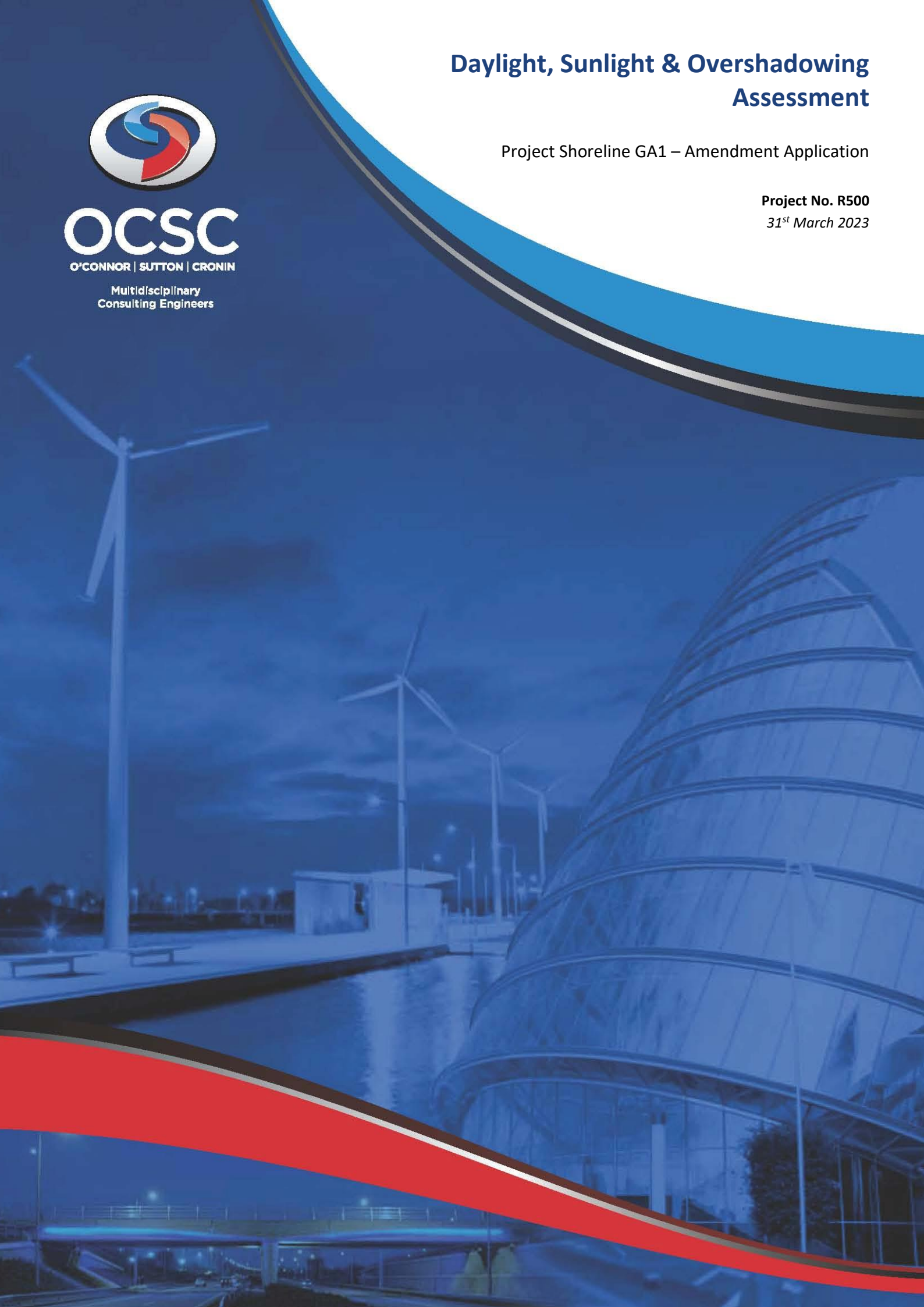


# Daylight, Sunlight & Overshadowing Assessment

Project Shoreline GA1 – Amendment Application

Project No. R500  
31<sup>st</sup> March 2023



# Daylight, Sunlight & Overshadowing Assessment



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## EXECUTIVE SUMMARY

The subject application site (hereafter called 'the site') is located at Baldoyle-Stapolin, Dublin 13, formerly known as The Coast, Baldoyle. It is a site of approx. 1.02ha, which forms part of the wider 9.10ha permitted GA1 SHD development ABP Reg. Ref. 310418. The proposed amendments comprise of alterations to Block A1, Block D1, Block D2 and Block D3.

The proposed development which is subject of this Planning Application is seeking to alter permitted GA1 Strategic Housing Development (SHD) (ABP Reg. Ref. 310418 / FCC Reg. Ref. SHD/011/20) planning permission. The proposed red line application area includes Block A1, D1, D2 and D3, which are subject of proposed modifications and all other elements of the permitted scheme remain as permitted under ABP Reg. Ref. 310418 / FCC Reg. Ref. SHD/011/20. The proposed amendments consist of the reduction of height, façade enhancements and building form enhancements across Block A1, D1, D2 and D3.

The aim of the study is to record and analyse the impact of the proposed alterations, for blocks which are subject to modifications, namely A1, D1, D2, and D3 in terms of the following:

- The daylight levels within the living and bedroom areas of selected apartments, within the blocks proposed to be modified, to give an indication of the expected daylight levels;
- The expected sunlight levels within the living areas and bedrooms within the blocks proposed to be modified;
- The impact of the modifications on the quality of sunlight to the amenity spaces of the blocks proposed to be modified;
- The impact of the modifications on any potential daylight or sunlight impact on surrounding properties.

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 calculation methodology for daylight and sunlight is based on the British Research Establishments (BRE) “Site Layout Planning for Daylight and Sunlight: A Good Practice Guide” by PJ Littlefair, Second Edition (2011), as well as the Third Edition (2022).

The Third Edition was published following the submission of the application for the permitted development. It is used in this report to analyse the daylight both before and after the incorporation of the proposed modifications, both to the units subject to modification, and units in the modified blocks in general.

The Second Edition was used for the daylight analysis for the permitted development and is used again here in this report to allow for a fair comparison, and an accurate assessment of the impact of the proposed changes on daylight, on the same selection of apartments as the daylight analysis submitted for the permitted development.

#### Internal daylight within the blocks proposed to be amended

It is the expert opinion of OCSC, that the modifications proposed in this amendment (comprising a reduction in various block heights, and minor changes to balconies and glazing areas), will result in an overall improvement in daylight in the modified blocks. The results detailed in Section 5 of this report confirm this to be the case.

In Section 5.3, using the BRE Guide Third Edition, the impact of the proposed height reduction modifications on daylight within the blocks proposed to be modified, is assessed. The daylight to a select number of units is tested both before and after the incorporation of the proposed changes to provide proof to support OCSC's expert opinion. As is to be expected considering the reduction in massing, the daylight to these units improves following the incorporation of the proposed changes.

In Section 5.4, the daylight to the 62 units subject to modifications (ie those which will have rearranged balcony, or a change in glazing area) are analysed, both before and after the incorporation of the proposed changes. All 62 rooms comfortably comply with the Second Edition daylight requirements, both before and after the incorporation of the proposed changes. As measured by the Second Edition daylight methodology, all of these units see an increase in daylight. When measured against the Third Edition daylight standard, 44 units see an increase in daylight following the incorporation of the proposed changes, with the remaining 18 unchanged. 35 of the 62 analysed rooms comply with the Third Edition (2022) daylight standard, following the incorporation of the proposed changes.

Furthermore, the analysis in Section 5.5, which is done for comparison purposes, confirms that when tested using the BRE Guide Second Edition, that for the four blocks which are proposed to be amended, excellent levels of internal daylight continue to be achieved following the incorporation of the proposed changes, with the compliance rate increasing from 92% to 96%. This is in line with expectations, considering the overall reduction in massing.

Overall, the results show that the daylight in the blocks proposed to be modified, will be improved following the incorporation of the proposed amendments, as is to be expected considering the reduction in massing proposed.

#### Sunlight to windows within the blocks proposed to be amended

It is the opinion of OCSC, that a reduction in massing, as is proposed in this amendment, will result in an improvement in sunlight in the modified blocks.

The annual probable sunlight hours assessment in Section 7.1 has shown that following the incorporation of the proposed changes, the sunlight to windows in the blocks proposed to be amended improves slightly. Although some windows in the blocks proposed to be amended are slightly under the BRE Guide Second Edition (2011) recommendations, acceptable levels of sunlight will still be achieved, following the incorporation of the proposed changes, as per permitted development. A small improvement is seen in sunlight to windows, following the incorporation of the proposed changes, as is to be expected considering the reduction in massing proposed.

Section 7.2 illustrates that good levels of sunlight will be achieved following the incorporation of the proposed changes when measured using the Third Edition (2022) standard also.

#### Sunlight to amenity spaces of blocks proposed to be amended

In terms of sunlight access, excellent levels of sunlight continue to be experienced in the amenity areas of the blocks proposed to be amended, following the incorporation of the proposed changes, as can be seen in Section 6. The communal amenity spaces provided to the apartment areas greatly exceeds the BRE Second Edition guidelines (2011) for sunlight on the test day of 21<sup>st</sup> of March. (Note, The Third Edition (2022) Guidelines are identical to the Second Edition (2011) for amenity sunlight). A small increase in sunlight to these amenity areas is seen, as is to be expected considering the reduction in massing proposed.

### Impact to neighbouring properties

Following the incorporation of the proposed changes to GA1, the 25° line method confirms that all sensitive receptors aside from Ref. 5 are too far from the blocks proposed to be amended to perceive an impact on daylight or sunlight, as can be seen in Section 8.

In relation to the overshadowing impact, the sensitive receptors will not perceive an impact, as was the case for the proposed development. This is detailed further in Section 9.

Sensitive receptor Ref. 5 is subject to a separate planning permission. A daylight and sunlight EIAR chapter was submitted as part of that application where the impact of GA1 on GA3 was taken into account within the calculations. The proposed reduction in height of Blocks D1, D2, and D3 will only reduce the impact of GA1 on GA3.

Overall, the impact to surrounding properties is reduced following the incorporation of the proposed changes, as is to be expected considering the reduction in massing proposed.

## DAYLIGHT & SUNLIGHT REPORT

INDEX	PAGE
EXECUTIVE SUMMARY .....	4
1. INTRODUCTION .....	9
2. PROPOSED DEVELOPMENT .....	11
3. PROPOSED BUILDING DESIGN.....	12
4. BRE GUIDELINES FOR DAYLIGHT AND SUNLIGHT .....	14
5. DAYLIGHT LEVELS WITHIN THE PROPOSED DEVELOPMENT .....	16
6. SUNLIGHT ASSESSMENT TO AMENITY SPACES WITHIN THE DEVELOPMENT .....	45
7. SUNLIGHT ASSESSMENT WITHIN THE PROPOSED DEVELOPMENT (APSH) .....	47
8. ASSESSING THE IMPACT ON SURROUNDING PROPERTIES .....	55
9. OVERSHADOWING IMPACT TO SURROUNDING PROPERTIES .....	64
10. CONCLUSION .....	69



## 1. INTRODUCTION

The subject application site (hereafter called 'the site') is located at Baldoyle-Stapolin, Dublin 13, formerly known as The Coast, Baldoyle. It is a site of approx. 1.02ha, which forms part of the wider 9.10ha permitted GA1 SHD development ABP Reg. Ref. 310418. The proposed amendments comprise of alterations to Block A1, Block D1, Block D2 and Block D3.

The proposed development which is subject of this Planning Application is seeking to alter permitted GA1 Strategic Housing Development (SHD) (ABP Reg. Ref. 310418 / FCC Reg. Ref. SHD/011/20) planning permission. The proposed red line application area includes Block A1, D1, D2 and D3, which are subject of proposed modifications and all other elements of the permitted scheme remain as permitted under ABP Reg. Ref. 310418 / FCC Reg. Ref. SHD/011/20. The proposed amendments consist of the reduction of height, façade enhancements and building form enhancements across Block A1, D1, D2 and D3.

The aim of the study is to record and analyse the impact of the proposed alterations, for blocks which are subject to modifications, namely A1, D1, D2, and D3 in terms of the following:

- The daylight levels within the living and bedroom areas of selected apartments, within the blocks proposed to be modified, to give an indication of the expected daylight levels;
- The expected sunlight levels within the living areas and bedrooms within the blocks proposed to be modified;
- The impact of the modifications on the quality of sunlight to the amenity spaces of the blocks proposed to be modified;
- The impact of the modifications on any potential daylight or sunlight impact on surrounding properties.

The calculation methodology for daylight and sunlight is based on the British Research Establishments (BRE) "Site Layout Planning for Daylight and Sunlight: A Good Practice Guide" by PJ Littlefair, Second Edition (2011), as well as the Third Edition (2022).

The Third Edition was published following the submission of the application for the permitted development. It is used in this report to analyse the daylight both before and after the incorporation

of the proposed modifications, both to the units subject to modification, and units in the modified blocks in general.

The Second Edition was used for the daylight analysis for the permitted development and is used again here in this report to allow for a fair comparison, and an accurate assessment of the impact of the proposed changes on daylight, on the same selection of apartments as the daylight analysis submitted for the permitted development.

## 2. PROPOSED DEVELOPMENT

This proposed LRD application is an alteration to the permitted Strategic Housing Development ABP Reg. Ref. 310418). The proposed amendments comprise of alterations to Blocks A1, D1, D2 and D3 on the northern and western portion of GA1 lands.

As the proposed change constitutes only a reduction in height to the blocks, an overall reduction in massing, and minor alterations to balconies and glazing areas, any impact to daylight or sunlight is expected to be positive.



Figure 1: Proposed Site Plan

### 3. PROPOSED BUILDING DESIGN

In order to ensure that daylight levels were maximised for the proposed 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 development has been carefully selected to promote a sense of brightness and light and is composed of light materials. This will ensure light is reflected throughout the development. The inclusion of greenery to the amenity spaces will help to improve the sense of light and brightness within the apartments.

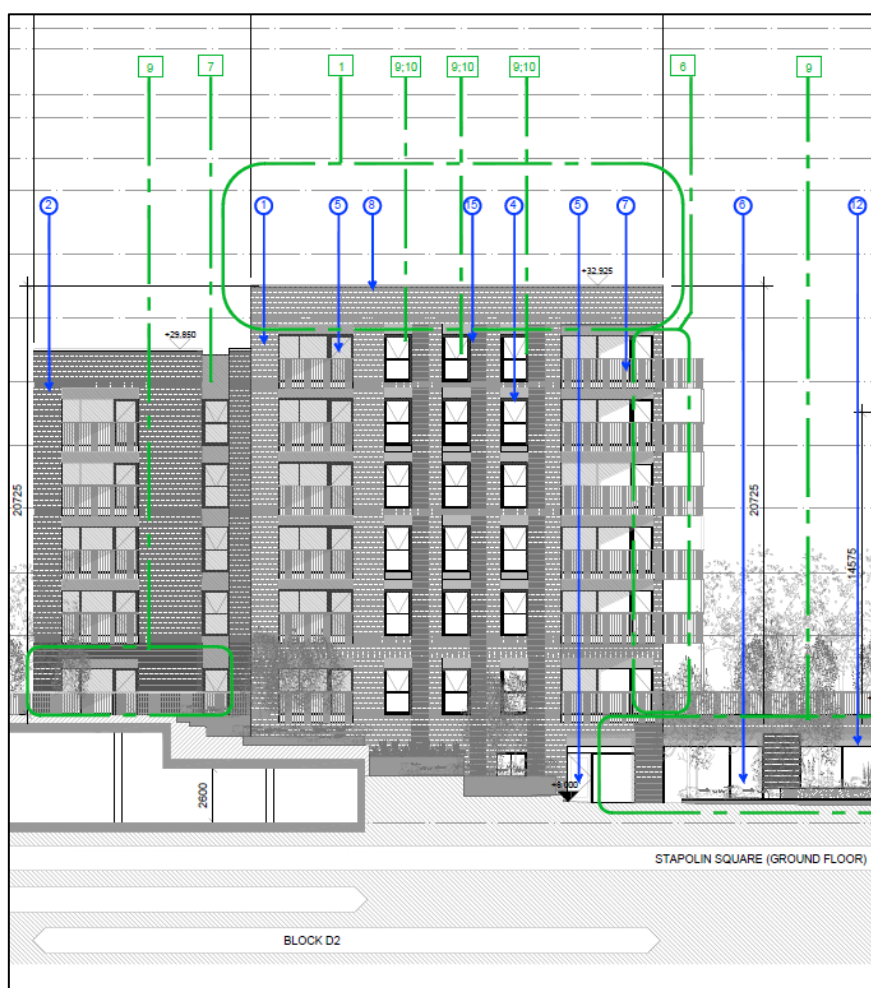


Figure 2: Façade Views of Proposed Development – Block D2 (North)

### 3.2. GLAZING TO WALL RATIO

The primary function of the glazing to wall ratio is to maximise 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. Extensive analysis was undertaken on all building facades to ensure glazing widths were maximised to promote access to daylight. The image below illustrates the glazing to wall ratio of the proposed development.

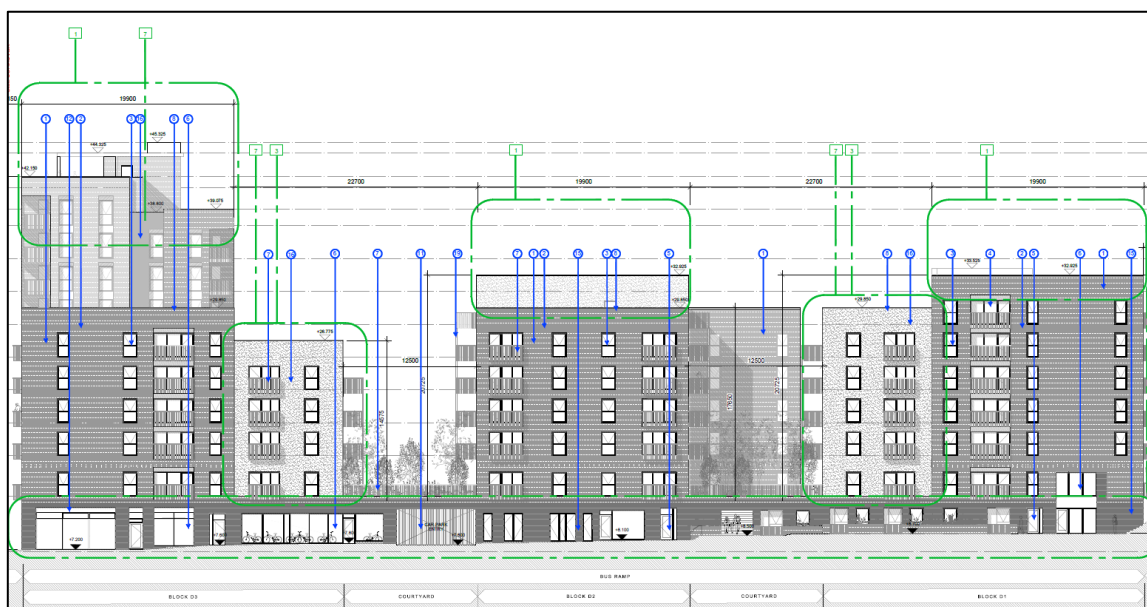


Figure 3: Typical Elevation Glazing to Wall Ratio - Blocks D1, D2 & D3 (North)

## 4. BRE GUIDELINES FOR DAYLIGHT AND SUNLIGHT

The analysis of the impact of the proposed modifications on the daylight and sunlight, has been based on the Building Research Establishment (BRE) Second Edition guidelines on “Site Layout Planning for Daylight and Sunlight. A Guide to Good Practice” (2011), as well as the Third Edition (2022).

Two units in each block, both before and after the proposed changes, were assessed using the BRE Guide Third Edition (2022), to determine the impact of the proposed changes on daylight within the blocks proposed to be modified.

Units subject to modification (ie units which have had balconies rearranged, or glazing areas changed) have been assessed against both the Second Edition (2011) and the Third Edition (2022), both before and after the incorporation of the proposed changes. Testing both before and after the incorporation of the changes, allows the impact of the modifications on daylight to be assessed.

For the permitted development, daylight and sunlight was assessed against the BRE Second Edition (2011) standard, as it was the latest standard at time of submission. In order to allow for a fair comparison to the permitted, and for an accurate assessment of the impact of the proposed reduction in height, the Second Edition (2011) is used.

The BRE 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 Guidelines:

*“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 surface reflectance values outlined in Table 1 have been used in the analysis.

Surface Type	Reflectance (%)
External Wall	40
Internal Partitions	70
Ceiling	70
Floor	40
Adjacent Buildings	40
Glazing Transmittance	70

Table 1: Surface Reflectance Values



Figure 4: Proposed Site Plan

## 5. DAYLIGHT LEVELS WITHIN THE PROPOSED DEVELOPMENT

### 5.1. ASSESSMENT CRITERIA – INTERNAL DAYLIGHT (2022 METHODOLOGY)

The daylight assessment methodology detailed in the BRE Guide Third Edition is used in this assessment. The Third Edition methodology goes beyond the average daylight levels within a space, and accounts for the distribution of light within a space also. Spaces must have both high quality of light, but also a relatively even spread of illuminance.

Level of recommendation for vertical and inclined daylight opening	Target illuminance $E_T$ lx	Fraction of space for target level $F_{plane, \%}$	Minimum target illuminance $E_{TM}$ lx	Fraction of space for minimum target level $F_{plane, \%}$	Fraction of daylight hours $F_{time, \%}$
Minimum	300	50 %	100	95 %	50 %
Medium	500	50 %	300	95 %	50 %
High	750	50 %	500	95 %	50 %
NOTE Table A.3 gives target daylight factor ( $D_T$ ) and minimum target daylight factor ( $D_{TM}$ ) corresponding to target illuminance level and minimum target illuminance, respectively, for the CEN capital cities.					

Figure 5: 2022 Methodology – Table A.1

The methodology features two daylight criteria for compliance.

- Criterion one recommends that in the analysed space an illuminance of  $\geq 100$  lux must be achieved for half of the daylight time in a year (2,190 hours), across  $\geq 95\%$  of the floor area of the given space.
- Criterion two recommends that in the analysed space an illuminance of  $\geq 300$  lux must be achieved for half of the daylight time in a year (2,190 hours), across  $\geq 50\%$  of the floor area of the given space.



## 5.2. ASSESSMENT CRITERIA – INTERNAL DAYLIGHT (2011 METHODOLOGY)

One of the methods of analysis selected for the internal daylight analysis for this development is the Average Daylight Factor (ADF), as per the BRE Guide Second Edition (2011). As this standard was in effect at the time of submission for the permitted scheme, it was used for that daylight assessment. It is used again in this report to facilitate a fair comparison, and to allow for an accurate assessment of the impact on daylight due to the proposed changes.

To quantify the quality of daylight within a space as per BRE Guidelines (2011), the British standards BS 8206 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
Kitchens	2

Where one room serves more than one purpose, the minimum average daylight factor should be that for the room type with the highest value. For example, in a space which combines a living room and a kitchen the minimum average daylight factor should be 2%.

Figure 6: BS 8206 – Table 2

BS 8206 outlines that for a room that serves more than one purpose, the minimum ADF should be that for the room type with the highest value. For example, in a combined living/kitchen space, the minimum recommended ADF value should be 2%.

In line with standard industry practice, units presented at the lower levels 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 to be representative of the units across those blocks which are proposed to be modified, and therefore results are indicative of daylight levels to be expected across these blocks. If a unit is found to be below the minimum standard, then the equivalent unit one level higher is also tested. This process is continued until all units on a given level are in compliance. This allows all failing units to be identified, without having to test every unit.

The daylight calculations are carried out in a working plane that lies 850 mm above the floor and it is offset 500 mm from the perimeter of the room. A grid of 250 mm is used to calculate all different points within the room.

Architectural plans and elevations provided by Henry J Lyons formed the basis for the assessment.

In order to analyse the daylight 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 this software and includes the proposed development as well as the surrounding buildings adjacent to the site. Heights of surrounding buildings have been obtained from survey data.

### 5.3. DAYLIGHT RESULTS – INTERNAL DAYLIGHT TO APARTMENTS (2022 METHODOLOGY)

To determine what impact (if any) the proposed amendment will have on the daylight within the blocks proposed to be modified (A1, D1, D2 and D3) two first floor rooms per block are analysed using the Third Edition of the BRE Guide (the first floor level is the lowest level with apartments). As the proposed amendment features reductions in block height, and in massing, an overall improvement is expected to be seen in the daylight results of the analysed units.

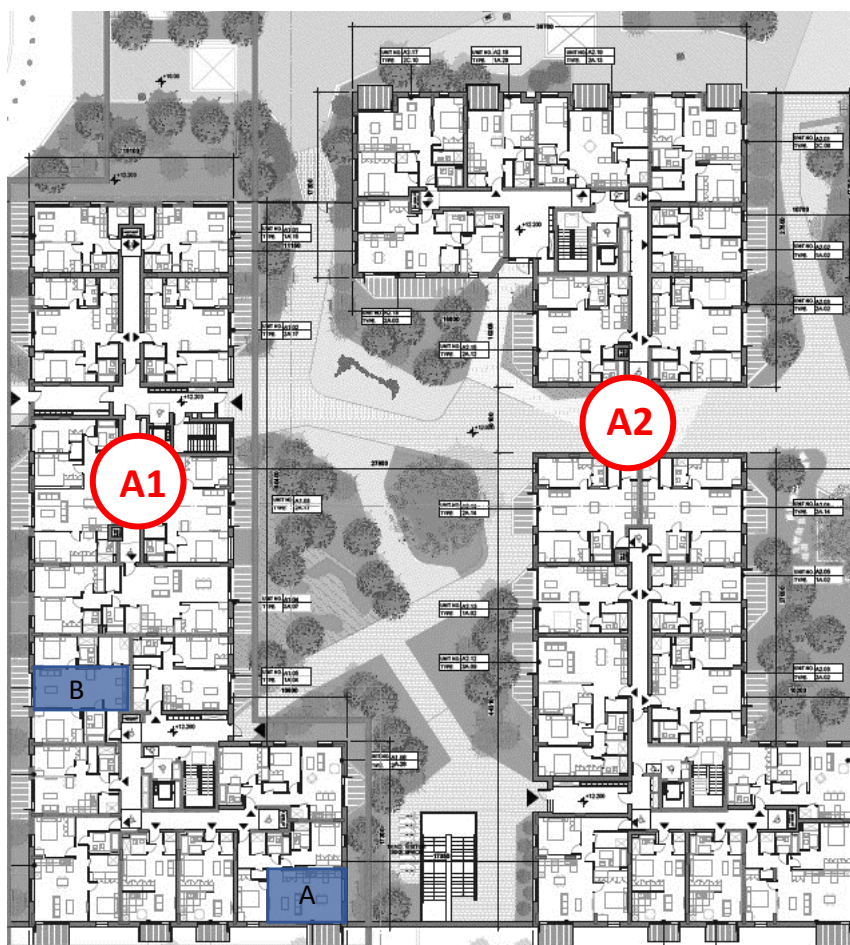


Figure 7: Block A1 – First Level Assessed Units – BRE Third Edition Daylight

Room Ref.	Block	BRE Third Edition Criterion 1 % Area > 100 lux Permitted	BRE Third Edition Criterion 2 % Area > 300 lux Permitted	BRE Third Edition Criterion 1 % Area > 100 lux Proposed	BRE Third Edition Criterion 2 % Area > 300 lux Proposed	Impact of Proposed Amendment on Daylight
A	A1	96%	32%	98%	35%	Improved
B	A1	67%	35%	68%	35%	Improved

Table 2: Block A1 – First Level Assessed Units – BRE Third Edition Daylight Results

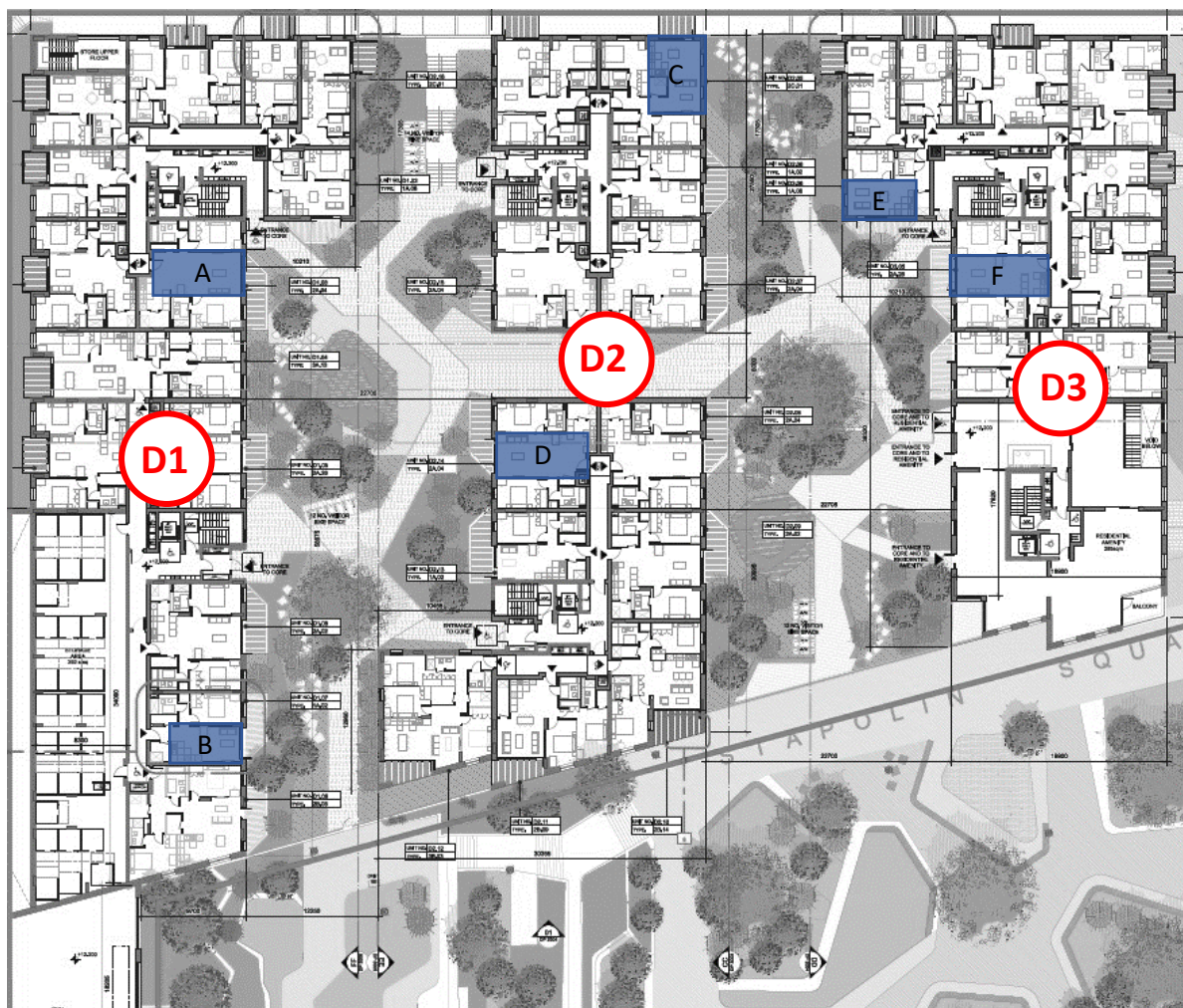


Figure 8: Blocks D1, D2 & D3 – First Level Assessed Checked Units – BRE Third Edition Daylight

Room Ref.	Block	BRE Third Edition Criterion 1 % Area > 100 lux Permitted	BRE Third Edition Criterion 2 % Area > 300 lux Permitted	BRE Third Edition Criterion 1 % Area > 100 lux Proposed	BRE Third Edition Criterion 2 % Area > 300 lux Proposed	Impact of Proposed Amendment on Daylight
A	D1	21%	7%	24%	9%	Improved
B	D1	51%	20%	53%	23%	Improved
C	D2	100%	72%	100%	77%	Improved
D	D2	21%	7%	26%	10%	Improved
E	D3	87%	40%	93%	44%	Improved
F	D3	40%	15%	44%	19%	Improved

Table 3: Blocks D1, D2 & D3 – First Level Assessed Checked Units – BRE Third Edition Daylight Results

Of the 8 units analysed with the newer Third Edition (2022) BRE Guide, all 8 see an improvement in daylighting following the incorporation of the proposed modifications.

Of the 8 units analysed, 1 unit passes both criteria of the BRE Guide Third Edition (2022). This sample tested includes only rooms on the lowest levels of each block, where daylight will be lowest. Therefore, the compliance rate would improve if all units were tested, as the access to daylight improves as you move up through the building.

The units tested here have already been permitted under ABP Reg. Ref. 310418, the analysis here is solely to assess the impact to the permitted rooms due to the proposed changes. The overall improvement is in line with expectations, given the proposed modifications include a reduction in overall massing.



## 5.4. DAYLIGHT TO UNITS SUBJECT TO MODIFICATIONS

The most significant proposed changes are to the overall block heights, however minor changes are also made to individual apartments. These changes include a rearranging of balconies, change in glazing areas, and removal of columns at balconies. Block A1 is not affected by these changes. These changes are only made to Blocks D1, D2 and D3. A total of 62 units are subject to change. These 62 units are assessed for daylight against both the Second Edition (2011) and the Third Edition (2022) of the BRE Guide, both before and after the incorporation of the proposed changes.

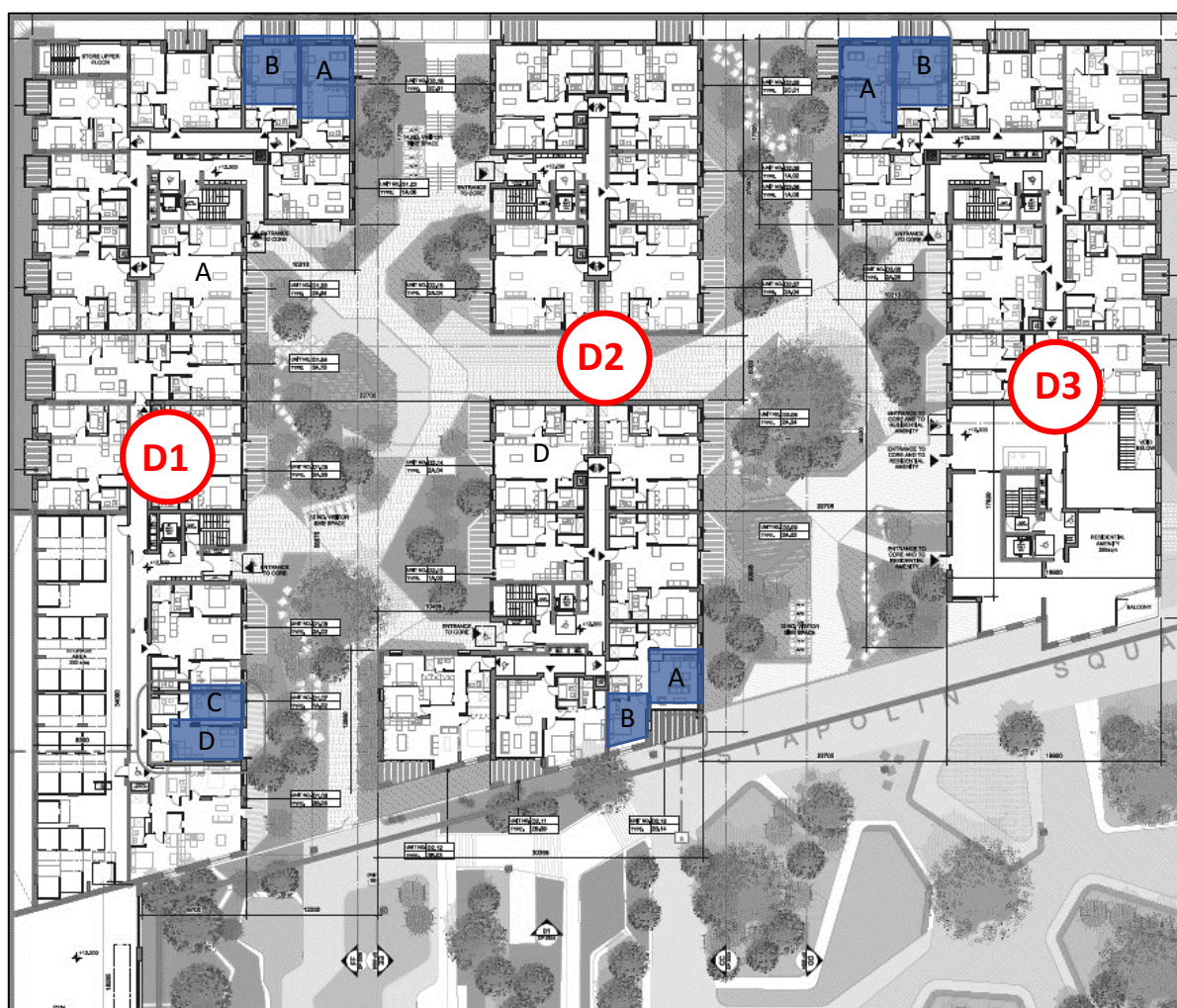


Figure 9: Block D1, D2 and D3 – First Level – Units Subject to Modifications

Room Ref.	Block	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved Before Amendment (%)	ADF Results Achieved After Amendment (%)	Impact of Proposed Amendment on Daylight
A	D1	Living Room/ Kitchen	2.0	3.21%	3.34%	Increase
B	D1	Living Room/ Kitchen	2.0	2.80%	3.05%	Increase
C	D1	Bedroom	1.0	1.49%	1.57%	Increase
D	D1	Living Room/ Kitchen	2.0	2.02%	2.08%	Increase
A	D2	Living Room/ Kitchen	2.0	3.91%	4.14%	Increase
B	D2	Bedroom	1.0	5.05%	5.09%	Increase
A	D3	Living Room/ Kitchen	2.0	2.91%	3.09%	Increase
B	D3	Living Room/ Kitchen	2.0	3.36%	3.43%	Increase

Table 4: Block D1, D2 and D3 – First Level – Units Subject to Modifications – BRE Guide Second Edition Daylight Results

Room Ref.	Block	BRE Third Edition Criterion 1 % Area > 100 lux Permitted	BRE Third Edition Criterion 2 % Area > 300 lux Permitted	BRE Third Edition Criterion 1 % Area > 100 lux Proposed	BRE Third Edition Criterion 2 % Area > 300 lux Proposed	Impact of Proposed Amendment on Daylight
A	D1	91%	40%	93%	42%	Increase
B	D1	76%	41%	79%	44%	Increase
C	D1	40%	16%	42%	17%	Increase
D	D1	63%	26%	69%	28%	Increase
A	D2	100%	96%	100%	99%	Increase
B	D2	100%	97%	100%	98%	Increase
A	D3	77%	44%	79%	45%	Increase
B	D3	89%	41%	93%	43%	Increase

Table 5: Block D1, D2 and D3 – First Level – Units Subject to Modifications– BRE Guide Third Edition Daylight Results



Figure 10: Block D1, D2 and D3 – Second Level – Units Subject to Modifications

Room Ref.	Block	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved Before Amendment (%)	ADF Results Achieved After Amendment (%)	Impact of Proposed Amendment on Daylight
A	D1	Living Room/ Kitchen	2.0	3.29%	3.52%	Increase
B	D1	Living Room/ Kitchen	2.0	2.87%	3.15%	Increase
C	D1	Bedroom	1.0	1.53%	1.63%	Increase
D	D1	Living Room/ Kitchen	2.0	2.23%	2.42%	Increase
E	D1	Living Room/ Kitchen	2.0	4.06%	4.28%	Increase
F	D1	Bedroom	1.0	5.31%	5.49%	Increase
G	D1	Living Room/ Kitchen	2.0	2.15%	2.21%	Increase
H	D1	Bedroom	1.0	3.20%	3.31%	Increase
A	D2	Living Room/ Kitchen	2.0	4.01%	4.31%	Increase
B	D2	Bedroom	1.0	5.25%	5.41%	Increase
A	D3	Living Room/ Kitchen	2.0	3.10%	3.28%	Increase
B	D3	Living Room/ Kitchen	2.0	3.49%	3.55%	Increase

Table 6: Block D1, D2 and D3 – Second Level – Units Subject to Modifications – BRE Guide Second Edition Daylight Results



Room Ref.	Block	BRE Third Edition Criterion 1 % Area > 100 lux Permitted	BRE Third Edition Criterion 2 % Area > 300 lux Permitted	BRE Third Edition Criterion 1 % Area > 100 lux Proposed	BRE Third Edition Criterion 2 % Area > 300 lux Proposed	Impact of Proposed Amendment on Daylight
A	D1	96%	46%	100%	49%	Increase
B	D1	81%	51%	89%	53%	Increase
C	D1	55%	29%	61%	32%	Increase
D	D1	71%	45%	72%	49%	Increase
E	D1	100%	100%	100%	100%	Unchanged
F	D1	100%	100%	100%	100%	Unchanged
G	D1	52%	23%	55%	36%	Increase
H	D1	43%	15%	49%	53%	Increase
A	D2	100%	100%	100%	100%	Unchanged
B	D2	100%	100%	100%	100%	Unchanged
A	D3	79%	51%	86%	52%	Increase
B	D3	95%	49%	98%	49%	Increase

Table 7: Block D1, D2 and D3 – Second Level - Units Subject to Modifications– BRE Guide Third Edition Daylight Results



Figure 11: Block D1, D2 and D3 – Third Level – Units Subject to Modifications

Room Ref.	Block	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved Before Amendment (%)	ADF Results Achieved After Amendment (%)	Impact of Proposed Amendment on Daylight
A	D1	Living Room/ Kitchen	2.0	3.56%	3.76%	Increase
B	D1	Living Room/ Kitchen	2.0	2.96%	3.66%	Increase
C	D1	Bedroom	1.0	1.69%	2.31%	Increase
D	D1	Living Room/ Kitchen	2.0	2.36%	2.76%	Increase
E	D1	Living Room/ Kitchen	2.0	4.58%	4.89%	Increase
F	D1	Bedroom	1.0	5.68%	5.76%	Increase
G	D1	Living Room/ Kitchen	2.0	2.32%	2.41%	Increase
H	D1	Bedroom	1.0	3.33%	3.51%	Increase
A	D2	Living Room/ Kitchen	2.0	4.23%	4.52%	Increase
B	D2	Bedroom	1.0	5.59%	5.63%	Increase
A	D3	Living Room/ Kitchen	2.0	3.23%	3.65%	Increase
B	D3	Living Room/ Kitchen	2.0	3.76%	3.95%	Increase

Table 8: Block D1, D2 and D3 – Third Level – Units Subject to Modifications – BRE Guide Second Edition Daylight Results

Room Ref.	Block	BRE Third Edition Criterion 1 % Area > 100 lux Permitted	BRE Third Edition Criterion 2 % Area > 300 lux Permitted	BRE Third Edition Criterion 1 % Area > 100 lux Proposed	BRE Third Edition Criterion 2 % Area > 300 lux Proposed	Impact of Proposed Amendment on Daylight
A	D1	100%	62%	100%	68%	Increase
B	D1	92%	69%	95%	73%	Increase
C	D1	73%	36%	79%	46%	Increase
D	D1	79%	51%	86%	53%	Increase
E	D1	100%	100%	100%	100%	Unchanged
F	D1	100%	100%	100%	100%	Unchanged
G	D1	55%	26%	59%	39%	Increase
H	D1	48%	21%	52%	58%	Increase
A	D2	100%	100%	100%	100%	Unchanged
B	D2	100%	100%	100%	100%	Unchanged
A	D3	89%	69%	92%	72%	Increase
B	D3	100%	62%	100%	69%	Increase

Table 9: Block D1, D2 and D3 – Third Level - Units Subject to Modifications– BRE Guide Third Edition Daylight Results



Figure 12: Block D1, D2 and D3 – Fourth Level – Units Subject to Modifications

Room Ref.	Block	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved Before Amendment (%)	ADF Results Achieved After Amendment (%)	Impact of Proposed Amendment on Daylight
A	D1	Living Room/ Kitchen	2.0	3.96%	4.23%	Increase
B	D1	Living Room/ Kitchen	2.0	3.31%	4.06%	Increase
C	D1	Bedroom	1.0	2.04%	2.73%	Increase
D	D1	Living Room/ Kitchen	2.0	2.72%	2.92%	Increase
E	D1	Living Room/ Kitchen	2.0	4.91%	5.23%	Increase
F	D1	Bedroom	1.0	6.05%	6.31%	Increase
G	D1	Living Room/ Kitchen	2.0	2.42%	2.49%	Increase
H	D1	Bedroom	1.0	3.42%	3.63%	Increase
A	D2	Living Room/ Kitchen	2.0	4.89%	5.23%	Increase
B	D2	Bedroom	1.0	6.04%	6.43%	Increase
A	D3	Living Room/ Kitchen	2.0	3.86%	4.23%	Increase
B	D3	Living Room/ Kitchen	2.0	4.10%	4.67%	Increase

Table 10: Block D1, D2 and D3 – Fourth Level – Units Subject to Modifications – BRE Guide Second Edition Daylight Results

Room Ref.	Block	BRE Third Edition Criterion 1 % Area > 100 lux Permitted	BRE Third Edition Criterion 2 % Area > 300 lux Permitted	BRE Third Edition Criterion 1 % Area > 100 lux Proposed	BRE Third Edition Criterion 2 % Area > 300 lux Proposed	Impact of Proposed Amendment on Daylight
A	D1	100%	73%	100%	76%	Increase
B	D1	99%	75%	100%	77%	Increase
C	D1	86%	51%	89%	61%	Increase
D	D1	92%	62%	93%	68%	Increase
E	D1	100%	100%	100%	100%	Unchanged
F	D1	100%	100%	100%	100%	Unchanged
G	D1	59%	31%	62%	43%	Increase
H	D1	52%	26%	57%	63%	Increase
A	D2	100%	100%	100%	100%	Unchanged
B	D2	100%	100%	100%	100%	Unchanged
A	D3	96%	83%	99%	89%	Increase
B	D3	100%	71%	100%	83%	Increase

Table 11: Block D1, D2 and D3 – Fourth Level - Units Subject to Modifications– BRE Guide Third Edition Daylight Results



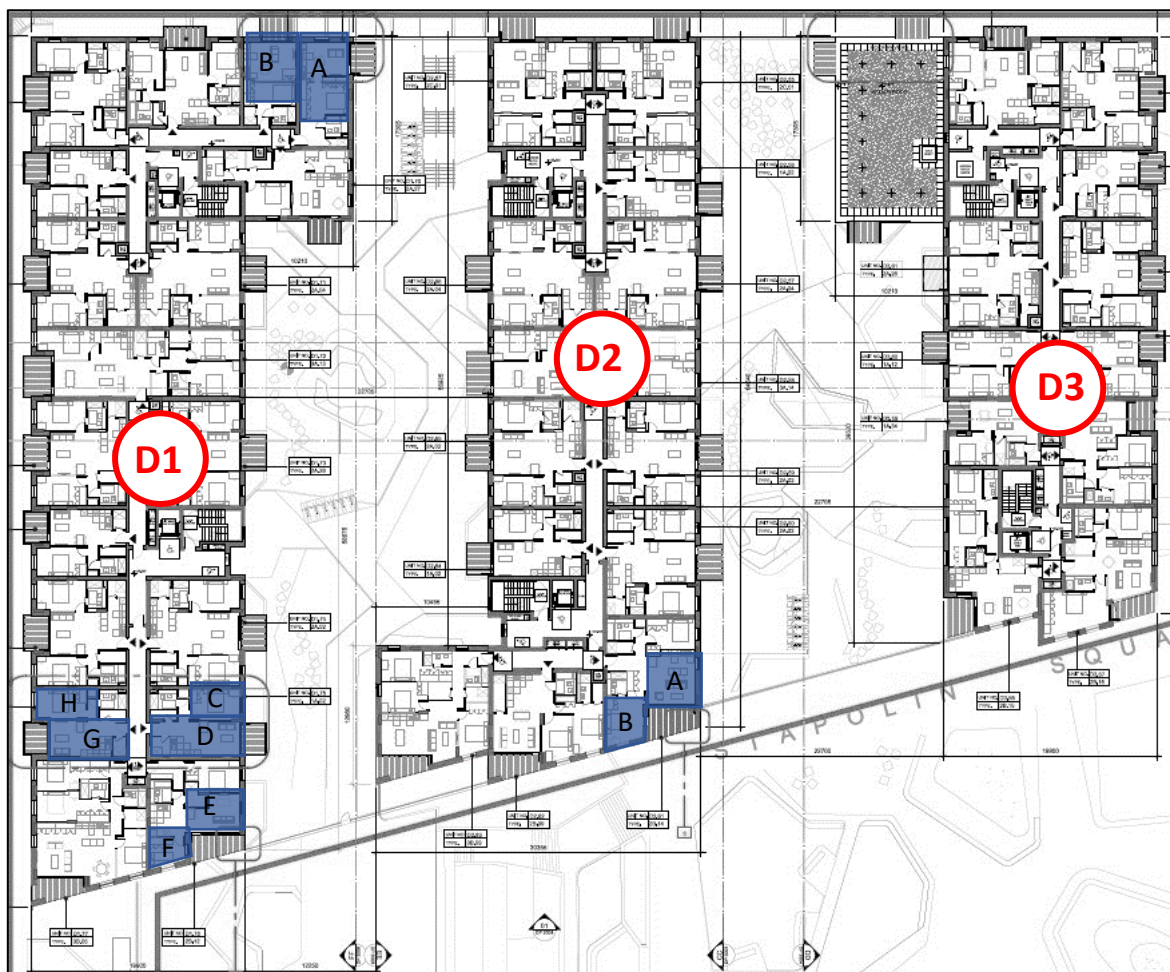


Figure 13: Block D1, D2 and D3 – Fifth Level – Units Subject to Modifications

Room Ref.	Block	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved Before Amendment (%)	ADF Results Achieved After Amendment (%)	Impact of Proposed Amendment on Daylight
A	D1	Living Room/ Kitchen	2.0	4.20%	4.45%	Increase
B	D1	Living Room/ Kitchen	2.0	3.56%	4.12%	Increase
C	D1	Bedroom	1.0	2.35%	2.81%	Increase
D	D1	Living Room/ Kitchen	2.0	3.15%	3.22%	Increase
E	D1	Living Room/ Kitchen	2.0	5.16%	5.36%	Increase
F	D1	Bedroom	1.0	6.36%	6.59%	Increase
G	D1	Living Room/ Kitchen	2.0	2.49%	2.53%	Increase
H	D1	Bedroom	1.0	3.52%	3.69%	Increase
A	D2	Living Room/ Kitchen	2.0	5.23%	5.47%	Increase
B	D2	Bedroom	1.0	6.35%	6.59%	Increase

Table 12: Block D1, D2 and D3 – Fifth Level – Units Subject to Modifications – BRE Guide Second Edition Daylight Results

Room Ref.	Block	BRE Third Edition Criterion 1 % Area > 100 lux Permitted	BRE Third Edition Criterion 2 % Area > 300 lux Permitted	BRE Third Edition Criterion 1 % Area > 100 lux Proposed	BRE Third Edition Criterion 2 % Area > 300 lux Proposed	Impact of Proposed Amendment on Daylight
A	D1	100%	81%	100%	83%	Increase
B	D1	100%	83%	100%	86%	Increase
C	D1	93%	61%	95%	70%	Increase
D	D1	98%	70%	99%	73%	Increase
E	D1	100%	100%	100%	100%	Unchanged
F	D1	100%	100%	100%	100%	Unchanged
G	D1	63%	33%	66%	46%	Increase
H	D1	59%	29%	61%	55%	Increase
A	D2	100%	100%	100%	100%	Unchanged
B	D2	100%	100%	100%	100%	Unchanged

Table 13: Block D1, D2 and D3 – Fifth Level - Units Subject to Modifications– BRE Guide Third Edition Daylight Results

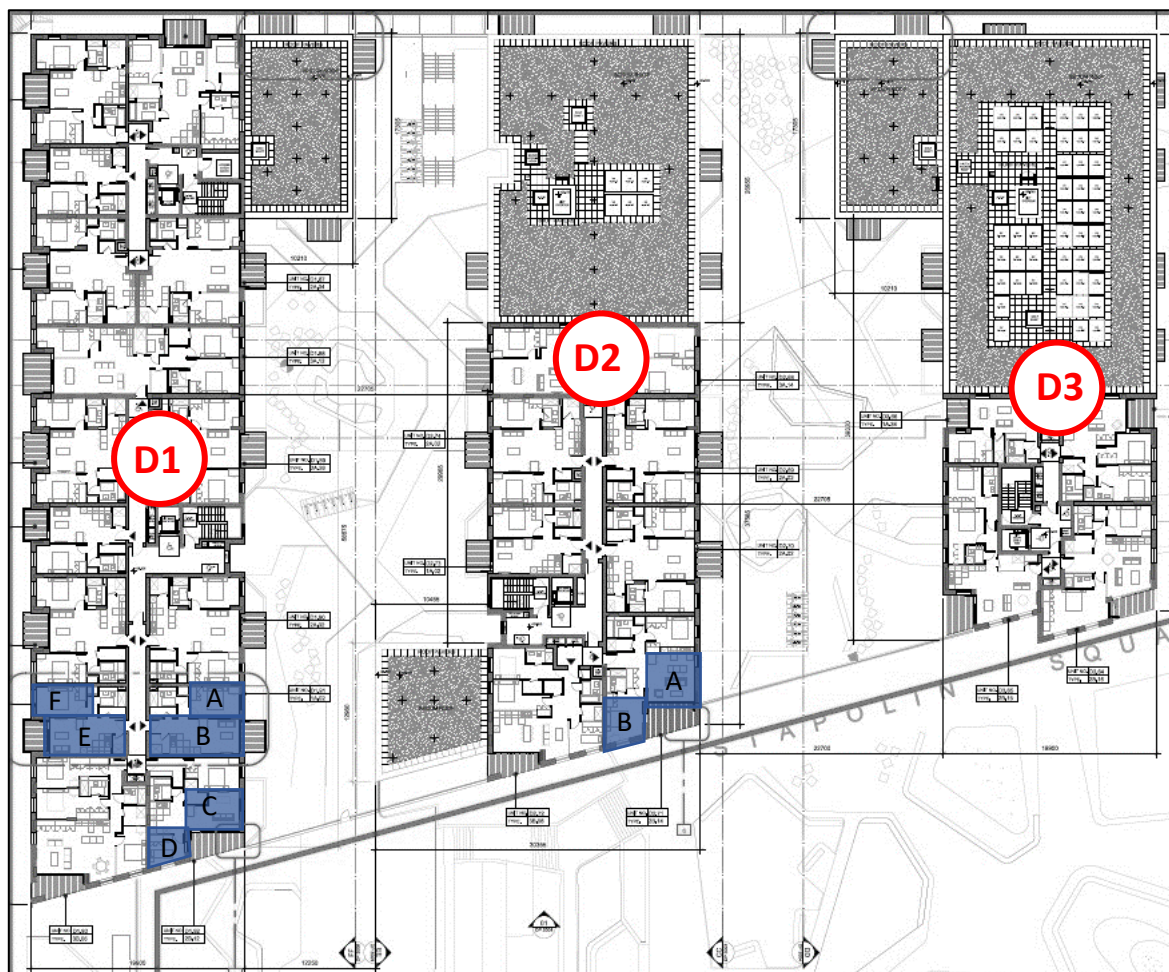


Figure 14: Block D1, D2 and D3 – Sixth Level – Units Subject to Modifications

Room Ref.	Block	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved Before Amendment (%)	ADF Results Achieved After Amendment (%)	Impact of Proposed Amendment on Daylight
A	D1	Living Room/ Kitchen	2.0	4.45%	4.69%	Increase
B	D1	Living Room/ Kitchen	2.0	3.61%	4.32%	Increase
C	D1	Bedroom	1.0	2.43%	2.91%	Increase
D	D1	Living Room/ Kitchen	2.0	3.35%	3.40%	Increase
E	D1	Living Room/ Kitchen	2.0	2.62%	2.79%	Increase
F	D1	Bedroom	1.0	3.63%	3.81%	Increase
A	D2	Living Room/ Kitchen	2.0	5.46%	5.61%	Increase
B	D2	Bedroom	1.0	6.55%	6.72%	Increase

Table 14: Block D1, D2 and D3 – Sixth Level – Units Subject to Modifications – BRE Guide Second Edition Daylight Results

Room Ref.	Block	BRE Third Edition Criterion 1 % Area > 100 lux Permitted	BRE Third Edition Criterion 2 % Area > 300 lux Permitted	BRE Third Edition Criterion 1 % Area > 100 lux Proposed	BRE Third Edition Criterion 2 % Area > 300 lux Proposed	Impact of Proposed Amendment on Daylight
A	D1	100%	89%	100%	92%	Increase
B	D1	100%	90%	100%	96%	Increase
C	D1	99%	71%	100%	84%	Increase
D	D1	100%	78%	99%	81%	Increase
E	D1	69%	38%	70%	52%	Increase
F	D1	63%	32%	66%	60%	Increase
A	D2	100%	100%	100%	100%	Unchanged
B	D2	100%	100%	100%	100%	Unchanged

Table 15: Block D1, D2 and D3 – Sixth Level - Units Subject to Modifications– BRE Guide Third Edition Daylight Results



Overall, the 62 rooms which are subject to modifications see an increase in the daylight received, following the incorporation of the proposed changes, tested under the Second Edition of the BRE Guide. All 62 rooms comply with the BRE Second Edition (2011) recommendations for daylight both before and after the incorporation of the proposed changes.

When tested under the Third Edition daylight standard, following the incorporation of the proposed changes, 44 of the 62 rooms see an increase in daylight received, while the remaining 18 see no change in the daylight received. Of the 62 rooms tested, 35 units comply with both criteria of the BRE Guide Third Edition following the incorporation of the proposed changes.

The improvement in daylight experienced following the incorporation of the proposed modifications, is as expected considering the most substantial changes in the proposed amendment are an overall reduction in massing.

## **5.5. DAYLIGHT RESULTS – INTERNAL DAYLIGHT TO APARTMENTS (2011 METHODOLOGY)**

This section outlines the apartments that were selected for assessment of internal daylight levels, within the blocks which are proposed to be modified, in the original daylight analysis for the permitted. The results of the analysis are outlined within the accompanying tables.

32 units fall short of compliance with the BRE Guide Second Edition (2011) daylight standard, however these 32 units also did so prior to the incorporation of the proposed changes. Prior to the incorporation of the proposed changes, a total of 34 units failed to meet the Second Edition (2011) daylight standard. It can be stated that due to the proposed changes, 2 additional units comply with the BRE Guide Second Edition daylight standard. Of the 80 units tested, 70 see an improvement in daylight, 6 see a reduction, while 4 are unchanged.

All units subject of this assessment are permitted under ABP Reg. Ref. 310418, and are included here for assessment to illustrate that daylight is improving as a result of the proposed changes in this application.

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



Figure 15: Block A1 First Floor - Assessed Rooms

Room Ref.	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved (%)	Meets Minimum Recommended ADF Target in BRE Guide Second Edition (%)
A	Living Room/ Kitchen	2.0	3.04%	Y
B	Living Room/ Kitchen	2.0	2.60%	Y
C	Bedroom	1.0	2.14%	Y
D	Living Room/ Kitchen	2.0	2.88%	Y
E	Bedroom	1.0	3.16%	Y
F	Living Room/ Kitchen	2.0	1.64%	N
G	Bedroom	1.0	1.05%	Y
H	Bedroom	1.0	3.16%	Y
I	Bedroom	1.0	1.42%	Y
J	Living Room/ Kitchen	2.0	1.32%	N

Table 16: Block A1 First Floor - Average Daylight Factor Results



Figure 16: Block A1 Second Floor - Assessed Rooms

Room Ref.	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved (%)	Meets Minimum Recommended ADF Target in BRE Guide Second Edition (%)
A	Bedroom	1.0	3.62%	Y
B	Living Room/ Kitchen	2.0	1.04%	N
C	Bedroom	1.0	1.60%	Y
D	Living Room/ Kitchen	2.0	1.01%	N
E	Living Room/ Kitchen	2.0	3.08%	Y
F	Bedroom	1.0	3.53%	Y
G	Living Room/ Kitchen	2.0	2.82%	Y

Table 17: Block A1 Second Floor - Average Daylight Factor Results



Figure 17: Block A1 Third Floor - Assessed Rooms

Room Ref.	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved (%)	Meets Minimum Recommended ADF Target in BRE Guide Second Edition (%)
A	Living Room/ Kitchen	2.0	1.25%	N
B	Living Room/ Kitchen	2.0	1.22%	N

Table 18: Block A1 Third Floor - Average Daylight Factor Results



Figure 18: Block A1 Fourth Floor - Assessed Rooms

Room Ref.	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved (%)	Meets Minimum Recommended ADF Target in BRE Guide Second Edition (%)
A	Living Room/ Kitchen	2.0	1.52%	N
B	Living Room/ Kitchen	2.0	1.48%	N

Table 19: Block A1 Fourth Floor - Average Daylight Factor Results



Figure 19: Block A1 Fifth Floor - Assessed Rooms

Room Ref.	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved (%)	Meets Minimum Recommended ADF Target in BRE Guide Second Edition (%)
A	Living Room/ Kitchen	2.0	2.06%	Y
B	Living Room/ Kitchen	2.0	2.02%	Y

Table 20: Block A1 Fifth Floor - Average Daylight Factor Results

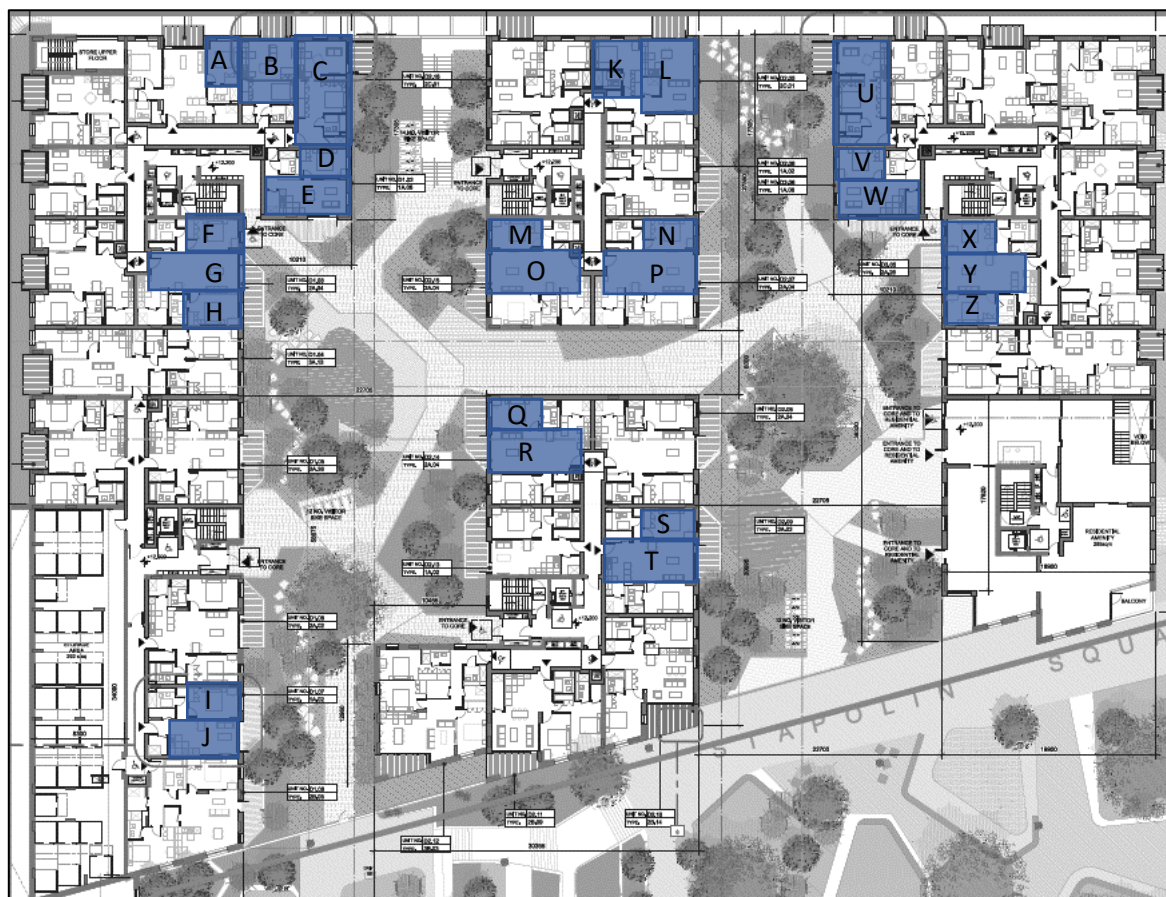


Figure 20: Blocks D1, D2 and D3 First Floor - Assessed Rooms

Room Ref.	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved (%)	Meets Minimum Recommended ADF Target in BRE Guide Second Edition (%)
A	Bedroom	1.0	3.62%	Y
B	Living Room/ Kitchen	2.0	3.53%	Y
C	Living Room/ Kitchen	2.0	3.08%	Y
D	Bedroom	1.0	1.21%	Y
E	Living Room/ Kitchen	2.0	3.13%	Y
F	Bedroom	1.0	1.05%	Y
G	Living Room/ Kitchen	2.0	0.79%	N
H	Bedroom	1.0	1.84%	Y
I	Bedroom	1.0	3.56%	Y
J	Living Room/ Kitchen	2.0	3.95%	Y
K	Bedroom	1.0	1.24%	Y
L	Living Room/ Kitchen	2.0	1.60%	N
M	Bedroom	1.0	1.28%	Y
N	Bedroom	1.0	1.12%	Y
O	Living Room/ Kitchen	2.0	0.98%	N
P	Living Room/ Kitchen	2.0	0.98%	N



<b>Q</b>	Bedroom	1.0	1.90%	Y
<b>R</b>	Living Room/ Kitchen	2.0	1.02%	N
<b>S</b>	Bedroom	1.0	1.24%	Y
<b>T</b>	Living Room/ Kitchen	2.0	1.60%	N
<b>U</b>	Living Room/ Kitchen	2.0	2.50%	Y
<b>V</b>	Bedroom	1.0	1.43%	Y
<b>W</b>	Living Room/ Kitchen	2.0	2.50%	Y
<b>X</b>	Bedroom	1.0	2.89%	Y
<b>Y</b>	Living Room/ Kitchen	2.0	1.09%	N
<b>Z</b>	Bedroom	1.0	1.83%	Y

Table 21: Blocks D1, D2 and D3 First Floor - Average Daylight Factor Results



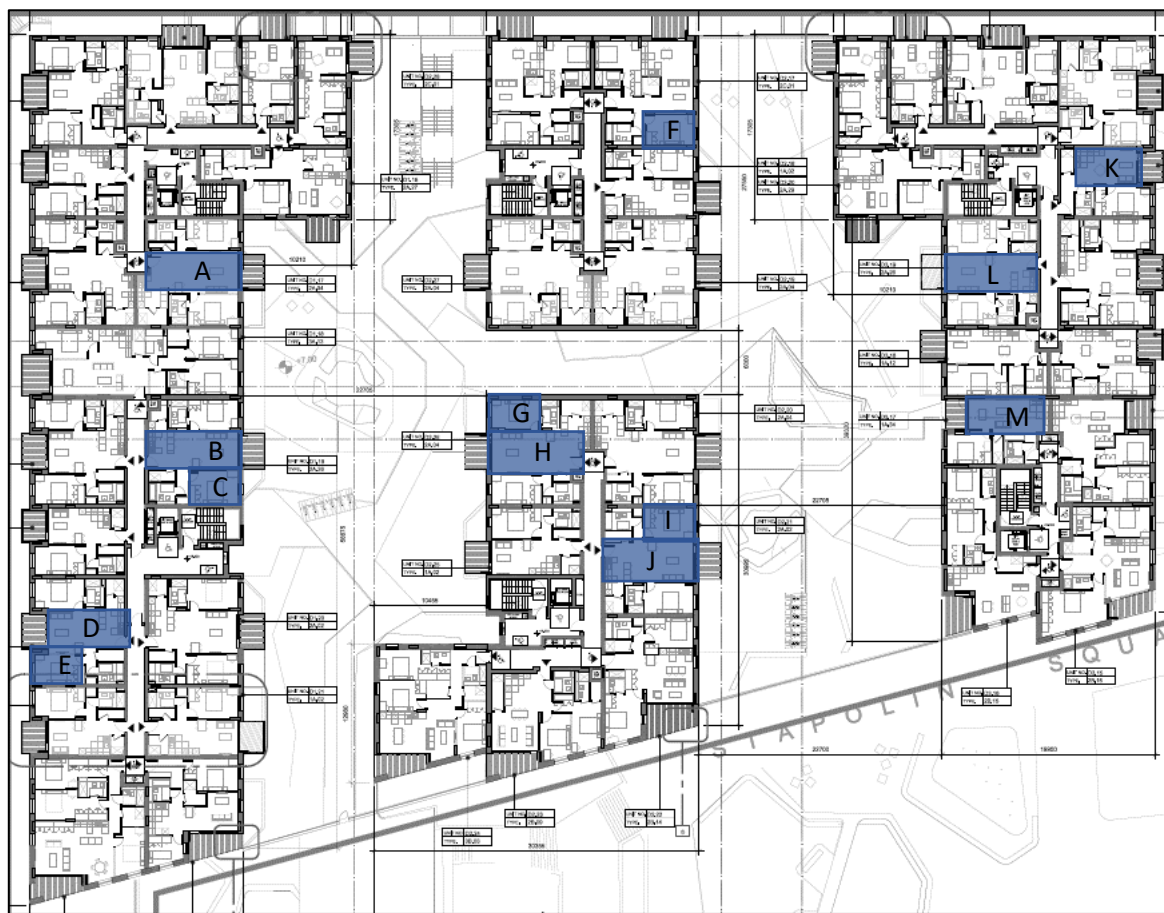


Figure 21: Blocks D1, D2 and D3 Second Floor - Assessed Rooms

Room Ref.	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved (%)	Meets Minimum Recommended ADF Target in BRE Guide Second Edition (%)
A	Living Room/ Kitchen	2.0	0.76%	N
B	Living Room/ Kitchen	2.0	1.24%	N
C	Bedroom	1.0	1.49%	Y
D	Living Room/ Kitchen	2.0	1.96%	N
E	Bedroom	1.0	3.61%	Y
F	Bedroom	1.0	2.10%	Y
G	Bedroom	1.0	1.00%	Y
H	Living Room/ Kitchen	2.0	1.29%	N
I	Bedroom	1.0	1.67%	Y
J	Living Room/ Kitchen	2.0	1.75%	N
K	Living Room/ Kitchen	2.0	2.02%	Y
L	Living Room/ Kitchen	2.0	1.13%	N
M	Living Room/ Kitchen	2.0	0.56%	N

Table 22: Blocks D1, D2 and D3 Second Floor - Average Daylight Factor Results

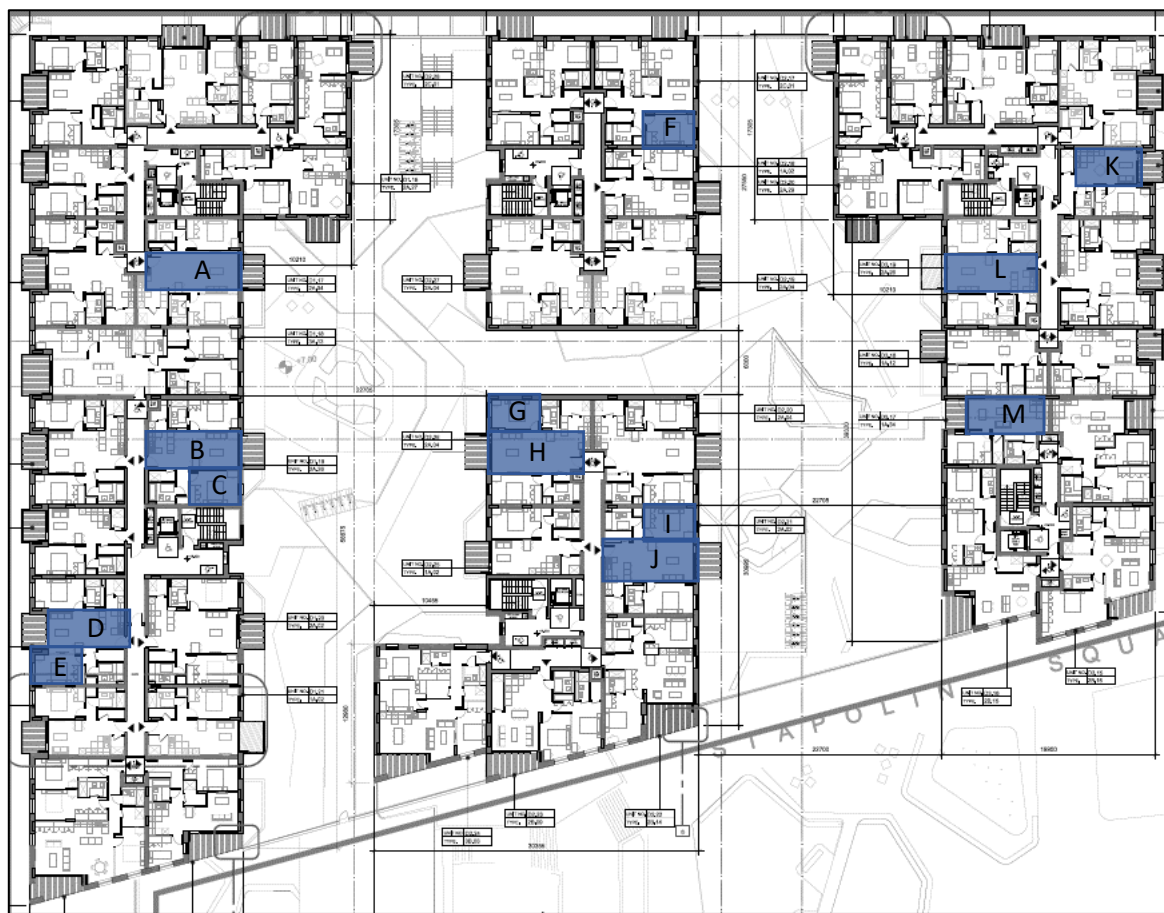


Figure 22: Blocks D1, D2 and D3 Third Floor - Assessed Rooms

Room Ref.	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved (%)	Meets Minimum Recommended ADF Target in BRE Guide Second Edition (%)
A	Living Room/ Kitchen	2.0	0.98%	N
B	Living Room/ Kitchen	2.0	1.54%	N
C	Bedroom	1.0	1.72%	Y
D	Living Room/ Kitchen	2.0	1.97%	N
E	Bedroom	1.0	3.62%	Y
F	Bedroom	1.0	1.67%	Y
G	Bedroom	1.0	2.36%	Y
H	Living Room/ Kitchen	2.0	1.29%	N
I	Bedroom	1.0	1.67%	Y
J	Living Room/ Kitchen	2.0	1.75%	N
K	Bedroom	1.0	2.03%	Y
L	Living Room/ Kitchen	2.0	1.51%	N
M	Living Room/ Kitchen	2.0	0.72%	N

Table 23: Blocks D1, D2 and D3 Third Floor - Average Daylight Factor Results

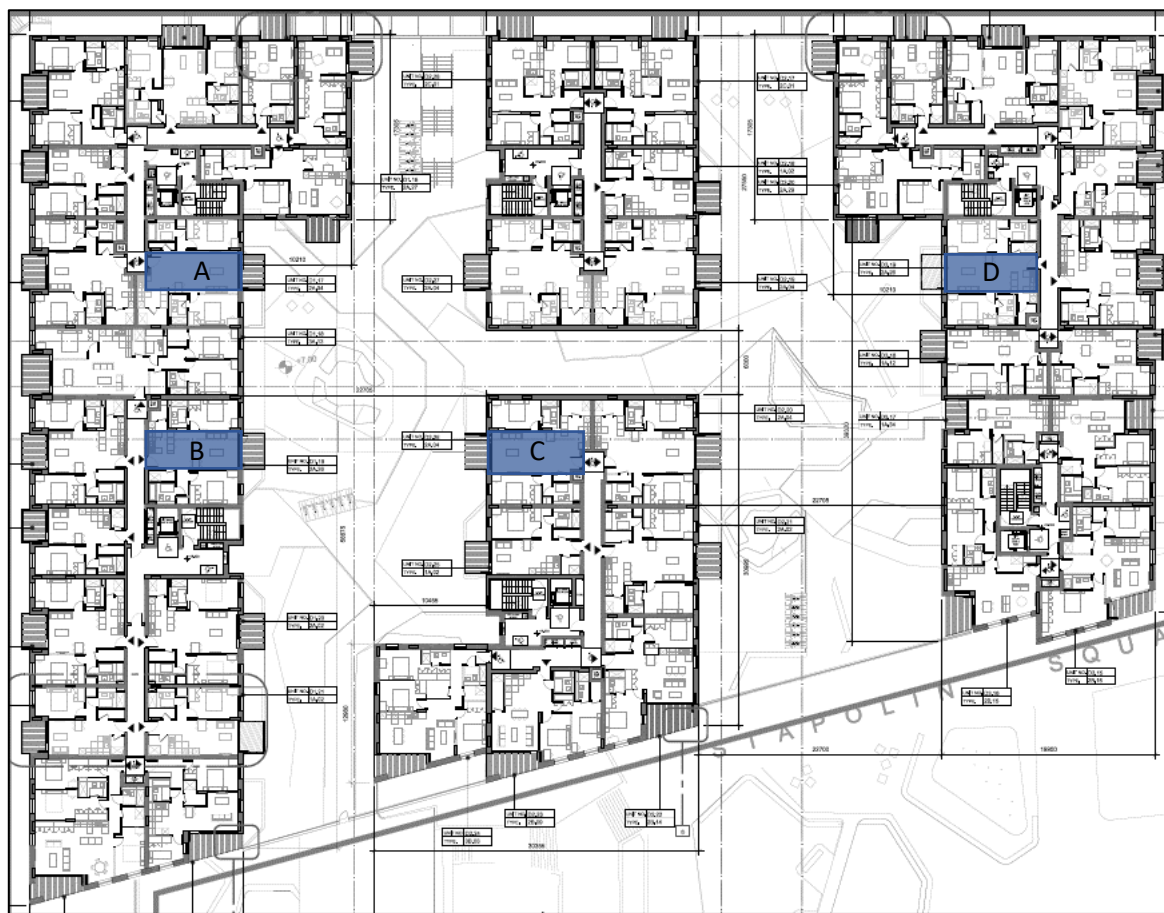


Figure 23: Blocks D1, D2 and D3 Fourth Floor - Assessed Rooms

Room Ref.	Room Type	Minimum Recommended ADF Target in BRE Guide Second Edition (%)	ADF Results Achieved (%)	Meets Minimum Recommended ADF Target in BRE Guide Second Edition (%)
A	Living Room/ Kitchen	2.0	2.11%	Y
B	Living Room/ Kitchen	2.0	2.01%	Y
C	Living Room/ Kitchen	2.0	2.09%	Y
D	Living Room/ Kitchen	2.0	2.07%	Y

Table 24: Blocks D1, D2 and D3 Fourth Floor - Average Daylight Factor Results

In summary, the vast majority of units not only meet but in the majority of cases exceed the Average Daylight Factor target recommended in BRE Guide Second Edition. Of the 911 rooms which are in the blocks affected by the proposed alteration to the permitted development (Blocks A1, D1, D2 and D3), only 32 fall short of the BRE Second Edition Guidelines, therefore a 96% compliance rate is achieved. Prior to the incorporation of the proposed changes, the compliance rate for the permitted scheme was 92%, therefore a small improvement in overall daylight to the scheme is seen, following the incorporation of the proposed changes.

The 32 units which fall short of compliance also did so prior to the incorporation of the proposed changes. On average, ADF increases by 0.07% in each unit.

All units subject of this assessment are permitted under ABP Reg. Ref. 310418, and are included here for assessment to illustrate that no negative impact on daylight is occurring through the removal of units and height within this application, as was expected.

Total No. of Rooms	No. Living/ Kitchen Rooms Not Compliant with BS 8206 Guidelines (2.0% ADF)	No. Bedrooms Not Compliant with BS 8206 Guidelines (1.0% ADF)	Total No. Rooms Not Compliant with BS 8206 Guidelines	% of compliance with BS 8206
911	32	0	32	96%

Table 25: Percentage of Compliance – Internal Daylight - BRE Second Guide (2011)

## 6. SUNLIGHT ASSESSMENT TO AMENITY SPACES WITHIN THE DEVELOPMENT

The Second Edition (2011) of the BRE Guidelines recommends that for sunlight to external amenity spaces, they should 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 21<sup>st</sup>.

In order to show that sunlight levels within the amenity space of the development achieve compliance with the Second Edition (2011) of the BRE Guidelines following the reduction in block heights, a sunlight study has been carried out.

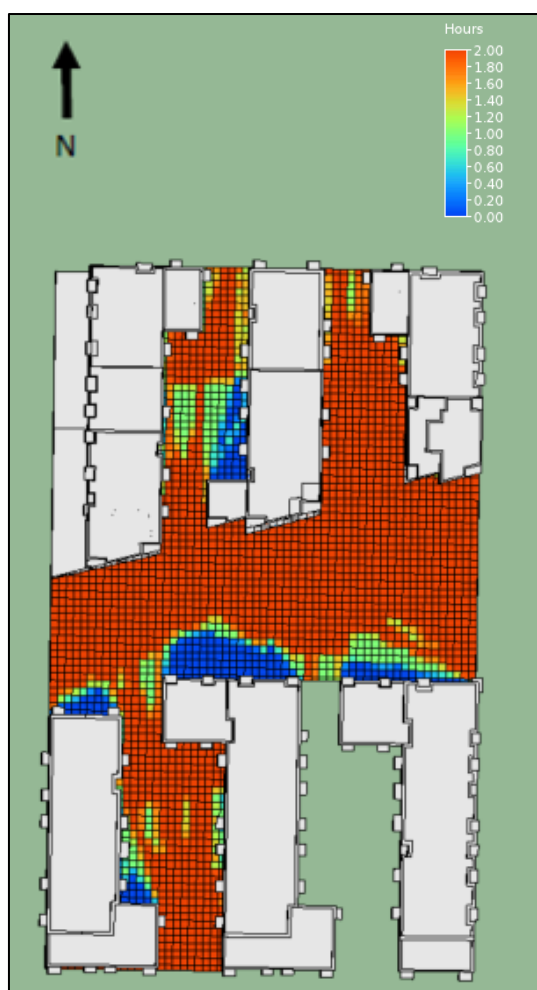


Figure 24: Amenity Spaces - Hours of Sunlight on March 21<sup>st</sup> (Amenity areas to blocks proposed to be modified)

The red squares in Figure 24 illustrate the areas that receive a minimum of 2 hours of sunlight on the 21<sup>st</sup> of March for the proposed development. The majority of the communal amenity spaces receive

2 hours or more of sunlight on March 21<sup>st</sup>, therefore compliance with the BRE Guidelines is achieved, as was the case prior to the incorporation of the proposed changes. The sunlight levels received within the amenity spaces of the development improve following the incorporation of the proposed changes.

The excellent daylight and sunlight access can also be attributed to the sunlight reflection from the building facades that have been carefully designed with light materials, thus creating comfortable and desirable spaces for the residents.



## **7. SUNLIGHT ASSESSMENT WITHIN THE PROPOSED DEVELOPMENT (APSH)**

In order to assess the amount of sunlight that is received by windows within the proposed development, the Sunlight Hours calculation method as outlined in BRE Guide Second Edition (2011) and Third Edition (2022) has been used.

All units subject of this assessment are permitted under ABP Reg. Ref. 310418, and are included here for assessment to illustrate that no negative impact on sunlight is occurring through the removal of units and height within this application. Section 7.1 details how sunlight to windows has marginally improved following the incorporation of the proposed changes when tested to the Second Edition standard, with both annual and winter sunlight improving. Section 7.2 details the sunlight to windows received, as tested to the Third Edition standard.

For the permitted, sunlight was assessed against the BRE Second Edition (2011) standard, as it was the latest standard at time of submission. In order to allow for a fair comparison to the permitted, and for an accurate assessment of the impact of the proposed reduction in height, the Second Edition (2011) standard is used here.

BRE guidelines outline that in housing, the main requirement for sunlight is in living rooms, where it is valued at any time of the day but especially in the afternoon. BRE guidelines also state that sunlight is less important in bedrooms and kitchens. All windows to occupied rooms within the blocks which are proposed to be altered (Blocks A1, D1, D2 and D3) have been included in the analysis.

As the location of balconies have been designed to primarily comply with the apartment design guidelines, the amount of sunlight reaching these living room windows at lower floors will naturally be reduced and achieving the recommended values within BRE Guidelines can become challenging. Therefore, in addition to assessing the criteria recommended in the BRE Guidelines, a relaxed value has been set to give further reference in relation to sunlight levels.

## 7.1. SUNLIGHT ASSESSMENT – (2011 METHODOLOGY)

Sunlight access is assessed against the methodology detailed in BRE Guide Second Edition, as was done for the permitted development. This methodology requires that a given window receives greater than or equal to 25% of available sunlight hours across the year, and greater than or equal to 5% of available sunlight hours across the winter months. Windows in red in Figure 25 to Figure 28 show the levels of compliance achieved over the annual period.

The Table 26 below summarises the annual probable sunlight hours for the annual period and for the winter period based on the BRE Second Edition recommendations, for the blocks affected by the proposed alterations. Two additional checks with relaxed benchmarks have been carried out to show the majority of windows still achieve good levels of sunlight across the development.

	BRE Guidelines Check 1	BRE Guidelines Check 2	Additional Check 1	Additional Check 2
	APSH > 25%	APSH > 5%	APSH > 20%	APSH > 15%
	Annual Period	Winter Period	Annual Period	Annual Period
Percentage of Compliance	59%	71%	66%	83%

Table 26: APSH Summary (Blocks A1, D1, D2 and D3) – Second Edition

The results from the analysis have shown that for the annual period, 59% of the analysed windows achieve the recommended APSH values stated in the BRE Guidelines, while 71% of windows achieve the recommended values during the winter months, when sunlight is more valuable. When a relaxed benchmark of 20% and 15% is applied, 66% and 83% of the analysed windows achieve this alternative value, showing that acceptable levels of sunlight will be achieved across the blocks affected by the proposed alteration. The shortfall in compliance can be attributed to the projection of balconies and to the north facing windows, as was the case for the permitted scheme.

Prior to the proposed modifications, the Annual APSH compliance rate was 53%, and the Winter APSH compliance rate was 67%. Both figures have improved following the incorporation of the proposed alterations.



Figure 25: APSH (2011 Methodology) – South East Elevation



Figure 26: APSH (2011 Methodology) – South West Elevation





Figure 27: APSH (2011 Methodology) – North West Elevation

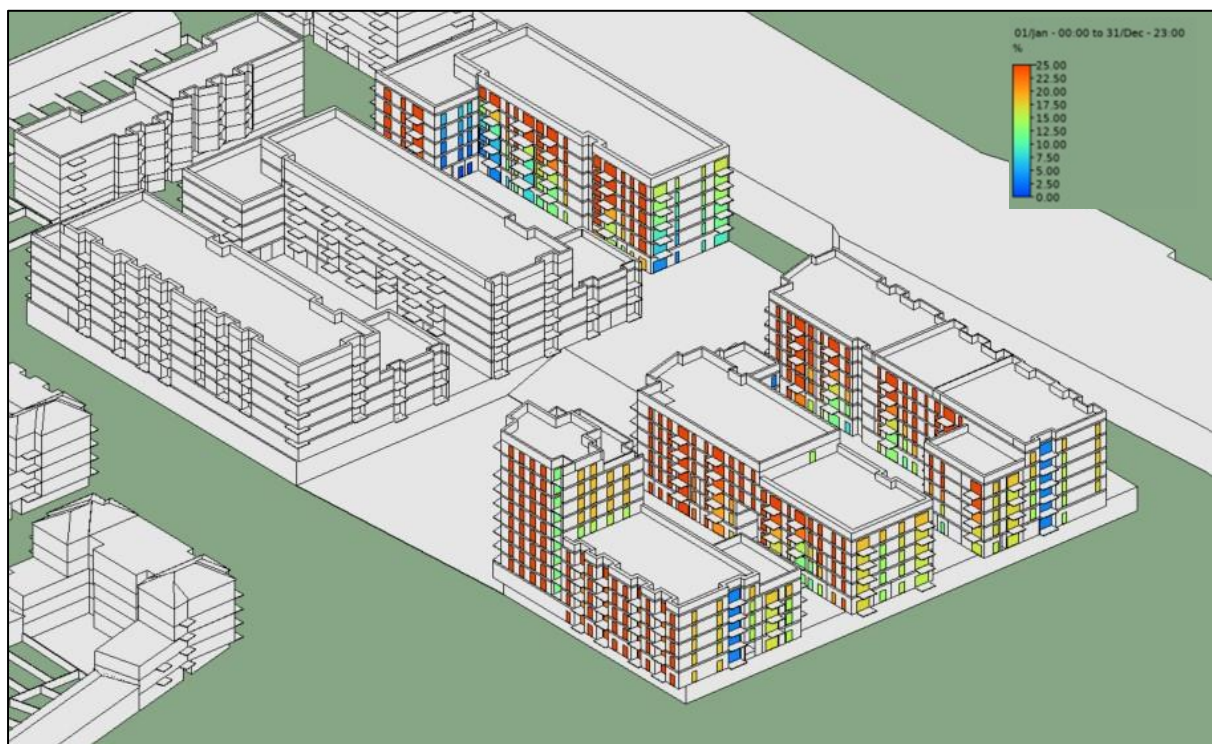


Figure 28: APSH (2011 Methodology) – North East Elevation

It must be noted that the results within this report should be treated with certain degree of flexibility, based on the following statement in the BRE guidelines:

*“the guide is intended for building designers and their clients, consultants and planning officials. 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 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”.*

In addition, BRE guidelines states that *“the degree of satisfaction is related to the expectation of sunlight. If a room is necessarily north facing or if the building is in a densely-built urban area, the absence of sunlight is more acceptable than when its exclusion seems arbitrary”.*

## 7.2. SUNLIGHT ASSESSMENT – (THIRD EDITION METHODOLOGY)

The sunlight values experienced across the blocks affected by the proposed alteration are illustrated in the following images for the Third Edition requirements. In Figure 29 to Figure 32 windows coloured red achieve the minimum standard as outlined in BRE Guide Third Edition (2022) on March 21<sup>st</sup>.

	<b>BRE Guidelines Third Edition</b> <b>Sunlight &gt; 1.5 Hrs (Minimum Standard)</b> <b>March 21<sup>st</sup></b>
<b>Percentage of Compliance</b>	73%

Table 27: Sunlight Analysis (Blocks A1, D1, D2 and D3) - BRE Guide Third Edition



Figure 29: Sunlight Hours (2022 Methodology) Minimum Standard – South East Elevation



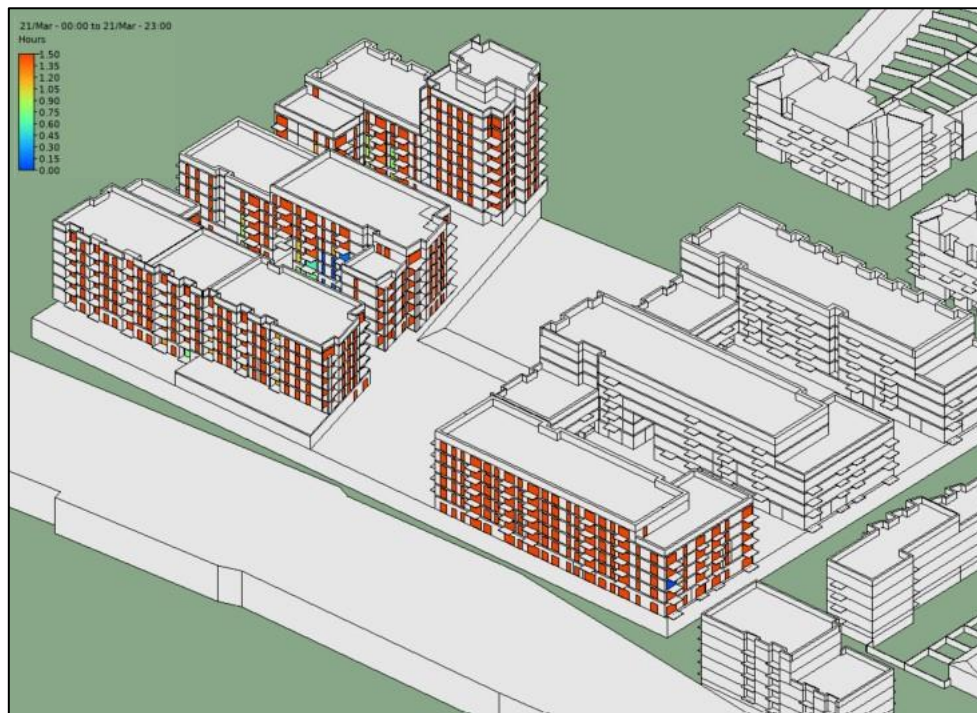


Figure 30: Sunlight Hours (2022 Methodology) Minimum Standard – South West Elevation



Figure 31: Sunlight Hours (2022 Methodology) Minimum Standard – North West Elevation

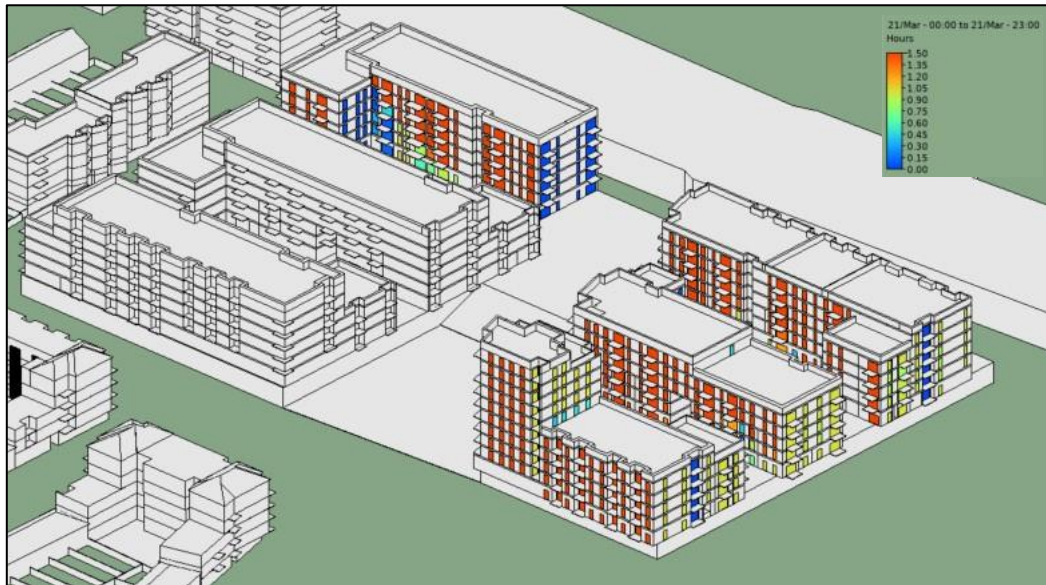


Figure 32: Sunlight Hours (2022 Methodology) Minimum Standard – North East Elevation

The 73% compliance rate achieved represents a positive result, and is in line with expectations.

## 8. ASSESSING THE IMPACT ON SURROUNDING PROPERTIES

### 8.1. DAYLIGHT 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 alterations to the permitted development. The same flow matrix was followed for the permitted. The analysis shows that following the incorporation of the proposed changes, there is no adverse change in impact on surrounding properties, as was expected.

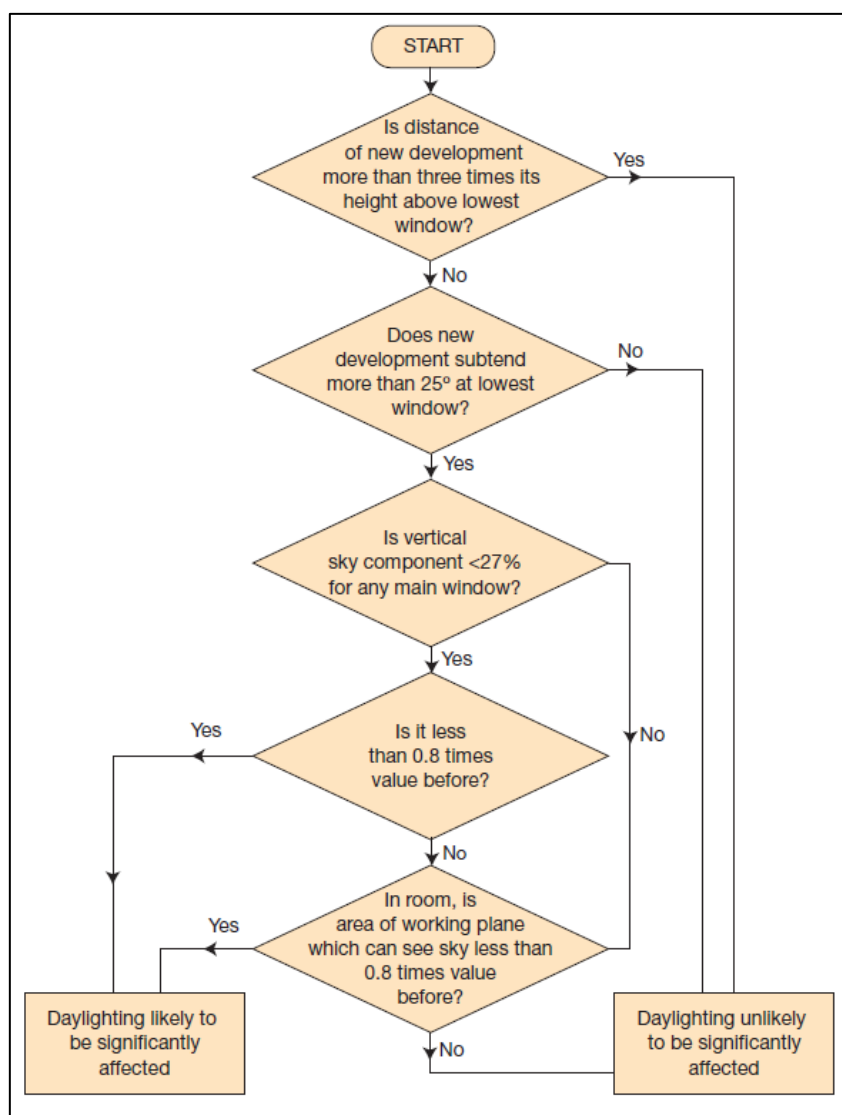


Figure 33: Daylight Assessment Methodology

As per the flow matrix, the BRE guidelines provide three main methods for assessing daylight availability. In order to assess the impact of the proposed development to surrounding buildings, the 25° line was selected as the method of analysis.

### 8.1.1 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. If the proposed development extends beyond the 25° line then further analysis is required (Step 2).

### 8.1.2 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 analysis:

- 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 Sky Line should be undertaken.

### **8.1.3 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.

Sections 8.2 and 8.3 on the following pages outline the details of the analysis undertaken.

## 8.2. 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 Guidelines, 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 (including developments not yet permitted) where the occupants have a reasonable expectation of daylight. Table 28 identifies all sensitive receptors analysed, whilst Figure 34 identifies their location.

Development Ref.	Development name	Status
Ref. 1	Clongriffin and Marrsfield Developments	Permitted
Ref. 2	Properties at Myrtle Avenue	Existing
Ref. 3	Site under construction as per planning permission FCC Reg. Ref. F16A/0412, ABP Reg. Ref. ABP-248970 (as amended)	Permitted
Ref. 4	Red Arches Drive Properties	Existing
Ref. 5	Shoreline GA3 – Site Subject to separate SHD process	Permitted

Table 28: Sensitive Receptors surrounding Project Shoreline GA1 Development



The image below identifies the location of the sensitive receptors.



Figure 34: Location of Sensitive Receptors

GA2 lands lie to the east of GA1, and have been recently subject of a refusal of permission under ABP Ref. 313177. They therefore do not form part of this analysis.

### 8.3. DAYLIGHT IMPACT ON SURROUNDING PROPERTIES

#### 25° line

BRE Guidelines state that if a proposed development falls beneath a 25° line taken from a point 1.6 metres above ground level from any adjacent properties, then no impact is perceived and further analysis is not required. This methodology was followed for this analysis (to assess the impact of the reduction in block heights), as it was followed for the initial assessment for the permitted.

As illustrated below, all identified sensitive receptors aside from Ref. 5 fall outside the 25° line created, therefore, they are too far away and there will not be a perceptible impact. Ref. 5 is subject to a separate SHD permission. The daylight/sunlight analysis that was carried out for that permission includes the impact of GA1. Therefore, sensitive receptor Ref. 5 was not selected for further analysis as the impact of GA1 has been accounted for within the daylight/sunlight results included within that application. The reduction in height to Blocks D1, D2, and D3 will only reduce the impact of GA1 on GA3.

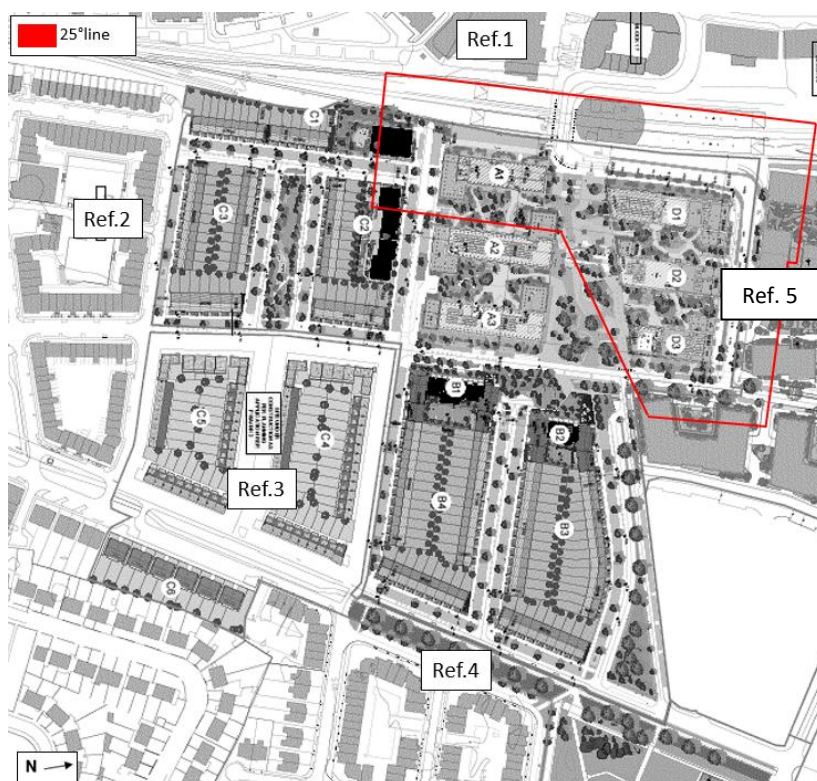


Figure 35: 25° Line

Development Ref.	Development name	Impact Perceived
Ref. 1	Clongriffin and Marrsfield Developments	This sensitive receptor falls outside of the 25° line. Therefore the sensitive receptor is located too far from GA1 to perceive an impact.
Ref. 2	Properties at Myrtle Avenue	This sensitive receptor falls outside of the 25° line. Therefore the sensitive receptor is located too far from GA1 to perceive an impact.
Ref. 3	Site under construction as per planning permission FCC Reg. Ref. F16A/0412, ABP Reg. Ref. ABP-248970 (as amended)	This sensitive receptor falls outside of the 25° line. Therefore the sensitive receptor is located too far from GA1 to perceive an impact.
Ref. 4	Red Arches Drive Properties	This sensitive receptor falls outside of the 25° line. Therefore the sensitive receptor is located too far from GA1 to perceive an impact.
Ref. 5	Shoreline GA3 – Site Subject to separate SHD process	A daylight and sunlight EIAR chapter has been carried out for the separate subject application where the impact of GA01 on GA03 has been taken into account within the calculations.

Table 29: Summary of Daylight Impact to Sensitive Receptors

## 8.4. SUNLIGHT IMPACT TO NEIGHBOURING PROPERTIES (APSH)

In order to analyse the impact the proposed reductions in block height will have on sunlight access within the adjacent properties to the development, the Annual Probable Sunlight Hours (APSH) is the method used for this assessment, as it was done for the permitted. The results of this section confirm that there is no negative impact on neighbouring buildings sunlight due to the proposed reduction in block height.

BRE Guidelines outline that if a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlight of the existing dwelling may be adversely affected (refer to Figure 36).

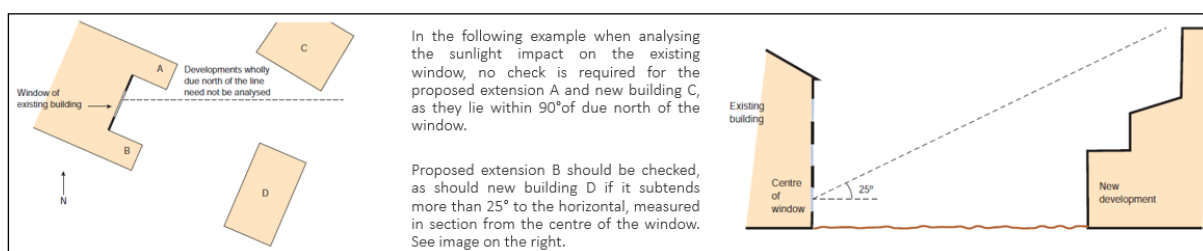


Figure 36: BRE Extract of the methodology for rooms selection - APSH

The sunlight within adjacent properties may be adversely affected if the center of the window:

- Receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between September 21<sup>st</sup> and March 21<sup>st</sup>;
- Receives less than 80% of its former sunlight hours during either period;
- Has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.

It must be noted that BRE Guidelines states that to assess loss of sunlight to an existing building, it is suggested that all main living rooms of dwellings should be checked if they have a window facing within 90° of due south and that kitchen and bedrooms are less important, although care should be taken not to block too much sun.

As detailed within Section 8.3, all sensitive receptors aside from Ref. 5 fall outside the 25° line criteria, therefore, they are too substantial a distance from the proposed blocks to be amended and an impact will not be perceived. Sensitive receptor Ref. 5 is subject to a separate permission. Further assessment was not required for sensitive receptor Ref. 5 since a daylight and sunlight EIAR chapter has been carried out for that separate permission, where the impact of the proposed GA1 on GA3 has been taken into account within the calculations.

The results of this section confirm that there is no negative impact on neighbouring buildings sunlight due to the proposed reduction in block height.

## 9. OVERSHADOWING IMPACT TO SURROUNDING PROPERTIES

The overshadowing impact from the proposed development on surrounding buildings has been analysed for the blocks which are proposed to be amended, as was done for the permitted. The overshadowing images illustrate the overshadowing impact on March 21<sup>st</sup> from 8 a.m. – 7 p.m, on June 21<sup>st</sup> 6 a.m. – 7 p.m., and December from 10 a.m. – 3 p.m.



Figure 37: Overshadowing at 08:00 and 09:00 on March 21<sup>st</sup>



Figure 38: Overshadowing at 10:00 and 11:00 on March 21<sup>st</sup>



Figure 39: Overshadowing at 12:00 and 13:00 on March 21<sup>st</sup>





Figure 40: Overshadowing at 14:00 and 15:00 on March 21<sup>st</sup>



Figure 41: Overshadowing at 16:00 and 17:00 on March 21<sup>st</sup>



Figure 42: Overshadowing at 06:00 and 07:00 on June 21<sup>st</sup>



Figure 43: Overshadowing at 08:00 and 09:00 on June 21<sup>st</sup>



Figure 44: Overshadowing at 10:00 and 11:00 on June 21<sup>st</sup>



Figure 45: Overshadowing at 12:00 and 13:00 on June 21<sup>st</sup>



Figure 46: Overshadowing at 14:00 and 15:00 on June 21<sup>st</sup>



Figure 47: Overshadowing at 16:00 and 17:00 on June 21<sup>st</sup>



Figure 48: Overshadowing at 18:00 and 19:00 on June 21<sup>st</sup>



Figure 49: Overshadowing at 10:00 and 11:00 on December 21<sup>st</sup>



Figure 50: Overshadowing at 12:00 and 13:00 on December 21<sup>st</sup>



Figure 51: Overshadowing at 14:00 and 15:00 on December 21<sup>st</sup>

In relation to the overshadowing impact, the majority of sensitive receptors will not perceive an impact, with sensitive receptor Ref. 5 receiving a non-significant impact, as was the case for the permitted development, therefore this proposed reduction in block height has no adverse impact on overshadowing.

## 10. CONCLUSION

The aim of the study is to record and analyse the impact of the proposed alterations, for blocks which are subject of this amendment application, namely A1, D1, D2 and D3, in terms of the following:

- The daylight levels within the living and bedroom areas of selected apartments, within the blocks proposed to be modified, to give an indication of the expected daylight levels;
- The expected sunlight levels within the living areas and bedrooms within the blocks proposed to be modified;
- The impact of the modifications on the quality of sunlight to the amenity spaces of the blocks proposed to be modified;
- The impact of the modifications on any potential daylight or sunlight impact on surrounding properties.

The calculation methodology for daylight and sunlight is based on the British Research Establishments (BRE) “Site Layout Planning for Daylight and Sunlight: A Good Practice Guide” by PJ Littlefair, Second Edition (2011), as well as the Third Edition (2022).

The Third Edition was published following the submission of the application for the permitted development. It is used in this report to analyse the daylight both before and after the incorporation of the proposed modifications, both to the units subject to modification, and units in the modified blocks in general.

The Second Edition was used for the daylight analysis for the permitted development and is used again here in this report to allow for a fair comparison, and an accurate assessment of the impact of the proposed changes on daylight, on the same selection of apartments as the daylight analysis submitted for the permitted development.

*“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”*

### Internal daylight within the blocks proposed to be amended

It is the expert opinion of OCSC, that the modifications proposed in this amendment (comprising a reduction in various block heights, and minor changes to balconies and glazing areas), will result in an overall improvement in daylight in the modified blocks. The results detailed in Section 5 of this report confirm this to be the case.

In Section 5.3, using the BRE Guide Third Edition, the impact of the proposed height reduction modifications on daylight within the blocks proposed to be modified, is assessed. The daylight to a select number of units is tested both before and after the incorporation of the proposed changes to provide proof to support OCSC's expert opinion. As is to be expected considering the reduction in massing, the daylight to these units improves following the incorporation of the proposed changes.

In Section 5.4, the daylight to the 62 units subject to modifications (ie those which will have rearranged balcony, or a change in glazing area) are analysed, both before and after the incorporation of the proposed changes. All 62 rooms comfortably comply with the Second Edition daylight requirements, both before and after the incorporation of the proposed changes. As measured by the Second Edition daylight methodology, all of these units see an increase in daylight. When measured against the Third Edition daylight standard, 44 units see an increase in daylight following the incorporation of the proposed changes, with the remaining 18 unchanged. 35 of the 62 analysed rooms comply with the Third Edition (2022) daylight standard, following the incorporation of the proposed changes.

Furthermore, the analysis in Section 5.5, which is done for comparison purposes, confirms that when tested using the BRE Guide Second Edition, that for the four blocks which are proposed to be amended, excellent levels of internal daylight continue to be achieved following the incorporation of the proposed changes, with the compliance rate increasing from 92% to 96%. This is in line with expectations, considering the overall reduction in massing.

Overall, the results show that the daylight in the blocks proposed to be modified, will be improved following the incorporation of the proposed amendments, as is to be expected considering the reduction in massing proposed.

### Sunlight to windows within the blocks proposed to be amended

It is the opinion of OCSC, that a reduction in massing, as is proposed in this amendment, will result in an improvement in sunlight in the modified blocks.



The annual probable sunlight hours assessment in Section 7.1 has shown that following the incorporation of the proposed changes, the sunlight to windows in the blocks proposed to be amended improves slightly. Although some windows in the blocks proposed to be amended are slightly under the BRE Guide Second Edition (2011) recommendations, acceptable levels of sunlight will still be achieved, following the incorporation of the proposed changes, as per permitted development. A small improvement is seen in sunlight to windows, following the incorporation of the proposed changes, as is to be expected considering the reduction in massing proposed.

Section 7.2 illustrates that good levels of sunlight will be achieved following the incorporation of the proposed changes when measured using the Third Edition (2022) standard also.

#### Sunlight to amenity spaces of blocks proposed to be amended

In terms of sunlight access, excellent levels of sunlight continue to be experienced in the amenity areas of the blocks proposed to be amended, following the incorporation of the proposed changes, as can be seen in Section 6. The communal amenity spaces provided to the apartment areas greatly exceeds the BRE guidelines for sunlight on the test day of 21<sup>st</sup> of March. A small increase in sunlight to these amenity areas is seen, as is to be expected considering the reduction in massing proposed.

#### Impact to neighbouring properties

Following the incorporation of the proposed changes to GA1, the 25° line method confirms that all sensitive receptors aside from Ref. 5 are too far from the blocks proposed to be amended to perceive an impact on daylight or sunlight, as can be seen in Section 8.

In relation to the overshadowing impact, the sensitive receptors will not perceive an impact, as was the case for the proposed development. This is detailed further in Section 9.

Sensitive receptor Ref. 5 is subject to a separate planning permission. A daylight and sunlight EIAR chapter was submitted as part of that application where the impact of GA1 on GA3 was taken into account within the calculations. The proposed reduction in height of Blocks D1, D2, and D3 will only reduce the impact of GA1 on GA3.

Overall, the impact to surrounding properties is reduced following the incorporation of the proposed changes, as is to be expected considering the reduction in massing proposed.



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