



47 Hampstead High Street, London

**Daylight, Sunlight, and Overshadowing Assessment
for Surrounding Properties and
Proposed Development**

Document Issue Record

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Calculations are based on the drawings and information provided to us, which have been accepted in good faith as being accurate and valid. The accuracy of this information may have an impact on the daylight, sunlight, and overshadowing assessments.

We have used our best endeavours to ensure that all relevant windows within the neighbouring properties and that all external amenity spaces have been identified.

We can make no guarantee as to the status (successful/unsuccessful) of the planning application following the submission of our report.

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1.0 Executive Summary

A daylight, sunlight, and overshadowing assessment has been carried out for the surrounding properties to the proposed development at 47 Hampstead High Street, London. An internal assessment has also been carried out to determine the amount of daylight and sunlight received by the proposed developments new habitable rooms. This report outlines the results of the assessments in order to assist with the developments planning application.

Calculations have been based on the drawings and information provided to us by the client / architect, internet and OS mapping sources, and publicly available planning records, which have been accepted in good faith as being accurate and valid. The accuracy of this information may have an impact on the daylight, sunlight, and overshadowing assessment.

The methodology used for this assessment follows the most recognised guidance document for daylight and sunlight within dwellings and is titled 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' *Third Edition 2022* and is published by the Building Research Establishment.

1.1 Assessment for Surrounding Properties

This assessment has investigated the changes in natural light received by the surrounding properties under the existing and proposed plans. The following daylight, sunlight, and overshadowing assessments have been carried out with the use of computer modelling software in order to provide the most accurate results possible.

- Vertical Sky Component (VSC)
- Annual and Winter Probable Sunlight Hours
- Overshadowing Assessment

The VSC results show that the surrounding window W01 within 47A Hampstead High Street would only receive a negligible impact overall. This is because its VSC value under the proposed scheme is greater than 0.80 times its former value, and as a result the BRE Guidelines with respect to natural daylight would be satisfied.

W01 is the lowest surrounding window, and it receives negligible impact, therefore any other surrounding window higher up would also receive negligible impact due to the proposed extension.

The sunlight results show that there would only be a negligible impact to the amount of annual and winter sunlight hours the surrounding window receives under the proposed scheme, this is because its ratio is above 0.80 times its former value, therefore the BRE Guidelines in regard to direct sunlight will be satisfied.

As there are no surrounding outside amenity spaces that would be impacted by the proposed development overshadowing calculations do not need to be carried out.

For these reasons we believe that the proposed development at 47 Hampstead High Street, London should be considered as acceptable overall in regard to its neighbourly impact on daylight, sunlight, and overshadowing.

1.2 Assessment for Proposed Development

This assessment investigated the amount of natural daylight and sunlight received by the new habitable rooms (Living Areas and Bedrooms) within the proposed development itself.

The following assessments were carried out with the use of computer modelling software in order to provide the most accurate results possible.

- Daylight Factors
- Interior Sunlight

The daylight factor method results show that three out of six habitable rooms within the proposed development would satisfy the target daylight factors required. The remaining rooms are close to the target of 50%, with the exception of Flat 1 Bedroom 1. Although these rooms are just below the target this should still be seen as a good result given the existing nature of the development being on a constrained site with high rise surrounding buildings. The Flat 1 Bedroom 1 daylight is low, but this has been improved upon in comparison to the existing layout.

It is important to remember that the BRE Guidelines state that *'Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design'*.

The interior sunlight results show that the main living rooms of each flat would receive greater than 1.5 hours of sunlight on 21st March, therefore the BRE Guidelines in regard to interior sunlight would be satisfied.

For these reasons we also believe that the proposed development at 47 Hampstead High Street, London should also be considered as acceptable overall in regard to its own amounts of natural daylight and sunlight received.

2.0 Introduction

EEABS (Elmstead Energy Assessments & Building Services) have been instructed to undertake a daylight, sunlight, and overshadowing assessment for the surrounding properties to the proposed development at 47 Hampstead High Street, London.

We were also asked to determine the amount of daylight and sunlight that is to be received by the new habitable rooms within the proposed development itself.

This report will therefore investigate the changes in natural daylight and sunlight received between the existing and proposed plans for surrounding properties. It will also determine the daylight and sunlight achieved within each of the proposed developments new habitable rooms.

The key elements of this report are:

- To review the relevant guidance and methodology with respect to daylight, sunlight, and overshadowing that relate to the development.
- Calculate the surrounding properties levels of daylight, sunlight and overshadowing for the existing scheme in accordance with standard methodology.
- Calculate the surrounding properties levels of daylight, sunlight and overshadowing for the proposed scheme in accordance with standard methodology.
- Calculate the internal daylight and sunlight received by the proposed developments habitable rooms.
- To summarise and compare the findings against regulation guidelines for daylight and sunlight of neighbouring buildings, the overshadowing of amenity spaces, and the daylight and sunlight received by new rooms.

2.1 The Site and Development Proposal

The site is located on the first and second floors of 47 Hampstead High Street, London and can be seen on the site plan below. The surrounding properties that have been investigated under this assessment are.

- 47A Hampstead High Street

This is because these are the closest properties to the proposed development with windows that face it, or they have nearby garden amenity areas that could be impacted.

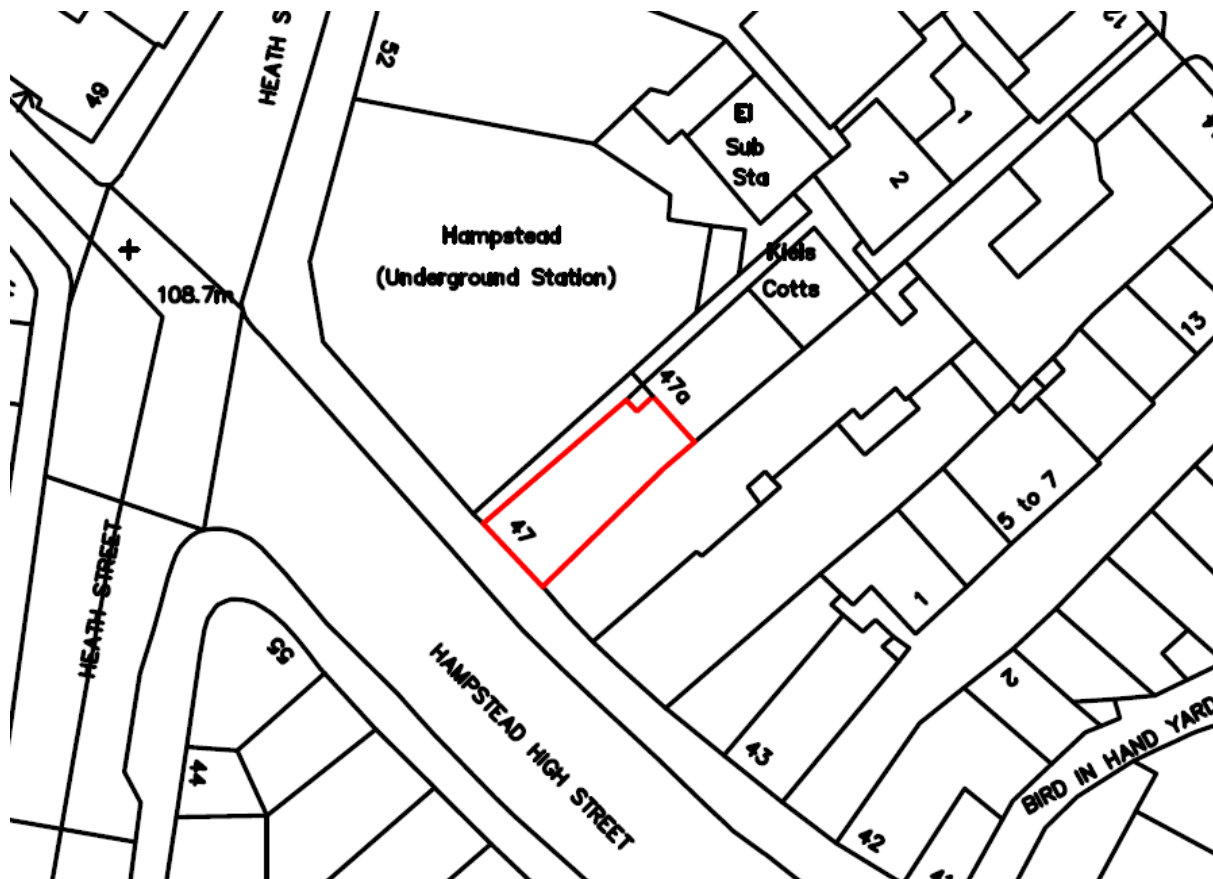
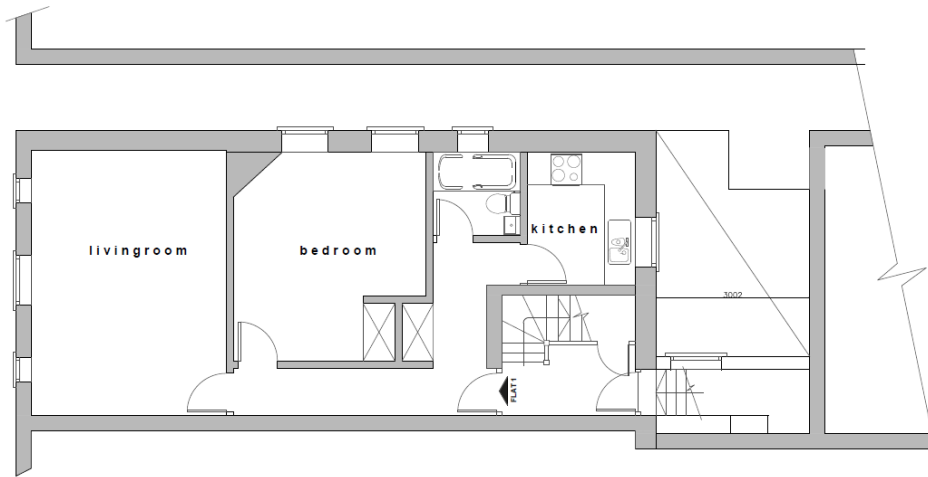


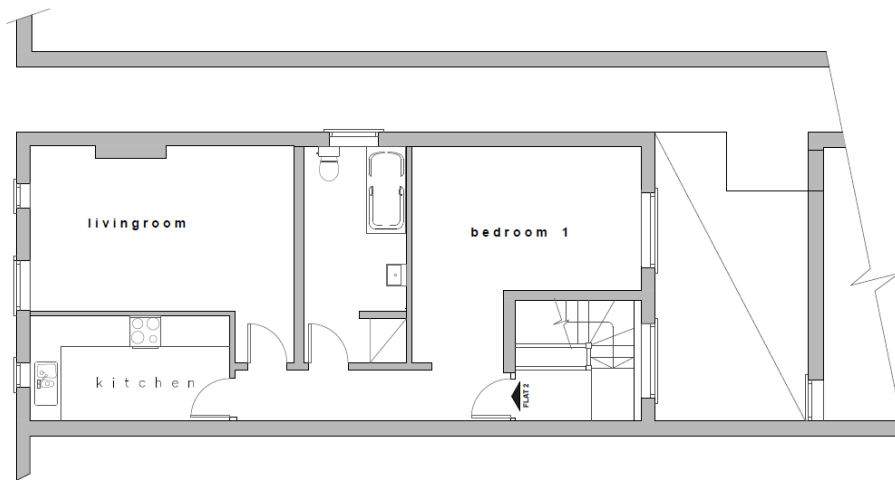
Figure 1 - Site Plan of 47 Hampstead High Street

The proposal is for a small rear first floor extension and for internal configurations to the first and second floor flats. Existing and Proposed Architectural drawings can be seen below.

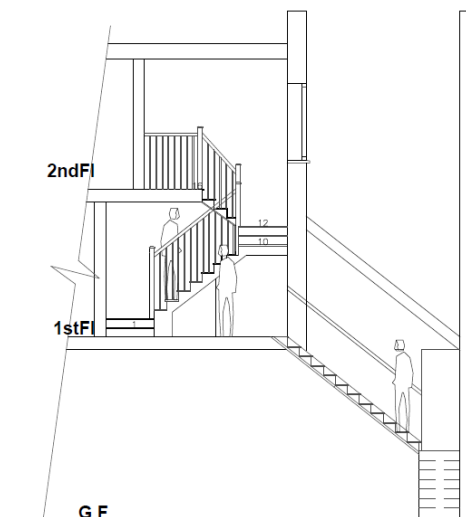
This assessment has been based on the drawings and information provided to us by the client / architect, which have been accepted in good faith as being accurate and valid, internet and OS mapping sources, and publicly available planning records where available. A drawing register can be found within Appendix A.



existing first floor
FLAT 1



existing top floor
FLAT 2



existing stairs
SECTION

Figure 2 - Existing Architectural Drawings

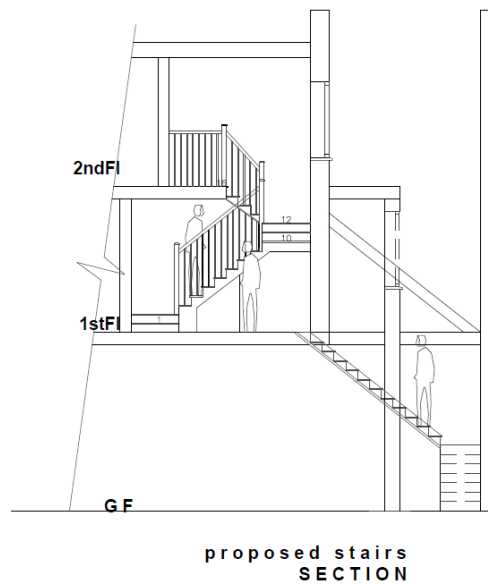
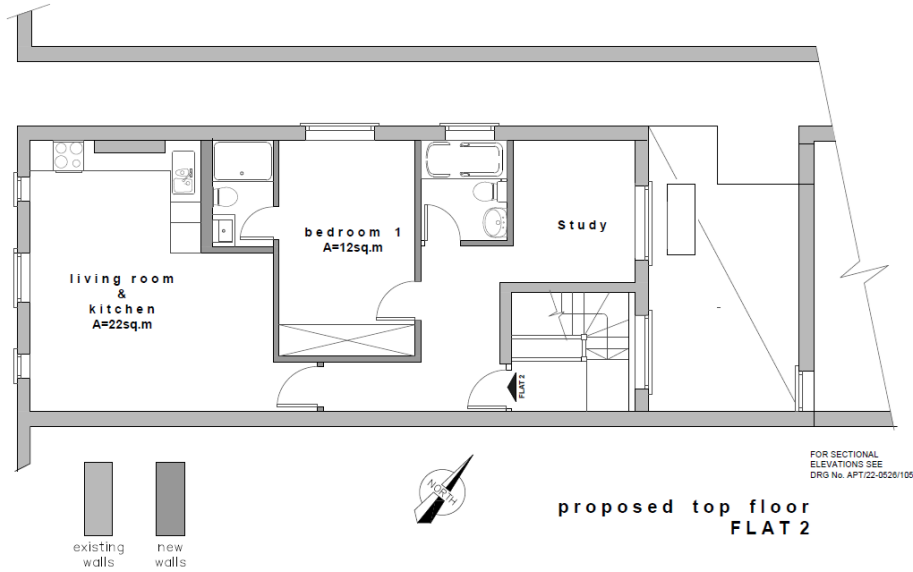
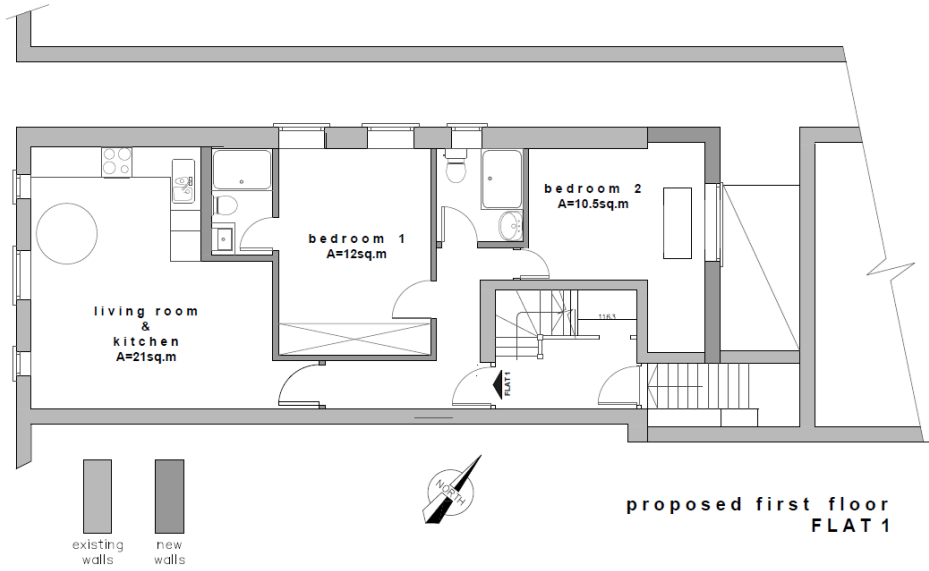


Figure 3 - Proposed Architectural Drawings

2.2 Planning Policy and Guidance

The most recognised guidance document for natural light within dwellings is titled 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' *Third Edition 2022* and is published by the Building Research Establishment.



Figure 4 - BRE: Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice

Although the BRE guide clearly states that its recommendations are not mandatory and the document should not be considered as an instrument of planning policy, it can be used in conjunction with the British Standard BS EN 17037.

While the BRE Guidelines are the most recognised document for natural light within dwellings they also do state that:

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here 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. In special circumstances the developer or planning authority may wish to use different target values."

As the numerical values within the BRE guide are purely advisable, Appendix H of the guide provides further assistance on how to assess the impact to daylight and sunlight of the surrounding properties.

Criteria	Impact
Where the loss of skylight or sunlight fully meets the guidelines and only a small number of windows or limited area of open space lose light.	Negligible
<p>Where the loss of skylight or sunlight is only just within the guidelines and a large number of windows or open spaces are affected.</p> <p>Where the loss of skylight or sunlight does not meet the guidelines but one or more of the following applies:</p> <ul style="list-style-type: none"> • Only a small number of windows or limited area of open spaces are affected. • The loss of light is only just outside the guidelines. • The affected room has other sources of light. • The affected building/room or open space has a low requirement for light. 	Minor Adverse
<p>Where the loss of skylight or sunlight does not meet the guidelines and one or more of the following applies:</p> <ul style="list-style-type: none"> • A large number of windows or large area of open space are affected. • The loss of light is substantially outside the guidelines. • All windows within a particular property are affected. • The affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight. 	Major Adverse

The methodology and target benchmarks set out within the BRE guide have been used to assess the surrounding properties under the existing and proposed schemes.

A value greater than 0.80 times its former value will be determined to have a Negligible impact, values lower than this will be determined as either minor or major adverse dependent on which factors apply as described in the table above. (We also generally determine values of between 0.80 and 0.50 to be minor adverse, and values less than 0.50 to be major adverse).

The BRE Guide states that these guidelines *“are intended for rooms in adjoining properties where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed.”*

Any trees located close to proposed development have been excluded from the model as recommended by the BRE Guide, which states: *“Where the effect of a new building on existing buildings nearby is being analysed, it is usual to ignore the effect of existing trees.”*

2.3 Methodology

The following methodology and calculations set out within the BRE Guide 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' *Third Edition 2022* were used to carry out the daylight, sunlight, and overshadowing assessment for the surrounding properties and the proposed development located at 47 Hampstead High Street, London.

2.3.1 Surrounding Property Calculations

Daylight Calculation - Vertical Sky Component (VSC)

The Vertical Sky Component (VSC) is a ratio (expressed as a percentage) of the direct sky illuminance falling on the outside mid-point of a window, to the horizontal illuminance under a standard CIE overcast sky. For example, a window looking across an unobstructed field would achieve the highest possible value of just under 40% (39.6%).

For a window to be considered as receiving a good level of daylight, a VSC value of 27% should be achieved. However, for existing windows if the VSC value is less than 27%, then a window is still said to achieve a good level of daylight provided its VSC is within 0.8 times of its former value.

Sunlight Calculation - Annual and Winter Probable Sunlight Hours

To determine if an adequate amount of sunlight is achieved within a room the following criteria needs to be met. At least one main window wall should face within 90° of due south and at least one window should receive at least 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months between 21st September and 21st March.

The term Annual probable sunlight hours means the total amount of hours during a year in which direct sunlight will reach the ground. The winter annual probable sunlight hours are the same thing but only during 21st September to 21st March.

If any of the surrounding windows that face within 90° of due south fail to meet the 25% of annual probable sunlight hours and 5% of winter sunlight hours, then they can still be said to receive a good amount of sunlight providing they are within 0.8 times of their former value or the reduction in sunlight received over the whole year is not greater than 4%.

The BRE guide states that the above guidance is to be applied for living room windows only.

Shadow Calculation - Overshadowing

To be determined as adequately sunlit throughout the year, at least half of a garden and other similar amenity spaces should receive at least two hours of sunlight on 21st March (the Equinox).

For the existing garden or amenity spaces being calculated due to the proposed development, the results should be no less than 0.8 times of former values in order for a loss of light to not be noticeable.

2.3.2 Proposed Development Calculations

Daylight Calculation - Daylight Factor Method

The daylight factor is the ratio of the illuminance at a point on the working plane in a room, divided by the outside illuminance on a horizontal surface under a CIE overcast sky.

The ratio is usually expressed as a percentage and guidance for adequate levels of daylight, for different UK Cities, are laid out within the standard BS EN 17037 and referenced within Table C3 of the BRE guide.

Table C3 – Target daylight factors (D_r) to achieve over at least 50% of the assessment grid in UK domestic habitable rooms with vertical and/or inclined daylight apertures			
Location	D_r for 100 lx (Bedroom)	D_r for 150 lx (Living room)	D_r for 200 lx (Kitchen)
St Peter (Jersey)	0.6%	0.9%	1.2%
London (Gatwick Airport)	0.7%	1.1%	1.4%
Birmingham	0.6%	0.9%	1.2%
Hemsby (Norfolk)	0.6%	0.9%	1.3%
Finningley (Yorkshire)	0.7%	1.0%	1.3%
Aughton (Lancashire)	0.7%	1.1%	1.4%
Belfast	0.7%	1.0%	1.4%
Leuchars (Fife)	0.7%	1.1%	1.4%
Oban	0.8%	1.1%	1.5%
Aberdeen	0.7%	1.1%	1.4%

Figure 5 - BRE Target Daylight Factors

As detailed plans have been provided for the proposed new development, the daylight factor calculation will be carried out on the habitable rooms as recommended by the BRE Guide.

“To Check that adequate daylight is provided in new rooms, daylight factor or interior illuminance may be calculated and compared with the recommendations in BS EN 17037 Daylight in Buildings”.

For this development, London is considered to be the nearest city and therefore Bedrooms should achieve 0.7%, Living Rooms should achieve 1.1%, and Kitchens should achieve 1.4% generally over at least 50% of the assessment grid. For a combined living/dining/kitchen area the target for a living room can be used.

Sunlight Calculation - Interior Sunlight

BS EN 17037 and the BRE Guide recommends that at least one main window wall should face within 90° of due south and a habitable room, preferably a main living room, should receive a minimum of 1.5 hours of direct sunlight on 21st March in order to appear as reasonably sunlit.

Where a group of dwellings are planned, the site layout design should aim to maximise the number of dwellings with a main living room that meets these recommendations.

3.0 Dynamic Simulation Modelling

EDSL TAS Dynamic Simulation Modelling software was used to carry out the daylight, sunlight, and overshadowing calculations, as this can provide a more accurate means of assessment over the 'by hand' indicator method outlined within the BRE guide.

The daylight calculations are carried out under a standard CIE overcast sky. For the sunlight and overshadowing calculations, the computer model uses actual hourly weather data for the proposed location, in this instance current CIBSE London TRY weather data was used.

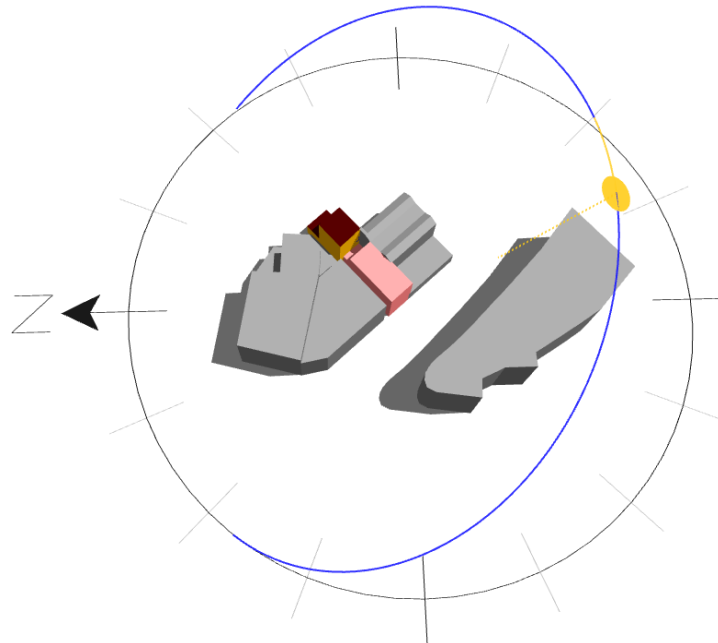


Figure 6 - EDSL TAS Computer Model of the Existing Site

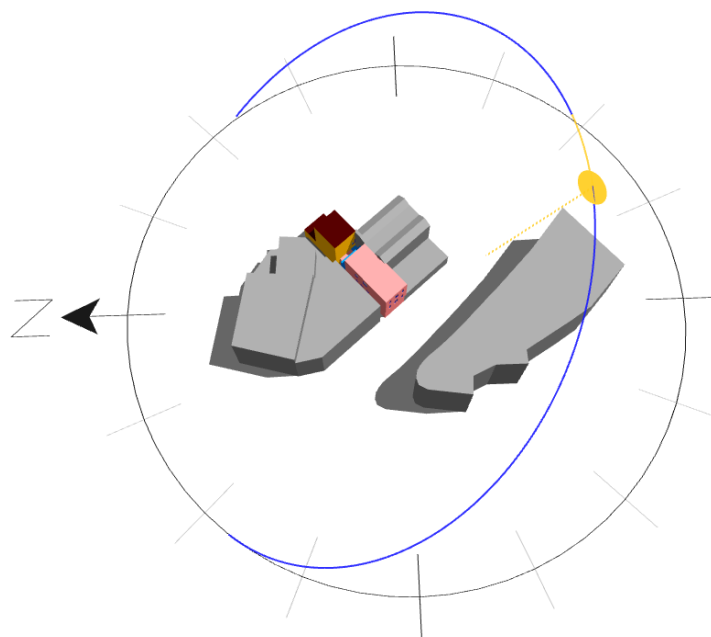


Figure 7 - EDSL TAS Computer Model of the Proposed Site

4.0 Surrounding Properties

The windows that were most likely to be affected by the proposed development have undergone the following calculations and can be found in Appendix B - Window Reference Diagrams.

4.1 Daylight Assessments

4.1.1 Vertical Sky Component (VSC)

The VSC results calculated for the surrounding windows can be found in the table below.

Property	Win Ref	Orientation (°)	VSC Existing (%)	VSC Proposed (%)	VSC Ratio	Impact
47A Hamstead High Street	W01	229	6.89	6.89	1.00	Negligible

The VSC results show that the surrounding window W01 would only receive a negligible impact overall. This is because its VSC value under the proposed scheme is greater than 0.80 times its former value, and as a result the BRE Guidelines with respect to natural daylight would be satisfied.

W01 is the lowest surrounding window, and it receives negligible impact, therefore any other surrounding window higher up would also receive negligible impact due to the proposed extension.

4.2 Sunlight Assessment

4.2.1 Annual and Winter Probable Sunlight Hours

Only living room windows within 90° of due south need to have the amount of sunlight they can receive assessed (Due south is taken as 180°, therefore a windows orientation should be between 90° and 270°). The orientation of each of the windows can be seen within the VSC results.

Property	Win Ref	APSH Ext (%)	APSH Pro (%)	Ratio	WPSH Ext (%)	WPSH Pro (%)	Ratio	Overall Impact
47A Hamstead High Street	W01	2	2	1.00	0	0	1.00	Negligible

The sunlight results show that there would only be a negligible impact to the amount of annual and winter sunlight hours the surrounding window receives under the proposed scheme, this is because its ratio is above 0.80 times its former value, therefore the BRE Guidelines in regard to direct sunlight will be satisfied.

4.3 Overshadowing Assessment

As there are no surrounding outside amenity spaces that would be impacted by the proposed development overshadowing calculations do not need to be carried out.

5.0 Proposed Development

Internal daylight factor and Sunlight calculations have also been carried out on the new habitable rooms within the proposed development located at 47 Hampstead High Street, London, as recommended by the BRE Guide.

5.1 Daylight Factors

For the daylight factor method, the windows were assumed to be clear double glazing with a light transmittance value of 0.68. The working plane height was assumed to be 0.85m with an assessment grid excluding a band of 0.3m from the walls as recommended.

The internal light reflectance's of the floors, walls and roofs were assumed to be typical values of 0.40, 0.70 and 0.80, respectively. (Each surface/paint colour has its own light reflectance value ranging from 0 - 1, with black being on the low end of the scale around 0.05 and white being on the high end around 0.90).

Flat	Room	Target Daylight Factor (%)	% Of Room Assessment Grid over Target Factor (%)	Result (50% is the Pass Mark)
Flat 1	Kitchen Living	1.10	40.56	Below Target
	Bedroom 1	0.70	6.00	Below Target
	Bedroom 2	0.70	99.37	Above Target
Flat 2	Kitchen Living	1.10	40.02	Below Target
	Bedroom 1	0.70	50.63	Above Target
	Study	0.70	100.00	Above Target

The daylight factor method results show that three out of six habitable rooms within the proposed development would satisfy the target daylight factors required. The remaining rooms are close to the target of 50%, with the exception of Flat 1 Bedroom 1. Although these rooms are just below the target this should still be seen as a good result given the existing nature of the development being on a constrained site with high rise surrounding buildings. The Flat 1 Bedroom 1 daylight is low, but this has been improved upon in comparison to the existing layout.

It is important to remember that the BRE Guidelines state that *'Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design'*.

Daylight Factor Plots showing the distribution of daylight across each of the rooms can be seen in Appendix C.

5.2 Interior Sunlight

For the interior sunlight calculation at least one habitable room (although preferably a main living room) should receive at least 1.5 hours of sunlight on 21st March. The amount of sunlight received by each room can be seen below.

Flat	Room	Target Sunlight Hours	Hours of Sunlight Received (Hours)	Result
Flat 1	Kitchen Living	1.50	4.08	Above Target
	Bedroom 1		0.50	
	Bedroom 2		0.00	
Flat 2	Kitchen Living	1.50	5.25	Above Target
	Bedroom 1		0.67	
	Study		0.92	

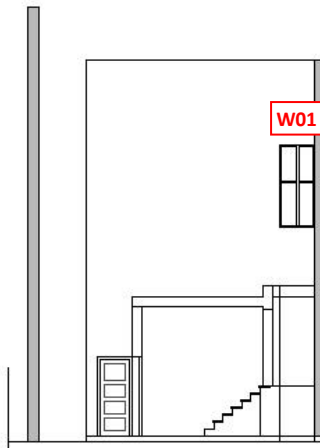
The interior sunlight results show that the main living rooms of each flat would receive greater than 1.5 hours of sunlight on 21st March, therefore the BRE Guidelines in regard to interior sunlight would be satisfied.

Appendix A - Drawing Register

Drawing Number	Drawing Title
APT/22-0526/01	OS Plan
APT/22-0526/02A	Existing First Floor Plan
APT/22-0526/03	Existing Second Floor Plan
APT/22-0526/101A	Existing and Proposed Ground Floor Plan
APT/22-0526/102A	Proposed First Floor Plan
APT/22-0526/103E	Proposed Second Floor Plan
APT/22-0526/104D	Existing and Proposed Stairs Section
APT/22-0526/105	Elevations 1
APT/22-0526/106	Elevations 2

Appendix B - Window Reference Diagrams

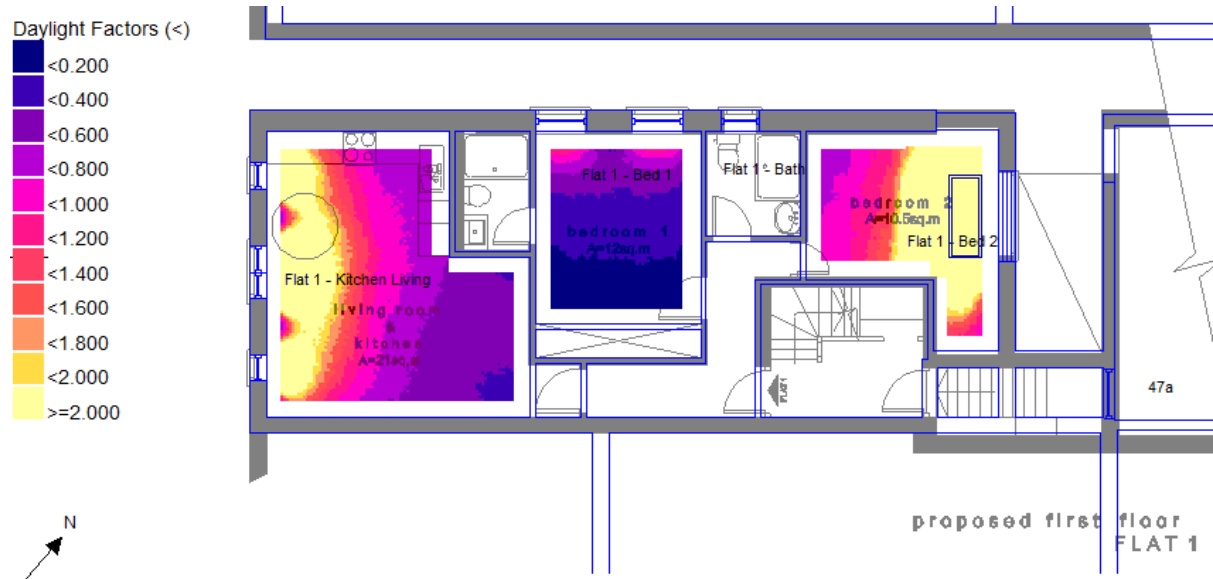
47A Hampstead High Street – Window References



The smaller windows are believed to serve non-habitable rooms such as a bathroom in which case the BRE Guidelines state that they do not need to be analysed as they have no expectation to daylight or sunlight. The centre points of these windows are higher up than window W01, therefore they would only receive a better result than W01 if they were to be assessed.

Appendix C - Daylight Factor Plots

Proposed First Floor



Proposed Second Floor

