Delta Green
environmental design

REPORT

Cecil Norris House, Shoreham

Addendum to Sunlight, Daylight & Overshadowing Report (Revision 5)

28th January 2019

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Delta Green Environmental Design
Integrated Sustainable Solutions

t: +44 (0) 1273 086186
e: admin@deltagreen.co.uk
w: deltagreen.co.uk

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1.0 Introduction

The proposed development site at Cecil Norris House, Shoreham includes the replacement of the vacant sheltered accommodation with 15 new build affordable homes. The design proposals have been evaluated to identify if there will be any impact on daylight, sunlight and overshadowing to the adjacent neighbouring properties on Ravens Road and Queens Place.

Due to the concerns of the resident at 2 Ravens Road, further studies have been undertaken to address all of the comments made by Mr McBride in his objection letter dated 16th January 2019. These include:

- Daylight (VSC) analysis of access door with glazed panel to dining area – doors not usually assessed, particularly given the room has a large patio door & 2 rooflights
- Daylight (VSC) analysis of conservatory windows – conservatory is not a habitable room
- Sunlight (APSH) analysis of patio doors to dining area and windows of conservatory – only main living room window is usually assessed.

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 Sunlight[1] provides the following guide for relating VSC to daylight levels:

VSC ≥ 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.

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

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:

- 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

Please note – these sunlight levels are the times in the day the windows are not in shadow.

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.

4.0 3D Models

A 3D model of the existing site, the proposed new building and neighbouring properties has been constructed, see Figure 1. The model was based upon drawings from Liam Russell Architects and survey drawings from M.J. Zara Associates. A site plan has also been provided in Figures 2 and 3 to illustrate the orientation of the buildings in relation to North.

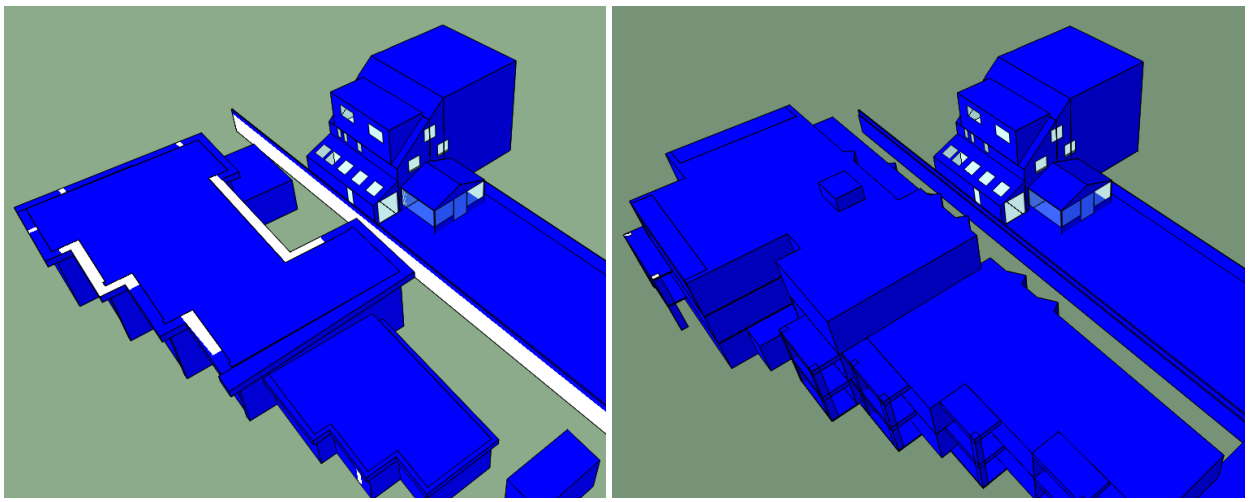

Figure 1 **Axonometric view of existing (left) & proposed (right) Cecil Norris House site & 2 Ravens Road**

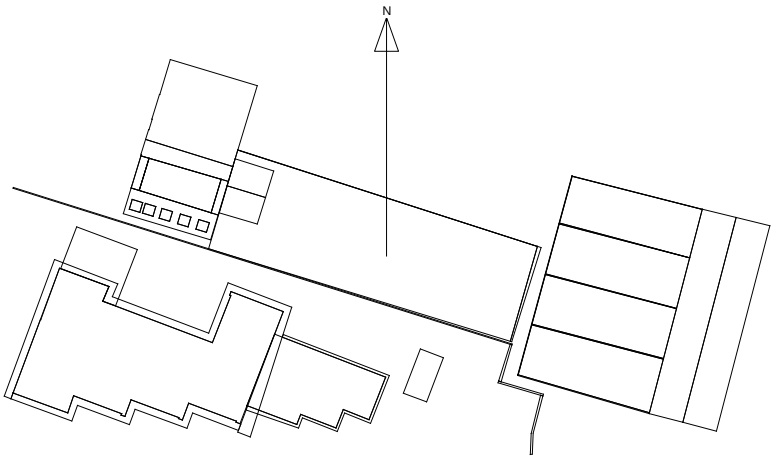

Figure 2 **Site plan of the existing site showing the orientation from North**

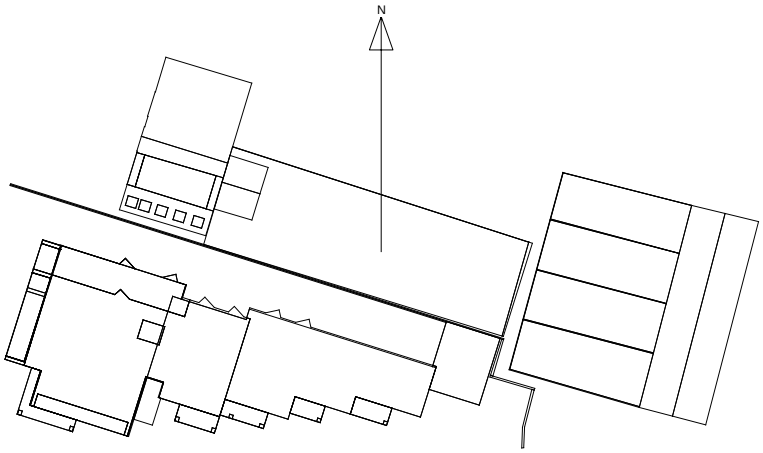

Figure 3 **Site plan of the proposed development site showing the orientation from North**

5.0 Results and Discussion

5.1 Vertical Sky Component

The VSC has been assessed for the side door to the dining room and the conservatory windows of 2 Ravens Road. The window references for this analysis are shown below.

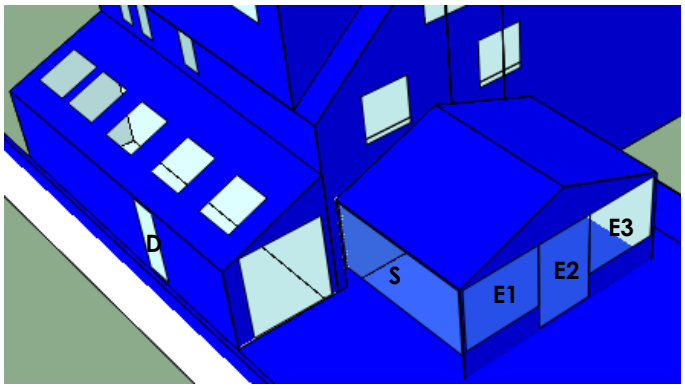

Figure 4 2 Ravens Road with window references for side door & conservatory

The results for the VSC are presented in Table 5.1.

The results show that currently the side door to the dining room receives only 16% VSC. This is mostly due to the closeness to the boundary wall. This will not change with the proposed development.

The south facing conservatory of the window will be reduced below the 27% VSC with the proposed development, although it will not be reduced below the threshold. This meets the BRE guidance and is unlikely to be noticeable by the occupants, particularly given the glazing on the east elevation.

The east facing conservatory windows will hardly change with the proposed development.

Building	Point No.	Existing VSC	Guidance met currently?	80% VSC Threshold	Proposed VSC	reduced below 27%?	Reduced beyond threshold?	BRE impact guidance met?
Dining side door	D	16.2	✘	13.0	15.8	N/A	No	✓
Conservatory	S	28.6	✓	22.9	23.4	Yes	No	✓
Conservatory	E1	37.1	✓	29.7	35.7	No	No	✓
Conservatory	E2	37.0	✓	29.6	36.0	No	No	✓
Conservatory	E3	37.7	✓	30.2	37.1	No	No	✓

Table 5.1 VSC results of additional 2 Ravens Road windows being assessed

Therefore, the VSC impact criteria are met for the additional windows of concern at 2 Ravens Road.

5.2 Annual Probable Sunlight Hours

The annual probable sunlight hours are determined for the living room windows only. Hence no APSH assessment is required for 2 Ravens Road as no living room windows face the proposed development.

Mr McBride has raised concerns regarding the impact on the rooms they use as their main living room, shown as the 'dining room' on the drawing below, because this is an open plan space. Therefore the current living room receives borrowed light from the dining room and the conservatory. To determine any changes in sunlight availability to the dining room and conservatory, the APSH have been determined.

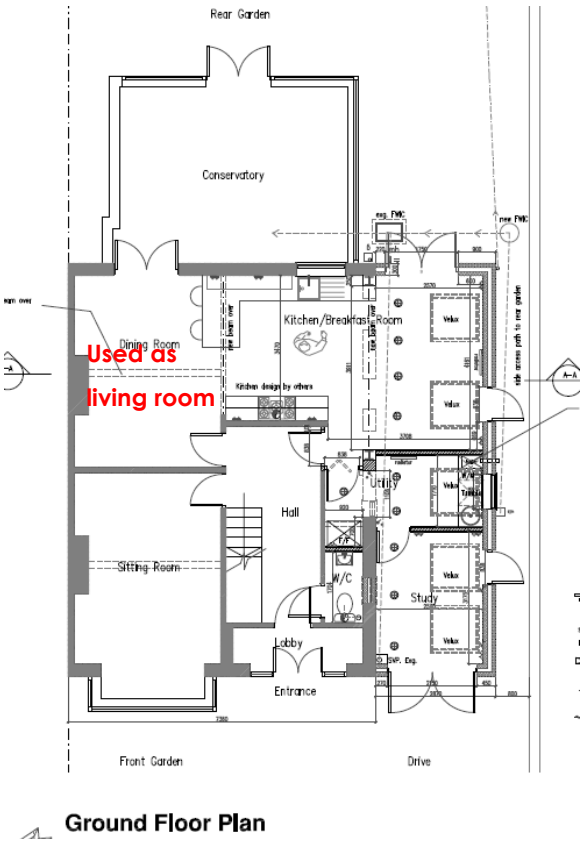

Figure 5 Ground floor plan of 2 Ravens Road (taken from BJW Architectural Services drawing 02 Rev B dated 19.01.2016)

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

- 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.

The APSH results in Table 5.2 show that whilst there will be a slight reduction in available sunlight due to the proposed development. The change is so small that the modelling has demonstrated 2 Ravens Road will still achieve very high sunlight hours, much higher than the recommended 25% annual probable sunlight hours and the 5% winter sunlight hours.

Building	Window No.	Existing APSH %		80% Threshold		Proposed APSH %		BRE Guidance met?
		Annual	Winter	Annual	Winter	Annual	Winter	
Patio door	-	34.47	9.31	27.58	7.45	31.17	6.33	✓
Conservatory	S	51.85	19.63	41.48	15.70	43.46	11.36	✓
Conservatory	E1	49.16	17.31	39.32	13.85	45.95	14.10	✓
Conservatory	E2	49.31	18.20	39.45	14.56	46.43	15.32	✓
Conservatory	E3	51.77	20.13	41.41	16.10	50.32	18.68	✓

Table 5.2 Results of the sunlight analysis of 2 Ravens Road

The study has clearly demonstrated that although these windows need not be assessed, the proposed development will not adversely impact the sunlight availability of 2 Ravens Road as it meets the impact criteria outlined in the BRE good practice guidance for Site Layout Planning for Daylight and Sunlight.

6.0 Conclusions

A further study of the daylight and sunlight impact to 2 Ravens Road has been undertaken due to concerns raised by the resident Mr McBride. The study has looked at the daylight to the side door to the dining room and the conservatory windows, as well and the sunlight availability to both the dining room and conservatory.

This study has been done as a separate exercise as these windows are not required to be assessed in a usual impact assessment for planning. This has been undertaken purely to address the concerns of the local resident.

The study has clearly demonstrated that following the BRE good practice guidance Site Layout Planning for Daylight and Sunlight the proposed development will not negatively impact any of the windows assessed.

Please note – Delta Green daylight reports have been previously sent to the BRE by another local authority to check the methodology used and have never received any comments.