

58 Ferringham Lane, Ferring

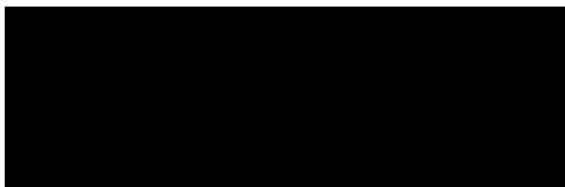
Daylight, Sunlight and Overshadowing Report

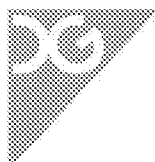
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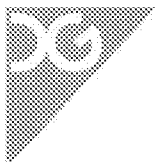
Delta Green Environmental Design
Integrated Sustainable Solutions





Contents

1.0	Introduction	2
2.0	Assessment Criteria.....	2
2.1	Vertical Sky Component	2
2.2	Annual Probable Sunlight Hours.....	2
2.3	Overshadowing	3
3.0	Methodology	3
4.0	3D Models	3
5.0	Results and Discussion	5
5.1	Vertical Sky Component	5
5.2	Annual Probable Sunlight Hours.....	5
5.3	Overshadowing	6
6.0	Conclusions.....	6
7.0	Appendix 1 – Window References	7



1.0 Introduction

The proposed development involves the demolition of an existing care home and the erection of a new residential building. The proposals for the new development have been evaluated to identify if there will be any impact on daylight, sunlight or overshadowing to the property at 60 Ferringham Lane.

2.0 Assessment Criteria

2.1 Vertical Sky Component

The amount of skylight that reaches the windows is assessed by determining the Vertical Sky Component (VSC). The vertical sky component is the ratio of direct sky light that reaches a vertical plane (wall or window) to the amount of sky light that reaches the horizontal plane (the ground). This ratio is expressed as a percentage. The maximum VSC that could be achieved for a completely unobstructed window/wall is almost 40%.

The BRE's Guide to Good Practice Site Layout Planning for Daylight and Sunlight¹ provides the following guide for relating VSC to daylight levels:

- VSC $\geq$ 27% should give reasonable daylight results
- VSC between 15% and 27% would need large windows to achieve good daylight
- VSC between 5% and 15% would need very large windows to achieve good daylight
- VSC less than 5% often impossible to achieve good daylight even if whole wall were glazed.

When assessing the impact of a new development on existing buildings the guidance suggests that if with a new development, an existing window has a VSC greater than 27% it should still receive sufficient skylight. If the VSC is reduced below 27% and less than 0.8 times its former value, then the occupants are likely to notice the loss of skylight.

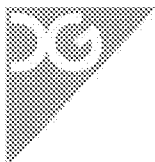
2.2 Annual Probable Sunlight Hours

The criteria used for assessment of the impact of the proposed development on sunlight levels to existing dwellings is taken from the BRE Guidance for "Site Layout Planning for Daylight and Sunlight, a Guide to Good Practice".

The BRE guidance summarises that a dwelling shall appear reasonably sunlit if the centre of a main living room window can receive 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in winter months between 21st September and 21st March.

When considering the impact of a development on an existing dwelling, the sunlight to the existing dwelling may be adversely affected if:

¹ Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice (BR 209), 2011, Paul Littlefair, BRE, Second Edition.



- The centre of the main living room window receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21st September and 21st March;
- The centre of the main living room window receives less than 80% of its former sunlight hours during either period, and;
- The centre of the main living room window has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours

2.3 Overshadowing

The impact of the proposed development on existing surrounding gardens is assessed against guidance provided within the BRE Guidance for "Site Layout Planning for Daylight and Sunlight, a Guide to Good Practice" 2011. The guidance states that the sunlight to a garden will be adversely affected if both of the following criteria are infringed upon:

1. The area of garden that can receive 2 or more hours of direct sunlight on 21st March is reduced to below 50% of the total area.
2. The total area of the garden that can receive 2 or more hours of direct sunlight on 21st March is reduced by 20% or more of the existing value as a result of the proposed development.

Therefore, where less than 50% of the garden is found to receive direct sunlight for at least 2 hours as a result of the development and the total area that still receives direct sunlight is less than 80% of the former value the garden is considered to be overshadowed.

3.0 Methodology

The Radiance module in the IES Virtual Environment (VE) software is used to calculate the vertical sky component (VSC). The VSC calculation uses the standard CIE overcast sky.

The SunCast module in IES VE is used to produce a solar exposure calculation to determine the number of hours each day a window receives sunlight from the sky. These results are used to calculate the Annual Probable Sunlight Hours. This module is also used to determine the area of overshadowing to each of the gardens.

4.0 3D Models

A 3D model of the existing care home at 58 Ferringham Lane, the proposed development and the adjacent 60 Ferringham Lane has been constructed, see Figure 1 and 2. The model was based upon drawings from Turner Associates. Please note – the BRE guidance requires the studies to be undertaken without the inclusion of trees.

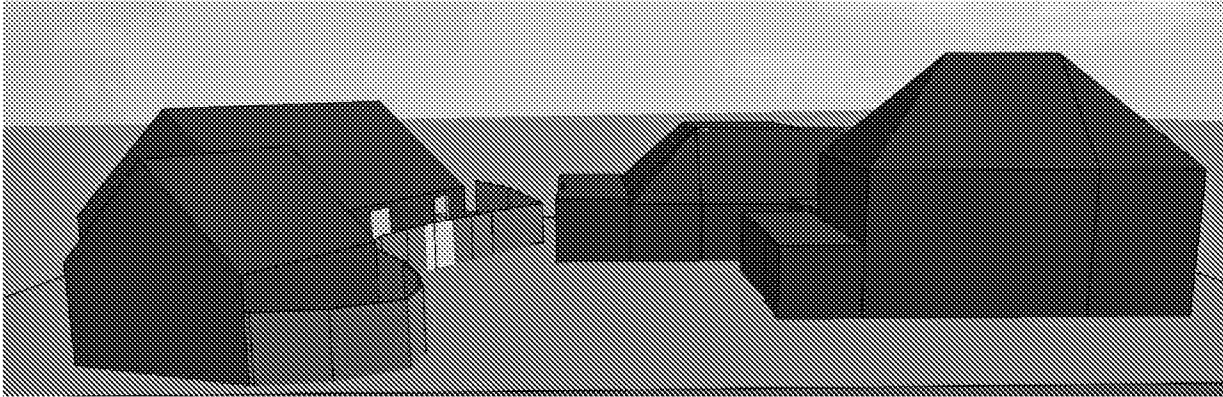


Figure 1 Axonometric view of existing 58 & 60 Ferringham Lane

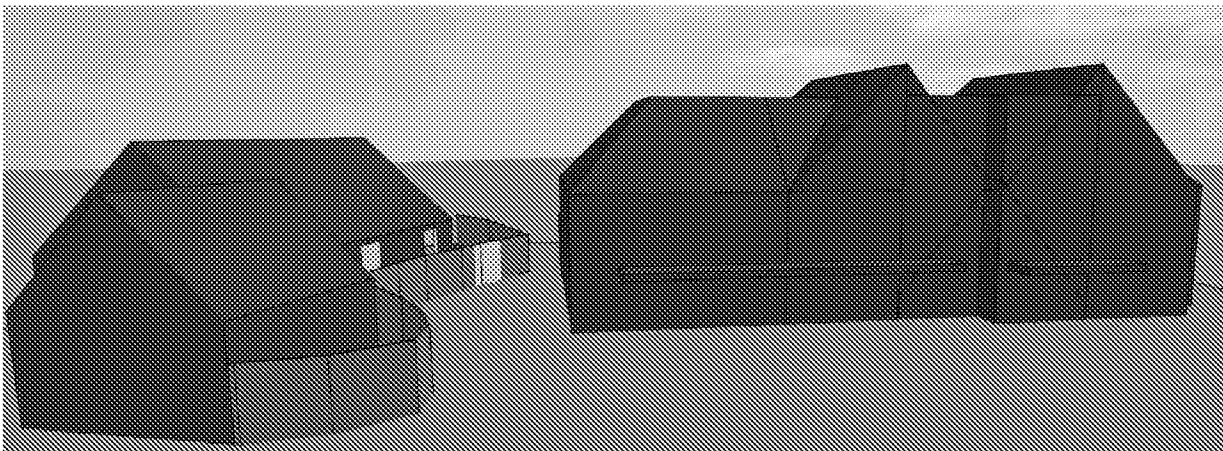
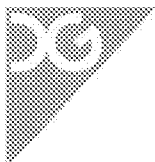


Figure 2 Axonometric view of proposed 58 & 60 Ferringham Lane



5.0 Results and Discussion

5.1 Vertical Sky Component

The results for the VSC are presented in Table 5.1 (window references are given in Appendix 1). The results show that whilst the side windows to 60 Ferringham Lane will be reduced, they will remain above 27% VSC and therefore maintain good daylight levels.

Therefore, the results show that the proposed development at 58 Ferringham Lane will not compromise the availability of daylight to the windows of 60 Ferringham Lane.

Building	Point No.	Existing VSC	Guidance met currently?	80% VSC Threshold	Proposed VSC	reduced below 27%?	Reduced beyond threshold?	BRE compliant?
60 Ferringham Lane	1	30	Yes	24.0	27	No	No	Yes
60 Ferringham Lane	2	35	Yes	28.0	30	No	No	Yes
60 Ferringham Lane	3	34	Yes	27.2	27	No	Yes	Yes
60 Ferringham Lane	4	37	Yes	29.6	37	No	No	Yes

Table 5.1 VSC results of windows of 60 Ferringham Lane with proposed development

5.2 Annual Probable Sunlight Hours

The annual probable sunlight hours are calculated for the main living room windows only of dwellings. Based on the site visit it was ascertained that the main window to the living room are the rear patio doors (window 4).

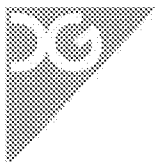
The criteria to evaluate if the sunlight levels will be adversely affected are:

1. Less than 25% APSH or less than 5% APSH in winter months AND
2. Either annual or winter sunlight hours are less than 0.8 times former values AND
3. Reduction in annual sunlight is greater than 4% APSH

The results are presented in Table 5.2 and demonstrate that with the proposed development, the main living room window will still receive high annual probable hours of sunlight, well in excess of BRE recommendations.

Building	Window No.	Existing APSH %		80% Threshold		Proposed APSH %		BRE Guidance met?
		Annual	Winter	Annual	Winter	Annual	Winter	
60 Ferringham Lane	1	49.05	24.88	39.24	19.90	39.67	19.12	Yes

Table 5.2 APSH results for main living room window of 60 Ferringham Lane



5.3 Overshadowing

The BRE impact criteria for overshadowing outlines that where less than 50% of the garden is found to receive direct sunlight for at least 2 hours as a result of the development and the total area that still receives direct sunlight is less than 80% of the former value the garden is considered to be overshadowed.

The results of the overshadowing study to the garden of 60 Ferringham Lane are summarised in Table 5.3 with hourly detail presented in Table 5.4. The results for show that the garden will remain unchanged by the proposed development until 3pm. Then there will be a 20% increase in shadow to the garden of 60 Ferringham Lane and the garden will be in shadow at 4pm.

As the garden at 60 Ferringham Lane will still enjoy high levels of sunlight for the majority of the day with the proposed development, the scheme complies with the BRE criteria for overshadowing.

Garden	No. hours >50% of garden receives direct sunlight		Av. Area receiving direct sunlight (sqm)			BRE Guidance met?
	Existing	Proposed	Existing	80% Threshold	Proposed	
60 Ferringham Lane	9	8	49.93	39.95	45.26	Yes

Table 5.3 Overshadowing results

	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
Existing	91.4	82.2	77.7	74.7	72.3	69.9	67.4	64.8	60.2	41	5.7	0
Proposed	91.4	82.2	77.7	74.7	72.3	69.9	67.4	63.7	41.7	0	0	0

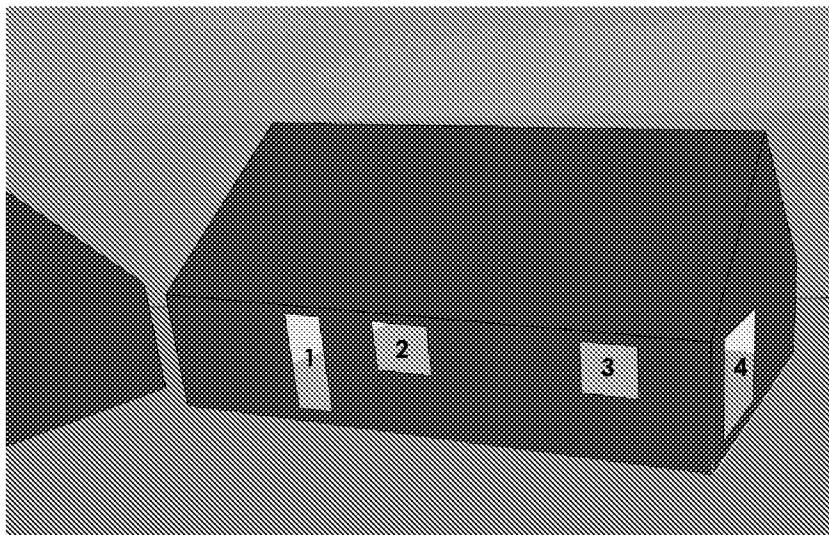
Table 5.4 Hourly % area of garden to the rear of 12-21 Camber Close receiving direct sunlight on 21st March

6.0 Conclusions

The daylight, sunlight and overshadowing study of the proposed development at 58 Ferringham Lane has demonstrated that the windows and garden of 60 Ferringham Lane will not be adversely impacted as all the VSC, APSH and overshadowing criteria are met.



7.0 Appendix 1 – Window References



Note – the chimney breast has not been included as it will not impact on the study.