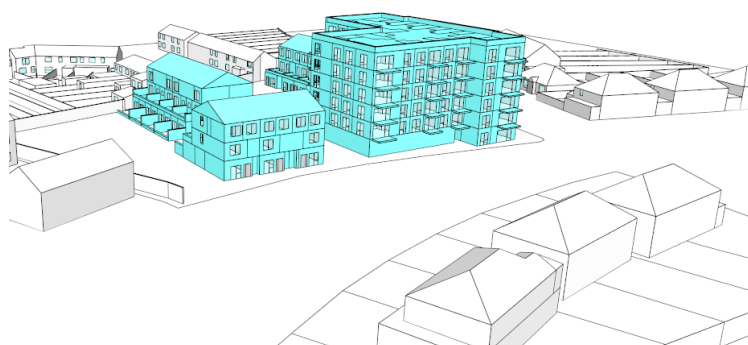




Beaumont Road



Daylight, Sunlight and Overshadowing Study

Report For: Urban Life (BDM) Ltd.

Project No: 20765

Version History

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Integrated Environmental Solutions Limited

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Table of Contents

1	Executive Summary	4
2	Introduction	14
3	BRE – Site Layout Planning for Daylight and Sunlight (3 rd Edition).....	16
4	Methodology	17
5	Shadow Analysis	23
6	Sunlight to Amenity Spaces	39
7	Sunlight to Existing Buildings	49
8	Sunlight to Proposed Development	55
9	Daylight to Existing Buildings.....	61
10	Daylight to Proposed Development.....	78
11	Conclusion.....	85
12	Appendix A – Daylight Provision Results	91
13	Appendix B – BRE Guide 3 rd Edition / IS EN 17037-2018+A1 2021	107

1 Executive Summary

This report summarises the analyses undertaken to quantify the Sunlight and Daylight performance of the proposed Beaumont Road development. The report focuses on measuring the daylight and sunlight impact to the surrounding dwellings as well as the daylight and sunlight performance within the proposed development.

1.1 Planning Authority Guidelines

Where daylight is concerned, The Planning Design Standards for Apartments Guidelines for Planning Authorities, 2025 refers to the Government of Ireland Sustainable Residential Development and Compact Settlements Guidelines 2024 Section 5.3.7 (b) Daylight, which states the following:

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

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

As such the following section details out the standards adhered to within this report that align with the planning authority guidelines as outlined above.

To note, all methodologies have been employed for completeness to ensure appropriate and reasonable regard has been taken to address all assessments under all of the different standards. For clarity these are listed below and the following Section 1.2 denotes which standard is applicable for each assessment type:

- BRE Guide –3rd Edition of BR 209 BRE Site Layout Planning for Daylight and Sunlight
- BS EN 17037-2018+A1-2021 – Daylight in Buildings
 - This is the UK implementation of the European EN 17037-2018+A1-2021 standard. It supersedes BS 8206-2:2008 which is withdrawn in the UK. The BS EN standard includes a National Annex which addresses daylight requirements

specific to dwellings which is notable as Ireland's climate matches closely with the UK.

- IS EN 17037-2018+A1-2021 – Daylight in Buildings
 - For completeness, IS EN 17037-2018+A1-2021 – Daylight in Buildings has been assessed and results included in Appendix B. This has been included for completeness but does not have requirements specific to dwellings.

Further to this where IS EN 17037 is concerned the Dublin City Council Development Plan Appendix 16 section 3.4 notes the following:

“Prior to 2018, Ireland had no standard for daylight. In 2018, the National Standards Authority of Ireland 8 adopted EN 17037 to directly become IS EN 17037. It is important to note that no amendments were made to this document and unlike BS EN 317037, it does not contain a national annex. It offers only a single target for new buildings (there are no space by space targets – e.g. a kitchen would have the same target as a warehouse or office). It does not offer guidance on how new developments will impact on surrounding existing environments. These limitations make it unsuitable for use in planning policy or during planning applications. BR 209 must still be used for this purpose.”

Therefore, where daylight is concerned the BS EN 17037 The BS EN standard which includes a National Annex that addresses daylight requirements specific to dwellings is the more appropriate standard in this instance.

1.2 Reference Standards & Summary of Assessments Undertaken

The various daylight and sunlight assessments that were undertaken using the IES VE software are based on a number of different standards which are referenced in the individual sections of this report. For clarity, the assessments that were undertaken are summarised below as well as the reference standards that were used for each (where applicable):

- **Shadow Analysis**
 - Assessed using shadow images cast at key times throughout the year, i.e. March 21st, June 21st and December 21st to determine if any overshadowing impact occurs and to what extent to any Existing neighbouring dwellings in accordance with the BRE Guide (3rd Edition).
- **Sunlight to Amenity Spaces**
 - Assessed using annual Solar Exposure calculations to determine any impact to Existing amenities and the sunlight received and also to assess the proposed developments amenity spaces to derive how much sunlight they can expect to receive in accordance with the BRE Guide (3rd Edition).
- **Sunlight to Existing Buildings**
 - Assessed using the Annual Probable Sunlight Hours (APSH) method in accordance with the BRE Guide (3rd Edition) - to determine any impact to sunlight received to the Existing neighbouring building main living areas.
- **Sunlight to Proposed Buildings**
 - Assessed using Solar Exposure calculations in accordance with IS/BS EN 17037-2018+A1-2021 (BRE Guide 3rd Edition)
 - In both assessments above the aim is to derive how much sunlight proposed development can expect to receive.
- **Daylight to Existing Buildings**
 - Assessed using the Vertical Sky Component (VSC) method in accordance with the BRE Guide (3rd Edition) - to determine any impact to existing daylight received to the Existing building neighbouring the site.
- **Daylight to Proposed Development**
 - Assessed in accordance with BS EN 17037-2018+A1-2021 National Annex Method 2 (BRE Guide 3rd Edition)
 - According to the BRE 3, BS EN 17037-2018+A1-2021 National Annex is the appropriate assessment methodology to satisfy minimum standards of daylight provision. For completeness, IS EN 17037 non-annex results have been included in Appendix B.
 - In all assessments above the aim is to derive how much daylight will be received within each of the apartments within the proposed development.
- **View Out**
 - Assessed in accordance with IS/BS EN 17037-2018+A1-2021 (BRE Guide 3rd Edition)

- **Glare**
 - Assessed in accordance with IS/BS EN 17037-2018+A1-2021 (BRE Guide 3rd Edition)

The following can be concluded based on the assessments undertaken:

1.3 Shadow Analysis

The shadow analysis illustrates different shadows being cast at key times of the year (March 21st, June 21st and December 21st) for the Existing Situation and the Proposed Scheme. The results from the study are summarised as follows (Property Numbers estimated from Google maps):

Beaumont Grove (19-22 + 78a)

Additional shading noted in the afternoons of March (1600-1800) and December* (1400).
No additional shading noted at any other period.

Beaumont Road East (78/80)

Additional shading noted in the afternoons of March (1600-1800) and December* (1400).
No additional shading noted at any other period.

Beaumont Road South East (75 -81)

Minor additional shading noted in the late evenings of June (2000). No additional shading noted at any other period.

Grace Park Court

No additional shading noted as these properties sit to the south of the development site.

Glencorp Road (30-33)

No additional shading noted to these properties as a result of the proposed development. It should also be noted that there is reduced overshadowing to some of the gardens to the rear of Glencorp Road as a result of the proposed development when compared to the existing site.

Ellenfield Road (1-8/23-29)

Additional shading noted in the mornings of March (0800) and December*(1000) mainly to the front of properties to one side of Ellenfield Road, with only very minor additional shading in June (until 10:00). As a result of the proposed development, in March and December 1000-1200, June 0800 - 1000 it should also be noted that there is reduced overshadowing and an overall improvement to some of the gardens to the rear of Ellenfield Road when compared to the existing site.

* Overshadowing can be expected in December when the sun is lower in the sky and shadows cast are much longer. Although this is the case, overshadowing is least noticeable during the

winter months as there is a lot less sunlight available at this time of year and so the overall impact is vastly reduced.

The potential shading impact is quantified via the “Sunlight to Amenity Spaces” and “Daylight to Existing Buildings” section of this report.

1.4 Sunlight to Amenity Spaces

As outlined in Section 3.3.17 of the BRE Guide (3rd Edition), for a space to appear adequately sunlit throughout the year, at least half of the garden or amenity area should receive at least 2 hours of sunlight on March 21st. In the case of Existing amenity spaces, if they are already below the 50% threshold then the BRE recommends the results kept to within 80% of the existing situation.

Existing Amenity Spaces

On March 21st the majority of existing amenity spaces will receive the same levels of sunlight with the proposed development in place when compared to the existing scheme. Only one amenity space falls marginally outwith the guidelines (73% rather than 80%) and therefore it can be concluded that there will be a minor adverse impact to this garden. Although not included in this assessment it should also be taken into consideration that there are existing trees that will already be impacting on the sunlight to this garden space as can be seen in the image below. All other spaces tested complying with the recommendations in the BRE Guide outlined above.



Proposed Amenity Spaces

On March 21st, 88% of the combined proposed communal amenity areas situated within the development site will receive at least 2 hours of sunlight over their total area, thus exceeding recommendations in the BRE Guide (3rd Edition). The images included confirm the amenity area will be quality spaces in terms of sunlight.

1.5 Sunlight to Existing Buildings

This study considers the proposed scheme and tests if the Annual Probable Sunlight Hours (APSH) results for the living room windows (existing properties) are greater than 25% annual and 5% winter sunlight or are greater than 0.8 times their former value with the proposed development in place or the reduction in sunlight across the year is less than 4% with the proposed development in place.

When compared to the Existing Scheme, 91% of the tested points (10 out of 11 no.) meet the BRE recommended values. These results highlight that the proposed development will have negligible impact to the sunlight received to these existing neighbouring properties. As the point tested that falls below the winter recommendations is one of two windows on the same property on Beaumont Grove, this can be noted as a minor adverse impact to this property. Although not included in this assessment it should also be taken into consideration that there are existing trees that will have some impact on the sunlight during the winter months even in the existing case. This will cumulatively lessen the impact of the proposed development further during the winter months particularly given there is a negligible impact to the annual sunlight as a result of the proposed development.



1.6 Sunlight to Proposed Development

With regards to the sunlight to the proposed development assessment a sunlight exposure assessment in accordance with BRE Guide 3rd Edition / IS/BS EN 17037-2018+A1-2021 considers the orientation of the rooms. As such the following should be noted from section 3.1.11 of the guide.

“The BS EN 17037 criterion applies to rooms of all orientations, although if a room faces significantly north of due east or west it is unlikely to be met.”

Of the 100 no. points tested, 90 no. points (90%) meet the BRE Guide 3rd Edition/IS/BS EN 17037-2018+A1-2021 sunlight exposure recommendations of greater than 1.5 hours on March 21st. When including bedrooms as habitable spaces this increases to 94 no. points (94%). Where windows do not meet this recommendation, this is predominantly as a result of their orientation.

It should be noted that in the development of any apartment type building in particular, achieving in the region of 75% to 80% for this assessment would be considered very high and factors such site constraints and ultimately orientation play a huge part to the outcome of this assessment. In some instance and particularly a scheme like this where you have spaces/units on either side of a rectangular block that is constrained by the site orientation,

50% would be as highest percentage achievable with the apartments on one side not able to meet requirements purely on orientation as noted.

Overall, the sunlight provision results to the proposed development in accordance with IS/BS EN 17037:23018 are performing to a very high standard due to the fact that not all spaces can face south.

1.7 Daylight to Existing Buildings

This study considers the Proposed Scheme and tests if the VSC results are greater than 27% or not less than 0.8 times the value of the Existing Situation.

When compared to the Existing Situation, of the 146 no. points tested, 100% have a Proposed VSC value greater than 27% or not less than 0.8 times their former value compared to the Existing Situation, thus complying with the BRE Guidelines.

1.8 Daylight to Proposed Development

For the daylight to proposed development assessment, one standard has been analysed: BS EN 17037-2018+A1-2021 National Annex (BRE Guide 3rd Edition). For completeness, IS EN 17037-2018+A1-2021 (BRE Guide 3rd Edition) non-annex results have been included in Appendix A.

There are two methods to assess daylight provision to the interior which are based on target values in Table A.3 of BS EN 17037-2018+A1-2021 which are summarised as follows:

Method 1: This calculation method uses the daylight factor targets on the reference plane as per Table A.3. The assessment is carried out on a representative day and time during the year, i.e. 21st September @ 12:00 under standard CIE overcast sky conditions.

Method 2: This calculation method uses the illuminance targets on the reference plane as per Table NA.1. The assessment is carried out for each hour over the course of the year (8,760 hours) using a local weather file which accounts for varying sky conditions and sun positions throughout the year.

As outlined in Section 5.1.4 of the standard, the verification of daylight provision can be determined using either an adequate software or on-site measurements. When using a software, *“a representative model of the space is required together with the key parameters (such as any significant nearby obstructions, the assigned surface reflectance values and glazing transmissivity) that are a reasonable representation of those for the actual, completed building. This can be determined using either Method 1 or Method 2.”*

Based on the above criteria, the daylight provision to the proposed development has been assessed using an adequate software (i.e. IES VE), using the Method 2 climate-based approach

and targeting the minimum recommended values outlined in Table NA.1 of BS EN 17037-2018+A1-2021. (see section 10.1.1 for table NA.1)

The Method 2 climate-based approach was selected as it is a far more accurate assessment method compared to Method 1. Climate based daylight modelling (CBDM) is more accurate compared to a calculation based on a single day during the year, i.e. Method 1. The amount of daylight varies throughout the year, primarily due to the sun's position, so it is essential the impact of daylight variance is properly considered. CBDM utilises an annual simulation linking location, shading, climate data (including solar intensity and cloud cover) together with the building properties. This provides a complete overview on how the daylight performance varies throughout the year due to changes in these factors.

The purpose of the calculations is to quantify an overall percentage of units which exceeds the daylight provision recommendations. Our proposed methodology is to complete the calculations for all of the apartments within the development. The objective of the design team is to maximise the number of units which exceed the minimum recommendations.

The following sections summarise the requirements and results for the BS EN 17037-2018+A1-2021 standard.

BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 National Annex

In the UK, EN 17037-2018+A1-2021 was adopted to form "BS EN 17037-2018+A1-2021". However, a National Annex was included which states:

"The UK committee supports the recommendations for daylight in buildings given in BS EN 17037:2018; however, it is the opinion of the UK committee that the recommendations for daylight provision in a space (see Clause A.2) may not be achievable for some buildings, particularly dwellings. The UK committee believes this could be the case for dwellings with basement rooms or those with significant external obstructions (for example, dwellings situated in a dense urban area or with tall trees outside), or for existing buildings being refurbished or converted into dwellings. This National Annex therefore provides the UK committee's guidance on minimum daylight provision in all UK dwellings."

The BS EN 17037-2018+A1-2021 National Annex provides target illuminance values for bedrooms, living rooms and kitchens within residential developments as per Table NA.1. It is also important to note that as the climate in Ireland is similar to the UK, the targets outlined in the BS EN National Annex could also be applied to dwellings in Ireland.

The BS National Annex also states:

“Where one room in a UK dwelling serves more than a single purpose, the UK committee recommends that the target illuminance is that for the room type with the highest value – for example, in a space that combines a living room and a kitchen the target illuminance is recommended to be 200 lx.”

Therefore, combined LKDs were assessed using a 200-lux target illuminance (E_T).

Across the proposed development, 100% of the tested rooms are achieving the daylight provision targets in accordance with Table NA.1 of BS EN 17037-2018+A1-2021 National Annex using Method 2.

Overall the quality of daylight provision across the development is high.

1.9 View Out

The View Out assessment is related to buildings such as offices or schools where seating layouts are typically fixed compared to domestic settings where an occupant can move around the space freely. In their own home occupants can choose to sit near to or even at a window which will inevitably provide the varying layers of a ‘View Out’ such as the ground, landscape or sky. This ability to choose their position within a domestic setting means they would always have access to a position in the house or apartment with the minimum requirements of ‘View Out’. Therefore, all the properties would meet the minimum requirement as outlined in IS EN 17037-2018+A1-2021 / BS EN 17037-2018+A1-2021 National Annex (BRE Guide 3rd Edition).

1.10 Glare

As outlined in IS EN 17037-2018+A1-2021 / BS EN 17037-2018+A1-2021 National Annex (BRE Guide 3rd Edition), a Glare assessment is suggested in spaces where the *“expected activities are comparable to reading, writing or using display devices and the user is not able to choose freely their position and viewing direction”*. Given that occupants within a domestic setting are free to move around, on this basis a glare assessment for the proposed development has not been carried out.

1.11 Observations

It is important to note that the recommendations within the BRE Guide (3rd Edition) itself states *“although it gives numerical guidelines these should be interpreted flexibly because natural lighting is only one of many factors in site layout design”*, Although this is true appropriate and reasonable regard has still been taken to the BRE guide.

Whilst the results shown relate to the criteria as laid out in the BRE Guide (3rd Edition), it is important to note that the BRE targets are guidance only and should therefore be used with flexibility and caution when dealing with different types of sites.

In addition, BRE Guide 3rd Edition also notes:

“This report is a comprehensive revision of the 2011 edition of Site layout planning for daylight and sunlight: a guide to good practice. It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location.”

Taking all of the above information into account and based on the results from each of the assessments undertaken, the proposed development performs well when compared to the recommendations in the BRE Guide 3rd Edition and BS EN 17037-2018+A1-2021 National Annex. With regards to the existing properties there is a negligible impact to sunlight and daylight as a result of the proposed development when considering all factors.

2 Introduction

This report summarises the analyses undertaken to quantify the Sunlight and Daylight performance of the proposed Beaumont Road development. The report focuses on measuring the daylight and sunlight impact to the surrounding dwellings as well as the daylight and sunlight performance within the proposed development.

2.1 Development Description

The proposed Large Scale Residential Development (LRD) will comprise 100 no. apartments/duplexes (17 no. studios, 45 no. 1-beds, 27 no. 2-beds and 11 no. 3 beds) within 4 no. blocks ranging in height from 3 to 6 storeys. All residential units will be provided with associated private balconies/terraces to the north/south/east/west elevations. Provision of internal amenity space and lobby/reception area at ground floor of the apartment block. Vehicular/pedestrian/cyclist access from Grace Park Court and pedestrian/cyclist and emergency access via Ellenfield Road. All associated site development works including import, export and reuse of material to achieve appropriate site levels, infrastructure and enabling works including water services provision and upgrades, public utilities, open spaces (including play areas), surface car parking, set down areas, cycle parking areas/buildings, landscaping and boundary treatment works, plant areas (at ground and roof level), green roofs, roof mounted photovoltaic (PV) panels, ESB substation, and waste storage.

3 BRE – Site Layout Planning for Daylight and Sunlight (3rd Edition)

Access to daylight and sunlight is a vital part of a healthy environment. Sensitive design should provide sufficient daylight and sunlight to new residential developments while not obstructing light to existing homes nearby.

The 3rd Edition of the BR 209 BRE Site Layout Planning for Daylight and Sunlight, advise on planning developments for good access to daylight and sunlight and is widely used by local authorities to help determine the performance of new developments.

3.1 Impact Classification Discussion

BRE guidance in Appendix H (BRE Guide 3rd Edition) – Environmental Impact Assessment suggests impact classifications as minor, moderate and major adverse. It provides further classifications of these impacts with respect to criteria summarised in the table below.

Where the loss of skylight or sunlight fully meets the guidelines in the BRE guide (3rd Edition), the impact is assessed as negligible or minor adverse. Where the loss of skylight or sunlight does not meet the BRE guidelines, the impact is assessed as minor, moderate or major adverse.

Impact	Description
<i>Negligible adverse impact</i>	• <i>Loss of light well within guidelines, or</i> • <i>only a small number of windows losing light (within the guidelines) or limited area of open space losing light (within the guidelines)</i>
<i>Minor adverse impact (a)</i>	• <i>Loss of light only just within guidelines and</i> ○ <i>a larger number of windows are affected or</i> ○ <i>larger area of open space is affected (within the guidelines)</i>
<i>Minor adverse impact (b)</i>	• <i>only a small number of windows or limited open space areas are affected</i> • <i>the loss of light is only marginally outside the guidelines</i> • <i>an affected room has other sources of skylight or sunlight</i> • <i>the affected building or open space only has a low-level requirement for skylight or sunlight</i> • <i>there are particular reasons why an alternative, less stringent, guideline should be applied</i>
<i>Major adverse impact</i>	• <i>large number of windows or large open space areas are affected</i> • <i>the loss of light is substantially outside the guidelines</i> • <i>all the windows in a particular property are affected</i> • <i>the affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight (living rooms / playground)</i>

4 Methodology

4.1 Planning Authority Guidelines

Where daylight is concerned, The Planning Design Standards for Apartments Guidelines for Planning Authorities, 2025 refers to the Government of Ireland Sustainable Residential Development and Compact Settlements Guidelines 2024 Section 5.3.7 (b) Daylight, which states the following:

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

To note, all methodologies have been employed for completeness to ensure appropriate and reasonable regard has been taken to address all assessments under all of the different standards. For clarity these are listed below and the following Section 4.2 denotes which standard is applicable for each assessment type:

- BRE Guide –3rd Edition of BR 209 BRE Site Layout Planning for Daylight and Sunlight
- BS EN 17037-2018+A1-2021 – Daylight in Buildings
 - This is the UK implementation of the European EN 17037-2018+A1-2021 standard. It supersedes BS 8206-2:2008 which is withdrawn in the UK. The BS EN standard includes a National Annex which addresses daylight requirements specific to dwellings which is notable as Ireland’s climate matches closely with the UK.
- For completeness, IS EN 17037-2018+A1-2021 – Daylight in Buildings has been assessed and results included in Appendix B.

Furthermore, the EN 17037-2018+A1-2021 standard has already been adopted in the UK to inform the BS EN 17037-2018+A1-2021 standard which supersedes BS 8206-2:2008 which is now withdrawn. It is important to note that BS EN 17037-2018+A1-2021 includes a National Annex which specifically addresses daylight provision in residential dwellings in the UK. A similar annex is not included in the IS EN 17037-2018+A1-2021 standard.

Further to this where IS EN 17037 is concerned the Dublin City Council Development Plan Appendix 16 section 3.4 notes the following:

“Prior to 2018, Ireland had no standard for daylight. In 2018, the National Standards Authority of Ireland adopted EN 17037 to directly become IS EN 17037. It is important to note that no

amendments were made to this document and unlike BS EN 317037, it does not contain a national annex. It offers only a single target for new buildings (there are no space by space targets – e.g. a kitchen would have the same target as a warehouse or office). It does not offer guidance on how new developments will impact on surrounding existing environments. These limitations make it unsuitable for use in planning policy or during planning applications. BR 209 must still be used for this purpose.”

Therefore, where daylight is concerned the BS EN 17037 The BS EN standard which includes a National Annex that addresses daylight requirements specific to dwellings is the more appropriate standard in this instance.

Finally, the latest BRE guide ‘Site Layout Planning for Daylight and Sunlight’ (3rd Edition) was published in June 2022. This now directly links to the new daylighting standards EN 17037-2018+A1-2021. Aside refinements to the BRE guide, the assessments are the same to what is found within the BRE guide 2nd Edition.

Therefore, with regards to interior daylighting in particular, where different methodologies are found in each of the different standards, all have been carried out for completeness to ensure appropriate and reasonable regard has been taken to address all assessments under all of the different standards.

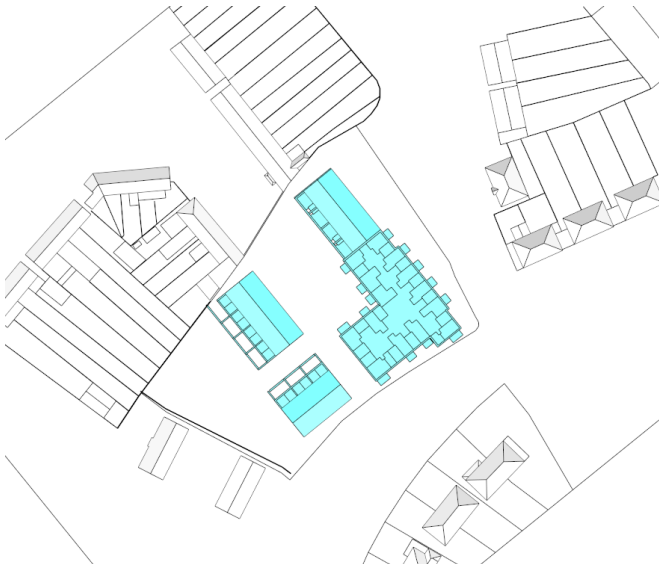
4.2 Reference Standards & Summary of Assessments Undertaken

The various daylight and sunlight assessments that were undertaken using the IES VE software are based on a number of different standards which are referenced in the individual sections of this report. For clarity, the assessments that were undertaken are summarised below as well as the reference standards that were used for each (where applicable):

- **Shadow Analysis**
 - Assessed using shadow images cast at key times throughout the year, i.e. March 21st, June 21st and December 21st to determine if any overshadowing impact occurs and to what extent to any existing neighbouring dwellings in accordance with the BRE Guide (3rd Edition).
- **Sunlight to Amenity Spaces**
 - Assessed using annual Solar Exposure calculations to determine any impact to existing amenities and the sunlight received and also to assess the proposed developments amenity spaces to derive how much sunlight they can expect to receive in accordance with the BRE Guide (3rd Edition).
- **Sunlight to Existing Buildings**
 - Assessed using the Annual Probable Sunlight Hours (APSH) method in accordance with the BRE Guide (3rd Edition) - to determine any impact to sunlight received to the existing neighbouring building main living areas.
- **Sunlight to Proposed Buildings**
 - Assessed using Solar Exposure calculations in accordance with IS/BS EN 17037-2018+A1-2021 (BRE Guide 3rd Edition)
 - In both assessments above the aim is to derive how much sunlight proposed development can expect to receive.
- **Daylight to Existing Buildings**
 - Assessed using the Vertical Sky Component (VSC) method in accordance with the BRE Guide (3rd Edition) - to determine any impact to existing daylight received to the existing building neighbouring the site.
- **Daylight to Proposed Development**
 - Assessed in accordance with BS EN 17037-2018+A1-2021 National Annex Method 2 (BRE Guide 3rd Edition)
 - For completeness, IS EN 17037 results have been included in the report.
 - In all assessments above the aim is to derive how much daylight will be received within each of the apartments within the proposed development.
- **View Out**
 - Assessed in accordance with IS/BS EN 17037-2018+A1-2021 (BRE Guide 3rd Edition)
- **Glare**
 - Assessed in accordance with IS/BS EN 17037-2018+A1-2021 (BRE Guide 3rd Edition)

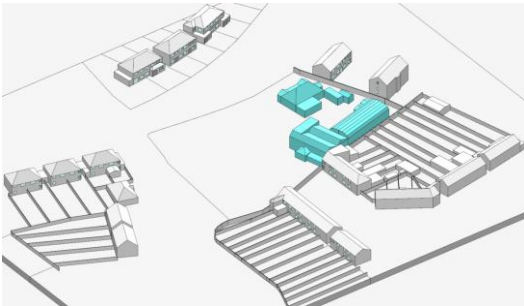
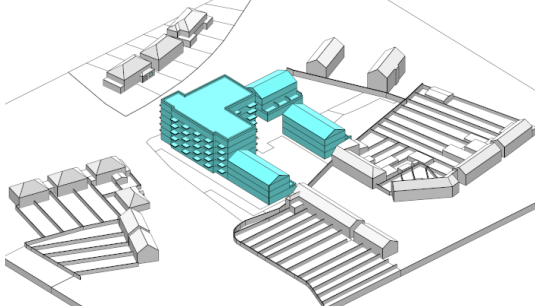
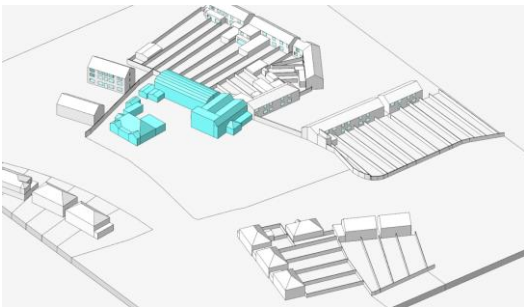
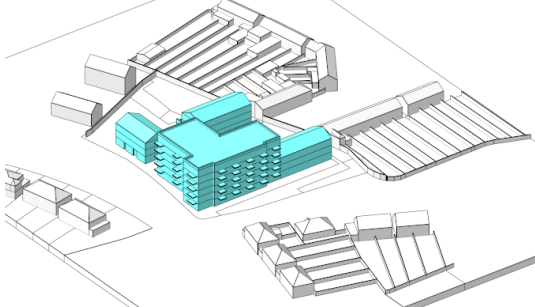
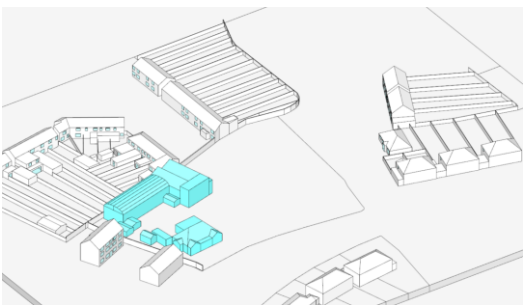
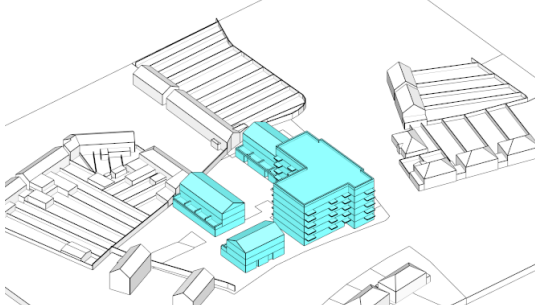
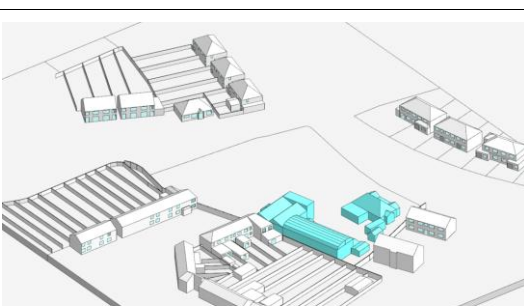
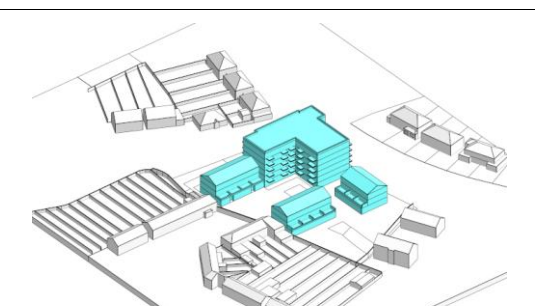
4.3 Orientation

The model orientation has been taken from drawings provided by the Architect with the resulting angle shown below used in the analysis.

Orientation	
	
	

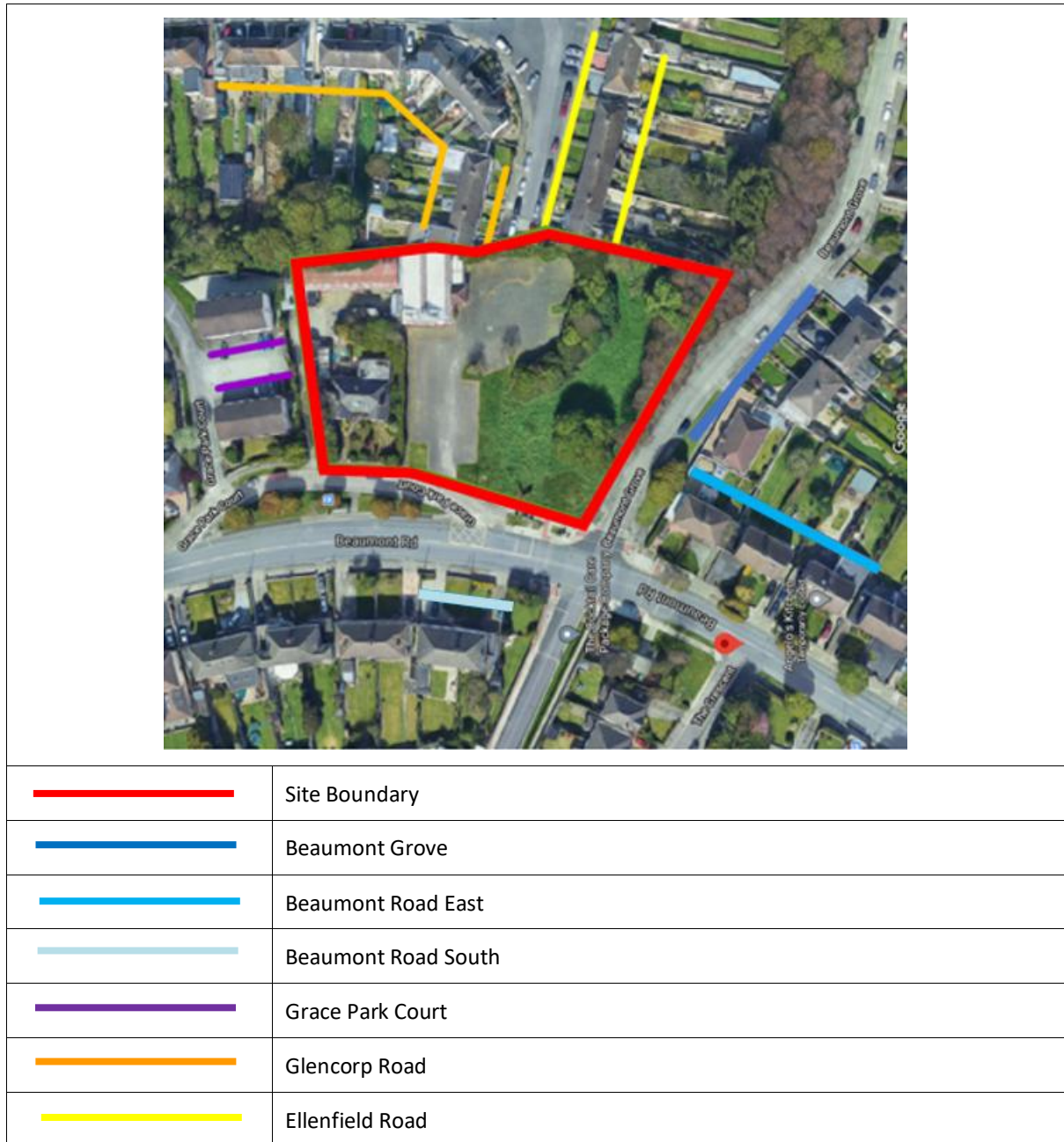
4.4 Proposed Model

The following images illustrate the models created from the architectural information provided and the use of Google/Bing maps where information was absent.

	Existing Situation	Proposed Scheme
View looking from North of Site		
View looking from East of Site		
View looking from South of Site		
View looking from West of Site		

4.5 Potential Sensitive Receptors

To help understand the potential impact to surrounding buildings, potential sensitive receptors were identified as illustrated below.



5 Shadow Analysis

The statistics of Met Eireann, the Irish Meteorological Service, show that the sunniest months in Ireland are May and June, based on 1991-2020 averages or latest:

<https://www.met.ie/climate/30-year-averages>.

The following can also be shown:

- During December a mean daily duration of 1.7 hours of sunlight out of a potential 7.3 hours sunlight each day is received (i.e. only 23% of potential sunlight hours).
- During June a mean daily duration of 5.8 hours of sunlight out of a potential 15.9 hours sunlight each day is received (i.e. only 36% of potential sunlight hours).

Therefore, the impacts caused by overshadowing are generally most noticeable during the summer months and least noticeable during the winter months. According to the BRE (3rd Edition) in Section 3.3.13:

“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.”

Section 3.3.14 states:

“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”

In Section 3.3.15:

“As an optional addition, plots for summertime (for example 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 (e.g. 21 December) are plotted, even low buildings will cast long shadows.”

Based on the above, and for completeness, this section will consider the shadows cast by the proposed development on the following dates:

- March 21st / September 21st (Equinox)
- June 21st (Summer Solstice)
- December 21st (Winter Solstice)



These images illustrate shadows cast for 'perfect sunny' conditions with no clouds and assumed that the sun is shining for every hour shown. Given the discussion above it is important to remember that this is not always going to be the case.



5.1 Plan View
5.1.1 March 21st

	Existing	Proposed
March 21 st - 8:00		
March 21 st - 10:00		
March 21 st - 12:00		



	Existing	Proposed
March 21 st - 14:00		
March 21 st - 16:00		
March 21 st - 18:00		

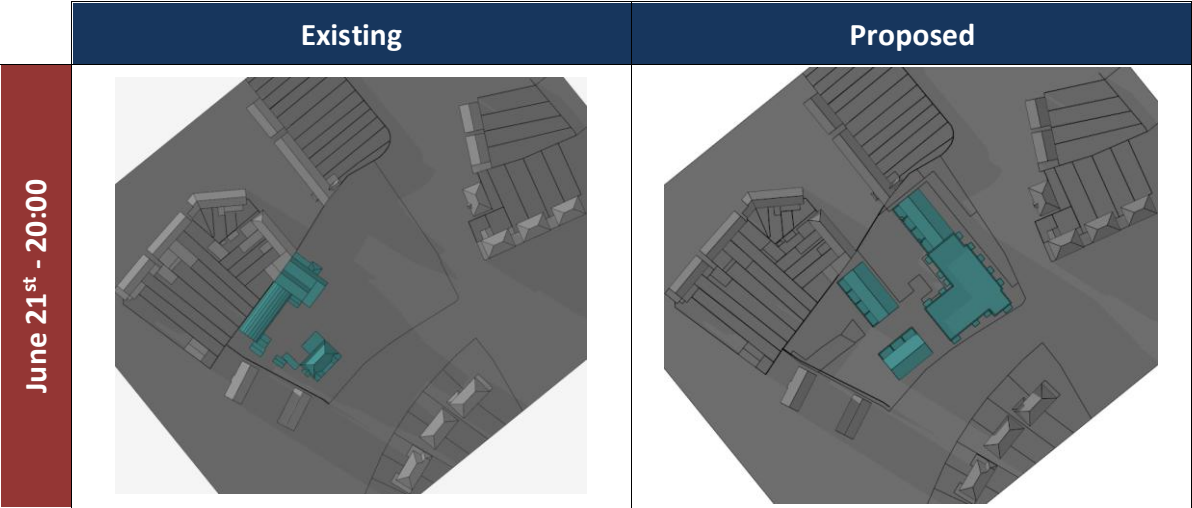


5.1.2 June 21st

	Existing	Proposed
June 21 st - 8:00		
June 21 st - 10:00		
June 21 st - 12:00		



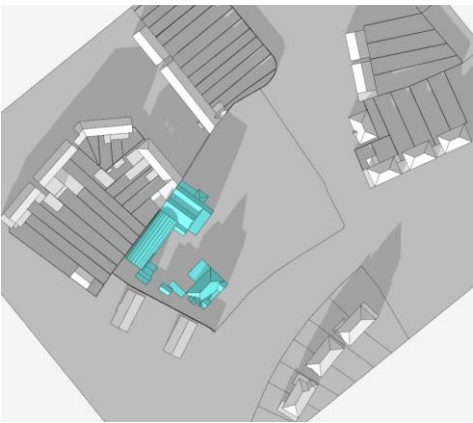
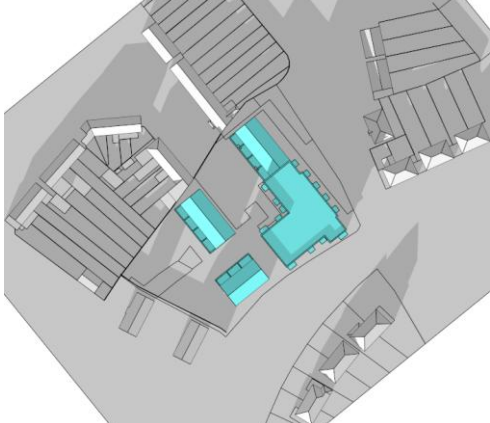
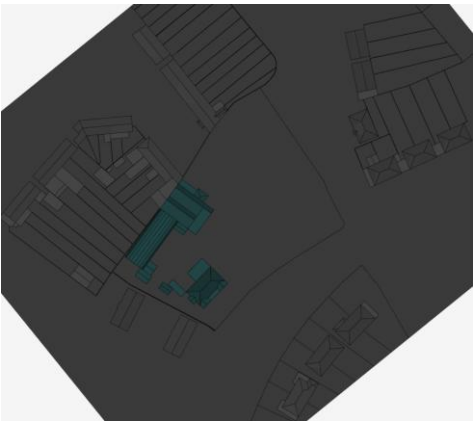
	Existing	Proposed
June 21 st - 14:00		
June 21 st - 16:00		
June 21 st - 18:00		



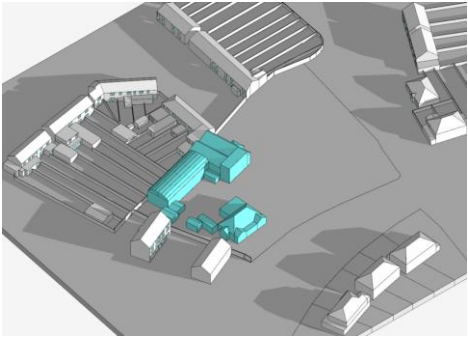
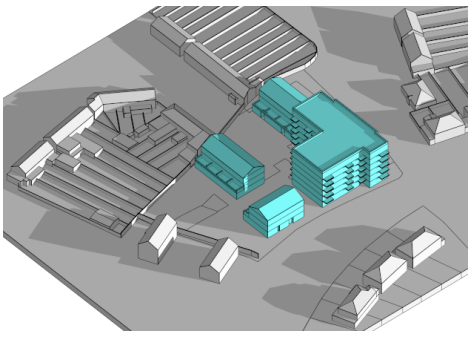
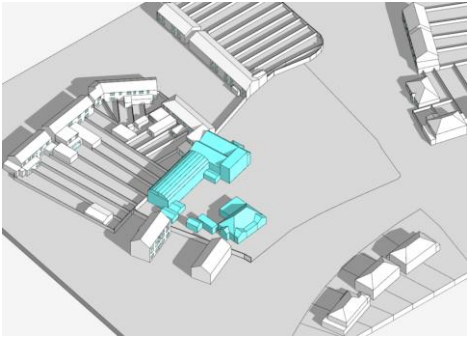
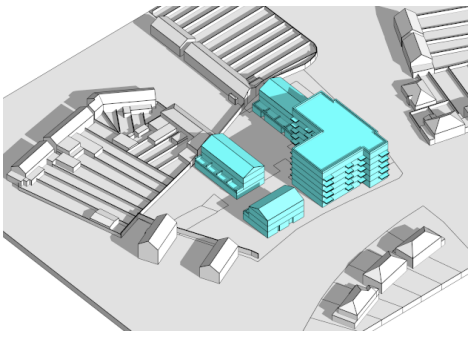
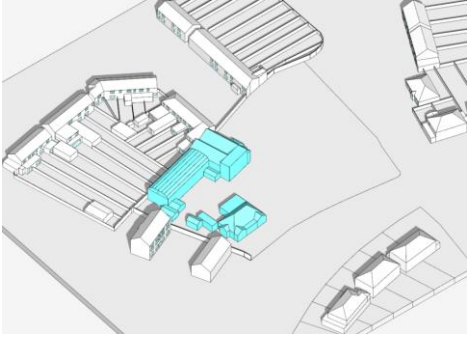
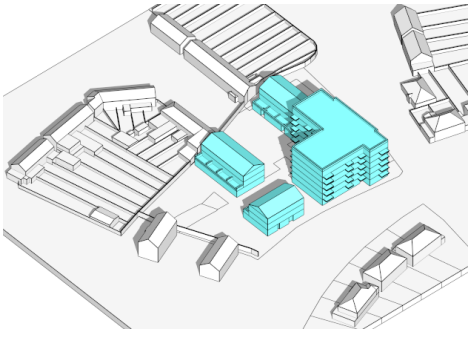
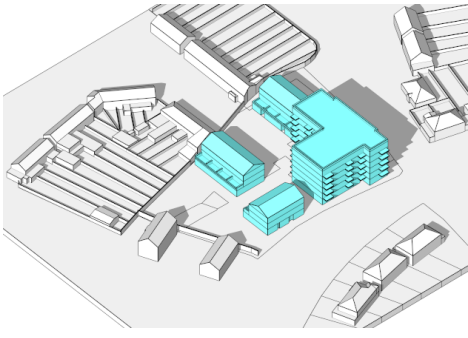


5.1.3 December 21st

	Existing	Proposed
December 21 st - 8:00		
December 21 st - 10:00		
December 21 st - 12:00		

	Existing	Proposed
December 21 st - 14:00		
December 21 st - 16:00		

5.2 3D View
5.2.1 March 21st

	Existing	Proposed
March 21 st - 8:00		
March 21 st - 10:00		
March 21 st - 12:00		
March 21 st - 14:00		

	Existing	Proposed
March 21 st - 16:00		
March 21 st - 18:00		



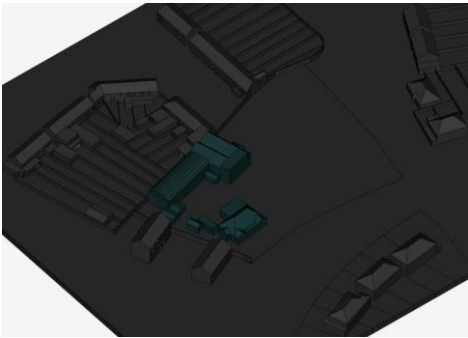
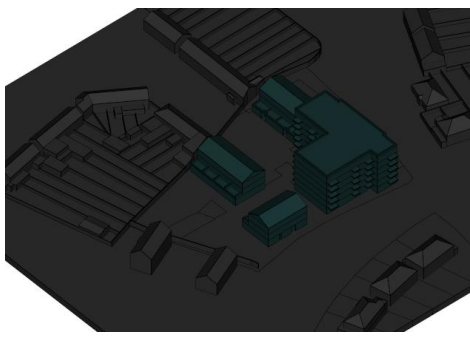
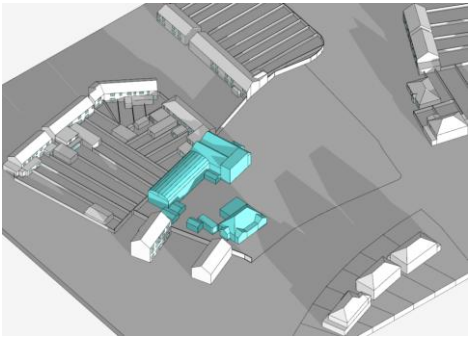
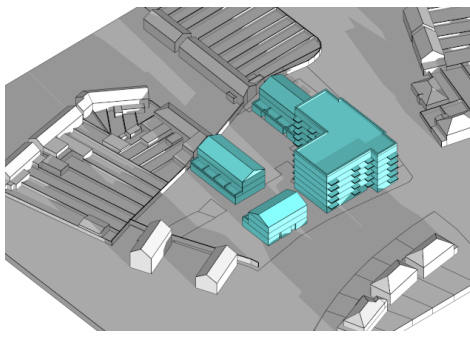
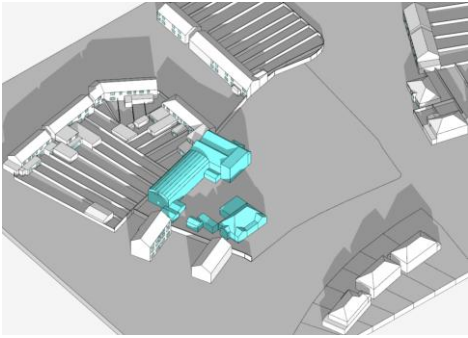
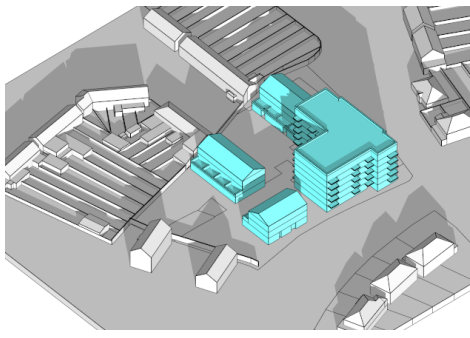
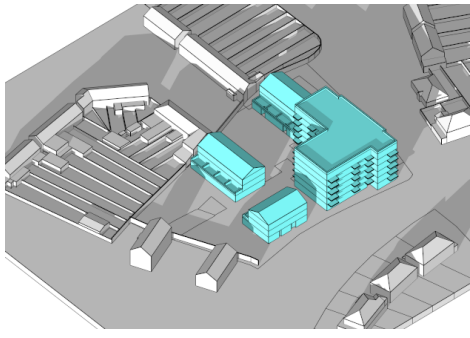
5.2.2 June 21st

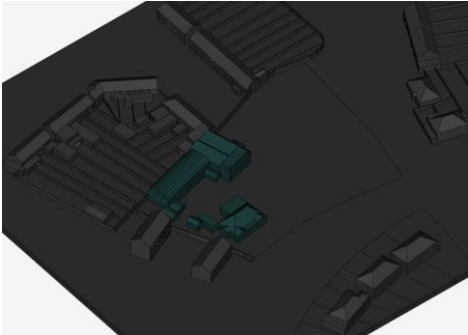
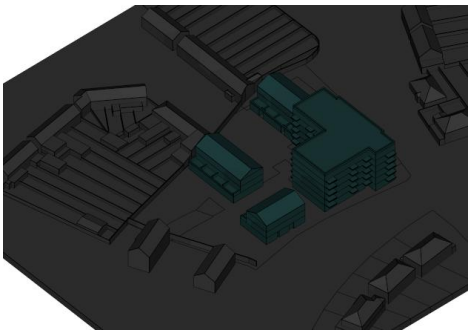
	Existing	Proposed
June 21 st - 8:00		
June 21 st - 10:00		
June 21 st - 12:00		
June 21 st - 14:00		



	Existing	Proposed
June 21 st - 16:00		
June 21 st - 18:00		
June 21 st - 20:00		

5.2.3 December 21st

	Existing	Proposed
December 21 st - 8:00		
December 21 st - 10:00		
December 21 st - 12:00		
December 21 st - 14:00		

	Existing	Proposed
December 21 st - 16:00		

5.3 Discussion

The shadow analysis illustrates different shadows being cast at key times of the year (March 21st, June 21st and December 21st) for the Existing Situation and the Proposed Scheme. The results from the study are summarised as follows (Property Numbers estimated from Google maps):

Beaumont Grove (19-22 + 78a)

Additional shading noted in the afternoons of March (1600-1800) and December* (1400).
No additional shading noted at any other period.

Beaumont Road East (78/80)

Additional shading noted in the afternoons of March (1600-1800) and December* (1400).
No additional shading noted at any other period.

Beaumont Road South East (75 -81)

Minor additional shading noted in the late evenings of June (2000). No additional shading noted at any other period.

Grace Park Court

No additional shading noted as these properties sit to the south of the development site.

Glencorp Road (30-33)

No additional shading noted to these properties as a result of the proposed development. It should also be noted that there is reduced overshadowing to some of the gardens to the rear of Glencorp Road as a result of the proposed development when compared to the existing site.

Ellenfield Road (1-8/23-29)

Additional shading noted in the mornings of March (0800) and December*(1000) mainly to the front of properties to one side of Ellenfield Road, with only very minor additional shading in June (until 10:00). As a result of the proposed development, in March and December 1000-1200, June 0800 - 1000 it should also be noted that there is reduced overshadowing and an overall improvement to some of the gardens to the rear of Ellenfield Road when compared to the existing site.

* Overshadowing can be expected in December when the sun is lower in the sky and shadows cast are much longer. Although this is the case, overshadowing is least noticeable during the winter months as there is a lot less sunlight available at this time of year and so the overall impact is vastly reduced.

The potential shading impact is quantified via the “Sunlight to Amenity Spaces” and “Daylight to Existing Buildings” section of this report.

6 Sunlight to Amenity Spaces

6.1 Guidance Requirements

The impact of the proposed development on the sunlight availability to the amenity spaces will be considered to determine how the amenity spaces perform when assessed against the BRE Guide (3rd Edition) which states the following in Section 3.3.17:

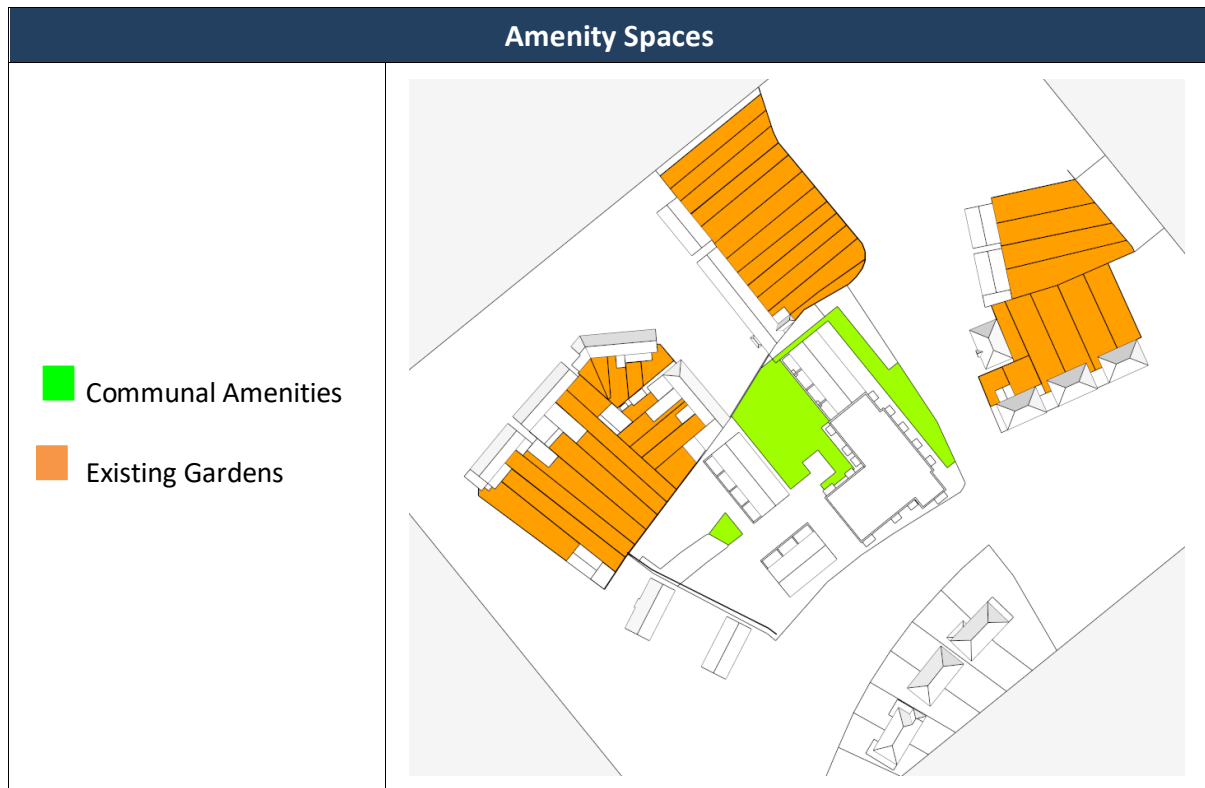
Summary

3.3.17 It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area that can receive two hours of sun on 21 March is less than 0.80 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March.

The BRE Guide (3rd Edition) states that for a space to appear adequately sunlit throughout the year, at least half of a garden or amenity space should receive at least 2 hours of sunlight on March 21st. In the case of existing amenity spaces, if they are already below the 50% threshold then the BRE recommends the results kept to within 80% of the existing situation.

6.2 Existing and Proposed Amenity Spaces

This analysis will be performed on the amenity spaces illustrated in the image below.



The following images illustrate the predicted results with respect to this space receiving at least 2 hours of sunlight on March 21st. Any areas that receive less than 2 hours of sunlight are colour-coded in grey.

6.2.1 Existing Amenity Spaces

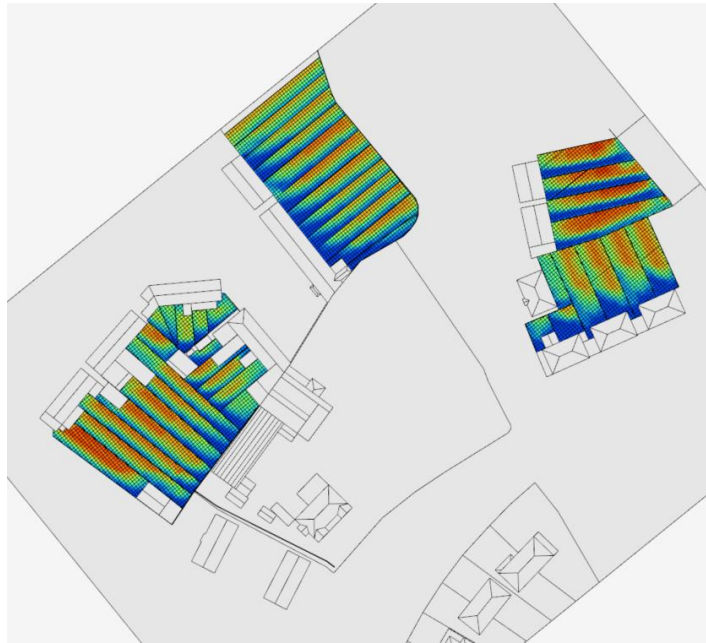
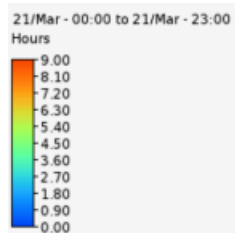
As stated above for a space to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least 2 hours of sunlight on March 21st. In the case of existing amenity spaces, if they are already below the 50% threshold then the BRE recommends the results kept to within 80% of the existing situation with the proposed development in place.

This analysis performed on the following amenity spaces highlighted below:

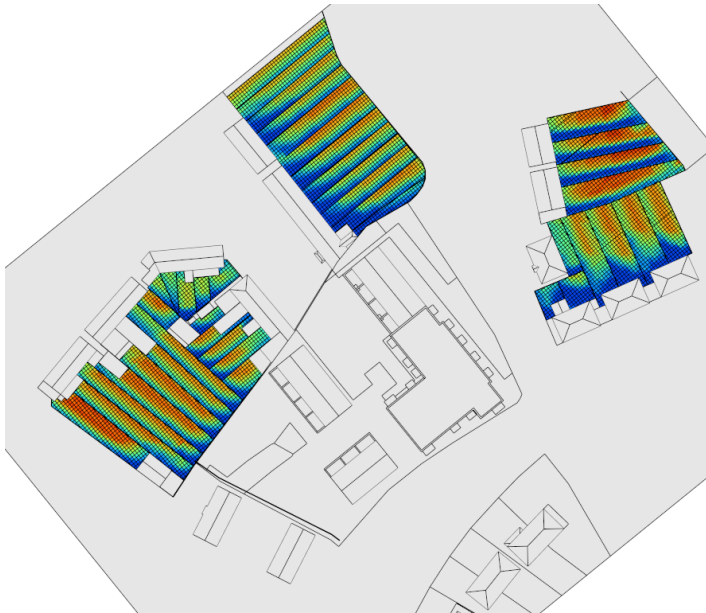
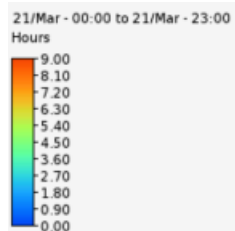


6.2.1.1 Existing Amenity Area Results

Existing Situation: Absolute Scale Showing all Hours of Sunlight Received

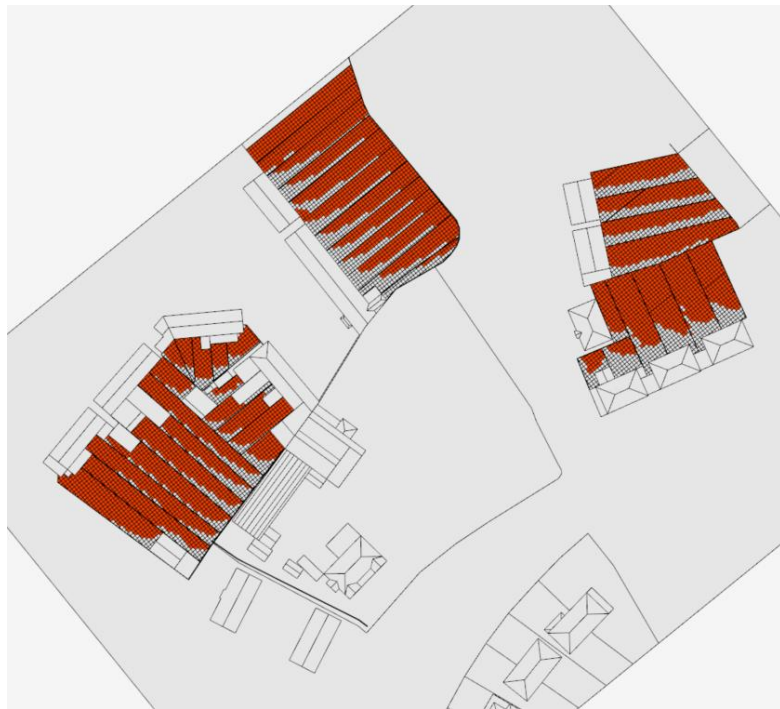


Proposed Situation: Absolute Scale Showing all Hours of Sunlight Received



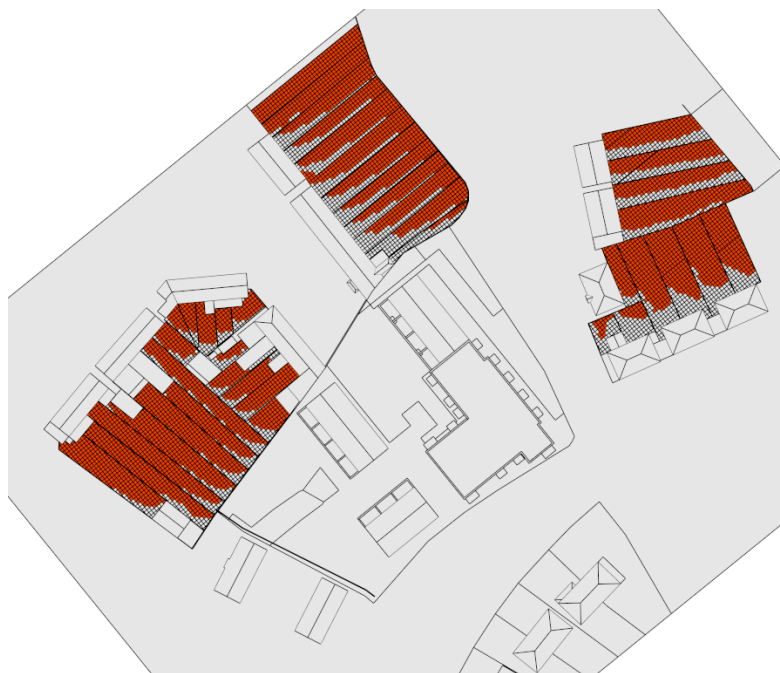
Existing Situation: Hours of Sunlight > 2 Illustrated in Red

- Receives more than 2 hours of sunlight
- Receives less than 2 hours of sunlight

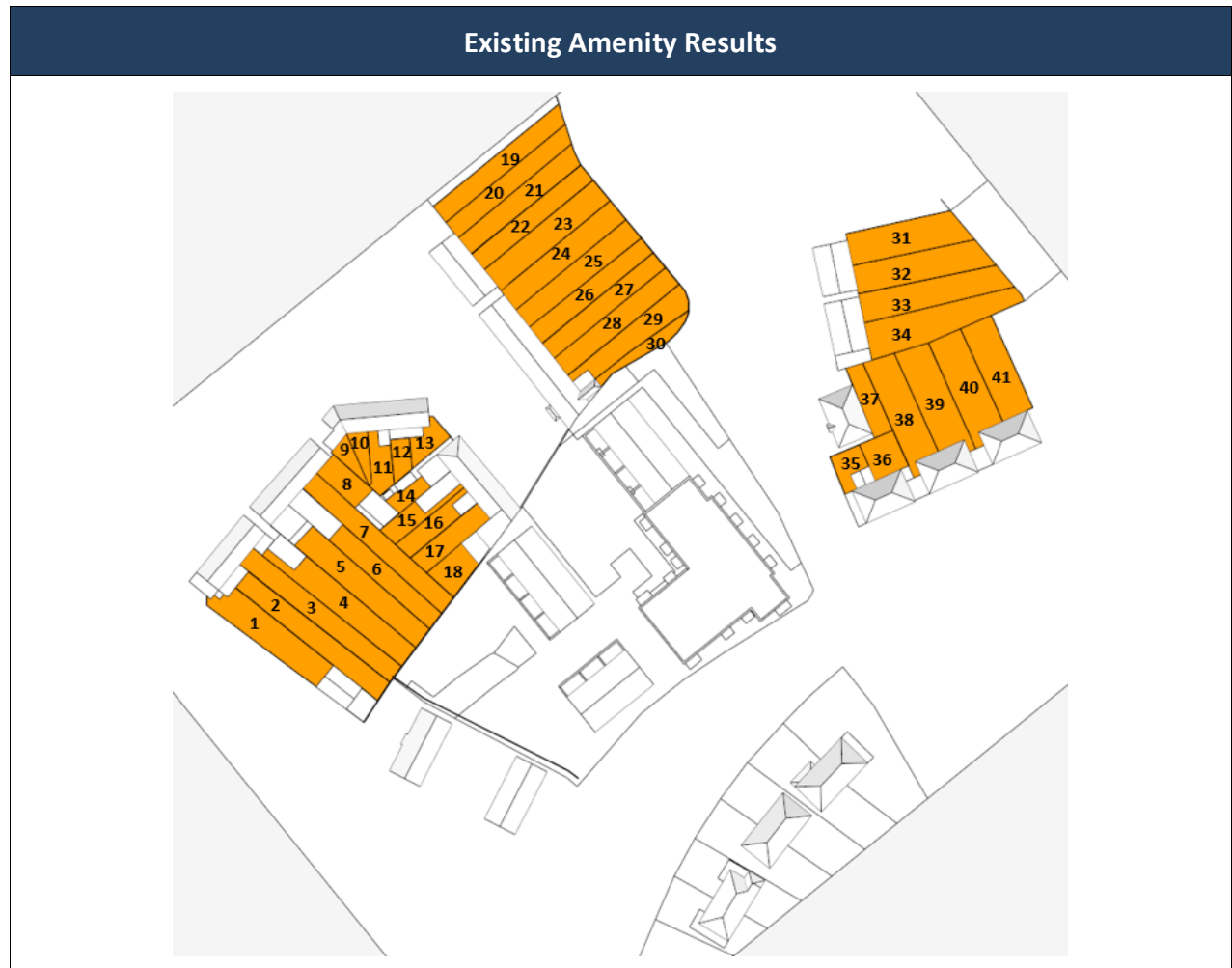


Proposed Situation: Hours of Sunlight > 2 Illustrated in Red

- Receives more than 2 hours of sunlight
- Receives less than 2 hours of sunlight



6.2.1.2 Existing Amenity Results

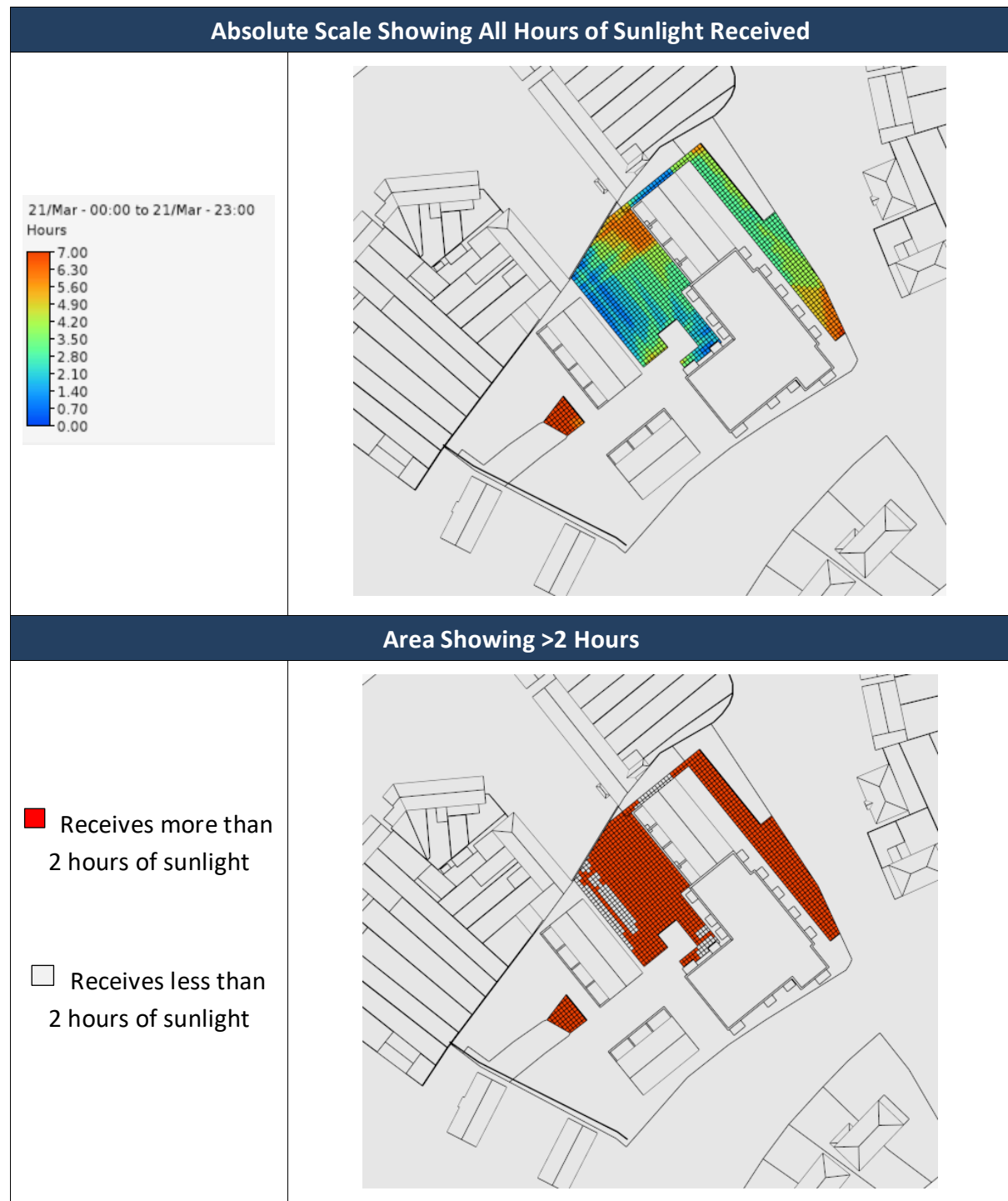


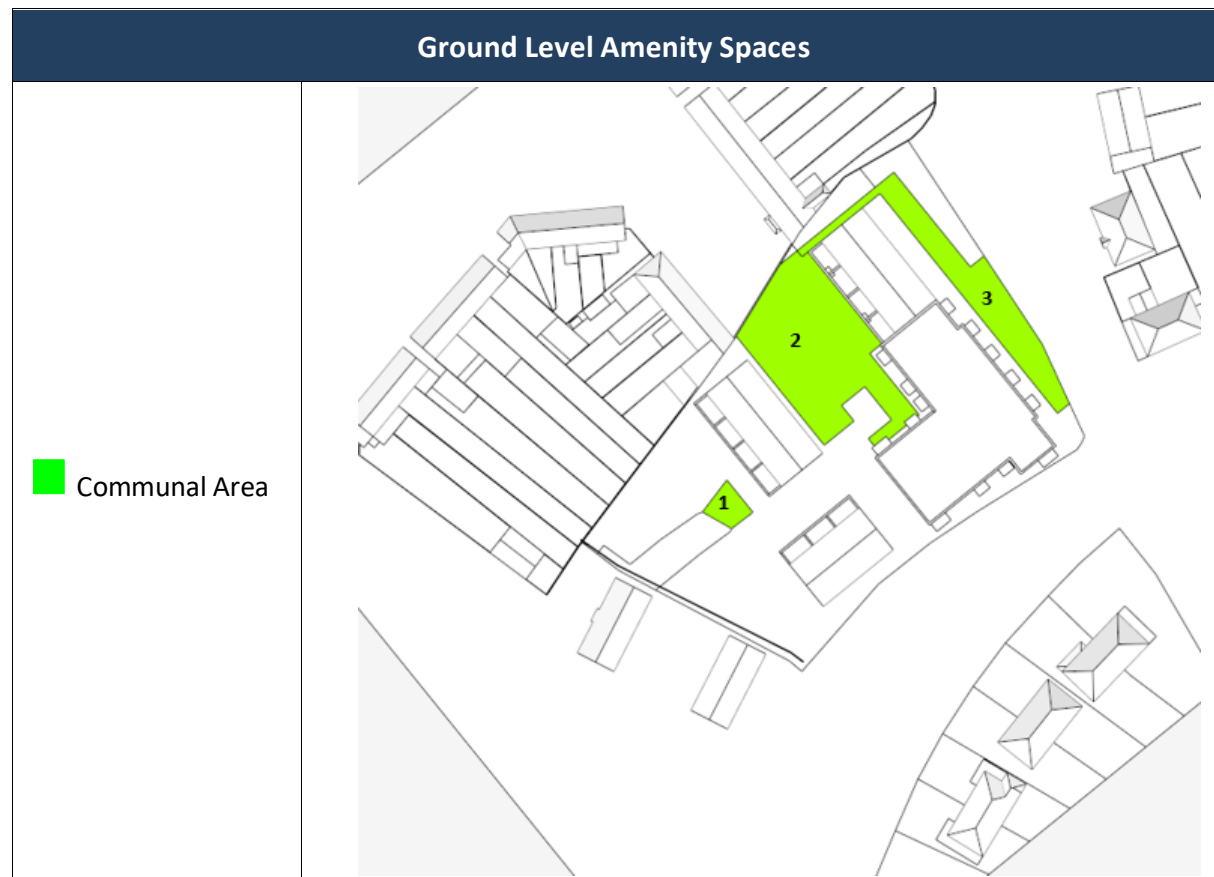
Ref	Area (m ²)	Existing Area >2 hrs		Existing Area with Proposed Development in Place >2 hrs		Proposed vs Existing (%)	Comment
		(m ²)	(%)	(m ²)	(%)		
1	242	220	91%	220	91%	100%	✓
2	234	207	88%	205	88%	99%	✓
3	242	219	90%	219	90%	100%	✓
4	243	218	90%	218	90%	100%	✓
5	245	208	85%	208	85%	100%	✓
6	169	124	73%	130	77%	105%	✓
7	234	182	78%	189	81%	104%	✓
8	83	71	86%	71	86%	100%	✓
9	38	30	79%	30	79%	100%	✓
10	40	34	85%	34	85%	100%	✓
11	72	61	85%	61	85%	100%	✓
12	45	35	78%	35	78%	100%	✓
13	61	54	89%	54	89%	100%	✓

Ref	Area (m ²)	Existing Area >2 hrs		Existing Area with Proposed Development in Place >2 hrs		Proposed vs Existing (%)	Comment
		(m ²)	(%)	(m ²)	(%)		
14	43	29	67%	29	67%	100%	✓
15	73	54	74%	54	74%	100%	✓
16	90	79	88%	79	88%	100%	✓
17	113	101	89%	101	89%	100%	✓
18	86	61	71%	67	78%	110%	✓
19	202	202	100%	202	100%	100%	✓
20	187	179	96%	179	96%	100%	✓
21	196	148	76%	148	76%	100%	✓
22	177	123	69%	123	69%	100%	✓
23	241	188	78%	188	78%	100%	✓
24	220	167	76%	167	76%	100%	✓
25	206	152	74%	152	74%	100%	✓
26	185	132	71%	132	71%	100%	✓
27	171	119	70%	119	70%	100%	✓
28	199	139	70%	139	70%	100%	✓
29	186	135	73%	135	73%	100%	✓
30	69	17	25%	17	25%	100%	✓
31	243	156	64%	156	64%	100%	✓
32	247	157	64%	157	64%	100%	✓
33	257	169	66%	169	66%	100%	✓
34	295	252	85%	252	85%	100%	✓
35	63	30	47%	22	35%	73%	X
36	90	26	29%	24	27%	92%	✓
37	89	80	90%	80	90%	100%	✓
38	236	183	78%	183	78%	100%	✓
39	242	184	76%	184	76%	100%	✓
40	237	182	77%	182	77%	100%	✓
41	216	158	73%	158	73%	100%	✓

6.2.2 Proposed Amenity Spaces

6.2.2.1 Proposed Public and Communal Amenity Spaces





Ref.	Total Area (m)	Area Receiving >2h (m)	Percent Receiving >2h	Comment
1	57	57	98%	✓
2	739	618	84%	✓
3	403	385	96%	✓
Total	1199	1060	88%	✓

6.3 Discussion

As outlined in Section 3.3.17 of the BRE Guide (3rd Edition), for a space to appear adequately sunlit throughout the year, at least half of the garden or amenity area should receive at least 2 hours of sunlight on March 21st. In the case of Existing amenity spaces, if they are already below the 50% threshold then the BRE recommends the results kept to within 80% of the existing situation.

Existing Amenity Spaces

On March 21st the majority of existing amenity spaces will receive the same levels of sunlight with the proposed development in place when compared to the existing scheme. Only one amenity space falls marginally outwith the guidelines (73% rather than 80%) and therefore it can be concluded that there will be a minor adverse impact to this garden. Although not included in this assessment it should also be taken into consideration that there are existing trees that will already be impacting on the sunlight to this garden space as can be seen in the image below. All other spaces tested complying with the recommendations in the BRE Guide outlined above.



Proposed Amenity Spaces

On March 21st, 88% of the combined proposed communal amenity areas situated within the development site will receive at least 2 hours of sunlight over their total area, thus exceeding recommendations in the BRE Guide (3rd Edition). The images included confirm the amenity area will be quality spaces in terms of sunlight.

7 Sunlight to Existing Buildings

7.1 Guidance – BRE Guide (3rd Edition)

The BRE Guide (3rd Edition) states that interiors where the occupants expect sunlight should receive at least one quarter (25%) of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months, between 21st September and 21st March.

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.

If a window reference point can receive more than 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months between 21st September and 21st March, then the room should still receive enough sunlight. 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 given and less than 0.8 times their former value, either over the whole year or just during the winter months (21st September to 21st March) and reduction in sunlight across the year has a greater reduction than 4%, then the occupants of the existing building will notice the loss of sunlight.

Summary

3.2.13 If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:

- receives less than 25% of annual probable sunlight hours and less than 0.80 times its former annual value; or less than 5% of annual probable sunlight hours between 21 September and 21 March and less than 0.80 times its former value during that period;
- and also has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.

BRE 3rd Edition guidance document Site Layout Planning for Daylight and Sunlight

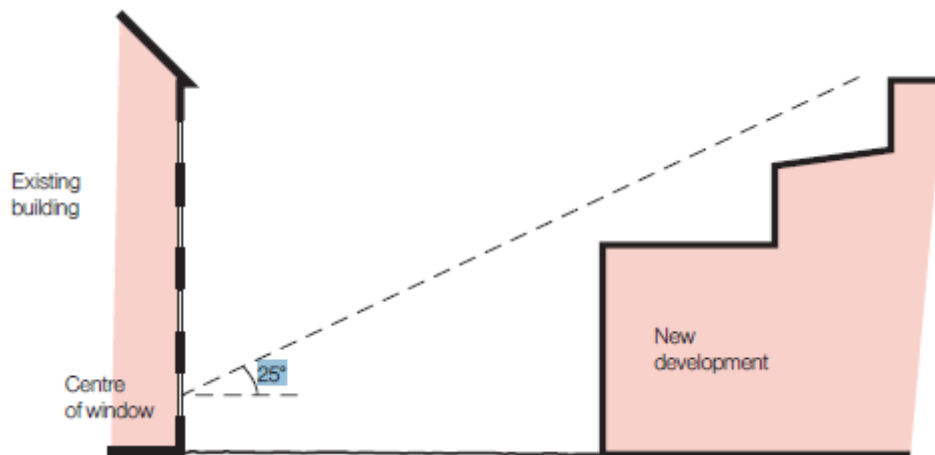
As such this study will compare the Existing Scheme and Proposed Schemes and consider if the values on the existing buildings meet the requirements outlined above when compared to their former value (that of the Existing scheme).

7.2 APSH Exclusions

The BRE recommendations note that if a new development sits within 90° of due south of any main living room window of an existing dwelling, then these should be assessed for APSH. However, there are several exceptional cases in which APSH is not required to be calculated, as indicated below:

3.2.9 It is not always necessary to do a full calculation to check sunlight potential. The guideline above is met provided either of the following is true:

- If the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window (note: obstructions within 90° of due north of the existing window need not count here).
- The window wall faces within 90° of due south and no obstruction, measured in the section perpendicular to the window wall, subtends an angle of more than 25° to the horizontal (Figure 14 in section 2.2). Again, obstructions within 90° of due north of the existing window need not be counted.
- The window wall faces within 20° of due south and the reference point has a VSC (section 2.1) of 27% or more.



BRE 3rd Edition guidance document Site Layout Planning for Daylight and Sunlight

Consequently, APSH will only be calculated for adjacent windows which meet the following conditions:

1. The height distance rule is not met and the existing building has a living room with a main window which faces within 90 degrees of due south with the 25° rule not being met either.
2. Existing building is located to the North, East, or West of the Proposed Development.
3. The existing main living room window lies within 20 degrees of due south and has a VSC of less than 27%.

Based on the criteria outlined above, only the existing dwellings at Beaumont Grove and part of the Ellenfield Road residences were included within the APSH assessment.

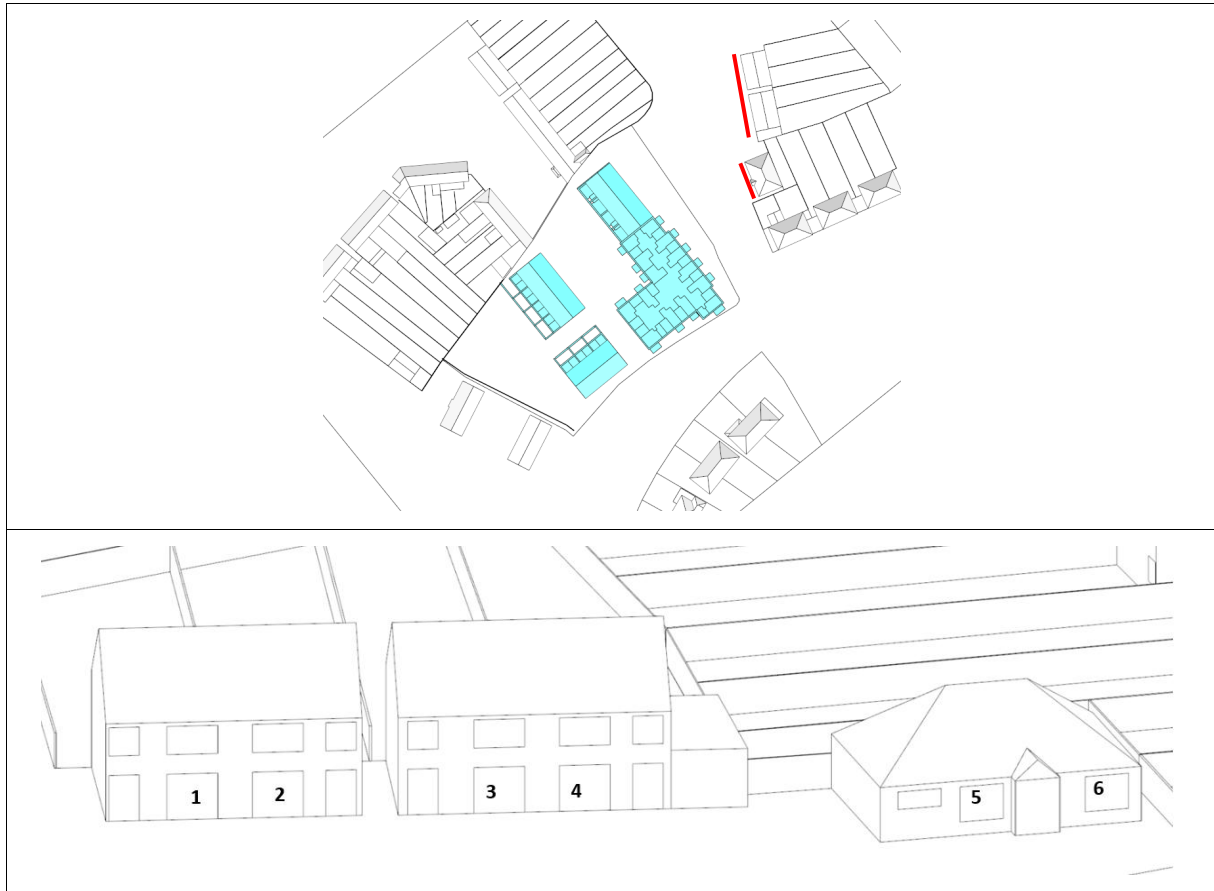
7.3 APSH Assessment

Based on the above criteria, the locations in the following sections have been modelled and analysed with the results also included.

Please note, the “Comment” symbol in each of the tables represents the following:

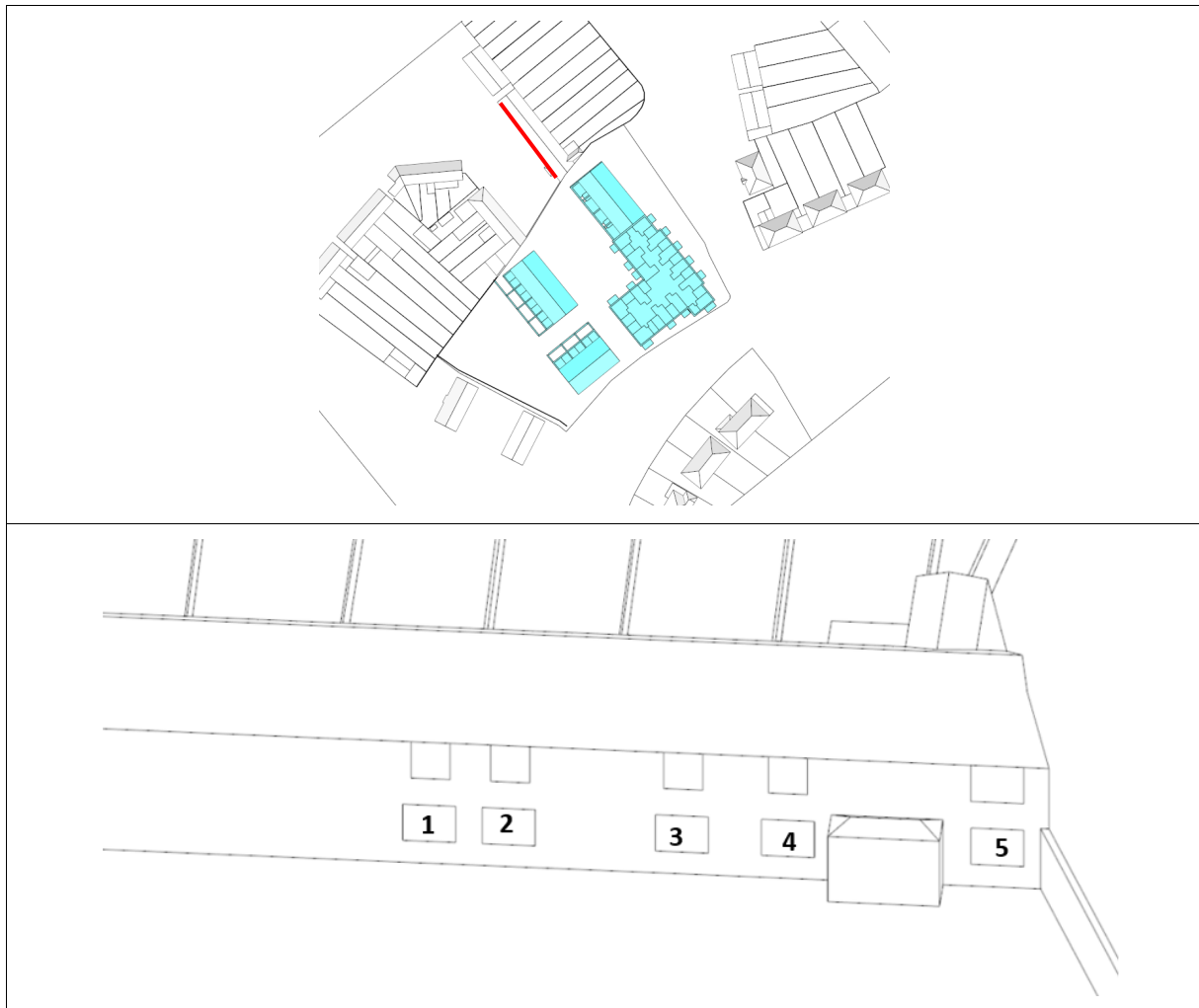
- ✓/✓ For these locations, both the Proposed Scheme annual and winter APSH results are greater than 25% and 5% respectively, or are greater than 0.8 times their former value or are less than 4% overall annual loss with the proposed development in place.
- ✓/x For these locations, the annual APSH results are greater than 25% or are greater than 0.8 times their former value with the proposed development in place, however, the winter results are below recommendations.
- x/✓ For these locations, the annual APSH results are less than the recommended values, however, the winter APSH results are greater than 5% or greater than 0.8 times their former value with the proposed development in place.
- x/x For these locations, both the annual and winter APSH results are less than 25% and 5% respectively, and less than 0.8 times their former value or are greater than 4% overall annual loss with the proposed development in place.

7.3.1 View 01: Beaumont Grove



Points	Existing Situation APSH		Proposed Scheme APSH		Proposed APSH as a % of Existing Situation		Comment
	Annual	Winter	Annual	Winter	Annual	Winter	
1	47.68	13.49	45.55	11.66	96%	86%	✓/✓
2	51.79	18.13	47.74	14.09	92%	78%	✓/✓
3	50.89	17.59	45.9	12.09	90%	69%	✓/✓
4	51.73	18.58	44.79	11.64	87%	63%	✓/✓
5	45.28	13.67	33.74	3.74	75%	27%	✓/x
6	51.99	20.19	39.34	9.79	76%	48%	✓/✓

7.3.2 View 02: Ellenfield Road (A)



Points	Existing Situation APSH		Proposed Scheme APSH		Proposed APSH as a % of Existing Situation		Comment
	Annual	Winter	Annual	Winter	Annual	Winter	
1	65.03	25.87	62.95	23.79	97%	92%	✓/✓
2	65.04	25.88	63.28	24.12	97%	93%	✓/✓
3	61.06	21.9	59.8	20.64	98%	94%	✓/✓
4	48.88	12.05	48.43	11.6	99%	96%	✓/✓
5	46.99	14.01	45.13	12.17	96%	87%	✓/✓

7.4 Discussion

This study considers the proposed scheme and tests if the Annual Probable Sunlight Hours (APSH) results for the living room windows (existing properties) are greater than 25% annual and 5% winter sunlight or are greater than 0.8 times their former value with the proposed development in place or the reduction in sunlight across the year is less than 4% with the proposed development in place.

When compared to the Existing Scheme, 91% of the tested points (10 out of 11 no.) meet the BRE recommended values. These results highlight that the proposed development will have negligible impact to the sunlight received to these existing neighbouring properties. As the point tested that falls below the winter recommendations is one of two windows on the same property on Beaumont Grove, this can be noted as a minor adverse impact to this property. Although not included in this assessment it should also be taken into consideration that there are existing trees that will have some impact on the sunlight during the winter months even in the existing case. This will cumulatively lessen the impact of the proposed development further during the winter months particularly given there is a negligible impact to the annual sunlight as a result of the proposed development.



8 Sunlight to Proposed Development

Section 5.3.1 of IS/BS EN 17037-2018+A1-2021 states that *“exposure to sunlight is an important quality criterion of an interior space and can contribute to human well-being.”*

Table A.6 from IS/BS EN 17037-2018+A1-2021 summarises the recommendation for daily sunlight exposure.

Table A.6 — Recommendation for daily sunlight exposure

Level of recommendation for exposure to sunlight	Sunlight exposure
Minimum	1,5 h
Medium	3,0 h
High	4,0 h

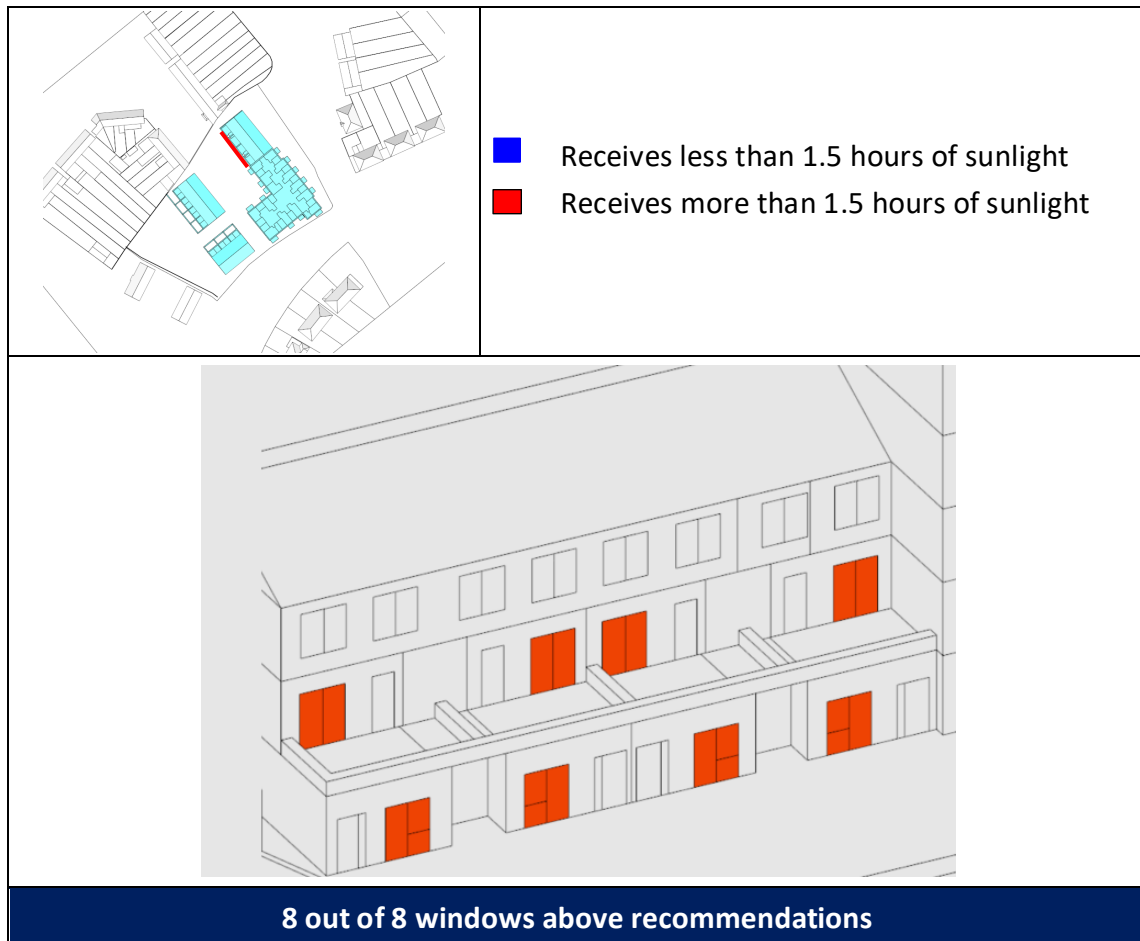
Within the context of a domestic property, BRE Guide 3rd Edition/IS/BS EN 17037:2018 states that at least one habitable space within a dwelling should receive the recommended minimum value of 1.5 hours of sunlight on the 21st of March. The test is carried out on a clear, cloud free day.

8.1 Sunlight Exposure Assessment

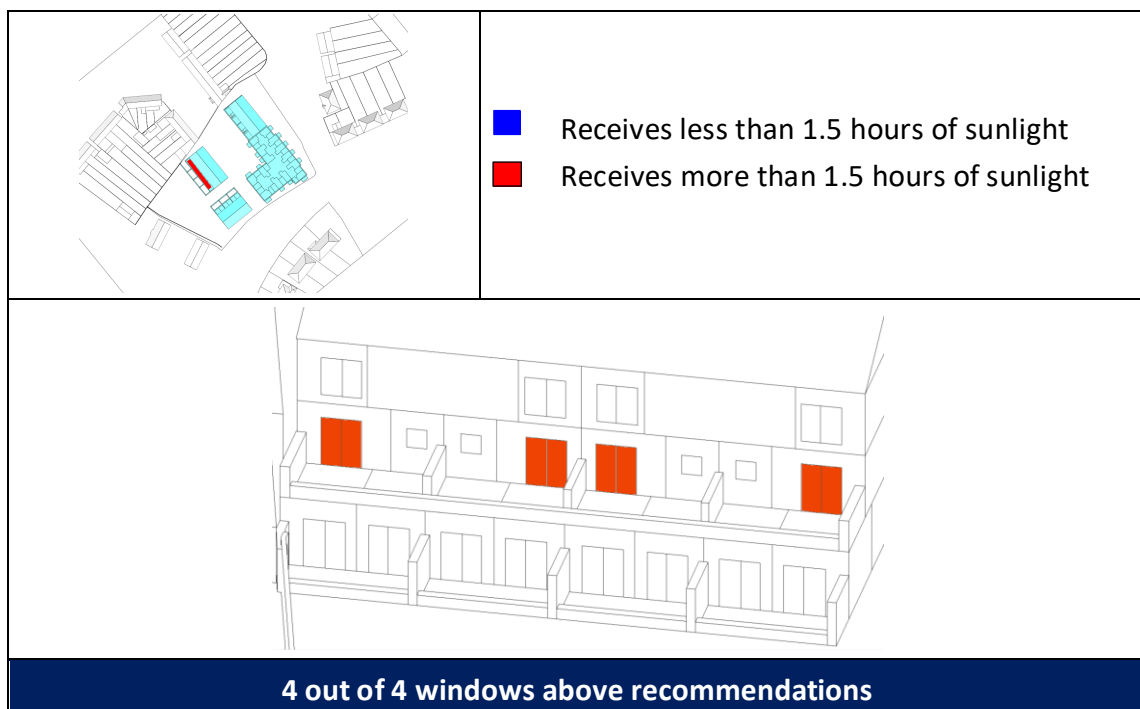
Based on the above criteria for BRE Guide 3rd Edition/IS/BS EN 17037-2018+A1-2021, all main living room windows within the proposed development have been assessed initially with the results visually represented in the following images. Where any main Living/Kitchen/Dining space does not achieve 1.5 hrs of sunlight the bedrooms have been included within the assessment as habitable spaces.

The windows highlighted in “red” achieve the minimum 1.5 hours of recommended sunlight on March 21st, while the windows highlighted in “blue” do not achieve the recommended value.

8.1.1 Block 1 LKD's - View 1



8.1.2 Block 2 LKD's - View 2

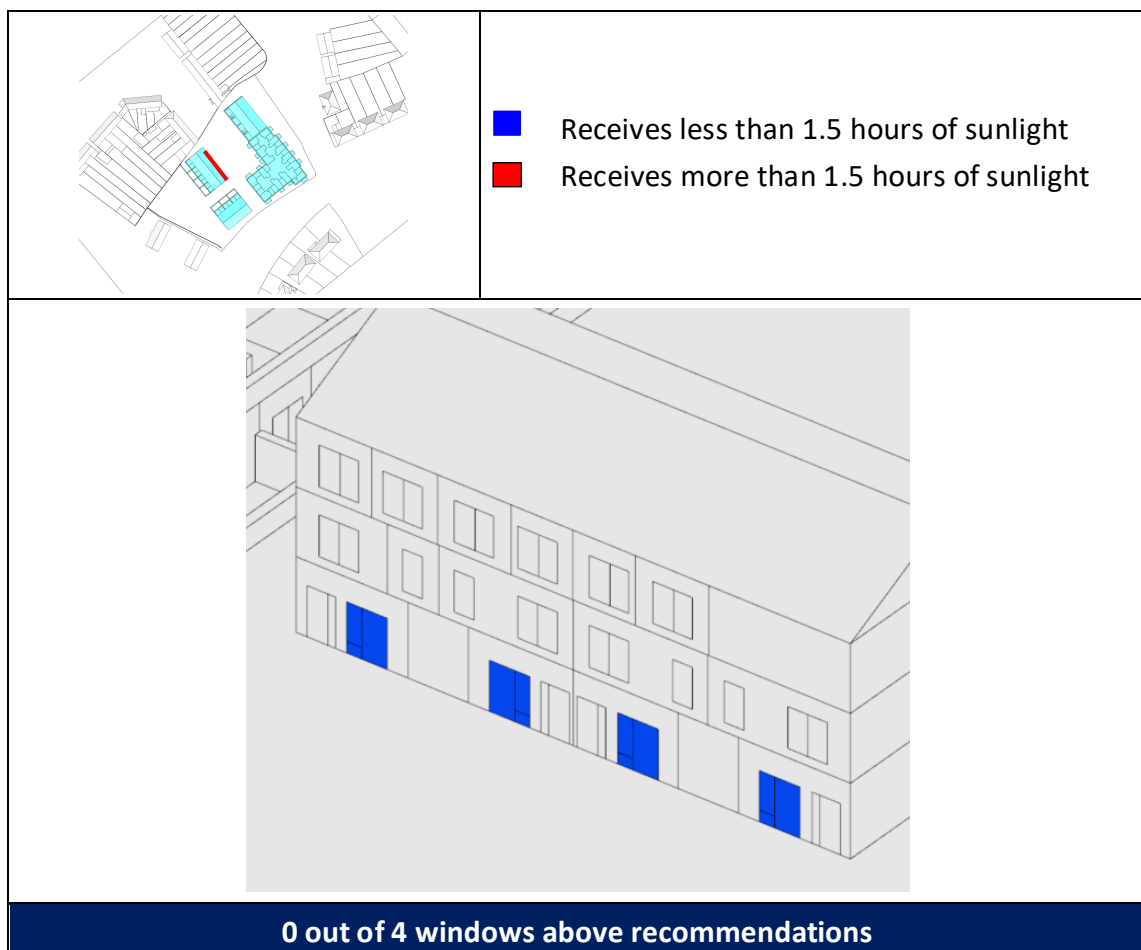


8.1.3 Block 2 LKD's + Bedrooms - View 2a

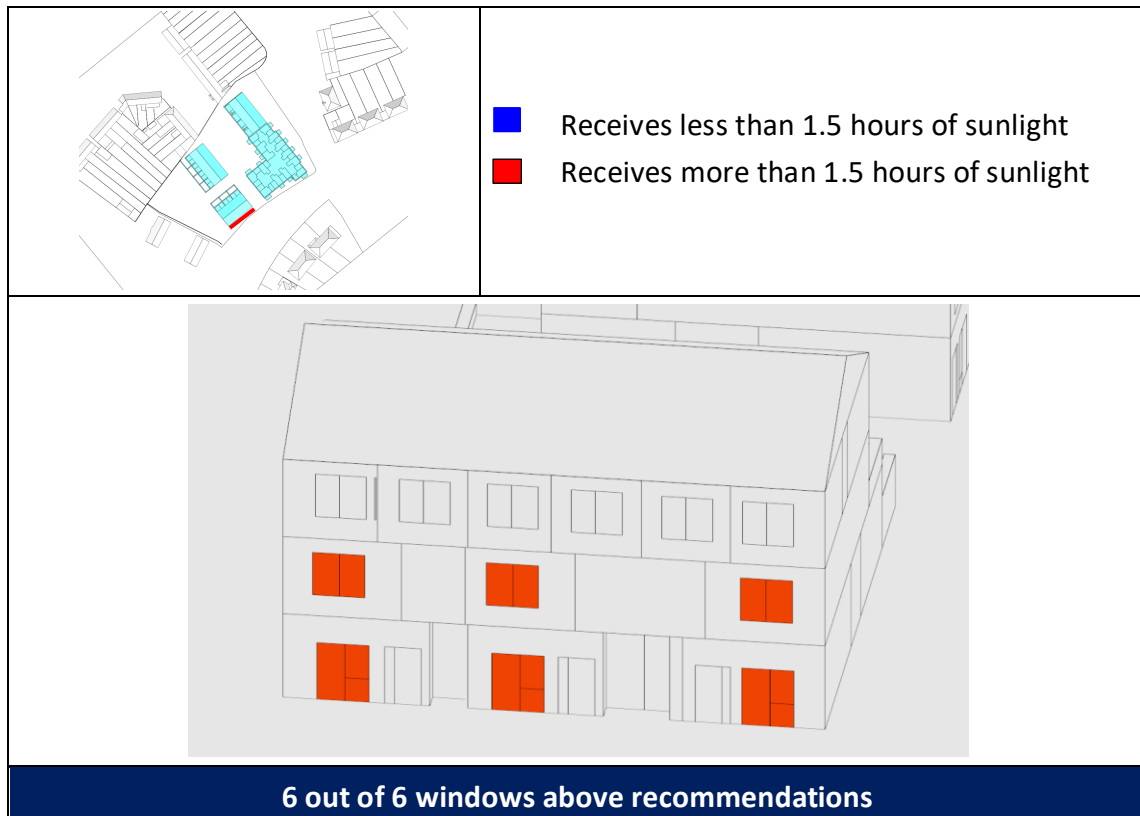


*When Bedrooms are included as habitable rooms

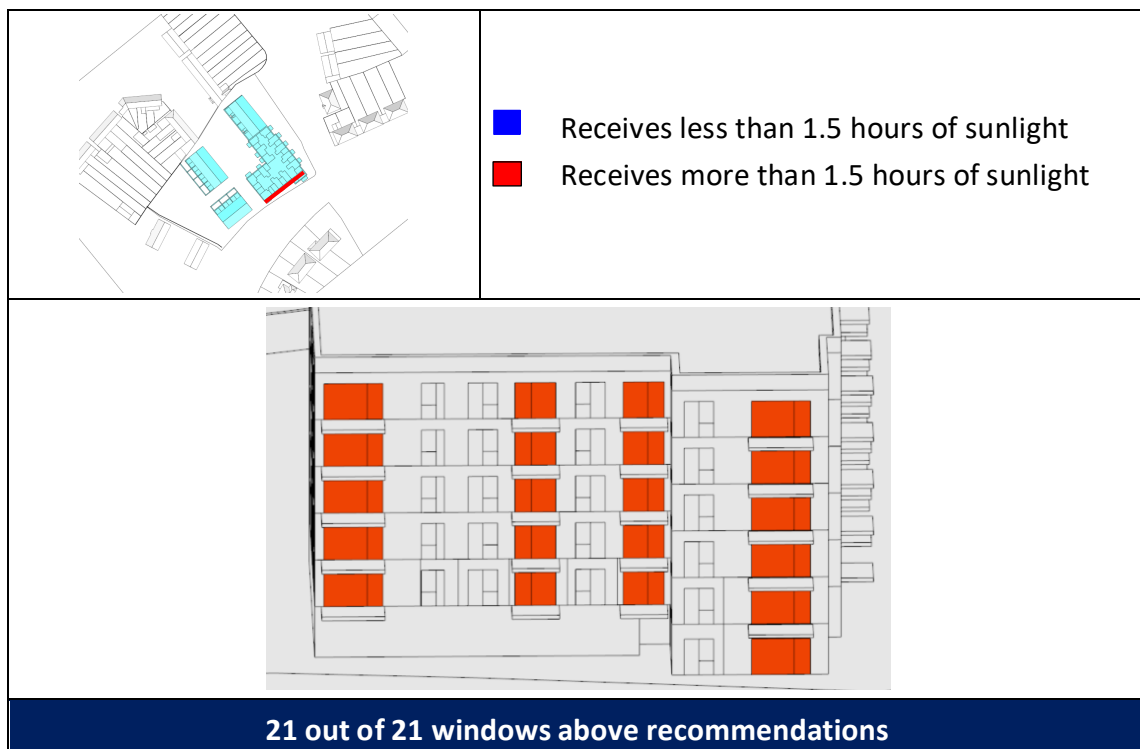
8.1.4 Block 2 LKD's - View 3



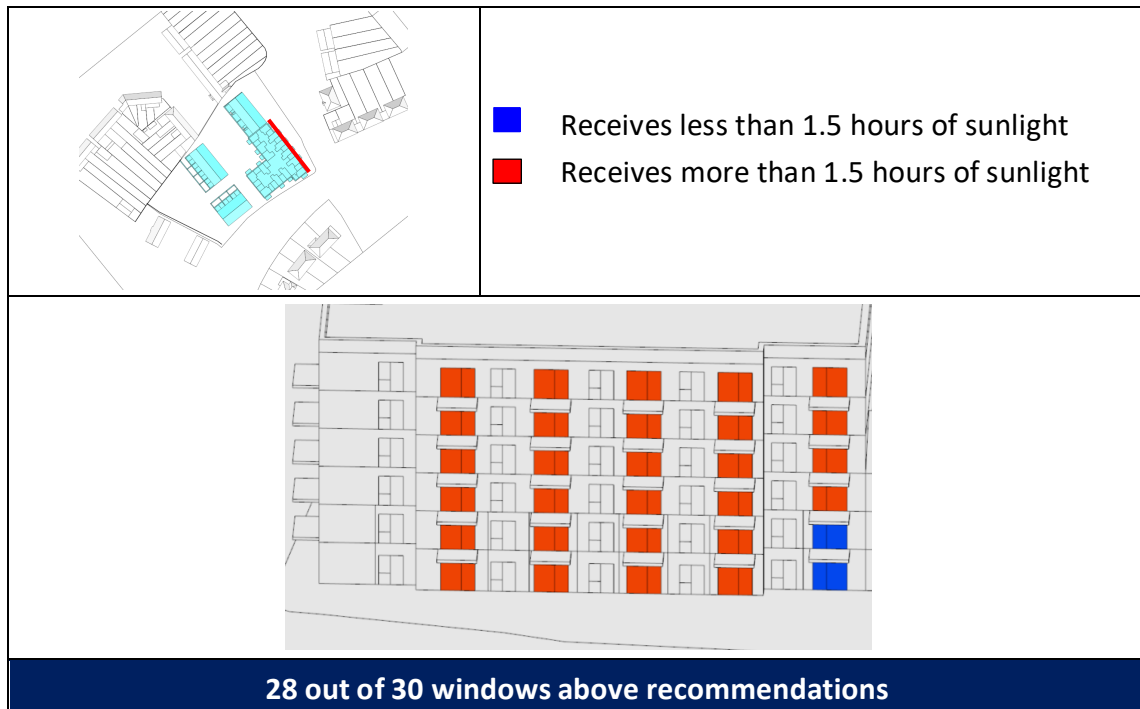
8.1.5 Block 3 LKD's - View 4



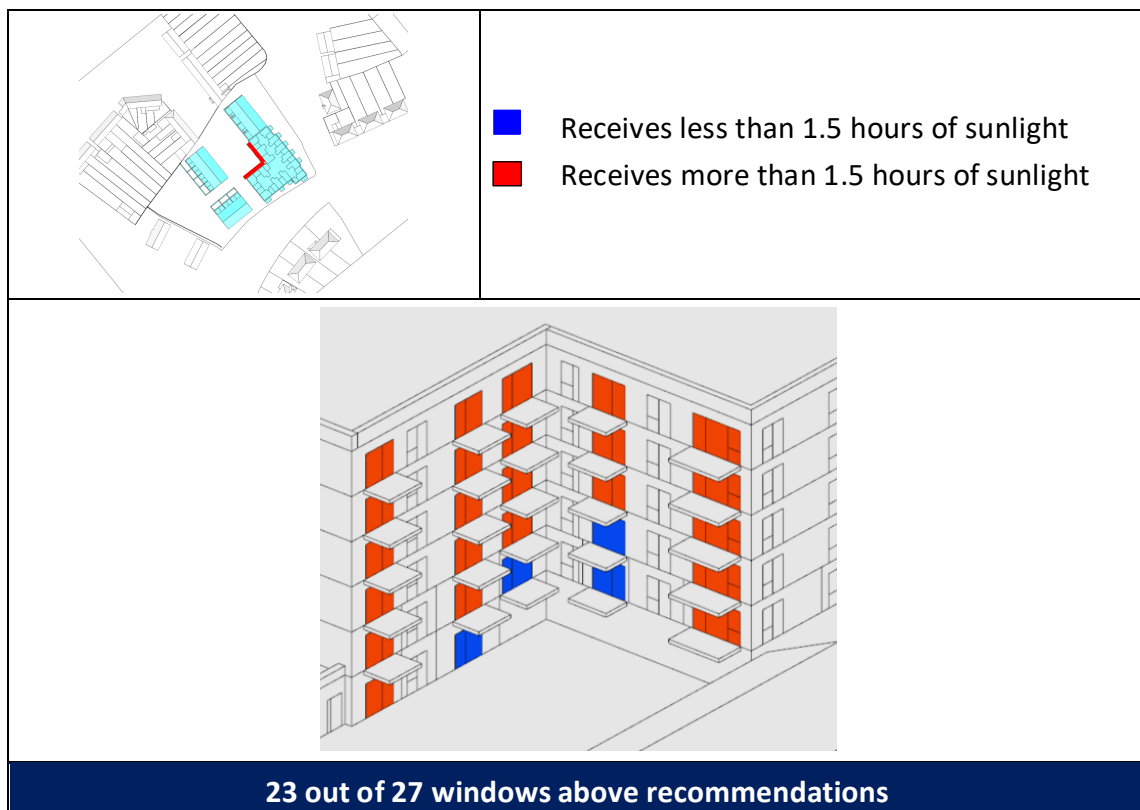
8.1.6 Apartment LKD's - View 5



8.1.1 Apartment LKD's - View 6



8.1.1 Apartment LKD's - View 7



8.2 Discussion

With regards to the sunlight to the proposed development assessment a sunlight exposure assessment in accordance with BRE Guide 3rd Edition / IS/BS EN 17037-2018+A1-2021 considers the orientation of the rooms. As such the following should be noted from section 3.1.11 of the guide.

“The BS EN 17037 criterion applies to rooms of all orientations, although if a room faces significantly north of due east or west it is unlikely to be met.”

Of the 100 no. points tested, 90 no. points (90%) meet the BRE Guide 3rd Edition/IS/BS EN 17037-2018+A1-2021 sunlight exposure recommendations of greater than 1.5 hours on March 21st. When including bedrooms as habitable spaces this increases to 94 no. points (94%). Where windows do not meet this recommendation, this is predominantly as a result of their orientation.

It should be noted that in the development of any apartment type building in particular, achieving in the region of 75% to 80% for this assessment would be considered very high and factors such site constraints and ultimately orientation play a huge part to the outcome of this assessment. In some instance and particularly a scheme like this where you have spaces/units on either side of a rectangular block that is constrained by the site orientation, 50% would be as highest percentage achievable with the apartments on one side not able meet requirements purely on orientation as noted.

Overall, the sunlight provision results to the proposed development in accordance with IS/BS EN 17037:23018 are performing to a very high standard due to the fact that not all spaces can face south.

9 Daylight to Existing Buildings

9.1 Guidance – BRE Guide (3rd Edition) / IS/BS EN 17037-2018+A1 2021

When designing a new development, it is important to safeguard the daylight to nearby buildings. The BRE Guide provides numerical values that are purely advisory. Different criteria may be used based on the requirements for daylighting in an area viewed against other site layout constraints. Another issue is whether the Existing building is itself a good neighbour, standing a reasonable distance from the boundary and taking no more than its fair share of light. Any reduction in the total amount of skylight can be calculated by determining the vertical sky component at the centre of key reference points. The vertical sky component definition from the BRE Guide (3rd Edition) is described below:

Vertical sky component (VSC)	This is a measure of the amount of light reaching a window. It is the ratio of that part of illuminance, at a point on a given vertical plane, that is received directly from a CIE standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. Usually the 'given vertical plane' is the outside of a window wall. The VSC does not include reflected light, either from the ground or from other buildings.
-------------------------------------	--

The maximum possible VSC value for an opening in a vertical wall, assuming no obstructions, is 40%. This VSC at any given point can be tested in RadianceIES, a module of IES VE.

For typical residential schemes the BRE Guide (3rd Edition) states the following in Section 2.2.7:

2.2.7 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.

As such this study will compare the Existing scheme and Proposed scheme and consider if the values on the Existing buildings are above 27% or not less than 0.8 times their former value (that of the Existing scheme).

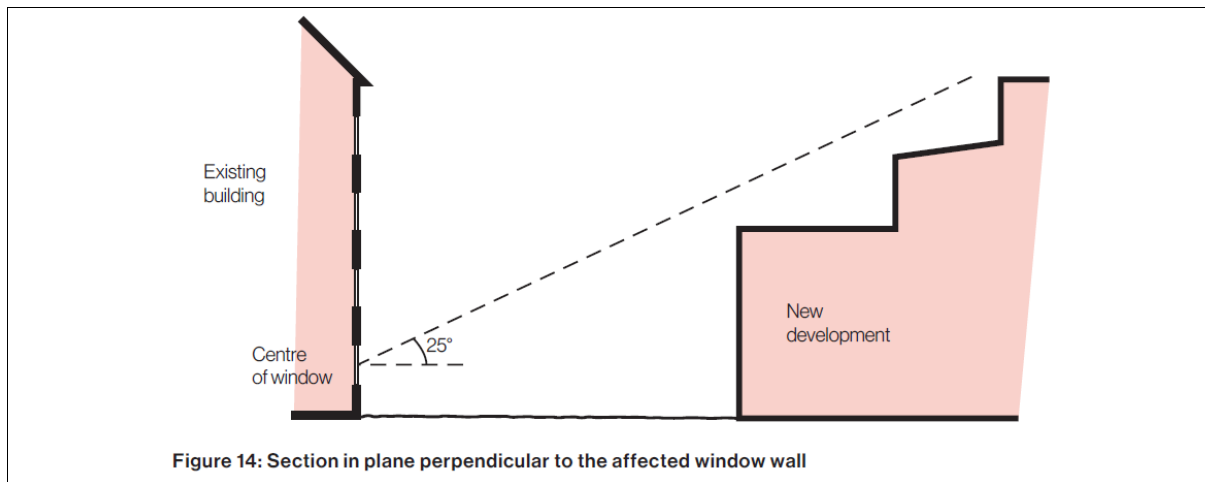
It is also important to note that Section 2.1.6 of the BRE Guide states that if the VSC is between 15% and 27%, special measures such as larger windows can provide adequate daylight (refer to extract below).

2.1.6 The amount of daylight a room needs depends on what it is being used for. But roughly speaking, if θ is:

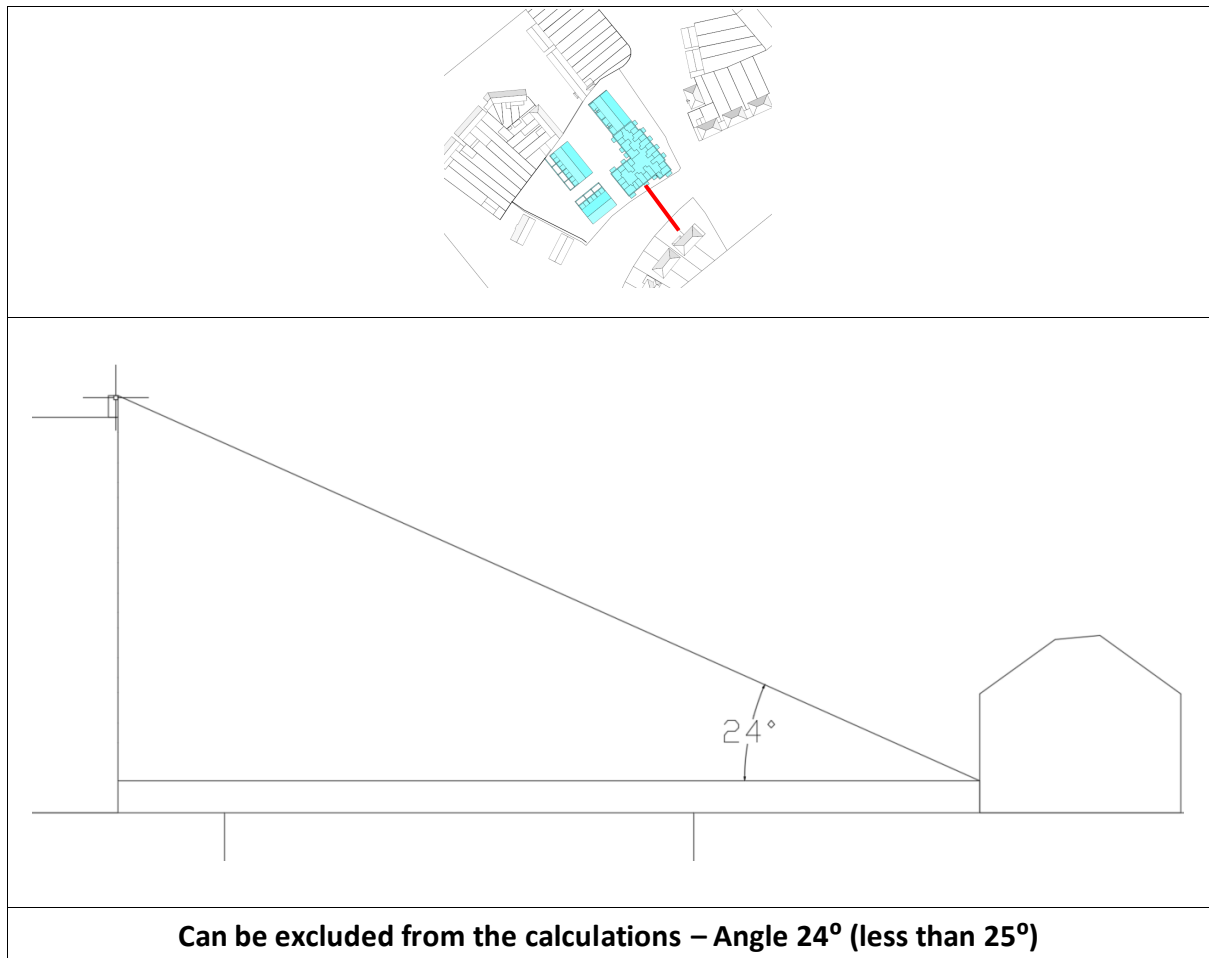
- greater than 65° (obstruction angle less than 25° or VSC at least 27%) conventional window design will usually give reasonable results.
- between 45° and 65° (obstruction angle between 25° and 45°, VSC between 15% and 27%) special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight.
- between 25° and 45° (obstruction angle between 45° and 65°, VSC between 5% and 15%) it is very difficult to provide adequate daylight unless very large windows are used.
- less than 25° (obstruction angle greater than 65°, VSC less than 5%) it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed.

9.2 Assessment - 25-Degree Rule

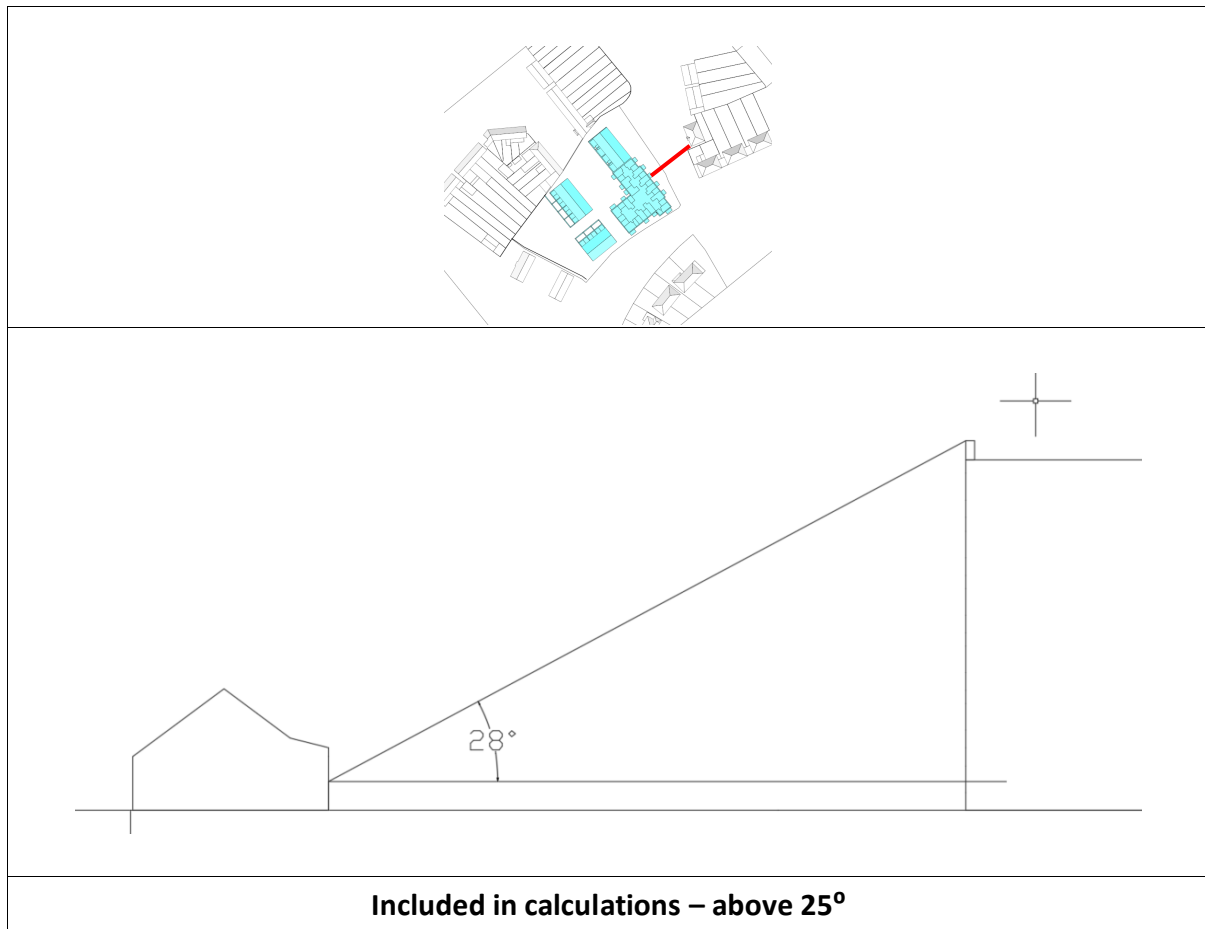
Section 2.2.5 of the BRE Guide states that if in a section perpendicular to the window wall, no angle subtended more than 25 degrees, as shown in the image below, it is not necessary to do a full calculation as the daylight impact will be unnoticeable to the occupants. The following screenshots show the section images produced as evidence for each of the qualifying views for the 25-degree rule.



9.2.1 Beaumont Grove - View 01



9.2.2 Beaumont Road - View 02



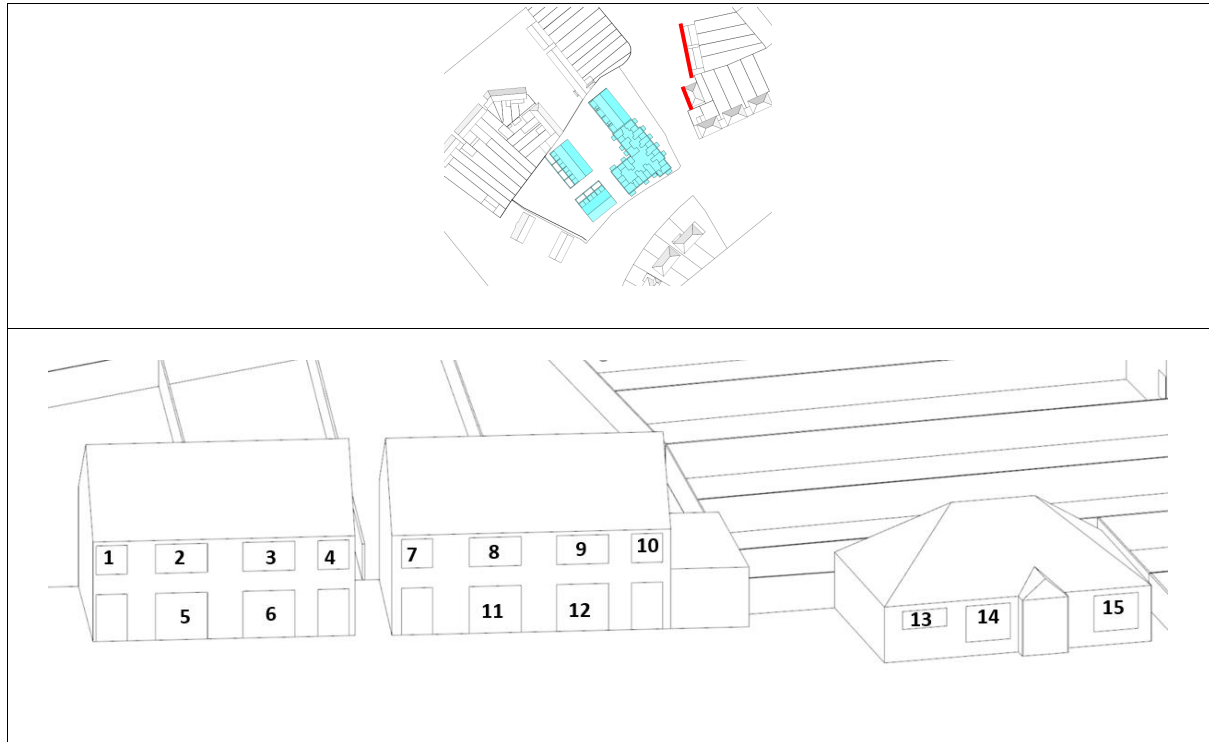
9.3 Assessment

Based on the above criteria, the locations in the following sections have been modelled and analysed with the results also included.

Please note, the “Comment” symbol in each of the tables represents the following:

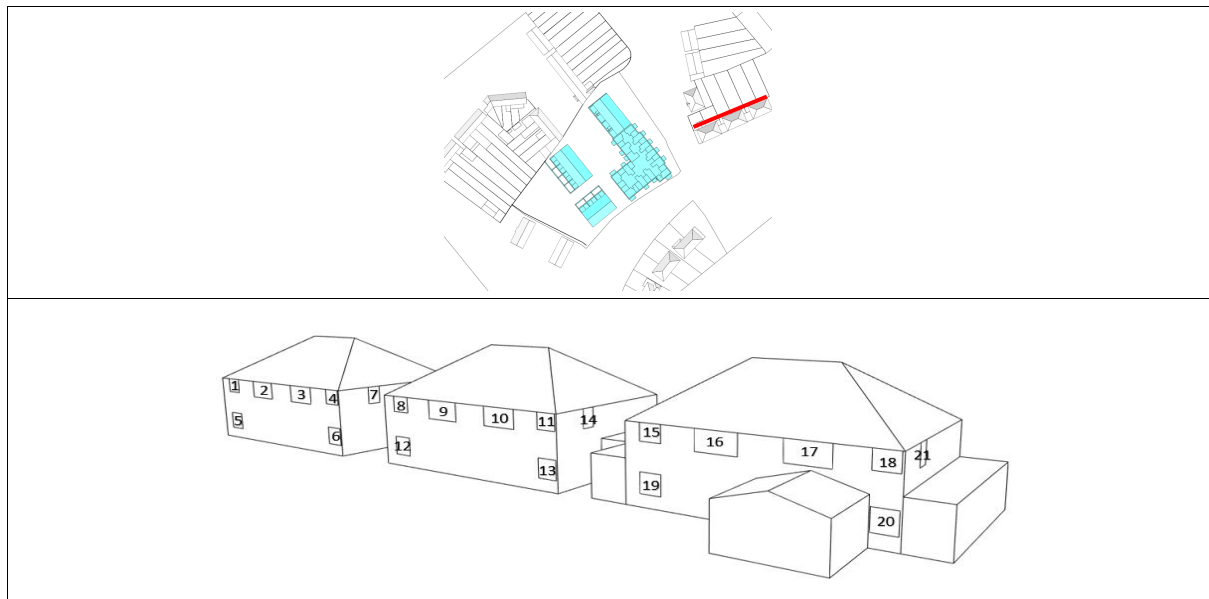
- ✓ For these locations, the Proposed Scheme VSC value is greater than 27% or 0.8 times their former value (that of the Existing Situation/Permitted Scheme).
- ✓¹ For these locations, the Proposed Scheme VSC value is less than 0.8 times its former value (that of the Existing). However, the Proposed Scheme VSC values are between 15% and 27% and hence adequate daylight should still be expected (as per Section 2.1.6 of the BRE Guide) given the presence of larger than conventional windows.
- x For these locations, the Proposed Scheme VSC value is less than 15% and less than 0.8 times its former value (that of the Existing Situation), therefore, it does not achieve the BRE recommendations.

9.3.1 Beaumont Grove: View 01



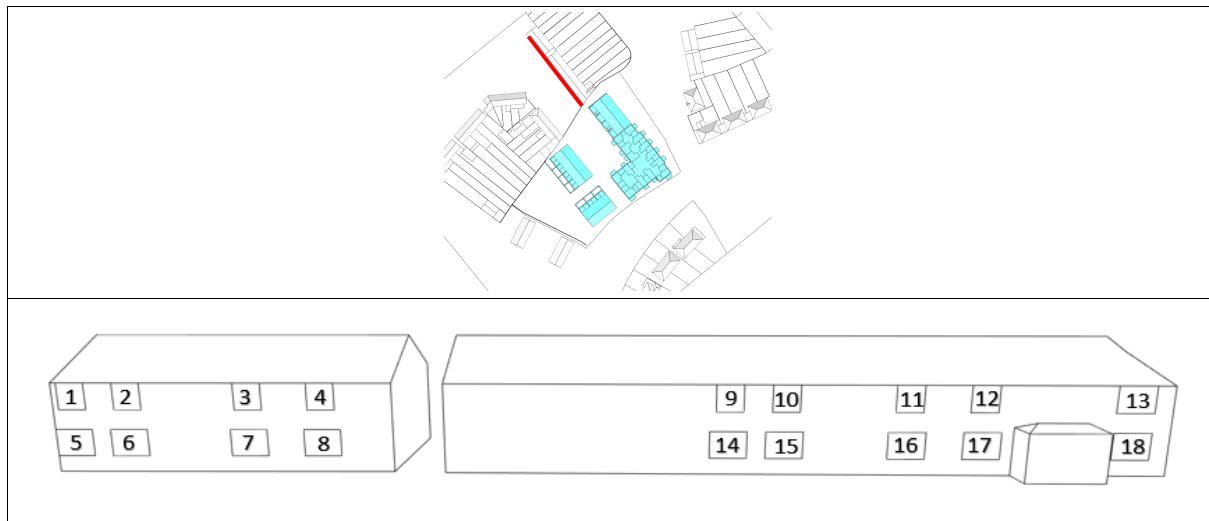
Ref.	Existing Situation	Proposed Scheme VSC	Proposed VSC as a % of Existing Situation	Comment
1	38.7	37.9	98%	✓
2	38.7	37.5	97%	✓
3	38.7	37.2	96%	✓
4	38.6	37.0	96%	✓
5	38.1	36.6	96%	✓
6	38.0	36.4	96%	✓
7	38.6	36.8	96%	✓
8	38.5	36.7	95%	✓
9	38.6	36.2	94%	✓
10	38.4	36.0	94%	✓
11	37.9	35.5	94%	✓
12	37.8	34.9	92%	✓
13	38.2	31.5	82%	✓
14	36.6	30.0	82%	✓
15	37.4	29.6	79%	✓

9.3.2 Beaumont Grove: View 02



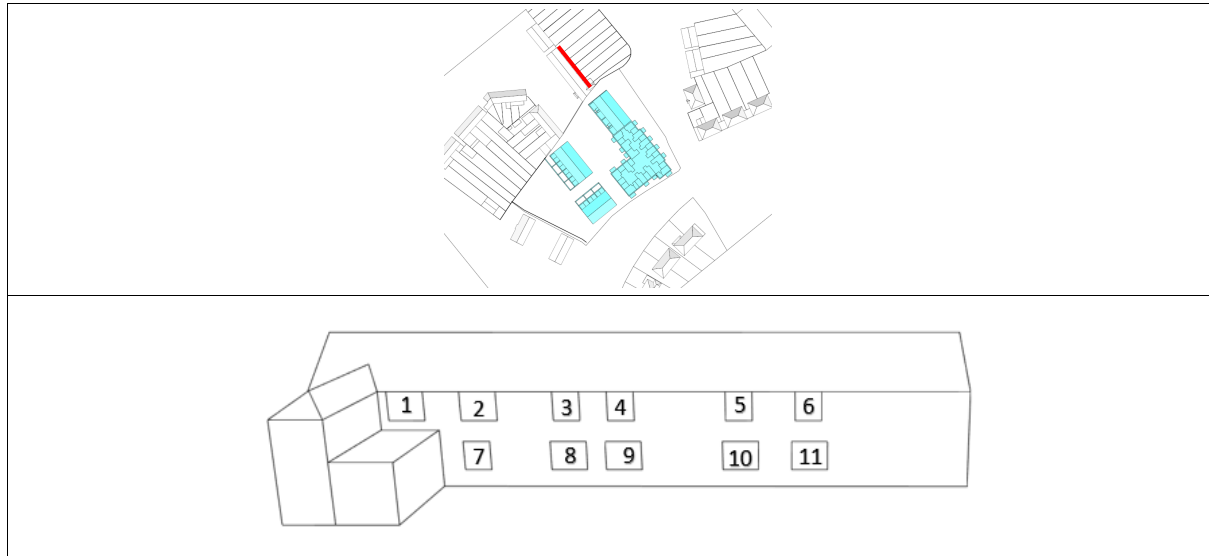
Ref.	Existing Situation	Proposed Scheme VSC	Proposed VSC as a % of Existing Situation	Comment
1	38.9	38.7	100%	✓
2	38.6	38.6	100%	✓
3	38.6	38.6	100%	✓
4	38.4	38.4	100%	✓
5	38.3	37.4	98%	✓
6	37.3	37.1	100%	✓
7	32.1	32.1	100%	✓
8	38.3	38.4	100%	✓
9	38.2	38.2	100%	✓
10	38.2	38.1	100%	✓
11	37.9	36.8	97%	✓
12	36.5	36.3	99%	✓
13	35.6	32.0	90%	✓
14	31.9	37.7	118%	✓
15	37.6	37.8	100%	✓
16	37.1	37.1	100%	✓
17	37.3	37.3	100%	✓
18	37.6	37.6	100%	✓
19	34.0	34.0	100%	✓
20	25.6	25.6	100%	✓
21	38.6	30.3	79%	✓

9.3.3 Ellenfield Road: View 03



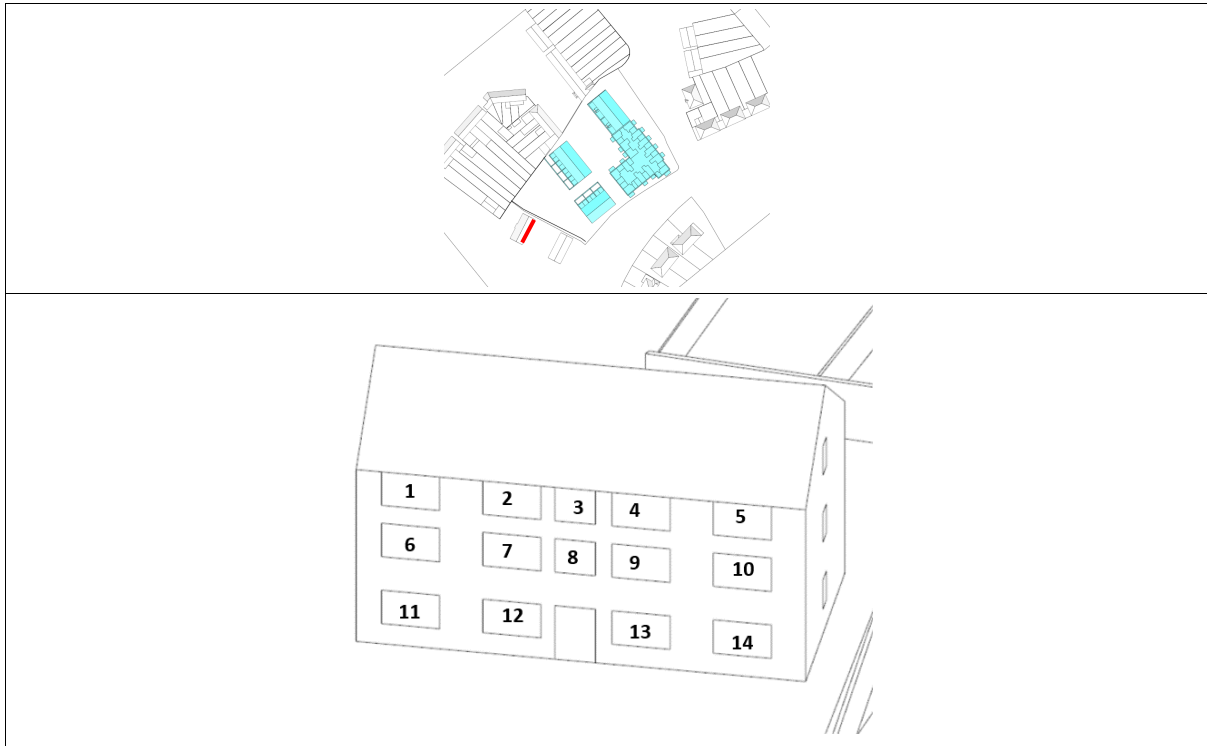
Ref.	Existing Situation	Proposed Scheme VSC	Proposed VSC as a % of Existing Situation	Comment
1	39.0	38.6	99%	✓
2	38.7	38.7	100%	✓
3	38.6	38.2	99%	✓
4	38.5	38.3	99%	✓
5	38.2	37.8	99%	✓
6	37.9	37.9	100%	✓
7	37.9	37.5	99%	✓
8	37.6	37.3	99%	✓
9	38.0	37.8	99%	✓
10	38.1	37.5	98%	✓
11	37.7	37.0	98%	✓
12	37.4	36.9	99%	✓
13	37.4	36.0	96%	✓
14	36.6	36.3	99%	✓
15	36.4	35.9	99%	✓
16	35.7	35.2	99%	✓
17	33.1	32.7	99%	✓
18	32.1	31.4	98%	✓

9.3.4 Ellenfield Road: View 04



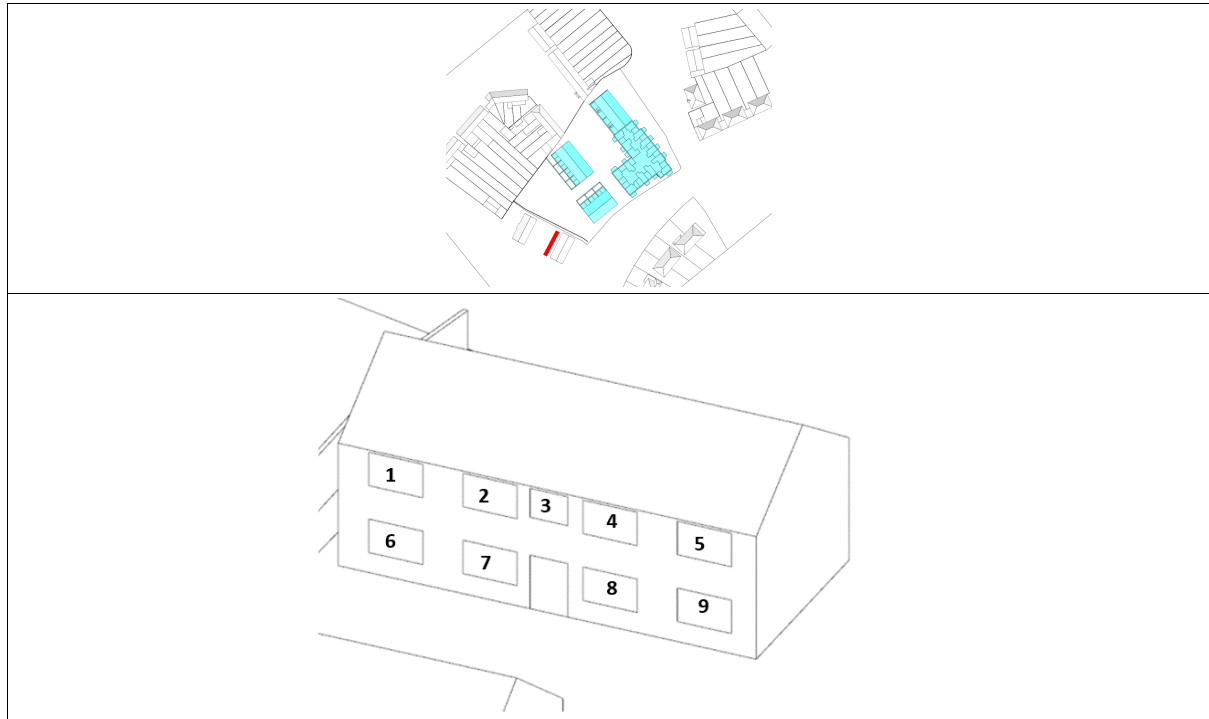
Ref.	Existing Situation	Proposed Scheme VSC	Proposed VSC as a % of Existing Situation	Comment
1	34.2	34.2	100%	✓
2	38.0	37.6	99%	✓
3	38.6	38.3	99%	✓
4	38.8	38.5	99%	✓
5	38.9	38.7	99%	✓
6	39.0	38.8	100%	✓
7	21.2	21.2	100%	✓
8	36.5	36.1	99%	✓
9	37.7	37.8	100%	✓
10	38.0	37.9	100%	✓
11	38.1	38.1	100%	✓

9.3.5 Grace Park Count: View 05



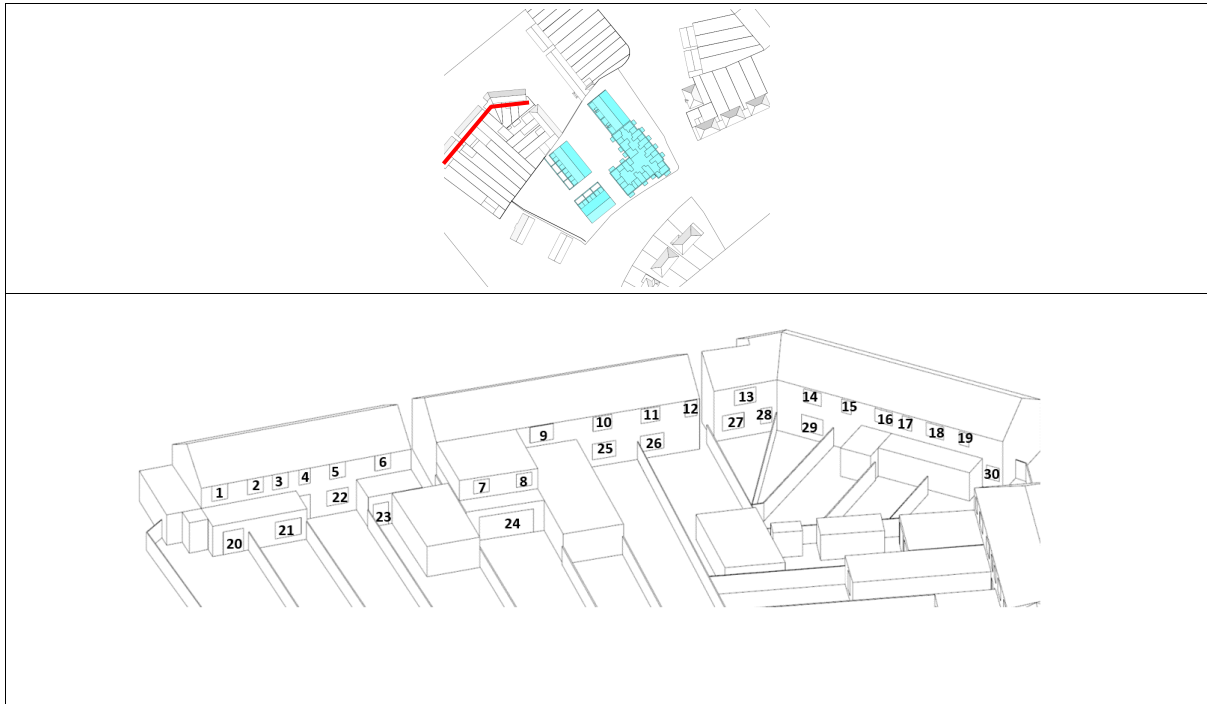
Ref.	Existing Situation	Proposed Scheme VSC	Proposed VSC as a % of Existing Situation	Comment
1	38.6	38.0	98%	✓
2	38.7	37.6	97%	✓
3	38.5	37.4	97%	✓
4	38.5	37.0	96%	✓
5	38.7	36.6	95%	✓
6	37.6	36.7	98%	✓
7	37.5	36.2	97%	✓
8	37.2	35.7	96%	✓
9	37.2	35.2	95%	✓
10	37.3	34.8	93%	✓
11	35.6	34.6	97%	✓
12	35.2	33.4	95%	✓
13	34.7	32.4	94%	✓
14	34.5	31.6	92%	✓

9.3.6 Grace Park Count: View 06



Ref.	Existing Situation	Proposed Scheme VSC	Proposed VSC as a % of Existing Situation	Comment
1	35.3	35.4	100%	✓
2	35.1	35.5	101%	✓
3	35.3	35.6	101%	✓
4	35.4	35.6	100%	✓
5	35.8	36.1	101%	✓
6	32.4	32.7	101%	✓
7	32.6	33.0	101%	✓
8	32.6	33.4	102%	✓
9	33.8	34.0	100%	✓

9.3.7 Glencorp Road: View 07



Ref.	Existing Situation	Proposed Scheme VSC	Proposed VSC as a % of Existing Situation	Comment
1	38.3	37.8	99%	✓
2	38.2	37.7	99%	✓
3	38.2	37.8	99%	✓
4	38.4	37.6	98%	✓
5	38.1	37.7	99%	✓
6	37.7	37.2	99%	✓
7	37.9	37.2	98%	✓
8	37.6	37.2	99%	✓
9	35.6	34.8	98%	✓
10	37.5	36.9	98%	✓
11	37.6	36.8	98%	✓
12	37.6	36.9	98%	✓
13	37.0	36.4	98%	✓
14	37.7	37.1	98%	✓
15	37.8	37.2	99%	✓
16	37.7	37.2	99%	✓
17	37.7	37.1	99%	✓
18	37.5	37.1	99%	✓
19	37.2	36.8	99%	✓
20	34.0	34.1	100%	✓
21	35.9	35.8	100%	✓

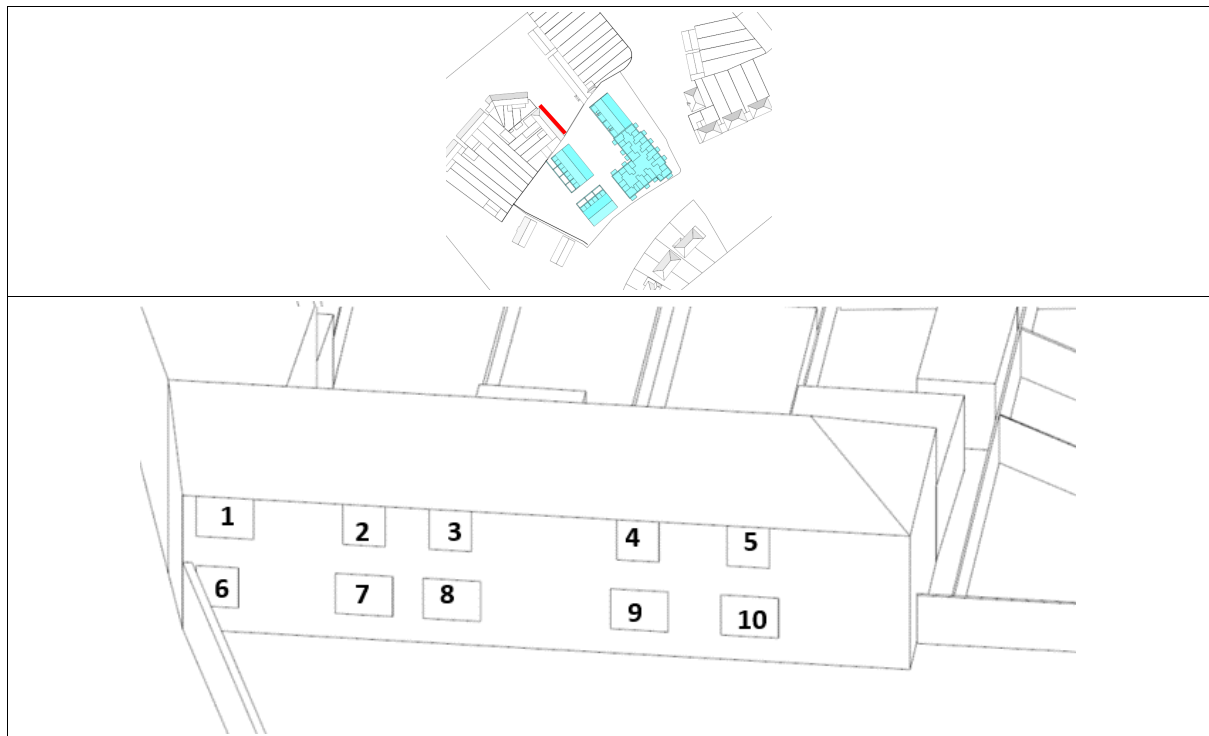
Ref.	Existing Situation	Proposed Scheme VSC	Proposed VSC as a % of Existing Situation	Comment
22	31.6	31.6	100%	✓
23	21.8	21.9	100%	✓
24	31.3	31.3	100%	✓
25	32.3	31.9	99%	✓
26	35.1	34.6	99%	✓
27	34.8	34.4	99%	✓
28	32.7	32.6	100%	✓
29	34.4	34.4	100%	✓
30	24.4	24.1	99%	✓

9.3.1 Glencorp Road: View 08



Ref.	Existing Situation	Proposed Scheme VSC	Proposed VSC as a % of Existing Situation	Comment
1	37.6	37.6	100%	✓
2	37.6	37.6	100%	✓
3	37.8	37.8	100%	✓
4	37.5	37.5	100%	✓
5	37.6	37.6	100%	✓
6	37.2	37.2	100%	✓
7	35.4	35.5	100%	✓
8	28.2	28.2	100%	✓
9	36.0	36.0	100%	✓
10	31.0	31.2	100%	✓
11	29.2	29.2	100%	✓
12	36.3	36.3	100%	✓
13	24.0	23.9	100%	✓
14	23.6	23.4	99%	✓
15	33.4	33.3	100%	✓
16	24.9	24.6	99%	✓
17	23.6	23.5	99%	✓
18	31.3	31.1	100%	✓

9.3.1 Glencorp Road: View 09



Ref.	Existing Situation	Proposed Scheme VSC	Proposed VSC as a % of Existing Situation	Comment
1	38.1	33.1	87%	✓
2	37.9	34.1	90%	✓
3	37.7	34.4	91%	✓
4	37.5	35.1	94%	✓
5	37.5	35.5	95%	✓
6	25.0	25.0	100%	✓
7	35.5	31.7	89%	✓
8	35.8	32.0	90%	✓
9	35.5	32.5	91%	✓
10	35.3	32.9	93%	✓

9.4 Discussion

This study considers the Proposed Scheme and tests if the VSC results are greater than 27% or not less than 0.8 times the value of the Existing Situation.

When compared to the Existing Situation, of the 146 no. points tested, 100% have a Proposed VSC value greater than 27% or not less than 0.8 times their former value compared to the Existing Situation, thus complying with the BRE Guidelines.

10 Daylight to Proposed Development

This section addresses daylight provision to the proposed apartments and duplex apartments. The purpose of the calculations is to quantify an overall percentage of units which exceeds the daylight provision recommendations. Our proposed methodology is to complete the calculations for all the apartments within the development at this point. The objective of the design team is to maximise the number of units which exceed the minimum recommendations.

10.1 Daylight Model Inputs

The following inputs were used in the study:

BRE Guide (3rd Edition) / IS EN / BS EN 17037:2018+A1-2021

- Weather File: Dublin.epw (15 year average)

Common Inputs to all Standards

- Working Plane Height: 0.85m
- Glazing Light Transmittance: 70%
- Window Frame thickness: 50 mm

The following surface reflectance values are used in the study:

Material Surface	Reflectance
External Wall	0.20
Internal Partition	0.80
Roof	0.20
Ground	0.20
Floor/Ceiling (Floor)	0.40
Floor/Ceiling (Ceiling)	0.80

10.2 Reference Standards

The daylight provision to the proposed development was assessed against the following standard:

- BRE Guide (3rd Edition) / BS EN 17037-2018+A1-2021

There are two methods to assess daylight provision to the interior which are based on target values in Table A.3 of BS EN 17037-2018+A1-2021 which are summarised as follows:

Method 1: This calculation method uses the daylight factor targets on the reference plane as per Table A.3. The assessment is carried out on a representative day and time during the year, i.e. 21st September @ 12:00 under standard CIE overcast sky conditions.

Method 2: This calculation method uses the illuminance targets on the reference plane as per Table NA.1. The assessment is carried out for each hour over the course of the year (8,760 hours) using a local weather file which accounts for varying sky conditions and sun positions throughout the year.

As outlined in Section 5.1.4 of the standard, the verification of daylight provision can be determined using either an adequate software or on-site measurements. When using a software, *“a representative model of the space is required together with the key parameters (such as any significant nearby obstructions, the assigned surface reflectance values and glazing transmissivity) that are a reasonable representation of those for the actual, completed building. This can be determined using either Method 1 or Method 2.”*

Based on the above criteria, the daylight provision to the proposed development has been assessed using an adequate software (i.e. IES VE), using the Method 2 climate-based approach and targeting the minimum recommended values outlined in Table NA.1 of BS EN 17037-2018+A1-2021. (see section 10.1.1 for table NA.1)

The Method 2 climate-based approach was selected as it is a far more accurate assessment method compared to Method 1. Climate based daylight modelling (CBDM) is more accurate compared to a calculation based on a single day during the year, i.e. Method 1. The amount of daylight varies throughout the year, primarily due to the sun's position, so it is essential the impact of daylight variance is properly considered. CBDM utilises an annual simulation linking location, shading, climate data (including solar intensity and cloud cover) together with the building properties. This provides a complete overview on how the daylight performance varies throughout the year due to changes in these factors.

For completeness, IS EN 17037 non-annex results have been included in Appendix B.

The following sections summarise the requirements for the BS EN 17037-2018+A1-2021 standard.

10.2.1 BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 National Annex

In the UK, EN17037-2018+A1-2021 was adopted to form “BS EN 17037-2018+A1-2021”. However, a “National Annex NA” was included which states:

“The UK committee supports the recommendations for daylight in buildings given in BS EN 17037:2018; however, it is the opinion of the UK committee that the recommendations for daylight provision in a space (see Clause A.2) may not be achievable for some buildings, particularly dwellings. The UK committee believes this could be the case for dwellings with basement rooms or those with significant external obstructions (for example, dwellings situated in a dense urban area or with tall trees outside), or for existing buildings being refurbished or converted into dwellings. This National Annex therefore provides the UK committee’s guidance on minimum daylight provision in all UK dwellings.”

Whereas IS EN 17037-2018+A1-2021 does not provide different illuminance targets for different space types, the BS EN 17037:2018 National Annex provides target illuminance values for bedrooms, living rooms and kitchens within residential developments as per Table NA.1 below. It is also important to note that as the climate in Ireland is similar to the UK, the targets outlined in the BS EN National Annex could also be applied to dwellings in Ireland.

Table NA.1 — Values of target illuminance for room types in UK dwellings

Room type	Target illuminance E_T (lx)
Bedroom	100
Living room	150
Kitchen	200

The BS National Annex also states:

“Where one room in a UK dwelling serves more than a single purpose, the UK committee recommends that the target illuminance is that for the room type with the highest value – for example, in a space that combines a living room and a kitchen the target illuminance is recommended to be 200 lx.”

Therefore, combined LKDs are to be assessed using a 200 lux target illuminance (E_T).

Finally, the BS National Annex also states that:

“It is the opinion of the UK committee that the recommendation in Clause A.2 – that a target illuminance level should be achieved across the entire (i.e. 95 %) fraction of the reference plane within a space – need not be applied to rooms in dwellings.”

Therefore, when assessing the daylight provisions in residential dwellings in accordance with BS EN 17037-2018+A1-2021, only the target illuminance (E_T) will be assessed for Bedrooms, Living Rooms, Kitchens (or combined LKDs) on over 50% of the floor area over 50% of the available daylight hours. The minimum target illuminance (E_{TM}) or minimum target daylight factor (D_{TM}) will not be assessed.

10.3 Daylight Results

The following tables summarise the daylight provision results for all of the apartment units assessed within the development. Individual room results can be viewed in Appendix A along with the results for IS EN 17037-2018+A1-2021 in Appendix B.

The purpose of the calculations is to quantify an overall percentage of rooms which exceed the recommendations. The objective of the design team is to maximise the number of units which exceed the recommendations. The results for the BS EN 17037-2018+A1-2021 are summarised in the following tables:

Apartments

A compliance rate of 100% is achieved under BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 Method 2 National Annex for the tested spaces within the apartment building. The daylight provision results are summarised below.

Rooms Tested	Total No. Rooms
Total No. Bedrooms Tested	77
Total No. LKDs Tested	61
Total No. Studio Tested	17
Total No. Spaces Tested	155

BRE Guide 3 rd Edition / BS EN 17037:2018+A1-2021 Method 2 National Annex Assessment				
Room Type	AR(No.)	AR (%)	BR (No.)	BR (%)
No. Bedrooms	77	100%	0	0%
No. LKDs	61	100%	0	0%
No. Studios	17	100%	0	0%
Total No.	155	100%	0	0%

*AR = Above Recommendations

*BR = Below Recommendations

Block B1

A compliance rate of 100% is achieved under BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 Method 2 National Annex for the tested spaces of Block B1. The daylight provision results are summarised below.

Rooms Tested	No. Rooms
Total No. Bedrooms Tested	20
Total No. LKDs Tested	8
Total No. Spaces Tested	28

BRE Guide 3 rd Edition / BS EN 17037:2018 Method 2 Assessment				
Room Type	AR (No.)	AR (%)	BR (No.)	BR (%)
No. Bedrooms	20	100%	0	0%
No. LKDs	8	100%	0	0%
Total No.	28	100%	0	0%

*AR = Above Recommendations

*BR = Below Recommendations

Block B2

A compliance rate of 100% is achieved under BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 Method 2 National Annex for the tested spaces of Block B2. The daylight provision results are summarised below.

Rooms Tested	No. Rooms
Total No. Bedrooms Tested	20
Total No. LKDs Tested	8
Total No. Spaces Tested	28

BRE Guide 3 rd Edition / BS EN 17037:2018 Method 2 Assessment				
Room Type	AR (No.)	AR (%)	BR (No.)	BR (%)
No. Bedrooms	20	100%	0	0%
No. LKDs	8	100%	0	0%
Total No.	28	100%	0	0%

*AR = Above Recommendations

*BR = Below Recommendations

Block B3

A compliance rate of 100% is achieved under BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 Method 2 National Annex for the tested spaces of Block B3. The daylight provision results are summarised below.

Rooms Tested				No. Rooms
Total No. Bedrooms Tested				15
Total No. LKDs Tested				6
Total No. Spaces Tested				21
BRE Guide 3 rd Edition / BS EN 17037:2018				
Method 2 Assessment				
Room Type	AR (No.)	AR (%)	BR (No.)	BR (%)
No. Bedrooms	15	100%	0	0%
No. LKDs	6	100%	0	0%
Total No.	21	100%	0	0%

*AR = Above Recommendations

*BR = Below Recommendations

Total for The Development

A compliance rate of 100% is achieved for the entire development under the BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 Method 2 National Annex. The daylight provision results are summarised below.

Rooms Tested				No. Rooms
Total No. Bedrooms Tested				132
Total No. LKDs Tested				83
Total No. Studio’s Tested				17
Total No. Spaces Tested				232
BRE Guide 3 rd Edition / BS EN 17037:2018 Method 2 Assessment				
Room Type	AR (No.)	AR (%)	BR (No.)	BR (%)
No. Bedrooms	132	100%	0	0%
No. LKDs	83	100%	0	0%
No. Studios	17	100%	0	0%
Total No.	232	100%	0	0%

*AR = Above Recommendations

*BR = Below Recommendations

Overall the quality of daylight provision across the development is high.

11 Conclusion

The following can be concluded based on the assessments undertaken:

11.1 Shadow Analysis

The shadow analysis illustrates different shadows being cast at key times of the year (March 21st, June 21st and December 21st) for the Existing Situation and the Proposed Scheme. The results from the study are summarised as follows (Property Numbers estimated from Google maps):

Beaumont Grove (19-22 + 78a)

Additional shading noted in the afternoons of March (1600-1800) and December* (1400).
No additional shading noted at any other period.

Beaumont Road East (78/80)

Additional shading noted in the afternoons of March (1600-1800) and December* (1400).
No additional shading noted at any other period.

Beaumont Road South East (75 -81)

Minor additional shading noted in the late evenings of June (2000). No additional shading noted at any other period.

Grace Park Court

No additional shading noted as these properties sit to the south of the development site.

Glencorp Road (30-33)

No additional shading noted to these properties as a result of the proposed development. It should also be noted that there is reduced overshadowing to some of the gardens to the rear of Glencorp Road as a result of the proposed development when compared to the existing site.

Ellenfield Road (1-8/23-29)

Additional shading noted in the mornings of March (0800) and December*(1000) mainly to the front of properties to one side of Ellenfield Road, with only very minor additional shading in June (until 10:00). As a result of the proposed development, in March and December 1000-1200, June 0800 - 1000 it should also be noted that there is reduced overshadowing and an overall improvement to some of the gardens to the rear of Ellenfield Road when compared to the existing site.

* Overshadowing can be expected in December when the sun is lower in the sky and shadows cast are much longer. Although this is the case, overshadowing is least noticeable during the winter months as there is a lot less sunlight available at this time of year and so the overall impact is vastly reduced.

The potential shading impact is quantified via the “Sunlight to Amenity Spaces” and “Daylight to Existing Buildings” section of this report.

11.2 Sunlight to Amenity Spaces

As outlined in Section 3.3.17 of the BRE Guide (3rd Edition), for a space to appear adequately sunlit throughout the year, at least half of the garden or amenity area should receive at least 2 hours of sunlight on March 21st. In the case of Existing amenity spaces, if they are already below the 50% threshold then the BRE recommends the results kept to within 80% of the existing situation.

Existing Amenity Spaces

On March 21st the majority of existing amenity spaces will receive the same levels of sunlight with the proposed development in place when compared to the existing scheme. Only one amenity space falls marginally outwith the guidelines (73% rather than 80%) and therefore it can be concluded that there will be a minor adverse impact to this garden. Although not included in this assessment it should also be taken into consideration that there are existing trees that will already be impacting on the sunlight to this garden space as can be seen in the image below. All other spaces tested complying with the recommendations in the BRE Guide outlined above.



Proposed Amenity Spaces

On March 21st, 88% of the combined proposed communal amenity areas situated within the development site will receive at least 2 hours of sunlight over their total area, thus exceeding

recommendations in the BRE Guide (3rd Edition). The images included confirm the amenity area will be quality spaces in terms of sunlight.

11.3 Sunlight to Existing Buildings

This study considers the proposed scheme and tests if the Annual Probable Sunlight Hours (APSH) results for the living room windows (existing properties) are greater than 25% annual and 5% winter sunlight or are greater than 0.8 times their former value with the proposed development in place or the reduction in sunlight across the year is less than 4% with the proposed development in place.

When compared to the Existing Scheme, 91% of the tested points (10 out of 11 no.) meet the BRE recommended values. These results highlight that the proposed development will have negligible impact to the sunlight received to these existing neighbouring properties. As the point tested that falls below the winter recommendations is one of two windows on the same property on Beaumont Grove, this can be noted as a minor adverse impact to this property. Although not included in this assessment it should also be taken into consideration that there are existing trees that will have some impact on the sunlight during the winter months even in the existing case. This will cumulatively lessen the impact of the proposed development further during the winter months particularly given there is a negligible impact to the annual sunlight as a result of the proposed development.



11.4 Sunlight to Proposed Development

With regards to the sunlight to the proposed development assessment a sunlight exposure assessment in accordance with BRE Guide 3rd Edition / IS/BS EN 17037-2018+A1-2021 considers the orientation of the rooms. As such the following should be noted from section 3.1.11 of the guide.

“The BS EN 17037 criterion applies to rooms of all orientations, although if a room faces significantly north of due east or west it is unlikely to be met.”

Of the 100 no. points tested, 90 no. points (90%) meet the BRE Guide 3rd Edition/IS/BS EN 17037-2018+A1-2021 sunlight exposure recommendations of greater than 1.5 hours on March 21st. When including bedrooms as habitable spaces this increases to 94 no. points (94%). Where windows do not meet this recommendation, this is predominantly as a result of their orientation.

It should be noted that in the development of any apartment type building in particular, achieving in the region of 75% to 80% for this assessment would be considered very high and factors such site constraints and ultimately orientation play a huge part to the outcome of this assessment. In some instance and particularly a scheme like this where you have spaces/units on either side of a rectangular block that is constrained by the site orientation, 50% would be as highest percentage achievable with the apartments on one side not able meet requirements purely on orientation as noted.

Overall, the sunlight provision results to the proposed development in accordance with IS/BS EN 17037:23018 are performing to a very high standard due to the fact that not all spaces can face south.

11.5 Daylight to Existing Buildings

This study considers the Proposed Scheme and tests if the VSC results are greater than 27% or not less than 0.8 times the value of the Existing Situation.

When compared to the Existing Situation, of the 146 no. points tested, 100% have a Proposed VSC value greater than 27% or not less than 0.8 times their former value compared to the Existing Situation, thus complying with the BRE Guidelines.

11.6 Daylight to Proposed Development

For the daylight to proposed development assessment, one standard has been analysed: BS EN 17037-2018+A1-2021 National Annex (BRE Guide 3rd Edition). For completeness, IS EN 17037-2018+A1-2021 (BRE Guide 3rd Edition) non-annex results have been included in Appendix B.

BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 National Annex

In the UK, EN 17037-2018+A1-2021 was adopted to form “BS EN 17037-2018+A1-2021”. However, a National Annex was included which states:

“The UK committee supports the recommendations for daylight in buildings given in BS EN 17037:2018; however, it is the opinion of the UK committee that the recommendations for daylight provision in a space (see Clause A.2) may not be achievable for some buildings, particularly dwellings. The UK committee believes this could be the case for dwellings with basement rooms or those with significant external obstructions (for example, dwellings situated in a dense urban area or with tall trees outside), or for existing buildings being refurbished or converted into dwellings. This National Annex therefore provides the UK committee’s guidance on minimum daylight provision in all UK dwellings.”

The BS EN 17037-2018+A1-2021 National Annex provides target illuminance values for bedrooms, living rooms and kitchens within residential developments as per Table NA.1. It is also important to note that as the climate in Ireland is similar to the UK, the targets outlined in the BS EN National Annex could also be applied to dwellings in Ireland.

The BS National Annex also states:

“Where one room in a UK dwelling serves more than a single purpose, the UK committee recommends that the target illuminance is that for the room type with the highest value – for example, in a space that combines a living room and a kitchen the target illuminance is recommended to be 200 lx.”

Therefore, combined LKDs were assessed using a 200-lux target illuminance (E_T).

Across the proposed development, 100% of the tested rooms are achieving the daylight provision targets in accordance with Table NA.1 of BS EN 17037-2018+A1-2021 National Annex using Method 2.

Overall the quality of daylight provision across the development is high.

11.7 View Out

The View Out assessment is related to buildings such as offices or schools where seating layouts are typically fixed compared to domestic settings where an occupant can move around the space freely. In their own home occupants can choose to sit near to or even at a window which will inevitably provide the varying layers of a ‘View Out’ such as the ground, landscape or sky. This ability to choose their position within a domestic setting means they would always have access to a position in the house or apartment with the minimum

requirements of 'View Out'. Therefore, all the properties would meet the minimum requirement as outlined in IS EN 17037-2018+A1-2021 / BS EN 17037-2018+A1-2021 National Annex (BRE Guide 3rd Edition).

11.8 Glare

As outlined in IS EN 17037-2018+A1-2021 / BS EN 17037-2018+A1-2021 National Annex (BRE Guide 3rd Edition), a Glare assessment is suggested in spaces where the *“expected activities are comparable to reading, writing or using display devices and the user is not able to choose freely their position and viewing direction”*. Given that occupants within a domestic setting are free to move around, on this basis a glare assessment for the proposed development has not been carried out.

11.9 Observations

It is important to note that the recommendations within the BRE Guide (3rd Edition) itself states *“although it gives numerical guidelines these should be interpreted flexibly because natural lighting is only one of many factors in site layout design”*, Although this is true appropriate and reasonable regard has still been taken to the BRE guide.

Whilst the results shown relate to the criteria as laid out in the BRE Guide (3rd Edition), it is important to note that the BRE targets are guidance only and should therefore be used with flexibility and caution when dealing with different types of sites.

In addition, BRE Guide 3rd Edition also notes:

“This report is a comprehensive revision of the 2011 edition of Site layout planning for daylight and sunlight: a guide to good practice. It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location.”

Taking all of the above information into account and based on the results from each of the assessments undertaken, the proposed development performs well when compared to the recommendations in the BRE Guide 3rd Edition and BS EN 17037-2018+A1-2021 National Annex. With regards to the existing properties there is a negligible impact to sunlight and daylight as a result of the proposed development when considering all factors.

12 Appendix A – Daylight Provision Results

The tables in the following sections summarise the daylight provision results for the rooms that were assessed in the proposed development. Note, within the tables the code “LKD” equates to combined Living, Kitchen, Dining area.

The results for the following daylight standards are included in each table:

- BRE Guide (3rd Edition) / BS EN 17037:2018 National Annex
- BRE Guide (3rd Edition) / IS EN 17037:2018

Please note, the “Comment” symbol in each of the tables represents the following:

BRE Guide (3rd Edition) / BS EN 17037:2018 National Annex

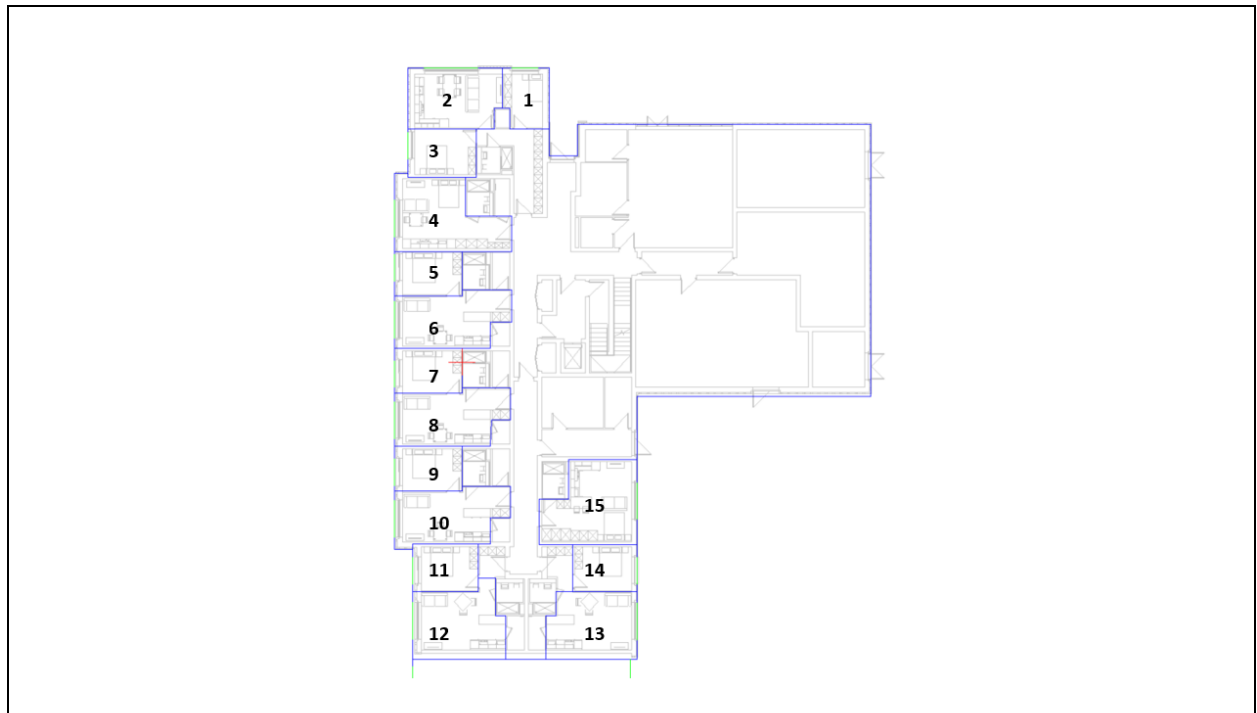
- ✓ These rooms achieve the target illuminance (E_T) over the minimum floor area requirements, i.e. 100 lux for over 50% of bedroom floor areas, and 200 lux for over 50% of LKD floor areas.
- x These rooms do not achieve the target illuminance (E_T) over the minimum floor area requirements.

BRE Guide (3rd Edition) / IS EN 17037:2018

- ✓ These rooms achieve both the target illuminance (E_T) and minimum target illuminance (E_{TM}) over the minimum floor area requirements, i.e. 300 lux for over 50% of their floor area (E_T) and 100 lux for over 95% of their floor area (E_{TM}).
- x These rooms do not achieve both the target illuminance (E_T) and minimum target illuminance (E_{TM}) over the minimum floor area requirements.

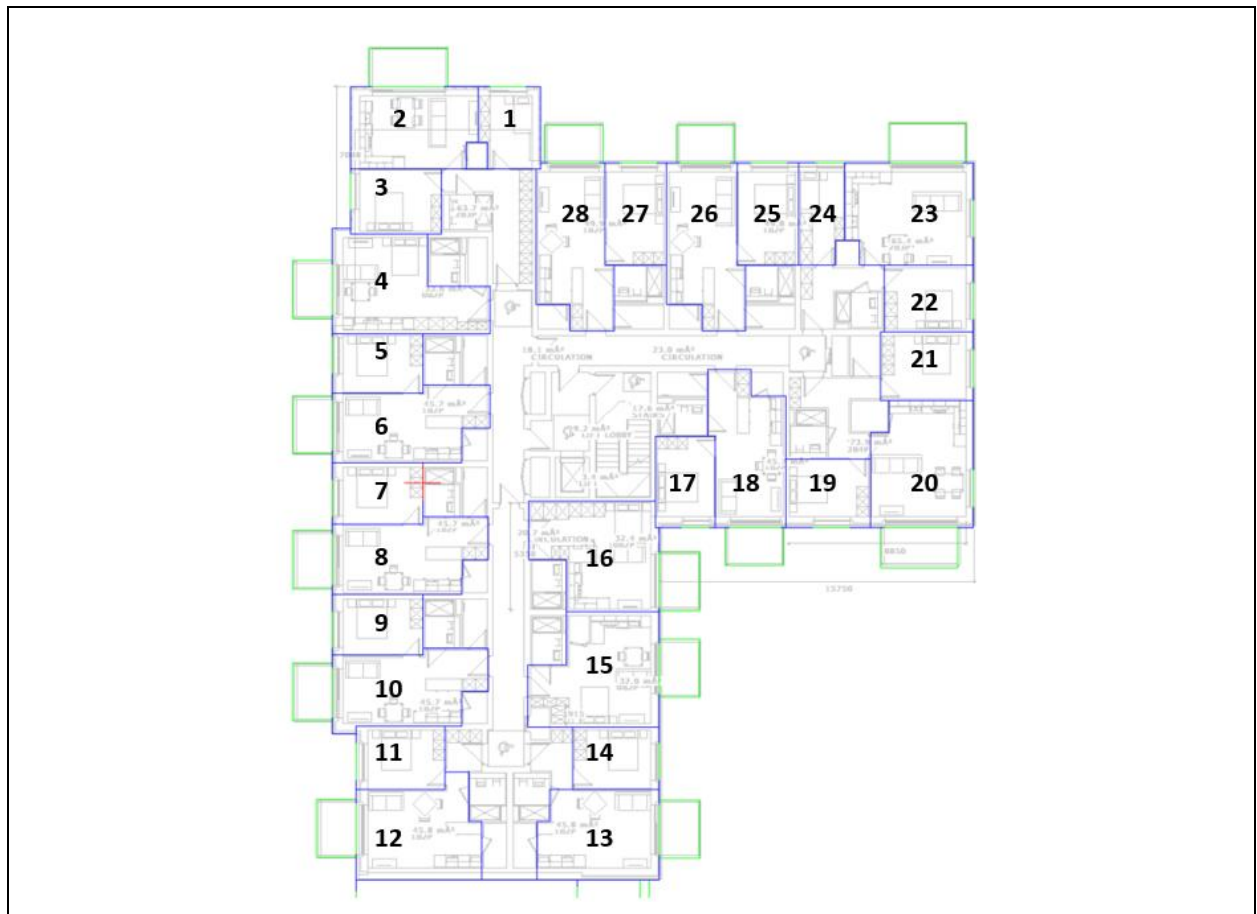
12.1 Daylight Provision Results

12.1.1 Apartment – Level 00



Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
1	1	Bedroom	100	✓
	2	LKD	100	✓
	3	Bedroom	100	✓
2	4	Studio	92	✓
3	5	Bedroom	100	✓
	6	LKD	90	✓
4	7	Bedroom	100	✓
	8	LKD	92	✓
5	9	Bedroom	100	✓
	10	LKD	100	✓
6	11	Bedroom	100	✓
	12	LKD	100	✓
7	13	LKD	100	✓
	14	Bedroom	100	✓
8	15	Studio	100	✓

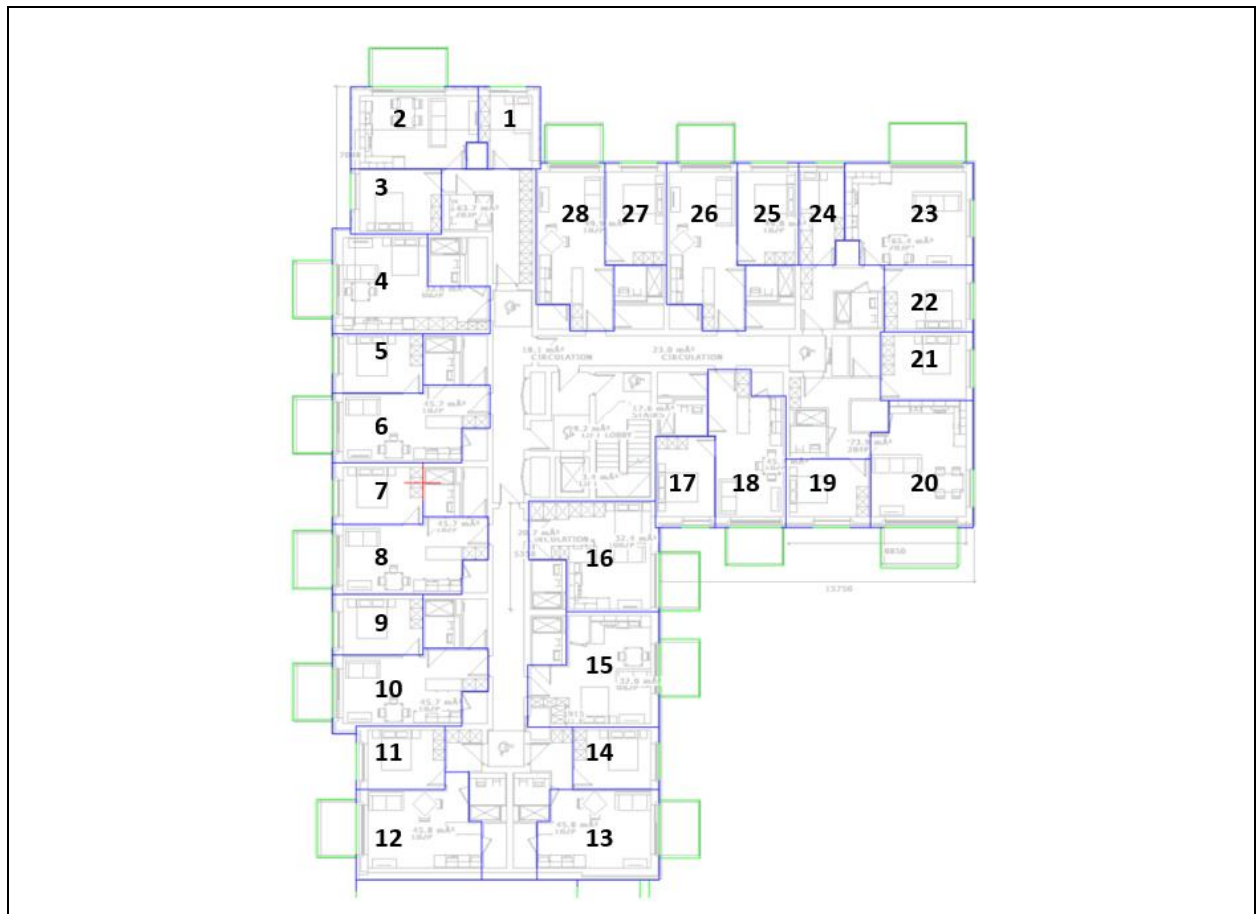
12.1.2 Apartment – Level 01



Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
1	1	Bedroom	100	✓
	2	LKD	100	✓
	3	Bedroom	100	✓
2	4	Studio	100	✓
3	5	Bedroom	100	✓
	6	LKD	100	✓
4	7	Bedroom	100	✓
	8	LKD	100	✓
5	9	Bedroom	100	✓
	10	LKD	99	✓
6	11	Bedroom	100	✓
	12	LKD	100	✓
7	13	LKD	100	✓
	14	Bedroom	100	✓
8	15	Studio	100	✓

Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
9	16	Studio	51	✓
10	17	Bedroom	100	✓
	18	LKD	57	✓
11	19	Bedroom	100	✓
	20	LKD	100	✓
	21	Bedroom	100	✓
12	22	Bedroom	100	✓
	23	LKD	100	✓
	24	Bedroom	100	✓
13	25	Bedroom	100	✓
	26	LKD	89	✓
14	27	Bedroom	100	✓
	28	LKD	82	✓

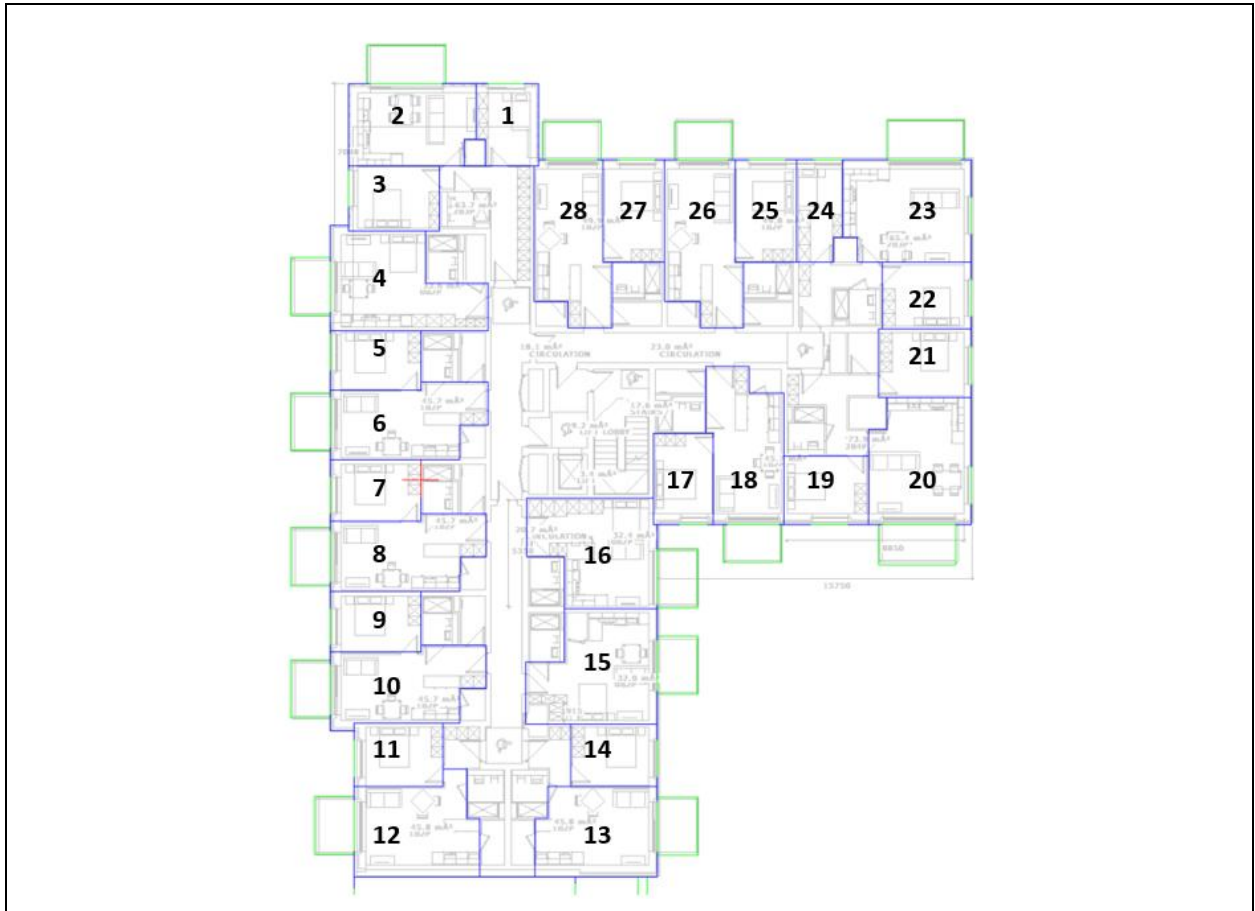
12.1.1 Apartment – Level 02



Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
1	1	Bedroom	100	✓
	2	LKD	100	✓
	3	Bedroom	100	✓
2	4	Studio	100	✓
3	5	Bedroom	100	✓
	6	LKD	86	✓
4	7	Bedroom	100	✓
	8	LKD	100	✓
5	9	Bedroom	100	✓
	10	LKD	90	✓
6	11	Bedroom	100	✓
	12	LKD	99	✓
7	13	LKD	100	✓
	14	Bedroom	100	✓
8	15	Studio	71	✓
9	16	Studio	51	✓

Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
10	17	Bedroom	100	✓
	18	LKD	69	✓
11	19	Bedroom	100	✓
	20	LKD	100	✓
	21	Bedroom	100	✓
12	22	Bedroom	100	✓
	23	LKD	100	✓
	24	Bedroom	100	✓
13	25	Bedroom	100	✓
	26	LKD	100	✓
14	27	Bedroom	100	✓
	28	LKD	83	✓

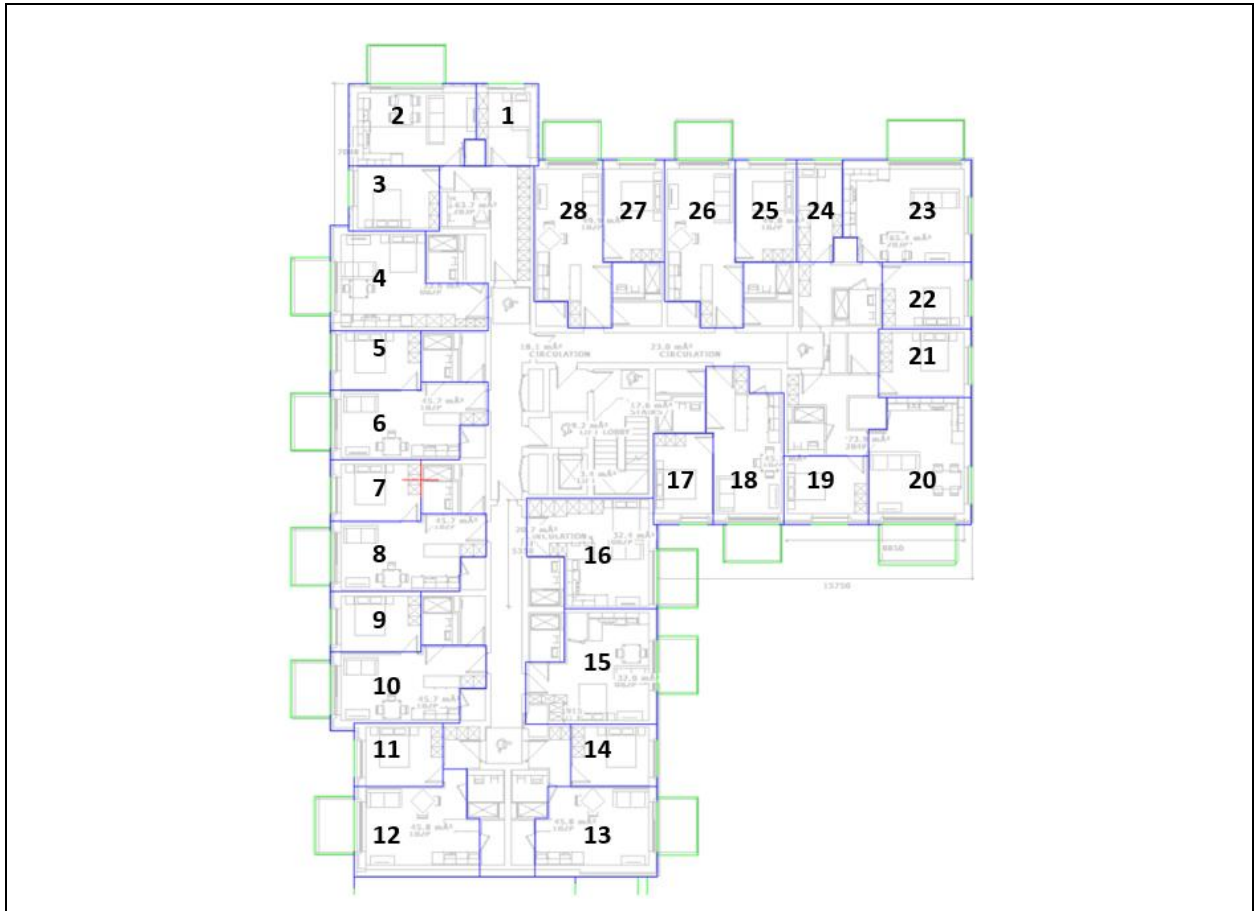
12.1.1 Apartment – Level 03



Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
1	1	Bedroom	100	✓
	2	LKD	100	✓
	3	Bedroom	100	✓
2	4	Studio	100	✓
3	5	Bedroom	100	✓
	6	LKD	88	✓
4	7	Bedroom	100	✓
	8	LKD	85	✓
5	9	Bedroom	100	✓
	10	LKD	88	✓
6	11	Bedroom	100	✓
	12	LKD	99	✓
7	13	LKD	100	✓
	14	Bedroom	100	✓
8	15	Studio	83	✓
9	16	Studio	51	✓

Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
10	17	Bedroom	100	✓
	18	LKD	74	✓
11	19	Bedroom	100	✓
	20	LKD	100	✓
	21	Bedroom	100	✓
12	22	Bedroom	100	✓
	23	LKD	100	✓
	24	Bedroom	100	✓
13	25	Bedroom	100	✓
	26	LKD	100	✓
14	27	Bedroom	100	✓
	28	LKD	86	✓

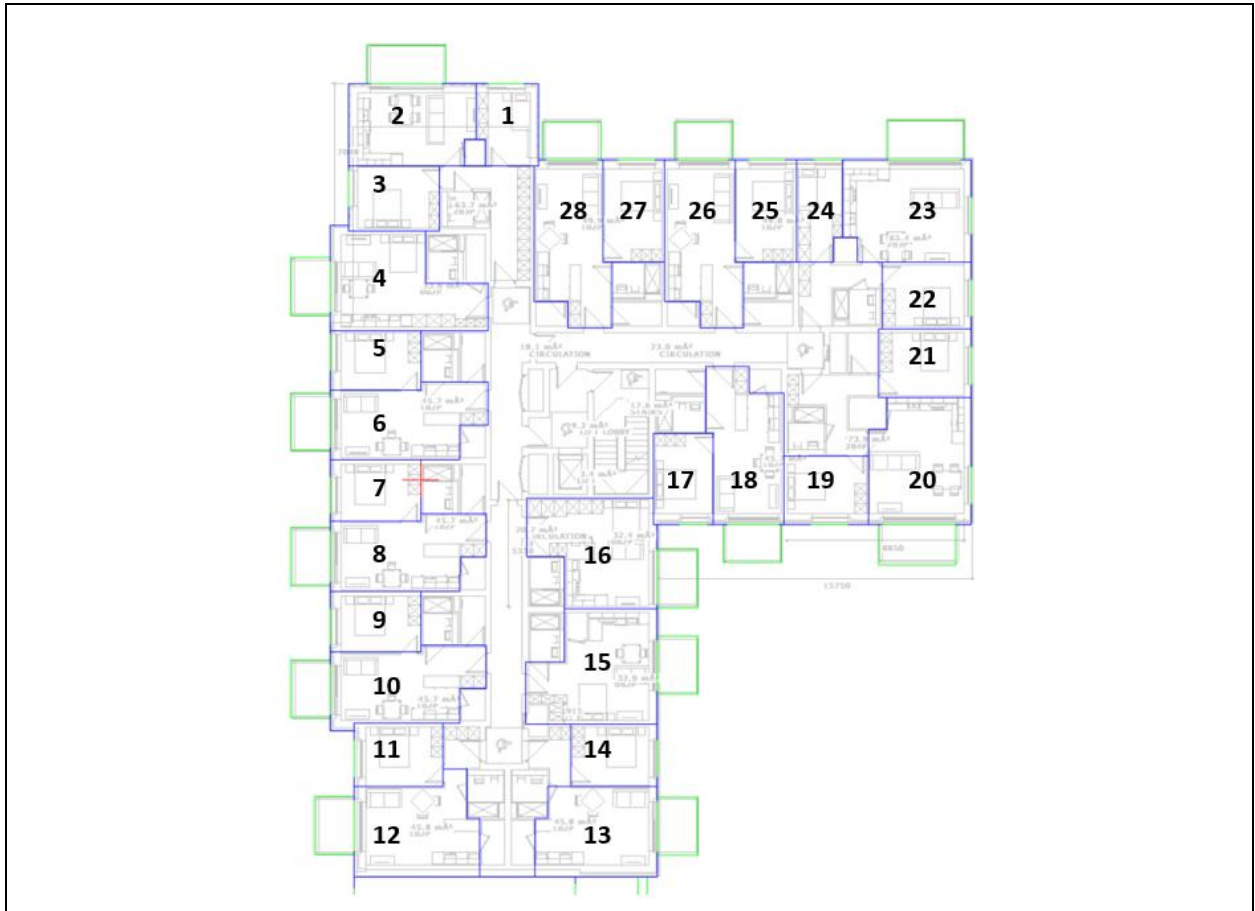
12.1.1 Apartment – Level 04



Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
1	1	Bedroom	100	✓
	2	LKD	100	✓
	3	Bedroom	100	✓
2	4	Studio	90	✓
3	5	Bedroom	100	✓
	6	LKD	86	✓
4	7	Bedroom	100	✓
	8	LKD	85	✓
5	9	Bedroom	100	✓
	10	LKD	88	✓
6	11	Bedroom	100	✓
	12	LKD	99	✓
7	13	LKD	100	✓
	14	Bedroom	100	✓
8	15	Studio	100	✓
9	16	Studio	51	✓

Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
10	17	Bedroom	100	✓
	18	LKD	84	✓
11	19	Bedroom	100	✓
	20	LKD	100	✓
	21	Bedroom	100	✓
12	22	Bedroom	100	✓
	23	LKD	100	✓
	24	Bedroom	100	✓
13	25	Bedroom	100	✓
	26	LKD	94	✓
14	27	Bedroom	100	✓
	28	LKD	89	✓

12.1.1 Apartment – Level 05



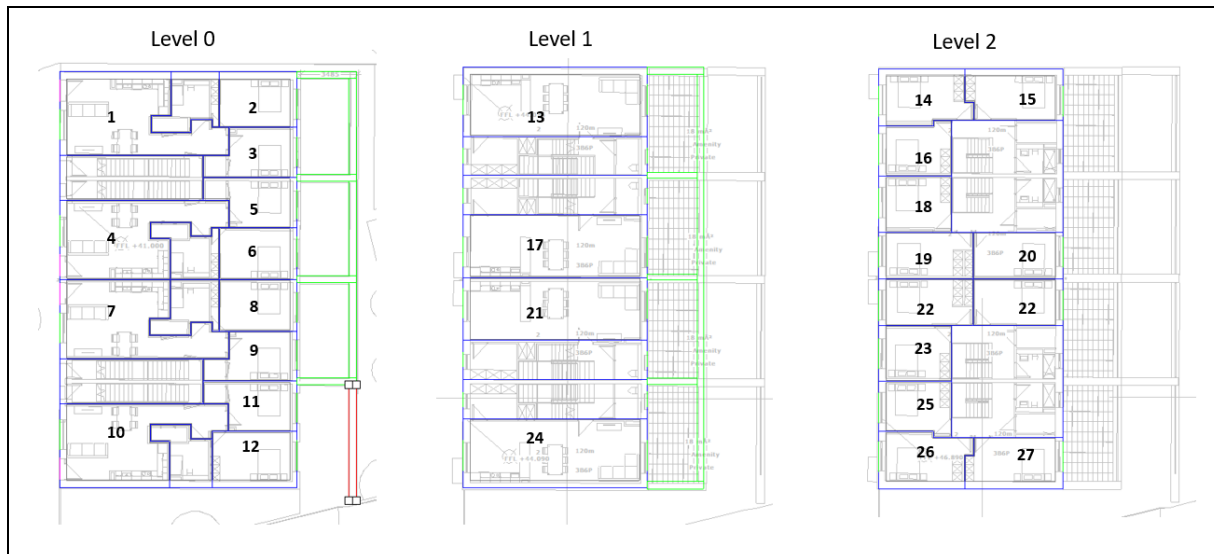
Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
1	1	Bedroom	100	✓
	2	LKD	100	✓
	3	Bedroom	100	✓
2	4	Studio	100	✓
3	5	Bedroom	100	✓
	6	LKD	93	✓
4	7	Bedroom	100	✓
	8	LKD	100	✓
5	9	Bedroom	100	✓
	10	LKD	99	✓
6	11	Bedroom	100	✓
	12	LKD	100	✓
7	13	LKD	100	✓
	14	Bedroom	100	✓
8	15	Studio	100	✓
9	16	Studio	51	✓

Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
10	17	Bedroom	100	✓
	18	LKD	96	✓
11	19	Bedroom	100	✓
	20	LKD	100	✓
	21	Bedroom	100	✓
12	22	Bedroom	100	✓
	23	LKD	100	✓
	24	Bedroom	100	✓
13	25	Bedroom	100	✓
	26	LKD	100	✓
14	27	Bedroom	100	✓
	28	LKD	99	✓

12.1.2 Block 1

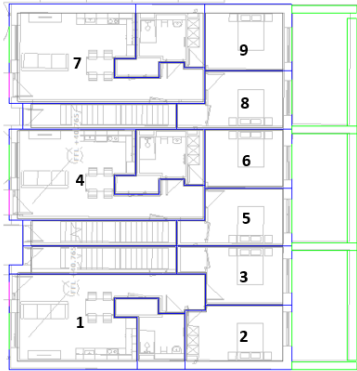
BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex				
Units	Ref.	Room Activity	Floor Area > E _T (%)	Comment
1	1	LKD	100	✓
	2	Bedroom	100	✓
	3	Bedroom	100	✓
2	4	LKD	100	✓
	5	Bedroom	100	✓
	6	Bedroom	100	✓
3	7	LKD	100	✓
	8	Bedroom	100	✓
	9	Bedroom	100	✓
4	10	LKD	98	✓
	11	Bedroom	100	✓
	12	Bedroom	100	✓
5	13	LKD	100	✓
	14	Bedroom	100	✓
	15	Bedroom	100	✓
	16	Bedroom	100	✓
6	17	LKD	100	✓
	18	Bedroom	100	✓
	19	Bedroom	100	✓
	20	Bedroom	100	✓
7	21	LKD	100	✓
	22	Bedroom	100	✓
	23	Bedroom	100	✓
	24	Bedroom	100	✓
8	25	LKD	100	✓
	26	Bedroom	100	✓
	27	Bedroom	100	✓
	28	Bedroom	100	✓

12.1.3 Block 2



Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
1	1	LKD	91	✓
	2	Bedroom	100	✓
	3	Bedroom	100	✓
2	4	LKD	100	✓
	5	Bedroom	100	✓
	6	Bedroom	100	✓
3	7	LKD	100	✓
	8	Bedroom	100	✓
	9	Bedroom	100	✓
4	10	LKD	100	✓
	11	Bedroom	100	✓
	12	Bedroom	100	✓
5	13	LKD	100	✓
	14	Bedroom	100	✓
	15	Bedroom	100	✓
	16	Bedroom	100	✓
6	17	LKD	100	✓
	18	Bedroom	100	✓
	19	Bedroom	100	✓
	20	Bedroom	100	✓
7	21	LKD	100	✓
	22	Bedroom	100	✓
	23	Bedroom	100	✓
	24	Bedroom	100	✓
8	25	LKD	100	✓
	26	Bedroom	100	✓
	27	Bedroom	100	✓
	28	Bedroom	100	✓

12.1.4 Block 3

Level 0 				
Level 1 				
Level 2 				
Units	Ref.	Room Activity	BRE Guide 3 rd Edition BS EN 17037:2018 Method 2 National Annex	
			Floor Area > E _T (%)	Comment
1	1	LKD	100	✓
	2	Bedroom	100	✓
	3	Bedroom	95	✓
2	4	LKD	100	✓
	5	Bedroom	97	✓
	6	Bedroom	100	✓
3	7	LKD	100	✓
	8	Bedroom	100	✓
	9	Bedroom	100	✓
4	10	LKD	100	✓
	11	Bedroom	100	✓
	12	Bedroom	100	✓
	13	Bedroom	100	✓
5	14	LKD	100	✓
	15	Bedroom	100	✓
	16	Bedroom	100	✓
	17	Bedroom	100	✓
6	18	LKD	100	✓
	19	Bedroom	100	✓
	20	Bedroom	100	✓
	21	Bedroom	100	✓

13 Appendix B – BRE Guide 3rd Edition / IS EN 17037-2018+A1 2021

13.1 Standard Requirements - IS EN 17037-2018+A1-2021

As outlined in Section 5.1.2 of the IS EN 17037-2018+A1-2021 standard:

“A space is considered to provide adequate daylight if a target illuminance level is achieved across a fraction of the reference plane within a space for at least half of the daylight hours. In addition, for spaces with vertical or inclined daylight openings, a minimum target illuminance level is also to be achieved across the reference plane”.

Annex A of IS EN 17037-2018+A1-2021 gives three levels of recommendation for the assessment of daylight provision in interior spaces which are summarised as follows:

“The three levels are: minimum, medium and high, and the minimum recommendation should be provided.”

It is important to note that IS EN 17037-2018+A1-2021 does not provide different illuminance targets for different space types. Therefore, in the case of residential developments; bedrooms, living rooms, kitchens and combined LKDs all have the same daylight provision targets.

Table A.1 of IS EN 17037-2018+A1-2021 (included below) provides recommendations for daylight provision by daylight openings in vertical and inclined surfaces. Note, Table A.2 provides similar recommendations for daylight openings in horizontal surfaces, e.g. rooflights. As there are no rooflights in the proposed development, the recommendations in Table A.2 are not followed.

To achieve the minimum level of daylight provision for vertical and inclined openings as per Table A.1, the following must be achieved:

- A target illuminance (E_T) of 300 lux must be achieved on over 50% of the floor area for over 50% of the available daylight hours, and
- A minimum target illuminance (E_{TM}) of 100 lux must be achieved on over 95% of the floor area for over 50% of the available daylight hours.
- Both targets above must be satisfied for a space to be deemed compliant with the requirements.

Table A.1 — Recommendations of daylight provision by daylight openings in vertical and inclined surface

Level of recommendation for vertical and inclined daylight opening	Target illuminance E_T lx	Fraction of space for target level $F_{plane,\%}$	Minimum target illuminance E_{TM} lx	Fraction of space for minimum target level $F_{plane,\%}$	Fraction of daylight hours $F_{time,\%}$
Minimum	300	50 %	100	95 %	50 %
Medium	500	50 %	300	95 %	50 %
High	750	50 %	500	95 %	50 %

NOTE Table A.3 gives target daylight factor (D_T) and minimum target daylight factor (D_{TM}) corresponding to target illuminance level and minimum target illuminance, respectively, for the CEN capital cities.

The recommendations in Table A.1 can also be expressed in terms of a daylight factor “D”. Table A.3 provides the corresponding daylight factor (D) relative to a recommended target illuminance E_T (lx) and target minimum illuminance E_{TM} (lx) depending on the location for daylight openings in vertical and inclined surfaces. Note, Table A.4 provides similar target values for openings in horizontal surfaces, e.g. rooflights. As there are no rooflights in the proposed development, the recommendations in Table A.4 are not followed.

The extract from Table A.3 below is for Dublin with the daylight factor targets highlighted, i.e. to achieve the target illuminance (E_T) of 300 lux outlined in Table A.1, an equivalent target daylight factor is 2.0%. Furthermore, to achieve the minimum target illuminance (E_{TM}) of 100 lux outlined in Table A.1, an equivalent target daylight factor is 0.7%.

Table A.3 — Values of D for daylight openings to exceed an illuminance level of 100, 300, 500 or 750 lx for a fraction of daylight hours $F_{time,\%} = 50\%$ for 33 capitals of CEN national members

Nation	Capital ^a	Geographical latitude φ [°]	Median External Diffuse Illuminance $E_{v,d,med}$	D to exceed 100 lx	D to exceed 300 lx	D to exceed 500 lx	D to exceed 750 lx
Ireland	Dublin	53,43	14 900	0,7 %	2,0 %	3,4 %	5,0 %

Therefore, to achieve the minimum level of daylight provision for vertical and inclined openings as per Table A.3, the following must be achieved:

- A target daylight factor (D_T) of 2.0% must be achieved on over 50% of the floor area for over 50% of the available daylight hours, and
- A minimum target daylight factor (D_{TM}) of 0.7% must be achieved on over 95% of the floor area for over 50% of the available daylight hours.
- Both targets above must be satisfied for a space to be deemed compliant with the requirements.

There are two methods to assess daylight provision to the interior which are based on target values in either Table A.1 or Table A.3 which are summarised as follows:

Method 1: This calculation method uses the daylight factor targets on the reference plane as per Table A.3. The assessment is carried out on a representative day and time during the year, i.e. 21st September @ 12:00 under standard CIE overcast sky conditions.

Method 2: This calculation method uses the illuminance targets on the reference plane as per Table A.1. The assessment is carried out for each hour over the course of the year (8,760 hours) using a local weather file which accounts for varying sky conditions and sun positions throughout the year.

As outlined in Section 5.1.4, the verification of daylight provision can be determined using either an adequate software or on-site measurements. When using a software, *“a representative model of the space is required together with the key parameters (such as any significant nearby obstructions, the assigned surface reflectance values and glazing transmissivity) that are a reasonable representation of those for the actual, completed building. This can be determined using either Method 1 or Method 2.”*

Based on the above criteria, the daylight provision to the proposed development has been assessed using an adequate software (i.e. IES VE), using the Method 2 climate-based approach and targeting the minimum recommended values outlined in Table A.1 of IS EN 17037-2018+A1-2021.

The Method 2 climate-based approach was selected as it is a far more accurate assessment method compared to Method 1. Climate based daylight modelling (CBDM) is more accurate compared to a calculation based on a single day during the year, i.e. Method 1. The amount of daylight varies throughout the year, primarily due to the sun's position, so it is essential the impact of daylight variance is properly considered. CBDM utilises an annual simulation linking location, shading, climate data (including solar intensity and cloud cover) together with the building properties. This provides a complete overview on how the daylight performance varies throughout the year due to changes in these factors.

13.2 Daylight Provision Results

The tables in the following section summarise the daylight provision results for the rooms that were assessed in the proposed development. Note, within the tables the code “LKD” equates to combined Living, Kitchen, Dining area.

The results for the following daylight standard are included in each table:

- BRE Guide (3rd Edition) / IS EN 17037-2018+A1-2021

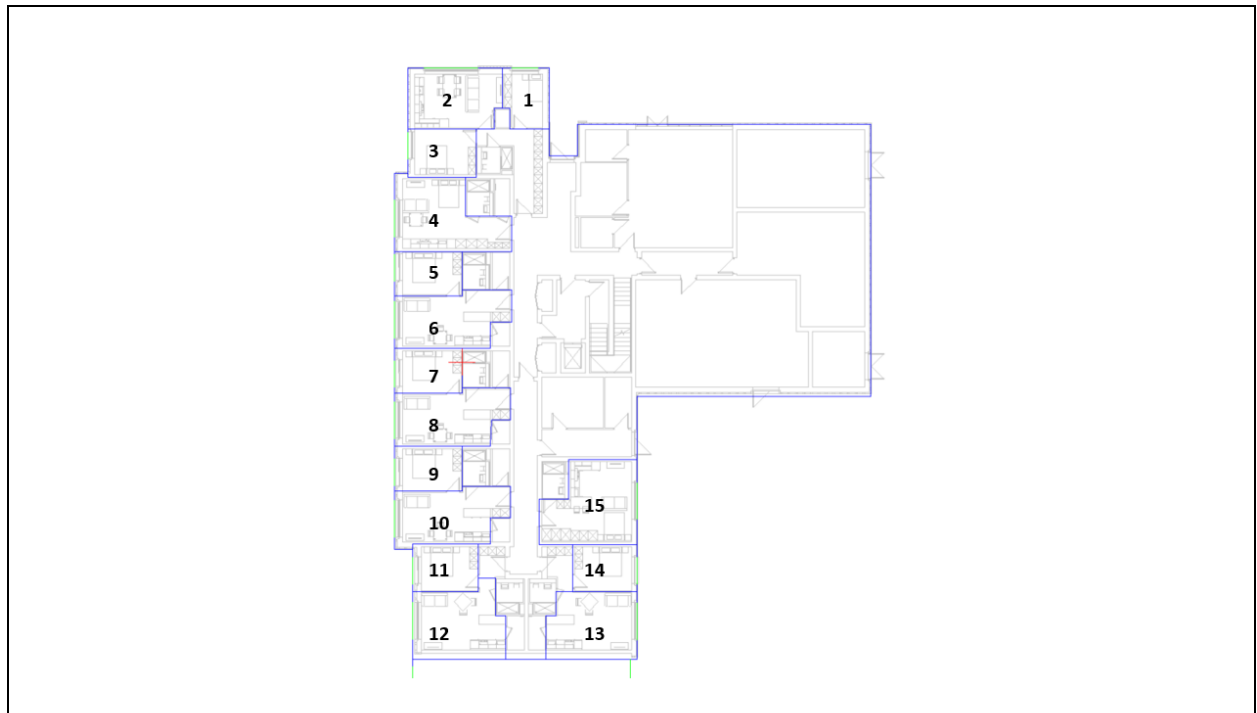
Please note, the “Comment” symbol in each of the tables represents the following:

BRE Guide (3rd Edition) / IS EN 17037-2018+A1-2021

- ✓ These rooms achieve both the target illuminance (E_T) and minimum target illuminance (E_{TM}) over the minimum floor area requirements, i.e. 300 lux for over 50% of their floor area (E_T) and 100 lux for over 95% of their floor area (E_{TM}).
- x These rooms do not achieve both the target illuminance (E_T) and minimum target illuminance (E_{TM}) over the minimum floor area requirements.

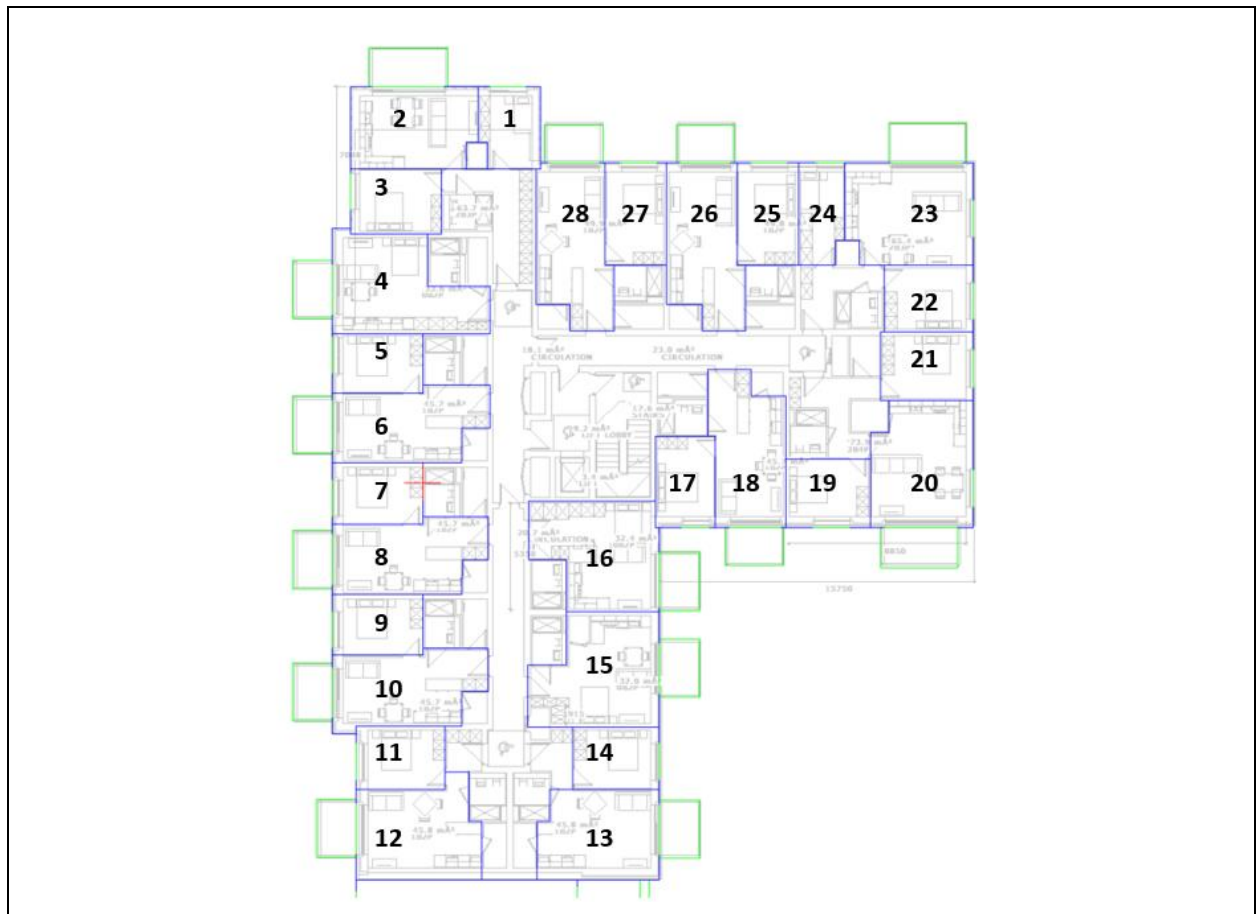
13.3 IS EN Daylight results

13.3.1 Apartment – Level 00



Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
1	1	Bedroom	100	100	✓
	2	LKD	100	100	✓
	3	Bedroom	100	100	✓
2	4	Studio	82	100	✓
3	5	Bedroom	100	100	✓
	6	LKD	68	100	✓
4	7	Bedroom	100	100	✓
	8	LKD	71	100	✓
5	9	Bedroom	100	100	✓
	10	LKD	84	100	✓
6	11	Bedroom	100	100	✓
	12	LKD	99	100	✓
7	13	LKD	75	100	✓
	14	Bedroom	100	100	✓
8	15	Studio	21	95	x

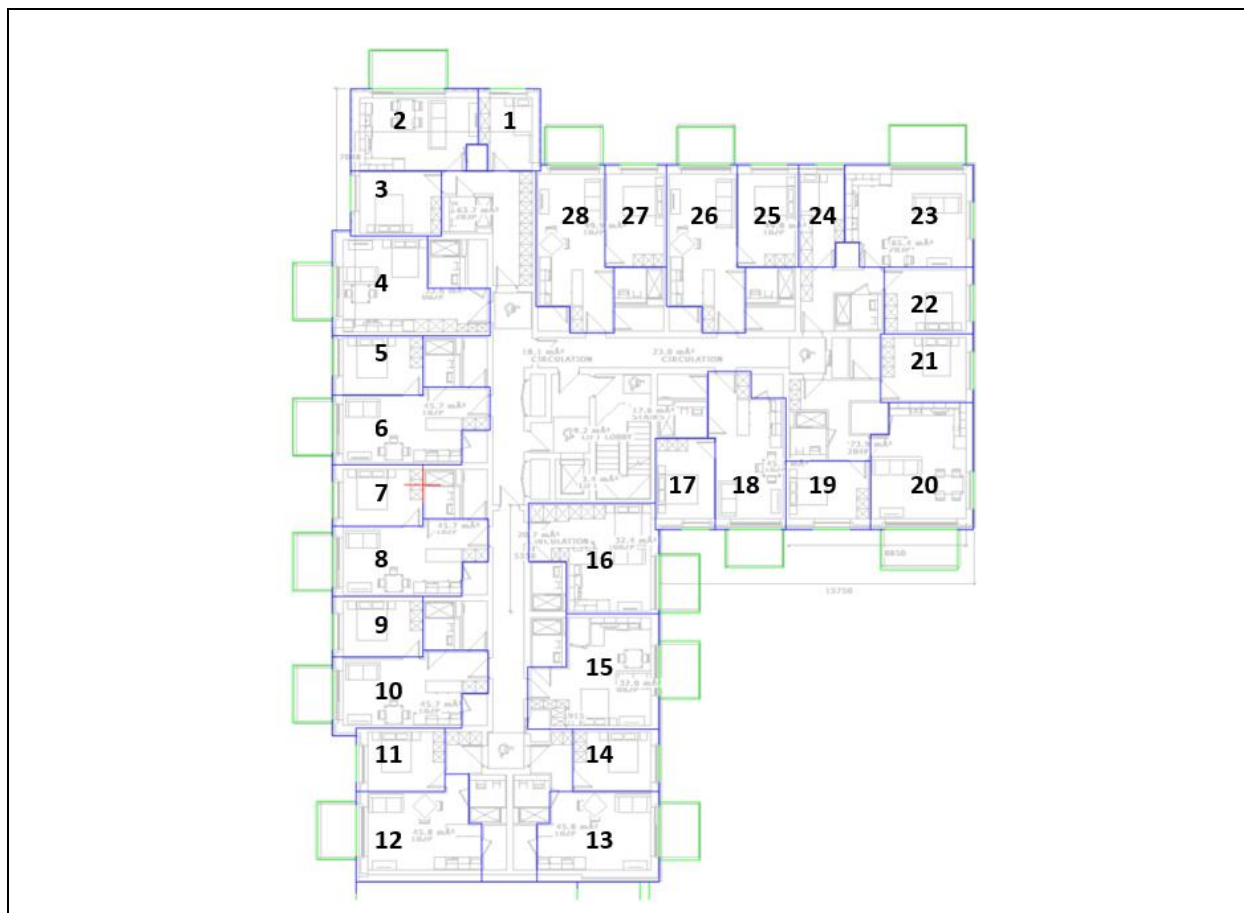
13.3.2 Apartment – Level 01



Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
1	1	Bedroom	100	100	✓
	2	LKD	100	100	✓
	3	Bedroom	100	100	✓
2	4	Studio	100	100	✓
3	5	Bedroom	100	100	✓
	6	LKD	83	100	✓
4	7	Bedroom	100	100	✓
	8	LKD	92	100	✓
5	9	Bedroom	100	100	✓
	10	LKD	86	100	✓
6	11	Bedroom	100	100	✓
	12	LKD	100	100	✓
7	13	LKD	100	100	✓
	14	Bedroom	100	100	✓

Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
8	15	Studio	62	100	✓
9	16	Studio	22	88	x
10	17	Bedroom	22	100	x
	18	LKD	36	99	x
11	19	Bedroom	100	100	✓
	20	LKD	100	100	✓
	21	Bedroom	82	100	✓
12	22	Bedroom	100	100	✓
	23	LKD	100	100	✓
	24	Bedroom	100	100	✓
13	25	Bedroom	100	100	✓
	26	LKD	66	100	✓
14	27	Bedroom	100	100	✓
	28	LKD	57	100	✓

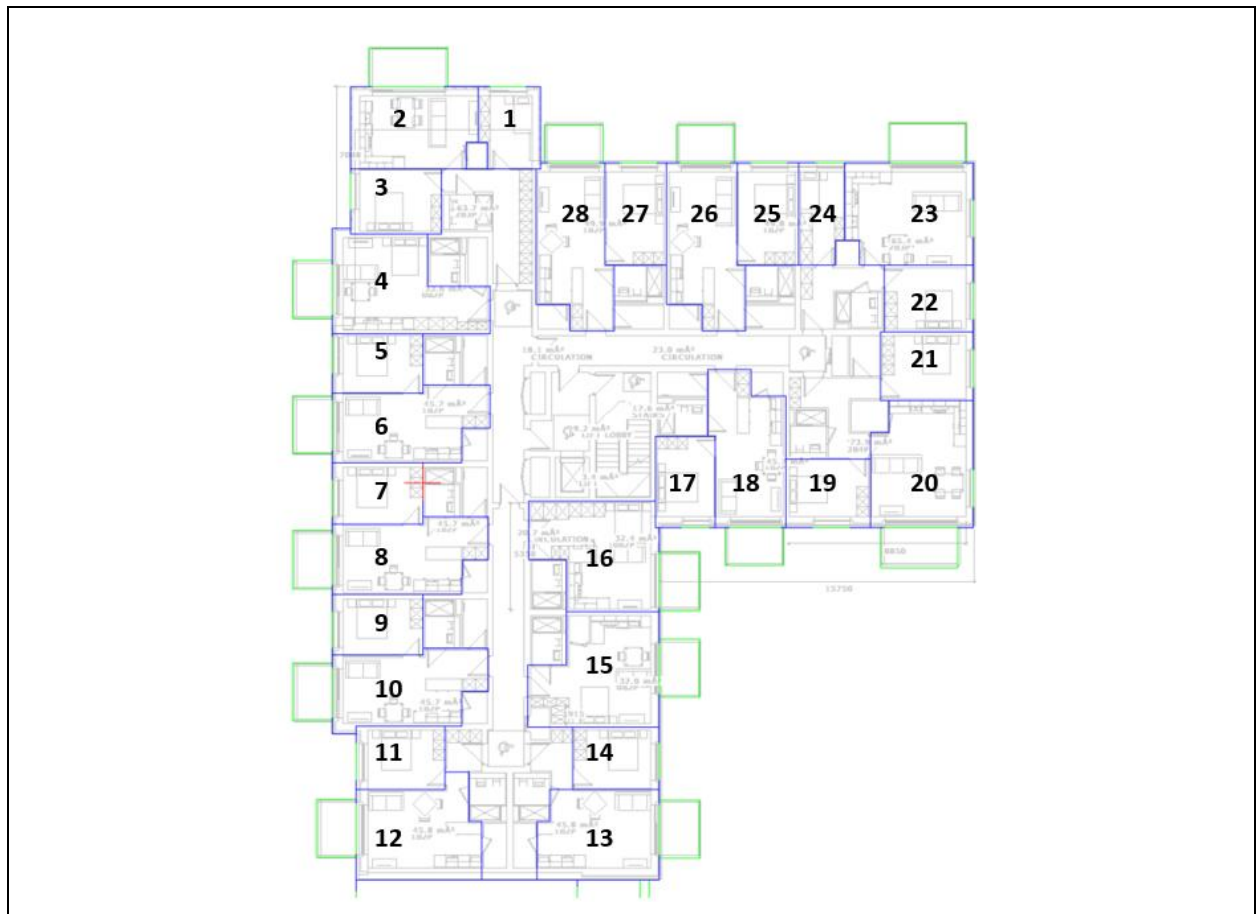
13.3.1 Apartment – Level 02



Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
1	1	Bedroom	100	100	✓
	2	LKD	100	100	✓
	3	Bedroom	100	100	✓
2	4	Studio	98	100	✓
3	5	Bedroom	100	100	✓
	6	LKD	63	100	✓
4	7	Bedroom	100	100	✓
	8	LKD	85	100	✓
5	9	Bedroom	100	100	✓
	10	LKD	69	100	✓
6	11	Bedroom	100	100	✓
	12	LKD	99	100	✓
7	13	LKD	100	100	✓
	14	Bedroom	100	100	✓

Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
8	15	Studio	50	100	✓
9	16	Studio	22	88	x
10	17	Bedroom	36	100	x
	18	LKD	43	100	x
11	19	Bedroom	100	100	✓
	20	LKD	100	100	✓
	21	Bedroom	100	100	✓
12	22	Bedroom	100	100	✓
	23	LKD	100	100	✓
	24	Bedroom	100	100	✓
13	25	Bedroom	100	100	✓
	26	LKD	91	100	✓
14	27	Bedroom	100	100	✓
	28	LKD	57	100	✓

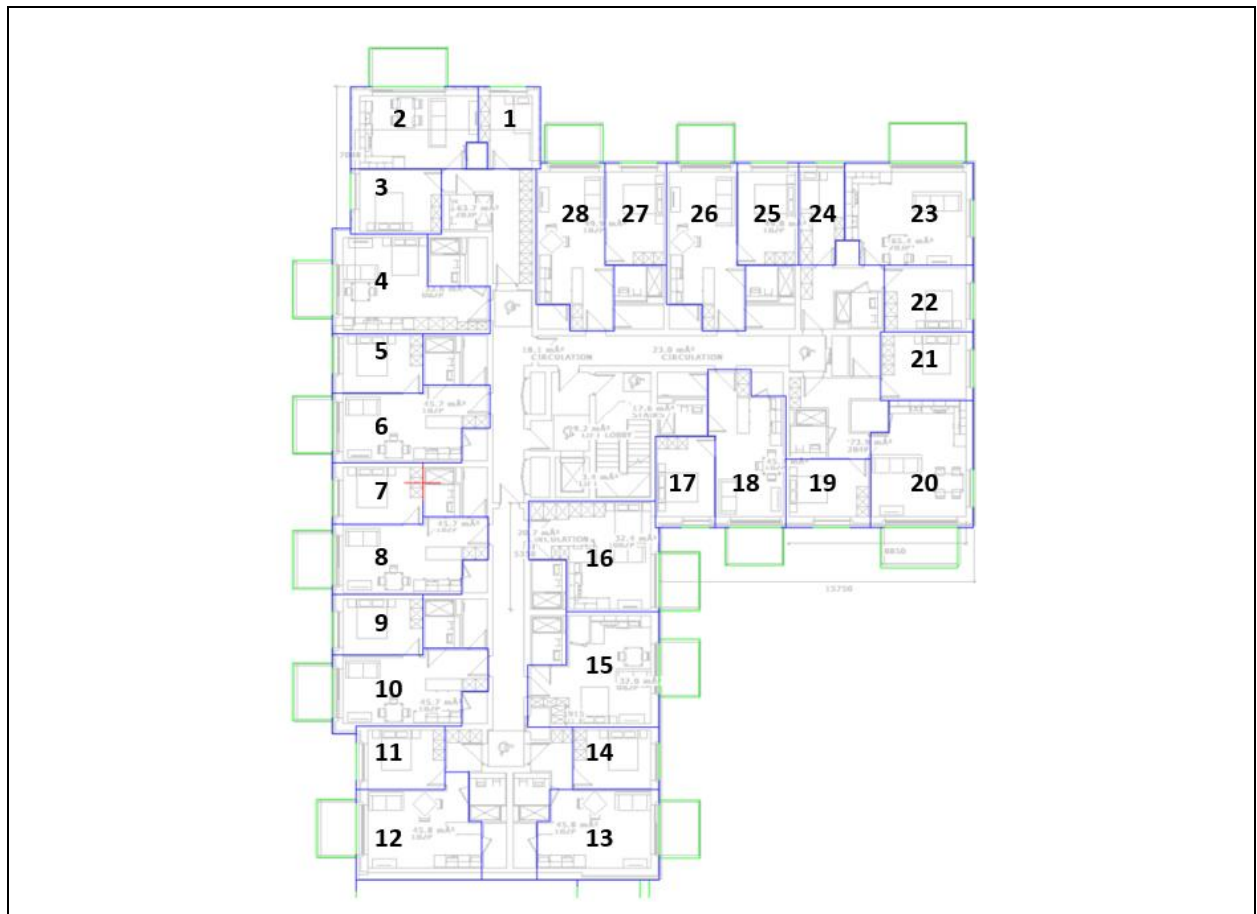
13.3.1 Apartment – Level 03



Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
1	1	Bedroom	100	100	✓
	2	LKD	100	100	✓
	3	Bedroom	100	100	✓
2	4	Studio	100	100	✓
3	5	Bedroom	100	100	✓
	6	LKD	66	100	✓
4	7	Bedroom	100	100	✓
	8	LKD	58	100	✓
5	9	Bedroom	100	100	✓
	10	LKD	64	100	✓
6	11	Bedroom	100	100	✓
	12	LKD	82	100	✓
7	13	LKD	100	100	✓
	14	Bedroom	100	100	✓

Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
8	15	Studio	59	100	✓
9	16	Studio	22	88	x
10	17	Bedroom	48	100	x
	18	LKD	47	100	x
11	19	Bedroom	100	100	✓
	20	LKD	100	100	✓
	21	Bedroom	100	100	✓
12	22	Bedroom	100	100	✓
	23	LKD	100	100	✓
	24	Bedroom	100	100	✓
13	25	Bedroom	100	100	✓
	26	LKD	94	100	✓
14	27	Bedroom	100	100	✓
	28	LKD	66	100	✓

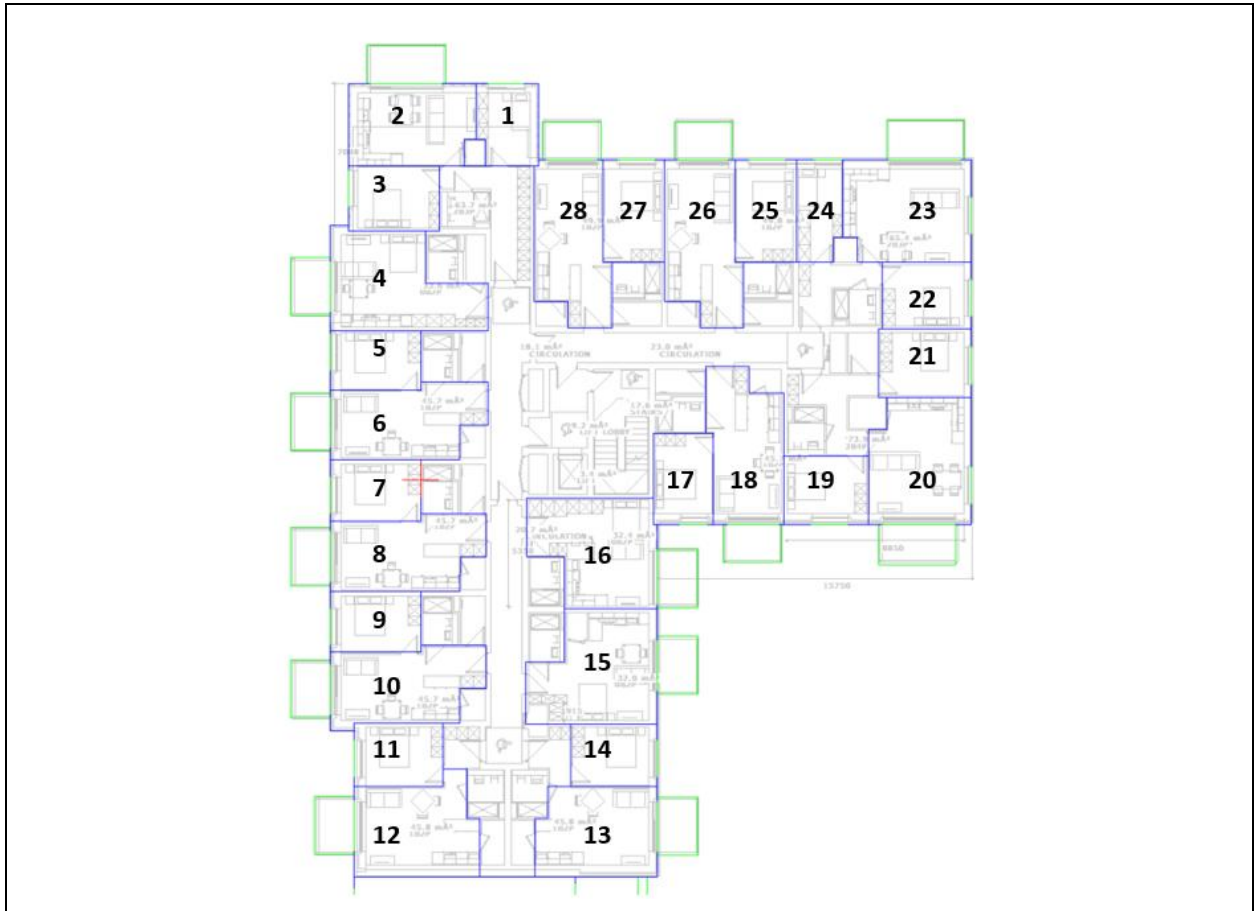
13.3.1 Apartment – Level 04



Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
1	1	Bedroom	100	100	✓
	2	LKD	100	100	✓
	3	Bedroom	100	100	✓
2	4	Studio	82	100	✓
3	5	Bedroom	100	100	✓
	6	LKD	61	100	✓
4	7	Bedroom	100	100	✓
	8	LKD	60	100	✓
5	9	Bedroom	100	100	✓
	10	LKD	60	100	✓
6	11	Bedroom	100	100	✓
	12	LKD	94	100	✓
7	13	LKD	100	100	✓
	14	Bedroom	100	100	✓

Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
8	15	Studio	74	100	✓
9	16	Studio	22	88	x
10	17	Bedroom	74	100	✓
	18	LKD	52	100	✓
11	19	Bedroom	100	100	✓
	20	LKD	100	100	✓
	21	Bedroom	100	100	✓
12	22	Bedroom	100	100	✓
	23	LKD	100	100	✓
	24	Bedroom	100	100	✓
13	25	Bedroom	100	100	✓
	26	LKD	70	100	✓
14	27	Bedroom	100	100	✓
	28	LKD	67	100	✓

13.3.1 Apartment – Level 05



Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
1	1	Bedroom	100	100	✓
	2	LKD	100	100	✓
	3	Bedroom	100	100	✓
2	4	Studio	91	100	✓
3	5	Bedroom	100	100	✓
	6	LKD	80	100	✓
4	7	Bedroom	100	100	✓
	8	LKD	100	100	✓
5	9	Bedroom	100	100	✓
	10	LKD	82	100	✓
6	11	Bedroom	100	100	✓
	12	LKD	99	100	✓
7	13	LKD	100	100	✓
	14	Bedroom	100	100	✓

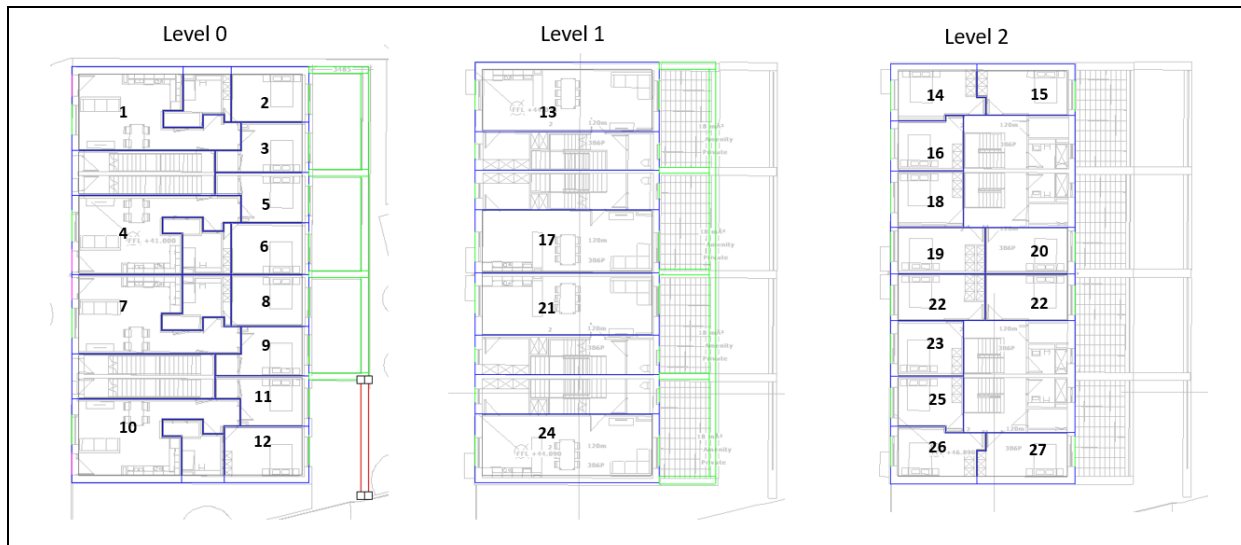
Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
8	15	Studio	100	100	✓
9	16	Studio	22	88	x
10	17	Bedroom	100	100	✓
	18	LKD	73	100	✓
11	19	Bedroom	100	100	✓
	20	LKD	100	100	✓
	21	Bedroom	100	100	✓
12	22	Bedroom	100	100	✓
	23	LKD	100	100	✓
	24	Bedroom	100	100	✓
13	25	Bedroom	100	100	✓
	26	LKD	87	100	✓
14	27	Bedroom	100	100	✓
	28	LKD	80	100	✓

13.3.2 Block 1



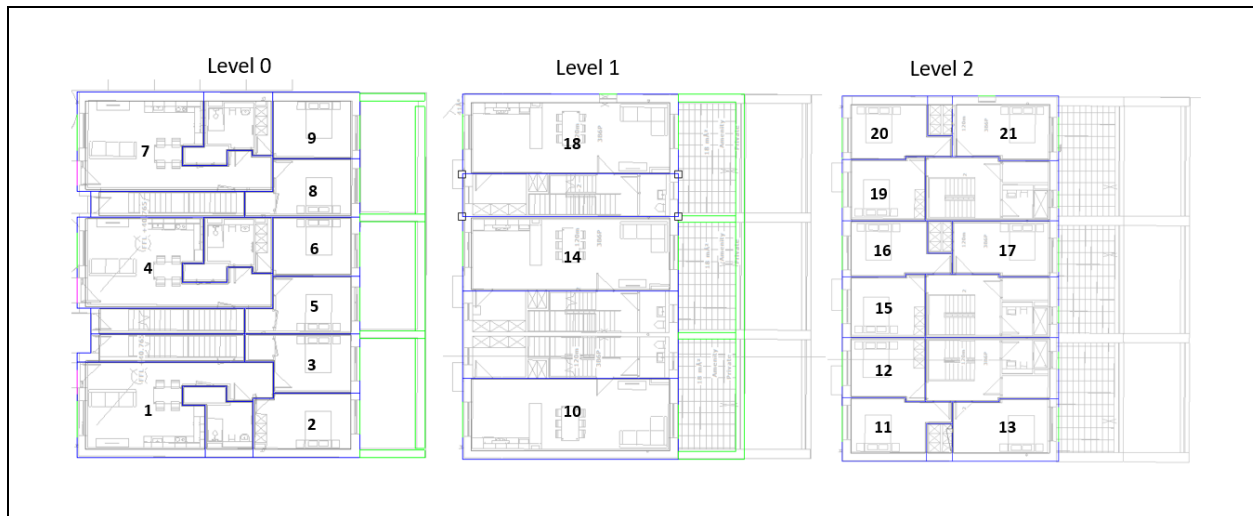
Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
1	1	LKD	100	100	✓
	2	Bedroom	100	100	✓
	3	Bedroom	100	100	✓
2	4	LKD	92	100	✓
	5	Bedroom	100	100	✓
	6	Bedroom	100	100	✓
3	7	LKD	98	100	✓
	8	Bedroom	100	100	✓
	9	Bedroom	100	100	✓
4	10	LKD	95	100	✓
	11	Bedroom	100	100	✓
	12	Bedroom	100	100	✓
5	13	LKD	100	100	✓
	14	Bedroom	100	100	✓
	15	Bedroom	100	100	✓
	16	Bedroom	100	100	✓
6	17	LKD	100	100	✓
	18	Bedroom	100	100	✓
	19	Bedroom	100	100	✓
	20	Bedroom	100	100	✓
7	21	LKD	100	100	✓
	22	Bedroom	100	100	✓
	23	Bedroom	100	100	✓
	24	Bedroom	100	100	✓
8	25	LKD	100	100	✓
	26	Bedroom	100	100	✓
	27	Bedroom	100	100	✓
	28	Bedroom	100	100	✓

13.3.3 Block 2



Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021 Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
1	1	LKD	66	100	✓
	2	Bedroom	100	100	✓
	3	Bedroom	100	100	✓
2	4	LKD	100	100	✓
	5	Bedroom	100	100	✓
	6	Bedroom	100	100	✓
3	7	LKD	100	100	✓
	8	Bedroom	100	100	✓
	9	Bedroom	100	100	✓
4	10	LKD	81	100	✓
	11	Bedroom	100	100	✓
	12	Bedroom	100	100	✓
5	13	LKD	100	100	✓
	14	Bedroom	100	100	✓
	15	Bedroom	100	100	✓
	16	Bedroom	100	100	✓
6	17	LKD	100	100	✓
	18	Bedroom	100	100	✓
	19	Bedroom	100	100	✓
	20	Bedroom	100	100	✓
7	21	LKD	100	100	✓
	22	Bedroom	100	100	✓
	23	Bedroom	100	100	✓
	24	Bedroom	100	100	✓
8	25	LKD	100	100	✓
	26	Bedroom	100	100	✓
	27	Bedroom	100	100	✓
	28	Bedroom	100	100	✓

13.3.4 Block 3



Units	Ref.	Room Activity	BRE Guide 3 rd Edition IS EN17037-2018+A1-2021		
			Method 2 National Annex		
			Floor Area > E _T (%)	Floor Area > E _{TM} (%)	Comment
1	1	LKD	100	100	✓
	2	Bedroom	28	100	x
	3	Bedroom	37	95	x
2	4	LKD	79	100	✓
	5	Bedroom	43	97	x
	6	Bedroom	43	100	x
3	7	LKD	100	100	✓
	8	Bedroom	63	100	✓
	9	Bedroom	96	100	✓
4	10	LKD	98	100	✓
	11	Bedroom	100	100	✓
	12	Bedroom	100	100	✓
	13	Bedroom	96	100	✓
5	14	LKD	100	100	✓
	15	Bedroom	100	100	✓
	16	Bedroom	100	100	✓
	17	Bedroom	74	100	✓
6	18	LKD	100	100	✓
	19	Bedroom	100	100	✓
	20	Bedroom	100	100	✓
	21	Bedroom	100	100	✓

13.4 Daylight Results

The following tables summarise the daylight provision results for the tested spaces within the proposed development. These include all the residential apartments within the development. The assessment has been carried out in accordance with the BRE Guide (3rd Edition) and IS EN 17037:2018+A1:2021, using Method 2.

Apartment

A compliance rate of 94% is achieved under BRE Guide 3rd Edition / IS EN 17037-2018+A1-2021 Method 2 for the tested spaces of Block A. The daylight provision results are summarised below.

Rooms Tested	Total No. Rooms
Total No. Bedrooms Tested	77
Total No. LKDs Tested	61
Total No. Studio Tested	17
Total No. Spaces Tested	155

BRE Guide 3 rd Edition / IS EN 17037:2018+A1-2021 Method 2				
Room Type	AR (No.)	AR (%)	BR (No.)	BR (%)
No. Bedrooms	74	96%	3	4%
No. LKDs	58	95%	3	5%
No. Studios	11	65%	6	35%
Total No.	143	94%	12	6%

*AR = Above Recommendations

*BR = Below Recommendations

Block B1

A compliance rate of 100% is achieved under BRE Guide 3rd Edition / IS EN 17037-2018+A1-2021 Method 2 for the tested spaces of Block B1. The daylight provision results are summarised below.

Rooms Tested				No. Rooms
Total No. Bedrooms Tested				20
Total No. LKDs Tested				8
Total No. Spaces Tested				28
BRE Guide 3 rd Edition/ IS EN17037-2018+A1-2021 Method 2 Assessment				
Room Type	AR (No.)	AR (%)	BR (No.)	BR (%)
No. Bedrooms	20	100%	0	0%
No. LKDs	8	100%	0	0%
Total No.	28	100%	0	0%

*AR = Above Recommendations

*BR = Below Recommendations

Block B2

A compliance rate of 100% is achieved under BRE Guide 3rd Edition / IS EN 17037-2018+A1-2021 Method 2 for the tested spaces of Block B2. The daylight provision results are summarised below.

Rooms Tested				No. Rooms
Total No. Bedrooms Tested				20
Total No. LKDs Tested				8
Total No. Spaces Tested				28
BRE Guide 3 rd Edition/ IS EN17037-2018+A1-2021 Method 2 Assessment				
Room Type	AR (No.)	AR (%)	BR (No.)	BR (%)
No. Bedrooms	20	100%	0	0%
No. LKDs	8	100%	0	0%
Total No.	28	100%	0	0%

*AR = Above Recommendations

*BR = Below Recommendations

Block B3

A compliance rate of 93% is achieved under BRE Guide 3rd Edition / IS EN 17037-2018+A1-2021 Method 2 for the tested spaces of Block B3. The daylight provision results are summarised below.

Rooms Tested				No. Rooms
Total No. Bedrooms Tested				15
Total No. LKDs Tested				6
Total No. Spaces Tested				21
BRE Guide 3 rd Edition/ IS EN17037-2018+A1-2021 Method 2 Assessment				
Room Type	AR (No.)	AR (%)	BR (No.)	BR (%)
No. Bedrooms	11	73%	4	27%
No. LKDs	6	100%	0	0%
Total No.	17	81%	4	19%

*AR = Above Recommendations

*BR = Below Recommendations

Total for The Development

A compliance rate of 93% is achieved for the entire development under the BRE Guide 3rd Edition / IS EN 17037-2018+A1-2021 Method 2. The daylight provision results are summarised below.

Rooms Tested	No. Rooms
Total No. Bedrooms Tested	132
Total No. LKDs Tested	83
Total No. Studio's Tested	17
Total No. Spaces Tested	232

BRE Guide 3 rd Edition/ IS EN17037-2018+A1-2021 Method 2 Assessment				
Room Type	AR (No.)	AR (%)	BR (No.)	BR (%)
No. Bedrooms	125	95%	7	5%
No. LKDs	80	96%	3	4%
No. Studios	11	65%	6	35%
Total No.	216	93%	16	7%

*AR = Above Recommendations

*BR = Below Recommendations

Overall, the quality of daylight provision across the development is high, with the majority of rooms that are below recommendations located on the lower floors.