



5060

Sunlight Reception Report

SUNLIGHT RECEPTION IN AMENITY SPACES WITHIN THE PROPOSED DEVELOPMENT
EFFECTS on SUNLIGHT RECEPTION IN EXISTING NEIGHBOURING AMENITY SPACES AS A RESULT OF THE PROPOSED DEVELOPMENT

Phase 1 - The Meadows - Bessborough

Proposed Residential Development

**Bessborough,
Ballinure,
Blackrock,
Co. Cork**

Estuary View Enterprises 2020 Ltd

Project file no
DKP-M88-5060 | 2P
2022-02-23

Document control

DKP project no: M88
 DKP document no: 5060
 Project file no: DKP-M88-5060

Circular	Issue >	1P#	1P	2P
Clients	Estuary View Enterprises 2020 Ltd			<input checked="" type="checkbox"/>
Architects	Shipseymore Architects	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Planning consultants	HW Planning	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Issue	1P#	2021-08-31	Draft issue, for review
Issue	1P	2021-09-06	SHD issue
Issue	2P	2022-02-23	SHD updated issue

Document issue status ID

Sketch/draft
 P Planning
 C Concept
 D Design
 G General information
 T Tender
 W Works/construction
 Z As-build/constructed

Issue	Prepared	Checked	Approved
1P#	201	208	208
1P	201	208	201
2P	201	208	201

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A	5061 One hourly overall site shadow – sunlight status illustrations	Attached

1 Introduction

1.1 Report purpose

This report gives information on the level of achieved sunlight reception in amenity spaces within the proposed new development and the effects of the proposed development on sunlight reception in existing neighbouring amenity spaces.

1.2 Instruction

DKPartnership (DKP) have been commissioned by Estuary View Enterprises 2020 Ltd, to carry out the analysis and report for the proposed development at Bessborough, Co. Cork.

1.3 Development description

Estuary View Enterprises 2020 Limited are seeking planning permission for a mixed use strategic housing development of 420 no. build to sell residential units with two creches, a café, tenant amenities, landscaping, pedestrian/cycleway infrastructure and associated site development works at Bessborough, Ballinure, Blackrock, Cork. The proposed development comprises two planning applications to An Bord Pleanála and includes two distinct phases, namely 'The Meadows' (Phase 1) and 'The Farm' (Phase 2).

1.4 Statutory requirement

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/EN17037 and the BRE document "Site layout planning for daylight and sun light". The aforementioned documents do refer to a "right to a sky view" relating to existing buildings facing a new adjacent development in so far that it compares an existing sky view with the sky view when the new development is constructed. The difference, if any, must be within a certain acceptable threshold.

2 Executive summary

2.1 Analysis conducted

This report details the effects on the sunlight/shadow status of the sunlight/shadow status of new amenity spaces within the proposed development and the effects of the proposed development on sunlight reception in existing neighbouring amenity spaces.

2.2 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 (referred to as the BRE Report).
- British European Standard BS EN17037/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.

2.3 Technical analysis

Calculations were conducted in accordance with the BRE guidelines to determine the extent to which the proposed development could affect the shadow/sun light reception in any existing amenity spaces and new amenity spaces proposed with the development. For new amenity spaces, in basic terms, the minimum criteria is that at least 50% of the amenity space should receive at least two hours of sunlight on the 21st March and for "existing" amenity spaces there is also the additional criteria that any loss of sunlight should not be greater than 0.8 times its former size.

2.4 Amenity spaces within the development shadow / sunlight assessment conclusion

Based on the BRE guidelines at least 50% of the amenity space should receive at least two hours of sunlight on the 21st March. From the calculation results we note the new amenity spaces all received more than the recommended sunlight. Summary of results are as follows (see image 5.1 for receptor locations):

- Amenity area outlined in 1 (communal amenity no. 1) was calculated to have 3.00 hours at 50% area.
- Amenity area outlined in 2 (communal amenity no. 2) was calculated to have 4.00 hours at 50% area.
- Amenity area outlined in 3 (public open space) was calculated to have 4.00 hours at 50% area.

We conclude that the new amenity spaces receive sunlight on 50% of the area is in excess of the minimum recommendations of the BRE Report - Site Layout and Planning for Daylight and Sunlight - and therefore deem this to be compliant to this element.

2.5 Existing neighbouring amenity spaces sunlight/shadow assessment conclusion

Based on the BRE guidelines at least 50% of the amenity space should receive at least two hours of sunlight on the 21st March and that and any loss of sunlight should not be greater than 0.8 (20% reduction) times its former size. From the calculation results we note that selected existing amenity spaces all received 2 hours of sunlight or more on at least 50% of the area before and after the introduction of the new development. Summary of results are as follows (see image 6.1 for receptor locations):

- North receptors: Receptor A and B is the Bessboro Day Care Centre with back garden amenity space / courtyard amenity space. These areas resulted in a change factor of 1.00 meaning the new proposed development has no effect on the amenity spaces shadow/sunlight
- East receptor: Receptor C is a section of the Mahon green way. This area resulted in a change factor of 0.80 meaning the new proposed development has an effect on the amenity space shadow/sunlight current status, this effect happens in the afternoon hours of 13.00-18.00. The calculation findings are within minimum BRE guidelines.
- West receptors: Receptor D, E and F are part of the Bessborough Centre with private amenity areas. These amenity areas resulted in a change factor range of 0.90-0.99 meaning the new proposed development has a small effect on the amenity spaces shadow/sunlight, this effect happens in the morning hours of 07.00-10.00. The calculation findings are comfortably within BRE guidelines.

We conclude that the sunlight reception in the existing neighbouring amenity spaces after the introduction of the new development is in excess of the minimum recommendations of the BRE Report– "Site Layout and Planning for Daylight and Sunlight and therefore deem this to be compliant to this element.

2.6 Mitigation measures / actions

No mitigation measures.

3 Geographical overview

3.1 Project overview

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



Image 3.1: proposed development site area outlined

4 Approach and methodology

4.1 General approach

This report covers

- the sunlight reception/shadow status of new proposed amenity spaces within the new development.
- the effects of the new development on the sunlight reception/shadow status of existing neighbouring amenity spaces/gardens.

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 shines through windows, even when sunlight is absent. Any development within a built-up area has the potential to alter the amount of daylight and direct sun 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 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/EN17037 Day Lighting for buildings. BS EN17037/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 like BS EN17037/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 with flexibility 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. The table below summarises the criteria used to assess the overshadowing/sunlight reception in amenity spaces.

In this report we have separated the new and existing amenity spaces as they are assessed slightly differently. BRE sunlight/shadow assessment criteria. Table 4.1 Sunlight reception requirements for amenity spaces within the new proposed development.

Type	Criteria	Acceptable parameters
Overshadowing new amenity spaces	Amenity space prevented from receiving any sunlight on March 21 st	At least 50% of the amenity space should receive at least two hours of sunlight

Table 4.1

Table 4.2 Effects on Sunlight reception requirements for existing neighbouring amenity spaces.

Type	Criteria	Acceptable parameters
Overshadowing existing amenity spaces	Amenity space prevented from receiving any sunlight on March 21 st	Any loss of sunlight should not be greater than 0.8 times its former size.

Table 4.2

4.5 Overshadowing effects measured

The minimum sunlight requirement in this report measured in sunlight time 2 hours (120 minutes) multiplied by 50% area m² or the minimum requirement = 120 (min) * 0.5a (m²) = [] min·m².

4.6 Existing amenity spaces

The overshadowing/sun light assessment is the effects the proposed development has on existing open amenity spaces. In basic terms, based on the BRE report states that at least 50% of the amenity space should receive at least two hours of sunlight on the 21st March and any loss of sunlight should not be greater than 0.8 times its former size. The overshadowing/sun light assessment is executed in using a 3D model of the project and adjoining buildings with the results illustrated in tabular format showing the hourly status of the shadow/sunlight fraction in the relevant amenity spaces. The impacts of vegetation: It is important to note that according to the BRE Report, calculations do not normally take into account vegetation. The exception is when evergreen vegetation exists that forms a continuous barrier and would be permanent throughout the seasons.

5 Receptor selection and Calculation results - Amenity spaces within the proposed development

5.1 Amenity spaces within the proposed development

Image 5.1 below indicates the amenity areas that have been selected and analysed on the basis that the shadow casted from the proposed development may effect the amenity areas given its geographical location in relation to the development.

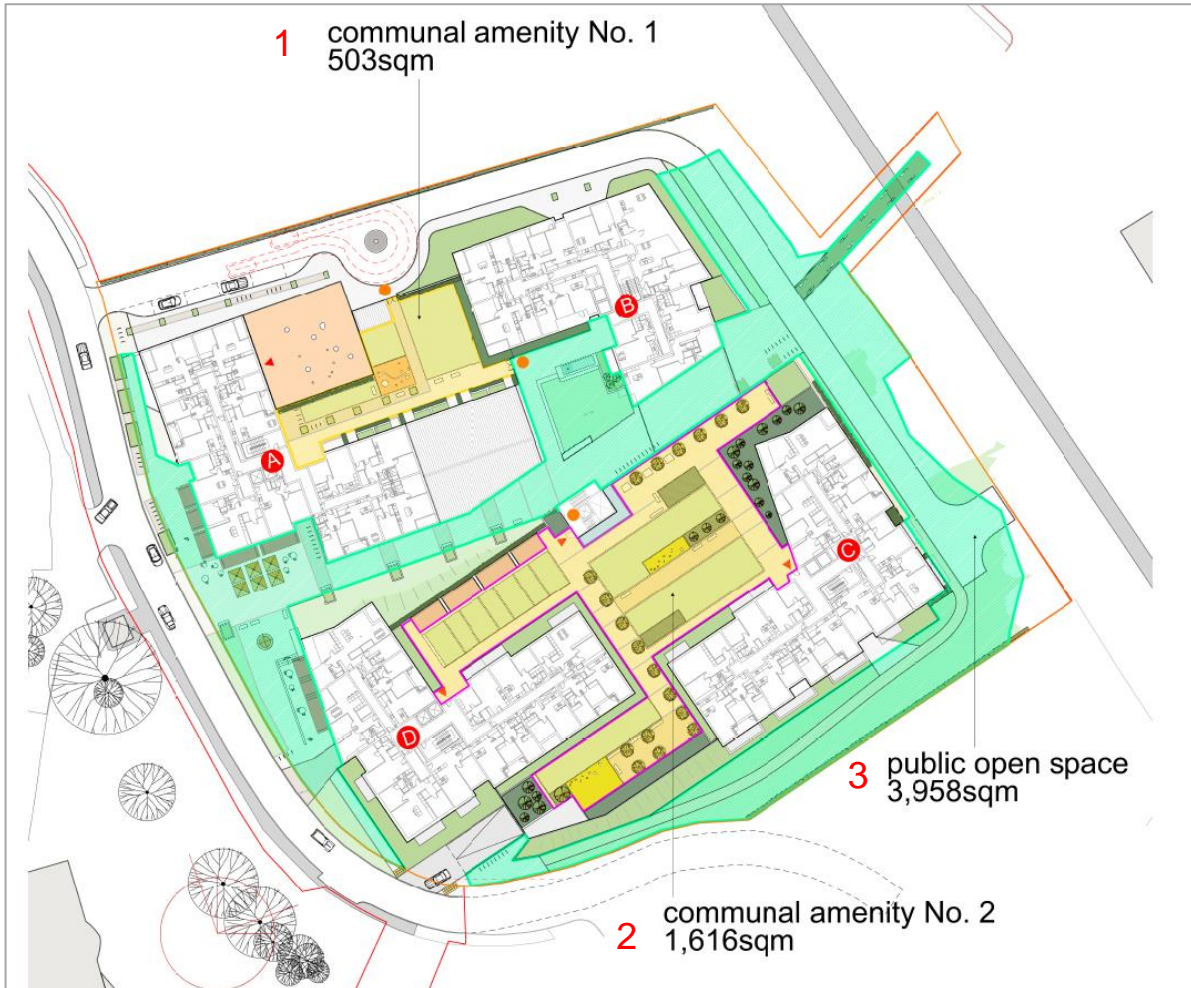


Image 5.1: amenity spaces within phase 1 - The Meadows

Receptor	Description	Area m ²
1	Communal amenity no. 1	503
2	Communal amenity no. 2	1,616
3	Public open space	3,958

5.2 Assessment approach

The tables below represent the one hourly sunlight/shadow status of the respective new amenity spaces provided within the new development on March 21st. To compare against the BRE guidelines, the calculation results have been given the following colour code guide depending on its level of resulting compliance. See appendix A for the modelled shadow/sunlight imaging per hour.

Compliance guide

<input checked="" type="checkbox"/>	0% Over /equal to
<input checked="" type="checkbox"/>	5% Within
!!	10% Within
x	10% In excess of

5.3 Proposed development amenity space calculation results

The calculation results of the one hourly sunlight & shadow status of each amenity space:

SUNLIGHT/SHADOW CALCULATION DATA The Meadows, Phase 1

1 Communal amenity no.1 503 m²

NEW STATUS March 21st					
Time	Shadow	Sunlight	Sun time	Sun area	Sun time.area
24 Hr	% / %		min	m2	min*m2
6.00	100%	0%	60	0	0
7.00	90%	10%	60	50	3,018
8.00	90%	10%	60	50	3,018
9.00	54%	46%	60	231	13,883
10.00	45%	55%	60	277	16,599
11.00	43%	57%	60	287	17,203
12.00	49%	51%	60	257	15,392
13.00	64%	36%	60	181	10,865
14.00	71%	29%	60	146	8,752
15.00	84%	16%	60	80	4,829
16.00	89%	11%	60	55	3,320
17.00	90%	10%	60	50	3,018
18.00	90%	10%	60	50	3,018
19.00	100%	0%	60	0	0

Required sun hours @ 50% area 2
 Achieved sun hours on @ 50% area 3.00
 Achieved total sun time (hrs) 3.41
 Achieved daily sun time * area 102914

2 Communal amenity no.2 1,616 m²

NEW STATUS March 21st					
Time	Shadow	Sunlight	Sun time	Sun area	Sun time.area
24 Hr	% / %		min	m2	min*m2
6.00	100%	0%	60	0	0
7.00	90%	10%	60	162	9,696
8.00	86%	14%	60	226	13,574
9.00	74%	26%	60	420	25,210
10.00	69%	31%	60	501	30,058
11.00	57%	43%	60	695	41,693
12.00	47%	53%	60	856	51,389
13.00	45%	55%	60	889	53,328
14.00	49%	51%	60	824	49,450
15.00	49%	51%	60	824	49,450
16.00	54%	46%	60	743	44,602
17.00	66%	34%	60	549	32,966
18.00	77%	23%	60	372	22,301
19.00	100%	0%	60	0	0

Required sun hours @ 50% area 2
 Achieved sun hours on @ 50% area 4.00
 Achieved total sun time (hrs) 4.37
 Achieved daily sun time * area 423715

3 Public open space 3,958 m²

NEW STATUS March 21st					
Time	Shadow	Sunlight	Sun time	Sun area	Sun time.area
24 Hr	% / %		min	m2	min*m2
6.00	100%	0%	60	0	0
7.00	90%	10%	60	396	23,748
8.00	79%	21%	60	831	49,871
9.00	66%	34%	60	1346	80,743
10.00	58%	42%	60	1662	99,742
11.00	49%	51%	60	2019	121,115
12.00	41%	59%	60	2335	140,113
13.00	44%	56%	60	2216	132,989
14.00	47%	53%	60	2098	125,864
15.00	54%	46%	60	1821	109,241
16.00	56%	44%	60	1742	104,491
17.00	68%	32%	60	1267	75,994
18.00	86%	14%	60	554	33,247
19.00	100%	0%	60	0	0

Required sun hours @ 50% area 2
 Achieved sun hours on @ 50% area 4.00
 Achieved total sun time (hrs) 4.62
 Achieved daily sun time * area 1097158

5.4 Amenity spaces within proposed development at The Meadows, sunlight / shadow results conclusion

Based on the BRE guidelines at least 50% of the amenity space should receive at least two hours of sunlight on the 21st March. From the calculation results we note the new amenity spaces all received more than the recommended sunlight. Summary of results are as follows (see image 5.1 for receptor locations):

- Amenity area outlined in 1 (communal amenity no. 1) was calculated to have 3.00 hours at 50% area.
- Amenity area outlined in 2 (communal amenity no. 2) was calculated to have 4.00 hours at 50% area.
- Amenity area outlined in 3 (public open space) was calculated to have 4.00 hours at 50% area.

We conclude that the new amenity spaces receive sunlight on 50% of the area is in excess of the minimum recommendations of the BRE Report - Site Layout and Planning for Daylight and Sunlight - and therefore deem this to be compliant to this element.



6 Receptor selection and calculation results – Existing neighbouring amenity spaces

6.1 Selected existing amenity spaces

Image 6.1 below indicates the neighbouring amenity areas that have been selected and analysed on the basis that the shadow casted from the new development may effect these amenity areas given its geographical location in relation to the proposed development.

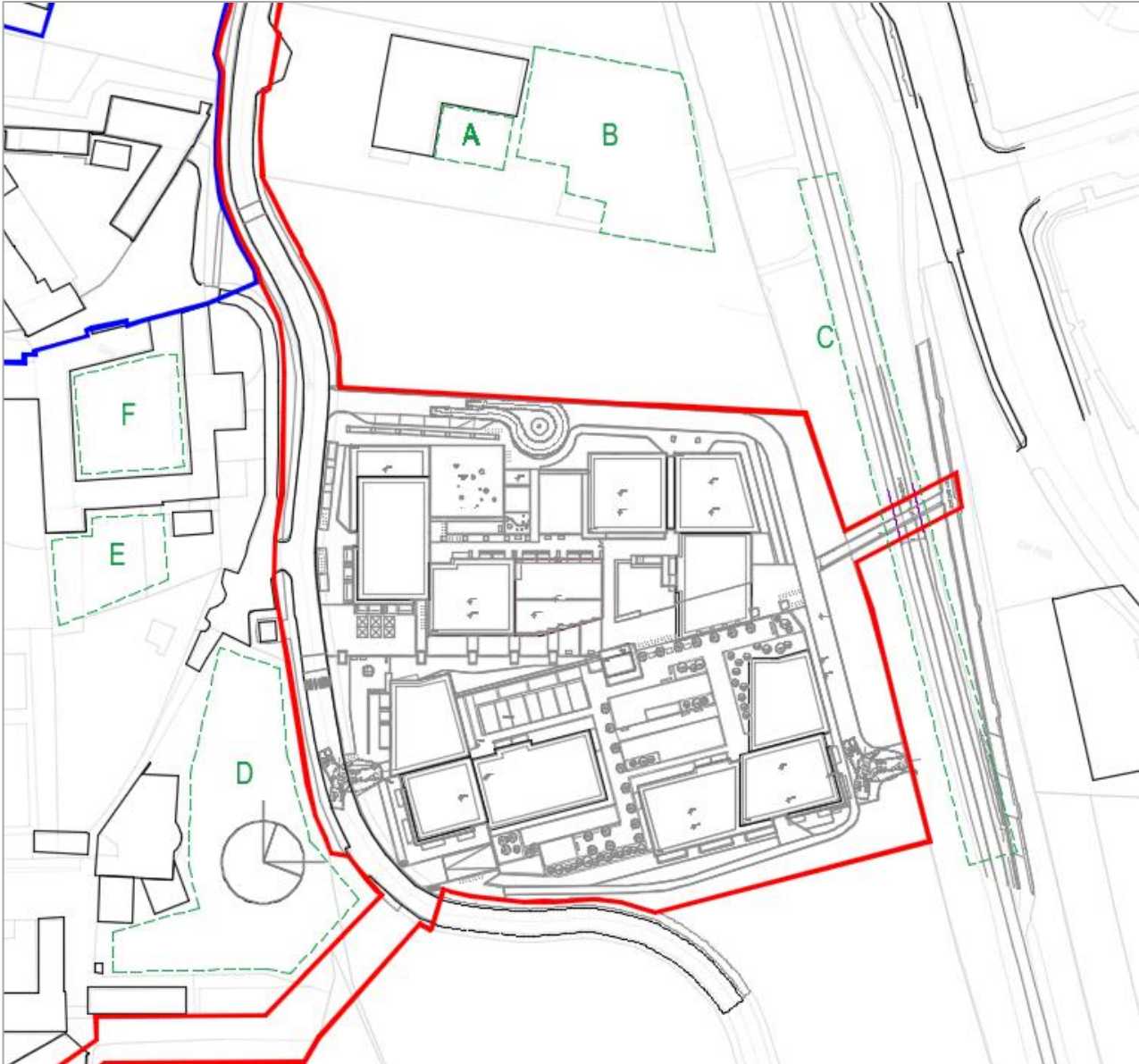


Image 6.1: existing amenity spaces

Receptor	Address	Description	~Area m ²
A	Bessborough, day care centre, Mahon	Private amenity – court yard	170
B	Bessborough, day care centre, Mahon	Private amenity – green area	800
C	Mahon, greenway (section of)	Public amenity	1,000
D	Bessborough centre, Mahon	Private amenity – green area	1,200
E	Bessborough Heritage centre, Mahon	Private amenity – green area	400
F	Bessborough Heritage centre, Mahon	Private amenity – court yard	700

6.2 Assessment approach

The left-hand side calculation tables below represent the one hourly sunlight/shadow status of the respective existing amenity space before the introduction of the new development and the right hand side tables below represent the one hourly sunlight/shadow status of the respective existing amenity space after the introduction of the new development. See appendix A for the predicted sunlight/shadow imaging per hour. Note: The calculation results have been given the following colour code guide depending on its level of resulting compliance.

Compliance guide

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

6.3 Existing amenity spaces calculation results

SUNLIGHT/SHADOW CALCULATION DATA

A Private amenity – court yard 170 m²

EXISTING STATUS						NEW STATUS						March 21st	change
Time	Shadow	Sunlight	Sun time	Sun area	time * area	Time	Shadow	Sunlight	Sun time	Sun area	time * area	time * area	time * area
24 Hr	% / %	% / %	min	m ²	min*m ²	24 Hr	% / %	% / %	min	m ²	min*m ²	min*m ²	min*m ²
6.00	100%	0%	60	0	0	6.00	100%	0%	60	0	0	0	0
7.00	90%	10%	60	17	1,020	7.00	90%	10%	60	17	1,020	0	0
8.00	59%	41%	60	70	4,182	8.00	59%	41%	60	70	4,182	0	0
9.00	39%	61%	60	104	6,222	9.00	39%	61%	60	104	6,222	0	0
10.00	25%	75%	60	128	7,650	10.00	25%	75%	60	128	7,650	0	0
11.00	20%	80%	60	136	8,160	11.00	20%	80%	60	136	8,160	0	0
12.00	18%	82%	60	139	8,364	12.00	18%	82%	60	139	8,364	0	0
13.00	18%	82%	60	139	8,364	13.00	18%	82%	60	139	8,364	0	0
14.00	22%	78%	60	133	7,956	14.00	22%	78%	60	133	7,956	0	0
15.00	23%	77%	60	131	7,854	15.00	23%	77%	60	131	7,854	0	0
16.00	26%	74%	60	126	7,548	16.00	26%	74%	60	126	7,548	0	0
17.00	58%	42%	60	71	4,284	17.00	58%	42%	60	71	4,284	0	0
18.00	90%	10%	60	17	1,020	18.00	90%	10%	60	17	1,020	0	0
19.00	100%	0%	60	0	0	19.00	100%	0%	60	0	0	0	0

Required sun hours @ 50% area (hr)	2	Required sun hours @ 50% area (hr)	2
Achieved sun hours on (hrs) @ 50% area	8.00	Achieved sun hours on (hrs) @ 50% area	8.00
Achieved total sun time (hrs)	7.12	Achieved total sun time (hrs)	7.12
Achieved daily sun time * area	72624	Achieved daily sun time * area	72624

B Private amenity – green area 800 m²

EXISTING STATUS						NEW STATUS						March 21st	change
Time	Shadow	Sunlight	Sun time	Sun area	time * area	Time	Shadow	Sunlight	Sun time	Sun area	time * area	time * area	time * area
24 Hr	% / %	% / %	min	m ²	min*m ²	24 Hr	% / %	% / %	min	m ²	min*m ²	min*m ²	min*m ²
6.00	100%	0%	60	0	0	6.00	100%	0%	60	0	0	0	0
7.00	90%	10%	60	80	4,800	7.00	90%	10%	60	80	4,800	0	0
8.00	69%	31%	60	248	14,880	8.00	69%	31%	60	248	14,880	0	0
9.00	14%	86%	60	688	41,280	9.00	14%	86%	60	688	41,280	0	0
10.00	14%	86%	60	688	41,280	10.00	14%	86%	60	688	41,280	0	0
11.00	14%	86%	60	688	41,280	11.00	14%	86%	60	688	41,280	0	0
12.00	14%	86%	60	688	41,280	12.00	14%	86%	60	688	41,280	0	0
13.00	14%	86%	60	688	41,280	13.00	14%	86%	60	688	41,280	0	0
14.00	14%	86%	60	688	41,280	14.00	14%	86%	60	688	41,280	0	0
15.00	18%	82%	60	656	39,360	15.00	18%	82%	60	656	39,360	0	0
16.00	21%	79%	60	632	37,920	16.00	21%	79%	60	632	37,920	0	0
17.00	26%	74%	60	592	35,520	17.00	26%	74%	60	592	35,520	0	0
18.00	77%	23%	60	184	11,040	18.00	77%	23%	60	184	11,040	0	0
19.00	100%	0%	60	0	0	19.00	100%	0%	60	0	0	0	0

Required sun hours @ 50% area (hr)	2	Required sun hours @ 50% area (hr)	2
Achieved sun hours on (hrs) @ 50% area	9.00	Achieved sun hours on (hrs) @ 50% area	9.00
Achieved total sun time (hrs)	8.15	Achieved total sun time (hrs)	8.15
Achieved daily sun time * area	391200	Achieved daily sun time * area	391200

C Public amenity 1,000 m²

EXISTING STATUS						NEW STATUS						March 21st	change
Time	Shadow	Sunlight	Sun time	Sun area	time * area	Time	Shadow	Sunlight	Sun time	Sun area	time * area	time * area	time * area
24 Hr	% / %	% / %	min	m ²	min*m ²	24 Hr	% / %	% / %	min	m ²	min*m ²	min*m ²	min*m ²
6.00	100%	0%	60	0	0	6.00	100%	0%	60	0	0	0	0
7.00	89%	11%	60	110	6,600	7.00	89%	11%	60	110	6,600	0	0
8.00	70%	30%	60	300	18,000	8.00	70%	30%	60	300	18,000	0	0
9.00	59%	41%	60	410	24,600	9.00	59%	41%	60	410	24,600	0	0
10.00	16%	84%	60	840	50,400	10.00	16%	84%	60	840	50,400	0	0
11.00	16%	84%	60	840	50,400	11.00	16%	84%	60	840	50,400	0	0
12.00	16%	84%	60	840	50,400	12.00	16%	84%	60	840	50,400	0	0
13.00	16%	84%	60	840	50,400	13.00	18%	82%	60	820	49,200	-1,200	-1,200
14.00	16%	84%	60	840	50,400	14.00	30%	70%	60	700	42,000	-8,400	-8,400
15.00	16%	84%	60	840	50,400	15.00	57%	43%	60	430	25,800	-24,600	-24,600
16.00	16%	84%	60	840	50,400	16.00	69%	31%	60	310	18,600	-31,800	-31,800
17.00	16%	84%	60	840	50,400	17.00	72%	28%	60	280	16,800	-33,600	-33,600
18.00	71%	29%	60	290	17,400	18.00	80%	20%	60	200	12,000	-5,400	-5,400
19.00	100%	0%	60	0	0	19.00	100%	0%	60	0	0	0	0

Required sun hours @ 50% area (hr)	2	Required sun hours @ 50% area (hr)	2
Achieved sun hours on (hrs) @ 50% area	8.00	Achieved sun hours on (hrs) @ 50% area	5.00
Achieved total sun time (hrs)	7.83	Achieved total sun time (hrs)	6.08
Achieved daily sun time * area	469800	Achieved daily sun time * area	364800



D Private amenity – green area 1,200 m²

EXISTING STATUS						March 21st
Time	Shadow % / %	Sunlight % / %	Sun time min	Sun area m ²	time * area min*m ²	
6.00	100%	0%	60	0	0	
7.00	85%	15%	60	180	10,800	
8.00	68%	32%	60	384	23,040	
9.00	18%	82%	60	984	59,040	
10.00	15%	85%	60	1020	61,200	
11.00	17%	83%	60	996	59,760	
12.00	17%	83%	60	996	59,760	
13.00	19%	81%	60	972	58,320	
14.00	20%	80%	60	960	57,600	
15.00	22%	78%	60	936	56,160	
16.00	25%	75%	60	900	54,000	
17.00	34%	66%	60	792	47,520	
18.00	79%	21%	60	252	15,120	
19.00	100%	0%	60	0	0	

Required sun hours @ 50% area (hr) 2
 Achieved sun hours on (hrs) @ 50% area **9.00**
 Achieved total sun time (hrs) 7.81
 Achieved daily sun time * area 562320

NEW STATUS						March 21st	change
Time	Shadow % / %	Sunlight % / %	Sun time min	Sun area m ²	time * area min*m ²	time * area min*m ²	time * area min*m ²
6.00	100%	0%	60	0	0	0	0
7.00	95%	5%	60	60	3,600	3,600	-7,200
8.00	77%	23%	60	276	16,560	16,560	-6,480
9.00	31%	69%	60	828	49,680	49,680	-9,360
10.00	15%	85%	60	1020	61,200	61,200	0
11.00	17%	83%	60	996	59,760	59,760	0
12.00	17%	83%	60	996	59,760	59,760	0
13.00	19%	81%	60	972	58,320	58,320	0
14.00	20%	80%	60	960	57,600	57,600	0
15.00	22%	78%	60	936	56,160	56,160	0
16.00	25%	75%	60	900	54,000	54,000	0
17.00	34%	66%	60	792	47,520	47,520	0
18.00	79%	21%	60	252	15,120	15,120	0
19.00	100%	0%	60	0	0	0	0

Required sun hours @ 50% area (hr) 2
 Achieved sun hours on (hrs) @ 50% area **9.00**
 Achieved total sun time (hrs) 7.49 **0.96**
 Achieved daily sun time * area 539280 **0.96**

E Private amenity – green area 400 m²

EXISTING STATUS						March 21st
Time	Shadow % / %	Sunlight % / %	Sun time min	Sun area m ²	time * area min*m ²	
6.00	100%	0%	60	0	0	
7.00	90%	10%	60	40	2,400	
8.00	22%	78%	60	312	18,720	
9.00	9%	91%	60	364	21,840	
10.00	9%	91%	60	364	21,840	
11.00	9%	91%	60	364	21,840	
12.00	9%	91%	60	364	21,840	
13.00	9%	91%	60	364	21,840	
14.00	9%	91%	60	364	21,840	
15.00	9%	91%	60	364	21,840	
16.00	9%	91%	60	364	21,840	
17.00	9%	91%	60	364	21,840	
18.00	70%	30%	60	120	7,200	
19.00	100%	0%	60	0	0	

Required sun hours @ 50% area (hr) 2
 Achieved sun hours on (hrs) @ 50% area **10.00**
 Achieved total sun time (hrs) 9.37
 Achieved daily sun time * area 224880

NEW STATUS						March 21st	change
Time	Shadow % / %	Sunlight % / %	Sun time min	Sun area m ²	time * area min*m ²	time * area min*m ²	time * area min*m ²
6.00	100%	0%	60	0	0	0	0
7.00	90%	10%	60	40	2,400	2,400	0
8.00	82%	18%	60	72	4,320	4,320	-14,400
9.00	44%	56%	60	224	13,440	13,440	-8,400
10.00	9%	91%	60	364	21,840	21,840	0
11.00	9%	91%	60	364	21,840	21,840	0
12.00	9%	91%	60	364	21,840	21,840	0
13.00	9%	91%	60	364	21,840	21,840	0
14.00	9%	91%	60	364	21,840	21,840	0
15.00	9%	91%	60	364	21,840	21,840	0
16.00	9%	91%	60	364	21,840	21,840	0
17.00	9%	91%	60	364	21,840	21,840	0
18.00	70%	30%	60	120	7,200	7,200	0
19.00	100%	0%	60	0	0	0	0

Required sun hours @ 50% area (hr) 2
 Achieved sun hours on (hrs) @ 50% area **9.00**
 Achieved total sun time (hrs) 8.42 **0.90**
 Achieved daily sun time * area 202080 **0.90**

F Private amenity – court yard 700 m²

EXISTING STATUS						March 21st
Time	Shadow % / %	Sunlight % / %	Sun time min	Sun area m ²	time * area min*m ²	
6.00	100%	0%	60	0	0	
7.00	90%	10%	60	70	4,200	
8.00	80%	20%	60	140	8,400	
9.00	70%	30%	60	210	12,600	
10.00	36%	64%	60	448	26,880	
11.00	24%	76%	60	532	31,920	
12.00	22%	78%	60	546	32,760	
13.00	26%	74%	60	518	31,080	
14.00	37%	63%	60	441	26,460	
15.00	44%	56%	60	392	23,520	
16.00	67%	33%	60	231	13,860	
17.00	88%	12%	60	84	5,040	
18.00	90%	10%	60	70	4,200	
19.00	100%	0%	60	0	0	

Required sun hours @ 50% area (hr) 2
 Achieved sun hours on (hrs) @ 50% area **6.00**
 Achieved total sun time (hrs) 5.26
 Achieved daily sun time * area 220920

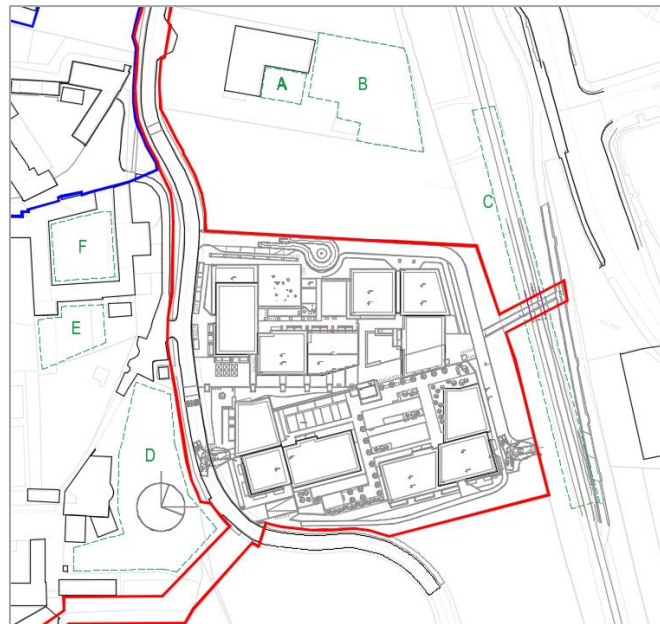
NEW STATUS						March 21st	change
Time	Shadow % / %	Sunlight % / %	Sun time min	Sun area m ²	time * area min*m ²	time * area min*m ²	time * area min*m ²
6.00	100%	0%	60	0	0	0	0
7.00	90%	10%	60	70	4,200	4,200	0
8.00	90%	10%	60	70	4,200	4,200	-4,200
9.00	70%	30%	60	210	12,600	12,600	0
10.00	36%	64%	60	448	26,880	26,880	0
11.00	24%	76%	60	532	31,920	31,920	0
12.00	22%	78%	60	546	32,760	32,760	0
13.00	26%	74%	60	518	31,080	31,080	0
14.00	37%	63%	60	441	26,460	26,460	0
15.00	44%	56%	60	392	23,520	23,520	0
16.00	67%	33%	60	231	13,860	13,860	0
17.00	88%	12%	60	84	5,040	5,040	0
18.00	90%	10%	60	70	4,200	4,200	0
19.00	100%	0%	60	0	0	0	0

Required sun hours @ 50% area (hr) 2
 Achieved sun hours on (hrs) @ 50% area **6.00**
 Achieved total sun time (hrs) 5.16 **0.99**
 Achieved daily sun time * area 216720 **0.99**



6.4 Existing neighbouring amenity spaces shadow/sunlight assessment conclusion

Based on the BRE guidelines at least 50% of the amenity space should receive at least two hours of sunlight on the 21st March and that any loss of sunlight should not be greater than 0.8 (20% reduction) times its former size. From the calculation results we note that selected existing amenity spaces all received 2 hours of sunlight or more on at least 50% of the area before and after the introduction of the new development. Summary of results are as follows (see image 6.1 for receptor locations):



(For reference) Image 6.1: existing amenity spaces

- North receptors: Receptor A and B is the Bessboro Day Care Centre with back garden amenity space / courtyard amenity space. These areas resulted in a change factor of 1.00 meaning the new proposed development has no effect on the amenity spaces shadow/sunlight
- East receptor: Receptor C is a section of the Mahon green way. This area resulted in a change factor of 0.80 meaning the new proposed development has an effect on the amenity space shadow/sunlight current status, this effect happens in the afternoon hours of 13.00-18.00. The calculation findings are within minimum BRE guidelines.
- West receptors: Receptor D, E and F are part of the Bessborough Centre with private amenity areas. These amenity areas resulted in a change factor range of 0.90-0.99 meaning the new proposed development has a small effect on the amenity spaces shadow/sunlight, this effect happens in the morning hours of 07.00-10.00. The calculation findings are comfortably within BRE guidelines.

We conclude that the sunlight reception in the existing neighbouring amenity spaces after the introduction of the new development is in excess of the minimum recommendations of the BRE Report– “Site Layout and Planning for Daylight and Sunlight and therefore deem this to be compliant to this element.