



The Grove Lawn Tennis Club,

Cascade Avenue, N10

Daylight and Sunlight Assessment

Job No: 4760

Issued: January, 2023

Issue No.: 3

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1.0 Introduction

- 1.1 This daylight and sunlight assessment has been prepared to support a planning application for the proposed development on land occupied by The Grove Lawn Tennis Club, Cascade Avenue, London N10.
- 1.2 The report assesses the proposals in respect of daylight, sunlight and overshadowing matters, having regard to industry standard guidance. The report concludes that the proposal is acceptable and in accordance with planning policy requirements in relation to daylight and sunlight.
- 1.3 There is no existing specific National Planning Policy relating to the prospective impacts of developments on daylight and sunlight on their surrounding environment.
- 1.4 However, 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.
- 1.5 This reference document is accepted as the authoritative work in the field on daylight, sunlight and overshadowing and is specifically referred to in many Local Authorities' planning policy guidance for daylighting. 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 a parcel of land lying between Cascade Avenue and The Chine, London N10. It is currently occupied by The Grove Lawn Tennis Club.
- 2.2 The proposal is for the construction of a residential development in two blocks, rising to a maximum height of 3 storeys. The existing pavilion will also be converted to a residential unit.
- 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 within the proposed new dwellings has also been assessed.



Site Location

3.0 Methodology

- 3.1 For this analysis, we have undertaken the most common calculations for the change in daylight and sunlight to existing buildings, as recommended in BRE Digest 209. These are:
 - Vertical Sky Component (VSC) and No Sky Line (NSL) for daylight impacts and Target Daylight Factor (DF_T) for daylight within the proposal.
 - Annual Probable Sunlight Hours and Winter Probable Sunlight Hours (A/WPSH) 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 An additional test that can be undertaken is the No Sky Line (NSL) test, also referred to as Daylight Distribution.
- 3.5 The NSL test calculates the distribution of daylight within rooms by determining the area of the room at desk / work surface height (the 'working plane') which can and cannot receive a direct view of the sky and hence 'sky light'. The working plane height is set at 850mm above floor level within residential property.
- 3.6 The NSL test can be carried out where neighbouring room layouts are known.
- 3.7 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.
- 3.8 APSH covers sunlight over the whole year and WPSH from September 21st to March 21st. The number of total available hours is calculated from a data file in the software, built up over a number of years of actual weather data records.
- 3.9 Only windows which face within 90° of due south need be assessed for sunlight. This is looked at in Section 9.
- 3.10 APSH can also be used to assess the impact on external spaces such as gardens. This is looked at in Section 10.

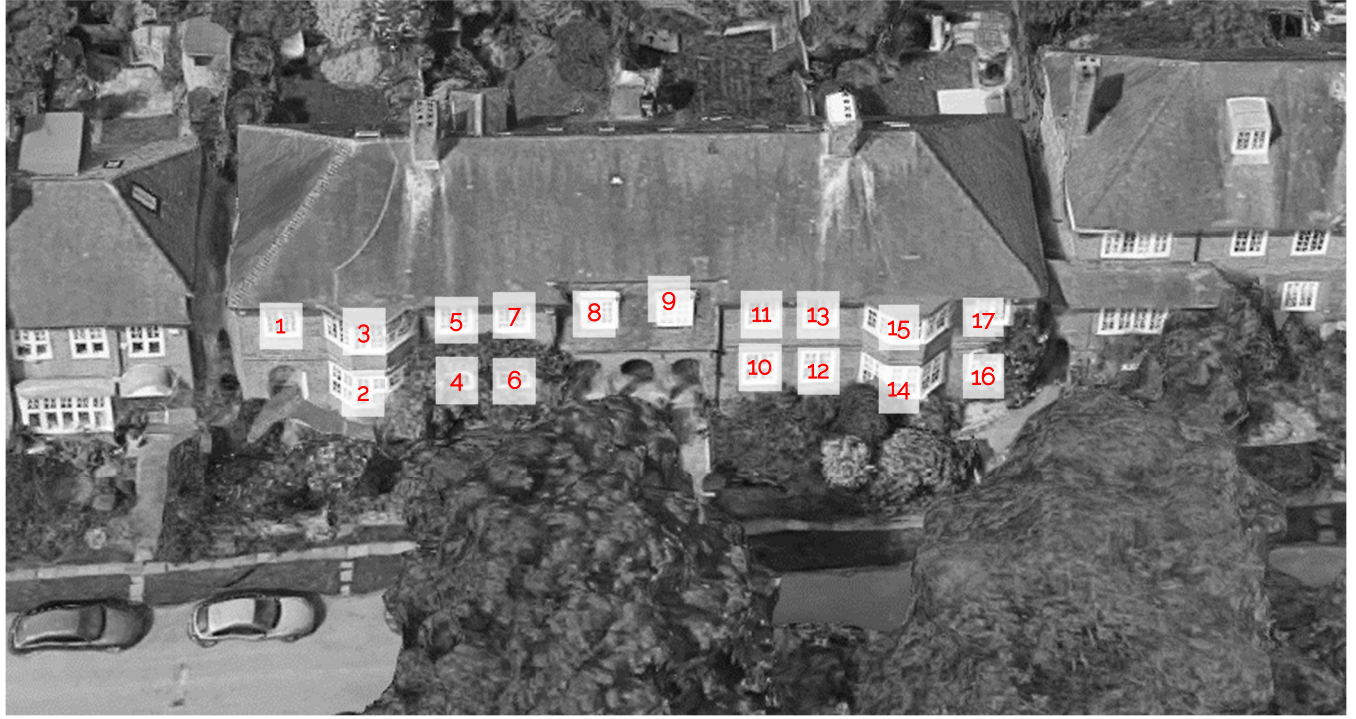
4.0 Modelling & Data Sources

- 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 when compared to the existing condition.
- 4.2 2D drawings and a 3D model 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 and a model 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.

5.0 BRE Guidance Targets

- 5.1 The reference document for this analysis, BRE Digest 209, gives the methodology for undertaking the calculations. It also provides benchmark figures for the acceptable reduction in the daylight on existing properties which might be affected by development.
- 5.2 Specifically, the guidance gives figures for the VSC, NSL and APSH, as a percentage reduction that is "permissible" for the effect on existing windows.
- 5.3 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."
- 5.4 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 area of the room beyond the No Sky Line should not be reduced to less than 80% of its 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.

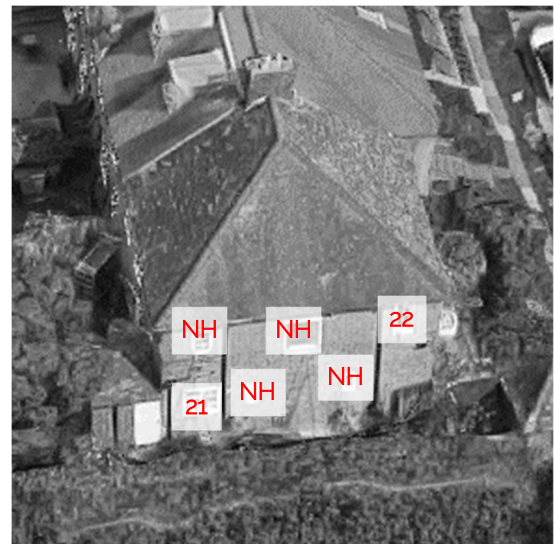
6.0 Window Schedules



13-19 The Chine



10 The Chine



37 Cascade Avenue

7.0 Daylight Impact Results – VSC Test

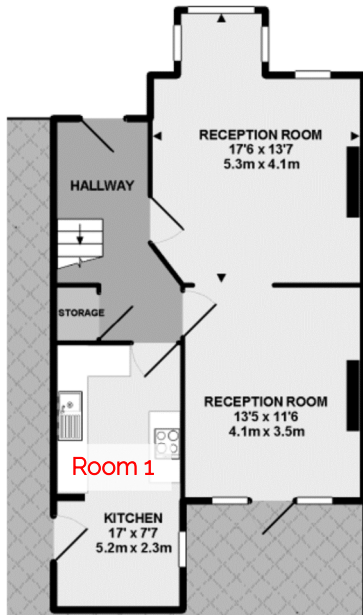
- 7.1 The Vertical Sky Component has been calculated for each of the 22 assessed windows for both the existing and proposed conditions.
- 7.2 As can be seen in the results below, the majority of windows (20 of 22) retain 80% of their current values or a residual VSC above 27%.
- 7.3 For the windows which fall short of these targets, floor plans are available for the rooms which they serve, which enables the more detailed No Sky Line calculations to be undertaken.
- 7.4 This is detailed in the following section.
- 7.5 The remaining windows meet the BRE guidance by virtue of retaining 80% of existing values.

Vertical Sky Component				
Window	Existing VSC	Proposed VSC	% Retained	Meets BRE Guidance?
1	31.941	30.516	95.54%	Yes
2	34.912	31.797	91.08%	Yes
3	35.929	33.979	94.57%	Yes
4	30.766	27.367	88.95%	Yes
5	32.223	30.100	93.41%	Yes
6	34.036	30.301	89.03%	Yes
7	34.427	32.126	93.32%	Yes
8	35.242	32.696	92.78%	Yes
9	35.311	32.521	92.10%	Yes
10	35.115	30.570	87.06%	Yes
11	34.613	31.769	91.78%	Yes
12	33.158	28.575	86.18%	Yes
13	33.575	30.669	91.34%	Yes
14	36.384	31.229	85.83%	Yes
15	37.456	34.294	91.56%	Yes
16	31.120	26.427	84.92%	Yes
17	32.440	29.626	91.33%	Yes
18	35.102	29.987	85.43%	Yes
19	39.077	38.088	97.47%	Yes
20	37.750	15.677	41.53%	No
21	36.424	18.638	51.17%	No
22	33.279	28.269	84.94%	Yes

8.0 Daylight Impact Results – NSL Test

- 8.1 BRE guidance states that the No Sky Line can additionally be calculated "where neighbouring room layouts are known".
- 8.2 In this instance floor plans have been sourced for the neighbour at 10 The Chine. The other neighbour, 37 Cascade Avenue, appears to be a mirror image and so has been assumed to have the same internal layout.
- 8.3 For the other neighbours, no reliable floor plans have been sourced.
- 8.4 However, although the calculations cannot be undertaken, as the VSC results show the impact on skylight levels to the windows on other properties is low, it is a reasonable assumption that the impact on their No Sky Line would also be low.
- 8.5 The area of the room beyond the No Sky Line has been calculated for the room which shows a loss of VSC beyond the guidance.
- 8.6 This test is more detailed and represents better the actual impact on a room, as it considers both the size of the room and the window.
- 8.7 As can be seen in the results below, the assessed rooms retain in excess of 80% of its area within the No Sky Line. These rooms therefore meet the BRE guidance using this more detailed and representative test.
- 8.8 As above, it would be a reasonable assumption that the impact on NSL for the properties for which reliable floorplans could not be sourced would also be well within the BRE guidance.
- 8.9 The scheme is compliant with BRE guidance when assessed using the No Sky Line test.

8.0 Daylight Impact Results – NSL Test



10 The Chine – Ground Floor Plan



10 The Chine – Internal View Showing Window 20

Note – Room 2 at 37 Cascade Avenue is assumed to be a mirror image of the layout of 10 The Chine

No Sky Line

Room	Window Ref	Room Served	Existing NSL (%)	Proposed NSL (%)	% Retained	Meets BRE Guidance?
1	20	Kitchen/Dining	75.12%	61.36%	81.68%	Yes
2	21	Kitchen/Dining	73.08%	62.57%	85.62%	Yes

9.0 Sunlight Impact Results

- 9.1 BRE guidance states that only windows which face within 90° of due south need be assessed for sunlight provision. In this instance, 5 windows fall into this category.
- 9.2 The Annual Probable Sunlight Hours has been calculated for each of 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)
- 9.3 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
- 9.4 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.
- 9.5 The results below show that all of the assessed windows retain 25% of available sunlight hours annually and 5% over the winter months.
- 9.6 The scheme is therefore compliant with BRE guidance in relation to sunlight impacts.

Window	Annual Sunlight Hours			Winter Sunlight Hours			Meets Guidance?
	Ex. Hrs Received (%)	Prop. Hrs Received	% Retained	Ex. Hrs Received	Prop. Hrs Received	% Retained	
18	76.992	67.152	N/A	30.492	22.107	N/A	Yes
19	84.754	83.645	N/A	30.769	29.660	N/A	Yes
20	85.100	47.886	N/A	30.769	5.331	N/A	Yes
21	85.031	55.094	N/A	30.007	5.176	N/A	Yes
22	73.042	64.449	N/A	30.492	21.899	N/A	Yes

10.0 Sunlight To Neighbouring Gardens

- 10.1 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.
- 10.2 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 applies if the space is reduced to less than 50% of the area well sunlit.
- 10.3 The gardens of the nearest neighbouring properties to the site were assessed using this methodology.
- 10.4 As can be seen, the neighbouring gardens retain over 80% of their existing values and the scheme is therefore compliant with BRE guidance.



Site Location

Amenity Sunlight Hours				
Garden	Existing Area Receiving 2 Hours	Proposed Area Receiving 2 Hours	% Retained	Meets BRE Guidance?
G1	59.52%	48.55%	81.57%	Yes
G2	56.88%	48.04%	84.46%	Yes

11.0 Daylight within the Proposal

- 11.1 This 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)

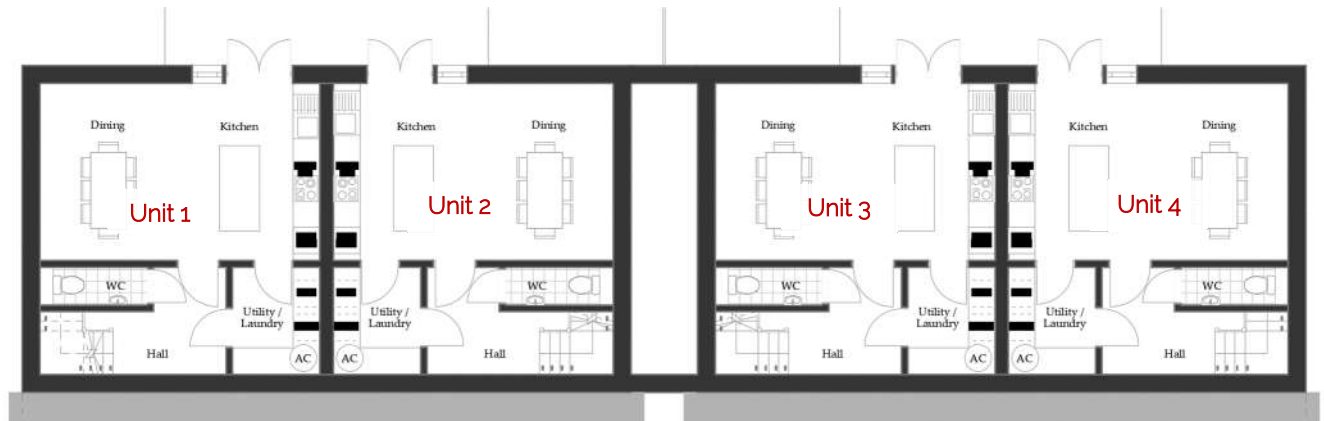
- 11.2 The DF_T method is a complex and representative calculation to determine natural internal luminance.
- 11.3 It takes into account such factors as window size, number of windows available to the room, room size and layout, room surface reflectance, and the angle of visible sky reaching the window.
- 11.4 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.
- 11.5 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.
- 11.6 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

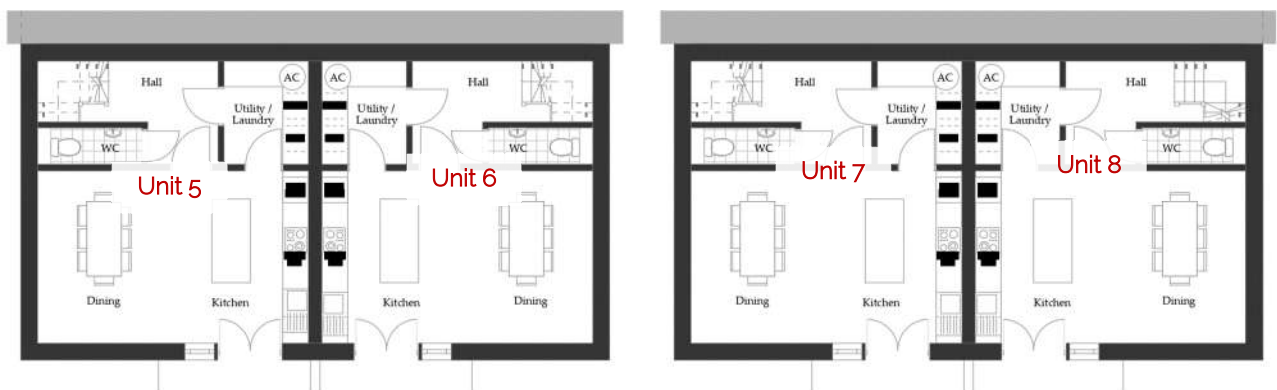
Level of recommendation	Target daylight factor D for half of assessment grid	Target daylight factor D for 95% of assessment grid
Minimum	2.1%	0.7%
Medium	3.5%	2.1%
High	5.3%	3.5%

- 11.7 It is deemed by the guidance that if the minimum DF criteria are met, then the occupiers 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.

11.0 Daylight within the Proposal

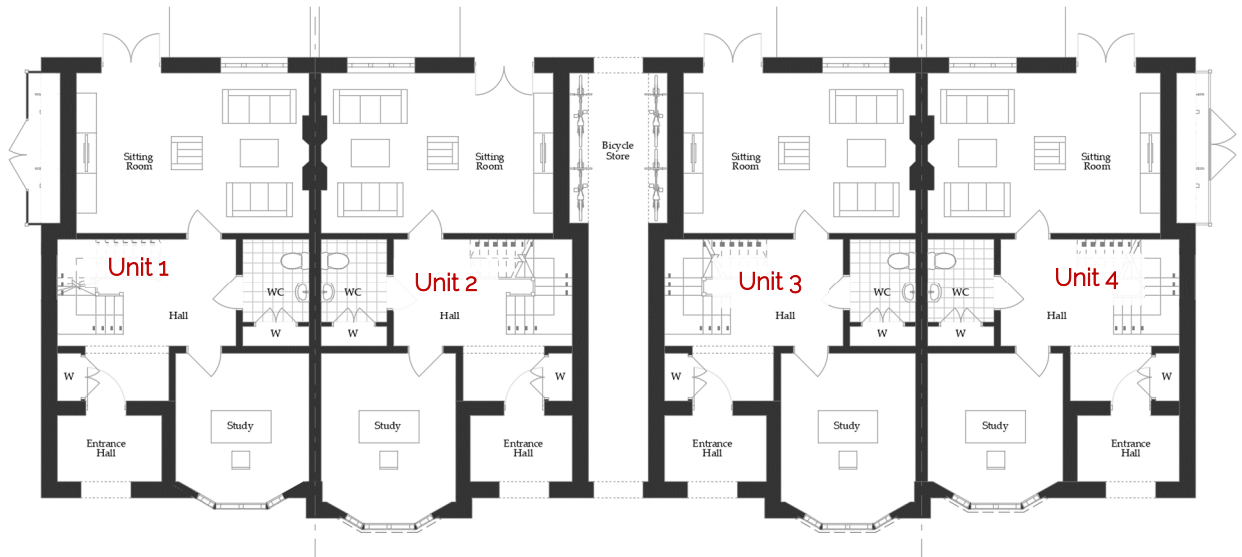


Basement Floor as Proposed – Block 1

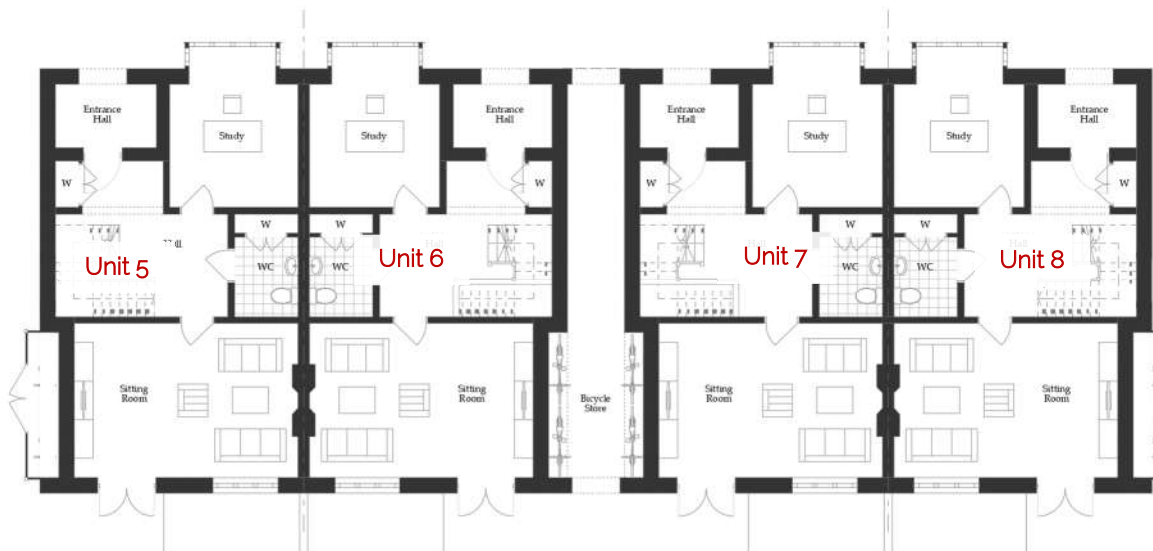


Basement Floor as Proposed – Block 2

11.0 Daylight within the Proposal



Ground Floor as Proposed – Block 1

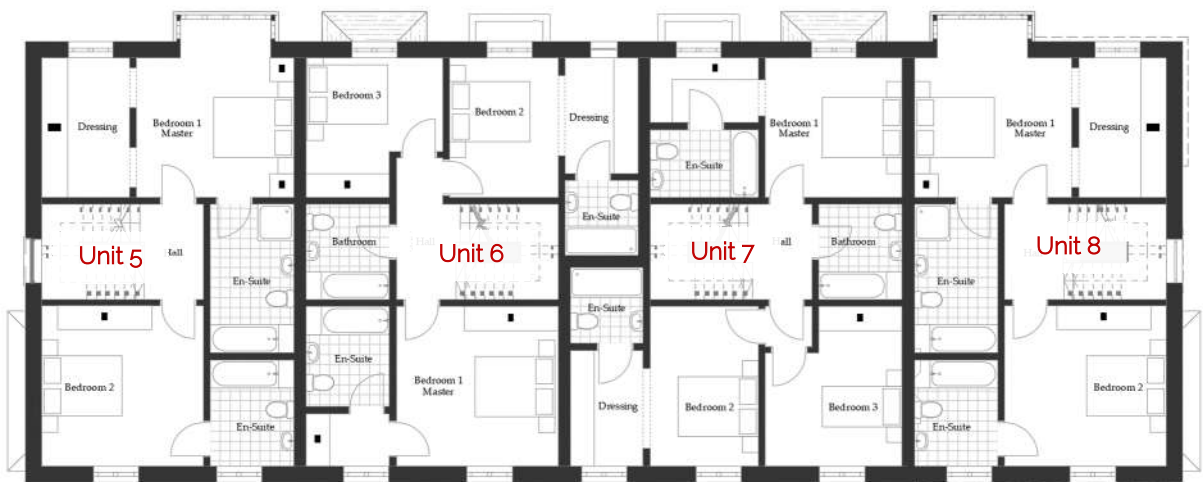


Ground Floor as Proposed – Block 2

11.0 Daylight within the Proposal

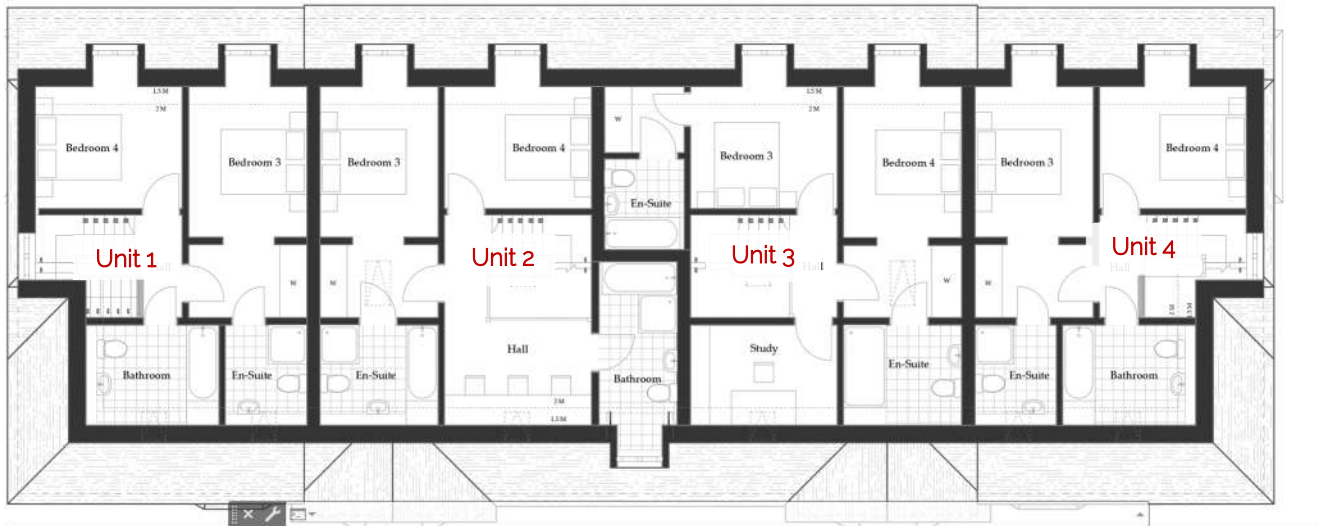


First Floor as Proposed – Block 1

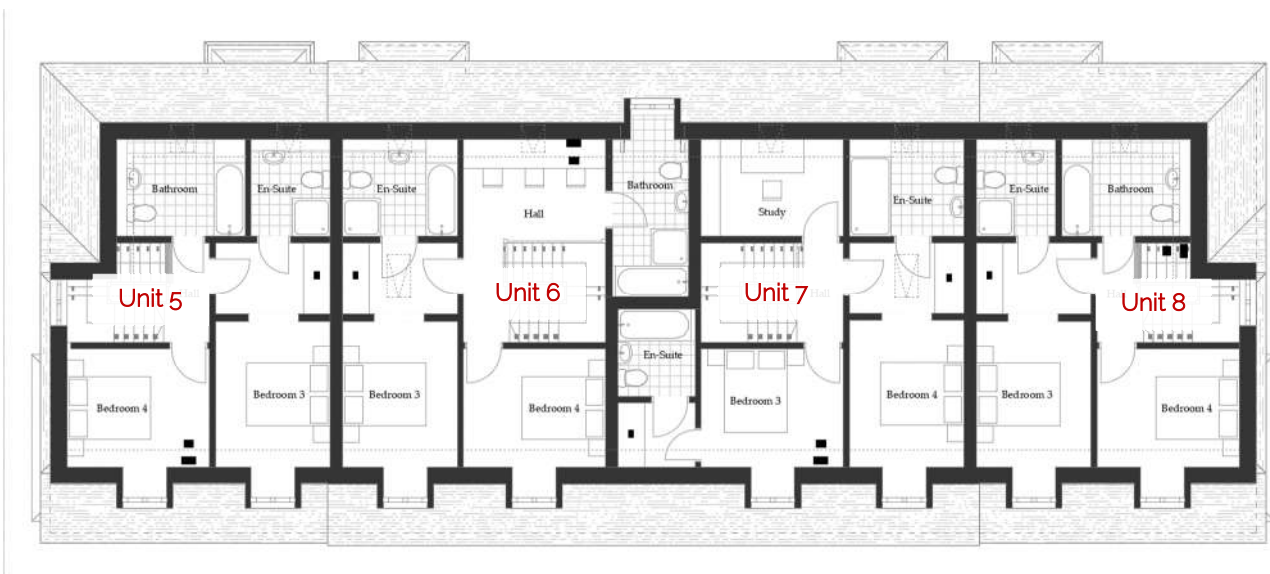


First Floor as Proposed – Block 2

11.0 Daylight within the Proposal

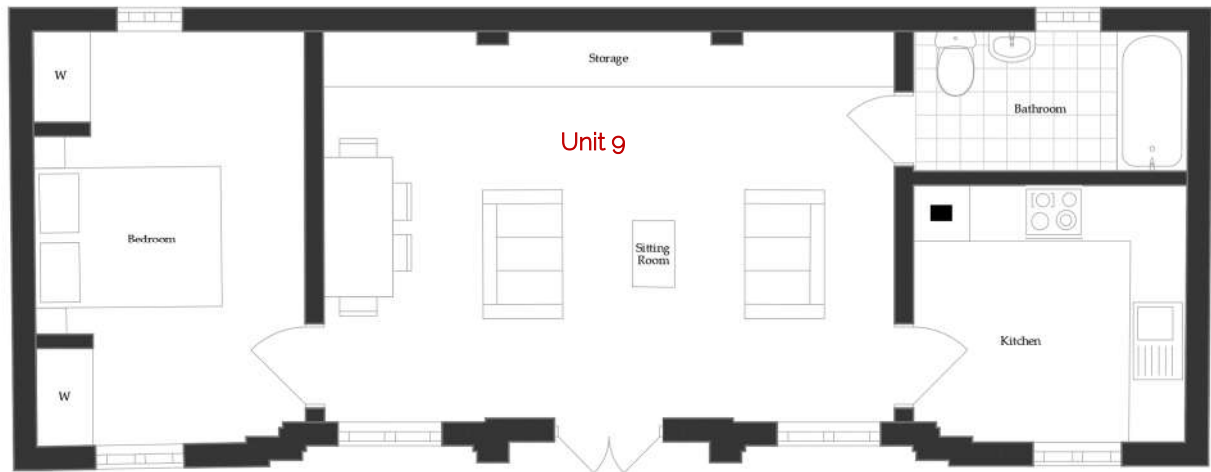


Second Floor as Proposed – Block 1



Second Floor as Proposed – Block 2

11.0 Daylight within the Proposal



Ground Floor as Proposed – Pavilion



11.0 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/Dining	95%	100.0%	50%	65.2%	Yes
1	Sitting Room	95%	100.0%	50%	100.0%	Yes
1	Study	95%	100.0%	50%	100.0%	Yes
1	Bedroom 1	95%	100.0%	50%	100.0%	Yes
1	Bedroom 2	95%	100.0%	50%	75.4%	Yes
1	Bedroom 3	95%	100.0%	50%	63.8%	Yes
1	Bedroom 4	95%	100.0%	50%	60.6%	Yes
2	Kitchen/Dining	95%	100.0%	50%	65.1%	Yes
2	Sitting Room	95%	100.0%	50%	100.0%	Yes
2	Study	95%	100.0%	50%	100.0%	Yes
2	Bedroom 1	95%	100.0%	50%	72.1%	Yes
2	Bedroom 2	95%	100.0%	50%	85.8%	Yes
2	Bedroom 3	95%	100.0%	50%	100.0%	Yes
2	Bedroom 4	95%	100.0%	50%	60.7%	Yes
2	Bedroom 5	95%	100.0%	50%	61.9%	Yes
3	Kitchen/Dining	95%	100.0%	50%	65.1%	Yes
3	Sitting Room	95%	100.0%	50%	100.0%	Yes
3	Study	95%	100.0%	50%	100.0%	Yes
3	Bedroom 1	95%	100.0%	50%	100.0%	Yes
3	Bedroom 2	95%	100.0%	50%	67.7%	Yes
3	Bedroom 3	95%	100.0%	50%	65.3%	Yes
3	Bedroom 4	95%	100.0%	50%	61.2%	Yes
3	Bedroom 5	95%	100.0%	50%	60.4%	Yes
4	Kitchen/Dining	95%	100.0%	50%	65.3%	Yes
4	Sitting Room	95%	100.0%	50%	100.0%	Yes
4	Study	95%	100.0%	50%	100.0%	Yes
4	Bedroom 1	95%	100.0%	50%	100.0%	Yes
4	Bedroom 2	95%	100.0%	50%	73.4%	Yes
4	Bedroom 3	95%	100.0%	50%	61.6%	Yes
4	Bedroom 4	95%	100.0%	50%	60.7%	Yes

11.0 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?
5	Kitchen/Dining	95%	100.0%	50%	65.0%	Yes
5	Sitting Room	95%	100.0%	50%	100.0%	Yes
5	Study	95%	100.0%	50%	100.0%	Yes
5	Bedroom 1	95%	100.0%	50%	100.0%	Yes
5	Bedroom 2	95%	100.0%	50%	73.1%	Yes
5	Bedroom 3	95%	100.0%	50%	60.3%	Yes
5	Bedroom 4	95%	100.0%	50%	61.5%	Yes
6	Kitchen/Dining	95%	100.0%	50%	64.9%	Yes
6	Sitting Room	95%	100.0%	50%	100.0%	Yes
6	Study	95%	100.0%	50%	100.0%	Yes
6	Bedroom 1	95%	100.0%	50%	73.3%	Yes
6	Bedroom 2	95%	100.0%	50%	82.9%	Yes
6	Bedroom 3	95%	100.0%	50%	81.6%	Yes
6	Bedroom 4	95%	100.0%	50%	61.5%	Yes
6	Bedroom 5	95%	100.0%	50%	60.7%	Yes
7	Kitchen/Dining	95%	100.0%	50%	65.0%	Yes
7	Sitting Room	95%	100.0%	50%	100.0%	Yes
7	Study	95%	100.0%	50%	100.0%	Yes
7	Bedroom 1	95%	100.0%	50%	75.6%	Yes
7	Bedroom 2	95%	100.0%	50%	74.0%	Yes
7	Bedroom 3	95%	100.0%	50%	76.2%	Yes
7	Bedroom 4	95%	100.0%	50%	61.5%	Yes
7	Bedroom 5	95%	100.0%	50%	60.7%	Yes
8	Kitchen/Dining	95%	100.0%	50%	65.4%	Yes
8	Sitting Room	95%	100.0%	50%	100.0%	Yes
8	Study	95%	100.0%	50%	100.0%	Yes
8	Bedroom 1	95%	100.0%	50%	100.0%	Yes
8	Bedroom 2	95%	100.0%	50%	66.8%	Yes
8	Bedroom 3	95%	100.0%	50%	60.3%	Yes
8	Bedroom 4	95%	100.0%	50%	61.9%	Yes
9	Kitchen	95%	100.0%	50%	100.0%	Yes
9	Living/Dining	95%	100.0%	50%	100.0%	Yes
9	Bedroom 1	95%	100.0%	50%	100.0%	Yes

12.0 Conclusions

- 12.1 Using industry standard methodology, we have made numerical analyses to ascertain the effects of the proposal at The Grove Lawn Tennis Club, Cascade Avenue, N10 and the levels of change in daylight and sunlight for the windows of the neighbouring properties.
- 12.2 The main criteria used in this analysis to show compliance are the Vertical Sky Component and No Sky Line for daylight impacts and Annual and Winter Probable Sunlight Hours for sunlight impacts
- 12.3 As has been shown, the effect on VSC is within the guidance values for the majority of windows.
- 12.4 When the rooms which are served by the windows which fall short of the VSC test are assessed using the more detailed No Sky Line test, this shows a pass under the BRE guidance.
- 12.5 For the neighbours for which reliable floor plans could not be sourced, we consider it a reasonable assumption that, due to the very small impact on the VSC, that the NSL would also be compliant.
- 12.6 We consider that there will therefore be minimal adverse impact on neighbouring residential properties in terms of daylight.
- 12.7 In terms of sunlight, all of the assessed windows retain 25% of available sunlight hours annually and 5% over the winter months.
- 12.8 The neighbouring gardens retain in excess of 80% of their current area that receives 2 hours of sunlight on March 21st.
- 12.9 The scheme is therefore compliant with BRE guidance in relation to sunlight impacts.
- 12.10 The new residential units will benefit from daylight levels in excess of the requirements of BS EN 17037:2018
- 12.11 From a planning perspective therefore, it is the conclusion of this report that the proposed development is entirely acceptable for planning, in daylight and sunlight terms.



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