

# FARRANKELLY

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*Sunlight,*

*Daylight &*

*Shadow Assessment*

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## Executive Summary

This report examines the impact the proposed development at Farrankelly will have on the nearest properties in terms of sunlight, daylight & shadow. It will also assess the performance of the proposed apartment blocks in terms of room depth, light distribution and amenity space.

The report is, in accordance with "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice, BS 8206 Lighting for Buildings, Part 2: Code of Practice for Daylighting and other updated relevant documents".

It should be noted at the outset that the BRE document sets out in its introduction that:

*"Summary Page ..... It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location."*

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

The results are as follows:

- **Change/Impact to existing buildings in the adjoining residential areas to the South at Eden Gate and Glenbrook Park (A, B & C)**
  - **Skylight- VSC**– All test points pass the relevant VSC checks.
  - **Sunlight APSH & WPSH** –The development sits to the North of the neighbouring properties and sunlight is thus not impacted. The development passes the BRE requirement.
  - **Shadow** – Shadows are not cast on the private amenity spaces (back gardens) on the 21<sup>st</sup> March. The development passes the relevant requirement
- **Performance of the proposed design based on a full 1<sup>st</sup> floor analysis on all apartment blocks**
  - **Room depth** – All tested rooms comply with the guideline requirements for light constancy.
  - **Daylight- ADF** – All tested rooms pass the relevant check ADF % for light distribution.
  - **Shadow** – All private balconies and open & shared amenity receive 2hrs of sunlight over > 50%

**The application complies with the recommendations and guidelines of Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (BRE 2011) and BS 8206 Lighting for Buildings, Part 2: Code of Practice for Daylighting and other updated relevant documents.**

It has successfully been designed to maximise the occupants' access to light and reduced the impact on "existing" approved buildings. As such the design has used the guidelines in the spirit they have been written and balanced the requirements of this report with other design constraints to arrive at this design.

## Introduction

Chris Shackleton Consulting (CSC) have been asked to examine the impact of the proposed development at Farrankelly on adjoining properties in terms of sunlight, daylight & shadow. We also examine how the apartment blocks of the proposed development perform in terms of room depth, light distribution & amenity space.

This work has been done in accordance with the recommendations of Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (BRE 2011), BS 8206 Lighting for Buildings, Part 2: Code of Practice for Daylighting and other updated relevant documents.

*All references quoted in this report are from BRE document "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice – Second Edition – 2011 (BR 209) by Paul Littlefair" unless specifically noted otherwise.*

## Preliminary Analysis

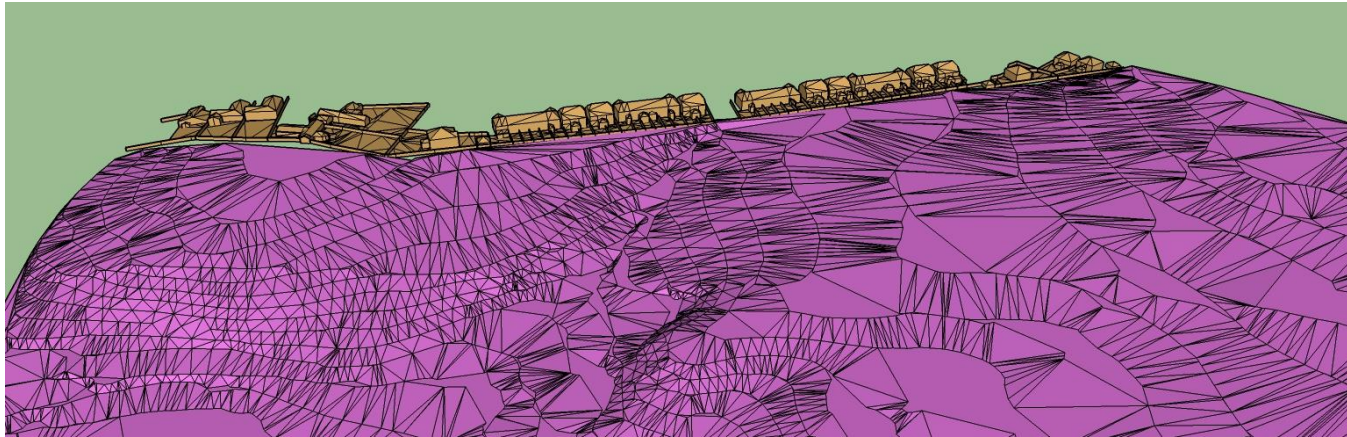
The aerial extract from Google Earth shows the context for the site.

The proposed development is currently a greenfield infill site. The nearest properties likely to be impacted are those to the South in adjoining estates Eden Gate and Glenbrook Park.

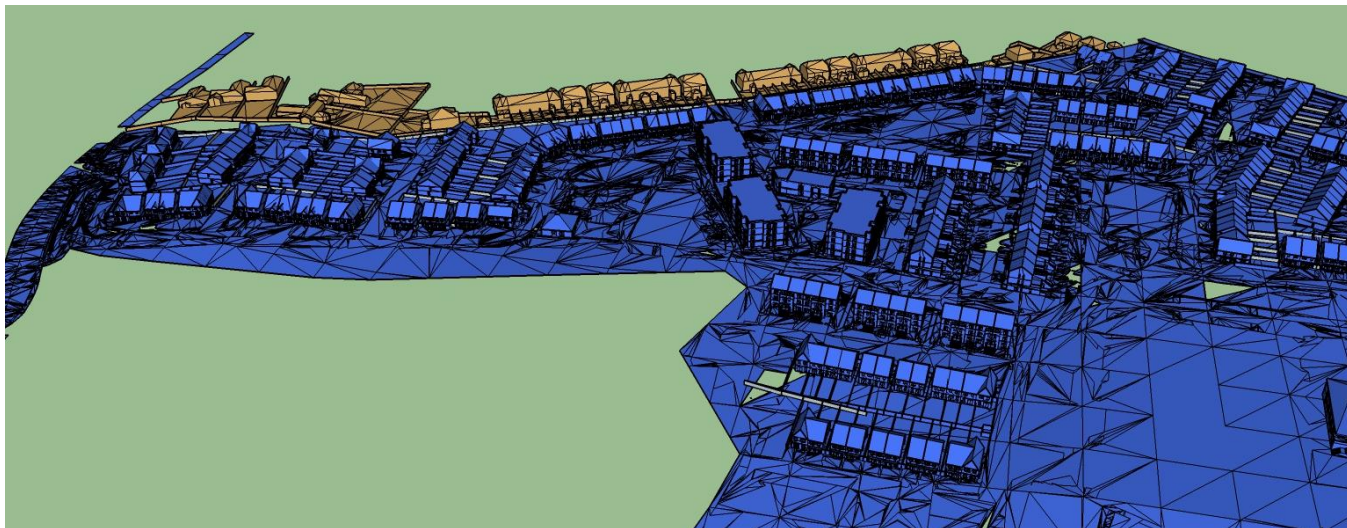


# Design Model

A 3D model of the site and environs was created from information provided by the client. The proposed buildings were created from AutoCAD plans and elevations, for this analysis. This model was geo-referenced to its correct location and an accurate solar daylight system was introduced.



Existing Model



Proposed Model

## Existing Impact Neighbours

In this document we will assess the potential impact of the proposed development on the neighbouring residential areas to the South Eden Gate and Glenbrook Park (Zones A, B & C). We will test for the following in relation to impact:

- Existing facing windows for:
  - Impact/Change for Skylight – Vertical Sky Component - VSC
  - Impact/Change for Probable Sunlight Hours – Annual APSH and Winter WPSH
- Existing amenity spaces for impact/change on Sunlight/Shadow

## Development Performance

For the proposed development we will examine the performance of the development under the following headings:

- Light Consistency – Room Depth
- Light distribution Average Daylight Factor - ADF
- Proposed amenity spaces to be for sunlight/shadow

When examining the internal performance of the development we note that the layout and sizes of rooms and window positions are the same floor to floor. When testing the blocks performance, we have chosen to test an entire floor at 1<sup>st</sup> floor level to provide a good representative indication of the overall building performance.

We have confined testing to the apartment blocks as the housing and duplex units are of a standard design and will receive good levels of light.

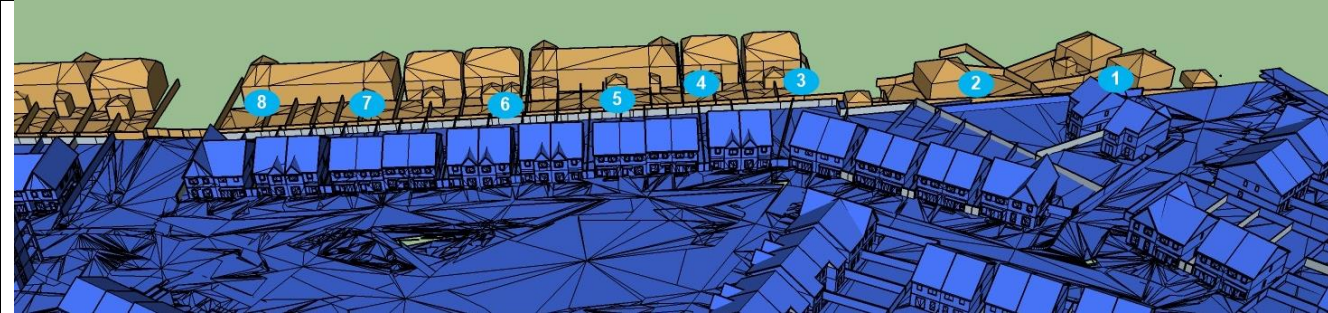
### Neighbours Houses to the North (Zone A)

#### Eden Gate (Priory Ave/Drive)

Aerial imagery of neighbouring Houses – Eden Gate (Priory Ave/Drive)



Drone Imagery



Surveyed elevations are not available for the neighbouring properties. We have tested a selection of closer facades where windows are evident in accordance with recommendations of the guidelines a point 1.6m from ground level.

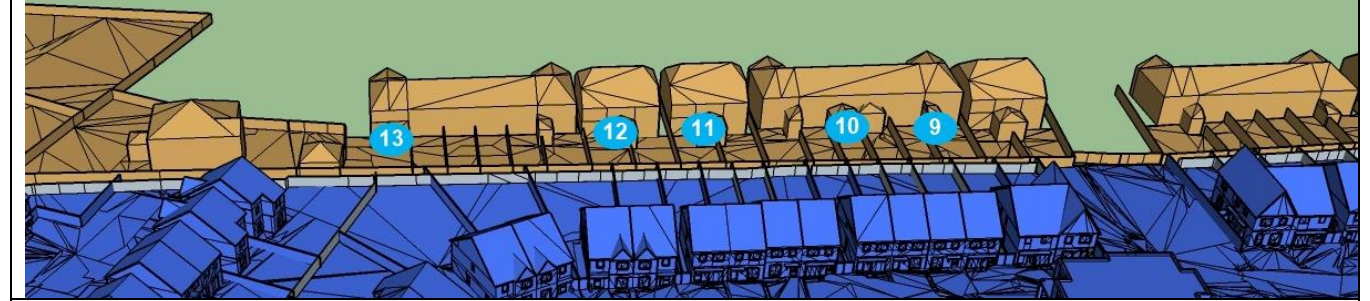
### Neighbours Houses to the North (Zone B)

#### Eden Gate (Church View)

Aerial imagery of neighbouring Houses – Eden Gate (Church View)



Drone Imagery



Surveyed elevations are not available for the neighbouring properties. We have tested a selection of closer facades where windows are evident in accordance with recommendations of the guidelines a point 1.6m from ground level.

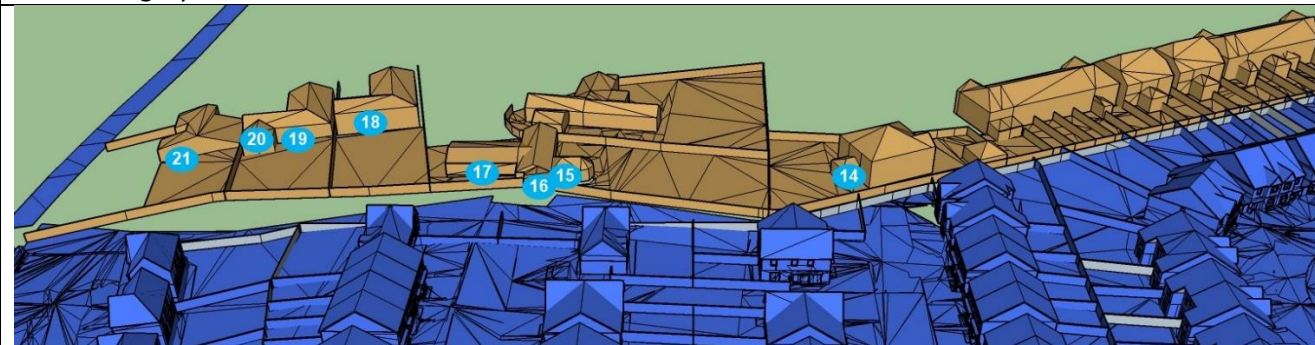
## Neighbours Houses to the North (Zone C)

### Glenbrook Park

Aerial imagery of neighbouring Houses – Glenbrook Park



Drone Imagery



Surveyed elevations are not available for the neighbouring properties. We have tested a selection of closer facades where windows are evident in accordance with recommendations of the guidelines a point 1.6m from ground level.

## Impact on neighbours

### Section 2 Light from the Sky impact on neighbouring properties

Tests for the quantity and quality of skylight (daylight) available to a room's windows.

We have investigated this impact under clause 2.2.7

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

As can be seen from the aerial drone imagery for Zones A, B & C there are numerous windows to the rear facades of houses along the common boundary. For clarity we have elected to test a selection of the closest facades which have windows and where there is potential for impact. Façades without windows are not tested. If there are extensions or conservatories the closer façade is tested.

Since window locations on the rear façades of these private houses have not been surveyed we have complied with the guideline recommendations and set test points at 1.6m above the ground floor level. A total of 21 such locations have been tested.

The naming convention is as detailed above, and the results are tabulated overleaf:

- All 21 tested points on the 3 housing Zones will pass the skylight requirements via the Vertical Sky Component (VSC) check as detailed in the table of results below.

**Tabulated results**

Skylight to habitable rooms						
VSC						
Check > 27% or ratio > 0.8						
Ref	Window	Type	Existing	Proposed	Ratio	Result
	1		24.06	20.75	0.86	Pass
	2		29.08	25.61	0.88	Pass
	3		34.60	31.41	0.91	Pass
	4		36.74	31.52	0.86	Pass
	5		34.63	30.51	0.88	Pass
	6		36.13	30.86	0.85	Pass
	7		27.86	24.86	0.89	Pass
	8		37.50	31.87	0.85	Pass
	9		39.44	34.33	0.87	Pass
	10		38.91	34.16	0.88	Pass
	11		38.69	34.61	0.89	Pass
	12		36.60	34.22	0.93	Pass
	13		32.92	32.68	0.99	Pass
	14		29.15	27.27	0.94	Pass
	15		36.13	34.90	0.97	Pass
	16		39.62	37.80	0.95	Pass
	17		37.10	36.69	0.99	Pass
	18		38.36	38.04	0.99	Pass
	19		32.26	32.16	1.00	Pass
	20		37.67	37.45	0.99	Pass
	21		35.68	35.57	1.00	Pass

**Conclusion**

When tested with the new development in place of the approved one, VSC of all tested points are greater than 27%, **or** do not breach the 0.8 times its former value limit for habitable rooms.

The average change ratio is only **0.92**

The proposed development complies with the requirements of the BRE guidelines in relation to skylight availability to neighbours

**Section 3 - Sunlight into living spaces**

Tests for the amount of sunlight that windows to living room and/or conservatory can receive over both annual and winter periods.

*3.2.3 To assess loss of sunlight to an existing building, it is suggested that all main living rooms of dwellings, and conservatories, should be checked if they have a window facing within 90° of due south.....*

*3.2.11 ..... sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:*

- *receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March and*
- *receives less than 0.8 times its former sunlight hours during either period and*
- *has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.*

Since none of the windows facing the proposal are facing within 90° of due South (clause 3.2.3) they do not require testing for sunlight.

**Summary**

No windows facing the development require testing for sunlight by virtue of their orientation. Since the proposed development sits to the North of the neighbour's sunlight will not be impacted.

**Conclusion**

The proposed development complies with the requirements of the BRE guidelines in relation to sunlight availability since its geographic location North will not impact sunlight.

### Section 3 - Shadow/Sunlight - Gardens and Open spaces

Tests for the availability of sunlight in amenity areas.

#### Shadow/Sunlight - Clause 3.3.17

*It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March.*

The proposed development sits to the north of the existing adjoining properties and cannot cast shadow South. It is therefore not necessary to assess overshadowing of adjoining gardens.

#### Conclusion

Shadows are not cast towards the amenity spaces (back gardens) of neighbouring properties on the 21<sup>st</sup> March due to their orientation. The proposed development complies with the requirements of the BRE guidelines in relation to impact of shadow (sunlight) on the amenity spaces of neighbours

### Summary - Adjacent Properties

Neighbouring properties will not be affected by the proposed development and the impacts on Skylight, Sunlight and Shadow have been tested in accordance with the best practice guidelines.

- **Change/Impact to existing buildings in the adjoining residential areas to the South at Eden Gate and Glenbrook Park (A, B & C)**

- **Skylight- VSC**– All test points pass the relevant VSC checks.
- **Sunlight APSH & WPSH** –The development sits to the North of the neighbouring properties and sunlight is thus not impacted. The development passes the BRE requirement.
- **Shadow** – Shadows are not cast on the private amenity spaces (back gardens) on the 21<sup>st</sup> March. The development passes the relevant requirement

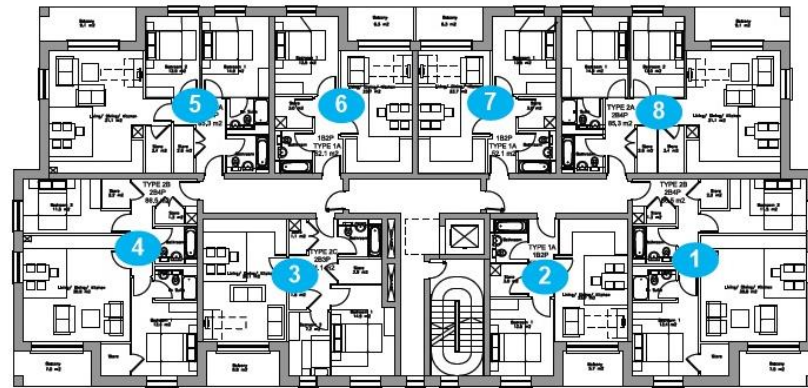
**The potential impact of the proposed development on neighbours complies with the requirements of "Site layout planning for daylight and sunlight a guide to good practice Second Edition" - 2011 by Paul J Littlefair - BR209**

# Development Performance

## Naming conventions

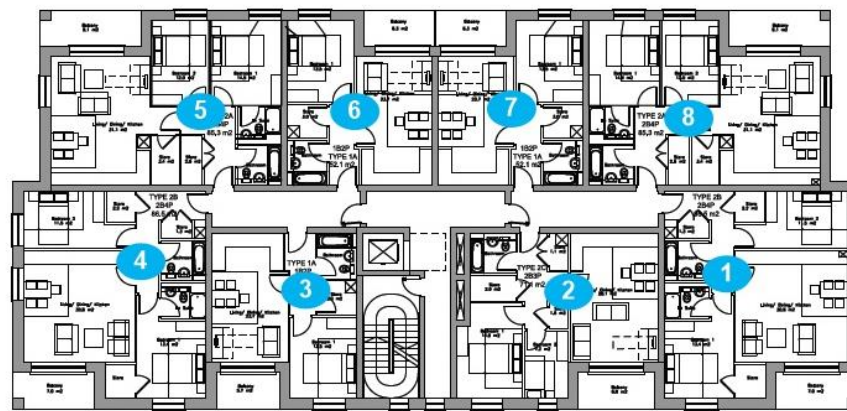
For the purposes of this analysis we have named rooms sequentially left to right, as shown below:

### 1<sup>st</sup> Floor - Block 1



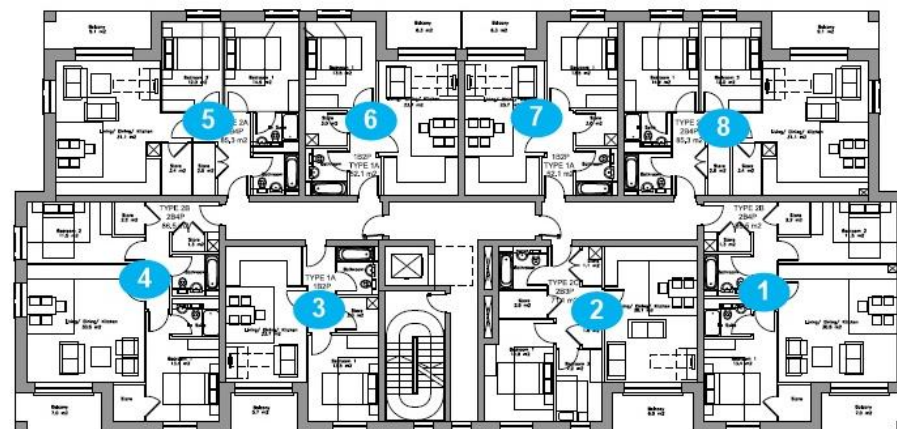
Block 1

### 1<sup>st</sup> Floor - Block 2



Block 2

### 1<sup>st</sup> Floor - Block 3



Block 3

## Proposed development - Room Depth

Room Depth tests the relative consistency of daylight between the front and the back of a room. It is computed as detailed in Appendix C

*C13 If a daylit room is lit by windows in one wall only, the depth of the room, L should not exceed the limiting value given by:*

$$\frac{L}{W} + \frac{L}{H} < \frac{2}{1 - Rb}$$

*L = Depth of the room from Window*

*W = Room Width parallel to window*

*H = Window Head Height above floor level*

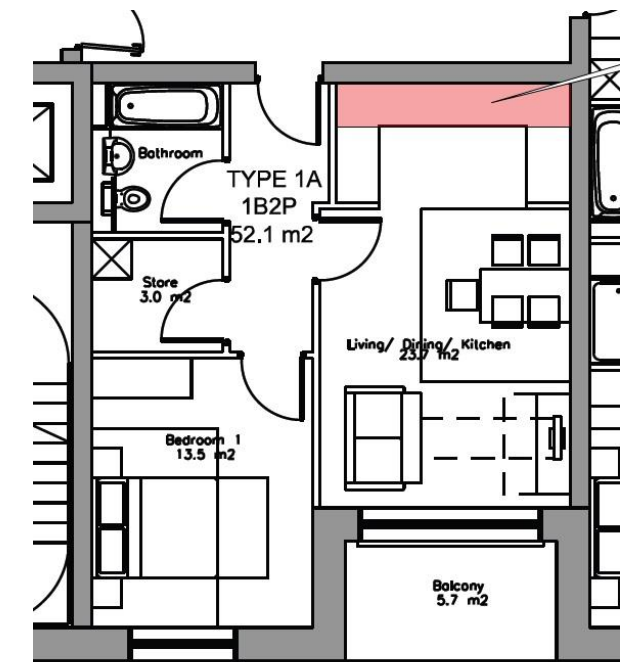
*Rb = Average reflectance of surfaces in the rear half of room away from window*

Room Depth check is not applicable to rooms with multiple windows on multiple walls since this test checks the relative consistency of daylight between front and back of the room. If the room has multiple light source directions, then there is no "back wall" and thus the check is unnecessary. We will take Rb conservatively as 0.5

*C15 External obstructions do not influence this recommendation.....*

Results are tabulated overleaf, since the rooms depths do not consider orientation or obstructions and relate solely to the room and window dimensions. Thus we can evaluate Blocks 1, 2, 3 together since they are mirrors of each other at 1<sup>st</sup> floor level. The results of the formula check above from are provided in the table overleaf.

For single aspect living rooms spaces 2,3,6,7 we have truncated the test depth to exclude the backwall cabinets (area highlighted in red here). Since this zone is effectively non-habitable its exclusion is reasonable when considering light consistency.





## Room Depth Checks

*For rooms lit by windows in one wall only*

W	is the room width			
L	Length or depth of room	Rb	0.5	
H	is the window head height above floor level			
Rb	average reflectance of surfaces in the rear half of the room (away from the window).			

**Block 1 - 1st Floor - Block 2 & 3 are (Mirrors)**

Block 1	Block 2	Block 3	Type	W	L	H	L/W+L/H	2/(1-Rb)	Check
1	4	4	Bed 2	2.850	4.600	2.400	3.5	4	Pass
			Living	Dual Aspect					
			Bed 1	3.450	3.875	2.400	2.7	4	Pass
2	3	3	Living	3.775	5.750	2.400	3.9	4	Pass * Excluding End cabs
			Bed 1	3.325	4.050	2.400	2.9	4	Pass
3	2	2	Bed 1	3.310	4.750	2.400	3.4	4	Pass
			Bed 2	2.150	3.340	2.400	2.9	4	Pass
			Living	4.390	5.750	2.400	3.7	4	Pass * Excluding End cabs
4	1	1	Bed 1	3.450	3.875	2.400	2.7	4	Pass
			Living	Dual Aspect					
			Bed 2	2.850	4.030	2.400	3.1	4	Pass
5	8	8	Living	Dual Aspect					
			Bed 2	2.840	4.225	2.400	3.2	4	Pass
			Bed 1	3.522	4.225	2.400	3.0	4	Pass
6	7	7	Bed 1	3.325	4.050	2.400	2.9	4	Pass
			Living	3.775	5.750	2.400	3.9	4	Pass * Excluding End cabs
7	6	6	Living	3.775	5.750	2.400	3.9	4	Pass * Excluding End cabs
			Bed 1	3.325	4.050	2.400	2.9	4	Pass
8	5	5	Bed 1	3.520	4.225	2.400	3.0	4	Pass
			Bed 2	2.840	4.225	2.400	3.2	4	Pass
			Living	Dual Aspect					

### ADF - Average Daylight Factor

Internal light distribution within a room is examined by testing ADF (Average Daylight Factor) against pre-defined parameters. Calculation of average daylight factor is based the BRE guidance document BR 209 and the referenced BS 8206-2:2008 Lighting for buildings – Part 2: Code of practice for daylighting.

This is defined under **Clause 2.11.3**

*daylight factor*

*ratio of illuminance at a point on a given plane due to light received from a sky of known or assumed luminance distribution, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky [BS 6100-7:2008, 59011]*

Defined in the **BRE 209 Glossary (similarly in the BS code Clause 2.11.4 and 5.5)**

*Average daylight factor:*

*Ratio of total daylight flux incident on the working plane to the area of the working plane, expressed as a percentage of the outdoor illuminance on a horizontal plane due to an unobstructed CIE standard overcast sky. Thus a 1% ADF would mean that the average indoor illuminance would be one hundredth the outdoor unobstructed illuminance*

The average daylight factor (see 2.11.4) is used as the measure of general illumination from skylight. It is considered good practice to ensure that rooms in dwellings and in most other buildings have a predominantly daylight appearance. In order to achieve this the average daylight factor should be at least 2%.

If the average daylight factor in a space is at least 5% then electric lighting is not normally needed during the daytime, provided the uniformity is satisfactory (see 5.7 BS or 2.1.8 BRE 209). If the average daylight factor in a space is between 2% and 5% supplementary electric lighting is usually required. Values greater than 6% might suggest that the room has too much daylight.

- For the purposes of the calculation of daylight factor in this standard, it is assumed that the sky has the luminance distribution of the standard overcast sky.
- Direct and reflected sunlight are excluded from all values of illuminance.

### Proposed - Room Depth Conclusion

Room Depths for all rooms show compliance.

### Average Daylight Factor – Tabulated

This Code also provides under **Clause 5.6** guidance for

*Minimum values of average daylight factor in dwellings*

*Even if a predominantly daylit appearance is not achievable in a dwelling, it is recommended that the average daylight factor should be at least the relevant value as given in Table 2 or clause 2.1.8 BRE 209*

**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%.*

In accordance with BRE 209 & BS 8206-2 computations are based on the standard CIE (Commission Internationale de l'Éclairage) overcast sky model. With the exclusion of direct and reflected sunlight from the computation of room average daylight factor it may be considered as worst case scenario.

Light distribution was computed by modelling the internal configuration of rooms and windows placed within the existing topography and the adjacent buildings and then running a radiance analysis on the same. This analysis was based on a standard working plane for residential of 0.85 and results are provided in terms of Average Daylight Factor for selected rooms. See code for definitions.

For apartment layouts we have tested against a value of 1.5% be used rather than the figure of 2.0% which is more appropriate to a traditional house layout and room usage. We note that for apartment developments a majority of councils in Ireland and the UK now accept the lower value of 1.5% normally assigned to living rooms as the primary test value. The usage of a reduced value accepted by Local Authorities is still compliant within the terms of the guidelines. This has been confirmed as acceptable by the author Dr Paul Littlefair.

We have thus used the minimum values of **1.0%** for bedrooms and **1.5%** for the Living room spaces.

The results of the analysis are shown here.

Average Daylight Factor				
For all habitable rooms				
ADF Values from radiance 3D model			Yes	
Room	Type	Min	ADF	Check
<b>Block 1</b>	<b>Type</b>			
1	Bedroom	1.0	3.1	Pass
	Living Room	1.5	3.5	Pass
	Bedroom	1.0	2.9	Pass
2	Living Room	1.5	1.6	Pass
	Bedroom	1.0	3.7	Pass
3	Bedroom	1.0	3.4	Pass
	Bedroom	1.0	2.6	Pass
	Living Room	1.5	1.6	Pass
4	Bedroom	1.0	3.9	Pass
	Living Room	1.5	3.0	Pass
	Bedroom	1.0	3.2	Pass
5	Living Room	1.5	3.4	Pass
	Bedroom	1.0	4.4	Pass
	Bedroom	1.0	4.2	Pass
6	Bedroom	1.0	3.5	Pass
	Living Room	1.5	1.9	Pass
7	Living Room	1.5	1.9	Pass
	Bedroom	1.0	3.9	Pass
8	Bedroom	1.0	3.9	Pass
	Bedroom	1.0	3.9	Pass
	Living Room	1.5	3.3	Pass

<b>Block 2</b>	<b>Type</b>			
1	Bedroom	1.0	2.6	Pass
	Living Room	1.5	3.0	Pass
	Bedroom	1.0	2.7	Pass
2	Living Room	1.5	1.7	Pass
	Bedroom	1.0	2.5	Pass
	Bedroom	1.0	3.5	Pass
3	Bedroom	1.0	3.2	Pass
	Living Room	1.5	1.5	Pass
4	Bedroom	1.0	2.6	Pass
	Living Room	1.5	3.2	Pass
	Bedroom	1.0	3.0	Pass
5	Living Room	1.5	3.5	Pass
	Bedroom	1.0	4.2	Pass
	Bedroom	1.0	3.7	Pass
6	Bedroom	1.0	3.9	Pass
	Living Room	1.5	1.8	Pass
7	Living Room	1.5	1.9	Pass
	Bedroom	1.0	3.9	Pass
8	Bedroom	1.0	3.9	Pass
	Bedroom	1.0	3.4	Pass
	Living Room	1.5	3.4	Pass

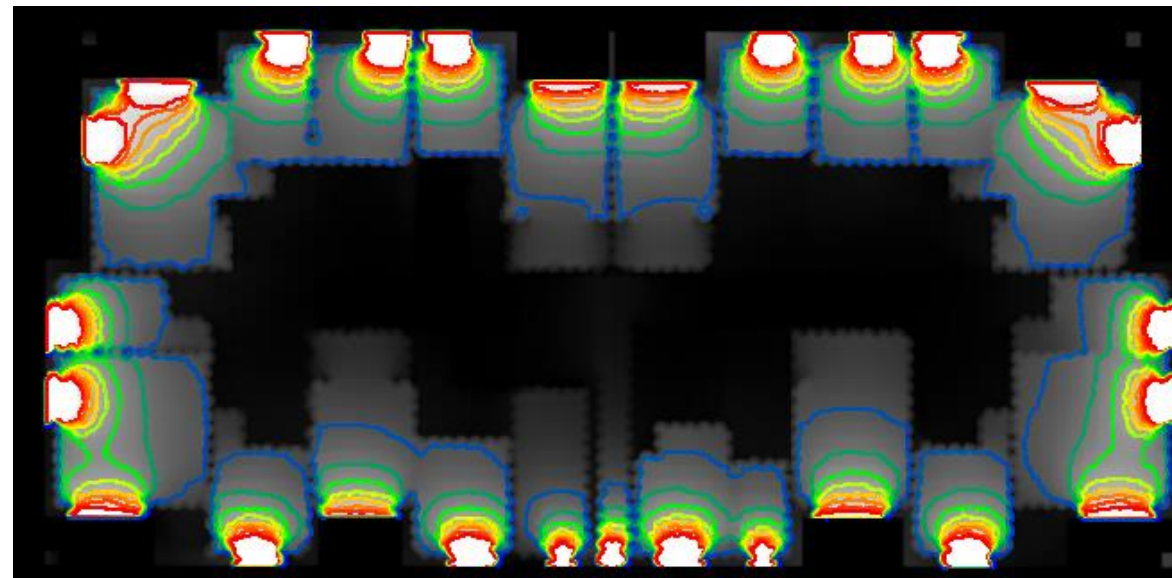
Block 3 (2)	Type			
1	Bedroom	1.0	2.6	Pass
	Living Room	1.5	3.1	Pass
2	Bedroom	1.0	2.5	Pass
	Living Room	1.5	1.5	Pass
	Bedroom	1.0	2.2	Pass
3	Bedroom	1.0	2.9	Pass
	Living Room	1.5	1.5	Pass
4	Bedroom	1.0	3.5	Pass
	Living Room	1.5	3.2	Pass
	Bedroom	1.0	3.0	Pass
5	Living Room	1.5	3.5	Pass
	Bedroom	1.0	2.7	Pass
	Bedroom	1.0	3.6	Pass
6	Bedroom	1.0	3.6	Pass
	Living Room	1.5	1.5	Pass
7	Living Room	1.5	1.5	Pass
	Bedroom	1.0	3.6	Pass
8	Bedroom	1.0	3.6	Pass
	Bedroom	1.0	2.8	Pass
	Living Room	1.5	3.3	Pass

All rooms meet the ADF standard. The vast majority of living rooms and bedrooms exceed 2.0% which is above the required standard.

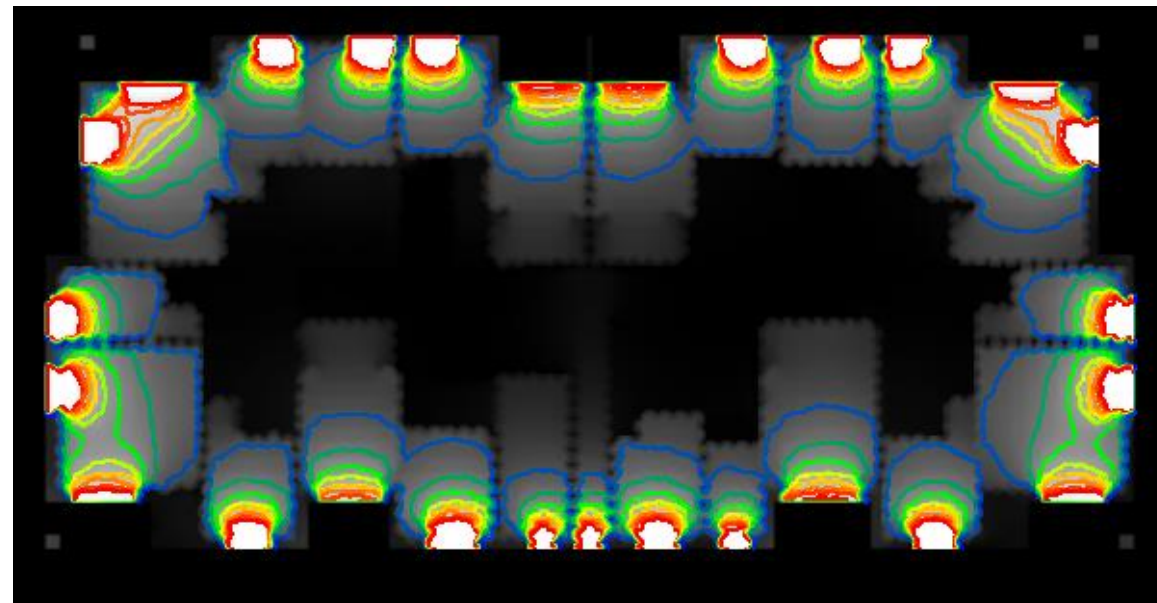
### Average Daylight Factor – Graphical Results showing distribution

Plots below show light distribution from radiance 3D model

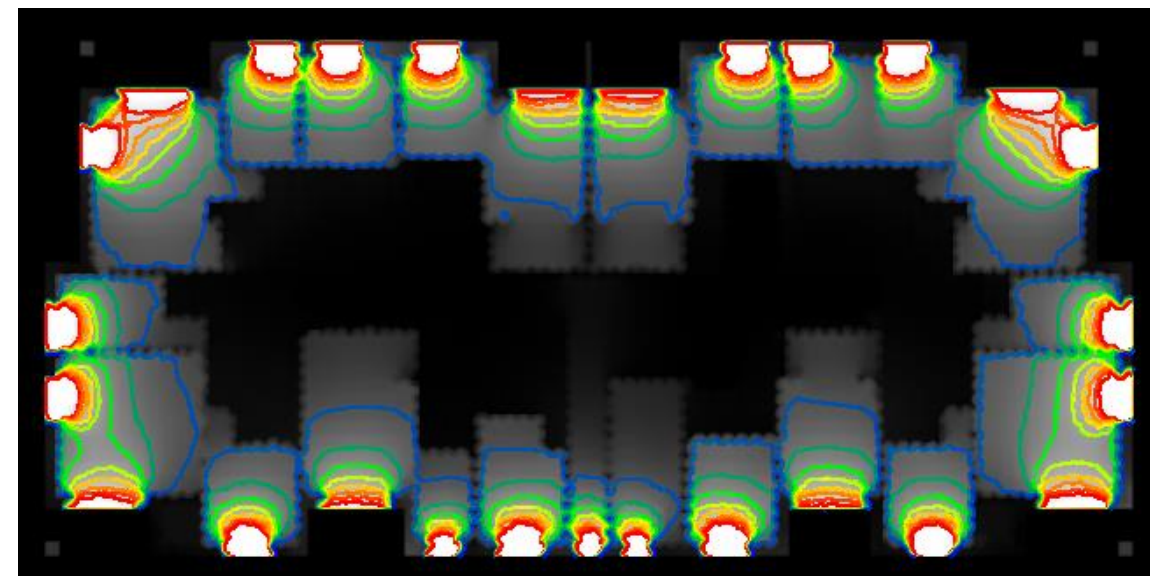
(Note: These images are to show the light distribution the numerical results are tabulated previously)



Block 2



Block 3



Block 1

### ADF Check - Summary

ADF (average daylight factors) for all rooms comply with the requirements. The development shows excellent ADF results with averages well in excess of the minimum values.

**The proposed development complies with the requirements of the BRE guidelines in relation to light distribution.**

## Shadow/Sunlight - Amenity Spaces

### Reference guidelines

Section 3.3.17 of the Building Research Establishment's Site layout planning for daylight and sunlight: a guide to good practice states

*" It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March.*

Please note: The BRE check is related solely to the amount of amenity area that can receive a minimum of 2 hours of sunlight. Our analysis relates to the balconies again on the 1<sup>st</sup> floor.

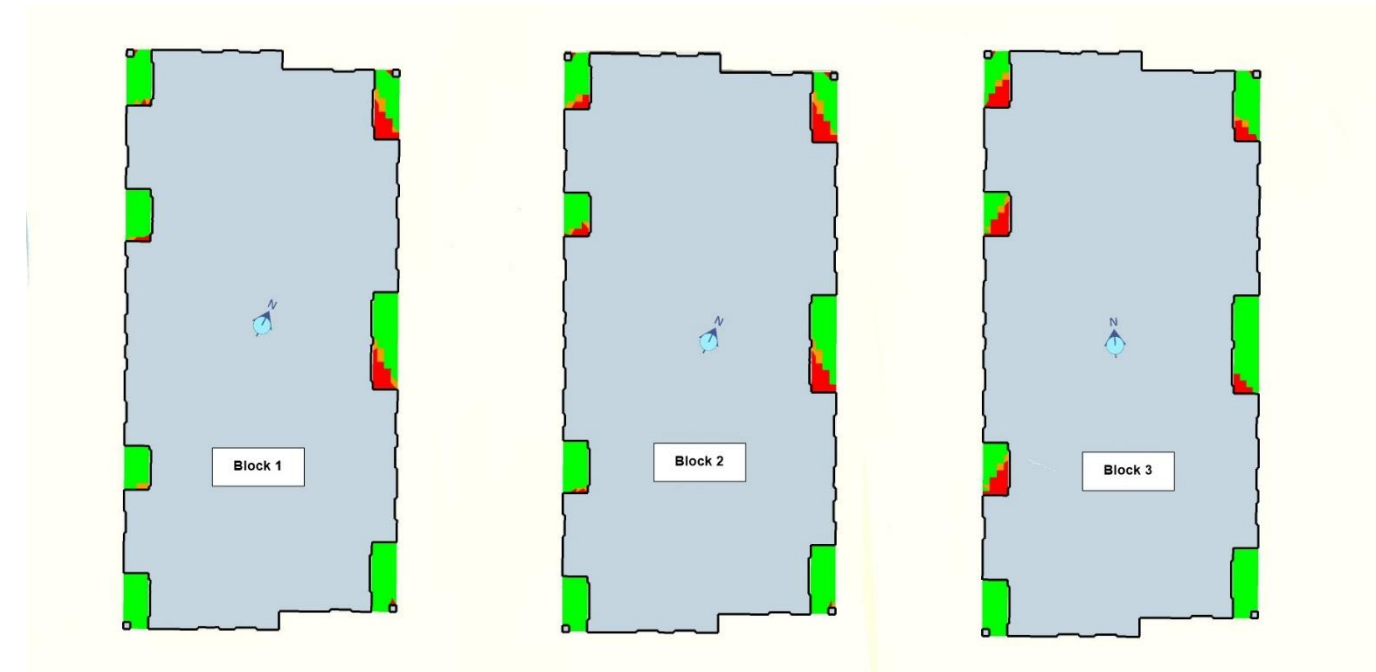
### BRE 2hr Shadow Plots

The graphic below indicates the areas which receive the BRE guidelines - 2hrs of sunlight on the 21<sup>st</sup> March.

- **Green** represents areas which exceed the 2hr requirement - pass
- **Red** is less than the 2hr requirement - fail
- **Orange** are marginal or borderline - just below the 2hr requirement

## Private Balconies Apartments

Numbered as detailed previous Balconies to rooms 1..8 for each of the Blocks 1..3. Graphic plots below.



## Open Space and Shared Amenity Spaces A..F (As detailed below)



## Shadow / Sunlight Amenity

>50% receives 2 hours of sunlight on 21st March)

	Ref	% 2hr Sunlight	Check
<b>Block 1</b>	1	99.00	Pass
	2	93.00	Pass
	3	92.00	Pass
	4	92.00	Pass
	5	56.00	Pass
	6&7	71.00	Pass
	8	98.00	Pass
	<b>Block 2</b>	1	99.00
2		95.00	Pass
3		82.00	Pass
4		79.00	Pass
5		56.00	Pass
6&7		71.00	Pass
8		98.00	Pass
<b>Block 3</b>		1	99.00
	2	57.00	Pass
	3	52.00	Pass
	4	58.00	Pass
	5	77.00	Pass
	6&7	90.00	Pass
	8	99.00	Pass
	<b>Open Space and Shared Amenity Spaces</b>		
AS01	A	83	Pass
AS02	B	99	Pass
AS03	C	96	Pass
AS04	D	100	Pass
AS05	E	100	Pass
AS06	F	100	Pass

### Shadow check – Summary

All private balconies, shared amenity space between the apartments and all areas of public open space receive at least 2hrs of sunlight over 50% of their area on the 21<sup>st</sup> of March. This complies with the requirements.

### Summary – Development Performance

This report is in compliance with: "Site layout planning for daylight and sunlight a guide to good practice Second Edition - 2011 by Paul J Littlefair - BR209". It also references "BS 8206-2:2008 Lighting for buildings – Part 2: Code of practice for daylighting" as and where called for in the above BRE guidance document.

- **Performance of the proposed design based on a full 1<sup>st</sup> floor analysis on all apartment blocks**
  - **Room depth** – All tested rooms comply with the guideline requirements for light constancy.
  - **Daylight- ADF** – All tested rooms pass the relevant check ADF % for light distribution.
  - **Shadow** – All private balconies and open & shared amenity receive 2hrs of sunlight over > 50%

The application complies with the recommendations and guidelines of **Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (BRE 2011)** and **BS 8206 Lighting for Buildings, Part 2: Code of Practice for Daylighting** and other updated relevant documents.

