

A photograph of a modern building facade. The building has a curved, dark grey exterior with a series of vertical, glass-enclosed balconies or walkways. The sky is blue with some clouds.

SITE PLANNING FOR DAYLIGHT & SUNLIGHT

MOUNTGORRY SWORDS
BRE DAYLIGHT & SUNLIGHT ASSESSMENT



MOUNTGORRY SWORDS

REPORT ON SITE PLANNING FOR DAYLIGHT & SUNLIGHT

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Contents

Figures.....	4
Tables.....	4
1 Executive Summary.....	5
2 Relevant Guidelines	6
2.1 Applying the Guidelines	7
3 Glossary.....	8
4 Introduction	9
5 Methodology.....	10
5.1 (A) Light from the Sky.....	11
5.2 (B) Loss of Sunlight.....	11
5.3 (C) Garden Analysis	12
5.4 (D) Overshadowing Assessment	13
5.5 (E) Internal Daylight Testing.....	14
5.6 (F) Sunlight Access	15
5.7 (G) Amenity Area Sunlight Analysis.....	15
6 Summary of Areas to be Assessed	16
6.1 Bidvest Noonan – Commercial.....	16
6.2 Apple Green – Commercial.....	16
6.3 Saint Werburghs – Residential.....	17
6.4 Seamount View/ House – Residential.....	19
6.5 Proposed Development	22
7 Results.....	23
7.1 (D) Overshadowing Assessment Results.....	23
7.2 (E) Internal Daylight Testing Results	29
7.2.1 Internal Daylight Testing Iterative Design Approach	30
7.3 (F) Sunlight Access Results	38
7.4 (G) Amenity Area Sunlight Analysis Results	43
8 Summary of Results	46
8.1 Compensatory Design Solutions	47
9 Conclusion.....	48
10 Appendix	49

Figures

Figure 1 - Site Plan of Buildings.....	10
Figure 2 - 25 Degree Rule.....	17
Figure 3 - Saint Werburghs 25 Degree Rule.....	18
Figure 4 - 25 Degree Rule.....	19
Figure 5 - Seamount View/ House 25 Degree Rule.....	20
Figure 6 - Proposed Development CGI.....	22
Figure 7 - 9.00am Proposed 21 st of March.....	24
Figure 8 - 9.00am Existing 21 st of March.....	24
Figure 9 - 10.00am Proposed 21 st of March.....	24
Figure 10 - 10.00am Existing 21 st of March.....	24
Figure 11 - 11.00am Proposed 21 st of March.....	25
Figure 12 - 11.00am Existing 21 st of March.....	25
Figure 13 - 12.00 Noon Proposed 21 st of March.....	25
Figure 14 - 12.00 Noon Existing 21 st of March.....	25
Figure 15 - 1.00pm Proposed 21 st of March.....	26
Figure 16 - 1.00pm Existing 21 st of March.....	26
Figure 17 - 2.00pm Proposed 21 st of March.....	26
Figure 18 - 2.00pm Existing 21 st of March.....	26
Figure 19 - 3.00pm Proposed 21 st of March.....	27
Figure 20 - 3.00pm Existing 21 st of March.....	27
Figure 21 - 4.00pm Proposed 21 st of March.....	27
Figure 22 - 4.00pm Existing 21 st of March.....	27
Figure 23 - 5.00pm Proposed 21 st of March.....	28
Figure 24 - 5.00pm Existing 21 st of March.....	28
Figure 25 - 6.00pm Proposed 21 st of March.....	28
Figure 26 - 6.00pm Existing 21 st of March.....	28
Figure 27 - Iterative Design Examples.....	31
Figure 28 - New -vs- Old Window Size.....	31
Figure 29 - Estimated Overall Pass Rate Ground Floor.....	32
Figure 30 - West Elevation Sunlight Access.....	41
Figure 31 - North Elevation Sunlight Access.....	41
Figure 32 - North East Sunlight Access.....	42
Figure 33 - South Elevation Sunlight Access.....	42
Figure 34 - Amenity Area Sunlight Analysis.....	44
Figure 35 - Communal Area A Layout.....	45

Tables

Table 1 - Ground Floor Estimated Pass Rates.....	32
Table 2 - Internal Daylight Testing Results BS EN 17037.....	33
Table 3 - Sunlight Access Results.....	38
Table 4 - Amenity Area Sunlight Analysis Results.....	43
Table 5 - IS EN 17037 Daylight Results.....	49

1 Executive Summary

J.V.Tierney & Co. have been commissioned to undertake a daylight and sunlight study for the Mountgorry development in Swords.

The Fingal Development Plan 2023-2029 states the following; *“Development shall be guided by the principles of Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice – (Building Research Establishment Report) 2011 and/or any updated guidance”*.

Given this, the contents of Paul Littlefair’s most recent 2022 revision of the 2011 publication *“Site layout planning for daylight and sunlight: a guide to good practice”* from the Building Research Establishment (BRE) have been considered in the preparation of this report.

The BRE Guidance (See Section *“2 Relevant Guidelines”*) does not set out rigid standards or limits. The BRE Guidance is preceded by the following very clear warning 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.”

The testing methodology for the Proposed Development and the surrounding properties consists of reviewing the potential impact against the following criteria:

- (A) Light from the Sky - Proposed Development has no impact on surrounding properties.
- (B) Loss of Sunlight - Proposed Development has no impact on surrounding properties.
- (C) Garden Analysis - Proposed Development will have no impact on surrounding gardens.
- (D) Overshadowing Assessment - Little to no overshadowing occurring.
- (E) Internal Daylight Testing - Overall pass rate of 99% achieved in line with *“BS EN 17037”* and overall pass rate of 88.3% in line with *“IS EN 17037”*. This is carried out for the Proposed Development only.
- (F) Sunlight Access - Overall pass rate of 87% achieved. This is carried out for the Proposed Development only.
- (G) Amenity Area Sunlight Analysis - Overall pass rate of 77.4% achieved which is above the 50% as required by the BRE Guidance. This is carried out for the Proposed Development only.

2 Relevant Guidelines

The analysis contained within this report has been prepared based on the following guidelines;

- *Site Layout Planning for Daylight and Sunlight 2022: A Guide to Good Practice, Third Edition by Paul Littlefair (BRE 209/ BRE Guidance)*

The purpose of the BRE Guidance is to provide advice on a buildings site plan and layout to achieve good levels of daylighting and sun lighting. The guide provides calculation methodologies which aims to assist clients, consultants and planning officials to make informed decisions on site layout to ensure no significant loss of light occurs. It should be noted that the guidance in this document should be seen as advice only and it should not constrain the design, *“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”*. If this guidance is followed the end result is a site which is positioned and laid out in such a way which will provide adequate levels of sun lighting and daylighting while creating an ambience that will appeal to any building occupant.

- *IS EN 17037:2018 – ‘Daylight in Buildings’*

This is the Irish adoption of the European Standard (*“EN 17037:2018”*) and aims to ensure new buildings create spaces with significant daylight availability to provide adequate illumination to indoor surfaces and save energy for electrical bills. To do so, *“IS EN 17037:2018”* proposes two methods to assess daylight provision in all regularly occupied spaces: a calculation method based on daylight factor and cumulative daylight availability data (method 1); or, a calculation method based on the direct prediction of illuminance levels using hourly climate data (method 2). Method 2 has been used for this daylight analysis.

Method 2 is a calculation method of illuminance levels on the reference plane using climatic data for the given site and an adequate time step.

Method 2 requires a space to meet a target illuminance of 300 Lux, across 50% of the reference plane for half of the daylight hours of the year (Criteria 1). The minimum target illuminance of 100 Lux is also required across 95% of the reference plane for half of the daylight hours (Criteria 2). Both criteria must be achieved for a space to meet *“IS EN 10737:2018”*.

The design of the scheme has been based on *“BS EN 17037:2018 – ‘Daylight in Buildings’* with results from *“IS EN 17037:2018 – ‘Daylight in Buildings’* included in the appendix. See section *“7.2 (E) Internal Daylight Testing Results”* for more details

- *BS EN 17037:2018 – ‘Daylight in Buildings’*

The British adoption of the European standard (*“EN 17037:2018”*) has produced a national annex which gives more appropriate daylight targets for applicability within residential schemes. Utilising the same calculation method (method 2), the below daylight levels are considered to be more appropriate when it comes to daylight testing;

- Bedrooms = 100 Lux across 50% of the area of the room for 50% of the daylight hours.
- Living Space = 150 Lux across 50% of the area of the room for 50% of the daylight hours.
- Kitchens = 200 Lux across 50% of the area of the room for 50% of the daylight hours.

2.1 Applying the Guidelines

It must be borne in mind that some degree of flexibility has to be allowed when applying the above standards, particularly in reference to urban generation. It should be expected that it is not always possible to meet the above standards especially when trying to achieve all planning objectives in the wider context.

Comments in relation to overshadowing from the BRE Guidance state that some degree of overshadowing is to be expected. The guide states that, *“It must be borne in mind that nearly all structures will create areas of new shadow, and some degree of transient overshadowing of a space is to be expected”*. The guide also clearly states the following in terms application, *“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 the many factors in site layout design”*.

The *“Urban Design Manual, A Best Practice Guide, 2009”* states that it may not always be possible to meet the criteria within *“Site Layout Planning for Daylight and Sunlight” (BRE209/ BRE Guidance)* for urban areas. *“Where design standards are to be used (such as the UK document Site Layout Planning for Daylight and Sunlight, published by the BRE), it should be acknowledged that for higher density proposals in urban areas it may not be possible to achieve the specified criteria, and standards may need to be adjusted locally to recognise the need for appropriate heights or street widths”*.

3 Glossary

VSC - Vertical Sky Component. This is the ratio of the direct sky illuminance falling on the vertical wall at a reference point (usually the centre of the window), to the simultaneous horizontal illuminance under an unobstructed sky that is received from a CIE overcast sky.

CIE - The standard CIE (Commission Internationale de L'Eclairage – International Commission on Illumination) overcast sky. The CIE Overcast sky is intended for two purposes; to be a universal basis for the classification of measured sky luminance distributions and to give a method for calculating sky luminance in daylighting design procedures.

APSH – Annual Probable Sunlight Hours. Here “probable sunlight hours” means the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question.

BRE – Building Research Establishment. The BRE is a profit for purpose organisation who generate new knowledge through independent research. This is used to create the products, standards and qualifications that help make sure that buildings, homes and communities are safe, efficient, productive, sustainable and enjoyable places to be.

4 Introduction

The development consists of the following;

Bartra Propco 23 Limited intend to apply for permission for development for a Large-scale Residential Development (LRD) at this c. 0.8731 Ha site fronting the Swords to Malahide Road (R106), Mountgorry, Swords, Co. Dublin. The site is bounded to the west by open space, with Seamount View Housing Estate further beyond, to the south by the R106, to the east by an access road to the Applegreen Service Station and to the north by Swords Business Park.

The development's surface water drainage network shall discharge from the site into the existing manhole located along the access road to the east of the site. The development site area and drainage work areas will provide a total application site area of c. 0.8792 Ha.

The proposed development will principally consist of: the construction of 123 No. residential units (55 No. one bed apartments and 68 No. two bed apartments). The development will be provided in a courtyard block arrangement ranging in height from part 4 No. to part 5 No. storeys. The proposed development has a gross floor area of c. 10,291 sq m.

The proposed development will also provide: vehicular access from the access road to the east; 24 No. car parking spaces; bicycle parking spaces; motorcycle parking spaces; pedestrian/cycle entrances at the south-west and north of the site, and along the western boundary connecting into the adjoining open space; a footpath and bicycle path around the south, east and north of the site perimeter and a shared cycle/pedestrian path along the western boundary; balconies and terraces facing all directions; hard and soft landscaping; boundary treatments; green roofs; lift overrun; PV panels; lighting; ESB substation; switchroom; plant; and all associated works above and below ground.

5 Methodology

A 3D geometric model of the site was created using software IES-VE and using drawings issued by Coady Architects. There are a number surrounding residential properties situated around the site. These residential properties are situated a large distance away from the Proposed Development and will not be impacted by it (see Section 6.3 and 6.4 for more details).

The analysis has considered the following sun lighting and daylighting calculation methodologies used when assessing a site; (A) Light from the Sky, (B) Loss of Sunlight, (C) Garden Analysis, (D) Overshadowing Assessment, (E) Internal Daylight Testing, (F) Sunlight Access and (G) Amenity Area Sunlight Analysis. These assessment methodologies are explained below.

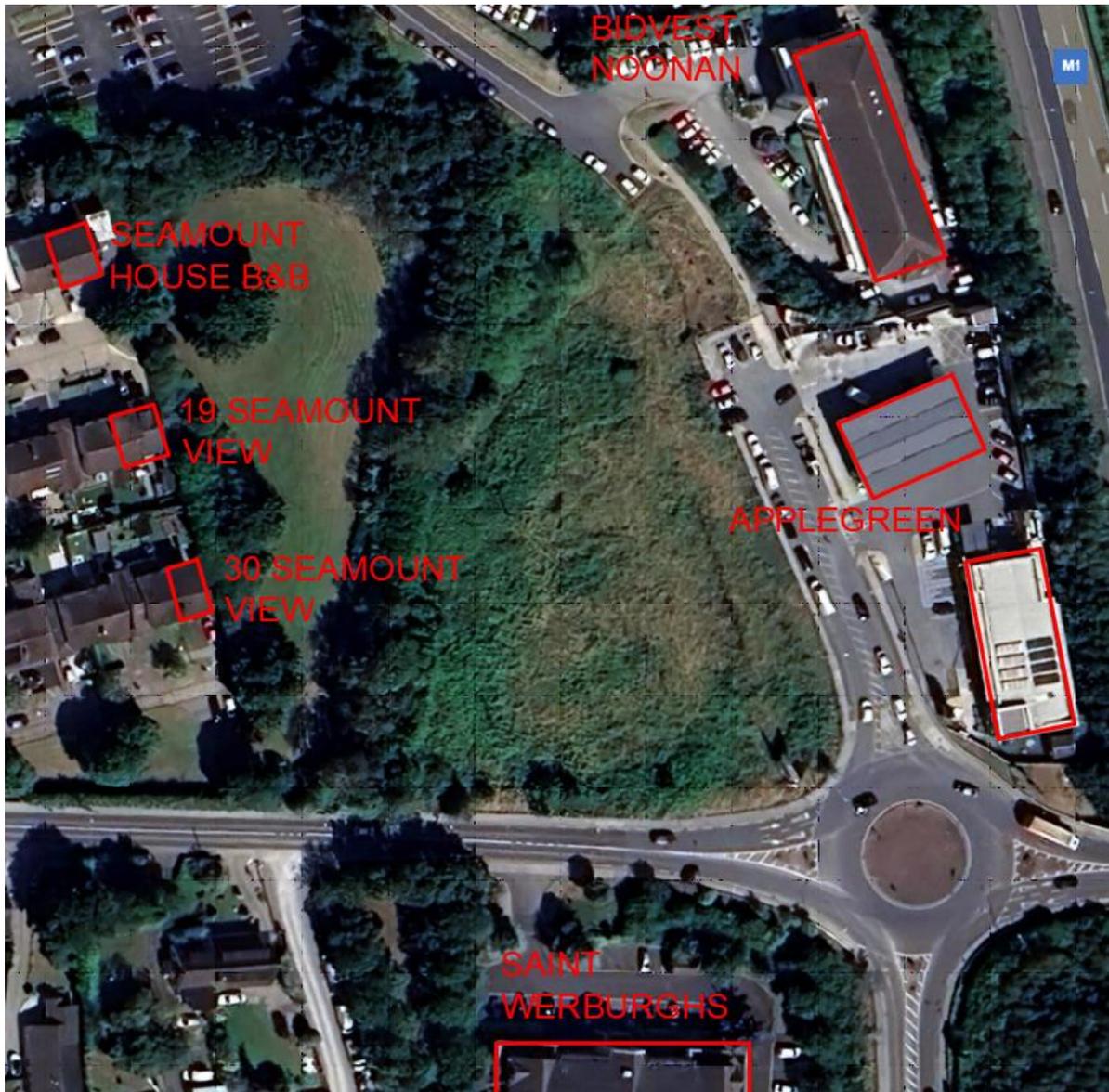


Figure 1 - Site Plan of Buildings

5.1 (A) Light from the Sky

This assessment methodology is used for the surrounding properties and is explained below;

This assessment methodology is for vertical windows and is called the “*Vertical Sky Component (VSC)*”. This is the ratio of the direct sky illuminance falling on the vertical wall at a reference point (usually the centre of the window), to the simultaneous horizontal illuminance under an unobstructed sky. The standard CIE (Commission Internationale de L’Eclairage – International Commission on Illumination) overcast sky is used. The CIE Overcast sky is intended for two purposes; to be a universal basis for the classification of measured sky luminance distributions and to give a method for calculating sky luminance in daylighting design procedures. The following steps contained within the BRE Guidance are used to carry out this methodology;

- (A) If the VSC’s with the new development in place are greater than 27%, then enough skylight should still be reaching the windows of the existing building. No further analysis needs to be carried out for these windows.
- (B) The existing VSC’s are then determined for any of the windows which are below 27%.
- (C) If the VSC’s, with the new development in place, are both less than 27% and less than 0.8 times their former value, (i.e.20% reduction) for the remainder of the windows, occupants of the existing building will notice a reduction in the amount of skylight.

The above testing criteria is contained within the BRE Guidance and is stated as follows, “*If this VSC is greater than 27% then enough skylight should still be reaching the window of the existing building. Any reduction below this level should be kept to a minimum. If the VSC, with the new development in place, is both less than 27% and less than 0.8 times its former value, occupants of the existing building will notice the reduction in the amount of skylight. The area lit by the window is likely to appear more gloomy, and electric lighting will be needed more of the time*”.

An additional point of testing under this methodology is the “*no sky line*” testing criteria. This testing criteria gives an indication of how much of the sky can be seen in a room. This can only be carried out when room layouts are known as stated in the BRE Guidance, “*Where room layouts are known, the impact on the daylighting distribution in the existing building can be found by plotting the “no sky line” in each of the main rooms. For houses this would include living rooms, dining rooms and kitchens; bedrooms should also be analysed although they are less important.* As room layouts of the existing dwellings are unknown, this testing criteria cannot be carried out. The VSC analysis above (A, B and C) is generally accepted as standard industry practice.

This methodology has not been included in the analysis, see Section 6.3 and 6.4 for more details.

5.2 (B) Loss of Sunlight

When designing a new development, careful consideration should be taken to safeguard access to sunlight for any nearby buildings. As stated in BRE Guidance, “*people are particularly likely to notice a loss of sunlight to their homes and if it is extensive then it will usually be resented*”.

To assess loss of sunlight to a property, consideration should only be taken to any window facing within 90° of due south. Any windows which face outside of 90° of due south have much less access to sunlight and are less likely to be impacted. Main living rooms and conservatories should be assessed but the BRE Guidance indicates that bedrooms and kitchens are less important, although care should be taken not to

block too much sun. The following steps contained within the BRE Guidance are used to carry out this methodology;

- (A) If the centre of a window facing within 90° of due south can receive more than a quarter (25%) of APSH (Annual Probable Sunlight Hours), including at least 5% of APSH in the winter months between the 21st of September and the 21st of March, then the room should still receive enough sunlight. No further analysis needs to be carried out for these windows. If either the annual (APSH) or winter sunlight hours are below the criteria, then the analysis moves onto step B - C.
- (B) The existing values are then determined for any of the windows which are below the above thresholds.
- (C) If the available sunlight hours are both less than the amount above and less than 0.8 times their formal value (i.e. 20% reduction) either over the whole year (APSH) or just in the winter months (21st September to 21st March), then the occupants of the existing building will notice the loss of sunlight.
- (D) Additionally, if the overall annual loss is greater than 4% of APSH, the room may appear colder and less cheerful and pleasant. This is carried out for any window that does not achieve the thresholds as set out in (A) above.

Here “*probable sunlight hours*” means the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question.

The above testing criteria is contained within the BRE Guidance and is stated as follows, “*If a room can receive more than one quarter of APSH, including at least 5% of APSH in the winter months between 21 September and 21 March, then the room should still receive enough sunlight*”. Also, *if the overall annual loss of APSH is 4% or less, the loss of sunlight is small, “Any reduction in sunlight access below this level should be kept to a minimum. If the available sunlight hours are both less than the amount above and less than 0.8 times their former value, either over the whole year or just in the winter months (21 September to 21 March), and the overall annual loss is greater than 4% of APSH, then the occupants of the existing building will notice the loss of sunlight; the room may appear colder and less cheerful and pleasant” and “To assess loss of sunlight to an existing building, it is suggested that all main living rooms of dwellings, and conservatories, should be checked and if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun.”*

This methodology has not been included in the analysis, see Section 6.3 and 6.4 for more details.

5.3 (C) Garden Analysis

While providing good levels of daylight and sunlight in living spaces is important, it is also essential to apply the same mentality to outside spaces and amenity areas. An adequately lit garden or open space creates a rich ambience that any occupant would find appealing. A well-lit garden or open space will add value to a property so it is essential that careful consideration is taken when assessing these spaces.

The following steps contained within the BRE Guidance are used to carry out this methodology;

- (A) If the garden areas with the new development in place receives two hours’ worth of sunlight on 50% of the garden during the equinox (21st of March), then the gardens meet the criteria contained within the BRE Guidance.

- (B) If the garden areas do not meet the criteria in (A) above, then the analysis determines the area of garden that does receive two hours' worth of sunlight on the equinox (21st of March) on the existing site, i.e. without the Proposed Development in place.
- (C) If the garden areas, with the new development in place, are both less than criteria (A) and less than 0.8 times their former value, (i.e. 20% reduction) the loss of sunlight will be significant.

The above criteria are stated in the BRE Guidance as follows; *“As a check, it is recommended that at least half of the amenity areas listed above should receive two hours of sunlight on 21 March”* and *“If an existing garden or open space is already heavily obstructed then any further loss of sunlight should be kept to a minimum. In this poorly sunlit case, if as a result of new development, the area which can receive two hours of direct sunlight on 21 March is reduced to less than 0.8 times its former size, this further loss of sunlight is significant. The garden or amenity area will tend to look more heavily overshadowed”*

As per the BRE Guidance, the equinox (21st of March) is used as it provides the best date to prepare shadow cast plots as it gives an average level of shadowing. This is fairest representation for shadowing from a Proposed Development. Winter time shadow plots are of limited value as the sun is very low and casts long shadows. Similarly, summertime plots give the best case causing minimum shadowing due to the sun's position which can provide an unfair advantage for new buildings. The following is stated in the BRE Guidance, *“If a space is used all year round, the equinox (21 March) is the best date for which to prepare shadow plots as it gives an average level of shadowing”* and *“As an optional addition, plots for summertime (eg 21 June) may be helpful as they will show the reduced shadowing then, although it should be borne in mind that 21 June represents the best case of minimum shadow, and that shadows for the rest of the year will be longer. Conversely if winter shadows (eg 21 December) are plotted, even low buildings will cast long shadows. In a built-up area, it is common for large areas of the ground to be in shadow in December.*

This methodology has not been included in the analysis, see Section 6.3 and 6.4 for more details.

5.4 (D) Overshadowing Assessment

An overshadowing analysis has been out in line with the BRE Guidance which states the following, *“Where there are existing buildings as well as the proposed one, “before” and “after” shadow plots showing the difference that the proposed building makes may be helpful. In interpreting the impact of such differences, it must be borne in mind that nearly all structures will create areas of new shadow, and some degree of transient overshadowing of a space is to be expected”.*

Shadow cast plots with and without the Proposed Development in place are presented to highlight any potential overshadowing impact that the Proposed Development may have. Shadow cast plots have been carried out from 08.00 – 18.00 on the 21st of March. As per the BRE Guidance, the equinox (21st of March) is used as it provides the best date to prepare shadow cast plots as it gives an average level of shadowing. This is fairest representation for shadowing from a Proposed Development. Winter time shadow plots are of limited value as the sun is very low and casts long shadows. Similarly, summertime plots give the best case causing minimum shadowing due to the sun's position which can provide an unfair advantage for new buildings. The following is stated in the BRE Guidance, *“If a space is used all year round, the equinox (21 March) is the best date for which to prepare shadow plots as it gives an average level of shadowing”* and *“As an optional addition, plots for summertime (eg 21 June) may be helpful as they will show the reduced*

shadowing then, although it should be borne in mind that 21 June represents the best case of minimum shadow, and that shadows for the rest of the year will be longer. Conversely if winter shadows (eg 21 December) are plotted, even low buildings will cast long shadows. In a built-up area, it is common for large areas of the ground to be in shadow in December.

5.5 (E) Internal Daylight Testing

Internal Daylight Testing has been carried out in line with “BS EN 17037:2018”. This standard aims to ensure new buildings create spaces with significant daylight availability to provide adequate illumination to indoor surfaces and save energy for electrical bills. To do so, “BS EN 17037:2018” proposes two methods to assess daylight provision in all regularly occupied spaces: a calculation method based on daylight factor and cumulative daylight availability data (method 1); or, a calculation method based on the direct prediction of illuminance levels using hourly climate data (method 2). Method 2 can be considered to be a more accurate representation of the daylight achieved; therefore, this method has been used for this analysis.

This standard has produced a national annex which gives more appropriate daylight targets for applicability within residential schemes when compared against the Irish Daylight Standard (*IS EN 17037:2018*). Utilising the same calculation method (method 2), the below daylight levels are considered to be more in line with the BRE Guidance;

- Bedrooms = 100 Lux across 50% of the area of the room for 50% of the daylight hours.
- Living Space = 150 Lux across 50% of the area of the room for 50% of the daylight hours.
- Kitchens = 200 Lux across 50% of the area of the room for 50% of the daylight hours.

As with the BRE Guidance, where one rooms serves more than one purpose, the minimum daylight target of the room type with the highest value has been applied. An example of this is where a space combines a kitchen and living area, the minimum daylight target is then 200 Lux across 50% of the area of the room for 50% of the daylight hours.

The assessment of Internal Daylight Testing is based on the following parameters;

- Site Layout
- Building Form
- Surrounding Structures
- Separation Distances
- Room Depths
- Window size
- Balconies

5.6 (F) Sunlight Access

Direct Sunlight is generally desired within residential dwellings. Around 90% of people say they appreciate having sunlight in their homes, which makes rooms look bright and cheerful.

A south-facing window will, in general, receive most sunlight, while a north-facing one will only receive it on a handful of occasions (early morning and late evening in summer). East- and west-facing windows will receive sunlight only at certain times of the day. A dwelling with no main window wall within 90° of due south is likely to be perceived as insufficiently sunlit.

Access to Sunlight in a proposed development can be quantified using “BS EN 17037” which recommends that a space should receive a minimum of 1.5 hours of direct sunlight on 21st of March (equinox).

5.7 (G) Amenity Area Sunlight Analysis

While providing good levels of daylight and sunlight in living spaces is important, it is also essential to apply the same mentality to outside spaces and amenity areas. An adequately lit open space creates a rich ambience that any occupant would find appealing.

The basis of this calculation is to assess if 50% of the amenity area will achieve more than two hours' worth of sunlight during the equinox (21st March). As per the BRE Guidance, the equinox (21st of March) is used as it provides the best date to prepare shadow cast plots as it gives an average level of shadowing. This is fairest representation for shadowing from a Proposed Development. Winter time shadow plots are of limited value as the sun is very low and casts long shadows. Similarly, summertime plots give the best case causing minimum shadowing due to the sun's position which can provide an unfair advantage for new buildings. The following is stated in the BRE Guidance, *“If a space is used all year round, the equinox (21 March) is the best date for which to prepare shadow plots as it gives an average level of shadowing”* and *“As an optional addition, plots for summertime (eg 21 June) may be helpful as they will show the reduced shadowing then, although it should be borne in mind that 21 June represents the best case of minimum shadow, and that shadows for the rest of the year will be longer. Conversely if winter shadows (eg 21 December) are plotted, even low buildings will cast long shadows. In a built-up area, it is common for large areas of the ground to be in shadow in December.* This testing criteria is carried out for the Proposed Development.

The above testing criteria is contained within the BRE Guidance and is stated as follows, *“As a check, it is recommended that at least half of the amenity areas listed above should receive at least two hours of sunlight on 21 March”.*

6 Summary of Areas to be Assessed

Please see a summary of areas to be assessed below. The selection of assessment points is based on proximation and orientation of surrounding Residential and Commercial Properties towards the Proposed Development.

6.1 Bidvest Noonan – Commercial

This is a Commercial Property. See Figure 1 for location. The latest BRE Guidance (2022) gives the following two statements from section 2.2.2 and section 3.2.1. in terms of Commercial Properties;

***“2.2.2 The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens, and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas, and garages need not be analysed. The guidelines may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight; this would normally include schools, hospitals, hotels and hostels, small workshops, and some offices.*”**

“3.2.1 In designing a new development or extension to a building, care should be taken to safeguard the access to sunlight both for existing dwellings, and for any nearby non-domestic buildings where there is a particular requirement for sunlight. People are particularly likely to notice a loss of sunlight to their homes and if it is extensive then it will usually be resented.”

The Guidelines state that they are intended for use in rooms in adjoining dwellings where daylight is required and we should safeguard access to sunlight for existing dwellings and that they may also be applied to any non-domestic buildings where there is a particular requirement for sunlight. We would generally consider a Commercial Property serving as an office space catering for cleaning/ security services, to not have a “particular requirement” for sunlight. Therefore, this Commercial Property has not been included in the analysis.

6.2 Apple Green – Commercial

This is a Commercial Property. See Figure 1 for location. The latest BRE Guidance (2022) gives the following two statements from section 2.2.2 and section 3.2.1. in terms of Commercial Properties;

***“2.2.2 The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens, and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas, and garages need not be analysed. The guidelines may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight; this would normally include schools, hospitals, hotels and hostels, small workshops, and some offices.*”**

“3.2.1 In designing a new development or extension to a building, care should be taken to safeguard the access to sunlight both for existing dwellings, and for any nearby non-domestic buildings where there is a particular requirement for sunlight. People are particularly likely to notice a loss of sunlight to their homes and if it is extensive then it will usually be resented.”

The Guidelines state that they are intended for use in rooms in adjoining dwellings where daylight is required and we should safeguard access to sunlight for existing dwellings and that they may also be applied to any non-domestic buildings where there is a particular requirement for sunlight. We would generally consider a Petrol Station, to not have a “particular requirement” for sunlight. Therefore, this Commercial Property has not been included in the analysis.

6.3 Saint Werburghs – Residential

This is an apartment block located south of the Proposed Development. See Figure 1 for location. The following methodologies have been considered for this Property.

A – Light from the Sky – This apartment block is located a large distance away from the Proposed Development. Based on the Guidance given in “*Site layout planning for daylight and sunlight: a guide to good practice*” from the “*Building Research Establishment*” (BRE), i.e. BRE 209, this Apartment Block will still receive adequate amounts of daylight and sunlight based on the separation distance from the Proposed Development and the height of the Proposed Development itself. The below methodology has been used to establish this.

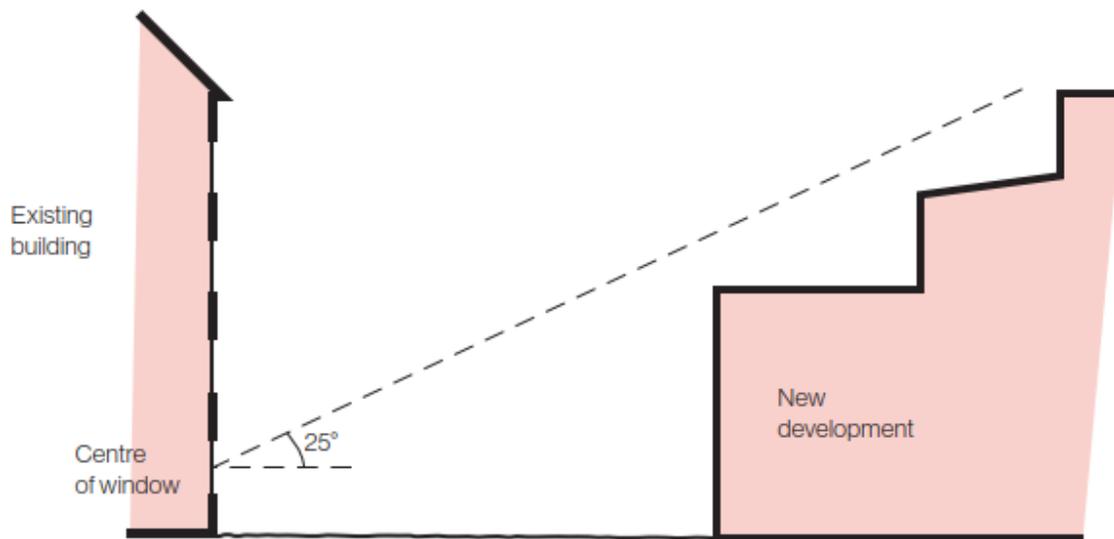


Figure 2 - 25 Degree Rule

The methodology is based on the 25° rule, where the angle from the lowest window on a surrounding property to the maximum height of the Proposed Development, is less than 25°. This is stated as follows in “*Site layout planning for daylight and sunlight: a guide to good practice*”, “*if this angle is less than 25° for the whole development then it unlikely to have a substantial effect on the diffuse skylight enjoyed by the existing building*”. Please see dimensions and angle below and noting the following annotations;

- A = Distance from Proposed Development.
- B = Typical ground floor window height on centre of window.
- C = Angle from lowest window of Apartment Block to highest point on South elevation of Proposed Development, i.e. less than 25°.

No further analysis needs to be carried out based on the above.

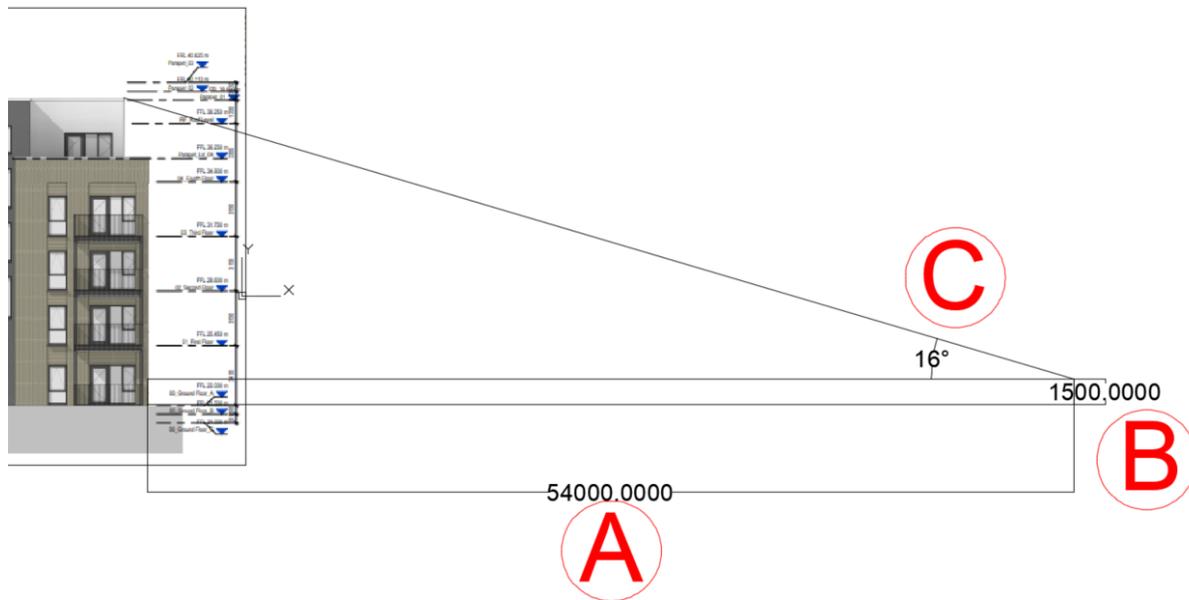


Figure 3 - Saint Werburghs 25 Degree Rule

B – Loss of Sunlight – There are no windows that face within 90° of due south of the Proposed Development. All windows facing the Proposed Development are facing north so therefore this methodology does not need to be carried out as per the BRE Guidance.

C – Garden Analysis – There are no gardens within this development that would be affected by the Proposed Development as the apartment block is located to the south of the Proposed Development.

D – Overshadowing Assessment – This methodology is carried out for the whole site and this property will be included within the analysis.

E – Internal Daylight Testing – This methodology is used for testing the Internal Daylight Performance of the Proposed Development only and is not applicable for this Property.

F – Sunlight Access – This methodology is used for testing the amount of direct sunlight on windows of the Proposed Development only and is not applicable for this property.

G – Amenity Area Sunlight Analysis – This is carried out for the Proposed Development only.

6.4 Seamount View/ House – Residential

These are two storey houses surrounding the site located west of the Proposed Development with an open field between them and the subject site. See Figure 1 for location. The following methodologies have been considered for this Property.

A – Light from the Sky - These houses are located a large distance away from the Proposed Development. Based on the Guidance given in *“Site layout planning for daylight and sunlight: a guide to good practice”* from the *“Building Research Establishment”* (BRE), i.e. BRE 209, these Houses will still receive adequate amounts of daylight and sunlight based on the separation distance from the Proposed Development and the height of the Proposed Development itself. The below methodology has been used to establish this.

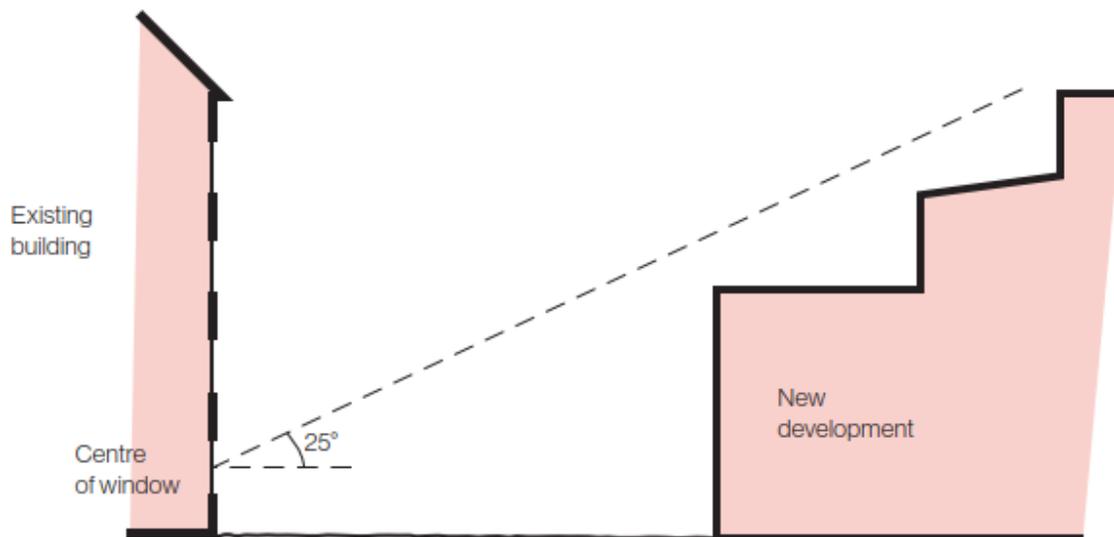


Figure 4 - 25 Degree Rule

The methodology is based on the 25° rule, where the angle from the lowest window on a surrounding property to the maximum height of the Proposed Development, is less than 25°. This is stated as follows in *“Site layout planning for daylight and sunlight: a guide to good practice”*, *“if this angle is less than 25° for the whole development then it unlikely to have a substantial effect on the diffuse skylight enjoyed by the existing building”*. Please see dimensions and angle below and noting the following annotations;

- A = Distance from Proposed Development to 30 Seamount View, noting that the gable end facing the Proposed Development has been used to establish the distance as the gable end is facing the Proposed Development. It should be noted that there are other windows on the houses (front and back) that will not be affected as they are not facing the Proposed Development. 30 Seamount View is the closet house to the Proposed Development and therefore represents the worst-case scenario. Additionally, we are assuming that there is a low-level window on the gable end that could be affected. The likelihood is that there is no window here and if there was, it would not be impacted by the Proposed Development as the gable end of this house is heavily obstructed by existing trees.
- B = Typical ground floor window height on centre of window

- C = Angle from lowest window of 30 Seamount View to highest point on West elevation of Proposed Development, i.e. less than 25°.

No further analysis needs to be carried out based on the above.

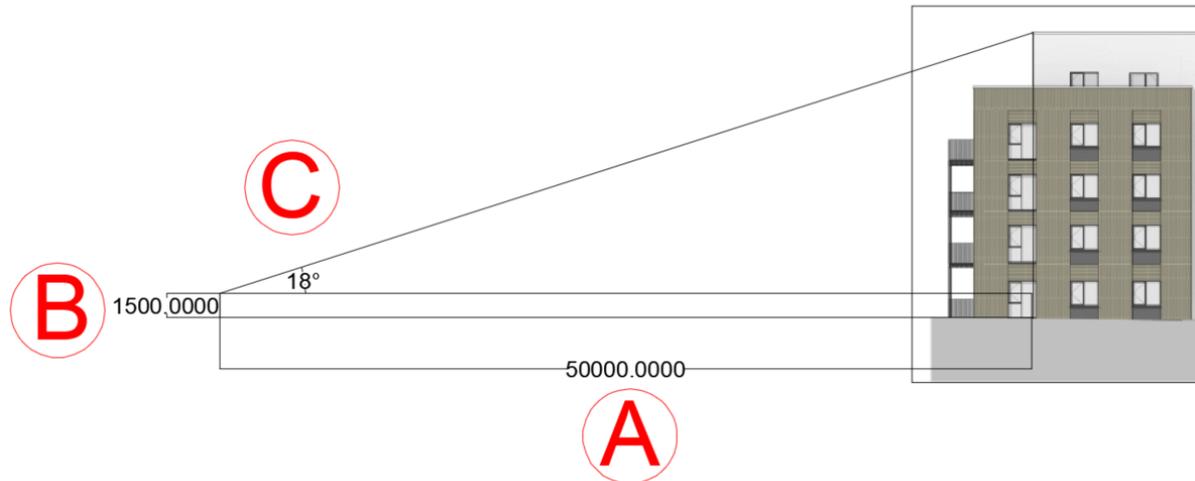


Figure 5 - Seamount View/ House 25 Degree Rule

B – Loss of Sunlight – There are windows that face within 90° of due south of the Proposed Development. However, this methodology does not need to be carried out based on “Figure 5” noted above. The BRE Guidance states the following;

“Obstruction to sunlight may become an issue if:

Some part of a new development is situated within 90° of due south of a main window wall of an existing building. In the section drawn perpendicular to this existing window wall, the new development subtends an angle greater than 25° to the horizontal measured from the centre of the lowest window to a main living room.”

The angle noted in “Figure 5” is 18°, so therefore this methodology does not need to be carried out.

C – Garden Analysis – All the gardens are heavily obstructed by existing large trees. The Proposed Development is located to the south east of these houses so these houses will be impacted their own massing in terms of sunlight. This methodology has not been carried out and the Proposed Development will not impact these gardens.

D – Overshadowing Assessment – This methodology is carried out for the whole site and this property will be included within the analysis.

E – Internal Daylight Testing – This methodology is used for testing the Internal Daylight Performance of the Proposed Development only and is not applicable for this Property.

F – Sunlight Access – This methodology is used for testing the amount of direct sunlight on windows of the Proposed Development only and is not applicable for this property.

G – Amenity Area Sunlight Analysis – This is carried out for the Proposed Development only.

6.5 Proposed Development



Figure 6 - Proposed Development CGI

The Proposed Development is a 4 - 5-storey apartment block. See Figure 1 for location. The following methodologies have been used for the Proposed Development.

A – Light from the Sky – This methodology is used for testing the impact of the Proposed Development on the Surrounding Properties and is therefore not applicable in this instance.

B – Loss of Sunlight – This methodology is used for testing the impact of the Proposed Development on the Surrounding Properties and is therefore not applicable in this instance.

C – Garden Analysis – This methodology is used for testing the impact of the Proposed Development on the Surrounding Properties and is therefore not applicable in this instance.

D – Overshadowing Assessment – This methodology is used for testing the impact of the Proposed Development on the Surrounding Properties and is therefore not applicable in this instance.

E – Internal Daylight Testing – Every habitable room will be tested under this methodology.

F – Sunlight Access – Every habitable room will be tested under this methodology.

G – Amenity Area Sunlight Analysis – The amenity area of the Proposed Development will be tested under this methodology.

7 Results

Please see results below for the different assessment methodologies carried out for the site. Please note that testing methodologies A – C are not applicable for this site, so results start from (D) Overshadowing Assessment (see below). See sections 6.1 – 6.4 on why these methodologies have not been carried out.

7.1 (D) Overshadowing Assessment Results

An overshadowing analysis has been carried out in line with the BRE Guidance which states the following, *“Where there are existing buildings as well as the proposed one, “before” and “after” shadow plots showing the difference that the proposed building makes may be helpful. In interpreting the impact of such differences, it must be borne in mind that nearly all structures will create areas of new shadow, and some degree of transient overshadowing of a space is to be expected”*.

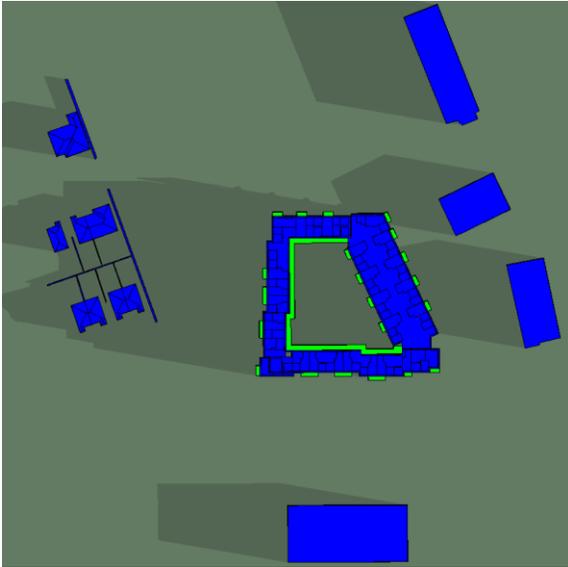


Figure 7 - 9.00am Proposed 21st of March

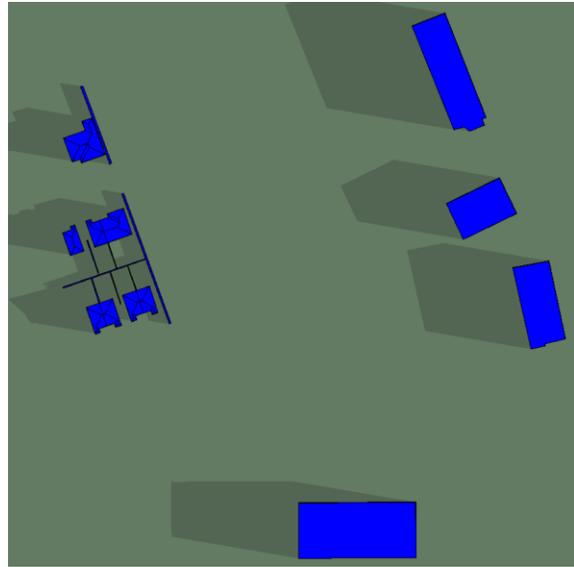


Figure 8 - 9.00am Existing 21st of March



Figure 9 - 10.00am Proposed 21st of March

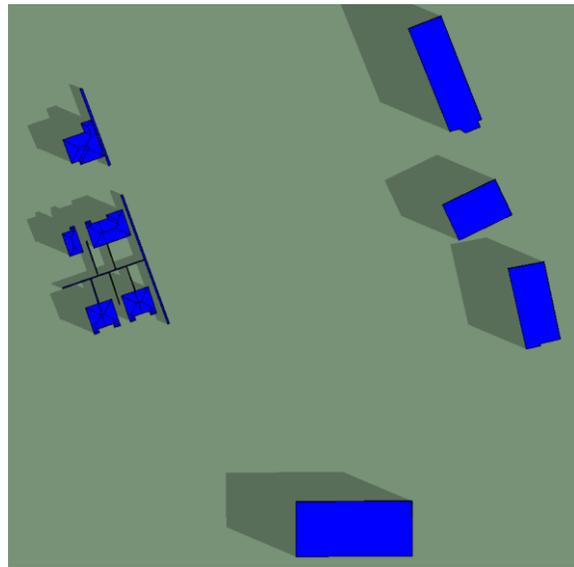


Figure 10 - 10.00am Existing 21st of March

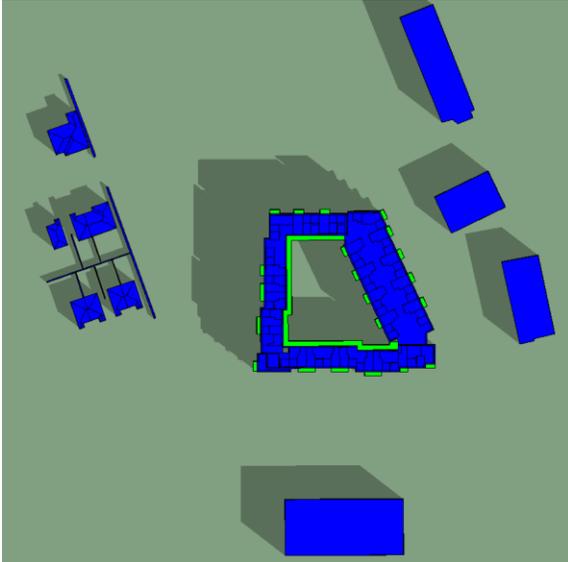


Figure 11 - 11.00am Proposed 21st of March

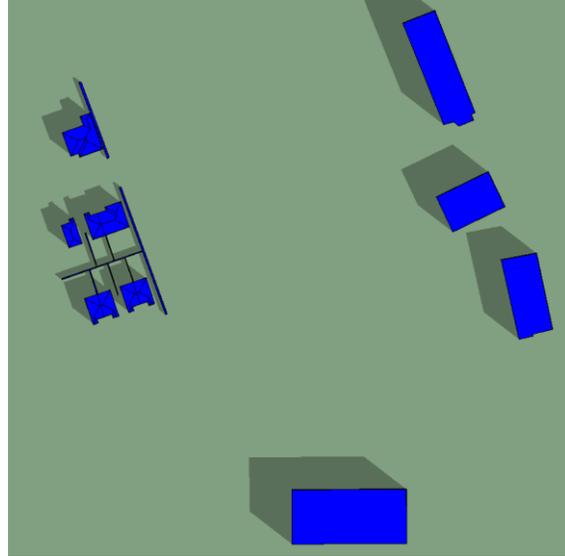


Figure 12 - 11.00am Existing 21st of March

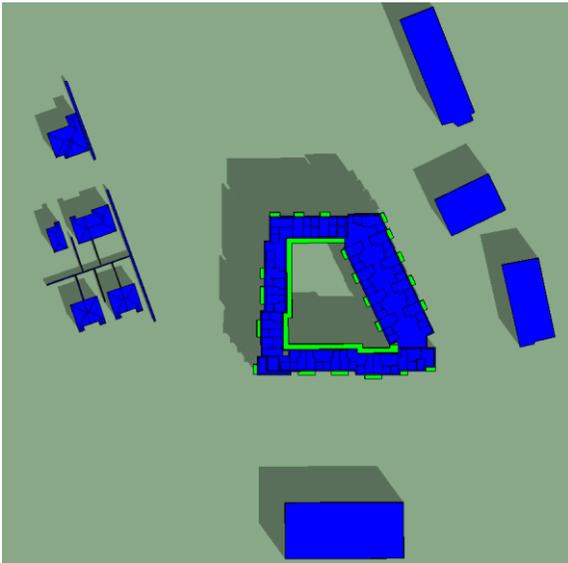


Figure 13 - 12.00 Noon Proposed 21st of March

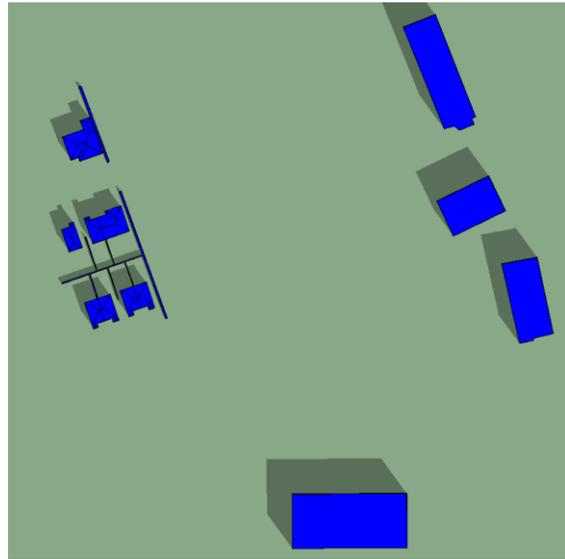


Figure 14 - 12.00 Noon Existing 21st of March

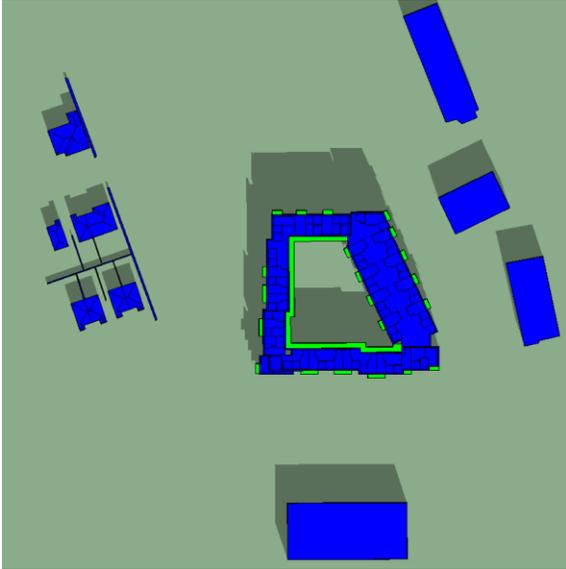


Figure 15 - 1.00pm Proposed 21st of March

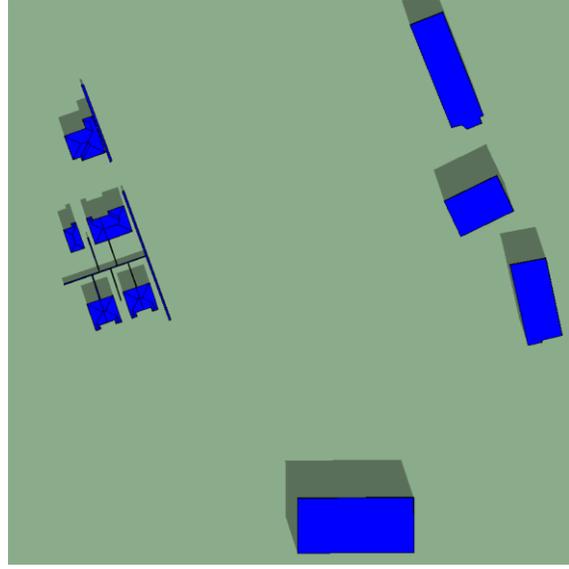


Figure 16 - 1.00pm Existing 21st of March

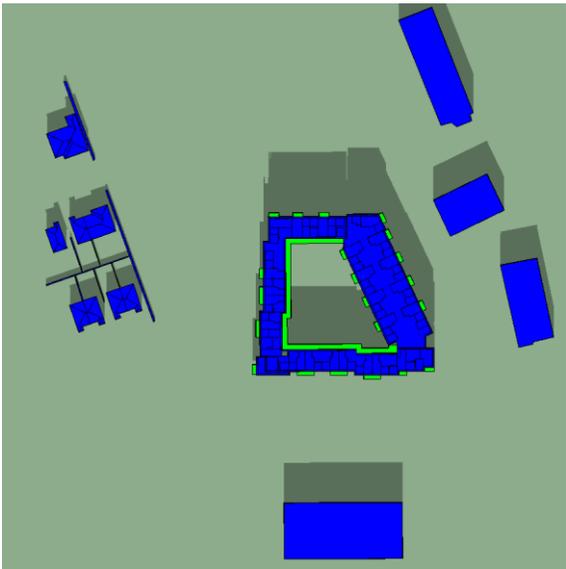


Figure 17 - 2.00pm Proposed 21st of March

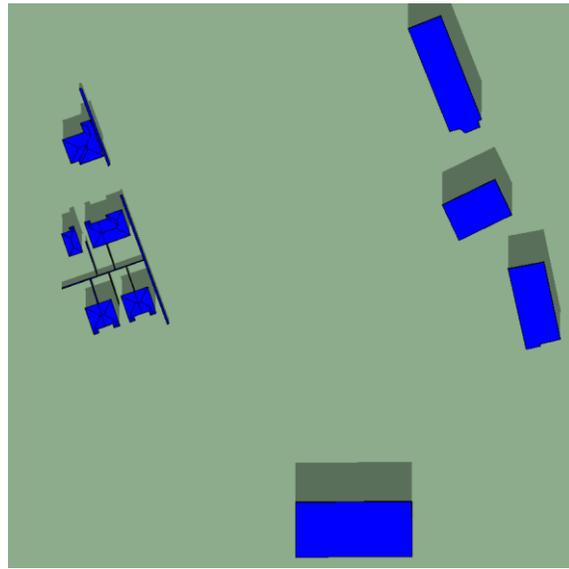


Figure 18 - 2.00pm Existing 21st of March

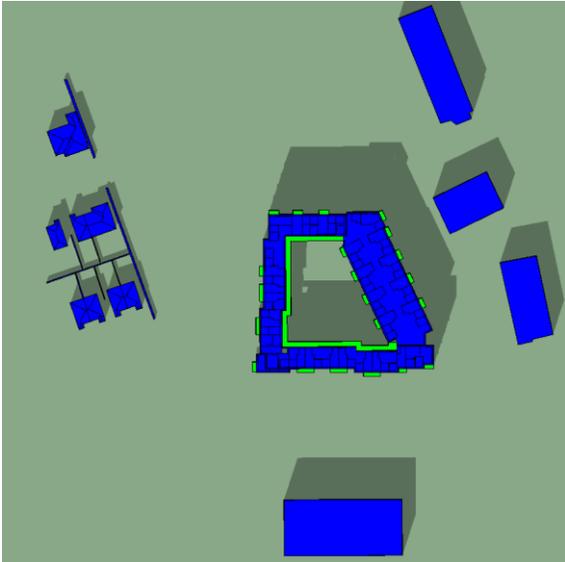


Figure 19 - 3.00pm Proposed 21st of March

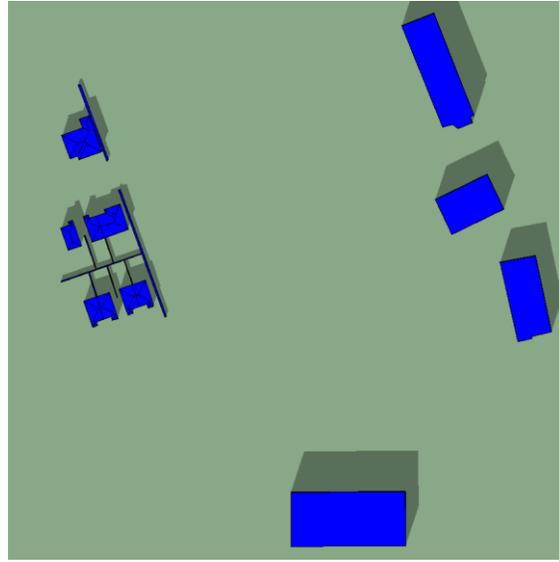


Figure 20 - 3.00pm Existing 21st of March

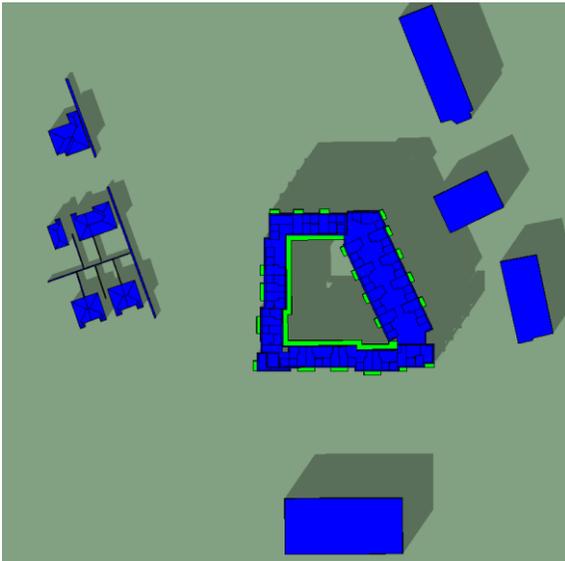


Figure 21 - 4.00pm Proposed 21st of March

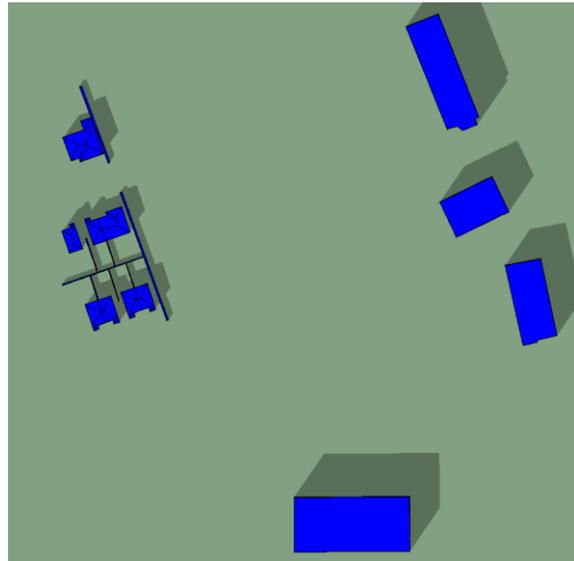


Figure 22 - 4.00pm Existing 21st of March

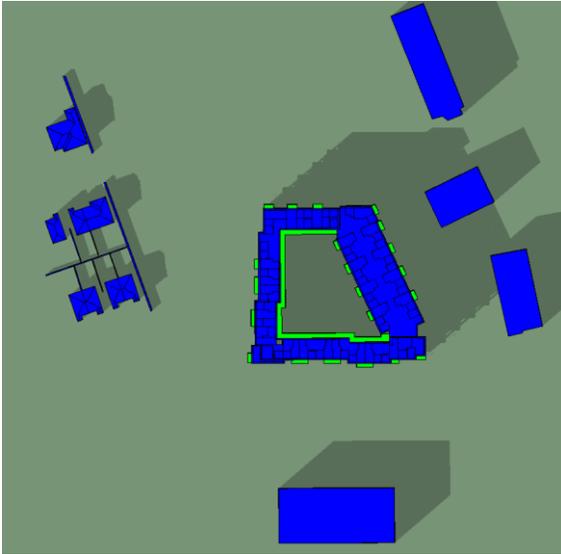


Figure 23 - 5.00pm Proposed 21st of March

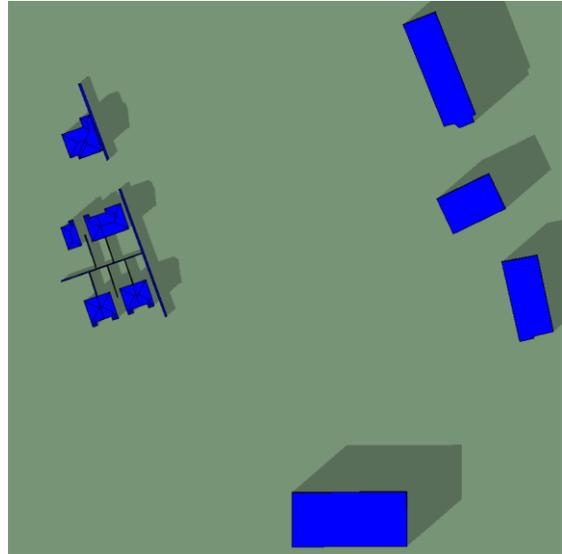


Figure 24 - 5.00pm Existing 21st of March

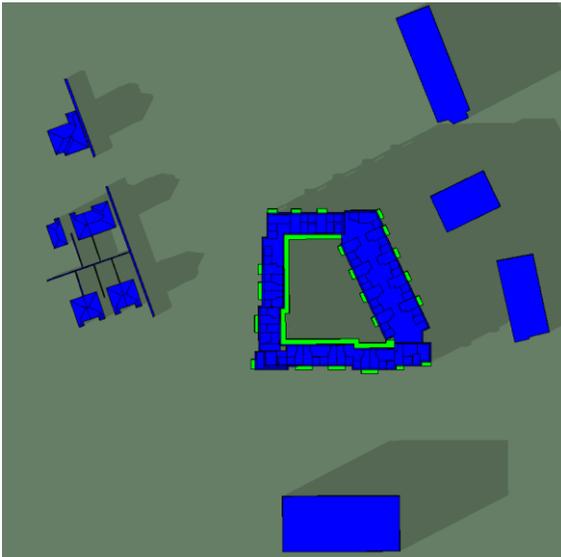


Figure 25 - 6.00pm Proposed 21st of March

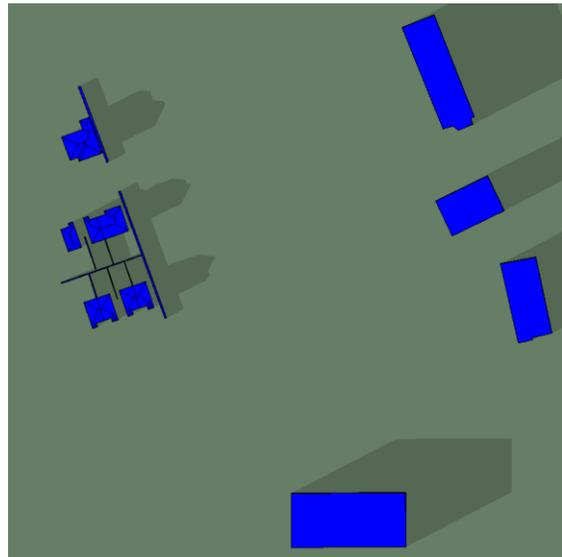


Figure 26 - 6.00pm Existing 21st of March

7.2 (E) Internal Daylight Testing Results

This methodology has been carried out for the internal daylight received within the habitable rooms in the Proposed Development. The design of the scheme has been carried out in line with the British adoption of the European standard, “*BS EN 17037:2018*”. The habitable rooms have also been tested against the Irish adoption of the European Standard, “*IS EN 17037:2018*”.

This approach has been adopted due to the lack of a national annex for the Irish daylighting standard. The Irish daylighting standard requires that all room types (Kitchens/ Living/ Bedrooms) achieve the same level of daylight and it does not recognise that different rooms types require different levels of daylight. For example, the now superseded daylight standards to which all previous daylight & sunlight analysis was carried out in line with, “*BS-8206*” require the following daylight levels for different room types;

- Kitchens = **2%** Average Daylight Factor
- Living Rooms = **1.5%** Average Daylight Factor
- Bedrooms = **1%** Average Daylight Factor

The new Irish adoption of the European Standard, “*IS EN 17037:2018*” require the following the daylight levels for different room types;

- Kitchens = **300 Lux** across 50% of the reference plane for half of the daylight hours of the year and 100 Lux across 95% of the reference plane for half of the daylight hours.
- Living Rooms = **300 Lux** across 50% of the reference plane for half of the daylight hours of the year and 100 Lux across 95% of the reference plane for half of the daylight hours.
- Bedrooms = **300 Lux** across 50% of the reference plane for half of the daylight hours of the year and 100 Lux across 95% of the reference plane for half of the daylight hours.

The Irish adoption of the European Standard, “*IS EN 17037:2018*” unnecessarily penalises designs and creates a design which is solely daylight led and does not capture the wider planning objectives that make a scheme well rounded. Designing a scheme in line with this standard leads to excessively large windows which have a knock-on effect on room depths, room widths, balcony size, balcony layout and privacy.

Large windows also contribute to overheating in the summer which can lead to a requirement for mechanical cooling which could otherwise be ignored. Large windows also contribute to high heat losses in the winter which then leads to oversized plant and excessive energy consumption/ bills.

The British standard has produced a national annex which gives more appropriate daylight targets for applicability within residential schemes. The below daylight levels are considered to be more in line with the BRE Guidance and “*BS 8206 – 2:2008*”.

- Kitchens = **200 Lux** across 50% of the area of the room for 50% of the daylight hours.
- Living Space = **150 Lux** across 50% of the area of the room for 50% of the daylight hours.
- Bedrooms = **100 Lux** across 50% of the area of the room for 50% of the daylight hours.

The Fingal Development Plan states the following in terms of Guidelines “*Development shall be guided by the principles of Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice – (Building Research Establishment Report) 2011 and/or any updated guidance.*” These Guidelines have now been

updated to “*Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice – (Building Research Establishment Report) 2022*”.

“*Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice – (Building Research Establishment Report) 2022*” gives the following statements (amongst many others in terms of applying “*BS EN 17037*”) when it comes to daylight standards that have to be applied;

- “*It is intended to be used in conjunction with the interior recommendations in BS EN 17037 Daylight in Buildings”.*
- *The British Standard “Daylight in buildings” (BS EN 17037) contains advice and guidance on interior daylighting. The guidance contained in this publication (BR 209) is intended to be used with BS EN 17037 and its UK National Annex. Other European countries have their own versions of EN17037, which do not include the UK National Annex.*
- *The guidance here is intended for use in the United Kingdom and in the Republic of Ireland, though recommendations in the Irish Standard IS EN 17037 may vary from those in BS EN 17037.*

The main intention of “*Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice – (Building Research Establishment Report) 2022*” is for it to be used in conjunction with “*BS EN 17037*” but it does also make reference to the fact that Ireland has a different standard which does not include the more appropriate national annex. So, we have therefore carried out our design based on the British Standard which includes the national annex, but we have also carried out the more stringent Irish Standard and included the results in the appendix.

Please note **existing trees** on the site have been included in this methodology in accordance with section G2.1 of the BRE Guidance which states the following; “*Sometimes, however, trees should be taken into account, for example where a new dwelling is proposed near to large **existing trees**. There may be concern that future occupants of the dwelling may want the trees to be cut down if they block too much skylight or sunlight.*”

7.2.1 Internal Daylight Testing Iterative Design Approach

Extensive iterative design work has been carried out in conjunction with the design team. Baseline designs and many other “improved” designs have been carried out. Preliminary analysis, carried out in line with “*Site Layout Planning for Daylight and Sunlight*”, informed the design team of a baseline performance in relation to the daylight received within the apartments comprising the scheme. Early discussions with the design team concluded that with some changes, the amount of natural light penetration into the scheme could be maximized. Following on from these discussions, the following changes were investigated;

- Overall height
- Scale
- Massing
- Window size
- Floor to ceiling heights
- Balcony layouts

Initial iterative design work was carried out on a sample of the rooms for the Ground and First Floor which would generally represent every room type seen in the development. Please see details on the

development below. The Blue Column represents the “New Design” and the orange column represents the “Baseline Design”. Please see text below which indicates the changes that were tested.



- L00 – Apt3 – KLD = Living room window height and width increased. Kitchen window height and width increased. Floor to ceiling increased.
- L00 – Apt2 – KLD = living room window height increased. Dual aspect added
- L00 – Apt4 – KLD = Living room window height and width increased. Kitchen window height and width increased. Floor to ceiling increased.
- L01 – Apt5 – KLD = Dual aspect added
- L01 – Apt8 – KLD = Dual aspect added, living room window width increased.
- L01 – Apt6 – KLD = window width increased, depth reduced, balcony shifted
- L01 – Apt6 – Bedroom 1 = Window width increased but balcony now over room.
- L01 – Apt6 – Bedroom 2 = Window width increase.
- L01 – Apt7 – Bedroom – Balcony now over room. Window width not increased.
- L01 – Apt7 – KLD – Dual aspect added

Figure 27 - Iterative Design Examples

Further iterative design was then carried out on the Ground Floor units which faced into the courtyard. The glazing in these units has been maximised as much as possible within the façade. See image below which highlights the existing window on the façade, along with an outline of the new window (see red and cyan boundary). The new window size has been based on a number of iterative simulations to best optimise the daylight while dealing with other room constraints and is the largest window that is architecturally feasible within the façade.



Figure 28 - New -vs- Old Window Size

Following on from this, overall estimated pass rates were established for the entire scheme based on sampling. This gave the design team an indication of overall scheme performance. See table below for Ground Floor indicating room name, result and overall glazing area tested.

Table 1 - Ground Floor Estimated Pass Rates

Room name	Kitchen/Living Space >200 Lux >50% Hours >50% Area	Status	Glazing Area <i>(Frame not Included)</i>	Bedroom Space >100 Lux >50% Hours >50% Area	Status	Glazing Area <i>(Frame not Included)</i>
	% Area Meeting Target			% Area Meeting Target		
Ground Floor - Zone 1 - KLD	33.06	Below Criteria	4.3m2 and 1.75m2			
Ground Floor - Zone 2 - KLD	62.04	Meets Criteria	13.67m2			
Ground Floor - Zone 3 - KLD	44.33	Below Criteria	13.67m2			
Ground Floor - Zone 1 - Bedroom 2				38.46	Below Criteria	
Ground Floor - Zone 3 - Bedroom 2				98.78	Meets Criteria	2.44m2
Ground Floor - Zone 3 - Bedroom 1				53.57	Meets Criteria	2.44m2
Ground Floor - Zone 4 - KLD	79.71	Meets Criteria	5.24m2			
Ground Floor - Zone 5 - KLD	78.87	Meets Criteria	5.24m2 and 1.35m2			
Ground Floor - Zone 6	88.73	Meets Criteria	5.24m2 and 1.35m2			
Ground Floor - Zone 7 - KLD	82.09	Meets Criteria	5.07m2 and 1.35m2			
Ground Floor - Zone 7 - Bedroom				100.00	Meets Criteria	2.44m2
Ground Floor - Zone 5 - Bedroom				100.00	Meets Criteria	2.44m2



Figure 29 - Estimated Overall Pass Rate Ground Floor

This information was then used to form the final design which encompasses all aspects of a well-rounded scheme including, architectural layout, structural layouts, DAC layouts, fire tender access and furniture layouts.

Please see results below for every habitable room within the scheme carried out in line with “BS EN 17037”. Please note that an overall pass rate of **99%** has been achieved. There are two kitchen/living/dining areas which are slightly below the criteria. These kitchen/ living/dining areas are corner units with single aspect. This scheme layout is unavoidable given the site layout and constraints.

Table 2 - Internal Daylight Testing Results BS EN 17037

Room name	Kitchen/Living Space >200 Lux >50% Hours >50% Area	Status	Bedroom >100 Lux >50% Hours >50% Area	Status
	% Area Meeting Target		% Area Meeting Target	
Ground Floor - Apartment 001 - Bedroom	-	-	100	Meets Criteria
Ground Floor - Apartment 002 - Bedroom	-	-	100	Meets Criteria
Ground Floor - Apartment 002 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 001 - KLD	86.96	Meets Criteria	-	-
Ground Floor - Apartment 003 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 003 - Bedroom	-	-	100	Meets Criteria
Ground Floor - Apartment 004 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 005 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 005 - Bedorom	-	-	100	Meets Criteria
Ground Floor - Apartment 006 - Bedroom	-	-	100	Meets Criteria
Ground Floor - Apartment 006 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 007 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 007 - Bedroom	-	-	100	Meets Criteria
Ground Floor - Apartment 008 - Bedroom 2	-	-	100	Meets Criteria
Ground Floor - Apartment 008 - Bedroom 1	-	-	100	Meets Criteria
Ground Floor - Apartment 008 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 009 - Bedroom	-	-	100	Meets Criteria
Ground Floor - Apartment 010 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 010 - Bedroom	-	-	100	Meets Criteria
Ground Floor - Apartment 011 - Bedroom	-	-	100	Meets Criteria
Ground Floor - Apartment 011 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 012 - KLD	98.04	Meets Criteria	-	-
Ground Floor - Apartment 012 - Bedroom 11.98	-	-	100	Meets Criteria
Ground Floor - Apartment 012 - Bedroom 13	-	-	100	Meets Criteria
Ground Floor - Apartment 013 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 013 - Bedroom Courtyar	-	-	100	Meets Criteria
Ground Floor - Apartment 013 - Bedroom	-	-	100	Meets Criteria
Ground Floor - Apartment 014 - KLD	91.67	Meets Criteria	-	-
Ground Floor - Apartment 014 - Bedroom 2	-	-	100	Meets Criteria
Ground Floor - Apartment 015 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 016 - KLD	94.92	Meets Criteria	-	-
Ground Floor - Apartment 016 - Bedroom 2	-	-	100	Meets Criteria
Ground Floor - Apartment 017 - KLD	100	Meets Criteria	-	-
Ground Floor - Apartment 018 - KLD	93.22	Meets Criteria	-	-
Ground Floor - Apartment 018 - Bedroom 2	-	-	100	Meets Criteria
Ground Floor - Apartment 019 - KLD	89.55	Meets Criteria	-	-
Ground Floor - Apartment 014 - Bedroom 1	-	-	100	Meets Criteria
Ground Floor - Apartment 015 - Bedroom 1	-	-	100	Meets Criteria
Ground Floor - Apartment 016 - Bedroom 1	-	-	100	Meets Criteria
Ground Floor - Apartment 017 - Bedroom 2	-	-	100	Meets Criteria
Ground Floor - Apartment 017 - Bedroom 1	-	-	100	Meets Criteria
Ground Floor - Apartment 018 - Bedroom 1	-	-	100	Meets Criteria
Ground Floor - Apartment 019 - Bedroom 2	-	-	100	Meets Criteria
Ground Floor - Apartment 019 - Bedroom 2	-	-	100	Meets Criteria
Ground Floor - Apartment 015 - Bedroom 2	-	-	100	Meets Criteria

First Floor - Apartment 101 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 102 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 102 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 101 - KLD	82.61	Meets Criteria	-	-
First Floor - Apartment 103 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 103 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 104 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 105 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 105 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 106 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 106 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 107 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 107 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 108 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 108 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 108 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 114 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 114 - Bedroom 11.98	-	-	100	Meets Criteria
First Floor - Apartment 114 - Bedroom 13	-	-	100	Meets Criteria
First Floor - Apartment 116 - KLD	97.62	Meets Criteria	-	-
First Floor - Apartment 116 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 118 - KLD	67.14	Meets Criteria	-	-
First Floor - Apartment 118 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 118 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 120 - KLD	67.61	Meets Criteria	-	-
First Floor - Apartment 120 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 120 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 122 - KLD	60.56	Meets Criteria	-	-
First Floor - Apartment 122 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 122 - Bedroom 2	-	-	90.91	Meets Criteria
First Floor - Apartment 124 - KLD	47.14	Below Criteria	-	-
First Floor - Apartment 124 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 124 - Bedroom 2	-	-	54.55	Meets Criteria
First Floor - Apartment 117 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 117 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 117 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 119 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 119 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 121 - KLD	79.17	Meets Criteria	-	-
First Floor - Apartment 121 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 121 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 123 - KLD	80.56	Meets Criteria	-	-
First Floor - Apartment 123 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 123 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 125 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 125 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 126 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 126 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 109 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 110 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 110 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 112 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 113 - KLD	-	-	-	-
First Floor - Apartment 113 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 113 - Bedroom 2	-	-	100	Meets Criteria
First Floor - Apartment 112 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 111 - KLD	100	Meets Criteria	-	-
First Floor - Apartment 111 - Bedroom	-	-	100	Meets Criteria
First Floor - Apartment 116 - Bedroom 1	-	-	100	Meets Criteria
First Floor - Apartment 109 - KLD	100	Meets Criteria	-	-

7.3 (F) Sunlight Access Results

Access to Sunlight in a Proposed Development can be quantified using “BS EN 17037” which recommends that at least one habitable space should receive a minimum of 1.5 hours of direct sunlight on 21st of March (equinox). “BS EN 17037” also states that any room facing significantly north of due east or west then the criterion is unlikely to be met. Every window highlighted below (see Figure 30 – 33) with a colour is receiving more than 1.5 hours’ worth of direct sunlight on the 21st of March. The brighter the colour the more sunlight hours it is receiving. Please see results below noting that 87% of spaces meet the criteria. There are a very small number of units which are below the criteria. These units are situated in the corner of the development inside the courtyard, are facing north or are heavily obstructed by trees. This is unavoidable given the site constraints and layout. There is no overall target pass rate given in any standard or guidelines for this methodology, however a result of 87% is extremely high. Please note, both newly **proposed trees** and **existing trees** on the site have been included in this methodology in accordance with section G3.2 of the BRE Guidance which states the following; “It is therefore recommended that where **trees may affect sunlight provision**, the calculations should first be carried out with deciduous trees as opaque objects”.

Table 3 - Sunlight Access Results

Room Name	One Habitable Space Receiving 1.5 Hours of Sunlight on 21st March	Comment
Ground Floor Apartment Number 001	Yes	No Comment
Ground Floor Apartment Number 002	Yes	No Comment
Ground Floor Apartment Number 003	Yes	No Comment
Ground Floor Apartment Number 004	Yes	No Comment
Ground Floor Apartment Number 005	Yes	No Comment
Ground Floor Apartment Number 006	Yes	No Comment
Ground Floor Apartment Number 007	Yes	No Comment
Ground Floor Apartment Number 008	Yes	No Comment
Ground Floor Apartment Number 009	No	No Comment
Ground Floor Apartment Number 010	No	Covered by Trees. Ground Floor Level
Ground Floor Apartment Number 011	No	No Comment
Ground Floor Apartment Number 012	No	No Comment
Ground Floor Apartment Number 013	No	No Comment
Ground Floor Apartment Number 014	Yes	No Comment
Ground Floor Apartment Number 015	Yes	No Comment
Ground Floor Apartment Number 016	Yes	No Comment
Ground Floor Apartment Number 017	Yes	No Comment
Ground Floor Apartment Number 018	Yes	No Comment
Ground Floor Apartment Number 019	Yes	No Comment

First Floor Apartment Number 101	Yes	No Comment
First Floor Apartment Number 102	Yes	No Comment
First Floor Apartment Number 103	Yes	No Comment
First Floor Apartment Number 104	Yes	No Comment
First Floor Apartment Number 105	Yes	No Comment
First Floor Apartment Number 106	Yes	No Comment
First Floor Apartment Number 107	Yes	No Comment
First Floor Apartment Number 108	Yes	No Comment
First Floor Apartment Number 109	No	No Comment
First Floor Apartment Number 110	Yes	No Comment
First Floor Apartment Number 111	No	No Comment
First Floor Apartment Number 112	No	No Comment
First Floor Apartment Number 113	Yes	No Comment
First Floor Apartment Number 114	Yes	No Comment
First Floor Apartment Number 115	No	North Facing
First Floor Apartment Number 116	No	North Facing
First Floor Apartment Number 117	Yes	No Comment
First Floor Apartment Number 118	Yes	No Comment
First Floor Apartment Number 119	Yes	No Comment
First Floor Apartment Number 120	Yes	No Comment
First Floor Apartment Number 121	Yes	No Comment
First Floor Apartment Number 122	Yes	Corner Unit Facing Inside Courtyard
First Floor Apartment Number 123	Yes	No Comment
First Floor Apartment Number 124	No	Corner Unit Facing Inside Courtyard
First Floor Apartment Number 125	Yes	No Comment
First Floor Apartment Number 126	Yes	No Comment

Second Floor Apartment Number 201	Yes	No Comment
Second Floor Apartment Number 202	Yes	No Comment
Second Floor Apartment Number 203	Yes	No Comment
Second Floor Apartment Number 204	Yes	No Comment
Second Floor Apartment Number 205	Yes	No Comment
Second Floor Apartment Number 206	Yes	No Comment
Second Floor Apartment Number 207	Yes	No Comment
Second Floor Apartment Number 208	Yes	No Comment
Second Floor Apartment Number 209	Yes	No Comment
Second Floor Apartment Number 210	Yes	No Comment
Second Floor Apartment Number 211	Yes	No Comment
Second Floor Apartment Number 212	Yes	No Comment
Second Floor Apartment Number 213	Yes	No Comment
Second Floor Apartment Number 214	Yes	No Comment
Second Floor Apartment Number 215	No	North Facing
Second Floor Apartment Number 216	No	North Facing
Second Floor Apartment Number 217	Yes	No Comment
Second Floor Apartment Number 218	Yes	No Comment
Second Floor Apartment Number 219	Yes	No Comment
Second Floor Apartment Number 220	Yes	No Comment
Second Floor Apartment Number 221	Yes	No Comment
Second Floor Apartment Number 222	Yes	No Comment
Second Floor Apartment Number 223	Yes	No Comment
Second Floor Apartment Number 224	No	Corner Unit Facing Inside Courtyard
Second Floor Apartment Number 225	Yes	No Comment
Second Floor Apartment Number 226	Yes	No Comment

Third Floor Apartment Number 301	Yes	No Comment
Third Floor Apartment Number 302	Yes	No Comment
Third Floor Apartment Number 303	Yes	No Comment
Third Floor Apartment Number 304	Yes	No Comment
Third Floor Apartment Number 305	Yes	No Comment
Third Floor Apartment Number 306	Yes	No Comment
Third Floor Apartment Number 307	Yes	No Comment
Third Floor Apartment Number 308	Yes	No Comment
Third Floor Apartment Number 309	Yes	No Comment
Third Floor Apartment Number 310	Yes	No Comment
Third Floor Apartment Number 311	Yes	No Comment
Third Floor Apartment Number 312	Yes	No Comment
Third Floor Apartment Number 313	Yes	No Comment
Third Floor Apartment Number 314	Yes	No Comment
Third Floor Apartment Number 315	No	North Facing
Third Floor Apartment Number 316	No	North Facing
Third Floor Apartment Number 317	Yes	No Comment
Third Floor Apartment Number 318	Yes	No Comment
Third Floor Apartment Number 319	Yes	No Comment
Third Floor Apartment Number 320	Yes	No Comment
Third Floor Apartment Number 321	Yes	No Comment
Third Floor Apartment Number 322	Yes	No Comment
Third Floor Apartment Number 323	Yes	No Comment
Third Floor Apartment Number 324	Yes	No Comment
Third Floor Apartment Number 325	Yes	No Comment
Third Floor Apartment Number 326	Yes	No Comment

Fourth Floor Apartment Number 401	Yes	No Comment
Fourth Floor Apartment Number 402	Yes	No Comment
Fourth Floor Apartment Number 403	Yes	No Comment
Fourth Floor Apartment Number 404	Yes	No Comment
Fourth Floor Apartment Number 405	Yes	No Comment
Fourth Floor Apartment Number 406	Yes	No Comment
Fourth Floor Apartment Number 407	Yes	No Comment
Fourth Floor Apartment Number 408	Yes	No Comment
Fourth Floor Apartment Number 409	Yes	No Comment
Fourth Floor Apartment Number 410	Yes	No Comment
Fourth Floor Apartment Number 411	Yes	No Comment
Fourth Floor Apartment Number 412	Yes	No Comment
Fourth Floor Apartment Number 413	Yes	No Comment
Fourth Floor Apartment Number 414	Yes	No Comment
Fourth Floor Apartment Number 415	Yes	No Comment
Fourth Floor Apartment Number 416	Yes	No Comment
Fourth Floor Apartment Number 417	Yes	No Comment
Fourth Floor Apartment Number 418	Yes	No Comment
Fourth Floor Apartment Number 419	Yes	No Comment
Fourth Floor Apartment Number 420	Yes	No Comment
Fourth Floor Apartment Number 421	Yes	No Comment
Fourth Floor Apartment Number 422	Yes	No Comment
Fourth Floor Apartment Number 423	Yes	No Comment
Fourth Floor Apartment Number 424	Yes	No Comment
Fourth Floor Apartment Number 425	Yes	No Comment
Fourth Floor Apartment Number 426	Yes	No Comment

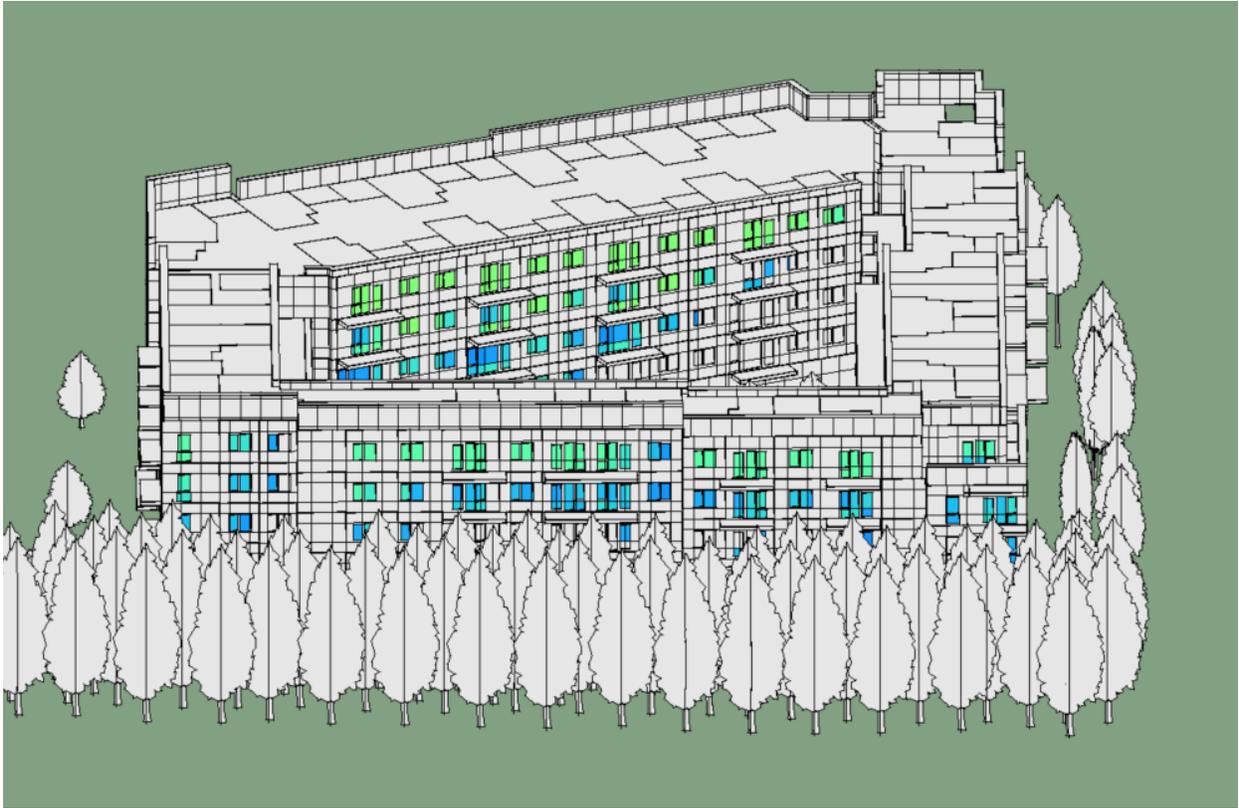


Figure 30 - West Elevation Sunlight Access

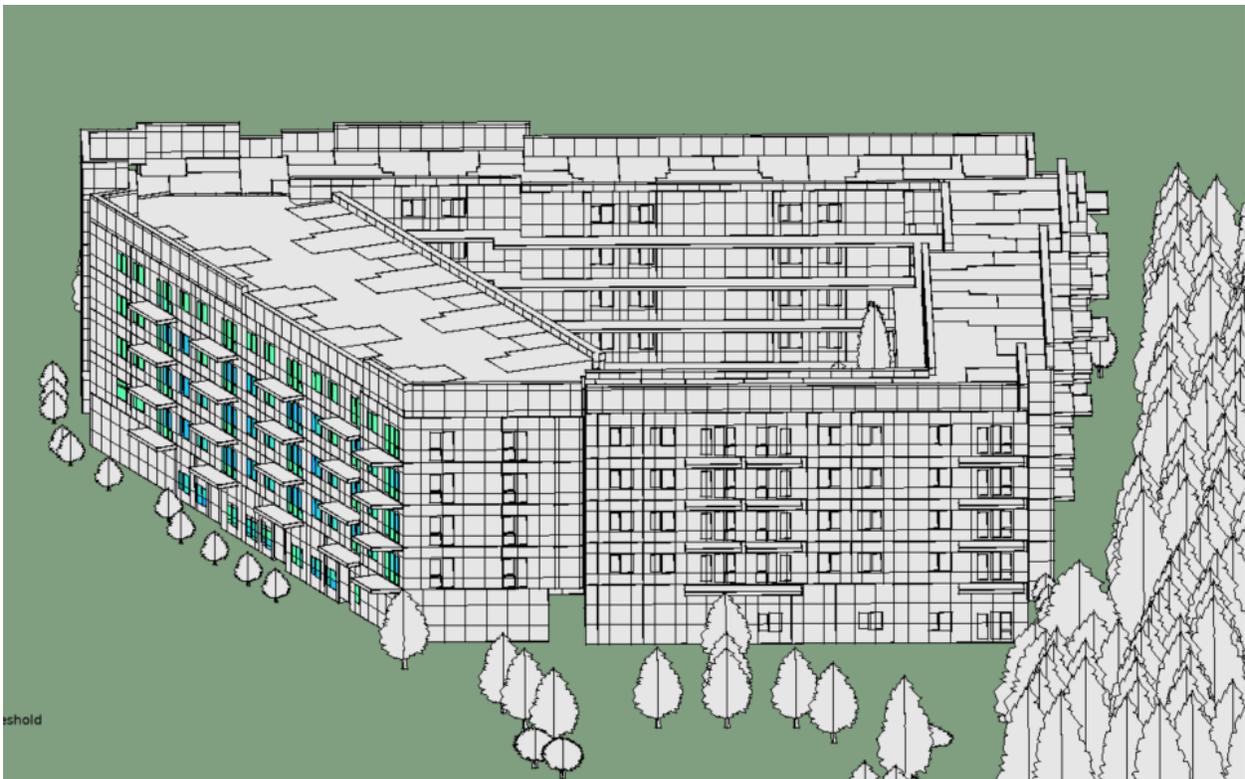


Figure 31 - North Elevation Sunlight Access

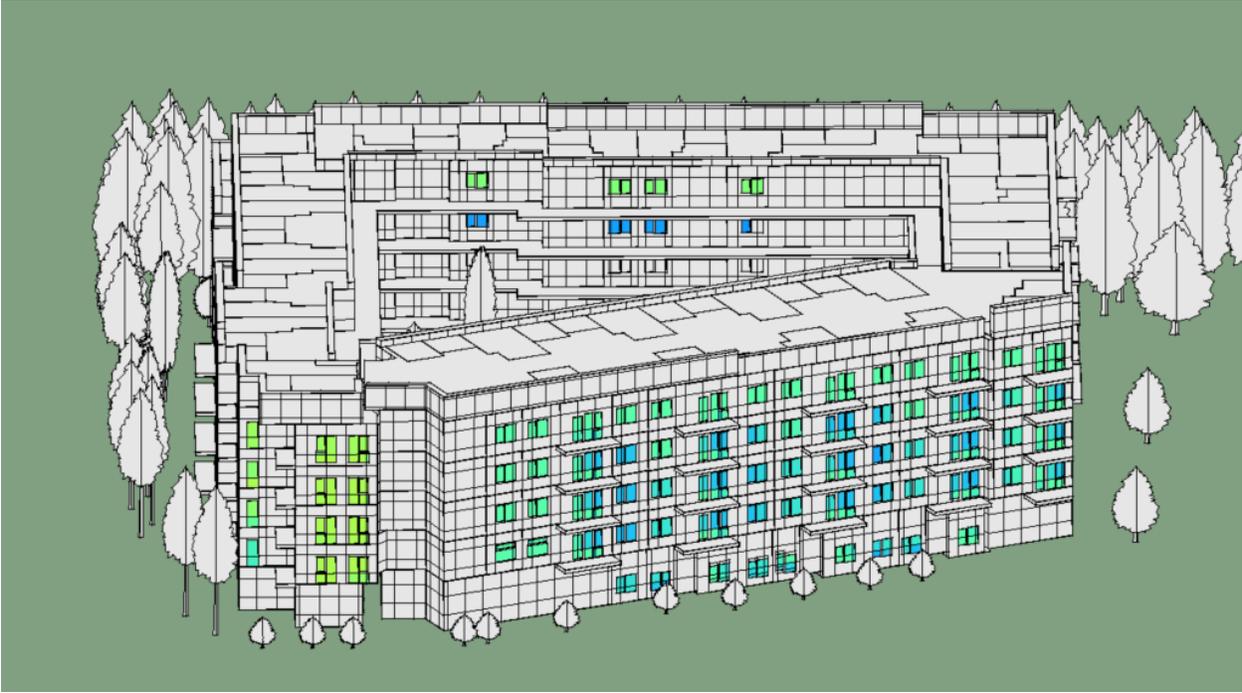


Figure 32 - North East Sunlight Access

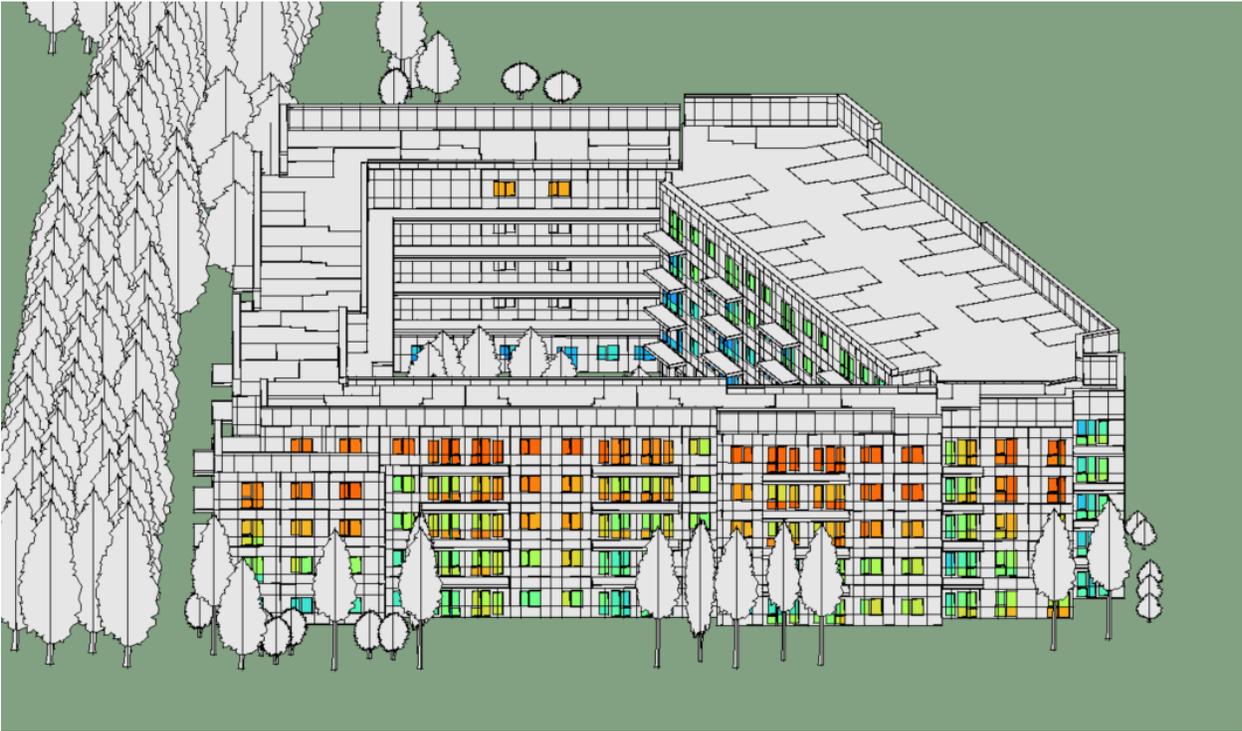


Figure 33 - South Elevation Sunlight Access

7.4 (G) Amenity Area Sunlight Analysis Results

The Communal Areas have been analysed in separate locations with residents having access to all areas. The results indicate that Communal Area C is slightly below the criteria, but Communal Area A,B and D are in full sunlight with 100% of these areas meeting the Guidelines. The quantum of the four spaces if analysed as a whole, are above the criteria with a pass rate of 77.4% achieved. Iterative design work was carried out with the landscape architect to best position the most used parts of Communal Area C, with the playground area situated north in the courtyard. The playground area of Communal Area C if analysed by itself, will meet the Guidelines. Also noting that the least used parts of Communal Area C (bike storage area) are situated to the south, where less sunlight is received. See Figure 35 below which highlights the layout of Communal Area C, noting the playground area in the North and bike storage area in the south. Note that the hardstanding surrounding the bike store and the bike store itself has been excluded from the area under assessment. Please note no trees on the site have been included in this methodology in accordance with section G4.1 of the BRE Guidance which states the following; *“In assessing the impact of buildings on sunlight in gardens (see section 3.3), trees and shrubs are not normally included in the calculation unless a dense belt or group of evergreens is specifically planned as a windbreak or for privacy purposes.”*. The trees on site are not a dense belt of evergreens.

Table 4 - Amenity Area Sunlight Analysis Results

Sunlight Analysis 21st of March					
Property Name	Criteria				
	If the communal areas with the new development in place receives two hours worth of sunlight on 50% of the communal area during the equinox (21st of March), then the communal areas meet the criteria contained within the BRE Guidance.				
	BRE Target [%]	Total Communal Area [m2]	Total Communal Area Receiving More Than 2 Hours [m2]	Percentage of Communal Area Receiving 2 Hours [%]	Status
Communal Area A	50	163	163	100.0	Meets Criteria
Communal Area B	50	522	522	100.0	Meets Criteria
Communal Area C	50	732	350	47.8	Below Criteria
Communal Area D	50	276	276	100.0	Meets Criteria
Total	50	1693	1311	77.4	Meets Criteria

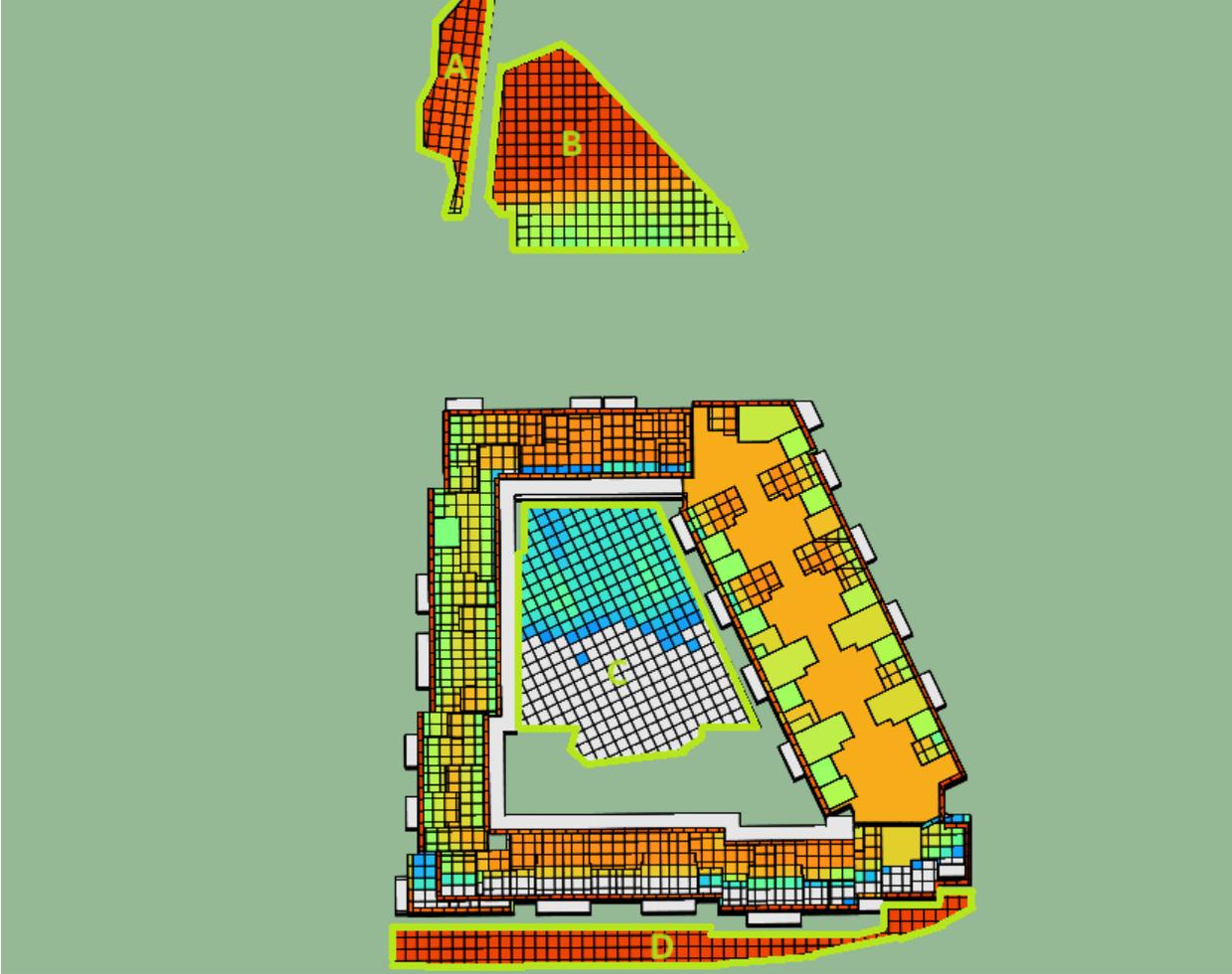


Figure 34 - Amenity Area Sunlight Analysis



Figure 35 - Communal Area Layout

8 Summary of Results

Bidvest Noonan – Commercial

- (A) Light from the Sky – Not assessed as this is a Commercial Property.
- (B) Loss of Sunlight – Not assessed as this is a Commercial Property.
- (C) Garden Analysis – Not assessed as this is a Commercial Property. No garden associated with this Commercial Property.
- (D) Overshadowing Assessment – Whole site analysed. Little to no overshadowing occurring.
- (E) Internal Daylight Testing – This is carried out for the Proposed Development only.
- (F) Sunlight Access – This is carried out for the Proposed Development only.
- (G) Amenity Area Sunlight Analysis - This is carried out for the Proposed Development only.

Apple Green – Commercial

- (A) Light from the Sky – Not assessed as this is a Commercial Property.
- (B) Loss of Sunlight – Not assessed as this is a Commercial Property.
- (C) Garden Analysis – Not assessed as this is a Commercial Property. No garden associated with this Commercial Property.
- (D) Overshadowing Assessment – Whole site analysed. Little to no overshadowing occurring.
- (E) Internal Daylight Testing – This is carried out for the Proposed Development only.
- (F) Sunlight Access – This is carried out for the Proposed Development only.
- (G) Amenity Area Sunlight Analysis - This is carried out for the Proposed Development only.

Saint Werburghs – Residential

- (A) Light from the Sky – Proposed Development will have no impact.
- (B) Loss of Sunlight – Proposed Development will have no impact.
- (C) Garden Analysis – No garden associated that would be impacted by the Proposed Development.
- (D) Overshadowing Assessment – Whole site analysed. Little to no overshadowing occurring.
- (E) Internal Daylight Testing – This is carried out for the Proposed Development only.
- (F) Sunlight Access – This is carried out for the Proposed Development only.
- (G) Amenity Area Sunlight Analysis - This is carried out for the Proposed Development only.

Seamount View/ House – Residential

- (A) Light from the Sky – Proposed Development will have no impact.
- (B) Loss of Sunlight – Proposed Development will have no impact.
- (C) Garden Analysis – All the gardens are heavily obstructed by existing large trees. The Proposed Development is located to the south east of these houses so these houses will be impacted their own massing in terms of sunlight. This methodology has not been carried out and the Proposed Development will not impact these gardens.
- (D) Overshadowing Assessment – Whole site analysed. Little to no overshadowing occurring.
- (E) Internal Daylight Testing – This is carried out for the Proposed Development only.
- (F) Sunlight Access – This is carried out for the Proposed Development only.
- (G) Amenity Area Sunlight Analysis - This is carried out for the Proposed Development only.

Proposed Development

- (A) Light from the Sky – This is carried out for the surrounding Properties only.
- (B) Loss of Sunlight – This is carried out for the surrounding Properties only.
- (C) Garden Analysis – This is carried out for the surrounding Properties only.
- (D) Overshadowing Assessment – This is carried out for the surrounding Properties only.
- (E) Internal Daylight Testing – Overall pass rate of 99% achieved in line with “BS EN 17037” and overall pass rate of 88.3% in line with “IS EN 17037”.
- (F) Sunlight Access – Overall pass rate of 87% achieved.
- (G) Amenity Area Sunlight Analysis - Overall pass rate of 77.4% achieved which is above the 50% as required by the BRE Guidance.

8.1 Compensatory Design Solutions

There are a small number of rooms which do not meet the criteria under (E) Internal Daylight Testing and also for (F) Sunlight Access. This is typical of any scheme due to site layout and constraints. There will inevitably be rooms which face north or are located in the corner of a scheme. Based on this, the scheme will have compensatory design features which include;

- Balcony access.
- Amenity area access.
- Large amount of dual aspect Kitchen/ Living/ Dining areas.
- Well-proportioned apartment units.
- North facing units have a direct view onto public open space.

9 Conclusion

The site is mostly surrounded by Commercial Properties which do not have the same requirements for daylight/ sunlight as Residential Properties do.

The Residential Properties are situated a far distance away from the Proposed Development and will not be impacted by the Proposed Development.

The performance of the Proposed Development itself, performs exceptionally well, with very high levels of daylight and sunlight being achieved for the residents.

10 Appendix

Table 5 - IS EN 17037 Daylight Results

Room name	>300 Lux >50% Hours >50% Area	>100 Lux >50% Hours >95% Area	Status
	% Area Meeting Target	% Area Meeting Target	
Ground Floor - Apartment 001 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 002 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 002 - KLD	100	100	Meets Criteria
Ground Floor - Apartment 001 - KLD	71.74	100	Meets Criteria
Ground Floor - Apartment 003 - KLD	100	100	Meets Criteria
Ground Floor - Apartment 003 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 004 - KLD	100	100	Meets Criteria
Ground Floor - Apartment 005 - KLD	100	100	Meets Criteria
Ground Floor - Apartment 005 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 006 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 006 - KLD	100	100	Meets Criteria
Ground Floor - Apartment 007 - KLD	100	100	Meets Criteria
Ground Floor - Apartment 007 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 008 - Bedroom 2	91.67	100	Meets Criteria
Ground Floor - Apartment 008 - Bedroom 1	96.43	100	Meets Criteria
Ground Floor - Apartment 008 - KLD	100	100	Meets Criteria
Ground Floor - Apartment 009 - Bedroom	70	100	Meets Criteria
Ground Floor - Apartment 010 - KLD	67.9	100	Meets Criteria
Ground Floor - Apartment 010 - Bedroom	80	100	Meets Criteria
Ground Floor - Apartment 011 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 011 - KLD	64.2	100	Meets Criteria
Ground Floor - Apartment 012 - KLD	81.37	100	Meets Criteria
Ground Floor - Apartment 012 - Bedroom 11.98	100	100	Meets Criteria
Ground Floor - Apartment 012 - Bedroom 13	75	100	Meets Criteria
Ground Floor - Apartment 013 - KLD	60.71	100	Meets Criteria
Ground Floor - Apartment 013 - Bedroom Courtyard	55	100	Meets Criteria
Ground Floor - Apartment 013 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 014 - KLD	58.33	100	Meets Criteria
Ground Floor - Apartment 014 - Bedroom 2	45	100	Below Criteria
Ground Floor - Apartment 015 - KLD	61.19	100	Meets Criteria
Ground Floor - Apartment 016 - KLD	64.41	100	Meets Criteria
Ground Floor - Apartment 016 - Bedroom 2	50	100	Meets Criteria
Ground Floor - Apartment 017 - KLD	61.19	100	Meets Criteria
Ground Floor - Apartment 018 - KLD	64.41	100	Meets Criteria
Ground Floor - Apartment 018 - Bedroom 2	45.45	100	Below Criteria
Ground Floor - Apartment 019 - KLD	49.25	100	Below Criteria
Ground Floor - Apartment 014 - Bedroom 1	68	100	Meets Criteria
Ground Floor - Apartment 015 - Bedroom 1	68	100	Meets Criteria
Ground Floor - Apartment 016 - Bedroom 1	54.55	100	Meets Criteria
Ground Floor - Apartment 017 - Bedroom 2	100	100	Meets Criteria
Ground Floor - Apartment 017 - Bedroom 1	80	100	Meets Criteria
Ground Floor - Apartment 018 - Bedroom 1	78.79	100	Meets Criteria
Ground Floor - Apartment 019 - Bedroom 2	100	100	Meets Criteria
Ground Floor - Apartment 019 - Bedroom 2	57.69	100	Meets Criteria
Ground Floor - Apartment 015 - Bedroom 2	100	100	Meets Criteria

First Floor - Apartment 101 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 102 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 102 - KLD	92.16	100	Meets Criteria
First Floor - Apartment 101 - KLD	65.22	100	Meets Criteria
First Floor - Apartment 103 - KLD	85.94	100	Meets Criteria
First Floor - Apartment 103 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 104 - KLD	98.46	100	Meets Criteria
First Floor - Apartment 105 - KLD	100	100	Meets Criteria
First Floor - Apartment 105 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 106 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 106 - KLD	100	100	Meets Criteria
First Floor - Apartment 107 - KLD	100	100	Meets Criteria
First Floor - Apartment 107 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 108 - Bedroom 2	97.22	100	Meets Criteria
First Floor - Apartment 108 - Bedroom 1	96.43	100	Meets Criteria
First Floor - Apartment 108 - KLD	100	100	Meets Criteria
First Floor - Apartment 114 - KLD	85.29	100	Meets Criteria
First Floor - Apartment 114 - Bedroom 11.98	100	100	Meets Criteria
First Floor - Apartment 114 - Bedroom 13	100	100	Meets Criteria
First Floor - Apartment 116 - KLD	47.62	100	Below Criteria
First Floor - Apartment 116 - Bedroom 2	100	100	Meets Criteria
First Floor - Apartment 118 - KLD	38.57	100	Below Criteria
First Floor - Apartment 118 - Bedroom 1	86.67	100	Meets Criteria
First Floor - Apartment 118 - Bedroom 2	45.45	100	Below Criteria
First Floor - Apartment 120 - KLD	39.44	100	Below Criteria
First Floor - Apartment 120 - Bedroom 1	70	100	Meets Criteria
First Floor - Apartment 120 - Bedroom 2	54.55	100	Meets Criteria
First Floor - Apartment 122 - KLD	38.03	100	Below Criteria
First Floor - Apartment 122 - Bedroom 1	52.63	100	Meets Criteria
First Floor - Apartment 122 - Bedroom 2	31.82	90.91	Below Criteria
First Floor - Apartment 124 - KLD	22.86	94.29	Below Criteria
First Floor - Apartment 124 - Bedroom 1	15.79	100	Below Criteria
First Floor - Apartment 124 - Bedroom 2	4.55	54.55	Below Criteria
First Floor - Apartment 117 - Bedroom 2	88.46	100	Meets Criteria
First Floor - Apartment 117 - KLD	78.67	100	Meets Criteria
First Floor - Apartment 117 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 119 - Bedroom 1	100	100	Meets Criteria
First Floor - Apartment 119 - Bedroom 2	100	100	Meets Criteria
First Floor - Apartment 121 - KLD	43.06	100	Below Criteria
First Floor - Apartment 121 - Bedroom 1	100	100	Meets Criteria
First Floor - Apartment 121 - Bedroom 2	100	100	Meets Criteria
First Floor - Apartment 123 - KLD	47.22	100	Below Criteria
First Floor - Apartment 123 - Bedroom 1	84.21	100	Meets Criteria
First Floor - Apartment 123 - Bedroom 2	100	100	Meets Criteria
First Floor - Apartment 125 - Bedroom 1	100	100	Meets Criteria
First Floor - Apartment 125 - Bedroom 2	100	100	Meets Criteria
First Floor - Apartment 126 - Bedroom 1	100	100	Meets Criteria
First Floor - Apartment 126 - Bedroom 2	100	100	Meets Criteria
First Floor - Apartment 109 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 110 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 110 - KLD	88.75	100	Meets Criteria
First Floor - Apartment 112 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 113 - KLD	55.95	100	Meets Criteria
First Floor - Apartment 113 - Bedroom 1	95.83	100	Meets Criteria
First Floor - Apartment 113 - Bedroom 2	80.56	100	Meets Criteria
First Floor - Apartment 112 - KLD	68.75	100	Meets Criteria
First Floor - Apartment 111 - KLD	65.43	100	Meets Criteria
First Floor - Apartment 111 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 116 - Bedroom 1	100	100	Meets Criteria
First Floor - Apartment 109 - KLD	85.71	100	Meets Criteria

Second Floor - Apartment 201 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 202 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 202 - KLD	98.04	100	Meets Criteria
Second Floor - Apartment 201 - KLD	60.87	100	Meets Criteria
Second Floor - Apartment 203 - KLD	89.06	100	Meets Criteria
Second Floor - Apartment 203 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 204 - KLD	100	100	Meets Criteria
Second Floor - Apartment 205 - KLD	100	100	Meets Criteria
Second Floor - Apartment 205 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 206 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 206 - KLD	100	100	Meets Criteria
Second Floor - Apartment 207 - KLD	100	100	Meets Criteria
Second Floor - Apartment 207 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 208 - Bedroom 2	100	100	Meets Criteria
Second Floor - Apartment 208 - Bedroom 1	100	100	Meets Criteria
Second Floor - Apartment 208 - KLD	100	100	Meets Criteria
Second Floor - Apartment 214 - KLD	86.67	100	Meets Criteria
Second Floor - Apartment 214 - Bedroom 11.98	100	100	Meets Criteria
Second Floor - Apartment 214 - Bedroom 13	100	100	Meets Criteria
Second Floor - Apartment 216 - KLD	48.81	100	Below Criteria
Second Floor - Apartment 216 - Bedroom 2	100	100	Meets Criteria
Second Floor - Apartment 218 - KLD	57.14	100	Meets Criteria
Second Floor - Apartment 218 - Bedroom 1	100	100	Meets Criteria
Second Floor - Apartment 218 - Bedroom 2	63.64	100	Meets Criteria
Second Floor - Apartment 220 - KLD	57.75	100	Meets Criteria
Second Floor - Apartment 220 - Bedroom 1	100	100	Meets Criteria
Second Floor - Apartment 220 - Bedroom 2	59.09	100	Meets Criteria
Second Floor - Apartment 222 - KLD	50.7	100	Meets Criteria
Second Floor - Apartment 222 - Bedroom 1	89.47	100	Meets Criteria
Second Floor - Apartment 222 - Bedroom 2	31.82	100	Below Criteria
Second Floor - Apartment 224 - KLD	32.86	100	Below Criteria
Second Floor - Apartment 224 - Bedroom 1	31.58	100	Below Criteria
Second Floor - Apartment 224 - Bedroom 2	13.64	68.18	Below Criteria
Second Floor - Apartment 217 - Bedroom 2	84.62	100	Meets Criteria
Second Floor - Apartment 217 - KLD	80	100	Meets Criteria
Second Floor - Apartment 217 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 219 - Bedroom 1	100	100	Meets Criteria
Second Floor - Apartment 219 - Bedroom 2	100	100	Meets Criteria
Second Floor - Apartment 221 - KLD	43.06	100	Below Criteria
Second Floor - Apartment 221 - Bedroom 1	100	100	Meets Criteria
Second Floor - Apartment 221 - Bedroom 2	100	100	Meets Criteria
Second Floor - Apartment 223 - KLD	41.67	100	Below Criteria
Second Floor - Apartment 223 - Bedroom 1	84.21	100	Meets Criteria
Second Floor - Apartment 223 - Bedroom 2	100	100	Meets Criteria
Second Floor - Apartment 225 - Bedroom 1	100	100	Meets Criteria
Second Floor - Apartment 225 - Bedroom 2	100	100	Meets Criteria
Second Floor - Apartment 226 - Bedroom 1	100	100	Meets Criteria
Second Floor - Apartment 226 - Bedroom 2	100	100	Meets Criteria
Second Floor - Apartment 209 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 210 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 210 - KLD	100	100	Meets Criteria
Second Floor - Apartment 212 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 213 - KLD	82.43	100	Meets Criteria
Second Floor - Apartment 213 - Bedroom 1	100	100	Meets Criteria
Second Floor - Apartment 213 - Bedroom 2	83.33	100	Meets Criteria
Second Floor - Apartment 212 - KLD	100	100	Meets Criteria
Second Floor - Apartment 211 - KLD	97.18	100	Meets Criteria
Second Floor - Apartment 211 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 216 - Bedroom 1	100	100	Meets Criteria
Second Floor - Apartment 209 - KLD	97.37	100	Meets Criteria

Third Floor - Apartment 301 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 302 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 302 - KLD	100	100	Meets Criteria
Third Floor - Apartment 301 - KLD	60.87	100	Meets Criteria
Third Floor - Apartment 303 - KLD	98.44	100	Meets Criteria
Third Floor - Apartment 303 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 304 - KLD	100	100	Meets Criteria
Third Floor - Apartment 305 - KLD	100	100	Meets Criteria
Third Floor - Apartment 305 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 306 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 306 - KLD	100	100	Meets Criteria
Third Floor - Apartment 307 - KLD	100	100	Meets Criteria
Third Floor - Apartment 307 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 308 - Bedroom 2	100	100	Meets Criteria
Third Floor - Apartment 308 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 308 - KLD	100	100	Meets Criteria
Third Floor - Apartment 314 - KLD	86.67	100	Meets Criteria
Third Floor - Apartment 314 - Bedroom 11.98	100	100	Meets Criteria
Third Floor - Apartment 314 - Bedroom 13	100	100	Meets Criteria
Third Floor - Apartment 316 - KLD	75	100	Meets Criteria
Third Floor - Apartment 316 - Bedroom 2	100	100	Meets Criteria
Third Floor - Apartment 318 - KLD	30	100	Below Criteria
Third Floor - Apartment 318 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 318 - Bedroom 2	68.18	100	Meets Criteria
Third Floor - Apartment 320 - KLD	33.8	100	Below Criteria
Third Floor - Apartment 320 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 320 - Bedroom 2	86.36	100	Meets Criteria
Third Floor - Apartment 322 - KLD	28.17	100	Below Criteria
Third Floor - Apartment 322 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 322 - Bedroom 2	50	100	Meets Criteria
Third Floor - Apartment 324 - KLD	15.71	74.29	Below Criteria
Third Floor - Apartment 324 - Bedroom 1	63.16	100	Meets Criteria
Third Floor - Apartment 324 - Bedroom 2	31.82	100	Below Criteria
Third Floor - Apartment 317 - Bedroom 2	92.31	100	Meets Criteria
Third Floor - Apartment 317 - KLD	78.67	100	Meets Criteria
Third Floor - Apartment 317 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 319 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 319 - Bedroom 2	100	100	Meets Criteria
Third Floor - Apartment 321 - KLD	45.83	100	Below Criteria
Third Floor - Apartment 321 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 321 - Bedroom 2	100	100	Meets Criteria
Third Floor - Apartment 323 - KLD	45.83	100	Below Criteria
Third Floor - Apartment 323 - Bedroom 1	84.21	100	Meets Criteria
Third Floor - Apartment 323 - Bedroom 2	100	100	Meets Criteria
Third Floor - Apartment 325 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 325 - Bedroom 2	100	100	Meets Criteria
Third Floor - Apartment 326 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 326 - Bedroom 2	100	100	Meets Criteria
Third Floor - Apartment 309 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 310 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 310 - KLD	100	100	Meets Criteria
Third Floor - Apartment 312 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 313 - KLD	98.65	100	Meets Criteria
Third Floor - Apartment 313 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 313 - Bedroom 2	83.33	100	Meets Criteria
Third Floor - Apartment 312 - KLD	100	100	Meets Criteria
Third Floor - Apartment 311 - KLD	100	100	Meets Criteria
Third Floor - Apartment 311 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 316 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 309 - KLD	94.74	100	Meets Criteria

Fourth Floor - Apartment 401 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 402 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 402 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 401 - KLD	71.74	100	Meets Criteria
Fourth Floor - Apartment 403 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 403 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 404 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 405 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 405 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 406 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 406 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 407 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 407 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 414 - KLD	92	100	Meets Criteria
Fourth Floor - Apartment 414 - Bedroom 11.98	100	100	Meets Criteria
Fourth Floor - Apartment 414 - Bedroom 13	100	100	Meets Criteria
Fourth Floor - Apartment 416 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 416 - Bedroom 2	100	100	Meets Criteria
Fourth Floor - Apartment 418 - KLD	61.43	100	Meets Criteria
Fourth Floor - Apartment 418 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 418 - Bedroom 2	95.45	100	Meets Criteria
Fourth Floor - Apartment 420 - KLD	59.15	100	Meets Criteria
Fourth Floor - Apartment 420 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 420 - Bedroom 2	100	100	Meets Criteria
Fourth Floor - Apartment 422 - KLD	56.34	100	Meets Criteria
Fourth Floor - Apartment 422 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 422 - Bedroom 2	50	100	Meets Criteria
Fourth Floor - Apartment 424 - KLD	44.29	100	Below Criteria
Fourth Floor - Apartment 424 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 424 - Bedroom 2	54.55	100	Meets Criteria
Fourth Floor - Apartment 417 - Bedroom 2	80.77	100	Meets Criteria
Fourth Floor - Apartment 417 - KLD	93.33	100	Meets Criteria
Fourth Floor - Apartment 417 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 419 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 419 - Bedroom 2	100	100	Meets Criteria
Fourth Floor - Apartment 421 - KLD	56.94	100	Meets Criteria
Fourth Floor - Apartment 421 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 421 - Bedroom 2	100	100	Meets Criteria
Fourth Floor - Apartment 423 - KLD	58.33	100	Meets Criteria
Fourth Floor - Apartment 423 - Bedroom 1	84.21	100	Meets Criteria
Fourth Floor - Apartment 423 - Bedroom 2	100	100	Meets Criteria
Fourth Floor - Apartment 425 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 425 - Bedroom 2	100	100	Meets Criteria
Fourth Floor - Apartment 426 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 426 - Bedroom 2	100	100	Meets Criteria
Fourth Floor - Apartment 409 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 410 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 410 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 412 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 413 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 413 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 413 - Bedroom 2	80	100	Meets Criteria
Fourth Floor - Apartment 412 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 411 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 411 - Bedroom	100	100	Meets Criteria
Fourth Floor - Apartment 416 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 409 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 408 - Bedroom	95.83	100	Meets Criteria
Fourth Floor - Apartment 408 - KLD	98.75	100	Meets Criteria
Fourth Floor - Apartment 404 - Bedroom	100	100	Meets Criteria
Third Floor - Apartment 304 - Bedroom	100	100	Meets Criteria
Second Floor - Apartment 204 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 104 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 004 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 009 - KLD	68.12	100	Meets Criteria
First Floor - Apartment 119 - KLD	41.18	100	Below Criteria
First Floor - Apartment 125 - KLD	46.38	100	Below Criteria
Second Floor - Apartment 219 - KLD	42.65	100	Below Criteria
Second Floor - Apartment 225 - KLD	49.28	100	Below Criteria
Third Floor - Apartment 319 - KLD	44.12	100	Below Criteria
Third Floor - Apartment 325 - KLD	43.48	100	Below Criteria
Fourth Floor - Apartment 419 - KLD	57.35	100	Meets Criteria
Fourth Floor - Apartment 425 - KLD	55.07	100	Meets Criteria
First Floor - Apartment 115 - KLD	40.48	100	Below Criteria
First Floor - Apartment 115 - Bedroom 1	100	100	Meets Criteria
First Floor - Apartment 115 - Bedroom 2	80	100	Meets Criteria
First Floor - Apartment 126 - KLD	100	100	Meets Criteria
Second Floor - Apartment 215 - KLD	47.62	100	Below Criteria
Second Floor - Apartment 215 - Bedroom 1	100	100	Meets Criteria
Second Floor - Apartment 215 - Bedroom 2	75	100	Meets Criteria
Second Floor - Apartment 226 - KLD	100	100	Meets Criteria
Third Floor - Apartment 315 - KLD	76.19	100	Meets Criteria
Third Floor - Apartment 315 - Bedroom 1	100	100	Meets Criteria
Third Floor - Apartment 315 - Bedroom 2	85	100	Meets Criteria
Third Floor - Apartment 326 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 415 - KLD	100	100	Meets Criteria
Fourth Floor - Apartment 415 - Bedroom 1	100	100	Meets Criteria
Fourth Floor - Apartment 415 - Bedroom 2	75	100	Meets Criteria
Fourth Floor - Apartment 426 - KLD	100	100	Meets Criteria
Second Floor - Apartment 104 - Bedroom	100	100	Meets Criteria
First Floor - Apartment 104 - Bedroom	100	100	Meets Criteria
Ground Floor - Apartment 004 - Bedroom	100	100	Meets Criteria