



5020

# Daylight Reception Analysis Report

DAYLIGHT RECEPTION IN HABITABLE ROOMS WITHIN THE PROPOSED DEVELOPMENT

Castlelake SHD

Castlelake,  
Carrigtwohill,  
Co. Cork

BAM

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## 1 Introduction

### 1.1 Report purpose

This report gives information on the level of achieved daylight reception in habitable rooms within the proposed new development.

### 1.2 Instruction

DKPartnership (DKP) have been commissioned by BAM, to carry out the analysis and report for the proposed development at Carrigtwohill, Co. Cork.

### 1.3 Development description

The development will consist of the construction of a strategic housing development of 716 no. units and a 2 no. storey creche. The proposed development comprises 224 no. houses, 284 no. duplex units and 208 no. apartments. The two storey houses comprise 48 no. detached, 126 no. semi-detached and 50 no. terraced Houses containing 60 no. two bed units, 139 no. three bed units and 25 no. four bed units. The part-one to part-three storey duplex units are contained in 122 no. buildings providing 82 no. one bed units, 142 no. two bed units and 60 no. three bed units. There are 7 no. apartments blocks ranging in height from part-1 to part- 5 no. storeys.

- Block 1 is 4 no. storeys and contains 34 no. units (7 no. one bed units, 19 no. two bed units and 8 no. three bed units).
- Block 2 is part-1 to part-5 no. storeys and contains 42 no. units (15 no. one bed units, 20 no. two bed units and 7 no. three bed units).
- Block 3 is 5 no. storeys and contains 17 no. units (8 no. one bed units and 9 no. two bed units).
- Block 4 is 4 no. storeys and contains 13 no. units (6 no. one bed units and 7 no. two bed units).
- Block 5 is 4 no. storeys and contains 13 no. units (6 no. one bed units and 7 no. two bed units).
- Block 6 is 4 no. storeys and contains 13 no. units (6 no. one bed units and 7 no. two bed units).
- Block 7 is 5 no. storeys over basement and contains 76 no. units (23 no. one bed units, 41 no. two bed units and 12 no. three bed units).
- All blocks contain ancillary internal and external resident amenity space.

The proposed development also provides for: hard and soft landscaping; boundary treatments; public realm works; car parking; bicycle stores and shelters; bin stores; lighting; plant rooms; and all ancillary site development works above and below ground.

### 1.4 Policy and building regulation requirements

There are no particular building regulations in relation day light/shadow effect standards other than recommendations outlined or referred to in the CIBSE lighting guide 10, BS EN17037 and the BRE document "Site layout planning for daylight and sun light".

## 2 Executive summary

### 2.1 Analysis conducted

This report details the achieved calculated daylight reception in habitable rooms within the new development and compares these for compliance with the recommendations of the relevant guidelines and standards.

### 2.2 Daylight reception and building orientation

Day light reception in habitable rooms within the proposed development under the BRE, CIBSE and BS EN17037 is calculated using the area of the glazed element, the room depth/height ratio, the room light reflection capability and the amount of direct or blocked/partially blocked daylight it receives. i.e. building orientation is not relevant to day light reception or daylight reception calculations. In other words day light factor analysis is equal to all orientations. This note is for clarity as day light is often confused with sunlight or sunlight energy which is effected by orientation.

### 2.3 Guidelines and standards applied

For this report we applied the recommendations and guideline of the following;

- The Building Research Establishment (BRE) report, site layout planning for daylight and sunlight – a guide to good practice third edition 08-06-2022. (referred to as the BRE Report).
- British European Standard BS EN17037 Day lighting standards and contains guidance on the minimum recommended levels of interior day lighting.
- CIBSE guide 10 Day light and lighting for buildings.

### 2.4 Technical analysis

The amount of daylight received in a room is calculated and expressed as a daylight factor (BRE) and average illuminance on 50% of the area (BS-EN 17037). The resultant data is then compared with the BRE and BS-EN 17037 recommended minimum room daylight factor / illuminance to ensure sufficient daylight reception. Calculations were conducted in accordance with the BRE / BS-EN 17037 guidelines to determine the average day light factor / illuminance in a number of selected rooms within the new development. These selected rooms are generally in (daylight) challenging locations typically based at the lowest (ground floor) levels given that these would receive the least amount of day light. Once the ground floor rooms achieve compliance all other rooms at higher levels with similar room/window configurations and parameters will also achieve compliance as the vertical daylight impact angle will improve increasing the daylight reception typically 0.3%-0.5% per floor level (3m).

### 2.5 Daylight reception in rooms within the new development conclusion

The calculation assessment has been segregated according to Site areas, these are;

1. Blandcrest Site
2. Castlelake North Site
3. Castlelake South Site 01
4. Castlelake South Site 02
5. Castlelake West Site
6. Station Road North Site
7. Station Road South Site

The BRE report recommends as a methodology for assessing sufficient daylight reception in a habitable room, that the calculated average daylight factor (ADF) / Illuminance of a habitable room to be in excess of the BRE / BS-EN 17037 bench marks of a kitchen at 2% / 200Lx, a living room at 1.5% / 150Lx, a bedroom at 1% / 100Lx, a living room/bedroom at 1.5% / 150Lx and a living/kitchen/dining room at 2% / 200Lx. Summarized calculation findings are as follows; (see images throughout chapter 5 for receptor locations):

#### (1) Blandcrest Site:

From the calculation results in table 5.1 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

Level 01: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

All floors above the first floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor typically 0.3%-0.5% per floor level.

#### (2) Castlelake North Site:

From the calculation results in table 5.2 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.  
Level 01: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.  
All floors above the first floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

(3) Castlelake South Site 01:

From the calculation results in table 5.3 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.  
Level 01: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.  
All floors above the first floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

(4) Castlelake South Site 02:

From the calculation results in table 5.4 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.  
Level 01: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.  
All floors above the first floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

(5) Castlelake West Site:

From the calculation results in table 5.5 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.  
All floors above the ground floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

(6) Station Road North Site:

From the calculation results in table 5.6 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.  
All floors above the ground floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

(7) Station Road South Site:

From the calculation results in table 5.7 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.  
All floors above the ground floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

From the results data we note that all rooms are in excess of the minimum average day light factor criterion of the BRE report and minimum illuminance criterion of BS-EN 17037 and therefore concluded this to be compliant to the relevant standards.

## 2.6 Mitigation measures/actions

No mitigation measures anticipated.

### 3 Geographical overview

#### 3.1 Project overview

Image 3.1 the (google) site map below indicates the location of the sites approximately outlined.

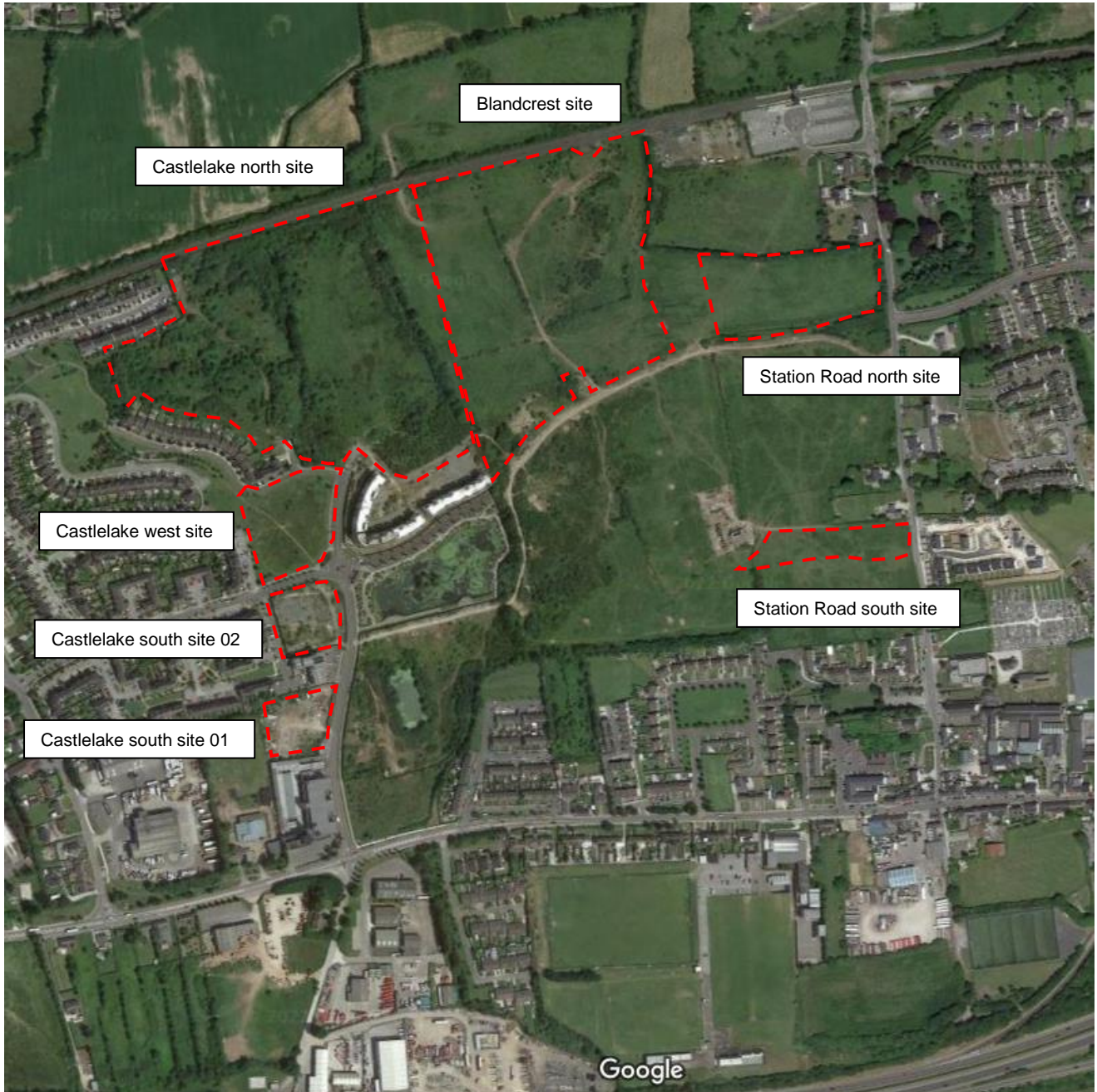


Image 3.1 Approximate proposed development site boundary



## 4 Approach and methodology

### 4.1 General approach

This report covers the day light reception of habitable rooms within the new proposed development. The day light reception is expressed as the average day light factor (ADF) in the following rooms:

- Bed rooms within dwellings
- Living rooms/dining rooms
- Kitchens
- Any combination of the above

### 4.2 The nature and effects of day light and sun light

When assessing the effects of proposed building projects on the potential to cause issues relating to light, it is important to recognise the distinction between daylight and sunlight. Daylight is the combination of all direct and indirect sunlight during the daytime, whereas sunlight (for the purposes of this report) comprises only the direct elements of sunlight. For example, on a cloudy or overcast day diffused daylight still comes in through windows, even when sunlight is absent. Any development within a built-up area has the potential to alter the amount of daylight received by nearby residential properties.

Care should be taken when designing new buildings in built-up areas, especially when the proposed development is relatively tall or situated to the south of existing buildings, because in the northern hemisphere the majority of the sunlight comes from the south. In Ireland (and other northern hemisphere countries) south-facing facades will in general, receive the most sunlight, while the north facing facades will receive sunlight on only a handful of occasions, specifically early mornings and late evenings during the summer months. It is therefore important to ensure that new buildings to the south of any development do not cause over shadowing to existing dwellings and therefore reduce their capacity to receive sunlight.

### 4.3 Assessment criteria

National Policy/building regulations:

The government does not have an adopted policy on daylight, sunlight and the effects of overshadowing, and does not have targets, criteria or relevant planning guidance in the way it has for other environmental impacts such as noise, landscape or air quality. However, there are a number of guidance documents which are relevant when considering daylight, sunlight and overshadowing in dwellings:

- The Building Research Establishment (BRE) report, "Site layout planning for daylight and sunlight – a guide to good practice (referred to as the BRE Report).  
Although not Government guidance, this report is commonly referenced as the main guide in Ireland/UK in determining the minimum standards of daylight and sunlight and for determining the impact of a development.
- British European Standard BS EN17037 Day Lighting for buildings.  
BS EN17037 contains guidance on the minimum recommended levels of interior day lighting and introduces some of the calculation procedures used in the BRE Report.
- CIBSE guide 10 Day light and lighting for buildings.  
CIBSE lighting guide 10, BS EN17037 contains guidance on the minimum recommended levels of interior day lighting and introduces recommended day light levels for general buildings.

### 4.4 The BRE Report – "Site Layout and Planning for Daylight and Sunlight – A Guide to Good Practice"

The BRE report contains guidance on how to design developments whilst minimising the impacts on existing buildings from overshadowing and reduced levels of daylight and sunlight. The advice provided within the guide is not mandatory and should not be seen as an instrument of planning policy, its aim is to help rather than constrain the designer. Although it gives numerical guidance values these should be interpreted flexibly since natural lighting is one of many factors in site layout design. The guidance should be applied appropriately to developments to assist in gaining the best development possible without adverse impacts.

As well as advice the report contains a methodology to assess levels of daylight, sunlight and over shadowing and contains criteria to determine the potential impacts of a new development on surrounding buildings. Table 4.1 below details the BRE and BS EN 17037 assessment criteria for daylight reception within the proposed development.



Day light reception criterion	BRE Average day light factor		BS EN 17037 Illuminance Lx	
Kitchens	>= 2.0%	On >- 75% area	>= 200 Lx	On >- 50% area
Living rooms	>= 1,5%	On >- 70% area	>= 150 Lx	On >- 50% area
Kitchen Living rooms	>= 2.0%	On >- 75% area	>= 200 Lx	On >- 50% area
Bed rooms	>= 1,0%	On >- 50% area	>= 100 Lx	On >- 50% area

Table 4.1

There are also recommendations with regards to minimum proposed glazed area in facades in relation to the available sky view component angle. BS EN17037 gives guidance on the minimum glazed area with different virtual sky component angles to maintain sufficient daylight reception. Table 4.2 presents the minimum glazed areas fractions relative to the available sky view angle.

Room depth	VSC <=25°	VSC >=25° <=45°	VSC >=45° <=65°	VSC >=65°	Comments
1 to 8	20%	20% - 31%	31% - 35%	35% - 40%	
8 – 11	25%	25% - 40%	40% - 44%	44% - 50%	
11 – 14	30%	30% - 47%	47% - 53%	53% - 60%	
14 - 20	35%	35% - 54%	54% - 61%	61% - 70%	

Table 4.2

#### 4.5 ADF or Average day light factor

The average day light assessment is the amount of day light received by the habitable rooms in the proposed development only. Whereas there are no standards applied for day light factors there are recommendations published in the CIBSE guides and BRE documents in relation to the percentage and minimum area of the room/area to conform to same. Table 4.1 above represents recommended minimum day light factors.

#### 4.6 ADF or Average Daylight Factor calculation method

The average daylight factor provides a useful technique for assessing the daylight potential of interior spaces under standard overcast conditions. The average daylight factor *df* is defined as;

$$df = \frac{T A_w q}{A (1 - R^2)} \%$$

where,

T is the diffuse visible transmittance of the glazing, including corrections for dirt on glass

A<sub>w</sub> is the net glazed area of the window (m<sup>2</sup>)

A is the total area of the room surfaces: ceiling, floor, walls and windows (m<sup>2</sup>)

R is their average reflectance of the ceiling, walls and floor surfaces

q is the angle of visible sky in degrees (VSC)

#### 4.7 Project ADF calculation parameters

The following calculation parameters have been applied. For T (E<sub>m</sub>), the overall maintained light transmittance into the room we applied a conservative 0.66. Current triple glazed elements can now be supplied with light emittance in excess of 0.72 effecting/improving the final resultant ADF by a further 0.3% to 0.5%.

Glass light emittance	0.72
Glazing maintenance factor	8%
Maintained light emittance E <sub>m</sub>	0.66



For R (Rf), the average reflectance of the walls, ceiling and floor we have used an overall average figure 0.61 representing a medium dark floor, medium dark walls and a light ceiling. R can also be significantly improved by implementing lighter colours on the walls and floor effecting/improving the ADF by 0.5% to 0.7%.

Ceiling	0.8	95%	Light
Walls	0.6	80%	Medium dark
Floor	0.4	70%	Dark
Combined Rf	0.61		

For q, the vertical sky component angle we use the combined calculated vertical sky component over the full visual horizontal plane from the relevant window/room point. i.e. at each obstacle in the general 180° horizontal view plane the vertical sky component is measured and combined to form the overall resultant VSC. The illustration 4.1 below shows the room analysed to be effected by 3 different vertical sky component angles A, B and C on its horizontal plane. The resultant VSC is a calculated combination of all three VSC angles.

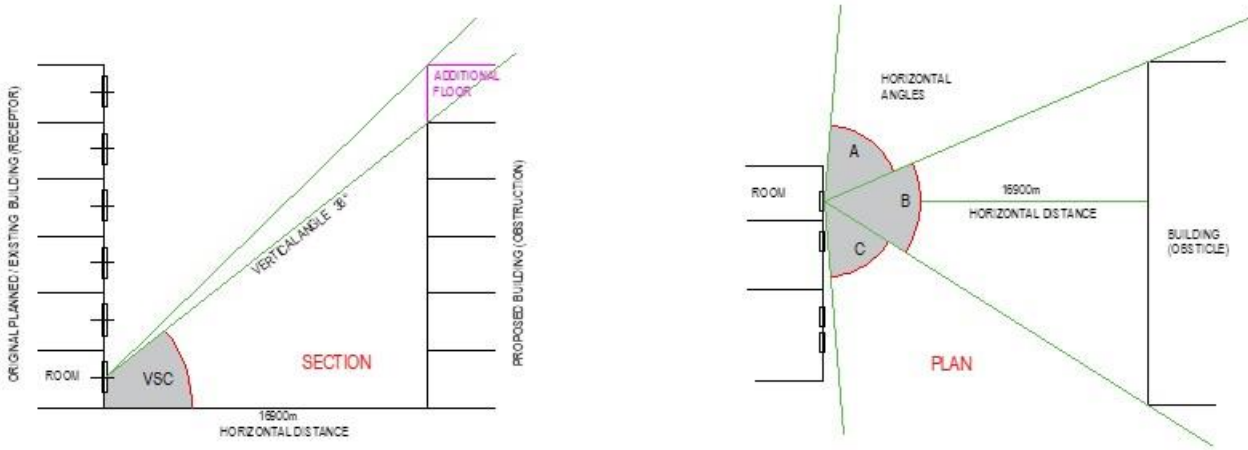


Image 4.1

**4.8 Average Illuminance over 50% of the area**

The average illuminance over 50% of the area (E<sub>1</sub>) has been calculated by applying the average daylight factor data and parameters from section 4.5 using an average illuminance level of 5000 Lx for a standard Sky (E<sub>0</sub>) by ;

$ADF = (E_1 / E_0) * 100$  where ADF = average day light factor, E<sub>1</sub> is the resultant illuminance at a certain point and E<sub>0</sub> is the standard sky illuminance value or

$E_1 = ADF_{point} * 5,000 / 100 Lx.$



## 5 Basis of receptor selection of habitable rooms within the development and Calculation results

### 5.1 Basis of receptor (room) selection

The daylight reception assessment has been targeted to rooms which are perceived to receive less day light i.e. ground floor rooms / first floor room / rooms facing close-by large obstacles. Once a (lowest level) room is compliant, rooms at higher levels with similar configuration / parameters are deemed compliant on the basis that the room daylight factor would have improved due to the better vertical sky view angle of higher located rooms.

### 5.2 Assessment approach and colour indicators




The result tables in the next sections provide the full calculation results of the selected rooms including the overall calculated vertical sky component together with the 'to-be-achieved' BRE minimum daylight factor standards.

The assessment has been segregated according to Site areas, these are;

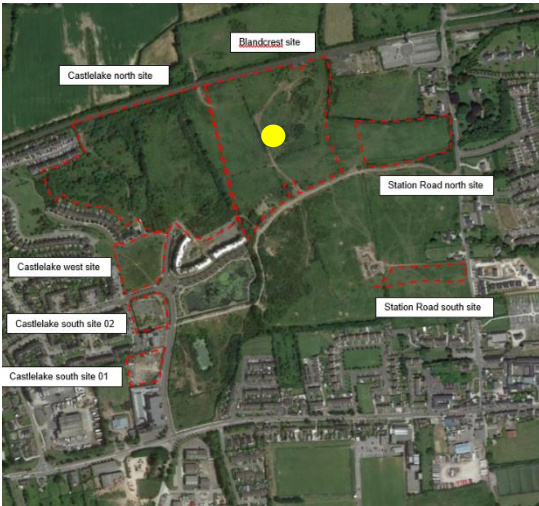
1. Blandcrest Site
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3. Castlelake South Site 01
4. Castlelake South Site 02
5. Castlelake West Site
6. Station Road North Site
7. Station Road South Site

The ADF calculation results have been given the following colour code guide depending on its level of resulting compliance. The overall conclusion is presented at the end of the chapter.

#### Compliance guide

	0% Over /equal to
	5% Within
	10% Within
	10% In excess of

### 5.3 (1) Blandcrest Site - receptors and calculation results



**Receptors:** Image 5.1 to 5.13 indicate the locations of the rooms chosen from the Blandcrest Site for the ADF analysis. Once a (lowest level) room is compliant, rooms at higher levels with similar configuration / parameters are deemed compliant on the basis that the room daylight factor would have improved due to the better vertical sky view angle of higher located rooms.



Image 5.1: Level 00 (ground floor) with selected rooms/receptors. Blandcrest Site. Overall view.





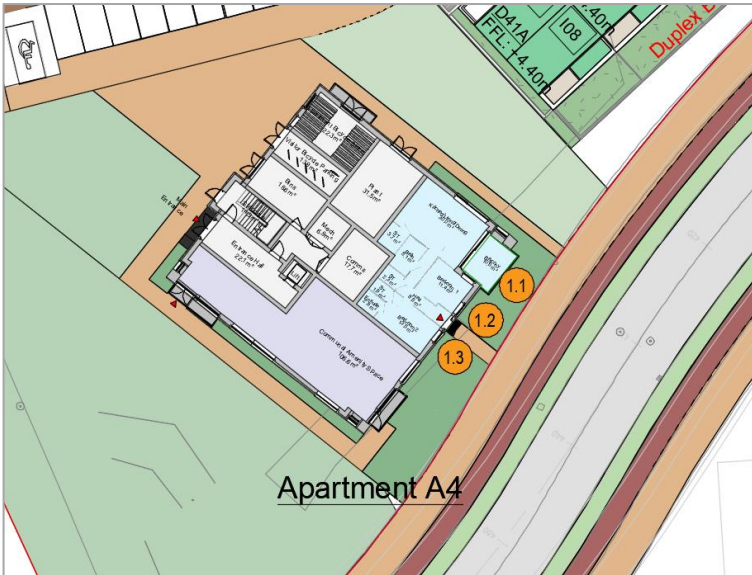


Image 5.2: Level 00 (ground floor) with selected rooms/receptors. Blandcrest Site. Apartment A4.

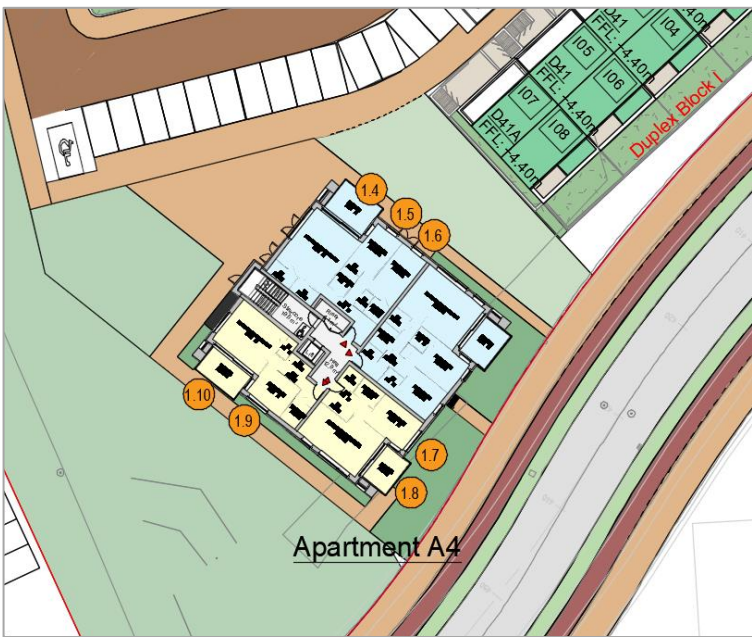


Image 5.3: Level 01 (first floor) with selected rooms/receptors. Blandcrest Site. Apartment A4.

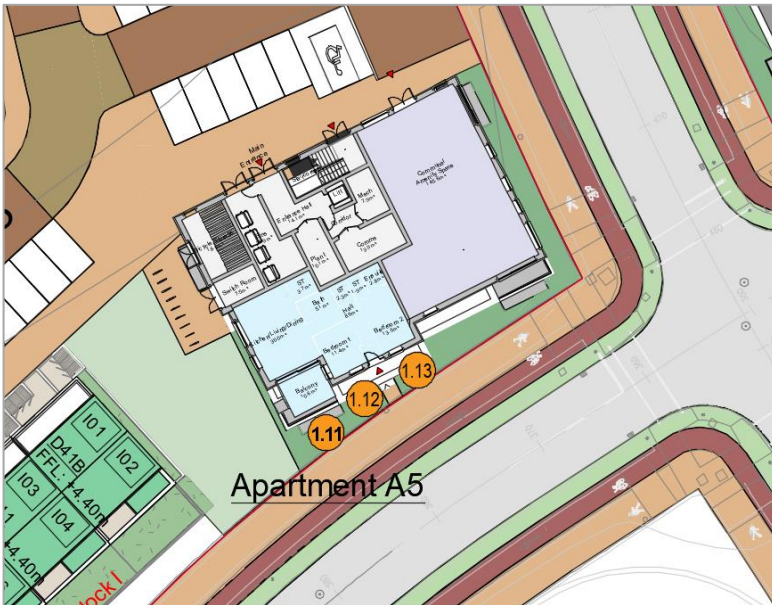


Image 5.4: Level 00 (ground floor) with selected rooms/receptors. Blandcrest Site. Apartment A5.

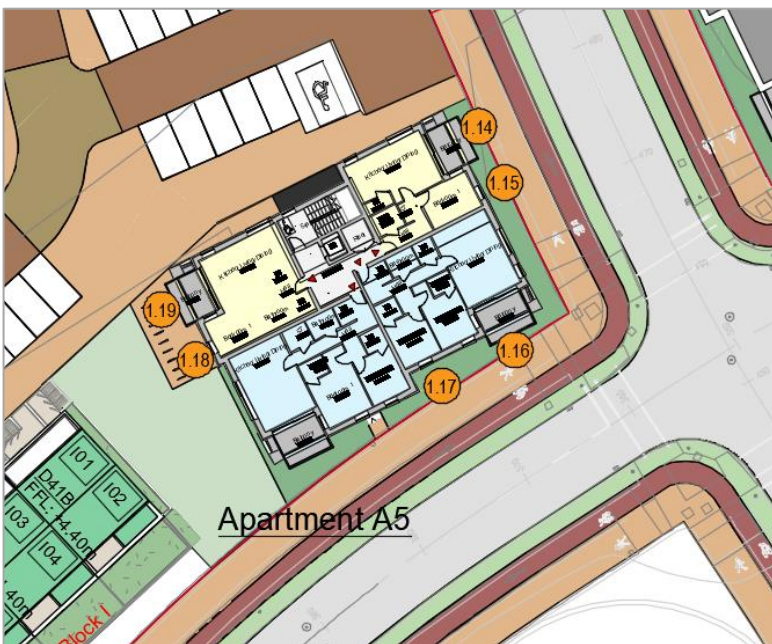


Image 5.5: Level 01 (first floor) with selected rooms/receptors. Blandcrest Site. Apartment A5.



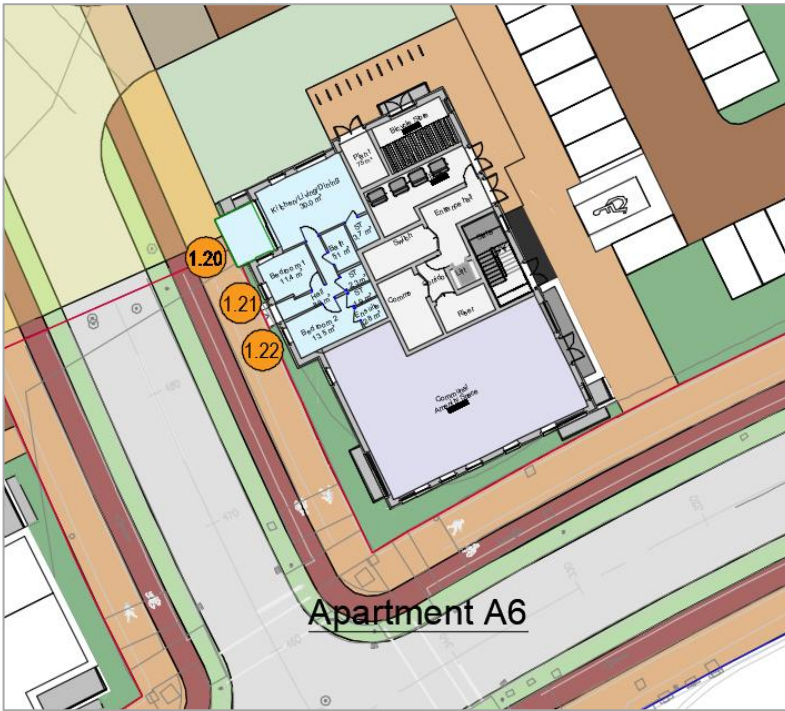


Image 5.6: Level 00 (ground floor) with selected rooms/receptors. Blandcrest Site. Apartment A6.

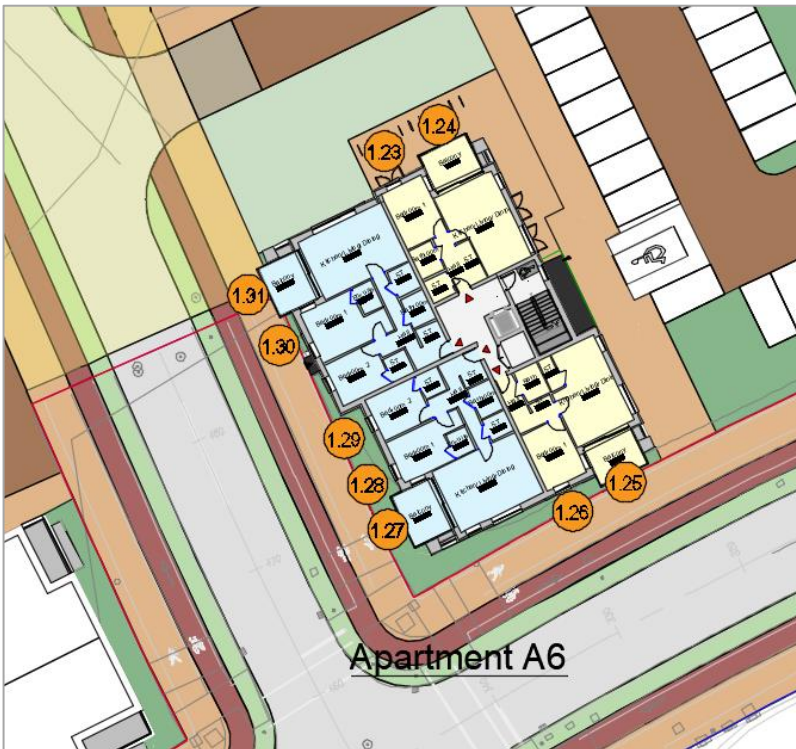


Image 5.7: Level 01 (first floor) with selected rooms/receptors. Blandcrest Site. Apartment A6.



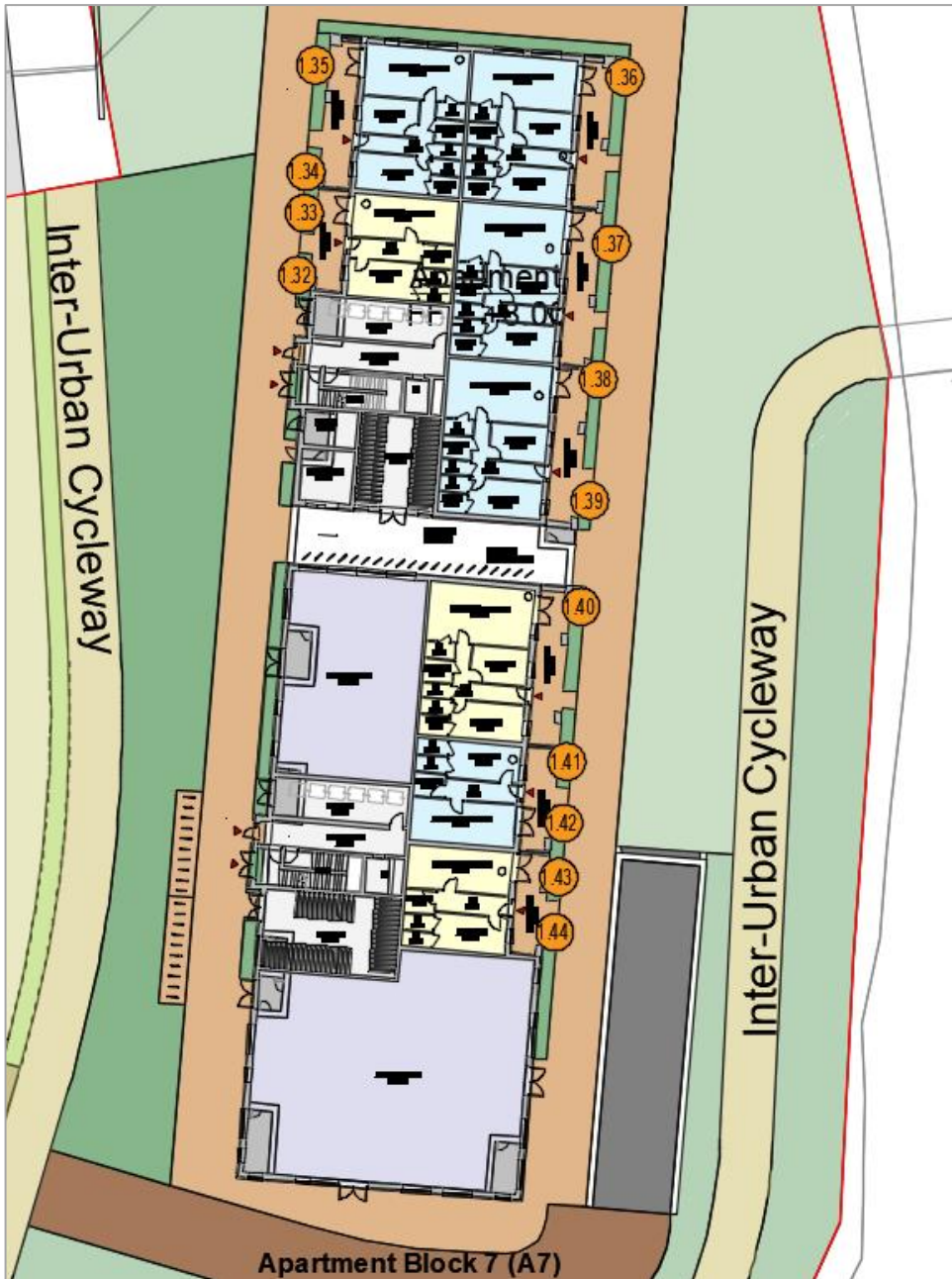


Image 5.8: Level 00 (ground floor) with selected rooms/receptors. Blandcrest Site. Apartment A7.



Image 5.9: Level 00 (first floor) with selected rooms/receptors. Blandcrest Site. Apartment A7.



Image 5.10: Level 00 (ground floor) with selected rooms/receptors. Blandcrest Site. Street 07 / 05.



Image 5.11: Level 00 (ground floor) with selected rooms/receptors. Blandcrest Site. Street 07 / 05.





Image 5.12: Level 00 (ground floor) with selected rooms/receptors. Blandcrest Site. Street 01.



Image 5.13: Level 00 (ground floor) with selected rooms/receptors. Blandcrest Site. Street 03 / 04.

**ADF calculation results: Blandcrest Site**

The table below provide the full calculation results of the selected rooms including the overall calculated vertical sky component together with the 'to-be-achieved' BRE minimum daylight factor standards.

Receptor	Block	Unit ID	Receptor		Hor Sec a		Hor Sec b		Hor Sec c		Hor Sec d		Σ Hor L	Σ VSC L	Room				Room	BRE	Room	BSEN
			Level	Room / type	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°			area m2	width m	depth m	height m	ADF %	ADF %	Lx % area	17037 min
1.01	A4	A4-001	00	Living - Kitchen	92	80	88	8					180	19%	9.90	4.60	6.50	3.80	3.49	2.00	377	200
1.02	A4	A4-001	00	Bed room	59	8	74	7	47	6			180	35%	1.98	2.80	3.70	3.80	2.58	1.00	395	100
1.03	A4	A4-001	00	Bed room	57	8	73	7	50	6			180	35%	1.98	2.80	4.80	3.80	2.14	1.00	252	100
1.04	A4	A4-101	01	Living - Kitchen	92	75	32	45	56	16			180	17%	9.90	5.10	6.00	3.00	3.37	2.00	408	200
1.05	A4	A4-101	01	Bed room	50	5	53	45	77	15			180	29%	1.98	2.80	4.70	3.00	2.11	1.00	254	100
1.06	A4	A4-101	01	Bed room	52	45	68	14	60	5			180	29%	1.98	2.80	5.30	3.00	1.95	1.00	208	100
1.07	A4	A4-104	01	Bed room	59	7	74	7	47	5			180	35%	4.40	3.10	4.30	3.00	5.69	1.00	782	100
1.08	A4	A4-104	01	Living - Kitchen	92	75	88	7					180	21%	10.34	4.50	6.70	3.00	4.39	2.00	457	200
1.09	A4	A4-103	01	Bed room	69	6	64	20	47	20			180	32%	4.40	3.80	3.20	3.00	5.50	1.00	1100	100
1.10	A4	A4-103	01	Living - Kitchen	44	20	50	19	86	78			180	18%	8.80	5.30	4.60	3.00	3.89	2.00	621	200
1.11	A5	A5-G01	00	Living - Kitchen	95	80	85	8					180	19%	8.80	4.50	6.50	3.80	3.06	2.00	328	200
1.12	A5	A5-G01	00	Bed room	45	35	37	8	98	7			180	32%	1.98	2.80	3.70	3.80	2.36	1.00	361	100
1.13	A5	A5-G01	00	Bed room	21	31	39	8	120	7			180	34%	1.98	2.80	4.80	3.80	2.06	1.00	243	100
1.14	A5	A5-103	01	Living - Kitchen	87	75	22	8	71	28			180	18%	8.80	4.50	6.70	3.00	3.24	2.00	337	200
1.15	A5	A5-103	01	Bed room	57	8	55	29	68	6			180	32%	1.98	2.80	4.30	3.00	2.49	1.00	328	100
1.16	A5	A5-102	01	Living - Kitchen	95	80	85	7					180	19%	8.80	4.60	6.50	3.00	3.48	2.00	376	200
1.17	A5	A5-102	01	Bed room	51	70	129	7					180	27%	1.98	3.20	3.80	3.00	2.14	1.00	337	100
1.18	A5	A5-104	01	Bed room	43	8	48	44	89	13			180	29%	1.98	2.80	4.30	3.00	2.29	1.00	301	100
1.19	A5	A5-104	01	Living - Kitchen	95	80	32	44	53	13			180	16%	8.80	4.30	6.70	3.00	2.89	2.00	296	200
1.20	A6	A6-001	00	Living - Kitchen	98	80	28	30	54	12			180	16%	8.80	4.60	6.50	3.80	2.62	2.00	283	200
1.21	A6	A6-001	00	Bed room	96	12	37	30	47	8			180	32%	1.98	2.80	3.70	3.80	2.34	1.00	358	100
1.22	A6	A6-001	00	Bed room	90	12	40	30	50	8			180	32%	1.98	2.80	4.80	3.80	1.93	1.00	228	100
1.23	A6	A6-103	01	Bed room	96	13	67	22	17	10			180	31%	1.98	2.80	4.30	3.00	2.42	1.00	319	100
1.24	A6	A6-103	01	Living - Kitchen	98	75	22	13	60	22			180	17%	8.80	4.30	6.70	3.00	3.22	2.00	330	200
1.25	A6	A6-104	01	Living - Kitchen	95	75	19	5	66	7			180	20%	8.80	4.30	6.70	3.00	3.78	2.00	388	200
1.26	A6	A6-104	01	Bed room	87	8	41	6	52	6			180	35%	1.98	2.80	4.30	3.00	2.71	1.00	357	100
1.27	A6	A6-101	01	Living - Kitchen	95	75	30	6	55	31			180	17%	8.80	4.60	6.50	3.00	3.13	2.00	338	200
1.28	A6	A6-101	01	Bed room	68	7	40	31	72	12			180	32%	1.98	3.10	5.60	3.00	1.94	1.00	211	100
1.29	A6	A6-101	01	Bed room	50	70	40	31	90	7			180	25%	1.98	3.20	3.80	3.00	1.98	1.00	312	100
1.30	A6	A6-102	01	Bed room	51	6	41	31	88	11			180	32%	1.98	3.80	4.00	3.00	2.14	1.00	342	100
1.31	A6	A6-102	01	Living - Kitchen	95	80	38	31	47	12			180	16%	9.90	4.50	6.50	3.00	3.40	2.00	365	200
1.32	A7	A7-003	00	Bed room	94	75	17	8	69	4			180	21%	1.98	2.80	5.50	3.80	1.14	1.00	117	100
1.33	A7	A7-003	00	Living - Kitchen	80	75	51	8	49	4			180	23%	4.62	3.30	6.50	3.80	2.33	2.00	217	200
1.34	A7	A7-001	00	Bed room	8	8	84	4	88	75			180	22%	1.98	2.80	5.50	3.80	1.19	1.00	122	100
1.35	A7	A7-001	00	Living - Kitchen	57	7	41	4	82	75			180	22%	6.62	3.90	6.90	3.80	2.89	2.00	278	200
1.36	A7	A7-002	00	Living - Kitchen	79	75	45	4	56	6			180	23%	6.62	3.90	6.90	3.80	2.97	2.00	286	200
1.37	A7	A7-004	00	Living - Kitchen	61	75	61	4	58	6			180	26%	5.82	4.80	6.90	3.80	2.58	2.00	266	200
1.38	A7	A7-005	00	Living - Kitchen	60	75	60	4	60	6			180	26%	5.82	4.80	6.90	3.80	2.60	2.00	268	200
1.39	A7	A7-005	00	Bed room	64	75	24	6	92	4			180	26%	1.98	2.80	5.50	3.80	1.41	1.00	145	100
1.40	A7	A7-006	00	Living - Kitchen	68	75	47	4	65	7			180	25%	5.82	4.80	6.90	3.80	2.46	2.00	254	200
1.41	A7	A7-007	00	Bed room	77	75	44	4	59	7			180	23%	1.98	2.80	5.50	3.80	1.28	1.00	132	100
1.42	A7	A7-007	00	Living - Kitchen	72	75	35	7	73	4			180	24%	4.73	3.30	6.60	3.80	2.52	2.00	232	200
1.43	A7	A7-008	00	Living - Kitchen	87	75	32	4	61	7			180	22%	4.73	3.30	6.60	3.80	2.24	2.00	206	200
1.44	A7	A7-008	00	Bed room	96	75	10	7	74	4			180	20%	1.98	2.80	5.50	3.80	1.12	1.00	115	100
1.45	A7	A7-113	01	Living - Kitchen	93	75	40	6	47	4			180	21%	5.82	4.60	7.00	3.00	2.39	2.00	240	200



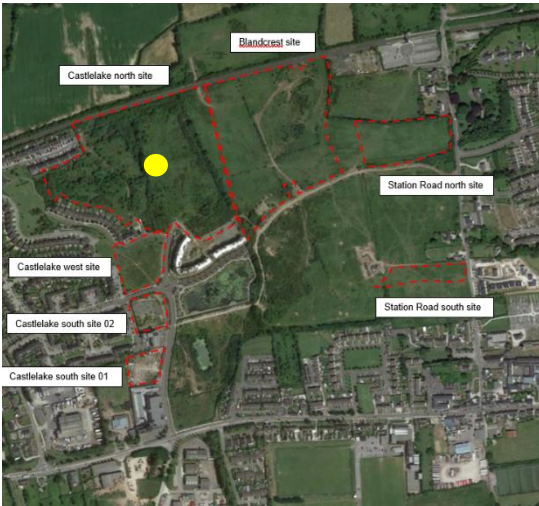
1.46	A7	A7-116	01	Living - Kitchen	102	75	36	7	42	4				180	19%	8.12	4.20	7.00	3.00	3.27	2.00	318	200
1.47	A7	A7-117	01	Bed room	62	10	52	10	66	9				180	34%	1.98	3.10	4.20	3.00	2.51	1.00	353	100
1.48	A7	A7-117	01	Living - Kitchen	93	75	87	10						180	20%	7.62	5.20	5.70	3.00	3.19	2.00	409	200
1.49	A7	A7-117	01	Bed room	50	8	67	10	63	7				180	34%	4.62	2.80	4.60	3.00	5.91	1.00	727	100
1.50	A7	A7-115	01	Living - Kitchen	60	35	34	7	65	10	21	7		180	30%	4.62	3.50	6.10	3.00	3.76	2.00	393	200
1.51	A7	A7-115	01	Bed room	61	10	119	75						180	16%	4.62	3.10	3.60	3.00	3.01	1.00	494	100
1.52	A7	A7-114	01	Living - Kitchen	60	40	73	10	47	5				180	30%	4.62	3.10	7.30	3.00	3.44	2.00	286	200
1.53	A7	A7-110	01	Living - Kitchen	112	75	48	10	20	5				180	17%	6.04	4.20	7.00	3.00	2.17	2.00	211	200
1.54	A7	A7-110	01	Bed room	60	5	115	10	5	8				180	34%	4.62	2.80	5.00	3.00	5.55	1.00	628	100
1.55	A7	A7-110	01	Bed room	62	5	113	10	5	8				180	34%	1.98	3.00	3.80	3.00	2.80	1.00	430	100
1.56	A7	A7-108	01	Bed room	70	5	72	10	38	8				180	34%	1.98	3.00	3.80	3.00	2.82	1.00	433	100
1.57	A7	A7-106	01	Living - Kitchen	115	75	26	4	39	8				180	17%	6.04	4.20	7.00	3.00	2.17	2.00	211	200
1.58	A7	A7-104	01	Living - Kitchen	10	5	56	8	114	75				180	17%	6.04	4.20	7.00	3.00	2.17	2.00	211	200
1.59	A7	A7-104	01	Bed room	91	5	89	8						180	35%	4.62	2.80	5.00	3.00	5.67	1.00	642	100
1.60	A7	A7-101	01	Bed room	95	5	85	8						180	35%	1.98	2.80	4.70	3.00	2.55	1.00	307	100
1.61	House		00	Living	29	8	120	28	31	8				180	29%	2.88	3.30	3.90	2.86	3.25	1.50	446	150
1.62	House		00	Living	13	7	66	15	56	30	45	9		180	30%	2.88	3.30	3.90	2.86	3.43	1.50	471	150
1.63	Duplex		00	Living - Kitchen	49	28	93	10	38	8				180	32%	5.40	3.80	9.10	2.86	3.21	2.00	203	200
1.64	Duplex		00	Living - Kitchen	48	5	58	13	74	6				180	34%	3.78	6.60	4.50	2.86	2.84	2.00	421	200
1.65	House		00	Living - Kitchen	86	22	48	43	46	14				180	27%	5.40	6.00	4.20	2.86	3.60	2.00	560	200
1.66	House		00	Living - Kitchen	64	19	92	19	24	8				180	30%	4.50	5.80	3.00	2.86	4.30	2.00	930	200
1.67	House		00	Living - Kitchen	37	11	109	19	34	11				180	31%	4.50	6.00	3.40	2.86	3.96	2.00	762	200
1.68	House		00	Living	26	8	77	24	77	24				180	29%	2.88	3.80	4.30	2.86	2.80	1.50	376	150
1.69	House		00	Living - Kitchen	44	13	47	37	89	19				180	29%	4.50	6.00	3.40	2.86	3.62	2.00	696	200
1.70	House		00	Living	42	12	96	24	42	11				180	30%	2.88	3.50	4.00	2.86	3.28	1.50	460	150
1.71	House		00	Living - Kitchen	41	14	46	37	93	19				180	28%	4.50	6.00	3.40	2.86	3.61	2.00	694	200
1.72	House		00	Living - Kitchen	76	19	55	37	49	19				180	28%	5.40	6.00	4.20	2.86	3.65	2.00	568	200
1.73	House		00	Living - Kitchen	79	19	52	37	49	19				180	28%	5.40	6.00	4.20	2.86	3.67	2.00	571	200
1.74	House		00	Living - Kitchen	43	13	49	36	88	19				180	29%	4.50	6.00	3.40	2.86	3.62	2.00	696	200
1.75	House		00	Living - Kitchen	70	24	87	19	23	13				180	29%	4.50	6.00	3.40	2.86	3.73	2.00	717	200
1.76	House		00	Living - Kitchen	14	46	83	19	83	26				180	28%	4.50	6.00	3.40	2.86	3.51	2.00	675	200
1.77	Duplex		00	Living - Kitchen	73	13	37	37	70	19				180	29%	5.04	6.50	4.80	2.86	3.11	2.00	431	200
1.78	Duplex		00	Living - Kitchen	28	11	78	19	41	40	33	35		180	27%	5.04	6.60	4.50	2.86	2.97	2.00	441	200
1.79	Duplex		00	Bed room	85	70	36	45	59	18				180	18%	1.80	3.80	4.00	2.86	1.14	1.00	164	100
1.80	House		00	Living - Kitchen	75	9	67	54	38	19				180	26%	5.40	6.00	4.20	2.86	3.47	2.00	540	200
1.81	House		00	Living - Kitchen	44	19	74	54	62	19				180	24%	5.40	6.00	4.20	2.86	3.16	2.00	492	200
1.82	House		00	Living - Kitchen	63	34	71	19	46	19				180	28%	4.50	6.00	3.40	2.86	3.52	2.00	677	200
1.83	Duplex		00	Living - Kitchen	65	19	34	17	45	37	36	10		180	29%	3.78	6.60	4.50	2.86	2.38	2.00	353	200
1.84	Duplex		00	Living - Kitchen	67	15	56	45	57	19				180	27%	5.04	6.50	4.80	2.86	2.87	2.00	398	200
1.85	Duplex		00	Bed room	39	10	74	18	67	27				180	30%	2.00	3.60	3.10	2.86	2.55	1.00	296	100
1.86	Duplex		00	Living - Kitchen	72	22	59	24	49	14				180	29%	5.40	3.80	8.60	2.86	3.12	2.00	209	200
1.87	Duplex		00	Bed room	42	9	40	24	98	70				180	19%	1.80	3.80	4.00	2.86	1.20	1.00	173	100
1.88	Duplex		00	Living - Kitchen	99	14	40	29	41	29				180	29%	3.78	6.60	4.50	2.86	2.39	2.00	355	200
1.89	House		00	Living	38	10	98	26	44	29				180	28%	4.50	6.00	3.40	2.86	3.56	1.50	685	150
1.90	House		00	Living	20	9	53	24	29	19	78	27		180	28%	2.88	3.80	4.30	2.86	2.75	1.50	369	150
1.91	House		00	Living - Kitchen	13	9	62	18	39	27	66	19		180	30%	5.40	6.00	4.20	2.86	3.92	2.00	610	200
1.92	House		00	Living - Kitchen	21	11	125	19	34	12				180	31%	4.50	5.80	3.00	2.86	4.35	2.00	941	200
1.93	House		00	Living	54	14	84	32	42	15				180	28%	2.88	3.50	4.00	2.86	3.08	1.50	432	150

Table 5.1: ADF calculation results. Blandcrest Site.





### 5.4 (2) Castlelake North Site - receptors and calculation results



**Receptors:** Image 5.14 to 5.19 indicate the locations of the rooms chosen from the Castlelake North Site for the ADF analysis. Once a (lowest level) room is compliant, rooms at higher levels with similar configuration / parameters are deemed compliant on the basis that the room daylight factor would have improved due to the better vertical sky view angle of higher located rooms.



Image 5.14: Level 00 (ground floor) with selected rooms/receptors. Castlelake North Site. Overview of site.







Image 5.15: Level 00 (ground floor) with selected rooms/receptors. Castlelake North Site. Apartment A3.



Image 5.16: Level 01 (first floor) with selected rooms/receptors. Castlelake North Site. Apartment A3.



Image 5.17: Level 00 (ground floor) with selected rooms/receptors. Castlelake North Site. Street 05/06.



Image 5.18: Level 00 (ground floor) with selected rooms/receptors. Castlelake North Site. Street 07/08.





Image 5.19: Level 00 (ground floor) with selected rooms/receptors. Castlelake North Site. Street 03/02.

**ADF calculation results: Castlelake North Site**

The table below provide the full calculation results of the selected rooms including the overall calculated vertical sky component together with the 'to-be-achieved' BRE minimum daylight factor standards.

Receptor	Block	Unit ID	Receptor		Hor Sec a		Hor Sec b		Hor Sec c		Hor Sec d		Σ Hor L	Σ VSC L	Room				Room ADF %	BRE ADF %	Room Lx 1/2area	BSEN 17037 min
			Level	Room / type	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°			area m2	width m	depth m	height m				
2.01	A3	A3-001	00	Living - Kitchen	14	17	68	10	98	80			180	18%	7.70	4.50	6.50	3.80	2.42	2.00	246	200
2.02	A3	A3-001	00	Bed room	114	10	33	20	33	8			180	33%	1.98	2.80	3.70	3.80	2.34	1.00	340	100
2.03	A3	A3-001	00	Bed room	112	10	35	24	33	8			180	33%	1.98	2.80	4.80	3.80	1.96	1.00	225	100
2.04	A3	A3-104	01	Living - Kitchen	98	75	40	9	42	29			180	17%	7.70	4.50	6.70	3.00	2.63	2.00	259	200
2.05	A3	A3-103	01	Bed room	35	21	29	7	85	23	31	18	180	30%	3.30	3.70	3.10	3.00	3.95	1.00	786	100
2.06	A3	A3-103	01	Living - Kitchen	78	23	29	7	73	75			180	21%	6.60	5.30	4.40	3.00	3.29	2.00	520	200
2.07	A3	A3-101	01	Living - Kitchen	61	41	31	12	88	75			180	16%	7.70	5.10	6.00	3.00	2.43	2.00	278	200
2.08	A3	A3-101	01	Bed room	64	18	59	42	57	8			180	28%	1.98	2.80	4.10	3.00	2.23	1.00	300	100
2.09	A3	A3-101	01	Bed room	49	18	53	42	78	8			180	29%	1.98	2.80	5.30	3.00	1.89	1.00	197	100
2.10	Duplex		00	Bed room	67	6	43	37	70	15			180	31%	1.62	3.60	3.00	2.86	2.15	1.00	385	100
2.11	House		00	Living - Kitchen	33	10	86	19	61	10			180	32%	5.04	6.00	3.40	2.86	4.35	2.00	793	200
2.12	House		00	Bed room	45	19	56	54	79	16			180	26%	5.40	6.00	4.30	2.86	3.23	1.00	465	100
2.13	Duplex		00	Bed room	70	11	83	19	27	10			180	32%	1.80	3.70	3.60	2.86	2.14	1.00	322	100
2.14	Duplex		00	Living - Bedroom	59	11	91	19	30	10			180	32%	4.50	6.40	6.10	2.86	2.44	1.50	251	150
2.15	House		00	Living	52	17	44	29	84	15			180	30%	2.88	3.30	4.00	2.86	3.23	1.50	421	150
2.16	House		00	Living	71	17	45	29	64	15			180	30%	2.88	3.30	4.00	2.86	3.22	1.50	419	150
2.17	House		00	Living - Kitchen	79	19	47	35	54	19			180	28%	5.40	6.00	4.30	2.86	3.52	2.00	507	200
2.18	House		00	Living - Kitchen	42	17	47	34	91	19			180	28%	5.04	6.00	3.40	2.86	3.88	2.00	707	200
2.19	House		00	Living - Kitchen	42	19	52	34	86	18			180	28%	5.40	6.00	4.30	2.86	3.54	2.00	510	200
2.20	House		00	Living - Kitchen	21	8	124	19	35	10			180	31%	5.04	6.00	3.00	2.86	4.59	2.00	948	200
2.21	House		00	Living - Kitchen	64	19	21	8	95	20			180	30%	5.04	6.00	3.00	2.86	4.45	2.00	919	200
2.22	House		00	Living - Kitchen	150	20	14	10	16	10			180	30%	5.40	6.00	4.30	2.86	3.77	2.00	543	200
2.23	House		00	Living - Kitchen	84	18	55	32	41	19			180	28%	5.04	6.00	3.40	2.86	3.88	2.00	707	200
2.24	House		00	Living - Kitchen	51	15	111	19	18	13			180	31%	5.04	6.00	3.40	2.86	4.18	2.00	762	200
2.25	House		00	Living - Kitchen	72	24	90	19	18	16			180	29%	5.04	6.00	3.40	2.86	3.98	2.00	725	200
2.26	House		00	Living - Kitchen	83	19	54	41	43	17			180	27%	5.40	6.00	4.30	2.86	3.42	2.00	493	200
2.27	House		00	Living - Kitchen	48	19	52	40	80	24			180	26%	5.40	6.00	4.30	2.86	3.30	2.00	475	200
2.28	House		00	Living	30	9	65	19	85	23			180	30%	2.88	3.80	4.40	2.86	2.73	1.50	339	150
2.29	House		00	Living	21	65	105	20	54	10			180	29%	2.88	3.80	3.40	2.86	3.14	1.50	505	150
2.30	Duplex		00	Bed room	77	10	86	20	17	15			180	31%	1.80	3.80	3.00	2.86	2.35	1.00	428	100
2.31	Duplex		00	Bed room	34	26	98	75	48	9			180	18%	1.80	3.80	3.80	2.86	1.13	1.00	162	100
2.32	Duplex		00	Living - Kitchen	63	10	37	26	80	11			180	32%	5.04	3.80	8.40	2.86	3.12	2.00	203	200
2.33	Duplex		00	Living - Kitchen	28	9	42	19	110	13			180	32%	5.04	6.50	5.20	2.86	3.08	2.00	374	200
2.34	Duplex		00	Bed room	57	18	43	27	80	13			180	30%	1.80	3.80	3.00	2.86	2.27	1.00	413	100
2.35	Duplex		00	Living - Kitchen	53	37	83	8	44	11			180	31%	3.60	6.60	4.00	2.86	2.49	2.00	394	200
2.36	Duplex		00	Bed room	60	15	70	23	50	15			180	30%	3.60	6.60	4.00	2.86	2.46	1.00	389	100
2.37	Duplex		00	Bed room	44	9	80	23	56	19			180	30%	1.62	3.00	3.60	2.86	2.11	1.00	295	100
2.38	Duplex		00	Living - Kitchen	36	38	13	8	131	20			180	28%	3.60	6.60	4.00	2.86	2.30	2.00	364	200

Table 5.2: ADF calculation results. Castlelake North Site.



### 5.5 (3) Castlelake South Site 01 - receptors and calculation results



**Receptors:** Image 5.20 to 5.21 indicate the locations of the rooms chosen from the Castlelake South Site 01 for the ADF analysis. Once a (lowest level) room is compliant, rooms at higher levels with similar configuration / parameters are deemed compliant on the basis that the room daylight factor would have improved due to the better vertical sky view angle of higher located rooms.



Image 5.20: Level 00 (ground floor) with selected rooms/receptors. Castlelake South Site 01.







Image 5.21: Level 01 (first floor) with selected rooms/receptors. Castlelake South Site 01.

**ADF calculation results: Castlelake South Site 01**

The table below provide the full calculation results of the selected rooms including the overall calculated vertical sky component together with the 'to-be-achieved' BRE minimum daylight factor standards.

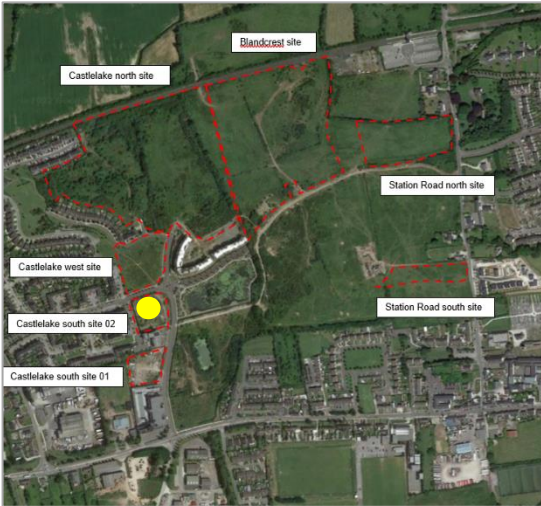
Receptor Block	Unit ID	Receptor		Hor Sec a		Hor Sec b		Hor Sec c		Hor Sec d		Σ Hor L	Σ VSC L	glass area m <sup>2</sup>	Room				Room ADF %	BRE ADF %	Room Lx 1/2area	BSEN 17037 min
		Level	Room / type	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°				width m	depth m	height m					
3.01	A1-003	00	Bed room	87	44	70	10	7	16	16	70	180	25%	1.98	2.80	4.70	3.80	1.49	1.00	175	100	
3.02	A1-003	00	Living - Kitchen	75	25	14	3	44	10	47	80	180	24%	5.06	3.30	7.20	3.80	2.42	2.00	204	200	
3.03	A1-001	00	Bed room	65	16	21	3	70	10	24	20	180	32%	1.98	3.00	5.00	3.80	1.82	1.00	207	100	
3.04	A1-001	00	Bed room	59	14	25	3	70	10	26	21	180	33%	1.98	2.80	4.00	3.80	2.21	1.00	297	100	
3.05	A1-001	00	Bed room	23	9	59	33	30	4	68	80	180	20%	3.98	4.20	4.00	3.80	2.11	1.00	341	100	
3.06	A1-001	00	Living - Kitchen	57	35	57	9	20	4	46	80	180	23%	7.96	5.00	8.55	3.80	2.54	2.00	203	200	
3.07	A1-002	00	Living - Kitchen	66	35	55	5	59	80			180	21%	7.96	4.50	7.80	3.80	2.59	2.00	219	200	
3.08	A1-002	00	Bed room	43	8	92	35	45	80			180	21%	4.84	4.20	4.00	3.80	2.73	1.00	441	100	
3.09	A1-002	00	Bed room	52	8	128	5					180	35%	1.98	2.60	4.00	3.80	2.48	1.00	322	100	
3.10	A1-002	00	Bed room	51	8	129	5					180	35%	3.96	2.80	5.00	3.80	4.11	1.00	453	100	
3.11	A1-004	00	Bed room	102	4	78	80					180	23%	1.98	2.80	6.10	3.80	1.13	1.00	102	100	
3.12	A1-004	00	Bed room	109	4	71	80					180	24%	1.98	2.80	5.60	3.80	1.27	1.00	125	100	
3.13	A1-004	00	Living - Kitchen	108	4	72	80					180	24%	7.96	5.20	8.45	3.80	2.51	2.00	205	200	
3.14	A1-105	01	Living - Kitchen	30	4	35	7	115	75			180	17%	6.38	3.80	7.00	3.00	2.36	2.00	210	200	
3.15	A1-105	01	Bed room	80	4	46	7	54	15			180	34%	2.07	2.80	5.20	3.00	2.37	1.00	251	100	
3.16	A1-102	01	Living - Kitchen	86	8	94	75					180	20%	6.38	4.00	7.60	3.00	2.51	2.00	210	200	
3.17	A1-102	01	Bed room	37	4	64	34	79	8			180	31%	3.96	3.80	3.40	3.00	4.55	1.00	834	100	
3.18	A1-102	01	Bed room	74	8	63	36	43	4			180	31%	1.98	3.50	3.60	3.00	2.30	1.00	386	100	
3.19	A1-101	01	Bed room	69	8	60	42	51	4			180	30%	1.98	4.20	3.30	3.00	2.11	1.00	413	100	
3.20	A1-101	01	Bed room	63	8	56	42	61	4			180	31%	1.98	3.10	2.80	3.00	2.94	1.00	604	100	
3.21	A1-101	01	Living - Kitchen	57	7	47	45	76	5			180	31%	8.80	9.10	5.50	3.00	3.73	2.00	538	200	
3.22	A1-101	01	Bed room	84	4	96	75					180	20%	1.98	2.80	4.80	3.00	1.42	1.00	163	100	
3.23	A1-103	01	Living - Kitchen	67	4	113	75					180	18%	4.84	3.30	6.30	3.00	2.21	2.00	207	200	
3.24	A1-103	01	Bed room	52	5	128	4					180	36%	3.30	2.80	4.30	3.00	4.57	1.00	586	100	
3.25	A1-104	01	Bed room	51	5	129	4					180	36%	1.98	2.80	4.00	3.00	2.89	1.00	398	100	
3.26	A1-104	01	Bed room	51	5	129	4					180	36%	1.98	2.80	5.20	3.00	2.37	1.00	251	100	
3.27	A1-104	01	Living - Kitchen	64	5	116	75					180	17%	4.84	3.80	5.90	3.00	2.05	2.00	217	200	
3.28	A1-106	01	Living - Kitchen	64	5	116	75					180	17%	4.84	3.80	5.90	3.00	2.05	2.00	217	200	
3.29	A1-106	01	Bed room	49	6	131	4					180	36%	3.30	2.80	5.20	3.00	3.94	1.00	418	100	
3.30	A1-106	01	Bed room	48	6	132	4					180	36%	3.30	2.80	4.00	3.00	4.81	1.00	663	100	
3.31	A1-109	01	Bed room	47	6	120	4	13	15			180	35%	1.98	3.00	4.40	3.00	2.55	1.00	329	100	
3.32	A1-109	01	Living - Kitchen	83	5	86	26	11	4			180	31%	5.50	5.90	6.50	3.00	2.94	2.00	324	200	
3.33	A1-110	01	Bed room	78	5	90	26	12	4			180	31%	2.20	2.20	3.30	3.00	3.65	1.00	530	100	
3.34	A1-110	01	Bed room	75	5	93	26	12	4			180	31%	2.20	3.00	4.40	3.00	2.49	1.00	321	100	
3.35	A1-110	01	Bed room	71	5	96	26	13	4			180	31%	1.98	2.60	4.20	3.00	2.52	1.00	320	100	
3.36	A1-110	01	Living - Kitchen	41	4	77	25	38	7	24	75	180	28%	8.80	8.90	4.00	3.00	4.27	2.00	842	200	
3.37	A1-108	01	Living - Kitchen	36	4	27	6	117	75			180	17%	4.40	3.30	5.90	3.00	2.02	2.00	202	200	
3.38	A1-108	01	Bed room	33	9	55	5	92	7			180	35%	3.30	2.80	4.30	3.00	4.44	1.00	569	100	
3.39	A1-107	01	Bed room	30	8	56	5	94	7			180	35%	1.98	2.90	4.30	3.00	2.61	1.00	340	100	
3.40	A1-107	01	Living - Kitchen	31	4	32	8	117	75			180	17%	4.84	3.30	5.90	3.00	2.20	2.00	220	200	

Table 5.3: ADF calculation results. Castlelake South Site 01.





### 5.6 (4) Castlelake South Site 02 - receptors and calculation results



**Receptors:** Image 5.22 to 5.23 indicate the locations of the rooms chosen from the Castlelake South Site 02 for the ADF analysis. Once a (lowest level) room is compliant, rooms at higher levels with similar configuration / parameters are deemed compliant on the basis that the room daylight factor would have improved due to the better vertical sky view angle of higher located rooms.

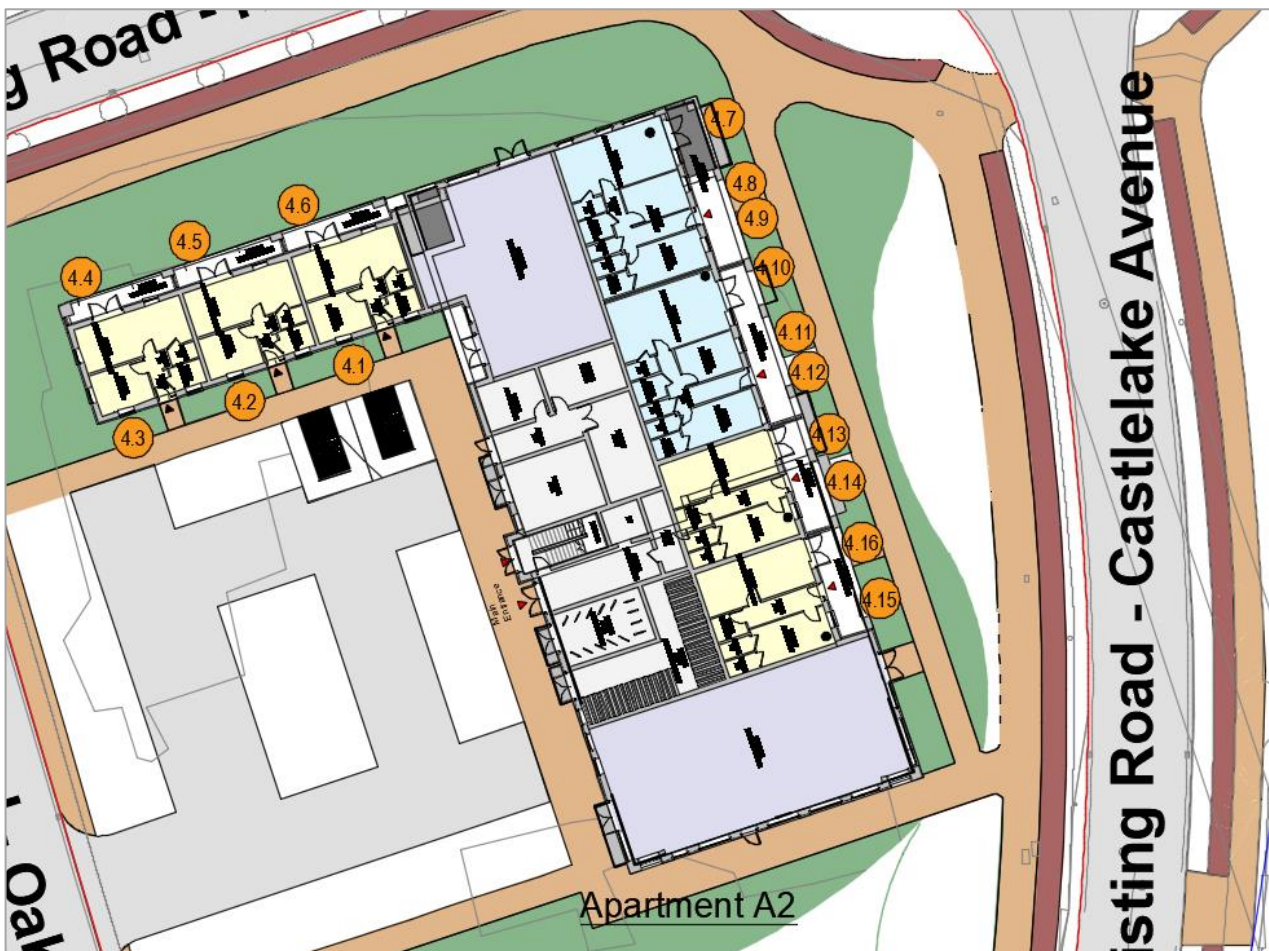


Image 5.22: Level 00 (ground floor) with selected rooms/receptors. Castlelake South Site 02.



Image 5.23: Level 01 (first floor) with selected rooms/receptors. Castlelake South Site 02.

**ADF calculation results: Castlelake South Site 02**

The table below provide the full calculation results of the selected rooms including the overall calculated vertical sky component together with the 'to-be-achieved' BRE minimum daylight factor standards.

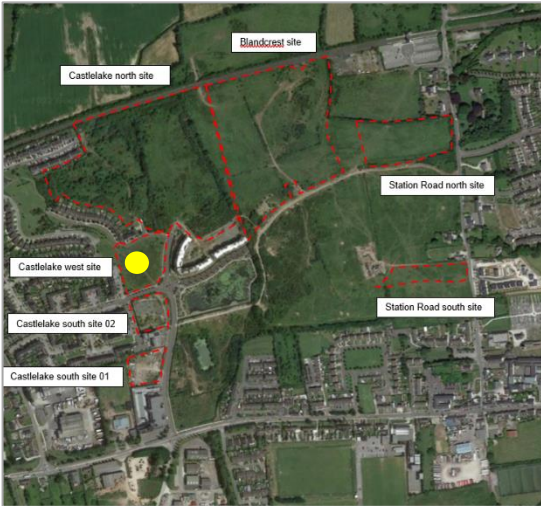
Receptor block	Unit ID	Receptor		Hor Sec a		Hor Sec b		Hor Sec c		Hor Sec d		Σ Hor L	Σ VSC L	glass area m2	Room				Room ADF %	BRE ADF %	Room Lx ½area	BSEN 17037 min
		Level	Room / type	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°				width m	depth m	height m					
4.01	A2-005	00	Bed room	80	60	37	16	63	10			180	24%	1.70	4.00	3.00	3.80	1.32	1.00	229	100	
4.02	A2-006	00	Bed room	70	48	40	16	70	12			180	27%	1.70	4.00	3.00	3.80	1.47	1.00	255	100	
4.03	A2-007	00	Bed room	60	35	41	16	79	15			180	29%	1.70	4.00	3.00	3.80	1.59	1.00	276	100	
4.04	A2-007	00	Living - Kitchen	44	9	78	20	58	80			180	23%	8.38	7.80	3.30	3.80	3.55	2.00	827	200	
4.05	A2-006	00	Living - Kitchen	30	8	92	20	58	80			180	22%	6.17	7.80	3.30	3.80	2.58	2.00	601	200	
4.06	A2-005	00	Living - Kitchen	93	20	29	6	58	80			180	22%	6.17	7.80	3.30	3.80	2.59	2.00	604	200	
4.07	A2-004	00	Living - Kitchen	53	80	112	4	15	59			180	25%	7.72	4.00	6.60	3.80	3.70	2.00	356	200	
4.08	A2-004	00	Bed room	132	4	29	75	19	59			180	29%	1.98	2.80	4.30	3.80	1.86	1.00	233	100	
4.09	A2-004	00	Bed room	54	80	112	3	14	59			180	25%	1.98	2.80	5.60	3.80	1.34	1.00	132	100	
4.10	A2-003	00	Living - Kitchen	59	80	100	3	21	59			180	23%	6.17	3.50	6.60	3.80	3.01	2.00	276	200	
4.11	A2-003	00	Bed room	62	80	98	3	20	59			180	23%	1.98	2.80	4.60	3.80	1.39	1.00	162	100	
4.12	A2-003	00	Bed room	62	80	98	3	20	59			180	23%	1.98	2.80	4.60	3.80	1.39	1.00	162	100	
4.13	A2-002	00	Living - Kitchen	52	80	106	3	22	59			180	24%	4.19	3.50	6.50	3.80	2.17	2.00	202	200	
4.14	A2-002	00	Bed room	66	80	102	3	12	59			180	23%	1.98	2.80	5.60	3.80	1.24	1.00	122	100	
4.15	A2-001	00	Bed room	30	80	132	3	18	59			180	29%	1.98	2.80	4.30	3.80	1.84	1.00	230	100	
4.16	A2-001	00	Living - Kitchen	46	80	120	3	14	59			180	27%	4.19	3.50	6.60	3.80	2.31	2.00	212	200	
4.17	A2-110	01	Bed room	33	6	72	18	75	8			180	33%	3.30	3.10	4.20	3.00	3.99	1.00	547	100	
4.18	A2-110	01	Living - Kitchen	52	8	82	3	46	80			180	28%	8.36	5.20	5.70	3.00	4.76	2.00	578	200	
4.19	A2-110	01	Bed room	97	7	83	3					180	36%	1.98	2.80	4.50	3.00	2.62	1.00	321	100	
4.20	A2-109	01	Living - Kitchen	97	7	83	3					180	36%	4.40	3.50	6.10	3.00	4.01	2.00	397	200	
4.21	A2-109	01	Bed room	59	4	121	80					180	15%	1.98	3.10	3.60	3.00	1.19	1.00	190	100	
4.22	A2-108	01	Bed room	95	7	85	3					180	36%	1.98	2.80	5.00	3.00	2.42	1.00	267	100	
4.23	A2-108	01	Living - Kitchen	48	7	39	3	93	80			180	20%	6.16	4.60	7.00	3.00	2.29	2.00	218	200	
4.24	A2-107	01	Living - Kitchen	46	7	41	3	93	80			180	20%	6.16	4.60	7.00	3.00	2.29	2.00	218	200	
4.25	A2-106	01	Bed room	91	7	89	3					180	36%	1.98	2.10	4.00	3.00	3.40	1.00	409	100	
4.26	A2-106	01	Living - Kitchen	41	6	43	3	96	80			180	19%	8.36	4.20	7.00	3.00	3.24	2.00	299	200	
4.27	A2-101	01	Bed room	11	6	61	30	108	4			180	32%	1.98	3.10	4.20	3.00	2.36	1.00	323	100	
4.28	A2-101	01	Living - Kitchen	29	28	70	6	81	80			180	20%	8.36	5.20	5.70	3.00	3.41	2.00	414	200	
4.29	A2-101	01	Bed room	63	25	80	6	37	6			180	32%	1.98	2.80	4.50	3.00	2.39	1.00	293	100	
4.30	A2-102	01	Living - Kitchen	59	23	81	6	40	6			180	33%	4.40	3.50	6.10	3.00	3.73	2.00	370	200	
4.31	A2-102	01	Bed room	59	6	121	80					180	15%	4.18	3.10	3.60	3.00	2.47	1.00	395	100	
4.32	A2-103	01	Bed room	59	6	121	80					180	15%	4.18	3.10	3.60	3.00	2.47	1.00	395	100	
4.33	A2-103	01	Living - Kitchen	48	19	81	6	51	6			180	34%	2.86	3.50	6.30	3.00	2.43	2.00	233	200	
4.34	A2-104	01	Living - Kitchen	81	6	99	80					180	19%	6.16	4.20	7.00	3.00	2.28	2.00	210	200	
4.35	A2-104	01	Bed room	38	14	112	6	30	7			180	34%	3.30	2.80	5.00	3.00	3.90	1.00	430	100	
4.36	A2-104	01	Bed room	37	14	114	6	29	7			180	34%	1.98	3.00	3.70	3.00	2.81	1.00	431	100	
4.37	A2-112	01	Bed room	33	13	111	6	36	8			180	34%	1.98	2.10	4.00	3.00	3.29	1.00	395	100	
4.38	A2-112	01	Living - Kitchen	87	7	93	80					180	19%	8.36	4.20	7.00	3.00	3.24	2.00	299	200	

Table 5.4: ADF calculation results. Castlelake South Site 02.





### 5.7 (5) Castlelake West Site - receptors and calculation results



**Receptors:** Image 5.24 indicates the locations of the rooms chosen from the Castlelake West Site for the ADF analysis. Once a (lowest level) room is compliant, rooms at higher levels with similar configuration / parameters are deemed compliant on the basis that the room daylight factor would have improved due to the better vertical sky view angle of higher located rooms.



Image 5.24: Level 00 (ground floor) with selected rooms/receptors. Castlelake West Site.

**ADF calculation results: Castlelake West Site**

The table below provide the full calculation results of the selected rooms including the overall calculated vertical sky component together with the 'to-be-achieved' BRE minimum daylight factor standards.

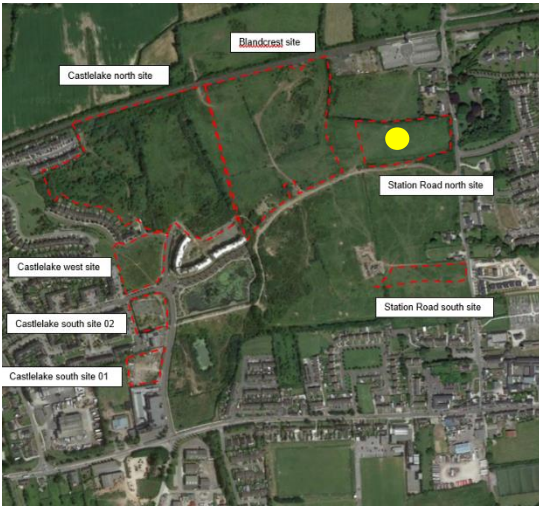
Receptor Block	Unit ID	Receptor		Hor Sec a		Hor Sec b		Hor Sec c		Hor Sec d		Σ Hor L°	Σ Vert L°	glass area m2	Room				Room BRE Room BSEN		
		Level	Room / type	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°				width m	depth m	height m	ADF %	ADF % Lx	Room % area	17037 min
5.01	Duplex	00	Living - Kitchen	45	8	101	15	34	6			180	33%	5.40	3.80	8.60	2.86	3.34	2.00	210	200
5.02	Duplex	00	Bed room	63	15	117	35					180	26%	1.80	3.80	4.40	2.86	1.49	1.00	182	100
5.03	Duplex	00	Living - Kitchen	34	65	102	14	40	6	4	20	180	29%	4.50	6.70	4.10	2.86	2.80	2.00	429	200
5.04	Duplex	00	Living - Kitchen	15	46	115	14	46	6	4	22	180	32%	4.50	6.70	4.10	2.86	3.10	2.00	475	200
5.05	Duplex	00	Living - Kitchen	9	37	113	14	50	6	8	37	180	32%	4.50	6.70	4.10	2.86	3.13	2.00	480	200
5.06	Duplex	00	Living - Kitchen	7	20	108	14	51	6	14	45	180	32%	4.50	6.70	4.10	2.86	3.12	2.00	478	200
5.07	Duplex	00	Living - Kitchen	41	6	46	15	93	10			180	33%	3.24	6.50	4.70	2.86	2.21	2.00	293	200
5.08	Duplex	00	Bed room	44	4	46	16	90	8			180	34%	1.80	3.60	3.60	2.86	2.32	1.00	340	100
5.09	Duplex	00	Bed room	79	4	61	53	40	8			180	29%	3.60	3.10	3.50	2.86	4.41	1.00	629	100
5.10	Duplex	00	Bed room	33	4	56	53	91	8			180	29%	1.80	3.00	3.60	2.86	2.21	1.00	303	100
5.11	Duplex	00	Bed room	22	4	55	42	45	13	58	10	180	30%	1.80	3.00	3.60	2.86	2.26	1.00	309	100
5.12	Duplex	00	Bed room	16	4	52	35	48	13	64	10	180	30%	1.80	3.00	3.60	2.86	2.33	1.00	319	100
5.13	Duplex	00	Bed room	13	4	46	27	50	13	71	10	180	32%	1.80	3.00	3.60	2.86	2.42	1.00	331	100
5.14	Duplex	00	Bed room	10	3	38	18	49	13	83	11	180	32%	1.26	2.30	3.00	2.86	2.34	1.00	343	100
5.15	Duplex	00	Bed room	9	3	36	16	47	13	88	12	180	32%	3.60	3.80	3.00	2.86	4.80	1.00	858	100
5.16	Duplex	00	Living - Kitchen	77	6	60	10	43	4			180	35%	4.50	6.70	4.10	2.86	3.43	2.00	525	200
5.17	Duplex	00	Living - Kitchen	73	6	61	10	46	4			180	35%	4.50	6.70	4.10	2.86	3.43	2.00	525	200
5.18	Duplex	00	Living - Kitchen	69	6	60	11	51	4			180	35%	4.50	6.70	4.10	2.86	3.42	2.00	524	200
5.19	Duplex	00	Living - Kitchen	66	5	58	11	56	4			180	35%	4.50	6.70	4.10	2.86	3.44	2.00	527	200
5.20	Duplex	00	Bed room	70	32	60	8	50	18			180	29%	1.80	3.00	3.60	2.86	2.25	1.00	308	100
5.21	Duplex	00	Bed room	62	24	62	8	56	24			180	30%	1.80	3.00	3.60	2.86	2.30	1.00	315	100
5.22	Duplex	00	Bed room	53	20	62	8	65	29			180	30%	1.80	3.00	3.60	2.86	2.28	1.00	312	100
5.23	Duplex	00	Bed room	47	18	59	8	74	32			180	29%	1.80	3.00	3.60	2.86	2.24	1.00	307	100
5.24	Duplex	00	Bed room	38	9	50	48	42	13	50	8	180	29%	1.80	3.00	3.60	2.86	2.24	1.00	307	100
5.25	Duplex	00	Bed room	27	8	54	45	45	13	54	9	180	29%	1.80	3.00	3.60	2.86	2.23	1.00	305	100
5.26	Duplex	00	Bed room	21	8	51	34	47	13	61	10	180	31%	1.80	3.00	3.60	2.86	2.34	1.00	320	100
5.27	Duplex	00	Bed room	17	7	44	24	44	13	75	10	180	32%	1.80	3.00	3.60	2.86	2.45	1.00	335	100
5.28	Duplex	00	Bed room	14	7	38	18	49	13	79	11	180	32%	1.26	2.30	3.00	2.86	2.33	1.00	342	100
5.29	Duplex	00	Bed room	13	6	36	16	46	13	85	12	180	32%	3.60	3.80	3.00	2.86	4.80	1.00	858	100
5.30	Duplex	00	Living - Kitchen	89	13	57	22	34	4			180	32%	5.40	3.80	8.60	2.86	3.23	2.00	203	200
5.31	Duplex	00	Bed room	63	10	117	35					180	27%	1.80	3.80	4.40	2.86	1.52	1.00	186	100
5.32	Duplex	00	Living - Kitchen	55	66	36	9	67	22	22	4	180	25%	4.50	6.70	4.10	2.86	2.45	2.00	375	200
5.33	Duplex	00	Living - Kitchen	43	4	71	22	46	8	20	41	180	31%	4.50	6.70	4.10	2.86	3.04	2.00	466	200
5.34	Duplex	00	Living - Kitchen	48	4	72	22	43	8	17	38	180	31%	5.04	6.70	4.10	2.86	3.45	2.00	529	200
5.35	Duplex	00	Living - Kitchen	47	4	70	22	39	7	24	66	180	29%	4.50	6.70	4.10	2.86	2.89	2.00	443	200
5.36	Duplex	00	Living - Kitchen	85	4	65	22	30	7			180	33%	3.24	6.50	4.70	2.86	2.20	2.00	292	200
5.37	Duplex	00	Bed room	78	4	41	16	61	6			180	35%	1.80	3.60	3.60	2.86	2.36	1.00	346	100
5.38	Duplex	00	Bed room	79	4	59	38	42	12			180	31%	3.60	3.10	3.50	2.86	4.69	1.00	669	100

Table 5.5: ADF calculation results. Castlelake West Site.





### 5.8 (6) Station Road North Site - receptors and calculation results



**Receptors:** Image 5.25 indicates the locations of the rooms chosen from the Station Road North Site for the ADF analysis. Once a (lowest level) room is compliant, rooms at higher levels with similar configuration / parameters are deemed compliant on the basis that the room daylight factor would have improved due to the better vertical sky view angle of higher located rooms.



Image 5.25: Level 00 (ground floor) with selected rooms/receptors. Station Road North Site.



**ADF calculation results: Station Road North Site**

The table below provide the full calculation results of the selected rooms including the overall calculated vertical sky component together with the 'to-be-achieved' BRE minimum daylight factor standards.

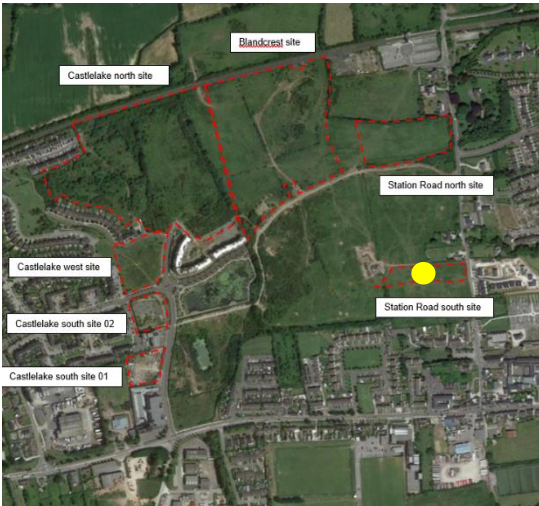
Receptor Block	Unit ID	Receptor		Hor Sec a		Hor Sec b		Hor Sec c		Hor Sec d		Σ Hor L	Σ VSC L	Room				Room BRE	Room BSEN		
		Level	Room / type	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°			area m2	width m	depth m	height m	ADF %	ADF %	Lx 1/2area	17037 min
6.01	Duplex	00	Bed room	39	5	52	24	89	4			180	34%	1.62	3.00	3.60	2.86	2.32	1.00	318	100
6.02	Duplex	00	Bed room	43	5	55	24	82	4			180	33%	1.62	3.00	3.60	2.86	2.31	1.00	316	100
6.03	Duplex	00	Bed room	46	5	64	24	70	4			180	33%	1.62	3.00	3.60	2.86	2.28	1.00	312	100
6.04	Duplex	00	Bed room	51	5	76	24	53	4			180	32%	1.62	3.00	3.60	2.86	2.24	1.00	307	100
6.05	House	00	Living - Kitchen	25	24	70	9	68	6	17	24	180	33%	4.50	6.10	3.44	2.86	3.91	2.00	698	200
6.06	House	00	Living - Kitchen	20	24	71	9	66	6	23	27	180	33%	4.50	6.10	3.44	2.86	3.89	2.00	694	200
6.07	House	00	Living	40	24	82	8	58	15			180	32%	2.88	3.80	3.40	2.86	3.48	1.50	549	150
6.08	House	00	Living	37	24	82	8	61	17			180	32%	2.88	3.80	3.40	2.86	3.45	1.50	544	150
6.09	House	00	Living	68	10	56	32	56	7			180	31%	2.88	3.80	3.40	2.86	3.38	1.50	533	150
6.10	House	00	Living	63	10	43	32	74	7			180	32%	2.88	3.80	3.40	2.86	3.47	1.50	548	150
6.11	House	00	Living	42	10	59	32	79	7			180	31%	2.88	3.80	3.40	2.86	3.38	1.50	533	150
6.12	House	00	Living	23	8	58	28	77	8	22	70	180	29%	2.88	3.80	3.40	2.86	3.10	1.50	489	150
6.13	House	00	Living - Kitchen	37	9	82	22	61	29			180	29%	4.50	6.10	3.44	2.86	3.40	2.00	607	200
6.14	House	00	Living - Kitchen	41	9	88	22	51	27			180	29%	4.50	5.80	3.00	2.86	3.91	2.00	789	200
6.15	House	00	Living - Kitchen	51	9	88	22	41	24			180	30%	4.50	5.80	3.00	2.86	4.01	2.00	809	200
6.16	House	00	Living - Kitchen	60	9	85	22	35	21			180	30%	4.50	6.10	3.44	2.86	3.61	2.00	644	200
6.17	House	00	Living - Kitchen	81	9	72	22	27	17			180	31%	4.50	6.10	3.44	2.86	3.71	2.00	662	200
6.18	House	00	Living - Kitchen	59	11	85	22	36	17			180	31%	4.50	6.10	3.44	2.86	3.61	2.00	644	200
6.19	House	00	Living - Kitchen	49	11	86	22	45	19			180	30%	4.50	6.10	3.44	2.86	3.57	2.00	637	200
6.20	House	00	Living - Kitchen	38	11	84	22	58	24			180	29%	4.50	6.10	3.44	2.86	3.47	2.00	619	200
6.21	House	00	Living - Kitchen	31	10	81	22	68	27			180	29%	4.50	5.80	3.00	2.86	3.84	2.00	774	200
6.22	House	00	Living - Kitchen	27	10	69	22	84	29			180	28%	4.50	5.80	3.00	2.86	3.74	2.00	754	200
6.23	House	00	Living - Kitchen	24	10	57	22	99	36			180	26%	4.50	6.10	3.44	2.86	3.08	2.00	549	200
6.24	House	00	Living	37	8	40	22	36	9	67	27	180	30%	2.88	3.80	3.40	2.86	3.27	1.50	516	150
6.25	House	00	Living	53	8	36	25	36	9	55	20	180	31%	2.88	3.40	4.00	2.86	3.29	1.50	425	150
6.26	House	00	Living	61	8	33	26	35	9	51	20	180	32%	2.88	3.80	3.40	2.86	3.43	1.50	541	150
6.27	House	00	Living	94	10	33	26	10	9	43	17	180	32%	2.88	3.80	3.40	2.86	3.45	1.50	544	150
6.28	House	00	Living	56	10	38	20	86	23			180	30%	2.88	3.80	3.40	2.86	3.27	1.50	516	150
6.29	House	00	Living	61	10	57	20	62	23			180	30%	2.88	3.80	3.40	2.86	3.30	1.50	521	150
6.30	House	00	Living - Kitchen	56	6	37	34	87	15			180	31%	3.60	6.50	4.60	2.86	2.32	2.00	315	200
6.31	Duplex	00	Bed room	70	6	40	34	70	15			180	31%	1.62	3.60	3.60	2.86	1.91	1.00	280	100
6.32	Duplex	00	Bed room	80	7	40	34	60	15			180	31%	1.62	3.10	3.60	2.86	2.11	1.00	292	100
6.33	Duplex	00	Living - Kitchen	60	7	44	34	76	15			180	31%	3.60	6.50	4.60	2.86	2.28	2.00	309	200
6.34	Duplex	00	Living - Kitchen	15	55	21	8	57	39	87	20	180	26%	4.50	6.70	4.10	2.86	2.58	2.00	395	200
6.35	Duplex	00	Living - Kitchen	61	32	69	24	50	25			180	27%	4.50	6.70	4.10	2.86	2.60	2.00	398	200
6.36	Duplex	00	Living - Kitchen	59	24	70	21	51	25			180	28%	4.50	6.70	4.10	2.86	2.76	2.00	423	200
6.37	Duplex	00	Living - Kitchen	70	17	75	33	35	65			180	24%	4.50	6.70	4.10	2.86	2.35	2.00	360	200
6.38	Duplex	00	Bed room	50	37	22	15	108	68			180	16%	1.71	3.80	2.80	2.86	1.14	1.00	218	100
6.39	Duplex	00	Living - Kitchen	40	22	53	38	87	10			180	29%	5.22	3.80	8.00	2.86	3.03	2.00	205	200
6.40	Duplex	00	Bed room	89	7	91	35					180	29%	1.62	3.00	3.50	2.86	2.04	1.00	287	100

Table 5.6: ADF calculation results. Station Road North Site.





### 5.9 (7) Station Road South Site - receptors and calculation results



**Receptors:** Image 5.26 indicates the locations of the rooms chosen from the Station Road South Site for the ADF analysis. Once a (lowest level) room is compliant, rooms at higher levels with similar configuration / parameters are deemed compliant on the basis that the room daylight factor would have improved due to the better vertical sky view angle of higher located rooms.

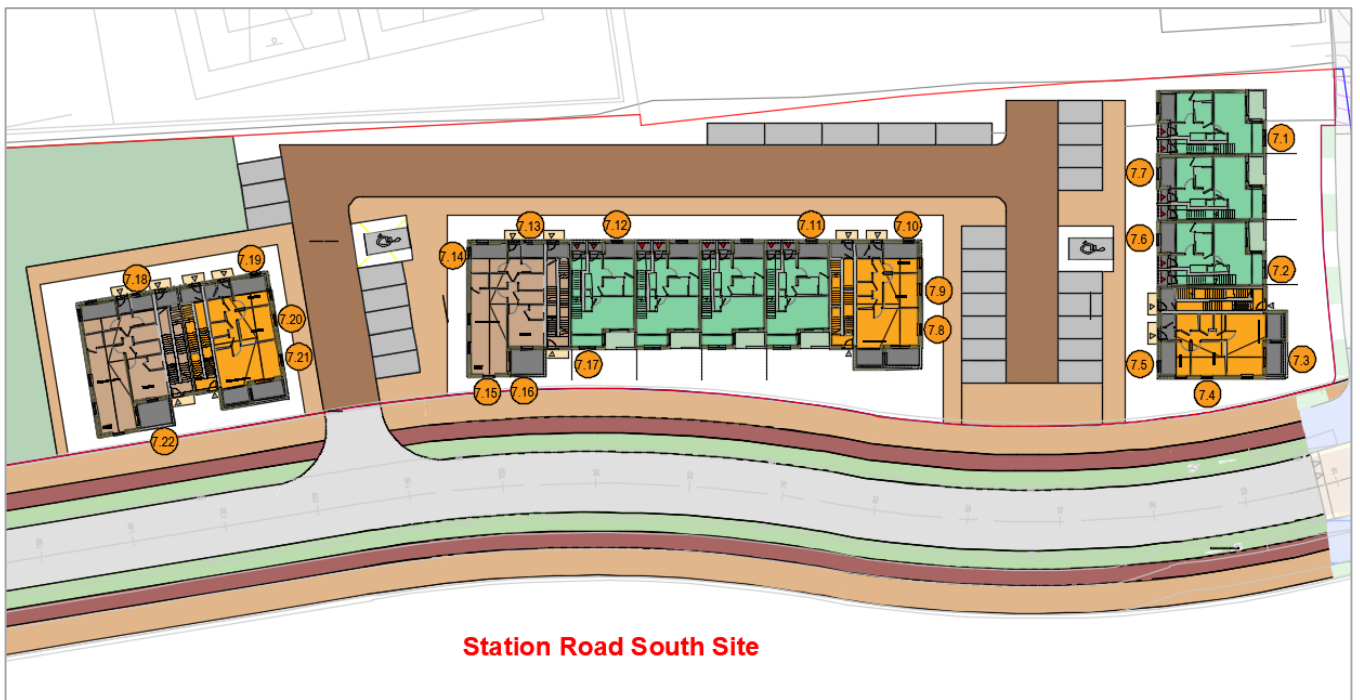


Image 5.26: Level 00 (ground floor) with selected rooms/receptors. Station Road South Site.

**ADF calculation results: Station Road South Site**

The table below provide the full calculation results of the selected rooms including the overall calculated vertical sky component together with the 'to-be-achieved' BRE minimum daylight factor standards.

Receptor block	Unit ID	Receptor		Hor Sec a		Hor Sec b		Hor Sec c		Hor Sec d		Σ Hor L	Σ VSC L	glass area m <sup>2</sup>	Room				Room ADF %	BRE ADF %	Room Lx ½area	BSEN 17037 min
		Level	Room / type	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°	Hor L°	Vert L°				width m	depth m	height m					
7.01	Duplex	00	Living - Kitchen	33	24	80	7	67	17			180	32%	4.32	6.70	4.10	2.86	3.01	2.00	461	200	
7.02	Duplex	00	Living - Kitchen	15	19	74	7	91	17			180	32%	4.32	6.70	4.10	2.86	3.05	2.00	467	200	
7.03	Duplex	00	Living - Kitchen	54	35	88	12	38	5			180	30%	3.60	6.50	4.60	2.86	2.27	2.00	308	200	
7.04	Duplex	00	Bed room	42	12	138	8					180	34%	1.62	3.60	3.60	2.86	2.08	1.00	305	100	
7.05	Duplex	00	Bed room	85	8	37	26	58	6			180	33%	2.70	3.10	3.60	2.86	3.73	1.00	517	100	
7.06	Duplex	00	Bed room	89	6	31	26	60	8			180	33%	1.62	3.00	3.50	2.86	2.36	1.00	332	100	
7.07	Duplex	00	Bed room	46	8	38	26	96	6			180	33%	1.62	3.00	3.50	2.86	2.34	1.00	330	100	
7.08	Duplex	00	Living - Kitchen	42	6	58	26	80	9			180	32%	3.60	6.50	4.60	2.86	2.38	2.00	323	200	
7.09	Duplex	00	Bed room	33	9	80	26	67	8			180	31%	1.62	3.60	3.60	2.86	1.90	1.00	278	100	
7.10	Duplex	00	Bed room	24	7	103	9	53	26			180	32%	1.62	3.10	3.60	2.86	2.16	1.00	299	100	
7.11	Duplex	00	Bed room	41	22	113	9	26	7			180	33%	1.62	3.00	3.50	2.86	2.31	1.00	325	100	
7.12	Duplex	00	Bed room	32	14	116	9	32	8			180	34%	1.71	3.00	3.50	2.86	2.50	1.00	352	100	
7.13	Duplex	00	Bed room	56	12	91	10	33	9			180	33%	1.71	2.30	3.00	2.86	3.26	1.00	480	100	
7.14	Duplex	00	Bed room	94	9	38	27	48	7			180	33%	2.70	3.80	3.00	2.86	3.61	1.00	644	100	
7.15	Duplex	00	Living - Kitchen	26	6	154	8					180	34%	5.40	3.80	9.00	2.86	3.35	2.00	201	200	
7.16	Duplex	00	Bed room	68	7	112	67					180	19%	1.71	3.80	4.30	2.86	1.06	1.00	133	100	
7.17	Duplex	00	Living - Kitchen	34	64	44	6	102	8			180	30%	4.32	6.70	4.10	2.86	2.85	2.00	437	200	
7.18	Duplex	00	Bed room	33	7	130	9	17	6			180	34%	1.62	2.30	3.00	2.86	3.17	1.00	466	100	
7.19	Duplex	00	Bed room	39	7	136	9	5	6			180	34%	2.70	3.10	3.60	2.86	3.85	1.00	534	100	
7.20	Duplex	00	Bed room	76	8	49	28	55	8			180	32%	1.62	3.60	3.60	2.86	1.97	1.00	288	100	
7.21	Duplex	00	Living - Kitchen	67	8	46	28	67	8			180	32%	3.60	6.50	4.60	2.86	2.40	2.00	326	200	
7.22	Duplex	00	Bed room	68	8	112	67					180	19%	1.80	3.70	4.40	2.86	1.11	1.00	135	100	

Table 5.7: ADF calculation results. Station Road South Site.



### 5.10 Daylight reception in rooms within the new development conclusion

The calculation assessment has been segregated according to Site areas, these are;

1. Blandcrest Site
2. Castlelake North Site
3. Castlelake South Site 01
4. Castlelake South Site 02
5. Castlelake West Site
6. Station Road North Site
7. Station Road South Site

The BRE report recommends as a methodology for assessing sufficient daylight reception in a habitable room, that the calculated average daylight factor (ADF) / Illuminance of a habitable room to be in excess of the BRE / BS-EN 17037 bench marks of a kitchen at 2% / 200Lx, a living room at 1.5% / 150Lx, a bedroom at 1% / 100Lx, a living room/bedroom at 1.5% / 150Lx and a living/kitchen/dining room at 2% / 200Lx. Summarized calculation findings are as follows; (see images throughout chapter 5 for receptor locations):

#### (1) Blandcrest Site:

From the calculation results in table 5.1 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

Level 01: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

All floors above the first floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor typically 0.3%-0.5% per floor level.

#### (2) Castlelake North Site:

From the calculation results in table 5.2 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

Level 01: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

All floors above the first floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

#### (3) Castlelake South Site 01:

From the calculation results in table 5.3 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

Level 01: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

All floors above the first floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

#### (4) Castlelake South Site 02:

From the calculation results in table 5.4 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

Level 01: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

All floors above the first floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

#### (5) Castlelake West Site:

From the calculation results in table 5.5 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

All floors above the ground floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

#### (6) Station Road North Site:

From the calculation results in table 5.6 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

All floors above the ground floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

#### (7) Station Road South Site:

From the calculation results in table 5.7 we note;

Level 00: All selected habitable rooms have achieved an ADF/Illuminance in excess of the recommended guidelines.

All floors above the ground floor are further deemed compliant as they naturally would have an improved vertical daylight impact angle thus increasing the daylight reception factor.

From the results data we note that all rooms are in excess of the minimum average day light factor criterion of the BRE report and minimum illuminance criterion of BS-EN 17037 and therefore concluded this to be compliant to the relevant standards.