

Neale Court

**Daylight, Sunlight and
Overshadowing
Assessment**

January 2024

DOCUMENT CONTROL SHEET	
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1 EXECUTIVE SUMMARY

- 1.1 NRG Consulting have been commissioned to undertake a Daylight, Sunlight and Overshadowing Assessment on a proposed development consisting of a roof extension to an existing building at Neale Court, Upminster Rd, Upminster, RM11 3XP.
- 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, 3rd Ed.
 - BS EN 17037:2018 *Daylight in Buildings*.
- 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 is no adverse effect on the sunlighting levels to the neighbouring properties and spaces at the existing units at Neale Court, Lees Manor Court, 59 Upminster Road and 10 Wingletye Lane.

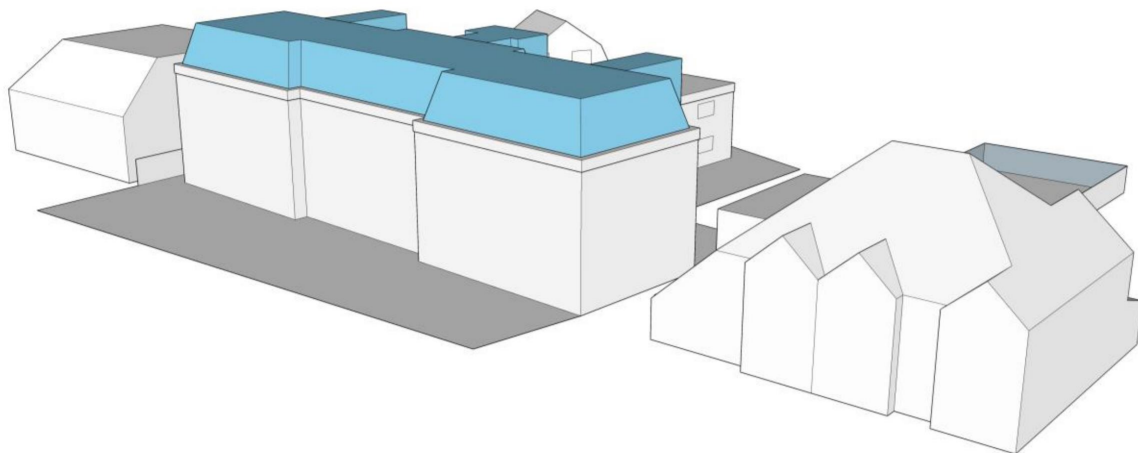


Figure 1: 3d Model of proposed buildings.

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”, 3rd 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 BS EN 17037:2018 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 EN 17037:2018 Daylight in Buildings 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 and their amenity areas with respect to the design proposals prepared by the design team.

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

- Prepare a 3D computer model to understand and visualize sunlight for the neighbours.
- Carry out daylight sunlight assessment using the methodologies set out in by BRE and British Standard Guidelines for diffuse daylight and sunlight conditions.

2.2 The Nature and Effect of Daylight and Sunlight

The BRE “Site layout planning for daylight and sunlight – A guide to good practice” 3rd edition by Paul J. Littlefair was released in June 2022 and superseded the second edition of the same guidance. The most important update from the previous version of the guidelines is represented by the methods for assessing daylight within a proposed building within section 2.1 and Appendix C of the handbook. These are based on the methods detailed in the BS EN 17037 which suggests two possible methodologies for appraising daylight across a room’s working plane: Illuminance Method Daylight Factor Method.



Figure 2: BRE guidelines

3 DAYLIGHT AND SUNLIGHT ASSESSMENT GUIDANCE

3.1 Assessment of the Effect of Daylight and Sunlight

When assessing the effects of proposed building projects and its 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 to a dwelling and its garden and open spaces.

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.

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

PARAMETER	REPORT REFERENCE	ACCEPTABILITY CRITERIA
Sunlight to Amenity Areas	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.
Vertical Sky Component	BRE 209 Section 2.2	Any reduction in the total amount of skylight can be calculated by finding the VSC at the centre of each existing window. If the VSC is both less than 27%, and less than 0.8 times its former value occupants will notice the reduction in the amount of skylight..
APSH/WPSH	BRE 209 Section 3.2	It is recommended that interiors where the occupants expect sunlight receive at least one quarter (25%) of Annual Probable Sunlight Hours (APSH), including the winter months between 21 st September and 21 st March at least 5% of Annual Probable Sunlight Hours (WPSH). If the available sunlight hours are both less than these values and less than 0.8 times their former value then the occupants will notice the loss of sunlight.

Table 1: BRE daylighting and sunlighting criteria

3.2 Angle to sky from horizontal.

In general, a building will retain the potential for good interior diffuse daylighting provided that, on all its main faces no obstruction, measured in a vertical section perpendicular to the main face, from the centre of the lowest window, subtends an angle of 25 ° to the horizontal or less.

If this criterion is satisfied, no further calculations are required as it is unlikely that daylighting will be significantly affected.

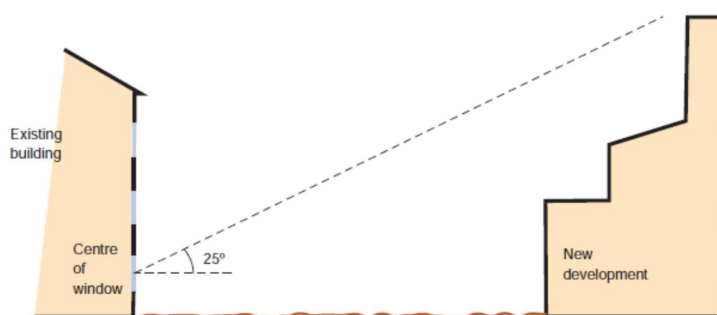


Figure 3: Section showing the angle to sky from horizontal criteria for diffuse daylighting

4 METHODOLOGY APPLIED

4.1 Data

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



Figure 4: Aerial view of the site as existing.



Figure 5: Site plan

4.2 3D Model

To complete the daylight, sunlight and overshadowing assessment, a full-size 3D model of the existing area, including existing buildings and neighbouring properties was constructed in Trimble SketchUp 2021. The measure of the angle to sky from horizontal has been made manually within the model space, MBS Daylight software has been used to assess the Vertical Sky Component, the sunlight to the amenity areas and the APSH/WPSH.

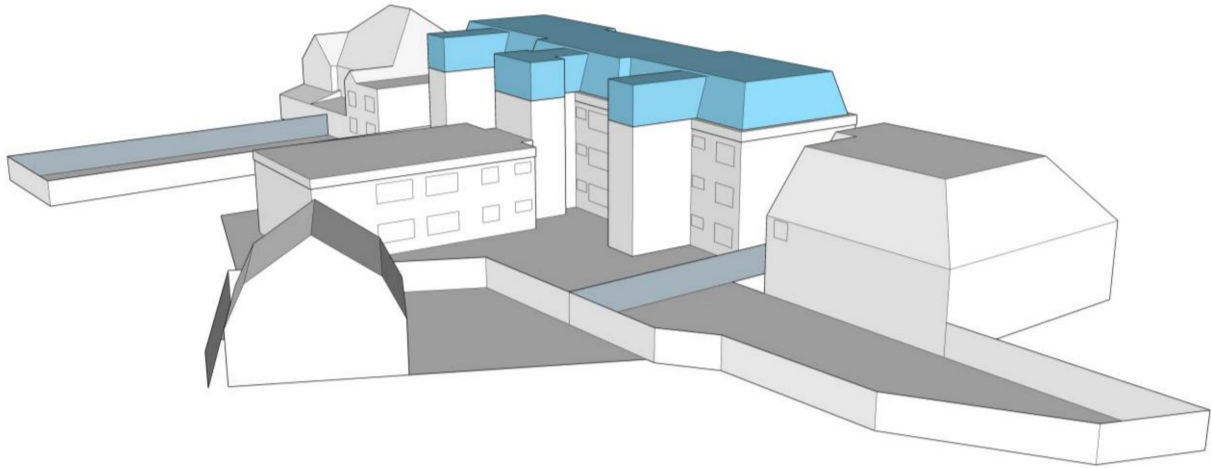


Figure 6: SketchUp 3D model of the proposed development.

4.3 Design Data

Architects: ME Architects

Drawing pack issued for Assessment on January 2024

 234_Neale Court_Planning Package - F	Adobe Acrobat D...	5,836 KB
 234_Neale Court_Planning Package	Adobe Acrobat D...	5,433 KB
 234_Neale Court_Resubmission	Adobe Acrobat D...	5,613 KB

5 RESULTS

5.1 Vertical Sky Component Analysis and APSH/WPSH 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 analysis of Annual and Winter Probable Sunlight Hours shows that there is no adverse effect to existing properties.

The BRE Guidance expressly states that kitchens and bedrooms are less important, although care should be taken not to block too much sun. The room which window no.9 serves is a non-dining kitchen which would be a non-habitable room in planning terms. As shown the other rooms in the flat would achieve high levels of daylight and sunlight, this would not be affected by the development proposal.

The analysed windows and their addresses are found in Table 2 and 3 below, all are deemed BRE compliant.

ADDRESS	WINDOW No	PRE CONSTRUCTION VSC	POST CONSTRUCTION VSC	AFFECT RATIO	MEETS BRE CRITERIA
59 Upminster Road	1	38.49	38.48	1	YES
	2	38.16	38.15	1	YES
	3	39.36	39.35	1	YES
	4	39.26	39.25	1	YES
Lees Manor Court	5	20.6	20.33	0.99	YES
	6	15.42	14.2	0.92	YES
	7	13.96	12.66	0.91	YES
	8	23.24	22.87	0.98	YES
	9	22.61	19.73	0.87	YES
10 Wingletye Lane	10	33.95	33.11	0.98	YES
	11	34.24	33.52	0.98	YES
	12	36.84	35.58	0.97	YES
	13	37.35	36.31	0.97	YES
Existing units at Neale Court – Front Building	14	28.26	27.82	0.98	YES
	15	21.87	21.72	0.99	YES

ADDRESS	WINDOW No	PRE CONSTRUCTION VSC	POST CONSTRUCTION VSC	AFFECT RATIO	MEETS BRE CRITERIA
	16	17.53	16.99	0.97	YES
	17	22.18	21.69	0.98	YES
	18	21.38	20.69	0.97	YES
	19	13.99	13.68	0.98	YES
	20	11.05	10.72	0.97	YES
	21	19.5	18.85	0.97	YES
	22	20.96	20.36	0.97	YES
	23	17.24	16.65	0.97	YES
	24	21.76	21.61	0.99	YES
	25	29.79	29.33	0.98	YES
	26	31.78	30.53	0.96	YES
	27	23.38	22.8	0.98	YES
	28	21.2	20.06	0.95	YES
	29	26.7	25.41	0.95	YES
	30	27.34	25.55	0.93	YES
	31	18.41	17.67	0.96	YES
	32	13.25	12.35	0.93	YES
	33	24.98	23.22	0.93	YES
	34	25.9	24.4	0.94	YES
	36	21	19.74	0.94	YES
	37	23.16	22.57	0.97	YES
	38	32.77	31.52	0.96	YES
	39	36.19	32.64	0.9	YES

ADDRESS	WINDOW No	PRE CONSTRUCTION VSC	POST CONSTRUCTION VSC	AFFECT RATIO	MEETS BRE CRITERIA
	40	27.43	23.59	0.86	YES
	41	26.91	22.39	0.83	YES
	42	31.94	28.77	0.9	YES
	43	34.77	29.86	0.86	YES
	44	24.72	20.13	0.81	YES
	45	Non habitable room			
	46	32.95	27.28	0.83	YES
	47	31.68	28.19	0.89	YES
	48	26.85	22.15	0.82	YES
	49	27.36	23.53	0.86	YES
	50	36.66	33.46	0.91	YES
Existing units at Neale Court – Rear Building	51	29.21	27.54	0.94	YES
	52	32.13	30.82	0.96	YES
	53	34.77	33.97	0.98	YES
	54	36.77	36.38	0.99	YES
	55	34.08	33.57	0.99	YES
	56	33.52	32.71	0.98	YES
	57	31.6	30.29	0.96	YES
	58	28.98	27.31	0.94	YES
	59	32.69	29.8	0.91	YES
	60	34.85	32.91	0.94	YES
	61	36.73	35.71	0.97	YES
	62	37.92	37.49	0.99	YES

ADDRESS	WINDOW No	PRE CONSTRUCTION VSC	POST CONSTRUCTION VSC	AFFECT RATIO	MEETS BRE CRITERIA
	63	36.94	36.35	0.98	YES
	64	36.31	35.28	0.97	YES
	65	34.76	32.82	0.94	YES
	66	32.66	29.77	0.91	YES
Lees Manor Court	68	38.82	38.78	1	YES

Table 2: Results of Vertical 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.

ADDRESS	WINDOW No	PRE CONSTRUCTION APSH	POST CONSTRUCTION APSH	AFFECT RATIO	PRE CONSTRUCTION WPSH	POST CONSTRUCTION WPSH	AFFECT RATIO	MEETS BRE CRITERIA
59 Upminster Road	1 – 4	North facing windows						
Lees Manor Court	5	North facing windows						
	6	2	2	1	0	0	1	YES
	7	26	25	0.96	13	13	1	YES
	8	North facing windows						
	9	23	14	0.61	0	0	1	NO
10 Wingletye Lane	10	70	66	0.94	22	18	0.82	YES
	11	70	67	0.96	22	19	0.86	YES
	12	72	69	0.96	24	21	0.88	YES
	13	73	71	0.97	25	23	0.92	YES
Existing units at Neale Court – Front Building	14 – 50	North facing windows						
Existing units at Neale Court – Rear Building	51	34	29	0.85	1	1	1	YES
	52	44	40	0.91	5	4	0.8	YES

ADDRESS	WINDOW No	PRE CONSTRU CTION APSH	POST CONSTRU CTION APSH	AFFECT RATIO	PRE CONSTRU CTION WPSH	POST CONSTRU CTION WPSH	AFFECT RATIO	MEETS BRE CRITERIA
	53	50	47	0.94	10	7	0.7	YES
	54	56	53	0.95	16	13	0.81	YES
	55 - 58	North facing windows						
	59	Non habitable room						
	60	51	45	0.88	11	6	0.55	YES
	61	54	50	0.93	14	10	0.71	YES
	62	60	56	0.93	20	16	0.8	YES
	63 - 66	North facing windows						
Lees Manor Court	68	North facing windows						

Table 3: Results of Annual Probable Sunlight Hours. If a window were to achieve less than 25% Post Construction APSH or 5% WPSH the Affect Ratio must be at least 0.80 to ensure BRE compliance.

5.2 Window Arrangement

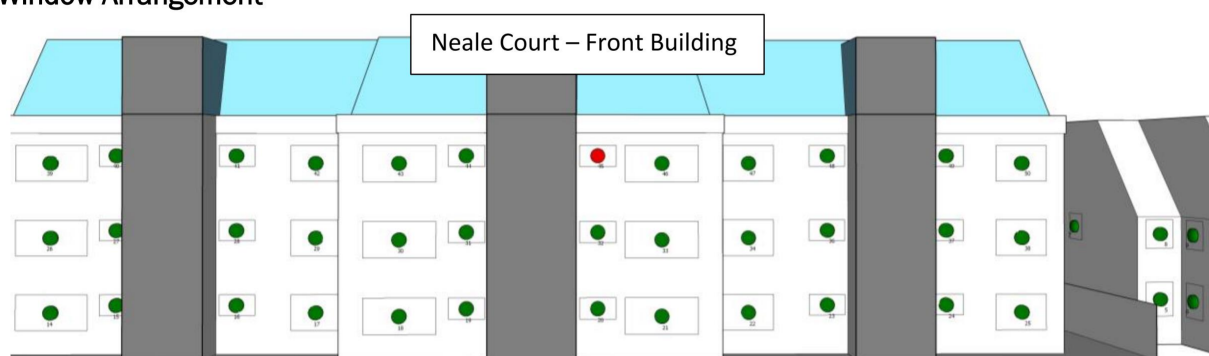


Figure 7: Window arrangement with VSC results

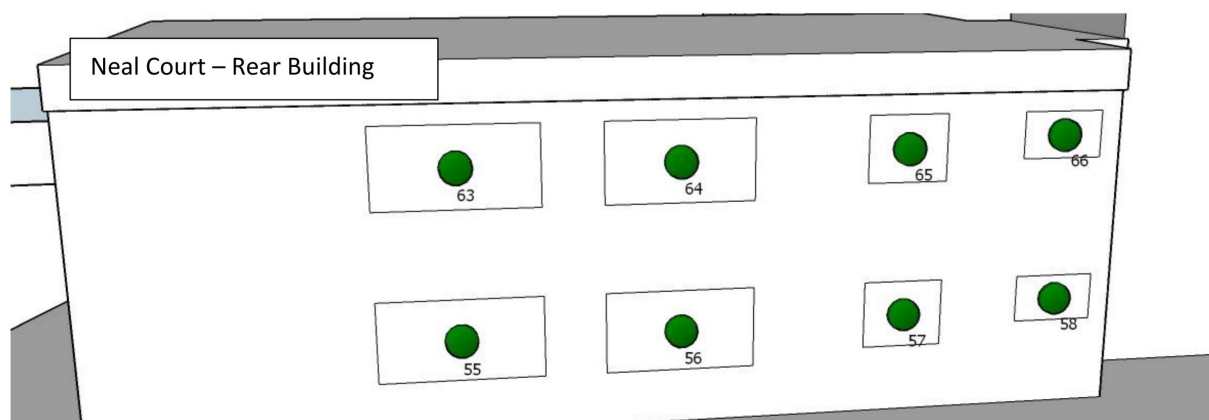


Figure 8: Window arrangement with VSC results

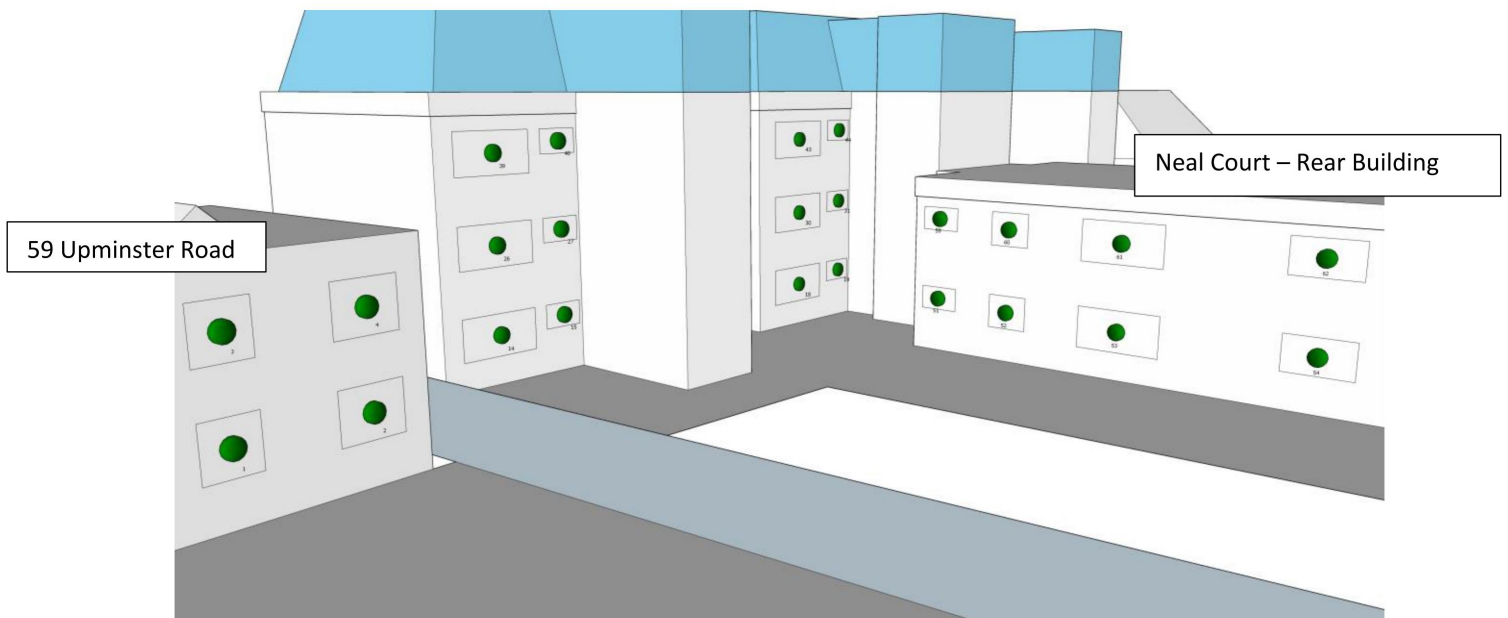


Figure 9: Window arrangement with VSC results

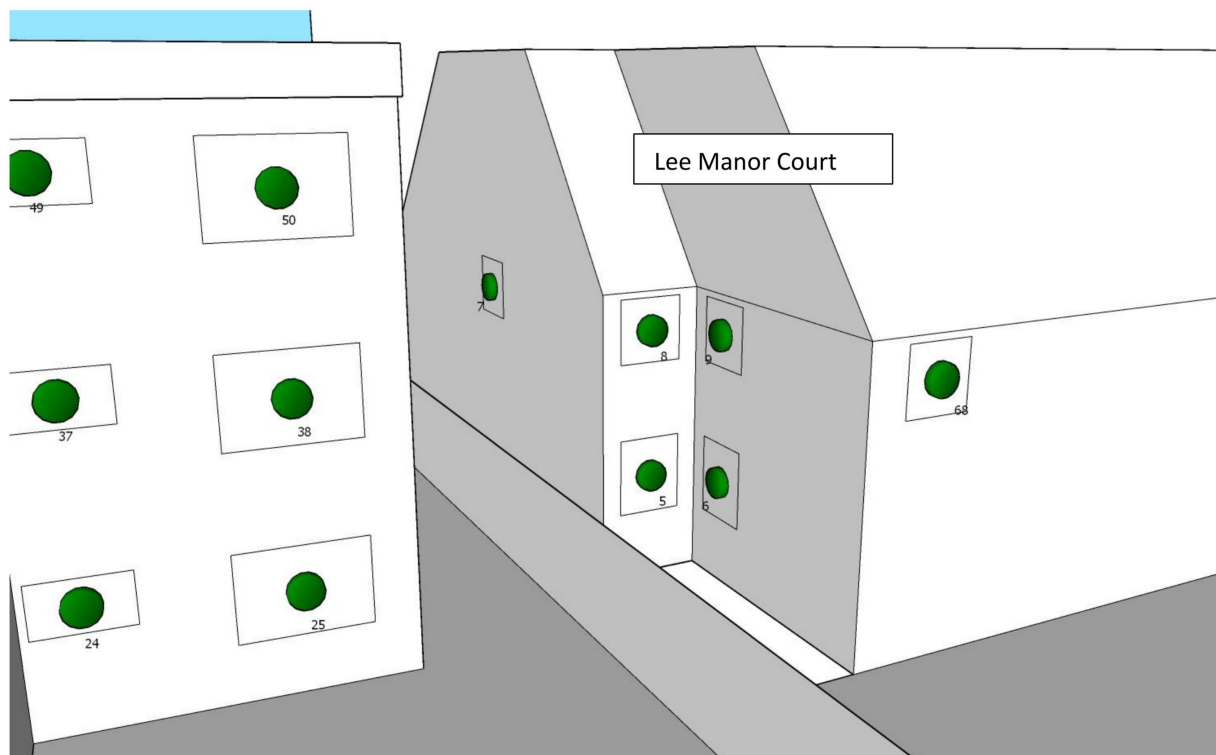


Figure 10: Window arrangement with VSC results

5.3 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 Neale Court, Lees Manor Court, 59 Upminster Road and 10 Wingletye Lane have been analysed using the 3D SketchUp model.

Figures 11 and 12 below show that the proposed development does not significantly affect the adjoining amenity areas.

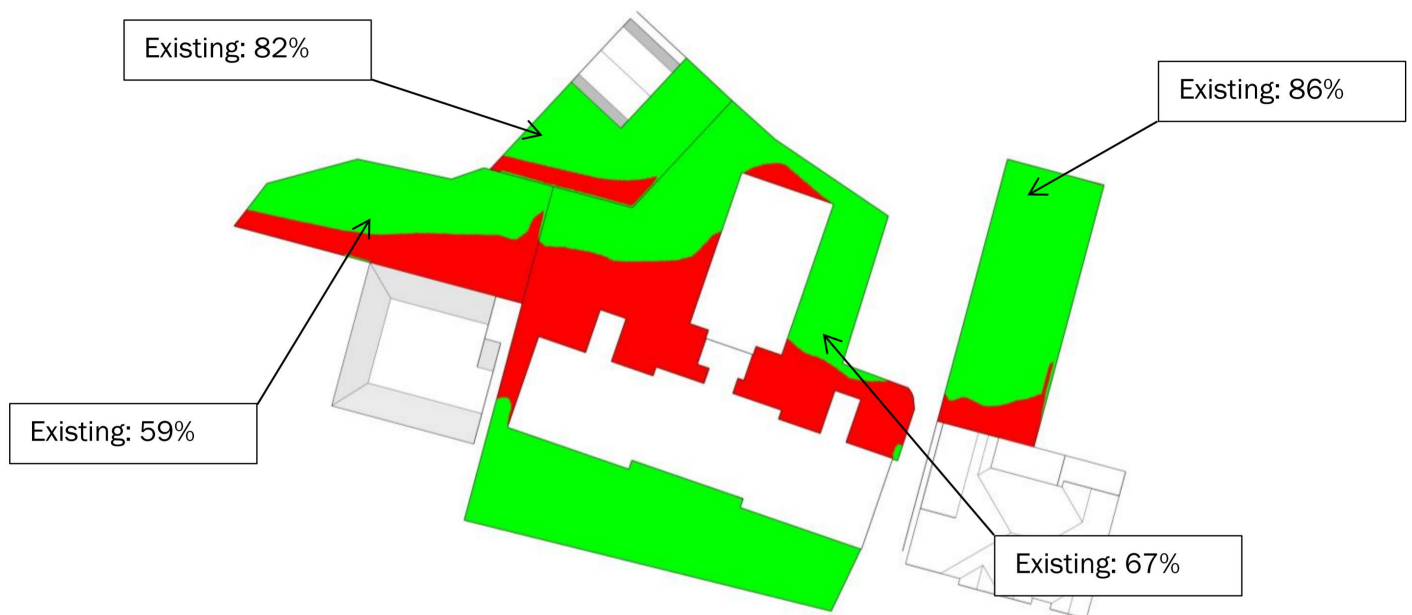


Figure 11: Existing amenity area sunlight

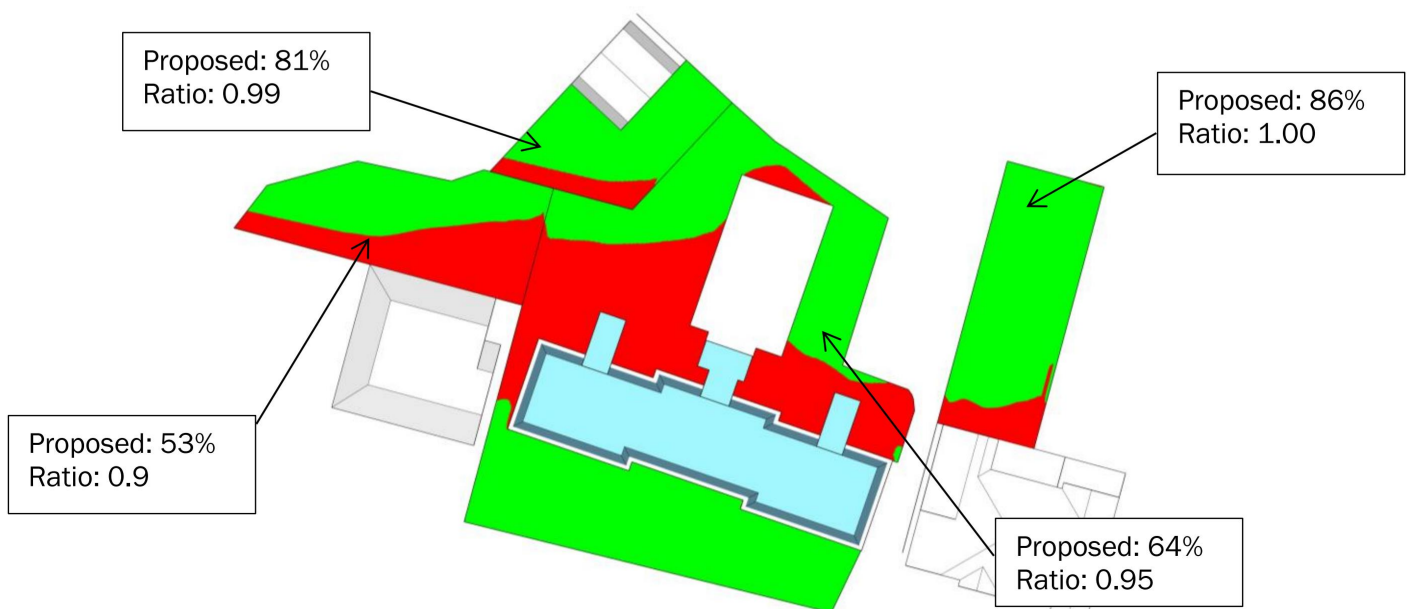


Figure 12: Proposed development amenity area sunlight

6 CONCLUSION

- 6.1 The daylight and sunlight analysis indicates that there will be no impact on the surrounding properties at Neale Court, Lees Manor Court, 59 Upminster Road and 10 Wingletye Lane arising from the proposed development at Neale Court, Upminster Rd, Upminster, RM11 3XP.
- 6.2 The results of our analysis [Sections 5.1-5.3] show that the neighbouring habitable windows/rooms analysed 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 doesn't significantly affect the existing buildings. None of the various windows analysed suffer a sunlight loss and all comfortably comply with and BS EN 17037:2018 [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 are not adversely affected by the proposed development [Section 5.3].
- 6.6 Overall, the proposed development fully complies with BRE Guidelines and will not cause impact to daylight and sunlight access for the surrounding buildings and the amenity space within its vicinity.

