

SHD Moygaddy, Maynooth, Co. Meath

Daylight and Sunlight Assessment Report
Applicant: Sky Castle 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." - BRE 209

+353 (0) 1 288 0186

info@3ddesignbureau.com

www.3ddesignbureau.com



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

Contents

1.0 Executive Summary	3
1.1 Summary of Assessment.....	3
1.2 Scheme Performance Results Overview.....	4
2.0 Guidelines / Standards	5
3.0 Glossary	7
3.1 Terms and Definitions	7
3.2 Definition of Levels of Sunlight Exposure	8
3.3 Index of Tables	9
4.0 Assessment Overview	12
4.1 Shadow Study	12
4.2 Sun On Ground in Proposed Outdoor Amenity Areas (SOG)	12
4.3 Sunlight Exposure in Proposed Habitable Rooms (SE)	12
4.4 Spatial Daylight Autonomy in Proposed Habitable Rooms (SDA).....	12
5.0 Methodology	14
5.1 Building the Baseline and Proposed Models.....	14
5.2 Trees	14
5.3 Generating Results.....	15
5.4 Shadow Study	16
5.5 Shadow Studies.....	17
5.5.1 Shadow Study 21 March	17
5.5.2 Shadow Study 21 June.....	20
5.5.3 Shadow Study 21 December.....	24
6.0 Scheme Performance Results	26
6.1 Sun On Ground in Proposed Outdoor Semi-Private Amenity Areas.....	26
6.2 Sun On Ground in Proposed Outdoor Public Open Areas	27
6.3 Sunlight Exposure (SE) in Proposed Units.....	28
6.4 Spatial Daylight Autonomy (SDA) in Proposed Units	53
7.0 Analysis of Results	80
7.1 Analysis of Scheme Performance Results.....	80
8.0 Conclusion	82

1.0 Executive Summary

1.1 Summary of Assessment

3D Design Bureau were commissioned to carry out a comprehensive BRE daylight and sunlight assessment, along with an accompanying shadow study for the SHD Moygaddy, Maynooth, Co. Meath.

The assessment has studied the scheme performance, which is summarised further below:

- Scheme Performance: Daylight and sunlight assessment of the proposed development, which includes Sun On Ground (SOG) in the proposed communal and semi-private amenity spaces, Sunlight Exposure (SE) and Spatial Daylight Autonomy (SDA) to the habitable rooms of all proposed Duplexes and Apartment Blocks.

Impact Assessment

The BRE Guidelines recommend that 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, does not subtend an angle of more than 25° to the horizontal, then the daylighting and sunlighting of the existing building are unlikely to be adversely affected. Using this guidance as a rule of thumb, the surrounding context was carefully considered and concluded that no properties warrant assessment for impact.

Scheme Performance

The scheme performance assessment of the proposed development included an analysis of the levels of sun on ground (SOG) to the proposed communal and semi-private amenity spaces, as well as sunlight exposure (SE) and spatial daylight autonomy (SDA) in the habitable rooms of the proposed units within the apartment blocks and duplexes of the proposed development.

Please see Page 4 for a detailed breakdown of results.



Figure 1.1: Scope of surrounding properties and environment assessed.

1.2 Scheme Performance Results Overview:

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

- Areas Assessed: 14
 - Areas meeting the guidelines: 14

Sunlight Exposure (SE):

- Units Assessed: 164
- Deciduous trees as opaque objects:
 - High: ~49%
 - Medium: ~20%
 - Minimum: ~14%
 - Non-compliant: ~18%
 - Compliance rate of tested: ~82%
- Without deciduous trees:
 - High: ~58%
 - Medium: ~14%
 - Minimum: ~13%
 - Non-compliant: ~15%
 - Compliance rate of tested: ~85%

Spatial Daylight Autonomy (SDA) of internal proposed development:

- Rooms assessed: 415 (excl. creche rooms)

Assessed under BRE 209:

- Deciduous trees in winter state:
 - Rooms meeting the guideline: 411
 - Rooms not meeting the guideline: 4
 - Compliance rate of tested: ~99%
- Deciduous trees in summer state:
 - Rooms meeting the guideline: 407
 - Rooms not meeting the guideline: 8
 - Compliance rate of tested: ~98%

Assessed under I.S. EN 17037:

- Rooms meeting the guideline: 341
- Rooms not meeting the guideline: 74
- Compliance rate of tested: ~82%

Assessment Location	SOG Compliance	SE Compliance	SDA Compliance (I.S. EN 17037)	SDA Compliance (BRE 209)
Semi-Private Open Space	100%	-	-	-
Public Open Space	100%	-	-	-
Creche Play Area	100%	-	-	-
Creche	-	100%	100%	100%
Apt. Block A	-	~84%	~79%	100%
Apt. Block B	-	~65% - 74%	~59%	~96%
Duplex A	-	~86% - 100%	100%	100%
Duplex B	-	100%	80%	~97%
Duplex C	-	100%	~88%	100%
Duplex D	-	100%	~98%	100%
Duplex E	-	100%	~80%	~87%
Duplex F	-	100%	~88%	100%

It is the opinion of 3D Design Bureau that the proposed scheme can be considered to perform very favourably in terms of potential daylight and sunlight access.

2.0 Guidelines / Standards

Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities. (2020)

In December of 2020, the Department of Housing, Planning and Local Government published a guidance document for new apartments, *Sustainable Urban Housing: Design Standards for New Apartments*. This document makes reference to the British Standard, *BS 8206-2:2008: Lighting for Buildings - Part 2: Code of Practice for Daylighting (the British Standard)* and to the Building Research Establishment's *Site Layout Planning for Daylight and Sunlight: a Guide to Good Practice (BRE 209)*.

Paragraph 6.7 of the 2020 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 [sic]. This may arise due to a design constraints associated with the site or location and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution.”

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

Note: Section 3.2 of the Urban Development and Building Height Guides 2018, provides similar guidance as above.

At the time of publication of *Design Standards for New Apartments* and the *Urban Development and Building Height Guides*, BRE 209 was in the 2nd edition, first published in 2011. Since then, a 3rd edition of BRE 209 has been published (June 2022) and the 2nd edition has been withdrawn. BRE 209 no longer references *BS 8206-2:2008*, which has also been withdrawn. The primary standard used as reference in BRE 209 edition 3 is *BS EN 17037*.

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

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

At the time of writing this report, the BRE Guidelines are in the third edition (BRE 209). The BRE Guidelines sets 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.

The BRE Guidelines will be used as the primary guiding document in the assessments that are carried out for the purpose of this report, as they are referenced in Irish guidance documents:

- *Sustainable Urban Housing: Design Standards for New Apartments*, as published in December of 2020 by the Department of Housing, Planning and Local Government and Heritage.
- *Urban Development and Building Heights*, as published in December of 2018 by the Government of Ireland.

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

A detailed description of the various recommendations for impact assessment and scheme performance is contained in section “4.0 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.

The target values given within EN 17037 are difficult to achieve, especially where increased density is desired.

Recommendations made in EN 17037 regarding Sunlight Exposure have been incorporated into the BRE Guidelines and are expanded on in section “4.0 Assessment Overview” on page 12 of this report.

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 difficult to achieve, especially where increased density is desired. Whilst it could be deemed appropriate to apply *I.S. EN 17037* instead of *BRE 209* in the Republic of Ireland, it should be noted that *BRE 209* is referenced in both the *Sustainable Urban Housing: Design Standards for New Apartments (2020)* and *Urban Development and Building Heights (2018)*. To the best of our knowledge, (at the time of writing), the only reference that is made to *I.S. EN 17037* in a planning guidance document issued by an Irish planning authority is in the draft *Dublin City Development Plan (2022-2028)*, in which *I.S. EN 17037* is deemed unsuitable for use during planning applications.

Regardless, a supplementary SDA study has been carried out using the same rooms as assessed under the primary study (*BRE 209*) using the criteria of *I.S. EN 17037*, with compliance rates stated. However, this can be considered a supplementary study. Compensatory design measures may not be put forward for non-compliant rooms under this standard as the rationale for non-compliance may be that the standard is too difficult to achieve in a well-balanced proposal.

Until official guidance or instruction is published by a relevant authority on this matter, 3DDB will continue to reference the *BRE* Guidelines in our daylight and sunlight assessments.

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 could prove to be a difficult task. 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.

Summary

The *BRE* Guidelines (*BRE 209*), will be the primary reference document for this report as it is referenced in both *Sustainable Urban Housing: Design Standards for New Apartments (2020)* and *Urban Development and Building Heights (2018)*. For daylight within proposed developments, a supplementary study will be carried out under the criteria of *I.S. EN 17037*.

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

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

That the recommendations of the *BRE* Guide are not suitable for rigid application to all developments in all contexts, is of particular importance in the context of national and local policies for the consolidation and densification of urban areas or when assessing applications for highly constrained sites (e.g. lands in close proximity or immediately to the south of residential lands).

3.0 Glossary

3.1 Terms and Definitions

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.

Existing Baseline Model State

The development site in its existing state. The proposed development has not been included. This model state is used when generating the baseline results for all the existing neighbouring properties. As there is no impact assessment required, this model state has no relevance for this report.

Proposed Development Model State

The proposed development has been modelled into the existing environment. This model state has been used when assessing the scheme performance.

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 a given date between February 1st and March 21st.

Sunlight Exposure (SE)

The number of hours a room can expect to receive of direct sunlight on a given date between February 1st and March 21st at a given 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.

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 BRE 209 criteria, and 500mm from the room boundaries under I.S. EN 17037 criteria.

LKD

Living / Kitchen / Dining room.

BRE Target Value

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

Alternative Target Value

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

Level of BRE Compliance

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

LUX

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

3.2 Definition of Levels of Sunlight Exposure

For interiors, access to sunlight can be quantified. BRE 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.

The level of sunlight exposure will be stated for each assessed room in the tables under section “6.3 Sunlight Exposure (SE) in Proposed Units” on page 28. Below is a list of the terms used to categorise the levels of sunlight exposure:

Non-compliant

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

Minimum

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

Medium

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

High

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

3.3 Index of Tables

3.3.1 Scheme Performance: Sun On Ground (SOG)

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

Table No. 3.1: Example of SOG Table for Scheme Performance			
Assessed Area	Area Capable of Receiving 2 Hours of Sunlight on March 21st	Recommended Minimum	Level of Compliance with BRE Guidelines
A	B	C	D

A: Assessed Area

This column identifies the assessed garden/amenity area.

B: 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.

C: Recommended Minimum

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

D: 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.

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

3.3.2 Scheme Performance: Sunlight Exposure (SE)

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

Table No. 3.2: Example of Sunlight Exposure Table for Scheme Performance							
Unit Number	Room Description	Deciduous Trees as Opaque Objects			Without Deciduous Trees		
		SE Hours on March 21st	Level of SE on March 21st	Unit compliance based on highest performing room	SE Hours on March 21st	Level of SE on March 21st	Unit compliance based on highest performing room
A	B	C	D	E	F	G	H

A: Unit Number

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

B: Room Description

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

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

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

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

BRE 209 recommends a minimum sunlight exposure of 1.5 hours for a proposed unit with preference given to main living rooms. BRE 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: *Non-compliant*,
- Between 1.5 hours and 3 hours: *Minimum*
- Between 3 hours and 4 hours: *Medium*

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 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 with deciduous trees as opaque objects. Typically only one room per unit will be populated in this column, 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 for each.

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)

BRE 209 recommends a minimum sunlight exposure of 1.5 hours for a proposed unit with preference given to main living rooms. BRE 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 (-). 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 for each.

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

3.3.3 Scheme Performance: Spatial Daylight Autonomy (SDA)

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

Table No. 3.3: Example of Table for SDA Results for Scheme Performance

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
A	B	C	D	E	F	G	H	I

A: Unit Number

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

B: Room Description

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

C: % of area above 300 Lux

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.

D: % of area above 100 Lux

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.

E: Meets I.S. EN 17037 Criteria

This column states if the assessed room achieves the recommended level of daylight as per I.S. EN 17037. (300 lux across more than 50% of the working plane and 100 lux across more than 95% of the working plane for half the daylight hours)

F: Target Lux

Under BRE 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.

G: % of area above target Lux (Winter)

BRE 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.

H: % of area above target Lux (Summer)

BRE 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.

I: Meets BRE 209 Criteria

This column states if the assessed room achieves the recommended level of daylight as per BRE 209. Target lux levels achieved across more than 50% of the working plane: (200 lux for Kitchens, 150 lux for Living Rooms or 100 lux for Bedrooms). For rooms with multiple purposes, such as LKDs, the higher target value should be taken. If the criteria is achieved with deciduous trees in both winter and summer states, this column will state "Yes", if the criteria is not met in either state this column will state "No". This column states "Winter only" if the criteria is met with deciduous trees in the winter state but not in the summer state, which would be an indication that the summer foliage of trees is the reason for non-compliance.

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

4.0 Assessment Overview

4.1 Shadow Study

A shadow study has been carried out on the the proposed model state. No Shadow Study has been carried out for the baseline model state due to the fact that the site is a green field site without any relevant context that warrants the production of a Shadow Study. This visual representation of the shadows cast by the proposed development can be found in the hourly shadow diagrams in section 5.5 on page 17.

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

- Spring equinox: March 21st Sunrise 6:25 | Sunset 18:40.
- Summer solstice: June 21st. Sunrise 4:57 | Sunset 21:57.
- Winter solstice: December 21st Sunrise 8:38 | Sunset 16:08.

The hourly renderings of the shadow study will be generated without deciduous trees and with evergreen trees represented as opaque objects.

Note: Considering the spring equinox (March 21st) and autumn equinox (22nd September) yield similar results, only the spring equinox was generated.

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

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

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

Deciduous trees are not included in the analytical model for SOG assessment as per the BRE Guidelines.

The portion of each space capable of receiving 2 hours of direct sunlight on March 21st will be calculated individually.

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 section 6.1 on page 26.

4.3 Sunlight Exposure in Proposed Habitable Rooms (SE)

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

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

SE results have been generated both with deciduous trees as opaque objects and without deciduous trees as per the BRE Guidelines.

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.

Whilst, 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.

All habitable rooms of the apartment blocks and duplex units will be assessed, and SE figures published for each, however compliance rates for the proposed development will be expressed on a unit by unit basis.

The results for the study on sunlight exposure in the proposed development can be found in section 6.3 on page 28 with calculated compliance rates stated as part of the analysis of results section on Page 80.

4.4 Spatial Daylight Autonomy in Proposed Habitable Rooms (SDA)

Spatial Daylight Autonomy assesses whether a space 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 occupied period.

In housing, the working plane is considered to be 850 mm above the finished floor level. The working plane is offset 300 mm from the room boundaries in the BRE 209 study, or 500 mm in the I.S. EN 17037 assessment.

SDA results have been generated with deciduous trees represented both in summer and winter states of foliage

as per the BRE Guidelines.

In terms of housing, *BRE 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.

I.S. EN 17037 provides target SDA values to be applied, these values do not vary depending on the room function. 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.

This study has assessed the Spatial Autonomy (SDA) received in all habitable rooms across all floors of the proposed apartment blocks and duplex units within the proposed development under the BRE 209 and I.S. EN 17037 criterion. Compliance rates will be stated for both guiding documents.

SDA assessment under the BRE 209 criteria is considered the primary study for internal daylight performance.

Note: non-habitable rooms and circulation spaces (e.g. bathrooms and corridors) do not require SDA assessment according to the BRE Guidelines.

8 no. rooms in the creche area have been assessed (*Classroom 01, Classroom 02, Classroom 03, Classroom 04, Classroom 05, Classroom 06, Classroom 07, and Kitchen-Dining*). 3DDB recommend that an SDA target value of 150 Lux be applied to the classrooms and 200 Lux to the Kitchen Dining. These rooms have not been included in the calculated compliance rates. For definition of spaces and target values applied, please see the methodology section of this report in section 5.0 on page 14.

The results for the study on SDA can be seen in section 6.4 on page 53.

5.0 Methodology

5.1 Building the Baseline and Proposed Models

In order to obtain the results of this assessments, 3D Design Bureau (3DDB) constructed a series of architectural 3D digital models using Revit 2021, a BIM software application made available by Autodesk.

McCrossan O'Rourke Manning Architects supplied 3DDB with DWGs of the proposed development, which were subsequently prepared for daylight and sunlight analysis.

A combination of survey information, aerial photography, available online photography and/or ordnance survey information were used to model the surrounding context and assessed buildings. **Note:** as the information gathered from online sources is not as accurate as surveyed information, some tolerance should be allowed to the placement of windows, boundary treatments and the results generated.

Proposed

The proposed state reflects the subject site if the development is built as proposed. This includes the demolishing of structures, landscaping etc. Trees to be retained and proposed trees have been included in this model state.

5.2 Trees

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

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

Whilst evergreen trees are included in all studies, BRE 209 provides guidance on how deciduous trees should be treated depending on the study being carried out, as summarised below:

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

The BRE Guidelines state that when assessing the effect a new development would have on existing buildings, it is usual to ignore the effect of trees. This is because daylight is at its scarcest and most valuable in winter when most trees will not be in leaf.

Sun On Ground (SOG)

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

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

As such, deciduous trees have not been included in the calculation of SOG in either the impact or scheme performance assessments. Deciduous trees may be included in shadow studies if there is a dense belt located close to the subject site. When a dense belt of deciduous trees are included in the shadow study, it will be clearly stated.

Sunlight Exposure (SE)

The BRE Guidelines state that as deciduous trees would not be in full leaf on the recommended assessment date (March 21st), sunlight would be expected to penetrate deciduous trees. However, as trees have so many variables, it is impossible to accurately represent how they would affect sunlight at a given time. The suggested methodology (BRE 209) to allow for this is to run the sunlight exposure study in two states. Once with deciduous 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)

BRE 209 recommends when assessing daylight in a proposed building, it is appropriate to run the assessment with deciduous trees represented in both winter and summer conditions. Light transmittance values of 60% and 20% have been applied to deciduous tree canopies for winter and summer assessments respectively.

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 deciduous trees in summertime foliage to represent the worst case scenario.

Shadow Study

The hourly renderings of the shadow study will be generated with evergreen trees represented as opaque objects 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. Deciduous trees may be included in shadow studies if there is a dense belt located close to the subject site. When a dense belt of deciduous trees are included in the shadow study, it will be clearly stated.

5.3 Generating Results

The 3D models as stated above were brought into specialist software packages specifically designed for the purpose of daylight and sunlight analysis.

For the purpose of this study, unique unit numbers have been assigned by 3DDB in order to identify the areas assessed in each block. These unit numbers may differ from others floorplans and reports.

The results are generated and analysed considering the BRE Guidelines, as expanded on below.

5.3.1 Sun On Ground

Assessment Criteria

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

5.3.2 Sunlight Exposure

Assessment Criteria

Sunlight exposure is carried out on habitable rooms within a proposed development. 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 assessment point is taken from the centre of the opening width and at least 1.2m above the floor and 0.3m above the sill (whichever is the higher).

The sunlight exposure of all habitable rooms within the proposed development have been assessed.

Sunlight exposure compliance rates for the proposed development will be expressed on a unit by unit basis.

5.3.3 Spatial Daylight Autonomy

SDA Target Values

There are two methods for calculating SDA:

- **Calculation method using daylight factor:** The daylight factor method assumes a constant ratio between internal and external illuminance. The daylight factors in the space shall be calculated by any reliable method that is based on the ISO 15469:2004 standard overcast sky (TYPE 1 or TYPE 16). Daylight factors are to be predicted across grid of points on a plane 0.85m above the floor of the space. The daylight factor of at least half the required area of the space should equal or exceed the target values.
- **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.

The calculations carried out in this report use the calculation method using illuminance level.

The target values to be achieved depend on the guidelines that are followed.

The recommended target illuminance level to be achieved across at least 50% of the working plane for at least half of the daylight hours in BRE 209 depend on the function of the room. 200 Lux is recommended for kitchens, 150 Lux for living rooms and 100 Lux for bedrooms.

Where a room serves more than one purpose, such as the modern day apartment design of the living/kitchen/dining (LKD), the target SDA should be taken for the room with the highest value.

Following this advice, a target SDA value of 200 Lux has been applied to LKDs within the proposed scheme.

The target SDA values recommended within I.S. EN 17037 do not vary depending on the room function. In which, 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.

Should full SDA compliance be sought, design changes could be needed, such as the removal of balconies or a reduction of unit sizes. Such mitigation measures could reduce the quality of living within the proposed units to a greater degree than the improvements that would be gained with increased SDA values.

In new developments, some internal spaces (e.g. studio apartments, shared communal areas etc.) can possibly be of a nature that do not have a predefined target value in BRE 209. In such instances, 3DDB have applied a target value they deem to be appropriate. In the case of the proposed development, the creche relevant spaces have been assessed (*Classroom 01, Classroom 02, Classroom 03, Classroom 04, Classroom 05, Classroom 06, Classroom 07, and Kitchen-Dining*). 3DDB recommend that an SDA target value of 150 Lux be applied to the classrooms and 200 Lux to the Kitchen-Dining.. These rooms have not been included in the calculated compliance rates.

Defining Areas

Definition of rooms has been taken directly from the architectural drawings supplied by McCrossan O'Rourke Manning Architects.

Circulation spaces, corridors, bathrooms etc. have not been assessed.

Indication of the assessed space in each room is provided in the floor plans that correspond to the SDA results in section "6.4 Spatial Daylight Autonomy (SDA) in Proposed Units" on page 53.

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 BRE 209 study the working plane is offset 300 mm from the room boundaries. Room boundaries are taken from the inside face of the interior walls.

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 approximately 300 mm.

Material Palette

Following consultation with the project architects, the following material values were used for SDA calculations.

Object	Material	Reflectance	Object	Material	Reflectance
					Transmittance
Exterior walls	Standard Brick	0.3	Interior Walls	Pastel paint	0.70
	Light Brick	0.4	Interior Ceiling	White paint	0.8
	Dark Brick	0.15	Interior Floor	Light timber	0.4
	Render	0.6	Miscellaneous	Miscellaneous	0.5
	Concrete	0.4	Glass	Double glazing	0.8
Ground cover	Paving	0.4		Maintenance Factor	0.91
	Tarmac	0.2		Glass adjusted for maintenance	0.73
	Grass	0.2		Frosted glass	0.5

5.4 Shadow Study

The shadow study renderings have been carried out in order to give a visual representation to the results set out in the sunlight assessment section of this report.

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

- Spring equinox: March 21st Sunrise 6:25 | Sunset 18:40.
- Summer solstice: June 21st. Sunrise 4:57 | Sunset 21:57.
- Winter solstice: December 21st Sunrise 8:38 | Sunset 16:08.

Note: Considering the spring equinox (March 21st) and autumn equinox (22nd September) yield similar results, only the spring equinox was generated.



Proposed

March 21st 7:00



March 21st 8:00



March 21st 9:00



March 21st 10:00



5.5
5.5.1

Shadow Studies
Shadow Study 21 March

Project: SHD Moygaddy, Maynooth, Co. Meath



March 21st
Sunrise 6:25 | Sunset 18:40

Applicant: Sky Castle Limited



Proposed

March 21st 11:00



March 21st 12:00



March 21st 13:00



March 21st 14:00



March 21st
Sunrise 6:25 | Sunset 18:40

Project: SHD Moygaddy, Maynooth, Co. Meath

Applicant: Sky Castle Limited





Proposed

March 21st 15:00



March 21st 16:00



March 21st 17:00



March 21st 18:00



March 21st
Sunrise 6:25 | Sunset 18:40

Project: SHD Moygaddy, Maynooth, Co. Meath

Applicant: Sky Castle Limited





Proposed

June 21st 6:00



June 21st 7:00



June 21st 8:00



June 21st 9:00



5.5.2 Shadow Study 21 June

Project: SHD Moygaddy, Maynooth, Co. Meath



June 21st
Sunrise 4:57 | Sunset 21:57

Applicant: Sky Castle Limited



Proposed

June 21st 10:00



June 21st 11:00



June 21st 12:00



June 21st 13:00



Project: SHD Moygaddy, Maynooth, Co. Meath



June 21st
Sunrise 4:57 | Sunset 21:57

Applicant: Sky Castle Limited



Proposed

June 21st 14:00



June 21st 15:00



June 21st 16:00



June 21st 17:00



June 21st
Sunrise 4:57 | Sunset 21:57

Project: SHD Moygaddy, Maynooth, Co. Meath

Applicant: Sky Castle Limited





Proposed

June 21st 18:00



June 21st 19:00



June 21st 20:00



June 21st 21:00



June 21st
Sunrise 4:57 | Sunset 21:57

Project: SHD Moygaddy, Maynooth, Co. Meath

Applicant: Sky Castle Limited





Proposed

December 21st 9:00



December 21st 10:00



December 21st 11:00



December 21st 12:00



5.5.3 Shadow Study 21 December

Project: SHD Moygaddy, Maynooth, Co. Meath



December 21st
Sunrise 8:38 | Sunset 16:08

Applicant: Sky Castle Limited



Proposed

December 21st 13:00



December 21st 14:00



December 21st 15:00



December 21st 16:00



December 21st
Sunrise 8:38 | Sunset 16:08

Project: SHD Moygaddy, Maynooth, Co. Meath

Applicant: Sky Castle Limited



6.0 Scheme Performance Results

6.1 Sun On Ground in Proposed Outdoor Semi-Private Amenity Areas

Table No. 6.1: SOG in Proposed Outdoor Amenity Areas Results:			
Assessed Area	Area Capable of Receiving 2 Hours of Sunlight on March 21st	Recommended minimum	Level of Compliance with BRE Guidelines*
Semi-Private Communal Open Space 1	99.7%	50.0%	BRE Compliant
Semi-Private Communal Open Space 2	100.0%	50.0%	BRE Compliant
Semi-Private Communal Open Space 3	97.0%	50.0%	BRE Compliant
Semi-Private Communal Open Space 4	100.0%	50.0%	BRE Compliant
Creche Play Area	87.5%	50.0%	BRE Compliant

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



Figure 6.1: 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).

6.2 Sun On Ground in Proposed Outdoor Public Open Areas

Table No. 6.2: SOG in Proposed Outdoor Amenity Areas Results:

Assessed Area	Area Capable of Receiving 2 Hours of Sunlight on March 21st	Recommended minimum	Level of Compliance with BRE Guidelines*
Public Open Space A	99.8%	50.0%	BRE Compliant
Public Open Space B	100.0%	50.0%	BRE Compliant
Public Open Space C	100.0%	50.0%	BRE Compliant
Public Open Space D	100.0%	50.0%	BRE Compliant
Public Open Space E	100.0%	50.0%	BRE Compliant
Public Open Space F	100.0%	50.0%	BRE Compliant
Public Open Space G	100.0%	50.0%	BRE Compliant
Public Open Space H	100.0%	50.0%	BRE Compliant
Public Open Space I	100.0%	50.0%	BRE Compliant

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

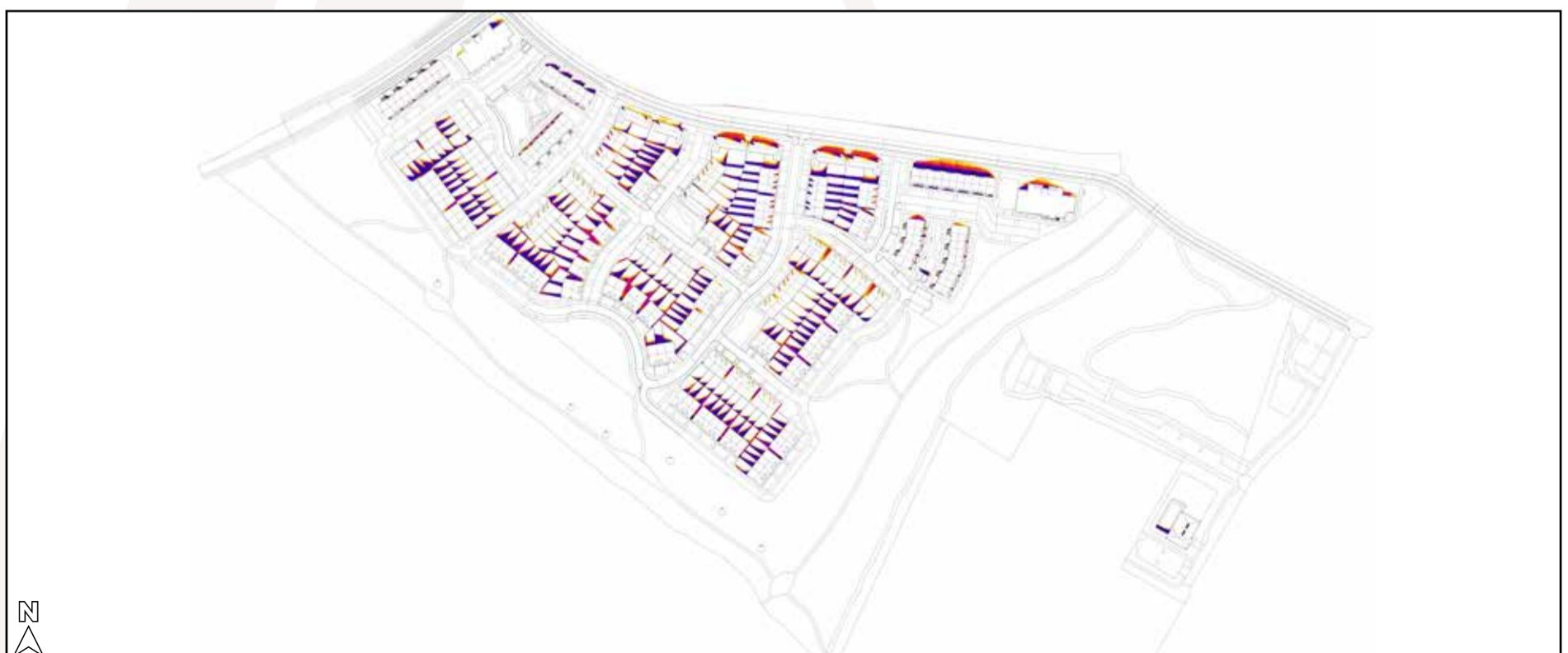


Figure 6.2: Indication of the amenity areas that have been analysed (L), Area capable of receiving 2 hours of sunlight on March 21st shown in white (R).

6.3 Sunlight Exposure (SE) in Proposed Units

6.3.1 Apt. Block A - Ground Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
A Apt. 1	LKD	0.50	Non-Compliant	Non-Compliant	0.60	Non-Compliant	Non-Compliant
A Apt. 1	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 1	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 2	LKD	1.20	Non-Compliant	-	1.20	Non-Compliant	-
A Apt. 2	Bedroom 1	3.70	Medium	Compliant	3.70	Medium	Compliant
A Apt. 2	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 3	LKD	3.40	Medium	-	3.40	Medium	-
A Apt. 3	Bedroom 1	4.40	High	Compliant	4.40	High	Compliant
A Apt. 4	LKD	5.60	High	Compliant	5.60	High	Compliant
A Apt. 4	Bedroom 1	2.50	Minimum	-	2.50	Minimum	-
A Apt. 5	LKD	3.30	Medium	-	3.80	Medium	Compliant
A Apt. 5	Bedroom 1	3.40	Medium	Compliant	3.70	Medium	-
A Apt. 6	LKD	3.20	Medium	-	3.80	Medium	-
A Apt. 6	Bedroom 1	3.70	Medium	Compliant	4.30	High	Compliant
A Apt. 7	LKD	0.90	Non-Compliant	Non-Compliant	0.90	Non-Compliant	Non-Compliant
A Apt. 7	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 7	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.3: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.2 Apt. Block A - First Floor

Table No. 6.4: Sunlight Exposure Results: Apt. Block A - First Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
A Apt. 8	LKD	0.50	Non-Compliant	Non-Compliant	0.50	Non-Compliant	Non-Compliant
A Apt. 8	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 8	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 9	LKD	1.20	Non-Compliant	-	1.20	Non-Compliant	-
A Apt. 9	Bedroom 1	4.00	High	Compliant	4.00	High	Compliant
A Apt. 9	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 10	LKD	2.70	Minimum	-	2.70	Minimum	-
A Apt. 10	Bedroom 1	4.40	High	Compliant	4.40	High	Compliant
A Apt. 11	LKD	6.40	High	Compliant	6.40	High	Compliant
A Apt. 11	Bedroom 1	2.60	Minimum	-	2.60	Minimum	-
A Apt. 11	Bedroom 2	1.80	Minimum	-	1.80	Minimum	-
A Apt. 12	LKD	2.70	Minimum	-	2.70	Minimum	-
A Apt. 12	Bedroom 1	3.70	Medium	Compliant	3.70	Medium	Compliant
A Apt. 13	LKD	2.60	Minimum	-	2.80	Minimum	-
A Apt. 13	Bedroom 1	4.20	High	Compliant	4.30	High	Compliant
A Apt. 14	LKD	7.00	High	Compliant	7.00	High	Compliant
A Apt. 14	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 14	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 15	LKD	2.30	Minimum	Compliant	2.30	Minimum	Compliant
A Apt. 15	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 15	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.4: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.3 Apt. Block A - Second Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
A Apt. 16	LKD	0.50	Non-Compliant	Non-Compliant	0.50	Non-Compliant	Non-Compliant
A Apt. 16	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 16	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 17	LKD	1.20	Non-Compliant	-	1.20	Non-Compliant	-
A Apt. 17	Bedroom 1	4.30	High	Compliant	4.30	High	Compliant
A Apt. 17	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 18	LKD	2.70	Minimum	-	2.70	Minimum	-
A Apt. 18	Bedroom 1	4.40	High	Compliant	4.40	High	Compliant
A Apt. 19	LKD	6.40	High	Compliant	6.40	High	Compliant
A Apt. 19	Bedroom 1	2.70	Minimum	-	2.70	Minimum	-
A Apt. 19	Bedroom 2	1.80	Minimum	-	1.80	Minimum	-
A Apt. 20	LKD	2.70	Minimum	-	2.70	Minimum	-
A Apt. 20	Bedroom 1	3.80	Medium	Compliant	3.80	Medium	Compliant
A Apt. 21	LKD	2.90	Minimum	-	2.90	Minimum	-
A Apt. 21	Bedroom 1	4.40	High	Compliant	4.40	High	Compliant
A Apt. 22	LKD	7.00	High	Compliant	7.00	High	Compliant
A Apt. 22	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 22	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 23	LKD	2.30	Minimum	Compliant	2.30	Minimum	Compliant
A Apt. 23	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 23	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.5: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.4 Apt. Block A - Third Floor

Table No. 6.6: Sunlight Exposure Results: Apt. Block A - Third Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
A Apt. 24	LKD	0.30	Non-Compliant	Non-Compliant	0.30	Non-Compliant	Non-Compliant
A Apt. 24	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 24	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 25	LKD	1.20	Non-Compliant	-	1.20	Non-Compliant	-
A Apt. 25	Bedroom 1	5.50	High	Compliant	5.50	High	Compliant
A Apt. 25	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 26	LKD	6.40	High	Compliant	6.40	High	Compliant
A Apt. 26	Bedroom 1	4.40	High	-	4.40	High	-
A Apt. 27	LKD	6.40	High	Compliant	6.40	High	Compliant
A Apt. 27	Bedroom 1	1.30	Non-Compliant	-	1.30	Non-Compliant	-
A Apt. 27	Bedroom 2	0.40	Non-Compliant	-	0.40	Non-Compliant	-
A Apt. 28	LKD	6.40	High	Compliant	6.40	High	Compliant
A Apt. 28	Bedroom 1	4.60	High	-	4.60	High	-
A Apt. 29	LKD	6.40	High	Compliant	6.40	High	Compliant
A Apt. 29	Bedroom 1	5.50	High	-	5.50	High	-
A Apt. 30	LKD	9.40	High	Compliant	9.40	High	Compliant
A Apt. 30	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 30	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 31	LKD	3.20	Medium	Compliant	3.20	Medium	Compliant
A Apt. 31	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
A Apt. 31	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.6: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.5 Apt. Block B - Ground Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
B Apt. 1	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 1	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 1	Bedroom 2	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 2	LKD	3.50	Medium	Compliant	3.80	Medium	-
B Apt. 2	Bedroom 1	2.80	Minimum	-	6.40	High	Compliant
B Apt. 2	Bedroom 2	2.60	Minimum	-	3.10	Medium	-
B Apt. 3	LKD	3.40	Medium	Compliant	5.40	High	Compliant
B Apt. 3	Bedroom 1	2.90	Minimum	-	2.90	Minimum	-
B Apt. 4	LKD	5.80	High	Compliant	8.30	High	Compliant
B Apt. 4	Bedroom 1	1.90	Minimum	-	1.90	Minimum	-
B Apt. 5	LKD	3.00	Medium	-	3.90	Medium	-
B Apt. 5	Bedroom 1	4.10	High	Compliant	4.40	High	Compliant
B Apt. 6	LKD	3.30	Medium	-	3.80	Medium	-
B Apt. 6	Bedroom 1	4.60	High	Compliant	4.60	High	Compliant
B Apt. 7	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 7	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 7	Bedroom 2	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.7: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.6 Apt. Block B - First Floor

Table No. 6.8: Sunlight Exposure Results: Apt. Block B - First Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
B Apt. 8	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 8	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 8	Bedroom 2	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 9	LKD	3.80	Medium	Compliant	3.80	Medium	-
B Apt. 9	Bedroom 1	1.40	Non-Compliant	-	6.40	High	Compliant
B Apt. 9	Bedroom 2	2.70	Minimum	-	3.10	Medium	-
B Apt. 10	LKD	1.70	Minimum	-	4.00	High	Compliant
B Apt. 10	Bedroom 1	3.00	Medium	Compliant	3.00	Medium	-
B Apt. 11	LKD	5.70	High	Compliant	8.30	High	Compliant
B Apt. 11	Bedroom 1	0.80	Non-Compliant	-	0.80	Non-Compliant	-
B Apt. 11	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
B Apt. 12	LKD	2.00	Minimum	-	2.60	Minimum	-
B Apt. 12	Bedroom 1	3.00	Medium	Compliant	3.30	Medium	Compliant
B Apt. 13	LKD	2.20	Minimum	-	2.70	Minimum	-
B Apt. 13	Bedroom 1	3.50	Medium	Compliant	3.50	Medium	Compliant
B Apt. 14	LKD	0.00	Non-Compliant	Non-Compliant	1.50	Minimum	Compliant
B Apt. 14	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	-
B Apt. 14	Bedroom 2	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	-
B Apt. 15	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 15	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 15	Bedroom 2	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.8: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.7 Apt. Block B - Second Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
B Apt. 16	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 16	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 16	Bedroom 2	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 17	LKD	3.80	Medium	Compliant	3.80	Medium	-
B Apt. 17	Bedroom 1	1.90	Minimum	-	6.70	High	Compliant
B Apt. 17	Bedroom 2	3.10	Medium	-	3.10	Medium	-
B Apt. 18	LKD	1.80	Minimum	-	4.00	High	Compliant
B Apt. 18	Bedroom 1	3.00	Medium	Compliant	3.00	Medium	-
B Apt. 19	LKD	6.30	High	Compliant	8.30	High	Compliant
B Apt. 19	Bedroom 1	0.80	Non-Compliant	-	0.80	Non-Compliant	-
B Apt. 19	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
B Apt. 20	LKD	2.30	Minimum	-	2.60	Minimum	-
B Apt. 20	Bedroom 1	3.30	Medium	Compliant	3.30	Medium	Compliant
B Apt. 21	LKD	2.70	Minimum	-	2.70	Minimum	-
B Apt. 21	Bedroom 1	3.50	Medium	Compliant	3.50	Medium	Compliant
B Apt. 22	LKD	0.10	Non-Compliant	Non-Compliant	1.50	Minimum	Compliant
B Apt. 22	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
B Apt. 22	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
B Apt. 23	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 23	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 23	Bedroom 2	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.9: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.8 Apt. Block B - Third Floor

Table No. 6.10: Sunlight Exposure Results: Apt. Block B - Third Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
B Apt. 24	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 24	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 24	Bedroom 2	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 25	LKD	3.80	Medium	-	3.80	Medium	-
B Apt. 25	Bedroom 1	4.20	High	Compliant	7.60	High	Compliant
B Apt. 25	Bedroom 2	3.10	Medium	-	3.10	Medium	-
B Apt. 26	LKD	8.00	High	Compliant	9.00	High	Compliant
B Apt. 26	Bedroom 1	4.70	High	-	4.70	High	-
B Apt. 27	LKD	7.70	High	Compliant	8.30	High	Compliant
B Apt. 27	Bedroom 1	0.40	Non-Compliant	-	0.40	Non-Compliant	-
B Apt. 27	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
B Apt. 28	LKD	8.00	High	Compliant	8.00	High	Compliant
B Apt. 28	Bedroom 1	4.60	High	-	4.60	High	-
B Apt. 29	LKD	8.40	High	Compliant	8.40	High	Compliant
B Apt. 29	Bedroom 1	6.00	High	-	6.00	High	-
B Apt. 30	LKD	1.30	Non-Compliant	Non-Compliant	2.10	Minimum	Compliant
B Apt. 30	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
B Apt. 30	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
B Apt. 31	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 31	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
B Apt. 31	Bedroom 2	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.10: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.9 Duplex A - Ground Floor

Table No. 6.11: Sunlight Exposure Results: Duplex A - Ground Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
DA.01	LKD	3.00	Medium	Compliant	3.00	Medium	Compliant
DA.01	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.02	LKD	3.00	Medium	Compliant	3.00	Medium	Compliant
DA.02	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.03	LKD	3.00	Medium	Compliant	3.00	Medium	Compliant
DA.03	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.04	LKD	3.00	Medium	Compliant	3.00	Medium	Compliant
DA.04	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.05	LKD	2.40	Minimum	Compliant	2.40	Minimum	Compliant
DA.05	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.06	LKD	2.70	Minimum	Compliant	2.70	Minimum	Compliant
DA.06	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.07	LKD	3.00	Medium	Compliant	3.00	Medium	Compliant
DA.07	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.08	LKD	3.00	Medium	Compliant	3.00	Medium	Compliant
DA.08	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.09	LKD	3.00	Medium	Compliant	3.00	Medium	Compliant
DA.09	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.10	LKD	3.00	Medium	Compliant	3.00	Medium	Compliant
DA.10	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.

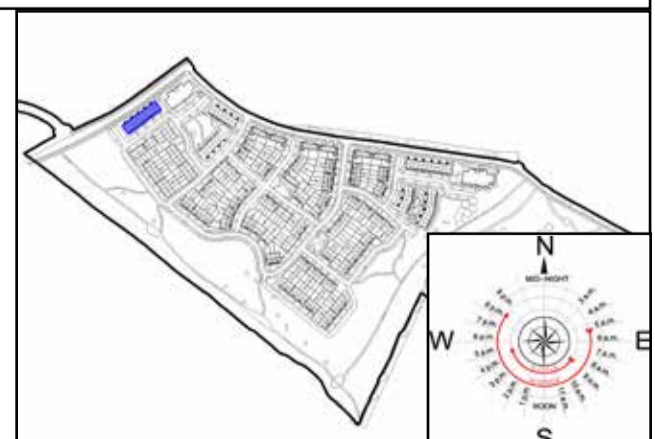


Figure 6.11: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.3.10 Duplex A - First & Second Floors

Table No. 6.12: Sunlight Exposure Results: Duplex A - First & Second Floors

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**
DA.11	LKD	6.50	High	Compliant	6.50	High	Compliant
DA.11	Bedroom 1	0.10	Non-Compliant	-	0.10	Non-Compliant	-
DA.11	Bedroom 2	5.70	High	-	5.70	High	-
DA.12	LKD	6.40	High	Compliant	6.40	High	Compliant
DA.12	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.12	Bedroom 2	5.70	High	-	5.70	High	-
DA.13	LKD	6.40	High	Compliant	6.40	High	Compliant
DA.13	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.13	Bedroom 2	5.70	High	-	5.70	High	-
DA.14	LKD	6.40	High	Compliant	6.40	High	Compliant
DA.14	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.14	Bedroom 2	5.70	High	-	5.70	High	-
DA.15	LKD	6.40	High	Compliant	6.40	High	Compliant
DA.15	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.15	Bedroom 2	5.70	High	-	5.70	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.12: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.11 Duplex A - First & Second Floors

Table No. 6.13: Sunlight Exposure Results: Duplex A - First & Second Floors

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**
DA.16	LKD	6.40	High	Compliant	6.40	High	Compliant
DA.16	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.16	Bedroom 2	3.10	Medium	-	6.00	High	-
DA.17	LKD	6.40	High	Compliant	6.40	High	Compliant
DA.17	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.17	Bedroom 2	5.70	High	-	5.70	High	-
DA.18	LKD	6.40	High	Compliant	6.40	High	Compliant
DA.18	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.18	Bedroom 2	5.70	High	-	5.70	High	-
DA.19	LKD	6.40	High	Compliant	6.40	High	Compliant
DA.19	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DA.19	Bedroom 2	5.70	High	-	5.70	High	-
DA.20	LKD	9.40	High	Compliant	9.40	High	Compliant
DA.20	Bedroom 1	3.70	Medium	-	3.70	Medium	-
DA.20	Bedroom 2	5.70	High	-	5.70	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.13: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.12 Duplex B - Ground Floor

Table No. 6.14: Sunlight Exposure Results: Duplex B - Ground Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
DB.01	LKD	3.40	Medium	Compliant	3.50	Medium	Compliant
DB.01	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.02	LKD	1.90	Minimum	Compliant	2.20	Minimum	Compliant
DB.02	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.03	LKD	1.90	Minimum	Compliant	2.90	Minimum	Compliant
DB.03	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.04	LKD	0.50	Non-Compliant	Non-Compliant	3.00	Medium	Compliant
DB.04	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.05	LKD	2.10	Minimum	Compliant	2.90	Minimum	Compliant
DB.05	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.06	LKD	1.00	Non-Compliant	Non-Compliant	3.00	Medium	Compliant
DB.06	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.07	LKD	2.40	Minimum	Compliant	2.90	Minimum	Compliant
DB.07	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.

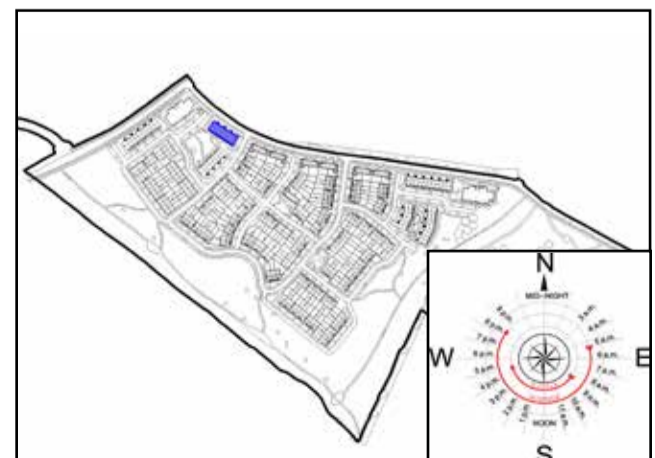


Figure 6.14: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.3.13 Duplex B - First & Second Floors

Table No. 6.15: Sunlight Exposure Results: Duplex B - First & Second Floors							
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**
DB.08	LKD	2.30	Minimum	-	6.70	High	Compliant
DB.08	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.08	Bedroom 2	2.70	Minimum	Compliant	5.90	High	-
DB.09	LKD	1.70	Minimum	-	6.70	High	Compliant
DB.09	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.09	Bedroom 2	2.50	Minimum	Compliant	5.90	High	-
DB.10	LKD	2.10	Minimum	-	6.70	High	Compliant
DB.10	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.10	Bedroom 2	2.50	Minimum	Compliant	5.90	High	-
DB.11	LKD	2.90	Minimum	-	6.70	High	Compliant
DB.11	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.11	Bedroom 2	3.50	Medium	Compliant	5.90	High	-
DB.12	LKD	4.40	High	Compliant	6.70	High	Compliant
DB.12	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.12	Bedroom 2	4.30	High	-	5.90	High	-
DB.13	LKD	6.60	High	Compliant	6.70	High	Compliant
DB.13	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.13	Bedroom 2	5.90	High	-	5.90	High	-
DB.14	LKD	6.00	High	Compliant	6.00	High	Compliant
DB.14	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DB.14	Bedroom 2	5.90	High	-	5.90	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.15: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.14 Duplex C - Ground Floor

Table No. 6.16: Sunlight Exposure Results: Duplex C - Ground Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
DC.01	LKD	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.01	Bedroom 1	4.80	High	Compliant	4.80	High	Compliant
DC.02	LKD	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.02	Bedroom 1	5.30	High	Compliant	5.30	High	Compliant
DC.03	LKD	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.03	Bedroom 1	5.30	High	Compliant	5.30	High	Compliant
DC.04	LKD	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.04	Bedroom 1	5.10	High	Compliant	5.10	High	Compliant
DC.05	LKD	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.05	Bedroom 1	5.10	High	Compliant	5.10	High	Compliant
DC.06	LKD	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.06	Bedroom 1	5.00	High	Compliant	5.00	High	Compliant
DC.07	LKD	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.07	Bedroom 1	5.20	High	Compliant	5.20	High	Compliant
DC.08	LKD	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.08	Bedroom 1	4.90	High	Compliant	4.90	High	Compliant

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.

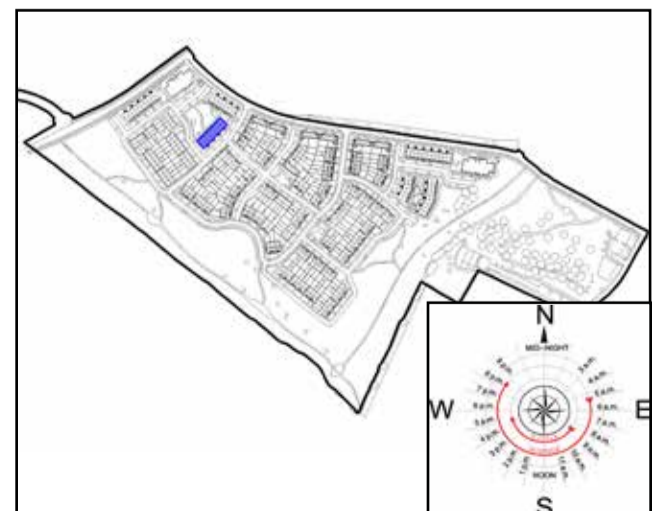
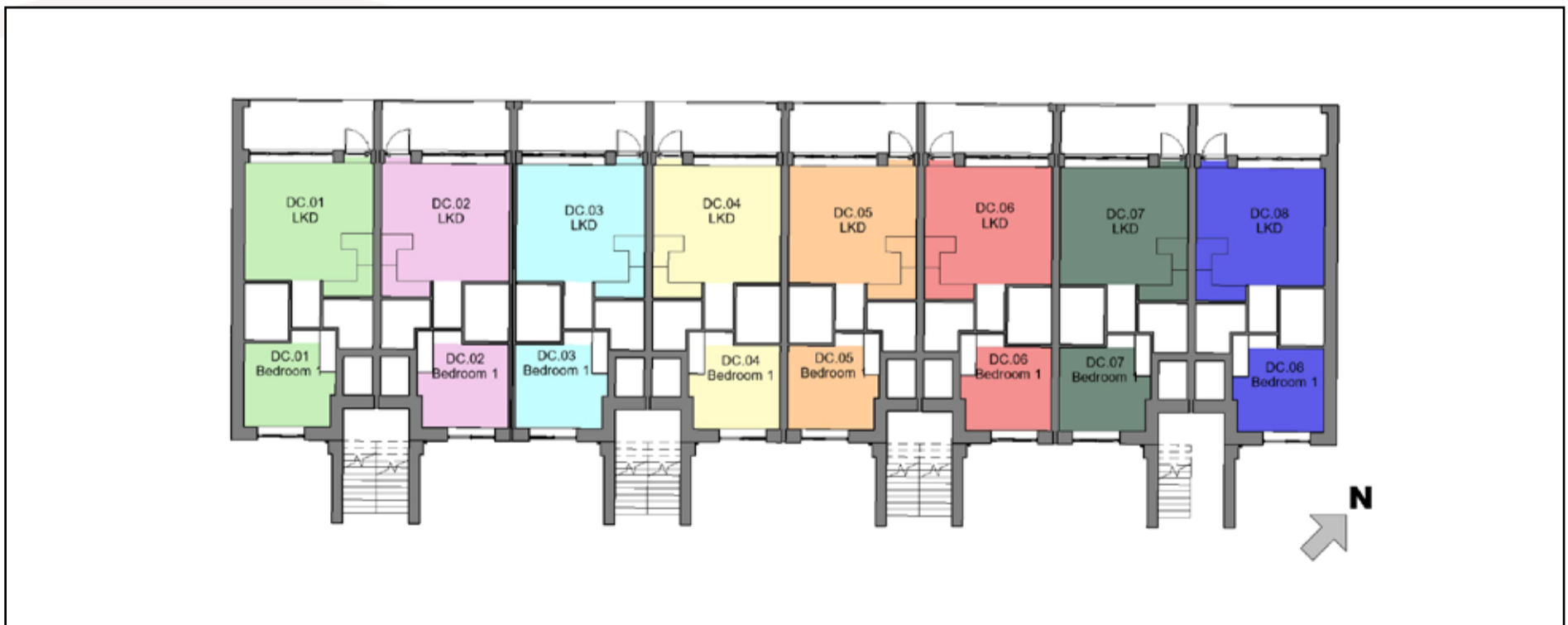


Figure 6.16: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.3.15 Duplex C - First & Second Floors

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**
DC.09	LKD	9.40	High	Compliant	9.40	High	Compliant
DC.09	Bedroom 1	9.40	High	Compliant	9.40	High	Compliant
DC.09	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.10	LKD	5.80	High	Compliant	5.80	High	Compliant
DC.10	Bedroom 1	5.30	High	-	5.30	High	-
DC.10	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.11	LKD	5.60	High	Compliant	5.60	High	Compliant
DC.11	Bedroom 1	5.30	High	-	5.30	High	-
DC.11	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.12	LKD	5.80	High	Compliant	5.80	High	Compliant
DC.12	Bedroom 1	5.30	High	-	5.30	High	-
DC.12	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.17: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.16 Duplex C - First & Second Floors

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**
DC.13	LKD	5.60	High	Compliant	5.60	High	Compliant
DC.13	Bedroom 1	5.30	High	-	5.30	High	-
DC.13	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.14	LKD	5.80	High	Compliant	5.80	High	Compliant
DC.14	Bedroom 1	5.30	High	-	5.30	High	-
DC.14	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.15	LKD	5.60	High	Compliant	5.60	High	Compliant
DC.15	Bedroom 1	5.30	High	-	5.30	High	-
DC.15	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DC.16	LKD	6.10	High	Compliant	6.10	High	Compliant
DC.16	Bedroom 1	5.30	High	-	5.30	High	-
DC.16	Bedroom 2	0.00	Non-Compliant	-	0.00	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.18: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.17 Duplex D - Ground Floor

Table No. 6.19: Sunlight Exposure Results: Duplex D - Ground Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
DD.01	LKD	0.40	Non-Compliant	Non-Compliant	0.40	Non-Compliant	Non-Compliant
DD.01	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.02	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
DD.02	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
DD.03	LKD	0.40	Non-Compliant	Non-Compliant	0.40	Non-Compliant	Non-Compliant
DD.03	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.04	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
DD.04	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
DD.05	LKD	0.40	Non-Compliant	Non-Compliant	0.40	Non-Compliant	Non-Compliant
DD.05	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.06	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
DD.06	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
DD.07	LKD	0.40	Non-Compliant	Non-Compliant	0.40	Non-Compliant	Non-Compliant
DD.07	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.08	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
DD.08	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
DD.09	LKD	0.40	Non-Compliant	Non-Compliant	0.40	Non-Compliant	Non-Compliant
DD.09	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.10	LKD	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
DD.10	Bedroom 1	0.00	Non-Compliant	Non-Compliant	0.00	Non-Compliant	Non-Compliant
DD.11	LKD	0.80	Non-Compliant	Non-Compliant	0.80	Non-Compliant	Non-Compliant
DD.11	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to “3.2 Definition of Levels of Sunlight Exposure” on page 8.

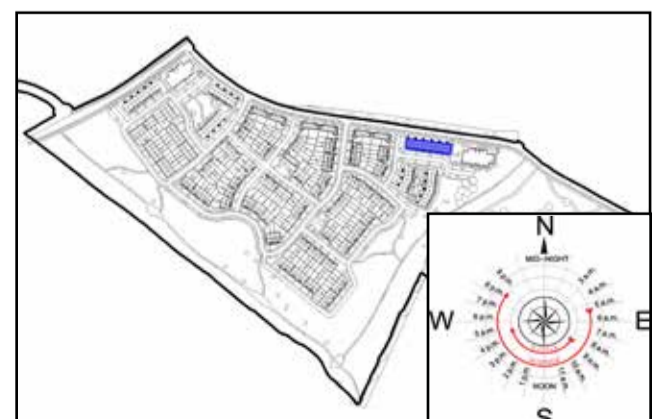


Figure 6.19: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.3.18 Duplex D - First & Second Floors

Table No. 6.20: Sunlight Exposure Results: Duplex D - First & Second Floors

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**
DD.12	LKD	8.20	High	Compliant	8.30	High	Compliant
DD.12	Bedroom 1	1.90	Minimum	-	1.90	Minimum	-
DD.12	Bedroom 2	6.60	High	-	6.60	High	-
DD.13	LKD	8.40	High	Compliant	8.40	High	Compliant
DD.13	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.13	Bedroom 2	6.60	High	-	6.60	High	-
DD.14	LKD	8.30	High	Compliant	8.30	High	Compliant
DD.14	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.14	Bedroom 2	6.60	High	-	6.60	High	-
DD.15	LKD	8.40	High	Compliant	8.40	High	Compliant
DD.15	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.15	Bedroom 2	6.60	High	-	6.60	High	-
DD.16	LKD	8.30	High	Compliant	8.30	High	Compliant
DD.16	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.16	Bedroom 2	6.60	High	-	6.60	High	-
DD.17	LKD	8.40	High	Compliant	8.40	High	Compliant
DD.17	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.17	Bedroom 2	6.60	High	-	6.60	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.20: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.19 Duplex D - First & Second Floors

Table No. 6.21: Sunlight Exposure Results: Duplex D - First & Second Floors							
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**
DD.18	LKD	8.30	High	Compliant	8.30	High	Compliant
DD.18	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.18	Bedroom 2	6.60	High	-	6.60	High	-
DD.19	LKD	8.40	High	Compliant	8.40	High	Compliant
DD.19	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.19	Bedroom 2	6.60	High	-	6.60	High	-
DD.20	LKD	8.30	High	Compliant	8.30	High	Compliant
DD.20	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.20	Bedroom 2	6.60	High	-	6.60	High	-
DD.21	LKD	8.40	High	Compliant	8.40	High	Compliant
DD.21	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.21	Bedroom 2	6.60	High	-	6.60	High	-
DD.22	LKD	8.30	High	Compliant	8.30	High	Compliant
DD.22	Bedroom 1	0.00	Non-Compliant	-	0.00	Non-Compliant	-
DD.22	Bedroom 2	6.60	High	-	6.60	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.21: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.20 Duplex E - Ground Floor

Table No. 6.22: Sunlight Exposure Results: Duplex E - Ground Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
DE.01	LKD	0.50	Non-Compliant	-	2.30	Minimum	Compliant
DE.01	Bedroom 1	2.30	Minimum	Compliant	2.30	Minimum	Compliant
DE.02	LKD	0.00	Non-Compliant	-	2.30	Minimum	Compliant
DE.02	Bedroom 1	2.30	Minimum	Compliant	2.30	Minimum	Compliant
DE.03	LKD	0.10	Non-Compliant	-	2.30	Minimum	Compliant
DE.03	Bedroom 1	2.10	Minimum	Compliant	2.10	Minimum	-
DE.04	LKD	3.20	Medium	Compliant	3.20	Medium	Compliant
DE.04	Bedroom 1	1.00	Non-Compliant	-	1.00	Non-Compliant	-
DE.05	LKD	1.70	Minimum	Compliant	3.20	Medium	Compliant
DE.05	Bedroom 1	0.90	Non-Compliant	-	0.90	Non-Compliant	-
DE.06	LKD	3.20	Medium	Compliant	3.20	Medium	Compliant
DE.06	Bedroom 1	0.80	Non-Compliant	-	0.80	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.

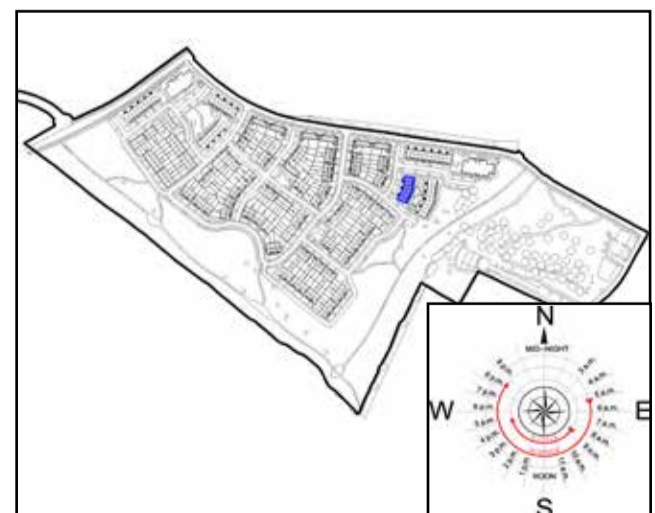
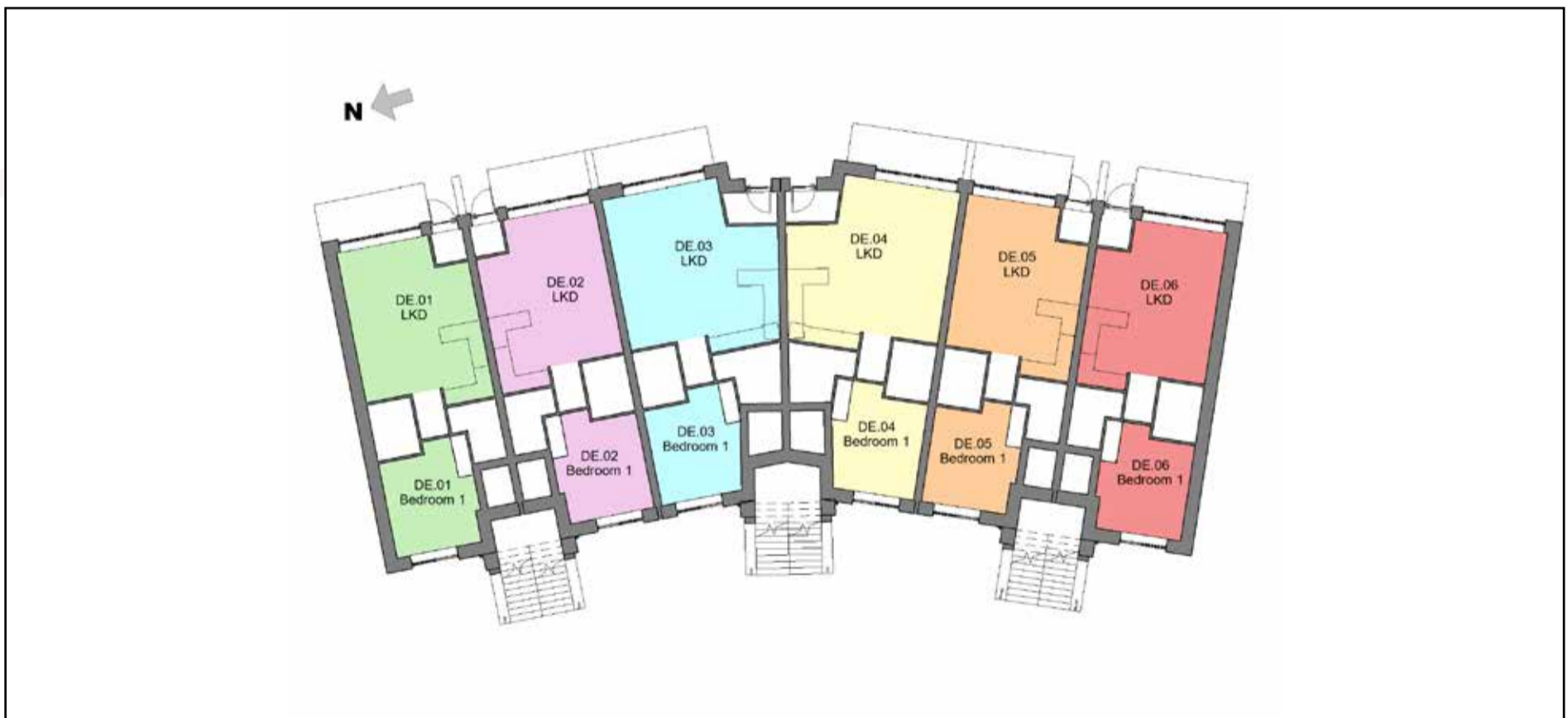


Figure 6.22: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.3.21 Duplex E - First & Second Floors

Table No. 6.23: Sunlight Exposure Results: Duplex E - First & Second Floors

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**
DE.07	LKD	6.10	High	Compliant	6.10	High	Compliant
DE.07	Bedroom 1	2.70	Minimum	-	2.70	Minimum	-
DE.07	Bedroom 2	3.30	Medium	-	3.30	Medium	-
DE.08	LKD	3.70	Medium	Compliant	5.40	High	Compliant
DE.08	Bedroom 1	2.30	Minimum	-	2.30	Minimum	-
DE.08	Bedroom 2	3.30	Medium	-	3.30	Medium	-
DE.09	LKD	3.10	Medium	Compliant	5.30	High	Compliant
DE.09	Bedroom 1	2.30	Minimum	-	2.30	Minimum	-
DE.09	Bedroom 2	1.60	Minimum	-	3.30	Medium	-
DE.10	LKD	4.60	High	Compliant	5.00	High	Compliant
DE.10	Bedroom 1	1.00	Non-Compliant	-	1.00	Non-Compliant	-
DE.10	Bedroom 2	3.80	Medium	-	4.40	High	-
DE.11	LKD	5.20	High	Compliant	5.20	High	Compliant
DE.11	Bedroom 1	1.00	Non-Compliant	-	1.00	Non-Compliant	-
DE.11	Bedroom 2	4.40	High	-	4.40	High	-
DE.12	LKD	8.70	High	Compliant	8.80	High	Compliant
DE.12	Bedroom 1	5.00	High	-	5.00	High	-
DE.12	Bedroom 2	4.40	High	-	4.40	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.23: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.22 Duplex F - Ground Floor

Table No. 6.24: Sunlight Exposure Results: Duplex F - Ground Floor

Unit Number	Room Description	Deciduous Trees as Opaque Objects*			Without Deciduous Trees*		
		SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**	SE Hours on March 21st	Level of SE on March 21st***	Unit compliance based on highest performing room**
DF.01	LKD	2.10	Minimum	Compliant	2.10	Minimum	Compliant
DF.01	Bedroom 1	0.20	Non-Compliant	-	1.60	Minimum	-
DF.02	LKD	2.00	Minimum	Compliant	2.00	Minimum	Compliant
DF.02	Bedroom 1	0.60	Non-Compliant	-	1.70	Minimum	-
DF.03	LKD	2.10	Minimum	Compliant	2.10	Minimum	Compliant
DF.03	Bedroom 1	0.70	Non-Compliant	-	1.80	Minimum	-
DF.04	LKD	2.00	Minimum	Compliant	2.00	Minimum	Compliant
DF.04	Bedroom 1	0.00	Non-Compliant	-	2.00	Minimum	Compliant
DF.05	LKD	2.10	Minimum	Compliant	2.10	Minimum	Compliant
DF.05	Bedroom 1	1.00	Non-Compliant	-	2.10	Minimum	Compliant
DF.06	LKD	2.60	Minimum	Compliant	2.60	Minimum	Compliant
DF.06	Bedroom 1	0.10	Non-Compliant	-	1.00	Non-Compliant	-
DF.07	LKD	2.60	Minimum	Compliant	2.60	Minimum	Compliant
DF.07	Bedroom 1	0.40	Non-Compliant	-	0.50	Non-Compliant	-
DF.08	LKD	2.20	Minimum	Compliant	2.60	Minimum	Compliant
DF.08	Bedroom 1	0.00	Non-Compliant	-	1.00	Non-Compliant	-
DF.09	LKD	4.80	High	Compliant	6.70	High	Compliant
DF.09	Bedroom 1	0.50	Non-Compliant	-	0.50	Non-Compliant	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.24: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.3.23 Duplex F - First & Second Floors

Table No. 6.25: Sunlight Exposure Results: Duplex F - First & Second Floors

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**
DF.10	LKD	6.30	High	Compliant	6.30	High	Compliant
DF.10	Bedroom 1	2.40	Minimum	-	2.40	Minimum	-
DF.10	Bedroom 2	3.30	Medium	-	3.30	Medium	-
DF.11	LKD	4.60	High	Compliant	5.80	High	Compliant
DF.11	Bedroom 1	1.80	Minimum	-	2.40	Minimum	-
DF.11	Bedroom 2	3.30	Medium	-	3.30	Medium	-
DF.12	LKD	5.10	High	Compliant	6.00	High	Compliant
DF.12	Bedroom 1	1.80	Minimum	-	2.40	Minimum	-
DF.12	Bedroom 2	3.30	Medium	-	3.30	Medium	-
DF.13	LKD	3.90	Medium	Compliant	6.00	High	Compliant
DF.13	Bedroom 1	0.80	Non-Compliant	-	2.40	Minimum	-
DF.13	Bedroom 2	3.30	Medium	-	3.30	Medium	-
DF.14	LKD	4.60	High	Compliant	6.00	High	Compliant
DF.14	Bedroom 1	1.40	Non-Compliant	-	2.40	Minimum	-
DF.14	Bedroom 2	3.30	Medium	-	3.30	Medium	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.25: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.24 Duplex F - First & Second Floors

Table No. 6.26: Sunlight Exposure Results: Duplex F - First & Second Floors

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**
DF.15	LKD	5.60	High	Compliant	5.60	High	Compliant
DF.15	Bedroom 1	1.00	Non-Compliant	-	1.00	Non-Compliant	-
DF.15	Bedroom 2	4.30	High	-	4.30	High	-
DF.16	LKD	5.50	High	Compliant	5.80	High	Compliant
DF.16	Bedroom 1	1.00	Non-Compliant	-	1.00	Non-Compliant	-
DF.16	Bedroom 2	4.30	High	-	4.30	High	-
DF.17	LKD	4.40	High	Compliant	5.60	High	Compliant
DF.17	Bedroom 1	1.00	Non-Compliant	-	1.00	Non-Compliant	-
DF.17	Bedroom 2	4.30	High	-	4.30	High	-
DF.18	LKD	3.70	Medium	Compliant	5.80	High	Compliant
DF.18	Bedroom 1	1.00	Non-Compliant	-	1.00	Non-Compliant	-
DF.18	Bedroom 2	3.70	Medium	Compliant	4.30	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.



Figure 6.26: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.3.25 Creche - Ground and First Floors

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 01	6.30	High	-	6.30	High	-
Creche	Classroom 02	1.00	Non-Compliant	-	1.00	Non-Compliant	-
Creche	Classroom 03	3.40	Medium	-	3.40	Medium	-
Creche	Classroom 04	4.50	High	-	4.50	High	-
Creche	Classroom 05	4.50	High	-	4.50	High	-
Creche	Classroom 06	4.50	High	-	4.50	High	-
Creche	Classroom 07	1.00	Non-Compliant	-	1.00	Non-Compliant	-
Creche	Kitchen-Dining	6.30	High	-	6.30	High	-

* Rooms are tested with deciduous trees as opaque objects and without deciduous trees to account for the range of possible sunlight hours.
 ** The BRE Guidelines recommend that for a unit to be compliant any room within the unit should receive a minimum of 1.5 hours of direct sunlight on March 21st, preferably a main living room. The SE circa compliance rates across the entire scheme can be found in section 7.1.2 on page 80.
 *** For the interpretation of levels of Sunlight Exposure please refer to "3.2 Definition of Levels of Sunlight Exposure" on page 8.

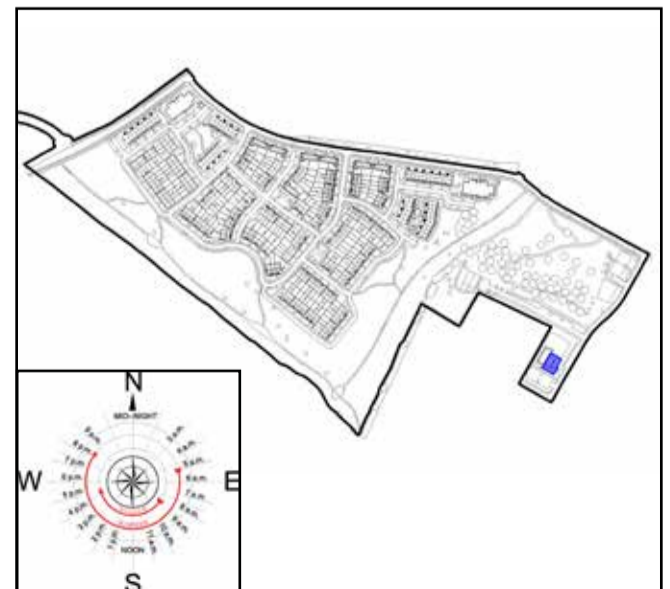
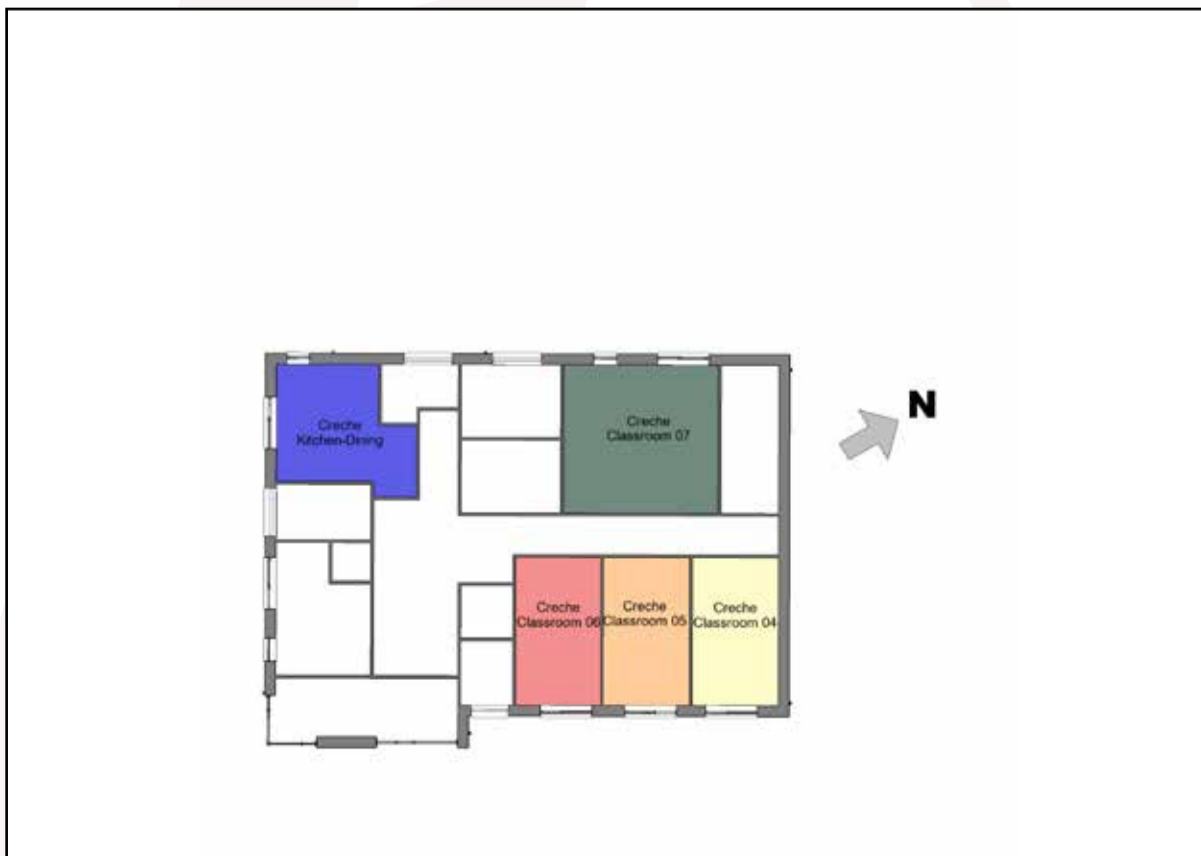
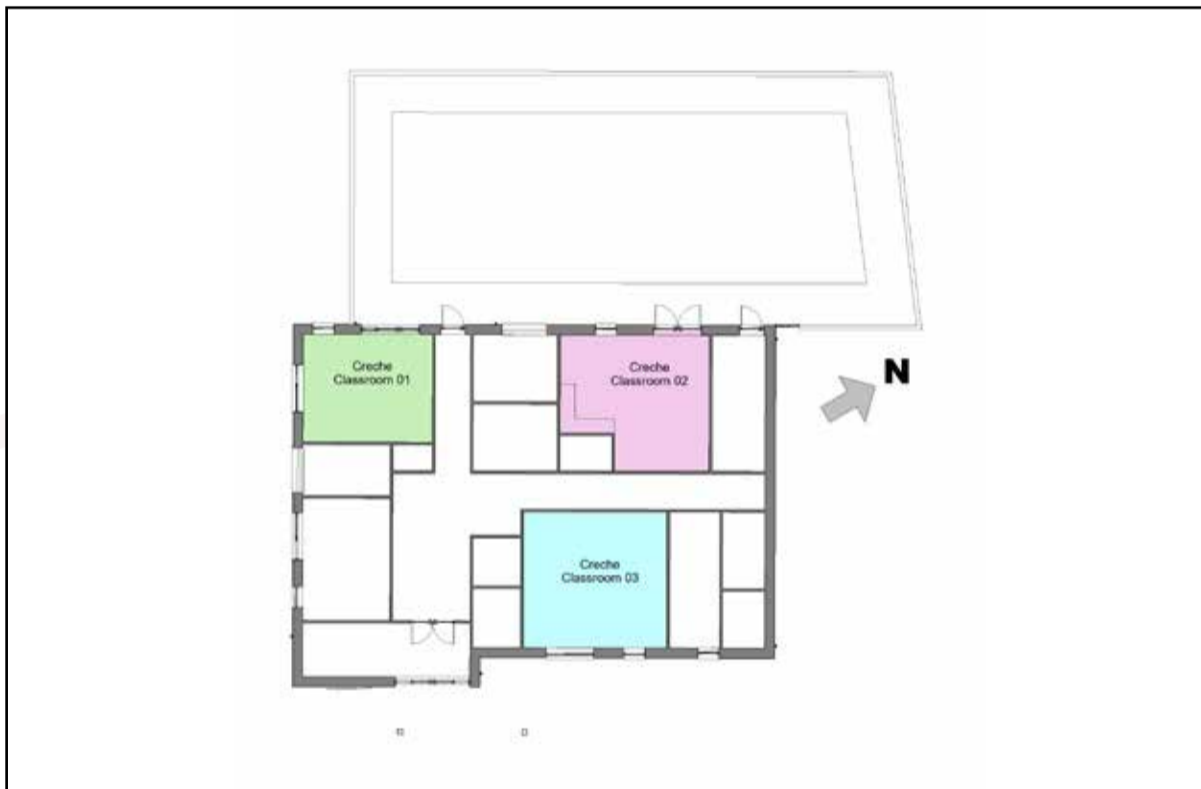


Figure 6.27: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

6.4 Spatial Daylight Autonomy (SDA) in Proposed Units

6.4.1 Apt. Block A - Ground Floor

Table No. 6.28: SDA Results: Apt. Block A - Ground Floor								
Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
A Apt. 1	LKD	65%	98%	Yes	200	78%	76%	Yes
A Apt. 1	Bedroom 1	33%	100%	No	100	100%	100%	Yes
A Apt. 1	Bedroom 2	43%	100%	No	100	100%	100%	Yes
A Apt. 2	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
A Apt. 2	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
A Apt. 2	LKD	100%	100%	Yes	200	100%	100%	Yes
A Apt. 3	Bedroom 1	45%	100%	No	100	100%	100%	Yes
A Apt. 3	LKD	77%	100%	Yes	200	84%	83%	Yes
A Apt. 4	Bedroom 1	38%	100%	No	100	100%	100%	Yes
A Apt. 4	LKD	51%	100%	Yes	200	70%	68%	Yes
A Apt. 5	Bedroom 1	59%	100%	Yes	100	100%	100%	Yes
A Apt. 5	LKD	57%	97%	Yes	200	77%	74%	Yes
A Apt. 6	Bedroom 1	70%	100%	Yes	100	100%	100%	Yes
A Apt. 6	LKD	60%	96%	Yes	200	82%	82%	Yes
A Apt. 7	Bedroom 1	22%	100%	No	100	100%	100%	Yes
A Apt. 7	Bedroom 2	22%	100%	No	100	100%	100%	Yes
A Apt. 7	LKD	61%	94%	No	200	74%	71%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.28: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.4.2 Apt. Block A - First Floor

Table No. 6.29: SDA Results: Apt. Block A - First Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
A Apt. 8	Bedroom 1	40%	100%	No	100	100%	100%	Yes
A Apt. 8	Bedroom 2	50%	100%	Yes	100	100%	100%	Yes
A Apt. 8	LKD	71%	100%	Yes	200	86%	85%	Yes
A Apt. 9	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
A Apt. 9	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
A Apt. 9	LKD	100%	100%	Yes	200	100%	100%	Yes
A Apt. 10	Bedroom 1	67%	100%	Yes	100	100%	100%	Yes
A Apt. 10	LKD	83%	100%	Yes	200	90%	88%	Yes
A Apt. 11	Bedroom 1	68%	100%	Yes	100	100%	100%	Yes
A Apt. 11	Bedroom 2	67%	100%	Yes	100	100%	100%	Yes
A Apt. 11	LKD	65%	100%	Yes	200	79%	77%	Yes
A Apt. 12	Bedroom 1	79%	100%	Yes	100	100%	100%	Yes
A Apt. 12	LKD	63%	99%	Yes	200	82%	81%	Yes
A Apt. 13	Bedroom 1	95%	100%	Yes	100	100%	100%	Yes
A Apt. 13	LKD	67%	98%	Yes	200	84%	84%	Yes
A Apt. 14	Bedroom 1	72%	100%	Yes	100	100%	100%	Yes
A Apt. 14	Bedroom 2	83%	100%	Yes	100	100%	100%	Yes
A Apt. 14	LKD	95%	100%	Yes	200	100%	100%	Yes
A Apt. 15	Bedroom 1	37%	100%	No	100	100%	100%	Yes
A Apt. 15	Bedroom 2	37%	100%	No	100	100%	100%	Yes
A Apt. 15	LKD	68%	94%	No	200	83%	77%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.29: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.4.3 Apt. Block A - Second Floor

Table No. 6.30: SDA Results: Apt. Block A - Second Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
A Apt. 16	Bedroom 1	48%	100%	No	100	100%	100%	Yes
A Apt. 16	Bedroom 2	65%	100%	Yes	100	100%	100%	Yes
A Apt. 16	LKD	77%	100%	Yes	200	90%	89%	Yes
A Apt. 17	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
A Apt. 17	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
A Apt. 17	LKD	100%	100%	Yes	200	100%	100%	Yes
A Apt. 18	Bedroom 1	79%	100%	Yes	100	100%	100%	Yes
A Apt. 18	LKD	86%	100%	Yes	200	92%	91%	Yes
A Apt. 19	Bedroom 1	77%	100%	Yes	100	100%	100%	Yes
A Apt. 19	Bedroom 2	78%	100%	Yes	100	100%	100%	Yes
A Apt. 19	LKD	69%	100%	Yes	200	84%	81%	Yes
A Apt. 20	Bedroom 1	91%	100%	Yes	100	100%	100%	Yes
A Apt. 20	LKD	68%	100%	Yes	200	85%	85%	Yes
A Apt. 21	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
A Apt. 21	LKD	74%	100%	Yes	200	86%	86%	Yes
A Apt. 22	Bedroom 1	95%	100%	Yes	100	100%	100%	Yes
A Apt. 22	Bedroom 2	96%	100%	Yes	100	100%	100%	Yes
A Apt. 22	LKD	99%	100%	Yes	200	100%	100%	Yes
A Apt. 23	Bedroom 1	48%	100%	No	100	100%	100%	Yes
A Apt. 23	LKD	75%	100%	Yes	200	88%	87%	Yes
A Apt. 23	Bedroom 2	53%	100%	Yes	100	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.30: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.4.4 Apt. Block A - Third Floor

Table No. 6.31: SDA Results: Apt. Block A - Third Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
A Apt. 24	Bedroom 1	28%	100%	No	100	100%	100%	Yes
A Apt. 24	Bedroom 2	42%	100%	No	100	100%	100%	Yes
A Apt. 24	LKD	82%	100%	Yes	200	91%	90%	Yes
A Apt. 25	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
A Apt. 25	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
A Apt. 25	LKD	100%	100%	Yes	200	100%	100%	Yes
A Apt. 26	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
A Apt. 26	LKD	90%	100%	Yes	200	99%	96%	Yes
A Apt. 27	Bedroom 1	60%	100%	Yes	100	100%	100%	Yes
A Apt. 27	Bedroom 2	57%	100%	Yes	100	100%	100%	Yes
A Apt. 27	LKD	74%	100%	Yes	200	91%	88%	Yes
A Apt. 28	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
A Apt. 28	LKD	85%	100%	Yes	200	93%	93%	Yes
A Apt. 29	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
A Apt. 29	LKD	85%	100%	Yes	200	93%	93%	Yes
A Apt. 30	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
A Apt. 30	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
A Apt. 30	LKD	100%	100%	Yes	200	100%	100%	Yes
A Apt. 31	Bedroom 1	30%	100%	No	100	100%	100%	Yes
A Apt. 31	Bedroom 2	35%	100%	No	100	100%	100%	Yes
A Apt. 31	LKD	81%	100%	Yes	200	91%	90%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.31: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.4.5 Apt. Block B - Ground Floor

Table No. 6.32: SDA Results: Apt. Block B - Ground Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
B Apt. 1	Bedroom 1	0%	52%	No	100	88%	48%	Winter Only
B Apt. 1	Bedroom 2	0%	70%	No	100	100%	67%	Yes
B Apt. 1	LKD	47%	88%	No	200	65%	56%	Yes
B Apt. 2	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
B Apt. 2	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
B Apt. 2	LKD	95%	100%	Yes	200	100%	100%	Yes
B Apt. 3	Bedroom 1	59%	100%	Yes	100	100%	100%	Yes
B Apt. 3	LKD	82%	100%	Yes	200	87%	84%	Yes
B Apt. 4	Bedroom 1	23%	100%	No	100	100%	100%	Yes
B Apt. 4	LKD	54%	100%	Yes	200	74%	70%	Yes
B Apt. 5	Bedroom 1	53%	100%	Yes	100	100%	100%	Yes
B Apt. 5	LKD	55%	94%	No	200	75%	69%	Yes
B Apt. 6	Bedroom 1	65%	100%	Yes	100	100%	100%	Yes
B Apt. 6	LKD	60%	94%	No	200	82%	80%	Yes
B Apt. 7	Bedroom 1	33%	100%	No	100	100%	100%	Yes
B Apt. 7	Bedroom 2	32%	100%	No	100	100%	100%	Yes
B Apt. 7	LKD	55%	93%	No	200	71%	67%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.32: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.4.6 Apt. Block B - First Floor

Table No. 6.33: SDA Results: Apt. Block B - First Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
B Apt. 8	Bedroom 1	0%	33%	No	100	71%	31%	Winter Only
B Apt. 8	Bedroom 2	0%	58%	No	100	100%	48%	Winter Only
B Apt. 8	LKD	49%	78%	No	200	64%	55%	Yes
B Apt. 9	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
B Apt. 9	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
B Apt. 9	LKD	100%	100%	Yes	200	100%	100%	Yes
B Apt. 10	Bedroom 1	77%	100%	Yes	100	100%	100%	Yes
B Apt. 10	LKD	55%	94%	No	200	86%	81%	Yes
B Apt. 11	Bedroom 1	37%	100%	No	100	100%	100%	Yes
B Apt. 11	Bedroom 2	27%	100%	No	100	100%	100%	Yes
B Apt. 11	LKD	65%	100%	Yes	200	81%	77%	Yes
B Apt. 12	Bedroom 1	71%	100%	Yes	100	100%	100%	Yes
B Apt. 12	LKD	59%	95%	Yes	200	81%	74%	Yes
B Apt. 13	Bedroom 1	86%	100%	Yes	100	100%	100%	Yes
B Apt. 13	LKD	65%	95%	Yes	200	84%	83%	Yes
B Apt. 14	Bedroom 1	17%	100%	No	100	100%	96%	Yes
B Apt. 14	Bedroom 2	25%	100%	No	100	100%	100%	Yes
B Apt. 14	LKD	88%	100%	Yes	200	100%	99%	Yes
B Apt. 15	Bedroom 1	35%	100%	No	100	100%	100%	Yes
B Apt. 15	Bedroom 2	40%	100%	No	100	100%	100%	Yes
B Apt. 15	LKD	61%	99%	Yes	200	81%	75%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.33: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.4.7 Apt. Block B - Second Floor

Table No. 6.34: SDA Results: Apt. Block B - Second Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
B Apt. 16	Bedroom 1	27%	100%	No	100	100%	100%	Yes
B Apt. 16	Bedroom 2	32%	100%	No	100	100%	100%	Yes
B Apt. 16	LKD	67%	94%	No	200	81%	74%	Yes
B Apt. 17	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
B Apt. 17	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
B Apt. 17	LKD	100%	100%	Yes	200	100%	100%	Yes
B Apt. 18	Bedroom 1	89%	100%	Yes	100	100%	100%	Yes
B Apt. 18	LKD	53%	95%	Yes	200	87%	76%	Yes
B Apt. 19	Bedroom 1	47%	100%	No	100	100%	100%	Yes
B Apt. 19	Bedroom 2	30%	100%	No	100	100%	100%	Yes
B Apt. 19	LKD	67%	100%	Yes	200	83%	79%	Yes
B Apt. 20	Bedroom 1	80%	100%	Yes	100	100%	100%	Yes
B Apt. 20	LKD	66%	100%	Yes	200	85%	84%	Yes
B Apt. 21	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
B Apt. 21	LKD	72%	100%	Yes	200	86%	86%	Yes
B Apt. 22	Bedroom 1	30%	100%	No	100	100%	100%	Yes
B Apt. 22	Bedroom 2	42%	100%	No	100	100%	100%	Yes
B Apt. 22	LKD	91%	100%	Yes	200	100%	100%	Yes
B Apt. 23	Bedroom 1	42%	100%	No	100	100%	100%	Yes
B Apt. 23	Bedroom 2	52%	100%	Yes	100	100%	100%	Yes
B Apt. 23	LKD	70%	100%	Yes	200	87%	86%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.34: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.4.8 Apt. Block B - Third Floor

Table No. 6.35: SDA Results: Apt. Block B - Third Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
B Apt. 24	Bedroom 1	22%	100%	No	100	100%	100%	Yes
B Apt. 24	Bedroom 2	22%	100%	No	100	100%	100%	Yes
B Apt. 24	LKD	77%	100%	Yes	200	90%	88%	Yes
B Apt. 25	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
B Apt. 25	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
B Apt. 25	LKD	100%	100%	Yes	200	100%	100%	Yes
B Apt. 26	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
B Apt. 26	LKD	86%	100%	Yes	200	95%	92%	Yes
B Apt. 27	Bedroom 1	37%	100%	No	100	100%	100%	Yes
B Apt. 27	Bedroom 2	23%	100%	No	100	100%	100%	Yes
B Apt. 27	LKD	70%	100%	Yes	200	88%	84%	Yes
B Apt. 28	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
B Apt. 28	LKD	83%	100%	Yes	200	92%	91%	Yes
B Apt. 29	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
B Apt. 29	LKD	85%	100%	Yes	200	93%	93%	Yes
B Apt. 30	Bedroom 1	64%	100%	Yes	100	100%	100%	Yes
B Apt. 30	Bedroom 2	90%	100%	Yes	100	100%	100%	Yes
B Apt. 30	LKD	100%	100%	Yes	200	100%	100%	Yes
B Apt. 31	Bedroom 1	23%	100%	No	100	100%	100%	Yes
B Apt. 31	Bedroom 2	30%	100%	No	100	100%	100%	Yes
B Apt. 31	LKD	76%	100%	Yes	200	88%	88%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.35: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.4.9 Duplex A -Ground Floor

Table No. 6.36: SDA Results: Duplex A -Ground Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
DA.01	Bedroom 1	96%	100%	Yes	100	100%	100%	Yes
DA.01	LKD	93%	100%	Yes	200	100%	100%	Yes
DA.02	Bedroom 1	98%	100%	Yes	100	100%	100%	Yes
DA.02	LKD	91%	100%	Yes	200	100%	100%	Yes
DA.03	Bedroom 1	98%	100%	Yes	100	100%	100%	Yes
DA.03	LKD	89%	100%	Yes	200	100%	100%	Yes
DA.04	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.04	LKD	96%	100%	Yes	200	100%	100%	Yes
DA.05	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.05	LKD	96%	100%	Yes	200	100%	100%	Yes
DA.06	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.06	LKD	95%	100%	Yes	200	100%	100%	Yes
DA.07	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.07	LKD	96%	100%	Yes	200	100%	100%	Yes
DA.08	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.08	LKD	96%	100%	Yes	200	100%	100%	Yes
DA.09	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.09	LKD	96%	100%	Yes	200	100%	100%	Yes
DA.10	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.10	LKD	98%	100%	Yes	200	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

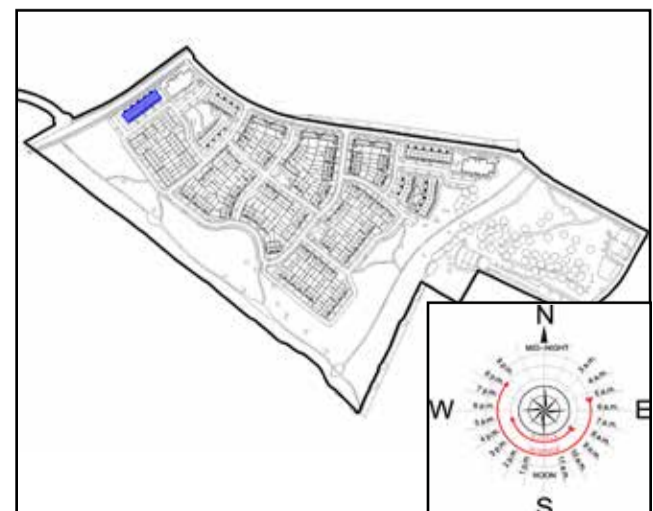


Figure 6.36: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.10 Duplex A - First Floor

Table No. 6.37: SDA Results: Duplex A - First Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
DA.11	LKD	100%	100%	Yes	200	100%	100%	Yes
DA.12	LKD	100%	100%	Yes	200	100%	100%	Yes
DA.13	LKD	100%	100%	Yes	200	100%	100%	Yes
DA.14	LKD	100%	100%	Yes	200	100%	100%	Yes
DA.15	LKD	100%	100%	Yes	200	100%	100%	Yes
DA.16	LKD	100%	100%	Yes	200	100%	100%	Yes
DA.17	LKD	100%	100%	Yes	200	100%	100%	Yes
DA.18	LKD	100%	100%	Yes	200	100%	100%	Yes
DA.19	LKD	100%	100%	Yes	200	100%	100%	Yes
DA.20	LKD	100%	100%	Yes	200	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

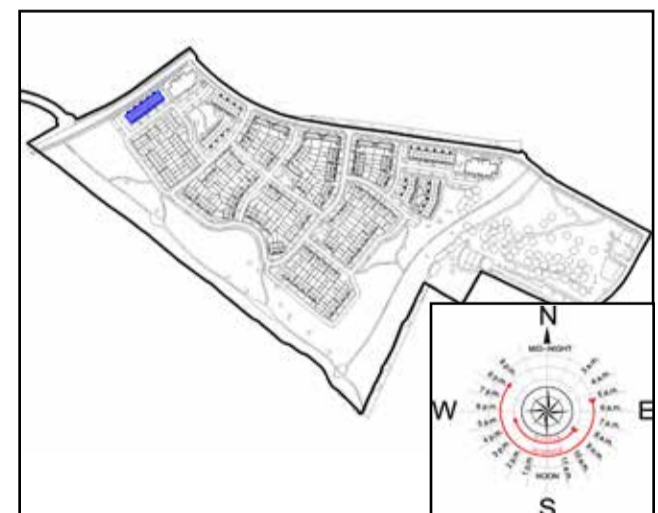
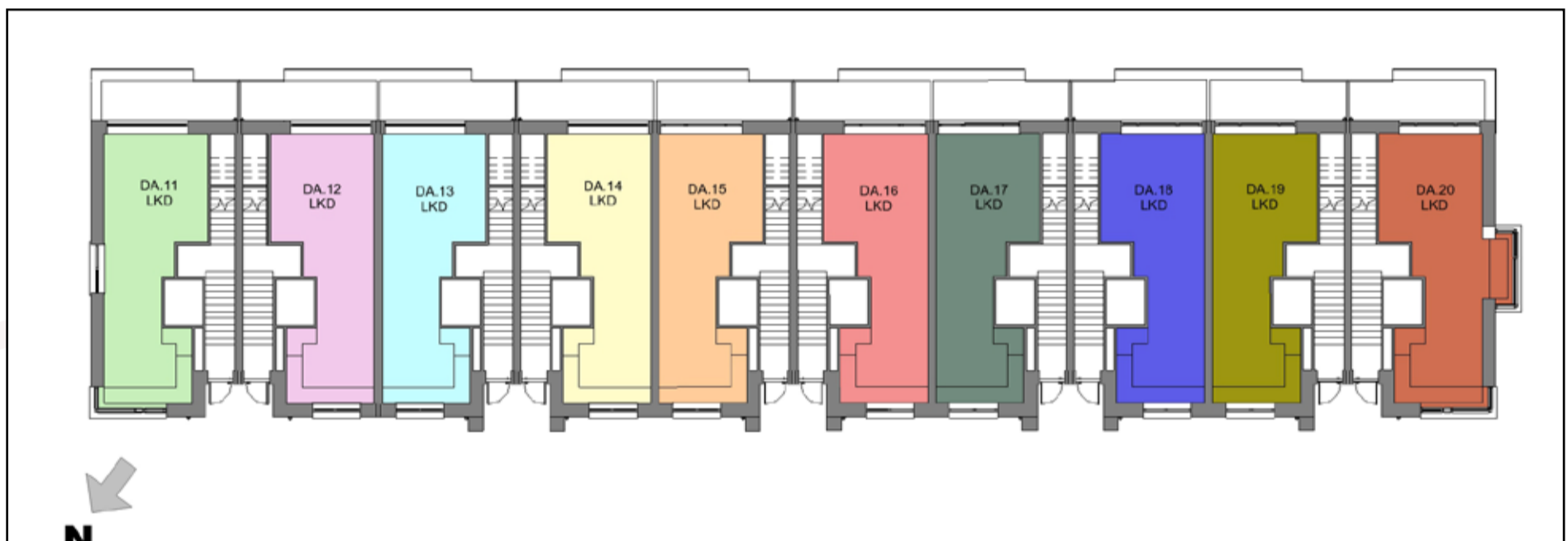


Figure 6.37: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.11 Duplex A - Second Floor

Table No. 6.38: SDA Results: Duplex A - Second Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
DA.11	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.11	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DA.12	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.12	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DA.13	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.13	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DA.14	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.14	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DA.15	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.15	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DA.16	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.16	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DA.17	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.17	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DA.18	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.18	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DA.19	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.19	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DA.20	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DA.20	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

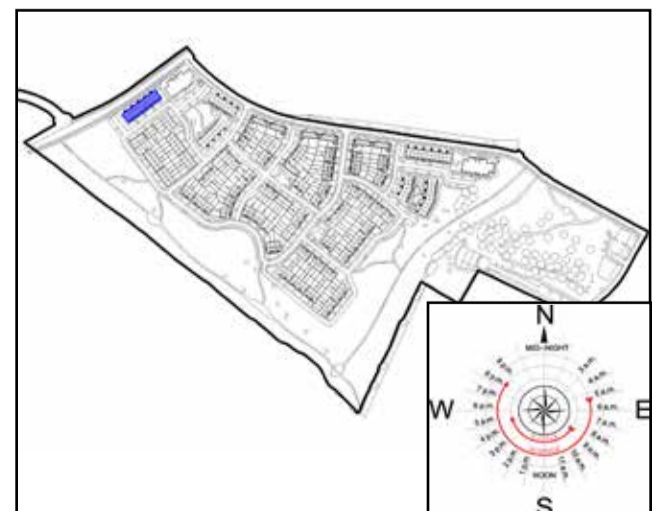
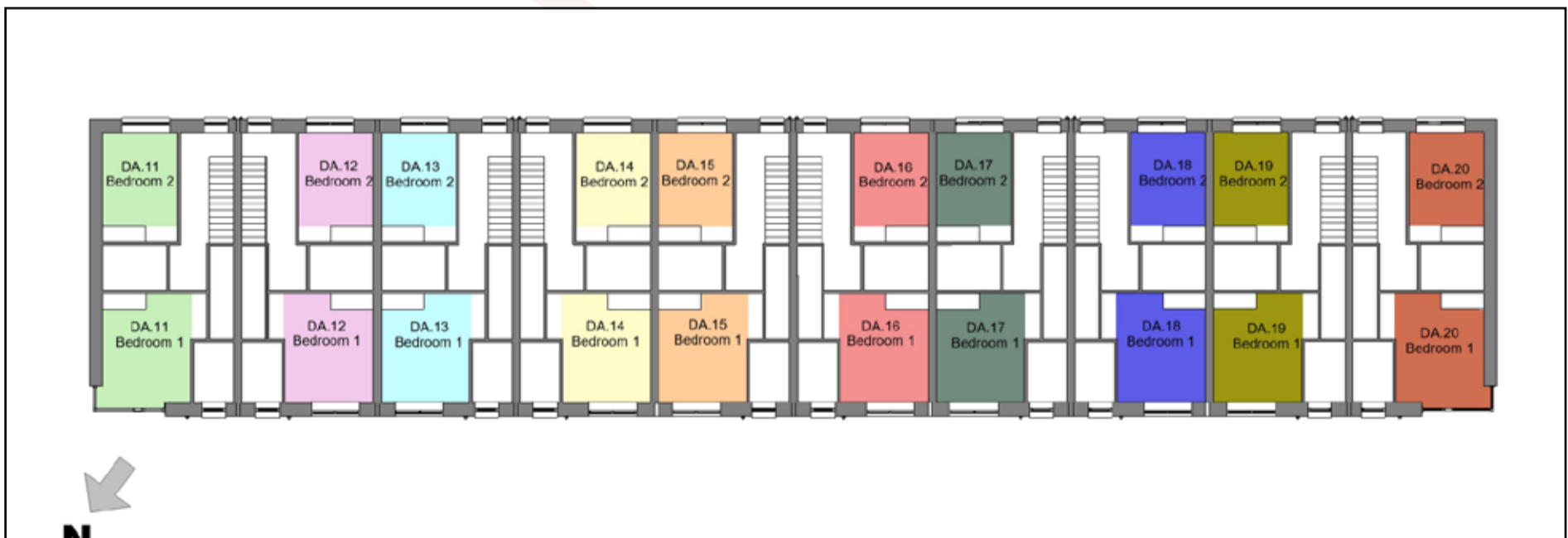


Figure 6.38: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.12 Duplex B - Ground Floor

Table No. 6.39: SDA Results: Duplex B - Ground Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
DB.01	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.01	LKD	97%	100%	Yes	200	100%	100%	Yes
DB.02	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.02	LKD	40%	100%	No	200	87%	79%	Yes
DB.03	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.03	LKD	40%	100%	No	200	97%	87%	Yes
DB.04	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.04	LKD	2%	100%	No	200	75%	31%	Winter Only
DB.05	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.05	LKD	23%	100%	No	200	93%	66%	Yes
DB.06	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.06	LKD	41%	100%	No	200	95%	85%	Yes
DB.07	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.07	LKD	39%	100%	No	200	100%	87%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

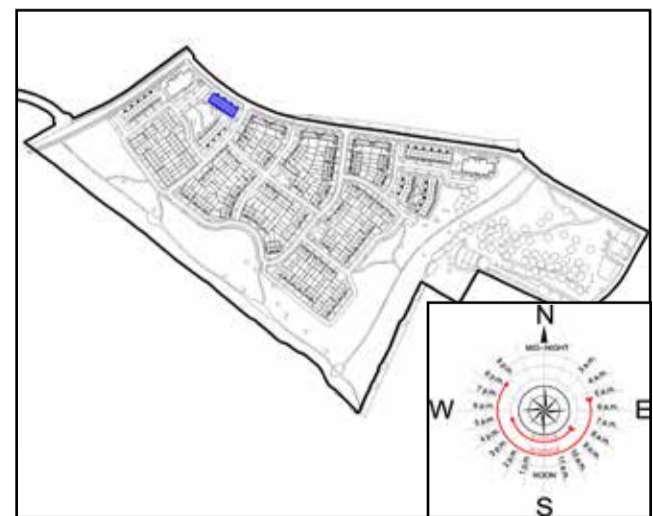


Figure 6.39: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.13 Duplex B - First Floor

Table No. 6.40: SDA Results: Duplex B - First Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
DB.08	LKD	100%	100%	Yes	200	100%	100%	Yes
DB.09	LKD	68%	100%	Yes	200	100%	100%	Yes
DB.10	LKD	50%	100%	Yes	200	100%	80%	Yes
DB.11	LKD	55%	100%	Yes	200	100%	87%	Yes
DB.12	LKD	83%	100%	Yes	200	100%	100%	Yes
DB.13	LKD	97%	100%	Yes	200	100%	100%	Yes
DB.14	LKD	100%	100%	Yes	200	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.40: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.14 Duplex B - Second Floor

Table No. 6.41: SDA Results: Duplex B - Second Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
DB.08	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.08	Bedroom 2	98%	100%	Yes	100	100%	100%	Yes
DB.09	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.09	Bedroom 2	92%	100%	Yes	100	100%	100%	Yes
DB.10	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.10	Bedroom 2	46%	100%	No	100	100%	100%	Yes
DB.11	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.11	Bedroom 2	73%	100%	Yes	100	100%	100%	Yes
DB.12	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.12	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DB.13	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.13	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DB.14	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DB.14	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

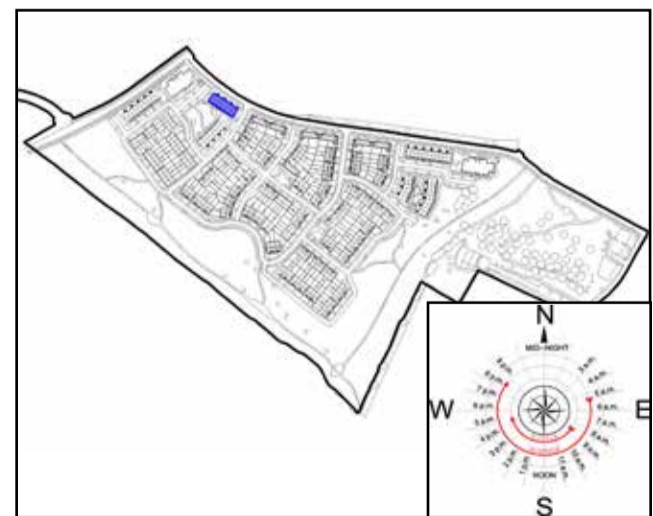


Figure 6.41: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.15 Duplex C - Ground Floor

Table No. 6.42: SDA Results: Duplex C - Ground Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
DC.01	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.01	LKD	64%	100%	Yes	200	99%	99%	Yes
DC.02	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.02	LKD	59%	100%	Yes	200	95%	94%	Yes
DC.03	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.03	LKD	52%	100%	Yes	200	96%	92%	Yes
DC.04	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.04	LKD	49%	100%	No	200	94%	91%	Yes
DC.05	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.05	LKD	49%	100%	No	200	93%	89%	Yes
DC.06	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.06	LKD	48%	100%	No	200	92%	88%	Yes
DC.07	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.07	LKD	41%	100%	No	200	89%	80%	Yes
DC.08	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.08	LKD	25%	100%	No	200	75%	65%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

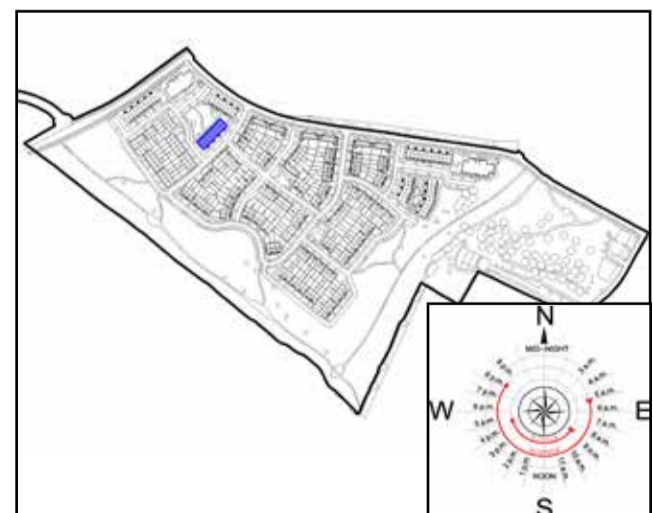
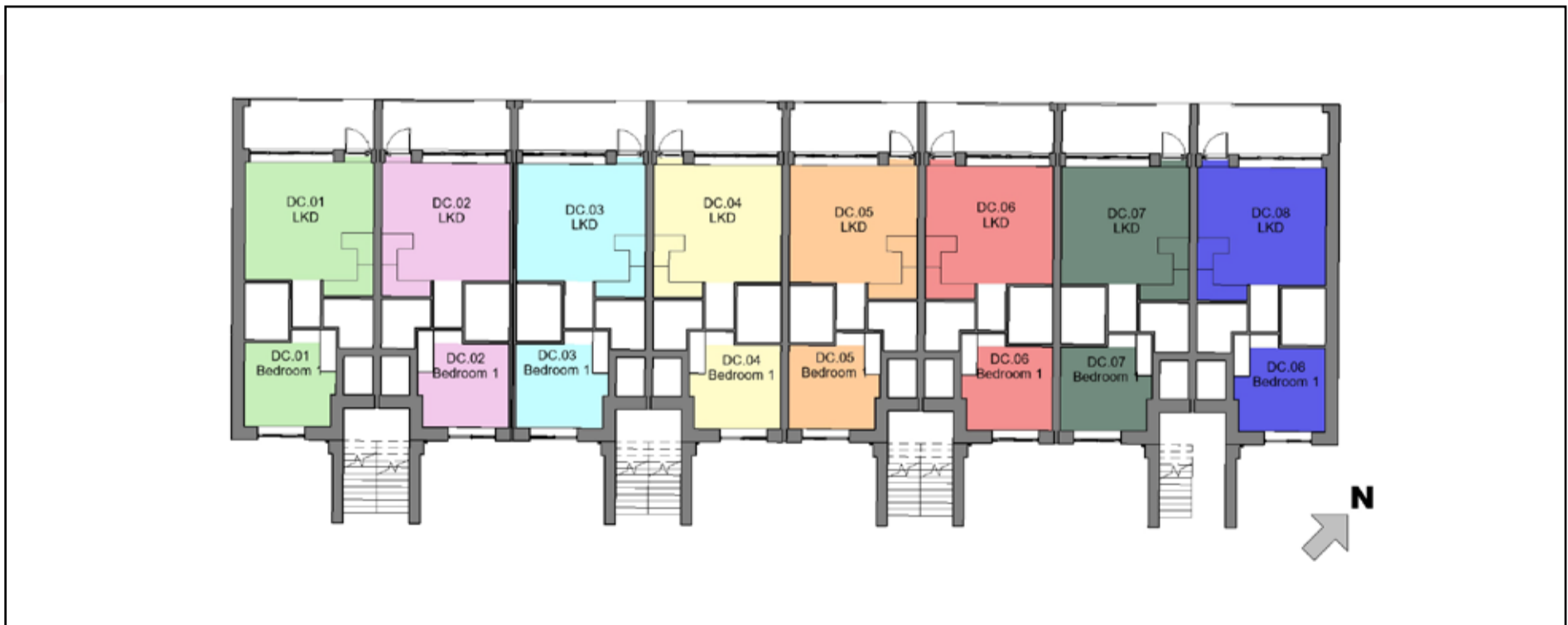


Figure 6.42: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.16 Duplex C - First Floor

Table No. 6.43: SDA Results: Duplex C - First Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
DC.09	LKD	100%	100%	Yes	200	100%	100%	Yes
DC.10	LKD	100%	100%	Yes	200	100%	100%	Yes
DC.11	LKD	95%	100%	Yes	200	100%	100%	Yes
DC.12	LKD	97%	100%	Yes	200	100%	100%	Yes
DC.13	LKD	100%	100%	Yes	200	100%	100%	Yes
DC.14	LKD	100%	100%	Yes	200	100%	100%	Yes
DC.15	LKD	92%	100%	Yes	200	100%	100%	Yes
DC.16	LKD	100%	100%	Yes	200	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

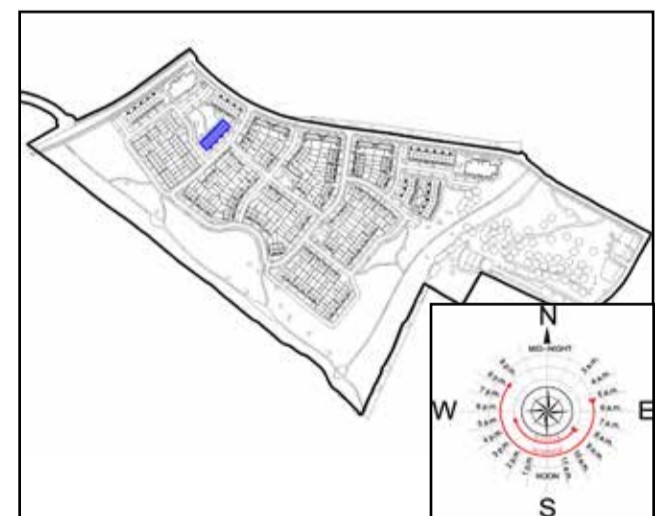


Figure 6.43: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.17 Duplex C - Second Floor

Table No. 6.44: SDA Results: Duplex C - Second Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
DC.09	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.09	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DC.10	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.10	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DC.11	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.11	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DC.12	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.12	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DC.13	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.13	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DC.14	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.14	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DC.15	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.15	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DC.16	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DC.16	Bedroom 2	98%	100%	Yes	100	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

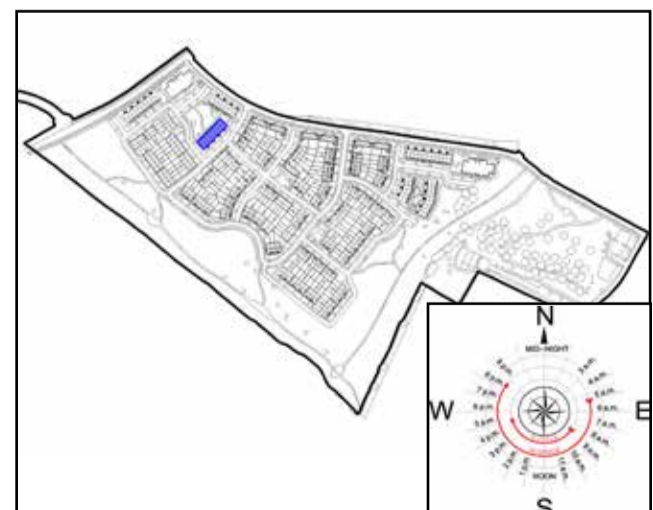
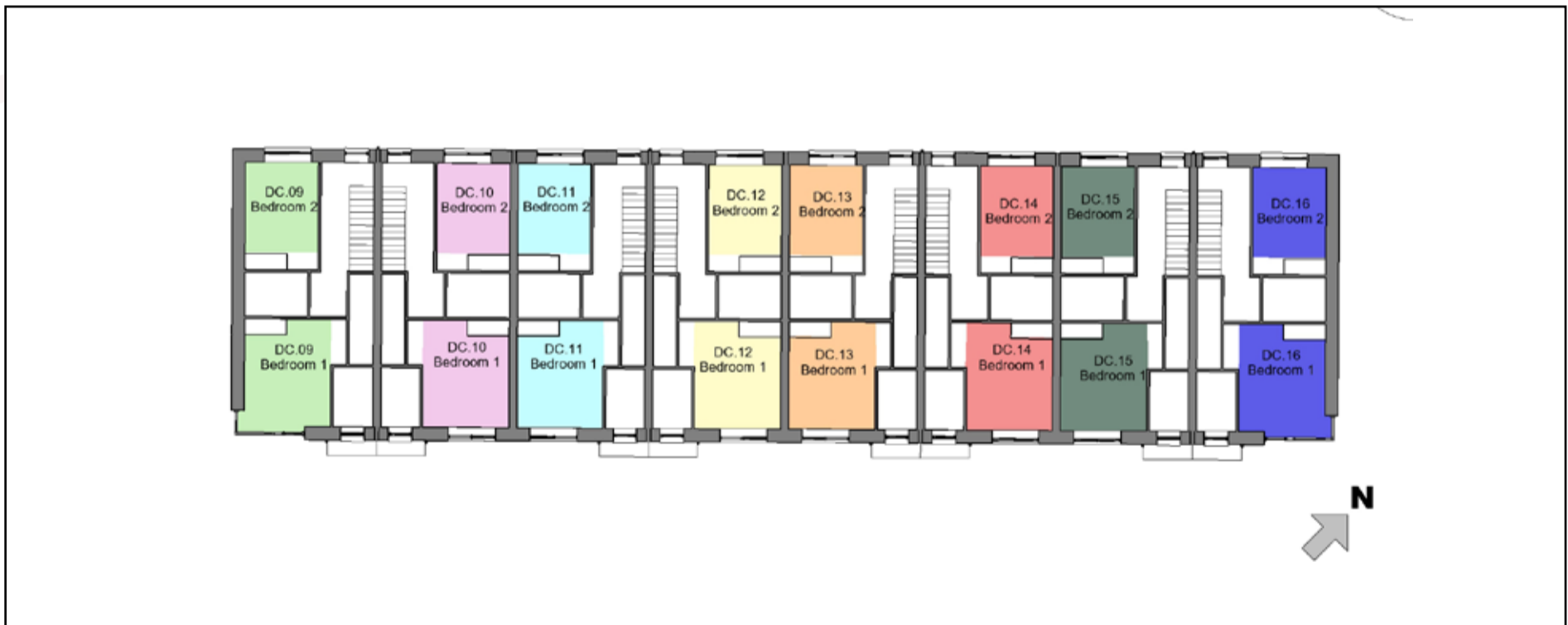


Figure 6.44: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.18 Duplex D - Ground Floor

Table No. 6.45: SDA Results: Duplex D - Ground Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
DD.01	Bedroom 1	40%	100%	No	100	100%	100%	Yes
DD.01	LKD	93%	100%	Yes	200	100%	100%	Yes
DD.02	Bedroom 1	87%	100%	Yes	100	100%	100%	Yes
DD.02	LKD	94%	100%	Yes	200	100%	100%	Yes
DD.03	Bedroom 1	92%	100%	Yes	100	100%	100%	Yes
DD.03	LKD	94%	100%	Yes	200	100%	100%	Yes
DD.04	Bedroom 1	94%	100%	Yes	100	100%	100%	Yes
DD.04	LKD	90%	100%	Yes	200	100%	100%	Yes
DD.05	Bedroom 1	94%	100%	Yes	100	100%	100%	Yes
DD.05	LKD	80%	100%	Yes	200	100%	100%	Yes
DD.06	Bedroom 1	75%	100%	Yes	100	100%	100%	Yes
DD.06	LKD	86%	100%	Yes	200	100%	100%	Yes
DD.07	Bedroom 1	88%	100%	Yes	100	100%	100%	Yes
DD.07	LKD	91%	100%	Yes	200	100%	100%	Yes
DD.08	Bedroom 1	85%	100%	Yes	100	100%	100%	Yes
DD.08	LKD	91%	100%	Yes	200	100%	100%	Yes
DD.09	Bedroom 1	94%	100%	Yes	100	100%	100%	Yes
DD.09	LKD	90%	100%	Yes	200	100%	100%	Yes
DD.10	Bedroom 1	98%	100%	Yes	100	100%	100%	Yes
DD.10	LKD	94%	100%	Yes	200	100%	100%	Yes
DD.11	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DD.11	LKD	100%	100%	Yes	200	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

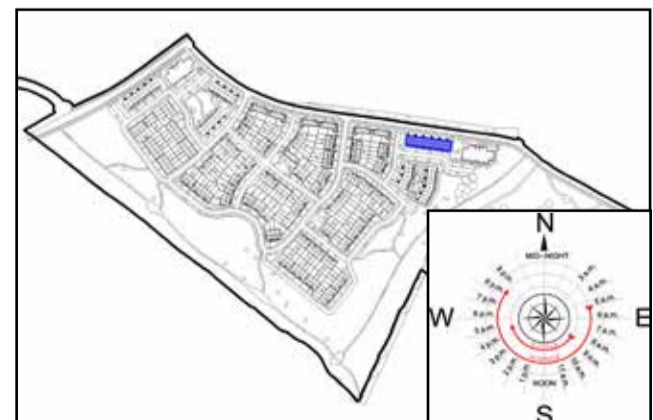


Figure 6.45: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.19 Duplex D - First Floor

Table No. 6.46: SDA Results: Duplex D - First Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
DD.12	LKD	100%	100%	Yes	200	100%	100%	Yes
DD.13	LKD	96%	100%	Yes	200	100%	100%	Yes
DD.14	LKD	100%	100%	Yes	200	100%	100%	Yes
DD.15	LKD	100%	100%	Yes	200	100%	100%	Yes
DD.16	LKD	99%	100%	Yes	200	100%	100%	Yes
DD.17	LKD	95%	100%	Yes	200	100%	100%	Yes
DD.18	LKD	100%	100%	Yes	200	100%	100%	Yes
DD.19	LKD	98%	100%	Yes	200	100%	100%	Yes
DD.20	LKD	100%	100%	Yes	200	100%	100%	Yes
DD.21	LKD	100%	100%	Yes	200	100%	100%	Yes
DD.22	LKD	100%	100%	Yes	200	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.46: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.20 Duplex D - Second Floor

Table No. 6.47: SDA Results: Duplex D - Second Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
DD.12	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DD.12	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DD.13	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DD.13	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DD.14	Bedroom 1	95%	100%	Yes	100	100%	100%	Yes
DD.14	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DD.15	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DD.15	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DD.16	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DD.16	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DD.17	Bedroom 1	99%	100%	Yes	100	100%	100%	Yes
DD.17	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DD.18	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DD.18	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DD.19	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DD.19	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DD.20	Bedroom 1	99%	100%	Yes	100	100%	100%	Yes
DD.20	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DD.21	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DD.21	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DD.22	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DD.22	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

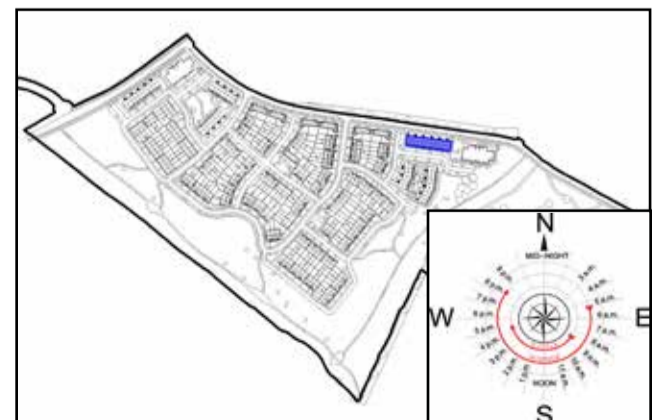


Figure 6.47: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.21 Duplex E - Ground Floor

Table No. 6.48: SDA Results: Duplex E - Ground Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
DE.01	Bedroom 1	98%	100%	Yes	100	100%	100%	Yes
DE.01	LKD	39%	100%	No	200	63%	59%	Yes
DE.02	Bedroom 1	97%	100%	Yes	100	100%	100%	Yes
DE.02	LKD	19%	74%	No	200	36%	30%	No
DE.03	Bedroom 1	91%	100%	Yes	100	100%	100%	Yes
DE.03	LKD	5%	40%	No	200	26%	16%	No
DE.04	Bedroom 1	93%	100%	Yes	100	100%	100%	Yes
DE.04	LKD	22%	74%	No	200	37%	31%	No
DE.05	Bedroom 1	94%	100%	Yes	100	100%	100%	Yes
DE.05	LKD	26%	96%	No	200	46%	39%	No
DE.06	Bedroom 1	98%	100%	Yes	100	100%	100%	Yes
DE.06	LKD	36%	100%	No	200	68%	63%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

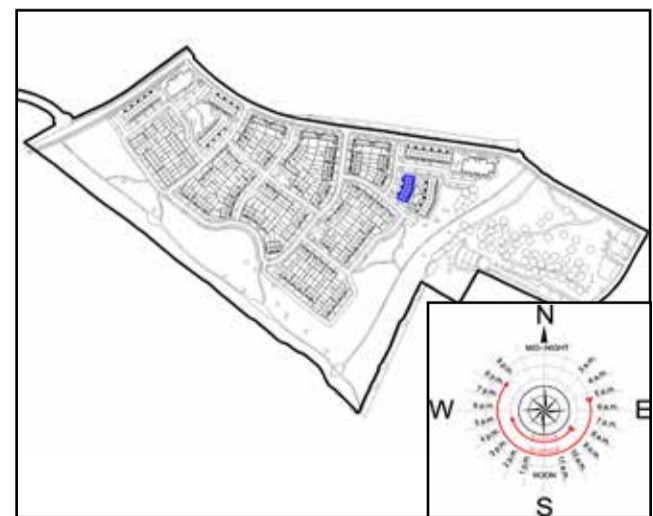
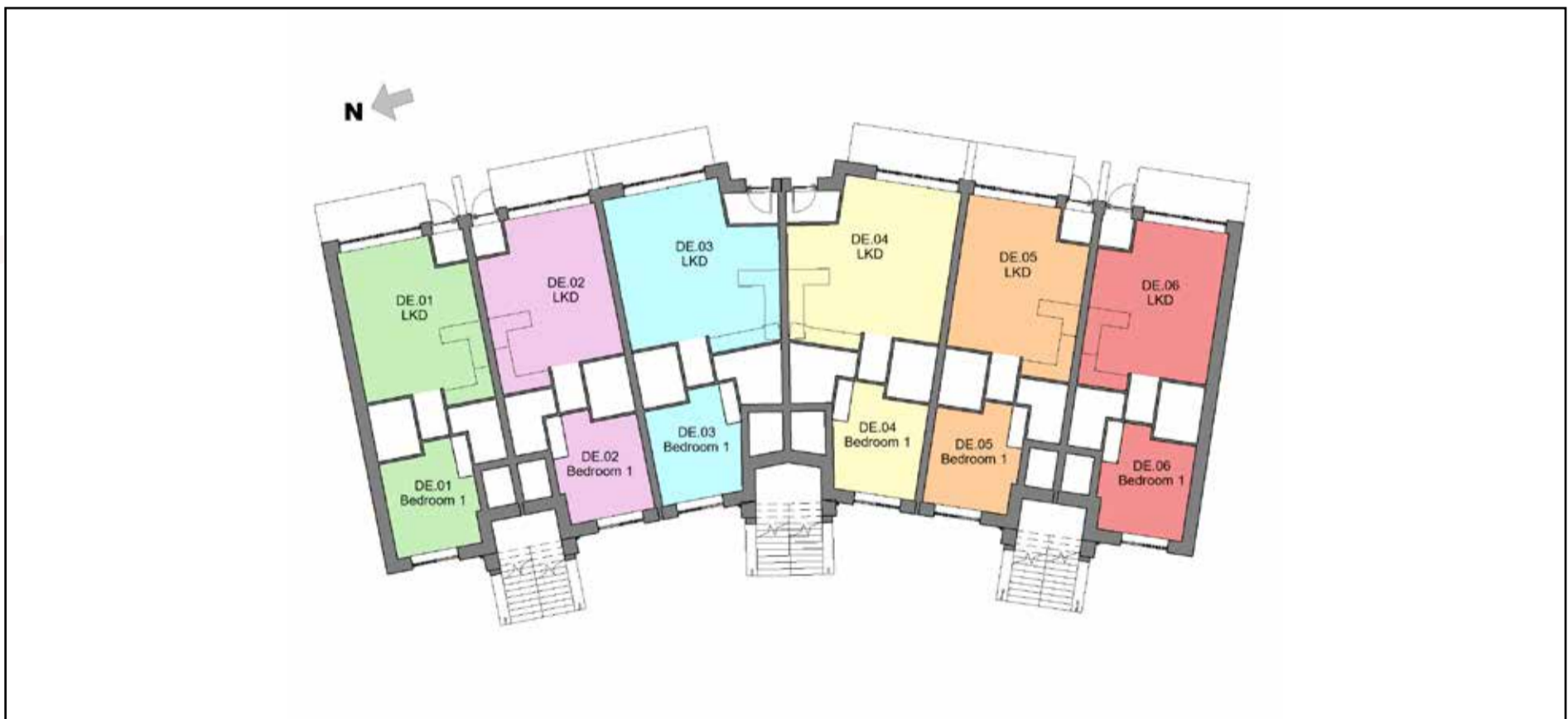


Figure 6.48: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.22 Duplex E - First Floor

Table No. 6.49: SDA Results: Duplex E - First Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
DE.07	LKD	100%	100%	Yes	200	100%	100%	Yes
DE.08	LKD	77%	100%	Yes	200	100%	100%	Yes
DE.09	LKD	60%	100%	Yes	200	100%	98%	Yes
DE.10	LKD	75%	100%	Yes	200	100%	100%	Yes
DE.11	LKD	86%	100%	Yes	200	100%	100%	Yes
DE.12	LKD	100%	100%	Yes	200	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

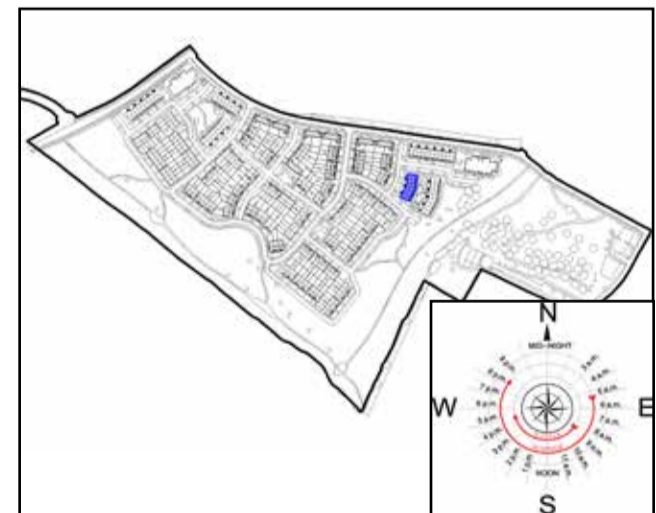


Figure 6.49: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.23 Duplex E - Second Floor

Table No. 6.50: SDA Results: Duplex E - Second Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
DE.07	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DE.07	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DE.08	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DE.08	Bedroom 2	98%	100%	Yes	100	100%	100%	Yes
DE.09	Bedroom 1	95%	100%	Yes	100	100%	100%	Yes
DE.09	Bedroom 2	76%	100%	Yes	100	100%	100%	Yes
DE.10	Bedroom 1	94%	100%	Yes	100	100%	100%	Yes
DE.10	Bedroom 2	99%	100%	Yes	100	100%	100%	Yes
DE.11	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DE.11	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DE.12	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DE.12	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

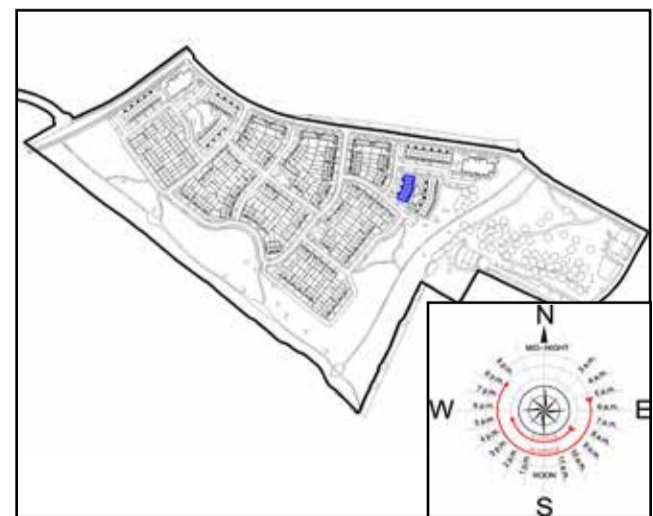


Figure 6.50: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.24 Duplex F - Ground Floor

Table No. 6.51: SDA Results: Duplex F - Ground Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		Meets BRE 209 Criteria*
						Winter**	Summer**	
DF.01	Bedroom 1	93%	100%	Yes	100	100%	100%	Yes
DF.01	LKD	77%	100%	Yes	200	100%	98%	Yes
DF.02	Bedroom 1	40%	100%	No	100	100%	100%	Yes
DF.02	LKD	81%	100%	Yes	200	100%	100%	Yes
DF.03	Bedroom 1	23%	100%	No	100	100%	96%	Yes
DF.03	LKD	78%	100%	Yes	200	100%	100%	Yes
DF.04	Bedroom 1	14%	88%	No	100	100%	76%	Yes
DF.04	LKD	74%	100%	Yes	200	100%	97%	Yes
DF.05	Bedroom 1	14%	72%	No	100	100%	61%	Yes
DF.05	LKD	81%	100%	Yes	200	100%	100%	Yes
DF.06	Bedroom 1	37%	100%	No	100	100%	100%	Yes
DF.06	LKD	85%	100%	Yes	200	100%	100%	Yes
DF.07	Bedroom 1	50%	100%	Yes	100	100%	100%	Yes
DF.07	LKD	81%	100%	Yes	200	100%	99%	Yes
DF.08	Bedroom 1	72%	100%	Yes	100	100%	100%	Yes
DF.08	LKD	71%	100%	Yes	200	100%	100%	Yes
DF.09	Bedroom 1	86%	100%	Yes	100	100%	100%	Yes
DF.09	LKD	100%	100%	Yes	200	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

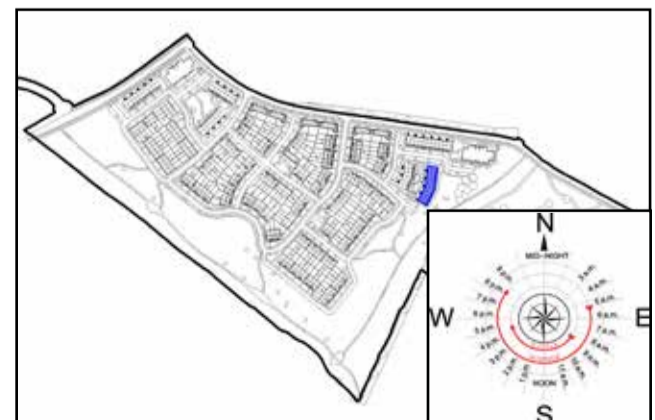


Figure 6.51: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.25 Duplex F - First Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
DF.10	LKD	100%	100%	Yes	200	100%	100%	Yes
DF.11	LKD	87%	100%	Yes	200	100%	100%	Yes
DF.12	LKD	79%	100%	Yes	200	100%	100%	Yes
DF.13	LKD	76%	100%	Yes	200	100%	99%	Yes
DF.14	LKD	61%	97%	Yes	200	81%	71%	Yes
DF.15	LKD	77%	100%	Yes	200	100%	100%	Yes
DF.16	LKD	93%	100%	Yes	200	100%	100%	Yes
DF.17	LKD	93%	100%	Yes	200	100%	100%	Yes
DF.18	LKD	89%	100%	Yes	200	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.

** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage. The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.



Figure 6.52: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.26 Duplex F - Second Floor

Table No. 6.53: SDA Results: Duplex F - Second Floor

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
DF.10	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DF.10	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DF.11	Bedroom 1	91%	100%	Yes	100	100%	100%	Yes
DF.11	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DF.12	Bedroom 1	79%	100%	Yes	100	100%	100%	Yes
DF.12	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DF.13	Bedroom 1	68%	100%	Yes	100	100%	100%	Yes
DF.13	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DF.14	Bedroom 1	53%	100%	Yes	100	100%	100%	Yes
DF.14	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DF.15	Bedroom 1	62%	100%	Yes	100	100%	100%	Yes
DF.15	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DF.16	Bedroom 1	85%	100%	Yes	100	100%	100%	Yes
DF.16	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DF.17	Bedroom 1	100%	100%	Yes	100	100%	100%	Yes
DF.17	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes
DF.18	Bedroom 1	95%	100%	Yes	100	100%	100%	Yes
DF.18	Bedroom 2	100%	100%	Yes	100	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

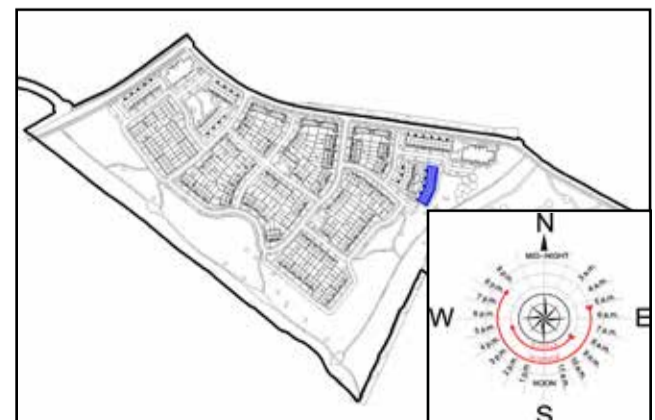


Figure 6.53: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).

6.4.27 Creche - Ground and First Floors

Table No. 6.54: SDA Results: Creche - Ground and First Floors

Unit Number	Room Description	I.S. EN 17037			BRE 209			Meets BRE 209 Criteria*
		% of area above 300 Lux (recommendation >50%)	% of area above 100 Lux (recommendation >95%)	Meets I.S. EN 17037 Criteria*	Target Lux*	% of area above target Lux* (recommendation >50%)		
						Winter**	Summer**	
Creche	Classroom 01	100%	100%	Yes	150	100%	100%	Yes
Creche	Classroom 02	58%	98%	Yes	150	95%	95%	Yes
Creche	Classroom 03	89%	100%	Yes	150	100%	100%	Yes
Creche	Classroom 04	100%	100%	Yes	150	100%	100%	Yes
Creche	Classroom 05	100%	100%	Yes	150	100%	100%	Yes
Creche	Classroom 06	100%	100%	Yes	150	100%	100%	Yes
Creche	Classroom 07	96%	100%	Yes	150	100%	100%	Yes
Creche	Kitchen-Dining	100%	100%	Yes	200	100%	100%	Yes

* For information regarding the criteria under the various guidelines including target Lux please refer to section 4.4 on page 12.
 ** Under the BRE 209 study the SDA has been calculated with deciduous trees represented with both winter and summer foliage.
 The SDA circa compliance rates across the entire scheme can be found in section 7.1.3 on page 80.

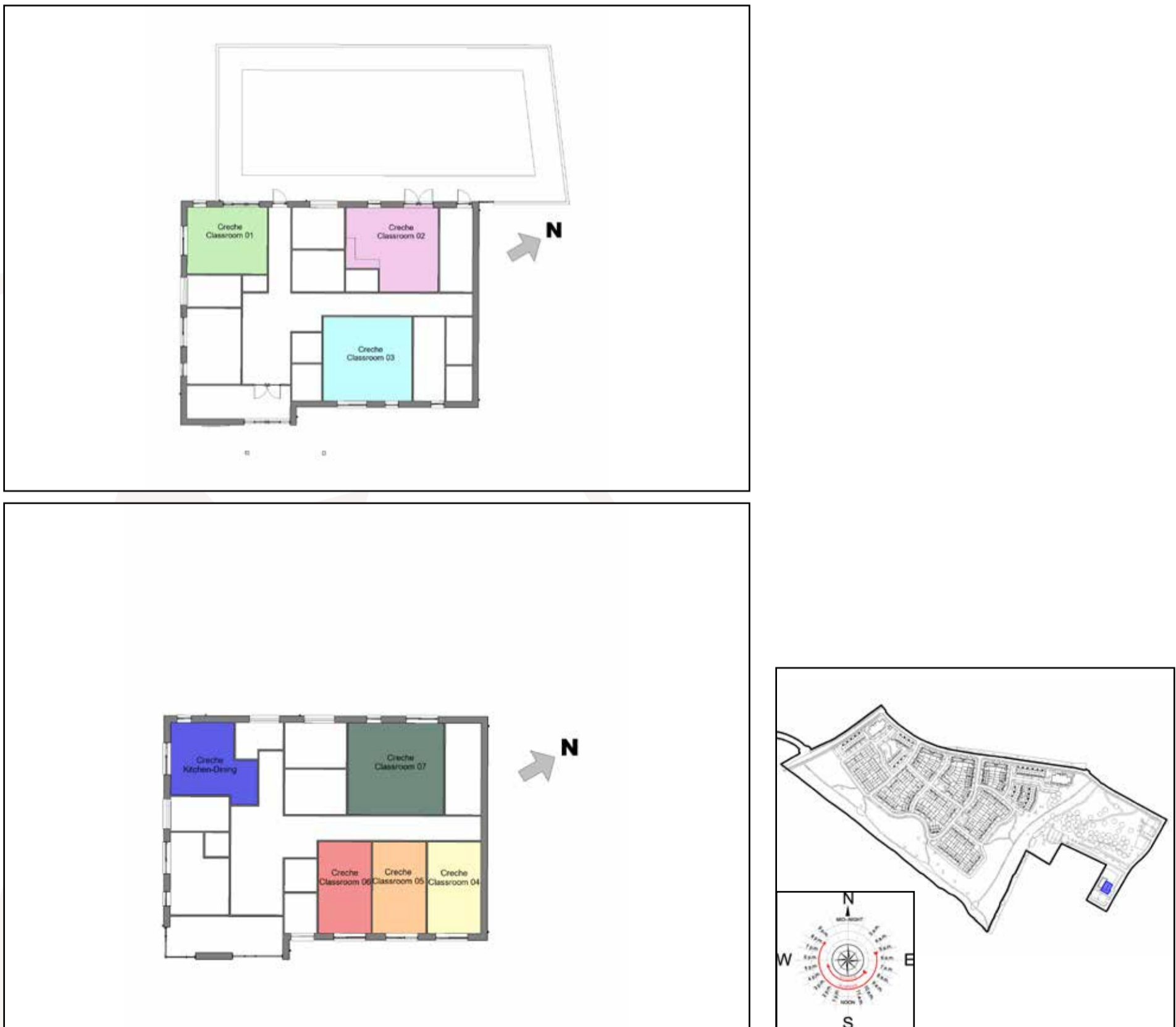


Figure 6.54: Floor plans of assessed building (L), Keyplan highlighting the assessed building (R).

7.0 Analysis of Results

Results were generated and analysed for the following studies:

- Sun On Ground in Proposed Gardens/Amenity Spaces
 - 14 No. spaces in the proposed development.
- Sunlight Exposure in proposed units
 - 164 No. units in the proposed development.
- Spatial Daylight Autonomy in proposed habitable rooms
 - 415 No. rooms in the proposed development.

7.1 Analysis of Scheme Performance Results

7.1.1 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 14 No. spaces have been assessed, all of which would meet the criteria as set out in the BRE Guidelines.

The complete results for the study on sunlighting in the proposed outdoor amenity spaces can be found in section 6.1 on page 26.

A visual representation of these readings can be seen in the false colour plan in section 6.1 and in the hourly shadow diagrams for March 21st in section 5.5.1 on page 17.

7.1.2 Sunlight Exposure (SE)

A sunlight exposure assessment has been carried out on all habitable rooms of the apartment blocks and duplex units within the proposed development with deciduous trees represented both as opaque objects and removed from the model.

In total 164 no. units have been assessed. Using the rationale explained in section 3.2 on page 8, the level of sunlight exposure for 80-95 no. units is considered *high*, 23-32 no. *medium*, 22-23 no. have reached the *minimum* recommendation with 24-29 below the *minimum* recommendation.

The SE assessment has shown that circa ~82% - 85% of the proposed units meet the criteria for sunlight exposure as set out in the BRE Guidelines.

Whilst, the criterion applies to rooms of all orientations, it should be noted that if a room faces significantly north of due east or west it is unlikely to be met. As such, it is not always possible to achieve full compliance, especially in developments that contain single aspect units. In this case, the single aspect units tested within the proposed development are all meeting the guidelines for the SE. This should be regarded as a very favourable outcome. **Note:** As previously stated, for a unit to be compliant under BRE 209, only one habitable room within the unit needs to meet the guideline values.

It is important to note that the assessed rooms on the ground floor units of the Duplex D block, which are failing to meet the guidelines for the test on March 21st, have yielded compliant results when tested on 1st of February (optional testing date for the SE as per BRE guidelines). This proves that these units can be considered compliant and will receive sufficient sunlight in months when the sun is lower in the sky such as the winter months, when it is more scarce, therefore more valuable.

No recommendation is made regarding the performance of a development as a whole for SE performance, but 3DDB consider the proposed development to perform favourably in this regard.

The complete results for the study on SE in the habitable rooms of the proposed units can be seen in section 6.3 on page 28.

7.1.3 Spatial Daylight Autonomy (SDA)

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

This proposed blocks assessed in this study consists of 164 no. units, which makes up approximately 415 no. habitable rooms.

Under the criteria as set out in the BRE 209, the SDA value in ~407-411 no. habitable rooms meet or exceed their target values in the summer and winter time calculations respectively. This gives a compliance rate of ~98% - 99% for the tested rooms. 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. This test has been carried out with the summer trees state. As such, the number of rooms achieving compliance is 341, giving a reduced compliance rate of ~82% for the tested rooms.

With regards to internal daylighting, Section 6.7 of the Sustainable Urban Housing: Design Standards for New Apartments December 2020, states the following:

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

Where rooms are compliant with the criteria of BRE 209 and non-compliant with I.S. EN 17037, it could be considered that this is due to the exceptionally high standards required to achieve compliance with I.S. EN 17037 rather than an indication of insufficient daylight.

Based on the above statements, compensatory measures have been incorporated into the design of the proposed development where rooms do not achieve the daylight provision targets in accordance with the standards they were assessed against within the primary study (BRE 209).

The following list indicates all units / rooms that do not achieve the recommended level of daylight with regards to BRE 209 and the compensatory design measure for each:

Block B Apt.1, Bedroom 1:

- *The unit itself is more than 10% larger than the minimum standard for a 2 Bed unit (81 sqm vs 73 sqm).*

Block B Apt. 8, Bedroom 1 & Bedroom 2:

- *The unit itself is more than 10% larger than the minimum standard for a 2 Bed unit (81 sqm vs 73 sqm).*

Duplex B, DB.04, LKD:

- *Larger terraces have been provided to all Ground Floor Duplex units to compensate for underperforming units.*
- *Glass entrance doors are being provided.*

Duplex E, (DE.02, LKD), (DE.03, LKD), (DE.04, LKD), (DE.05, LKD)

- *Larger terraces have been provided to all Ground Floor Duplex units to compensate for underperforming units.*
- *Glass entrance doors are being provided.*

The complete results for the study on SDA can be seen in section 6.4 on page 53.

8.0 Conclusion

3D Design Bureau (3DDB) were commissioned to carry out a daylight assessment, sunlight assessment and shadow study for SHD Moygaddy, Maynooth, Co. Meath.

No impact assessment has been carried out for this report as there are no properties that are in close proximity to the proposed development when using the rationale as stated in section "1.0 Executive Summary" on page 3.

The scheme performance assessment for this report has quantified the level of daylight and sunlight in the apartment blocks and duplexes units within the proposed development.

The daylight study has yielded very positive results in the assessed blocks, with a compliance rate ranging from ~98% to ~99% for the SDA in both 'winter' and 'summer trees' states. The scheme was initially tested under the BRE 2nd edition for the pre-application stage and circa compliance rate for the ADF was 94%. Notwithstanding the different metric now used for daylighting in buildings (SDA), and therefore a direct comparison to the original ADF is not feasible, the design interventions after the pre app stage, have resulted in higher compliance rates.

Future residents will also have access to external amenity areas capable of receiving excellent levels of sunlight with a reasonable percentage of proposed assessed units achieving at least the minimum recommendation for Sunlight Exposure.

We would like to reiterate the basis of the guidance given in BRE 209, which states:

"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."

It is the opinion of 3D Design Bureau, that the proposed development serves as a good example of well designed scheme with regard to daylight & sunlight access. Notwithstanding the fact there is an expectation of this for such a green field site, the proposed scheme still requires thought in design to achieve high compliance rates for SDA and full compliance for sunlighting to open amenity areas.