



62 Station Road, Hayes, UB3

Daylight and Sunlight Assessment

Job No: 5754

Issued: July, 2024

Issue No.: 1

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1.0 Introduction

- 1.1 This daylight and sunlight assessment has been prepared in relation to a planning application for the proposed extension and conversion of the site at 62 Station Road, Hayes.
- 1.2 The report assesses the impacts of the proposals in relation to daylight, sunlight and overshadowing matters, having regard to industry standard guidance.
- 1.3 The report concludes that the proposal is acceptable and in accordance with planning policy requirements in relation to daylight and sunlight.
- 1.4 There is no existing specific National Planning Policy relating to the prospective impacts of developments on daylight and sunlight on their surrounding environment.
- 1.5 However, the NPPF (Para 129) does refer to daylight and sunlight in relation to density, encouraging Local Planning Authorities to take a flexible approach to applying policies and guidance relating to the impacts of proposals where they would otherwise inhibit making effective use of the site.
- 1.6 The BRE Report 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' (3rd Edition, 2022) is the established National guidance to aid the developer to prevent and/or minimise the impact of a new development on the availability of daylight and sunlight in the environs of the site and the assessment of light within proposed new dwellings.
- 1.7 It refers in turn to the daylight and sunlight recommendations in BS EN 17037: 2018+A1:2021 (with UK Annexe): 'Daylight in Buildings'
- 1.8 These reference documents are accepted as the authoritative works in the field on daylight, sunlight and overshadowing and the BRE guidance specifically referred to in many Local Authorities' planning policy guidance for daylighting.
- 1.9 The methodology therein has been used in numerous lighting analyses and the standards of permissible reduction in light are accepted as the industry standards.

2.0 Project Summary

- 2.1 The proposal site is at 62 Station Road, Hayes and is occupied by a 2-storey building, used for commercial purposes.
- 2.2 The proposal is for the construction of a single storey rooftop extension and conversion of the existing first floor to residential use, creating 8 new dwelling in total.
- 2.3 The impacts of the scheme have been assessed, in line with BRE guidance. Generally, it is the impacts on residential neighbours which are of primary concern.
- 2.4 Further details on the location of the assessed neighbours and their windows are given in Section 5.0.
- 2.5 In addition to assessing the impacts of the scheme on neighbours, daylight levels within the proposed new dwellings have also been assessed.



Site Location

3.0 Methodology

- 3.1 For this analysis, we have undertaken the following calculations for the change in daylight and sunlight to existing buildings, as recommended in BRE Digest 209:
- Vertical Sky Component (VSC) for daylight impacts
 - Annual Probable Sunlight Hours and Winter Probable Sunlight Hours (WPSH) (APSH) for sunlight impacts
- 3.2 The VSC method measures the general amount of light available on the outside plane of the window as a ratio (%) of the amount of total unobstructed sky viewable following introduction of visible barriers such as buildings. The maximum value is just under 40% for a completely unobstructed vertical wall.
- 3.3 The VSC is calculated using computer simulation under a CIE overcast sky. This works by simulating the amount of visible sky from the centre point of each window. It is not affected by orientation and so all potentially affected windows are assessed.
- 3.4 Annual Probable Sunlight Hours (APSH) and Winter Probable Sun light Hours (WPSH) are a measure of the amount of potential direct sunlight that is available to a given surface. APSH covers sunlight over the whole year and WPSH from September 21st to March 21st.
- 3.5 Only windows which face within 90° of due south need be assessed for sunlight. This is looked at in Section 8.
- 3.6 The sunlight hours test can also be used to assess the impact on external spaces such as gardens. This is looked at in Section 9.

4.0 Modelling & Data Sources

- 4.1 The first stage of the analysis is to create the analysis model of the existing site condition and the proposal. This allows us to analyse the impact of the proposal in terms of loss of daylight and sunlight.
- 4.2 2D drawings have been provided by the design team. These drawings are used to construct a 3D analysis model which is exported into the specialist daylight software. Calculations are then run, for both existing and proposed scenarios.
- 4.3 Sufficient detail is added to the model for the analysis. In accordance with BRE recommendations, trees and foliage have been omitted from the calculations.
- 4.4 Information on the properties has been provided to us by the design team in the form of drawings giving the site as existing and proposed and photographs of the site and surroundings.
- 4.5 Web-based mapping sources and planning records for neighbouring buildings have also been used where available.



East Elevation – As Existing



East Elevation – As Proposed

5.0 BRE Guidance Targets

- 5.1 The reference document for this analysis, BRE Digest 209, 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' (3rd Edition, 2022) gives the methodology for undertaking the calculations.
- 5.2 It also provides benchmark figures for the acceptable reduction in the daylight on existing properties which might be affected by development.
- 5.3 Specifically, the guidance gives figures for the VSC and APSH, as a percentage reduction that is "permissible" for the effect on existing windows.
- 5.4 It is worth noting the following statement in the Guidance introduction:
 - "The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the developer.
 - Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design."
- 5.5 The relevant BRE recommendations for daylight and sunlight are:
 - The Vertical Sky Component measured at the centre of a window should be no less than 27%, or if reduced to below this, no less than 0.8 times the former value.
 - The window should receive at least 25% of available annual sunlight hours and more than 5% during the winter months (September 21st to March 21st), or, where this is not the case, 80% of its former value.

6.0 Window Schedules



60A Station Road



81 Station Road



Walters Close



NH – window known or assumed to serve non-habitable room

7.0 Daylight Impact Results

- 7.1 The Vertical Sky Component has been calculated for each of the 21 assessed windows for both the existing and proposed conditions.
- 7.2 As can be seen in the results below, all windows retain in excess of 80% of their current values.
- 7.3 The scheme is therefore compliant with BRE recommendations in relation to daylight impacts.

Vertical Sky Component				
Window	Existing VSC	Proposed VSC	% Retained	Meets BRE Guidance?
1	33.846	31.658	93.54%	Yes
2	36.342	34.519	94.98%	Yes
3	25.494	25.494	100.00%	Yes
4	35.979	31.944	88.79%	Yes
5	34.370	31.833	92.62%	Yes
6	34.903	32.440	92.94%	Yes
7	26.009	22.895	88.03%	Yes
8	31.081	27.089	87.16%	Yes
9	35.414	31.404	88.68%	Yes
10	24.903	21.967	88.21%	Yes
11	30.344	26.430	87.10%	Yes
12	35.286	31.224	88.49%	Yes
13	18.548	15.699	84.64%	Yes
14	23.298	19.639	84.30%	Yes
15	30.954	27.249	88.03%	Yes
16	25.055	21.993	87.78%	Yes
17	30.438	26.215	86.12%	Yes
18	35.393	30.755	86.90%	Yes
19	25.898	23.478	90.66%	Yes
20	32.018	28.746	89.78%	Yes
21	35.790	32.685	91.32%	Yes

8.0 Sunlight Impact Results

- 8.1 BRE guidance states that only windows which face within 90° of due south need be assessed for sunlight provision. In this instance, 15 windows fall into this category.
- 8.2 The remaining windows do not need to be assessed as they face within 90° of north.
- 8.3 The Annual Probable Sunlight Hours has been calculated for these windows for both the existing and proposed conditions using the methodology described previously, both over the whole year, and through the "winter months" (September 21st until March 21st)
- 8.4 The BRE guidance states that the sun lighting may be adversely affected if the centre of the window:
- Receives less than 25% of annual hours or less than 5% of winter hours and
 - Receives less than 80% of its current sunlight hours during either period and
 - Has a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours
- 8.5 It is clear from the wording of the above that all three clauses need to be met to qualify as an adverse impact. Thus, if the window does not meet any one of these criteria, the impact is acceptable.
- 8.6 The results below show that the assessed windows retain in excess of 25% of annual sunlight hours and 5% of hours over the winter months.
- 8.7 Where sufficient sunlight hours are retained, the percentage reduction does not need to be calculated.
- 8.8 The scheme is therefore compliant with BRE guidance in relation to sunlight impacts.

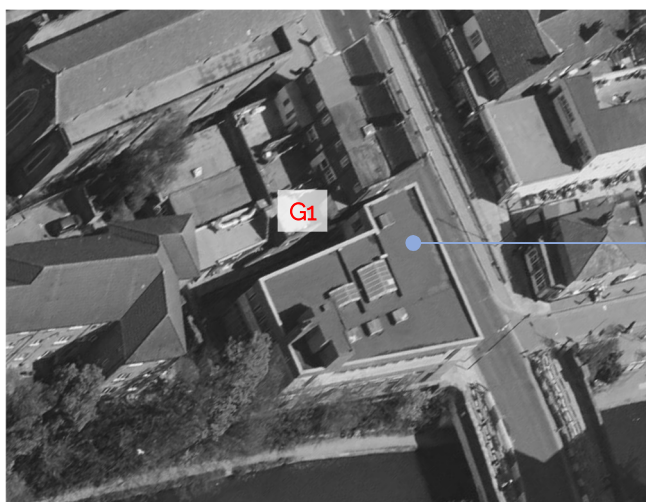


8.0 Sunlight Impact Results

	Annual Sunlight Hours			Winter Sunlight Hours			
Window	Ex. Hrs Received (%)	Prop. Hrs Received	% Retained	Ex. Hrs Received	Prop. Hrs Received	% Retained	Meets Guidance?
7	50.658	44.629	N/A	15.800	15.385	N/A	Yes
8	59.252	52.876	N/A	17.186	15.800	N/A	Yes
9	63.756	57.242	N/A	21.622	17.810	N/A	Yes
10	50.936	45.322	N/A	13.999	13.652	N/A	Yes
11	59.044	53.015	N/A	16.493	14.068	N/A	Yes
12	63.825	58.073	N/A	22.315	17.394	N/A	Yes
13	44.283	40.055	N/A	11.920	10.949	N/A	Yes
14	49.896	45.322	N/A	16.078	12.543	N/A	Yes
15	56.895	49.064	N/A	24.186	16.355	N/A	Yes
16	46.778	42.412	N/A	7.554	6.722	N/A	Yes
17	55.163	48.718	N/A	13.028	8.039	N/A	Yes
18	67.360	55.440	N/A	25.364	13.444	N/A	Yes
19	46.500	42.342	N/A	8.663	5.544	N/A	Yes
20	59.459	51.767	N/A	17.256	9.563	N/A	Yes
21	65.835	58.212	N/A	25.087	17.464	N/A	Yes

9.0 Sunlight to Neighbouring Gardens

- 9.1 Residential gardens are generally assessed using the sunlight hours test, but only on March 21st. The guidance describes a well-lit space as being one which receives at least 2 hours of direct sunlight on this date over 50% of its area.
- 9.2 BRE guidance also uses the "80%" rule for this test, whereby the effects are considered acceptable if the remaining sunlight is in excess of 80% of the existing level. This clause only applies if the space is reduced to less than 50% of the area well sunlit.
- 9.3 The roof top amenity space of the nearest neighbouring property to the site was assessed using this methodology.
- 9.4 As can be seen, the neighbouring amenity space retains in excess of 50% of its area which receives 2 hours of sunlight on March 21st.
- 9.5 The scheme is therefore compliant with the BRE guidance in relation to sunlight impacts to gardens and overshadowing.



Site Location

Amenity Sunlight Hours				
Garden	Existing Area Receiving 2 Hours	Proposed Area Receiving 2 Hours	% Retained	Meets BRE Guidance?
G1	76.08%	51.23%	N/A	Yes

10.0 Daylight within the Proposal

- 10.1 The BRE and BS EN 17037 guidance allows for two alternative methods to assess daylight within new dwellings. This report uses the following method:

Target Daylight Factor (DF_T)

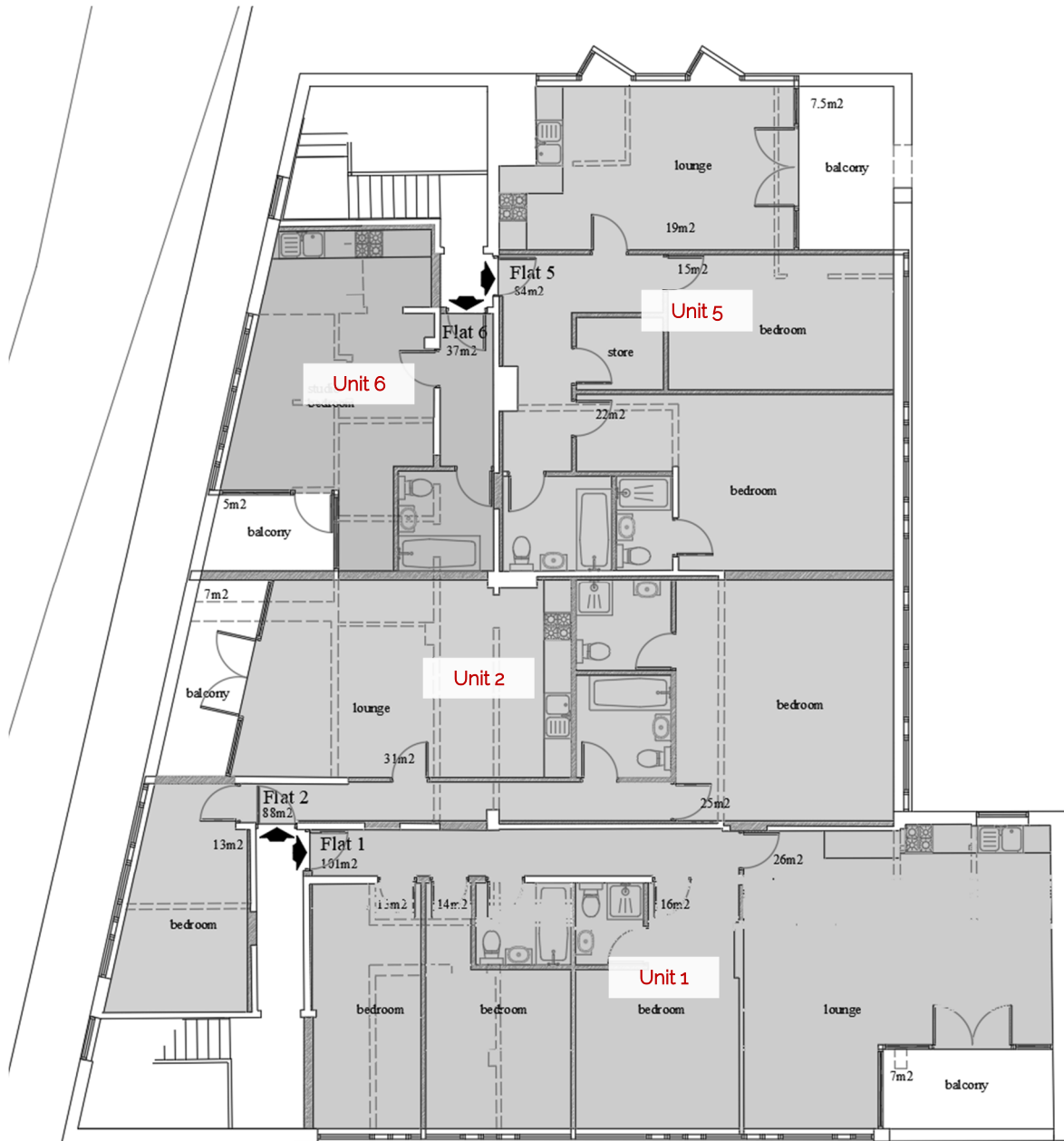
- 10.2 The DF_T method is a complex and representative calculation to determine natural internal luminance.
- 10.3 It takes into account such factors as window size, number of windows available to the room, room size and layout, room surface reflectance, and the angle of visible sky reaching the window.
- 10.4 Due to the complexity of the daylight entering the proposed rooms, the Target Daylight Factor approach is the most suitable calculation to give a realistic indication of the internal illuminance that will be experienced.
- 10.5 The calculations have assumed a white ceiling, cream walls and mid-grey carpet or wooden floor using reflectance values taken from the BS EN 170437 Guidance.
- 10.6 The benchmark values for all habitable rooms which are recommended by the BRE guidance and BS:EN 17037:2018 are:

Table C2 – Target daylight factors (D) for London

Level of recommendation	Target daylight factor D for half of assessment grid	Target daylight factor D for 95% of assessment grid
Minimum	2.1%	0.7%
Medium	3.5%	2.1%
High	5.3%	3.5%

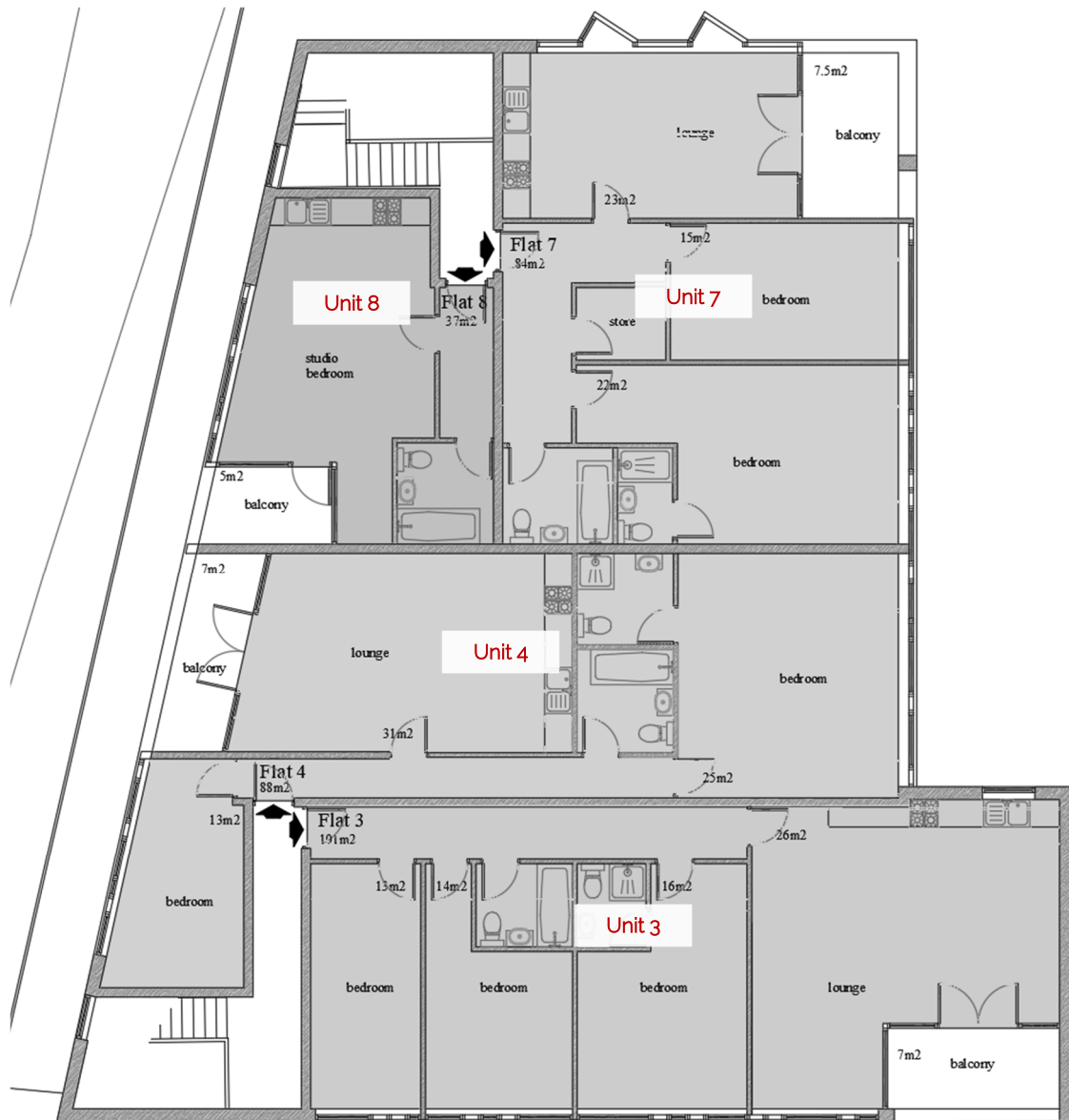
- 10.7 It is deemed by the guidance that if the minimum DF criteria are met, then the occupants of the dwelling will have sufficient daylight. As can be seen from the results below that all assessed habitable rooms meet and exceed the minimum levels of internal daylight.

10.0 Daylight within the Proposal



First Floor as Proposed

10.0 Daylight within the Proposal



Second Floor as Proposed

10.0 Daylight within the Proposal

Minimum Target Daylight Factor						
Unit	Room	0.7% DF Target Area	Area Receiving 0.7% DF	2.1% DF Target Area	Area Receiving 2.1% DF	Meets Standards?
1	Kitchen/Living/Dining	95%	100.0%	50%	81.3%	Yes
1	Bedroom 1	95%	100.0%	50%	100.0%	Yes
1	Bedroom 2	95%	100.0%	50%	100.0%	Yes
1	Bedroom 3	95%	100.0%	50%	100.0%	Yes
2	Kitchen/Living/Dining	95%	98.3%	50%	67.6%	Yes
2	Bedroom 1	95%	100.0%	50%	77.2%	Yes
2	Bedroom 2	95%	100.0%	50%	100.0%	Yes
3	Kitchen/Living/Dining	95%	100.0%	50%	87.5%	Yes
3	Bedroom 1	95%	100.0%	50%	100.0%	Yes
3	Bedroom 2	95%	100.0%	50%	100.0%	Yes
3	Bedroom 3	95%	100.0%	50%	100.0%	Yes
4	Kitchen/Living/Dining	95%	99.7%	50%	69.8%	Yes
4	Bedroom 1	95%	100.0%	50%	80.4%	Yes
4	Bedroom 2	95%	100.0%	50%	100.0%	Yes
5	Kitchen/Living/Dining	95%	100.0%	50%	90.2%	Yes
5	Bedroom 1	95%	100.0%	50%	81.6%	Yes
5	Bedroom 2	95%	100.0%	50%	85.7%	Yes
6	Studio	95%	100.0%	50%	100.0%	Yes
7	Kitchen/Living/Dining	95%	100.0%	50%	92.3%	Yes
7	Bedroom 1	95%	100.0%	50%	85.1%	Yes
7	Bedroom 2	95%	100.0%	50%	89.0%	Yes
8	Studio	95%	100.0%	50%	100.0%	Yes

11.0 Conclusions

- 11.1 Using industry standard methodology, we have made numerical analyses to ascertain the effects of the proposed extension and conversion of the site at 62 Station Road, Hayes, and the levels of change in daylight and sunlight for the windows and gardens of the neighbouring properties.
- 11.2 The main criteria used in this analysis to show compliance are the Vertical Sky Component (VSC) for daylight impacts and Annual and Winter Probable Sunlight Hours for sunlight impacts
- 11.3 As has been shown, the effect on VSC is within the 80% BRE guidance value in all cases.
- 11.4 We are therefore able to conclude that there will be no adverse impact on neighbouring residents in terms of daylight as a result of the works.
- 11.5 In terms of sunlight, our analysis shows that the windows which require assessment retain in excess of 25% of annual sunlight hours and 5% of hours over the winter months.
- 11.6 The nearest neighbouring amenity space also retains in excess of 50% of its area which receives 2 hours of sunlight on March 21st.
- 11.7 The scheme is therefore fully compliant with BRE guidance in relation to sunlight impacts.
- 11.8 Habitable rooms in the new dwellings will benefit from daylight levels in excess of the requirements of BS EN 17037:2018 recommendations.
- 11.9 It is therefore the conclusion of this report that the development meets the guidance values in the BRE report and is therefore entirely acceptable, in daylight and sunlight terms.



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