%	100%	Compliant
HT-05 / 079	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 079	Bedroom 1	99%	100%	97%	100%	Compliant
HT-05 / 079	Bedroom 2	76%	100%	75%	100%	Compliant
HT-05 / 079	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 080	LKD	52%	100%	50%	100%	Compliant
HT-05 / 080	Bedroom 1	29%	98%	23%	96%	Non-compliant
HT-05 / 080	Bedroom 2	91%	100%	77%	100%	Compliant
HT-05 / 081	Kitchen Dining	100%	100%	99%	100%	Compliant
HT-05 / 081	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 081	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 081	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 081	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 082	LKD	69%	100%	64%	100%	Compliant
HT-05 / 082	Bedroom 1	38%	100%	35%	100%	Non-compliant
HT-05 / 082	Bedroom 2	91%	100%	71%	100%	Compliant
HT-05 / 083	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 083	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 083	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 083	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 083	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 092	LKD	79%	100%	71%	100%	Compliant
HT-05 / 092	Bedroom 1	48%	100%	40%	100%	Non-compliant
HT-05 / 092	Bedroom 2	58%	100%	39%	100%	Trees affecting compliance
HT-05 / 093	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 093	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 093	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 093	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 093	Bedroom 3	100%	100%	100%	100%	Compliant
HT-10 / 094	LKD	84%	100%	59%	100%	Compliant
HT-10 / 094	Bedroom 1	89%	100%	61%	100%	Compliant
HT-10 / 095	LKD	77%	100%	43%	100%	Trees affecting compliance
HT-10 / 095	Bedroom 1	100%	100%	86%	100%	Compliant
HT-10 / 096	LKD	100%	100%	97%	100%	Compliant
HT-10 / 096	Bedroom 1	100%	100%	100%	100%	Compliant
HT-06 / 097	LKD	46%	100%	44%	99%	Non-compliant
HT-06 / 097	Bedroom 1	30%	89%	30%	89%	Non-compliant
HT-06 / 097	Bedroom 2	42%	100%	7%	89%	Non-compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.
For floor plans of the assessed units please refer to section C.1 on page 37.

D.1.7 Supplementary SDA Results (I.S. EN 17037 criteria): Duplex and Triplex Units

Table No. D.1.7 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
HT-06 / 098	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-06 / 098	Living Room	100%	100%	45%	100%	Trees affecting compliance
HT-06 / 098	Bedroom 1	100%	100%	100%	100%	Compliant
HT-06 / 098	Bedroom 2	85%	100%	83%	100%	Compliant
HT-06 / 098	Bedroom 3	100%	100%	100%	100%	Compliant
HT-06 / 099	LKD	45%	100%	44%	99%	Non-compliant
HT-06 / 099	Bedroom 1	31%	90%	30%	89%	Non-compliant
HT-06 / 099	Bedroom 2	33%	100%	5%	61%	Non-compliant
HT-06 / 100	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-06 / 100	Living Room	97%	100%	29%	100%	Trees affecting compliance
HT-06 / 100	Bedroom 1	100%	100%	100%	100%	Compliant
HT-06 / 100	Bedroom 2	77%	100%	77%	100%	Compliant
HT-06 / 100	Bedroom 3	100%	100%	100%	100%	Compliant
HT-10 / 101	LKD	100%	100%	99%	100%	Compliant
HT-10 / 101	Bedroom 1	86%	100%	57%	100%	Compliant
HT-10 / 102	LKD	100%	100%	100%	100%	Compliant
HT-10 / 102	Bedroom 1	100%	100%	88%	100%	Compliant
HT-10 / 103	LKD	100%	100%	100%	100%	Compliant
HT-10 / 103	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 104	LKD	63%	100%	61%	100%	Compliant
HT-05 / 104	Bedroom 1	44%	100%	42%	100%	Non-compliant
HT-05 / 104	Bedroom 2	56%	100%	40%	100%	Trees affecting compliance
HT-05 / 105	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 105	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 105	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 105	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 105	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 108	LKD	72%	100%	71%	100%	Compliant
HT-05 / 108	Bedroom 1	45%	100%	40%	100%	Non-compliant
HT-05 / 108	Bedroom 2	59%	100%	47%	100%	Trees affecting compliance
HT-05 / 109	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 109	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 109	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 109	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 109	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 130	LKD	64%	100%	60%	100%	Compliant
HT-05 / 130	Bedroom 1	40%	100%	27%	100%	Non-compliant
HT-05 / 130	Bedroom 2	100%	100%	67%	100%	Compliant
* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15. For floor plans of the assessed units please refer to section C.1 on page 37.						

D.1.8 Supplementary SDA Results (I.S. EN 17037 criteria): Duplex Units

Table No. D.1.8 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
HT-05 / 131	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 131	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 131	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 131	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 131	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 142	LKD	63%	100%	58%	100%	Compliant
HT-05 / 142	Bedroom 1	50%	100%	43%	100%	Trees affecting compliance
HT-05 / 142	Bedroom 2	42%	100%	30%	100%	Non-compliant
HT-05 / 143	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 143	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 143	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 143	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 143	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 144	LKD	64%	100%	63%	100%	Compliant
HT-05 / 144	Bedroom 1	44%	100%	38%	100%	Non-compliant
HT-05 / 144	Bedroom 2	85%	100%	53%	100%	Compliant
HT-05 / 145	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 145	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 145	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 145	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 145	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 156	LKD	62%	100%	58%	100%	Compliant
HT-05 / 156	Bedroom 1	50%	100%	45%	100%	Trees affecting compliance
HT-05 / 156	Bedroom 2	45%	100%	35%	100%	Non-compliant
HT-05 / 157	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 157	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 157	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 157	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 157	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 161	LKD	67%	100%	58%	100%	Compliant
HT-05 / 161	Bedroom 1	39%	100%	29%	98%	Non-compliant
HT-05 / 161	Bedroom 2	53%	100%	36%	100%	Trees affecting compliance
HT-05 / 162	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 162	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 162	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 162	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 162	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 163	LKD	65%	100%	60%	100%	Compliant
HT-05 / 163	Bedroom 1	37%	100%	23%	98%	Non-compliant
HT-05 / 163	Bedroom 2	95%	100%	88%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.
For floor plans of the assessed units please refer to section C.1 on page 37.

D.1.9 Supplementary SDA Results (I.S. EN 17037 criteria): Duplex Units

Table No. D.1.9 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
HT-05 / 164	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 164	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 164	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 164	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 164	Bedroom 3	100%	100%	100%	100%	Compliant
HT-07 / 178	LKD	52%	100%	43%	100%	Trees affecting compliance
HT-07 / 178	Bedroom 1	99%	100%	81%	100%	Compliant
HT-07 / 178	Bedroom 2	30%	100%	7%	91%	Non-compliant
HT-07 / 178	Bedroom 3	31%	100%	22%	94%	Non-compliant
HT-07 / 179	LKD	99%	100%	92%	100%	Compliant
HT-07 / 179	Living Room	100%	100%	100%	100%	Compliant
HT-07 / 179	Bedroom 1	100%	100%	100%	100%	Compliant
HT-07 / 179	Bedroom 2	61%	100%	59%	100%	Compliant
HT-07 / 179	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 180	LKD	52%	100%	50%	100%	Compliant
HT-05 / 180	Bedroom 1	32%	100%	30%	100%	Non-compliant
HT-05 / 180	Bedroom 2	37%	100%	33%	100%	Non-compliant
HT-05 / 181	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 181	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 181	Bedroom 1	51%	100%	50%	100%	Compliant
HT-05 / 181	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 181	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 182	LKD	47%	100%	46%	100%	Non-compliant
HT-05 / 182	Bedroom 1	32%	98%	31%	98%	Non-compliant
HT-05 / 182	Bedroom 2	32%	100%	30%	100%	Non-compliant
HT-05 / 183	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 183	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 183	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 183	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 183	Bedroom 3	100%	100%	100%	100%	Compliant
HT-07 / 184	LKD	46%	100%	40%	100%	Non-compliant
HT-07 / 184	Bedroom 1	99%	100%	82%	100%	Compliant
HT-07 / 184	Bedroom 2	66%	100%	57%	100%	Compliant
HT-07 / 184	Bedroom 3	25%	97%	19%	84%	Non-compliant
HT-07 / 185	LKD	100%	100%	100%	100%	Compliant
HT-07 / 185	Living Room	99%	100%	98%	100%	Compliant
HT-07 / 185	Bedroom 1	100%	100%	100%	100%	Compliant
HT-07 / 185	Bedroom 2	100%	100%	100%	100%	Compliant
HT-07 / 185	Bedroom 3	100%	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.
For floor plans of the assessed units please refer to section C.1 on page 37.

D.1.10 Supplementary SDA Results (I.S. EN 17037 criteria): Duplex and Triplex Units

Table No. D.1.10 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
HT-05 / 186	LKD	53%	100%	51%	100%	Compliant
HT-05 / 186	Bedroom 1	32%	100%	30%	99%	Non-compliant
HT-05 / 186	Bedroom 2	81%	100%	72%	100%	Compliant
HT-05 / 187	Kitchen Dining	93%	100%	93%	100%	Compliant
HT-05 / 187	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 187	Bedroom 1	97%	100%	97%	100%	Compliant
HT-05 / 187	Bedroom 2	84%	100%	84%	100%	Compliant
HT-05 / 187	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 188	LKD	54%	100%	54%	100%	Compliant
HT-05 / 188	Bedroom 1	31%	100%	31%	100%	Non-compliant
HT-05 / 188	Bedroom 2	89%	100%	78%	100%	Compliant
HT-05 / 189	Kitchen Dining	99%	100%	99%	100%	Compliant
HT-05 / 189	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 189	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 189	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 189	Bedroom 3	100%	100%	100%	100%	Compliant
HT-12 / 190	LKD	100%	100%	100%	100%	Compliant
HT-12 / 190	Bedroom 1	100%	100%	80%	100%	Compliant
HT-13 / 191	LKD	70%	100%	58%	100%	Compliant
HT-13 / 191	Bedroom 1	41%	100%	34%	100%	Non-compliant
HT-13 / 191	Bedroom 2	30%	100%	25%	100%	Non-compliant
HT-13 / 192	LKD	90%	100%	84%	100%	Compliant
HT-13 / 192	Bedroom 1	42%	100%	36%	100%	Non-compliant
HT-13 / 192	Bedroom 2	33%	100%	20%	100%	Non-compliant
HT-12 / 193	LKD	100%	100%	100%	100%	Compliant
HT-12 / 193	Bedroom 1	100%	100%	100%	100%	Compliant
HT-13 / 194	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-13 / 194	Living Room	99%	100%	90%	100%	Compliant
HT-13 / 194	Bedroom 1	100%	100%	100%	100%	Compliant
HT-13 / 194	Bedroom 2	83%	100%	72%	100%	Compliant
HT-13 / 194	Bedroom 3	66%	100%	60%	100%	Compliant
HT-13 / 195	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-13 / 195	Living Room	100%	100%	100%	100%	Compliant
HT-13 / 195	Bedroom 1	100%	100%	100%	100%	Compliant
HT-13 / 195	Bedroom 2	100%	100%	100%	100%	Compliant
HT-13 / 195	Bedroom 3	74%	100%	68%	100%	Compliant
HT-12 / 196	LKD	100%	100%	100%	100%	Compliant
HT-12 / 196	Bedroom 1	100%	100%	100%	100%	Compliant
HT-12 / 197	LKD	100%	100%	99%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.
For floor plans of the assessed units please refer to section C.1 on page 37.

D.1.11 Supplementary SDA Results (I.S. EN 17037 criteria): Duplex and Triplex Units

Table No. D.1.11 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
HT-12 / 197	Bedroom 1	92%	100%	79%	100%	Compliant
HT-13 / 198	LKD	85%	100%	65%	100%	Compliant
HT-13 / 198	Bedroom 1	45%	100%	40%	100%	Non-compliant
HT-13 / 198	Bedroom 2	28%	100%	11%	95%	Non-compliant
HT-13 / 199	LKD	100%	100%	100%	100%	Compliant
HT-13 / 199	Bedroom 1	46%	100%	38%	100%	Non-compliant
HT-13 / 199	Bedroom 2	30%	100%	9%	100%	Non-compliant
HT-12 / 200	LKD	100%	100%	100%	100%	Compliant
HT-12 / 200	Bedroom 1	93%	100%	93%	100%	Compliant
HT-13 / 201	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-13 / 201	Living Room	99%	100%	35%	100%	Trees affecting compliance
HT-13 / 201	Bedroom 1	100%	100%	100%	100%	Compliant
HT-13 / 201	Bedroom 2	93%	100%	84%	100%	Compliant
HT-13 / 201	Bedroom 3	82%	100%	79%	100%	Compliant
HT-13 / 202	LKD	100%	100%	100%	100%	Compliant
HT-13 / 202	Bedroom 1	100%	100%	100%	100%	Compliant
HT-12 / 203	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-12 / 203	Living Room	100%	100%	100%	100%	Compliant
HT-12 / 203	Bedroom 1	100%	100%	100%	100%	Compliant
HT-12 / 203	Bedroom 2	100%	100%	100%	100%	Compliant
HT-12 / 203	Bedroom 3	78%	100%	73%	100%	Compliant
HT-05 / 204	LKD	74%	100%	57%	100%	Compliant
HT-05 / 204	Bedroom 1	50%	100%	32%	100%	Trees affecting compliance
HT-05 / 204	Bedroom 2	48%	100%	32%	100%	Non-compliant
HT-05 / 205	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 205	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 205	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 205	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 205	Bedroom 3	100%	100%	100%	100%	Compliant
HT-05 / 219	LKD	76%	100%	70%	100%	Compliant
HT-05 / 219	Bedroom 1	49%	100%	39%	100%	Non-compliant
HT-05 / 219	Bedroom 2	67%	100%	52%	100%	Compliant
HT-05 / 220	Kitchen Dining	100%	100%	100%	100%	Compliant
HT-05 / 220	Living Room	100%	100%	100%	100%	Compliant
HT-05 / 220	Bedroom 1	100%	100%	100%	100%	Compliant
HT-05 / 220	Bedroom 2	100%	100%	100%	100%	Compliant
HT-05 / 220	Bedroom 3	100%	100%	100%	100%	Compliant
HT-10 / 232	LKD	100%	100%	93%	100%	Compliant
HT-10 / 232	Bedroom 1	96%	100%	88%	100%	Compliant
HT-10 / 233	LKD	100%	100%	100%	100%	Compliant
HT-10 / 233	Bedroom 1	98%	100%	96%	100%	Compliant
HT-10 / 234	LKD	100%	100%	100%	100%	Compliant

* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15.
For floor plans of the assessed units please refer to section C.1 on page 37.

D.1.12 Supplementary SDA Results (I.S. EN 17037 criteria): Creche

Table No. D.1.12 - Supplementary SDA Results (I.S. EN 17037 criteria):						
Unit Number	Room Description	No Trees		With Trees		Compliance with I.S. EN 17037 Criteria*
		Area above 300 Lux*	Area above 100 Lux*	Area above 300 Lux*	Area above 100 Lux*	
HT-10 / 234	Bedroom 1	100%	100%	100%	100%	Compliant
Creche	Classroom 1	100%	100%	100%	100%	Compliant
Creche	Classroom 2	49%	100%	34%	100%	Non-compliant
Creche	Classroom 3	100%	100%	100%	100%	Compliant
Creche	Classroom 4	99%	100%	99%	100%	Compliant
* For information regarding the criteria under the various guidelines including target Lux please refer to section 2.5.1 on page 15. For floor plans of the assessed units please refer to section C.1 on page 37.						

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

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

Table Example. D.2 - Supplementary Scheme Performance NSL			
Unit Type / 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 Type / Unit Number

This column identifies the assessed unit type first and unit number second. All unit type and 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, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line."

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

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

D.2.1 Supplementary NSL Results: Apartment Units

Table No. D.2.1 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Apartment / 020	LKD	100%	Yes
Apartment / 020	Bedroom 1	96%	Yes
Apartment / 021	LKD	96%	Yes
Apartment / 021	Bedroom 1	95%	Yes
Apartment / 022	LKD	100%	Yes
Apartment / 022	Bedroom 1	96%	Yes
Apartment / 023	LKD	99%	Yes
Apartment / 023	Bedroom 1	94%	Yes
Apartment / 024	LKD	100%	Yes
Apartment / 024	Bedroom 1	93%	Yes
Apartment / 025	LKD	90%	Yes
Apartment / 025	Bedroom 1	94%	Yes
Apartment / 026	LKD	86%	Yes
Apartment / 026	Bedroom 1	96%	Yes
Apartment / 027	LKD	100%	Yes
Apartment / 027	Bedroom 1	96%	Yes
Apartment / 028	LKD	98%	Yes
Apartment / 028	Bedroom 1	95%	Yes
Apartment / 029	LKD	100%	Yes
Apartment / 029	Bedroom 1	96%	Yes
Apartment / 030	LKD	99%	Yes
Apartment / 030	Bedroom 1	94%	Yes
Apartment / 031	LKD	99%	Yes
Apartment / 031	Bedroom 1	93%	Yes
Apartment / 032	LKD	93%	Yes
Apartment / 032	Bedroom 1	95%	Yes
Apartment / 033	LKD	99%	Yes
Apartment / 033	Bedroom 1	95%	Yes
Apartment / 033	Bedroom 2	92%	Yes
Apartment / 034	LKD	100%	Yes
Apartment / 034	Bedroom 1	96%	Yes
Apartment / 035	LKD	100%	Yes
Apartment / 035	Bedroom 1	96%	Yes
Apartment / 036	LKD	100%	Yes
Apartment / 036	Bedroom 1	94%	Yes
Apartment / 037	LKD	97%	Yes
Apartment / 037	Bedroom 1	94%	Yes
Apartment / 038	LKD	100%	Yes
Apartment / 038	Bedroom 1	93%	Yes
Apartment / 039	LKD	100%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line."

For floor plans of the assessed units please refer to section C.1 on page 37.

D.2.2 Supplementary NSL Results: Apartment Units

Table No. D.2.2 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Apartment / 039	Bedroom 1	95%	Yes
Apartment / 040	LKD	100%	Yes
Apartment / 040	Bedroom 1	95%	Yes
Apartment / 040	Bedroom 2	92%	Yes
* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line." For floor plans of the assessed units please refer to section C.1 on page 37.			

D.2.3 Supplementary NSL Results: Duplex and Triplex Units

Table No. D.2.3 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
HT-12 / 041	LKD	99%	Yes
HT-12 / 041	Bedroom 1	97%	Yes
HT-13 / 042	LKD	89%	Yes
HT-13 / 042	Bedroom 1	89%	Yes
HT-13 / 042	Bedroom 2	97%	Yes
HT-13 / 043	LKD	99%	Yes
HT-13 / 043	Bedroom 1	98%	Yes
HT-13 / 043	Bedroom 2	98%	Yes
HT-12 / 044	LKD	99%	Yes
HT-12 / 044	Bedroom 1	97%	Yes
HT-13 / 045	Kitchen Dining	99%	Yes
HT-13 / 045	Living Room	99%	Yes
HT-13 / 045	Bedroom 1	100%	Yes
HT-13 / 045	Bedroom 2	97%	Yes
HT-13 / 045	Bedroom 3	96%	Yes
HT-13 / 046	Kitchen Dining	100%	Yes
HT-13 / 046	Living Room	99%	Yes
HT-13 / 046	Bedroom 1	99%	Yes
HT-13 / 046	Bedroom 2	99%	Yes
HT-13 / 046	Bedroom 3	95%	Yes
HT-12 / 047	LKD	100%	Yes
HT-12 / 047	Bedroom 1	98%	Yes
HT-05 / 048	LKD	97%	Yes
HT-05 / 048	Bedroom 1	81%	Yes
HT-05 / 048	Bedroom 2	97%	Yes
HT-05 / 049	Kitchen Dining	100%	Yes
HT-05 / 049	Living Room	99%	Yes
HT-05 / 049	Bedroom 1	99%	Yes
HT-05 / 049	Bedroom 2	99%	Yes
HT-05 / 049	Bedroom 3	98%	Yes
HT-06 / 050	LKD	98%	Yes
HT-06 / 050	Bedroom 1	97%	Yes
HT-06 / 050	Bedroom 2	96%	Yes
HT-06 / 051	Kitchen Dining	100%	Yes
HT-06 / 051	Living Room	99%	Yes
HT-06 / 051	Bedroom 1	99%	Yes
HT-06 / 051	Bedroom 2	92%	Yes
HT-06 / 051	Bedroom 3	98%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line."

For floor plans of the assessed units please refer to section C.1 on page 37.

D.2.4 Supplementary NSL Results: Duplex Units

Table No. D.2.4 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
HT-06 / 052	LKD	82%	Yes
HT-06 / 052	Bedroom 1	96%	Yes
HT-06 / 052	Bedroom 2	96%	Yes
HT-06 / 053	Kitchen Dining	100%	Yes
HT-06 / 053	Living Room	99%	Yes
HT-06 / 053	Bedroom 1	99%	Yes
HT-06 / 053	Bedroom 2	92%	Yes
HT-06 / 053	Bedroom 3	99%	Yes
HT-05 / 054	LKD	77%	No
HT-05 / 054	Bedroom 1	84%	Yes
HT-05 / 054	Bedroom 2	96%	Yes
HT-05 / 055	Kitchen Dining	100%	Yes
HT-05 / 055	Living Room	100%	Yes
HT-05 / 055	Bedroom 1	100%	Yes
HT-05 / 055	Bedroom 2	99%	Yes
HT-05 / 055	Bedroom 3	96%	Yes
HT-05 / 060	LKD	66%	No
HT-05 / 060	Bedroom 1	80%	Yes
HT-05 / 060	Bedroom 2	96%	Yes
HT-05 / 061	Kitchen Dining	100%	Yes
HT-05 / 061	Living Room	99%	Yes
HT-05 / 061	Bedroom 1	99%	Yes
HT-05 / 061	Bedroom 2	99%	Yes
HT-05 / 061	Bedroom 3	96%	Yes
HT-06 / 062	LKD	77%	No
HT-06 / 062	Bedroom 1	93%	Yes
HT-06 / 062	Bedroom 2	99%	Yes
HT-06 / 063	Kitchen Dining	100%	Yes
HT-06 / 063	Living Room	98%	Yes
HT-06 / 063	Bedroom 1	98%	Yes
HT-06 / 063	Bedroom 2	92%	Yes
HT-06 / 063	Bedroom 3	97%	Yes
HT-06 / 064	LKD	89%	Yes
HT-06 / 064	Bedroom 1	99%	Yes
HT-06 / 064	Bedroom 2	98%	Yes
HT-06 / 065	Kitchen Dining	99%	Yes
HT-06 / 065	Living Room	98%	Yes
HT-06 / 065	Bedroom 1	98%	Yes
HT-06 / 065	Bedroom 2	93%	Yes
HT-06 / 065	Bedroom 3	98%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line."

For floor plans of the assessed units please refer to section C.1 on page 37.

D.2.5 Supplementary NSL Results: Duplex Units

Table No. D.2.5 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
HT-05 / 066	LKD	96%	Yes
HT-05 / 066	Bedroom 1	72%	No
HT-05 / 066	Bedroom 2	96%	Yes
HT-05 / 067	Kitchen Dining	100%	Yes
HT-05 / 067	Living Room	99%	Yes
HT-05 / 067	Bedroom 1	99%	Yes
HT-05 / 067	Bedroom 2	98%	Yes
HT-05 / 067	Bedroom 3	96%	Yes
HT-07 / 070	LKD	72%	No
HT-07 / 070	Bedroom 1	97%	Yes
HT-07 / 070	Bedroom 2	96%	Yes
HT-07 / 070	Bedroom 3	84%	Yes
HT-07 / 071	LKD	99%	Yes
HT-07 / 071	Living Room	99%	Yes
HT-07 / 071	Bedroom 1	97%	Yes
HT-07 / 071	Bedroom 2	96%	Yes
HT-07 / 071	Bedroom 3	97%	Yes
HT-05 / 072	LKD	56%	No
HT-05 / 072	Bedroom 1	71%	No
HT-05 / 072	Bedroom 2	96%	Yes
HT-05 / 073	Kitchen Dining	99%	Yes
HT-05 / 073	Living Room	98%	Yes
HT-05 / 073	Bedroom 1	97%	Yes
HT-05 / 073	Bedroom 2	95%	Yes
HT-05 / 073	Bedroom 3	96%	Yes
HT-05 / 074	LKD	66%	No
HT-05 / 074	Bedroom 1	81%	Yes
HT-05 / 074	Bedroom 2	96%	Yes
HT-05 / 075	Kitchen Dining	100%	Yes
HT-05 / 075	Living Room	99%	Yes
HT-05 / 075	Bedroom 1	99%	Yes
HT-05 / 075	Bedroom 2	99%	Yes
HT-05 / 075	Bedroom 3	96%	Yes
HT-07 / 076	LKD	75%	No
HT-07 / 076	Bedroom 1	97%	Yes
HT-07 / 076	Bedroom 2	96%	Yes
HT-07 / 076	Bedroom 3	84%	Yes
* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line." For floor plans of the assessed units please refer to section C.1 on page 37.			

D.2.6 Supplementary NSL Results: Duplex Units

Table No. D.2.6 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
HT-07 / 077	LKD	99%	Yes
HT-07 / 077	Living Room	98%	Yes
HT-07 / 077	Bedroom 1	96%	Yes
HT-07 / 077	Bedroom 2	96%	Yes
HT-07 / 077	Bedroom 3	97%	Yes
HT-05 / 078	LKD	60%	No
HT-05 / 078	Bedroom 1	76%	No
HT-05 / 078	Bedroom 2	96%	Yes
HT-05 / 079	Kitchen Dining	99%	Yes
HT-05 / 079	Living Room	99%	Yes
HT-05 / 079	Bedroom 1	97%	Yes
HT-05 / 079	Bedroom 2	96%	Yes
HT-05 / 079	Bedroom 3	96%	Yes
HT-05 / 080	LKD	69%	No
HT-05 / 080	Bedroom 1	82%	Yes
HT-05 / 080	Bedroom 2	97%	Yes
HT-05 / 081	Kitchen Dining	100%	Yes
HT-05 / 081	Living Room	99%	Yes
HT-05 / 081	Bedroom 1	99%	Yes
HT-05 / 081	Bedroom 2	99%	Yes
HT-05 / 081	Bedroom 3	97%	Yes
HT-05 / 082	LKD	92%	Yes
HT-05 / 082	Bedroom 1	97%	Yes
HT-05 / 082	Bedroom 2	96%	Yes
HT-05 / 083	Kitchen Dining	100%	Yes
HT-05 / 083	Living Room	99%	Yes
HT-05 / 083	Bedroom 1	99%	Yes
HT-05 / 083	Bedroom 2	99%	Yes
HT-05 / 083	Bedroom 3	97%	Yes
HT-05 / 092	LKD	82%	Yes
HT-05 / 092	Bedroom 1	91%	Yes
HT-05 / 092	Bedroom 2	98%	Yes
HT-05 / 093	Kitchen Dining	100%	Yes
HT-05 / 093	Living Room	99%	Yes
HT-05 / 093	Bedroom 1	99%	Yes
HT-05 / 093	Bedroom 2	99%	Yes
HT-05 / 093	Bedroom 3	98%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line."

For floor plans of the assessed units please refer to section C.1 on page 37.

D.2.7 Supplementary NSL Results: Duplex and Triplex Units

Table No. D.2.7 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
HT-10 / 094	LKD	100%	Yes
HT-10 / 094	Bedroom 1	97%	Yes
HT-10 / 095	LKD	99%	Yes
HT-10 / 095	Bedroom 1	97%	Yes
HT-10 / 096	LKD	99%	Yes
HT-10 / 096	Bedroom 1	99%	Yes
HT-06 / 097	LKD	95%	Yes
HT-06 / 097	Bedroom 1	75%	No
HT-06 / 097	Bedroom 2	95%	Yes
HT-06 / 098	Kitchen Dining	99%	Yes
HT-06 / 098	Living Room	98%	Yes
HT-06 / 098	Bedroom 1	99%	Yes
HT-06 / 098	Bedroom 2	92%	Yes
HT-06 / 098	Bedroom 3	99%	Yes
HT-06 / 099	LKD	92%	Yes
HT-06 / 099	Bedroom 1	92%	Yes
HT-06 / 099	Bedroom 2	93%	Yes
HT-06 / 100	Kitchen Dining	100%	Yes
HT-06 / 100	Living Room	98%	Yes
HT-06 / 100	Bedroom 1	99%	Yes
HT-06 / 100	Bedroom 2	95%	Yes
HT-06 / 100	Bedroom 3	98%	Yes
HT-10 / 101	LKD	97%	Yes
HT-10 / 101	Bedroom 1	97%	Yes
HT-10 / 102	LKD	100%	Yes
HT-10 / 102	Bedroom 1	97%	Yes
HT-10 / 103	LKD	100%	Yes
HT-10 / 103	Bedroom 1	100%	Yes
HT-05 / 104	LKD	75%	No
HT-05 / 104	Bedroom 1	86%	Yes
HT-05 / 104	Bedroom 2	96%	Yes
HT-05 / 105	Kitchen Dining	100%	Yes
HT-05 / 105	Living Room	100%	Yes
HT-05 / 105	Bedroom 1	100%	Yes
HT-05 / 105	Bedroom 2	99%	Yes
HT-05 / 105	Bedroom 3	96%	Yes
HT-05 / 108	LKD	73%	No
HT-05 / 108	Bedroom 1	85%	Yes
HT-05 / 108	Bedroom 2	97%	Yes
* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line." For floor plans of the assessed units please refer to section C.1 on page 37.			

D.2.8 Supplementary NSL Results: Duplex Units

Table No. D.2.8 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
HT-05 / 109	Kitchen Dining	100%	Yes
HT-05 / 109	Living Room	99%	Yes
HT-05 / 109	Bedroom 1	99%	Yes
HT-05 / 109	Bedroom 2	99%	Yes
HT-05 / 109	Bedroom 3	97%	Yes
HT-05 / 130	LKD	87%	Yes
HT-05 / 130	Bedroom 1	92%	Yes
HT-05 / 130	Bedroom 2	96%	Yes
HT-05 / 131	Kitchen Dining	100%	Yes
HT-05 / 131	Living Room	99%	Yes
HT-05 / 131	Bedroom 1	99%	Yes
HT-05 / 131	Bedroom 2	98%	Yes
HT-05 / 131	Bedroom 3	96%	Yes
HT-05 / 142	LKD	71%	No
HT-05 / 142	Bedroom 1	86%	Yes
HT-05 / 142	Bedroom 2	96%	Yes
HT-05 / 143	Kitchen Dining	100%	Yes
HT-05 / 143	Living Room	99%	Yes
HT-05 / 143	Bedroom 1	99%	Yes
HT-05 / 143	Bedroom 2	99%	Yes
HT-05 / 143	Bedroom 3	96%	Yes
HT-05 / 144	LKD	86%	Yes
HT-05 / 144	Bedroom 1	91%	Yes
HT-05 / 144	Bedroom 2	96%	Yes
HT-05 / 145	Kitchen Dining	100%	Yes
HT-05 / 145	Living Room	99%	Yes
HT-05 / 145	Bedroom 1	99%	Yes
HT-05 / 145	Bedroom 2	98%	Yes
HT-05 / 145	Bedroom 3	96%	Yes
HT-05 / 156	LKD	74%	No
HT-05 / 156	Bedroom 1	86%	Yes
HT-05 / 156	Bedroom 2	93%	Yes
HT-05 / 157	Kitchen Dining	100%	Yes
HT-05 / 157	Living Room	100%	Yes
HT-05 / 157	Bedroom 1	99%	Yes
HT-05 / 157	Bedroom 2	99%	Yes
HT-05 / 157	Bedroom 3	96%	Yes
HT-05 / 161	LKD	90%	Yes
HT-05 / 161	Bedroom 1	95%	Yes
HT-05 / 161	Bedroom 2	96%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line."

For floor plans of the assessed units please refer to section C.1 on page 37.

D.2.9 Supplementary NSL Results: Duplex Units

Table No. D.2.9 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
HT-05 / 162	Kitchen Dining	100%	Yes
HT-05 / 162	Living Room	100%	Yes
HT-05 / 162	Bedroom 1	100%	Yes
HT-05 / 162	Bedroom 2	99%	Yes
HT-05 / 162	Bedroom 3	96%	Yes
HT-05 / 163	LKD	97%	Yes
HT-05 / 163	Bedroom 1	96%	Yes
HT-05 / 163	Bedroom 2	97%	Yes
HT-05 / 164	Kitchen Dining	100%	Yes
HT-05 / 164	Living Room	100%	Yes
HT-05 / 164	Bedroom 1	99%	Yes
HT-05 / 164	Bedroom 2	99%	Yes
HT-05 / 164	Bedroom 3	96%	Yes
HT-07 / 178	LKD	65%	No
HT-07 / 178	Bedroom 1	97%	Yes
HT-07 / 178	Bedroom 2	97%	Yes
HT-07 / 178	Bedroom 3	84%	Yes
HT-07 / 179	LKD	100%	Yes
HT-07 / 179	Living Room	99%	Yes
HT-07 / 179	Bedroom 1	96%	Yes
HT-07 / 179	Bedroom 2	97%	Yes
HT-07 / 179	Bedroom 3	98%	Yes
HT-05 / 180	LKD	50%	No
HT-05 / 180	Bedroom 1	60%	No
HT-05 / 180	Bedroom 2	96%	Yes
HT-05 / 181	Kitchen Dining	99%	Yes
HT-05 / 181	Living Room	99%	Yes
HT-05 / 181	Bedroom 1	98%	Yes
HT-05 / 181	Bedroom 2	96%	Yes
HT-05 / 181	Bedroom 3	96%	Yes
HT-05 / 182	LKD	57%	No
HT-05 / 182	Bedroom 1	75%	No
HT-05 / 182	Bedroom 2	98%	Yes
HT-05 / 183	Kitchen Dining	100%	Yes
HT-05 / 183	Living Room	99%	Yes
HT-05 / 183	Bedroom 1	99%	Yes
HT-05 / 183	Bedroom 2	99%	Yes
HT-05 / 183	Bedroom 3	98%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line."
For floor plans of the assessed units please refer to section C.1 on page 37.

D.2.10 Supplementary NSL Results: Duplex and Triplex Units

Table No. D.2.10 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
HT-07 / 184	LKD	88%	Yes
HT-07 / 184	Bedroom 1	97%	Yes
HT-07 / 184	Bedroom 2	96%	Yes
HT-07 / 184	Bedroom 3	85%	Yes
HT-07 / 185	LKD	100%	Yes
HT-07 / 185	Living Room	98%	Yes
HT-07 / 185	Bedroom 1	97%	Yes
HT-07 / 185	Bedroom 2	97%	Yes
HT-07 / 185	Bedroom 3	98%	Yes
HT-05 / 186	LKD	68%	No
HT-05 / 186	Bedroom 1	83%	Yes
HT-05 / 186	Bedroom 2	93%	Yes
HT-05 / 187	Kitchen Dining	99%	Yes
HT-05 / 187	Living Room	100%	Yes
HT-05 / 187	Bedroom 1	98%	Yes
HT-05 / 187	Bedroom 2	96%	Yes
HT-05 / 187	Bedroom 3	96%	Yes
HT-05 / 188	LKD	78%	No
HT-05 / 188	Bedroom 1	87%	Yes
HT-05 / 188	Bedroom 2	98%	Yes
HT-05 / 189	Kitchen Dining	100%	Yes
HT-05 / 189	Living Room	99%	Yes
HT-05 / 189	Bedroom 1	99%	Yes
HT-05 / 189	Bedroom 2	99%	Yes
HT-05 / 189	Bedroom 3	99%	Yes
HT-12 / 190	LKD	100%	Yes
HT-12 / 190	Bedroom 1	97%	Yes
HT-13 / 191	LKD	99%	Yes
HT-13 / 191	Bedroom 1	98%	Yes
HT-13 / 191	Bedroom 2	96%	Yes
HT-13 / 192	LKD	99%	Yes
HT-13 / 192	Bedroom 1	98%	Yes
HT-13 / 192	Bedroom 2	96%	Yes
HT-12 / 193	LKD	100%	Yes
HT-12 / 193	Bedroom 1	97%	Yes
HT-13 / 194	Kitchen Dining	99%	Yes
HT-13 / 194	Living Room	98%	Yes
HT-13 / 194	Bedroom 1	99%	Yes
HT-13 / 194	Bedroom 2	96%	Yes
HT-13 / 194	Bedroom 3	94%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line."

For floor plans of the assessed units please refer to section C.1 on page 37.

D.2.11 Supplementary NSL Results: Duplex and Triplex Units

Table No. D.2.11 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
HT-13 / 195	Kitchen Dining	99%	Yes
HT-13 / 195	Living Room	98%	Yes
HT-13 / 195	Bedroom 1	99%	Yes
HT-13 / 195	Bedroom 2	99%	Yes
HT-13 / 195	Bedroom 3	95%	Yes
HT-12 / 196	LKD	100%	Yes
HT-12 / 196	Bedroom 1	97%	Yes
HT-12 / 197	LKD	100%	Yes
HT-12 / 197	Bedroom 1	97%	Yes
HT-13 / 198	LKD	99%	Yes
HT-13 / 198	Bedroom 1	99%	Yes
HT-13 / 198	Bedroom 2	96%	Yes
HT-13 / 199	LKD	100%	Yes
HT-13 / 199	Bedroom 1	98%	Yes
HT-13 / 199	Bedroom 2	96%	Yes
HT-12 / 200	LKD	99%	Yes
HT-12 / 200	Bedroom 1	97%	Yes
HT-13 / 201	Kitchen Dining	99%	Yes
HT-13 / 201	Living Room	98%	Yes
HT-13 / 201	Bedroom 1	98%	Yes
HT-13 / 201	Bedroom 2	97%	Yes
HT-13 / 201	Bedroom 3	96%	Yes
HT-13 / 202	LKD	100%	Yes
HT-13 / 202	Bedroom 1	98%	Yes
HT-12 / 203	Kitchen Dining	100%	Yes
HT-12 / 203	Living Room	99%	Yes
HT-12 / 203	Bedroom 1	99%	Yes
HT-12 / 203	Bedroom 2	99%	Yes
HT-12 / 203	Bedroom 3	94%	Yes
HT-05 / 204	LKD	86%	Yes
HT-05 / 204	Bedroom 1	97%	Yes
HT-05 / 204	Bedroom 2	97%	Yes
HT-05 / 205	Kitchen Dining	100%	Yes
HT-05 / 205	Living Room	99%	Yes
HT-05 / 205	Bedroom 1	100%	Yes
HT-05 / 205	Bedroom 2	99%	Yes
HT-05 / 205	Bedroom 3	96%	Yes
HT-05 / 219	LKD	66%	No
HT-05 / 219	Bedroom 1	84%	Yes
HT-05 / 219	Bedroom 2	99%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line."

For floor plans of the assessed units please refer to section C.1 on page 37.

D.2.12 Supplementary NSL Results: Duplex and Triplex Units

Table No. D.2.12 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
HT-05 / 220	Kitchen Dining	100%	Yes
HT-05 / 220	Living Room	99%	Yes
HT-05 / 220	Bedroom 1	99%	Yes
HT-05 / 220	Bedroom 2	99%	Yes
HT-05 / 220	Bedroom 3	100%	Yes
HT-10 / 232	LKD	99%	Yes
HT-10 / 232	Bedroom 1	98%	Yes
HT-10 / 233	LKD	99%	Yes
HT-10 / 233	Bedroom 1	97%	Yes
HT-10 / 234	LKD	100%	Yes
HT-10 / 234	Bedroom 1	100%	Yes

* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line."

For floor plans of the assessed units please refer to section C.1 on page 37.

D.2.13 Supplementary NSL Results: Creche

Table No. D.2.13 - Supplementary NSL Results:			
Unit Type / Unit Number	Room Description	No Sky Line (NSL)	
		% of room where the sky is visible from the working plane	Above 80%*
Creche	Classroom 1	100%	Yes
Creche	Classroom 2	98%	Yes
Creche	Classroom 3	100%	Yes
Creche	Classroom 4	98%	Yes
Creche	Classroom 5	98%	Yes
* Whilst the BRE Guidelines do not provide target values for NSL in a proposed development, section 2.2.10 states that "Supplementary electric lighting will be needed if a significant part of the working plane (20% of the room or more) lies beyond the No Sky Line." For floor plans of the assessed units please refer to section C.1 on page 37.			

E.0 Glossary

E.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 9.

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 one-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, section 3.2.9 of the BRE Guidelines suggest that windows with an orientation within 90 degrees of due north need not 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.

E.2 Definition of Effects

Section H3 and H4 of the BRE Guidelines states 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 section H6 of the BRE Guidelines is listed below, whilst the assessment of impact should depend on a combination of factors. The BRE Guidelines (section H2) 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. (-)

E.3 Definition of Levels of Sunlight Exposure

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

Level of Sunlight Exposure:

The level of sunlight exposure will be stated for each assessed room in the tables under section “C.3 Sunlight Exposure (SE) in Proposed Units” on page 65. Below is a list of the terms used to categorise the levels of sunlight exposure:

Below Minimum

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

Minimum

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

Medium

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

High

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

Unit Compliance:

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

Non-Compliant

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

Compliant

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

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

F.0 Guidelines / Standards

Overview

Neither the British Standard, European Standard, British Annex to the European Standard nor the BRE Guidelines (BR 209) set out rigid standards or limits. They are all considered advisory documents. The BRE Guide is preceded by the following very clear statement as to how the design advice contained therein should be used:

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

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

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

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

This document will be referred to as the *BRE Guidelines*, the *BRE Guide* or *BR 209* in this report.

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

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

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

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

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

Details of the criteria for new metrics, and all other relevant metrics, can be found in the methodology section on Page 8 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 [sic – likely intended to reference BS EN 17037], 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.”

While the 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 “2.3 Quantitative Impact Assessment Overview” on page 12 of this report.

EN 17037:2018: Daylight in Buildings (2018)

EN 17037 is 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 is 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.

Planning Design Standards for Apartments: Guidelines for Planning Authorities (2025)

In July 2025, the Department of Housing, Local Government and Heritage published an updated guidance document for new apartments, ‘*Planning Design Standards for Apartments: Guidelines for Planning Authorities, 2025*’. This document, which may be referred to by the simplified name ‘*Apartment Guidelines*’, supersedes the previous guidance document for apartments ‘*Sustainable Urban Housing: Design Standards for New Apartments, 2023*’.

Unlike the 2023 edition, the current *Apartment Guidelines* do not directly reference any specific guidance document for daylight and sunlight. Instead, they refer to ‘*Sustainable Residential Development and Compact Settlements Guidelines (2024)*’:

“The provision of acceptable levels of natural light in new apartment developments is an important planning consideration, as it contributes to the liveability and amenity enjoyed by apartment residents. It is also important to safeguard against a detrimental impact on the amenity of other sensitive occupiers of adjacent properties. Section 5.3.7 of the SRDCSGs outlines requirements for the provision of acceptable levels of daylight in new residential developments and adjoining properties.” (emphasis added.)

The relevant section of ‘*Sustainable Residential Development and Compact Settlements Guidelines*’ (SRDCGS), 5.3.7, is referenced in the following section of this report.

Paragraph 6.7 of the superseded 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.”

Although the above requirement has been removed from the 2025 apartment guidelines, the request remains in some local authority development plans. As such, the design team may still provide a rationale and/or compensatory design solutions for instances where daylight recommendations have not been achieved.

Note: Section 3.2 of the ‘*Urban Development and Building Height Guidelines 2018*’, provides similar guidance as the ‘2023 apartment guidelines’ as referenced 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 its second edition, first published in 2011. Since then, a third 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 now referenced in BR 209 edition 3 is BS EN 17037.

Sustainable Residential Development and Compact Settlements Guidelines (2024)

Often referred to as “The Compact Growth Guidelines” this document advises on compact growth principles as a means to promote sustainable development, efficient land use, and infrastructure while minimizing sprawl and environmental degradation, contributing to sustainable urban growth, enhance liveability and support broader planning objectives.

In regard to daylight, section 5.3.7 states:

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

(a) The potential for poor daylight performance in a proposed development or for a material impact on neighbouring

properties will generally arise in cases where the buildings are close together, where higher buildings are involved, or where there are other obstructions to daylight. Planning authorities do not need to undertake a detailed technical assessment in relation to daylight performance in all cases. It should be clear from the assessment of architectural drawings (including sections) in the case of low-rise housing with good separation from existing and proposed buildings that undue impact would not arise, and planning authorities may apply a level of discretion in this regard.

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

In drawing conclusions in relation to daylight performance, planning authorities must weigh up the overall quality of the design and layout of the scheme and the measures proposed to maximise daylight provision, against the location of the site and the general presumption in favour of increased scales of urban residential development. Poor performance may arise due to design constraints associated with the site or location and there is a need to balance that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution."

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

Kildare Development Plan (2023-2029)

The guidance provided in the Kildare Development Plan (2023-2029) references the 2nd Edition of the BRE guidelines (2011). Chapter 15 Development Management Standards, Section '15.2.3 Overshadowing' of the Kildare Development Plan states:

"High levels of daylight and sunlight provide for good levels of amenity for residents. The internal layout of residential units should be designed to maximize use of natural daylight and sunlight.

All new developments are required to have regard to the recommendations of Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (B.R.209, 2011) and British Standard (B.S.) 8206 Lighting for Buildings, Part 2, 2008: Code of Practice for Day Lighting or other updated relevant documents. Where an applicant cannot fully meet all of the requirements of the daylight provisions, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which will be considered by the planning authority on a case-by-case basis."

Prior to the publication of the Kildare Development Plan (2023-2029), the Building Research Establishment's 'Site Layout Planning for Daylight and Sunlight' has released the updated 3rd edition superseding the 2nd edition, which has since been withdrawn.

Guidelines / Standards 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.

Impact on the Surrounding Properties

Impact to daylight is assessed through a Vertical Sky Component (VSC) on all relevant surrounding windows: A VSC impact assessment is typically conducted, where appropriate, on the relevant surrounding windows determined by the BRE decision chart as illustrated in Figure 2.2 on page 8.

Impact to daylight can be further assessed through a No Sky Line (NSL) on surrounding properties: Section D3 of the BRE Guidelines recommends a No Sky Line study "where room layouts are known". Consequently, NSL assessments are typically conducted only on properties where detailed floor plans have been provided.

Impact to sunlight in neighbouring properties is assessed through an Annual Probable Sunlight Hours (APSH) and Winter Probable Sunlight Hours (WPSH) on all relevant surrounding windows: An APSH/WPSH impact assessment is typically conducted, where appropriate, on the relevant surrounding windows/rooms that have an orientation within 90° of due south.

Impact to sunlight in neighbouring gardens and/or amenity areas is assessed through a Sunlight on Ground (SOG) in all surrounding amenity spaces: A SOG impact assessment is typically carried out, where appropriate, on the neighbouring gardens/ amenity spaces located within close proximity and to the north of the subject site.

Performance of the Proposed Development

Target Illuminance in all habitable rooms: A target illuminance assessment, also known as a Spatial Daylight Autonomy (SDA) assessment. The two recommended methodologies for this assessment are detailed in section 2.5.1 on page 15. In a scheme performance assessment, the SDA is typically calculated for the habitable rooms of the proposed development. A supplementary SDA assessment may also be conducted under the criteria of IS EN 17037.

When conducting a scheme performance assessment for sunlight in the habitable rooms of the proposed development, Sunlight Exposure (SE) is the relevant metric.

Sunlight on Ground (SOG) in all amenity spaces: A SOG assessment is typically carried out, for the amenity spaces of the proposed development.

No Sky Line (NSL) in all habitable rooms: An NSL assessment is typically conducted for the habitable rooms of the proposed