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

The Green Quarter

Proposed Strategic Housing Development

Cartrontroy, Kilnafaddoge Lissywollen and Ardnaglug (townlands), Athlone Co. Westmeath

Avenir Homes Limited

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

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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 the new proposed development has on sunlight reception in existing neighbouring amenity spaces.

1.2 Instruction

DKPartnership (DKP) have been commissioned by Avenir Homes Limited to carry out the analysis and report for the proposed development at Cartrontroy, Kilnafaddoge, Lissywollen and Ardnaglug (townlands), Athlone, Co. Westmeath.

1.3 Development description

Avenir Homes Limited. intend to apply to An Bord Pleanála for permission for a strategic housing development at Cartrontroy, Kilnafaddoge, Lissywollen and Ardnaglug (townlands), Athlone, Co. Westmeath. The development will consist of:

The construction of a mixed use residential development of 122 no. residential units with ancillary creche, 46 no. student apartments consisting of 283 bed spaces, and all associated site development works. The proposed development makes provision for 60 no. dwelling houses comprising 38 no. 2-storey 3-bed townhouses, 7 no. 2-storey 4-bed townhouses, 7 no. 3-storey 4-bed townhouses, 6 no. 2 storey 4-bed semi-detached and 2 no. 2 storey 4-bed detached. The proposed development includes 62 no. apartments / duplexes to be provided as follows: Block R1 containing 38 no. apartments (16 no. 1 bed units and 22 no. 2 bed units) in a 3-6 storey building, and Block R2 containing 20 no. duplex units (10 no. 2 bed units and 10 no. 3 bed units) over 4 storeys with 4 no. apartments (4 no. 2 bed units) in one 5th storey feature area. The proposed student accommodation makes provision for 283 no. bed spaces in 3 no. blocks to be provided as follows: Block S1 containing 18 apartments with 117 bed spaces over 5-6 storeys, Block S2 containing 16 apartments with 107 bed spaces over 6-7 storeys, and Block S3 containing 12 apartments with 59 bed spaces over 4-5 storeys.

The proposed development will provide for two new vehicular accesses as well as pedestrian entrances onto Lissywollen Avenue east-west access road (as permitted under An Bord Pleanála Reference ABP-309513-21). Minor modifications to ABP-309513-21 are proposed to cater for these access points, alterations to cycle/pedestrian paths, the removal of a central island to facilitate the south-eastern entrance, and provision of bus stop infrastructure. Ancillary site works include public and communal open spaces, hard and soft landscaping, pedestrian / cycleways, car parking, cycle parking, bin storage, public lighting, solar panels, ESB substation and supporting distribution kiosks, and all other ancillary works above and below ground. The proposal includes pedestrian and cycle linkages onto the Old Rail Trail Greenway to the south and Blackberry Lane (L40061) to the west.

In addition to the above specified works within the red-line boundary, Westmeath County Council are facilitating some offsite works to support the project for which the applicant has confirmed written consent. These include:

Resurfacing Blackberry lane along the western extent of the site. A special development contribution has been agreed with the applicant for such purposes.

Facilitating works to complete connections to the Old Rail Trail Greenway, including

Completion of pedestrian/cycle path between Blocks R1 and S1 to the surfaced area of the greenway to the south, and:

Replacement of existing gated access between the greenway and Blackberry Lane (southwest of the site) with a revised arrangement with dedicated cycle/pedestrian access. Final works to be agreed with Westmeath County Council.

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.

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2 Executive summary

2.1 Analysis conducted

This report details the effects on the sunlight/shadow status of

- sunlight/shadow status of the new amenity spaces and existing spaces within the proposed development
- sunlight/shadow status of the 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 2 hours of sunlight on at least 50% of the area. Results are as follows (see image 5.1 for receptor locations):

Amenity area outlined in 1 (communal open area) was calculated to have 5.00 hours at 50% area.

Amenity area outlined in 2 (public open area) was calculated to have 6.00 hours at 50% area.

Amenity area outlined in 3 (private amenity area) was calculated to have 3.00 hours at 50% area.

Amenity area outlined in 4 (private amenity area) was calculated to have 3.00 hours at 50% area.

Amenity area outlined in 5 (private amenity area) was calculated to have 4.00 hours at 50% area.

Amenity area outlined in 6 (private amenity area) was calculated to have 4.00 hours at 50% area.

Amenity area outlined in 7 (private amenity area) was calculated to have 2.00 hours at 50% area.

Amenity area outlined in 8 (private amenity area) was calculated to have 6.00 hours at 50% area.

Amenity area outlined in 9 (private amenity area) was calculated to have 2.00 hours at 50% area.

Amenity area outlined in 10 (private amenity area) was calculated to have 6.00 hours at 50% area.

Amenity area outlined in 11 (private amenity area) was calculated to have 6.00 hours at 50% area.

Amenity area outlined in 12 (private amenity area) was calculated to have 6.00 hours at 50% area.

Amenity area outlined in 13 (private amenity area) was calculated to have 6.00 hours at 50% area.

Amenity area outlined in 14 (private amenity area) was calculated to have 6.00 hours at 50% area. Amenity area outlined in 15 (private amenity area) was calculated to have 2.00 hours at 50% area.

Amenity area outlined in 16 (private amenity area) was calculated to have 2.00 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.

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2.5 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 the selected existing amenity spaces all received 2 or more hours of sunlight on at least 50% of the area before and after the introduction of the new development. Results are as follows (see image 6.1 for receptor locations):

- North receptor: Receptor A is a residential dwelling with private green space. This space resulted in a change factor of 0.99 meaning the new proposed development has a small effect on the amenity space shadow/sunlight. This effect happens in the early morning hours between 08.00-09.00. The result is well within BRE guidelines.
- South receptors: Receptor B is a section of the Old Rail Trail Greenway and Receptor C is a residential dwelling with private green space. Both resulted in a change factor of 1.00 meaning the new proposed development has no effect on existing sunlight status, due to these amenity areas located south of the development site.
- East receptors: Receptor D is a residential dwelling with private green space. This space resulted in a change factor of 1.00 meaning the new proposed has no effect on existing sunlight status. Receptor E is the open green space on ESB grounds. This space resulted in a change factor of 0.91 meaning the new proposed development has a small effect on the amenity space shadow/sunlight. This effect happens in the afternoon hours between 15.00-18.00. The results are well within BRE guidelines.

We conclude that the loss of sunlight reception in the existing amenity spaces after the introduction of the new development is well 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.

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3 Geographical overview

3.1 Project overview

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



Image 3.1 proposed development site area outline

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4 Approach and methodology

4.1 General approach

This report covers

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

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.

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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 space prevented from	At least 50% of the amenity space should receive at least two hours of sunlight
amenity spaces	receiving any sunlight on March 21st	
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 21st	Any loss of sunlight should not be greater than 0.8 times its former size.
Table 4.2	3 , 7	

4.5 Overshadowing effects measured

The minimum sunlight requirement in this report measured in sunlight time 2 hours (120 minutes) multiplied by 50% area m^2 or the minimum requirement = 120 (min) * 0.5a (m^2) = $\begin{bmatrix} 1 & \text{min} \cdot \text{m}^2 \end{bmatrix}$.

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.

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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, public and communal 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.

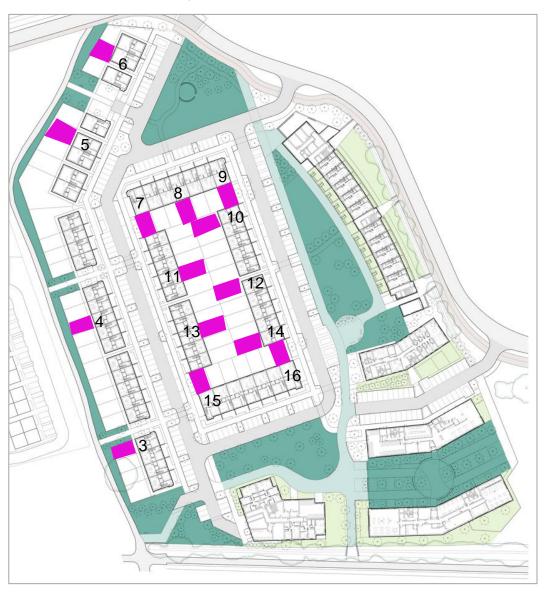


Image 5.1: amenity spaces within the development

Receptor	Description	Area m ²
1	Communal open area	495
2	Public open area	7666
3 - 16	Private amenity area	~70

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5.2 Assessment approach

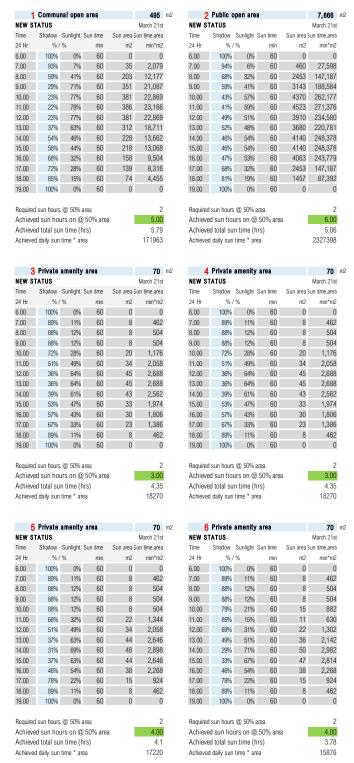
The tables below represent the one hourly sunlight/shadow status of the respective new amenity spaces provided within the new development on March 21st. To compare against the BRE guidelines, the calculation results have been given the following colour code guide depending on its level of resulting compliance.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

Compliance guide

\square	0% Over /equal to
☑	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:



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7 NEW S1	TATUS				March 21st	m2 8	TATUS				70 March 21st
Time		Sunlight	Sun time	Sun area	Sun time.area			Sunlight	Sun time	Sun area	Sun time.area
24 Hr	%	-	min	m2	min*m2		%		min	m2	min*m2
6.00	100%	0%	60	0	0		100%	0%	60	0	0
7.00	89%	11%	60	8	462		89%	11%	60	8	462
8.00	88%	12%	60	8	504	8.00	88%	12%	60	8	504
9.00	71%	29%	60	20	1,218		88%	12%	60	8	504
10.00	74%	26%	60	18	1,092		36%	64%	60	45	2,688
				-	-						-
11.00	73%	27%	60	19	1,134		21%	79%	60	55	3,318
12.00	85%	15%	60	11	630		21%	79%	60	55	3,318
13.00	71%	29%	60	20	1,218		21%	79%	60	55	3,318
14.00	48%	52%	60	36	2,184	14.00	26%	74%	60	52	3,108
15.00	49%	51%	60	36	2,142	15.00	30%	70%	60	49	2,940
16.00	63%	37%	60	26	1,554	16.00	69%	31%	60	22	1,302
17.00	88%	12%	60	8	504		85%	15%	60	11	630
18.00	89%	11%	60	8	462		89%	11%	60	8	462
19.00	100%	0%	60	0	0		100%	0%	60	0	0
10.00	10070	070	00	Ū		10.00	10070	070	00	Ū	
Doguirod	sun hours	@ E00/	0.000		2	Doguiro	d sun hour	@ E00/	a man		2
		-	aica 250% are		2.00	- 1	ed sun ho	-			6.00
	d total su	_		,	3.12		ed total su	_		2	5.37
Achieved	d daily sun	time * ar	rea		13104	Achieve	d daily sur	time * ar	ea		22554
0	Drivete	amenit.	groo		70	m2 4.6) Privata	amonit.	area		70
NEW ST					70 March 21st	NEW S		-			70 March 21st
Time	Shadow	Sunlight			Sun time.area			Sunlight			Sun time.area
24 Hr	%	/ %	min	m2	min*m2	24 Hr	%	/ %	min	m2	min*m2
6.00	100%	0%	60	0	0	6.00	100%	0%	60	0	0
7.00	89%	11%	60	8	462	7.00	89%	11%	60	8	462
8.00	88%	12%	60	8	504		88%	12%	60	8	504
9.00	66%	34%	60	24	1,428		88%	12%	60	8	504
10.00	48%	52%	60	36	2,184		68%	32%	60	22	1,344
					-						2,478
11.00	49%	51%	60	36	2,142		41%	59%	60	41	
12.00	70%	30%	60	21	1,260		36%	64%	60	45	2,688
13.00	85%	15%	60	11	630		36%	64%	60	45	2,688
14.00	80%	20%	60	14	840		38%	62%	60	43	2,604
15.00	74%	26%	60	18	1,092	15.00	41%	59%	60	41	2,478
16.00	74%	26%	60	18	1,092	16.00	47%	53%	60	37	2,226
17.00	88%	12%	60	8	504	17.00	85%	15%	60	11	630
18.00	89%	11%	60	8	462	18.00	89%	11%	60	8	462
19.00	100%	0%	60	0	0		100%	0%	60	0	0
10.00	10070	070	00	0	0	10.00	10070	070	00	0	0
Achieve Achieve Achieved	d total su d daily sun	urs on @ in time (I i time * ar	950% area nrs) rea	a	2.00 3 12600	Achiev Achiev Achieve	d sun hour ed sun ho ed total su ed daily sur	urs on @ in time (h i time * ar	950% area nrs) ea	а	6.00 4.54 19068
Achieve Achieve Achieved	d sun ho d total su d daily sun	urs on @ in time (I i time * ar	950% area nrs) rea	ì	2.00 3 12600 70	Achiev Achieve Achieve	ed sun ho ed total su d daily sur Private	urs on @ in time (h i time * ar	950% area nrs) ea	a	6.00 4.54 19068
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Achieve Achiev	d sun hou su	urs on @ in time (t time * ar amenity) Sunlight Sunlight 12% 62% 64% 64% 58% 11% 59% 62% 64% 64% 59% 62% 64% 64% 64% 64% 68% 68% 68% 68	2 50% are area Sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60	Sun areas m2 0 0 8 8 8 37 411 433 455 455 45 9 0 0 8 8 8 8 7 7 411 8 8 8 8 7 7 411 8 8 8 8 8 7 7 411 8 8 8 8 8 7 8 7 8 8 8 8 8 7 8 7 8	2.00 3 12600 70 March 21st Sun time area min*m2 0 4622 5044 2,688 2,688 2,436 1,344 630 504 462 0 4.53 19026 70 March 21st Sun time area min*m2 0 462 2,226 2,478 2,604 2,226 2,478 2,604 2,226 2,478 2,604 2,688 2,436 1,344 630 504	m2 12 12 NEW S Time 24 Hr 6.00 15.00 16.00 17.00 8.00 19.00 10.00 17.00 18.00 19.00 10.00	ed sun hoe dotal st. dd daily sur hoe dotal st. dd daily sur TATUS Shadow % 100% 68% 68% 68% 100% 68% 100% 68% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 68% 100% 100% 100% 100% 100% 100% 100% 10	urs on @ in time (t time * ar amenity Sunlight (% 0% 64% 62% 64% 62% 64% 62% 64% 62% 64% 62% 659% 11% 62% 64% 62% 659% 653% 65% 65% 65% 65% 65% 65% 65% 65% 65% 65	2 50% are area sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60	Sun areas m2 0 0 8 8 8 8 8 222 411 45 45 45 45 45 45 45 45 45 45 45 45 45	6.00 4.54 19068 70 March 21st Sun time area min*m2 504 504 1,344 2,478 2,688 2,688 2,688 2,688 2,626 504 462 0 0 4.51 18942 70 March 21st Sun time area min*m2 0 462 6.00 4.51 1,764 2,688 2,688 2,688 2,604 2,688 2,604 2,688 2,604 0,604 0,764 0,605 0,604 0,605 0,606

15	Private	amenity	area		70	m2 16	Private	amenity	area		70
NEW ST	TATUS				March 21st	NEW S	TATUS				March 21st
Time	Shadow	Sunlight	Sun time	Sun area 3u	ın time.area	Time	Shadow	Sunlight	Sun time	Sun area S	un time.area
24 Hr	% /	%	min	m2	min*m2	24 Hr	% .	%	min	m2	min*m2
6.00	100%	0%	60	0	0	6.00	100%	0%	60	0	0
7.00	89%	11%	60	8	462	7.00	89%	11%	60	8	462
8.00	88%	12%	60	8	504	8.00	88%	12%	60	8	504
9.00	88%	12%	60	8	504	9.00	88%	12%	60	8	504
10.00	83%	17%	60	12	714	10.00	38%	62%	60	43	2,604
11.00	79%	21%	60	15	882	11.00	42%	58%	60	41	2,436
12.00	79%	21%	60	15	882	12.00	69%	31%	60	22	1,302
13.00	69%	31%	60	22	1,302	13.00	70%	30%	60	21	1,260
14.00	38%	62%	60	43	2,604	14.00	70%	30%	60	21	1,260
15.00	42%	58%	60	41	2,436	15.00	70%	30%	60	21	1,260
16.00	75%	25%	60	18	1,050	16.00	84%	16%	60	11	672
17.00	88%	12%	60	8	504	17.00	88%	12%	60	8	504
18.00	89%	11%	60	8	462	18.00	89%	11%	60	8	462
19.00	100%	0%	60	0	0	19.00	100%	0%	60	0	0
Required	sun hours	@ 50%	area		2	Required	sun hours	@ 50%	area		2
		-	50% area	a	2.00) 50% are	a	2.00
Achieve	d total su	n time (h	ırs)	_	2.93		d total su				3.15
	daily sun	,	,		12306		d dailv sun	,	,		13230

5.4 Amenity spaces within proposed development at Lissywollen 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 2 hours of sunlight on at least 50% of the area. Results are as follows (see image 5.1 for receptor locations):

Amenity area outlined in 1 (communal open area) was calculated to have 5.00 hours at 50% area. Amenity area outlined in 2 (public open area) was calculated to have 6.00 hours at 50% area. Amenity area outlined in 3 (private amenity area) was calculated to have 3.00 hours at 50% area. Amenity area outlined in 4 (private amenity area) was calculated to have 3.00 hours at 50% area. Amenity area outlined in 5 (private amenity area) was calculated to have 4.00 hours at 50% area. Amenity area outlined in 6 (private amenity area) was calculated to have 4.00 hours at 50% area. Amenity area outlined in 7 (private amenity area) was calculated to have 2.00 hours at 50% area. Amenity area outlined in 8 (private amenity area) was calculated to have 6.00 hours at 50% area. Amenity area outlined in 9 (private amenity area) was calculated to have 2.00 hours at 50% area. Amenity area outlined in 10 (private amenity area) was calculated to have 6.00 hours at 50% area. Amenity area outlined in 11 (private amenity area) was calculated to have 6.00 hours at 50% area. Amenity area outlined in 12 (private amenity area) was calculated to have 6.00 hours at 50% area. Amenity area outlined in 13 (private amenity area) was calculated to have 6.00 hours at 50% area. Amenity area outlined in 14 (private amenity area) was calculated to have 6.00 hours at 50% area. Amenity area outlined in 15 (private amenity area) was calculated to have 2.00 hours at 50% area. Amenity area outlined in 16 (private amenity area) was calculated to have 2.00 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.

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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.

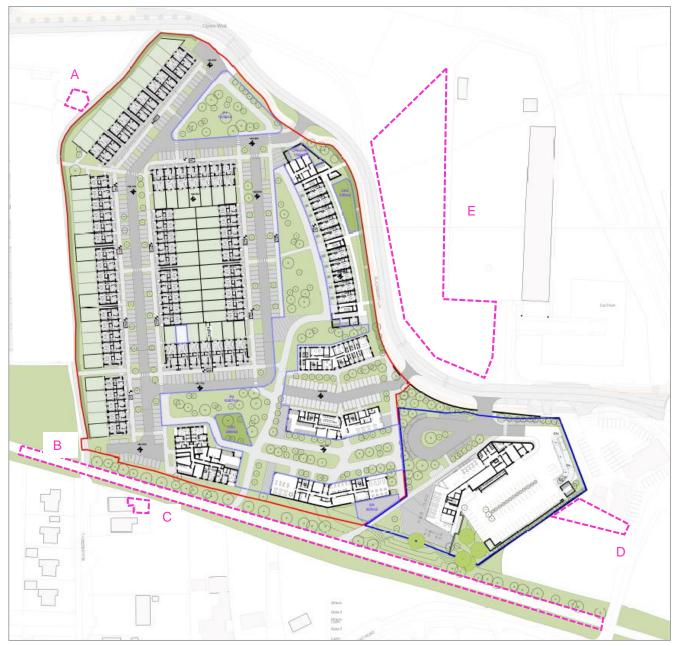


Image 6.1: selected existing amenity spaces

Receptor	Address	Description
А	Kilnafaddoge, Athlone	Front garden / amenity space
В	Part of the Old Rail Trail Greenway	Public amenity space
С	1 Ashgrove, Kilnafaddoge, Athlone	Back garden / amenity space
D	Garrycastle, Athlone	Green area / amenity space
Е	ESB Networks	ESB green area

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6.2 Assessment approach

The calculation results of the one hourly sunlight & shadow status of each amenity space before and after the introduction of the new development are all detailed in the tables below. Note: The calculation results have been given the following colour code guide depending on its level of resulting compliance for March 21st. See appendix A for the predicted sunlight/shadow imaging per hour.

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

6.3 Existing neighbouring amenity spaces calculation results

The calculation results of the one hourly sunlight & shadow status of each amenity space before and after the introduction of the new development:

	Kilnafa	ddoge,	Athlone		105	m2					
ST	ING STAT	US			March 21st	NEW :	STATUS				
ne		Sunlight	Sun time	Sun area	time * area	Time	Shadow			Sun time	Sun time Sun area
4 Hr	% .	/ %	min	m2	min*m2	24 Hr	% .	/ %		min	min m2
00	100%	0%	60	0	0	6.00	100%	0%		60	60 0
.00	75%	25%	60	26	1,575	7.00	75%	25%		60	
00	58%	42%	60	44	2,646	8.00	75%	25%		60	60 26
.00	14%	86%	60	90	5,418	9.00	14%	86%		60	60 90
0.00	5%	95%	60	100	5,985	10.00	5%	95%		60	60 100
1.00	0%	100%	60	105	6,300	11.00	0%	100%		60	60 105
2.00	0%	100%	60	105	6,300	12.00	0%	100%		60	60 105
3.00	0%	100%	60	105	6,300	13.00	0%	100%	6	0	0 105
.00	0%	100%	60	105	6,300	14.00	0%	100%	60		105
5.00	0%	100%	60	105	6,300	15.00	0%	100%	60		105
6.00	0%	100%	60	105	6,300	16.00	0%	100%	60		105
.00	16%	84%	60	88	5,292	17.00	16%	84%	60		88
3.00	39%	61%	60	64	3,843	18.00	39%	61%	60		64
.00	100%	0%	60	0	0	19.00	100%	0%	60		0
quire	ed sun hours	@ 50%	area (hr)		2	Requin	ed sun hour	s @ 50%	area (hr)		
chiev	ed sun ho	urs on (f	nrs) @ 50	% area	10.00	Achie	ved sun ho	urs on (h	nrs) @ 50	y	% area
chiev	ved total su	ın time (l	nrs)		9.93	Achie	ved total su	ın time (l	hrs)		
chiev	ed daily sun	time * ar	rea		62559	Achiev	ed daily sur	time * a	rea		
chiev	ed daily sun	time * aı	rea		62559	Achiev	ed daily sur	ı time * aı	rea		
							ed daily sur	ı time * aı	rea		
	Part of	the Old		il Greenv	1,400	m2		ı time * aı	rea		
XIST	Part of	the Old	Rail Tra		1,400 March 21st	m2 NEW :	STATUS				Sun ama
XIST me	Part of ING STAT	the Old US Sunlight	Rail Tra	Sun area	1,400 March 21st time * area	m2 NEW : Time	STATUS Shadow	Sunlight	Sun time		Sun area
XIST me 4 Hr	Part of ING STATI Shadow	the Old US Sunlight	Rail Tra	Sun area m2	1,400 March 21st time * area min*m2	m2 NEW : Time 24 Hr	STATUS Shadow %	Sunlight / %	Sun time		m2
KIST me I Hr 00	Part of ING STATE Shadow %	the Old US Sunlight / %	Rail Tra Sun time min 60	Sun area m2	1,400 March 21st time * area min*m2	m2 NEW: Time 24 Hr 6.00	STATUS Shadow %.	Sunlight / %	Sun time min 60		m2 0
XIST me 4 Hr 00	Part of ING STATI Shadow %, 100%	the Old US Sunlight / % 0% 22%	Rail Tra Sun time min 60 60	Sun area m2 0 308	1,400 March 21st time * area min*m2 0 18,480	m2 NEW : Time 24 Hr 6.00 7.00	STATUS Shadow %. 100% 78%	Sunlight / % 0% 22%	Sun time min 60 60		m2 0 308
XIST me 4 Hr 00 00	Part of ING STATI Shadow % . 100% 78% 74%	the Old us Sunlight / % 0% 22% 26%	Rail Tra Sun time min 60 60 60	Sun area m2 0 308 364	1,400 March 21st time * area min*m2 0 18,480 21,840	m2 NEW : Time 24 Hr 6.00 7.00 8.00	STATUS Shadow % 100% 78% 74%	Sunlight / % 0% 22% 26%	Sun time min 60 60 60		m2 0 308 364
XIST me 4 Hr 00 00 00	Part of ING STATI Shadow % 100% 78% 74% 24%	the Old us Sunlight / % 0% 22% 26% 76%	Rail Tra Sun time min 60 60 60	Sun area m2 0 308 364 1064	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840	m2 NEW 3 Time 24 Hr 6.00 7.00 8.00 9.00	STATUS Shadow % . 100% 78% 74% 24%	Sunlight / % 0% 22% 26% 76%	Sun time min 60 60 60 60		m2 0 308 364 1064
XIST ime 4 Hr .00 .00 .00	Part of ING STATI Shadow % 100% 78% 74% 24% 34%	the Old us Sunlight / % 0% 22% 26% 76% 66%	Rail Tra Sun time min 60 60 60 60 60	Sun area m2 0 308 364 1064 924	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840 55,440	m2 NEW : Time 24 Hr 6.00 7.00 8.00 9.00 10.00	STATUS Shadow % 100% 78% 74% 24% 34%	Sunlight / % 0% 22% 26% 76% 66%	Sun time min 60 60 60 60 60		m2 0 308 364 1064 924
MIST me 1 Hr 00 00 00 00 00 00 1.00	Part of ING STATI Shadow % . 100% 78% 74% 24% 34% 34%	the Old US Sunlight / % 0% 22% 26% 76% 66% 66%	Rail Tra Sun time min 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840 55,440 55,440	m2 NEW : Time 24 Hr 6.00 7.00 8.00 9.00 10.00 11.00	STATUS Shadow %. 100% 78% 74% 24% 34% 34%	Sunlight / % 0% 22% 26% 76% 66%	Sun time min 60 60 60 60 60 60		m2 0 308 364 1064 924 924
3 XIST ime 4 Hr .00 .00 .00 .00 .00 .00	Part of ING STATI Shadow % 100% 78% 24% 34% 34% 34%	the Old us Sunlight (* %)	Rail Tra Sun time min 60 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924 924	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840 55,440 55,440	m2 NEW: Time 24 Hr 6.00 7.00 8.00 9.00 10.00 11.00 12.00	STATUS Shadow %. 100% 78% 74% 24% 34% 34% 34%	Sunlight / % 0% 22% 26% 76% 66% 66%	Sun time min 60 60 60 60 60 60 60		m2 0 308 364 1064 924 924 924
3 XXIST ime 4 Hr .000 .000 .000 .000 1.00 2.00 3.00	Part of ING STATI Shadow %	the Old us Sunlight 7 % 0% 22% 26% 76% 66% 66% 66% 66%	Rail Tra Sun time min 60 60 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924 924 924	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840 55,440 55,440 55,440	m2 NEW: Time 24 Hr 6.00 7.00 8.00 9.00 10.00 11.00 12.00 13.00	STATUS Shadow % . 100% 78% 74% 24% 34% 34% 34% 34% 34%	Sunlight / % 0% 22% 26% 76% 66% 66% 66%	Sun time min 60 60 60 60 60 60 60 60 60		m2 0 308 364 1064 924 924 924 924
3 XXIST ime 4 Hr 5.00 5.00 1.00 1.00 1.00 2.00 3.00 4.00	Part of ING STATI Shadow % 100% 78% 24% 34% 34% 34% 34% 34% 34% 34%	the Old us Sunlight 7 % 0% 22% 26% 76% 66% 66% 66% 66%	Rail Tra Sun time min 60 60 60 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924 924 924	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840 55,440 55,440 55,440 55,440	m2 NEW 3 Time 24 Hr 6.00 7.00 8.00 9.00 10.00 11.00 12.00 13.00 14.00	STATUS Shadow % . 100% 78% 74% 24% 34% 34% 34% 34% 34%	Sunlight / % 0% 22% 26% 76% 66% 66% 66%	Sun time min 60 60 60 60 60 60 60 60 60		m2 0 308 364 1064 924 924 924 924
3 EXIST ime 4 Hr 5.00 5.00 1.00 1.00 1.00 2.00 3.00 4.00 4.00	Part of ING STATI Shadow % . 100% 78% 24% 34% 34% 34% 34% 34% 34% 34% 34% 34% 3	the Old us Sunlight 7 % 0% 22% 26% 76% 66% 66% 66% 66% 66%	Rail Tra Sun time min 60 60 60 60 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924 924 924 924	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840 55,440 55,440 55,440 55,440 55,440 55,440	m2 NEW 1 Time 24 Hr 6.00 7.00 8.00 9.00 10.00 11.00 12.00 13.00 14.00 15.00	STATUS Shadow % 100% 78% 74% 24% 34% 34% 34% 34% 34% 34% 34%	Sunlight / % 0% 22% 26% 76% 66% 66% 66% 66%	Sun time min 60 60 60 60 60 60 60 60 60 60		m2 0 308 364 1064 924 924 924 924 924 924
XIST ime 4 Hr .00 .00 .00 .00 .00 2.00 3.00 4.00 5.00 6.00	Part of ING STATI Shadow % . 100% 78% 74% 24% 34% 34% 34% 34% 34% 34% 34% 34% 34% 3	the Old us Sunlight / % 0% 22% 26% 66% 66% 66% 66% 66% 66% 66% 66	Rail Tra Sun time min 60 60 60 60 60 60 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924 924 924 924 924	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840 55,440 55,440 55,440 55,440 55,440 55,440	m2 NEW : Time 24 Hr 6.00 7.00 8.00 9.00 10.00 11.00 12.00 13.00 14.00 15.00 16.00	STATUS Shadow % 100% 78% 74% 24% 34% 34% 34% 34% 34% 34% 34% 34% 34% 3	Sunlight / % 0% 22% 26% 76% 66% 66% 66% 66% 66%	Sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60		m2 0 308 364 1064 924 924 924 924 924 924 924
XIST ime 4 Hr .00 .00 .00 .00 .00 .00 2.00 3.00 4.00 5.00	Part of ING STATI Shadow % 100% 78% 74% 24% 34% 34% 34% 34% 34% 34% 34% 34% 40%	the Old us Sunlight / % 0% 22% 26% 66% 66% 66% 66% 66% 66% 66% 66	Rail Tra Sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924 924 924 924 924 924	1,400 March 21st time * area min*m2 0 18,480 21,840 55,440 55,440 55,440 55,440 55,440 55,440 55,440	m2 NEW Time 24 Hr 6.00 7.00 8.00 9.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00	STATUS Shadow %. 100% 78% 74% 24% 34% 34% 34% 34% 34% 34% 40%	Sunlight / % 0% 22% 26% 76% 66% 66% 66% 66% 66% 66% 60%	Sun time min 60 60 60 60 60 60 60 60 60 60 60		m2 0 308 364 1064 924 924 924 924 924 924 924 924
XIST ime 4 Hr .00 .00 .00 .00 .00 .00 .00 4.00	Part of ING STATI Shadow % . 100% 78% 74% 24% 34% 34% 34% 34% 34% 34% 34% 34% 34% 3	the Old us Sunlight / % 0% 22% 26% 66% 66% 66% 66% 66% 66% 66% 66	Rail Tra Sun time min 60 60 60 60 60 60 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924 924 924 924 924	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840 55,440 55,440 55,440 55,440 55,440 55,440	m2 NEW : Time 24 Hr 6.00 7.00 8.00 9.00 10.00 11.00 12.00 13.00 14.00 15.00 16.00	STATUS Shadow % 100% 78% 74% 24% 34% 34% 34% 34% 34% 34% 34% 34% 34% 3	Sunlight / % 0% 22% 26% 76% 66% 66% 66% 66% 66%	Sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60		m2 0 308 364 1064 924 924 924 924 924 924 924
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CIST ne Hr 000 000 000 000 000 000 000 000 000	Part of ING STAT! Shadow %6 100% 78% 74% 34% 34% 34% 34% 34% 44% 40% 48% 100%	the Old US Sunlight	Rail Tra Sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924 924 924 924 924 924 92	1,400 March 21st time * area min*m2 0 18,480 21,840 55,440 55,440 55,440 55,440 55,440 55,440 50,400 43,680	m2 NEW : Time 24 Hr 6.00 7.00 9.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00 19.00	STATUS Shadow % 100% 78% 74% 24% 34% 34% 34% 34% 34% 40% 48% 100%	Sunlight / %	Sun time min		m2 0 308 364 1064 924 924 924 924 924 924 924 924 728
(IST me Hr 000 000 000 000 000 000 000 000 000	Part of ING STATI Shadow %6 100% 78% 74% 34% 34% 34% 34% 34% 40% 40% 48% 100% ed sun hours	the Old US Sunlight	Rail Tra Sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924 924 924 924 924 924 924 924	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840 55,440 55,440 55,440 55,440 55,440 50,400 43,680 0	m2 NEW 3 Time 24 Hr 6,000 7,000 8,000 9,000 11,000 12,000 13,000 14,000 15,000 16,000 17,000 18,000 19,000 Requin	STATUS Shadow % 100% 78% 74% 24% 34% 34% 34% 34% 40% 48% 100%	Sunlight / % 0% 22% 26% 66% 66% 66% 66% 60% 0% 52% 0% 50% 68 @ 50% 68 @ 50%	Sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60		m2 0 308 364 1064 924 924 924 924 924 924 924 924 924
IIST ne Hr 00 00 00 00 00 00 00 00 00 00 00 00 00	Part of ING STAT' Shadow %	the Old US Sunlight (%) % 0% 22% 26% 66% 66% 66% 66% 66% 00% 52% 0% 52%	Rail Tra Sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60	Sun area m2 0 308 364 1064 924 924 924 924 924 924 924 924 924	1,400 March 21st time * area min*m2 0 18,480 21,840 63,840 55,440 55,440 55,440 55,440 55,440 50,400 43,680 2	m2 NEW 3 Time 24 Hr 6,000 7,000 8,000 10,000 11,000 12,000 15,000 15,000 15,000 18,000 19,000 Requiring Achieve Achieve Achieve 100 100 100 100 100 100 100 100 100 10	STATUS Shadow % 100% 78% 24% 34% 34% 34% 34% 40% 40% 48% 100%	Sunlight / % 0% 22% 26% 66% 66% 66% 66% 00% 52% 0% 50% urs on (1	Sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60		m2 0 308 364 1064 924 924 924 924 924 924 924 924 924
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DKP

Time	Shadow	Sunlight	Sun time	Sun area	March 21st time * area	NEW S'		Sunlinht	Sun time	Sun area	March 21st time * area	time
24 Hr	% i	-	min	m2	min*m2	24 Hr	% /	-	min	m2	min*m2	n
6.00	100%	0%	60	0	0	6.00	100%	0%	60	0	0	
7.00	70%	30%	60	27	1,620	7.00	70%	30%	60	27	1,620	
B.00	0%	100%	60	90	5,400	8.00	0%	100%	60	90	5,400	
9.00	0%	100%	60	90	5,400	9.00	0%	100%	60	90	5,400	
10.00	0%	100%	60	90	5,400	10.00	0%	100%	60	90	5,400	
11.00	0%	100%	60	90	5,400	11.00	0%	100%	60	90	5,400	
12.00	8%	92%	60	83	4,968	12.00	8%	92%	60	83	4,968	
13.00	11%	89%	60	80	4,806	13.00	11%	89%	60	80	4,806	
14.00	58%	42%	60	38	2,268	14.00	58%	42%	60	38	2,268	
15.00	69%	31%	60	28	1,674	15.00	69%	31%	60	28	1,674	
16.00	85%	15%	60	14	810	16.00	85%	15%	60	14	810	
17.00	85%	15%	60	14	810	17.00	85%	15%	60	14	810	
18.00	85%	15%	60	14	810	18.00	85%	15%	60	14	810	
19.00	100%	0%	60	0	0	19.00	100%	0%	60	0	0	
	d sun hours				2		sun hours				2	
Achieve	ed sun ho	urs on (h	ırs) @ 50	% area	6.00	Achieve	ed sun ho	urs on (I	nrs) @ 50	1% area	6.00	
	ed total su				7.29		ed total su				7.29	
Achieve	d daily sun	i time * ai	rea		39366	Achieve	d daily sun	time * a	rea		39366	
D	Garryca NG STAT	astle, At	hlone		310 March 21st		TATUO				March 21st	
EXISTII Fime	Shadow		Sun time	Sun area	time * area	NEW S'	Shadow	Suplinh	Sun time	Sun area	time * area	time
24 Hr	Silauow %	-	min	m2	min*m2	24 Hr	% /	-	min	m2	min*m2	n
6.00	100%	0%	60	0	0	6.00	100%	0%	60	0	0	"
7.00	70%	30%	60	93	5,580	7.00	70%	30%	60	93	5,580	
B.00	85%	15%	60	47	2,790	8.00	85%	15%	60	47	2,790	
9.00	42%	58%	60	180	10,788	9.00	42%	58%	60	180	10,788	
10.00	19%	81%	60	251	15,066	10.00	19%	81%	60	251	15,066	
11.00	0%	100%	60	310	18,600	11.00	0%	100%	60	310	18,600	
12.00	0%	100%	60	310	18,600	12.00	0%	100%	60	310	18,600	
13.00	0%	100%	60	310	18,600	13.00	0%	100%	60	310	18,600	
14.00	0%	100%	60	310	18,600	14.00	0%	100%	60	310	18,600	
15.00	0%	100%	60	310	18,600	15.00	0%	100%	60	310	18,600	
16.00	16%	84%	60	260	15,624	16.00	16%	84%	60	260	15,624	
17.00	30%	70%	60	217	13,020	17.00	30%	70%	60	217	13,020	
18.00	85%	15%	60	47	2,790	18.00	85%	15%	60	47	2,790	
						19.00	100%	0%	60	0		
19.00	100%	0%	60	0	0					U	0	
Required	d sun hours	s @ 50%	area (hr)		2		sun hours				2	
Achieve	d sun hours ed sun ho	s @ 50% urs on (f	area (hr) nrs) @ 50		9.00	Achieve	sun hours ed sun ho	urs on (I	nrs) @ 50		9.00	
Required Achieve Achieve	d sun hours ed sun ho ed total su	s @ 50% urs on (f in time (l	area (hr) nrs) @ 50 nrs)		9.00 8.53	Achieve Achieve	sun hours ed sun ho ed total su	urs on (I in time (nrs) @ 50 hrs)		9.00 8.53	
Required Achieve Achieve	d sun hours ed sun ho	s @ 50% urs on (f in time (l	area (hr) nrs) @ 50 nrs)		9.00	Achieve Achieve	sun hours ed sun ho	urs on (I in time (nrs) @ 50 hrs)		9.00	
Requirec Achieve Achieve	d sun hours ed sun ho ed total su d daily sun	s @ 50% urs on (f in time (l i time * ai	area (hr) nrs) @ 50 nrs)		9.00 8.53 158658	Achieve Achieve Achieve	d sun hours ed sun ho ed total su d daily sun	urs on (I in time (nrs) @ 50 hrs)		2 9.00 8.53 158658	
Required Achieve Achieve Achiever E EXISTII	d sun hours ed sun ho ed total su d daily sun ESB Ne NG STAT	s @ 50% urs on (f in time (l i time * ai etworks us	area (hr) nrs) @ 50 nrs) rea	% area	9.00 8.53 158658 5,500 March 21st	Achieve Achieve	d sun hours ed sun ho ed total su d daily sun	urs on (I in time (time * a	nrs) @ 50 hrs) rea	% area	2 9.00 8.53 158658 March 21st	
Required Achieve Achieve Achieve E E EXISTII	d sun hoursed sun housed sun housed total sud daily sun	s @ 50% urs on (I in time (I i time * ai etworks us Sunlight	area (hr) nrs) @ 50 nrs) rea Sun time		9.00 8.53 158658	Achieve Achieve Achieve m2 NEW S	d sun hours d sun ho d total su d daily sun	urs on (I in time (time * a Sunlight	nrs) @ 50 hrs) rea Sun time		2 9.00 8.53 158658 March 21st time * area	time
Required Achieve Achieve Achieved EXISTII Fime	d sun hoursed sun housed total sud daily sun ESB Ne NG STATI Shadow	s @ 50% urs on (h in time (l itime * ai etworks us Sunlight	area (hr) nrs) @ 50 nrs) rea Sun time min	% area Sun area m2	2 9.00 8.53 158658 5,500 March 21st time * area min*m2	Achieve Achieve Achiever m2 NEW S Time 24 Hr	d sun hours ed sun ho ed total su d daily sun TATUS Shadow	urs on (I in time (i time * a Sunlight	nrs) @ 50 hrs) rea Sun time min	% area Sun area m2	2 9.00 8.53 158658 March 21st time * area min*m2	time
Required Achieve Achieve Achieve EXISTII Fime 24 Hr 5.00	d sun hoursed sun housed total sun daily sun daily sun ESB Ne NG STATI Shadow %.	s @ 50% urs on (h in time (l i time * ai etworks us Sunlight / %	area (hr) nrs) @ 50 nrs) rea Sun time min 60	% area Sun area m2 0	2 9.00 8.53 158658 5,500 March 21st time * area min*m2	Achieve Achieve Achiever m2 NEW S' Time 24 Hr 6.00	d sun hours ed sun ho ed total su d daily sun TATUS Shadow % 100%	urs on (I in time (time * a Sunlight	nrs) @ 50 hrs) rea Sun time min 60	Sun area m2 0	2 9.00 8.53 158658 March 21st time * area min*m2	time
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Requirec Achieve Achieve Achieve E EXISTII Me 24 Hr 7.00 8.00 9.00 10.00	ESB Ne NG STATI Shadow 100% 68% 16% 0%	s @ 50% urs on (fun time (litime * aid time	area (hr) nrs) @ 50 nrs) rea Sun time min 60 60 60 60	% area Sun area m2 0 1650 1760 4620 5500	2 9.00 8.53 158658 5,600 March 21st time * area min*m2 0 99,000 105,600 277,200 330,000	m2 NEW S Time 24 Hr 6.00 7.00 8.00 9.00 10.00	taun hoursed sun housed sun housed total sun did daily sund daily sund daily sund fatter shadow 100% 68% 68% 68% 0%	urs on (I in time (time * a Sunlight 9% 0% 30% 32% 84% 100%	Sun time min 60 60 60 60 60	Sun area m2 0 1650 1760 4620 5500	2 9.00 8.53 158658 March 21st time * area min*m2 0 99,000 105,600 277,200 330,000	time
Requirec Achieve Achieve E EXISTII Time 24 Hr 6.00 7.00 6.00 9.00 11.00	ESB Ne NG STATI Shadow 100% 68% 0%	s @ 50% urs on (h in time (l in time * ai etworks us Sunlight / % 30% 32% 84% 100%	sun time min 60 60 60 60 60 60 60 60 60 60 60 60 60	% area Sun area m2 0 1650 1760 4620 5500	2 9.00 8.53 158658 5,500 March 21st time * area min*m2 0 99,000 105,600 277,200 330,000 330,000	Achieve Achieves Achieves Time 24 Hr 6.00 7.00 8.00 9.00 10.00 11.00	tatus Shadow 100% 68% 16% 0%	urs on (I in time (time * a Sunlight 9% 0% 30% 32% 84% 100%	Sun time min 60 60 60 60 60 60 60 60	Sun area m2 0 1650 1760 4620 5500	2 9.00 8.53 158658 March 21st time * area min*m2 0 99,000 105,600 277,200 330,000 330,000	time
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6.4 Existing 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 the selected existing amenity spaces all received 2 or more hours of sunlight on at least 50% of the area before and after the introduction of the new development. Results are as follows (see image 6.1 for receptor locations):



(For reference) Image 6.1: selected existing amenity spaces

- North receptor: Receptor A is a residential dwelling with private green space. This space resulted in a change factor of 0.99 meaning the new proposed development has a small effect on the amenity space shadow/sunlight. This effect happens in the early morning hours between 08.00-09.00. The result is well within BRE guidelines.
- South receptors: Receptor B is a section of the Old Rail Trail Greenway and Receptor C is a residential dwelling with private green space. Both resulted in a change factor of 1.00 meaning the new proposed development has no effect on existing sunlight status, due to these amenity areas located south of the development site.
- East receptors: Receptor D is a residential dwelling with private green space. This space resulted in a change factor of 1.00 meaning the new proposed has no effect on existing sunlight status. Receptor E is the open green space on ESB grounds. This space resulted in a change factor of 0.91 meaning the new proposed development has a small effect on the amenity space shadow/sunlight. This effect happens in the afternoon hours between 15.00-18.00. The results are well within BRE guidelines.

We conclude that some existing amenity spaces have a marginal loss of sunlight reception however this loss in the existing amenity spaces as a result of the introduction of the new development is within the maximum allowable change factor (0.8 or maximum 20% loss) as per the BRE Report - Site Layout and Planning for Daylight and Sunlight - and we, DKP, therefore deem this to be compliant.

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