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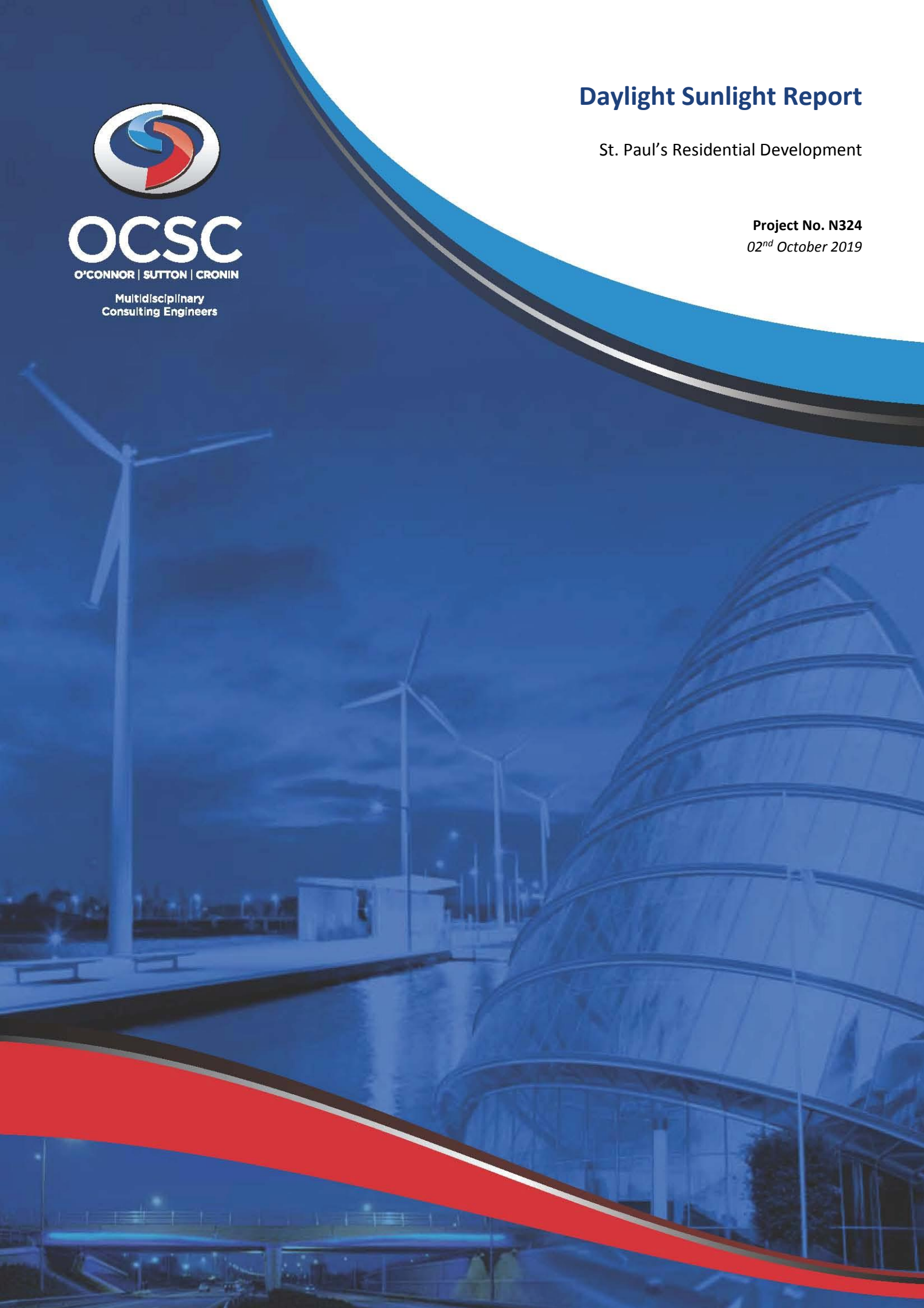
Daylight Sunlight Report

St. Paul's Residential Development

Project No. N324

02nd October 2019



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NOTICE

DOCUMENT CONTROL & HISTORY

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EXECUTIVE SUMMARY

OCSC (M&E) Ltd. have been appointed to carry out a Daylight / Sunlight study for the proposed St. Paul's development.

The aim of the study is to record and analyse the results for the following:

- The expected daylight levels within the living and bedroom areas of selected apartments, to give an indication of the expected daylight levels throughout the proposed development;
- The quality of amenity space, being provided as part of the development, in relation to sunlight;
- Any potential impact the proposed development may have on properties adjacent to the site.

The analysis confirms that across the entire development excellent levels of internal daylight are achieved. The significant majority of apartments not only meet but greatly exceed the recommendations outlined within the BRE guidelines on "Site Layout Planning for Daylight and Sunlight" and British Standard BS 8206.

In terms of sunlight access, excellent levels of sunlight are experienced across the development. The communal amenity space provided to the apartment areas greatly exceeds the BRE guidelines for sunlight on the test day of 21st of March.

The analysis also shows that the proposed building has imperceptible daylight impact to surrounding properties.

All calculations within this report follow the methodology for daylight and sunlight outlined on the British Research Establishments "Site Layout Planning for Daylight and Sunlight: A Good Practice Guide" by PJ Littlefair, 2011 Second Edition.

Daylight Sunlight Report

PROJECT NO. N324

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1. INTRODUCTION

OCSC (M&E) Ltd. have been appointed to carry out a Daylight / Sunlight study for the proposed St. Paul's development in Dublin.

The aim of the study is to record and analyse the results for the following:

- The expected daylight levels within the living and bedroom areas of selected apartments, to give an indication of the expected daylight levels throughout the proposed development;
- The quality of amenity space, being provided as part of the development, in relation to sunlight;
- Any potential impact the proposed development may have on properties adjacent to the site.

The calculation methodology for daylight and sunlight is based on the British Research Establishments "Site Layout Planning for Daylight and Sunlight: A Good Practice Guide" by PJ Littlefair, 2011 Second Edition.

2. SITE DESCRIPTION

The development will consist of the construction of a residential development set out in 9 no. blocks, ranging in height from 5 to 9 storeys accommodating 657 no. apartments, residential tenant amenity spaces and a crèche. At basement level the site will accommodate car parking spaces, bicycle parking, storage, services and plant areas. Landscaping will include extensive communal amenity areas, and a proposed significant area of public open space.

The proposed development also includes for the widening and realignment of an existing vehicular access onto Sybil Hill Road and the demolition of an existing pre-fab building to facilitate the construction of an access road from Sybil Hill Road between Sybil Hill House (a Protected Structure) and St Paul's College incorporating upgraded accesses to Sybil Hill House and St Paul's College and a proposed pedestrian crossing on Sybil Hill Road. The proposed development also includes for the laying of a foul water sewer in Sybil Hill Road and the routing of surface water discharge from the site via St. Anne's Park to the Naniken River and the demolition and reconstruction of existing pedestrian stream crossing in St. Anne's Park with integral surface water discharge to Naniken River.

Figure 1 – Proposed Site Layout Plan

3. PROPOSED BUILDING DESIGN

In order to ensure that daylight levels were maximised for the St. Paul's development, a number of key design strategies were analysed during concept design.

3.1. BUILDING MATERIAL SELECTION

The selection of materials play an important role in ambient daylight levels. The façade of the proposed buildings have been carefully selected to promote a sense of brightness and light. The St. Paul's façades are composed of light brick, render and metal cladding. This will ensure light is reflected throughout the development. The inclusion of greenery areas and amenity spaces will help to improve the sense of light and brightness within the apartments.

Figure 2 - Façade View of Proposed Development

3.2. GLAZING TO WALL RATIO

The primary function of the glazing to wall ratio is to maximize daylight within the space while reducing solar gains within the proposed development. The other advantage in conjunction with appropriate materials is that the more light coloured, reflective materials used externally, the more ambient daylight will be reflected to the surrounding areas. In addition, floor to ceiling heights of a minimum of 2.68m further enhance the opportunity for improved daylight levels. Extensive analysis was undertaken on all building facades to ensure glazing widths were maximized to promote access to daylight. The image below illustrates the glazing to wall ratio of the proposed development.

Figure 3 – Block 1 East Elevation

4. BRE GUIDELINES FOR DAYLIGHT AND SUNLIGHT

The analysis of the development's impact to the surrounding properties once the scheme has been implemented has been based on the Building Research Establishment (BRE) guidelines on "Site Layout Planning for Daylight and Sunlight. A Guide to Good Practice (Building Research Establishment Report, 2011)."

These guidelines provide the criteria and methodology for calculations pertaining to daylight and sunlight, and is the primary reference for this matter. The guide gives simple rules for analysing sites where the geometry of the surroundings is straightforward, supplementing them with graphical methods for complex sites.

However, it is important to note that the performance targets which are included should be used with a degree of flexibility as per the extract below from the BRE Guide:

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

The difficulty in achieving the result set out by the BRE guidance in a city centre location is also recognised within planning guidance which has been published by the Irish Government. On page 43 of the Urban Design Manual 2009 the following advice is provided:

"Where design standards are to be used (such as the UK document Site Layout Planning for Daylight and Sunlight, published by the BRE), it should be acknowledged that for higher density proposals in urban areas it may not be possible to achieve the specified criteria, and standards may need to be adjusted locally to recognise the need for appropriate heights or street widths."

5. DAYLIGHT LEVELS WITHIN THE PROPOSED DEVELOPMENT

5.1. ASSESSMENT CRITERIA – INTERNAL DAYLIGHT

The method of calculation selected for the internal daylight analysis for this development is the Average Daylight Factor (ADF). This is the most detailed and thus most accurate method which considers not only the amount of sky visible from the vertical face of the window, but also the window size, room size and room use.

Architectural plans and elevations provided by OMP Architects formed the basis for the internal daylight assessment.

In order to quantify the quality of daylight within a space as per BRE Guidelines, the British standards BS8206 sets out minimum daylight factors to be achieved in new build residential units.

Table 2 **Minimum average daylight factor**

Room type	Minimum average daylight factor %
Bedrooms	1
Living rooms	1.5

Figure 4 - BS 8206 – Table 2

In order to analyse the ADF within the proposed residential development, simulations have been completed within the IES VE Software package. A detailed model of the development has been constructed using the software.

5.2. DAYLIGHT RESULTS – INTERNAL DAYLIGHT APARTMENTS

This section outlines the apartment units that were selected for assessment of internal daylight levels for the proposed St. Paul's development. The results of the analysis are outlined in the accompanying tables.

In summary, the vast majority of units not only meet but in the majority of cases exceed the Average Daylight Factor criteria as outlined within the BRE Guidelines. Of the 1802 rooms that comprise the development, only 42 fall marginally short of the BRE requirements, therefore a 97% compliance rate is achieved across the development.

Total No. of Rooms	No. Rooms Compliant	No. Rooms Not Compliant	% of compliance
1802	1760	42	97%

Table 1 – Percentage of Compliance

In all cases generous floor to ceiling heights have been designed into the project with glazing areas being maximised to amplify the quality of daylight received. Careful consideration has been given to room layout design attributing store rooms and circulation areas to the back of rooms and living spaces to the front where the highest level of daylight is experienced.

In line with standard industry practice, units presented at the lower levels across all blocks have been selected as 'worst case' for analysis. The theory being that as floor level height increases so too does access to daylight. The units selected for analysis are considered representative of the units across the site and therefore results are indicative of daylight levels to be expected across the entire development.

In order to calculate the percentage of compliance across the entire development, the criteria outlined below has been followed and is based on the extensive results obtained as part of the analysis (refer to the results in Table 2 to Table 14).

Similar rooms on the same façade will have similar Average Daylight Factor results. As an example, the image below identifies rooms that will achieve similar ADF results highlighted with the same colours. Based on this methodology, OCSC have analysed a number of rooms based on each colour type.

Figure 5 - Block 1 Level 00 – ADF Calculation Methodology

As an example for bedrooms, yellow rooms present similar results as they all have the same façade width, amount of glazing and orientation, without high buildings in front that could block daylight. Therefore if 1.0% ADF is experienced in one of these rooms, the remaining rooms will also achieve this result. The same criteria is applied to the purple rooms, with the difference being Block 3 is located in front. Orange rooms have better access to daylight due to the wider façade while green rooms allow more daylight penetration due to their position and have better daylight access. Where rooms at lower levels have shown compliance with the ADF, analysis has not been required to the floors above on the basis that the upper levels will therefore comply.

The same philosophy applies to the living rooms, as an example the rooms highlighted in blue will achieve similar results, as will the rooms highlighted in aqua.

An Area of Interest has been defined to the rooms tested, considered the functional area of the room – the extent of the Area of Interest can be seen in Image 5 above.

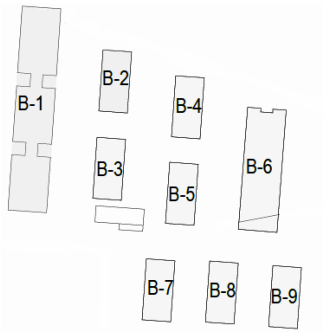

Figure 6 – Apartment Block Layout Plan

The following images illustrate the rooms tested and their subsequent results are shown in the accompanying tables.

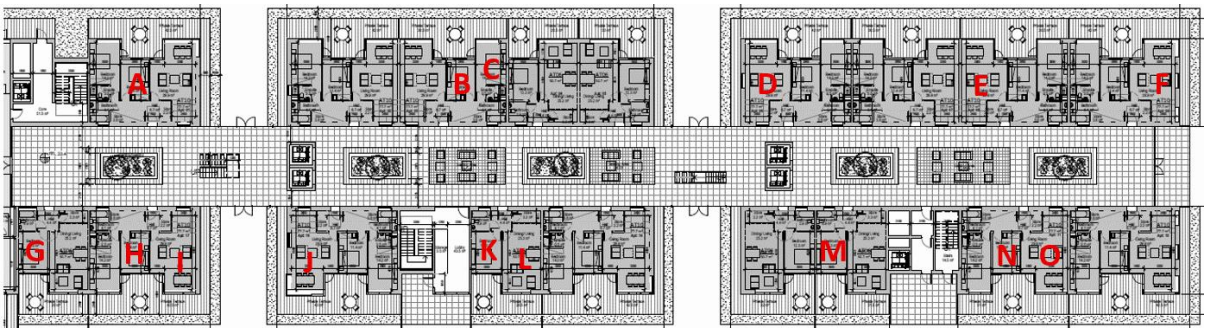

Figure 7 - Block 1 Level 00 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Bedroom	1.0	1.5	Y
B	Bedroom	1.0	1.7	Y
C	Bedroom	1.0	3.5	Y
D	Living Room	1.5	3.2	Y
E	Living Room	1.5	3.1	Y
F	Living Room	1.5	5.8	Y
G	Bedroom	1.0	0.8	N
H	Bedroom	1.0	0.8	N
I	Living Room	1.5	1.8	Y
J	Living Room	1.5	3.0	Y
K	Bedroom	1.0	0.8	N
L	Living Room	1.5	2.3	Y
M	Bedroom	1.0	1.0	Y
N	Bedroom	1.0	1.4	Y
O	Living Room	1.5	2.1	Y

Table 2 - Block 1 Level 00 - Average Daylight Factor Results

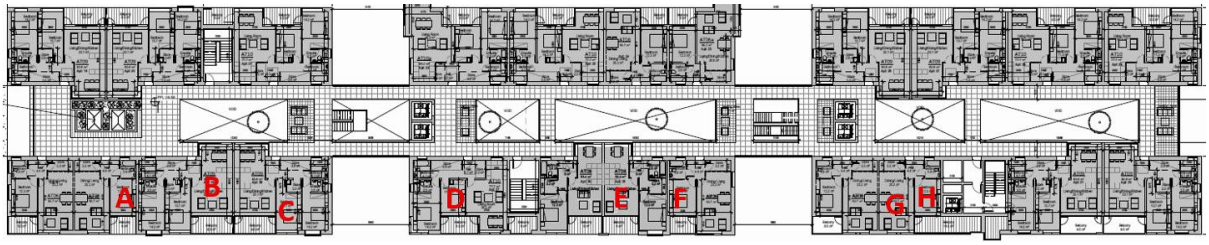

Figure 8 - Block 1 Level 01 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Bedroom	1.0	1.0	Y
B	Living Room	1.5	1.3	N
C	Bedroom	1.0	3.2	Y
D	Bedroom	1.0	1.1	Y
E	Living Room	1.5	1.0	N
F	Bedroom	1.0	1.0	Y
G	Living Room	1.5	2.9	Y
H	Bedroom	1.0	1.1	Y

Table 3 - Block 1 Level 01 - Average Daylight Factor Results

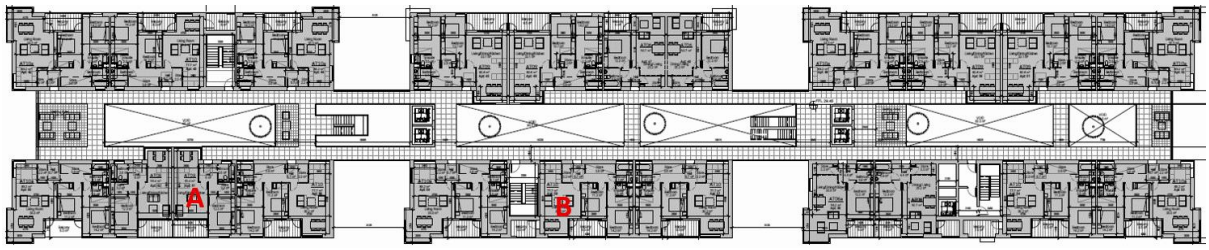

Figure 9 - Block 1 Level 02 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Living Room	1.5	1.7	Y
B	Living Room	1.5	4.6	Y

Table 4 - Block 1 Level 02 - Average Daylight Factor Results

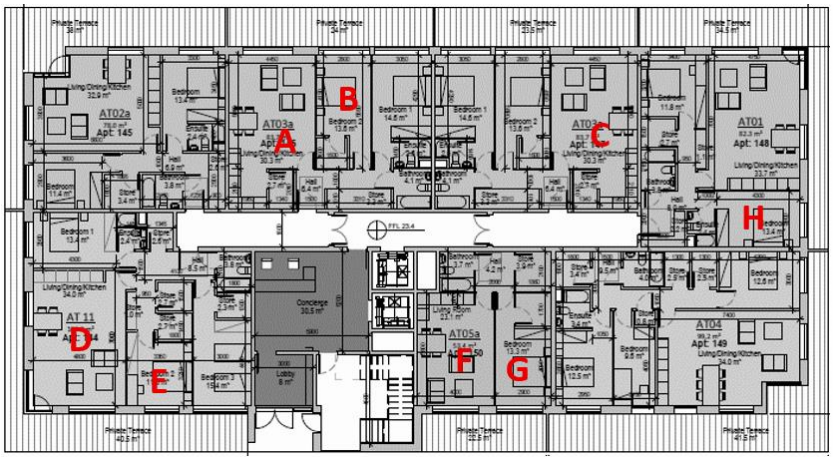

Figure 10 - Block 2 Level 00 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Living Room	1.5	2.5	Y
B	Bedroom	1.0	3.2	Y
C	Living Room	1.5	1.7	Y
D	Living Room	1.5	5.3	Y
E	Bedroom	1.0	4.0	Y
F	Living Room	1.5	2.5	Y
G	Bedroom	1.0	4.2	Y
H	Bedroom	1.0	2.5	Y

Table 5 - Block 2 Level 00 - Average Daylight Factor Results

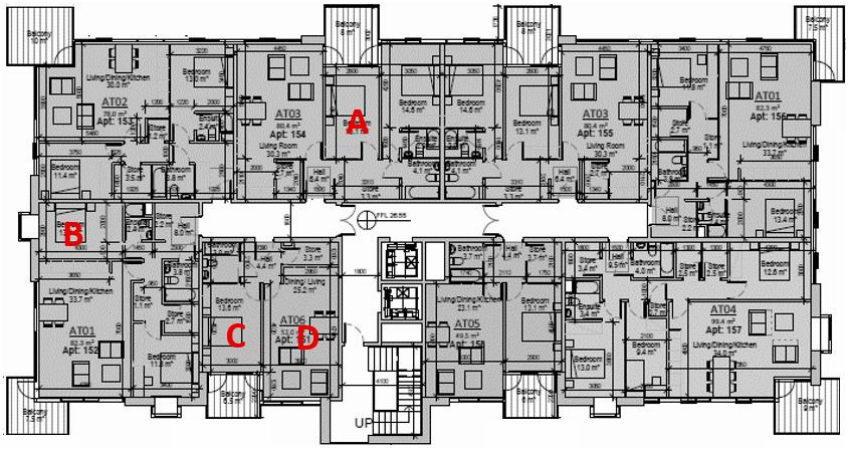

Figure 11 - Block 2 Level 01 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Bedroom	1.0	0.8	N
B	Bedroom	1.0	2.7	Y
C	Bedroom	1.0	0.8	N
D	Living Room	1.5	2.2	Y

Table 6 - Block 2 Level 01 - Average Daylight Factor Results

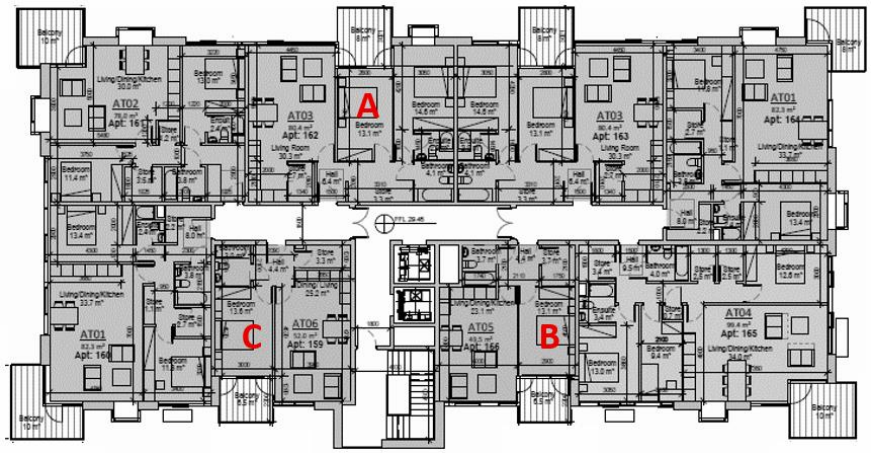

Figure 12 - Block 2 Level 02 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Bedroom	1.0	1.0	Y
B	Bedroom	1.0	1.0	Y
C	Bedroom	1.0	1.0	Y

Table 7 - Block 2 Level 02 - Average Daylight Factor Results

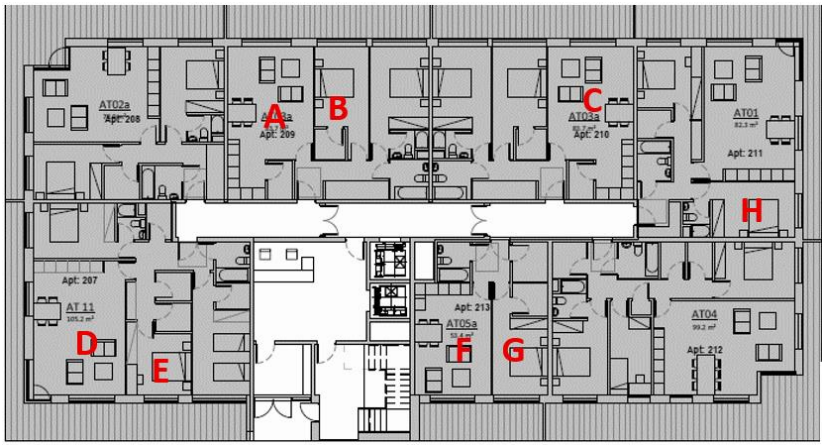

Figure 13 - Block 3 Level 00 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Living Room	1.5	2.6	Y
B	Bedroom	1.0	3.3	Y
C	Living Room	1.5	1.7	Y
D	Living Room	1.5	5.3	Y
E	Bedroom	1.0	3.9	Y
F	Living Room	1.5	2.6	Y
G	Bedroom	1.0	4.2	Y
H	Bedroom	1.0	2.6	Y

Table 8 - Block 3 Level 00 - Average Daylight Factor Results

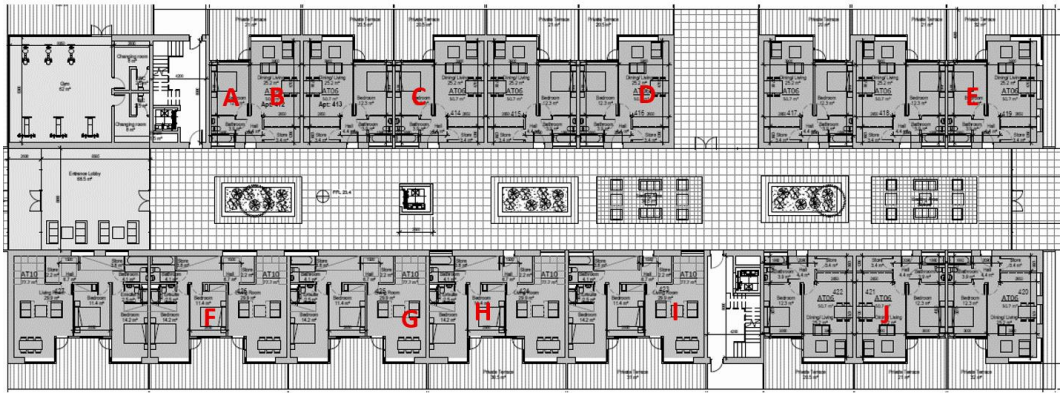

Figure 14 - Block 6 Level 00 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Bedroom	1.0	0.8	N
B	Living Room	1.5	2.7	Y
C	Bedroom	1.0	1.1	Y
D	Living Room	1.5	3.4	Y
E	Bedroom	1.0	1.0	Y
F	Bedroom	1.0	2.3	Y
G	Living Room	1.5	3.8	Y
H	Bedroom	1.0	1.8	Y
I	Living Room	1.5	3.5	Y
J	Living Room	1.5	5.2	Y

Table 9 - Block 6 Level 00 - Average Daylight Factor Results

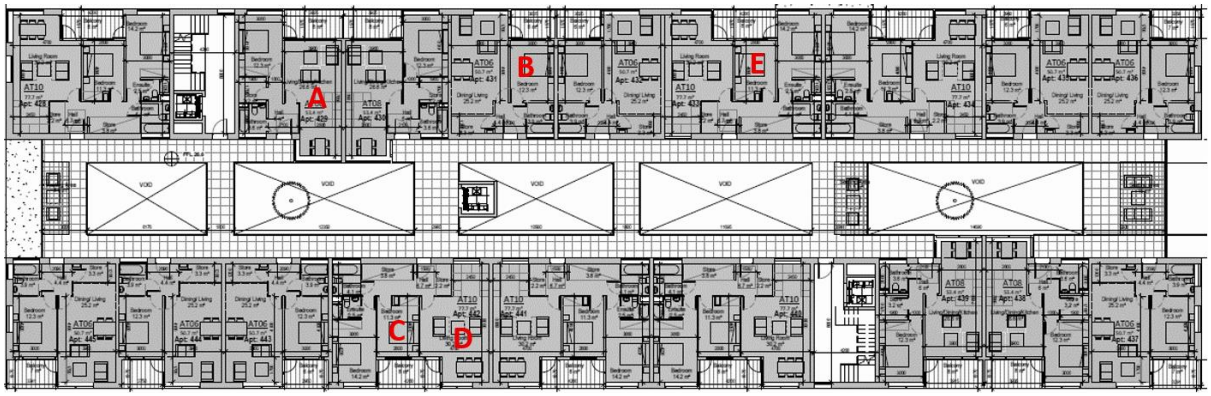

Figure 15 - Block 6 Level 01 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Living Room	1.5	1.1	N
B	Bedroom	1.0	1.1	Y
C	Bedroom	1.0	2.2	Y
D	Living Room	1.5	2.9	Y
E	Bedroom	1.0	1.1	Y

Table 10 - Block 6 Level 01 - Average Daylight Factor Results

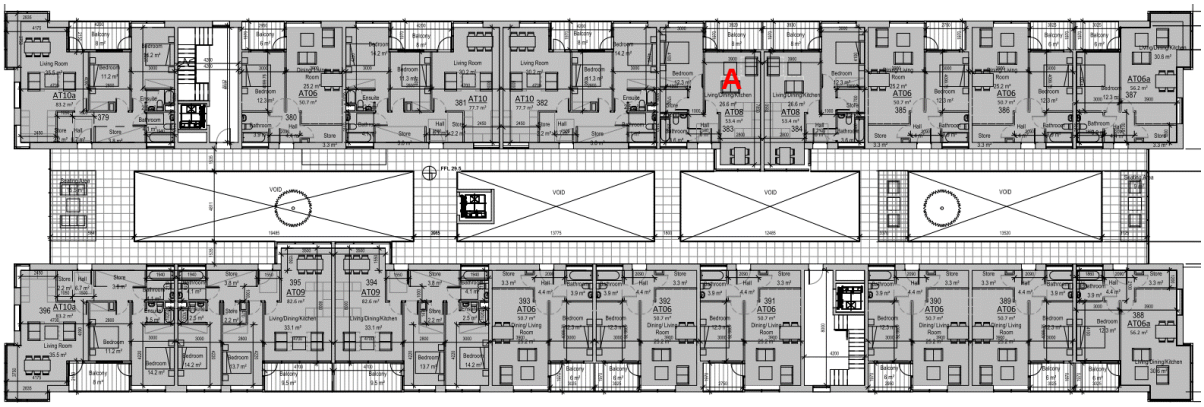

Figure 16 - Block 6 Level 02 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Living Room	1.5	1.5	Y

Table 11 - Block 6 Level 02 - Average Daylight Factor Results

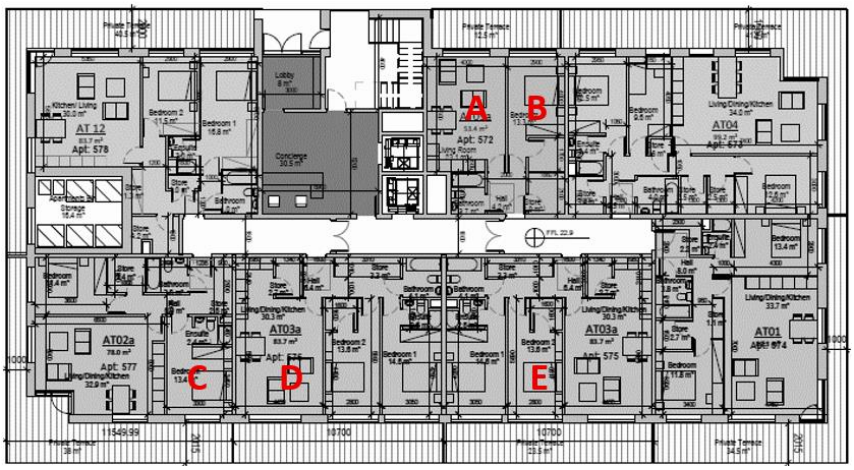

Figure 17 - Block 8 Level 00 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Living Room	1.5	1.9	Y
B	Bedroom	1.0	3.2	Y
C	Bedroom	1.0	3.5	Y
D	Living Room	1.5	2.9	Y
E	Bedroom	1.0	3.9	Y

Table 12 - Block 8 Level 00 - Average Daylight Factor Results

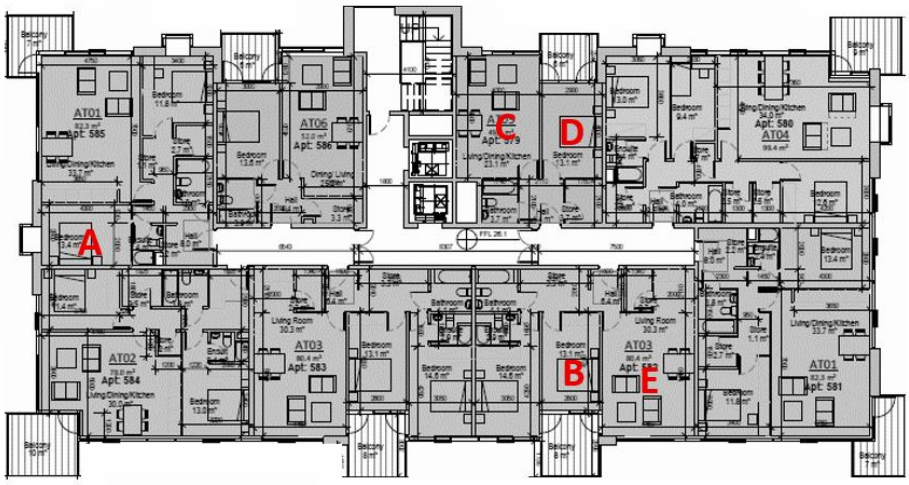

Figure 18 - Block 8 Level 01 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Bedroom	1.0	2.1	Y
B	Bedroom	1.0	0.8	N
C	Living Room	1.5	2.3	Y
D	Bedroom	1.0	0.8	N
E	Living Room	1.5	2.5	Y

Table 13 - Block 8 Level 01 - Average Daylight Factor Results

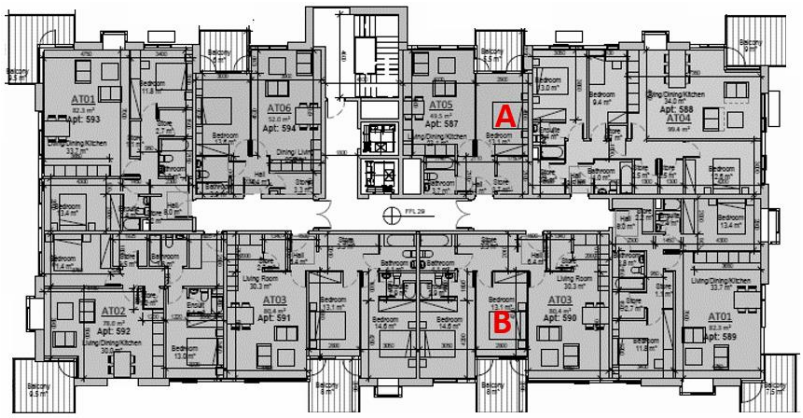

Figure 19 - Block 8 Level 02 - Assessed Rooms

Room Ref.	Room Type	BS 8206 minimum standard (%)	Daylight factor level expected (%)	Compliance
A	Bedroom	1.0	1.0	Y
B	Bedroom	1.0	1.1	Y

Table 14 - Block 8 Level 02 - Average Daylight Factor Results

6. SUNLIGHT ASSESSMENT TO AMENITY SPACES WITHIN THE DEVELOPMENT

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

In order to show that sunlight levels within the development achieve compliance with current BRE Guidelines a sunlight study has been carried out for the proposed development.

The red squares in Figure 20 highlight the areas that receive a minimum of 2 hours of sunlight on the 21st of March for the proposed development. It is evident that the majority of the amenity space receives 2 hours or more of sunlight on March 21st, therefore compliance with BRE Guidelines is achieved.

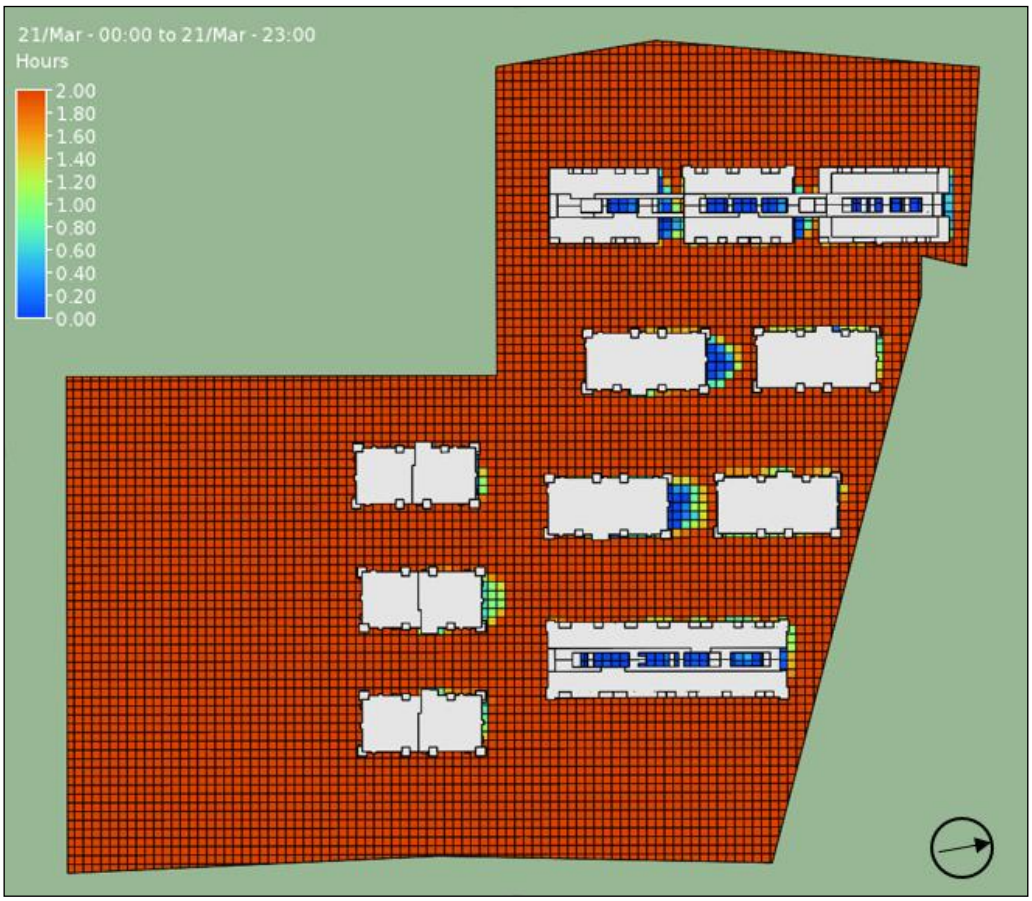

Figure 20 – Sunlight received on 21st March

7. ASSESSING THE IMPACT ON SURROUNDING PROPERTIES

7.1. DAYLIGHT & SUNLIGHT IMPACT METHODOLOGY

As per the BRE Guidelines it is important to safeguard the daylight to nearby buildings, from a proposed development, where a reasonable expectation of daylight is required. The flow matrix below outlines the criteria to be assessed, as per the BRE Guidelines, in order to ascertain any potential impact to adjacent buildings from the proposed development.

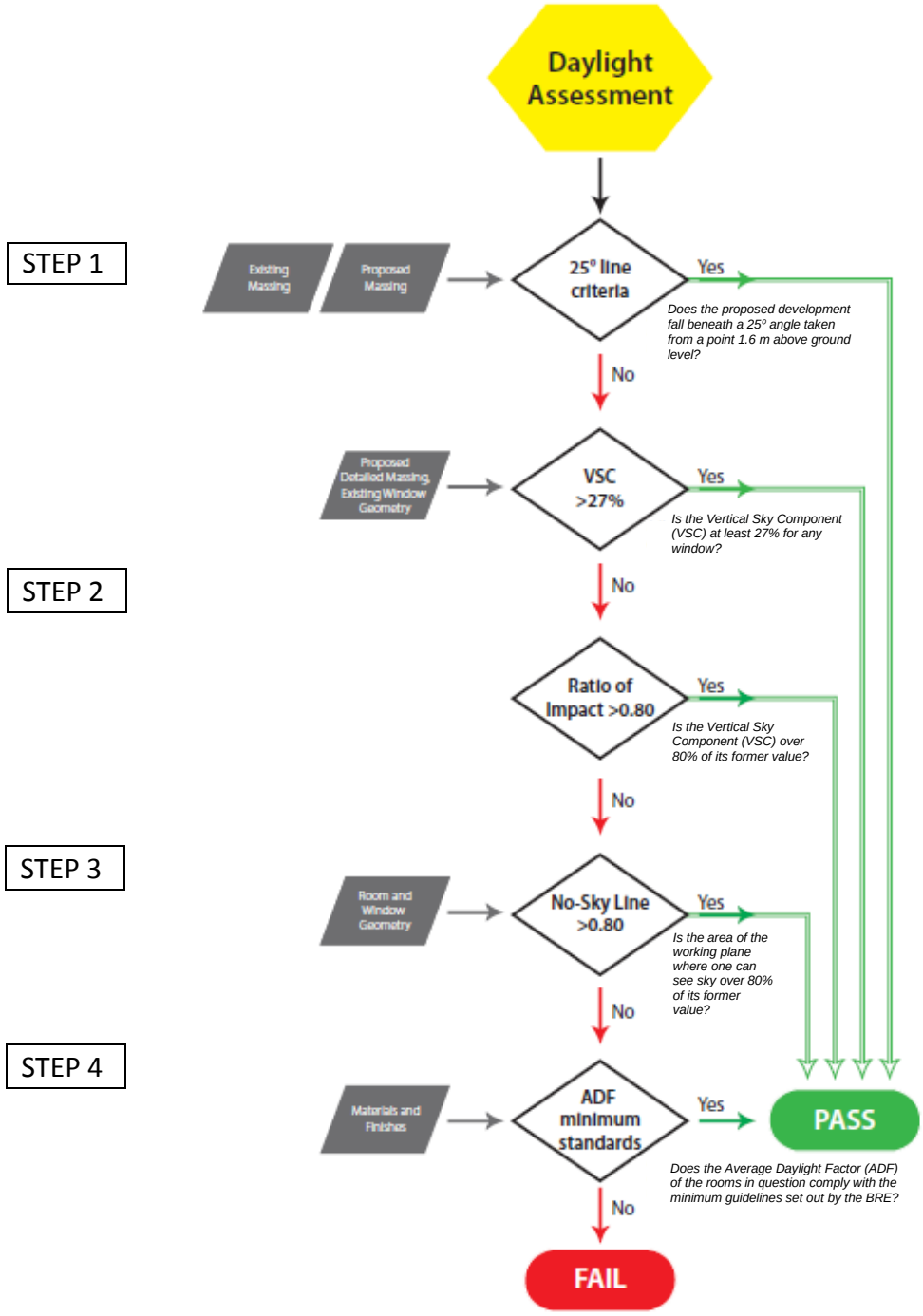

Figure 21 – Daylight Assessment Methodology

As per the flow matrix, the BRE and BS8206 guidelines provide four main methods for assessing daylight availability as outlined in the following sections.

7.1.1 25° LINE CRITERIA

In the first instance, if a proposed development falls beneath a 25° angle taken from a point 1.6 metres above ground level from any adjacent properties, then the BRE Guidelines say that no further analysis is required in relation to impact on surrounding properties as adequate skylight will still be available. As outlined in Table 16, with reference to the adjacent properties at Vincentian Order Parochial House and St. Paul's College this method was successful and therefore no further analysis is required on these properties.

7.1.2 VERTICAL SKY COMPONENT

The second method is known as the Vertical Sky Component (VSC). The VSC calculation is the ratio of the direct sky illuminance falling on the outside of a window, to the simultaneous horizontal illuminance under an unobstructed sky. The BRE Guide sets out two guidelines for the VSC:

- If the VSC at the centre of the existing window exceeds 27% with the new development in place, then enough sky light should still be reaching the existing window.
- If the VSC with the new development in place is both less than 27% and less than 80% its former value, then the reduction in light to the window is likely to be noticeable.
- This means that even if the VSC is less than 27%, as long as the VSC value is still greater than 80% of its former value, this would be acceptable and thus the impact would be considered negligible.

It is important to note that the VSC is a simple geometrical calculation which provides an early indication of the potential for daylight entering the space. However, it does not assess or quantify the actual daylight levels inside the rooms. If the VSC standard is not met on any window, a more detailed assessment based on the Average Daylight Factor should be undertaken.
The VSC method was used to assess the daylight impact on the adjacent properties at The Meadows.

7.1.3 NO SKY LINE

The third method is the No Sky Line or Daylight Distribution Method. This method assesses the change in position of the No Sky Line between the existing and proposed situations. It does take into account the number and size of windows to a room, but still does not give any qualitative or quantitative assessment of the light in the room, only where sky can or cannot be seen. Thus, as this method is limited, it was not used as part of the analysis.

7.1.4 AVERAGE DAYLIGHT FACTOR

The final method of calculation is the Average Daylight Factor (ADF). This is a more detailed and thus more accurate method which considers not only the amount of sky visible from the vertical face of the window, but also the window size, room size and room use. Where dimensions for the room to be assessed are available, this is the best method of assessment, but even where they are not, it provides a very informative result. It gives guidance as to the qualitative and quantitative change in daylight and is related to the British Standard BS 8206 Part II.

This step is only utilised for assessing the impact to adjacent properties where compliance is not achieved using the previous methods of analysis.

Sections 7.2 and 7.3 on the following pages outline the details of the analysis undertaken.

7.2. IDENTIFYING SENSITIVE RECEPTORS

Prior to following the flow matrix, first the key sensitive receptors around the site need to be identified. According to the BRE Guide, sensitive receptors are described as:

- Habitable rooms in residential buildings, where the occupants have a reasonable expectation of daylight;
- Other sensitive receptors are gardens and open spaces on adjacent properties to the new scheme, excluding public footpaths, front gardens and car parks. In accordance with the BRE Guide, windows are selected as sensitive receptors on the basis of being a habitable room facing the proposed development.

Similarly, amenities and open spaces are selected on the basis of being in the immediate vicinity of the proposed development. The primary purpose of a daylight, sunlight and overshadowing assessment is to determine the likely loss of light to adjacent buildings resulting from the construction of the proposed development.

Therefore, in this case, the proposed development is identified as the potential source of impact. The sensitive receptors identified for this study are windows of habitable rooms facing the site where the occupants have a reasonable expectation of daylight. Table 15 identifies all sensitive receptors analysed, whilst Figure 22 identifies their location.

Development Ref.	Development name
Ref. 1	Properties at The Meadows
Ref. 2	Vincentian Order Parochial House
Ref. 3	St. Paul's College

Table 15 – Sensitive Receptors surrounding St. Paul's Development

The image below identifies the location of the sensitive receptors.

Figure 22 - Location of Sensitive Receptors

7.3. DAYLIGHT IMPACT ON SURROUNDING PROPERTIES

25 º line criteria

As illustrated in the figure below, the Vincentian Order Parochial House and St. Paul's College fall outside the 25º line criteria. Therefore the distance to the proposed development is substantial and no further analysis is required, with the analysis for the properties at The Meadows moving to VSC.

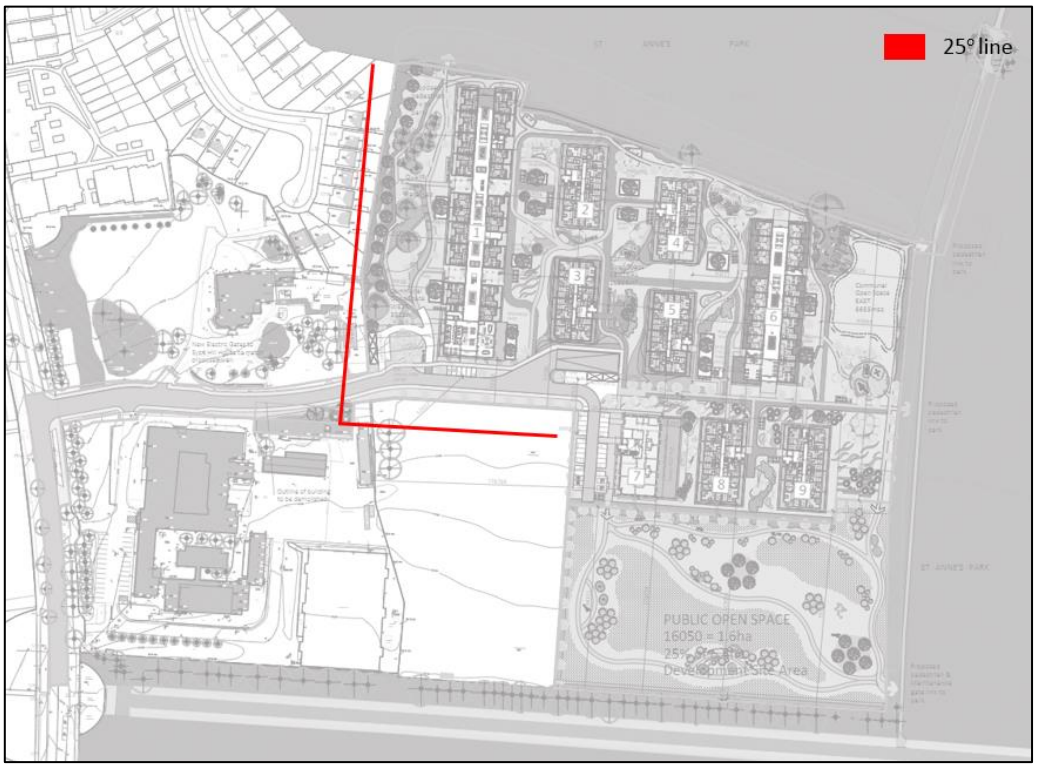

Figure 23 – 25º Line Adjacent Properties

Development Ref.	Development name	Impact Perceived
Ref. 1	Properties at The Meadows	Assessed using VSC method.
Ref. 2	Vincentian Order Parochial House	The distance is substantial from the development and in compliance with the 25ºline criteria. Therefore, imperceptible impact.
Ref. 3	St. Paul's College	The distance is substantial from the development and in compliance with the 25ºline criteria. Therefore, imperceptible impact.

Table 16 – Summary of Daylight Impact to Sensitive Receptors

VSC > 27%

The analysis has shown that all the properties located at The Meadows will achieve a VSC value above 27% once the proposed St. Paul's development takes place. Therefore, excellent levels of daylight will still be achieved with imperceptible impact.

Figure 24 – Sensitive Receptors at The Meadows

Window	VSC received once the proposed building is in place (%)	Meets BRE Guidelines VSC >27%
1	30	Y
2	32	Y
3	29	Y
4	30	Y
5	30	Y
6	30	Y
7	29	Y

Table 17 – Vertical Sky Component Results

7.4. OVERSHADOWING IMPACT ON SURROUNDING PROPERTIES

As outlined in section 7.3, the Vincentian Order Parochial House and St. Paul's College are located a substantial distance away from the development and comply with the 25° line criteria. Therefore, no impact is perceived, and the only properties selected for the overshadowing analysis are The Meadows. The overshadowing images illustrate the overshadowing impact on March 21st and June 21st at 10 a.m., 12 p.m., 2 p.m. and 4 p.m. The analysis confirms that no overshadowing to any of the adjacent properties at The Meadows is perceived when the proposed St Paul's development is in place.

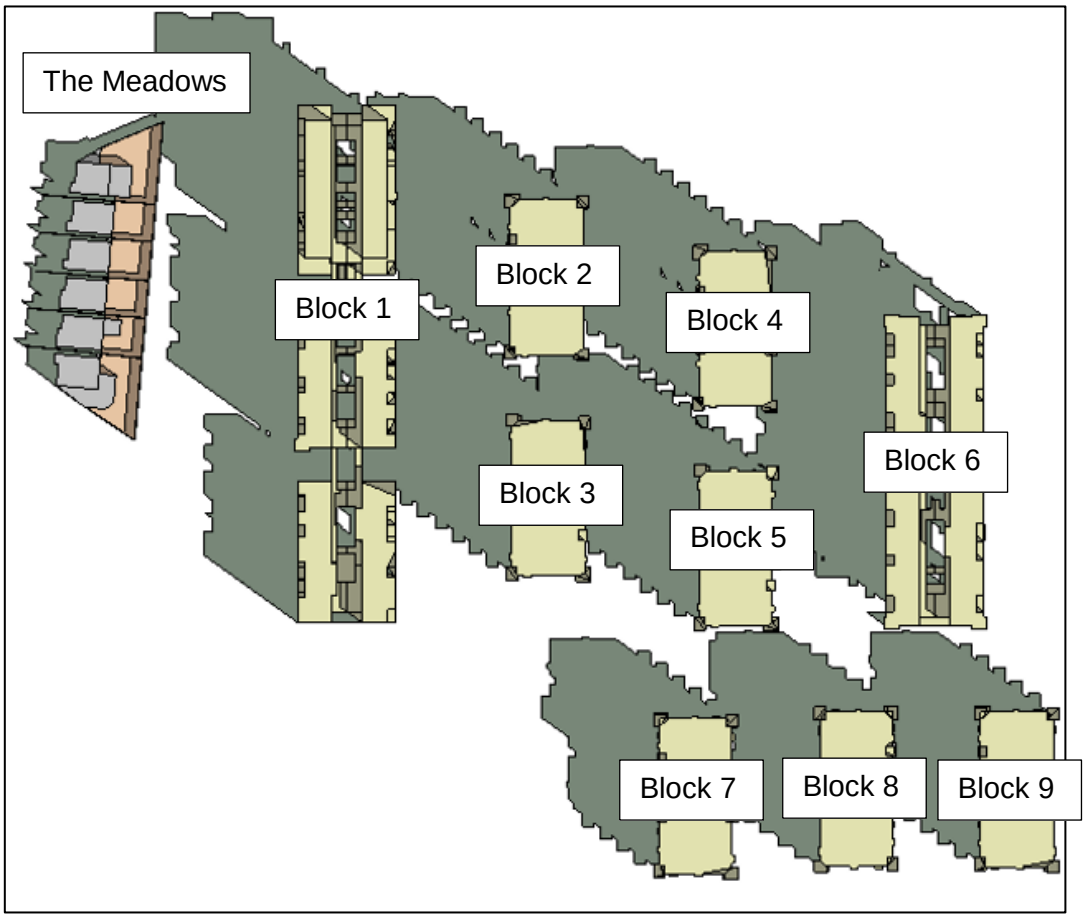

Figure 25 – Blocks References

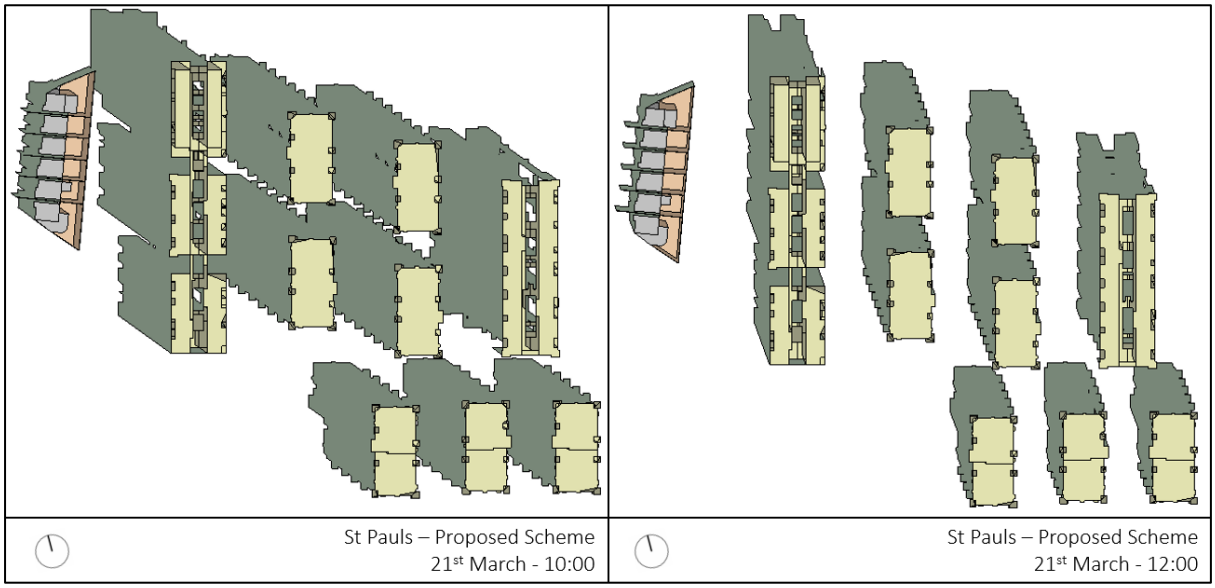

Figure 26 – Overshadowing Analysis on 21st March @ 10am & 12pm

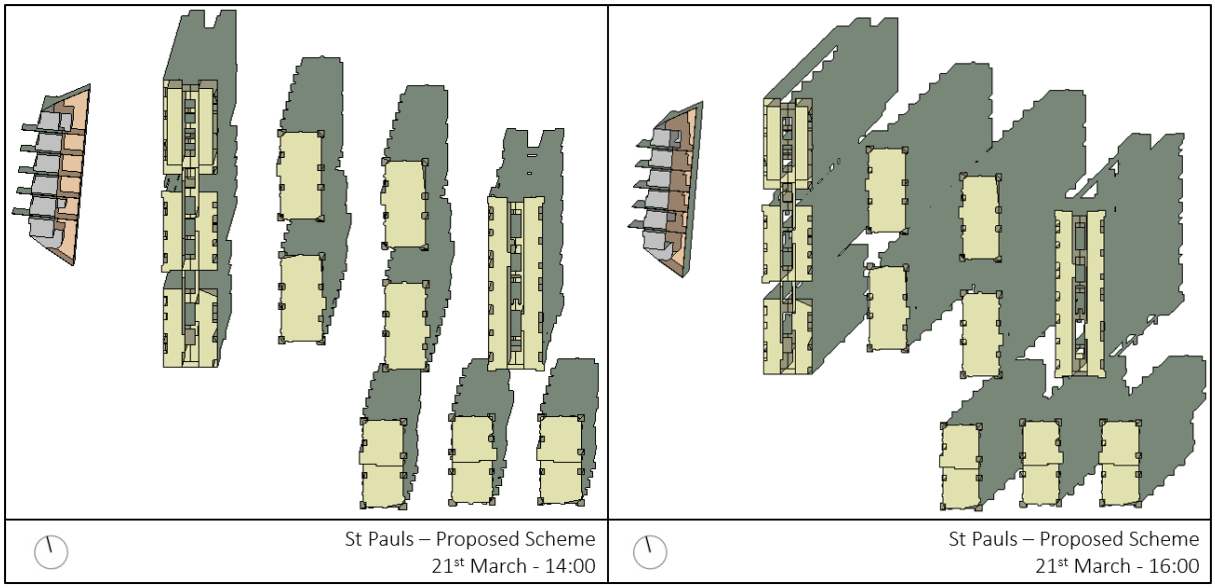

Figure 27 – Overshadowing Analysis on 21st March @ 2pm & 4pm

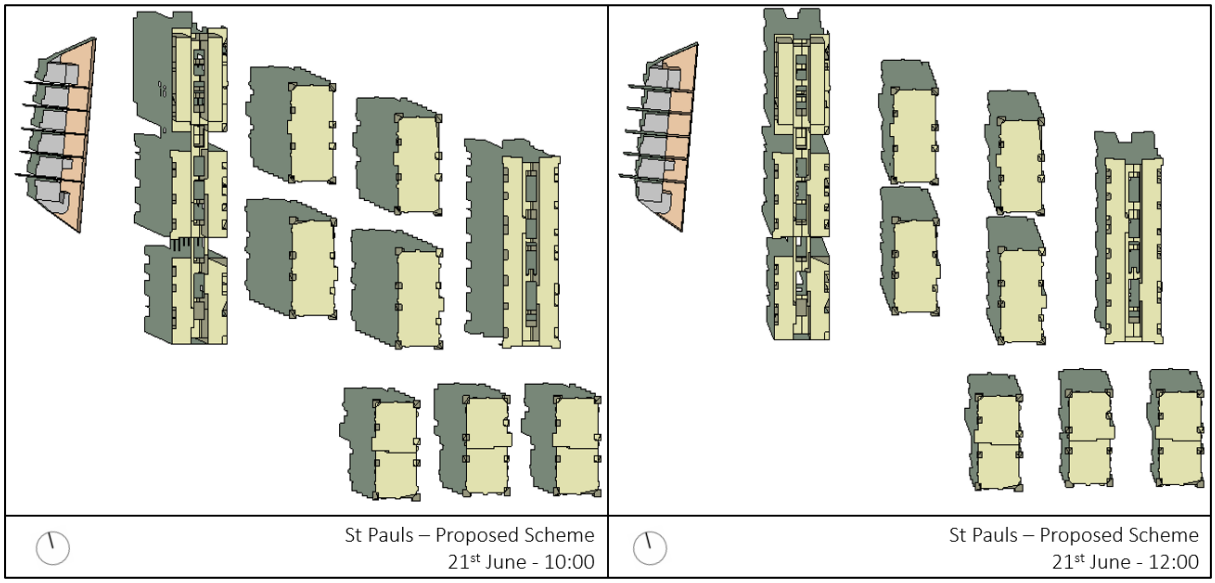

Figure 28 – Overshadowing Analysis on 21st June @ 10am & 12pm

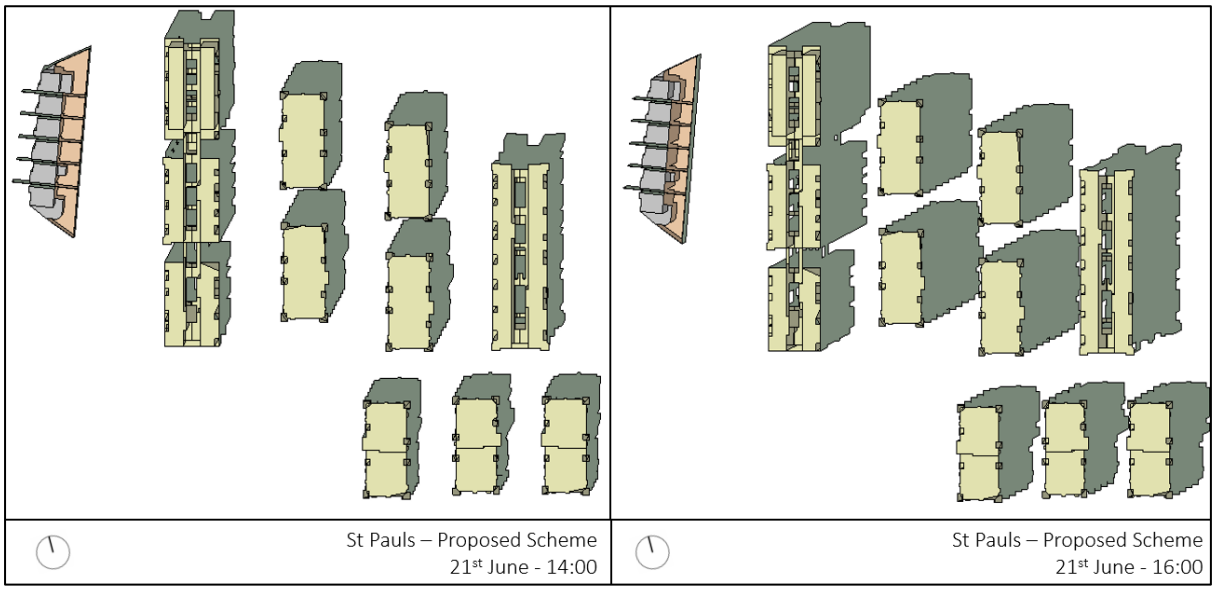

Figure 29 – Overshadowing Analysis on 21st June @ 2pm & 4pm

Furthermore, the adjacent back gardens at The Meadows have also been assessed for sunlight access. The red squares in Figure 30 highlight the areas that receive a minimum of 2 hours of sunlight on the 21st March. This is based on the current scenario, i.e. the St Paul's development **not** in place. It is evident that more than 50% of the back gardens achieve more than 2 hours of direct sunlight on March 21st.

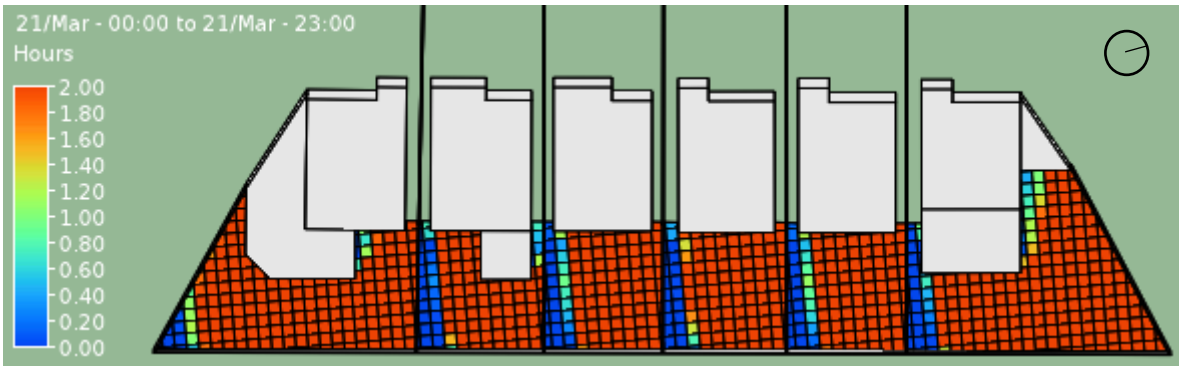

Figure 30 – The Meadows Sunlight received on 21st March (No Development in place)

The red squares in Figure 31 highlight the areas that receive a minimum of 2 hours of sunlight on the 21st March based on the proposed scenario, i.e. with the St Paul's development **in place**.

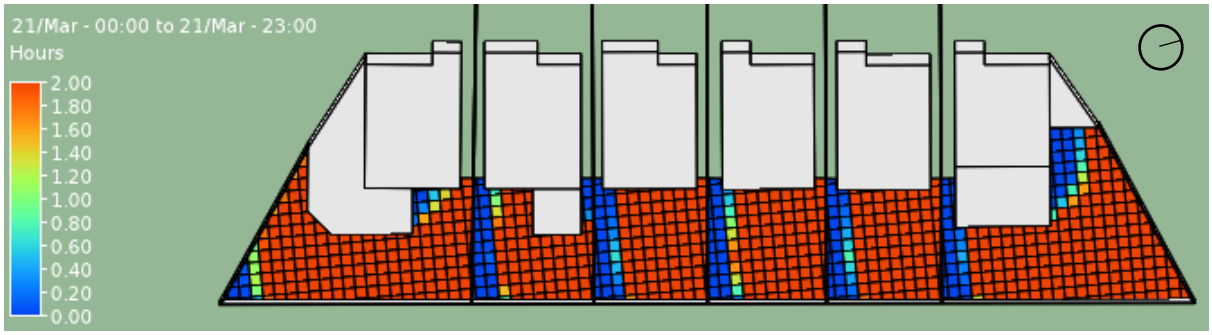

Figure 31 – The Meadows Sunlight received on 21st March (Development in place)

Even with the proposed St. Paul's development in place, the adjacent back gardens at The Meadows still achieve excellent levels of sunlight, with more than 50% of the gardens still achieving more than 2 hours of direct sunlight on March 21st.

8. CONCLUSION

The proposed St. Paul's development has been analysed in order to determine the following:

- The expected daylight levels within the living and bedroom areas of selected apartments, to give an indication of the expected daylight levels throughout the proposed development;
- The quality of amenity space, being provided as part of the development, in relation to sunlight;
- Any potential impact the proposed development may have on properties adjacent to the site.

Calculations and methodology used are in accordance with BRE Guidelines for daylight and sunlight and based on the British Research Establishments "Site Layout Planning for Daylight and Sunlight: A Good Practice Guide" by PJ Littlefair, 2011 Second Edition, however, the following should be reiterated as previously outlined:

"The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather that constrain the designer. Although it gives numeral guidelines these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design"

Internal Daylight

The analysis confirms that across the entire development excellent levels of internal daylight are achieved. A 97% compliance rate is achieved across the entire development.

Throughout the full development, comfortable and desirable spaces have been designed with floor to ceiling heights of a minimum of 2.68m and extensive glazing to every room enabling deep daylight penetration and providing enhanced views.

Sunlight

Sunlight analysis has shown that at least 2 hours of sunlight is achieved on March 21st on the majority of the amenity space provided, thus complying with BRE Guidelines.

Impact to surrounding properties

The Vincentian Order Parochial House and St. Paul's College properties fall outside the 25° line criteria, therefore the distance to the proposed development is substantial and no further analysis is required on these properties. The properties located at The Meadows were assessed using the VSC method. All analysed windows meet the minimum VSC requirements ensuring that enough daylight will still be received and therefore imperceptible impact is perceived at these properties. Furthermore, even with the proposed St. Paul's development in place, the adjacent back gardens at The Meadows still achieve excellent levels of sunlight, with more than 50% of the garden areas still achieving more than 2 hours of direct sunlight on March 21st resulting in minimal change to the existing condition.

Finally, the shadow analysis confirms that no overshadowing is perceived to any of the adjacent properties.

In conclusion, the steps taken by the project team during design have ensured that levels of daylight and sunlight within the development have been safeguarded and the impact to adjacent properties is imperceptible.

OCSC

O'CONNOR | SUTTON | CRONIN

Multidisciplinary
Consulting Engineers

9 Prussia Street
Dublin 7
Ireland

T | +353 (0)1 8682000
F | +353 (0)1 8682100
W | www.ocsc.ie