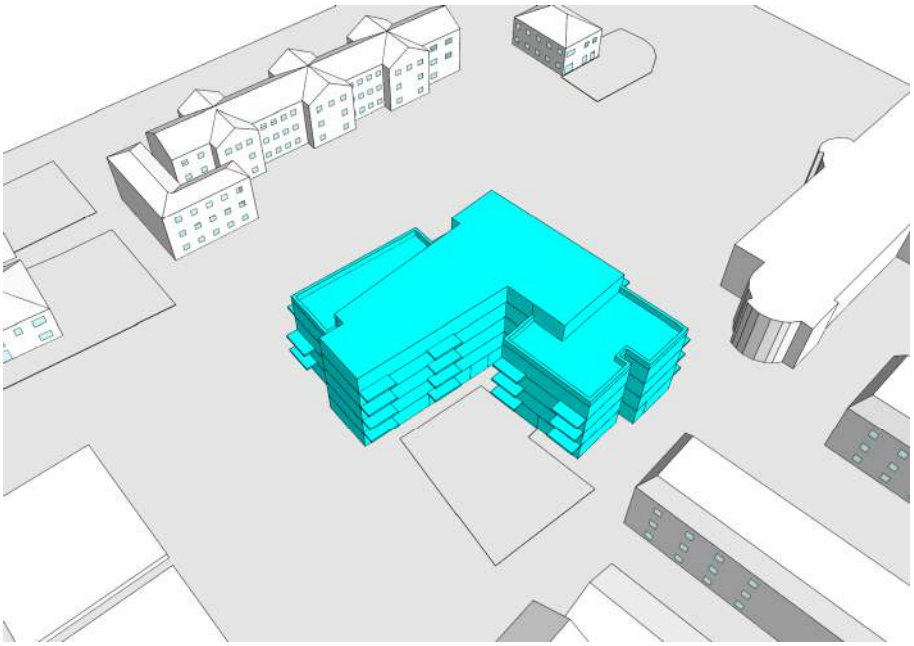
Westside, Model Farm Road, Cork

Daylight, Sunlight and Overshadowing



Report For: O'Mahony Pike Architects

Project No: 15555

Confidential

Version History

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3	06/06/2022	Final Report	Douglas Bell, Project Manager

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1 Executive Summary

This report details the analysis undertaken to quantify the Sunlight and Daylight performance of the proposed Westside development. The report focuses on measuring the daylight impact to the surrounding dwellings when compared to the existing situation. It also considers the impact to daylight and sunlight when considering the proposed design itself. The following can be concluded based on the preliminary studies undertaken:

1.1 Sunlight to the Existing and Proposed Amenity Spaces

As mentioned above under Section 3.3.17 of BRE's Site Layout Planning for Daylight and Sunlight states that for a space to appear adequately sunlit throughout the year, at least half of the garden or amenity area should receive at least 2 hours of sunlight on the 21st of March.

The images demonstrate that the proposed building does not have any impact on the existing amenity areas, which would continue to receive very similar high levels of sunlight with the proposed development in place. Furthermore, the proposed amenity area receives at least 2 hours of sunlight on 97% of their area. This confirms that the proposed amenity area will be a quality spaces in terms of sunlight, exceeding the BRE guidelines.

1.2 Shadow Analysis

The proposed development is noted to have some additional overshadowing to some of the properties situated to the north of the proposed development mainly in December. Although this is the case, when the results of the daylight (VSC analysis) and the sunlight to the existing amenities are examined in conjunction with these results, it can be predicted that this overshadowing will have a minimal impact to these existing properties.

1.3 Daylight Analysis of Existing Buildings

The Vertical Sky Component for 100% of the points tested (171) have a vertical sky component of greater than 27% or not less than 0.8 times their former value (that of the Existing Situation), and exceed the BRE recommendations.

1.4 Average Daylight Factors

100% of the proposed rooms tested on the ground and first floors of the proposed development are achieving Average Daylight Factors (ADF) above the BRE guidelines. Since these can be viewed as 'worst case' locations, it can be expected that the results from the development as a whole would perform to an equally high percentage.

1.5 Discussion

It should be noted that the guidance in 'Site layout planning for daylight and sunlight: a guide to good practice' is not mandatory and the Report itself states 'although it gives numerical

guidelines these should be interpreted flexibly because natural lighting is only one of many factors in site layout design.

Whilst the results shown relate to the criteria as laid out in the BRE guidance targets it is important to note that the BRE targets have been drafted primarily for use in low density suburban development and should therefore be used with flexibility and caution when dealing other types of sites.

The overall impact may need to be considered alongside the other social, economic and environmental benefits of the development.

Despite the above, overall the results within this report shows the proposed development performs well when compared to the BRE recommendations in the BRE 'Site Layout Planning for Daylight and Sunlight' guide, sometimes referred to as BRE Digest 209.

2 Introduction

This report was completed to quantify the Sunlight / Daylight performance of the proposed Westside development on Model Farm Road in Cork, both within the development itself and with regards to neighbouring buildings.

2.1 Analysis Performed

The focus of the study considers the following items with respect to the proposed new development:

- **Sunlight to the Existing and Proposed Amenity Spaces** – via sunlight hours simulation.
- **Shadow Analysis** - A visual representation analysing any potential changes that may arise from the proposed development on to the neighbouring existing dwellings.
- **Daylight analysis of existing neighbouring buildings** - via consideration of Vertical Sky Component (VSC).
- **Average Daylight Factors**: via consideration of the Average Daylight Factor (ADF) for the proposed development.

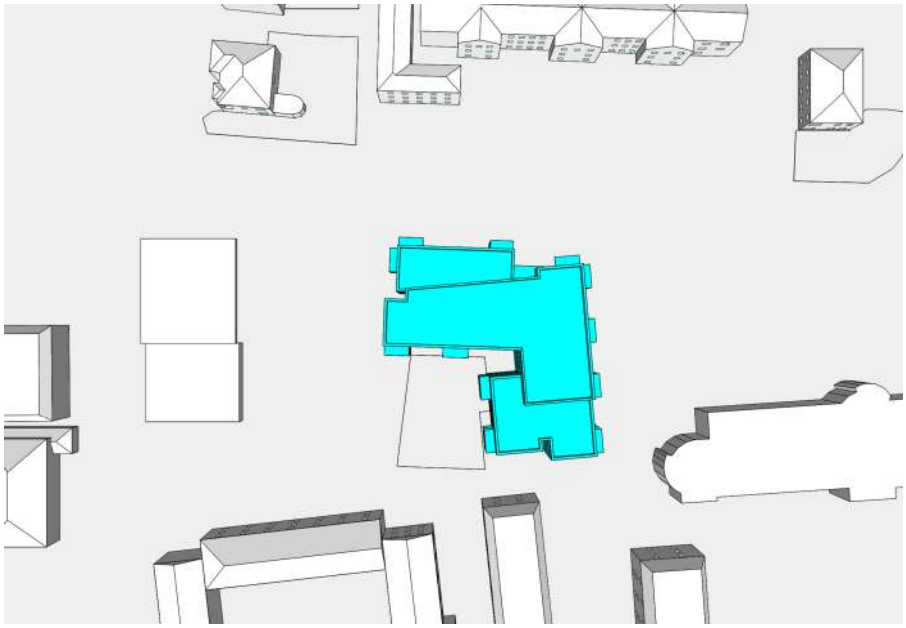
The analysis was completed using the IES VE software.

The assessment is based on recommendations given in BRE – Site Layout Planning for Daylight and Sunlight guide.

3 Methodology

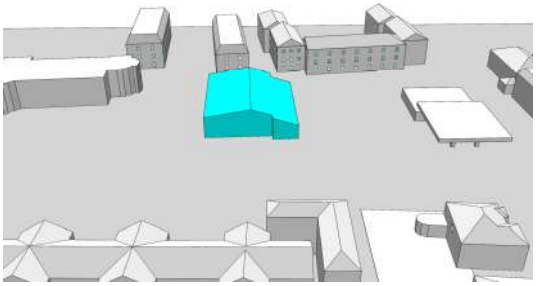
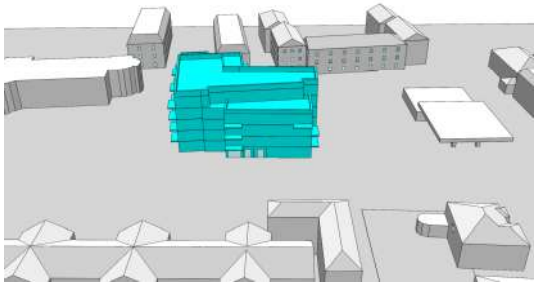
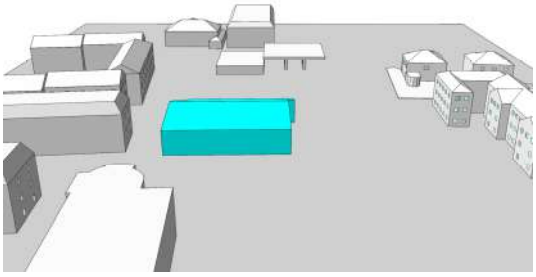
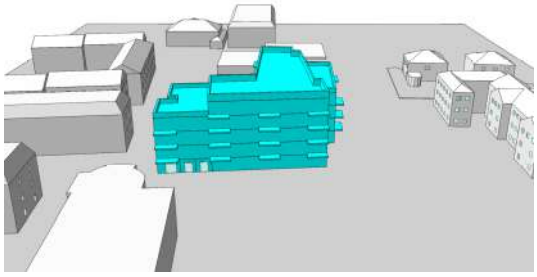
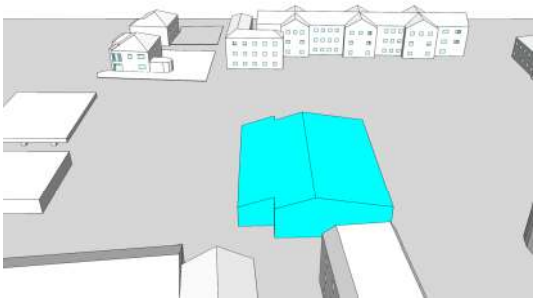
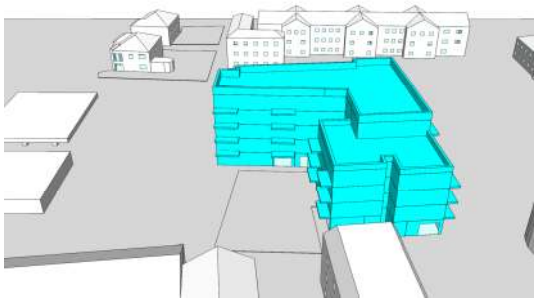
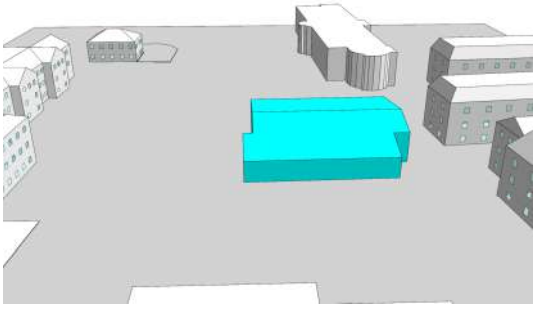
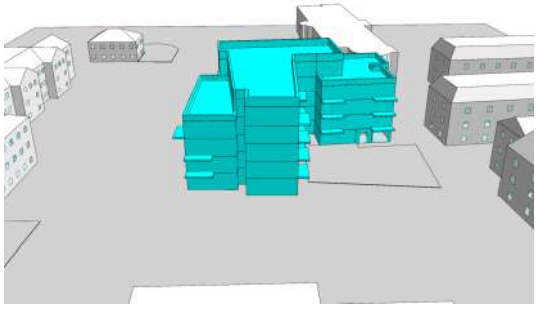
3.1 Orientation

The model orientation has been taken from drawings provided by the Architect with the resulting angle shown below used in the analysis.

Orientation	
	
	

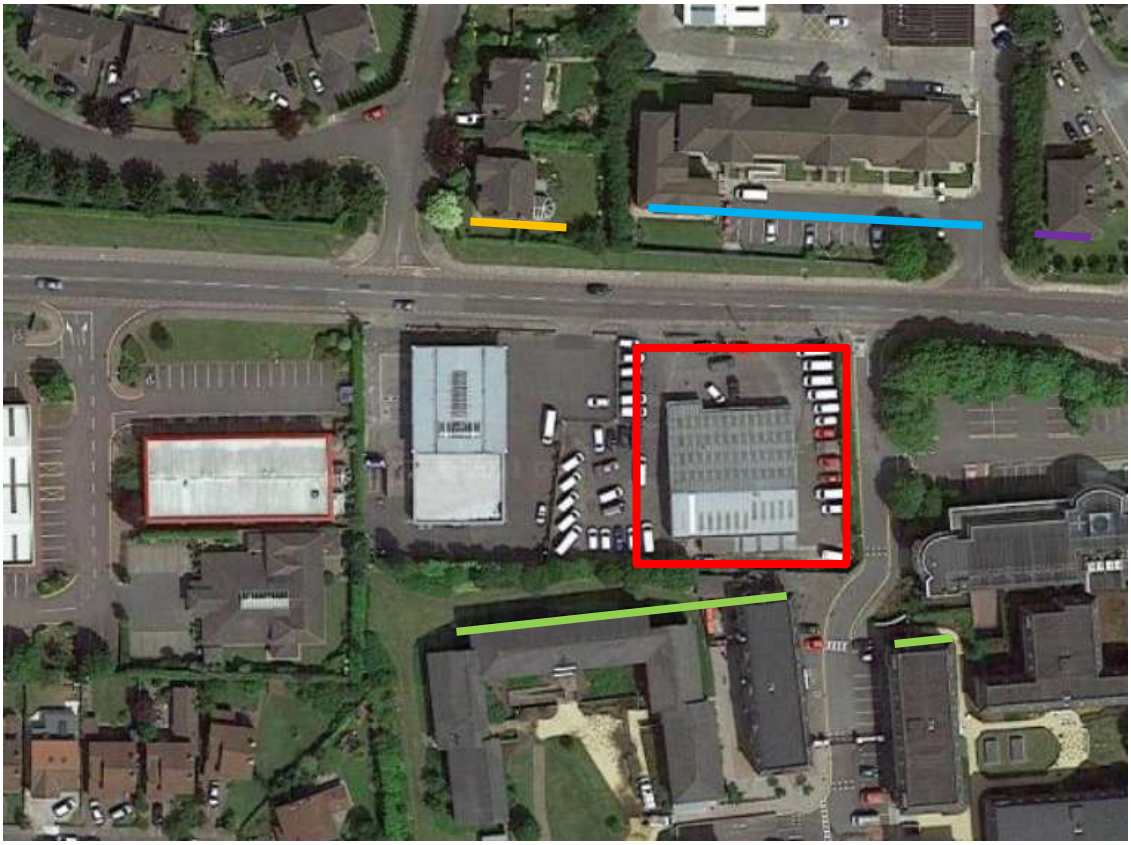
3.2 Proposed Model

The following images show the model created for analysis:

	Existing Scheme	Proposed Scheme
View looking from North of Site		
View looking from East of Site		
View looking from South of Site		
View looking from West of Site		

3.3 Potential Sensitive Receptors

To help understand the proposed development's performance regarding surrounding buildings, potential sensitive receptors were identified as illustrated below.



	Proposed Site
	Parchment Square Student Accommodation
	The Manor residences
	Abbeyville Apartments
	Model Farm Rd residences

4 BRE – Site Layout Planning for Daylight and Sunlight (2nd edition)

Access to daylight and sunlight is a vital part of a healthy environment. Sensitive design should provide sufficient daylight and sunlight to new housing while not obstructing light to existing homes nearby.

The BRE Report, Site layout planning for daylight and sunlight: a guide to good practice (BR209), advises on planning developments for good access to daylight and sunlight, and is widely used by local authorities to help determine the performance of new developments.

4.1 Impact Classification Discussion

BRE guidance in Appendix I – Environmental Impact Assessment suggests impact classifications as minor, moderate and major adverse. It provides further classifications of these impacts with respect to criteria as follows;

Where the loss of skylight or sunlight fully meets the guidelines in the BRE guide, the impact is assessed as negligible or minor adverse. Where the loss of skylight or sunlight does not meet the BRE guidelines, the impact is assessed as minor, moderate or major adverse.

Negligible adverse impact	• *Loss of light well within guidelines,* ***or*** • *only a small number of windows losing light (within the guidelines)* ***or*** *limited area of open space losing light (within the guidelines)*

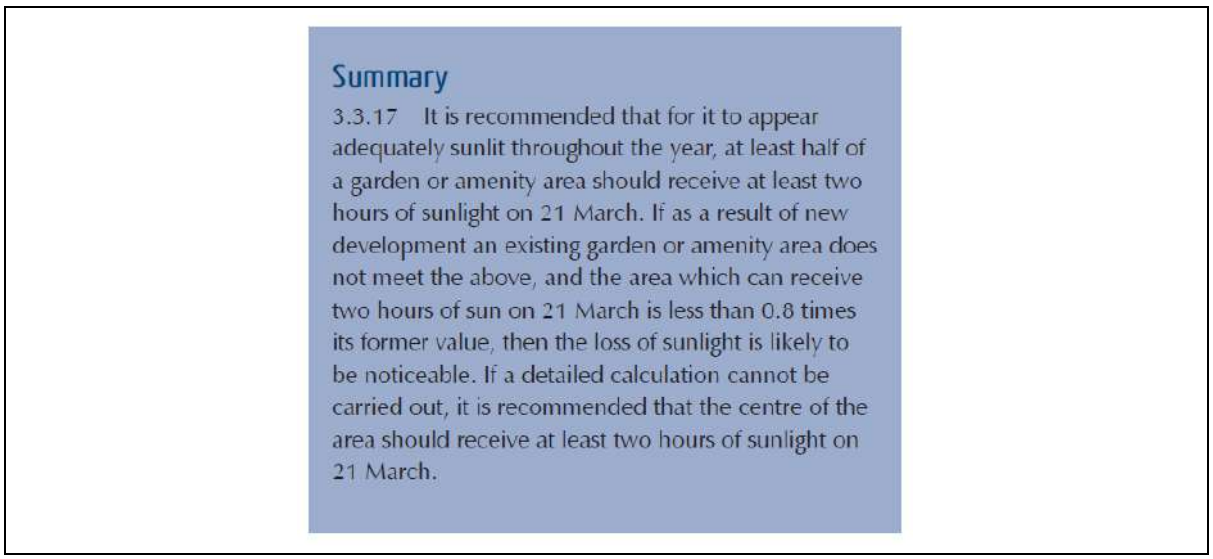
Minor adverse impact (a)	• *Loss of light only just within guidelines* ***and***
	  ○ *a larger number of windows are affected* ***or***
	  ○ *larger area of open space is affected (within the guidelines)*

Minor adverse impact (b)	• *only a small number of windows or limited open space areas are affected* • *the loss of light is only marginally outside the guidelines* • *an affected room has other sources of skylight or sunlight* • *the affected building or open space only has a low level requirement for skylight or sunlight* • *there are particular reasons why an alternative, less stringent, guideline should be applied*
Major adverse impact	• *large number of windows or large open space areas are affected* • *the loss of light is substantially outside the guidelines* • *all the windows in a particular property are affected* • *the affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight (living rooms / playground)*

5 Sunlight to the Amenity

5.1 Requirements

The performance of the development proposal regarding sunlight availability in the amenity areas will be considered to determine how they perform when assessed against the BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight which states the following in Section 3.3.17;



Summary

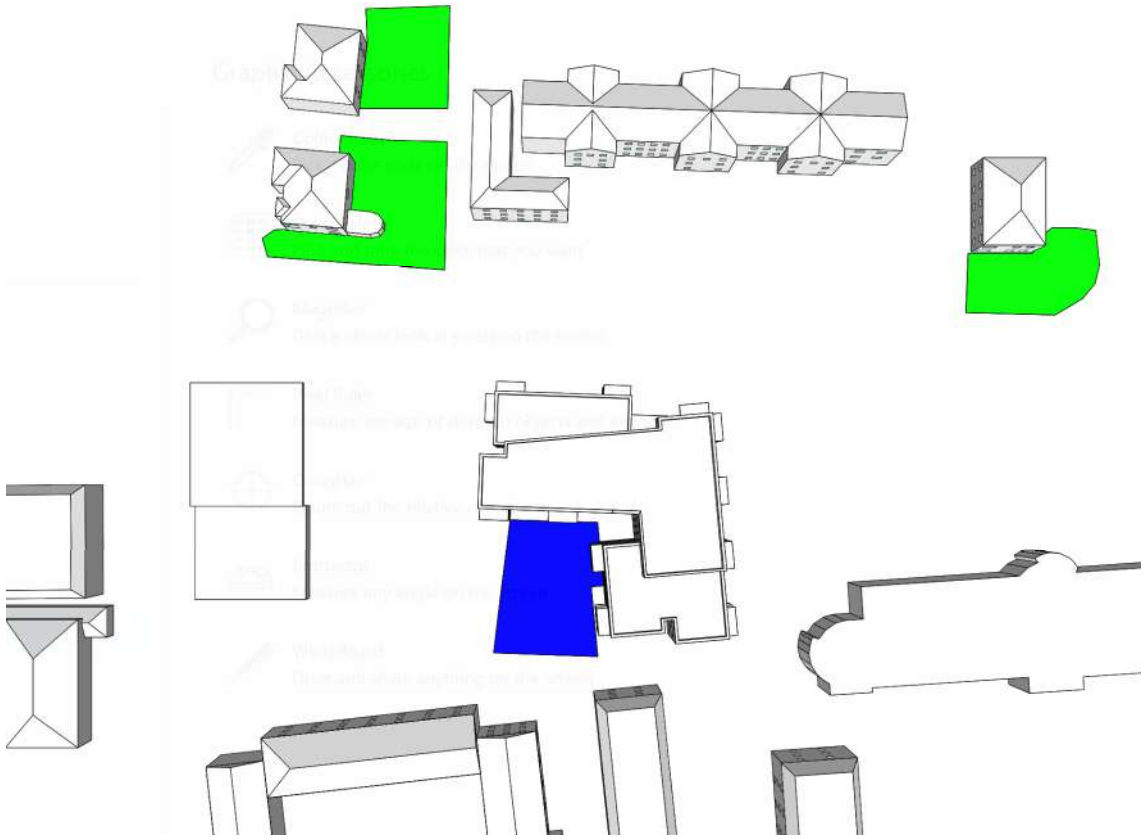
3.3.17 It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can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

BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight states in 3.3.17 that for a space to, appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least 2 hours of sunlight on 21st March.

5.2 Amenity Area Results

As stated above for a space to, appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least 2 hours of sunlight on 21st March. This analysis performed on the following amenity spaces highlighted below:

Proposed Amenity Space

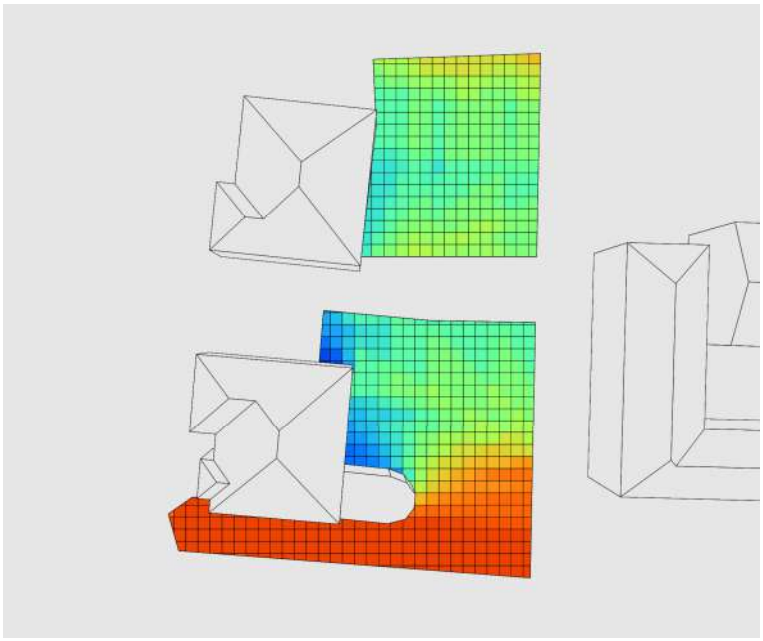
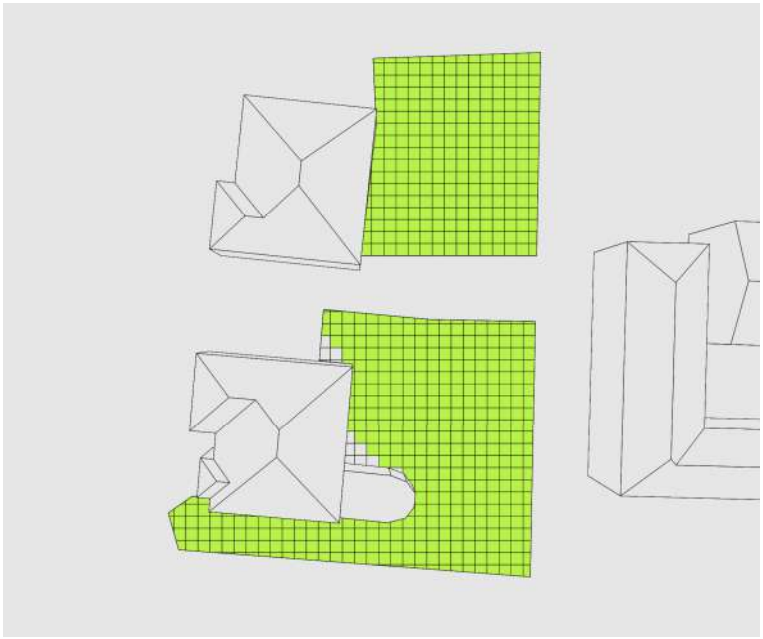


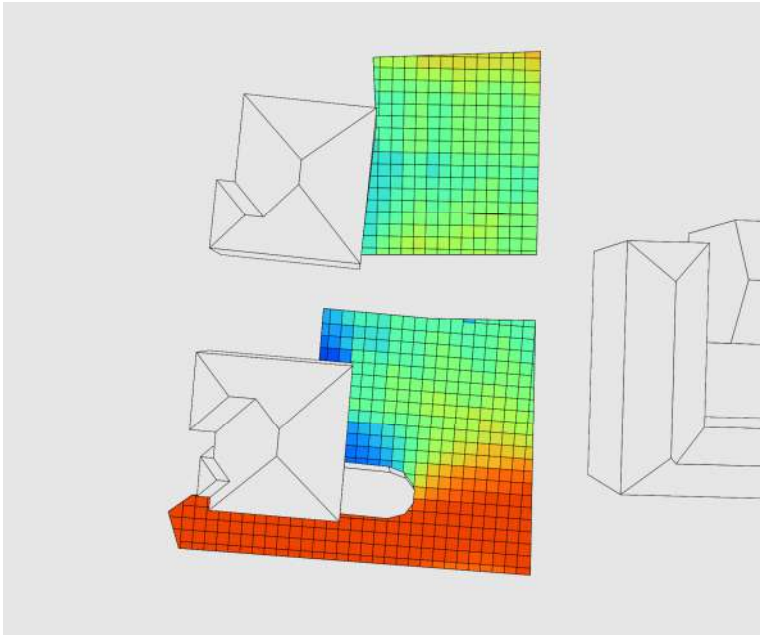
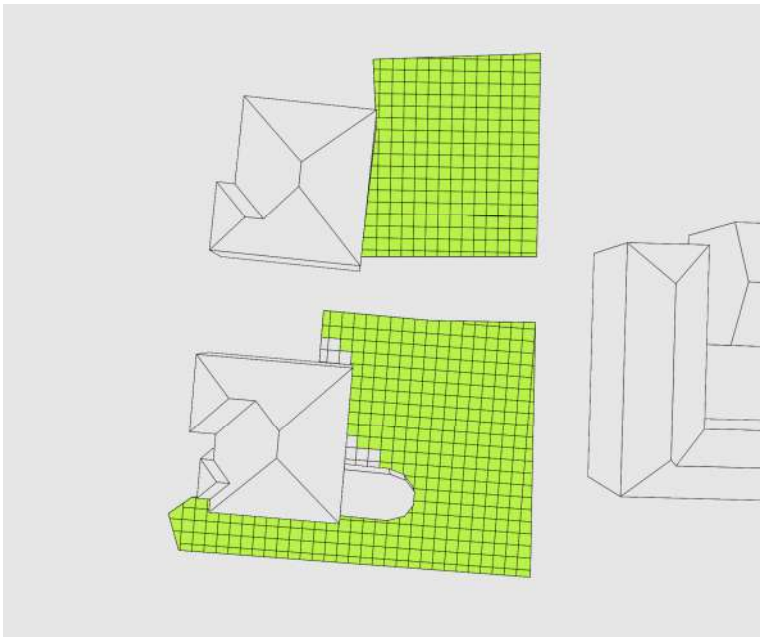
Proposed Amenity Area

Existing Amenity Areas

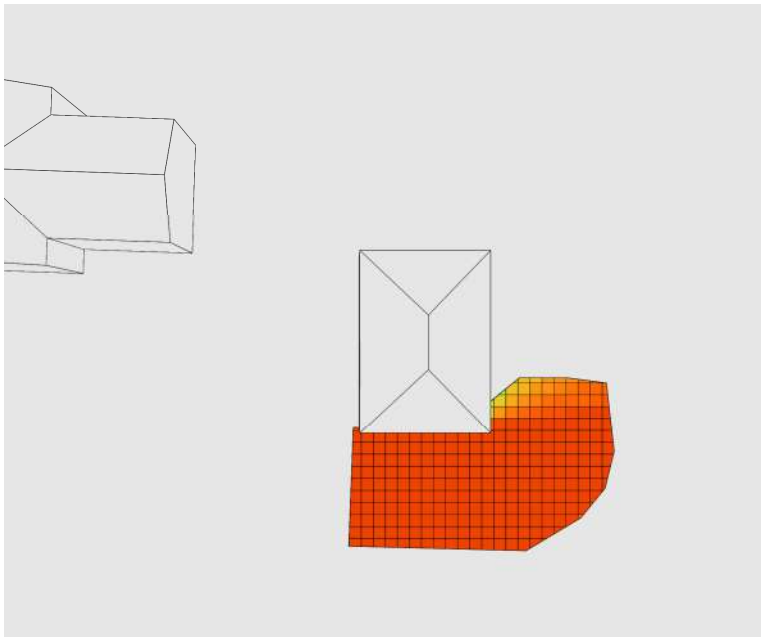
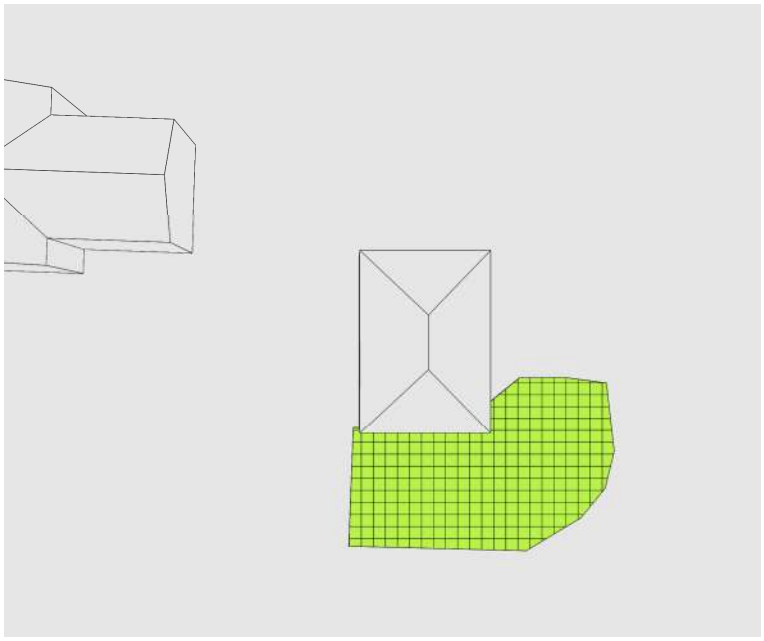
5.2.1 Existing Amenity Areas

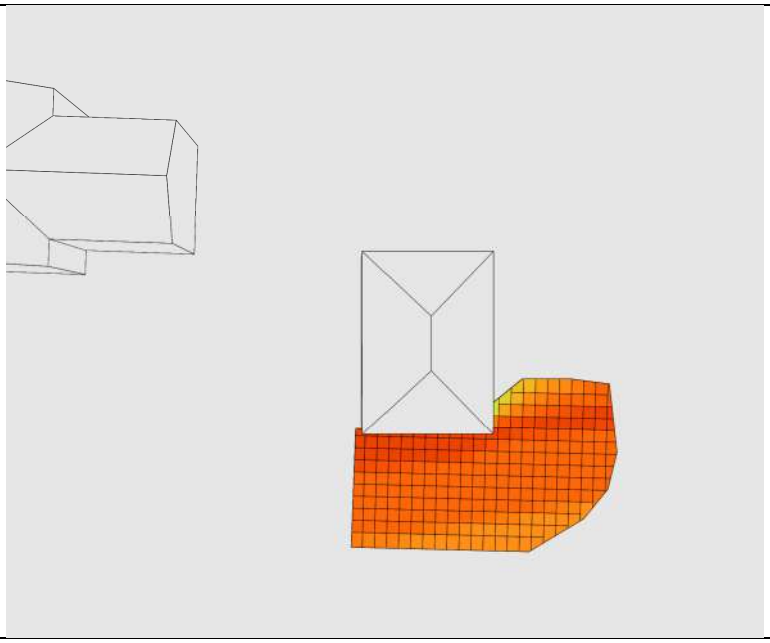
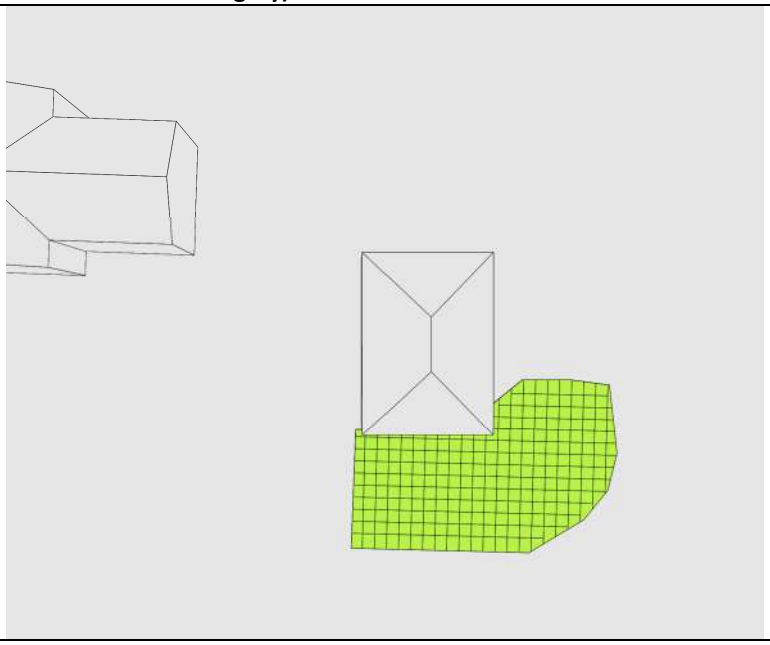
5.2.1.1 The Manor

Existing Scheme	
Absolute Scale showing all hours	
21/Mar - 00:00 to 21/Mar - 23:00 Hours 12.00 10.80 9.60 8.40 7.20 6.00 4.80 3.60 2.40 1.20 0.00	
Custom Scale - showing hours > 2 in red (Any gridded cells area below 2 hours are shown as grey)	
Receives more than 2 hours of sunlight Receives less than 2 hours of sunlight	

Proposed Scheme	
Absolute Scale showing all hours	
21/Mar - 00:00 to 21/Mar - 23:00 Hours 12.00 10.80 9.60 8.40 7.20 6.00 4.80 3.60 2.40 1.20 0.00	
Custom Scale - showing hours > 2 in red (Any gridded cells area below 2 hours are shown as grey)	
■ Receives more than 2 hours of sunlight □ Receives less than 2 hours of sunlight	

5.2.1.2 Model Farm Rd

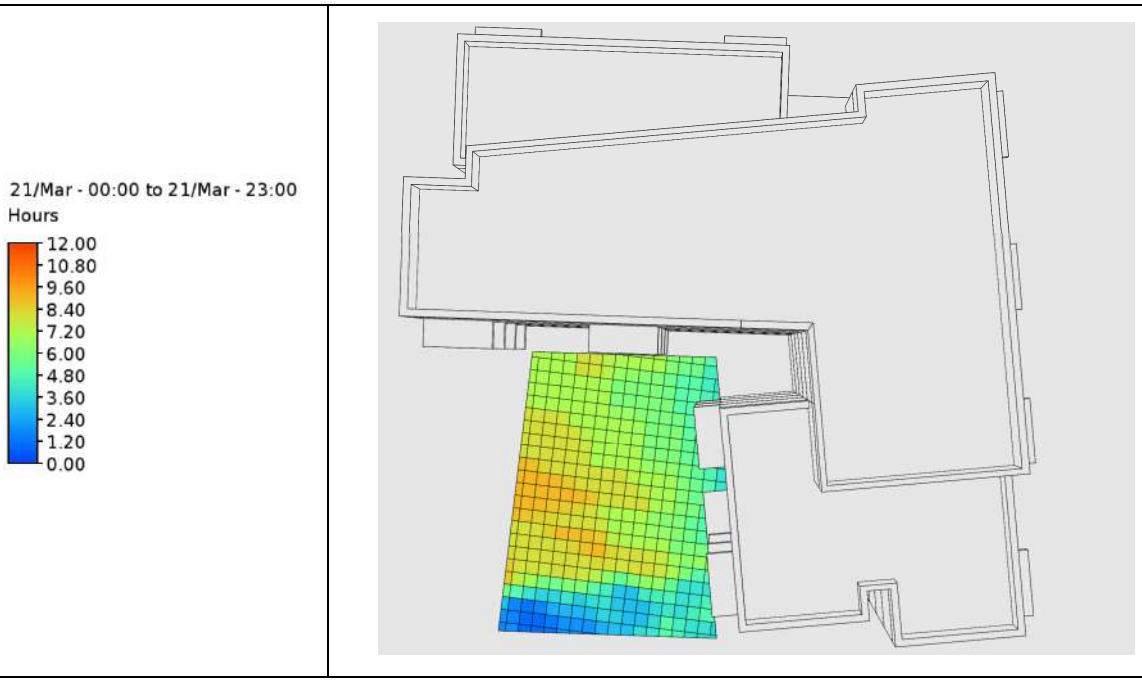
Existing Scheme	
Absolute Scale showing all hours	
21/Mar - 00:00 to 21/Mar - 23:00 Hours 12.00 10.80 9.60 8.40 7.20 6.00 4.80 3.60 2.40 1.20 0.00	
Custom Scale - showing hours > 2 in red (Any gridded cells area below 2 hours are shown as grey)	
■ Receives more than 2 hours of sunlight □ Receives less than 2 hours of sunlight	

Proposed Scheme	
Absolute Scale showing all hours	
21/Mar - 00:00 to 21/Mar - 23:00 Hours 12.00 10.80 9.60 8.40 7.20 6.00 4.80 3.60 2.40 1.20 0.00	
Custom Scale - showing hours > 2 in red (Any gridded cells area below 2 hours are shown as grey)	
Receives more than 2 hours of sunlight Receives less than 2 hours of sunlight	

There is no impact from the proposed development to the existing amenity spaces, as they receive sunlight for more than 2 hours on the 21st March for 100% of their area in both the Existing and Proposed Schemes.

5.2.2 Proposed Amenity Areas

Absolute Scale Showing All Hours of Sunlight Received



Area Showing >2 Hours

Ref.	Total Area (m)	Area Receiving >2h (m)	Percent Receiving >2h	Comment
1	347	337	97%	✓

5.3 Discussion

As mentioned above under Section 3.3.17 of BRE's Site Layout Planning for Daylight and Sunlight states that for a space to appear adequately sunlit throughout the year, at least half of the garden or amenity area should receive at least 2 hours of sunlight on the 21st of March.

The images demonstrate that the proposed building does not have any impact on the existing amenity areas, which would continue to receive very similar high levels of sunlight with the proposed development in place. Furthermore, the proposed amenity area receives at least 2 hours of sunlight on 97% of their area. This confirms that the proposed amenity area will be a quality spaces in terms of sunlight, exceeding the BRE guidelines.

6 Shadow Analysis

The statistics of Met Eireann, the Irish Meteorological Service, show that the sunniest months in Ireland are May and June, based on 1981-2010 averages or latest: https://www.met.ie/climate/30-year-averages.

The following can also be shown:

- During December a mean daily duration of 1.7 hours of sunlight out of a potential 7.4 hours sunlight each day is received (i.e. only 22% of potential sunlight hours).
- During June a mean daily duration of 6.4 hours of sunlight out of a potential 16.7 hours sunlight each day is received (i.e. only 38% of potential sunlight hours). Therefore, the impacts caused by overshadowing are generally most noticeable during the summer months and least noticeable during the winter months.

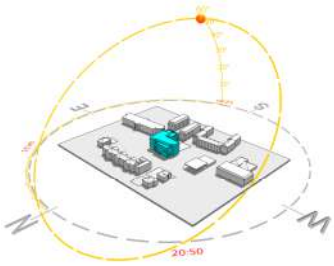
This section will consider the shadows cast for the proposed development for the following dates;

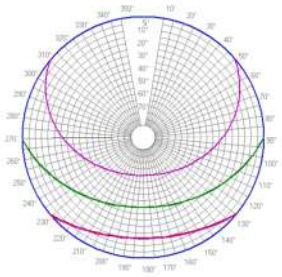
- December 21st (Winter Solstice)
- March 21st / September 21st (Equinox)
- June 21st (Summer solstice)

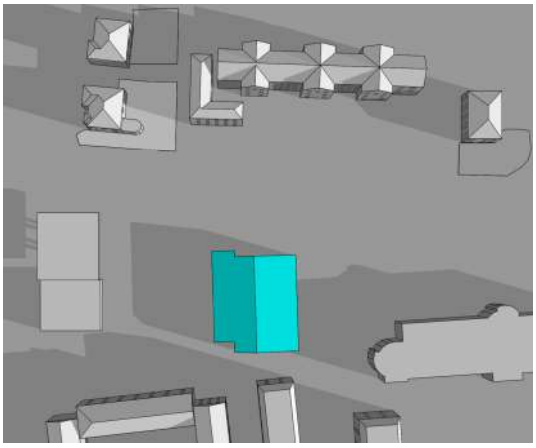
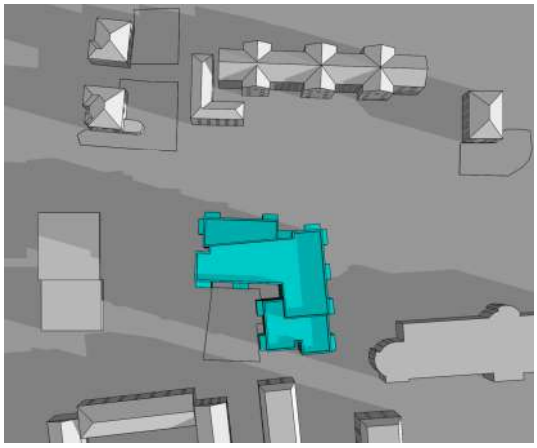
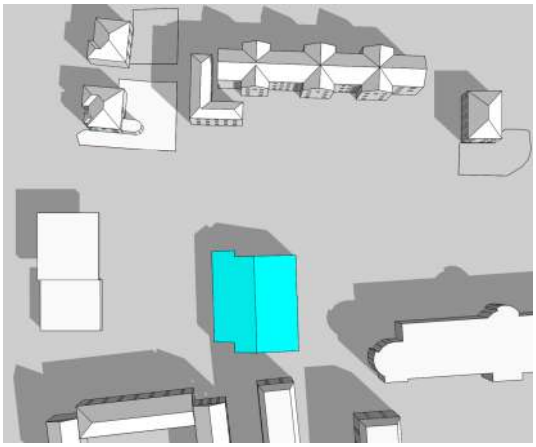
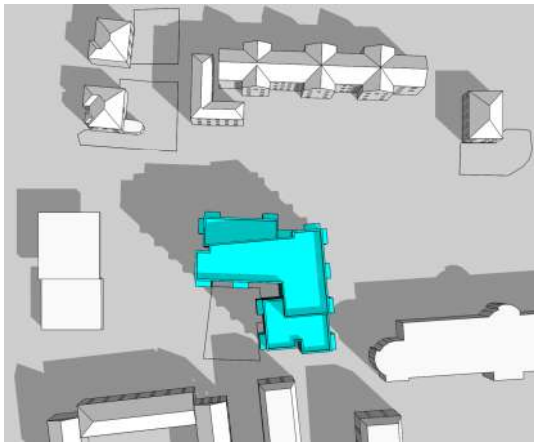
These images will show shadows cast for 'perfect sunny' conditions with no clouds and assumed that the sun is out for every hour shown. Given the discussion above it is important to remember that this is not always going to be the case.

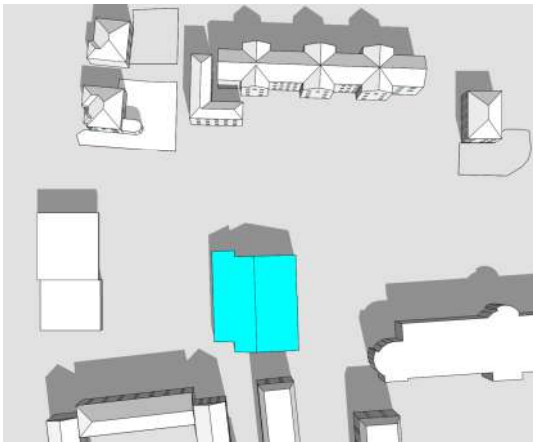
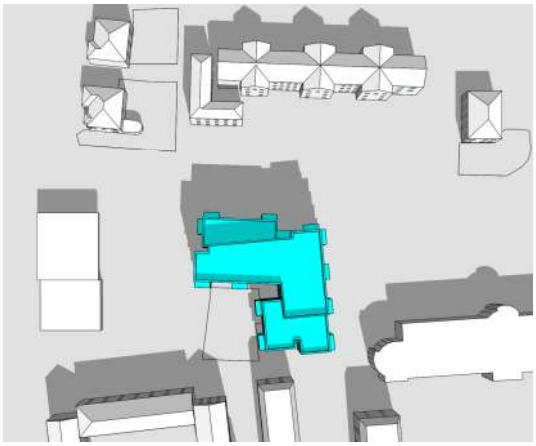
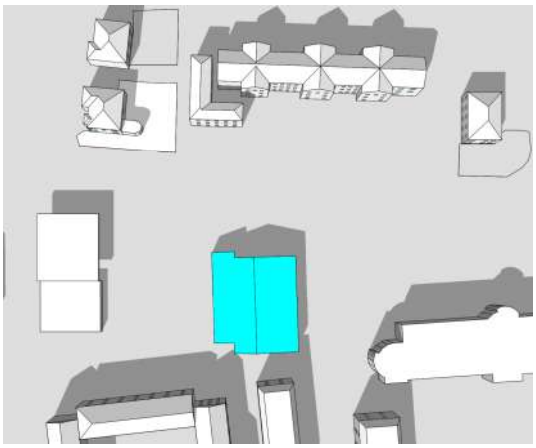
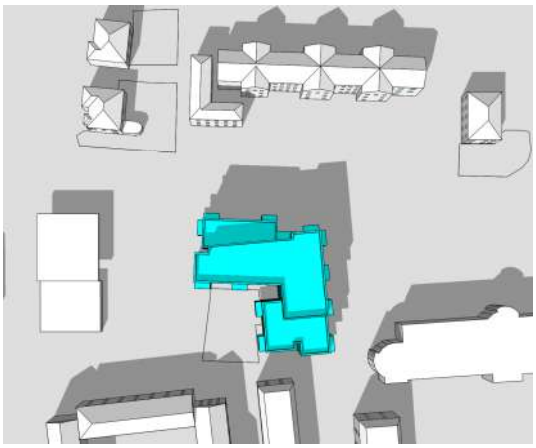
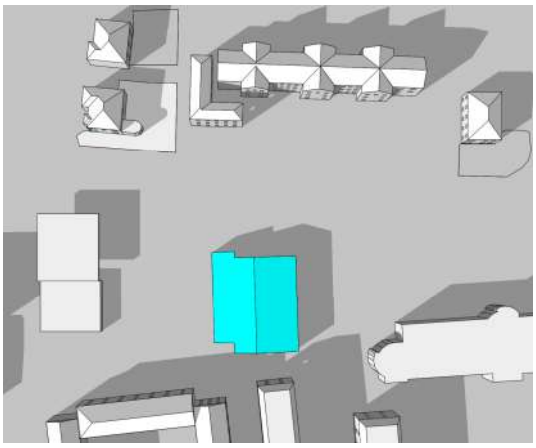
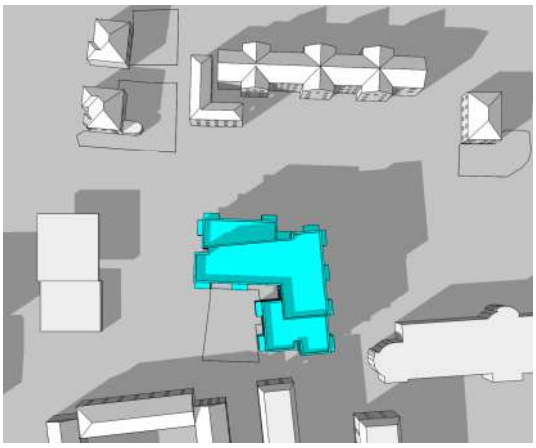
6.1 Plan View

6.1.1 March 21st

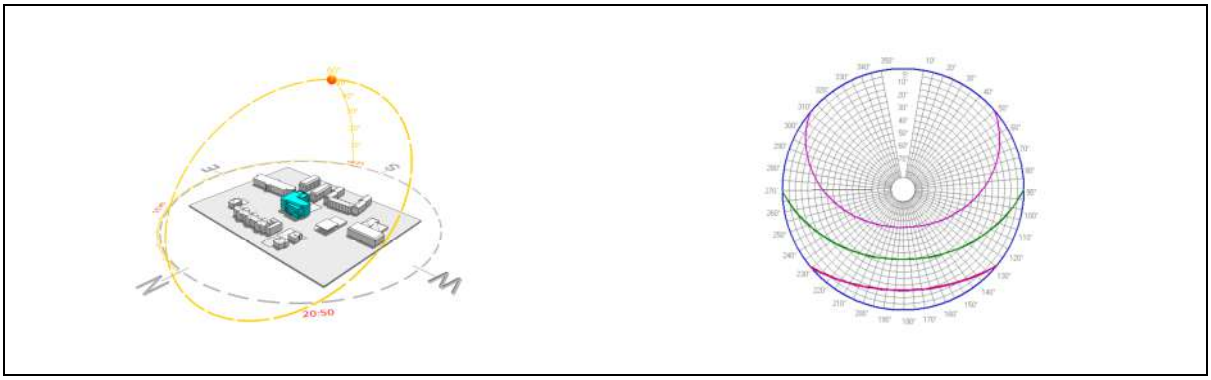


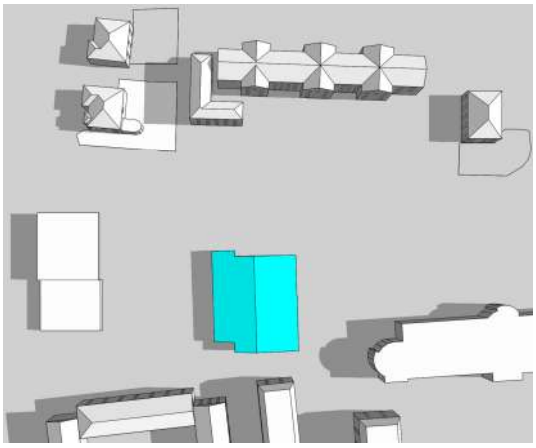
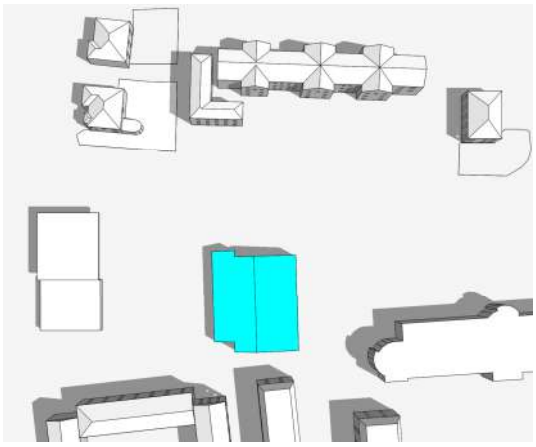


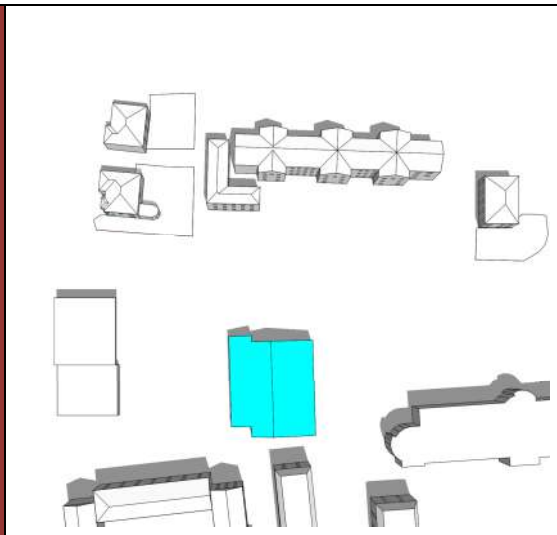
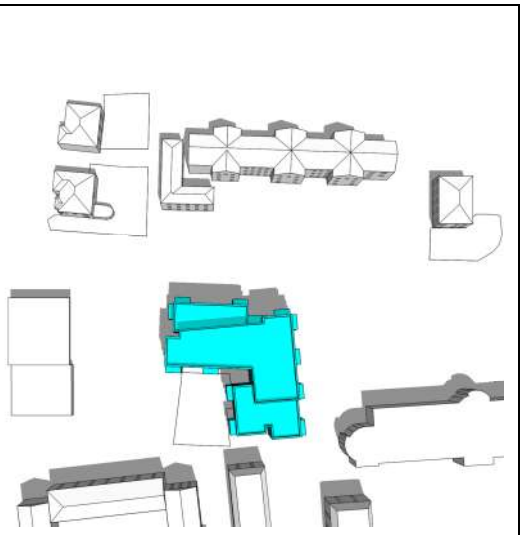
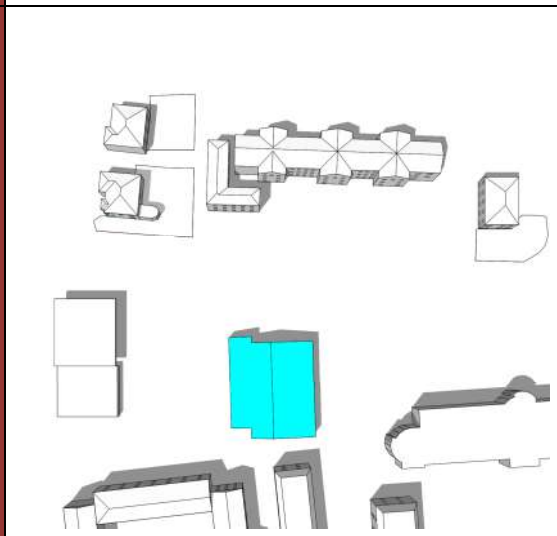
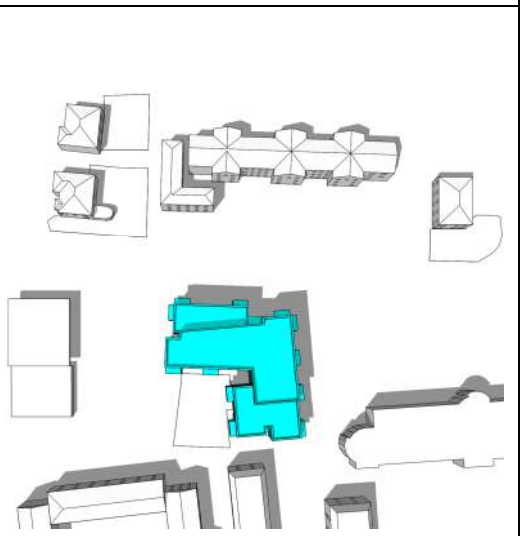
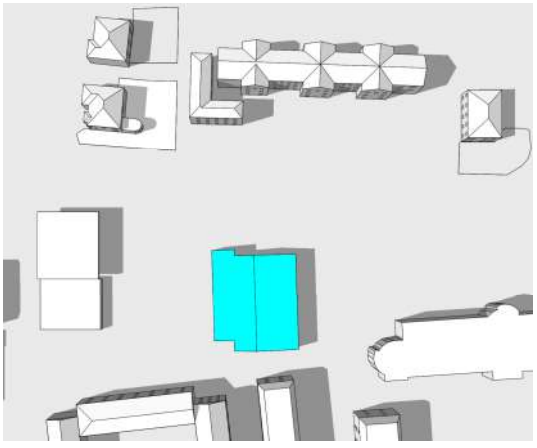
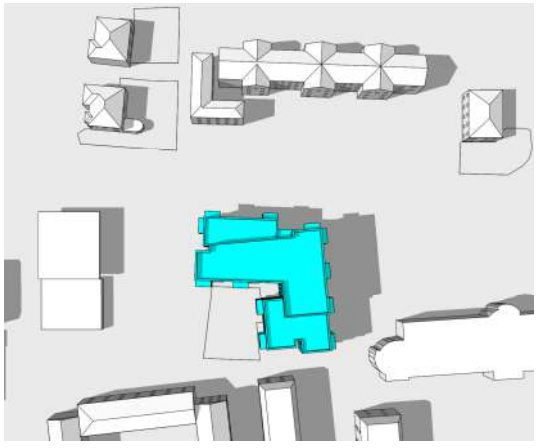
	Existing Scheme	Proposed Scheme
March 21st - 8:00		
March 21st - 10:00		

March 21st - 12:00		
March 21st - 14:00		
March 21st - 16:00		

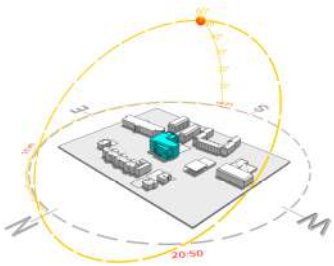
6.1.2 June 21st

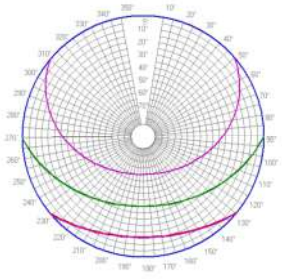


	Existing Scheme	Proposed Scheme
June 21st - 8:00		
June 21st - 10:00		

June 21st - 12:00		
June 21st - 14:00		
June 21st - 16:00		

6.1.3 December 21st





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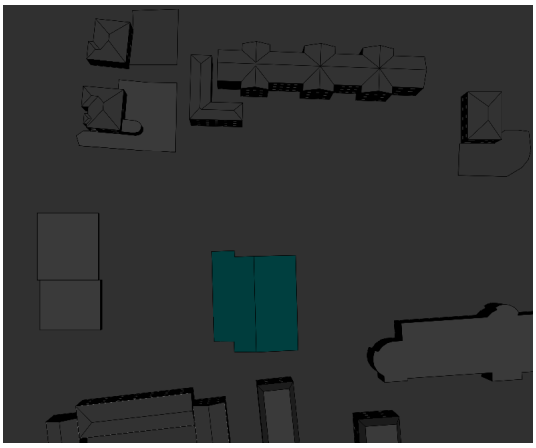
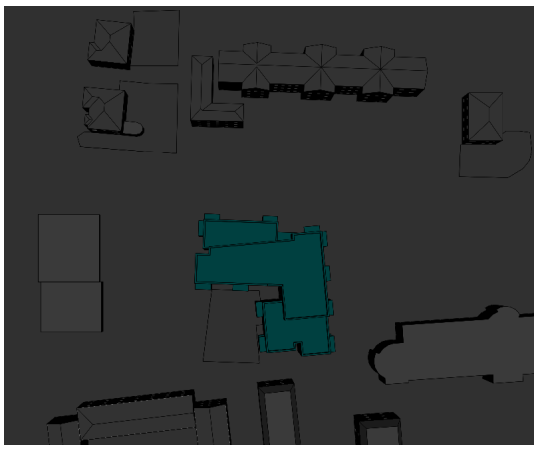
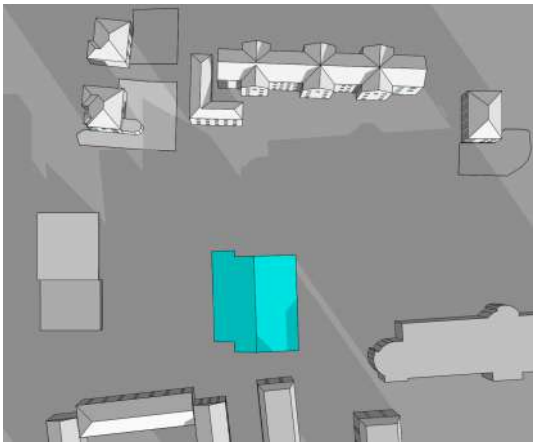
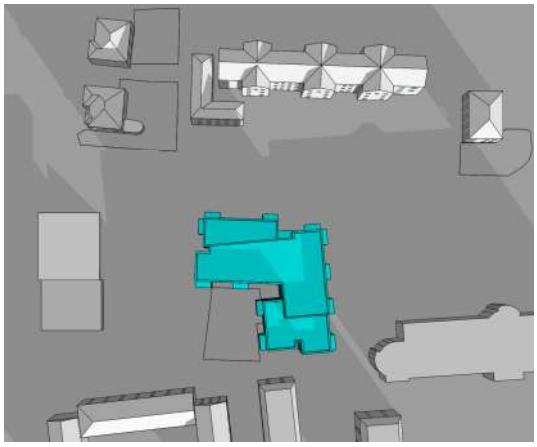
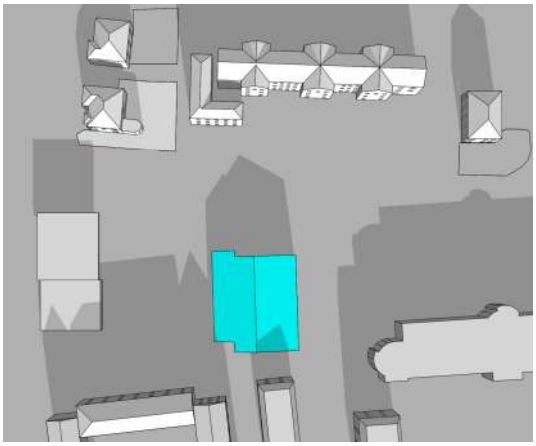
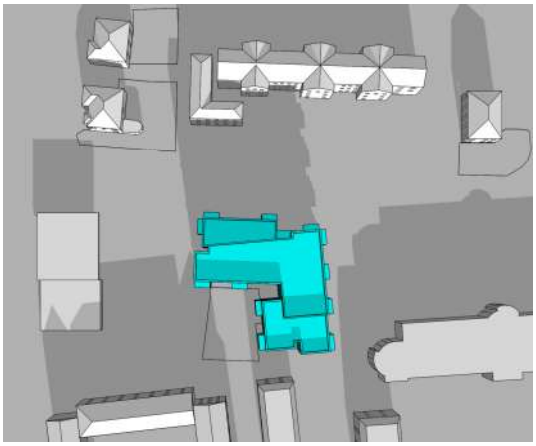
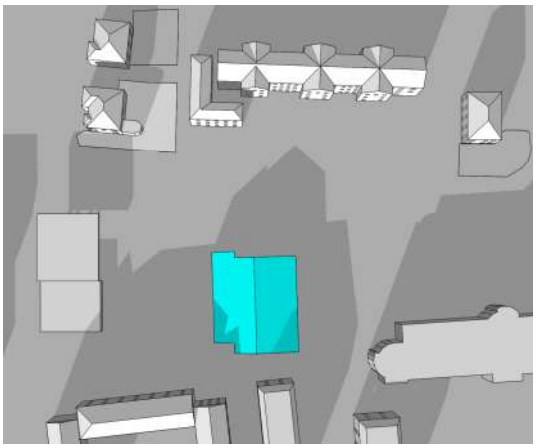
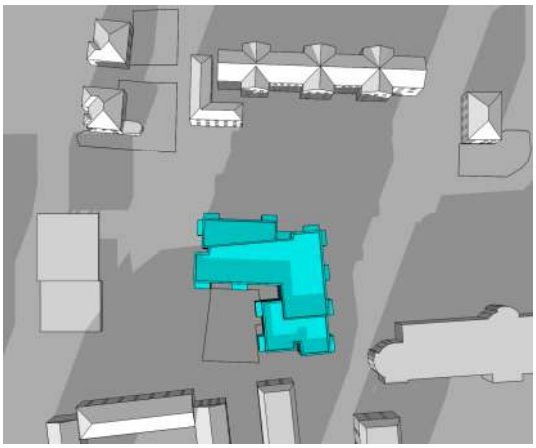
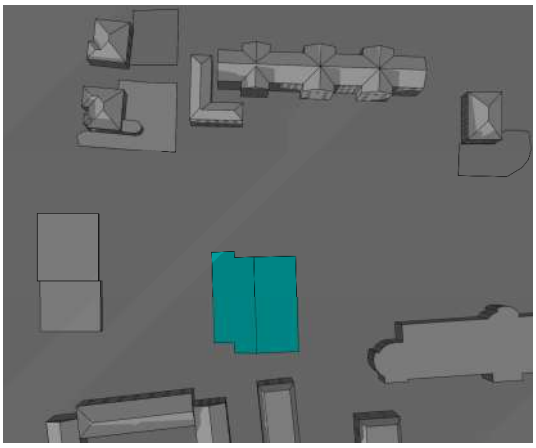
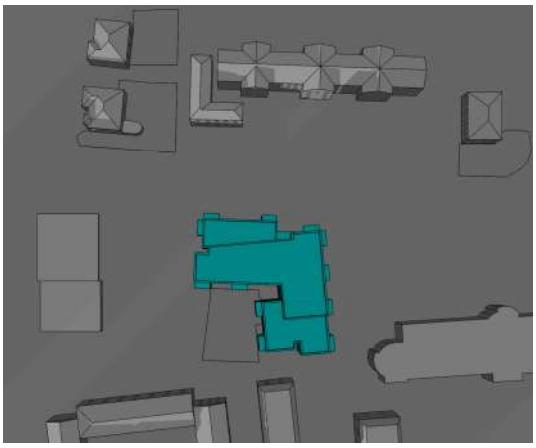
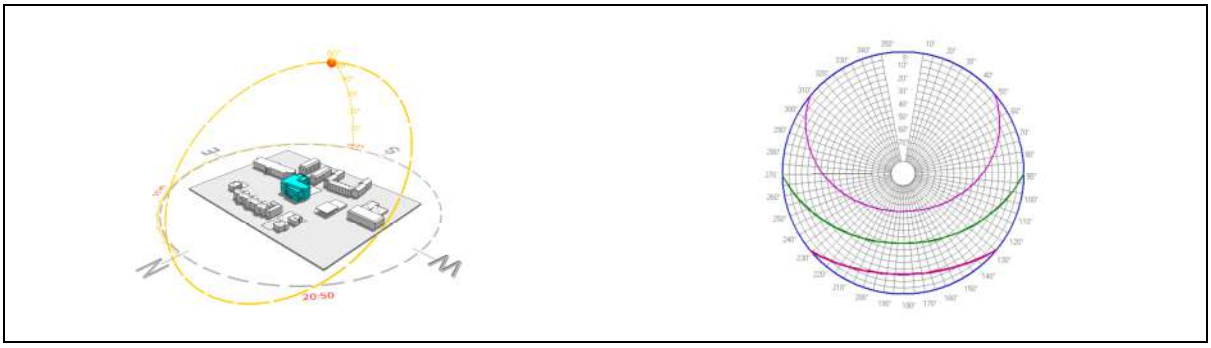
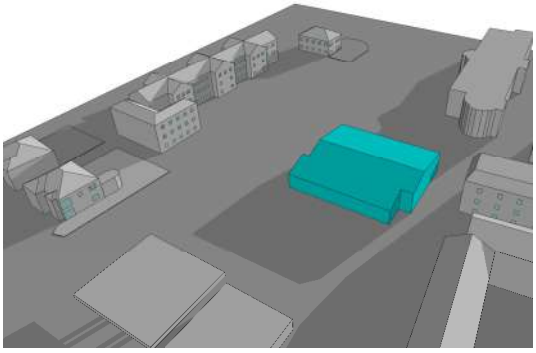
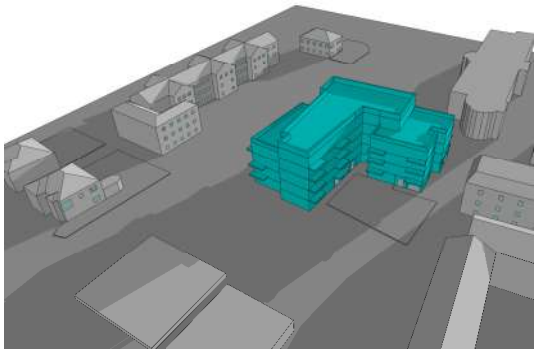
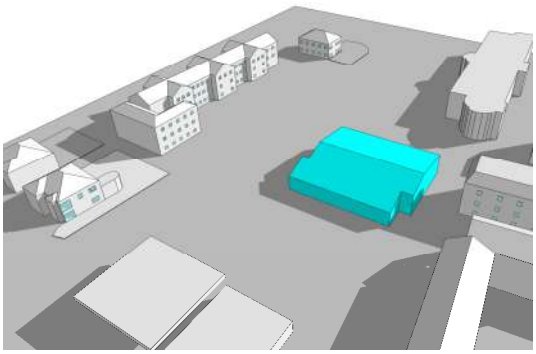
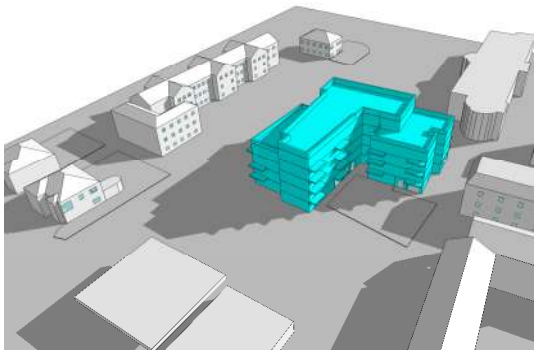
December 21st - 8:00		
December 21st - 10:00		

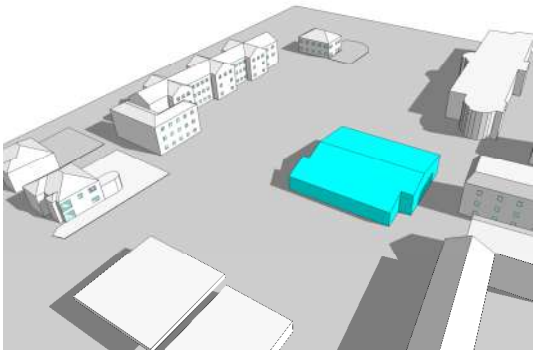
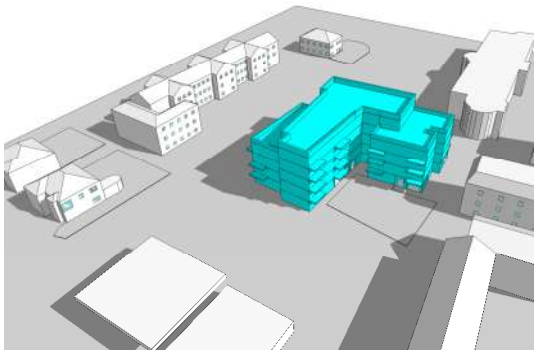
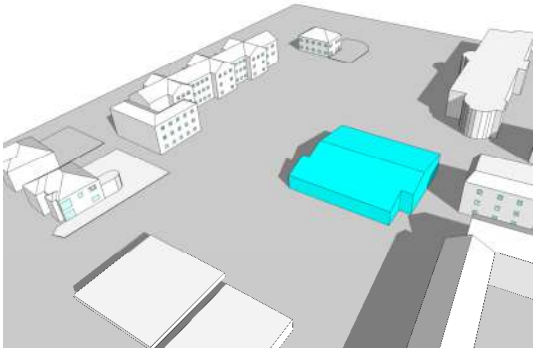
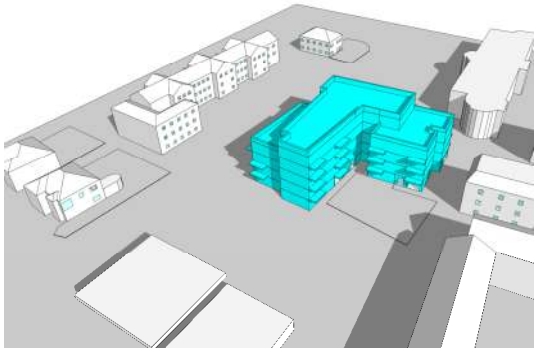
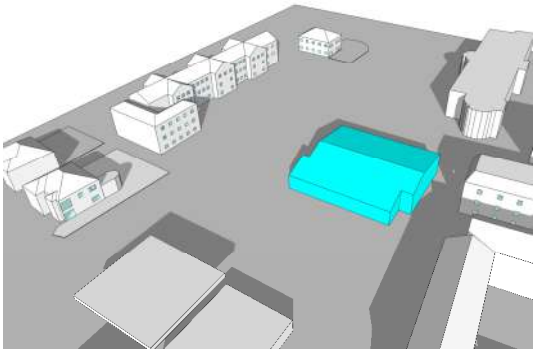
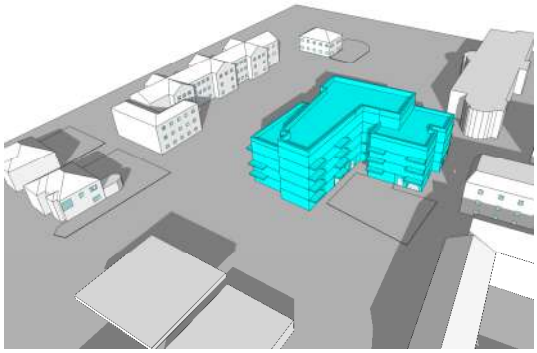
December 21st - 12:00		
December 21st - 14:00		
December 21st - 16:00		

6.2 3D View

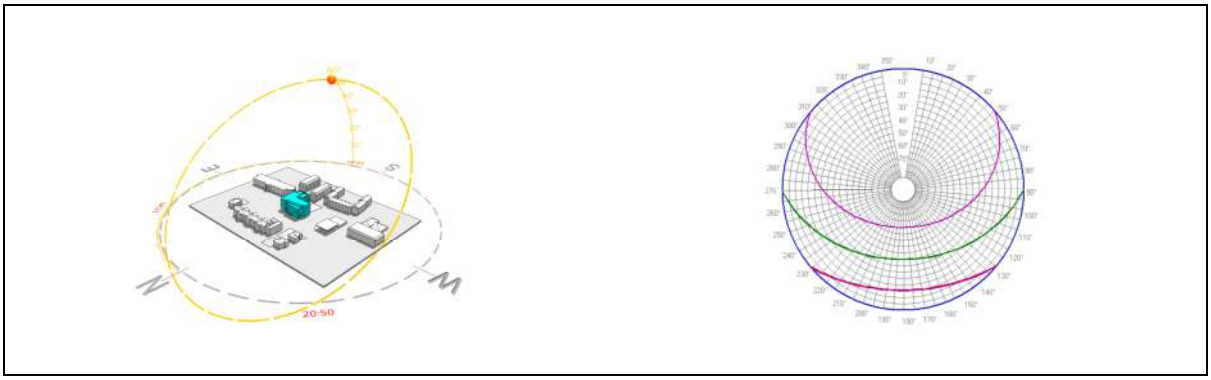
6.2.1 March 21st

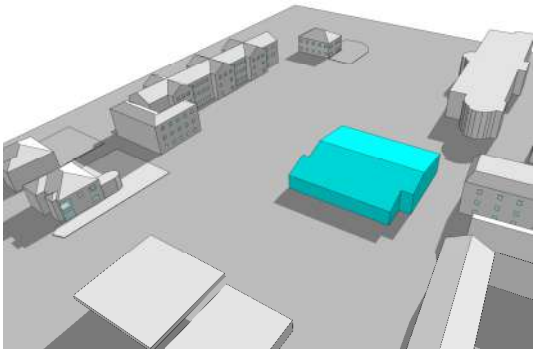
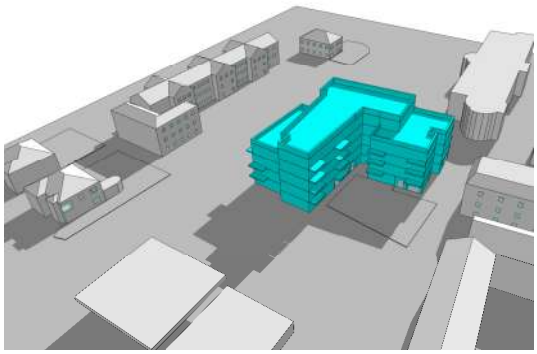
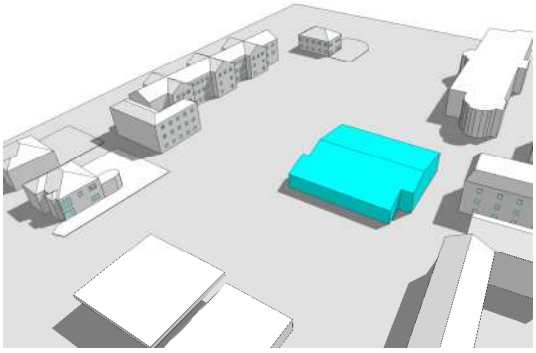
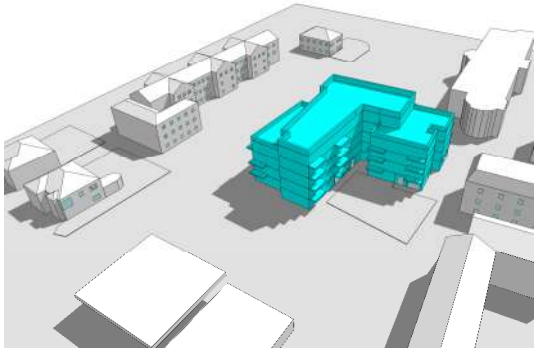


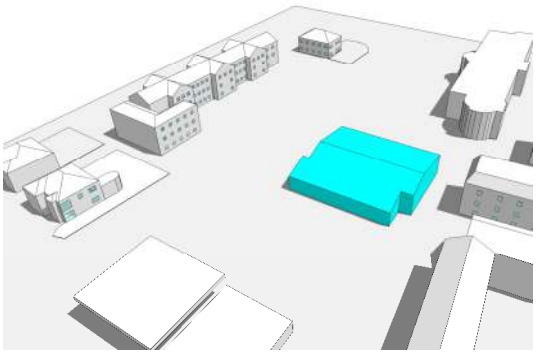
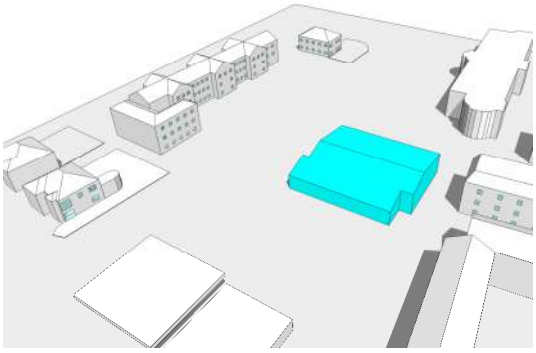
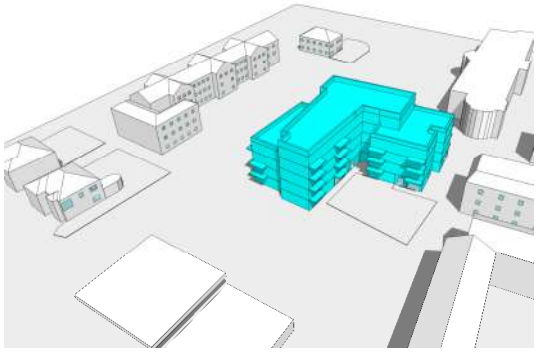
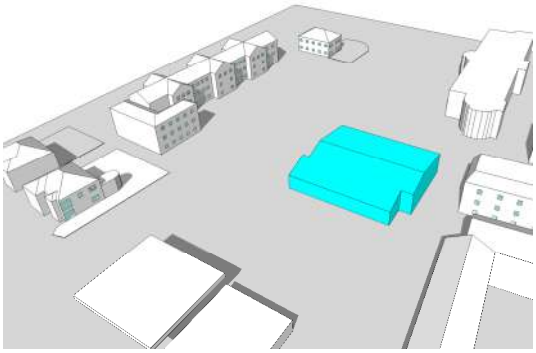
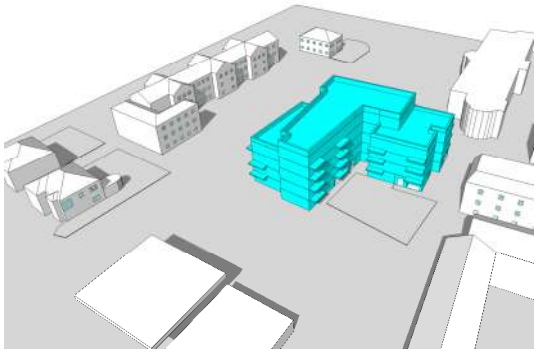
	Existing Scheme	Proposed Scheme
March 21st - 8:00		
March 21st - 10:00		

March 21st - 12:00		
March 21st - 14:00		
March 21st - 16:00		

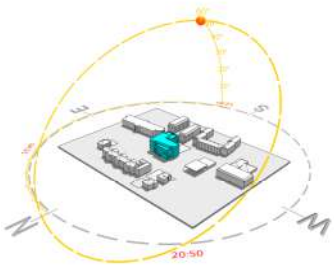
6.2.2 June 21st

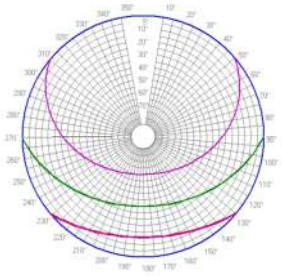


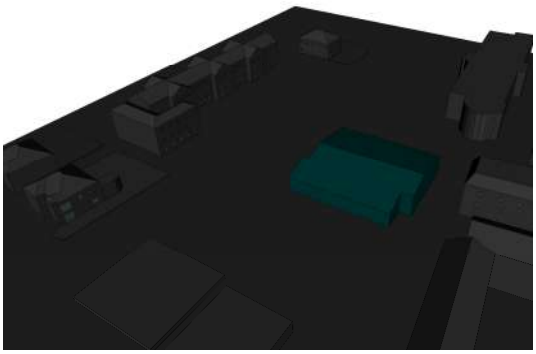
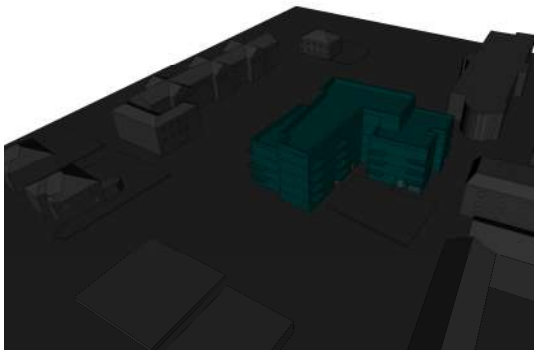
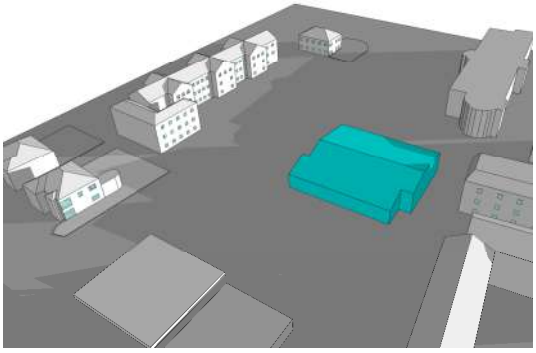
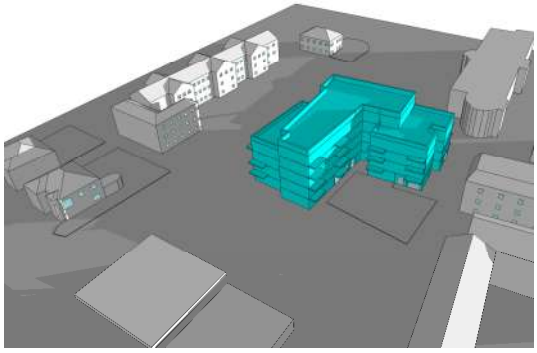
	Existing Scheme	Proposed Scheme
June 21st - 8:00		
June 21st - 10:00		

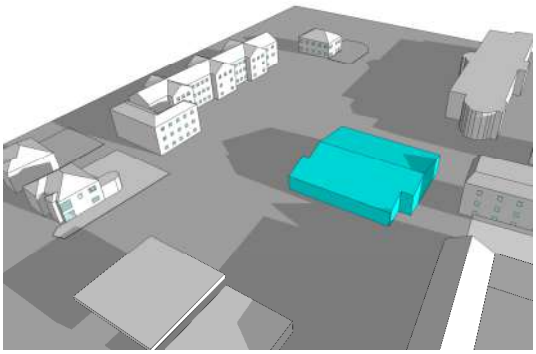
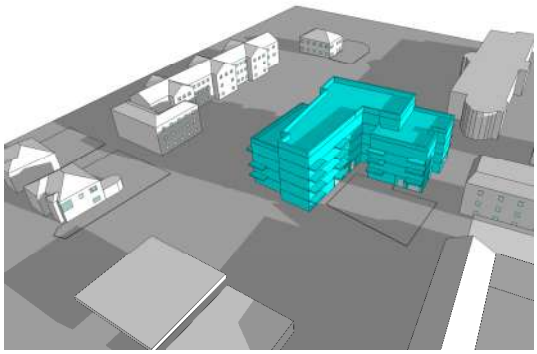
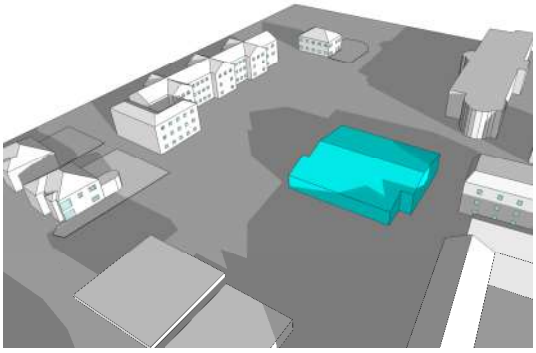
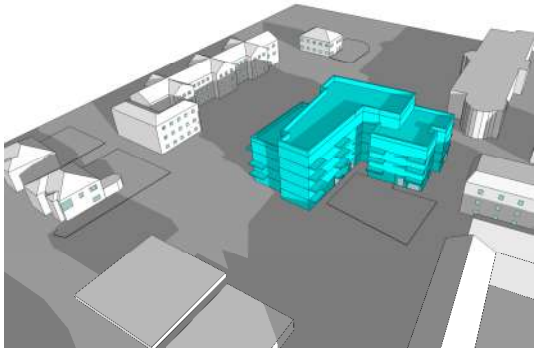
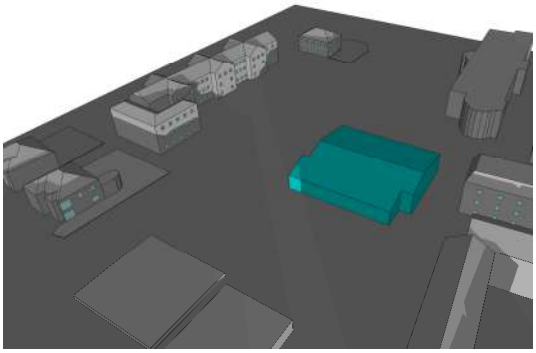
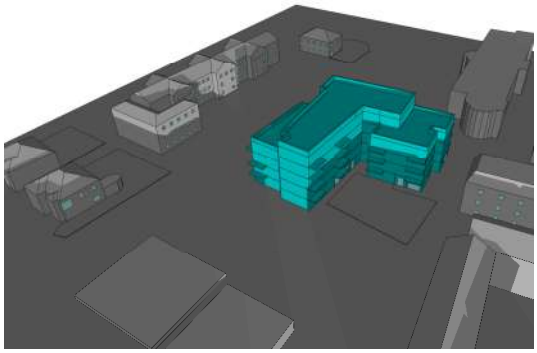
June 21st - 12:00		
June 21st - 14:00		
June 21st - 16:00		

6.2.3 December 21st





	Existing Scheme	Proposed Scheme
December 21st - 8:00		
December 21st - 10:00		

December 21st - 12:00		
December 21st - 14:00		
December 21st - 16:00		

6.3 Discussion

Shading from the proposed development is summarised as follows based on the analysis of images above:

The Manor Residences

Additional shading visible from the proposed development on the existing residential dwelling due to their location on the North-West of the development site, during mornings in December. No additional overshadowing noted at any other period.

Abbeyville Apartments

Additional shading visible from the proposed development on the existing residential dwelling due to their location on the North-West of the development site, during December. No additional overshadowing noted at any other period.

Model Farm Rd Residences

Minimal additional shading from the proposed development on the existing residences during late afternoons in December, as they sit on the North-East of the proposed development. No additional overshadowing noted at any other period.

Parchment Square Student Accommodation

No additional shading visible from the proposed development on the existing residential dwelling due to their location South of the development site.

The proposed development's performance is further quantified via both the Daylight Analysis of existing buildings and the Sunlight to Amenity sections of the report.

7 Daylight Analysis of Existing Buildings

7.1 Guidance Requirements

BRE Site layout planning for daylight and sunlight (Section 2.2)

When designing a new development, it is important to safeguard the daylight to nearby buildings. The BRE's 2011 guidance provide numerical values that are purely advisory. Different criteria may be used based on the requirements for daylighting in an area viewed against other site layout constraints. Another issue is whether the Permitted building is itself a good neighbour, standing a reasonable distance from the boundary and taking no more than its fair share of light. Any reduction in the total amount of skylight can be calculated by finding the vertical sky component at the centre of key reference points. The vertical sky component definition from the BRE's 2011 is described below;

Vertical sky component (VSC)	Ratio of that part of illuminance, at a point on a given vertical plane, that is received directly from a CIE standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. Usually the 'given vertical plane' is the outside of a window wall. The VSC does not include reflected light, either from the ground or from other buildings.

The maximum possible VSC value for an opening in a vertical wall, assuming no obstructions, is 40%. This VSC at any given point can be tested in the Radiance module of the IES VE software.

For typical Schemes the BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight which states the following in Section 2.2.7

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

As such this study will determine whether the proposed VSC values are greater than 27% or not less than 0.8 times their former value (that of the Existing situation).

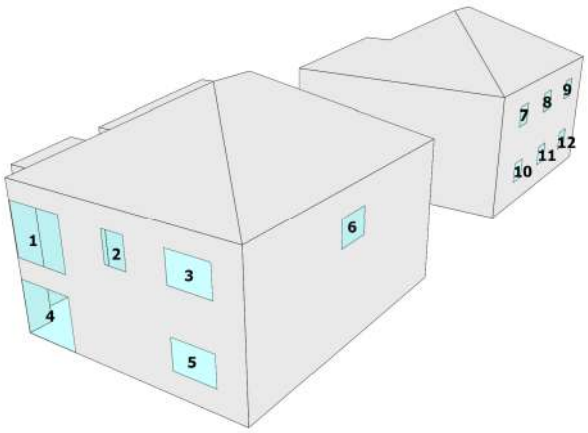
7.2 VSC values

The BRE Guide also states the following in Section 2.1.6 that the amount of daylight a room needs depends on what it is being used for, but roughly speaking if the VSC is:

- ≥ 27%, conventional window design will usually give reasonable results.
- between 15 % and 27 % special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight.
- between 5% and 15% it is very difficult to provide adequate daylight unless very large windows are used.
- Less than 5% it is often impossible to achieve reasonable daylight even if the whole window wall is glazed.

As such these values will be referred to as part of the analysis of the adjacent properties.

7.2.1 View 1 –The Manor

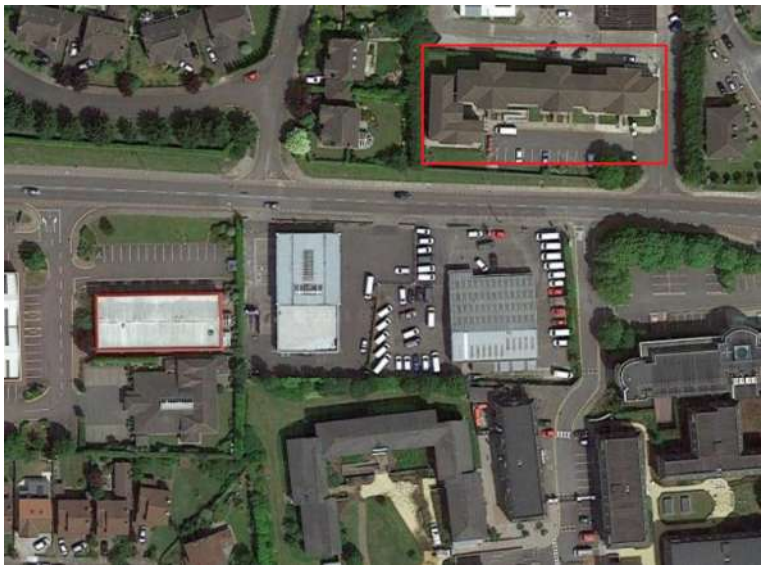


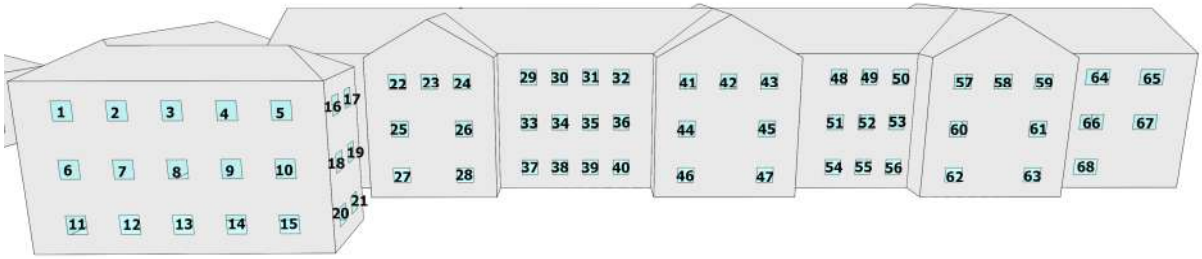
Window Point	Existing VSC values	Proposed Scheme VSC	Proposed Scheme VSC% of Existing VSC values	Comments
1	37.47	36.53	97%	✓
2	37.79	36.77	97%	✓
3	37.57	36.60	97%	✓
4	35.94	34.96	97%	✓
5	36.10	34.89	97%	✓
6	36.03	34.84	97%	✓
7	36.13	35.75	99%	✓
8	36.42	36.26	100%	✓
9	36.56	36.34	99%	✓
10	33.99	33.61	99%	✓
11	34.84	34.40	99%	✓
12	35.16	34.82	99%	✓

The following conclusions can be made:

✓ These points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value. Therefore, these points exceed BRE recommendations.

7.2.2 View 2 – Abbeyville Apartments





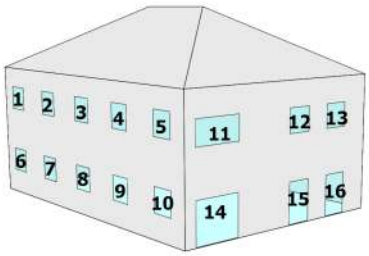
Window Point	Existing VSC values	Proposed Scheme VSC	Proposed Scheme VSC% of Existing VSC values	Comments
1	38.37	36.03	94%	✓
2	38.48	36.04	94%	✓
3	38.48	35.87	93%	✓
4	38.54	35.71	93%	✓
5	38.57	35.33	92%	✓
6	37.86	34.68	92%	✓
7	37.68	34.72	92%	✓
8	37.81	34.28	91%	✓
9	37.79	34.18	90%	✓
10	37.85	34.03	90%	✓
11	36.70	33.02	90%	✓
12	36.68	32.99	90%	✓
13	36.87	32.73	89%	✓
14	36.79	32.20	88%	✓
15	36.86	31.98	87%	✓
16	36.53	35.71	98%	✓
17	35.35	34.44	97%	✓
18	33.38	32.57	98%	✓
19	31.44	30.81	98%	✓
20	30.74	29.79	97%	✓
21	28.61	28.11	98%	✓
22	34.82	33.08	95%	✓

Window Point	Existing VSC values	Proposed Scheme VSC	Proposed Scheme VSC% of Existing VSC values	Comments
23	36.31	34.28	94%	✓
24	37.21	35.02	94%	✓
25	28.40	26.56	94%	✓
26	34.01	31.23	92%	✓
27	24.26	21.56	89%	✓
28	31.10	27.84	90%	✓
29	35.15	33.45	95%	✓
30	37.54	35.58	95%	✓
31	37.40	35.49	95%	✓
32	35.37	33.65	95%	✓
33	32.30	30.04	93%	✓
34	35.13	32.59	93%	✓
35	34.85	32.86	94%	✓
36	32.16	29.59	92%	✓
37	30.99	28.16	91%	✓
38	33.36	30.61	92%	✓
39	33.34	30.09	90%	✓
40	30.63	27.67	90%	✓
41	38.51	36.87	96%	✓
42	38.67	36.80	95%	✓
43	38.51	36.83	96%	✓
44	37.86	35.32	93%	✓
45	37.89	35.75	94%	✓
46	36.71	33.66	92%	✓
47	36.90	34.07	92%	✓
48	36.96	35.41	96%	✓
49	37.01	35.40	96%	✓
50	30.34	29.02	96%	✓
51	34.45	32.25	94%	✓
52	34.53	32.49	94%	✓
53	27.54	25.84	94%	✓
54	33.12	31.13	94%	✓
55	33.16	30.74	93%	✓
56	26.85	24.24	90%	✓
57	38.64	37.23	96%	✓
58	38.64	37.30	97%	✓
59	38.63	37.54	97%	✓
60	37.69	35.96	95%	✓
61	37.95	35.99	95%	✓
62	36.99	34.79	94%	✓
63	37.03	34.90	94%	✓
64	37.03	35.98	97%	✓
65	38.44	37.49	98%	✓
66	34.73	33.19	96%	✓
67	37.24	36.04	97%	✓
68	33.28	31.43	94%	✓

The following conclusions can be made:

- ✓ These points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value. Therefore, these points exceed BRE recommendations.

7.2.3 View 3 – Model Farm Rd

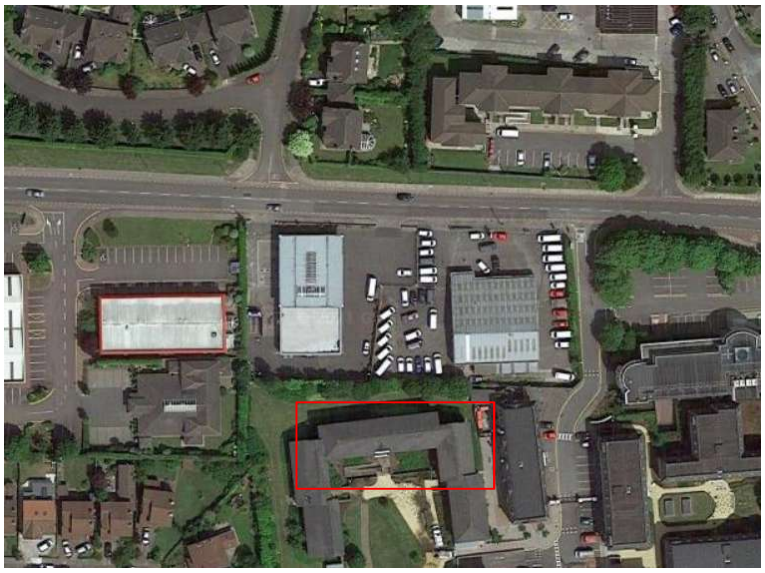


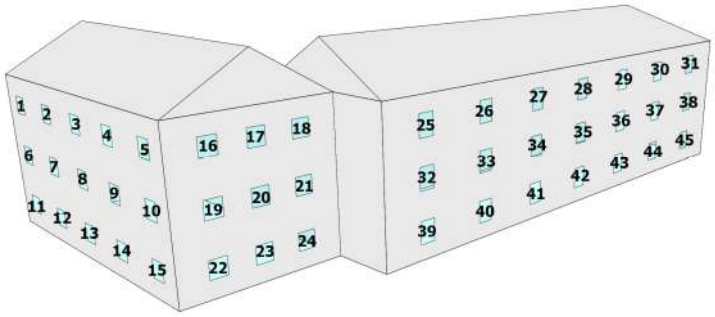
Window Point	Existing VSC values	Proposed Scheme VSC	Proposed Scheme VSC% of Existing VSC values	Comments
1	35.18	34.30	97%	✓
2	35.47	34.70	98%	✓
3	35.85	34.67	97%	✓
4	36.12	35.11	97%	✓
5	36.30	35.35	97%	✓
6	32.62	32.09	98%	✓
7	33.49	32.28	96%	✓
8	33.79	32.76	97%	✓
9	34.31	33.17	97%	✓
10	35.04	33.45	95%	✓
11	37.76	36.78	97%	✓
12	37.74	36.97	98%	✓
13	37.75	37.18	98%	✓
14	36.51	35.63	98%	✓
15	36.49	36.06	99%	✓
16	36.54	35.67	98%	✓

The following conclusions can be made:

- ✓ These points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value. Therefore, these points exceed BRE recommendations.

7.2.4 View 4 – Parchment Square Student Accommodation West





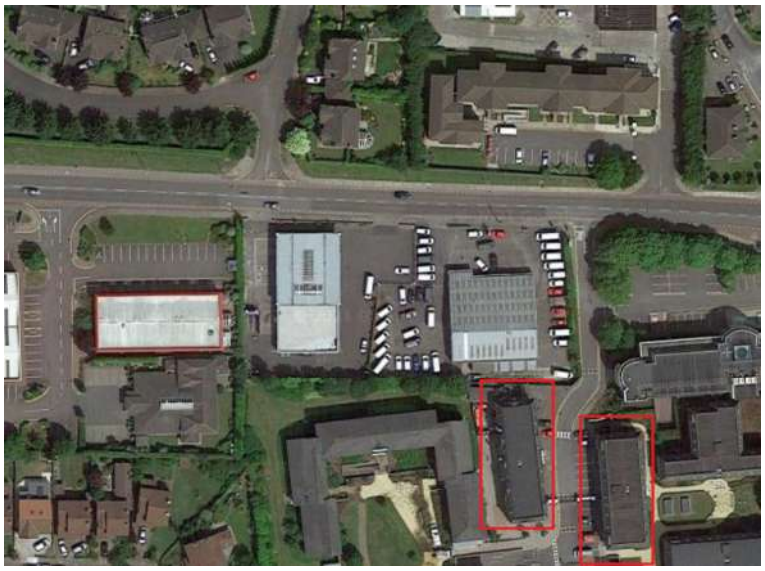
Window Point	Existing VSC values	Proposed Scheme VSC	Proposed Scheme VSC% of Existing VSC values	Comments
1	25.40	25.28	100%	✓
2	30.14	29.46	98%	✓
3	30.66	29.55	96%	✓
4	31.11	29.92	96%	✓
5	32.23	30.34	94%	✓
6	17.86	17.49	98%	✓
7	22.86	22.44	98%	✓
8	23.77	23.04	97%	✓
9	24.27	23.40	96%	✓
10	26.02	23.81	92%	✓
11	13.18	12.75	97%	✓
12	16.38	16.49	100%	✓
13	17.48	17.06	98%	✓
14	18.73	17.62	94%	✓
15	20.00	18.29	91%	✓
16	38.18	34.33	90%	✓
17	37.18	33.79	91%	✓
18	32.14	28.96	90%	✓
19	36.31	31.65	87%	✓
20	34.37	30.27	88%	✓

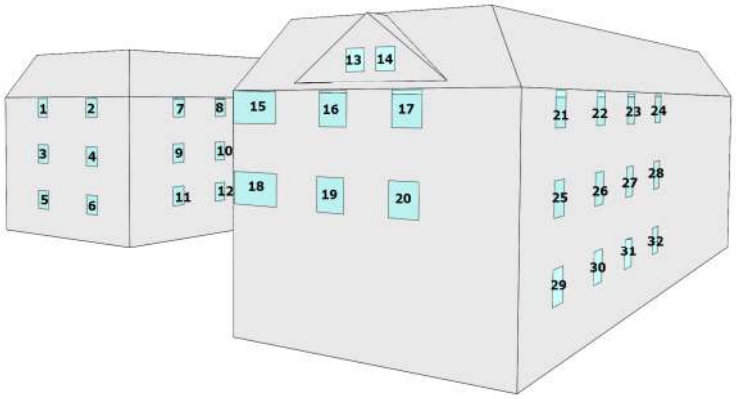
Window Point	Existing VSC values	Proposed Scheme VSC	Proposed Scheme VSC% of Existing VSC values	Comments
21	28.75	25.21	88%	✓
22	33.35	28.88	87%	✓
23	31.87	28.02	88%	✓
24	27.07	23.16	86%	✓
25	38.60	36.02	93%	✓
26	38.80	36.62	94%	✓
27	38.63	37.04	96%	✓
28	38.75	37.38	96%	✓
29	38.76	37.57	97%	✓
30	38.83	37.70	97%	✓
31	38.55	37.96	98%	✓
32	37.83	34.57	91%	✓
33	37.96	35.19	93%	✓
34	37.98	35.78	94%	✓
35	37.80	36.28	96%	✓
36	37.90	36.71	97%	✓
37	37.86	36.76	97%	✓
38	37.97	37.09	98%	✓
39	36.28	33.12	91%	✓
40	36.76	33.63	91%	✓
41	36.65	34.07	93%	✓
42	36.67	34.62	94%	✓
43	36.76	35.04	95%	✓
44	36.49	35.08	96%	✓
45	36.26	35.17	97%	✓

The following conclusions can be made:

- ✓ These points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value. Therefore, these points exceed BRE recommendations.

7.2.5 View 5 – Parchment Square Student Accommodation East





Window Point	Existing VSC values	Proposed Scheme VSC	Proposed Scheme VSC% of Existing VSC values	Comments
1	36.57	36.53	100%	✓
2	36.39	36.47	100%	✓
3	31.02	31.36	100%	✓
4	32.20	32.53	100%	✓
5	25.71	25.92	100%	✓
6	27.50	27.73	100%	✓
7	35.63	35.58	100%	✓
8	35.45	35.79	100%	✓
9	31.59	31.49	100%	✓
10	31.75	31.94	100%	✓
11	27.95	27.92	100%	✓
12	28.39	28.49	100%	✓
13	32.53	32.66	100%	✓
14	32.93	32.81	100%	✓
15	27.97	28.33	100%	✓
16	29.29	29.33	100%	✓
17	30.71	30.61	100%	✓

Window Point	Existing VSC values	Proposed Scheme VSC	Proposed Scheme VSC% of Existing VSC values	Comments
18	22.11	23.06	100%	✓
19	23.50	23.92	100%	✓
20	25.62	25.88	100%	✓
21	36.03	36.17	100%	✓
22	35.07	35.01	100%	✓
23	34.17	34.26	100%	✓
24	33.78	33.88	100%	✓
25	32.57	32.67	100%	✓
26	30.60	30.72	100%	✓
27	29.25	29.18	100%	✓
28	28.22	28.13	100%	✓
29	28.45	28.91	100%	✓
30	25.85	25.89	100%	✓
31	23.66	23.29	98%	✓
32	21.94	21.88	100%	✓

The following conclusions can be made:

✓ These points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value. Therefore, these points exceed BRE recommendations.

7.3 VSC Analysis Discussion

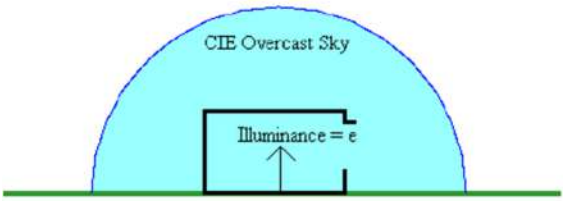
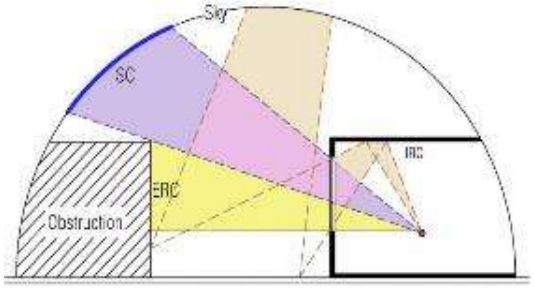
The Vertical Sky Component for 100% of the points tested (171) have a vertical sky component of greater than 27% or not less than 0.8 times their former value (that of the Existing Situation), and exceed the BRE recommendations.

8 Average Daylight Factors (ADF)

This section quantifies the average daylight factors (ADF) within the proposed units.

8.1 Introduction to ADF

Daylight is constantly changing, so its level at a point in a building is usually defined as an average daylight factor (ADF). This is the ratio of the indoor illuminance at the point in question to the outdoor unobstructed horizontal illuminance.

<table>
<tr><td colspan="2">Daylight Factor Methodology</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>E = illuminance on unobstructed plane</td><td>e = illuminance at point in interior</td></tr>
<tr><td colspan="2">Daylight Factor = e/E (often expressed as a percentage)</td></tr>
<tr><td colspan="2">SC – Sky Component
ERC – Externally Reflected Component
IRC – Internally Reflected Component
 

Sources of Daylight at a Point Within a Room</td></tr>
</table>

Both illuminances are measured under the same standard sky, a CIE overcast sky. Since the sun is in a particular position for only a short period each day, direct sunlight is excluded. Instead diffuse sunlight is used for average daylight calculations. Diffuse sunlight describes the sunlight that has been scattered by molecules and particles in the atmosphere but has still made it down to surface of the earth.

For average daylight factor there are three possible paths along which diffuse light can get into a room through glazed windows.

1. Light from the patch of sky visible at the point considered is expressed as the sky component.
2. Light reflected from opposing exterior surfaces is expressed as the externally reflected component.
3. Light entering through the window but reaching the point only after reflection from internal surfaces is expressed as the internally reflected component.

8.2 Reference and Metrics

BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight states the following in Appendix C with respect to Average Daylight Factors (ADF):

> C4 If a predominantly daylit appearance is required, then the ADF should be 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary electric lighting is provided. There are additional recommendations for dwellings of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. These additional recommendations are minimum values of ADF which should be attained even if a predominantly daylit appearance is not achievable.

From BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight

As noted above from this the recommended Average Daylight Factors (ADF) are therefore;

- Bedrooms – 1.0%
- Living Rooms – 1.5%
- Kitchens – 2.0%

The BRE guide does not provide guidance for a space that is a living/kitchen space.

It should be noted that where there are open plan spaces within the development the living areas have been treated as the main space in this context and as such an average daylight factor of 1.5% has been used as the target value for these spaces. In addition, where BRE guidance also notes that where a 'small internal kitchens galley-type kitchen is inevitable, it should be directly linked to a well daylit living room.

This study will consider the predicted average daylight factor to the proposed units. Analysis has been carried by using the Radiance module of IES VE software to quantify the metrics describe below.

8.3 Assumptions

The following assumptions are to be used in the study:

- Sky Conditions: Standard CIE overcast sky
- Time (24hr): 12:00
- Date: 21 September
- Working Plane: 0.85m
- Floor to Floor Height: 3.10m

The following Surface Reflectance's are to be used in the study:

Material Surface	Reflectance
External Wall	0.30/0.60
Internal Partition	0.85
Roof	0.20
Ground	0.20
Floor/Ceiling (Floor)	0.40
Floor/Ceiling (Ceiling)	0.85

Glazing Transmittance:

- Light Transmittance: 70%
- Window Frame thickness: 50 mm

8.4 ADF Results

The following floor plans highlight the rooms that were simulated to ascertain the Average Daylight Factors.

8.4.1 Ground Floor

Ref.	Room Reference	Room Activity	External Window Area	Living Area Only	Whole Space Average Daylight Factor	BRE Recommendation
1	L00: 02_LKD	LKD	7.61	-	2.07	✓
2	L00: 02_Bedroom	Bedroom	3.72	-	3.01	✓
3	L00: 03_Bedroom 02	Bedroom	3.72	-	2.62	✓
4	L00: 03_Bedroom 01	Bedroom	3.72	-	2.82	✓
5	L00: 03_LD	Living	13.80	-	4.57	✓
6	L00: 04_LKD	LKD	13.32	-	3.11	✓
7	L00: 04_Bedroom	Bedroom	3.72	-	2.79	✓
8	L00: 06_Bedroom 02	Bedroom	3.72	-	1.01	✓
9	L00: 06_Bedroom 01	Bedroom	3.72	-	1.64	✓
10	L00: 06_LD	Living	8.16	-	1.91	✓
11	L00: 08_Bedroom 02	Bedroom	3.72	-	2.71	✓
12	L00: 08_Bedroom 01	Bedroom	3.72	-	3.61	✓
13	L00: 08_LD	Living	13.32	-	3.73	✓

The following conclusions can be made:

✓ These rooms have an average daylight factor greater than the recommended minimum values (1.5% for living rooms and 1.0% for bedrooms) as stated under BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight.

8.4.2 First Floor

Ref.	Room Reference	Room Activity	External Window Area	Living Area Only	Whole Space Average Daylight Factor	BRE Recommendation
1	L01: 10_LKD	LKD	7.61	-	2.48	✓
2	L01: 10_Bedroom	Bedroom	3.72	-	3.44	✓
3	L01: 12_Bedroom 02	Bedroom	3.72	-	3.11	✓
4	L01: 12_Bedroom 01	Bedroom	3.72	-	3.38	✓
5	L01: 12_LD	Living	13.8	-	4.89	✓
6	L01: 13_LKD	LKD	7.68	-	2.3	✓
7	L01: 13_Bedroom	Bedroom	3.72	-	3.25	✓
8	L01: 15_Bedroom 02	Bedroom	3.72	-	1.11	✓
9	L01: 15_Bedroom 01	Bedroom	3.72	-	2.07	✓
10	L01: 15_LD	Living	8.16	-	2.09	✓
11	L01: 18_Bedroom 02	Bedroom	3.72	-	3.22	✓
12	L01: 18_Bedroom 01	Bedroom	3.72	-	4.13	✓
13	L01: 18_LD	Living	13.32	-	4.5	✓

The following conclusions can be made:

✓ These rooms have an average daylight factor greater than the recommended minimum values (1.5% for living rooms and 1.0% for bedrooms) as stated under BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight.

8.5 Discussion

It should be noted that 5 of the dwellings within the proposed development have been tested, on the ground and first floor levels.

The results are summarised in the following table.

Tested	26
Bedrooms Over BRE recommendations	16
Living/Kitchen/Dining Rooms Over BRE recommendations	10
Bedrooms Below BRE recommendations	0
Living/Kitchen/Dining Rooms Below BRE recommendations	0

100% of the proposed rooms tested on the ground floor of the proposed development are achieving Average Daylight Factors (ADF) above the BRE guidelines. Since these can be viewed as 'worst case' locations, it can be expected that the results from the development as a whole would perform to an equally high percentage.

9 Conclusion

The following can be concluded based on the studies undertaken:

9.1 Sunlight to Amenity Spaces

As mentioned above under Section 3.3.17 of BRE's Site Layout Planning for Daylight and Sunlight states that for a space to appear adequately sunlit throughout the year, at least half of the garden or amenity area should receive at least 2 hours of sunlight on the 21st of March.

The images demonstrate that the proposed building does not have any impact on the existing amenity areas, which would continue to receive very similar high levels of sunlight with the proposed development in place. Furthermore, the proposed amenity area receives at least 2 hours of sunlight on 97% of their area. This confirms that the proposed amenity area will be a quality spaces in terms of sunlight, exceeding the BRE guidelines.

9.2 Shadow Analysis

The proposed development is noted to have some additional overshadowing to some of the properties situated to the north of the proposed development mainly in December. Although this is the case, when the results of the daylight (VSC analysis) and the sunlight to the existing amenities are examined in conjunction with these results, it can be predicted that this overshadowing will have a minimal impact to these existing properties.

9.3 Daylight Analysis of Existing Buildings

The Vertical Sky Component for 100% of the points tested (171) have a vertical sky component of greater than 27% or not less than 0.8 times their former value (that of the Existing Situation), and exceed the BRE recommendations.

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9.4 Average Daylight Factors

100% of the proposed rooms tested on the ground and first floors of the proposed development are achieving Average Daylight Factors (ADF) above the BRE guidelines. Since these can be viewed as 'worst case' locations, it can be expected that the results from the development as a whole would perform to an equally high percentage.

9.5 Discussion

It should be noted that the guidance in 'Site layout planning for daylight and sunlight: a guide to good practice' is not mandatory and the Report itself states ‘although it gives numerical guidelines these should be interpreted flexibly because natural lighting is only one of many factors in site layout design.

Whilst the results shown relate to the criteria as laid out in the BRE guidance targets it is important to note that the BRE targets have been drafted primarily for use in low density suburban development and should therefore be used with flexibility and caution when dealing other types of sites.

The overall performance may need to be considered alongside the other social, economic and environmental benefits of the development.

Despite the above, overall the results within this report shows the proposed development performs well when compared to the BRE recommendations in the BRE ‘Site Layout Planning for Daylight and Sunlight’ guide, sometimes referred to as BRE Digest 209.

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Preliminary Fire Safety Strategy

For

Construction of a 4 – 5 storey Residential Development known as Westside

At

Model Farm Road, Cork

CLIENT	:	Cork City Council
PROJECT TITLE	:	Westside
REPORT NUMBER	:	20238 FSS R01 Issue 01

	ISSUE 01	**FINAL ISSUE**
STATUS	Planning	Planning
DATE	19.04.2022	03.06.2022
BY	CG	CG
CHECKED	LF	LF

CONTENTS

1.0 INTRODUCTION

1.1 SCOPE OF REPORT

This Report is submitted in support of a planning application for the proposed construction of a 4 – 5 storey building known as Westside.

The Fire Safety and Access & Use Strategy is being submitted with the planning application to demonstrate that the proposed design is in substantial compliance with Part B (Fire Safety) of the Building Regulations and that it will be possible in due course to obtain a Fire Safety without giving rise to changes that would require planning permission.

1.2 OUTLINE DESCRIPTION OF THE PROPOSED DEVELOPMENT

The construction of a 4 - 5 storey building containing 43 no. apartments (17 no. 1-bed and 26 no. 2-bed apartments), each with private balcony/terrace, as well as ground floor bin store and plant, and all associated site development works, services provision (including new foul and storm drainage connections to existing network), landscaping/public realm works, 13 no. car parking spaces and 92 no. bicycle parking spaces located at ground level.

1.3 BASIS OF COMPLIANCE

Purpose Group	Design Guidance (Fire Safety / Access & Use)
PG 1 (c) Flats and Maisonettes	Technical Guidance Document B 2006 + A1: 2020 and BS 5588: Part 1: 1990 Code of Practice for Residential Buildings

2.0 FIRE SAFETY STRATEGY

2.1 MEANS OF ESCAPE IN CASE OF FIRE

2.1.1 Internal Layout of Apartments:

The individual apartment units shall be sprinkler protected with all habitable rooms accessed via an entrance hall. The exit door from each apartment leads to a protected common lobby/corridor which leads to the common escape stairway for the upper floor apartment units that leads direct to open air.

2.1.2 Protection of Common Escape Stairway and Common Lobbies:

The upper floor apartments within the block shall be served by a single escape stairway. The escape stairway shall be treated as a protected shaft achieving 60 minutes fire resistance with FD30s doorsets. The stairway shall be provided with a $1m^2$ automatically opening smoke vent located at the head of the escape stairway. It shall be arranged to open on activation of the smoke detection within the stair, it will also have a manually opening mechanism.

The stairway shall be separated from the apartment entrance doors by way of a ventilated lobby protected by 60 minutes fire resistance and FD30s doorsets. The lobby shall be ventilated via $1.5m^2$ natural automatically opening window that shall be a full tested system to BS EN 12101-2.

The maximum dead-end travel distance from within a common lobby to the escape stairway shall not exceed 15m. This is measured from the most remote apartment entrance door to the door entering the ventilated lift lobby. 15m is deemed sufficient as the internal apartment units shall be sprinkler protected in accordance with Clause XX of TGD-B: 2006 + A1: 2020.

2.1.3 Active Fire Protection Systems:

The apartment block will be provided with a fire detection and alarm system designed, installed and commissioned in accordance with IS 3218: 2013 + A1: 2019 and shall achieve a coverage of L3X automatic detection throughout the building.

Each individual apartment unit shall be provided with standalone LD2 category systems.

The proposed sprinkler system shall be designed to BS 9251: 2021 and Section 1.8 of TGD-B: 2006 + A1: 2020.

The apartment block will be provided with an emergency lighting system that shall provide coverage to all common lobbies and the escape stair and the areas outside the final exits. The system shall be designed to comply with IS 3217: 2013 + A1: 2017.

Maintained illuminated exit signs will be provided at all common storey and final exits serving the building. The exit signage shall comply with BS 5499-1: 2002.

2.2 INTERNAL FIRE SPREAD (STRUCTURE)

The floor construction of the upper floors have been designed to achieve minimum 60 minutes fire resistance (stability, integrity and insulation) as applicable noting that any load bearing walls or elements to achieve the same including the following:

- Structural frame of the building
- Each floor
- Walls fire separating apartments from each other
- Enclosure to escape stairs
- Lift shaft

All separating walls to the development will achieve a minimum 60 minutes fire resistance (stability, integrity and insulation) on each side separately.

Cavity barriers achieving at least 30 minutes fire integrity and 15 minutes insulation ratings shall be provided in accordance with TGD-B: 2006 + A1: 2020 whereby they will be located at:

- An internal fire barrier meets the external façade
- At compartment junctions including horizontally at all floors
- At lengths of undivided cavities that exceed
- At the top of any cavity

2.3 EXTERNAL FIRE SPREAD

The external walls and roof of the buildings will be so designed including the locations and areas of any windows and doors on the external elevations and constructed that they afford adequate resistance to the spread of fire to and from neighbouring boundaries as per the external fire spread requirements of BRE 187.

The roof coverings will be selected to achieve a minimum Class AA, AB or AC designation and with reference to Table 4.4 of TGD-B: 2006 + A1: 2020, such roof coverings can be used without restriction.

Rooflights that do not achieve the minimum Class AA, AB or AC designation shall be limited in extent as set out in Table 4.5 (and Diagram 29 where applicable) of TGD-B: 2006 + A1: 2020.

2.4 ACCESS & FACILITIES FOR THE FIRE SERVICE

The external site access routes serving the development have been designed such that there will be adequate provision for Fire Brigade appliance access.

Fire Brigade access is provided to the North and East elevations of the Block. The block has a top floor height of circa 16m, therefore the fire tender access will be sufficient to allow for a high reach tender and will meet the requirements of Table 5.2 of TGD-B:2006 + A1: 2020.

The location and number of external fire hydrants shall be provided in accordance with TGD-B: 2006 + A1: 2020.

Design Rational – Landscape Architecture

Project:
Westside Residential Development at Model Farm Road, Cork City, Co. Cork.

Prepared on behalf of: Cork City Council

Prepared by:
Cathal O'Meara Landscape Architects
2 Mc Sweeney Street
Fermoy
Co. Cork

Issue: Planning

Date of Issue: 09. 03. 2022

Revision: 00

1.0 Introduction

The objective of this report is to describe the proposed landscape and external works as part of the Westside residential development on Model Farm Road, Cork City, Co.Cork.

This report should be read in conjunction with all other documents issued and included in this submission by Cathal O'Meara Landscape Architects and all other disciplines, namely:

- OMP Architects;
- Varming consulting engineers;
- PUNCH consulting engineers;and
- Cork County Council.

Cathal O'Meara Landscape Architects visited the site preceding this application in November 2020 in order to observe conditions on site, such as existing vegetation, context with respect to adjoining sites, boundaries, and other items, which would have a bearing on the design process.

The following documents have been issued by Cathal O'Meara Landscape Architects as part of this submission:

No.	Size	Scale	Title
2030 - LA- P001	A1	1:100	Landscape Layout & Details

2.0 Landscape Appraisal

2.1 Existing Conditions

The brownfield site fronting onto the Model Farm presently contains an industrial unit within a hard surfaced yard. It is presently secured around all boundaries and lies between a commercial shop/petrol station and a large office block owned by the Health Service Executive.
The south (back) of the site is occupied by a large student accommodation block with a small ground floor fast food unit while another student housing block fronts a commercial retail park to the North (front) of the development directly across the Model Farm Road.

Existing view of site interior.

2.2 Existing Site Boundaries

To the North the site is bounded a 1.8M high steel fence with matching security gates, this fence also extends around the first section of the Western boundary where it becomes a 1.8M high block wall. This block wall forms the Southern boundary.
The Eastern boundary is also formed by a block wall with an external, tightly knit, ornamental hedge fronting the access road.

Interior image showing Northern Boundary


Interior image showing Southern Boundary

3.0 Landscape Strategy

The landscape design approach seeks to create a high quality scheme which will integrate the residential scheme within a more industrial/ commercial streetscape. A contemporary approach to street design (incorporating DMURS homezone) is paramount while combining a range of both hard and soft landscaping features.

3.1 Streetscape

The streetscape has been designed as a shared surface to create an inclusive development where traffic is slowed by a sense of uncertainty and all users are asked to be aware of the presence of others.

The main site road and parking spaces will be surfaced using the same concrete block paver with aggregate finish. This visually widens the width of the street allowing it to feel more like a public open space and slows traffic movement in favour of more vulnerable users such as pedestrians and cyclists.

The front pedestrian entrance to the site along the Model Farm road will be paved with a larger paving flag where steps and a ramp allow access and create a contemporary exterior entrance feature while the rest of the road frontage is formed by a large planting bed housing regularly spaced semi-mature trees in keeping with the existing mature trees and green space to the front of the HSE offices.

Exemplar image showing shared surface street in block paving

3.2 Open Space

As previously mentioned it is intended that the street, parking and set down area will partially act as open space but a large central lawn to the back of the site provides a kickaround area with seating, ornamental planting and an enclosed play area. The lawn extends along the southern boundary with more areas of ornamental planting and lines of selected trees.

The natural play area will house a timber balance beam and some rounded stone boulders, this will be surfaced with play sand and enclosed within a secure chestnut pale fence.

Exemplar image showing courtyard with raised planters/seating and structural features

4. Proposed Boundaries

The boundaries are marked within the Landscape Layout drawing, Drawing No. 2030-LA-P001. This details all site boundaries, retained and proposed.

4.1 External site boundaries

Northern boundary: This boundary will be formed by a new rendered low block wall with a steel fence to 1.8M high, this encloses the mid-section of the site with pedestrian and vehicular entrances to either side.

Eastern boundary: The existing hedge will be removed with a 1.8m wall/fence (as above) to secure the open public section of the site, this changes to a newly planted hedge which will screen the retained section of wall at this location.

Southern and Western boundary: The wall will be retained along this boundary but screened with hedging to help assimilate the hard boundaries creating a green façade and contributing towards local biodiversity.

Exemplar image showing low wall with steel fence to 1.8M

4.2 Private Open Spaces in the form of back gardens only exist to Apartments 3 and 4, these are contained within a newly planted hedge. The remainder of the ground floor apartments have a small paved patio space bounded by a 1-1.2m hedge with an internal steel fence.

5.0 Planting
Detailed Landscape Plans, Drawing number 2030-LA-P001 prepared by Cathal O'Meara Landscape Architects**,** includes a schedule of proposed planting showing the location of the different planting areas.

5.1 Tree planting
A range of trees have been chosen to offer aesthetic and ecological diversity to the site. Large semi-mature Acer campestre and Quercus robur will be used at set spacings to create rhythm and structure along the Model Farm road continuing the line of trees from the HSE site. These are also used in the same manner along the Southern boundary with one of each used as feature trees within the open green space.

Smaller semi-mature Acer grisieum will be used in its multi-stem form within public planted areas to soften the site boundaries and to heighten privacy within planted areas near windows. Malus Cox's a common fruiting apple tree is also used within the developments planting beds and boundaries, as well as fruit this tree provides seasonal bloom, textured foliage and a great habitat for insects.


Malus Coxs in bloom.


Quercus robur shown with a 2m clear stem.

5.2 Boundary planting

Sections of the East, West and Southern boundaries will be heavily planted to screen the retained fencing and walls. This planting will include the vigorous climber Boston Ivy and dense single species blocks of Hornbeam and Yew hedging. The enclosed section of Northern boundary fronting the Model farm road will have a large linear block of ornamental planting to add visual interest along the hard public front.

5.3 Ornamental planting

Two mixes of Ornamental planting are proposed at specific locations to introduce some diversity to the landscape and to create specific, individual spaces. A spectrum of hardy, low maintenance perennials and architectural grasses have been chosen and will be planted in large mixed species blocks creating drama and texture with the public areas. The planting choice will provide year round interest with lively pops of seasonal colour and retained winter structure.

A selection of the ornamental grasses and perennials to be used in the public open spaces

6.0 Hard Landscape Materials & Furniture

A simple palette of hard materials is proposed to create a robust but considered development with a mix of insitu concrete footpaths and paved feature areas.

All materials will be in subtle shades of grey ranging from sliver grey to darker granite shades the only deviation from this comes with the use of grasscrete paving used within the services turning area. This softens the development while still allowing a compliant accessible route for vehicles when required.

This simple pallet will compliment the colours of the built façades, allowing the softer elements of the planted landscape to stand out.

7.0 Implementation

It is proposed that the full landscape planting be undertaken to the later stages of the building works to ensure the safety of trees and softer planting materials.

All bare root trees shall be planted from October to March. Potted planting material may be planted year round.

8.0 Maintenance

9.1 Scope of work
The maintenance of grass, trees, shrubs and perennials for the period of each contract. During this period the contractor shall keep all roads and pavements clear of weeds, grass mowing's, mulch and rubbish from site at the conclusion of each days work.

9.2 Trees and Shrubs
Tree stakes shall be checked at least once a month to make sure they are still performing correctly. Any loosened tree stakes shall be re-firmed and any damaged or broken stakes shall be replaced immediately and the ties adjusted to hold the tree firm.

Shrubs and trees loosened by wind, frost or any maintenance operations shall be firmed up. This shall be carried out at least four times a year. If any plants have been completely lifted out of the ground they shall not be replanted but replaced.
A 500 mm diameter circle shall be kept free of grass around the base of each tree to facilitate grass cutting and root development of the tree.

9.3 Weed Control
Any weed growth occurring during the maintenance period shall be spot treated with a glyphosate free herbicide – "Basta" or similar approved. All herbicide shall be applied to the manufacturers instructions.

9.4 Plant deaths
All tree and shrub losses to natural causes after planting shall be replaced by the contractor within the following season with plants equal in size and shape to those lost.

9.5 Pests and diseases
Experienced personnel shall inspect all plants at least twice a year for the presence of pests and diseases. If either or both are present the contractor shall report the conditions and implement the appropriate control measures immediately.

Any heavily infested plants may need to be removed and replaced with clean stock.

Landscape Key:

- *T1, Quecus robur,* 18-20cmg, 5.5M high, 2M Clear Stem, Rootballed
- *T2, Acer campestre*,18-20cmg, 5.5M high, 2M Clear Stem, Rootballed
- *T3, Acer Grisieum,* multistem, 2-2.5M tall, 3-5 breaks, rootballed
- Malus 'Coxs Self Fertile', 12-14cmg, 2M high, 1M clear stem, rootballed.
- Grass lawn, low maintenance grass seed mix
- Ornamental planting Mix 1
- Ornamental planting Mix 2
- Taxus bacatta hedging
- Climbing plants
- Carpinus betulus hedging

Boundaries Key:

- B01 Rendered block wall with steel fence to 1.8m tall
- B02 1.2m Sweet chestnut fence
- B03 1.2m High Hedge with internal steel fence
- B04 existing block retaining wall

Hardscape Key:

- 600x300mm slab paving, concrete with granite aggregate in silver.
- 600x150mm, Concrete with granite aggregate plank paver in silver.
- 100x200mm block paving, concrete with aggregate finish in graphite.
- 600x400mm turfstone block with soil/seeded grass infill.
- 400x400mm, concrete tactile paving in buff colour.
- Concrete aggregate kerb 145 x 255 x 915mm, Fusion by Tobermore or EQA, 125mm upstand to road, flush to planters.
- Sand base to play area
- Proposed rounded quarry bounders
- Timber Bench with PC gal steel frame 2000 x 450 x 450
- Timber Balance posts with rope by Komplan or similar approved
- 2 tier bike rack in galvanized steel.
- Stainless steel Sheffield bike stand.
- 1.2M high Flat top steel access gate with black painted finish.

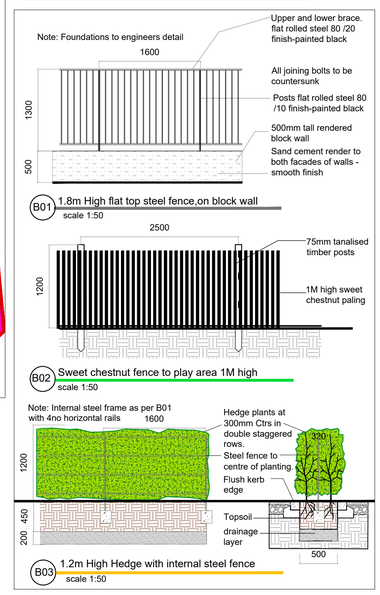
Ornamental Planting - Mix 01 To be planted as P9 sized plants.
50% Stipa arundinacea
20% Carex testacea
10% Rudbeckia fulgida var. sullivantii 'Goldsturm'
10% Achillea millefolium 'Red Velvet'
10% Astrantia major 'Claret'

Ornamental Planting - Mix 02
To be planted as P9 sized plants.
50%Stipa tenuissima
20% Stipa arundinacea
10% Achillea 'Walther Funcke'
10% Kniphofia uvaria
10% Helenium 'Waltraut'

Climbing Plants 1
100% Parthenocissus tricuspidata
Planted at 1M centres in single species groups.

Hedges
Taxus Bacatta hedge, 1-1.2m high planted @300mm centers in staggered rows.
Plants supplied bare root 2+2

Carpinus betulus hedge, 1-1.2m high planted @ 300mm centers in staggered rows.
Plants supplied bare root 2+2



Planting Notes
-Ornamental plants to be supplied in p9 pots except where stated otherwise.
-All trees and shrubs to be supplied and planted following B.S 3936.
-All plant material to be inspected by the Landscape Architect prior to planting.
-All existing vegetation to be removed and cleared of site
-Shrub planting beds to be 450mm good quality topsoil to BS 3882 (Certs required, LA to inspect prior to commencement on site), break up a further 350mm deep of existing
-Tree pit shall be excavated not more than 2 days prior to planting.
-All tree pits to maintain horizontal base and vertical sides, sides to be scarified, pit bottom to be broke up to to a depth of 200mm with slightly raised centre.
-Trees to be planted upright with collar at finished soil level and back filled with previously prepared planting material.
All new trees should be staked using a short double timber staking system mature relocated trees to be guyed where required.

Time scale for implementation:
-Deciduous trees and shrubs - Late October to late March
-Herbaceous plants: September/October and March/April
-Container grown plants: At any time if conditions are favorable
-All construction works to be carried out to manufactures recommendations regarding climatic conditions and controls.

Notes:

-For all structural and levels information refer to engineers drawings.

THIS IS NOT FOR CONSTRUCTION

Cathal O'Meara
Landscape Architects
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2 Mc Sweeney St,
Fermoy, Co. Cork

Chartered member of the Irish Landscape Institute

Client: Cork City Council

Project: Westside
Drawing: LA-P001

Date: 27/08/2021

Drawn By:
Luis Medeiros

Checked By:
Cathal O'Meara

Concept design

Issue: Concept

Dwg No: 2030

Rev	Date	Note
01	01/02/21	Update
02	09/03/22	Issue

cathal meara landscape architects

N

Scale 1:100, @ A1

Varming
Consulting Engineers Ltd.

PUBLIC LIGHTING

DESIGN CALCULATIONS REPORT

WESTSIDE SOCIAL HOUSING
MODEL FARM ROAD
APARTMENTS

Rev:

Date:

LINKED PRACTICES

VARMING CONSULTING ENGINEERS LTD. ARE LINKED TO
STEENSEN VARMING INTERNATIONAL
OFFICES IN LONDON,
DENMARK, HONG KONG, SYDNEY.

www.varming.ie

CONTENTS

Project Details:

Project:	Westside Social Housing, Model Farm Rd Apartments, Cork
Client:	Cork City Council, City Hall, Anglesa St., Cork, Co. Cork
Architect:	O'Mahony Pike Architects, 1, S. Mall Cork, Co. Cork
M&E Consultant:	Varming Consulting Engineers 3, Eastgate Rd, Castleview, Little Island, Co. Cork

WESTSIDE SOCIAL HOUSING

1. Introduction:

This report will outline the design intent for the proposed public lighting scheme for Model Farm Road Apartments, Cork, Co. Cork

This report outlines the lighting design as developed by Varming Consulting Engineers to provide adequate illuminance to meet all regulations and requirements as follows;

- To provide adequate illumination to contribute toward the safe use of the access roads and pathways for vehicular and pedestrians.
- Minimise lighting pollution on surrounding areas and neighbors
- Reduce glare on pedestrians and other users of the access areas
- Use of highly efficient artificial lighting to reduce energy consumption

The complete installation will be required to meet the following regulatory standards and policies:

- S.I. No. 291 of 2013: Safety, Health and Welfare at work (Construction Reg. 2013)
- ETCI National Rules for electrical Installation ET101-2008
- BS 5489-1:2013 Code of Practice for the design of road lighting
- IS EN 13201-1 & 2 -2015
- IS EN 13201-5-2015 S2 & ME4A
- CIBSE Lighting Guide 7
- Housing Scheme: Guidebook ESB Networks Standards for Electrical Services
- Guidance Note 08/18:Bats and artificial lighting in the UK (Bat Conservation Trust, 2018)
- Bats & Lighting Guidance notes for: Planners, engineers, architects and developers (12/2010)
- Cork County Council Public Lighting Technical Specification.

2. Development Description

- A proposed residential development consisting of apartment units. The proposal will also include all other site development works necessary to enable development.

3. Design Concept

The public lighting design concept for the proposed development is to provide adequate illuminance for vehicular and pedestrian access merging from the main road. The lighting levels shall be compliant with all the relevant standards and guidelines while complementing the Architecture of the development.

The design of the public lighting includes low energy LED lighting throughout. Energy efficient light fittings are a key element in reducing the developments energy consumption.

High quality optics selected around the ecologically sensitivity areas of the development have also been a key part of the concept design.

4. Detailed Design

The design proposes to use 7 No. Luminaires mounted on 6m high columns and 2 No. mounted on a 10m high columns all equipped with a wide street optical distribution beam.

Proposed luminaire design layout as per drawing 20836-VCE-ZZ-ZZ-DR-PL-001

Public lighting will be turned on/off by a photocell mounted on luminaires.

Lighting Dialux Calculations:

Development Lighting - Residential Zone:

- The Average Horizontal Illuminance is 5 Lux (Em ≥ 5 Lux) P4 to be compliant.
  Average achieved: 15
  The Minimum Horizontal Illuminance is 1 Lux (Emin ≥ 1 Lux) P4 to be compliant.
  Average achieved: 3.88

Development Lighting – Model Farm Road:

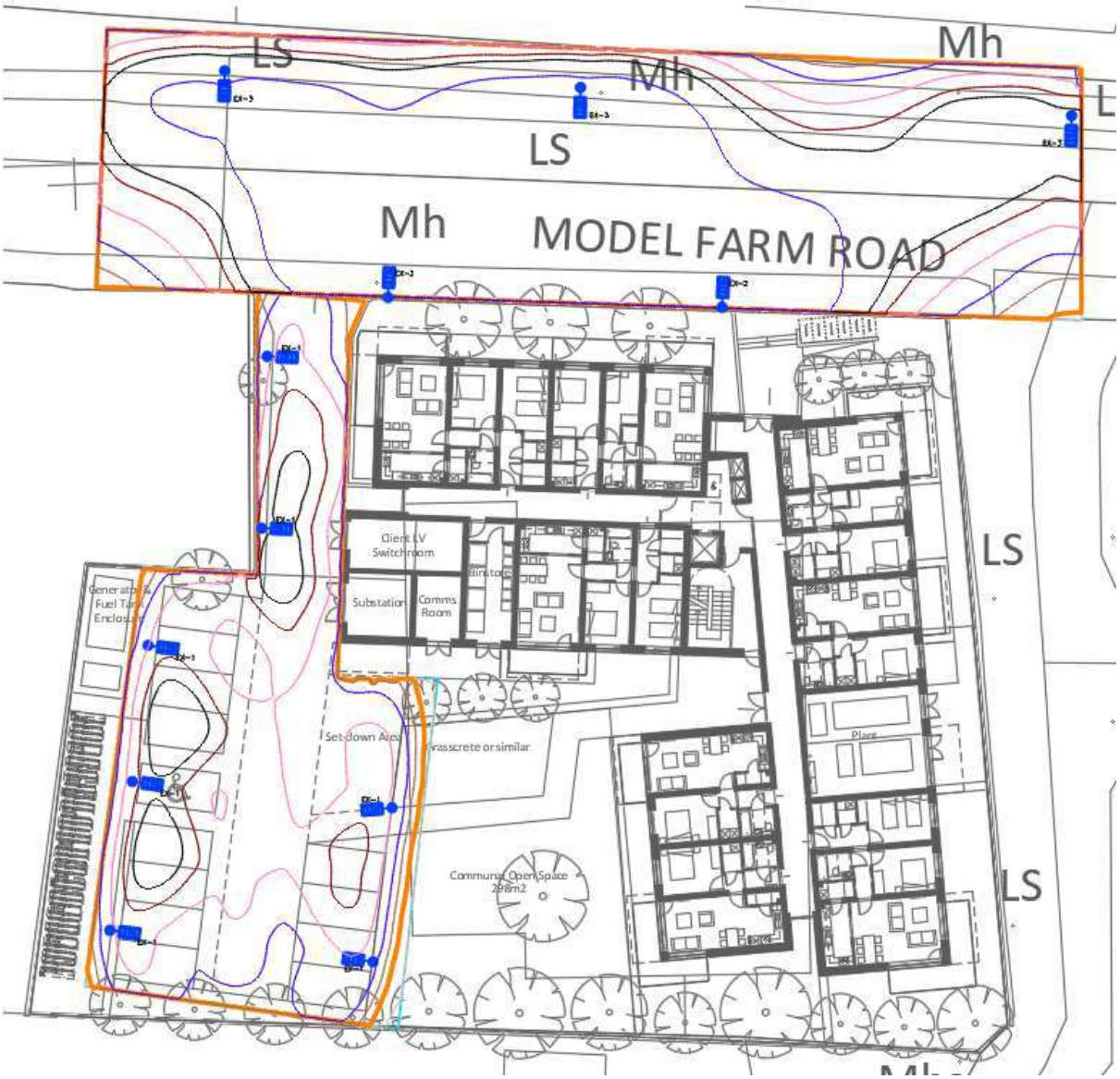
- The Average Horizontal Illuminance is 15 Lux (Em ≥ 15 Lux) C3 to be compliant.
  Average achieved: 24
  The Minimum Horizontal Illuminance is 6 Lux (Emin ≥ 6 Lux) C3 to be compliant.
  Average achieved: 7.7

Luminaires:

Type EX-1 THORN R2L2 S 12L50 740 EWS BS 3550 CL1 GY 20W@ 10m	Type EX-2 THORN R2L2 S 36L70 740 EWS CL1 GY 78W@ 10m
Development Lighting	Development Lighting
	

5. Grid Results

5.1. Lux Isolines



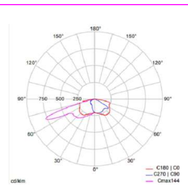
EX-1 LUMINAIRE

DESCRIPTION:

LED ROAD LIGHTING LANTERN WITH EXTRA WIDE STREET OPTIC. LED DRIVER PROGRAMMABLE. CLASS I ELECTRICAL, IP66, IK08. HOUSING: DIE-CAST ALUMINIUM (EN AC-44300), POWDER COATED TEXTURED LIGHT GREY. ENCLOSURE: TEMPERED FLAT GLASS. SCREWS: STAINLESS STEEL, ECOLUBRIC® TREATED.

DIMENSIONS: 655 X 362 X 155 MM
LUMINAIRE INPUT POWER: 20 W
LUMINAIRE LUMINOUS FLUX: 2773 LM
LUMINAIRE EFFICACY: 139 LM/W
WEIGHT: 8.89 KG
CRI>70
COLOR TEMPERATURE = 4000K
RATED LIFE = 100K HOURS
POWER FACTOR>0.95

PHOTOMETRY:



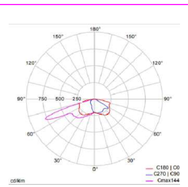
EX-2 LUMINAIRE

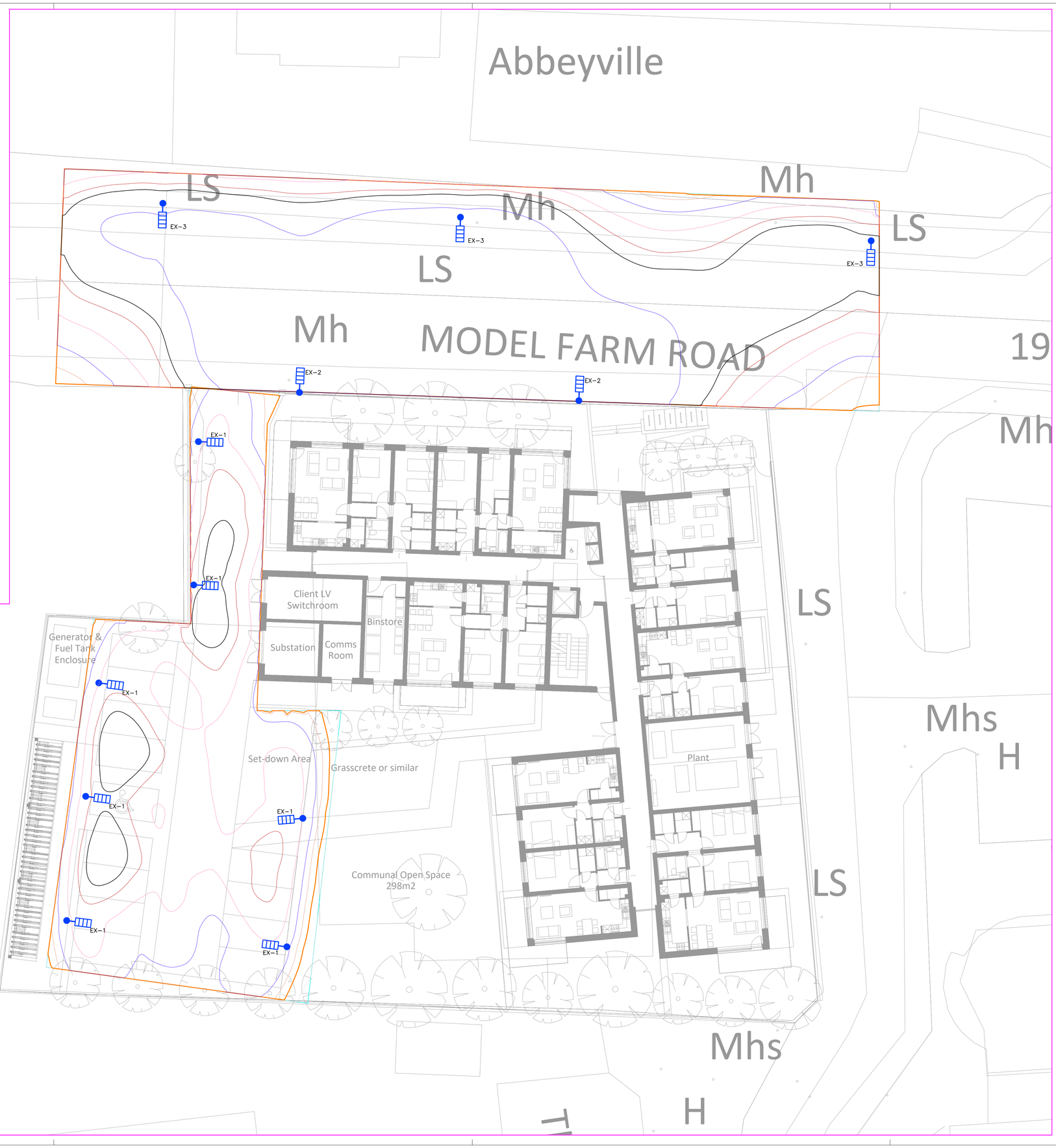
DESCRIPTION:

LED ROAD LIGHTING LANTERN WITH EXTRA WIDE STREET OPTIC. LED DRIVER PROGRAMMABLE. CLASS I ELECTRICAL, IP66, IK08. HOUSING: DIE-CAST ALUMINIUM (EN AC-44300), POWDER COATED TEXTURED LIGHT GREY. ENCLOSURE: TEMPERED FLAT GLASS. SCREWS: STAINLESS STEEL, ECOLUBRIC® TREATED.

DIMENSIONS: 655 X 362 X 155 MM
LUMINAIRE INPUT POWER: 78 W
LUMINAIRE LUMINOUS FLUX: 11038 LM
LUMINAIRE EFFICACY: 142 LM/W
WEIGHT: 9.32 KG
CRI>70
COLOR TEMPERATURE = 4000K
RATED LIFE = 100K HOURS
POWER FACTOR>0.95

PHOTOMETRY:





General Notes
A. DO NOT SCALE FROM THIS DRAWING- WORK ONLY FROM FIGURED DIMENSIONS.
B. ALL ERRORS & OMISSIONS TO BE REPORTED TO THE CONSULTING ENGINEER
C. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECTS AND STRUCTURAL ENGINEER'S DRAWINGS.
D. REFER TO DOCUMENT REGISTER FOR DESCRIPTION OF STATUS CODES.

ISOLINES:

- 2.0 lx
- 5.0 lx
- 8.0 lx
- 10.0 lx
- 12.0 lx
- 15.0 lx
- 18.0 lx
- 20.0 lx

INTERNAL SITE LIGHTING RESULTS:

MAINTAINED AVERAGE ILLUMINANCE: 15lx

UNIFORMITY U0: 0.25

MODEL FARM ROAD LIGHTING RESULTS:

MAINTAINED AVERAGE ILLUMINANCE: 24lx

UNIFORMITY U0: 0.32

LEGEND:

- EX-1 — NEW 6m LIGHTING COLUMN
- EX-2 — NEW 10m LIGHTING COLUMN
- EX-3 — EXISTING 10m LIGHTING COLUMN

Rev	Status	Date	Description	
C01	A3	JUN '22	ISSUE FOR PLANNING	D.D.

Revision	C01
Project Drawing Reference	20836-VCE-ZZ-ZZ-DR-PL-0001
Status	A3
Varming Project Number	20836
Date	JUNE 2022
Checked By	D.D.
Drawn By	G.E.
Scale	1:150@A1

Client
CORK CITY COUNCIL

Project Title
WESTSIDE SOCIAL HOUSING
MODEL FARM ROAD APARTMENTS

Drawing Title
PUBLIC LIGHTING REPORT

Varming Consulting Engineers Ltd
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Engineering for the Future

Titleblock Revision: 2020_1