

Proposed BTR and Student Accommodation Located at Canal Banks, Pa Healy Road/Park Road, Limerick

Daylight and Sunlight Assessment Report

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1.0 Executive Summary

1.1 Summary of Assessment

3D Design Bureau were commissioned by Revington Lands Limited to carry out a comprehensive BRE daylight and sunlight assessment, along with an accompanying shadow study for the proposed BTR and student accommodation located at Canal Banks, Pa Healy Road/Park Road, Co. Limerick.

The assessment has been broken down into the following two main categories, of which there are sub categories summarised further below:

- Impact assessment on the surrounding environment and properties, which includes VSC, APSH and sunlighting analysis. The effects were assessed in the baseline state versus the proposed state.
- Scheme Performance: Daylight and sunlight assessment of the proposed development, which includes sunlighting to the proposed amenity spaces and internal daylighting (ADF) to the habitable rooms.

The impact assessment that was carried out for the purpose of this report has studied the potential levels of effect the surrounding existing environment and/or properties would sustain should the proposed development be built as proposed.

This impact assessment covered the following categories:

- Effect on daylight (VSC) to surrounding properties. The effect to the VSC of the windows of the following neighbouring properties was assessed:
 - **Mondello, Park Road**
 - **Saint Anthony's, Park Road**
 - **Winander House, Park Road**
 - **Saint Joseph's, Park Road**
- Effect on sunlight (APSH) to surrounding properties. The effect to the APSH (annual and winter) of the windows of the following neighbouring properties was assessed:
 - **Mondello, Park Road**
 - **Saint Anthony's, Park Road**
 - **Winander House, Park Road**
 - **Saint Joseph's, Park Road**
- Effect on sunlight to surrounding external amenity spaces such as gardens:
 - **Mondello, Park Road**
 - **Saint Anthony's, Park Road**
 - **Winander House, Park Road**
 - **Saint Joseph's, Park Road**

The surrounding context was carefully considered to ensure all properties and amenity spaces that may potentially experience a level of effect were included in the study. The scheme is performing well with regard to the BRE guidelines.

The daylight and sunlight assessment of the proposed development includes an analysis of the levels of sunlight to the proposed amenity spaces, as well as access to daylight (ADF) in the habitable rooms of the proposed units within the development. All external amenity spaces as identified by the architect were assessed for sunlight. The ADF assessment has been carried out on the ground and first floors of each block. Note: Typically, ADF values increase in rooms located on higher floor levels, due to a lesser obstruction from adjacent obstructions. Where a room does not meet the guidelines for ADF, it was assessed on subsequent higher floors to show at what level the rooms will meet the target value.

Please see section 1.2 on page 5 for a detailed breakdown of results.



Figure 1.1: Scope of surrounding properties and environment assessed.

1.2 Results Overview

Should the development be built as proposed, the following effects will be experienced.

Effect to Vertical Sky Component (VSC) on neighbouring properties:

- Windows Assessed: 11 No.
 - Imperceptible: 11 No. (100%)

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

- Windows Assessed: 11 No.
 - Imperceptible: 11 No. (100%)

Effect to Annual Probable Sunlight Hours (APSH) Winter Study:

- Windows Assessed: 11 No.
 - Imperceptible: 11 No. (100%)

Sunlighting to existing neighbouring gardens:

- Gardens Assessed: 4 No.
 - Gardens meeting the guidelines: 4 No. (100%)

Sunlighting to proposed amenity area:

- Areas Assessed: 2 No.
 - Meeting the guidelines: 2 No. (100%)

Average Daylight Factor (ADF) of internal proposed development:

- Rooms assessed: 409 No. (Total No. across the development is 3079 No.)

With ADF target value of 2.0% applied to LKDs:

- Rooms meeting the guidelines: 3037 No.
- Rooms not meeting the guidelines: 42 No.
- Compliance rate: 99%

With ADF target value of 1.5% applied to LKDs:

- Rooms meeting the guidelines: 3079 No.
- Rooms not meeting the guidelines: 0 No.
- Compliance rate: 100%

2.0 Glossary

2.1 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.

Existing Baseline Model State

The development site in its existing state. The proposed development has not been included. This model state has been used when generating the baseline results for all the existing neighbouring properties.

Proposed Development Model State

The proposed development has been modelled into the existing environment. This model state has been used when assessing the effect of the proposed development on the existing neighbouring properties, as well as assessments carried out within the proposed development itself.

Vertical Sky Component (VSC)

Ratio of that part of illuminance, at a point on a given vertical plane, that is received directly from an overcast sky model, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. Usually the 'given vertical plane' is the outside of a window wall. The VSC does not include reflected light, either from the ground or from other buildings.

Annual Probable Sunlight Hours (APSH) / Winter Probable Sunlight Hours (WPSH)

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

It can be defined as the ratio between the annual or winter sunlight hours in a specific location, and the hours of sunlight an assessment point on a window actually receives.

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

Average Daylight Factor (ADF)

Ratio of total daylight flux incident on the working plane to the area of the working plane, expressed as a percentage of the outdoor illuminance on a horizontal plane due to an unobstructed overcast sky model.

Thus a 1% ADF would mean that the average indoor illuminance would be one hundredth the outdoor unobstructed illuminance.

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 500 mm from the room boundaries.

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.

2.2 Definition of Effects

In order to categorise the varying degrees of compliance with the BRE Guidelines when assessing the effect a proposed development would have on the daylight and sunlight of an existing property, 3DDB have assigned numerical values to the levels of effect as listed in 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' prepared by the Environmental Protection Agency (Draft of 2017), and to Directive 2011/92/EU (as amended by Directive 2014/52/EU).

The list of definitions given below is taken from Table 3.3: Descriptions of Effects contained in the draft 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' prepared by the Environmental Protection Agency. Some comment is also given below on what these definitions might imply in the case of sunlight access.

Note: There are many factors to be taken into consideration when determining levels of effect. We have included typical numerical values that we have used when assigning levels of effect. These values should not be applied rigidly, but rather as a guide. Circumstances may occur that lead to flexibility being sought in our interpretation of these definitions. Such cases are always explained in the Analysis of Results section, if and when they occur.

Imperceptible

An effect capable of measurement but without significant consequences. For the purposes of this Sunlight and Daylight Assessment Report an "imperceptible" level of effect will be stated if the level of effect is within the criteria as recommended in the BRE Guidelines and the applied target value has been achieved.

Not Significant

An effect which causes noticeable changes in the character of the environment but without significant consequences. For the purposes of this Sunlight and Daylight Assessment Report, a "not significant" level of effect will be stated if the level of effect is marginally outside of the criteria as stated in the BRE Guidelines. Typically a "not significant" level of effect will be applied if the level of daylight or sunlight is reduced to between 90-99% of the applied target value.

Slight

An effect which causes noticeable changes in the character of the environment without affecting its sensitivities. For the purposes of this Sunlight and Daylight Assessment Report, a "slight" level of effect will be stated if the level of daylight or sunlight is reduced to between 75-90% of the applied target value.

Moderate

An effect that alters the character of the environment in a manner that is consistent with existing and emerging trends. For the purposes of this Sunlight and Daylight Assessment Report, a "moderate" level of effect will be stated if the level of daylight or sunlight is reduced to between 50-75% of the applied target value. A "moderate" level of effect would be quite typical in instances where a proposed development is planned on an under-developed plot of land. The level of daylight and/or sunlight of an assessed property is reduced in a manner that is consistent with similar properties in the immediate surrounding area.

Significant

An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment. For the purposes of this Sunlight and Daylight Assessment Report a "significant" level of effect will be stated if the proposed development reduces the availability of daylight or sunlight of a neighbouring property to a low level. Typically a "significant" level of effect will be stated if the level of daylight or sunlight is reduced to between 30-50% of the applied target value.

Very Significant

An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment. For the purposes of this Sunlight and Daylight Assessment Report a "very significant" level of effect will be stated if the proposed development reduces the availability of daylight or sunlight of a neighbouring property to a very low level. Typically a "very significant" level of effect will be stated if the level of daylight or sunlight is reduced to between 10-30% of the applied target value.

Profound

An effect which obliterates sensitive characteristics. For the purposes of this Sunlight and Daylight Assessment Report, a "profound" level of effect will only be stated if the proposed development reduces the availability of daylight or sunlight of a neighbouring property to a level that is less than 10% of the applied target value.

Positive Effect

In relation to sunlight or daylight access, it is conceivable that there could be positive effects, but this implies that a development would involve a reduction of the size or scale of built form (e.g. such as the demolition of a building, which might result in an increase in sunlight access). Though that is possible, it is usually unlikely as most development involves the construction of new obstructions to sunlight access.

2.3 Index of Tables

2.3.1 Vertical Sky Component

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

Table No. 2.1: Example of VSC Table						
Window Number	Baseline VSC Value	Proposed VSC Value	Ratio of Proposed VSC to Baseline VSC	Recommended Minimum VSC	Level of Compliance with BRE Guidelines	Effect of Proposed Development
House Number/Floor						
A	B	C	D	E	F	G

A: Window Number

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

B: Baseline VSC Value

The *Baseline VSC Value* represents the VSC value of the assessed window is calculated in the existing baseline model state (as explained in the “Glossary” on page 6).

C: Proposed VSC Value

The *Proposed VSC Value* represents the VSC value of the assessed window calculated in the proposed model state (as explained in the “Glossary” on page 6).

D: Ratio of Proposed VSC to Baseline VSC

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

E: Recommended minimum VSC

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

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

F: Level of Compliance with the BRE Guidelines

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

G: Effect of Proposed Development

The levels of effect in this column describe the effect an assessed window will experience, based on its compliance with the *BRE Target Value*. The levels of effect used in this report have regard to the ‘*Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*’ prepared by the Environmental Protection Agency (Draft of 2017), and to *Directive 2011/92/EU (as amended by Directive 2014/52/EU)* and a full list can be found in “*Definition of Effects*” on page 7.

2.3.2 Annual/Winter Probable Sunlight Hours

Below is an example of the table used to describe the effect on APSH/WPSH.

Table No. 2.2: Example of APSH/WPSH Table						
Window Number	Baseline APSH/WPSH	Proposed APSH/WPSH	Ratio of Proposed to Baseline APSH/WPSH	Recommended Minimum APSH/WPSH	Level of Compliance with BRE Guidelines	Effect of Proposed Development
House Number/Floor						
A	B	C	D	E	F	G

A: Window Number

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

B: Baseline APSH/WPSH

The *APSH/WPSH Value* represents percentage of the probable sunlight hours that the assessed window can receive, calculated in the existing baseline model state (as explained in the “Glossary” on page 6). The annual and winter assessments will be represented in separate tables.

C: Proposed APSH/WPSH

The *Proposed APSH/WPSH Value* represents the percentage of probable sunlight hours that the assessed window can receive, calculated in the proposed model state (as explained in the “Glossary” on page 6).

D: Ratio of Proposed to Baseline APSH/WPSH

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

E: Recommended Minimum APSH/WPSH

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

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

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

F: Level of Compliance with BRE Guidelines

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

G: Effect of Proposed Development

The levels of effect in this column describe the effect an assessed window will experience, based on its compliance with the *BRE Target Value*. The levels of effect used in this report have regard to the ‘*Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*’ prepared by the Environmental Protection Agency (Draft of 2017), and to *Directive 2011/92/EU (as amended by Directive 2014/52/EU)* and a full list can be found in “*Definition of Effects*” on page 7.

2.3.3 Sunlighting

Existing Gardens and Amenity Spaces

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

Table No. 2.3: Example of Sunlighting Table for Existing Gardens/Amenity Spaces						
Address	% of Area to Receive Above 2 Hours Sunlight on March 21st (Target >50%)				Level of Compliance with BRE Guidelines	Effect of Proposed Development
	Baseline	Proposed	Ratio of Proposed to Baseline	Recommended Minimum as per BRE Guidelines		
A	B	C	D	E	F	G

A: Address

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

B: Baseline

Baseline represents percentage of the assessed space's area that can receive more than 2 hours of sunlight on March 21st, calculated in the existing baseline model state (as explained in the "Glossary" on page 6).

C: Proposed

Proposed represents percentage of the assessed space's area that can receive more than 2 hours of sunlight on March 21st, calculated in the proposed model state (as explained in the "Glossary" on page 6).

D: Ratio of Proposed to Baseline

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

E: Recommended Minimum as per the BRE Guidelines

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

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

F: Level of BRE Compliance

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

G: Effect of Proposed Development

The levels of effect in this column describe the effect an assessed garden or amenity space will experience, based on its compliance with the *BRE Target Value*. The levels of effect used in this report have regard to the 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' prepared by the Environmental Protection Agency (Draft of 2017), and to Directive 2011/92/EU (as amended by Directive 2014/52/EU) and a full list can be found in "Definition of Effects" on page 7.

Proposed Gardens and Amenity Spaces

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

Table No. 2.4: Example of Sunlighting Table for Proposed Gardens/Amenity Spaces			
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.

2.3.4 Average Daylight Factor

Below is an example of the table used to describe the daylight factor in proposed units.

Table No. 2.5: Example of ADF Results Table		
Unit Number	Room Description	Predicted ADF Value
A	B	C

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: Predicted ADF Value

The average daylight factor calculated for an assessed room.

3.0 Assessment Overview

3.1 Development Description

Revington Lands Limited, intend to apply to An Bord Pleanala for permission for a strategic housing development consisting of a mixed-use development of build-to-rent apartments, student apartments incorporating common areas, café and 3no retail units, creche and management facilities building, and dwelling houses at Canal Bank, Pa Healy Road, Limerick.

The development will consist of a 4ha area bounded by City Canal to the north, Pa Healy Road to the south and Park Road to the west, Canal Bank, Limerick, including;

- Demolition of existing 530m² warehouse building on site.
 - **Block 1** - Student accommodation building of 8,238m² stepped from three to six storeys, with ground floor café of 144.60m² and 3 no. retail units facing onto Pa Healy road of 86.59m² each, with 9 no. two bedroom, 37 no. three bedroom, and 15 no. four bedroom student apartments, totalling 189 bed spaces, ancillary laundry, refuse and enclosed communal courtyard with landscaping and bicycle storage;
 - **Block 2** - A residential apartment building of 6,013.25m² with eight storeys and two penthouse storeys, total ten storeys containing 10 no. studio, 1 no. one bedroom and 52 no. two-bedroom apartments;
 - **Block 3** - A residential apartment building of 8,107.10m² with six storeys and two penthouse storeys, total eight storeys containing 16 no. studio, 9 no. one bedroom, and 63 no. two-bedroom apartments;
 - **Block 4** - A residential apartment building of 3,869.18m² with six storeys and one penthouse storey, total seven storeys containing 7 no. studio, 13 no. one bedroom and 25 no. two-bedroom apartments;
 - **Block 5** - A residential apartment building of 5,849.40m² with six storey and one penthouse storey total seven storeys containing 14 no. studio, 15 no. one bedroom and 37 no. two-bedroom apartments;
 - **Block 6** - A residential apartment building of 3,869.18m² with six storeys and one penthouse storey, total seven storeys containing 7 no. studio, 13 no. one bedroom and 25 no. two-bedroom apartments;
 - **Block 7** - A residential apartment building of 4,962m² with five storeys and one penthouse storey, total six storeys containing 12 no. studio, 13 no. one bedroom and 31 no. two-bedroom apartments;
- Community facilities building of 1,336.90m² and three storeys with creche, café, management offices, gymnasium for apartment occupiers of 392m² and common accommodation for use by apartment dwellers;
- 18 no. Executive Houses - Consisting of 2 no. detached four-bedroom houses of 194.62m² each and 16 no. terraced four-bedroom houses of 177.82m² each, with off street parking to front separate from communal parking;
- 149 Car parking spaces throughout the development and 420 secured bicycle parking spaces throughout the development;
- Ancillary works comprising; new vehicular entrance onto Pa Healy Road, pedestrian and cycle links to Pa Healy road, Park road and City Canal, bin storage for all developments adjacent to all entrances, New public park of 0.5ha along city canal, communal open space and communal roof gardens for all apartments, all ancillary drainage, civil and landscape works, public lighting within estate and Electricity Sub-station to rear of Block 1.

3.2 Guidelines

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 Guidelines for Planning Authorities*. 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 (the BRE Guidelines)*.

Prior to the publication of the apartment guidelines in December 2020 a European Standard had been published *EN 17037 Daylight in Buildings*. Furthermore, British authorities have published and adopted a national annex to the European standards, *BS EN 17037*. Neither *EN 17037* nor *BS EN 17037* are referenced in the 2020 apartment guidelines and to the best of our knowledge is not referenced in any planning guidance document issued by Irish planning authorities. The BRE Guidelines have not been withdrawn. 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.

Neither the British Standard, European Standard, British annex to the European standard nor the BRE Guide set out rigid standards or limits. 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).

3.3 Effect on Vertical Sky Component (VSC)

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

To ensure a neighbouring property is not adversely affected, the Vertical Sky Component (also referred to as VSC) is calculated and assessed. VSC can be defined as the amount of skylight that falls on a vertical wall or window.

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

The BRE Guidelines state that if the VSC is:

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

In this assessment, the VSC of the centre point on each of the assessed windows will be calculated, both in the 'baseline state' and in the 'proposed state'. The baseline state reflects the current VSC of the window, the proposed state will determine what the VSC of the window would be if the proposed development is built as planned.

A comparison between these values will determine the level of effect.

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

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

The results for the study on the effect on VSC caused by the proposed development can be seen in section 5.1 on page 18.

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

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

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

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

As with the VSC study, the APSH/WPSH will be calculated in the baseline state and the proposed state. A comparison of the results will determine the level of effect.

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

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

The results of the study on APSH can be found in Section 5.2 on page 19.

3.5 Effect on Sunlighting in Existing Gardens/Amenity Areas

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 nighttime are of approximately equal duration on this date.

The percentage of assessed areas which can receive two hours or more of direct sunlight on March 21st will be calculated in both the baseline and proposed states. A comparison between these values will determine the

level of effect.

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

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

The results of the study on effect on sunlight the neighbouring gardens (including a visual representation in the form of 2-hour false colour plans) can be found in Section 5.3 on page 21.

3.6 Sunlighting in Proposed Outdoor Amenity Areas

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 nighttime are of approximately equal duration on this date.

The portion of each space capable of receiving 2 hours of direct sunlight on March 21st will be calculated individually, these figures will then be combined to give the development average.

The results for the study on sunlighting in the proposed outdoor amenity areas (including a visual representation in the form of 2-hour false colour plans) can be found in section 5.4 on page 22.

3.7 Shadow Study

A shadow study has been carried out on the baseline existing model state and the proposed model state. 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 23.

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.

3.8 Average Daylight Factor (ADF)

The BRE Guidelines define the Average Daylight Factor as the average illuminance on the working plane in a room, divided by the illuminance on an unobstructed horizontal surface outdoors.

In housing, the working plane is considered to be 850 mm above the finished floor level and is offset 500 mm from the room boundaries.

BS 8206-2:2008 Code of Practice for Daylighting recommends an ADF of 5% for a well day lit space where no additional electric lighting is available, and 2% for a partly daylight space with supplementary electric lighting.

In terms of housing, BS 8206-2:2008, as referenced in the BRE Guidelines, also gives minimum values of ADF. These recommendations are considered to be the minimum value of ADF required for the following habitable spaces:

- 2% for kitchens;
- 1.5% for living rooms;
- 1% for bedrooms.

This study has assessed the Average Daylight Factor (ADF) received in all habitable rooms across the ground and first floors of the proposed development.

Typically, ADF values increase in rooms located on higher floor levels, due to an improved relationship with adjacent obstructions. Where a room meets the guidelines for ADF, it can be reasonably assumed that similar rooms on subsequent floors will also meet the guidelines.

In an instance where a room does not achieve the recommended level of ADF, and is repeated on subsequent floors, calculations was run on the upper floors to determine at what level that room type meets the guidelines.

A combination of the calculated results and reasonable inference made from these results will be used to give an approximate compliance rate for the ADF for the proposed development as a whole. Where ADF compliance rates are stated both target values for LKDs (2% and 1.5%) have been considered. The appropriate ADF target value for LKDs is at the discretion of the planning authority.

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

For definition of spaces and target values applied, please see the methodology section of this report in section 4.0 on page 15.

The results for the study on ADF can be seen in section 6.5 on page 49.

4.0 Methodology

4.1 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.

OCA Architects supplied 3DDB with DWGs of the proposed development, which was 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.

Normally trees and shrubs do not need to be included in the studies carried out in this report, partly because their shapes are almost impossible to predict, and partly because the dappled shade of a tree is more pleasant than the deep shadow of a building (this applies especially to deciduous trees). Where a dense belt or group of evergreens is specifically planned as a windbreak or for privacy purposes, it is better to include their shadow in the calculation of shaded area. If and when trees have been included as part of the study, it will be clearly stated.

Baseline

The baseline state reflects the existing environment. It includes the surrounding context and the subject site in their current standing. This includes any structures that are to be demolished as part of this application.

Proposed

The proposed state reflects the subject site if the development is built as proposed. This includes the demolishing of structures, landscaping etc.

4.2 Generating Results

The 3D models as stated above were brought into specialist software packages using state of the art daylight and sunlight analysis methods developed by 3DDB.

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

4.2.1 VSC

Assessment Criteria

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

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

Assessment Points

The assessment points for measuring VSC or APSH are taken from the centre point of a standard window.

If the window being assessed is a full height window, the assessment point is taken at 1600 mm above the finished floor level.

If it can be determined that multiple windows are servicing the same room, each window will be assessed and the average value will be taken.

4.2.2 APSH/WPSH

Effect on Annual/Winter Probable Sunlight Hours (APSH/WPSH) has been calculated on the windows assessed in the VSC study. The BRE Guidelines suggest that windows with an orientation within 90 degrees of due south should be assessed. Therefore, the APSH/WPSH of windows that do not have an orientation within 90° of due south have not been assessed for the purposes of this report.

The assessment points for APSH/WPSH are equivalent to the VSC study.

4.2.3 Sunlighting

Assessment Criteria

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

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.

4.2.4 ADF

Recommended Minimum ADF

The recommended minimum for Average Daylight Factor (ADF) is based on the function of the room being assessed.

The recommendations as per the BS 8206-2:2008 are as follows: 2% for kitchens; 1.5% for living rooms; and 1% for bedrooms. BS 8206-2:2008 also recommends that where a room serves more than one purpose, such as the modern day apartment design of the living/kitchen/dining (LKD) space, the minimum average daylight factor should be taken for the room with the highest value.

Notwithstanding this advice, an ADF target value of 1.5% should be considered appropriate for LKDs within this assessment. The rationale for this departure from the recommended minimum ADF of 2%, is in recognition that the primary function of LKDs within apartment developments is typically that of a living space. Should full compliance for the higher target value 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 ADF values. The appropriate ADF target value for LKDs is at the discretion of the planning authority, for which there is precedent in applying the 1.5%.

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 the BS 8206-2:2008. In such instances, 3DDB have applied a target value they deem to be appropriate.

Defining Areas

Where rooms include a winter garden, the winter garden is deemed to be an extension to the interior space and will be included in the assessed area of the room.

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 ADF results in section "5.6 Average Daylight Factor" on page 32.

Work Plane

The calculation of ADF is carried out on a hypothetical work plane which lies 850 mm from the finished floor level in residential units and 700 mm in academic and office spaces. The work plane is offset 500 mm from the room boundaries. Room boundaries are taken from the inside face of the interior walls and the centre line of any main external windows.

The Daylight Factor (DF) percentage has been calculated on the work plane across a series of points on a grid of approximately 100 mm.

The average of these figures determines the Average Daylight Factor (ADF).

Material Palette

Unless a material palette is provided by the architect the following values have been assumed for ADF calculations.

Object	Material	Reflectance	Object	Material	Reflectance
					Transmittance
Exterior walls	Standard Brick	0.3	Interior Walls	Off white paint	0.75
	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

Assumed Values

Typically, ADF values increase in rooms located on higher floor levels, due to an improved relationship with adjacent obstructions. Where a room meets the guidelines for ADF, it can be reasonably assumed that similar rooms on subsequent floors will also meet the guidelines.

In an instance where a room does not achieve the recommended level of ADF, and is repeated on subsequent floors, calculations will be run on the upper floors to determine at what level that room type meets the guidelines.

A combination of the calculated results and reasonable inference made from these results will be used to give an approximate compliance rate for the ADF for the proposed development as a whole. Where ADF compliance rates are stated both target values for LKDs (2% and 1.5%) have been considered. The appropriate ADF target value for LKDs is at the discretion of the planning authority.

4.2.5 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.



5.0 Results

5.1 Effect on Vertical Sky Component

5.1.1 Mondello/Saint Anthony's/Winander House/Saint Joseph's, Park Road

Table No. 5.1: VSC Results: Mondello/Saint Anthony's/Winander House/Saint Joseph's, Park Road						
Window Number	Baseline VSC Value	Proposed VSC Value	Ratio of Proposed VSC to Baseline VSC	Recommended minimum VSC*	Level of Compliance with BRE Guidelines	Effect of Proposed Development**
Mondello, Park Road						
Ma	35.65%	31.24%	0.88	27.00%	BRE Compliant	Imperceptible
Mb	37.11%	32.14%	0.87	27.00%	BRE Compliant	Imperceptible
Mc	38.20%	32.27%	0.84	27.00%	BRE Compliant	Imperceptible
Saint Anthony's, Park Road						
Sa	38.54%	31.12%	0.81	27.00%	BRE Compliant	Imperceptible
Sb	38.69%	30.81%	0.80	27.00%	BRE Compliant	Imperceptible
Sc	38.36%	29.96%	0.78	27.00%	BRE Compliant	Imperceptible
Winander House, Park Road						
Wa	37.16%	27.10%	0.73	27.00%	BRE Compliant	Imperceptible
Wb	39.40%	31.61%	0.80	27.00%	BRE Compliant	Imperceptible
Wc	39.36%	31.58%	0.80	27.00%	BRE Compliant	Imperceptible
Saint Joseph's, Park Road						
Ja	36.98%	28.16%	0.76	27.00%	BRE Compliant	Imperceptible
Jb	34.91%	27.25%	0.78	27.00%	BRE Compliant	Imperceptible

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

** For the interpretation of level of effects please refer to "2.2 Definition of Effects" on page 7.

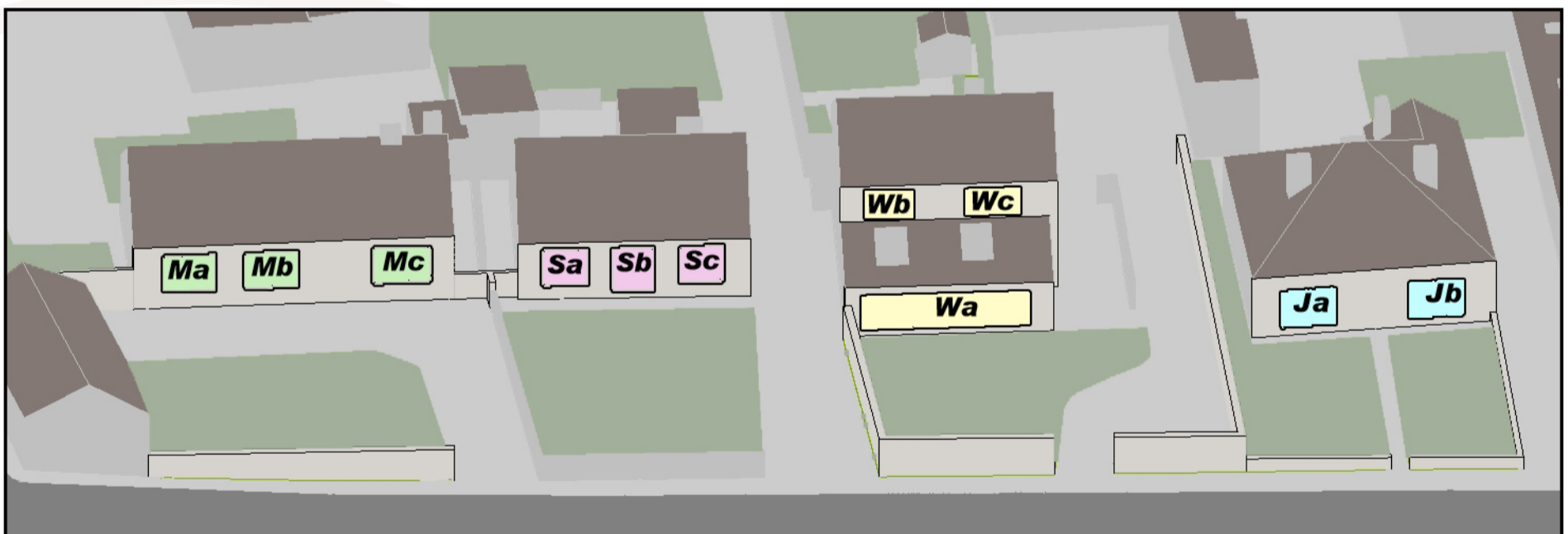


Figure 5.1: Top- Highlighted areas indicate the position of assessed windows., Bottom - Aerial view of assessed location.



5.2 Effect on Annual Probable Sunlight Hours

5.2.1 Mondello/Saint Anthony's/Winander House/Saint Joseph's, Park Road

Annual

Table No. 5.2: Annual APSH Results; Mondello/Saint Anthony's/Winander House/Saint Joseph's, Park Road						
Window Number	Baseline APSH	Proposed APSH	Ratio of Proposed APSH to Baseline APSH	Recommended minimum APSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Mondello, Park Road						
Ma	48.8%	40.1%	0.82	25.0%	BRE Compliant	Imperceptible
Mb	50.3%	40.5%	0.81	25.0%	BRE Compliant	Imperceptible
Mc	51.2%	39.6%	0.77	25.0%	BRE Compliant	Imperceptible
Saint Anthony's, Park Road						
Sa	50.2%	35.7%	0.71	25.0%	BRE Compliant	Imperceptible
Sb	50.2%	35.2%	0.70	25.0%	BRE Compliant	Imperceptible
Sc	49.8%	34.3%	0.69	25.0%	BRE Compliant	Imperceptible
Winander House, Park Road						
Wa	48.5%	33.4%	0.69	25.0%	BRE Compliant	Imperceptible
Wb	50.9%	37.4%	0.73	25.0%	BRE Compliant	Imperceptible
Wc	50.8%	38.1%	0.75	25.0%	BRE Compliant	Imperceptible
Saint Joseph's, Park Road						
Ja	50.5%	39.5%	0.78	25.0%	BRE Compliant	Imperceptible
Jb	45.3%	36.5%	0.80	25.0%	BRE Compliant	Imperceptible

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

** For the interpretation of level of effects please refer to "2.2 Definition of Effects" on page 7.

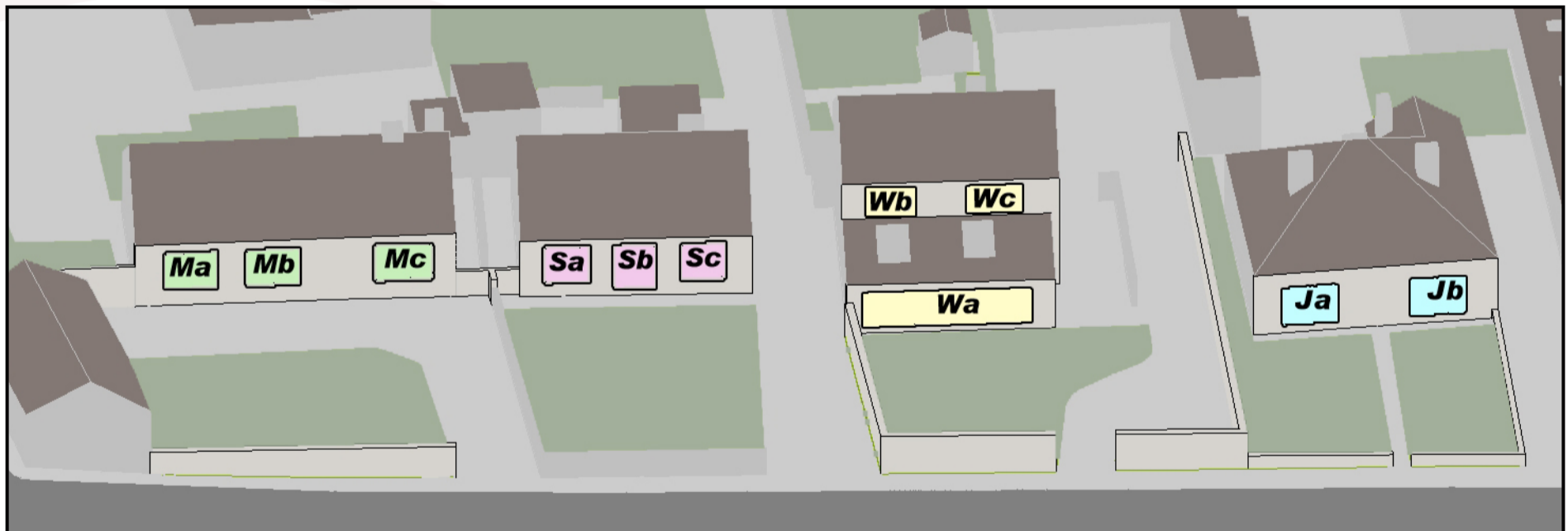


Figure 5.2: Top- Highlighted areas indicate the position of assessed windows., Bottom - Aerial view of assessed location.



Winter

Table No. 5.3: WPSH Results; Mondello/Saint Anthony's/Winander House/Saint Joseph's, Park Road						
Window Number	Baseline WPSH	Proposed WPSH	Ratio of Proposed to Baseline WPSH	Recommended minimum WPSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Mondello, Park Road						
Ma	52.2%	32.1%	0.61	5.0%	BRE Compliant	Imperceptible
Mb	52.1%	31.4%	0.60	5.0%	BRE Compliant	Imperceptible
Mc	51.8%	31.4%	0.61	5.0%	BRE Compliant	Imperceptible
Saint Anthony's, Park Road						
Sa	50.3%	31.0%	0.62	5.0%	BRE Compliant	Imperceptible
Sb	50.2%	31.8%	0.63	5.0%	BRE Compliant	Imperceptible
Sc	49.2%	31.6%	0.64	5.0%	BRE Compliant	Imperceptible
Winander House, Park Road						
Wa	48.2%	34.3%	0.71	5.0%	BRE Compliant	Imperceptible
Wb	51.2%	37.2%	0.73	5.0%	BRE Compliant	Imperceptible
Wc	51.1%	39.3%	0.77	5.0%	BRE Compliant	Imperceptible
Saint Joseph's, Park Road						
Ja	48.6%	44.4%	0.91	5.0%	BRE Compliant	Imperceptible
Jb	35.0%	33.1%	0.95	5.0%	BRE Compliant	Imperceptible

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

** For the interpretation of level of effects please refer to "2.2 Definition of Effects" on page 7.

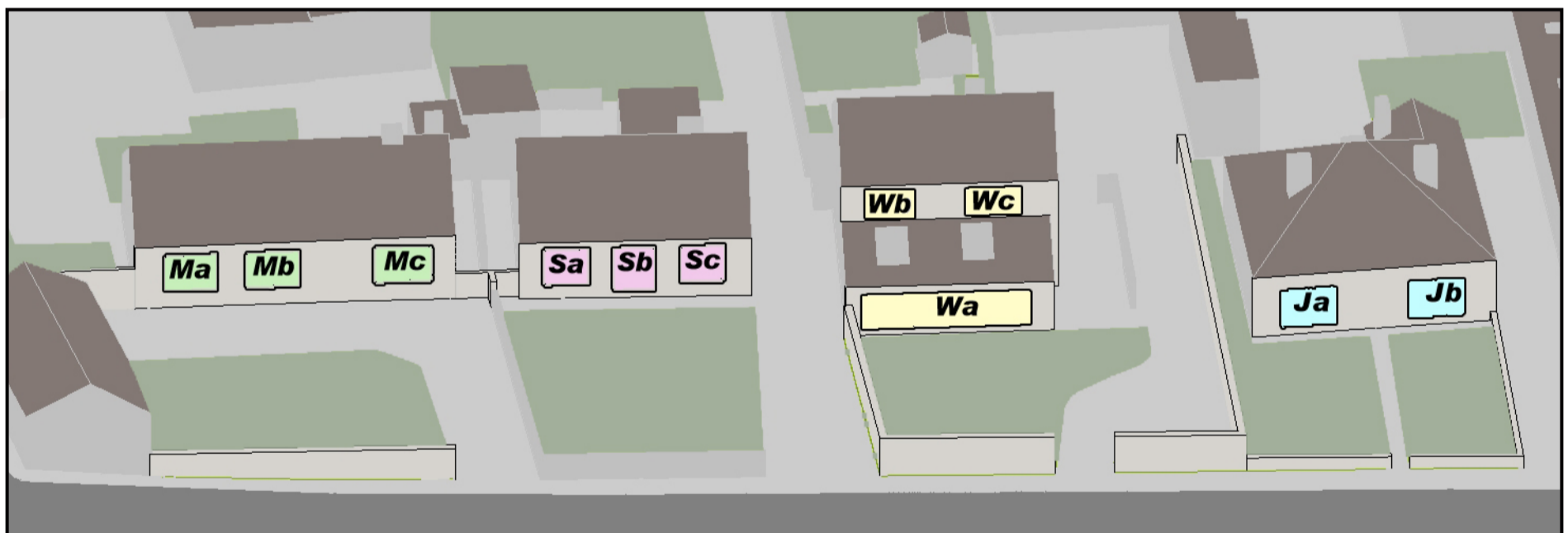


Figure 5.3: Top- Highlighted areas indicate the position of assessed windows., Bottom - Aerial view of assessed location.



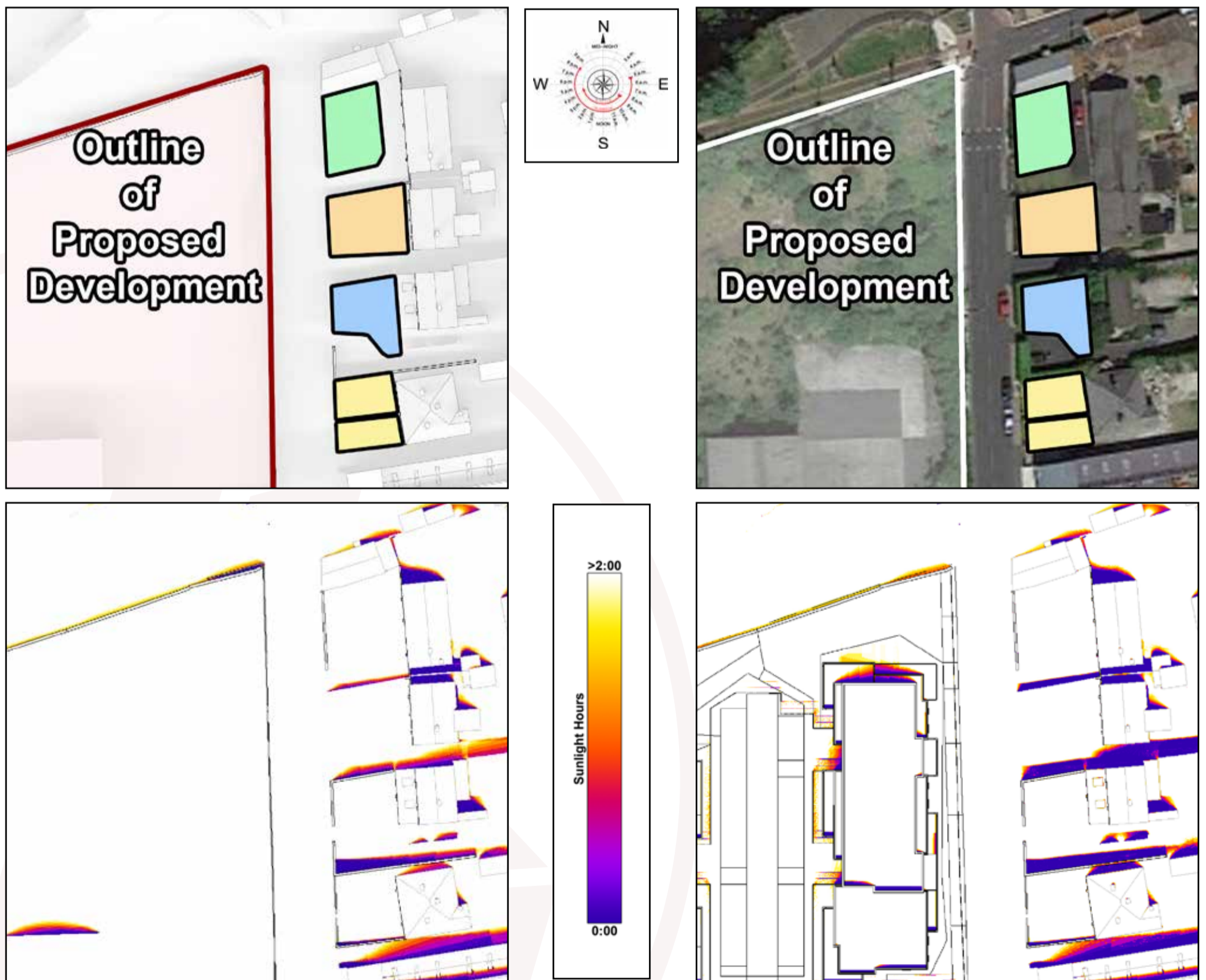
5.3 Effect on Sunlighting in Existing Gardens

5.3.1 Mondello/Saint Anthony's/Winander House/Saint Joseph's, Park Road

Table No. 5.4: Sunlighting Results Mondello/Saint Anthony's/Winander House/Saint Joseph's, Park Road						
Address	% of Area to Receive Above 2 Hours Sunlight on March 21st (Target >50%)				Level of Compliance with BRE Guidelines	Effect of Proposed Development**
	Baseline	Proposed	Ratio of Proposed to Baseline	Recommended minimum		
Mondello, Park Road	100.0%	100.0%	1.00	50.0%	BRE Compliant	Imperceptible
Saint Anthony's, Park Road	100.0%	100.0%	1.00	50.0%	BRE Compliant	Imperceptible
Winander House, Park Road	100.0%	100.0%	1.00	50.0%	BRE Compliant	Imperceptible
Saint Joseph's, Park Road	96.6%	96.2%	1.00	50.0%	BRE Compliant	Imperceptible

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

** For the interpretation of level of effects please refer to "2.2 Definition of Effects" on page 7.



Baseline

Figure 5.4: False colour plans. White area indicates the area capable of receiving 2 hours of sunlight on March 21st.

Proposed

5.4 Sunlight in Proposed Outdoor Amenity Areas

Table No. 5.5: Sunlight 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	90.8%	50.0%	BRE Compliant
Communal Open Space	85.2%	50.0%	BRE Compliant

* The BRE Guidelines recommend that for a garden or amenity 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.

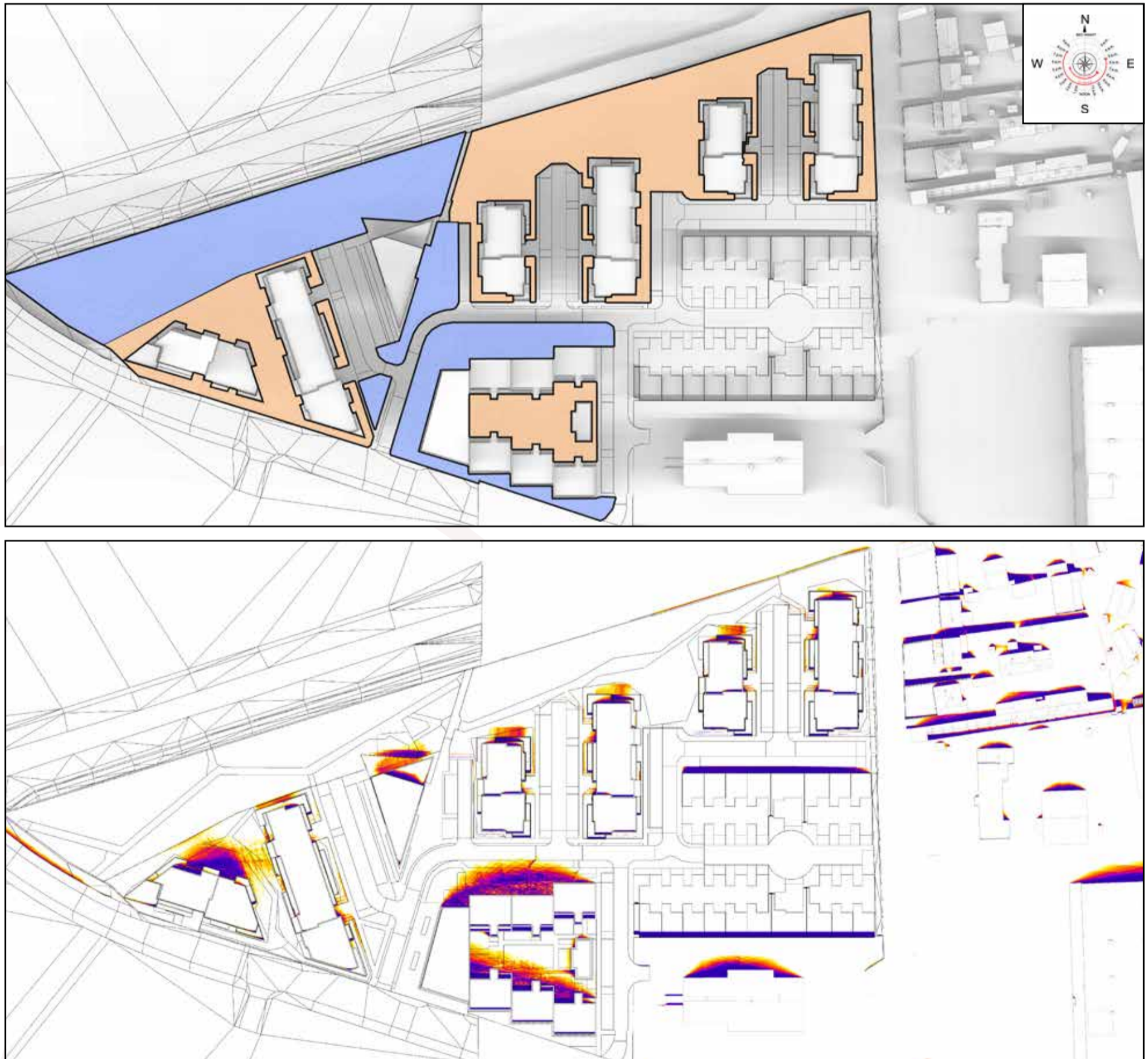


Figure 5.5: Top- Indication of the amenity areas that have been analysed, Bottom - Area capable of receiving 2 hours of sunlight on March 21st shown in white (R).



Baseline

Proposed

March 21st 7:00



March 21st 8:00



March 21st 9:00



March 21st 10:00



5.5 Shadow Studies
5.5.1 Shadow Study 21 March

Project: Park Road, Limerick



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

Applicant: Revington Lands Limited



Baseline

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: Park Road, Limerick

Applicant: Revington Lands Limited





Baseline

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: Park Road, Limerick

Applicant: Revington Lands Limited





Baseline

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: Park Road, Limerick



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

Applicant: Revington Lands Limited



Baseline

Proposed

June 21st 10:00



June 21st 11:00



June 21st 12:00



June 21st 13:00



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

Project: Park Road, Limerick

Applicant: Revington Lands Limited





Baseline

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: Park Road, Limerick

Applicant: Revington Lands Limited





Baseline

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: Park Road, Limerick

Applicant: Revington Lands Limited

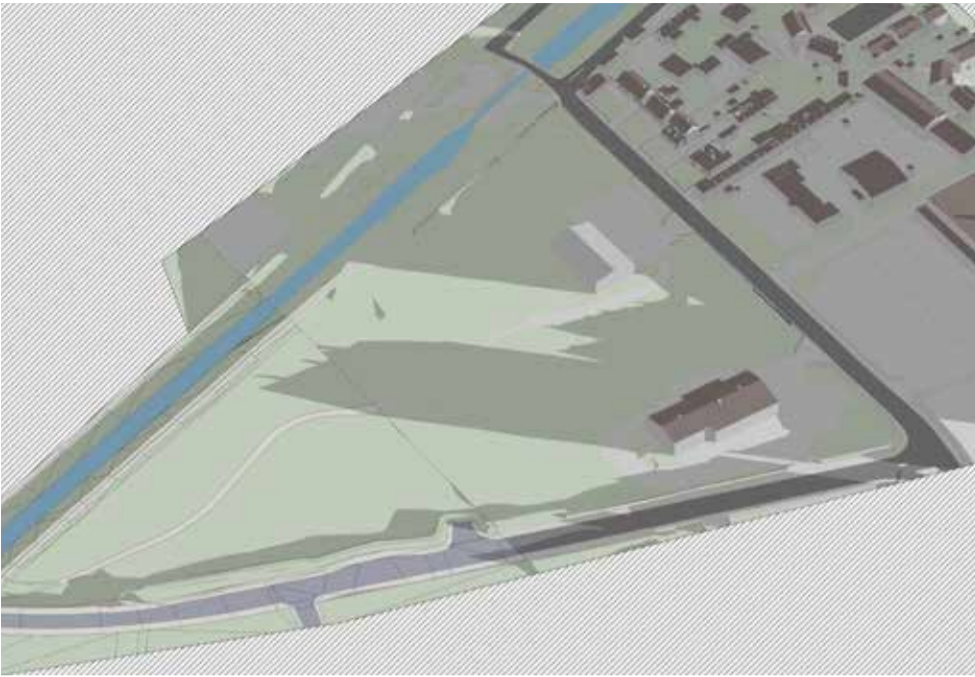




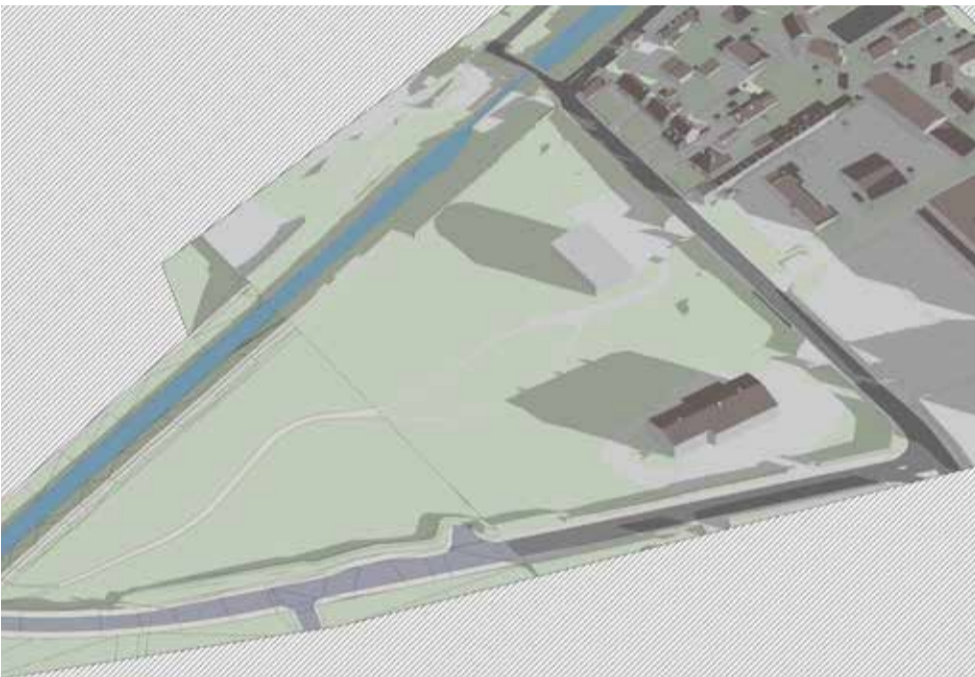
Baseline

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: Park Road, Limerick



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

Applicant: Revington Lands Limited



Baseline

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: Park Road, Limerick

Applicant: Revington Lands Limited



5.6 Average Daylight Factor

5.6.1 Block 1/Ground Floor

Table No. 5.6: ADF Results Block 1/Ground Floor		
Unit Number	Room Description	Predicted ADF Value
B1-LO-0A	LKD	3.21%
B1-LO-0A	Bedroom 1	5.87%
B1-LO-0A	Bedroom 2	3.15%
B1-LO-0B	LKD	2.58%
B1-LO-0B	Bedroom 1	4.63%
B1-LO-0B	Bedroom 2	2.61%
B1-LO-0C	LKD	1.63%
B1-LO-0C	Bedroom 1	3.77%
B1-LO-0C	Bedroom 2	1.42%
B1-LO-0D	LKD	1.70%
B1-LO-0D	Bedroom 1	1.10%
B1-LO-0D	Bedroom 2	3.86%
B1-LO-0D	Bedroom 3	3.06%
B1-LO-0D	Bedroom 4	2.74%
B1-LO-0E	LKD	2.56%
B1-LO-0E	Bedroom 1	2.89%
B1-LO-0E	Bedroom 2	2.79%
B1-LO-0E	Bedroom 3	2.78%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.6: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.2 Block 1/Ground Floor

Unit Number	Room Description	Predicted ADF Value
B1-LO-OF	LKD	2.76%
B1-LO-OF	Bedroom 1	2.56%
B1-LO-OF	Bedroom 2	2.79%
B1-LO-OF	Bedroom 3	2.71%
B1-LO-OF	Bedroom 4	2.95%
B1-LO-OG	LKD	4.36%
B1-LO-OG	Bedroom 1	3.03%
B1-LO-OG	Bedroom 2	2.90%
B1-LO-OG	Bedroom 3	2.35%
B1-LO-OH	LKD	3.25%
B1-LO-OH	Bedroom 1	2.54%
B1-LO-OH	Bedroom 2	3.83%
B1-LO-OH	Bedroom 3	3.01%
B1-LO-OH	Bedroom 4	2.87%
B1-LO-OI	LKD	5.19%
B1-LO-OI	Bedroom 1	3.04%
B1-LO-OI	Bedroom 2	2.90%
B1-LO-OI	Bedroom 3	2.79%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.7: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.3 Block 1/First Floor

Table No. 5.8: ADF Results Block 1/First Floor		
Unit Number	Room Description	Predicted ADF Value
B1-L1-1A	LKD	5.73%
B1-L1-1A	Bedroom 1	5.93%
B1-L1-1A	Bedroom 2	6.32%
B1-L1-1A	Bedroom 3	5.99%
B1-L1-1B	LKD	3.98%
B1-L1-1B	Bedroom 1	6.41%
B1-L1-1B	Bedroom 2	6.16%
B1-L1-1B	Bedroom 3	6.99%
B1-L1-1B	Bedroom 4	3.23%
B1-L1-1C	LKD	5.05%
B1-L1-1C	Bedroom 1	4.01%
B1-L1-1C	Bedroom 2	4.88%
B1-L1-1C	Bedroom 3	5.27%
B1-L1-1D	LKD	3.44%
B1-L1-1D	Bedroom 1	5.37%
B1-L1-1D	Bedroom 2	5.22%
B1-L1-1D	Bedroom 3	6.21%
B1-L1-1D	Bedroom 4	2.83%
B1-L1-1E	LKD	3.93%
B1-L1-1E	Bedroom 1	4.01%
B1-L1-1E	Bedroom 2	4.87%
B1-L1-1E	Bedroom 3	5.25%
B1-L1-1F	LKD	1.94%
B1-L1-1F	Bedroom 1	5.35%
B1-L1-1F	Bedroom 2	5.19%
B1-L1-1F	Bedroom 3	6.17%
B1-L1-1F	Bedroom 4	1.68%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.8: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.4 Block 1/First Floor

Table No. 5.9: ADF Results Block 1/First Floor		
Unit Number	Room Description	Predicted ADF Value
B1-L1-1G	LKD	2.17%
B1-L1-1G	Bedroom 1	1.91%
B1-L1-1G	Bedroom 2	4.51%
B1-L1-1G	Bedroom 3	3.87%
B1-L1-1G	Bedroom 4	3.83%
B1-L1-1H	LKD	3.48%
B1-L1-1H	Bedroom 1	3.71%
B1-L1-1H	Bedroom 2	3.62%
B1-L1-1H	Bedroom 3	3.62%
B1-L1-1J	LKD	3.74%
B1-L1-1J	Bedroom 1	3.58%
B1-L1-1J	Bedroom 2	3.50%
B1-L1-1J	Bedroom 3	3.75%
B1-L1-1J	Bedroom 4	3.81%
B1-L1-1K	LKD	5.61%
B1-L1-1K	Bedroom 1	3.84%
B1-L1-1K	Bedroom 2	3.44%
B1-L1-1K	Bedroom 3	3.04%
B1-L1-1L	LKD	4.16%
B1-L1-1L	Bedroom 1	3.33%
B1-L1-1L	Bedroom 2	4.52%
B1-L1-1L	Bedroom 3	3.97%
B1-L1-1L	Bedroom 4	3.98%
B1-L1-1M	LKD	6.43%
B1-L1-1M	Bedroom 1	3.89%
B1-L1-1M	Bedroom 2	3.40%
B1-L1-1M	Bedroom 3	3.62%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.

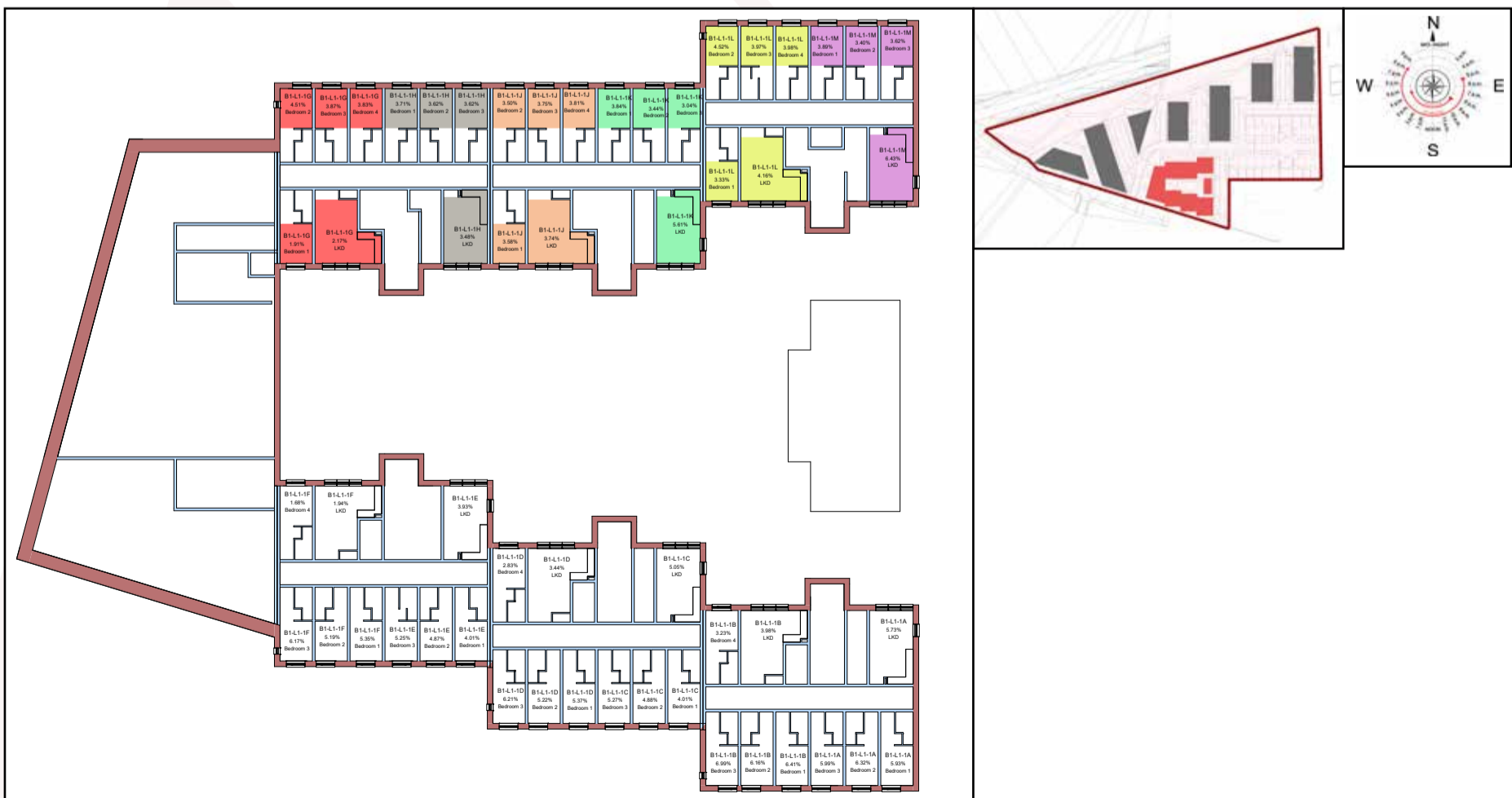


Figure 5.9: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.5 Block 2/Ground Floor

Unit Number	Room Description	Predicted ADF Value
B2_LO_01	LKD	3.64%
B2_LO_01	Bedroom 1	2.83%
B2_LO_01	Bedroom 2	4.24%
B2_LO_02	LKD	4.14%
B2_LO_02	Bedroom 1	3.24%
B2_LO_02	Bedroom 2	3.99%
B2_LO_03	LKD	2.34%
B2_LO_03	Bedroom 1	3.22%
B2_LO_03	Bedroom 2	2.98%
B2_LO_04	LKD	2.35%
B2_LO_05	LKD	5.10%
B2_LO_05	Bedroom 1	3.94%
B2_LO_05	Bedroom 2	3.75%
B2_LO_06	LKD	4.08%
B2_LO_06	Bedroom 1	2.61%
B2_LO_06	Bedroom 2	4.38%
B2_LO_07	LKD	2.83%
B2_LO_07	Bedroom 1	3.20%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.10: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).



5.6.6 Block 2/First Floor

Unit Number	Room Description	Predicted ADF Value
B2_L1_01	LKD	3.56%
B2_L1_01	Bedroom 1	4.73%
B2_L1_01	Bedroom 2	2.80%
B2_L1_02	LKD	3.74%
B2_L1_02	Bedroom 1	4.61%
B2_L1_02	Bedroom 2	2.67%
B2_L1_03	LKD	2.19%
B2_L1_03	Bedroom 1	3.83%
B2_L1_03	Bedroom 2	3.68%
B2_L1_04	LKD	2.11%
B2_L1_05	LKD	4.18%
B2_L1_05	Bedroom 1	4.20%
B2_L1_05	Bedroom 2	4.37%
B2_L1_06	LKD	4.74%
B2_L1_06	Bedroom 1	1.99%
B2_L1_06	Bedroom 2	5.08%
B2_L1_07	LKD	2.83%
B2_L1_07	Bedroom 1	2.77%
B2_L1_07	Bedroom 2	4.41%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.11: Floor plan of assessed building (Top), Keyplan highlighting the assessed building (Bottom).



5.6.7 Block 3/Ground Floor

Table No. 5.12: ADF Results Block 3/Ground Floor

Unit Number	Room Description	Predicted ADF Value
B3_LO_01	LKD	2.64%
B3_LO_01	Bedroom 1	3.66%
B3_LO_01	Bedroom 2	3.34%
B3_LO_02	LKD	1.76%
B3_LO_02	Bedroom 1	1.30%
B3_LO_02	Bedroom 2	1.92%
B3_LO_03	LKD	2.16%
B3_LO_03	Bedroom 1	3.61%
B3_LO_04	LKD	3.64%
B3_LO_04	Bedroom 1	3.76%
B3_LO_04	Bedroom 2	3.13%
B3_LO_05	LKD	3.48%
B3_LO_05	Bedroom 1	2.74%
B3_LO_05	Bedroom 2	2.91%
B3_LO_06	LKD	2.18%
B3_LO_07	LKD	2.80%
B3_LO_07	Bedroom 1	1.50%
B3_LO_08	LKD	1.93%
B3_LO_08	Bedroom 1	1.77%
B3_LO_08	Bedroom 2	1.70%
B3_LO_09	LKD	2.44%
B3_LO_10	LKD	8.38%
B3_LO_10	Bedroom 1	3.20%
B3_LO_10	Bedroom 2	2.76%
B3_LO_11	LKD	5.49%
B3_LO_11	Bedroom 1	2.00%
B3_LO_11	Bedroom 2	3.75%
B3_LO_12	LKD	2.21%
B3_LO_12	Bedroom 1	2.32%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.

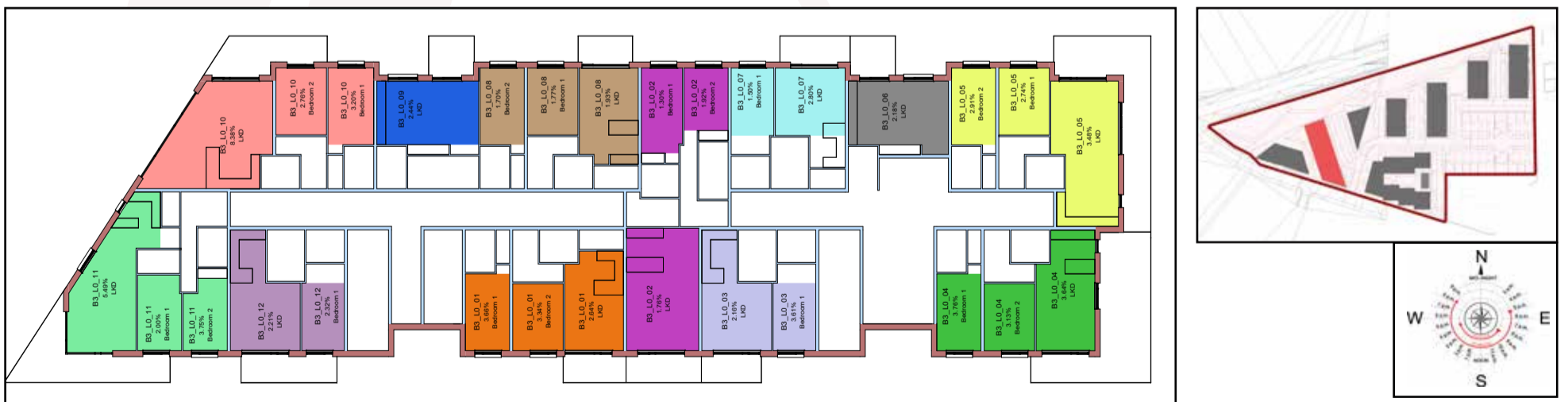


Figure 5.12: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.8 Block 3/First Floor

Table No. 5.13: ADF Results Block 3/First Floor

Unit Number	Room Description	Predicted ADF Value
B3_L1_01	LKD	2.18%
B3_L1_01	Bedroom 1	3.92%
B3_L1_01	Bedroom 2	3.42%
B3_L1_02	LKD	1.61%
B3_L1_02	Bedroom 1	2.12%
B3_L1_02	Bedroom 2	1.42%
B3_L1_03	LKD	1.95%
B3_L1_03	Bedroom 1	4.20%
B3_L1_03	Bedroom 2	3.95%
B3_L1_04	LKD	3.11%
B3_L1_04	Bedroom 1	4.57%
B3_L1_04	Bedroom 2	3.79%
B3_L1_05	LKD	3.11%
B3_L1_05	Bedroom 1	2.95%
B3_L1_05	Bedroom 2	3.09%
B3_L1_06	LKD	2.23%
B3_L1_07	LKD	2.18%
B3_L1_07	Bedroom 1	1.45%
B3_L1_08	LKD	2.22%
B3_L1_08	Bedroom 1	1.94%
B3_L1_08	Bedroom 2	1.89%
B3_L1_09	LKD	2.75%
B3_L1_10	LKD	9.50%
B3_L1_10	Bedroom 1	3.67%
B3_L1_10	Bedroom 2	2.22%
B3_L1_11	LKD	5.62%
B3_L1_11	Bedroom 1	1.92%
B3_L1_11	Bedroom 2	4.49%
B3_L1_12	LKD	1.96%
B3_L1_12	Bedroom 1	1.65%
B3_L1_12	Bedroom 2	3.75%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.

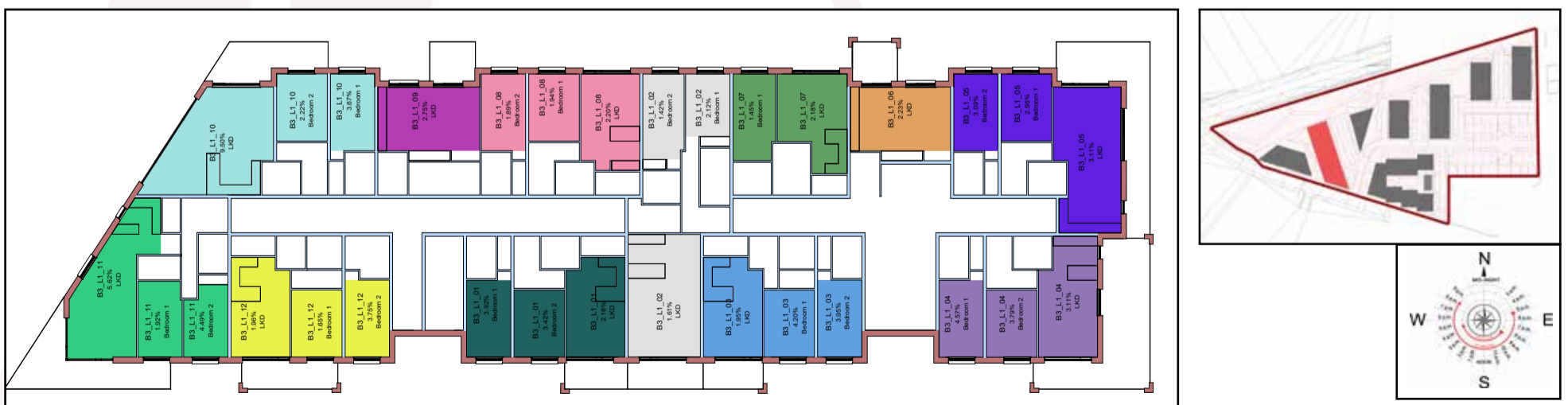


Figure 5.13: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.9 Block 4/Ground Floor

Unit Number	Room Description	Predicted ADF Value
B4_LO_01	LKD	1.51%
B4_LO_01	Bedroom 1	2.78%
B4_LO_02	LKD	3.43%
B4_LO_02	Bedroom 1	2.41%
B4_LO_02	Bedroom 2	1.71%
B4_LO_03	LKD	3.58%
B4_LO_03	Bedroom 1	4.11%
B4_LO_03	Bedroom 2	3.15%
B4_LO_04	LKD	2.76%
B4_LO_05	LKD	2.43%
B4_LO_05	Bedroom 1	3.38%
B4_LO_06	LKD	2.93%
B4_LO_06	Bedroom 1	5.67%
B4_LO_06	Bedroom 2	4.12%
B4_LO_07	LKD	1.84%
B4_LO_07	Bedroom 2	2.64%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.14: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.10 Block 4/First Floor

Table No. 5.15: ADF Results Block 4/First Floor

Unit Number	Room Description	Predicted ADF Value
B4_L1_01	LKD	1.52%
B4_L1_01	Bedroom 1	3.58%
B4_L1_02	LKD	3.00%
B4_L1_02	Bedroom 1	3.03%
B4_L1_02	Bedroom 2	1.63%
B4_L1_03	LKD	3.22%
B4_L1_03	Bedroom 1	5.01%
B4_L1_03	Bedroom 2	3.90%
B4_L1_04	LKD	3.02%
B4_L1_05	LKD	2.10%
B4_L1_05	Bedroom 1	3.97%
B4_L1_06	LKD	2.81%
B4_L1_06	Bedroom 1	4.50%
B4_L1_06	Bedroom 2	6.90%
B4_L1_07	LKD	1.59%
B4_L1_07	Bedroom 1	3.33%
B4_L1_07	Bedroom 2	3.53%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.15: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.11 Block 5/Ground Floor

Unit Number	Room Description	Predicted ADF Value
B5_LO_01	LKD	1.78%
B5_LO_01	Bedroom 1	3.39%
B5_LO_01	Bedroom 2	4.38%
B5_LO_02	LKD	1.78%
B5_LO_02	Bedroom 1	2.47%
B5_LO_03	LKD	1.83%
B5_LO_03	Bedroom 1	2.47%
B5_LO_03	Bedroom 2	2.49%
B5_LO_04	LKD	3.31%
B5_LO_04	Bedroom 1	6.73%
B5_LO_04	Bedroom 2	4.90%
B5_LO_05	LKD	3.47%
B5_LO_05	Bedroom 1	4.46%
B5_LO_06	LKD	2.58%
B5_LO_07	LKD	3.08%
B5_LO_07	Bedroom 1	3.50%
B5_LO_08	LKD	2.20%
B5_LO_09	LKD	3.60%
B5_LO_09	Bedroom 1	3.27%
B5_LO_09	Bedroom 2	3.38%
B5_LO_10	LKD	3.38%
B5_LO_10	Bedroom 1	3.72%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.

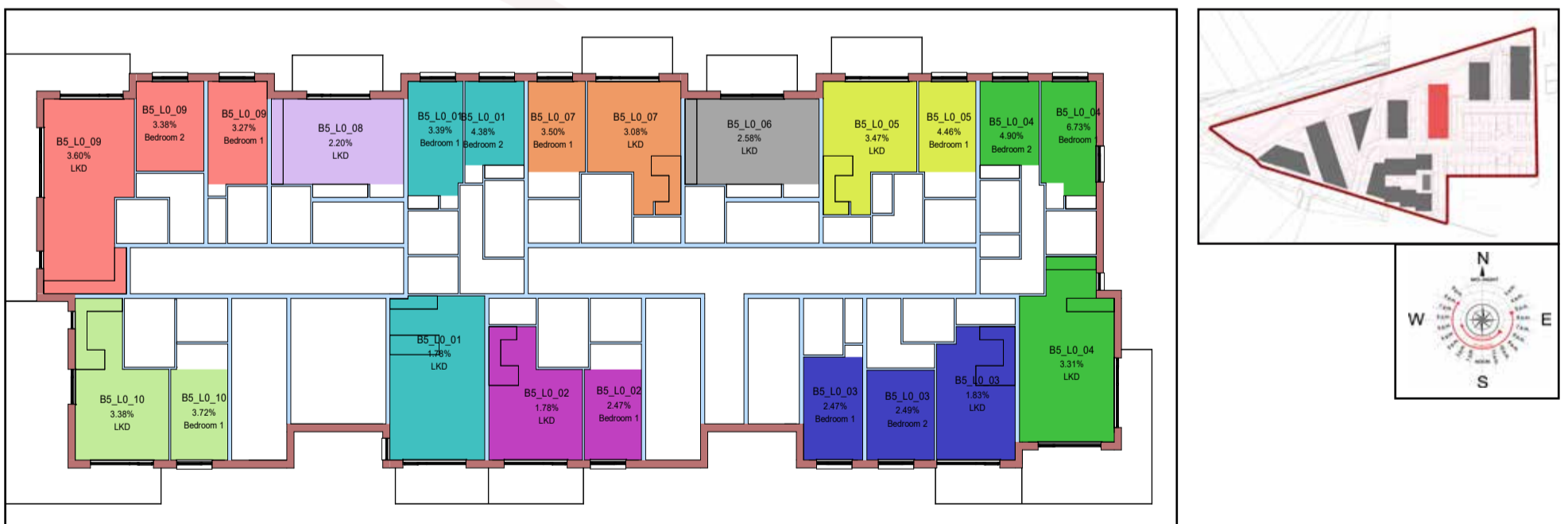


Figure 5.16: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.12 Block 5/First Floor

Table No. 5.17: ADF Results Block 5/First Floor		
Unit Number	Room Description	Predicted ADF Value
B5_L1_01	LKD	1.72%
B5_L1_01	Bedroom 1	5.16%
B5_L1_01	Bedroom 2	3.96%
B5_L1_02	LKD	1.53%
B5_L1_02	Bedroom 1	2.83%
B5_L1_02	Bedroom 2	3.23%
B5_L1_03	LKD	1.60%
B5_L1_03	Bedroom 1	2.93%
B5_L1_03	Bedroom 2	3.14%
B5_L1_04	LKD	3.01%
B5_L1_04	Bedroom 1	7.85%
B5_L1_04	Bedroom 2	5.63%
B5_L1_05	LKD	3.14%
B5_L1_05	Bedroom 1	5.14%
B5_L1_06	LKD	2.39%
B5_L1_07	LKD	2.63%
B5_L1_07	Bedroom 1	4.15%
B5_L1_08	LKD	4.60%
B5_L1_09	LKD	3.19%
B5_L1_09	Bedroom 1	3.95%
B5_L1_09	Bedroom 2	4.01%
B5_L1_10	LKD	2.74%
B5_L1_10	Bedroom 1	3.83%
B5_L1_10	Bedroom 2	3.64%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.

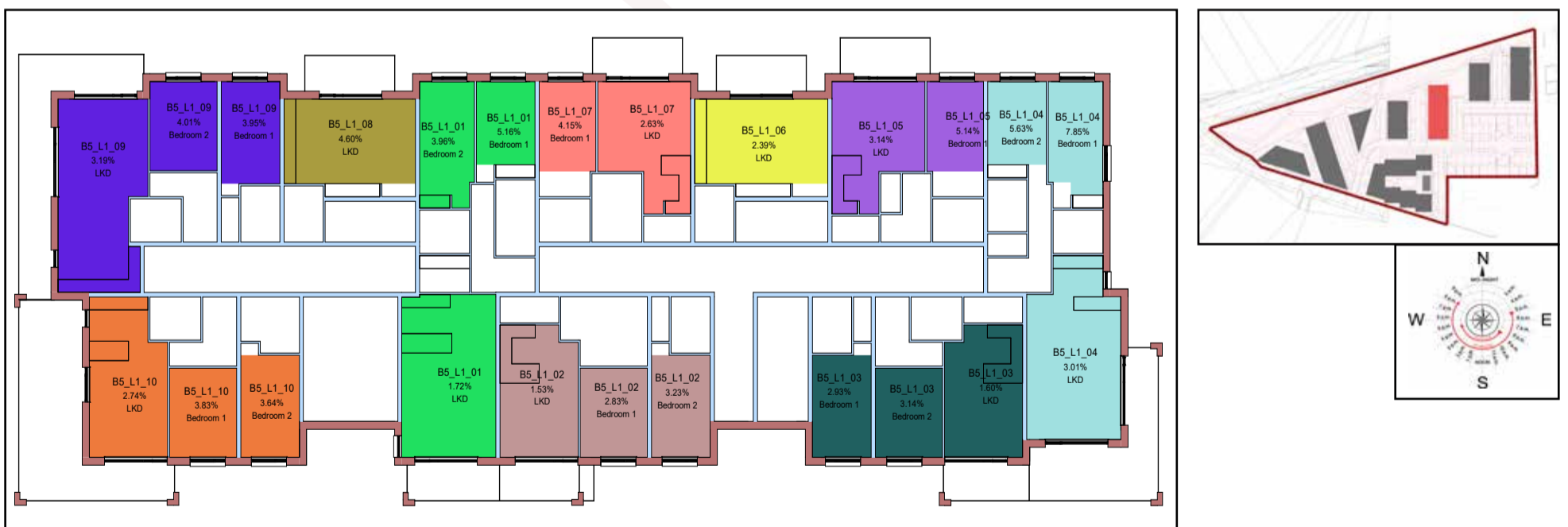


Figure 5.17: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.13 Block 6/Ground Floor

Unit Number	Room Description	Predicted ADF Value
B6_LO_01	LKD	1.72%
B6_LO_01	Bedroom 1	3.22%
B6_LO_02	LKD	3.39%
B6_LO_02	Bedroom 1	2.69%
B6_LO_02	Bedroom 2	1.83%
B6_LO_03	LKD	3.63%
B6_LO_03	Bedroom 1	4.33%
B6_LO_03	Bedroom 2	3.23%
B6_LO_04	LKD	2.89%
B6_LO_05	LKD	2.28%
B6_LO_05	Bedroom 1	3.04%
B6_LO_06	LKD	4.00%
B6_LO_06	Bedroom 1	5.78%
B6_LO_06	Bedroom 2	3.55%
B6_LO_07	LKD	2.14%
B6_LO_07	Bedroom 1	2.99%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.18: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.14 Block 6/First Floor

Table No. 5.19: ADF Results Block 6/First Floor

Unit Number	Room Description	Predicted ADF Value
B6_L1_01	LKD	1.70%
B6_L1_01	Bedroom 1	3.98%
B6_L1_02	LKD	3.04%
B6_L1_02	Bedroom 1	3.69%
B6_L1_02	Bedroom 2	1.74%
B6_L1_03	LKD	3.22%
B6_L1_03	Bedroom 1	4.92%
B6_L1_03	Bedroom 2	3.73%
B6_L1_04	LKD	2.89%
B6_L1_05	LKD	1.93%
B6_L1_05	Bedroom 1	3.00%
B6_L1_06	LKD	3.58%
B6_L1_06	Bedroom 1	4.24%
B6_L1_06	Bedroom 2	6.82%
B6_L1_07	LKD	1.79%
B6_L1_07	Bedroom 1	3.36%
B6_L1_07	Bedroom 2	3.88%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.19: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.15 Block 7/Ground Floor

Table No. 5.20: ADF Results Block 7/Ground Floor		
Unit Number	Room Description	Predicted ADF Value
B7_LO_01	LKD	3.32%
B7_LO_01	Bedroom 1	4.99%
B7_LO_01	Bedroom 2	4.35%
B7_LO_02	LKD	3.64%
B7_LO_02	Bedroom 1	2.87%
B7_LO_03	LKD	2.07%
B7_LO_03	Bedroom 1	2.90%
B7_LO_03	Bedroom 2	2.86%
B7_LO_04	LKD	3.75%
B7_LO_04	Bedroom 1	6.78%
B7_LO_04	Bedroom 2	4.97%
B7_LO_05	LKD	3.71%
B7_LO_05	Bedroom 1	4.55%
B7_LO_06	LKD	2.91%
B7_LO_07	LKD	3.30%
B7_LO_07	Bedroom 1	4.51%
B7_LO_08	LKD	2.98%
B7_LO_09	LKD	4.47%
B7_LO_09	Bedroom 1	3.91%
B7_LO_09	Bedroom 2	4.63%
B7_LO_10	LKD	3.32%
B7_LO_10	Bedroom 1	3.78%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.20: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

5.6.16 Block 7/First Floor

Table No. 5.21: ADF Results Block 7/First Floor

Unit Number	Room Description	Predicted ADF Value
B7_L1_01	LKD	3.34%
B7_L1_01	Bedroom 1	5.97%
B7_L1_01	Bedroom 2	5.28%
B7_L1_02	LKD	1.65%
B7_L1_02	Bedroom 1	3.51%
B7_L1_02	Bedroom 2	2.20%
B7_L1_03	LKD	1.81%
B7_L1_03	Bedroom 1	3.67%
B7_L1_03	Bedroom 2	3.52%
B7_L1_04	LKD	3.32%
B7_L1_04	Bedroom 1	8.09%
B7_L1_04	Bedroom 2	5.96%
B7_L1_05	LKD	3.56%
B7_L1_05	Bedroom 1	5.47%
B7_L1_06	LKD	2.79%
B7_L1_07	LKD	3.20%
B7_L1_07	Bedroom 1	5.43%
B7_L1_08	LKD	2.88%
B7_L1_09	LKD	4.10%
B7_L1_09	Bedroom 1	4.80%
B7_L1_09	Bedroom 2	5.62%
B7_L1_10	LKD	2.83%
B7_L1_10	Bedroom 1	4.18%
B7_L1_10	Bedroom 2	4.50%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 16, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 49.



Figure 5.21: Floor plan of assessed building (L), Keyplan highlighting the assessed building (R).

6.0 Analysis of Results

Results were generated and analysed for the following studies:

- Vertical Sky Component
 - **Mondello, Park Road**
 - **Saint Anthony's, Park Road**
 - **Winander House, Park Road**
 - **Saint Joseph's, Park Road**
- Annual Probable Sunlight Hours
 - **Mondello, Park Road**
 - **Saint Anthony's, Park Road**
 - **Winander House, Park Road**
 - **Saint Joseph's, Park Road**
- Sunlighting in Existing Gardens/Amenity Spaces
 - **Mondello, Park Road**
 - **Saint Anthony's, Park Road**
 - **Winander House, Park Road**
 - **Saint Joseph's, Park Road**
- Sunlighting in Proposed Gardens/Amenity Spaces
 - **2 No. spaces in the proposed development.**
- Average Daylight Factor
 - **409 No. spaces in the proposed development.**

6.1 Effect on Vertical Sky Component (VSC)

The effect on VSC has been assessed for 11 No. windows across the surrounding properties. Using the rationale explained in section 2.2 on page 7, 11 no. of these windows would be considered *imperceptible*.

This shows that 100% of the assessed windows will experience an imperceptible level of effect.

The complete results for the study on the effect on VSC caused by the proposed development can be found in Section 5.1 on page 18.

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

The APSH/WPSH assessment has been carried out on the relevant windows of the surrounding properties that have an orientation within 90 degrees of due south.

The effect on APSH has been assessed for 11 No. of windows of the surrounding existing properties. Using the rationale explained in section 2.2 on page 7, the effect on the APSH of 11 no. of these windows would be considered *imperceptible*.

100% of these windows have met the criteria for effect on APSH as set out in the BRE Guidelines.

The effect on WPSH has been assessed for 11 No. of windows of the surrounding existing properties. The effect on the WPSH of 100 No. of these windows would be considered *imperceptible*. These effects have been assigned per the rationale explained in section 2.2 on page 7.

100% of these windows have met the criteria for effect on WPSH as set out in the BRE Guidelines.

The results of the study on APSH can be found in Section 5.2 on page 19.

6.3 Effect on Sunlighting in Existing Gardens

This study has assessed the effect the proposed development would have on the level of sunlight on March 21st in the rear gardens of the neighbouring properties.

In total 4 No. spaces have been assessed. Using the rationale explained in section 2.2 on page 7, 4 no. of which would experience an *imperceptible* level of effect.

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

The complete results of the study on effect on sunlight the neighbouring gardens can be found in section 5.3 on page 21.

A visual representation of these readings can be seen in the 2 hour false colour plans in section 5.3 and in the hourly shadow diagrams for March 21st in section 5.5.1 on page 23.

6.4 Sunlighting in Proposed Outdoor Amenity Areas

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

In total 2 No. spaces have been assessed, 2 No. (100%) 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 5.4 on page 22.

A visual representation of these readings can be seen in the false colour plan in section 5.4 and in the hourly shadow diagrams for March 21st in section 5.5.1 on page 23.

6.5 Average Daylight Factor (ADF)

This study has assessed the Average Daylight Factor (ADF) received in all habitable rooms across the ground and first floors of the proposed development. This has ensured that where unit types differ by way of layout and/or floor to ceiling heights, a clear understanding has been obtained of the performance of the scheme with regard to ADF.

Typically, ADF values increase in rooms located on higher floor levels, due to an improved relationship with adjacent obstructions. Therefore, where a room meets its recommended minimum value, it was assumed that the corresponding room on subsequent floors also meet this target value.

Where individual rooms have fallen short of the recommended minimum target value, the equivalent room on the floor above has been assessed. This study has been carried out up to the floor where room meets the minimum recommended value.

The above assumptions were made based on unit types being repeated in other areas of the proposed development with similarities in room type and context. Our methodology in conjunction with this reasonable assumption gives us our circa compliance rate/s for the entire scheme.

This proposed development consists of 3079 No. habitable rooms.

If the appropriate target value for LKDs is considered to be 2%, the ADF value in 3037 No. habitable rooms meet or exceed their target values. This gives a circa compliance rate of 99%. For a scheme of this size, this could be considered an excellent level of compliance.

All bedrooms are meeting the 1% target value, with 42 No. LKD's not meeting the guidelines when a 2% target value is applied:

- 4 No. of these failing rooms are receiving a level of compliance between 70%-80%
- 16 No. of these failing rooms are receiving a level of compliance between 80%-90%
- 22 No. of these failing rooms are receiving a level of compliance between 90%-100%

If the appropriate target value for LKDs is considered to be 1.5%, the ADF value in 3079 no. habitable rooms meet or exceed their target values. This gives a circa compliance rate of 100%. For a scheme of this size, this could be considered an excellent level of compliance.

Given the fact that an appropriate level of density is being targeted, the results of the ADF study could be considered to be very favourable, whilst the small number of LKD's that are not meeting the 2% target value may require some supplementary lighting for periods of the day.

The complete results for the study on ADF can be seen in section 5.6 on page 32.

7.0 Conclusion

3D Design Bureau were commissioned by Revington Lands Limited, to carry out a comprehensive BRE daylight and sunlight assessment, along with an accompanying shadow study for the proposed BTR and student accommodation located at Canal Banks, Pa Healy Road/Park Road, Co. Limerick.

This assessment has studied the effect the proposed development would have on the level of daylight and sunlight received by the neighbouring residential properties that are in close proximity to the proposed development.

For the study of effect to VSC, Annual and Winter APSH to the surrounding property, 100% of assessed windows are meeting the BRE guidelines. No surrounding property will experience an unacceptable drop in the level of effect. This report also demonstrates that the existing gardens assessed will experience an imperceptible level of effect to their sunlighting, should the scheme be built as proposed. From the impact study carried out, the outcome can be considered favourable in terms of the level of effect the proposed development will have on the neighbouring properties. This shows that the layout of the scheme is sympathetic to these properties.

As for the proposed amenity areas, 2 No. of the assessed areas will meet the guidelines, receiving great levels of sunlight for March 21st. It would be our opinion that the results for sunlighting within the scheme itself are very favourable.

For the study of ADF we have assessed the lowest habitable floors (ground and first) of Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 and Block 7. Throughout this project, 3DDB worked closely with OCA Architects particularly with regard to the ADF of the proposed blocks. Compensatory measures and important design interventions were introduced in order to ensure a favourable outcome in terms of internal daylight values. These design changes included amendments to internal walls, room configuration, window sizes and additional windows where necessary, whilst maintaining the design integrity of the scheme. The proposed development as a whole can be considered to have access to good levels of daylight with a circa compliance rate of 99%, when a target value of 2% is applied to LKD's, and a circa compliance rate of 100% when a target value of 1.5% has been applied to LKD's. Given size of the proposed scheme the results of the ADF study could be considered to be favourable.

Given the large scale of the scheme and its density, the results of the ADF study should be considered favourable. No existing properties will experience an unacceptable drop in levels of daylight or sunlight and future occupants will enjoy good levels of daylight within the vast majority of the proposed units and will have access to amenity areas that are capable of receiving excellent levels of sunlight.

In final conclusion, it is the opinion of 3D Design Bureau that future occupants will enjoy good levels of daylight within the vast majority of the proposed units and will have access to amenity areas that are capable of receiving excellent levels of sunlight. Both the impact and scheme performance should be considered very favourable. This has been achieved through careful design by the design team and design interventions that have been implemented throughout the course of the project by working closely with OCA Architects.