

EPSOM LODGE

**DAYLIGHT AND
SUNLIGHT
ASSESSMENT**

January 2021

Document Control Sheet

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Client	Aura Homes
Site Address	1, Burgh Heat Road, Epsom, KT17 4LW
Assessor	Alex Visintini
Approved By	Neil Rotheron
Date of Issue	19.01.2021

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1 EXECUTIVE SUMMARY

1.1 NRG Consulting have been appointed by Aura Homes to carry out a Daylight, Sunlight and Overshadowing Assessment on a proposed development consisting of change of use of existing Care Home (Use Class C2) and creation of 10 new flats (Use Class C3) including extensions to the existing building and creation of an underground car park, at 1, Burgh Heat Road, Epsom, KT17 4LW.

1.2 The following guidelines have been followed to assess the proposed development:

- BRE's *Site Layout Planning for Daylight and Sunlight, A guide to good practice (BR 209)*, by P J Littlefair, 2nd Ed.
- *BS 8206-2:2008 Lighting for Buildings – Part 2: Code of practice for daylighting*.

1.3 The BRE document is a guide whose stated aim “is to help rather than constrain the designer”. The document provides advice and states that “it should not be mandatory and should not be seen as an instrument of planning policy. In special circumstances, the developer or planning authority may wish to use different target values”.

1.4 The results of this report show that there are negligible adverse effect on the sunlighting levels to the neighbouring properties and spaces at 3, Burgh Heat Road, 67, Church Street, 6 and 8, Roseberry Ave.

1.5 In light of the above, it is considered that sunlight/daylight should not be a constraint to the granting of planning permission.



Figure 1: Front Elevation of Proposed Buildings.

2 INTRODUCTION

2.1 Background

The Building Research Establishment (BRE) has set out in their handbook “Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice”, 2nd Ed, guidelines and methodology for the measurement and assessment of daylight and sunlight within proposed buildings. This document states that it is also intended to be used in conjunction with the interior daylight recommendations found within the British Standard BS8206-2:2008 and the Applications Manual on Window Design of the Chartered Institution of Buildings Services Engineers (CIBSE).

The guide also provides advice on site layout planning to determine the quality of daylight and sunlight within open spaces between buildings.

The BSI has set out in BS 8206-2:2008 “Lighting for Buildings – Part 2: Code of practice for daylighting” guidance to good practice in daylighting design, and presents criteria intended to enhance the well-being and satisfaction of people in buildings.

This study assesses the availability of Daylight and Sunlight to the façades of the local dwellings with respect to the design proposals prepared by the design team

NRG Consulting has proposed the following methodology to assess the layouts proposed:

- Carry out daylight sunlight assessment using the methodologies set out in by BRE and British Standard Guidelines for diffuse daylight and sunlight conditions.
- Prepare a 3D computer model to understand and visualize sunlight for the neighbours.
- Prepare a 3D computer model to assess the internal Average Daylight Factor (ADF) for the living rooms, kitchens and bedrooms of the proposed development.

2.2 The Nature and Effect of Daylight and Sunlight

The provision of daylight is as important as ensuring low levels of noise, or low levels of odour, in maintaining the enjoyment of one’s property. Adequate levels of daylight are important not only to light and heat the home, but also for an occupant’s emotional well-being. Daylight is widely accepted to have a positive psychological effect on human beings and there is a great deal of evidence to suggest that people who are deprived of daylight are more susceptible to depression and mood swings. This is common in northern countries, such as Norway, Iceland and Canada where daylight is scarce during the winter months.

3 DAYLIGHT AND SUNLIGHT ASSESSMENT GUIDANCE

3.1 Assessment of the Effect of Daylight and Sunlight

When assessing the effects of proposed building projects on the potential to cause issues relating to light, it is important to recognize the distinction between daylight and sunlight. Daylight is the combination of all direct and indirect sunlight during the daytime, whereas sunlight comprises only the direct elements of sunlight. On a cloudy or overcast day, diffused daylight still shines through windows, even when sunlight is absent.

Care should also be taken when the development is situated to the south of existing buildings, as in the northern hemisphere, the majority of the sunlight comes from the south. In the UK (and other northern hemisphere countries) south-facing facades will, in general, receive most sunlight, while north-facing facades will receive fewer sunlight hours during summer months, specifically early mornings and late evenings.

The Building Research Establishment (BRE) report, BRE 209 “Site Layout Planning for daylight and sunlight- a guide to good practice” by P J Littlefair, looks at three separate areas when considering the impacts of a new development on an existing property:

- Daylight - The impacts of all direct and indirect sunlight during daytime.
- Sunlight - The impacts of only the direct sunlight; and overshadowing of garden and open spaces.
- Overshadowing of Gardens and Open spaces.

A spacing to height ratio of just over 2:1 is normally enough to allow adequate daylighting on building faces. This aspect has not been analysed in this report as the proposed development is more than 18 metres from all neighbouring dwellings.

Appendix 1 in the BRE Report details the methodologies and criteria.

The BRE report provides guidelines for when the obstruction to sunlight may become an issue:

- If the proposed or existing development has a window that faces within 90° of due south, and
- On this window wall, all points on a line 2m above ground level are within 4m (measured sideways) of a point which receives at least a quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months, between 21st September and 21st March.

BSI guidance BS 8206-2:2008 “Lighting for Buildings – Part 2: Code of practice for daylighting” provides criteria for ADF in various internal spaces.

Table 1 below summarises the criteria used in this report to assess the impacts from new development on the sunlight reaching existing properties, and for internal ADF.

PARAMETER	REPORT REFERENCE	ACCEPTABILITY CRITERIA
Sunlight	BRE 209 Section 3.3	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.
Daylight	BRE 209 Section 2.2	If any part of the new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, subtends an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected if the VSC is less than 27% at the centre of an existing window, and less than 0.8 times its former value.

Table 1: BRE Daylighting Criteria

3.2 Gardens and Open Spaces

It is recommended that for a garden or an open 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. If, as a result of a new development, an existing garden or amenity area does not meet the above, AND the area which can receive two hours of sun on 21st March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.

3.3 Angle to sky from horizontal - externally.

In general, a building will retain the potential for good interior diffuse daylighting provided that, on all its main faces:

- a) No obstruction, measured in a vertical section perpendicular to the main face, from a point 2m above ground or first level, subtends an angle of 25 ° to the horizontal or less. See Figure 1 for further details.
- OR
- b) If (a) is not satisfied, then all points on the main face on a line 2m above ground or first level are within 4m (measured sideways) of a point which has a Vertical Sky Component (VSC) of 27% or more.

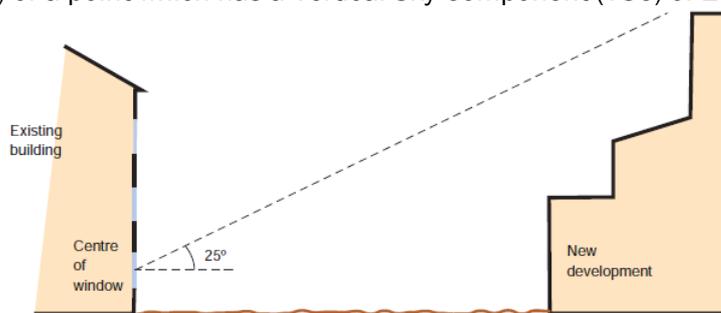


Figure 2: Section showing the angle to sky from horizontal criteria for diffuse daylighting.

4 METHODOLOGY APPLIED

4.1 Data

All the information has been taken directly from digital files provided by the Design Team. The height of the obstructions has been taken from survey data or from aerial photographs available online. Where available, further data has been used from existing information available online.



Figure 3: Aerial view of the site as existing.



Figure 4: Site Plan

4.2 3D Model

To complete the daylight and sunlight assessment, a full-size 3D model of the existing area, including existing buildings and neighbouring properties was constructed in Trimble SketchUp 2017. Measurement of the angle to sky from horizontal has been made with AutoCAD, MBS Daylight software has been used to assess the Vertical Sky Component.

Sunlight and overshadowing to the amenity and garden areas has been assessed by analysing the 3D SketchUp models, with shadows generated for various times throughout the day on 21st March.

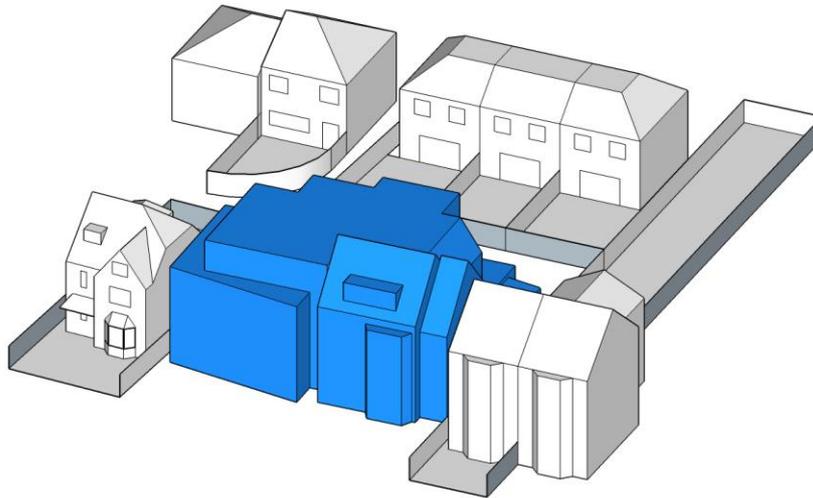


Figure 5: SketchUp 3D model of the proposed development.

4.3 Design Data

Architects: Aura Homes

Drawing pack issued for Assessment on January 2021

PL-01.dwg	06/01/2021 17:35	DWG File	168 KB
PL-02.dwg	06/01/2021 17:35	DWG File	149 KB
PL-03.dwg	06/01/2021 17:35	DWG File	655 KB
PL-04.dwg	06/01/2021 17:36	DWG File	486 KB
PL-05.dwg	06/01/2021 17:36	DWG File	354 KB
PL-06.dwg	06/01/2021 17:36	DWG File	277 KB
PL-07.dwg	06/01/2021 17:36	DWG File	1,763 KB
PL-08.dwg	06/01/2021 17:36	DWG File	2,959 KB
PL-09.dwg	06/01/2021 17:36	DWG File	856 KB
PL-10.dwg	06/01/2021 17:37	DWG File	2,859 KB
Planning Package.pdf	15/01/2021 16:26	PDF Document	2,419 KB

5 METHODOLOGY APPLIED

5.1 Vertical Sky Component Analysis

The assessment of the VSC demonstrates that there is minimal change between the VSC available to the windows analysed as existing and after the proposed development.

The analysed windows and their addresses are found in Table 2 below, all are deemed BRE compliant.

ADDRESS	WINDOW No	PRE CONSTRUCTION VSC	POST CONSTRUCTION VSC	AFFECT RATIO	MEETS BRE CRITERIA
67, Church Street	1	15.43	15.43	1.00	YES
	2	35.88	35.88	1.00	YES
	3	38.94	38.94	1.00	YES
	4	34.00	32.84	0.97	YES
	5	26.68	23.93	0.90	YES
	6	35.45	35.06	0.99	YES
	7	36.92	36.92	1.00	YES
	8	39.52	39.52	1.00	YES
	9	34.01	32.34	0.95	YES
	10	38.06	37.78	0.99	YES
	11	38.70	38.70	1.00	YES
	12	39.62	39.62	1.00	YES
3, Burgh Heath Road	13	19.33	16.80	0.87	YES
	14	16.14	14.28	0.89	YES
	15	12.60	11.14	0.88	YES
	16	18.63	18.47	0.99	YES
	17	39.09	38.91	1.00	YES
	18	20.44	18.92	0.93	YES

	19	33.63	33.57	1.00	YES
	20	33.07	30.64	0.93	YES
8, Rosebery Ave	21	34.88	33.33	0.96	YES
	22	31.62	30.39	0.96	YES
	23	37.08	36.02	0.97	YES
	24	37.64	36.31	0.96	YES
6, Rosebery Ave	25	32.77	30.66	0.94	YES
	26	37.08	35.57	0.96	YES
	27	36.91	35.37	0.96	YES
6A, Rosebery Ave	28	31.81	29.91	0.94	YES
	29	36.65	35.18	0.96	YES
	30	36.53	35.16	0.96	YES
6B, Rosebery Ave	31	32.22	30.72	0.95	YES
	32	36.50	35.23	0.97	YES
	33	36.56	35.45	0.97	YES

Table 2: Results of Visual Sky Component Analysis. If a window were to achieve less than 27% Post Construction VSC the Affect Ratio must be at least 0.80 to ensure BRE compliance.

Window Arrangement

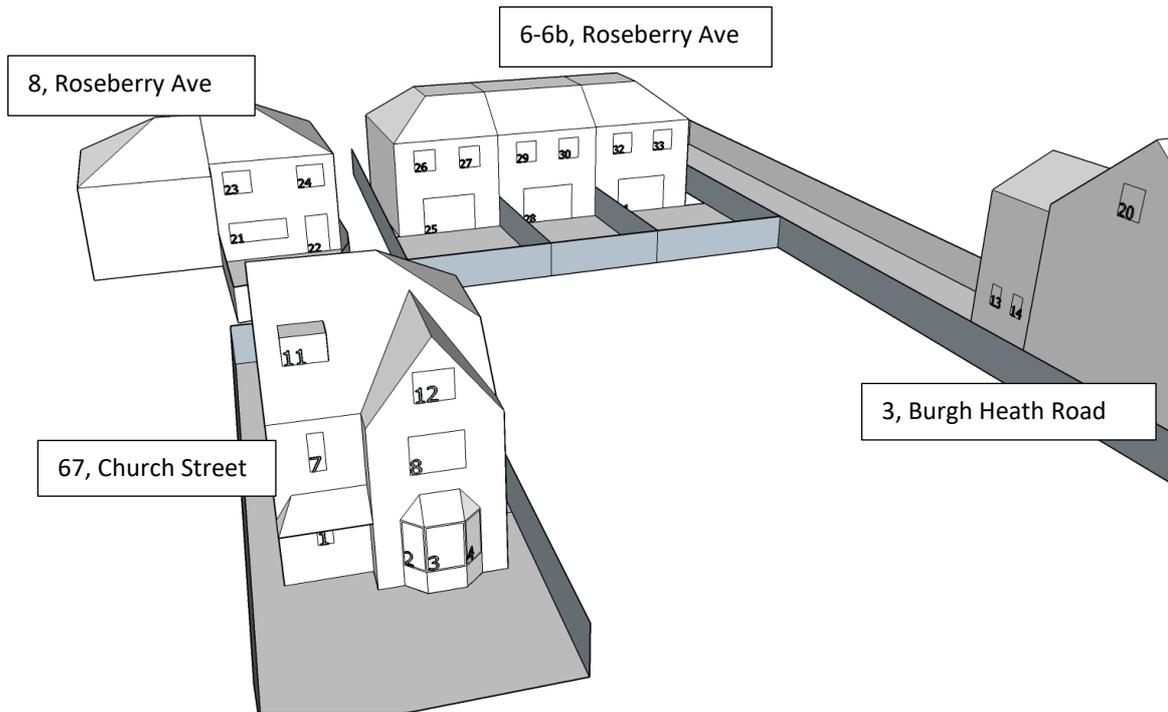


Figure 6: VSC Window Arrangement

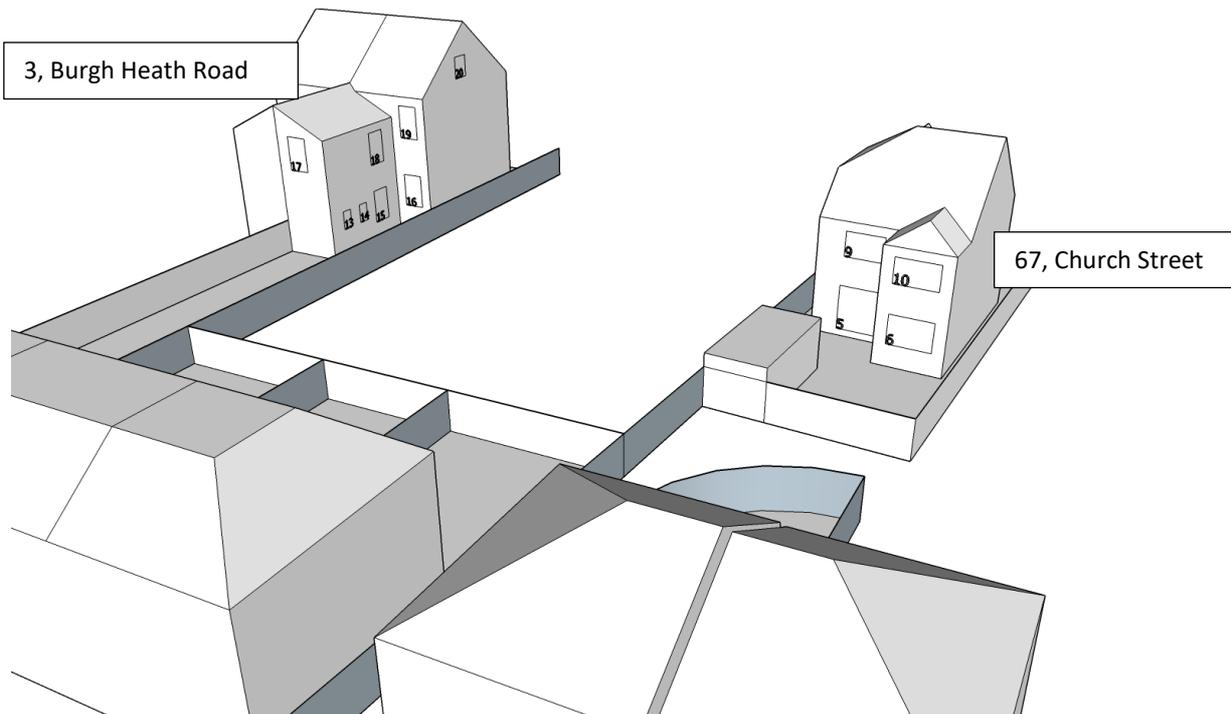


Figure 7: VSC Window Arrangement

5.2 Sunlight Assessment Results – Open Areas

When assessing the impact of a development on an existing neighbouring amenity or garden area, the BRE guide recommends that at least 50% of the area of each amenity space should receive at least two hours of sunlight on 21st March. If, as a result of the new development, an existing garden or amenity area does not meet the 50% criterion, and the area which can receive two hours of sunlight on 21st March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.

The existing and post development amenity areas at 3, Burgh Heat Road, 67, Church Street, 6 and 8, Roseberry Ave and at the proposed development at 1, Burgh Heath Road have been analysed using the 3D SketchUp model. Figures 8 and 9 below show that the proposed development slightly affects the adjoining amenity areas. In particular one only amenity area, located at 67, Church Street, suffers a loss of sunlight.

It has to be noted that the BRE Guidelines are intended for building designers and their clients, consultants and planning officials. The advice within given is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design.

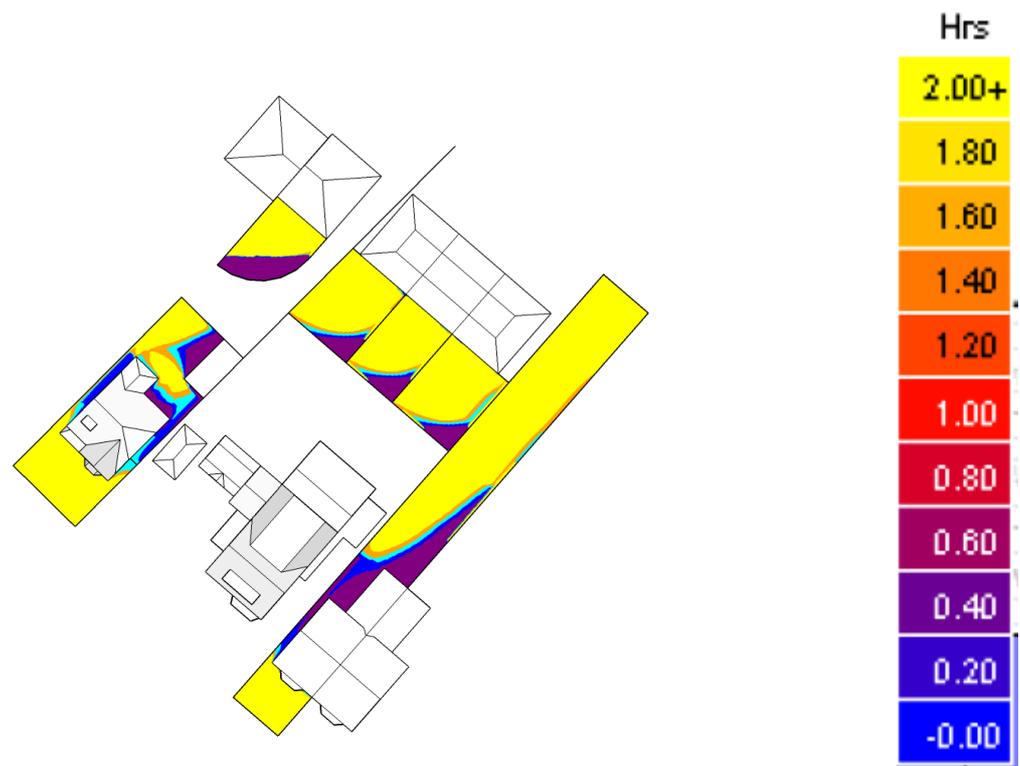


Figure 8: Existing: amenity area sunlight

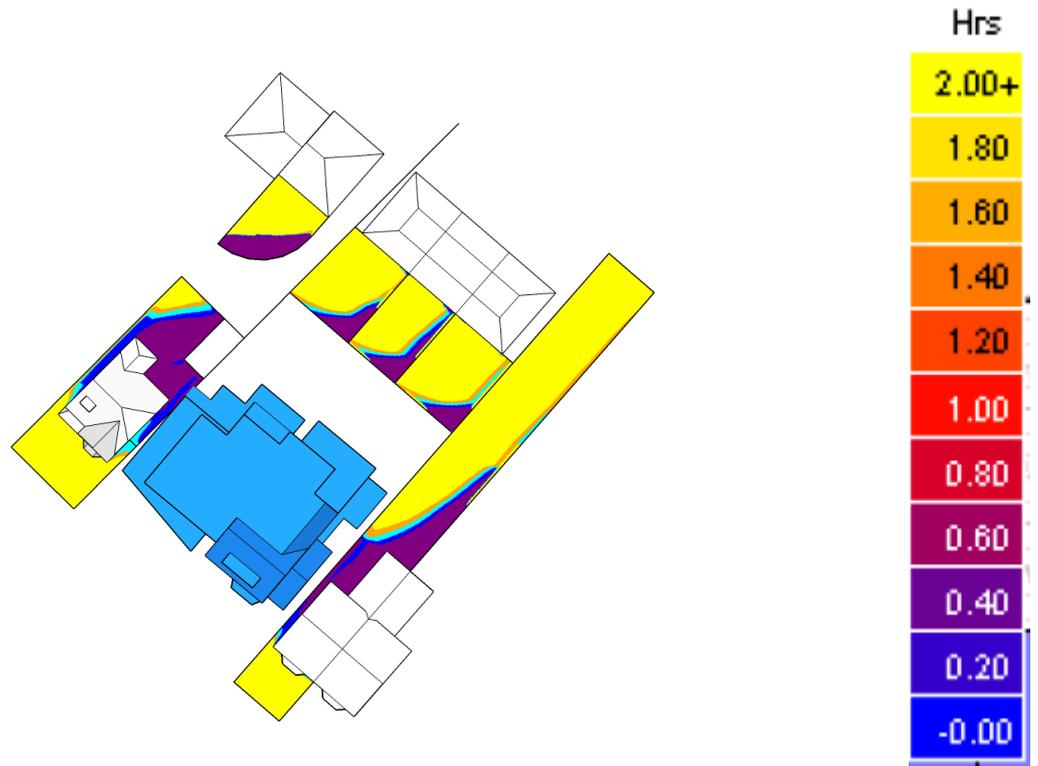


Figure 9: Proposed development: amenity area sunlight

6 CONCLUSION

- 6.1 The daylight and sunlight analysis indicates that there will be no impact on the surrounding properties at 3, Burgh Heat Road, 67, Church Street, 6 and 8, Roseberry Ave arising from the proposed development at 1, Burgh Heath Road, Epsom, Kt17 4LW.
- 6.2 The results of our analysis [Sections 5.1-5.3] show that for the neighbouring habitable windows/rooms analysed at 3, Burgh Heat Road, 67, Church Street, 6 and 8, Roseberry Ave satisfy the target requirements of the BRE Guide in terms of daylight and sunlight in the proposed situation with no significant adverse material effect. Equally in terms of amenity areas shadowing, the proposal does not result in any adverse effect and meets BRE Guide target criteria.
- 6.3 The VSC Analysis demonstrates that there is a minimal change between the access to daylight to the existing buildings before and after the proposed development. None of the various windows analysed were adversely affected by the proposed development and all comfortably comply with BRE guidelines for the recommended levels of adequate daylighting [Section 5.1].
- 6.4 The APSH and WPSH assessment show that proposed development does not significantly affect the existing buildings. None of the various windows analysed suffer a sunlight loss and all comfortably comply with and BS 8206-2:2008 [section 5.1]
- 6.5 For a garden or an open 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. Results show that existing open spaces at 3, Burgh Heat Road, 67, Church Street, 6 and 8, Roseberry Ave are only slightly adversely affected by the proposed development [Section 5.3].

