October 2021

SHD Broomhill Road Tallaght, Dublin

Daylight and Sunlight Assessment Report

Applicant: Garyaron Homes

+353 (0)1 288 0186

info@3ddesignbureau.com

www.3ddesignbureau.com

3D DESIGN BUREAU

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

Contents

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 Broomhill Road, in Tallaght, Dublin.

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 and APSH 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 covers 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:
  - Unit 52, Broomhill Road
  - Units 1-4 Broomhill Terrace
- Effect on sunlight (APSH/WPSH) to surrounding properties. The effect to the APSH/WPSH of the windows of the following neighbouring properties was assessed:
  - Unit 52, Broomhill Road
  - Units 1-4 Broomhill Terrace

Figure 1.1: Scope of surrounding properties and environment assessed.

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 to ensure all properties and amenity spaces that may potentially experience a level of effect were included in the study. Please note that no study has been carried out to determine the effect on Sunlighting in existing gardens as there are no gardens or amenity spaces on the neighbouring properties north of the proposed development.

For the assessment of the Scheme Performance regarding daylight and sunlight, 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 has been carried out. All external amenity spaces as identified by the architect were assessed for sunlight. ADF study was carried out on the ground and first floors of the proposed buildings. Note: Typically, ADF values increase in rooms located on higher floor levels, due to a lesser obstruction from adjacent obstructions. Where a room meets the guidelines for ADF, it was assumed that similar rooms on subsequent floors will also meet the guidelines.

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

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: 86
  - Imperceptible: 44
  - Not Significant: 24
  - Slight: 18

Effect to Annual Probable Sunlight Hours (APSH) on neighbouring commercial properties:

- Windows Assessed: 86
  - Imperceptible: 86

Effect to Winter Probable Sunlight Hours (WPSH) on neighbouring commercial properties:

- Windows Assessed: 86
  - Imperceptible: 84
  - Not Significant: 1
  - Moderate: 1

Sunlighting to proposed amenity area:

- Areas Assessed: 5
  - Meeting the guidelines: 5

Average Daylight Factor (ADF) of internal proposed development:

- Residential rooms assessed: 194 (Total No. across the development is ~635)
  - Residential rooms assessed as meeting the guidelines: 194
  - Residential rooms assessed as not meeting the guidelines: 0
  - Residential rooms assumed to meet the guidelines: ~441
  - Compliance rate: ~100%
- Non-residential rooms assessed: 7
  - Non-residential rooms assessed as meeting the guidelines: 7
  - Non-residential rooms assessed as not meeting the guidelines: 0

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 Impact Assessment: 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 Impact Assessment: Annual/Winter Probable Sunlight Hours (APSH/WPSH)

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 Impact Assessment: Sun On Ground

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

2.3.4 Scheme Performance: Sun On Ground in Proposed Gardens and Amenity Spaces

Below is an example of the table used to describe SOG 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.

2.3.5 Scheme Performance: 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 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).**

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."

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

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 17.03* **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).

3.2 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 assessment point of neighbouring windows that could be affected by the proposed development.

The BRE Guidelines state that if the VSC is:

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

In this assessment, the VSC of the assessment 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.

3.3 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 24.

3.4 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 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 6.0 on page 36.

3.5 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 6.2 on page 37.

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.

3.6 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 daylit 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 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.

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 7.4 on page 58.

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.

The project architect, John Fleming Architects (JFA) supplied 3DDB with AutoCAD drawings 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. It should be noted that a belt of evergreen trees was included as part of the baseline model at the north-west boundary of the proposed site, on Broomhill Road, since the density of these trees would have an effect on the daylight and sunlight received by the surrounding properties in the baseline state.

Proposed

The proposed state reflects the subject site if the development is built as proposed. This includes the demolishing of structures, landscaping etc. The proposed state does not include the trees as described in the baseline state, as they would be removed as part of the proposed works.

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

The effect on Vertical Sky Component (VSC) has been calculated on neighbouring commercial properties.

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. As all windows assessed in the VSC study have an orientation within 90˚ of due south, all windows have been assessed for impact to APSH/WPSH.

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

4.2.3 Sun On Ground

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. No areas within the surrounding context has been assessed for impact to Sun On Ground, as all areas appear to be in commercial use.

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.

Following this advice, a target ADF value of 2.0% has been applied to LKDs within the proposed scheme.

Bedrooms within the proposed units have been differentiated by applying a bedroom number. The bedroom numbers applied correspond with the results published in this report but may differ from the architects drawings.

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.

In the case of the proposed development there is a creche on the ground floor of Block D. The classrooms and office within this space have been assessed, similarly ADF assessment has been carried out on the communal facilities on the ground floor of Block C (Cafe and Co-working). 3DDB recommend a | ADF value of 1.5% for the rooms associated with the proposed creche. Whilst ADF calculations have been carried out on these non-residential rooms, they do not contribute towards the calculated circa compliance rates.

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 “6.3 Average Daylight Factor” on page 46.

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

The following values have been assumed for ADF calculations.

Table No. 4.1: Material Palette 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.

Should a room 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.

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 Unit 52, Broomhill Road

Table No. 5.1: VSC Results Unit 52, Broomhill 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**
Ground Floor						
Ga	25.44%	25.44%	1.00	20.35%	BRE Compliant	Imperceptible
Gb	23.99%	23.99%	1.00	19.19%	BRE Compliant	Imperceptible
Gc	23.27%	23.27%	1.00	18.62%	BRE Compliant	Imperceptible
Gd	22.29%	22.29%	1.00	17.84%	BRE Compliant	Imperceptible
Ge	17.89%	17.89%	1.00	14.31%	BRE Compliant	Imperceptible
Gf	17.04%	17.04%	1.00	13.63%	BRE Compliant	Imperceptible
Gg	17.05%	17.05%	1.00	13.64%	BRE Compliant	Imperceptible
Gh	17.89%	17.89%	1.00	14.32%	BRE Compliant	Imperceptible
Gi	22.28%	22.28%	1.00	17.83%	BRE Compliant	Imperceptible
Gj	23.24%	23.24%	1.00	18.59%	BRE Compliant	Imperceptible
Gk	23.97%	23.97%	1.00	19.18%	BRE Compliant	Imperceptible
Gl	25.50%	25.50%	1.00	20.40%	BRE Compliant	Imperceptible
First Floor						
1a	36.51%	34.60%	0.95	27.00%	BRE Compliant	Imperceptible
1b	35.01%	33.07%	0.94	27.00%	BRE Compliant	Imperceptible
1c	34.21%	32.23%	0.94	27.00%	BRE Compliant	Imperceptible
1d	33.12%	31.11%	0.94	26.50%	BRE Compliant	Imperceptible
1e	27.00%	25.09%	0.93	21.60%	BRE Compliant	Imperceptible
1f	34.30%	33.57%	0.98	27.00%	BRE Compliant	Imperceptible
1g	34.30%	33.62%	0.98	27.00%	BRE Compliant	Imperceptible
1h	27.33%	25.58%	0.94	21.86%	BRE Compliant	Imperceptible
1i	33.08%	31.25%	0.94	26.46%	BRE Compliant	Imperceptible
1j	34.12%	32.44%	0.95	27.00%	BRE Compliant	Imperceptible
1k	34.86%	33.27%	0.95	27.00%	BRE Compliant	Imperceptible
1l	36.30%	34.79%	0.96	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: Left - Highlighted areas indicate the position of assessed windows., Right - Aerial view of assessed location

5.1.2 Unit 52, Broomhill Road

Table No. 5.2: VSC Results Unit 52, Broomhill 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**
Second Floor						
2a	38.79%	36.46%	0.94	27.00%	BRE Compliant	Imperceptible
2b	35.48%	33.07%	0.93	27.00%	BRE Compliant	Imperceptible
2c	34.23%	31.79%	0.93	27.00%	BRE Compliant	Imperceptible
2d	33.23%	30.76%	0.93	26.59%	BRE Compliant	Imperceptible
2e	27.25%	24.92%	0.91	21.80%	BRE Compliant	Imperceptible
2f	39.20%	36.35%	0.93	27.00%	BRE Compliant	Imperceptible
2g	39.22%	36.43%	0.93	27.00%	BRE Compliant	Imperceptible
2h	27.69%	25.60%	0.92	22.16%	BRE Compliant	Imperceptible
2i	33.29%	31.13%	0.93	26.63%	BRE Compliant	Imperceptible
2j	34.28%	32.21%	0.94	27.00%	BRE Compliant	Imperceptible
2k	35.52%	33.56%	0.94	27.00%	BRE Compliant	Imperceptible
2l	38.80%	36.98%	0.95	27.00%	BRE Compliant	Imperceptible
Third Floor						
3a	14.70%	13.32%	0.91	11.76%	BRE Compliant	Imperceptible
3b	39.45%	37.72%	0.96	27.00%	BRE Compliant	Imperceptible
3c	39.46%	37.79%	0.96	27.00%	BRE Compliant	Imperceptible
3d	14.59%	13.40%	0.92	11.67%	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 5.2: Left - Highlighted areas indicate the position of assessed windows., Right - Aerial view of assessed location

5.1.3 Unit 1, Broomhill Terrace

Table No. 5.3: VSC Results Unit 1,Broomhill Terrace						
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**
Unit 1						
1a#[1]	30.09%	22.12%	0.73	24.07%	91.87%	Not Significant
1a#[2]	32.65%	24.59%	0.75	26.12%	94.16%	Not Significant
1a#[3]	32.99%	24.78%	0.75	26.39%	93.89%	Not Significant
1a#[4]	33.18%	24.73%	0.75	26.54%	93.18%	Not Significant
1a#[5]	33.33%	24.58%	0.74	26.66%	92.17%	Not Significant
1a#	**32.45%**	**24.16%**	**0.74**	**25.96%**	**93.07%**	**Not Significant**
1b#[1]	32.45%	24.16%	0.74	25.96%	93.07%	Not Significant
1b#[2]	35.17%	27.07%	0.77	27.00%	BRE Compliant	Imperceptible
1b#	**33.81%**	**25.61%**	**0.76**	**27.00%**	**94.87%**	**Not Significant**
1c#[1]	35.19%	26.97%	0.77	27.00%	99.89%	Not Significant
1c#[2]	34.72%	26.55%	0.76	27.00%	98.34%	Not Significant
1c#	**34.95%**	**26.76%**	**0.77**	**27.00%**	**99.11%**	**Not Significant**
1d#[1]	35.31%	26.70%	0.76	27.00%	98.89%	Not Significant
1d#[2]	35.40%	26.54%	0.75	27.00%	98.28%	Not Significant
1d#[3]	35.35%	26.62%	0.75	27.00%	98.59%	Not Significant
1d#	**35.35%**	**26.62%**	**0.75**	**27.00%**	**98.59%**	**Not Significant**

*** 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.**

 # If it can be determined or reasonably assumed that multiple windows are servicing the same room, each window has been assessed and the average value has been taken.

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

5.1.4 Unit 2, Broomhill Terrace

Table No. 5.4: VSC Results Unit 2, Broomhill Terrace						
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**
Unit 2						
2a	33.53%	24.07%	0.72	26.82%	89.73%	Slight
2b	33.32%	23.91%	0.72	26.66%	89.71%	Slight
2c	33.30%	23.70%	0.71	26.64%	88.96%	Slight
2d	33.39%	23.89%	0.72	26.71%	89.47%	Slight
2e	34.60%	23.23%	0.67	27.00%	86.03%	Slight
2f	34.47%	22.73%	0.66	27.00%	84.18%	Slight
2g	32.61%	21.13%	0.65	26.09%	81.00%	Slight
2h	35.65%	26.27%	0.74	27.00%	97.30%	Not Significant
2i	35.79%	26.14%	0.73	27.00%	96.83%	Not Significant
2j	35.93%	26.00%	0.72	27.00%	96.30%	Not Significant
2k	36.06%	25.84%	0.72	27.00%	95.72%	Not Significant
2l	36.19%	25.67%	0.71	27.00%	95.09%	Not Significant
2m	36.28%	25.49%	0.70	27.00%	94.39%	Not Significant
2n	36.37%	25.36%	0.70	27.00%	93.92%	Not Significant

* 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 5.4: Left - Highlighted areas indicate the position of assessed windows., Right - Aerial view of assessed location

5.1.5 Unit 3, Broomhill Terrace

Table No. 5.5: VSC Results Unit 3, Broomhill Terrace						
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**
Unit 3						
3a	34.56%	21.53%	0.62	27.00%	79.76%	Slight
3b	35.78%	22.67%	0.63	27.00%	83.97%	Slight
3c	36.11%	23.04%	0.64	27.00%	85.35%	Slight
3d	36.23%	23.24%	0.64	27.00%	86.07%	Slight
3e	36.31%	23.39%	0.64	27.00%	86.62%	Slight
3f	36.36%	23.54%	0.65	27.00%	87.20%	Slight
3g	36.42%	23.73%	0.65	27.00%	87.87%	Slight
3h	37.41%	25.69%	0.69	27.00%	95.15%	Not Significant
3i	37.47%	25.78%	0.69	27.00%	95.47%	Not Significant
3j	37.52%	25.88%	0.69	27.00%	95.86%	Not Significant
3k	37.58%	26.00%	0.69	27.00%	96.30%	Not Significant
3l	37.63%	26.12%	0.69	27.00%	96.76%	Not Significant
3m	37.68%	26.26%	0.70	27.00%	97.28%	Not Significant
3n	37.73%	26.41%	0.70	27.00%	97.82%	Not Significant

* 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 5.5: Left - Highlighted areas indicate the position of assessed windows., Right - Aerial view of assessed location

5.1.6 Unit 4, Broomhill Terrace

Table No. 5.6: VSC Results Unit 4, Broomhill Terrace						
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**
Unit 4						
4a	36.46%	23.89%	0.66	27.00%	88.50%	Slight
4b	36.49%	24.08%	0.66	27.00%	89.19%	Slight
4c	36.51%	24.30%	0.67	27.00%	89.99%	Slight
4d	36.51%	24.52%	0.67	27.00%	90.81%	Not Significant
4e	36.42%	24.67%	0.68	27.00%	91.38%	Not Significant
4f	36.02%	24.56%	0.68	27.00%	90.96%	Not Significant
4g	32.81%	21.67%	0.66	26.25%	82.55%	Slight
4h	37.77%	26.57%	0.70	27.00%	98.41%	Not Significant
4i	37.81%	26.75%	0.71	27.00%	99.08%	Not Significant
4j	37.85%	26.96%	0.71	27.00%	99.87%	Not Significant
4k	37.89%	27.19%	0.72	27.00%	BRE Compliant	Imperceptible
4l	37.91%	27.44%	0.72	27.00%	BRE Compliant	Imperceptible
4m	37.94%	27.72%	0.73	27.00%	BRE Compliant	Imperceptible
4n	37.96%	28.03%	0.74	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 5.6: Left - Highlighted areas indicate the position of assessed windows., Right - Aerial view of assessed location

5.2 Effect on Annual Probable Sunlight Hours

5.2.1 Unit 52, Broomhill Road

Annual

Table No. 5.7: Annual APSH Results Unit 52, Broomhill Road						
Window Number	Baseline Annual APSH	Proposed Annual APSH	Ratio of Proposed APSH to Baseline APSH	Recommended minimum Annual APSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Ground Floor						
Ga	53.2%	53.2%	1.00	25.0%	BRE Compliant	Imperceptible
Gb	50.7%	50.7%	1.00	25.0%	BRE Compliant	Imperceptible
Gc	49.0%	49.0%	1.00	25.0%	BRE Compliant	Imperceptible
Gd	46.9%	46.9%	1.00	25.0%	BRE Compliant	Imperceptible
Ge	39.5%	39.5%	1.00	25.0%	BRE Compliant	Imperceptible
Gf	28.9%	28.9%	1.00	23.1%	BRE Compliant	Imperceptible
Gg	28.9%	28.9%	1.00	23.1%	BRE Compliant	Imperceptible
Gh	32.4%	32.4%	1.00	25.0%	BRE Compliant	Imperceptible
Gi	42.6%	42.6%	1.00	25.0%	BRE Compliant	Imperceptible
Gj	45.8%	45.8%	1.00	25.0%	BRE Compliant	Imperceptible
Gk	48.2%	48.2%	1.00	25.0%	BRE Compliant	Imperceptible
Gl	51.5%	51.5%	1.00	25.0%	BRE Compliant	Imperceptible
First Floor						
1a	78.6%	75.2%	0.96	25.0%	BRE Compliant	Imperceptible
1b	77.4%	74.1%	0.96	25.0%	BRE Compliant	Imperceptible
1c	76.0%	72.7%	0.96	25.0%	BRE Compliant	Imperceptible
1d	73.4%	70.1%	0.96	25.0%	BRE Compliant	Imperceptible
1e	60.8%	57.9%	0.95	25.0%	BRE Compliant	Imperceptible
1f	75.0%	73.5%	0.98	25.0%	BRE Compliant	Imperceptible
1g	75.0%	73.5%	0.98	25.0%	BRE Compliant	Imperceptible
1h	54.0%	51.8%	0.96	25.0%	BRE Compliant	Imperceptible
1i	68.3%	66.0%	0.97	25.0%	BRE Compliant	Imperceptible
1j	72.0%	69.9%	0.97	25.0%	BRE Compliant	Imperceptible
1k	74.2%	72.2%	0.97	25.0%	BRE Compliant	Imperceptible
1l	75.9%	74.2%	0.98	25.0%	BRE Compliant	Imperceptible

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the APSH 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 5.7: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

Winter

Table No. 5.8: WPSH Results Unit 52, Broomhill 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
Ground Floor						
Ga	23.9%	23.9%	1.00	5.0%	BRE Compliant	Imperceptible
Gb	18.9%	18.9%	1.00	5.0%	BRE Compliant	Imperceptible
Gc	16.8%	16.8%	1.00	5.0%	BRE Compliant	Imperceptible
Gd	15.6%	15.6%	1.00	5.0%	BRE Compliant	Imperceptible
Ge	14.7%	14.7%	1.00	5.0%	BRE Compliant	Imperceptible
Gf	0.5%	0.5%	1.00	0.4%	BRE Compliant	Imperceptible
Gg	0.4%	0.4%	1.00	0.3%	BRE Compliant	Imperceptible
Gh	5.6%	5.6%	1.00	4.5%	BRE Compliant	Imperceptible
Gi	10.5%	10.5%	1.00	5.0%	BRE Compliant	Imperceptible
Gj	11.7%	11.7%	1.00	5.0%	BRE Compliant	Imperceptible
Gk	13.1%	13.1%	1.00	5.0%	BRE Compliant	Imperceptible
Gl	17.5%	17.5%	1.00	5.0%	BRE Compliant	Imperceptible
First Floor						
1a	83.1%	74.4%	0.89	5.0%	BRE Compliant	Imperceptible
1b	82.2%	73.4%	0.89	5.0%	BRE Compliant	Imperceptible
1c	81.7%	73.0%	0.89	5.0%	BRE Compliant	Imperceptible
1d	81.0%	72.5%	0.89	5.0%	BRE Compliant	Imperceptible
1e	70.7%	63.0%	0.89	5.0%	BRE Compliant	Imperceptible
1f	68.4%	64.3%	0.94	5.0%	BRE Compliant	Imperceptible
1g	68.4%	64.5%	0.94	5.0%	BRE Compliant	Imperceptible
1h	55.2%	49.4%	0.90	5.0%	BRE Compliant	Imperceptible
1i	71.4%	65.3%	0.91	5.0%	BRE Compliant	Imperceptible
1j	74.8%	69.5%	0.93	5.0%	BRE Compliant	Imperceptible
1k	76.8%	71.6%	0.93	5.0%	BRE Compliant	Imperceptible
1l	78.3%	73.7%	0.94	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 5.8: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

5.2.2 Unit 52, Broomhill Road

Annual

Table No. 5.9: Annual APSH Results Unit 52, Broomhill Road						
Window Number	Baseline Annual APSH	Proposed Annual APSH	Ratio of Proposed APSH to Baseline APSH	Recommended minimum Annual APSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Second Floor						
2a	81.2%	78.6%	0.97	25.0%	BRE Compliant	Imperceptible
2b	80.4%	77.9%	0.97	25.0%	BRE Compliant	Imperceptible
2c	79.0%	76.6%	0.97	25.0%	BRE Compliant	Imperceptible
2d	75.4%	73.2%	0.97	25.0%	BRE Compliant	Imperceptible
2e	61.0%	59.3%	0.97	25.0%	BRE Compliant	Imperceptible
2f	83.2%	80.9%	0.97	25.0%	BRE Compliant	Imperceptible
2g	83.2%	81.0%	0.97	25.0%	BRE Compliant	Imperceptible
2h	56.3%	55.5%	0.99	25.0%	BRE Compliant	Imperceptible
2i	71.5%	70.6%	0.99	25.0%	BRE Compliant	Imperceptible
2j	75.5%	74.7%	0.99	25.0%	BRE Compliant	Imperceptible
2k	77.5%	76.8%	0.99	25.0%	BRE Compliant	Imperceptible
2l	78.7%	78.1%	0.99	25.0%	BRE Compliant	Imperceptible
Third Floor						
3a	32.0%	31.2%	0.97	25.0%	BRE Compliant	Imperceptible
3b	84.0%	82.9%	0.99	25.0%	BRE Compliant	Imperceptible
3c	84.0%	82.9%	0.99	25.0%	BRE Compliant	Imperceptible
3d	31.5%	31.1%	0.99	25.0%	BRE Compliant	Imperceptible

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the APSH 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 5.9: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

Winter

Table No. 5.10: WPSH Results Unit 52, Broomhill Road						
Window Number	Baseline Winter APSH	Proposed Winter APSH	Ratio of Proposed WPSH to Baseline WPSH	Recommended minimum Winter WPSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Second Floor						
2a	89.6%	82.8%	0.92	5.0%	BRE Compliant	Imperceptible
2b	89.5%	83.0%	0.93	5.0%	BRE Compliant	Imperceptible
2c	89.4%	83.3%	0.93	5.0%	BRE Compliant	Imperceptible
2d	88.7%	82.9%	0.93	5.0%	BRE Compliant	Imperceptible
2e	75.7%	71.3%	0.94	5.0%	BRE Compliant	Imperceptible
2f	88.5%	82.3%	0.93	5.0%	BRE Compliant	Imperceptible
2g	88.3%	82.7%	0.94	5.0%	BRE Compliant	Imperceptible
2h	60.7%	58.5%	0.96	5.0%	BRE Compliant	Imperceptible
2i	79.4%	76.9%	0.97	5.0%	BRE Compliant	Imperceptible
2j	83.2%	81.0%	0.97	5.0%	BRE Compliant	Imperceptible
2k	84.8%	83.0%	0.98	5.0%	BRE Compliant	Imperceptible
2l	85.7%	84.1%	0.98	5.0%	BRE Compliant	Imperceptible
Third Floor						
3a	79.7%	77.6%	0.97	5.0%	BRE Compliant	Imperceptible
3b	90.3%	87.3%	0.97	5.0%	BRE Compliant	Imperceptible
3c	90.1%	87.4%	0.97	5.0%	BRE Compliant	Imperceptible
3d	67.5%	66.3%	0.98	5.0%	BRE Compliant	Imperceptible

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the APSH 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 5.10: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

5.2.3 Unit 1, Broomhill Terrace

Annual

Table No. 5.11: Annual APSH Results Unit 1, Broomhill Terrace						
Window Number	Baseline Annual APSH	Proposed Annual APSH	Ratio of Proposed APSH to Baseline APSH	Recommended minimum Annual APSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Unit 1						
1a#[1]	55.8%	36.6%	0.66	25.0%	BRE Compliant	Imperceptible
1a#[2]	67.7%	48.2%	0.71	25.0%	BRE Compliant	Imperceptible
1a#[3]	70.4%	50.7%	0.72	25.0%	BRE Compliant	Imperceptible
1a#[4]	71.3%	51.2%	0.72	25.0%	BRE Compliant	Imperceptible
1a#[5]	71.7%	51.3%	0.71	25.0%	BRE Compliant	Imperceptible
1a#	**67.4%**	**47.6%**	**0.71**	**25.0%**	**BRE Compliant**	**Imperceptible**
1b#[1]	76.2%	58.6%	0.77	25.0%	BRE Compliant	Imperceptible
1b#[2]	76.1%	58.3%	0.77	25.0%	BRE Compliant	Imperceptible
1b#	**76.1%**	**58.5%**	**0.77**	**25.0%**	**BRE Compliant**	**Imperceptible**
1c#[1]	75.9%	58.0%	0.76	25.0%	BRE Compliant	Imperceptible
1c#[2]	75.8%	57.7%	0.76	25.0%	BRE Compliant	Imperceptible
1c#	**75.9%**	**57.9%**	**0.76**	**25.0%**	**BRE Compliant**	**Imperceptible**
1d#[1]	75.7%	57.4%	0.76	25.0%	BRE Compliant	Imperceptible
1d#[2]	75.6%	57.2%	0.76	25.0%	BRE Compliant	Imperceptible
1d#[3]	75.6%	56.9%	0.75	25.0%	BRE Compliant	Imperceptible
1d#	**75.6%**	**57.2%**	**0.76**	**25.0%**	**BRE Compliant**	**Imperceptible**

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the APSH 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.

If it can be determined or reasonably assumed that multiple windows are servicing the same room, each window has been assessed and the average value has been taken.

Figure 5.11: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

Winter

Table No. 5.12: WPSH Results Unit 1, Broomhill Terrace						
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
Unit 1						
1a#[1]	50.5%	16.8%	0.33	5.0%	BRE Compliant	Imperceptible
1a#[2]	60.6%	26.0%	0.43	5.0%	BRE Compliant	Imperceptible
1a#[3]	62.7%	27.0%	0.43	5.0%	BRE Compliant	Imperceptible
1a#[4]	63.3%	26.5%	0.42	5.0%	BRE Compliant	Imperceptible
1a#[5]	63.6%	25.6%	0.40	5.0%	BRE Compliant	Imperceptible
1a#	**60.1%**	**24.4%**	**0.41**	**5.0%**	**BRE Compliant**	**Imperceptible**
1b#[1]	72.6%	35.1%	0.48	5.0%	BRE Compliant	Imperceptible
1b#[2]	72.1%	33.9%	0.47	5.0%	BRE Compliant	Imperceptible
1b#	**72.3%**	**34.5%**	**0.48**	**5.0%**	**BRE Compliant**	**Imperceptible**
1c#[1]	71.6%	32.6%	0.45	5.0%	BRE Compliant	Imperceptible
1c#[2]	71.2%	31.2%	0.44	5.0%	BRE Compliant	Imperceptible
1c#	**71.4%**	**31.9%**	**0.45**	**5.0%**	**BRE Compliant**	**Imperceptible**
1d#[1]	70.9%	29.9%	0.42	5.0%	BRE Compliant	Imperceptible
1d#[2]	70.6%	28.8%	0.41	5.0%	BRE Compliant	Imperceptible
1d#[3]	70.5%	27.6%	0.39	5.0%	BRE Compliant	Imperceptible
1d#	**70.7%**	**28.8%**	**0.41**	**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.

If it can be determined or reasonably assumed that multiple windows are servicing the same room, each window has been assessed and the average value has been taken.

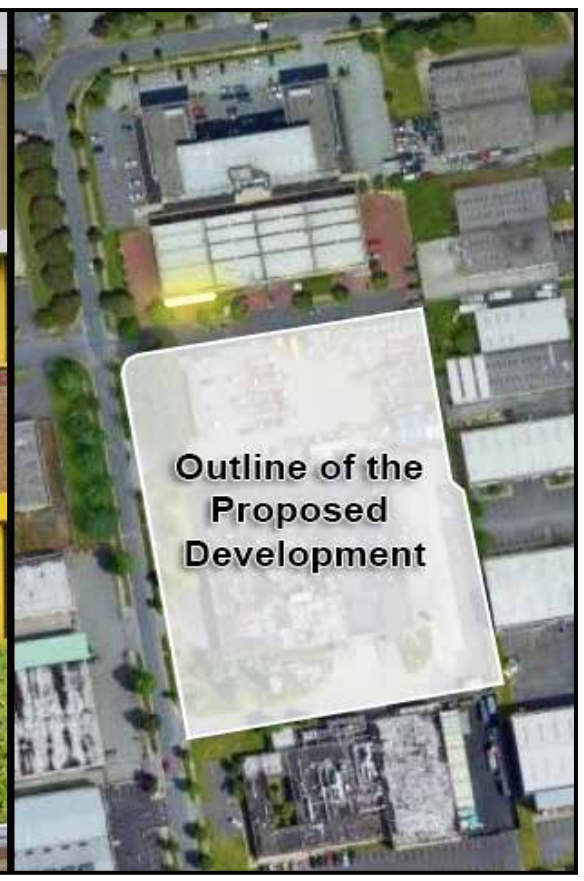


Figure 5.12: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

5.2.4 Unit 2, Broomhill Terrace

Annual

Table No. 5.13: Annual APSH Results Unit 2, Broomhill Terrace						
Window Number	Baseline Annual APSH	Proposed Annual APSH	Ratio of Proposed APSH to Baseline APSH	Recommended minimum Annual APSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Unit 2						
2a	71.5%	50.5%	0.71	25.0%	BRE Compliant	Imperceptible
2b	71.0%	50.2%	0.71	25.0%	BRE Compliant	Imperceptible
2c	71.5%	49.5%	0.69	25.0%	BRE Compliant	Imperceptible
2d	71.9%	48.9%	0.68	25.0%	BRE Compliant	Imperceptible
2e	71.3%	47.6%	0.67	25.0%	BRE Compliant	Imperceptible
2f	69.5%	45.3%	0.65	25.0%	BRE Compliant	Imperceptible
2g	63.1%	40.4%	0.64	25.0%	BRE Compliant	Imperceptible
2h	75.6%	56.7%	0.75	25.0%	BRE Compliant	Imperceptible
2i	75.6%	56.5%	0.75	25.0%	BRE Compliant	Imperceptible
2j	75.7%	56.2%	0.74	25.0%	BRE Compliant	Imperceptible
2k	75.7%	55.9%	0.74	25.0%	BRE Compliant	Imperceptible
2l	75.8%	55.6%	0.73	25.0%	BRE Compliant	Imperceptible
2m	75.9%	55.2%	0.73	25.0%	BRE Compliant	Imperceptible
2n	75.9%	55.0%	0.72	25.0%	BRE Compliant	Imperceptible

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the APSH 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 5.13: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

Winter

Table No. 5.14: WPSH Results Unit 2, Broomhill Terrace						
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
Unit 2						
2a	62.4%	22.2%	0.36	5.0%	BRE Compliant	Imperceptible
2b	61.2%	21.1%	0.34	5.0%	BRE Compliant	Imperceptible
2c	62.7%	19.6%	0.31	5.0%	BRE Compliant	Imperceptible
2d	64.8%	18.4%	0.28	5.0%	BRE Compliant	Imperceptible
2e	65.4%	16.9%	0.26	5.0%	BRE Compliant	Imperceptible
2f	65.4%	15.2%	0.23	5.0%	BRE Compliant	Imperceptible
2g	63.2%	13.5%	0.21	5.0%	BRE Compliant	Imperceptible
2h	70.4%	26.5%	0.38	5.0%	BRE Compliant	Imperceptible
2i	70.4%	25.4%	0.36	5.0%	BRE Compliant	Imperceptible
2j	70.4%	24.3%	0.35	5.0%	BRE Compliant	Imperceptible
2k	70.4%	23.3%	0.33	5.0%	BRE Compliant	Imperceptible
2l	70.5%	22.1%	0.31	5.0%	BRE Compliant	Imperceptible
2m	70.7%	20.9%	0.30	5.0%	BRE Compliant	Imperceptible
2n	70.8%	20.0%	0.28	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.

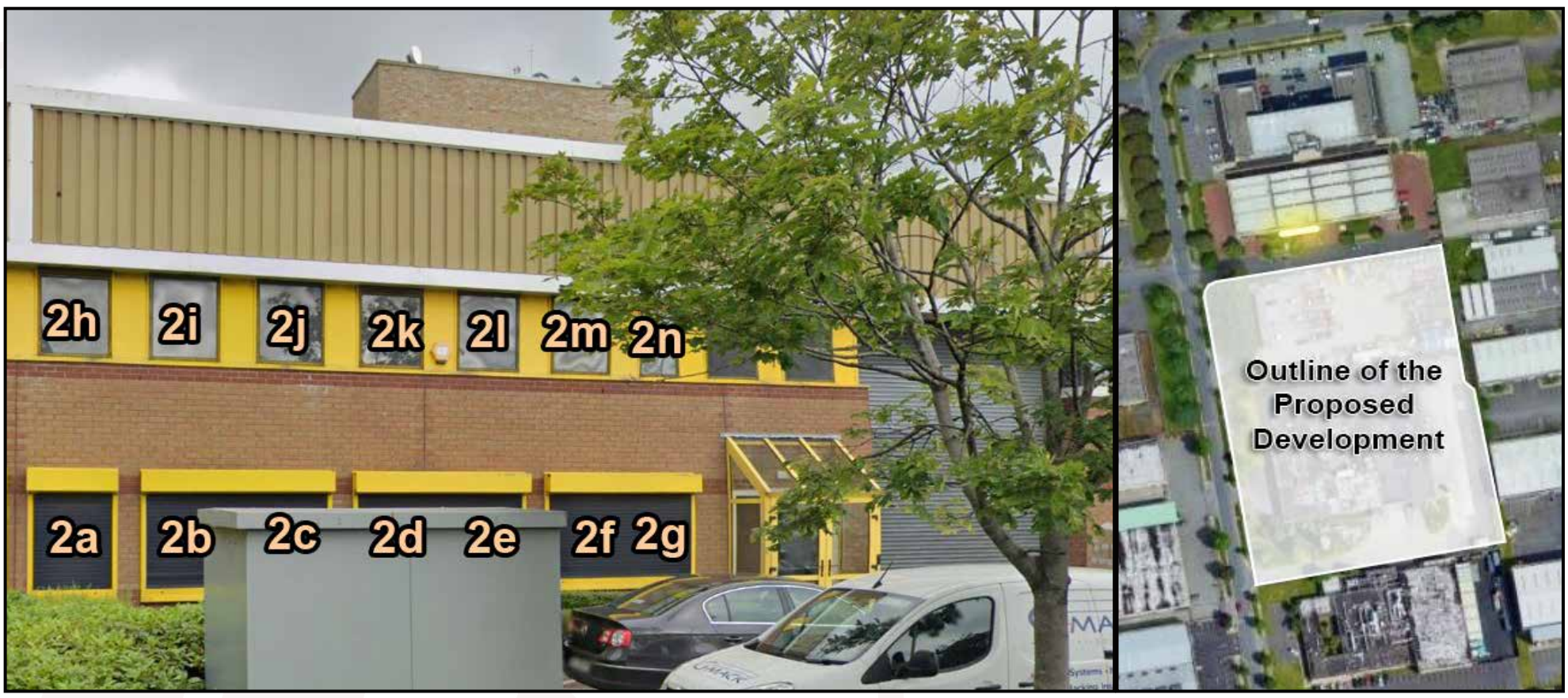


Figure 5.14: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

5.2.5 Unit 3, Broomhill Terrace

Annual

Table No. 5.15: Annual APSH Results Unit 3, Broomhill Terrace						
Window Number	Baseline Annual APSH	Proposed Annual APSH	Ratio of Proposed APSH to Baseline APSH	Recommended minimum Annual APSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Unit 3						
3a	63.5%	38.1%	0.60	25.0%	BRE Compliant	Imperceptible
3b	70.2%	44.6%	0.63	25.0%	BRE Compliant	Imperceptible
3c	72.9%	47.4%	0.65	25.0%	BRE Compliant	Imperceptible
3d	73.9%	48.6%	0.66	25.0%	BRE Compliant	Imperceptible
3e	74.4%	49.3%	0.66	25.0%	BRE Compliant	Imperceptible
3f	74.7%	49.9%	0.67	25.0%	BRE Compliant	Imperceptible
3g	75.0%	50.4%	0.67	25.0%	BRE Compliant	Imperceptible
3h	77.3%	55.9%	0.72	25.0%	BRE Compliant	Imperceptible
3i	77.4%	56.2%	0.73	25.0%	BRE Compliant	Imperceptible
3j	77.5%	56.4%	0.73	25.0%	BRE Compliant	Imperceptible
3k	77.6%	56.8%	0.73	25.0%	BRE Compliant	Imperceptible
3l	77.7%	57.1%	0.73	25.0%	BRE Compliant	Imperceptible
3m	77.9%	57.4%	0.74	25.0%	BRE Compliant	Imperceptible
3n	78.0%	57.8%	0.74	25.0%	BRE Compliant	Imperceptible

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the APSH 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 5.15: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

Winter

Table No. 5.16: WPSH Results Unit 3, Broomhill Terrace						
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
Unit 3						
3a	63.2%	3.1%	0.05	5.0%	62.5%	Moderate
3b	65.0%	4.6%	0.07	5.0%	91.9%	Not Significant
3c	67.3%	7.0%	0.10	5.0%	BRE Compliant	Imperceptible
3d	68.3%	8.3%	0.12	5.0%	BRE Compliant	Imperceptible
3e	69.0%	9.2%	0.13	5.0%	BRE Compliant	Imperceptible
3f	69.4%	10.0%	0.14	5.0%	BRE Compliant	Imperceptible
3g	69.8%	10.9%	0.16	5.0%	BRE Compliant	Imperceptible
3h	73.9%	20.0%	0.27	5.0%	BRE Compliant	Imperceptible
3i	74.2%	20.5%	0.28	5.0%	BRE Compliant	Imperceptible
3j	74.5%	21.1%	0.28	5.0%	BRE Compliant	Imperceptible
3k	74.8%	21.7%	0.29	5.0%	BRE Compliant	Imperceptible
3l	75.0%	22.3%	0.30	5.0%	BRE Compliant	Imperceptible
3m	75.3%	23.0%	0.31	5.0%	BRE Compliant	Imperceptible
3n	75.6%	23.7%	0.31	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 5.16: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

5.2.6 Unit 4, Broomhill Terrace

Annual

Table No. 5.17: Annual APSH Results Unit 4, Broomhill Terrace						
Window Number	Baseline Annual APSH	Proposed Annual APSH	Ratio of Proposed APSH to Baseline APSH	Recommended minimum Annual APSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Unit 4						
4a	75.1%	50.9%	0.68	25.0%	BRE Compliant	Imperceptible
4b	75.1%	51.3%	0.68	25.0%	BRE Compliant	Imperceptible
4c	75.0%	51.6%	0.69	25.0%	BRE Compliant	Imperceptible
4d	74.7%	51.7%	0.69	25.0%	BRE Compliant	Imperceptible
4e	73.7%	51.3%	0.70	25.0%	BRE Compliant	Imperceptible
4f	71.3%	49.4%	0.69	25.0%	BRE Compliant	Imperceptible
4g	62.5%	41.2%	0.66	25.0%	BRE Compliant	Imperceptible
4h	78.1%	58.2%	0.75	25.0%	BRE Compliant	Imperceptible
4i	78.2%	58.7%	0.75	25.0%	BRE Compliant	Imperceptible
4j	78.3%	59.1%	0.76	25.0%	BRE Compliant	Imperceptible
4k	78.4%	59.6%	0.76	25.0%	BRE Compliant	Imperceptible
4l	78.5%	60.2%	0.77	25.0%	BRE Compliant	Imperceptible
4m	78.6%	60.8%	0.77	25.0%	BRE Compliant	Imperceptible
4n	78.7%	61.5%	0.78	25.0%	BRE Compliant	Imperceptible

* The BRE Guidelines state that in order for a proposed development to have a noticeable effect on the APSH 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 5.17: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

Winter

Table No. 5.18: WPSH Results Unit 4, Broomhill Terrace						
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
Unit 4						
4a	70.2%	11.9%	0.17	5.0%	BRE Compliant	Imperceptible
4b	70.5%	12.9%	0.18	5.0%	BRE Compliant	Imperceptible
4c	70.8%	13.9%	0.20	5.0%	BRE Compliant	Imperceptible
4d	71.1%	15.2%	0.21	5.0%	BRE Compliant	Imperceptible
4e	71.4%	16.5%	0.23	5.0%	BRE Compliant	Imperceptible
4f	71.6%	17.9%	0.25	5.0%	BRE Compliant	Imperceptible
4g	67.5%	15.1%	0.22	5.0%	BRE Compliant	Imperceptible
4h	75.9%	24.6%	0.32	5.0%	BRE Compliant	Imperceptible
4i	76.1%	25.6%	0.34	5.0%	BRE Compliant	Imperceptible
4j	76.4%	26.6%	0.35	5.0%	BRE Compliant	Imperceptible
4k	76.6%	27.9%	0.36	5.0%	BRE Compliant	Imperceptible
4l	76.8%	29.2%	0.38	5.0%	BRE Compliant	Imperceptible
4m	77.1%	30.7%	0.40	5.0%	BRE Compliant	Imperceptible
4n	77.3%	32.4%	0.42	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 5.18: Left - Highlighted areas indicate the position of assessed windows, Right - Aerial view of assessed location.

6.0 Sunlight Assessment

6.1 Sunlight in Proposed Outdoor Amenity Areas

Table No. 6.1: 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
Communal Open Space	95.0%	50.0%	BRE Compliant
Public Open Space	97.4%	50.0%	BRE Compliant
Roof Garden Block D	91.7%	50.0%	BRE Compliant
Roof Garden Block E	80.6%	50.0%	BRE Compliant
Creche Play Area	69.7%	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.			

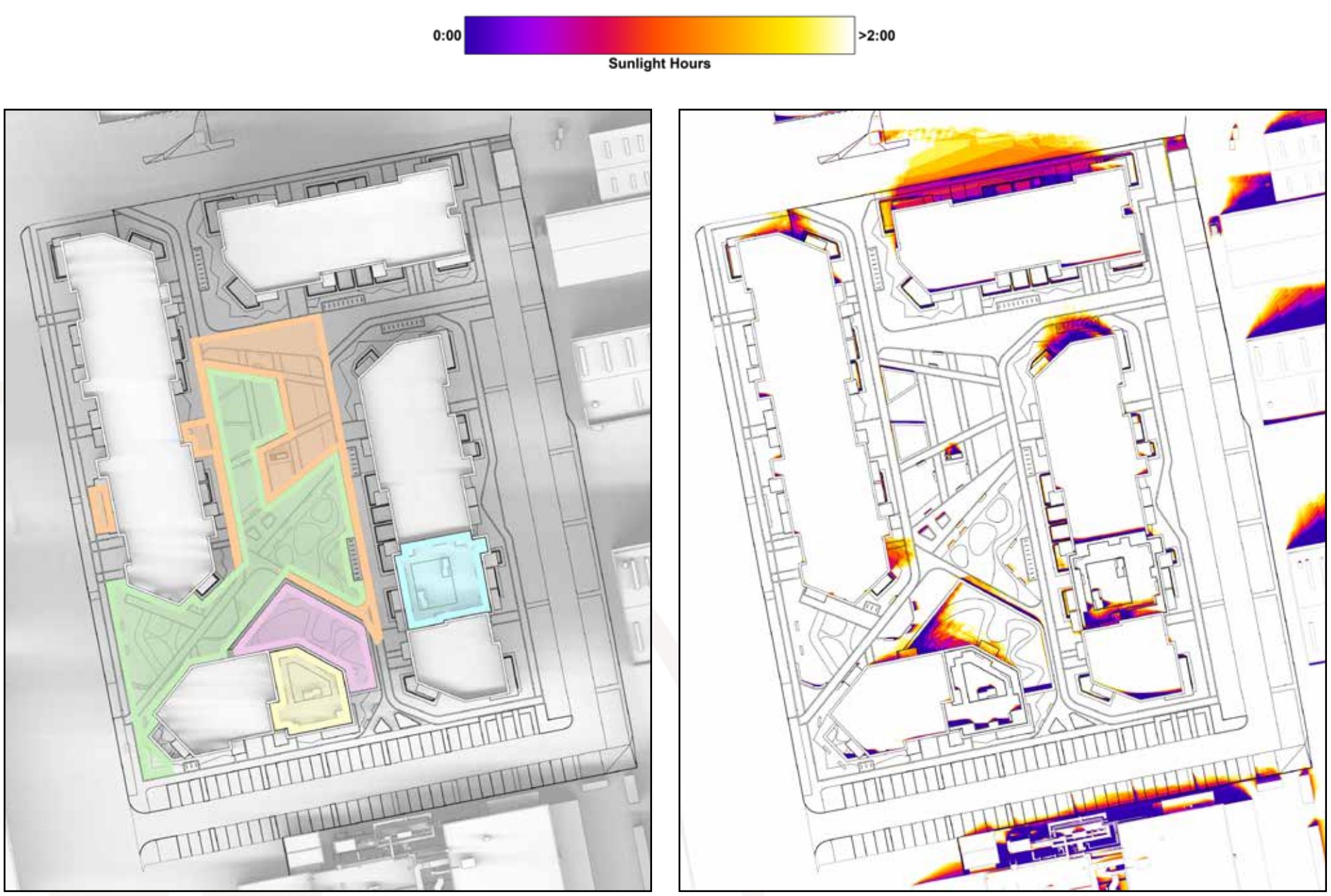


Figure 6.1: Left - Indication of the amenity areas that have been analysed, Right - Area capable of receiving 2 hours of sunlight on March 21st shown in white (R).

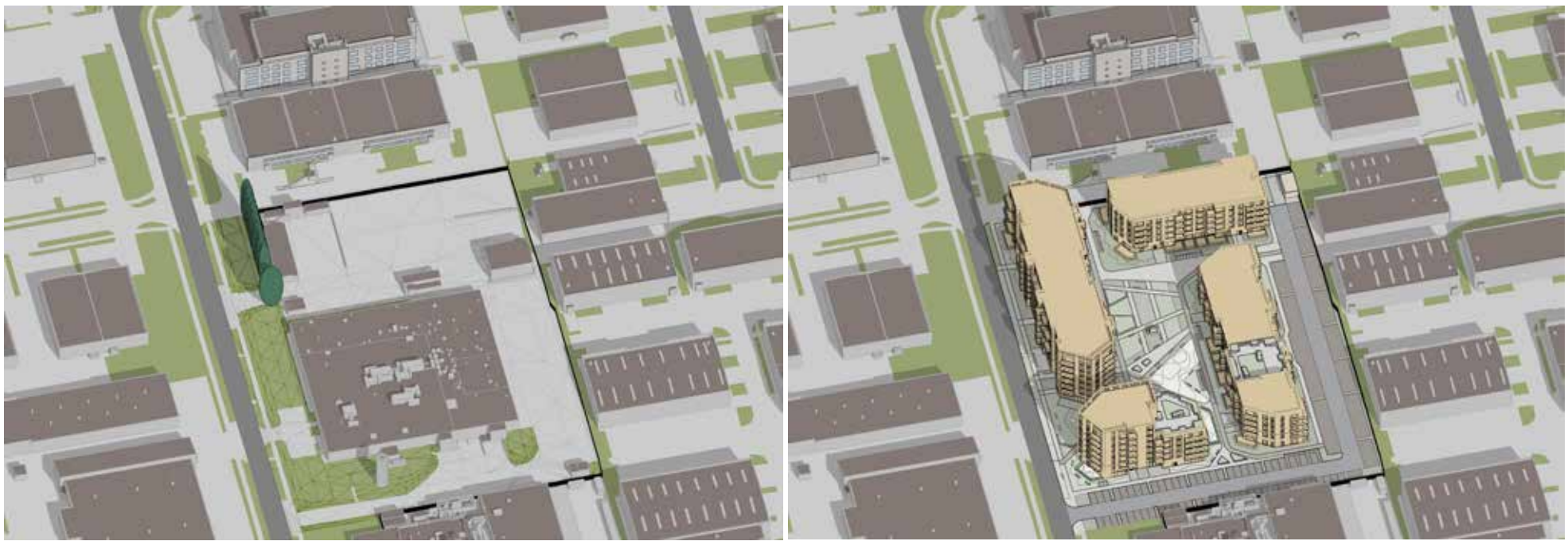
N

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

6.2 6.2.1	Shadow Studies Shadow Study 21 March	Project: SHD Broomhill Road	3D DESIGN BUREAU
	March 21st Sunrise 6:25 | Sunset 18:40	Applicant: Garyaron Homes	

N

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



	Project: SHD Broomhill Road	3D DESIGN BUREAU
March 21st **Sunrise 6:25 | Sunset 18:40**	**Applicant: Garyaron Homes**	

N

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: SHD Broomhill Road

Applicant: Garyaron Homes

3D DESIGN BUREAU

N

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

6.2.2 Shadow Study 21 June	Project: SHD Broomhill Road	3D DESIGN BUREAU
June 21st Sunrise 4:57 | Sunset 21:57	Applicant: Garyaron Homes	

N

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

Project: SHD Broomhill Road

3D DESIGN BUREAU

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

Applicant: Garyaron Homes

N

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

Project: SHD Broomhill Road

3D DESIGN BUREAU

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

Applicant: Garyaron Homes

N

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

	Project: SHD Broomhill Road	3D DESIGN BUREAU
June 21st **Sunrise 4:57 | Sunset 21:57**	**Applicant: Garyaron Homes**	

N

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

6.2.3	**Shadow Study 21 December**	**Project: SHD Broomhill Road**	3D DESIGN BUREAU
	December 21st Sunrise 8:38 | Sunset 16:08	**Applicant: Garyaron Homes**	

N

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

Project: SHD Broomhill Road

3D DESIGN BUREAU

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

Applicant: Garyaron Homes

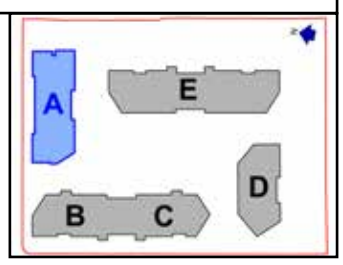
6.3 Average Daylight Factor

6.3.1 Block A - Ground Floor

Table No. 6.2: ADF Results Block A - Ground Floor		
Unit Number	Room Description	Predicted ADF Value
A1002	LKD	7.08%
A1002	Bedroom 1	4.08%
A1003	LKD	3.48%
A1003	Bedroom 1	2.38%
A1004	LKD	3.02%
A1004	Bedroom 2	6.20%
A1004	Bedroom 1	6.08%
A2001	LKD	3.48%
A2001	Bedroom 1	6.09%
A2001	Bedroom 2	5.55%
A2002	Bedroom 1	3.13%
A2002	LKD	4.56%
A2003	LKD	4.55%
A2003	Bedroom 1	2.04%
A2004	Bedroom 3	2.84%
A2004	LKD	6.36%
A2004	Bedroom 2	3.89%
A2004	Bedroom 1	5.64%
A1001	Bedroom 2	4.63%
A1001	Bedroom 1	7.48%
A1001	LKD	7.08%

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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.

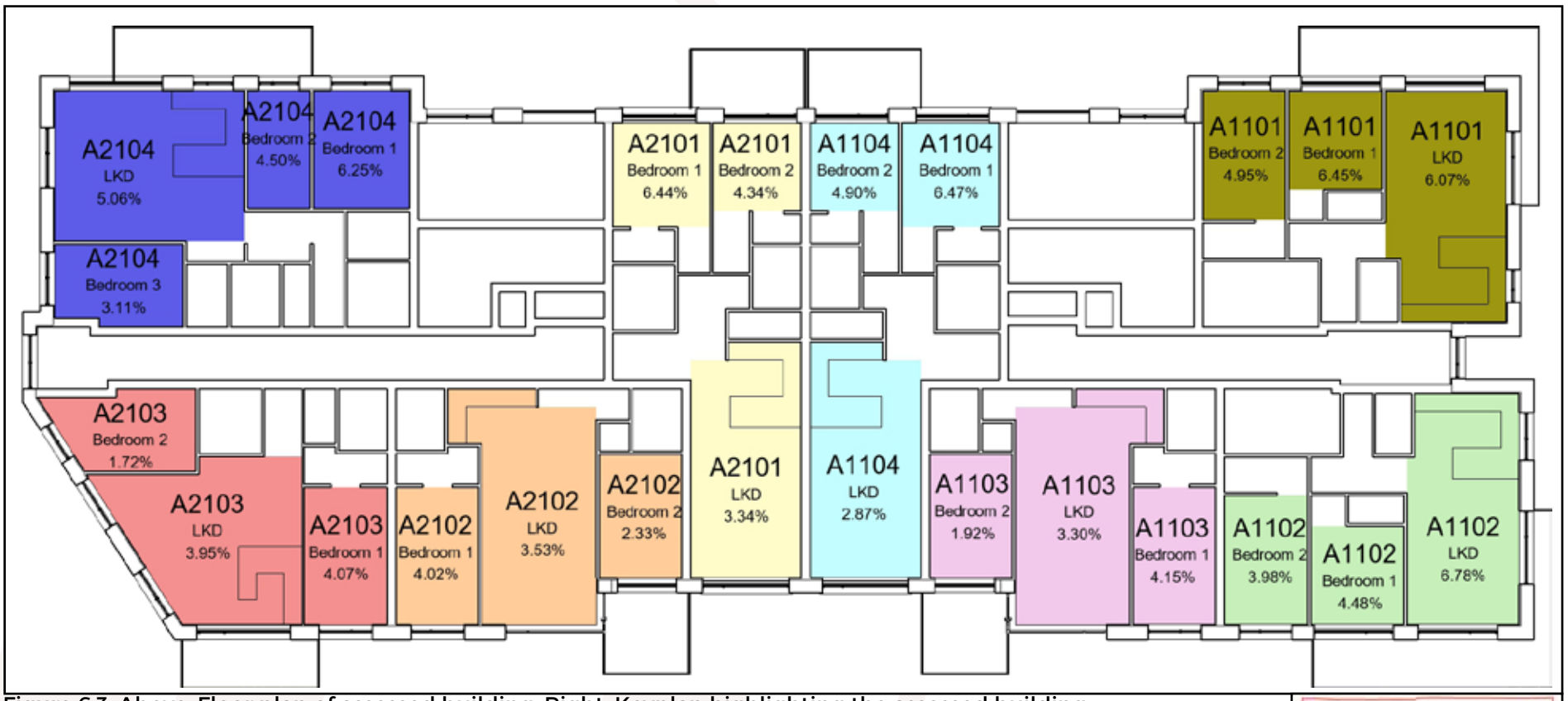
Figure 6.2: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.



6.3.2 Block A - First Floor

Table No. 6.3: ADF Results Block A - First Floor		
Unit Number	Room Description	Predicted ADF Value
A1102	LKD	6.78%
A1102	Bedroom 1	4.48%
A1102	Bedroom 2	3.98%
A1103	Bedroom 1	4.15%
A1103	LKD	3.30%
A1103	Bedroom 2	1.92%
A1104	LKD	2.87%
A1104	Bedroom 2	4.90%
A1104	Bedroom 1	6.47%
A2101	LKD	3.34%
A2101	Bedroom 1	6.44%
A2101	Bedroom 2	4.34%
A2102	Bedroom 2	2.33%
A2102	LKD	3.53%
A2102	Bedroom 1	4.02%
A2103	Bedroom 1	4.07%
A2103	LKD	3.95%
A2103	Bedroom 2	1.72%
A2104	Bedroom 3	3.11%
A2104	LKD	5.06%
A2104	Bedroom 2	4.50%
A2104	Bedroom 1	6.25%
A1101	Bedroom 2	4.95%
A1101	Bedroom 1	6.45%
A1101	LKD	6.07%

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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.



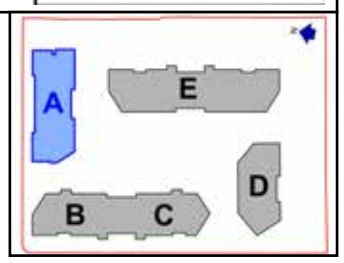


Figure 6.3: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.

6.3.3 Block BC - Ground Floor

Table No. 6.4: ADF Results Block BC - Ground Floor		
Unit Number	Room Description	Predicted ADF Value
Communal	Café	11.48%
Communal	Co-Working	5.13%
B004	Bedroom 1	4.97%
B004	Bedroom 2	6.10%
B004	LKD	8.37%
B003	Bedroom 1	4.17%
B003	LKD	6.81%
B002	Bedroom 1	3.12%
B002	LKD	3.44%
B002	Bedroom 2	3.80%
B001	LKD	5.15%
B001	Bedroom 1	3.59%
C002	Bedroom 1	3.72%
C002	LKD	3.80%
C002	Bedroom 2	4.38%
C001	LKD	4.79%
C001	Bedroom 1	2.19%
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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.		

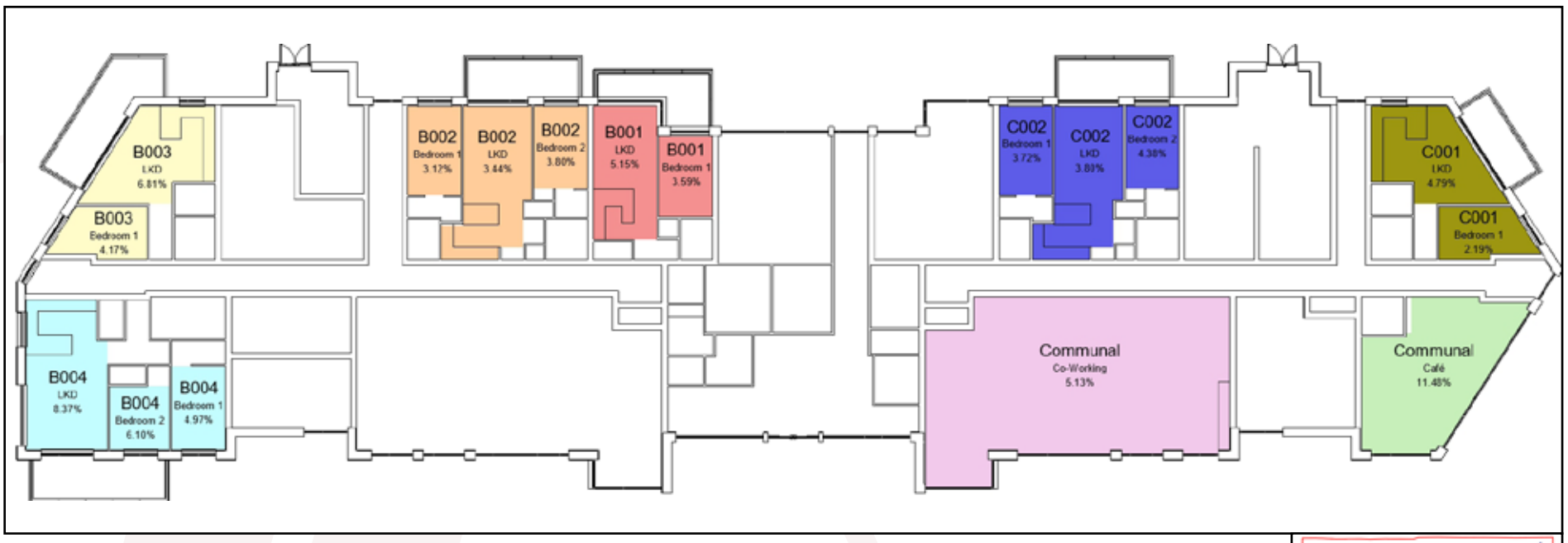
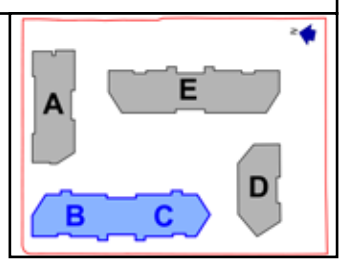


Figure 6.4: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.



6.3.4 Block BC - First Floor

Table No. 6.5: ADF Results Block BC - First Floor		
Unit Number	Room Description	Predicted ADF Value
C101	Bedroom 1	3.43%
C101	LKD	5.88%
C108	Bedroom 2	5.23%
C108	LKD	3.73%
C108	Bedroom 1	2.91%
C107	Bedroom 1	2.59%
C107	LKD	5.92%
C106	LKD	3.65%
C106	Bedroom 1	5.67%
C106	Bedroom 2	4.60%
B103	LKD	3.22%
B103	Bedroom 2	4.60%
B103	Bedroom 1	5.71%
B102	LKD	6.62%
B102	Bedroom 1	3.04%
B101	Bedroom 1	4.42%
B101	LKD	4.14%
B101	Bedroom 2	3.50%
B108	Bedroom 1	5.83%
B108	Bedroom 2	4.50%
B108	LKD	8.34%

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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.

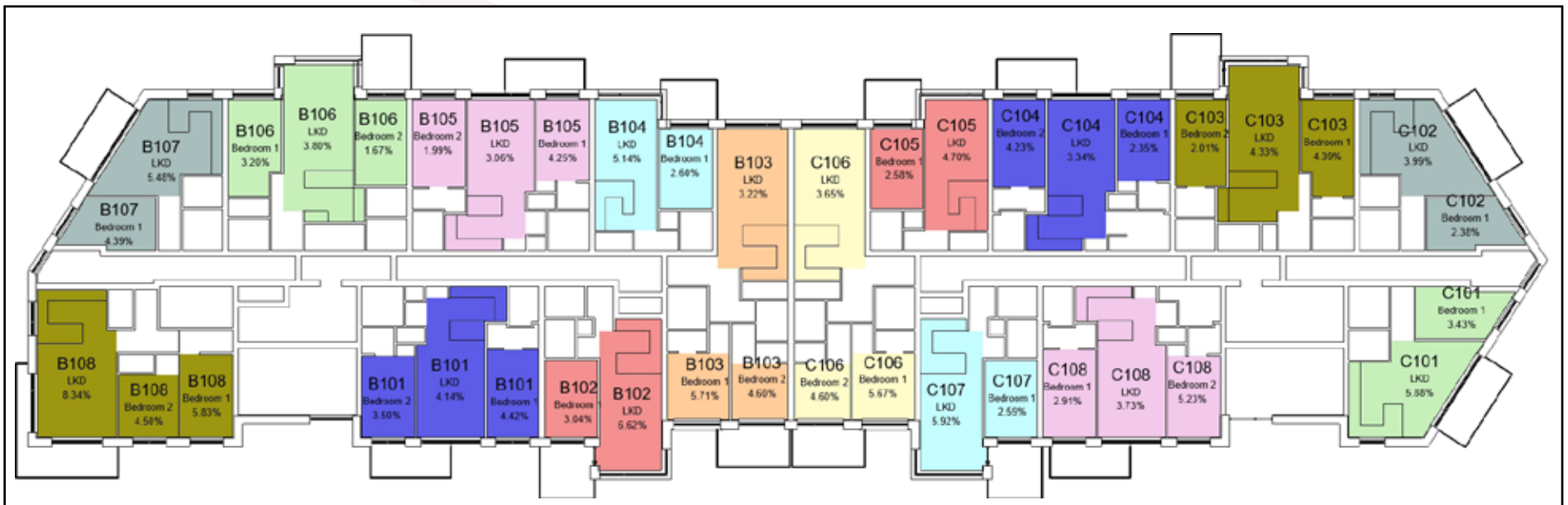
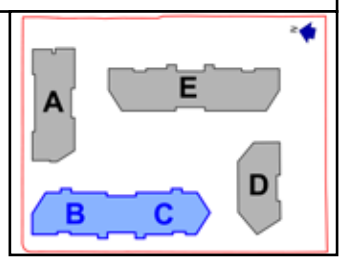


Figure 6.5: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.



6.3.5 Block BC - First Floor

Table No. 6.6: ADF Results Block BC - First Floor		
Unit Number	Room Description	Predicted ADF Value
B107	Bedroom 1	4.39%
B107	LKD	5.48%
B106	Bedroom 1	3.20%
B106	LKD	3.80%
B106	Bedroom 2	1.67%
B105	Bedroom 2	1.99%
B105	LKD	3.06%
B105	Bedroom 1	4.25%
B104	LKD	5.14%
B104	Bedroom 1	2.60%
C105	Bedroom 1	2.58%
C105	LKD	4.70%
C104	Bedroom 2	4.23%
C104	LKD	3.34%
C104	Bedroom 1	2.35%
C103	Bedroom 2	2.01%
C103	LKD	4.33%
C103	Bedroom 1	4.39%
C102	LKD	3.99%
C102	Bedroom 1	2.38%

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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.

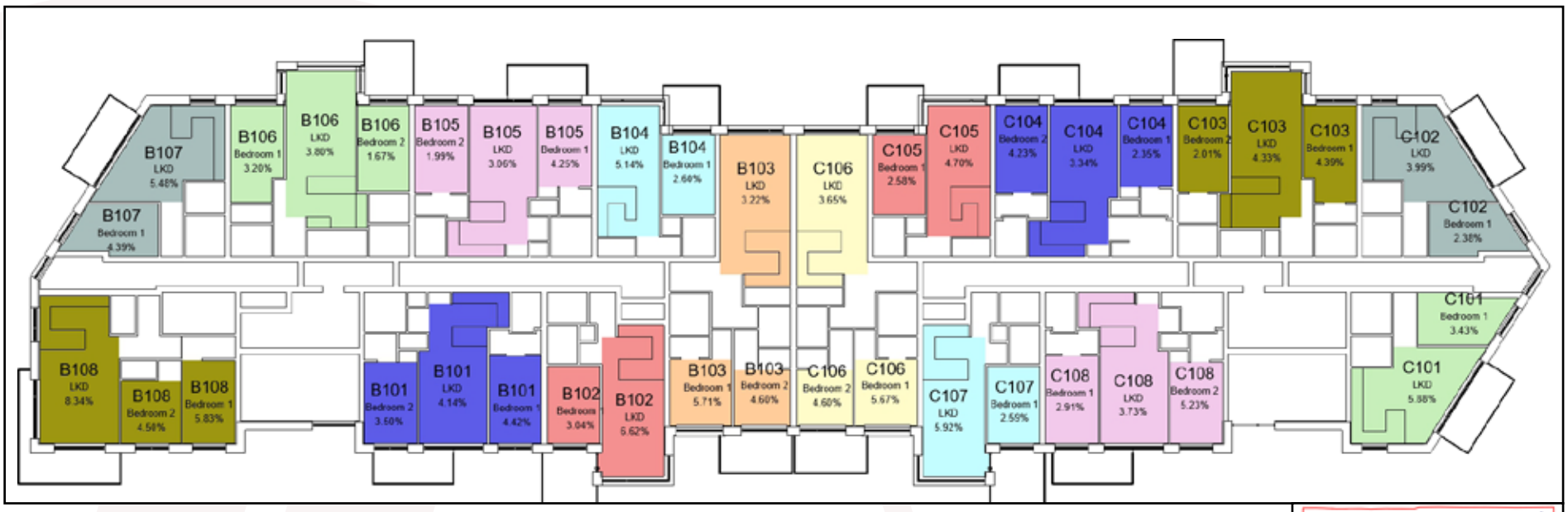
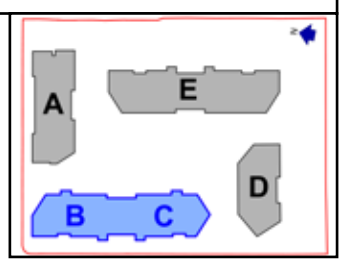
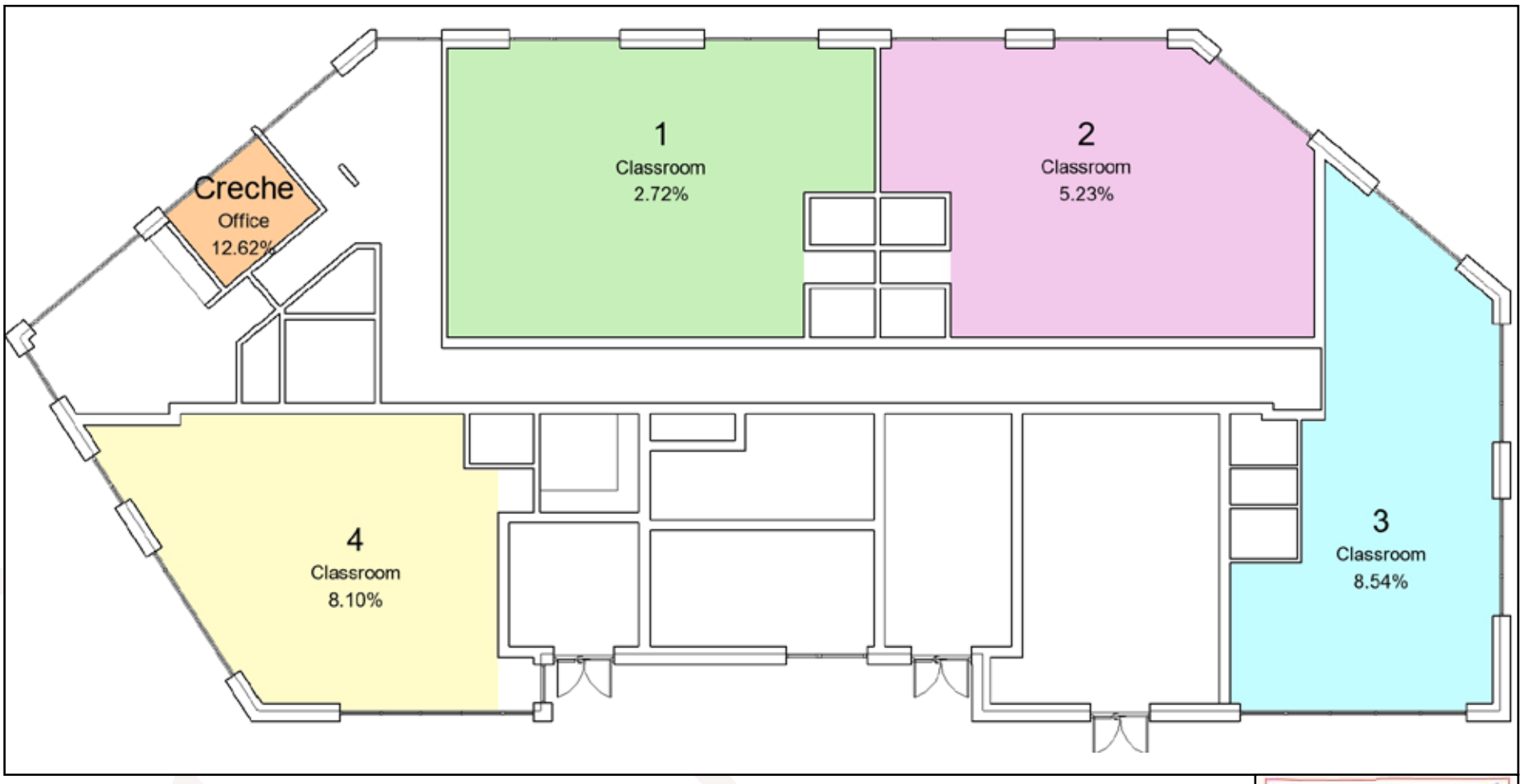


Figure 6.6: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.



6.3.6 Block D - Ground Floor

Table No. 6.7: ADF Results Block D - Ground Floor		
Unit Number	Room Description	Predicted ADF Value
1	Classroom 1	2.72%
2	Classroom 2	5.23%
3	Classroom 3	8.54%
4	Classroom 4	8.10%
Creche	Office	12.62%
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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.		



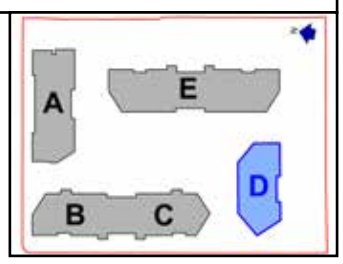
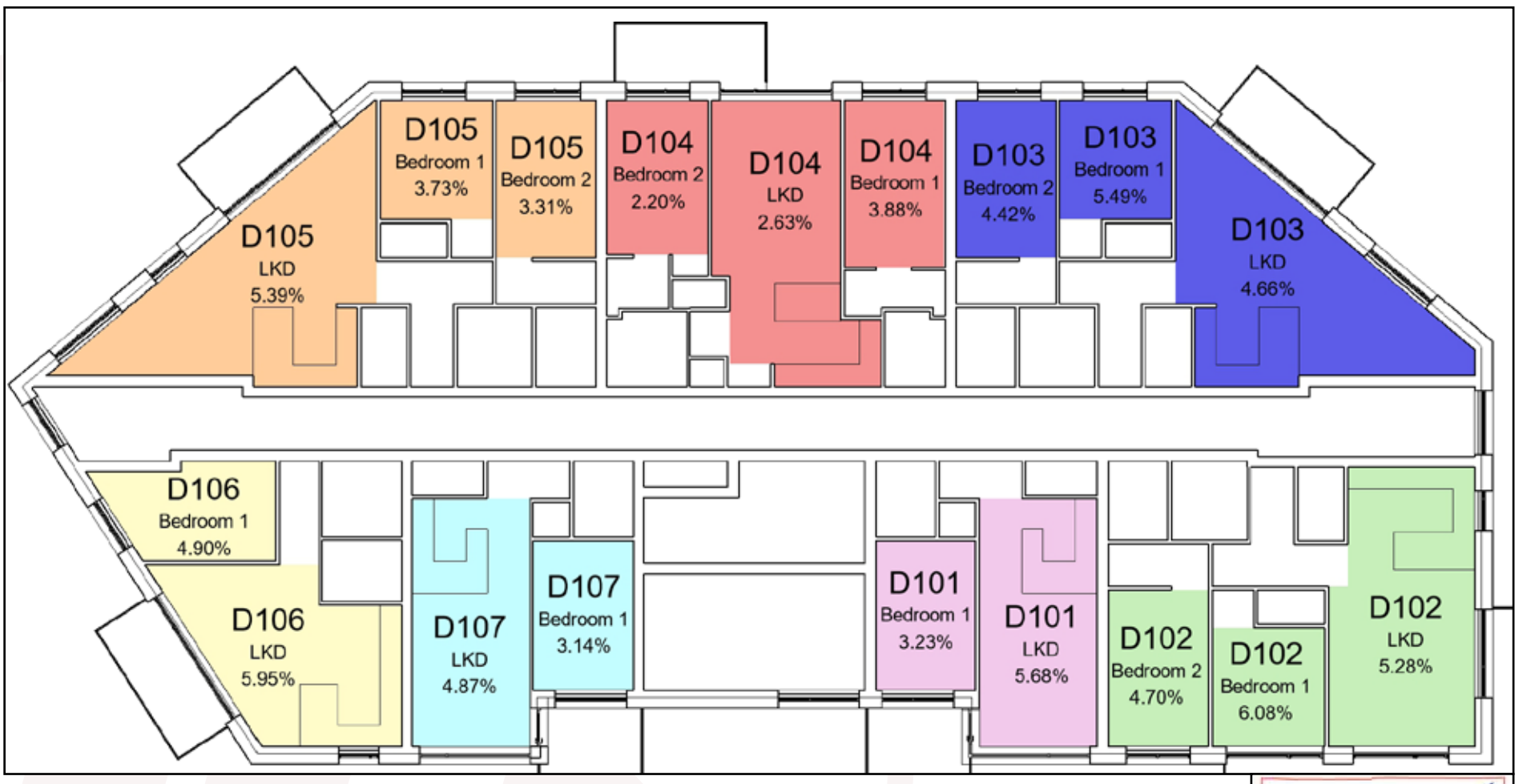


Figure 6.7: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.

6.3.7 Block D - First Floor

Table No. 6.8: ADF Results Block D - First Floor		
Unit Number	Room Description	Predicted ADF Value
D102	LKD	5.28%
D102	Bedroom 1	6.08%
D102	Bedroom 2	4.70%
D101	LKD	5.68%
D101	Bedroom 1	3.23%
D107	Bedroom 1	3.14%
D107	LKD	4.87%
D106	LKD	5.95%
D106	Bedroom 1	4.90%
D105	LKD	5.39%
D105	Bedroom 1	3.73%
D105	Bedroom 2	3.31%
D104	Bedroom 2	2.20%
D104	LKD	2.63%
D104	Bedroom 1	3.88%
D103	Bedroom 2	4.42%
D103	Bedroom 1	5.49%
D103	LKD	4.66%
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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.		



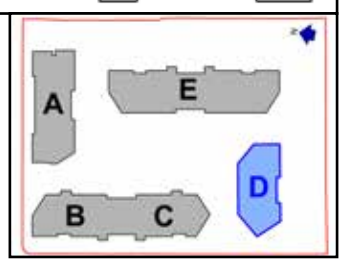


Figure 6.8: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.

6.3.8 Block E - Ground Floor

Table No. 6.9: ADF Results Block E - Ground Floor		
Unit Number	Room Description	Predicted ADF Value
E2002	Bedroom 1	4.46%
E2002	LKD	6.00%
E2003	Bedroom 1	3.21%
E2003	LKD	3.36%
E2004	Bedroom 1	3.92%
E2004	LKD	3.54%
E2004	Bedroom 2	2.77%
E2005	LKD	3.13%
E2005	Bedroom 2	5.45%
E2005	Bedroom 1	5.01%
E1003	LKD	3.49%
E1003	Bedroom 1	4.94%
E1003	Bedroom 2	6.23%
E1004	Bedroom 2	2.70%
E1004	LKD	3.91%
E1004	Bedroom 1	3.50%
E1005	Bedroom 1	2.71%
E1005	LKD	4.73%
E1005	Bedroom 2	2.00%
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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.		

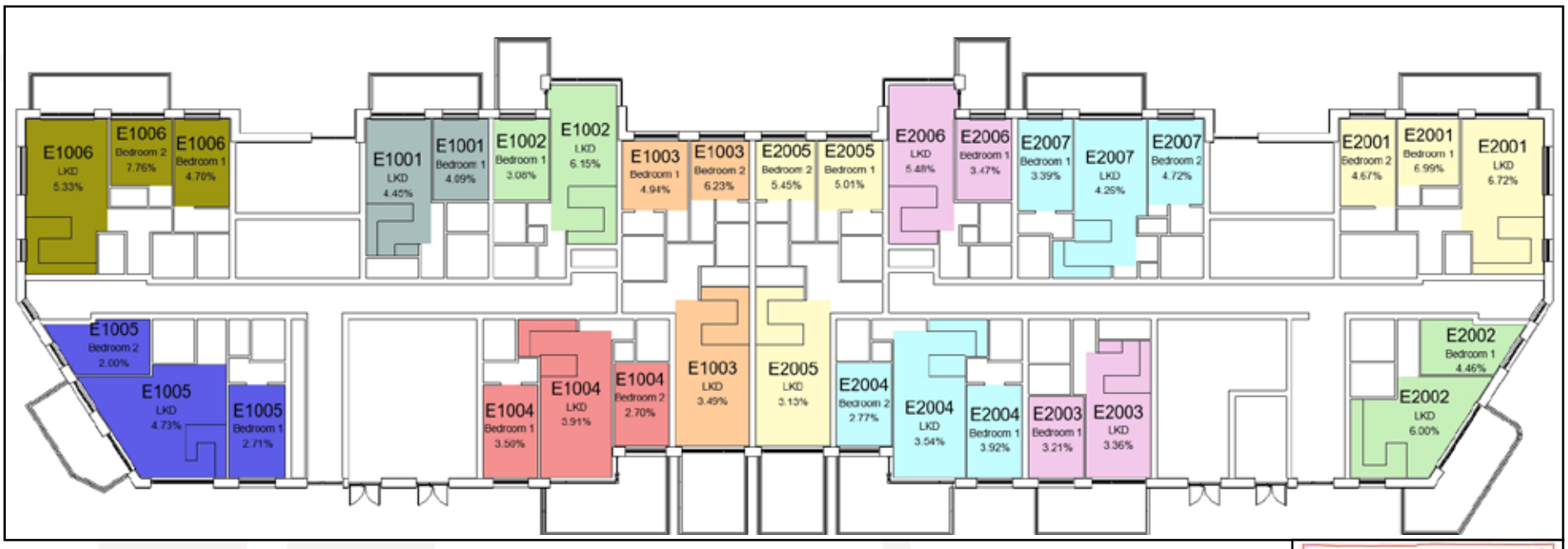
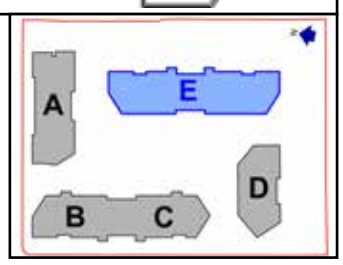


Figure 6.9: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.



6.3.9 Block E - Ground Floor

Table No. 6.10: ADF Results Block E - Ground Floor		
Unit Number	Room Description	Predicted ADF Value
E1006	LKD	5.33%
E1006	Bedroom 2	7.76%
E1006	Bedroom 1	4.70%
E1001	LKD	4.45%
E1001	Bedroom 1	4.09%
E1002	Bedroom 1	3.08%
E1002	LKD	6.15%
E2006	LKD	5.48%
E2006	Bedroom 1	3.47%
E2007	Bedroom 1	3.39%
E2007	LKD	4.26%
E2007	Bedroom 2	4.72%
E2001	Bedroom 2	4.67%
E2001	Bedroom 1	6.99%
E2001	LKD	6.72%
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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.		

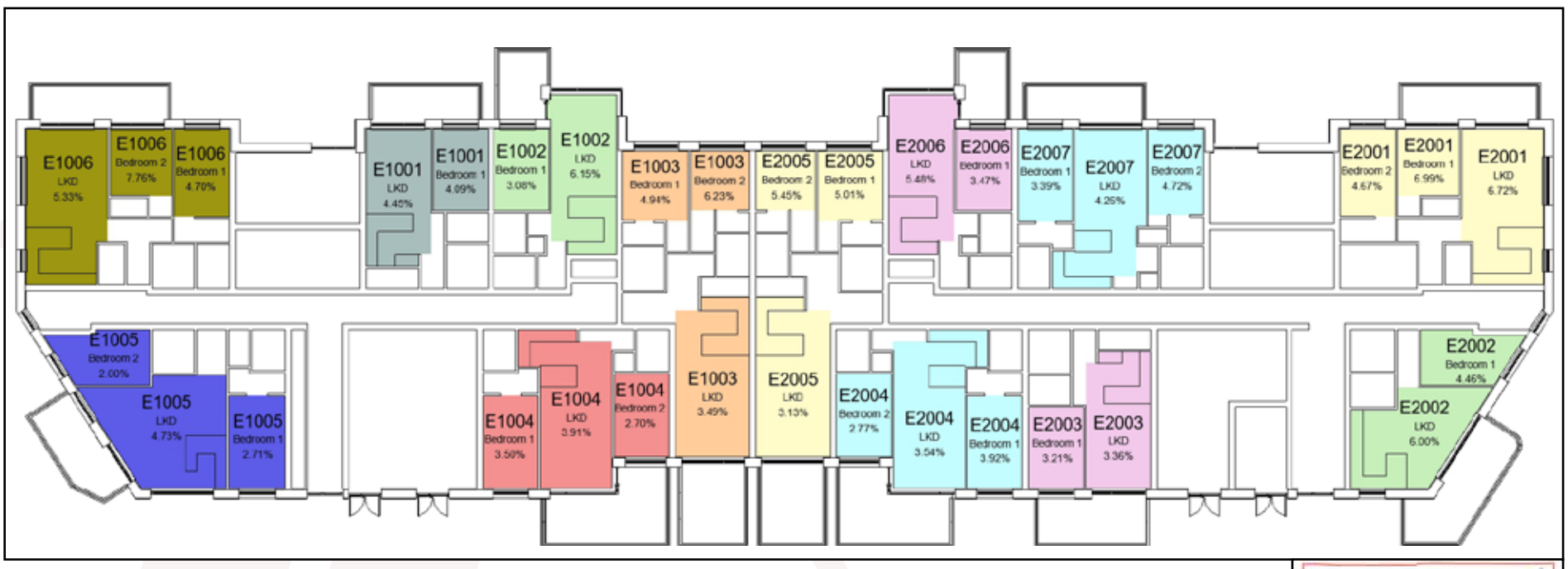
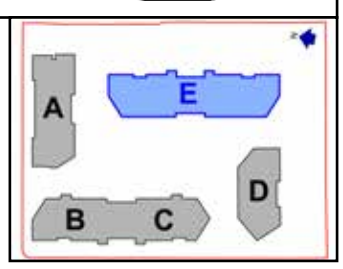


Figure 6.10: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.



6.3.10 Block E - First Floor

Table No. 6.11: ADF Results Block E - First Floor		
Unit Number	Room Description	Predicted ADF Value
E2102	Bedroom 1	4.65%
E2102	LKD	4.70%
E2103	Bedroom 1	2.57%
E2103	LKD	2.45%
E2104	Bedroom 2	2.39%
E2104	LKD	2.64%
E2104	Bedroom 1	3.59%
E2105	Bedroom 1	4.12%
E2105	LKD	3.40%
E2105	Bedroom 2	2.06%
E2106	LKD	2.93%
E2106	Bedroom 2	4.04%
E2106	Bedroom 1	5.26%
E1103	LKD	3.24%
E1103	Bedroom 1	5.86%
E1103	Bedroom 2	4.02%
E1104	Bedroom 2	2.23%
E1104	LKD	3.44%
E1104	Bedroom 1	4.00%
E1105	Bedroom 1	2.78%
E1105	LKD	2.64%
E1106	LKD	2.92%
E1106	Bedroom 1	2.54%
E1107	LKD	3.52%
E1107	Bedroom 1	3.67%
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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.		

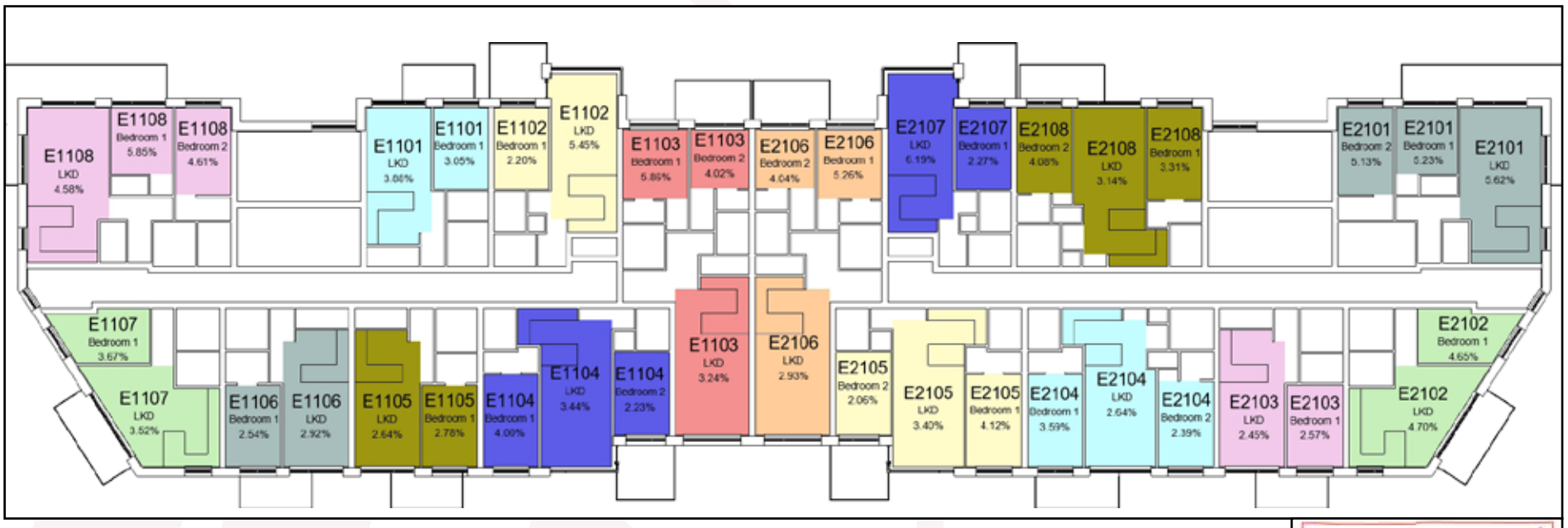


Figure 6.11: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.

6.3.11 Block E - First Floor

Table No. 6.12: ADF Results Block E - First Floor		
Unit Number	Room Description	Predicted ADF Value
E1108	LKD	4.58%
E1108	Bedroom 1	5.85%
E1108	Bedroom 2	4.61%
E1101	LKD	3.88%
E1101	Bedroom 1	3.05%
E1102	Bedroom 1	2.20%
E1102	LKD	5.45%
E2107	LKD	6.19%
E2107	Bedroom 1	2.27%
E2108	Bedroom 2	4.08%
E2108	LKD	3.14%
E2108	Bedroom 1	3.31%
E2101	Bedroom 2	5.13%
E2101	Bedroom 1	5.23%
E2101	LKD	5.62%
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. In LKDs, the higher target value of 2.0% should be applied. The circa compliance rates across the entire scheme can be found in section 7.4 on page 58.		

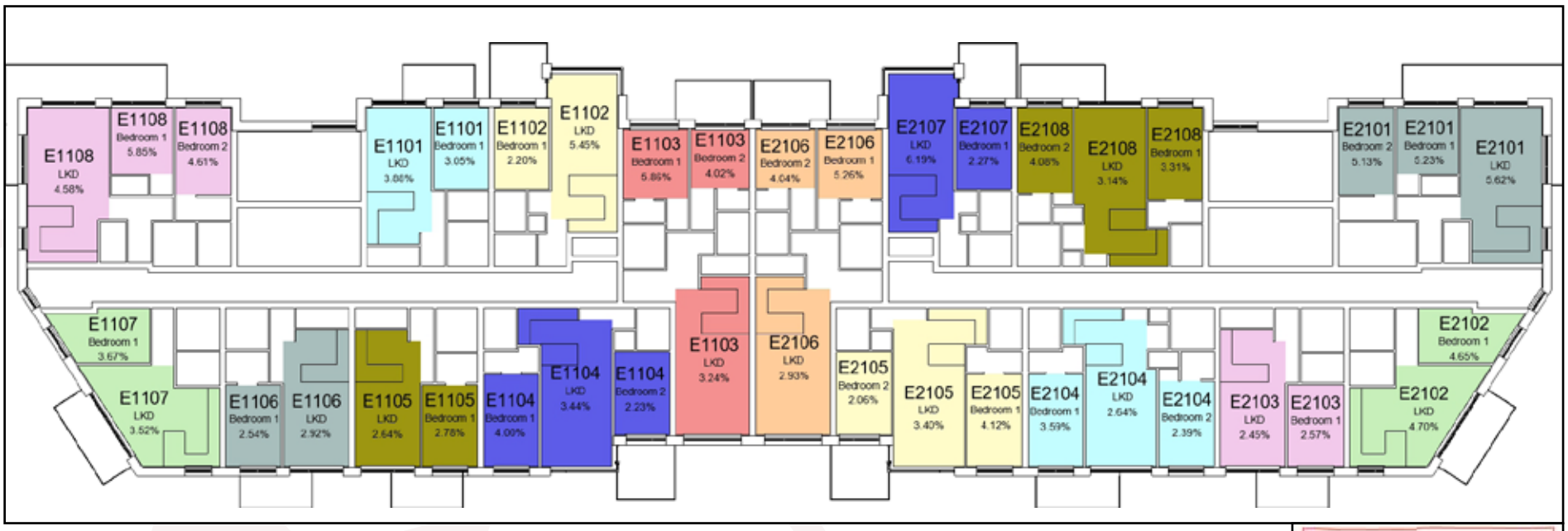
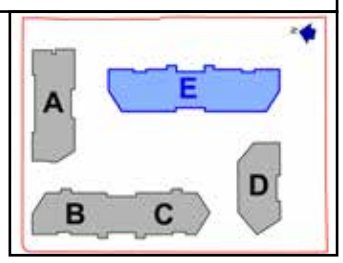


Figure 6.12: Above: Floor plan of assessed building, Right: Keyplan highlighting the assessed building.



7.0 Analysis of Results

Results were generated and analysed for the following studies:

- Vertical Sky Component
  - Unit 52, Broomhill Road
  - Units 1-4 Broomhill Terrace
- Annual Probable Sunlight Hours
  - 53 Broomhill Road
  - Units 1-4 Broomhill Terrace
- Sunlighting in Proposed Gardens/Amenity Spaces
  - 2 No. spaces in the proposed development.
- Average Daylight Factor
  - 196 No. residential rooms in the proposed development.
  - 5 No. non-residential rooms in the proposed development.

7.1 Effect on Vertical Sky Component (VSC)

The effect on VSC has been assessed for 86 No. windows across the surrounding properties. Using the rationale explained in section 2.2 on page 7, 44 no. of these windows would be considered *imperceptible*, 24 no. *not significant*. 18 no. *slight*.

This shows that 51.2% of the assessed windows will experience an imperceptible level of effect.

The windows that presented *not significant* and *slight* levels of effect are located on Broomhill Terrace, which are in close proximity to the proposed development. All of these windows appear to be in commercial use.

All assessed windows of Unit 52, Broomhill Road presented a level of effect compliant with the recommended minimum level as per the BRE Guidelines, as such the level of effect to these windows has been categorised as *imperceptible*.

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.

7.2 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 86 no. of windows of the surrounding existing properties across Unit 52, Broomhill Road and Units 1-4 Broomhill Terrace. Using the rationale explained in section 2.2 on page 7, the effect on the APSH of all of these windows would be considered *imperceptible*.

All of the assessed windows have met the criteria for effect on APSH as set out in the BRE Guidelines.

The effect on WPSH has been assessed for the same 86 no. of windows as the APSH assessment. The effect on the WPSH of 84 no. of these windows would be considered *imperceptible*, 1 no. *not significant* and 1 no. *moderate*. These effects have been assigned per the rationale explained in section 2.2 on page 7.

~98% of these windows have met the criteria for effect on WPSH as set out in the BRE Guidelines.

The proposed development would result in a notable reduction to the level of sunlight received by the windows along Broomhill Terrace, however as the vast majority of these windows have maintained the minimum recommended level of sunlight as per the BRE Guidelines and as such have been categorised as *imperceptible*.

The results of the study on APSH can be found in Section 5.2 on page 24.

7.3 Sun On Ground in Proposed Outdoor Amenity Areas

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

In total 5 No. spaces have been assessed, all of which would meet the criteria as set out in the BRE Guidelines. indicating that both spaces will be capable of receiving adequate levels of sunlight throughout the year.

The complete results for the study on sunlighting in the proposed outdoor amenity spaces can be found in section 6.0 on page 36.

A visual representation of these readings can be seen in the false colour plan in section 6.0 and in the hourly shadow diagrams for March 21st in section 6.2.1 on page 37.

7.4 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. No further study was carried out on the upper floors for these units/rooms.

Had individual rooms fallen short of the recommended minimum target value, the equivalent room on the floor above would have been assessed. This study would have been carried out up to the floor where room meets the minimum recommended value, but was not necessary in the context of this assessment as all assessed rooms achieved the recommended minimum level of daylight.

This proposed development consists of 242 no. units, which makes up approximately 635 no. habitable rooms.

The ADF in all habitable rooms meets or exceeds their appropriate target values. The combination of these rooms plus the reasonable assumption that rooms on subsequent floors will show an improved level of daylight, will result in the proposed scheme achieving a compliance rate of 100%.

ADF assessment was also carried out on the communal rooms and the classrooms and office space within the proposed creche facility. All assessed rooms achieved an ADF above 1.5% which 3DDB have deemed to be the appropriate target for rooms of this type.

The complete results for the study on ADF can be seen in section 6.3 on page 46.

8.0 Conclusion

3D Design Bureau (3DDB) were commissioned to carry out a daylight assessment, sunlight assessment and shadow study for the proposed development on the Broomhill Road, Tallaght, Dublin.

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

Should the proposed development be constructed as proposed, the neighbouring commercial units along Broomhill Terrace would experience a level of effect to daylight that has been categorised as *imperceptible, not significant* and *slight*. All assessed windows on Unit 52, Broomhill Road would experience an *imperceptible* level of effect.

The vast majority of the assessed windows (~98%) have met the BRE criteria for impact to sunlight.

It should be taken into consideration that the assessed windows are part of a commercial unit and may not be subject to the same level of sensitivity as residential windows.

Finally, future occupants will enjoy good levels of daylight within the proposed units and will have access to amenity areas that are capable of receiving excellent levels of sunlight.