

Proposed SHD, 'Kenelm' at Deer Park, Howth, Co. Dublin

Daylight and Sunlight Assessment Report
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1.0 Executive Summary

1.1 Summary of Assessment

3D Design Bureau were commissioned to carry out a comprehensive BRE daylight and sunlight assessment, along with an accompanying shadow study for the proposed strategic housing development in Howth, Co. Dublin.

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

1. Impact assessment on the surrounding environment and properties. (Baseline v Proposed)
2. Internal assessment of the proposed development itself (sunlighting to the proposed amenity spaces and internal daylighting (ADF) to the habitable rooms (LKD and bedrooms of the units within the building). Note: It was only necessary to carry out this internal sunlighting and ADF study on the proposed scheme.

The impact assessment that was carried out for the purpose of this report has studied the potential levels of effect the surrounding existing environment and/or properties would sustain should the proposed development be built as proposed. As there is a current grant of permission on a different site to the north of the proposed site (ABP PL06F.306102), our proposed model state includes this scheme in the calculation of all assessment figures. This approach has been adopted to account for the possibility of a cumulative level of impact. Should the granted scheme (ABP PL 06F.306102) not be constructed, the results of this analysis would either remain the same or be more favourable. In the LKDs that did meet the guidelines, a supplementary assessment on the living rooms only within these units was carried out. This was to establish if the living room part of the LKD would meet the recommended ADF values for such spaces.

This impact assessment covered the following categories:

- Effect on daylight (VSC) to surrounding properties. The effect to the VSC of the windows of the following neighbouring properties was assessed:
 - Tig Bhríde
 - Windwood
 - Kincora Lodge
 - Baltray:
- Effect on sunlight (APSH) to surrounding properties. The effect to the APSH (annual and winter) of the windows of the following neighbouring properties was assessed:
 - Tig Bhríde
 - Baltray:
- Effect on sunlight to surrounding external amenity spaces:
 - Tig Bhríde
 - Windwood
 - Kincora Lodge
 - Baltray:



The surrounding context was carefully considered to ensure all properties and amenity spaces that may potentially experience a level of effect were included in the study. It can be seen in the Result Overview that all assessed windows and gardens comply with the recommendation outlined in the BRE Guidelines.

In addition to the assessment of the impact the proposed development would have on the neighbouring properties, an assessment on the quality of daylight in the proposed apartment units and on the level of sunlight in the proposed amenity areas was also carried out.

This study has assessed the Average Daylight Factor (ADF) received in the LKDs and bedrooms in all residential rooms across the lowest habitable floor of the proposed development (202 No). Where unit types are repeated on higher floors, a similar ADF figure will be assumed although the actual ADF may differ due to differences in context. However, as stated elsewhere in this report, it can be assumed that higher units in a scheme will receive higher levels of daylight due to less external obstructions. In instances where rooms have not achieved the target ADF value on the ground floor, analysis has been carried out on similar rooms on subsequent floors to determine at which level the target ADF value would be achieved.

A supplementary study of living rooms only was carried out on the LKDs not meeting the guidelines (These results do not count towards the circa compliance rate). This additional study was to demonstrate that some units will receive recommended levels of daylight within the area of the LKD that is likely to be used the most. Note: Our methodology of assessing daylight within the development, without assessing all rooms, should be considered acceptable and an accurate representation of how the overall scheme will perform.

A combination of the calculated ADF values and the assumed values will be used to estimate what percentage of the proposed rooms meet the recommended level of ADF.

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

1.2 Results Overview

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

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

- Windows Assessed: 22 no.
- Imperceptible: 22 no.

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

- Windows Assessed: 8 no.
- Imperceptible: 8 no.

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

- Windows Assessed: 8 no.
- Imperceptible: 8 no.

Sunlighting to existing neighbouring gardens:

- Gardens Assessed: 4 no.
- Gardens meeting the guidelines: 4 no.

Sunlighting to proposed amenity area:

- Areas Assessed: 6 no.
- Meeting the guidelines: 6 no.

Average Daylight Factor (ADF) of internal proposed development:

- Assessment with LKD target value of 2.0%:
 - Rooms assessed: 207 no.
 - Rooms above target value: 172 no.
 - Rooms below target value: 35 no.
 - Rooms assumed to be above target value: 279 no.
 - Compliance Rate: ~93%
- Assessment with LKD target value of 1.5%:
 - Rooms assessed: 207 no.
 - Rooms above target value: 187 no.
 - Rooms below target value: 20 no.
 - Rooms assumed to be above target value: 279 no.
 - Compliance Rate: ~96%

2.0 Glossary

2.1 Terms and Definitions

Skylight

Non directional ambient light cast from the sky and environment.

Sunlight

Direct parallel rays of light emitted from the sun.

Daylight

Combined skylight and sunlight.

Overcast sky model

A completely overcast sky model, used for daylight calculation.

Existing Baseline Model State

The development site in its existing condition on site, with no development on either the proposed site or the granted scheme to the north (ABP PL 06F.306102). This model state has been used when generating the baseline results for all the existing neighbouring properties.

Proposed Development Model State

The proposed development has been modelled into the existing environment in conjunction with the granted scheme to the north (ABP PL 06F.306102). This model state has been used when assessing the effect of the proposed development on the existing neighbouring properties, as well as assessments carried out within the proposed development itself. This approach has been adopted to account for the possibility of a cumulative level of impact.

Vertical Sky Component (VSC)

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

Annual Probable Sunlight Hours (APSH)

Annual Probable Sunlight Hours (APSH) is a measure of sunlight that a given window may expect over a year period. It can be defined as the ratio between the annual sunlight hours in a specific location, and the hours of sunlight an assessment point on a window actually receives.

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

Average Daylight Factor (ADF)

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

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

Working plane

Horizontal, vertical or inclined plane in which a visual task lies. Normally the working plane may be taken to be horizontal, 850 mm above the floor in houses and factories, 700 mm above the floor in offices. The plane is offset 500 mm from the room boundaries.

BRE Target Value

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

Alternative Target Value

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

Level of BRE Compliance

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

2.2 Definition of Effects

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

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

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

Imperceptible

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

Not Significant

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

Slight

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

Moderate

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

Significant

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

Very Significant

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

Profound

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

Positive Effect

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

2.3 Index of Tables

2.3.1 Vertical Sky Component

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

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

A: Window Number

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

B: Baseline VSC Value

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

C: Proposed VSC Value

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

D: Ratio of Proposed VSC to Baseline VSC

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

E: Recommended minimum VSC

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

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

F: Level of Compliance with the BRE Guidelines

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

G: Effect of Proposed Development

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

2.3.2 Annual Probable Sunlight Hours

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

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

A: Window Number

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

B: Baseline Annual/Winter APSH

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

C: Proposed Annual APSH

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

D: Ratio of Proposed APSH to Baseline APSH

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

E: Recommended Minimum APSH

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

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

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

F: Level of Compliance with BRE Guidelines

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

G: Effect of Proposed Development

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

2.3.3 Sunlighting

2.3.3.1 Existing Gardens and Amenity Spaces

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

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

A: Address

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

B: Baseline

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

C: Proposed

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

D: Ratio of Proposed to Baseline

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

E: Recommended Minimum as per the BRE Guidelines

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

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

F: Level of BRE Compliance

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

G: Effect of Proposed Development

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

2.3.3.2 Proposed Gardens and Amenity Spaces

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

Table No. 2.4: Example of Sunlighting Table for Proposed Gardens/Amenity Spaces			
Assessed Area	Area Capable of Receiving 2 Hours of Sunlight on March 21st	Recommended Minimum	Level of Compliance with BRE Guidelines
A	B	C	D

A: Assessed Area

This column identifies the assessed garden/amenity area.

B: Area Capable of Receiving 2 Hours of Sunlight on March 21st

The percentage of the proposed area that can receive more than 2 hours of sunlight on March 21st.

C: Recommended Minimum

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

D: Level of Compliance with BRE Guidelines

This column states the compliance of the assessed space with the *BRE Target Value*. If the assessed garden or amenity area complies with the BRE Guidelines this cell will state "*BRE Compliant*". If the garden or amenity area does not meet the criteria as set out in the BRE Guidelines, a percentage of compliance with the *recommended minimum* will be stated.

2.3.4 Average Daylight Factor

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

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

A: Unit Number

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

B: Room Description

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

C: ADF

The average daylight factor calculated for an assessed room.

3.0 Assessment Overview

3.1 Development Description

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on Drawing No. 1101 contained within the architectural suite of drawings.

The development will consist of;

- i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
 - a. 29 no. 1-bedroom units, - 17.9%
 - b. 104 no. 2-bedroom units and - 64.2%
 - c. 29 no. 3-bedroom units - 17.9%
- ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
- iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
- iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
- v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
- vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
- vii. a single storey ESB sub-station and switch room (45.5 sq.m);
- viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access to the Centre;
- ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
- x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
- xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
- xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

3.2 Guidelines

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

Prior the publication of the apartment guidelines in December 2020 a European Standard has been published *EN 17037 Daylight in Buildings*. EN 17037 is not referenced in the 2020 apartment guidelines and to the best of our knowledge is not referenced in any planning guidance document issued by Irish planning authorities. The BRE Guidelines have not been withdrawn. Until official guidance or instruction is published by a relevant authority on this matter, 3DDB will continue to reference the BRE Guidelines in our daylight and sunlight assessments.

Neither the European Standard, British Standard nor the BRE Guide set out rigid standards or limits. The BRE Guide is preceded by the following very clear warning as to how the design advice contained therein should be used:

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

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

3.3 Effect on Vertical Sky Component (VSC)

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

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

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

The BRE Guidelines state that if the VSC is:

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

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

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

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

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

The results for the study on the effect on VSC caused by the proposed development can be seen in section 5.1 on page 19.

3.4 Effect on Annual Probable Sunlight Hours (APSH)

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

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

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

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

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

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

The results of the study on APSH can be found in Section 5.2 on page 21.

3.5 Effect on Sunlighting in Existing Gardens

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

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

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

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

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

The results of the study on effect on sunlight the neighbouring gardens (including a visual representation in the form of 2-hour false colour plans) can be found in Section 5.3 on page 23.

3.6 Sunlighting in Proposed Outdoor Amenity Areas

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

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

For the purpose of this report the external amenity areas of the proposed development have been separated into 7 sections, as defined by the architect. These spaces comprise of the public amenity area at the north of the proposed development, the area between the proposed blocks, the area to the east of block C and the roof gardens on each block.

An assessment has been carried out on each external amenity area to determine what portion of it is capable of receiving at least 2 hours of direct sunlight on March 21st.

The results for the study on sunlighting in the proposed outdoor amenity areas (including a visual representation in the form of 2-hour false colour plans) can be found in section 5.4 on page 24.

3.7 Shadow Study

A shadow study has been carried out on the baseline existing model state and the proposed model state. This visual representation of the shadows cast by the proposed development can be found in the hourly shadow diagrams in section 5.5 on page 25.

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

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

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

3.8 Average Daylight Factor (ADF)

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

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

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

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

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

This study has assessed the Average Daylight Factor (ADF) received in all habitable rooms across ground and 1st floors of the proposed development.

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

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

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

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

For definition of spaces and target values applied, please see the methodology section of this report in section 4.0 on page 16.

The results for the study on ADF can be seen in section 6.5 on page 50.

4.0 Methodology

4.1 Building the Baseline and Proposed Models

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

Michael Collins Associates Architects (MCA) supplied 3DDB with a 3D model of the proposed SHD development, which was subsequently prepared for daylight and sunlight analysis by 3DDB. 3DDB also modelled in detail the proposed landscaping/site layout to assess the sunlighting to these spaces. The completed digital 3D model used for this study was a detailed and accurate representation of the proposed scheme both externally and internally.

The granted scheme to the north of the proposed site (ABP PL06F.306102) was modelled by Modelworks and issued to 3DDB under a shared model license agreement. It should be noted that 3DDB cannot stand over the accuracy of this model but from inspection, it would appear fit for purpose. Furthermore, the scheme has little to no bearing on the results of the assessment.

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

Baseline Model State

The baseline model state is representative of the existing condition on site, with no development on either the proposed site or the granted scheme to the north (ABP PL 06F.306102). This model state has been used in the calculation of all baseline figures.

Proposed Model States

The proposed model state is representative of the proposed development in conjunction with the granted scheme to the north (ABP PL 06F.306102). This model state has been used in the calculation of all proposed figures. This approach has been adopted to account for the possibility of a cumulative level of impact.

Should the granted scheme (ABP PL 06F.306102) not be constructed, the results of this analysis would either remain the same or be more favourable.

Trees

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

In the case of this study, there is a dense belt of trees that form part of the site boundary. These trees have been included in the analytical model due to their density and maturity. The heights of these trees have been approximated, and their shape simplified for modelling purposes.

4.2 Generating Results

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

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

4.2.1 VSC

Assessment Criteria

The effect on Vertical Sky Component (VSC) has been calculated for windows of the neighbouring existing properties that face the proposed development.

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

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

Assessment Points

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

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

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

4.2.2 APSH

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

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

4.2.3 Sunlighting

Assessment Criteria

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

Defining Areas

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

4.2.4 ADF

Recommended Minimum ADF

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

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

Notwithstanding this advice, an ADF target value of 1.5% should be considered appropriate for LKDs within this assessment. The rationale for this departure from the recommended minimum ADF of 2%, is in recognition that the primary function of LKDs within apartment developments is typically that of a living space. Should full compliance for the higher target value be sought, design changes could be needed, such as the removal of balconies or a reduction of unit sizes. Such mitigation measures could reduce the quality of living within the proposed units to a greater degree than the improvements that would be gained with increased ADF values. The appropriate ADF target value for LKDs is at the discretion of the planning authority, for which there is precedent in applying the 1.5%.

In new developments, some internal spaces (e.g. studio apartments, shared communal areas etc.) can possibly be of a nature that do not have a predefined target value in the BS 8206-2:2008. In such instances, 3DDB have applied a target value they deem to be appropriate.

Defining Areas

It is standard practice in apartment designs for LKDs to contain kitchens that are completely internal and not serviced by window on the external facade. These internal kitchens will often rely on supplementary electric lighting for periods of the day and can contribute to perceived lower ADF values in otherwise well-lit spaces. To better quantify the performance of the living areas of LKDs with this common configuration, an additional calculation has been carried out, in which the kitchens are omitted and the Living/Dining areas. This has been carried out on LKDs that have shown an ADF lower than 1.5%. This supplementary assessment will not be counted towards a percentage compliance rate for the proposed development.

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

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

Work Plane

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

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

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

Material Palette

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

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

Assumed Values

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

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

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

4.2.5 Shadow Study

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

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

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

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

5.0 Results

5.1 Effect on Vertical Sky Component

5.1.1 Tig Bhríde & Windwood

VSC Results Tig Bhríde & Windwood						
Window Number	Baseline VSC Value	Proposed VSC Value	Ratio of Proposed VSC to Baseline VSC	Recommended minimum VSC*	Level of Compliance with BRE Guidelines	Effect of Proposed Development**
Tig Bhríde						
89a	35.35%	34.47%	0.98	27.00%	BRE Compliant	Imperceptible
89b#	34.84%	31.54%	0.91	27.00%	BRE Compliant	Imperceptible
Windwood						
90a	36.50%	30.95%	0.85	27.00%	BRE Compliant	Imperceptible
90b	36.75%	31.41%	0.85	27.00%	BRE Compliant	Imperceptible
90c	37.55%	32.54%	0.87	27.00%	BRE Compliant	Imperceptible
90d	38.59%	33.87%	0.88	27.00%	BRE Compliant	Imperceptible
90e	38.67%	34.05%	0.88	27.00%	BRE Compliant	Imperceptible
90f	38.75%	34.27%	0.88	27.00%	BRE Compliant	Imperceptible
90g	38.82%	34.56%	0.89	27.00%	BRE Compliant	Imperceptible

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

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

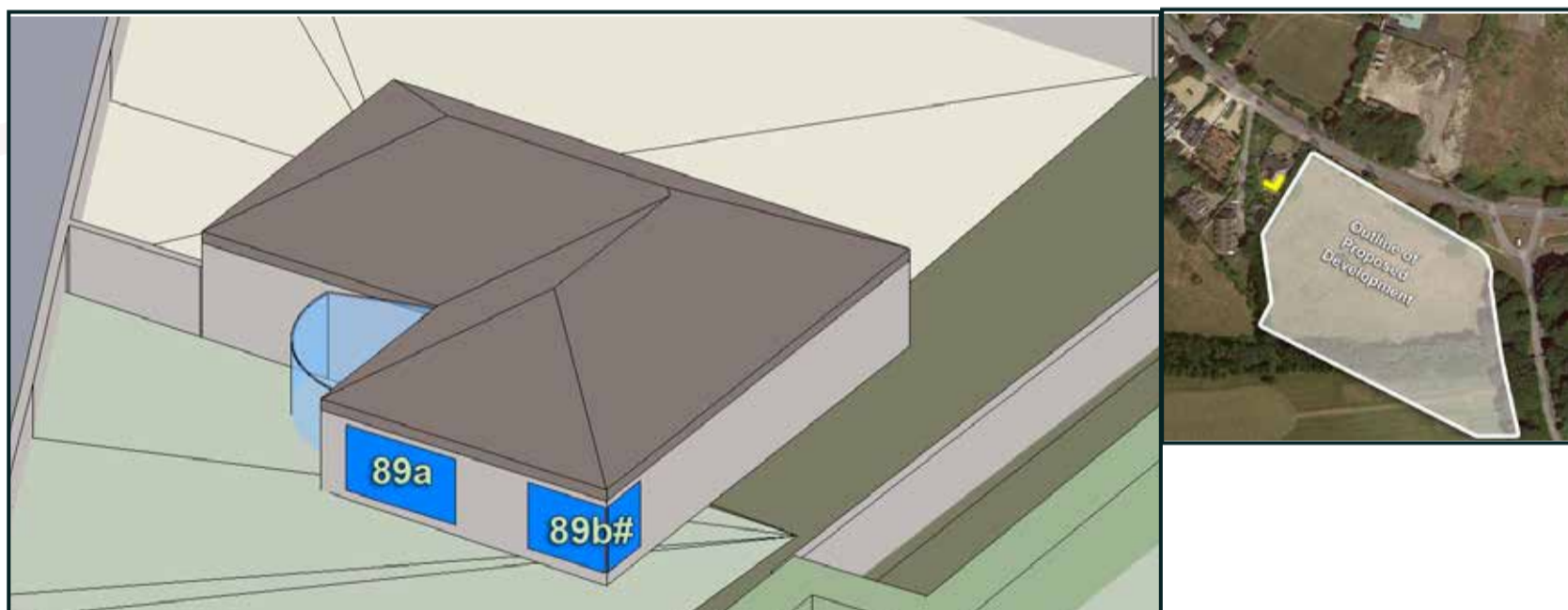


Figure 5.1: Left - Highlighted areas indicate the position of assessed windows on Tig Bhríde, Right - Aerial view of assessed location



Figure 5.2: Left - Highlighted areas indicate the position of assessed windows on Windwood, Right - Aerial view of assessed location

5.1.2 Kincora Lodge & Baltray

Table No. 5.1: VSC Results Kincora Lodge & Baltray						
Window Number	Baseline VSC Value	Proposed VSC Value	Ratio of Proposed VSC to Baseline VSC	Recommended minimum VSC*	Level of Compliance with BRE Guidelines	Effect of Proposed Development**
Kincora Lodge						
91a	21.13%	20.88%	0.99	16.91%	BRE Compliant	Imperceptible
91b	27.49%	27.05%	0.98	21.99%	BRE Compliant	Imperceptible
91c	35.14%	34.11%	0.97	27.00%	BRE Compliant	Imperceptible
91d	34.88%	34.06%	0.98	27.00%	BRE Compliant	Imperceptible
91e	37.38%	36.08%	0.97	27.00%	BRE Compliant	Imperceptible
91f	37.36%	36.14%	0.97	27.00%	BRE Compliant	Imperceptible
91g	37.33%	36.20%	0.97	27.00%	BRE Compliant	Imperceptible
Baltray						
92a#	27.71%	27.20%	0.98	22.17%	BRE Compliant	Imperceptible
92b#	28.97%	28.32%	0.98	23.18%	BRE Compliant	Imperceptible
92c	33.16%	33.03%	1.00	26.53%	BRE Compliant	Imperceptible
92d	34.72%	34.58%	1.00	27.00%	BRE Compliant	Imperceptible
92e	35.27%	32.99%	0.94	27.00%	BRE Compliant	Imperceptible
92f	37.71%	37.57%	1.00	27.00%	BRE Compliant	Imperceptible

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

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

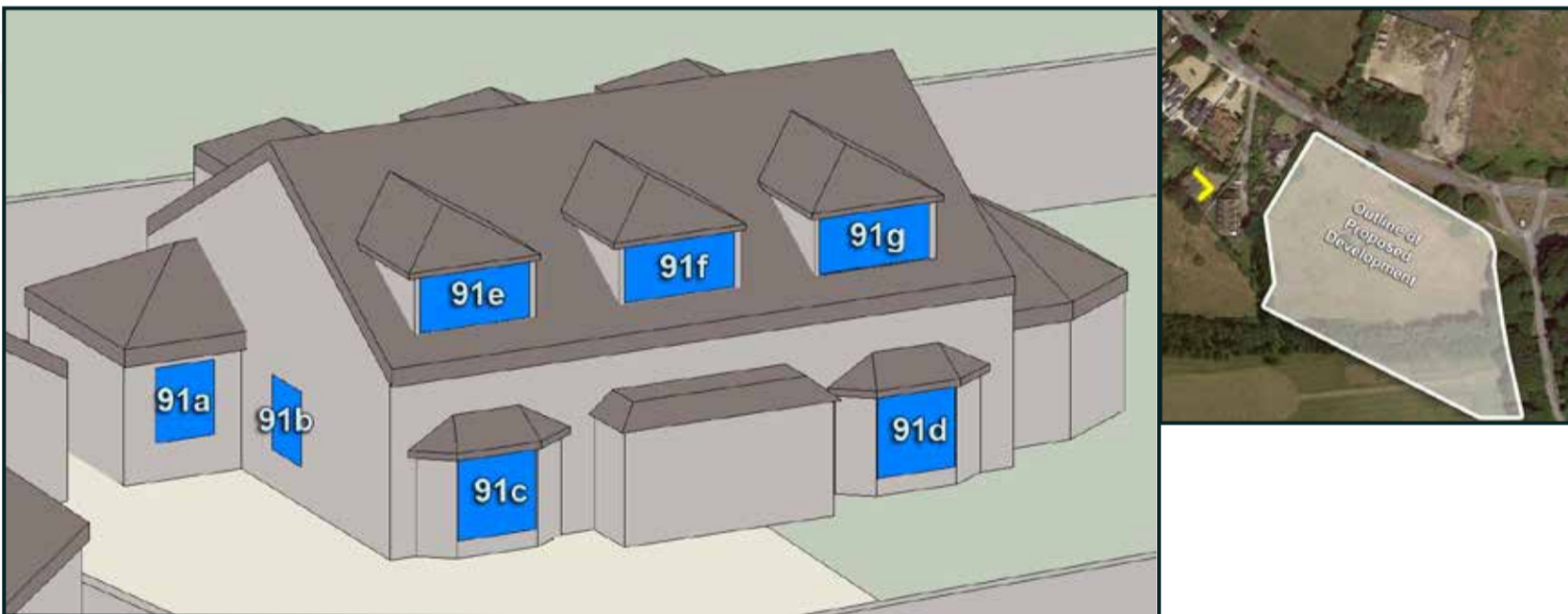


Figure 5.3: Left - Highlighted areas indicate the position of assessed windows on Kincora Lodge, Right - Aerial view of assessed location

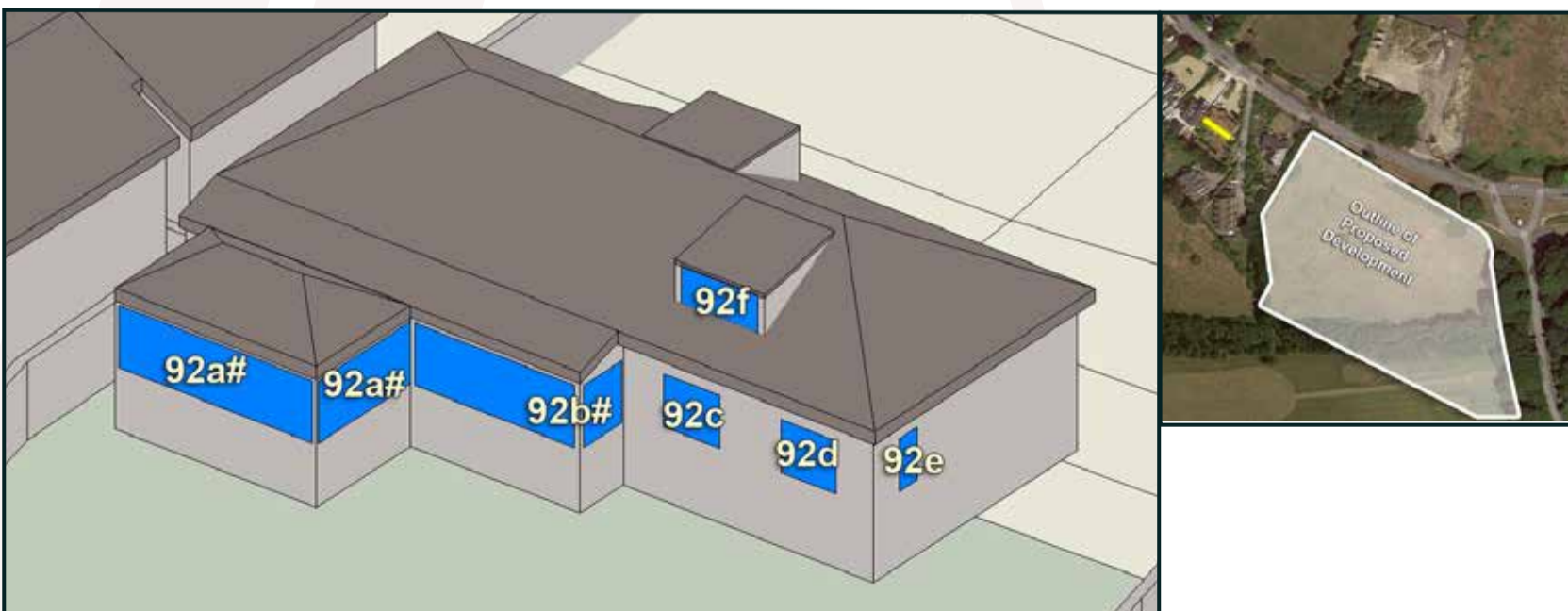


Figure 5.4: Left - Highlighted areas indicate the position of assessed windows on Baltray, Right - Aerial view of assessed location

5.2 Effect on Annual Probable Sunlight Hours

5.2.1 Tig Bhríde & Baltray - Annual APSH

Table No. 5.2: Annual APSH Results Tig Bhríde & Baltray						
Window Number	Baseline Annual APSH	Proposed Annual APSH	Ratio of Proposed APSH to Baseline APSH	Recommended minimum Annual APSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Tig Bhríde						
89a	74.6%	68.7%	0.92	25.0%	BRE Compliant	Imperceptible
89b#	65.9%	57.1%	0.87	25.0%	BRE Compliant	Imperceptible
Baltray						
92a#	63.4%	61.3%	0.97	25.0%	BRE Compliant	Imperceptible
92b#	58.6%	56.6%	0.97	25.0%	BRE Compliant	Imperceptible
92c	66.8%	64.9%	0.97	25.0%	BRE Compliant	Imperceptible
92d	71.1%	69.1%	0.97	25.0%	BRE Compliant	Imperceptible
92e	63.0%	58.4%	0.93	25.0%	BRE Compliant	Imperceptible
92f	75.2%	73.7%	0.98	25.0%	BRE Compliant	Imperceptible

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

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

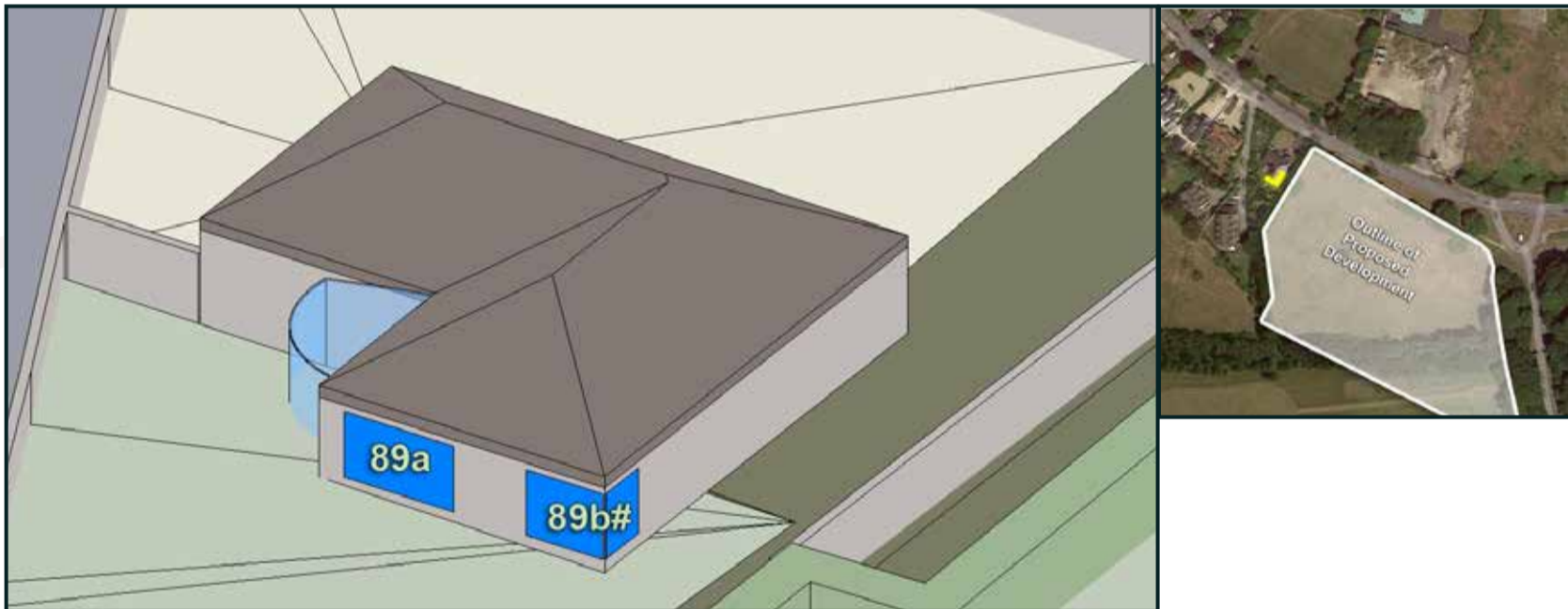


Figure 5.5: Left - Highlighted areas indicate the position of assessed windows on Tig Bhríde, Right - Aerial view of assessed location

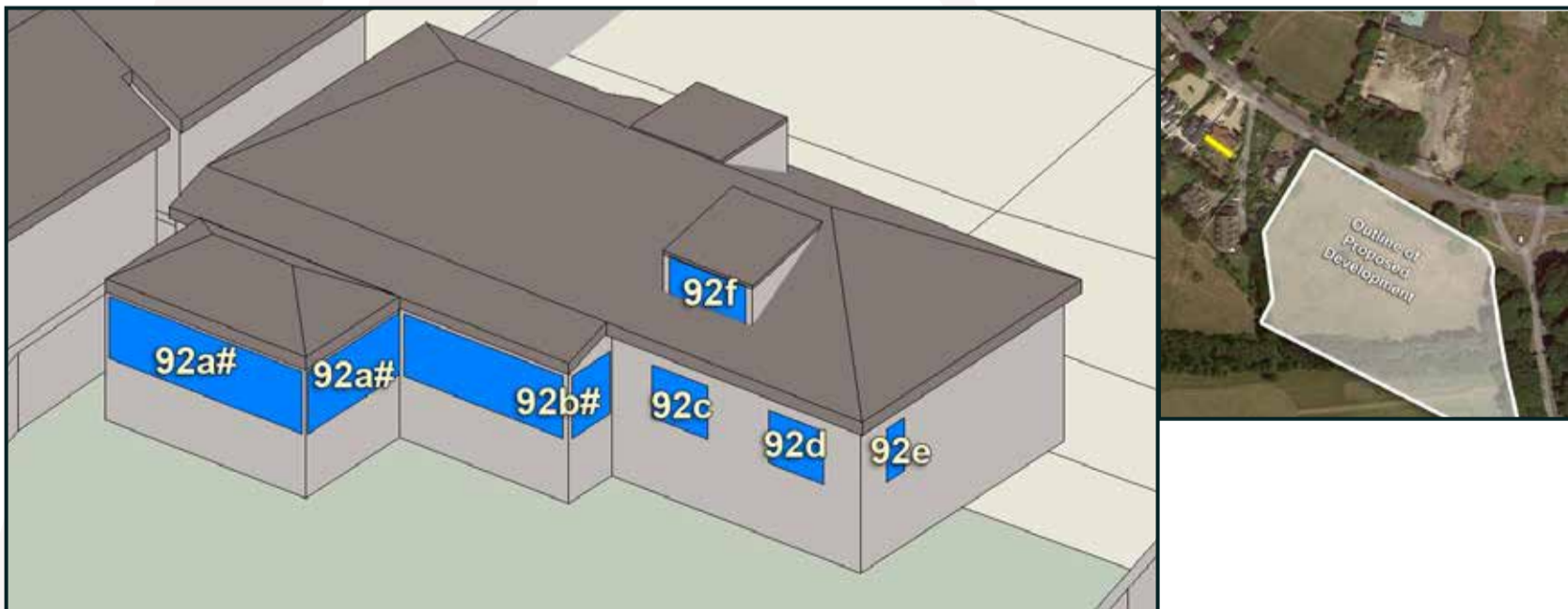


Figure 5.6: Left - Highlighted areas indicate the position of assessed windows on Baltray, Right - Aerial view of assessed location

5.2.2 Tig Bhríde & Baltray - Winter APSH

Table No. 5.3: Winter APSH Results Tig Bhríde & Baltray						
Window Number	Baseline Winter APSH	Proposed Winter APSH	Ratio of Proposed APSH to Baseline APSH	Recommended minimum Winter APSH*	Level of Compliance with BRE Guidelines	Effect of Proposed Development
Tig Bhríde						
89a	78.4%	63.1%	0.80	5.0%	BRE Compliant	Imperceptible
89b#	66.0%	48.9%	0.74	5.0%	BRE Compliant	Imperceptible
Baltray						
92a#	74.7%	69.4%	0.93	5.0%	BRE Compliant	Imperceptible
92b#	71.3%	66.1%	0.93	5.0%	BRE Compliant	Imperceptible
92c	81.2%	76.3%	0.94	5.0%	BRE Compliant	Imperceptible
92d	81.8%	76.5%	0.94	5.0%	BRE Compliant	Imperceptible
92e	67.2%	57.6%	0.86	5.0%	BRE Compliant	Imperceptible
92f	83.9%	79.7%	0.95	5.0%	BRE Compliant	Imperceptible

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

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

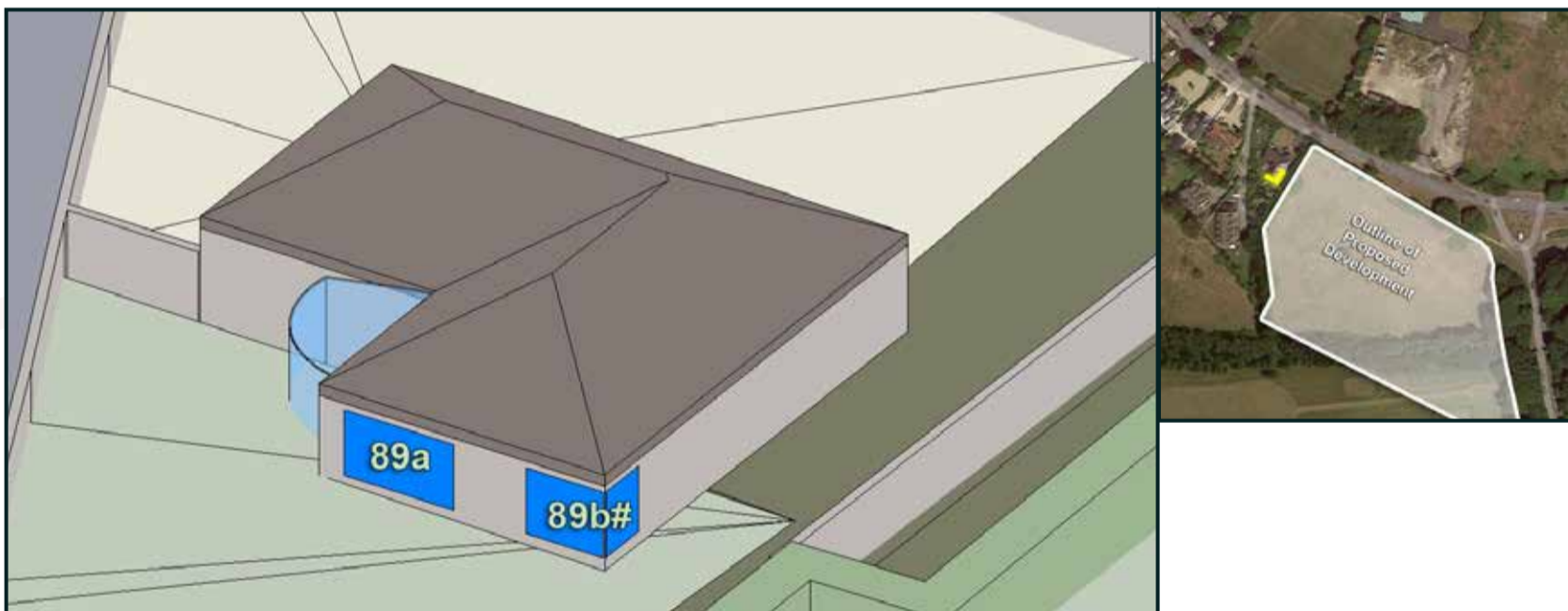


Figure 5.7: Left - Highlighted areas indicate the position of assessed windows on Tig Bhríde, Right - Aerial view of assessed location

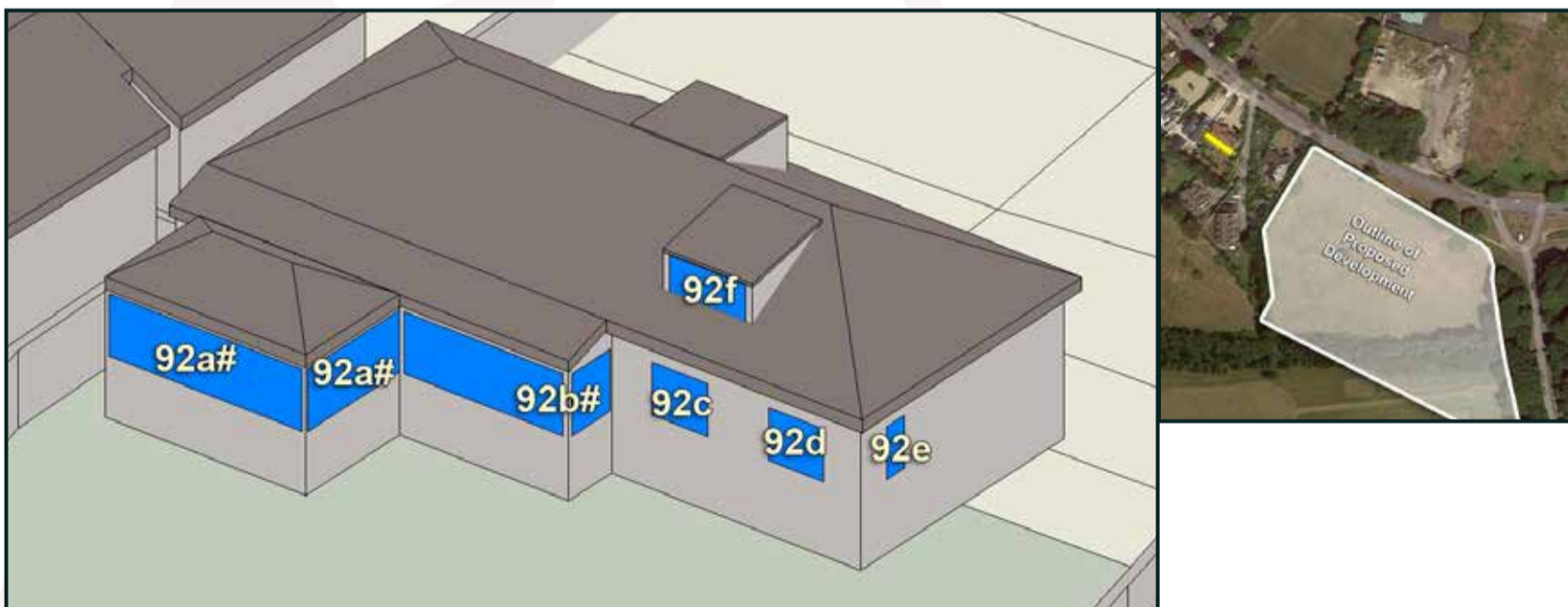


Figure 5.8: Left - Highlighted areas indicate the position of assessed windows on Baltray, Right - Aerial view of assessed location

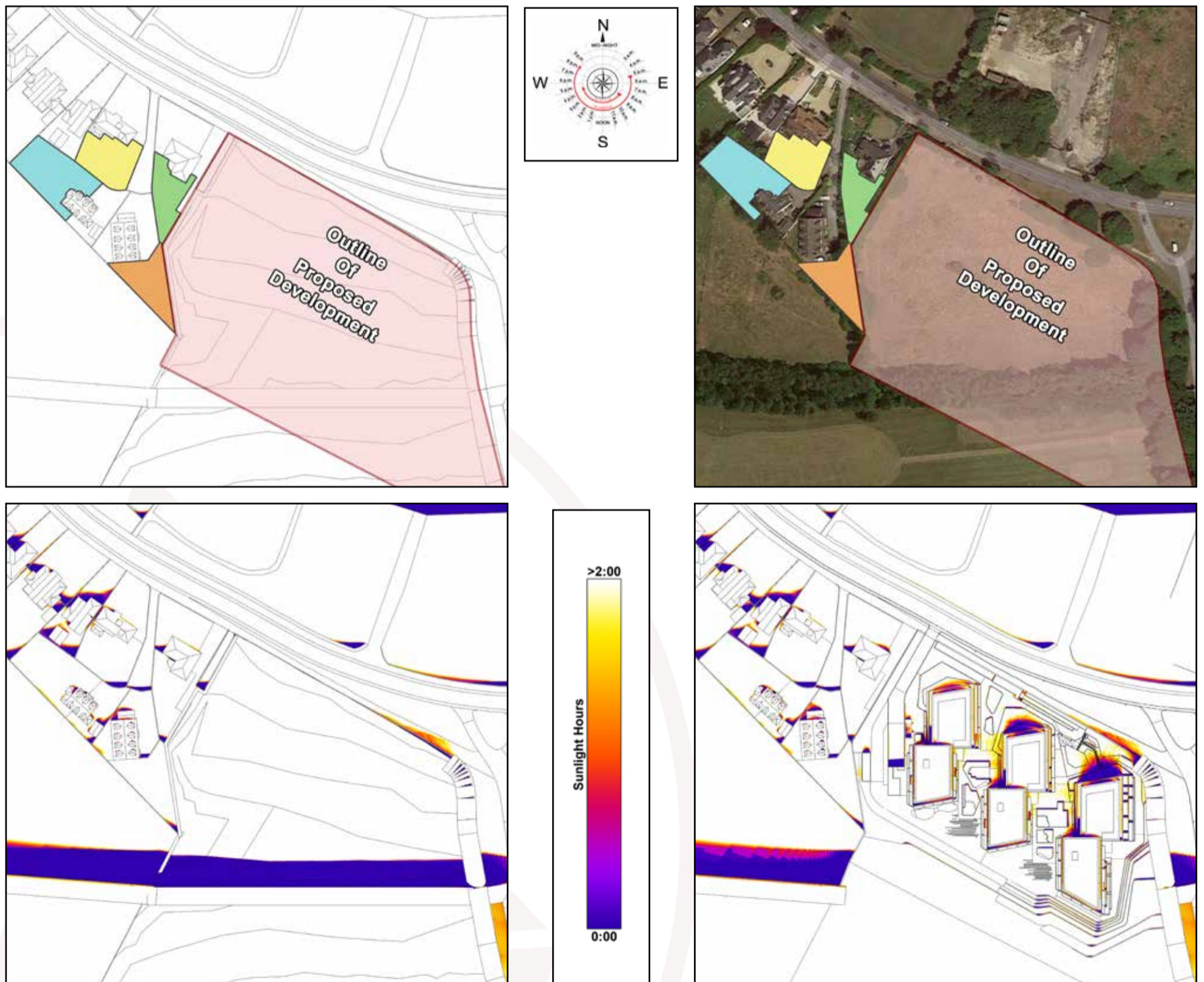
5.3 Effect on Sunlighting in Existing Gardens

5.3.1 Existing Rear Gardens

Table No. 5.4: Sunlighting Results Existing Rear Gardens						
Address	% of Area to Receive Above 2 Hours Sunlight on March 21st (Target >50%)				Level of Compliance with BRE Guidelines	Effect of Proposed Development**
	Baseline	Proposed	Ratio of Proposed to Baseline	Recommended minimum		
Tig Bhríde	98.5%	98.0%	1.00	50.0%	BRE Compliant	Imperceptible
Windwood	98.6%	96.8%	0.98	50.0%	BRE Compliant	Imperceptible
Kincora Lodge	98.1%	97.0%	0.99	50.0%	BRE Compliant	Imperceptible
Baltray	95.9%	95.2%	0.99	50.0%	BRE Compliant	Imperceptible

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

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



Baseline Figure 5.9: False colour plans. White area indicates the area capable of receiving 2 hours of sunlight on March 21st. Proposed

5.4 Sunlight in Proposed Outdoor Amenity Areas

5.4.1 Proposed Amenity Areas

Table No. 5.5: Sunlight in Proposed Outdoor Amenity Areas Results			
Assessed Area	Area Capable of Receiving 2 Hours of Sunlight on March 21st	Recommended minimum	Level of Compliance with BRE Guidelines
Amenity Area 1	89.6%	50.0%	BRE Compliant
Amenity Area 2	92.1%	50.0%	BRE Compliant
Roof Garden A	100.0%	50.0%	BRE Compliant
Roof Garden B	100.0%	50.0%	BRE Compliant
Roof Garden C	100.0%	50.0%	BRE Compliant
Public Amenity Area	81.6%	50.0%	BRE Compliant

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

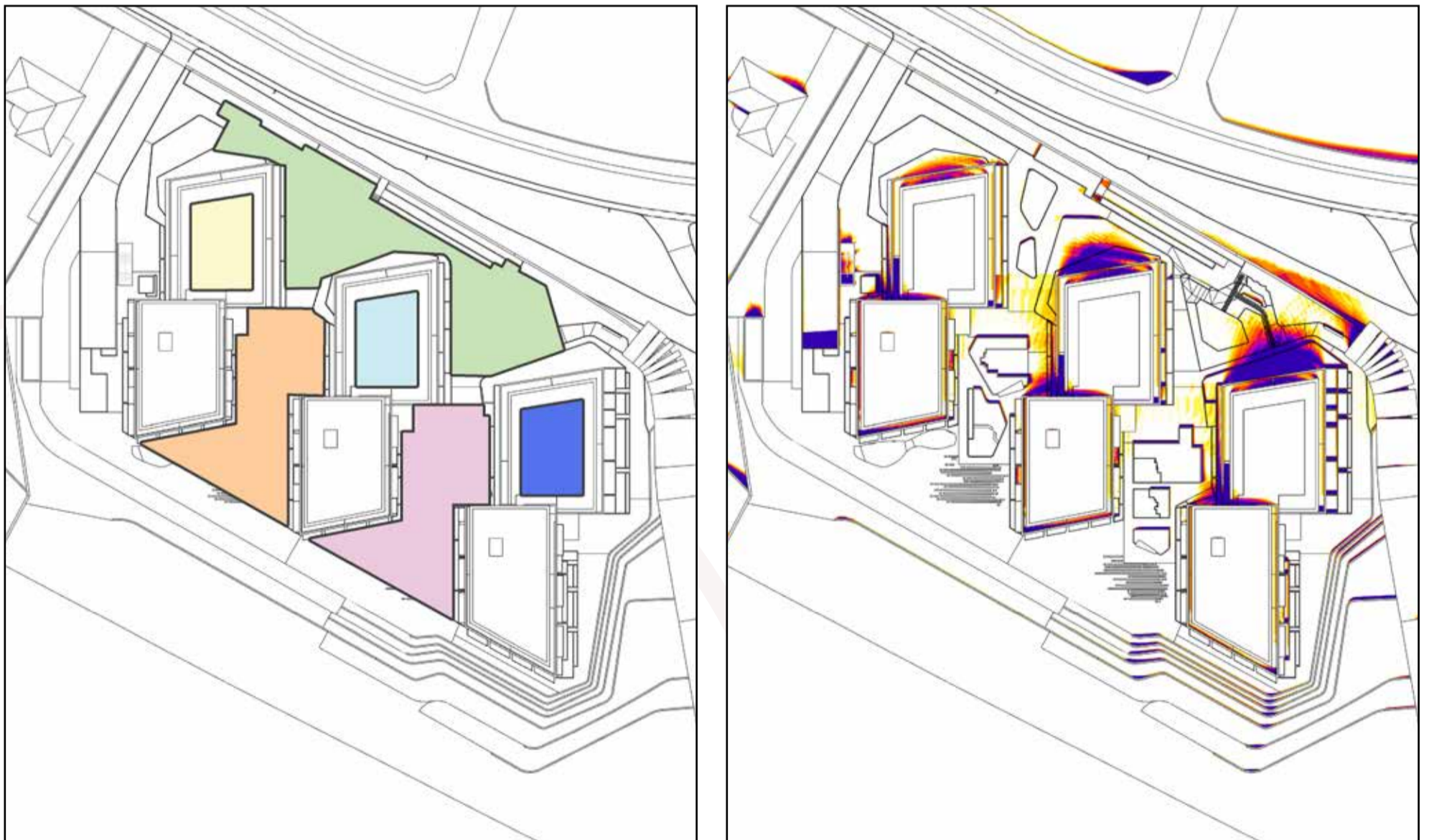
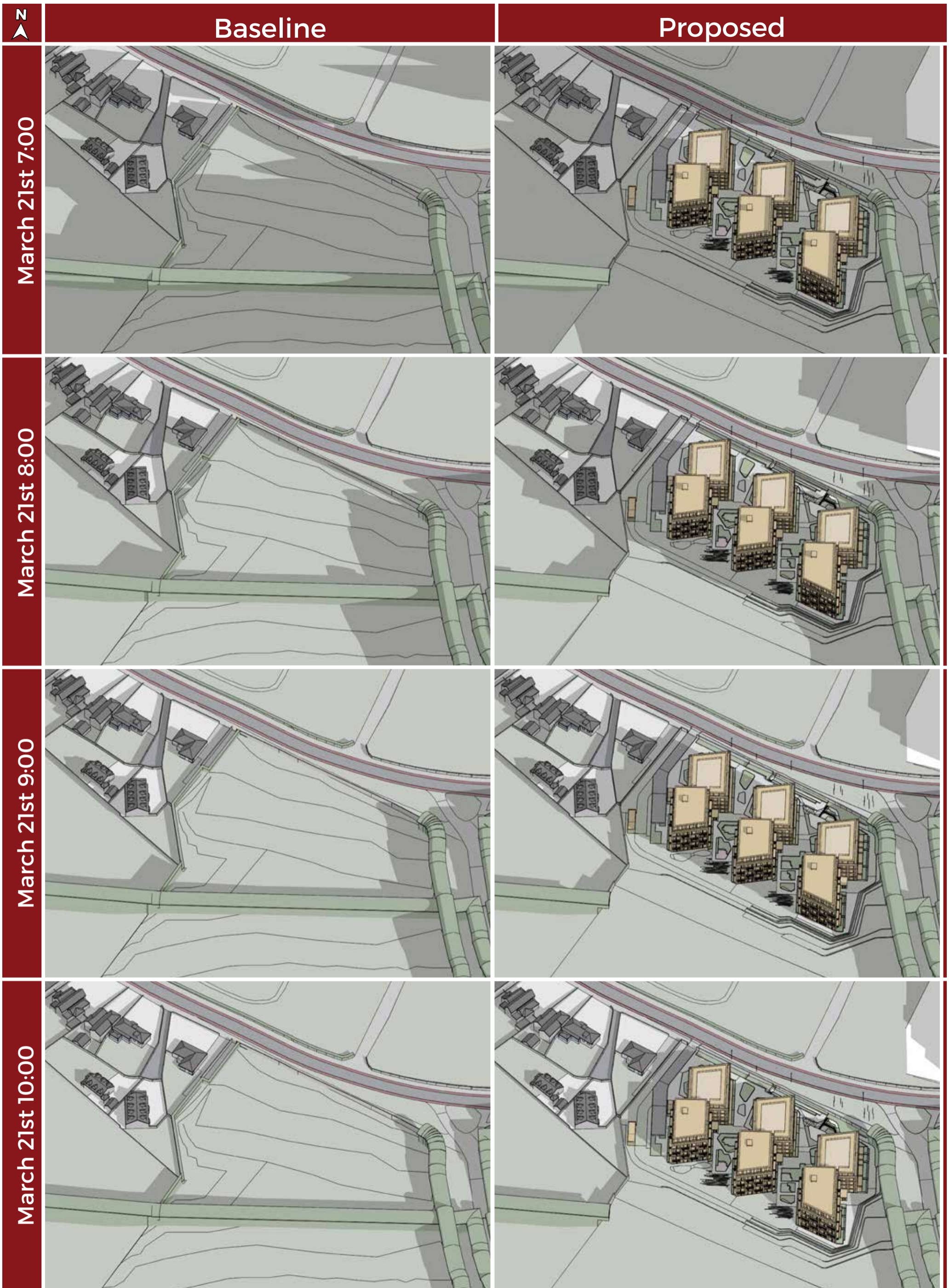


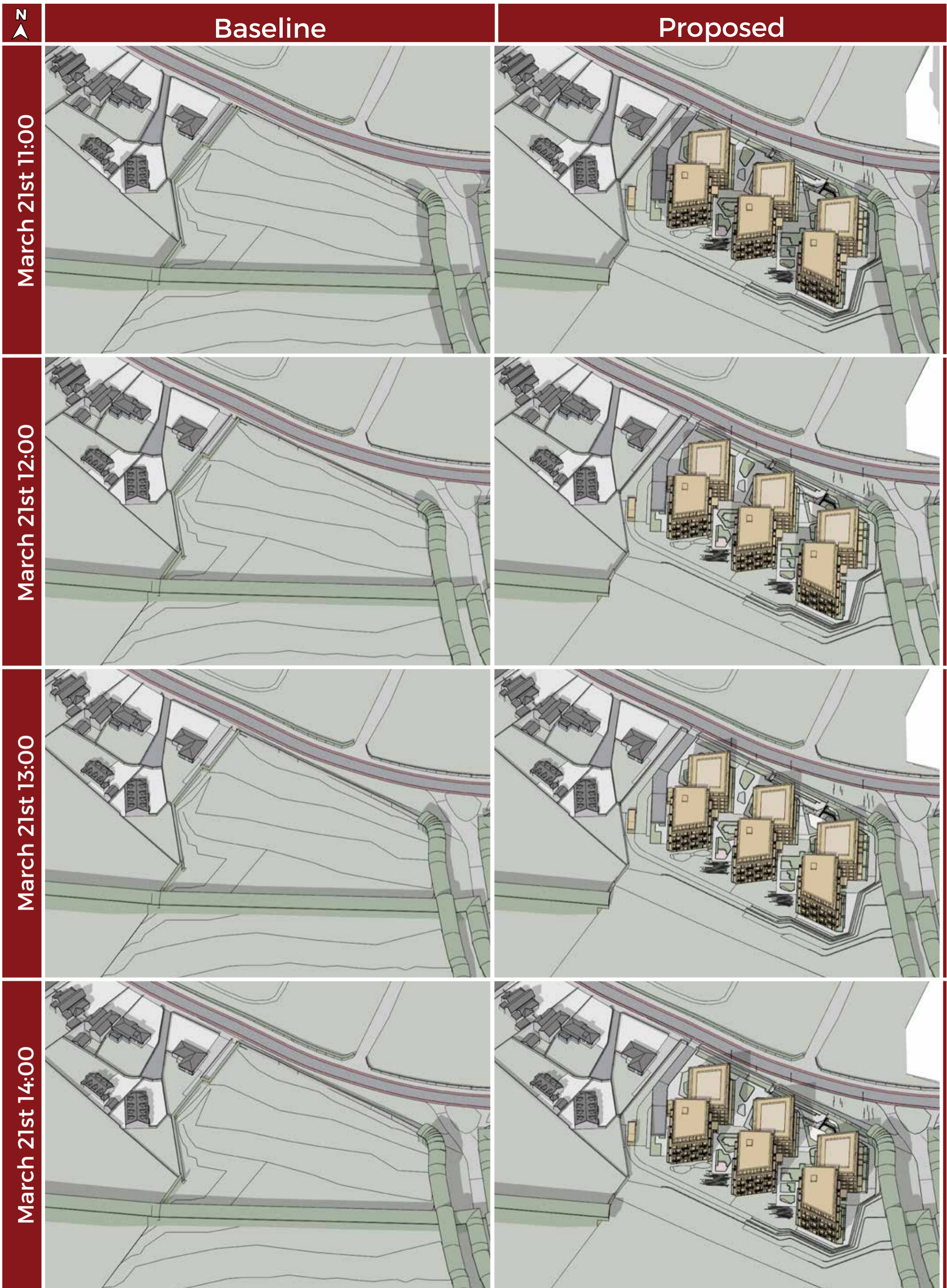
Figure 5.10: Indication of the amenity areas that have been analysed (L) Area capable of receiving 2 hours of sunlight on March 21st shown in white (R).



5.5 Shadow Studies
 5.5.1 Shadow Study 21 March
 March 21st
 Sunrise 6:25 | Sunset 18:40

Project: Proposed SHD, 'Kenelm' at Deer Park,
 Howth, Co. Dublin
 Applicant: GLL PRS Holdco Limited

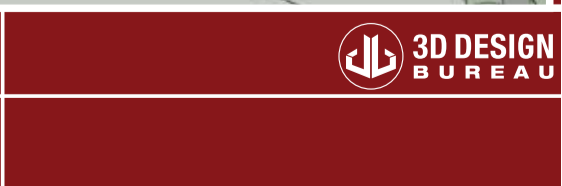


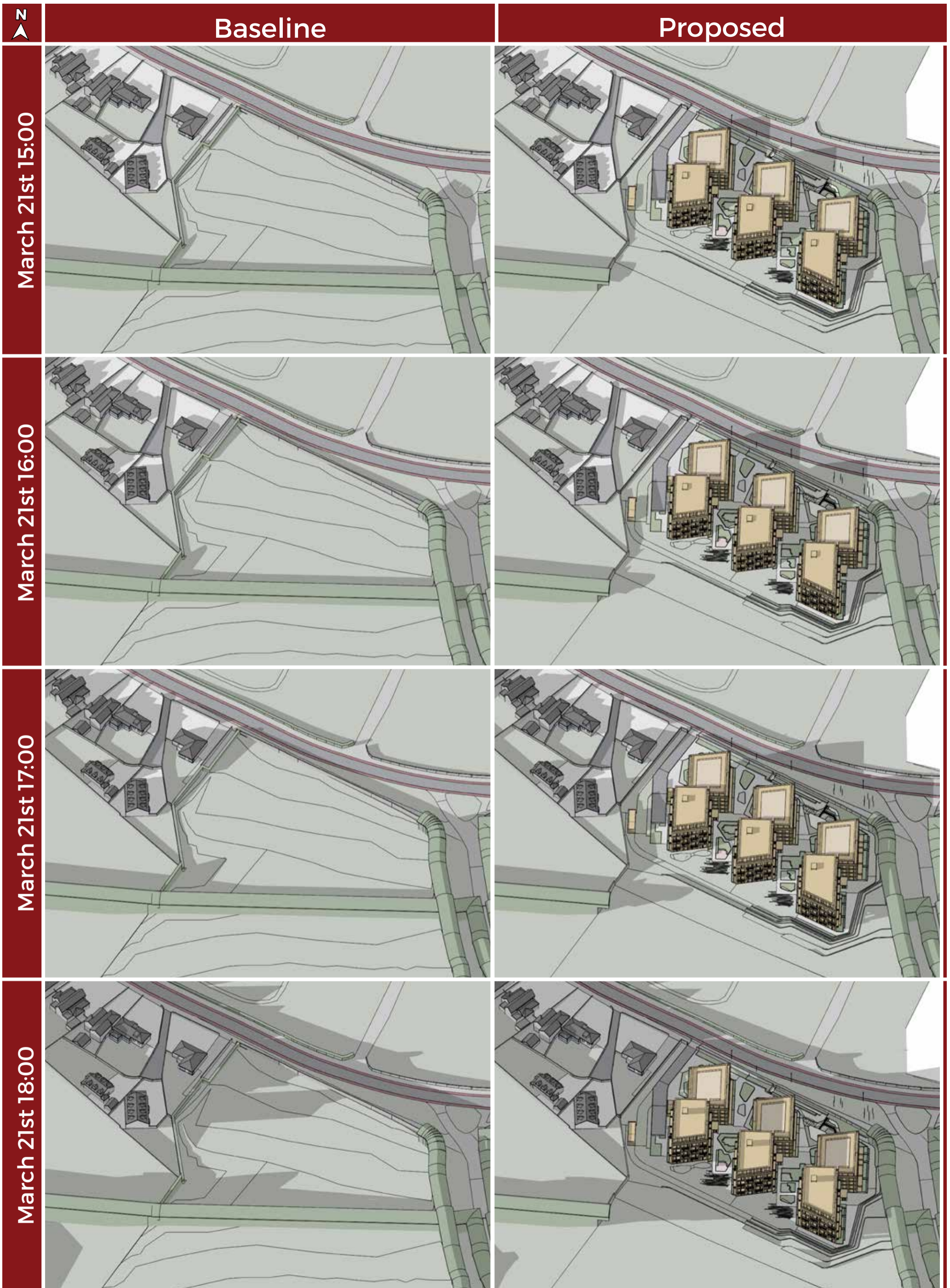


March 21st
Sunrise 6:25 | Sunset 18:40

Project: Proposed SHD, 'Kenelm' at Deer Park,
Howth, Co. Dublin

Applicant: GLL PRS Holdco Limited

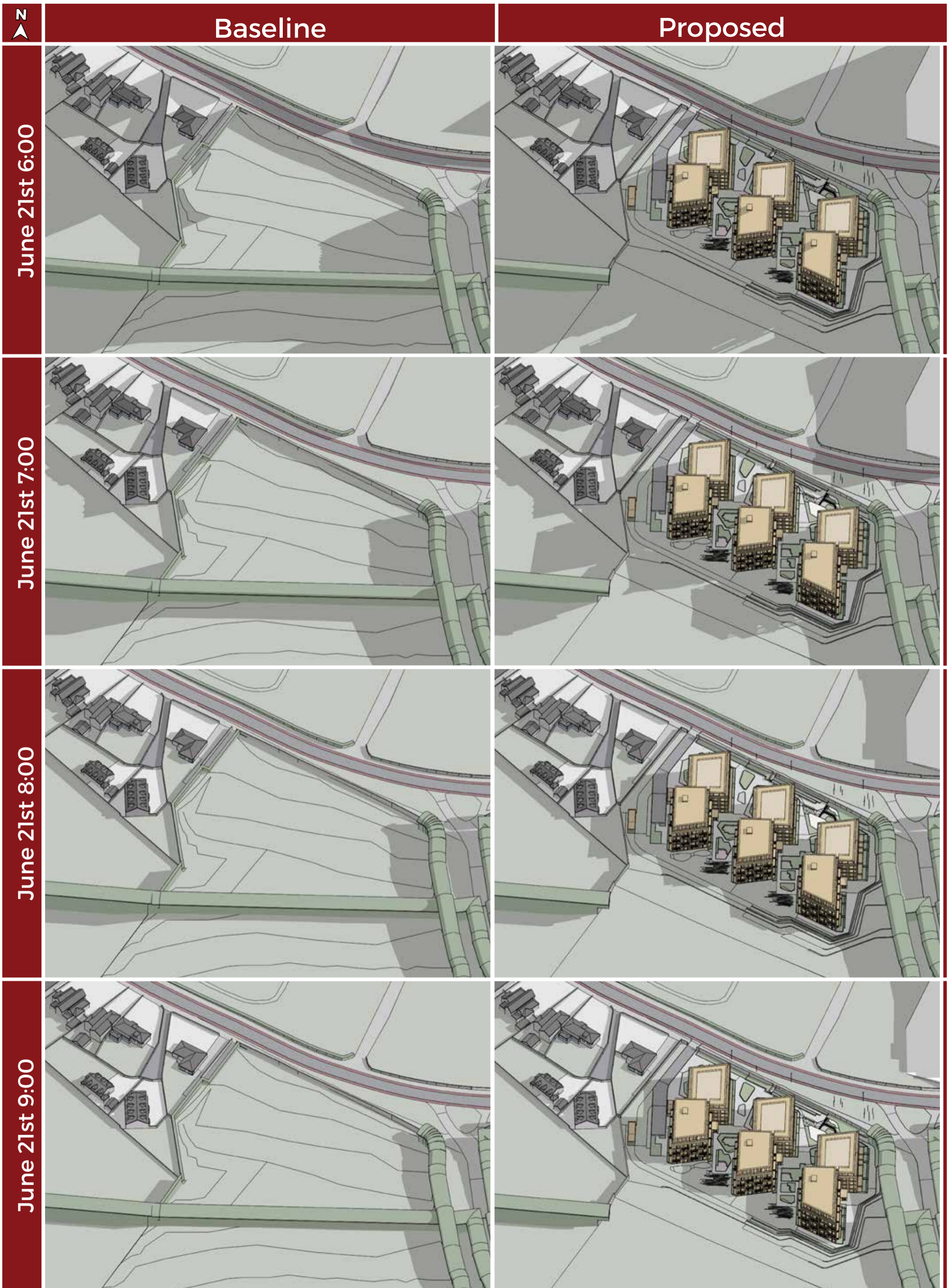




March 21st
Sunrise 6:25 | Sunset 18:40

Project: Proposed SHD, 'Kenelm' at Deer Park, Howth, Co. Dublin
Applicant: GLL PRS Holdco Limited





5.5.2 Shadow Study 21 June

Project: Proposed SHD, 'Kenelm' at Deer Park, Howth, Co. Dublin



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

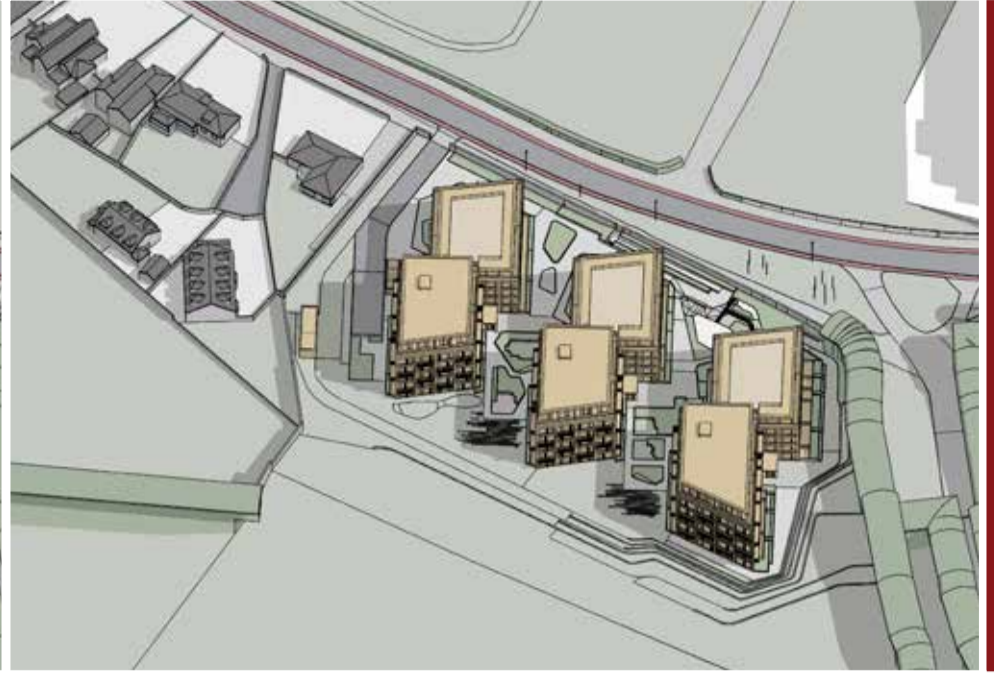
Applicant: GLL PRS Holdco Limited



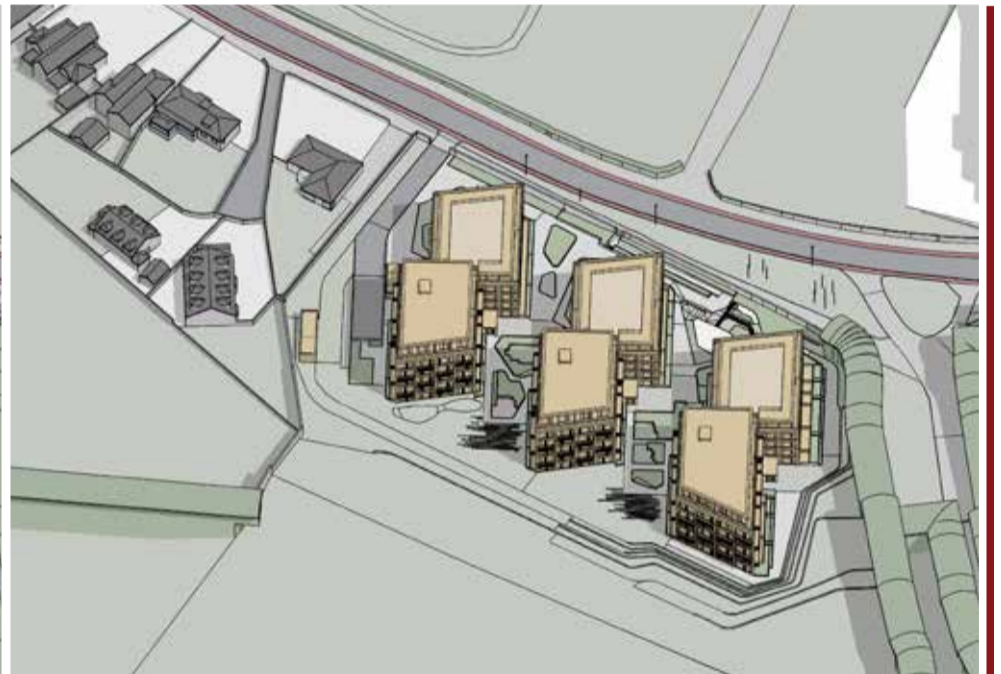
Baseline

Proposed

June 21st 10:00



June 21st 11:00



June 21st 12:00



June 21st 13:00



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

Project: Proposed SHD, 'Kenelm' at Deer Park,
Howth, Co. Dublin

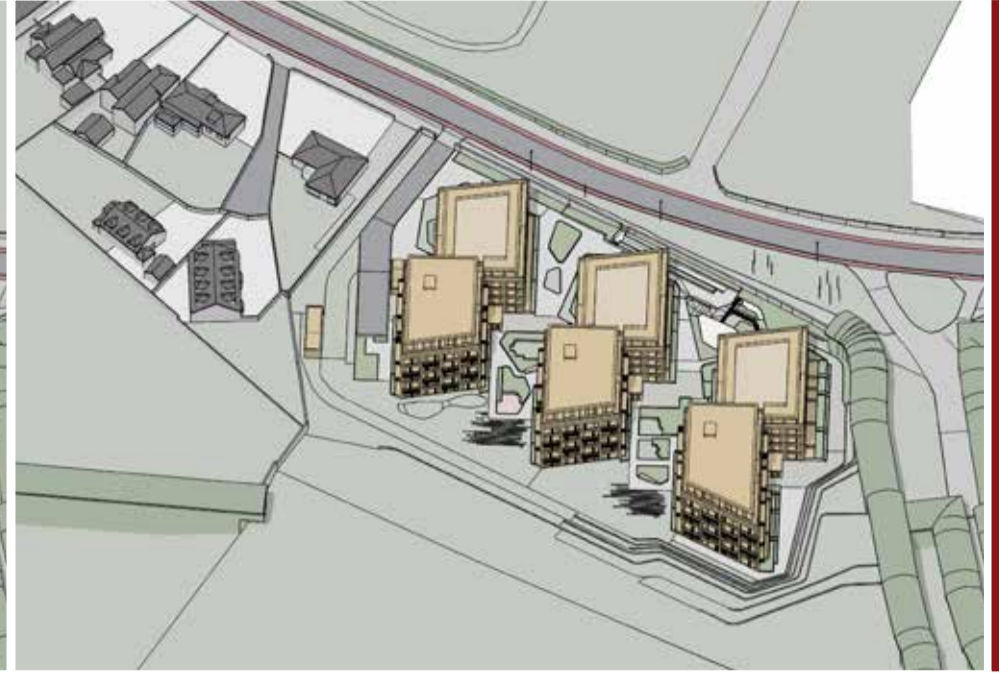
Applicant: GLL PRS Holdco Limited



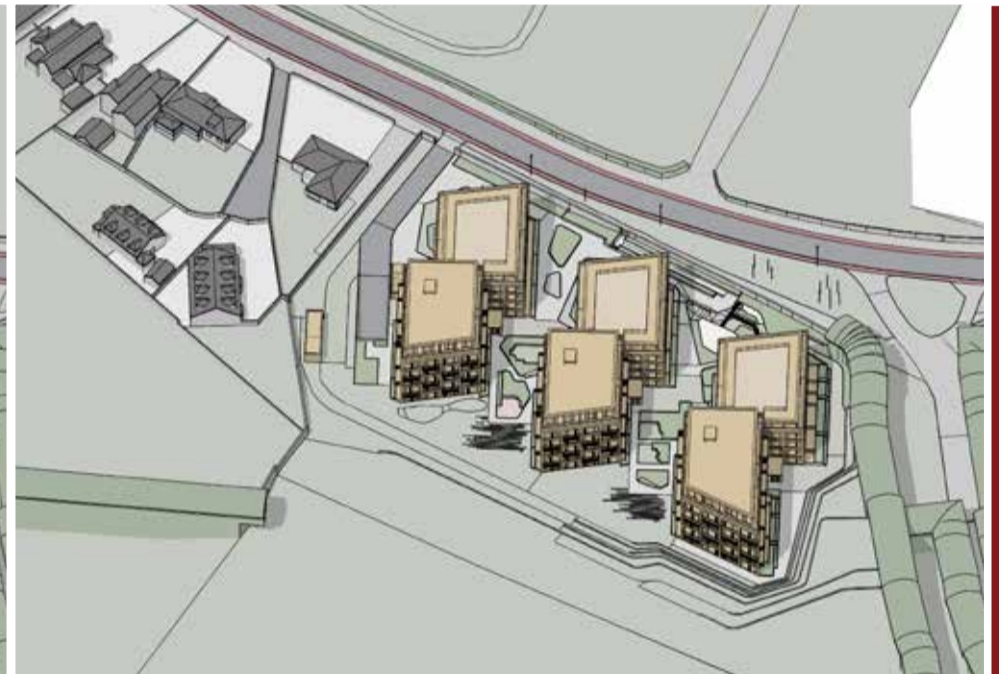
Baseline

Proposed

June 21st 14:00



June 21st 15:00



June 21st 16:00



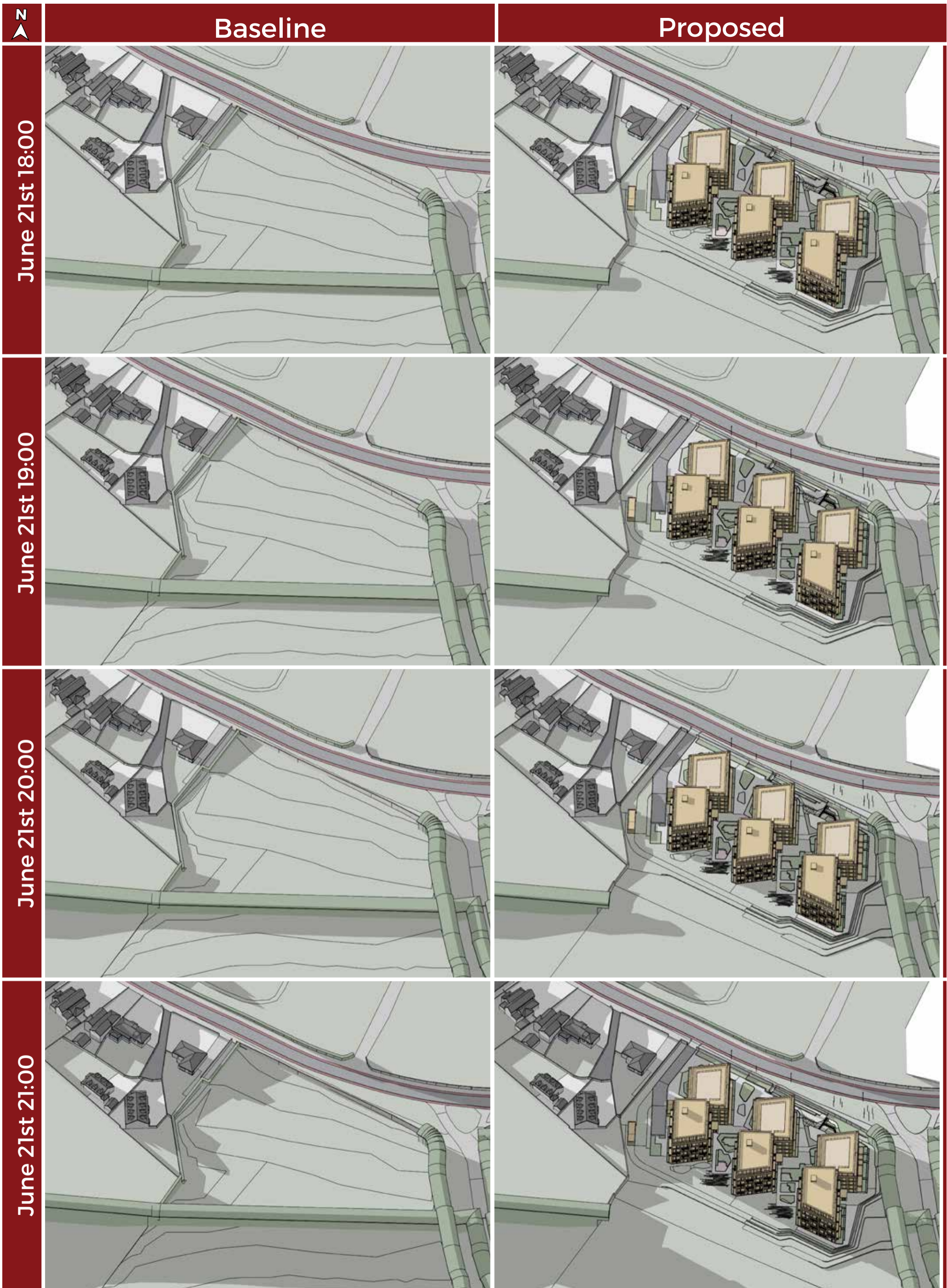
June 21st 17:00



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

Project: Proposed SHD, 'Kenelm' at Deer Park,
Howth, Co. Dublin

Applicant: GLL PRS Holdco Limited

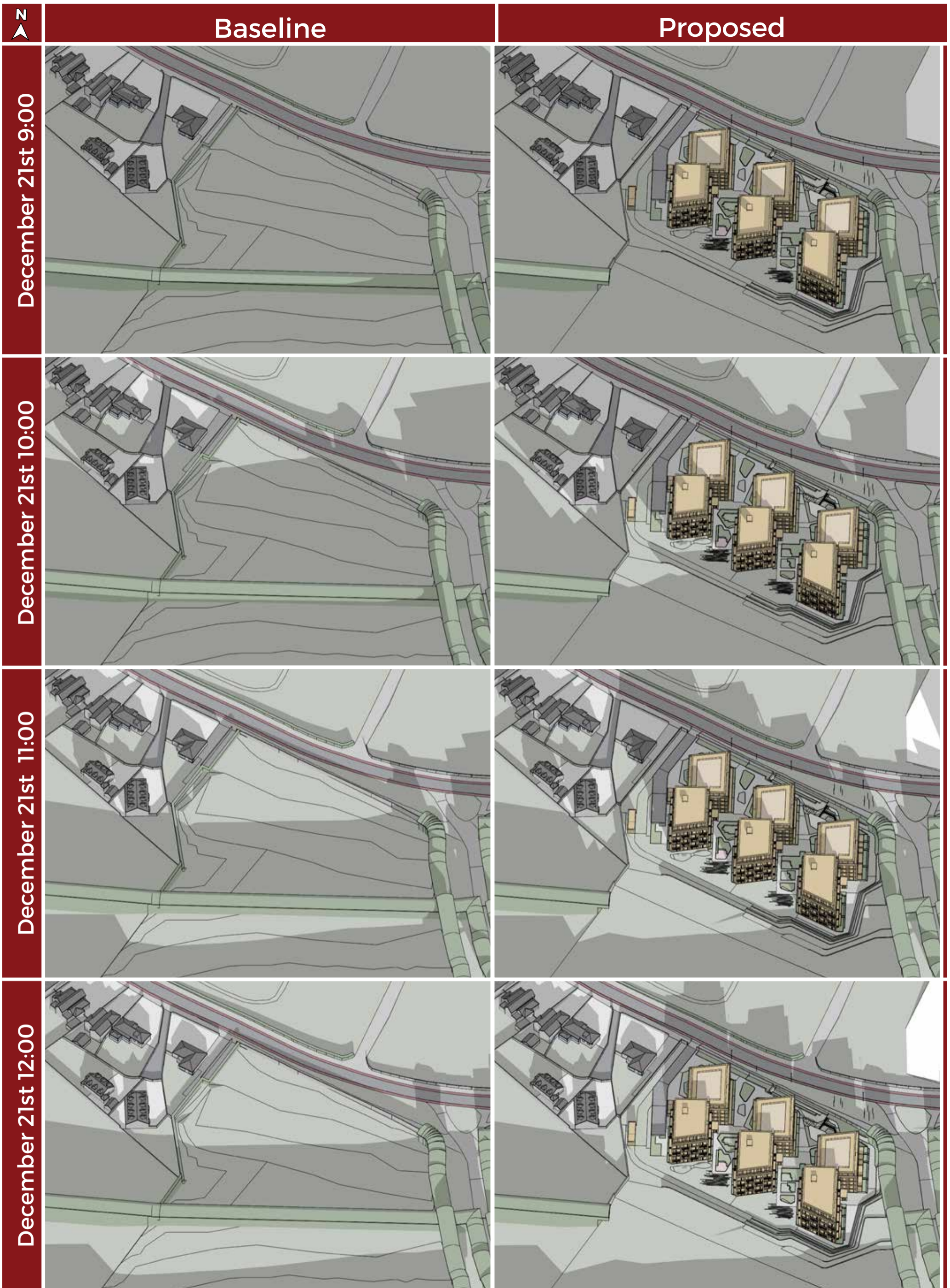


Project: Proposed SHD, 'Kenelm' at Deer Park, Howth, Co. Dublin



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

Applicant: GLL PRS Holdco Limited



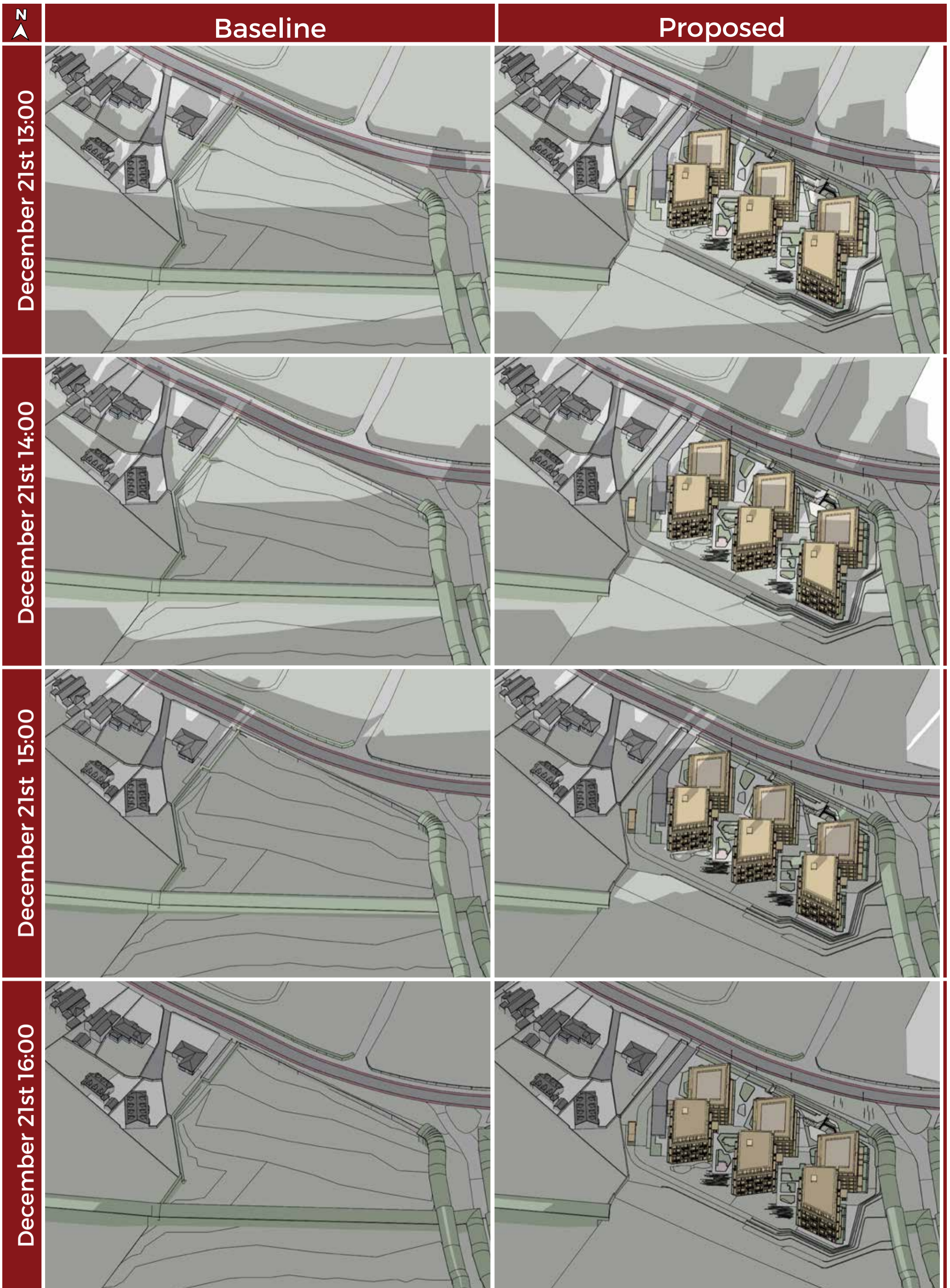
5.5.3 Shadow Study 21 December

Project: Proposed SHD, 'Kenelm' at Deer Park, Howth, Co. Dublin



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

Applicant: GLL PRS Holdco Limited



Project: Proposed SHD, 'Kenelm' at Deer Park, Howth, Co. Dublin



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

Applicant: GLL PRS Holdco Limited

5.6 Average Daylight Factor

5.6.1 Block A - Ground Floor

Table No. 5.6: ADF Results Block A - Ground Floor		
Unit Number	Room Description	ADF
A0-01	LKD	2.32%
A0-01	Bedroom 1	1.05%
A0-01	Bedroom 2	1.69%
A0-02	LKD	2.92%
A0-02	Bedroom	2.10%
A0-03	LKD	7.94%
A0-03	Bedroom 1	2.57%
A0-03	Bedroom 2	7.18%
A0-04	LKD	6.68%
A0-04	Bedroom 1	2.12%
A0-04	Bedroom 2	7.22%
A0-04	Bedroom 3	2.84%
A0-05	LKD	2.37%
A0-05	Bedroom	1.57%
A0-06	LKD	2.48%
A0-06	Bedroom 1	1.46%
A0-06	Bedroom 2	1.17%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.



Figure 5.11: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.7 Block A - Ground Floor

Unit Number	Room Description	ADF
A0-07	LKD	1.08%
A0-07	Living Space [^]	1.63%
A0-07	Bedroom 1	3.29%
A0-07	Bedroom 2	1.99%
A0-08	LKD	4.40%
A0-08	Bedroom 1	1.87%
A0-08	Bedroom 2	3.60%
A0-09	LKD	6.46%
A0-09	Bedroom 1	4.49%
A0-09	Bedroom 2	3.88%
A0-10	LKD	3.58%
A0-10	Bedroom 1	6.84%
A0-10	Bedroom 2	6.01%
Co-Working	Co-Working	7.83%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.

[^] In instances where an LKD has recorded an ADF value lower than 1.5%, an additional study has been carried out, in which the living area has been assessed as a standalone space with the kitchen area omitted from the assessment. This supplementary study does not contribute to the circa compliance rates.



Figure 5.12: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.8 Block B - Ground Floor

Table No. 5.8: ADF Results Block B - Ground Floor

Unit Number	Room Description	ADF
B0-01	LKD	1.24%
B0-01	Living Space [^]	1.89%
B0-01	Bedroom 1	0.44%
B0-01	Bedroom 2	0.71%
B0-02	LKD	1.51%
B0-02	Bedroom	1.02%
B0-03	LKD	6.21%
B0-03	Bedroom 1	1.04%
B0-03	Bedroom 2	6.85%
B0-04	LKD	6.56%
B0-04	Bedroom 1	2.25%
B0-04	Bedroom 2	6.88%
B0-04	Bedroom 3	2.57%
B0-05	LKD	2.46%
B0-05	Bedroom	1.70%
B0-06	LKD	2.61%
B0-06	Bedroom 1	1.45%
B0-06	Bedroom 2	1.34%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.

[^] In instances where an LKD has recorded an ADF value lower than 1.5%, an additional study has been carried out, in which the living area has been assessed as a standalone space with the kitchen area omitted from the assessment. This supplementary study does not contribute to the circa compliance rates.



Figure 5.13: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.9 Block B - Ground Floor

Unit Number	Room Description	ADF
B0-07	LKD	1.15%
B0-07	Living Space [^]	1.75%
B0-07	Bedroom 1	3.44%
B0-07	Bedroom 2	2.15%
B0-08	LKD	4.38%
B0-08	Bedroom 1	1.98%
B0-08	Bedroom 2	3.54%
B0-09	LKD	6.08%
B0-09	Bedroom 1	3.78%
B0-09	Bedroom 2	3.84%
B0-10	LKD	2.82%
B0-10	Bedroom 1	5.52%
B0-10	Bedroom 2	4.50%
Community Room	Community Room	4.63%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.

[^] In instances where an LKD has recorded an ADF value lower than 1.5%, an additional study has been carried out, in which the living area has been assessed as a standalone space with the kitchen area omitted from the assessment. This supplementary study does not contribute to the circa compliance rates.



Figure 5.14: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.10 Block C - Ground Floor

Table No. 5.10: ADF Results Block C - Ground Floor

Unit Number	Room Description	ADF
C0-01	LKD	1.23%
C0-01	Living Space [^]	1.90%
C0-01	Bedroom 1	0.43%
C0-01	Bedroom 2	0.77%
C0-02	LKD	1.57%
C0-02	Bedroom	0.90%
C0-03	LKD	6.06%
C0-03	Bedroom 1	1.06%
C0-03	Bedroom 2	6.57%
C0-04	LKD	5.69%
C0-04	Bedroom 1	1.09%
C0-04	Bedroom 2	6.75%
C0-04	Bedroom 3	1.53%
C0-05	LKD	1.55%
C0-05	Bedroom	1.03%
C0-06	LKD	3.04%
C0-06	Bedroom 1	1.10%
C0-06	Bedroom 2	1.04%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.

[^] In instances where an LKD has recorded an ADF value lower than 1.5%, an additional study has been carried out, in which the living area has been assessed as a standalone space with the kitchen area omitted from the assessment. This supplementary study does not contribute to the circa compliance rates.



Figure 5.15: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.11 Block C - Ground Floor

Unit Number	Room Description	ADF
C0-07	LKD	1.89%
C0-07	Bedroom	3.07%
C0-08	LKD	1.74%
C0-08	Bedroom 1	5.12%
C0-08	Bedroom 2	3.20%
C0-09	LKD	7.44%
C0-09	Bedroom 1	2.72%
C0-09	Bedroom 2	4.86%
C0-10	LKD	6.12%
C0-10	Bedroom 1	5.66%
C0-10	Bedroom 2	6.55%
C0-11	LKD	1.72%
C0-11	Bedroom 1	3.59%
C0-11	Bedroom 2	5.47%
Meeting Room	Meeting Room	5.22%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.



Figure 5.16: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.12 Block A - 1st Floor

Unit Number	Room Description	ADF
A1-01	LKD	2.51%
A1-01	Bedroom 1	1.28%
A1-01	Bedroom 2	1.81%
A1-02	LKD	3.08%
A1-02	Bedroom	2.16%
A1-03	LKD	8.64%
A1-03	Bedroom 1	2.59%
A1-03	Bedroom 2	7.88%
A1-04	LKD	6.91%
A1-04	Bedroom 1	2.51%
A1-04	Bedroom 2	8.06%
A1-04	Bedroom 3	2.87%
A1-05	LKD	2.54%
A1-05	Bedroom	1.84%
A1-06	LKD	4.72%
A1-06	Bedroom 1	1.52%
A1-06	Bedroom 2	1.35%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.



Figure 5.17: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.13 Block A - 1st Floor

Unit Number	Room Description	ADF
A1-07	LKD	1.70%
A1-07	Bedroom 1	3.70%
A1-07	Bedroom 2	2.00%
A1-08	LKD	4.68%
A1-08	Bedroom 1	2.85%
A1-08	Bedroom 2	6.44%
A1-08	Bedroom 3	2.71%
A1-09	LKD	6.79%
A1-09	Bedroom 1	6.95%
A1-09	Bedroom 2	3.69%
A1-10	LKD	5.45%
A1-10	Bedroom 1	6.83%
A1-10	Bedroom 2	4.57%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.



Figure 5.18: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.14 Block B - 1st Floor

Unit Number	Room Description	ADF
B1-01	LKD	1.43%
B1-01	Living Space [^]	2.23%
B1-01	Bedroom 1	0.52%
B1-01	Bedroom 2	0.80%
B1-02	LKD	1.80%
B1-02	Bedroom	1.03%
B1-03	LKD	6.79%
B1-03	Bedroom 1	1.12%
B1-03	Bedroom 2	7.40%
B1-04	LKD	6.68%
B1-04	Bedroom 1	2.41%
B1-04	Bedroom 2	7.60%
B1-04	Bedroom 3	3.18%
B1-05	LKD	2.85%
B1-05	Bedroom	1.88%
B1-06	LKD	4.92%
B1-06	Bedroom 1	1.70%
B1-06	Bedroom 2	1.45%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.

[^] In instances where an LKD has recorded an ADF value lower than 1.5%, an additional study has been carried out, in which the living area has been assessed as a standalone space with the kitchen area omitted from the assessment. This supplementary study does not contribute to the circa compliance rates.



Figure 5.19: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.15 Block B - 1st Floor

Unit Number	Room Description	ADF
B1-07	LKD	1.78%
B1-07	Bedroom 1	3.81%
B1-07	Bedroom 2	2.21%
B1-08	LKD	4.70%
B1-08	Bedroom 1	2.95%
B1-08	Bedroom 2	6.40%
B1-08	Bedroom 3	2.85%
B1-09	LKD	6.42%
B1-09	Bedroom 1	6.12%
B1-09	Bedroom 2	3.66%
B1-10	LKD	3.55%
B1-10	Bedroom 1	5.78%
B1-10	Bedroom 2	3.41%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.



Figure 5.20: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.16 Block C - 1st Floor

Table No. 5.16: ADF Results Block C - 1st Floor

Unit Number	Room Description	ADF
C1-01	LKD	1.45%
C1-01	Living Space [^]	2.23%
C1-01	Bedroom 1	0.51%
C1-01	Bedroom 2	0.89%
C1-02	LKD	1.73%
C1-02	Bedroom	1.04%
C1-03	LKD	7.02%
C1-03	Bedroom 1	1.16%
C1-03	Bedroom 2	7.42%
C1-04	LKD	5.82%
C1-04	Bedroom 1	1.49%
C1-04	Bedroom 2	7.51%
C1-04	Bedroom 3	1.73%
C1-05	LKD	2.01%
C1-05	Bedroom	1.29%
C1-06	LKD	5.83%
C1-06	Bedroom 1	1.38%
C1-06	Bedroom 2	1.25%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.

[^] In instances where an LKD has recorded an ADF value lower than 1.5%, an additional study has been carried out, in which the living area has been assessed as a standalone space with the kitchen area omitted from the assessment. This supplementary study does not contribute to the circa compliance rates.



Figure 5.21: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.17 Block C - 1st Floor

Unit Number	Room Description	ADF
C1-07	LKD	2.56%
C1-07	Bedroom 1	4.89%
C1-07	Bedroom 2	3.48%
C1-08	LKD	2.00%
C1-08	Bedroom 1	4.53%
C1-08	Bedroom 2	5.31%
C1-09	LKD	7.59%
C1-09	Bedroom 1	4.92%
C1-09	Bedroom 2	3.91%
C1-10	LKD	6.95%
C1-10	Bedroom 1	4.30%
C1-10	Bedroom 2	4.96%
C1-11	LKD	3.40%
C1-11	Bedroom 1	5.77%
C1-11	Bedroom 2	4.85%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.



Figure 5.22: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.18 Block A - Upper Floors

Table No. 5.18: ADF Results Block A - Upper Floors		
Unit Number	Room Description	ADF
Unit 07 - 2nd Floor		
A2-07	LKD	1.76%
Unit 07 - 3rd Floor		
A3-07	LKD	2.85%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.



Figure 5.23: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

5.19 Block B - Upper Floors

Table No. 5.19: ADF Results Block B - Upper Floors		
Unit Number	Room Description	ADF
Unit 01 - 2nd Floor		
B2-01	LKD	1.70%
B2-01	Bedroom 1	0.65%
B2-01	Bedroom 2	0.99%
Unit 01 - 3rd Floor		
B3-01	LKD	2.02%
B3-01	Bedroom 1	0.85%
B3-01	Bedroom 2	1.26%
Unit 01 - 4th Floor		
B4-01	LKD	9.34%
B4-01	Bedroom 1	5.09%
B4-01	Bedroom 2	6.26%
Unit 02 - 2nd Floor		
B2-02	LKD	2.17%
Unit 02 - 3rd Floor		
B3-02	LKD	2.48%
Unit 07 - 2nd Floor		
B2-07	LKD	1.82%
Unit 07 - 3rd Floor		
B3-07	LKD	2.89%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.



Figure 5.24: Left - Floor plan of assessed building. Right - Keyplan highlighting the assessed building.

5.20 Block C - Upper Floors

Table No. 5.20: ADF Results Block C - Upper Floors		
Unit Number	Room Description	ADF
Unit 01 - 2nd Floor		
C2-01	LKD	1.77%
C2-01	Bedroom 1	0.66%
C2-01	Bedroom 2	1.06%
Unit 01 - 3rd Floor		
C3-01	LKD	2.04%
C3-01	Bedroom 1	0.85%
C3-01	Bedroom 2	1.31%
Unit 01 - 4th Floor		
C4-01	LKD	9.36%
C4-01	Bedroom 1	5.10%
C4-01	Bedroom 2	6.29%
Unit 07 - 2nd Floor		
C2-07	LKD	2.53%
Unit 07 - 3rd Floor		
C3-07	LKD	3.46%

The following ADF target values should be considered when reading the above table of results: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. For LKDs a target value of 2% or 1.5% can be appropriate. Consideration should be given to the methodology section of this report, specifically "Recommended Minimum ADF" on page 17, when reviewing these results. The circa compliance rates across the entire scheme can be found in section 6.5 on page 50.



Figure 5.25: Left - Floor plan of assessed building, Right - Keyplan highlighting the assessed building.

6.0 Analysis of Results

Results were generated and analysed for the following studies:

- Vertical Sky Component
 - Tig Bhríde Street names
 - Windwood
 - Kincora Lodge
 - Baltray
- Annual Probable Sunlight Hours
 - Tig Bhríde
 - Baltray
- Sunlighting in Existing Gardens
 - Tig Bhríde Street names
 - Windwood
 - Kincora Lodge
 - Baltray
- Sunlighting in Proposed Amenity Spaces
 - 6 No. spaces in the proposed development.
- Average Daylight Factor
 - 207 No. spaces in the proposed development.

6.1 Effect on Vertical Sky Component (VSC)

The impact to VSC has been assessed for 22 No. windows across the four properties that are located to the west of the proposed development as listed above. All of the assessed windows have met the criteria for impact to VSC, as set out in the BRE guidelines. On this basis, the effect to the VSC of these windows can be considered to be imperceptible. This shows that 100% of the assessed windows will experience an imperceptible level of effect.

The complete results for the study on the effect on VSC caused by the proposed development can be found in Section 5.1 on page 19.

6.2 Effect on Annual Probable Sunlight Hours (APSH)

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

The effect on APSH has been assessed for 8 No. south facing windows of the surrounding existing properties across Tig Bhríde and Baltray that face towards the proposed site. All of the assessed windows have met the criteria for impact to APSH as set out in the BRE Guidelines. On this basis the effect to the APSH of these windows can be considered to be imperceptible. 100% of these windows have met the criteria for effect on APSH as set out in the BRE Guidelines.

The results of the study on APSH can be found in Section 5.2 on page 21.

6.3 Effect on Sunlighting in Existing Gardens

This study has assessed the effect the proposed development would have on the level of sunlight on March 21st in the rear gardens of the neighbouring properties that are located along Tig Bhríde, Windwood, Kincora Lodge & Baltray.

All of the assessed gardens have met the criteria for impact to sunlight on March 21st, as set out in the BRE Guidelines of which would experience an *imperceptible* level of effect. 100% of these gardens have met the criteria for effect on sunlighting as set out in the BRE Guidelines.

The complete results of the study on effect on sunlight the neighbouring gardens can be found In Section 5.3 on page 23.

A visual representation of these readings can be seen in the 2 hour false colour plans in Section 5.3 and in the hourly shadow diagrams for March 21st In Section 5.5.1 on page 25.

6.4 Sunlighting in Proposed Outdoor Amenity Areas

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

In total 6 No. spaces have been assessed, 6 No. of which would meet the criteria as set out in the BRE Guidelines. The assessment of the proposed amenity areas has shown that all of the proposed amenity areas will receive a level of sunlight in excess of the recommended levels as per the BRE Guidelines, which indicates that these spaces will appear adequately sunlit throughout the year.

The complete results for the study on sunlighting in the proposed outdoor amenity spaces can be found in Section 5.4 on page 24.

A visual representation of these readings can be seen in the false colour plan in Section 5.4 and in the hourly shadow diagrams for March 21st in Section 5.5.1 on page 25.

6.5 Average Daylight Factor (ADF)

This study has assessed the Average Daylight Factor (ADF) received in all habitable rooms across ground and 1st floors of the proposed development. This has ensured that where unit types differ by way of layout and/or floor to ceiling heights, a clear understanding has been obtained of the performance of the scheme with regard to ADF.

Typically, ADF values increase in rooms located on higher floor levels, due to an improved relationship with adjacent obstructions. Therefore, where a room meets its recommended minimum value, it was assumed that the corresponding room on subsequent floors also meet this target value. No further study was carried out on the upper floors for these units/rooms.

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

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

This proposed development consists of 162 no. units, which makes up approximately 486 no. habitable rooms.

If the appropriate target value for LKDs is considered to be 2%, the ADF value in 172 no. of the 207 no. habitable rooms that have been assessed meet or exceed their target values. The combination of these rooms plus the 279 no. inferred rooms that meet the ADF recommendations, give a compliance rate of circa 93%.

If the appropriate target value for LKDs is considered to be 1.5%, the ADF value in 187 no. of the 207 no. habitable rooms that have been assessed meet or exceed their target values. The combination of these rooms plus the 279 no. inferred rooms that meet the ADF recommendations, give a compliance rate of circa 96%.

Article 6.7 in the planning guidelines on Design Standards for New Apartments as published by the Department of Housing, Planning and Local Government in March 2018 states:

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

The primary reason for the low level of daylight in the lower performing rooms is due to the recessed balconies, which are an integral part of the proposed design. These balconies, whilst they affect the level of daylight in the units, also provide a valuable amenity of private external space as they adjoin and have a functional relationship with the main living space of the apartment as is required in the December 2020 apartment guidelines

Another design feature of the proposed development is the proportionately large windows which will ensure that even the rooms that do not achieve the minimum recommended ADF values will appear adequate well daylight in the areas of the room that are within close proximity to the windows, with the rear of the rooms likely to require supplementary electric lighting for longer parts of the day.

In instances where the LKD has recorded an ADF less than 1.5%, an additional study has been carried out where the living area has been assessed as a standalone space with the kitchen area omitted from the assessment. This was to demonstrate that while the kitchen area of some units may require supplementary electric lighting for periods of the day, all corresponding living spaces would receive adequate levels of daylight.

The communal amenity areas, located on the ground floor of each block will have good levels of daylight as demonstrated in the tables of results. These rooms in conjunction with the well-lit external courtyards and roof gardens are considered to be part of the compensatory design solution for the small number of rooms that do not meet the recommended levels of daylight.

For a scheme of this size and density, the level of ADF compliance could be considered acceptable regardless of which target is deemed to be applicable for the LKDs.

The complete results for the study on ADF can be seen in Section 5.6 on page 34.

7.0 Conclusion

3D Design Bureau (3DDB) were commissioned to carry out a daylight assessment, sunlight assessment and shadow study for the proposed strategic housing development in Howth, Co. Dublin.

This assessment has studied the effect the proposed development would have on the level of daylight and sunlight received by the neighbouring residential properties that are in close proximity to the proposed development whilst also taking into consideration the previously granted development on the Techrete site (ABP PL 06F.306102).

This was an important consideration to take into account in order to demonstrate if the proposed development would have any further adverse negative impact on the surrounding properties when compared to the already permitted scheme. This report demonstrates that proposed development would not result in a perceptible level of reduction to the daylight or sunlight received by the existing properties.

All windows that were assessed would experience an imperceptible level of effect to their VSC, Annual APSH and Winter ASPH. The proposed development would also have an Imperceptible effect on the level of sunlight received by the gardens of the neighbouring properties. Therefore, it is our opinion that the design of the proposed scheme can be considered very favourable for the site in terms of impact as no existing properties will experience any noticeable drop in levels of daylight or sunlight.

During the design phase of the proposed development, 3DDB worked closely with MCA, particularly with regard to the performance of daylight within the proposed units. Specific changes included reconfiguration of some internal layouts, increasing window sizes, and the removal of louvers to improve the level of daylight within the proposed units, whilst maintaining the design integrity of the scheme.

Notwithstanding the handful of rooms that did not meet the recommended level of ADF, the proposed development as a whole can be considered to have access to good levels of daylight.

Finally, in conclusion, future occupants will enjoy access to acceptable levels of daylight within the vast majority of the proposed units and furthermore, they will have access to private and public amenity areas that are capable of receiving excellent levels of sunlight.