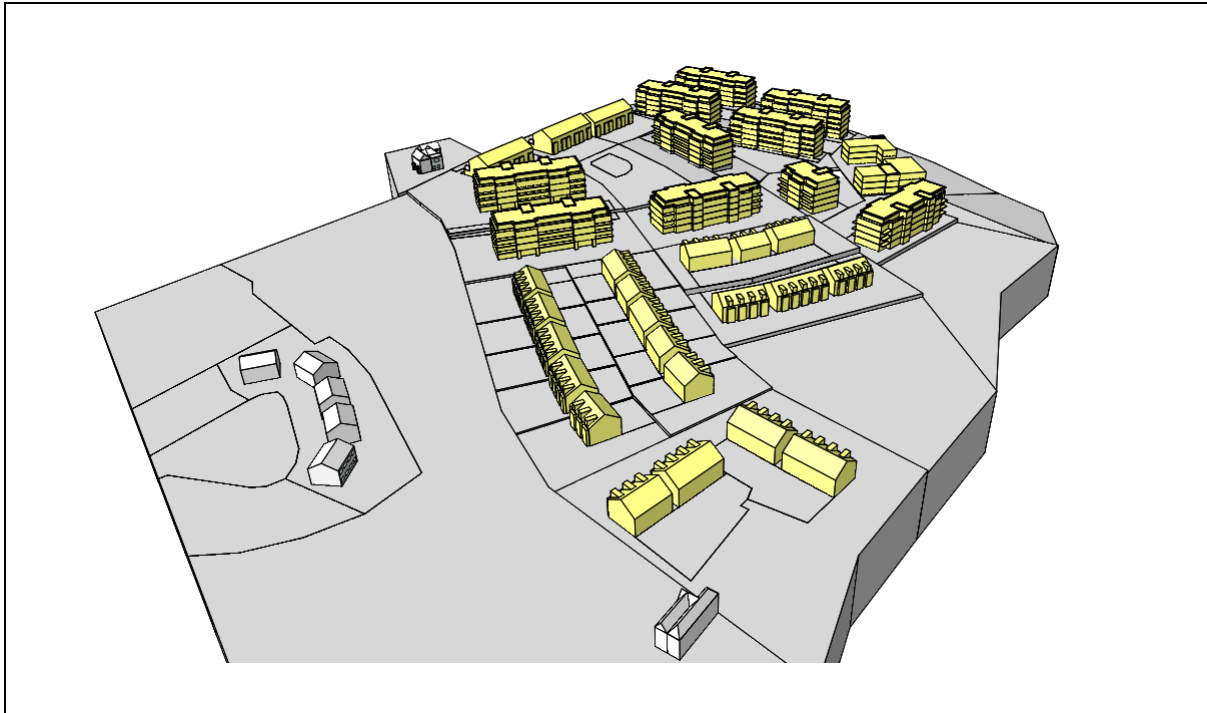


Report for: J. Murphy Developments Ltd

Project No: 14246

Newtown, Drogheda

Daylight, Sunlight and Overshadowing Study



Confidential

Version History

Document created by:

Integrated Environmental Solutions Limited

International Sustainability Consulting Developers of the IES <Virtual Environment>

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Executive Summary

The following can be concluded based on the studies undertaken.

Shadow Analysis

The Shadow analysis shows different shadows being cast at some times of the year for the proposed scheme. As the proposed development sits to the North of the existing residential dwellings on Foxhill and McGrath's Lane, no resulting overshadowing is visible on the neighbouring dwellings.

Daylight Analysis of existing buildings

For the dwellings considered on Foxhill and McGrath's Lane, all of the points tested have a vertical sky component of not less than 0.8 times their former value (that of the Existing Scheme). Therefore, these points are all in line with the BRE recommendations.

Sunlight to the 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.

- **Communal open space amenity areas** – all in line with BRE recommendations
- **Duplex Garden amenity areas** – all in line with BRE recommendations
- **House Garden amenity areas** – the majority of the amenity areas are in line with the BRE recommendations

As demonstrated by the analysis undertaken, the majority of the communal and private amenity areas are in line with the recommendations stated in BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight. Where areas do not meet the recommendations, this is due to orientation and hence, areas perform as expected.

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.

Despite the above, the site performs well in relation to the metrics considered in this report.

When assessing the proposed development impact on the neighbouring properties, the following can be concluded:

- In terms of shading on surrounding properties, as the proposed development sits to the North of the existing residential dwellings on Foxhill and McGrath's Lane, no resulting overshadowing is visible.
- Resultant VSC values for the proposed development are all in line with the BRE recommendations.
- In terms of Sunlight to the Proposed Amenity Spaces, the majority of amenity areas would receive above 2 hours of sunlight on the 21st March as per the BRE recommendations.

Overall, the results demonstrate that the majority of the proposed development performs in line with BRE recommendations in the BRE 'Site Layout Planning for Daylight and Sunlight' guide, sometimes referred to as BRE Digest 209.

1 Introduction

This report was complete to quantify the Sunlight / Daylight impact of the proposed development at Drogheda on the existing neighbouring dwelling.

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

- **Shadow Analysis** - A visual representation analysing any potential changes that may arise from the proposed development on to the neighbouring existing developments.
- **Daylight Analysis of Existing Buildings** - via consideration of Vertical sky component (VSC).
- **Sunlight to proposed amenity space and gardens** - via annual sunlight hours comparison.

The analysis was complete out using the IES VE software.

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

2 Methodology

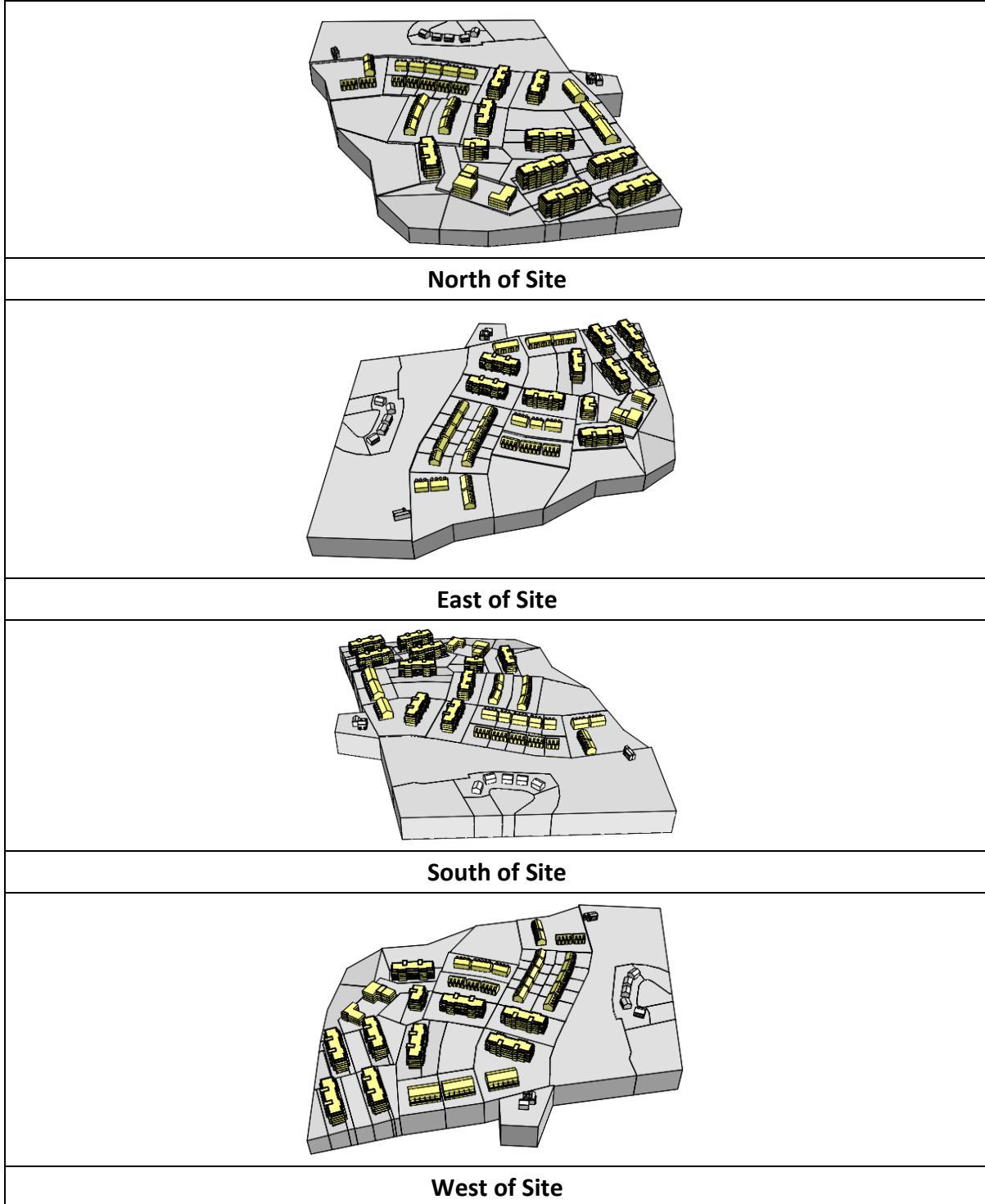
2.1 Orientation

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

| Orientation | |
|-------------|--|
| | |
| | |

2.2 Model Geometry

The following images show the model created for use on across various views.



2.3 Potential Sensitive Receptors

To help understand the potential impact to surrounding buildings potential sensitive receptors were identified as illustrated below.



3 Shadow Analysis

The statistics of Met Eireann, the Irish Meteorological Service, show that the sunniest months in Ireland are May and June.

The following can also be shown:

- During December, Drogheda receives a mean daily duration of 1.7 hours of sunlight out of a potential 7.4 hours sunlight each day (i.e. only 22% of potential sunlight hours).
- During June, Drogheda receives a mean daily duration of 6.4 hours of sunlight out of a potential 16.7 hours sunlight each day (i.e. only 38% of potential sunlight hours).

Therefore, impact caused by overshadowing are generally most noticeable during the summer months and least noticeable during the winter months.

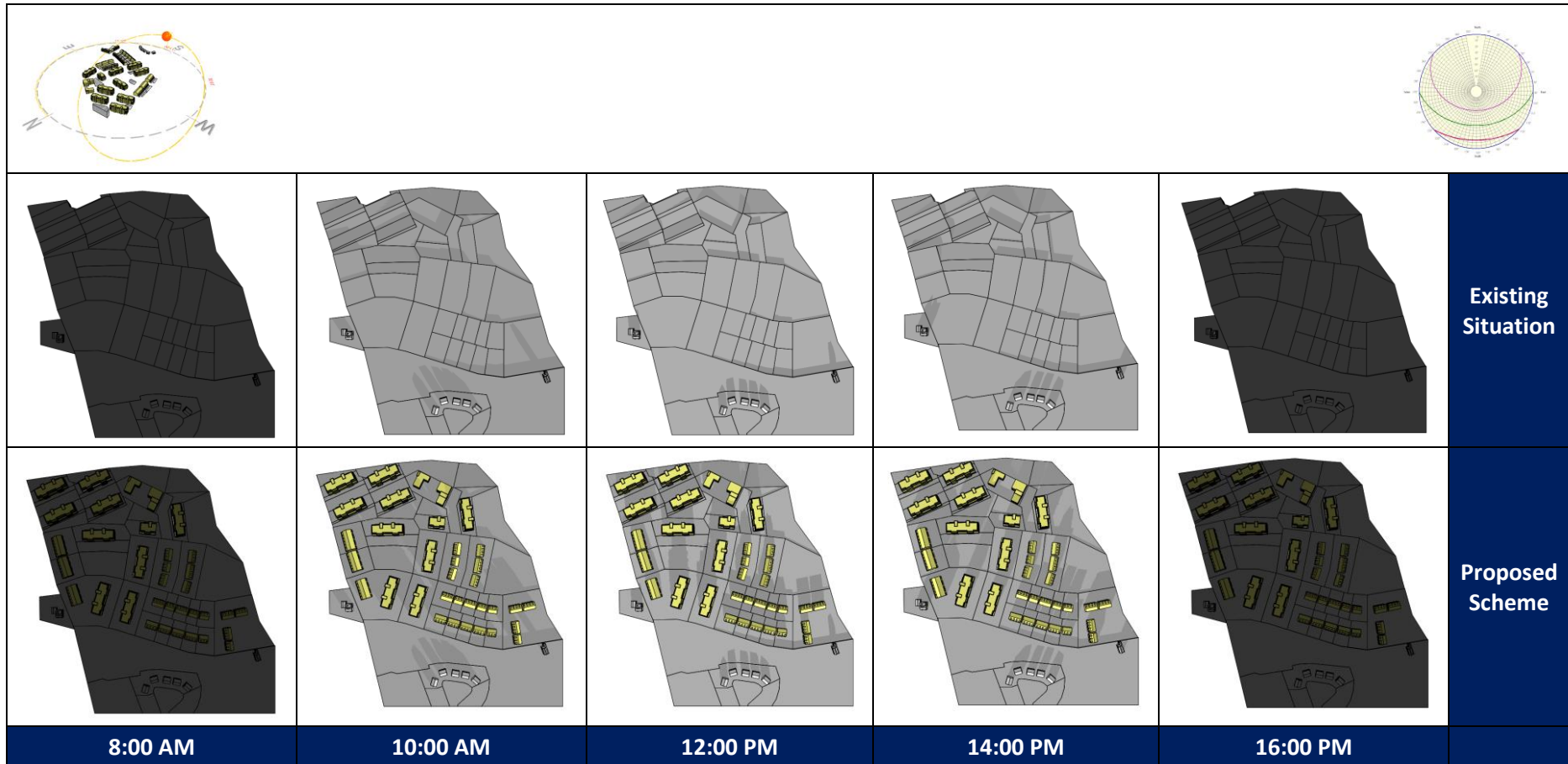
This section will consider the shadows cast for the Proposed development for the following dates;

- 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.

3.1 Plan View

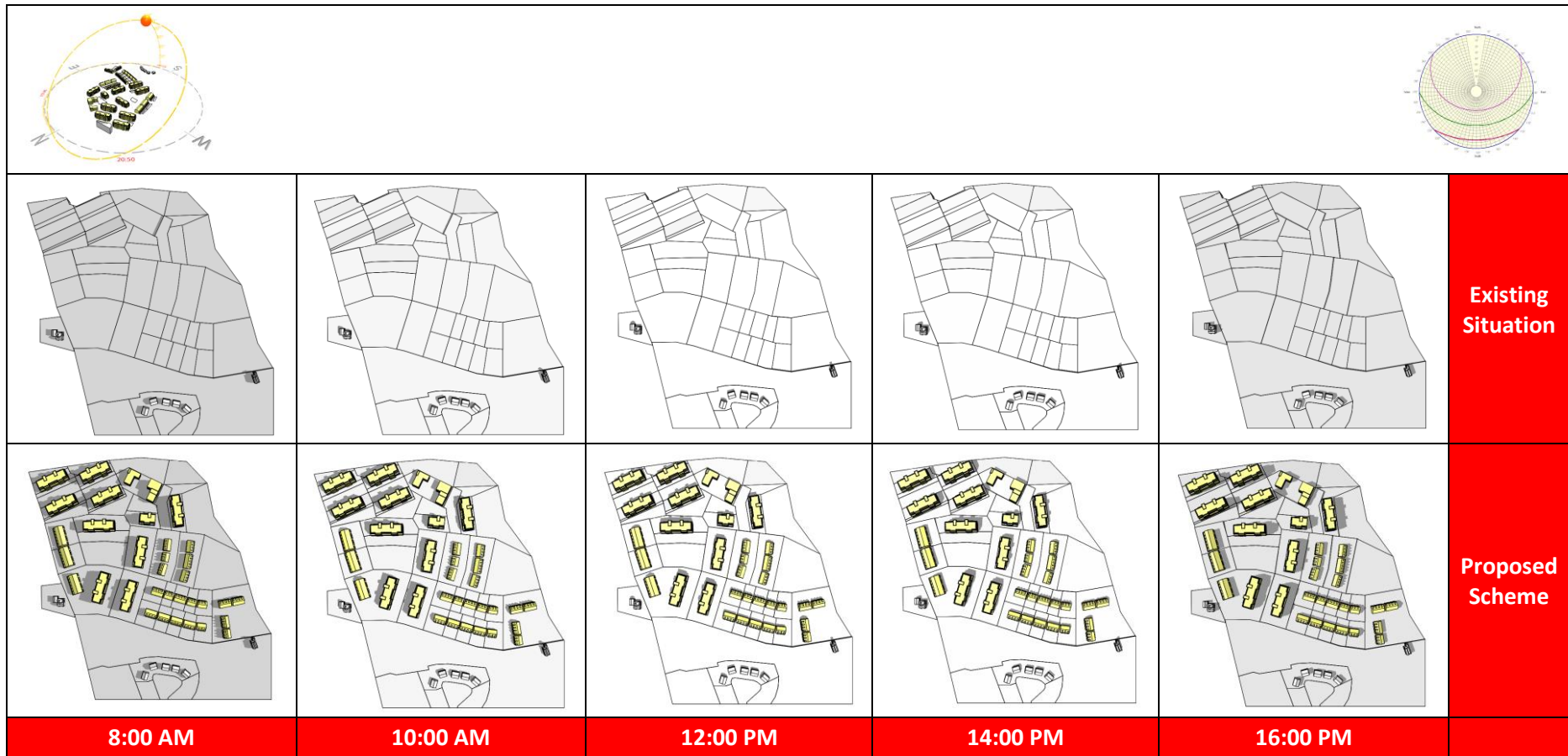
3.1.1 December 21st



3.1.2 March 21st

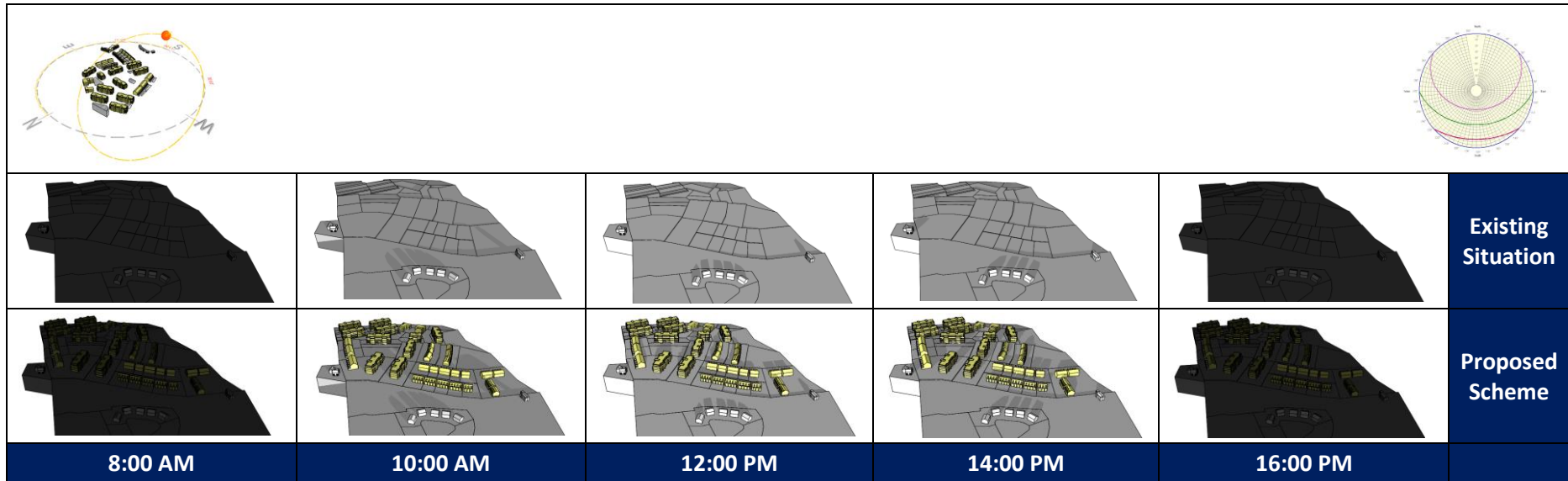


3.1.3 June 21st

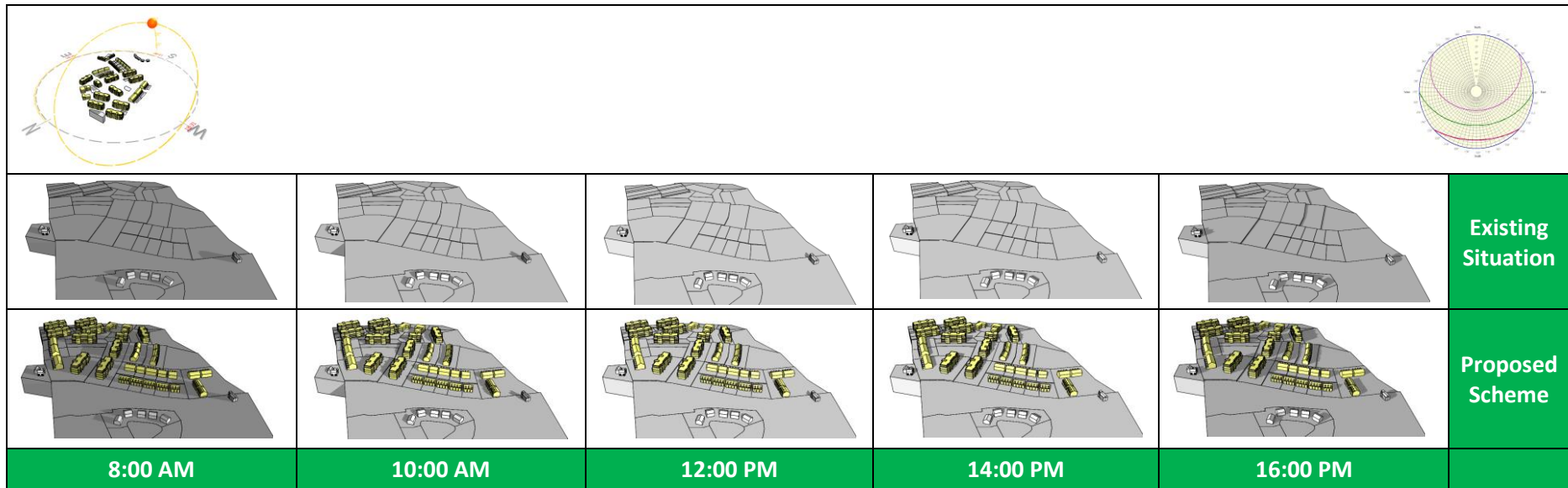


3.2 View 01: Looking over Fox Hill and McGrath's Lane

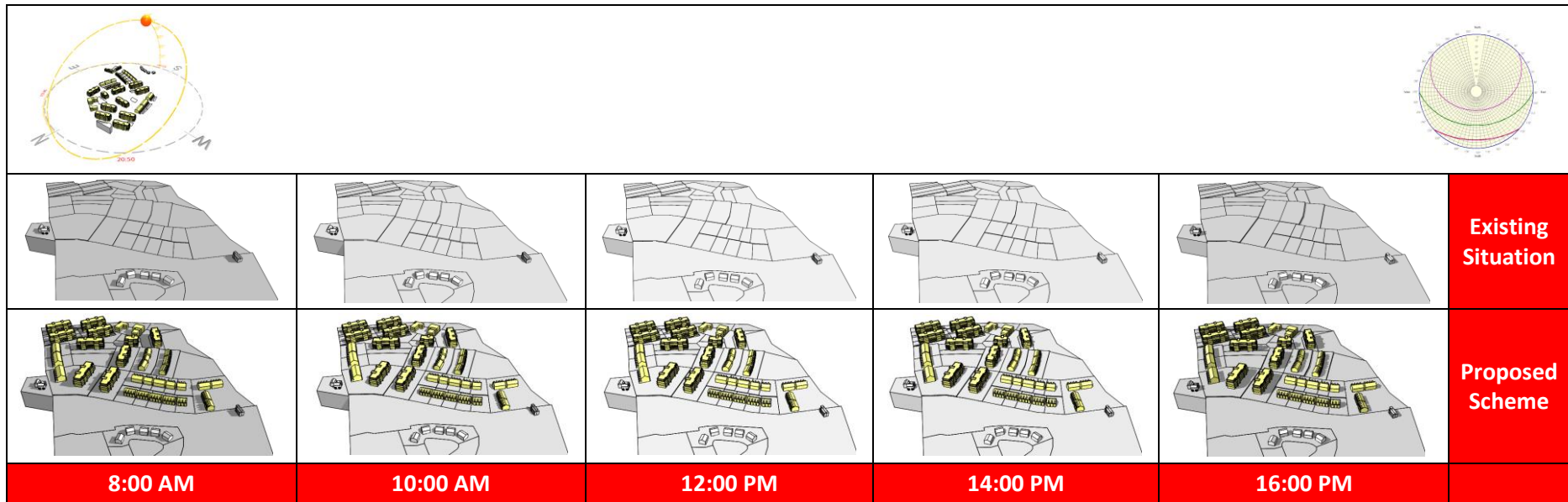
3.2.1 December 21st



3.2.2 March 21st

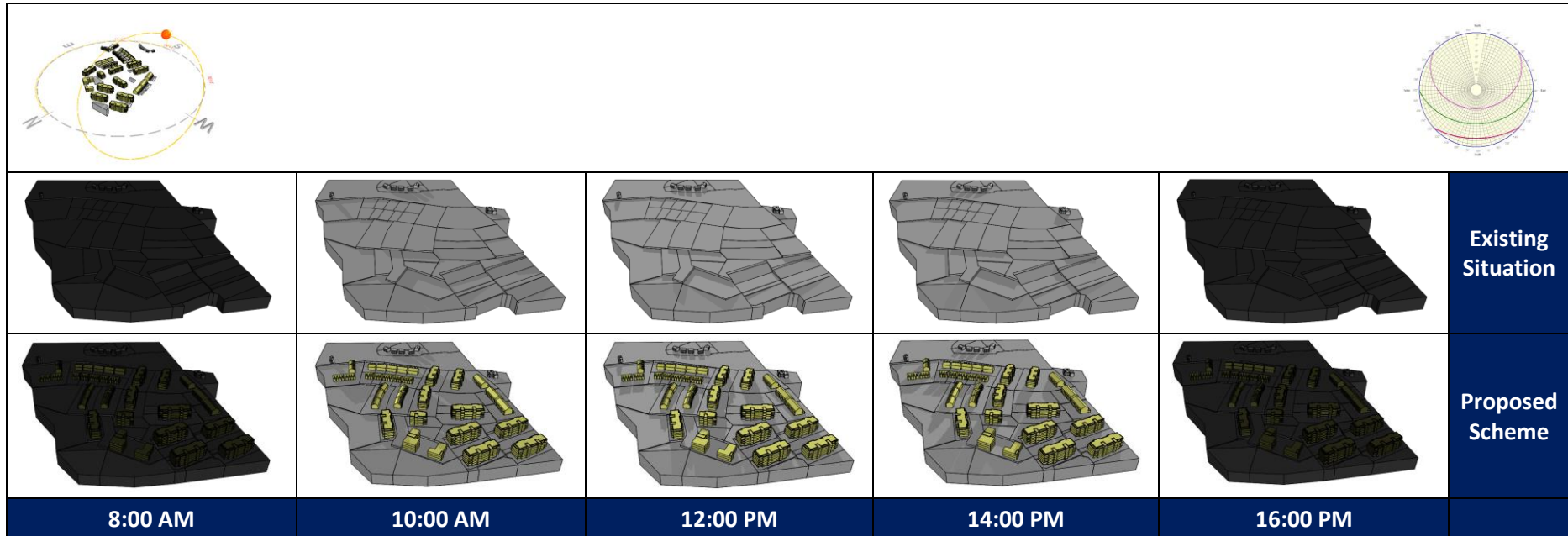


3.2.3 June 21st

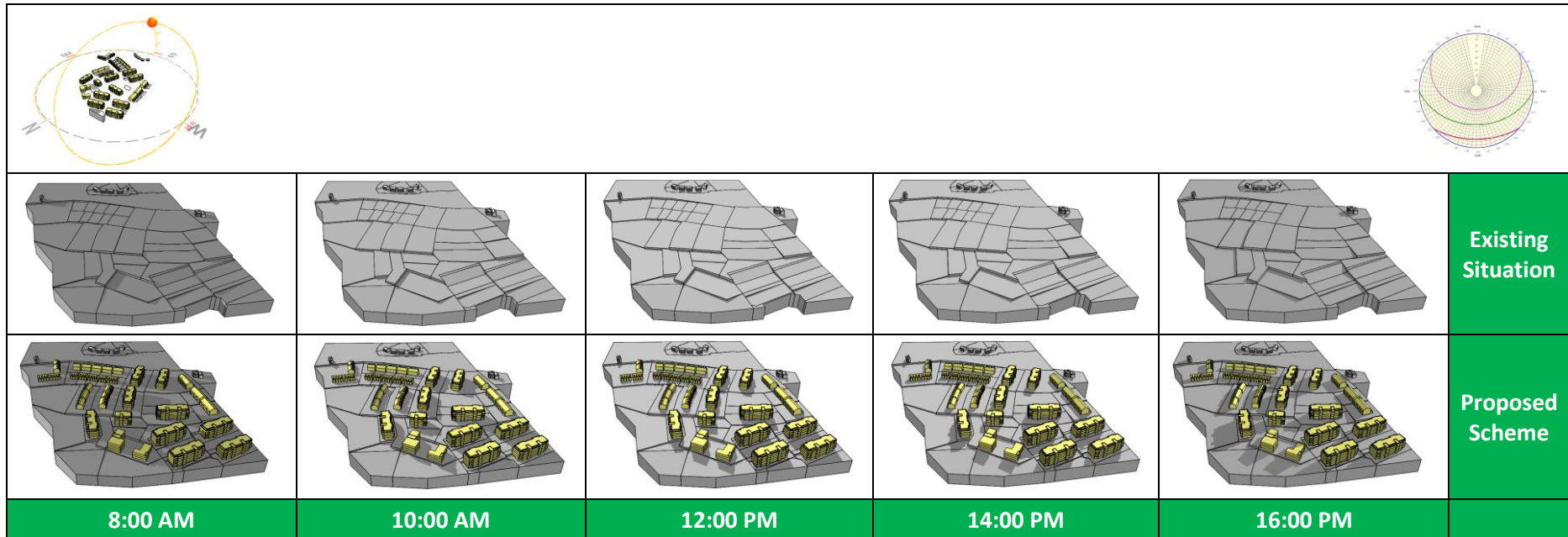


3.3 View 02: Looking over from North of Site

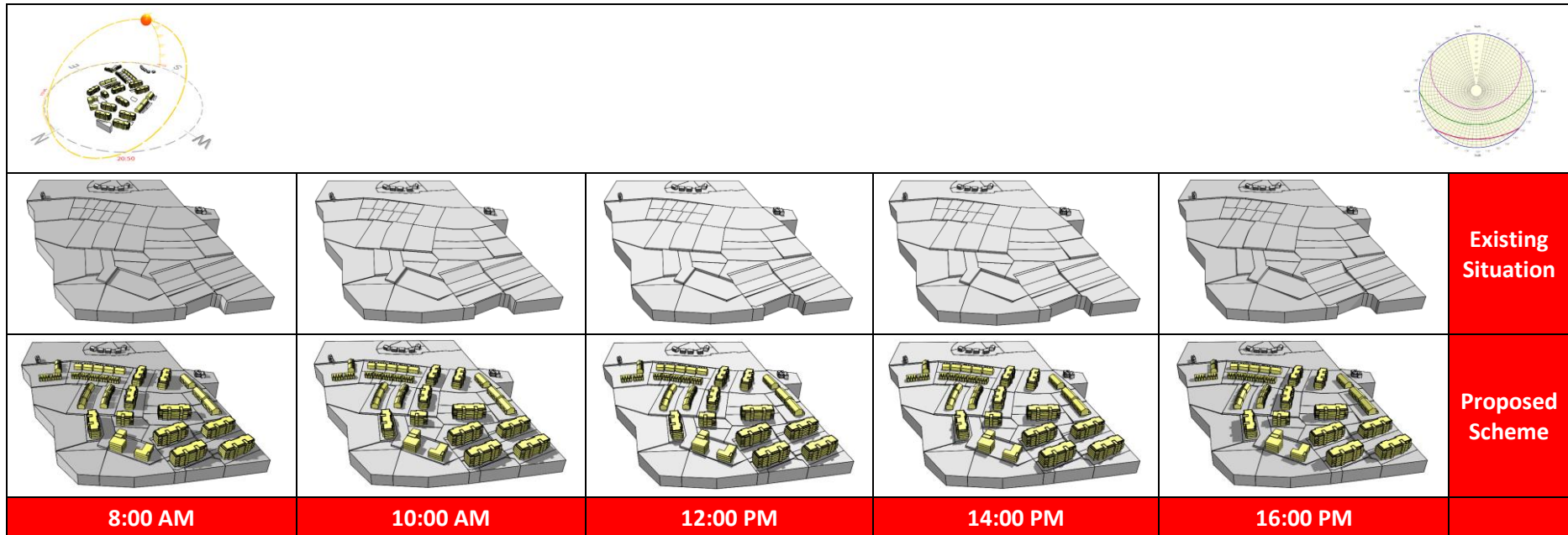
3.3.1 December 21st



3.3.2 March 21st



3.3.3 June 21st



3.4 Discussion

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

- **Morning (until 12h00)**
 - **Foxhill dwellings** – no additional shading visible from the proposed development on the existing residential dwellings as they sit to the South of development site.
 - **McGrath's Lane dwellings** – no additional shading visible from the proposed development on the existing residential dwellings as they sit to the South-west and South-east of development site.

- **Midday (from 12h00 until 16h00)**
 - **Foxhill dwellings** – no additional shading visible from the proposed development on the existing residential dwellings as they sit to the South of development site.
 - **McGrath's Lane dwellings** – no additional shading visible from the proposed development on the existing residential dwellings as they sit to the South-west and South-east of development site.

- **Late Afternoon (from 16h00)**
 - **Foxhill dwellings** – no additional shading visible from the proposed development on the existing residential dwellings as they sit to the South of development site.
 - **McGrath's Lane dwellings** – no additional shading visible from the proposed development on the existing residential dwellings as they sit to the South-west and South-east of development site.

As such, no additional shading is to be expected on the existing residential dwellings.

4 Daylight Analysis of Existing Buildings

4.1 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 Existing 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

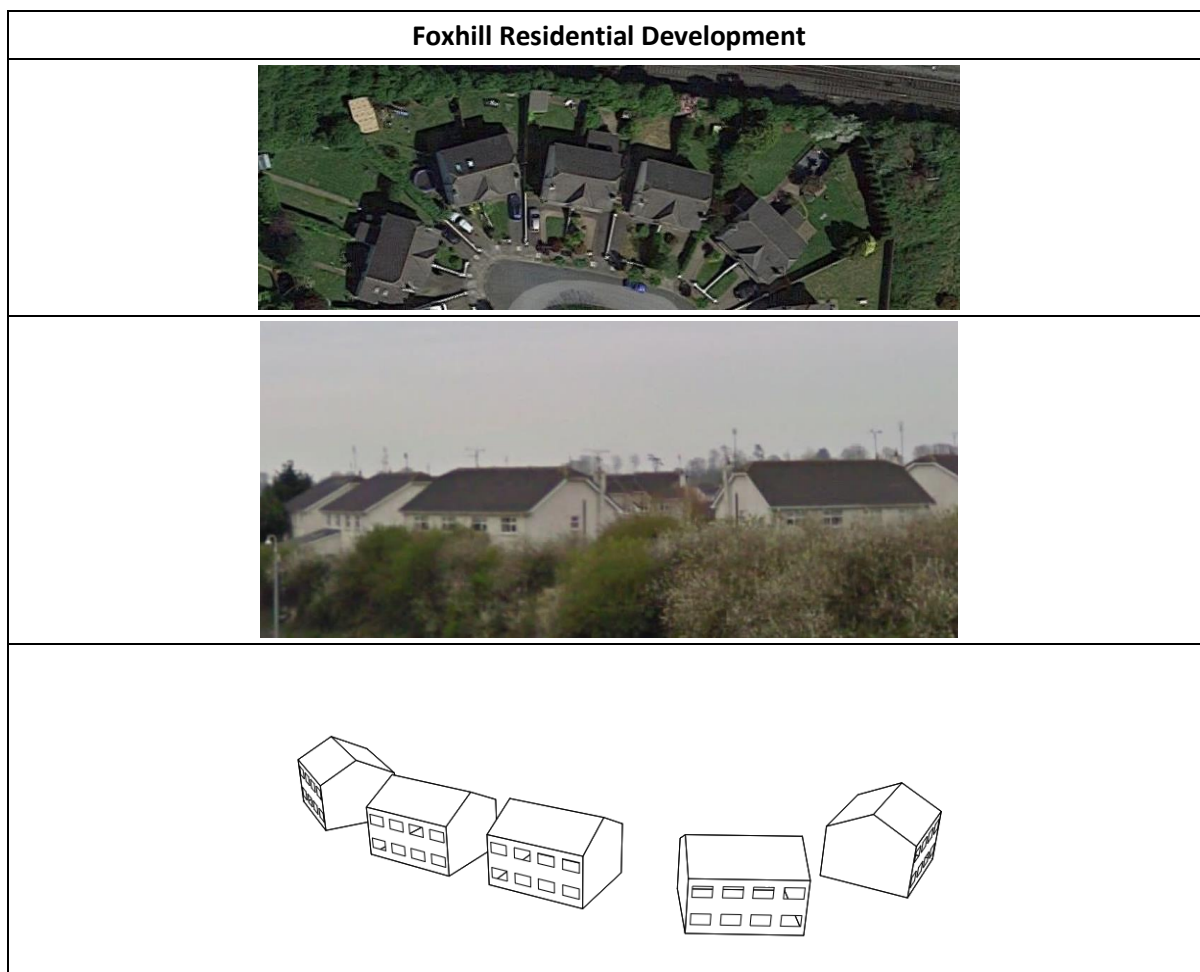
2.2.7 If this VSC is greater than 27% then enough skylight should still be reaching the window of the existing building. Any reduction below this level should be kept to a minimum. If the VSC, with the new development in place, is both less than 27% and less than 0.8 times its former value, occupants 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 compare the Existing Scheme and Proposed Schemes and consider whether any reduction will be greater than 20%.

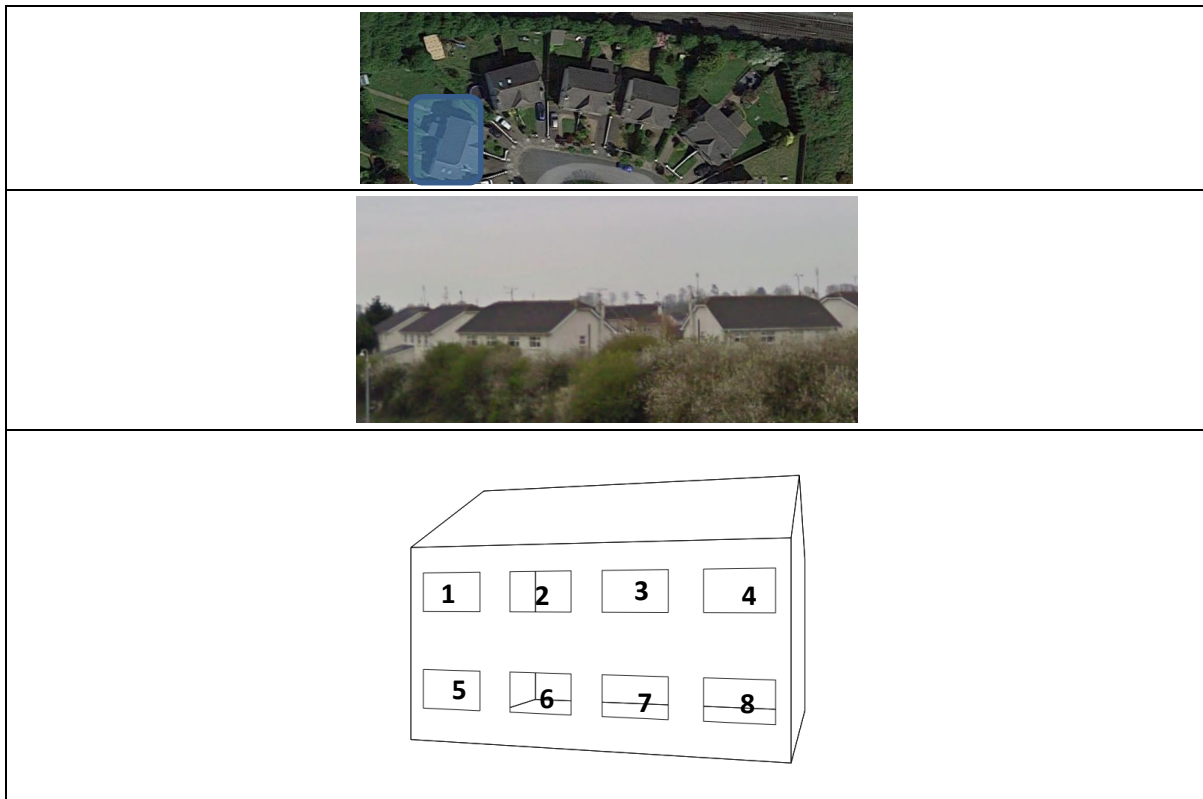
4.2 Assessment

4.2.1 Foxhill – Residential

Based on the above, the following locations have been modelled:



4.2.1.1 11 & 12 Foxhill



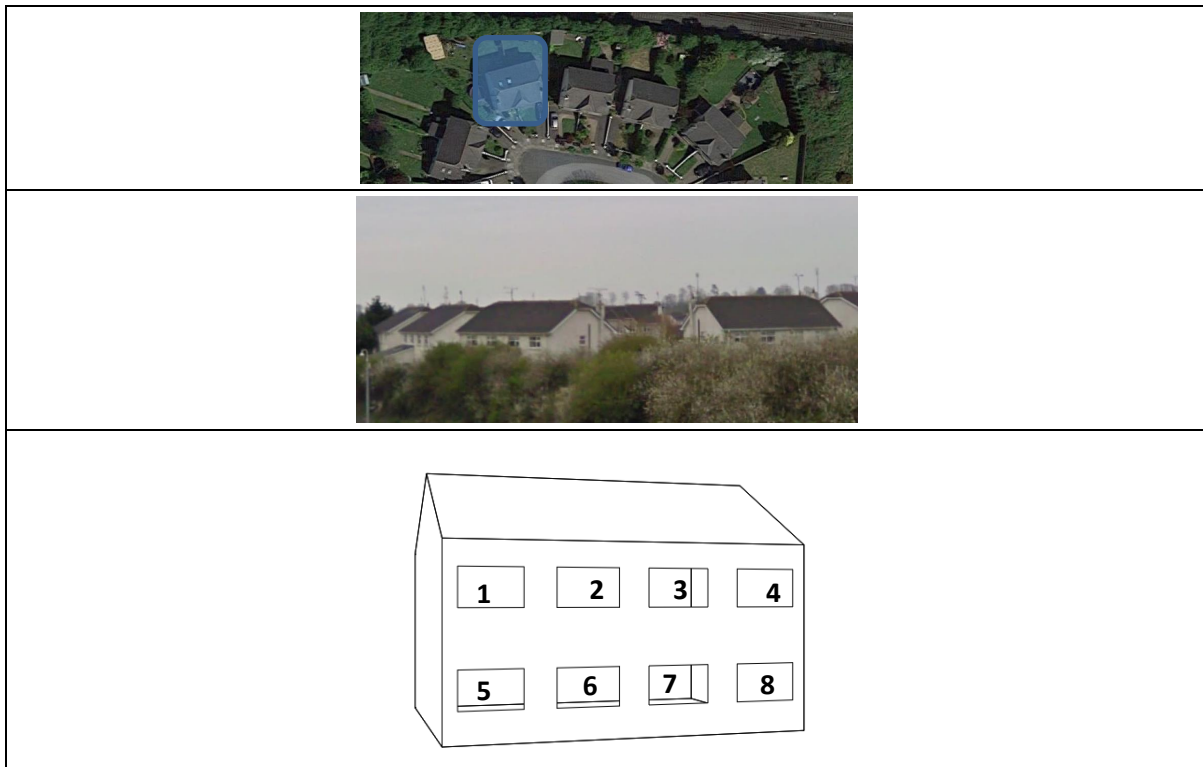
| Points | Existing Scheme VSC | Proposed Scheme VSC | Proposed VSC as % of Existing Scheme | Comment |
|--------|---------------------|---------------------|--------------------------------------|---------|
| 1 | 39.23 | 38.63 | 98% | ✓ |
| 2 | 39.12 | 38.80 | 99% | ✓ |
| 3 | 39.16 | 38.87 | 99% | ✓ |
| 4 | 39.03 | 38.67 | 99% | ✓ |
| 5 | 39.12 | 38.54 | 99% | ✓ |
| 6 | 39.17 | 38.68 | 99% | ✓ |
| 7 | 39.16 | 38.38 | 98% | ✓ |
| 8 | 39.17 | 38.58 | 98% | ✓ |

The following conclusions can be made:

- ✓ All of the tested points have a vertical sky component of not less than 0.8 times their former value (that of the Existing Scheme).

Therefore, these points are in line with the BRE recommendations.

4.2.1.2 13 & 14 Foxhill



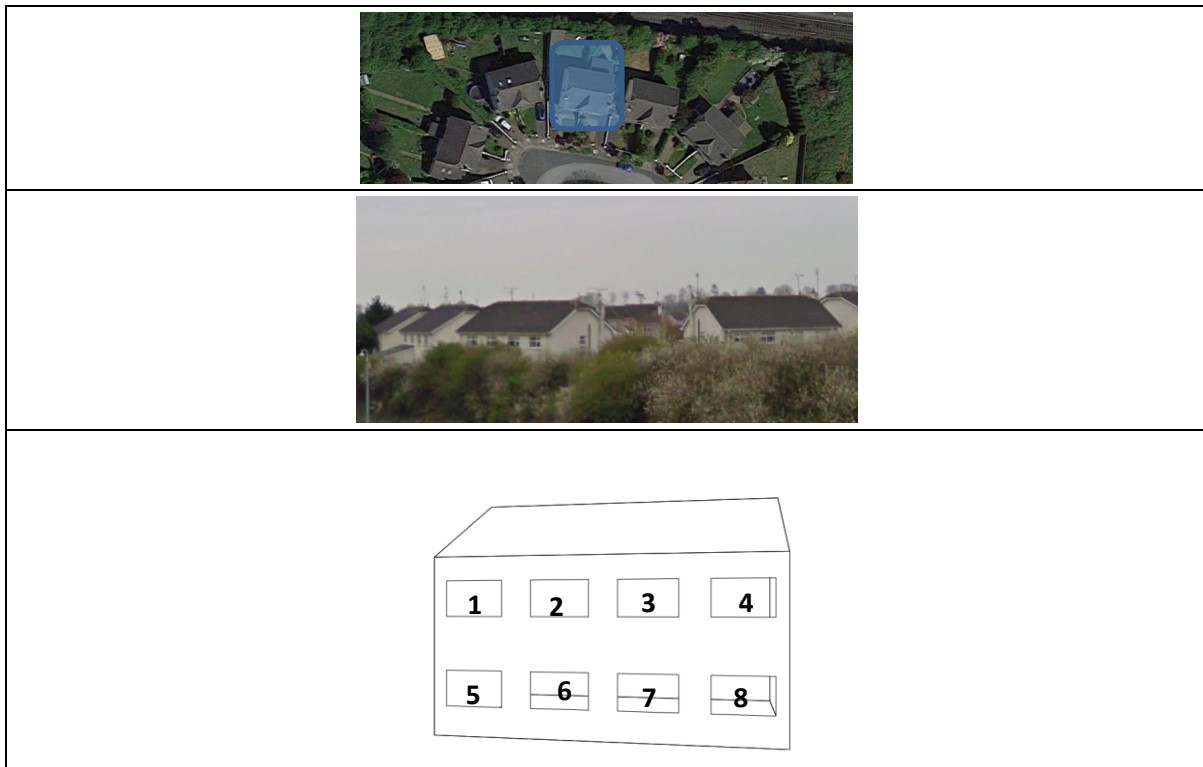
| Points | Existing Scheme VSC | Proposed Scheme VSC | Proposed VSC as % of Existing Scheme | Comment |
|--------|---------------------|---------------------|--------------------------------------|---------|
| 1 | 39.11 | 37.78 | 97% | ✓ |
| 2 | 39.08 | 37.81 | 97% | ✓ |
| 3 | 38.98 | 37.82 | 97% | ✓ |
| 4 | 39.23 | 37.89 | 97% | ✓ |
| 5 | 39.12 | 37.06 | 95% | ✓ |
| 6 | 39.14 | 37.35 | 95% | ✓ |
| 7 | 39.17 | 37.1 | 95% | ✓ |
| 8 | 39.13 | 37.4 | 96% | ✓ |

The following conclusions can be made:

- ✓ All of the tested points have a vertical sky component of not less than 0.8 times their former value (that of the Existing Scheme).

Therefore, these points are in line with the BRE recommendations.

4.2.1.3 15 & 16 Foxhill



| Points | Existing Scheme VSC | Proposed Scheme VSC | Proposed VSC as % of Existing Scheme | Comment |
|--------|---------------------|---------------------|--------------------------------------|---------|
| 1 | 39.22 | 37.99 | 97% | ✓ |
| 2 | 39.09 | 37.98 | 97% | ✓ |
| 3 | 39.18 | 37.85 | 97% | ✓ |
| 4 | 39.04 | 37.78 | 97% | ✓ |
| 5 | 39.16 | 37.34 | 95% | ✓ |
| 6 | 39.33 | 37.22 | 95% | ✓ |
| 7 | 39.22 | 37.09 | 95% | ✓ |
| 8 | 39.10 | 37.05 | 95% | ✓ |

The following conclusions can be made:

- ✓ All of the tested points have a vertical sky component of not less than 0.8 times their former value (that of the Existing Scheme).

Therefore, these points are in line with the BRE recommendations.

4.2.1.4 17 & 18 Foxhill



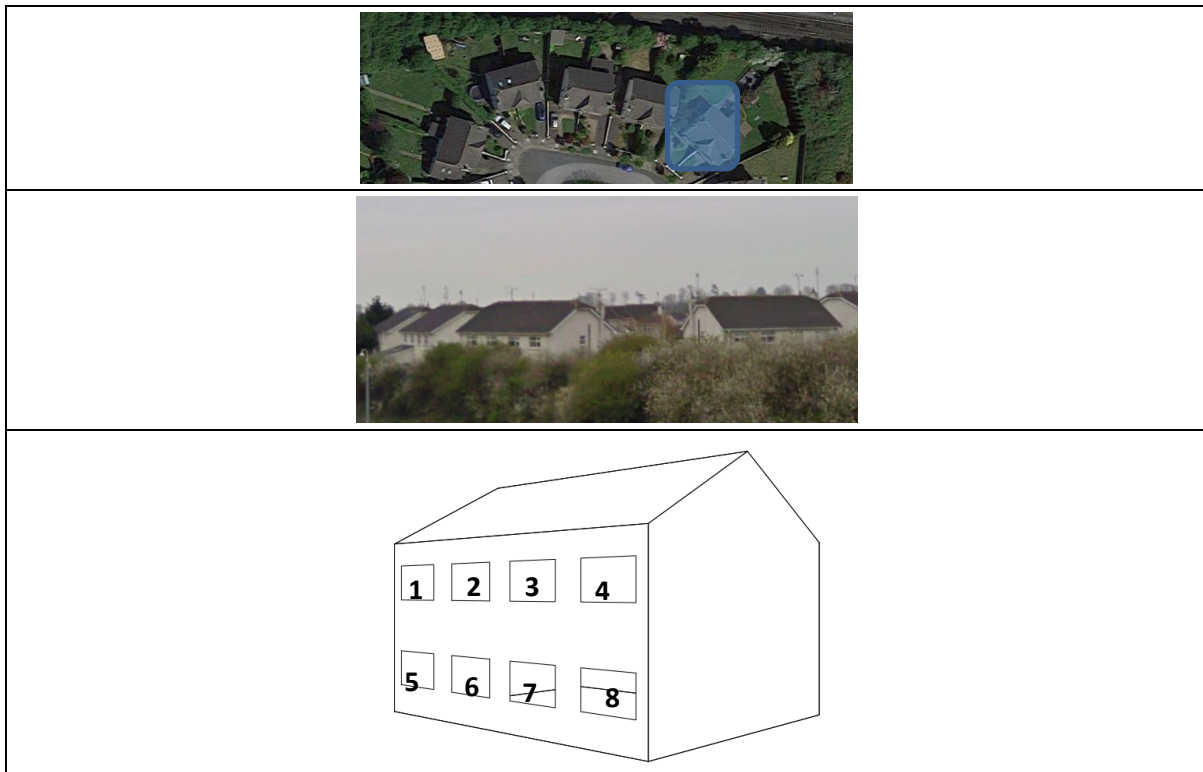
| Points | Existing Scheme VSC | Proposed Scheme VSC | Proposed VSC as % of Existing Scheme | Comment |
|--------|---------------------|---------------------|--------------------------------------|---------|
| 1 | 39.2 | 38.10 | 97% | ✓ |
| 2 | 39.15 | 38.00 | 97% | ✓ |
| 3 | 39.19 | 38.01 | 97% | ✓ |
| 4 | 39.17 | 38.01 | 97% | ✓ |
| 5 | 39.16 | 37.51 | 96% | ✓ |
| 6 | 39.1 | 37.15 | 95% | ✓ |
| 7 | 39.12 | 37.29 | 95% | ✓ |
| 8 | 39.01 | 37.36 | 96% | ✓ |

The following conclusions can be made:

- ✓ All of the tested points have a vertical sky component of not less than 0.8 times their former value (that of the Existing Scheme).

Therefore, these points are in line with the BRE recommendations.

4.2.1.5 19 & 20 Foxhill



| Points | Existing Scheme VSC | Proposed Scheme VSC | Proposed VSC as % of Existing Scheme | Comment |
|--------|---------------------|---------------------|--------------------------------------|---------|
| 1 | 38.99 | 38.73 | 99% | ✓ |
| 2 | 39.14 | 38.54 | 98% | ✓ |
| 3 | 39.19 | 38.49 | 98% | ✓ |
| 4 | 39.13 | 38.43 | 98% | ✓ |
| 5 | 39.05 | 38.16 | 98% | ✓ |
| 6 | 39.16 | 38.18 | 97% | ✓ |
| 7 | 39.09 | 38.01 | 97% | ✓ |
| 8 | 39.11 | 37.92 | 97% | ✓ |

The following conclusions can be made:

- ✓ All of the tested points have a vertical sky component of not less than 0.8 times their former value (that of the Existing Scheme).

Therefore, these points are in line with the BRE recommendations.

4.2.2 McGrath's Ln

Based on the above, the following locations have been modelled:



4.2.2.1 McGrath's Ln West



| Points | Existing Scheme VSC | Proposed Scheme VSC | Proposed VSC as % of Existing Scheme | Comment |
|--------|---------------------|---------------------|--------------------------------------|---------|
| 1 | 38.99 | 35.23 | 90% | ✓ |
| 2 | 38.23 | 35.74 | 93% | ✓ |
| 3 | 34.68 | 32.35 | 93% | ✓ |
| 4 | 32.12 | 28.66 | 89% | ✓ |
| 5 | 39.08 | 33.92 | 87% | ✓ |
| 6 | 38.93 | 33.44 | 86% | ✓ |
| 7 | 37.62 | 33.77 | 90% | ✓ |
| 8 | 35.29 | 31.8 | 90% | ✓ |
| 9 | 26.98 | 23.4 | 87% | ✓ |
| 10 | 23.4 | 18.71 | 80% | ✓ |
| 11 | 28.66 | 23.44 | 82% | ✓ |

The following conclusions can be made:

- ✓ All of the tested points have a vertical sky component of not less than 0.8 times their former value (that of the Existing Scheme).

Therefore, these points are in line with the BRE recommendations.

4.2.2.2 McGrath's Ln East



| Points | Existing Scheme VSC | Proposed Scheme VSC | Proposed VSC as % of Existing Scheme | Comment |
|--------|---------------------|---------------------|--------------------------------------|---------|
| 1 | 39.25 | 38.77 | 99% | ✓ |
| 2 | 35.39 | 35.21 | 99% | ✓ |
| 3 | 29.12 | 28.91 | 99% | ✓ |
| 4 | 38.99 | 38.84 | 100% | ✓ |
| 5 | 39.09 | 38.97 | 100% | ✓ |
| 6 | 39.09 | 38.94 | 100% | ✓ |
| 7 | 39.17 | 38.98 | 100% | ✓ |
| 8 | 39.23 | 37.82 | 96% | ✓ |
| 9 | 33.06 | 31.87 | 96% | ✓ |
| 10 | 25.16 | 24.04 | 96% | ✓ |
| 11 | 38.98 | 38.07 | 98% | ✓ |
| 12 | 38.96 | 38.25 | 98% | ✓ |
| 13 | 39.01 | 38.37 | 98% | ✓ |
| 14 | 39.04 | 38.38 | 98% | ✓ |

The following conclusions can be made:

- ✓ All of the tested points have a vertical sky component of not less than 0.8 times their former value (that of the Existing Scheme).

Therefore, these points are in line with the BRE recommendations.

4.3 Discussion

For the residential dwellings considered on Foxhill and McGrath's Lane, all of the points tested have a vertical sky component of not less than 0.8 times their former value (that of the Existing Scheme).

Therefore, these points are all in line with the BRE recommendations.

5 Sunlight to the Proposed Amenity Spaces

5.1 Requirements

The impact of the development proposal on the 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 Exclusion of Garden Fences

BRE’s 2011 guidance document Site Layout Planning for Daylight and Sunlight states under section 3.3.10 that shadows cast by fences or walls that are greater than 1.50m high should be included in the analysis whilst fences etc. picket fencing, which let through sunlight can be omitted.

As illustrated below, the proposed scheme’s house garden fencing marking the boundaries between each amenity space are intended to let through sunlight, therefore these fences are excluded from the analysis.

3.3.10 Fences and walls cast deeper shade than trees and their positions can often be predicted. As a guide, shadows of walls or opaque fences greater than 1.5 m high should be included in the calculation. Where low fences or walls are intended, or railings or trellises which let through sunlight, no calculation of shadows is necessary.

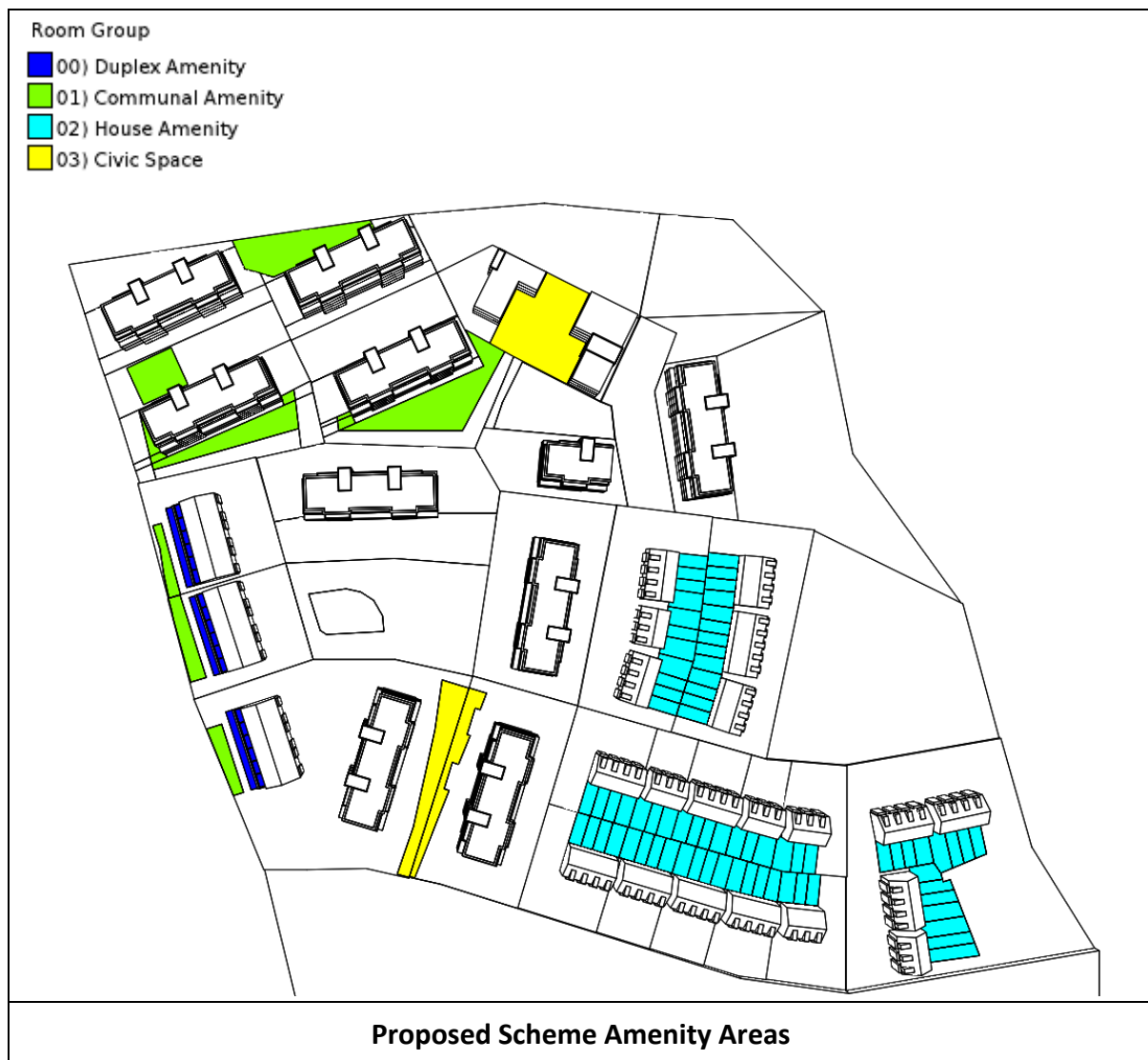


5.3 Assessment

5.3.1 Methodology

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.

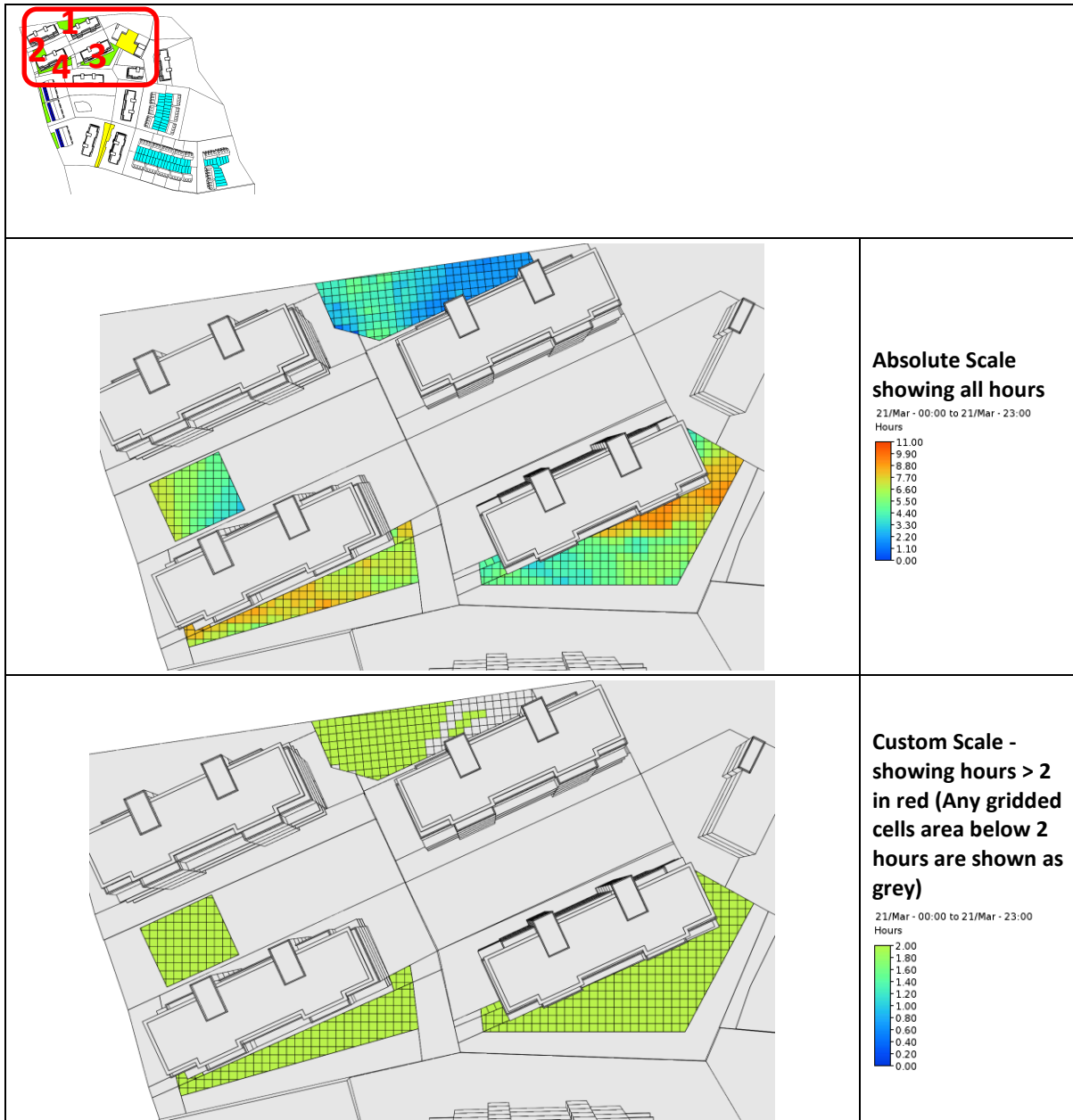
This analysis will be performed on the following proposed amenity spaces shown in the images below:



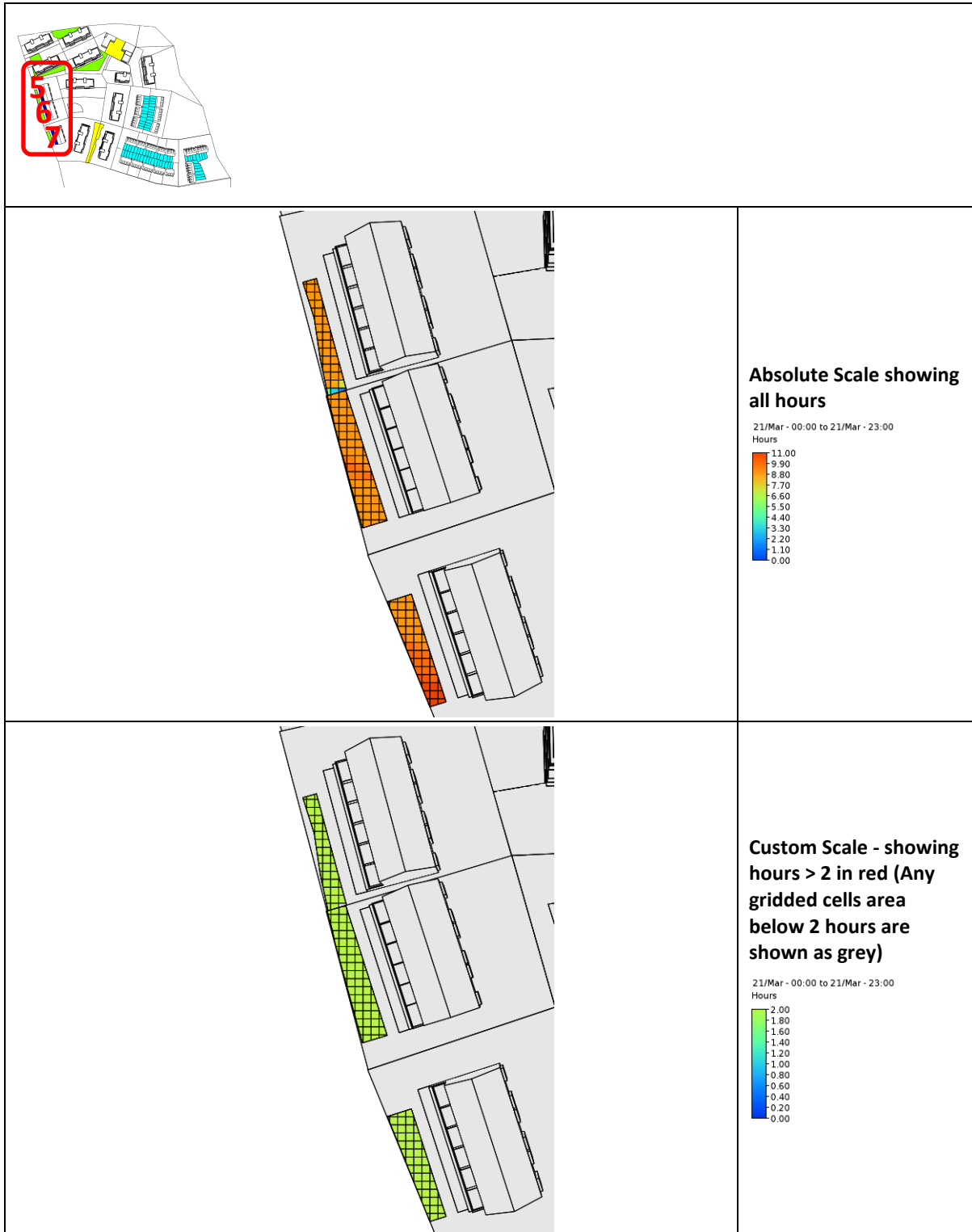
5.4 Communal Amenity Areas

The following images show the predicted results with respect to this space receiving at least 2 hours of sunlight on 21st March, across the gridded cells.

5.4.1 Areas 1, 2, 3 & 4



5.4.2 Areas 5, 6 & 7



5.4.3 Discussion

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.

It is observed on the 21st of March that over half of all of the proposed communal amenity areas tested would receive at least 2 hours of sunlight and thus satisfying the BRE recommendations.

| Assessment Space | % Area receiving >2 Hours | Comment | BRE recommendations |
|------------------|---------------------------|---|---------------------|
| Area 1 | ~ 60 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ |
| Area 2 | 100 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ |
| Area 3 | 100 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ |
| Area 4 | 100 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ |
| Area 5 | ~ 100 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ |
| Area 6 | 100 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ |
| Area 7 | 100 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ |

- ✓ These areas are in line with the BRE recommendations.

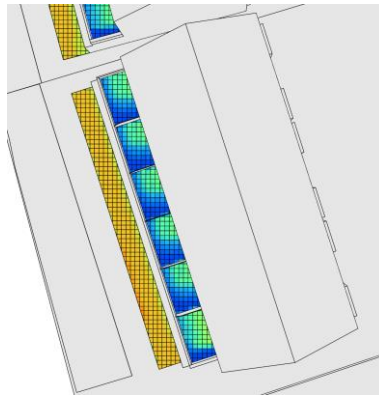
5.5 Duplex Garden Amenity Areas

The following images show the predicted results with respect to this space receiving at least 2 hours of sunlight on 21st March, across the gridded cells.

5.5.1 Areas 1, 2 & 3

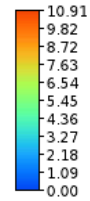


Area 2



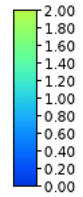
Absolute Scale showing all hours

21/Mar - 00:00 to 21/Mar - 23:00
Hours

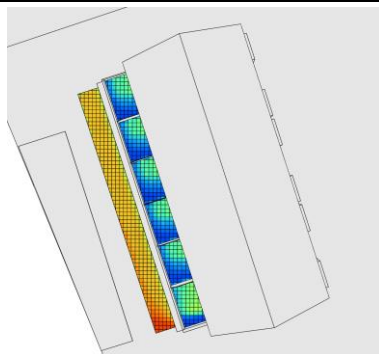


Custom Scale - showing hours > 2 in red (Any gridded cells area below 2 hours are shown as grey)

21/Mar - 00:00 to 21/Mar - 23:00
Hours

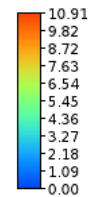


Area 3



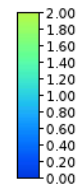
Absolute Scale showing all hours

21/Mar - 00:00 to 21/Mar - 23:00
Hours



Custom Scale - showing hours > 2 in red (Any gridded cells area below 2 hours are shown as grey)

21/Mar - 00:00 to 21/Mar - 23:00
Hours



5.5.2 Discussion

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.

It is observed on the 21st of March that over half of each proposed duplex garden amenity area tested would receive at least 2 hours of sunlight and thus satisfying the BRE recommendations.

This is based on the assumption that the obscure glass screen between units at first floor level and the 800mm wall to the front is opaque and obstructs light.

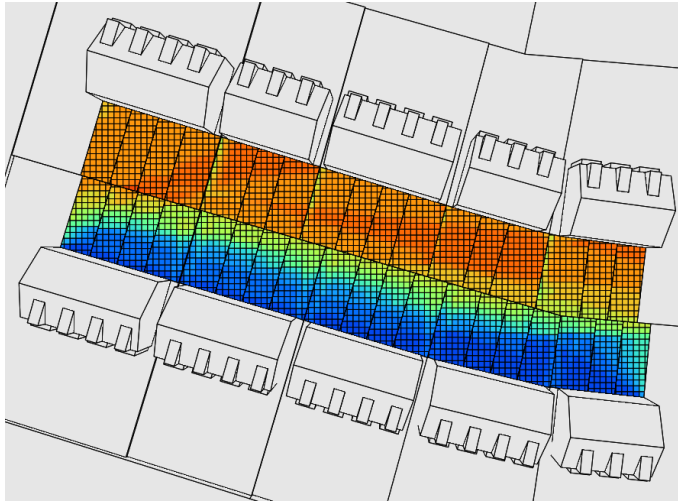
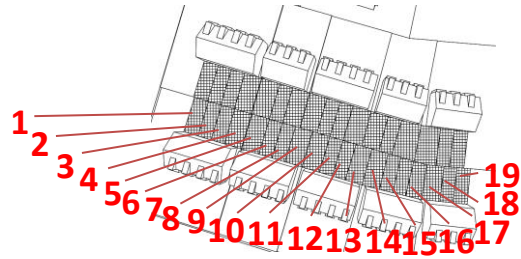
5.6 House Garden Amenity Areas

The following images show the predicted results with respect to each individual rear garden space receiving at least 2 hours of sunlight on 21st March, across the gridded cells. Low-density fences have been assumed for the dividing balustrades.

5.6.1 Areas 1 – 4

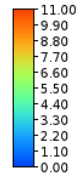


Areas 2 & 3



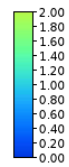
**Absolute Scale
showing all hours**

21/Mar - 00:00 to 21/Mar - 23:00
Hours

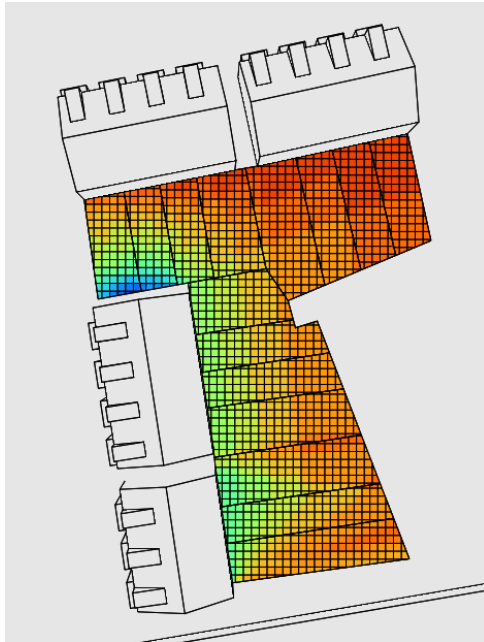


**Custom Scale -
showing hours > 2 in
red (Any gridded cells
area below 2 hours
are shown as grey)**

21/Mar - 00:00 to 21/Mar - 23:00
Hours

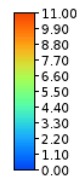


Area 4



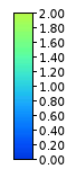
**Absolute Scale
showing all hours**

21/Mar - 00:00 to 21/Mar - 23:00
Hours



**Custom Scale -
showing hours > 2 in
red (Any gridded cells
area below 2 hours
are shown as grey)**

21/Mar - 00:00 to 21/Mar - 23:00
Hours



5.6.2 Discussion

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.

It is observed on the 21st of March that over half of each house garden amenity area tested under Areas 1, 2 & 4 would receive at least 2 hours of sunlight and thus satisfying the BRE recommendations.

For Area 3, 15 out of 19 of the garden amenity areas are in line with BRE recommendations.

The remaining amenity spaces that do not meet the BRE recommendations with respect to the level of sunlight access are north facing spaces and are performing as expected due to the orientation of the buildings within the site.

| Assessment Space | % Area receiving >2 Hours | Comment | Ref |
|------------------|---------------------------|---|----------------|
| Area 1 | 100 % | Over half of each individual rear garden amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Area 2 | 100 % | Over half of each individual rear garden amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Area 3 | | | |
| Garden 1 | ~ 80 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Garden 2 | ~ 60 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Garden 3 | ~ 60 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Garden 4 | ~ 50 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Garden 5 | ~ 55% | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Garden 6 | ~ 55% | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Garden 7 | ~ 55% | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |

| Assessment Space | % Area receiving >2 Hours | Comment | Ref |
|------------------|---------------------------|--|----------------|
| Garden 8 | ~ 60 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Garden 9 | ~ 60 % | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Garden 10 | ~ 55% | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Garden 11 | ~ 55% | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Garden 12 | ~ 50% | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ² |
| Garden 13 | ~ 40% | Less than half of the amenity space receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ² |
| Garden 14 | ~ 40% | Less than half of the amenity space receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ² |
| Garden 15 | ~ 40% | Less than half of the amenity space receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ² |
| Garden 16 | ~ 40% | Less than half of the amenity space receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ² |
| Garden 17 | ~ 20% | Less than half of the amenity space receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ² |
| Garden 18 | ~ 30% | Less than half of the amenity space receives a minimum of 2 hours of sunlight on the 21st of March.. | ✓ ² |
| Garden 19 | ~ 70% | Over half of the amenity area receives a minimum of 2 hours of sunlight on the 21st of March. | ✓ ¹ |
| Area 4 | 100 % | Over half of each individual rear garden amenity area receives a minimum of 2 hours of sunlight on the 21st of March | ✓ ¹ |

✓¹ These areas are in line with the BRE recommendations.

✓² These areas are north facing spaces and perform as expected due to the position of the buildings on the site.

5.7 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 results above show that based on the analysis taken, the majority of spaces considered are expected to receive a minimum of 2 hours of sunlight for over half their respective areas:

- **Communal open space amenity areas** – all in line with BRE recommendations
- **Duplex Garden amenity areas** – all in line with BRE recommendations
- **House Garden amenity areas** – the majority of the amenity areas are in line with the BRE recommendations

In terms of the House Garden amenity spaces, it is important to note that the minimum required separation distances have been met and that the gardens extend for at least 12m in attempt to ensure that the rear of the garden is receiving sunlight on the 21st of March for a potential patio / seating area. This can be seen in the result images shown.

6 Conclusion

The following can be concluded based on the studies undertaken.

6.1 Shadow Analysis

The Shadow analysis shows different shadows being cast at some times of the year for the proposed scheme. As the proposed development sits to the North of the existing residential dwellings on Foxhill and McGrath's Lane, no resulting overshadowing is visible on the neighbouring dwellings.

6.2 Daylight Analysis of existing buildings

For the residential dwellings considered on Foxhill and McGrath's Lane, all of the points tested have a vertical sky component of not less than 0.8 times their former value (that of the Existing Scheme). Therefore, these points are all in line with the BRE recommendations.

6.3 Sunlight to the 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.

- **Communal open space amenity areas** – all in line with BRE recommendations
- **Duplex Garden amenity areas** – all in line with BRE recommendations
- **House Garden amenity areas** – the majority of the amenity areas are in line with the BRE recommendations

As demonstrated by the analysis undertaken, the majority of the communal and private amenity areas are in line with the recommendations stated in BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight. Where areas do not meet the recommendations, this is due to orientation and hence, areas perform as expected.

6.4 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.

Despite the above, the site performs well in relation to the metrics considered in this report.

When assessing the proposed development impact on the neighbouring properties, the following can be concluded:

- In terms of shading on surrounding properties, as the proposed development sits to the North of the existing residential dwellings on Foxhill and McGrath's Lane, no resulting overshadowing is visible.
- Resultant VSC values for the proposed development are all in line with the BRE recommendations.
- In terms of Sunlight to the Proposed Amenity Spaces, the majority of amenity areas would receive above 2 hours of sunlight on the 21st March as per the BRE recommendations.

Overall, the results demonstrate that the majority of the proposed development performs in line with BRE recommendations in the BRE 'Site Layout Planning for Daylight and Sunlight' guide, sometimes referred to as BRE Digest 209.



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