SYNTEGRA CONSULTING

Daylight, Sunlight & Overshadowing Report

28 Redington Road, London, NW3 7RB

August 2016

Ref: 15-1601

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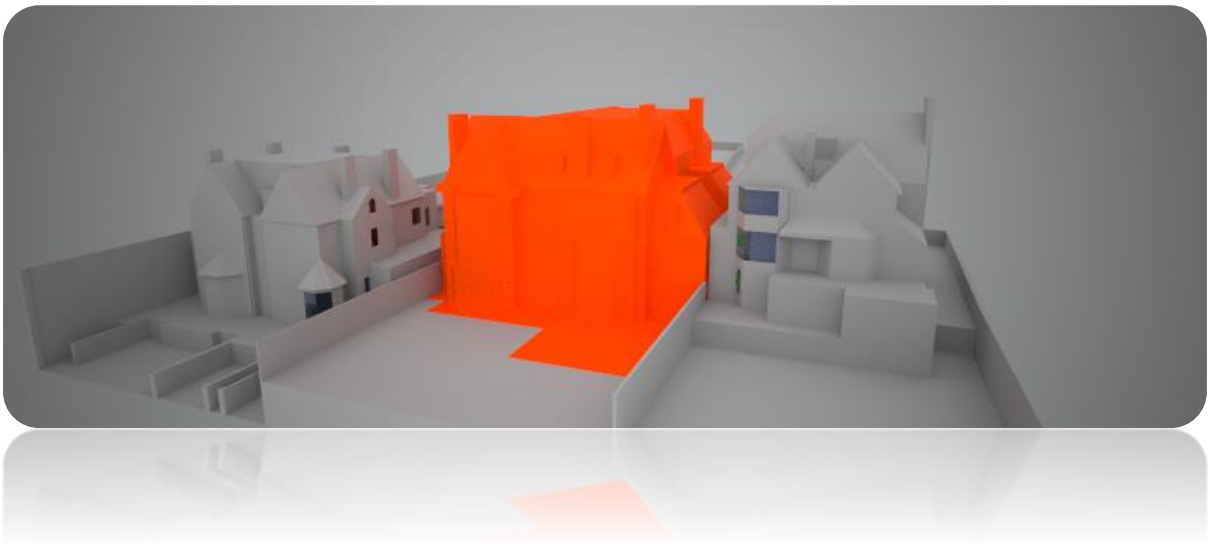
DATE	PRODUCED BY	APPROVED BY
18/11/2015	DC	DC



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Prepared by	DC	YC
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1. Executive summary

This report demonstrates the impact of the proposed development **on the surrounding buildings and amenity areas/gardens/open spaces**.

The results of the assessment show that in terms of:

- Daylight, this report demonstrates that the levels of daylight at the surrounding buildings **at 26 Redington Road and at 30 Redington Road** are adequate.

  The BRE criteria are met: ☑

- Sunlight, this report demonstrates that the levels of sunlight at the surrounding buildings **at 30 Redington Road** are adequate.

  The BRE criteria are met: ☑

- Overshadowing,

  30 Redington Road
  The existing amenity area/garden at the rear of 30 Redington Road achieves the BRE criteria as at least half of garden area will receive at least two hours of sunlight on 21st March.

  The BRE criteria are met: ☑

On balance, it can be concluded that the surrounding buildings located **at 26 and 30 Redington Road** will not be adversely impacted by the proposed development.

↳ **The proposed scheme is acceptable.**

2. Introduction

This report has been prepared to support the planning application for the proposed development at 28 Redington Road, Hampstead, London, NW3 7RB. The proposed scheme involves the demolition of the existing building on site and a redevelopment to provide a new construction of 6 storey building comprising of 8 no. of residential units.
The report assesses the daylight, sunlight and overshadowing effect of the proposed development on the surrounding building and specifically focuses on the windows of the residential buildings at 26 and 30 Redington Road. The assessment is undertaken in accordance with ***"BRE 209 Digest: Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice".***

The existing & proposed drawings (in AutoCAD format) of the project were provided by **Jo Cowen Architects** on the **11th April 2016** and have been used in preparing this report.

The study has been undertaken by constructing a 3D IES model of the existing and proposed site and surrounding buildings in order to analyse the daylight, sunlight and overshadowing impact of the new development on the affected buildings. All images used in this report are technical 3D models created using 2D AutoCAD Drawings (floor plans, sections and elevations) and not 3D visualisation images.

3. Planning policy

Where the proposed development has the potential to negatively impact the existing levels of daylight or sunlight on neighbouring properties, a daylight and sunlight assessment has to accompany the planning application.

The daylight and sunlight assessment includes the necessary information to meet the criteria outlined in the Site layout planning for daylight and sunlight: a guide to good practice published by the Building Research Establishment (BRE).

4. Guidance document

4.1. Building Research Establishment (BRE) report (BRE 209): "Site layout planning for daylight and sunlight: A guide to good practice" Second Edition (2011)

The Second Edition of the report replaces the 1991 document of the same name and came into effect from October 2011.

It is important to note that the introduction to the report stresses that the document is provided for guidance purposes only and it is not intended to be interpreted as a strict and rigid set of rules. It also recommends that it may be appropriate to adopt a flexible approach and alternative target values in dealing with *"special circumstances"* for example *"in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings".* This is amplified by the following extracts from the introduction (p1, para. 6) and Section 2.2:

"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 designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design". (p1, para. 1.6)

"In special circumstances the Developer or Planning Authority may wish to use different target values". (p1, para. 1.6)

"Note that numerical values given here are purely advisory. Different criteria may be used, based upon the requirements for daylight in an area viewed against other site layout constraints. Another important issue is whether the existing building is itself a good neighbour, standing a reasonable distance from the boundary and taking no more than its fair share of light". (p7 para. 2.2.3)

The examples given in the report can be applied to any part of the country: suburban, urban and rural areas. The inflexible application of the target values given in the report may make reaching the BRE criteria difficult in a tight, urban environment where there is unlikely to be the same expectation of daylight and sunlight amenity as in a suburban or rural environment.

5. Assessment methodology

5.1. General

When assessing any potential effects on the surrounding properties, the BRE guidelines suggest that only those windows that have a reasonable expectation of daylight or sunlight need be assessed. In particular the BRE guidelines at paragraph 2.2.2 state:

"The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed. The guidelines may also be applied to any existing non-domestic buildings where the occupants have a reasonable expectation of daylight; this would normally include schools, hospitals, hotels and hostels, small workshops and some offices."

Further to the above statement, it is considered that the vast majority of commercial properties do not have a reasonable expectation of daylight or sunlight. This is because they are generally designed to rely on electric lighting rather than natural daylight or sunlight.

This report assesses the potential impact of the proposed development in relation to daylight, sunlight and overshadowing on the surrounding building **at 26 and 30 Redington Road**. Specifically, it takes into consideration the possible effect and influence that the new development would have on the property and on the amenity area.

Fifteen target surfaces (S1-S15) for external levels of daylight VSCs (Vertical Sky Components) and sunlight availability, as shown in section 9.4 in Appendix, have been selected based on anticipated worse case impact judged from professional experience and also following guidance within the BRE guidelines *"Site layout planning for daylight and sunlight"*.

One existing amenity area/garden/open spaces has been identified on the drawings and/or site plan at the rear of 30 Redington Road.

The IES Virtual Environment modelling software utilised for the compilation of this report has been accredited by CIBSE and acknowledged by the BRE as a suitable software tool for undertaking daylight, sunlight and overshadowing assessments in accordance with the BRE Good Practice guidelines. The specific IES software modules utilised for this assessment are the following:

- ModelIT: enables you to create a 3D "Virtual Environment" model without CAD data, or alternatively allows you to create a 3D model from 2D CAD data. Interfaces with AutoCAD and Google Sketchup.

- Radiance: is a detailed 3D simulation tool designed to predict daylight and electric light levels, and the appearance of a space prior to construction. Vertical Sky Components (VSC) and Average Daylight Factors (ADF) can be simulated using Radiance.

- SunCast: produces visual, graphical and numerical information that can be used to explain to colleagues, clients and planning authorities how the sun impacts on and inside the building, and on the site.

If a property is considered to have a reasonable expectation of daylight or sunlight the following methodology to assess the impacts has been used.

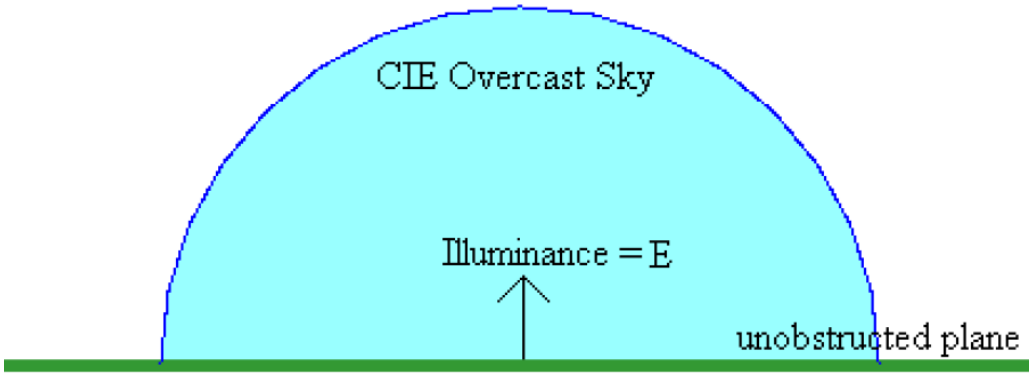
5.2. BRE Digest 209: "Site layout planning for daylight and sunlight"

This section provides a brief description of the calculating methods for the daylight, sunlight and overshadowing to gardens and open spaces criteria presented in BRE Digest 209.

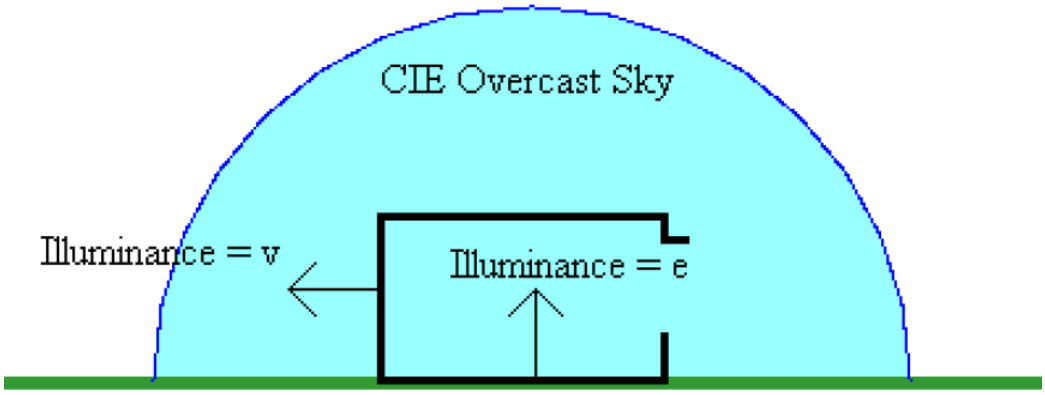
5.2.1. Daylight

The BRE guidelines *"Site layout planning for daylight and sunlight"* incorporate two main methods of calculating daylight: the Vertical Sky Component (VSC) method and the Average Daylight Factor (ADF) method.

The VSC method measures the amount of light available on the outside plane at the centre of a window, as a ratio (expressed as a percentage) of the amount of total unobstructed sky visible following the introduction of visible barriers such as buildings.



E = Illuminance on unobstructed plane



e = Illuminance at point in interior

Sky component = e/E (often expressed as a percentage %)

Vertical Sky Component (VSC) = v/E %

In this assessment, VSC is selected and more details on the numerical criteria for the VSC method are presented in section 9.6.

5.2.2. Sunlight

The BRE guidelines "*Site layout planning for daylight and sunlight"* recommend that access to sunlight is assessed with a development proposal. Potential impacts on available sunlight were assessed using the BRE's Annual Probable Sunlight Hours (APSH) method. This method involves the forecasting of sunlight availability throughout the year and in the winter months, for the main window of each habitable room that faces within 90° of due south. The buildings surrounding the site that do not contain windows that face within 90° of due south has been excluded from the sunlight assessment.

To provide a concise and comprehensive indicative analysis, the closest surfaces within the surrounding properties were analysed for both daylight and sunlight. Their locations are shown in section 9.4.1 in Appendix.

More details on the numerical criteria for the APSH method are presented in section 9.7.

5.2.3. Overshadowing to gardens and open spaces

The BRE guidelines *"Site layout planning for daylight and sunlight"* provide sunlight availability criteria for open spaces. In particular it gives guidance for calculating any areas of open space that may be in permanent shadow on 21st March.

In summary the BRE document states:

"It is suggested 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 21st March. If as a result of new development, an existing garden or amenity area does not meet these guidelines, 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".

For this assessment the IES "Virtual Environment" SunCast software package has been used. A 3D model of the proposed and surrounding buildings was first modelled and the sunlight-tracking feature within the software used to view the shadow results. The study illustrated the extent of the shadow on one key date:

- March 21 (Spring Equinox)

More details on the numerical criteria for the overshadowing method are presented in section 9.8.

6. BRE Digest 209: Significant criteria

6.1. Daylight

The daylight criteria given within the BRE guidelines have been used as a basis to assess the potential impacts of the development:

"The daylighting is not considered to be substantially affected when the Vertical Sky Component (VSC) measured at the centre of a window is >27%. A window may be adversely affected if the VSC measured at the centre of the window is less than 27% and less than 0.8 times its former value".

In the assessment, the reduction between existing and proposed situations is expressed as a percentage, where a change in daylight levels above 20% equates to a figure of less than 0.8 times its former value.

Assessment points that do not meet the above criteria require further considerations to show the level of impact likely to be incurred.

6.2. Sunlight

The sunlight criteria given within the BRE guidelines have been used as a basis to assess the potential impacts of the development:

"A window may be adversely affected if a point at the centre of the window receives in the year less than 25% of the Annual Probable Sunlight Hours (APSH) including at least 5% of the APSH during the winter months (21st October to 21st March)".

Assessment points that do not meet the above criteria require further considerations to show the level of impact likely to be incurred.

6.3. Overshadowing to gardens and open spaces

The sunlight criteria given within the BRE guidelines have been used as a basis to assess the potential impacts of the development:

"It is suggested 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 21st March. If as a result of new development, an existing garden or amenity area does not meet these guidelines, 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".

Assessment points that do not meet the above criteria require further considerations to show the level of impact likely to be incurred.

6.4. Criteria for assessing daylight, sunlight and overshadowing effects

The table 1 is a summary of the criteria to assess daylight, sunlight and overshadowing impacts:

Magnitude of effect	Criteria		
Beneficial	An improvement ratio > 1.3 of the baseline value		
Negligible	Daylight A VSC of 27% or above in the proposed scenario with adequate daylight distribution Or A reduction ratio <1.0 and ≥ 0.8 of the baseline value	Sunlight An APSH of 25%, of which 5% are in the winter months Or A reduction ratio <1.0 and ≥ 0.8 of the baseline value	Overshadowing 50% of any amenity areas receiving at least 2 hours of direct sunlight on 21st March Or A reduction ratio <1.0 and ≥ 0.8 of the baseline value
Minor adverse	A reduction ratio <0.8 and ≥ 0.7 of the baseline value		
Moderate adverse	A reduction ratio <0.7 and ≥ 0.6 of the baseline value		
Major adverse	A reduction ratio <0.6 of the baseline value		

Table 1: Criteria for assessing daylight, sunlight and overshadowing effects

Please note that in terms of daylight and sunlight BRE considers that a reduction in daylight or sunlight of less than 20% is not likely to be materially noticeable to occupiers of buildings. Our report then uses 10% increments of exceedance above the relevant threshold to be able to make the difference between minor, moderate and major adverse impact.

7. Assessment

7.1. BS 8206-2: 1992

The foreword to BS 8206-2: 1992 states that:

"The aim of the standard is to give guidance to architects, builders and others who carry out lighting design. It is recognised that lighting is only one of many matters that influence fenestration. These include other aspects of environmental performance (such as noise, thermal equilibrium and the control of energy use), fire hazards, constructional requirements, the external appearance and the surroundings of the site. The best design for a building does not necessarily incorporate the ideal solution for any individual function. For this reason, careful judgement should be exercised when using the criteria given in the standards for other purposes, particularly town planning control."

7.2. Daylight

The daylight results are presented in section 9.6 in Appendix. The images and results show and compare the external levels of daylight (VSC – Vertical Sky Components) on the surfaces at 26 and 30 Redington Road with and without the proposed development.

A summary of results is displayed in the table 2 below:

Daylight assessment (Surrounding buildings)				
Building Target surface	**VSC (existing) >27%**	**VSC (proposed) >27%**	**Ratio**	**Result**
S1 – 26 redington road – North Elevation – GF	27.83	26.06	0.94	Negligible
S2 - 26 Redington Road – North Elevation - 1F	30.36	28.41	0.94	Negligible
S3 - 26 Redington Road – North Elevation - 1F	30.74	20.78	0.68	Moderate adverse
S4 - 26 Redington Road – North Elevation - 1F	31.38	20.68	0.66	Moderate adverse
S5 - 26 Redington Road – North Elevation - 1F	32.87	20.70	0.63	Moderate adverse
S6 – 26 Redington road – 2F	37.35	31.25	0.84	Negligible
S7 – 26 Redington road – 2F	37.70	30.96	0.82	Negligible
S8 - 30 Redington Road – South Elevation - GF	8.43	7.35	0.87	Negligible
S9 - 30 Redington Road – South Elevation - GF	2.71	4.05	1.49	Beneficial

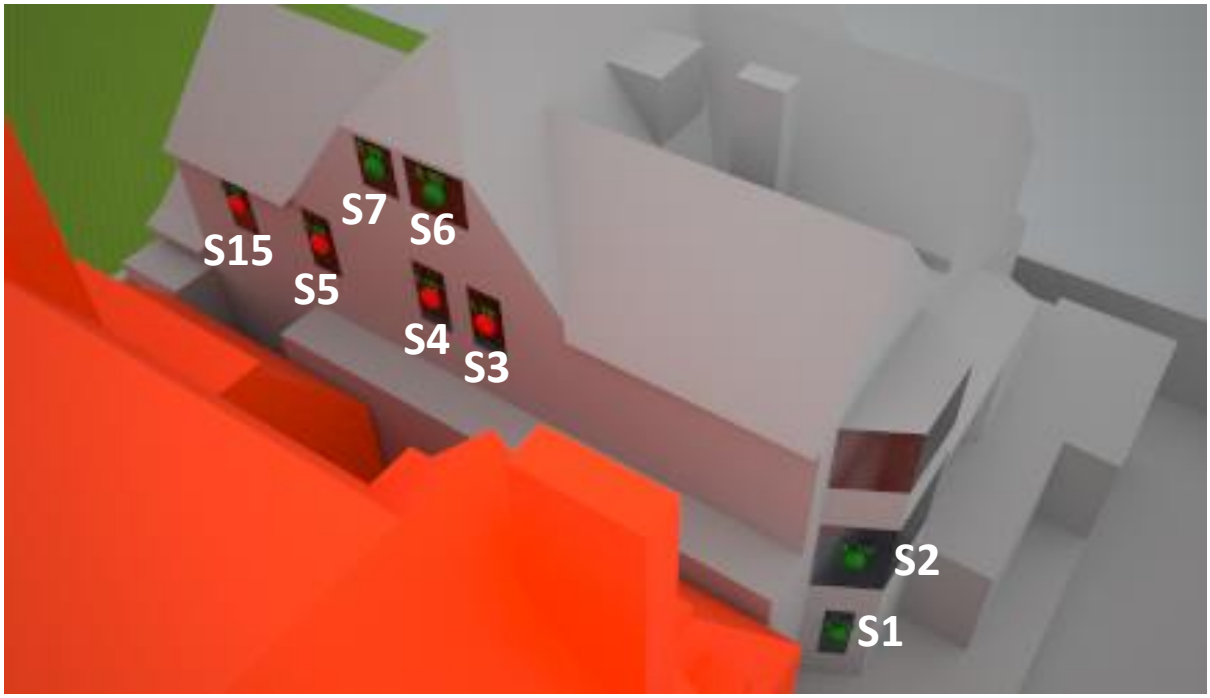
S10 - 30 Redington Road – South Elevation - GF	1.66	2.67	1.61	Beneficial
S11 – 30 Redington Road – south east - GF	26.39	21.95	0.83	Negligible
S12 – 30 Redington Road – south – 1F	18.25	17.03	0.93	Negligible
S13 – 30 Redington Road – north east – 1F	39.32	37.32	0.95	Negligible
S14 – 30 Redington Road – north east – 2F	37.85	37.07	0.98	Negligible
S15 - 26 Redington Road – North Elevation - 1F	32.71	20.54	0.63	Moderate adverse

Table 2: Daylight results

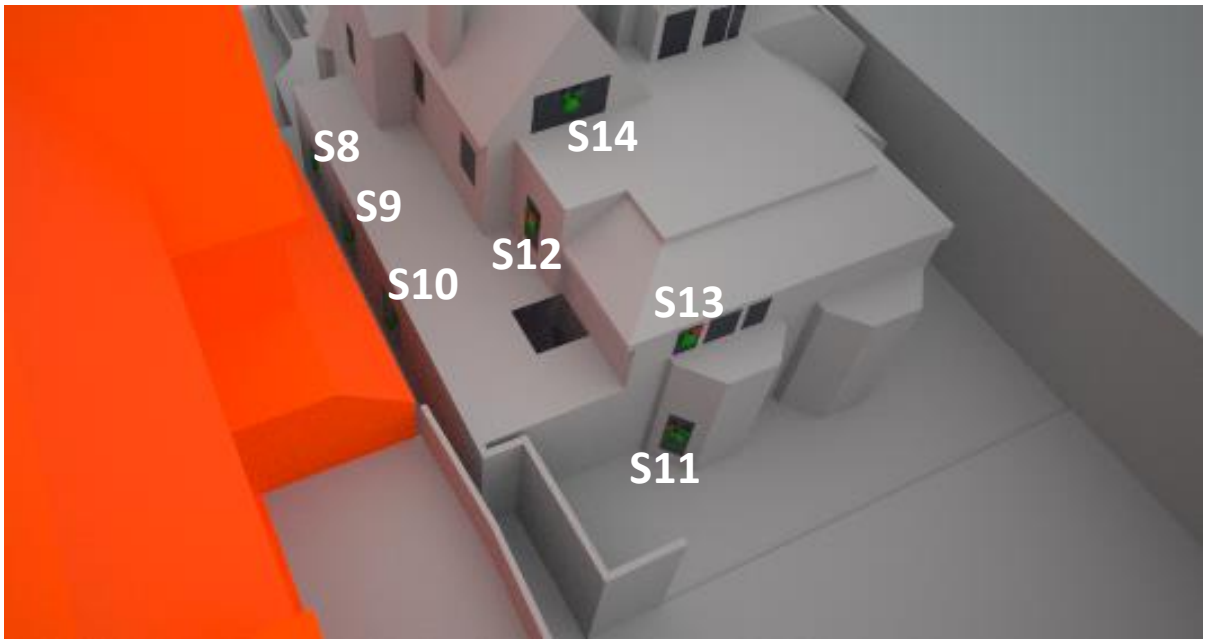
Note: For location of target surfaces, see Appendix section 9.4 "Site plan and location"

As can be seen in the above table, none of the surfaces at 26 Redington Road and 30 Redington Road will be adversely impacted by the proposed development. Only 4 out of 15 windows will experience a loss in proposed VSC values more than 20% (reduction approximately of 23% with proposed scheme), however in all cases the proposed VSC values will remain greater than 20% ranging from 20.54% to 20.78% and will still provide adequate levels of daylight.

✓ **The slight loss in daylight for the other surfaces is not considered of concern as the proposed VSC levels are either above 27% or more than 0.8 times their former values and will provide adequate levels of daylight.**



North Elevation at 26 Redington Road – Surface 1 to 7 and S15



South east and north east elevation at 30 Redington Road – Surface 8 to 14

→ **In terms of daylight the proposed scheme is considered acceptable.**

It should be noted that the values provided in the BRE 209 are for guidance purposes only.

7.3. Sunlight

Where necessary (as defined in the Assessment Methodology section of this report) Annual Probable Sunlight Hours (APSH) tests have been undertaken with the results presented in section 9.7 in the appendix.
The table below indicates the likely levels of sunlight on the surfaces at 30 Redington Road with and without the proposed development.

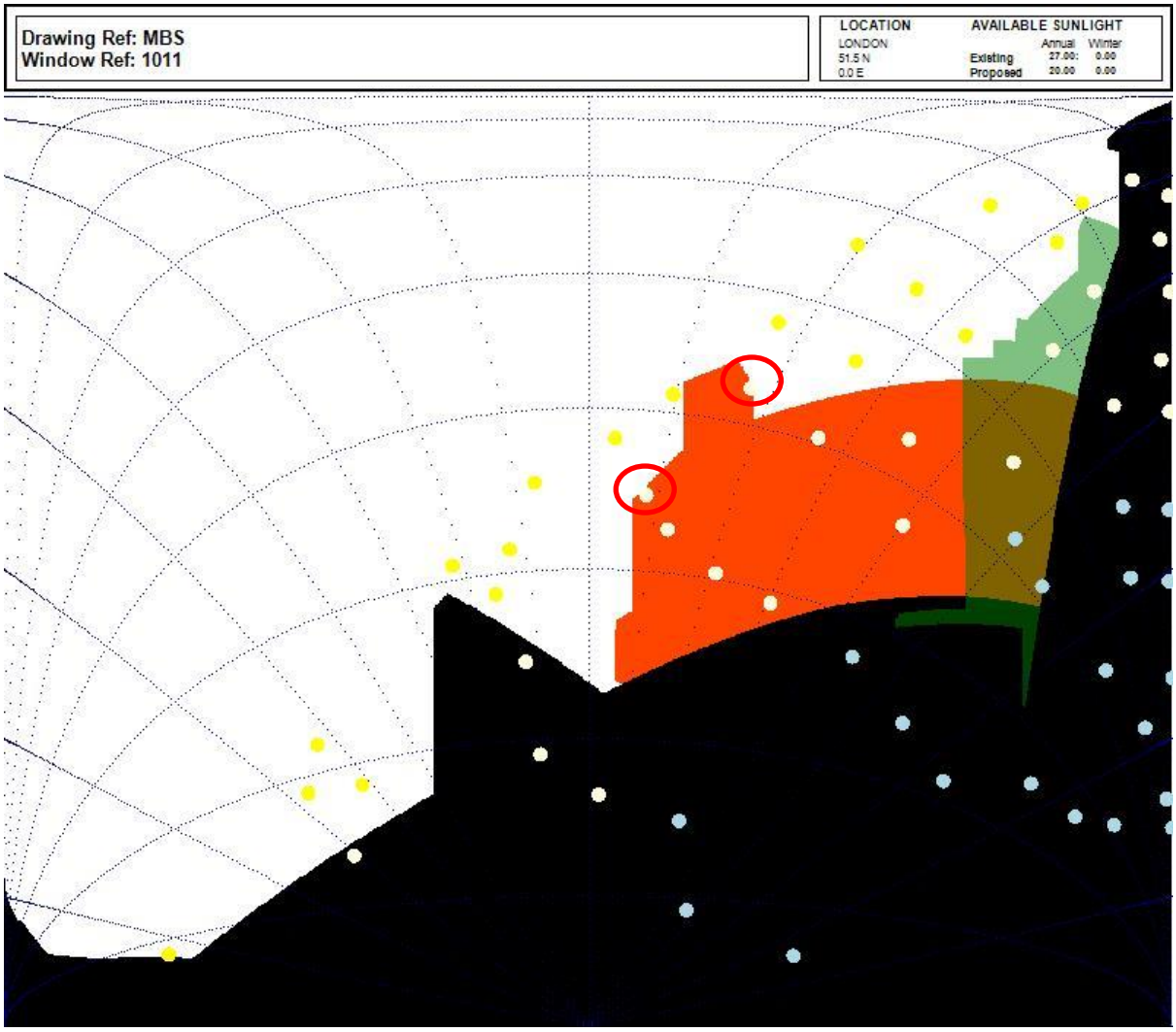
A summary of results is displayed in the table 3 below:

Building Target surface	Total APSH >25%		Winter APSH >5%		Ratio Annual	Result
	Existing	Proposed	Existing	Proposed		
S1 – 26 redington road – North Elevation – GF	N/A	N/A	N/A	N/A	N/A	N/A
S2 - 26 Redington Road – North Elevation - 1F	N/A	N/A	N/A	N/A	N/A	N/A
S3 - 26 Redington Road – North Elevation - 1F	N/A	N/A	N/A	N/A	N/A	N/A
S4 - 26 Redington Road – North Elevation - 1F	N/A	N/A	N/A	N/A	N/A	N/A
S5 - 26 Redington Road – North Elevation - 1F	N/A	N/A	N/A	N/A	N/A	N/A
S6 – 26 Redington road – 2F	N/A	N/A	N/A	N/A	N/A	N/A
S7 – 26 Redington road – 2F	N/A	N/A	N/A	N/A	N/A	N/A
S8 - 30 Redington Road – South Elevation - GF	27.0	23.0	3.0	3.0	0.85	negligible
S9 - 30 Redington Road – South Elevation - GF	14.0	17.0	2.0	2.0	1.21	negligible
S10 - 30 Redington Road – South Elevation - GF	7.0	11.0	2.0	3.0	1.57	negligible
S11 – 30 Redington Road – south east - GF	27.0	20.0	0.0	0.0	0.74	Minor adverse
S12 – 30 Redington Road – south – 1F	34.0	31.0	3.0	2.0	0.91	negligible
S13 – 30 Redington Road – north east – 1F	N/A	N/A	N/A	N/A	N/A	N/A
S14 – 30 Redington Road – north east – 2F	N/A	N/A	N/A	N/A	N/A	N/A
S15 - 26 Redington Road – North Elevation - 1F	N/A	N/A	N/A	N/A	N/A	N/A

Table 3: Sunlight results

Note: For location of target surfaces, see Appendix section 9.4 "Site plan and location"

The table above demonstrates that, none of the surfaces at 30 Redington Road facing south east will be adversely impacted by the proposed development. Only the surface S11 will experience a loss in proposed annual probable sunlight hours of 20%, (there are 18 dots unobscured, that is 18% during summer months and 0% during winter months), 2 spots lie on the proposed building and they will be partially obstructed. However the proposed APSH will remain close to 20% and it will still provide adequate levels of sunlight.



Sunlight result – APSH indicator at surface S11

N/A: Not applicable. The buildings surrounding or adjacent to the site that do not contain windows within 90° of due south have been excluded from the sunlight assessments. This is because sunlight is directional and North-facing windows in this location will only receive sunlight at the height of summer at occasional times. As such, pursuant to the BRE guide, North-facing windows are not considered to have a reasonable expectation of sunlight and do not require assessment.

- ✓ **The slight loss in sunlight for the other surfaces is not considered of concern as the proposed total APSH is above >25% of which more than 5% is in winter months or more than 0.8 times their former values and will provide adequate levels of sunlight.**

→ **In terms of sunlight the proposed scheme is considered acceptable.**

It should be noted that the values provided in the BRE 209 are for guidance purposes only.

7.4. Overshadowing

The following results represent the cumulative overshadowing impacts of the proposed development. As identified from the AutoCAD drawings and/or site plan, one existing amenity area is located **at the rear of 30 Redington Road**. In accordance with the BRE guidelines, overshadowing has been assessed during times of the day where the sun's altitude is above 10º (from 7:30am to 5:00pm).

"It is suggested 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 21st March. If as a result of new development, an existing garden or amenity area does not meet these guidelines, 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".

The pictures showing the overshadowing impact are indicated in section 9.8 of the Appendix.
A summary of results is displayed in the table 4 below:

Overshadowing assessment from 7.30am to 5.00pm % of area receiving sunlight on 21st March				
Amenity area	**Existing (%)**	**Proposed (%)**	**Ratio**	**Result**
A1 - 30 Redington Road - garden	65.31	21.85	0.34	**Negligible**

Table 4: Overshadowing results

Note: For location of target surfaces, see Appendix section 9.4 "Site plan and location"
The results are expressed as a percentage of area receiving direct sunlight on the 21st March.

Impact on A1 - 30 Redington Road - garden as per BRE Criteria stated above:

With the proposed development, at least half of the amenity area receives direct sunlight at 13.00pm and at 15.00pm (2 hours) on 21st March as shown below (*see also Appendix section 9.8 "Overshadowing results and pictures"*).

Month	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
Mar	**0.00**	**10.70**	**35.00**	**0.00**	**0.00**	**24.20**	**71.00**	**0.00**	**78.40**	**42.10**	**0.80**	**0.00**

As can be seen in the table above, the existing amenity area/garden/open space will not be impacted by the proposed development as more than 50% of its area will receive two hours of sun on 21th March.

8. Conclusion

8.1. Daylight

This report demonstrates that the levels of daylight at the surrounding buildings **at 26 and 30 Redington Road** are adequate.

BRE criteria met: ☑

8.2. Sunlight

This report demonstrates that the levels of sunlight at the surrounding building **at 30 Redington Road** are adequate.

BRE criteria met: ☑

8.3. Overshadowing

This report demonstrates that the existing amenity area/garden/open spaces located at **the rear of at 30 Redington Road** will not be adversely impacted by the proposed development.

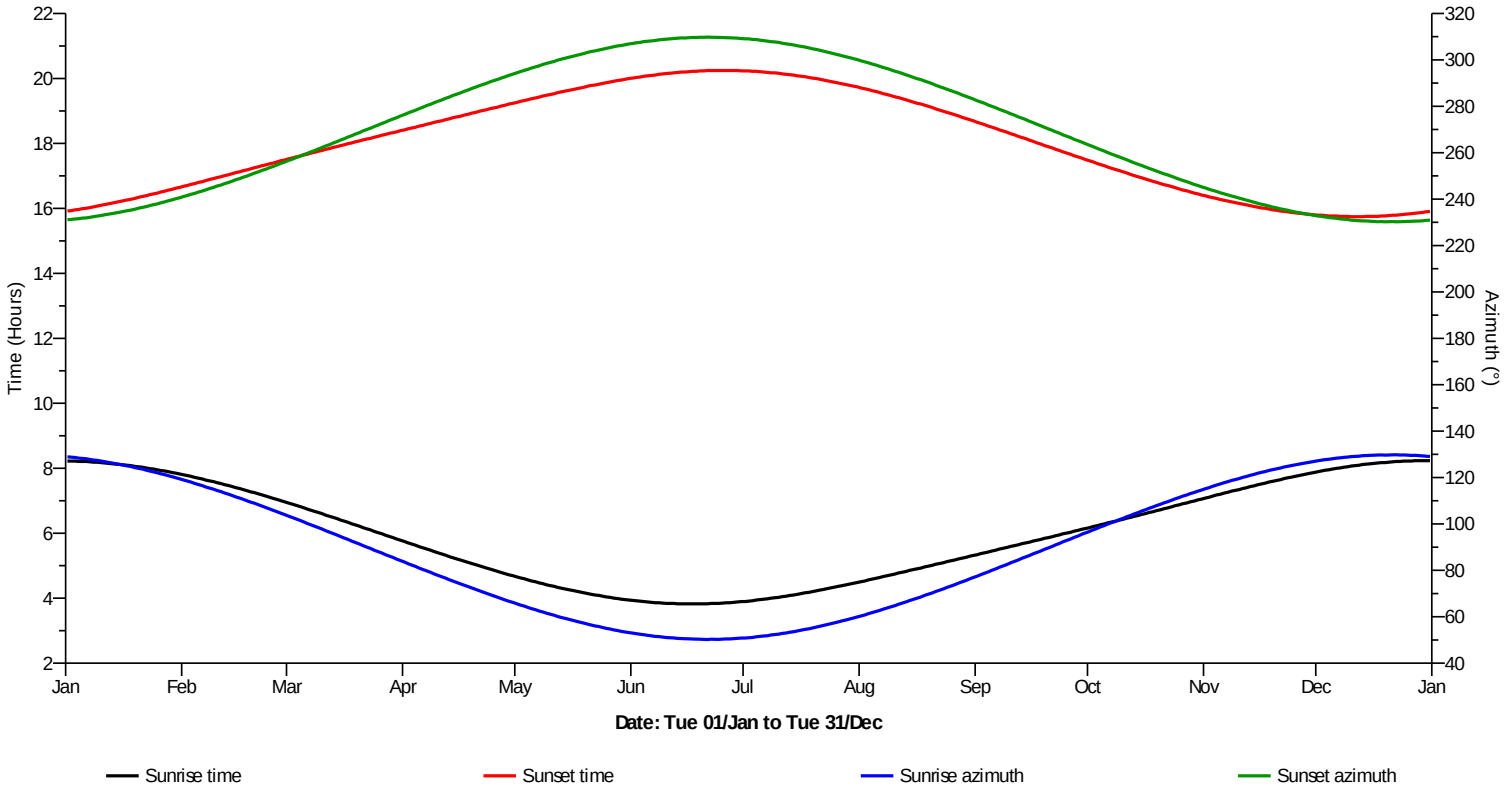
BRE criteria met: ☑

On balance, it can be concluded that the surrounding buildings **at 26 and 30 Redington Road** will not be adversely impacted by the proposed development.

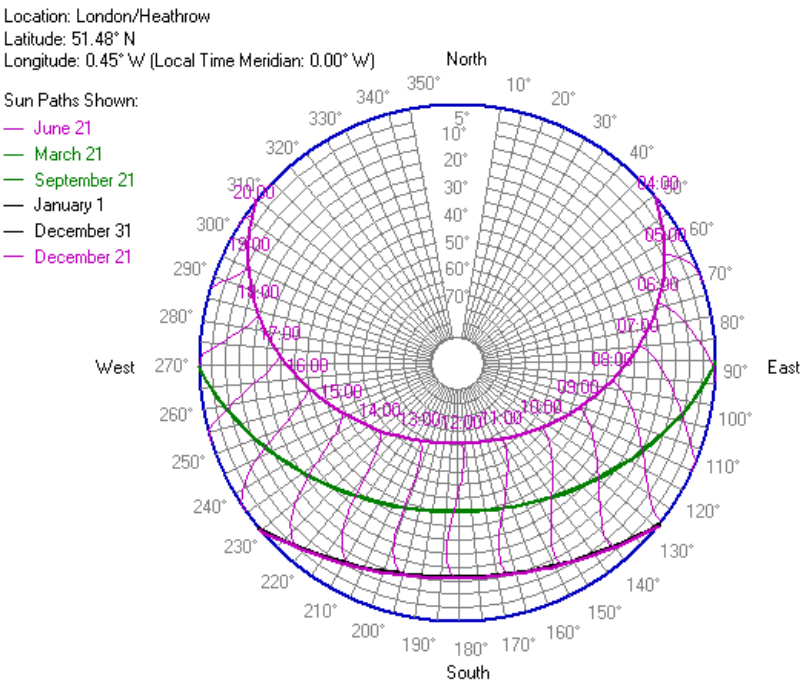
↳ **The proposed scheme is acceptable.**

9. Appendix

9.1. Sunrise and sunset time

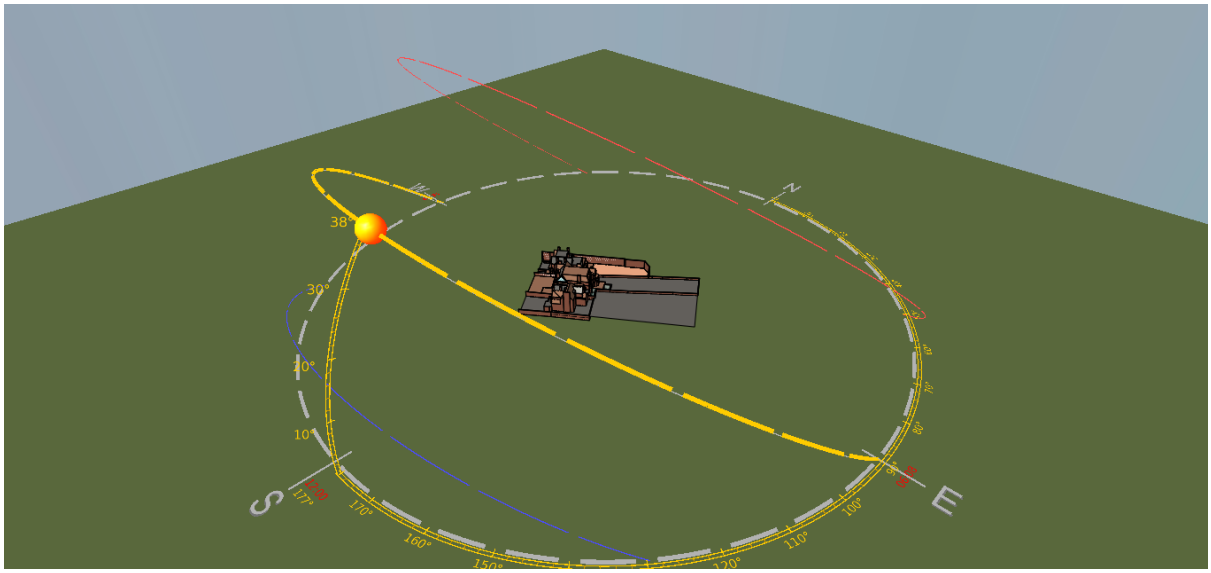


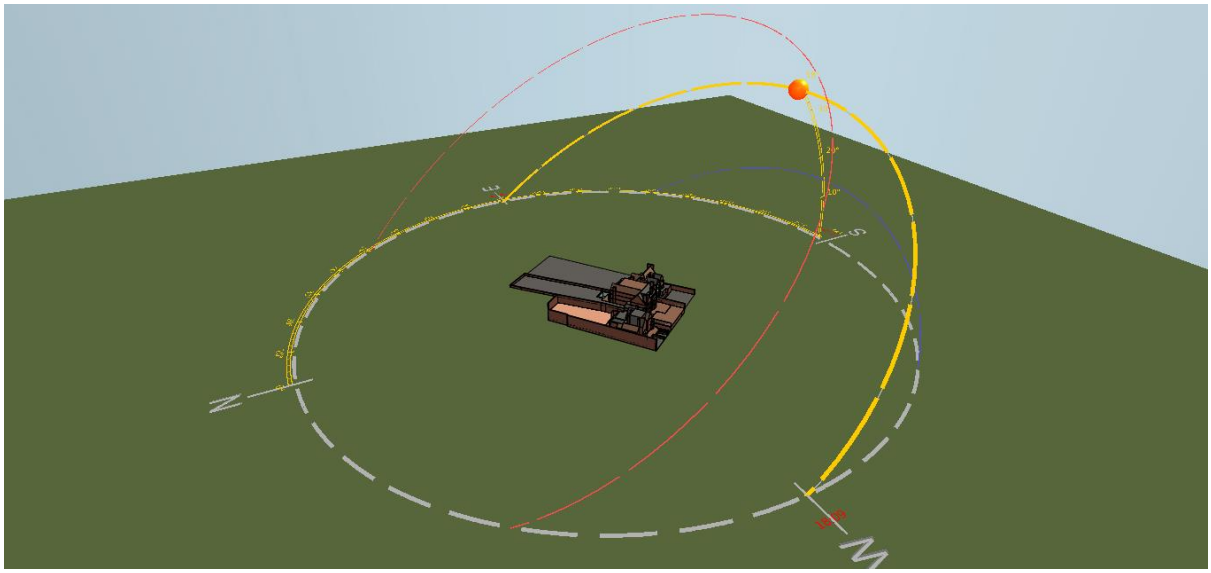
9.2. Sun path



9.3. Suntrace

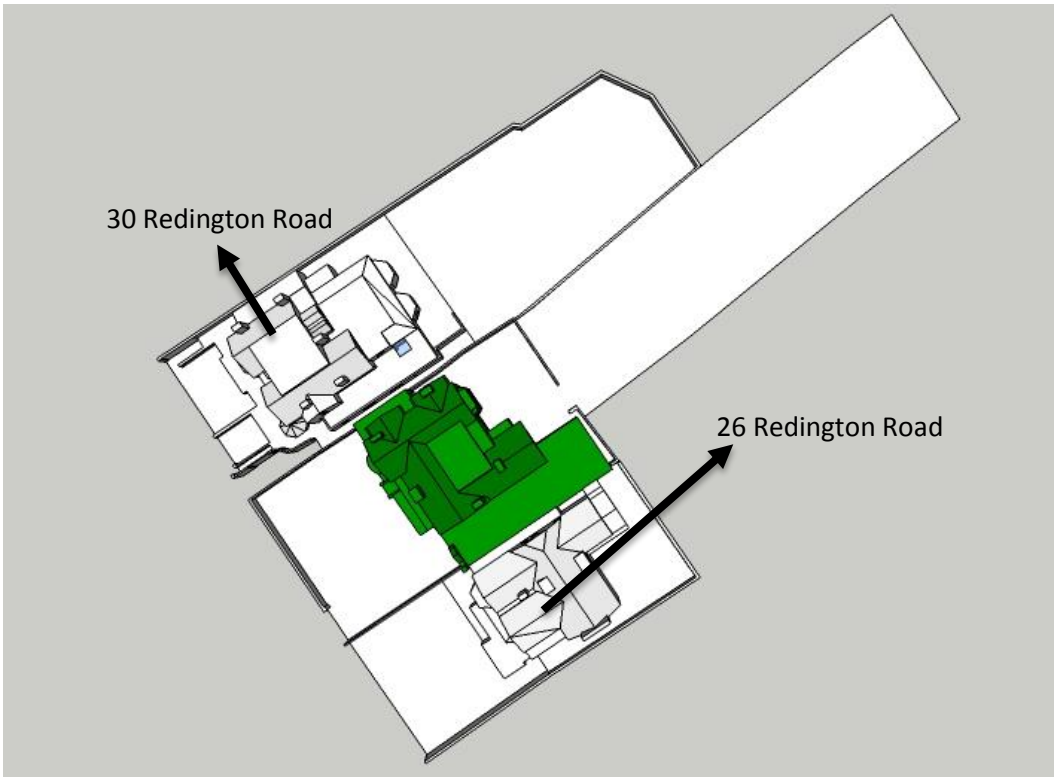
- The red line represents the sun's path during June.
- The yellow line represents the sun's path during March/September.
- The blue line represents the sun's path during December.



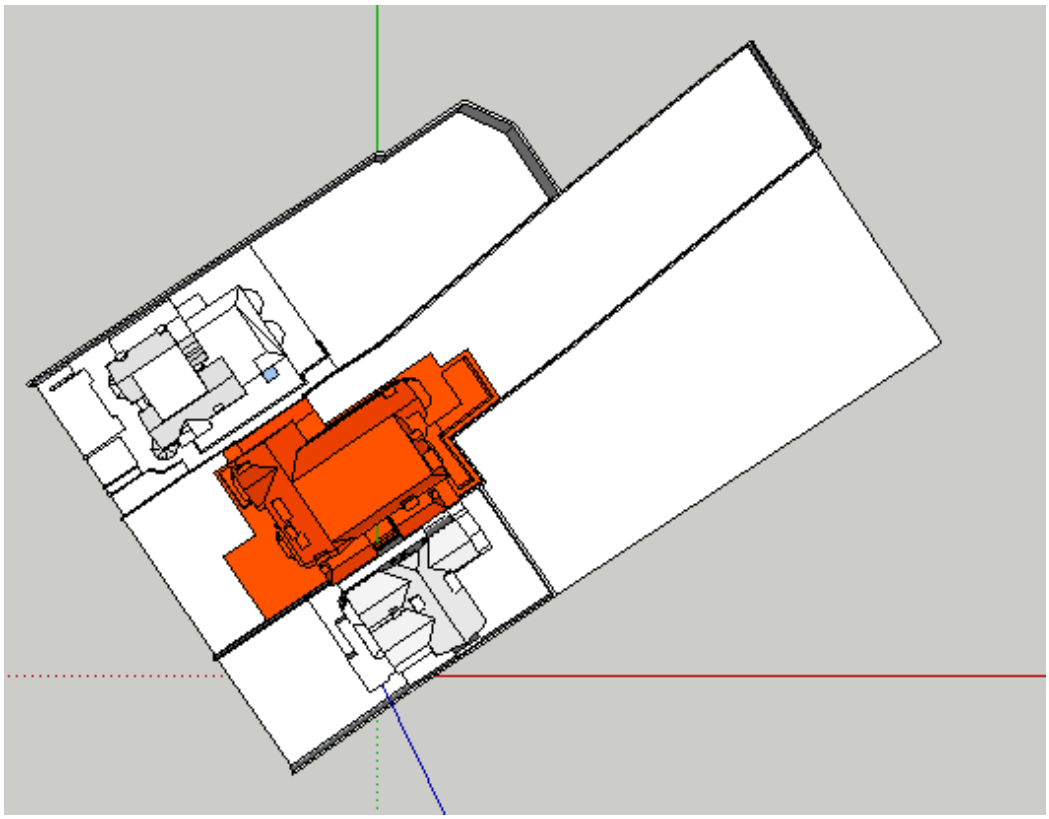


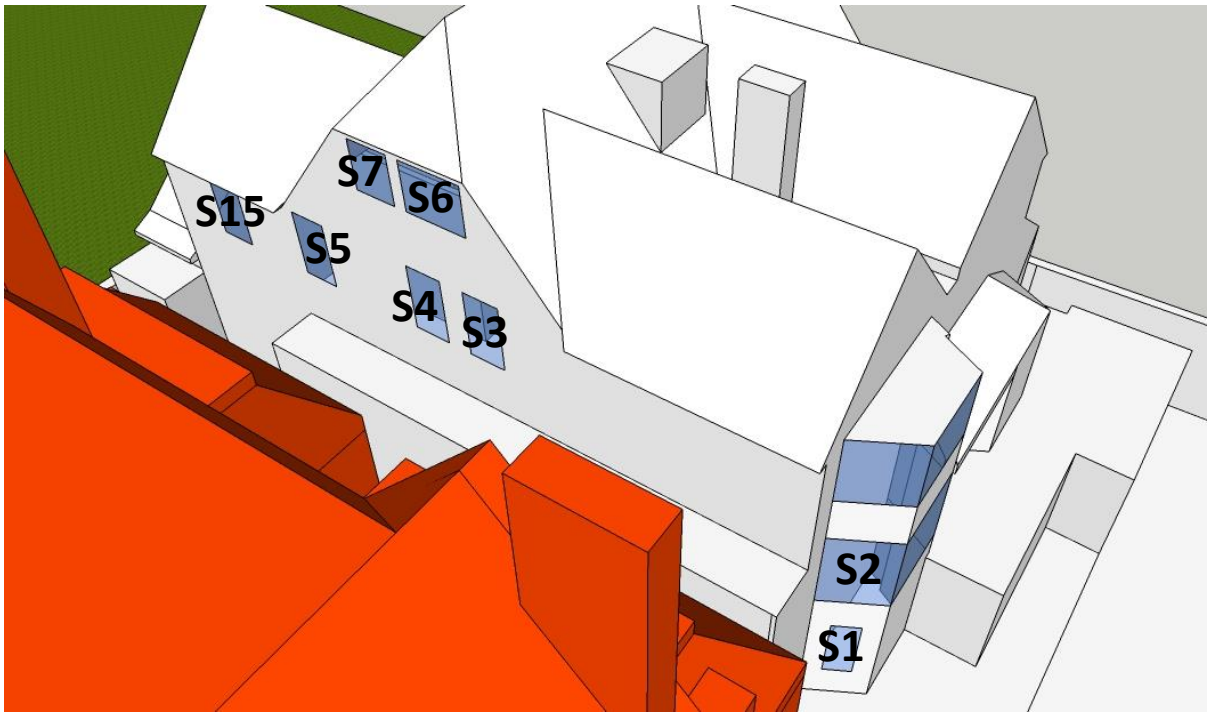
9.4. Site plan and location

9.4.1. Existing site layout

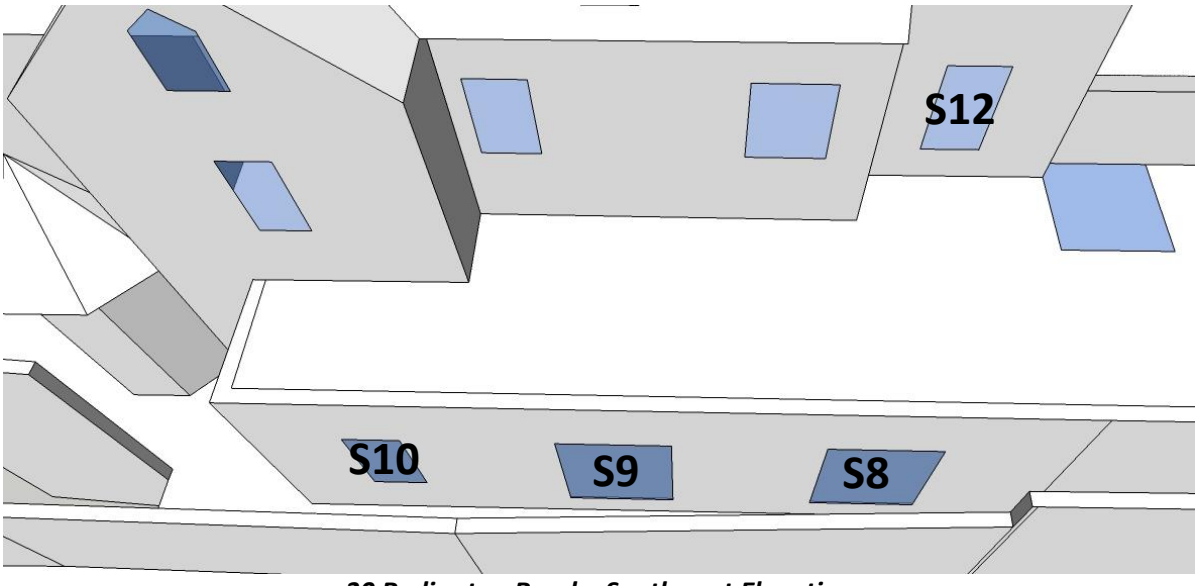


9.4.2. Proposed site layout

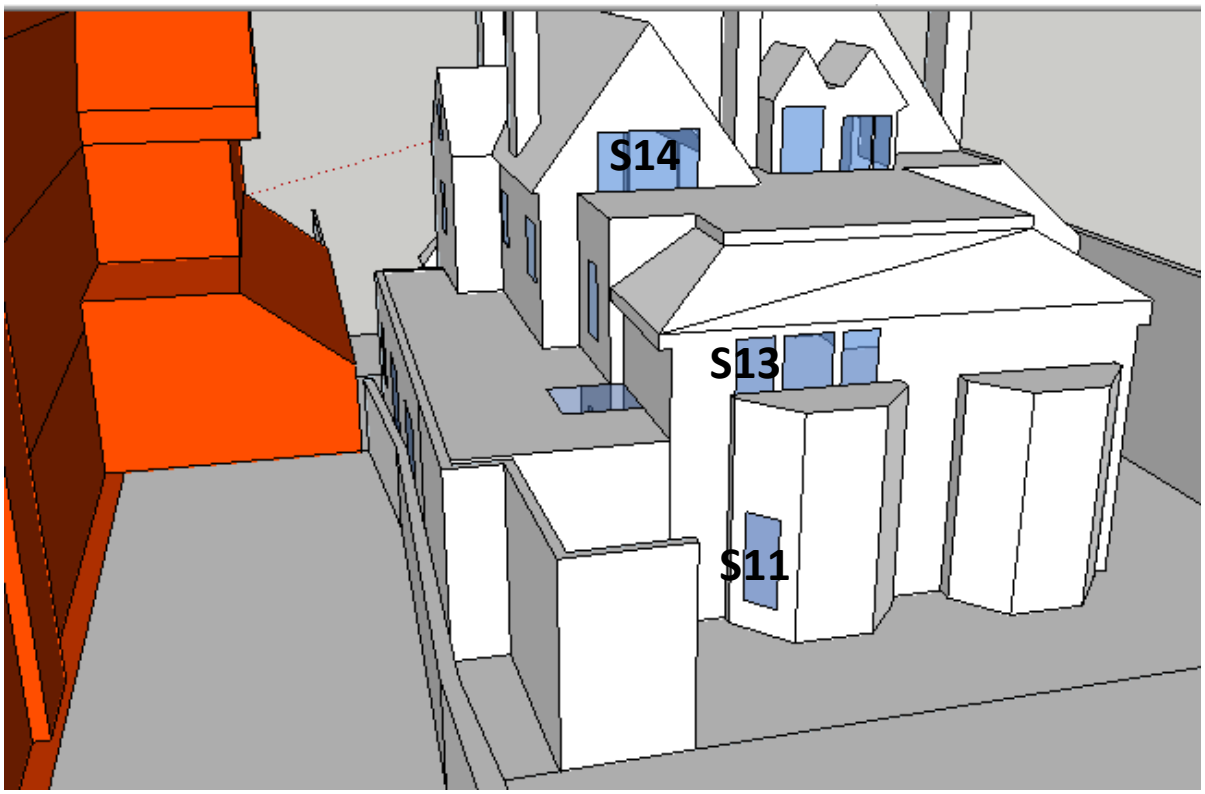




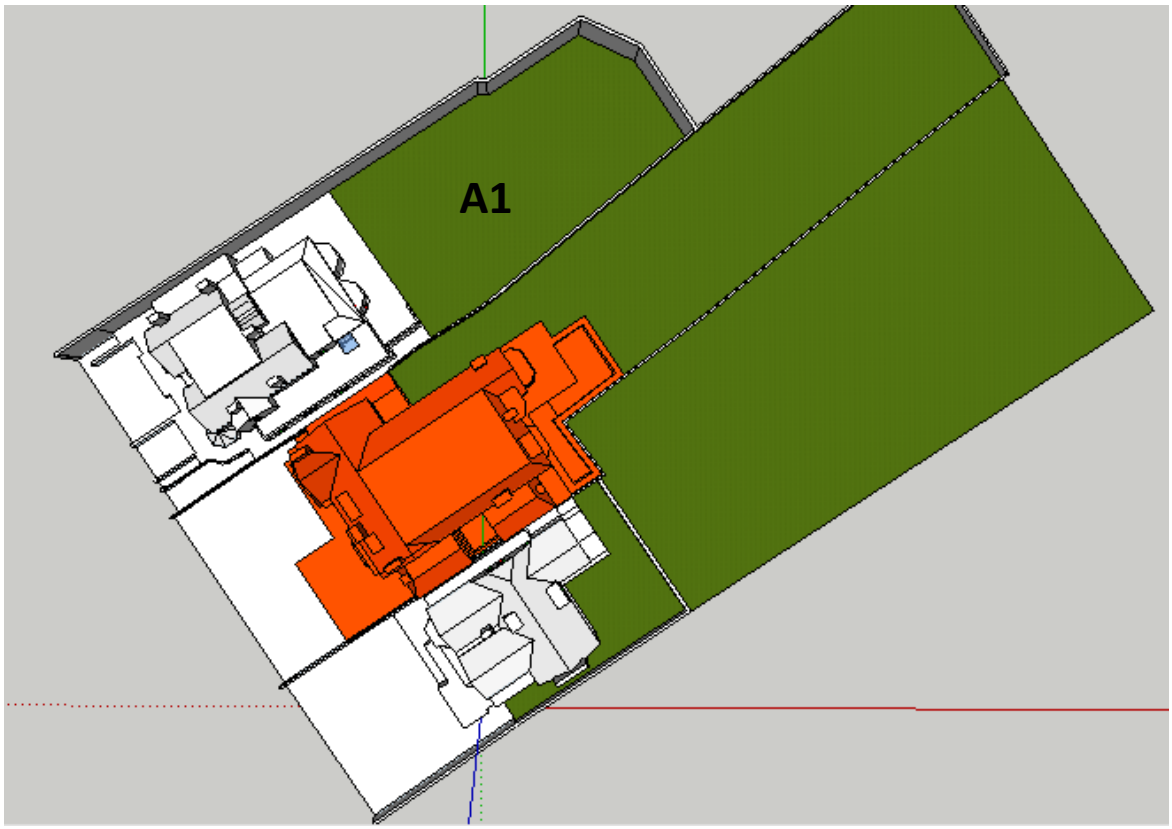
26 Redington Road – North Elevation



30 Redington Road – South east Elevation



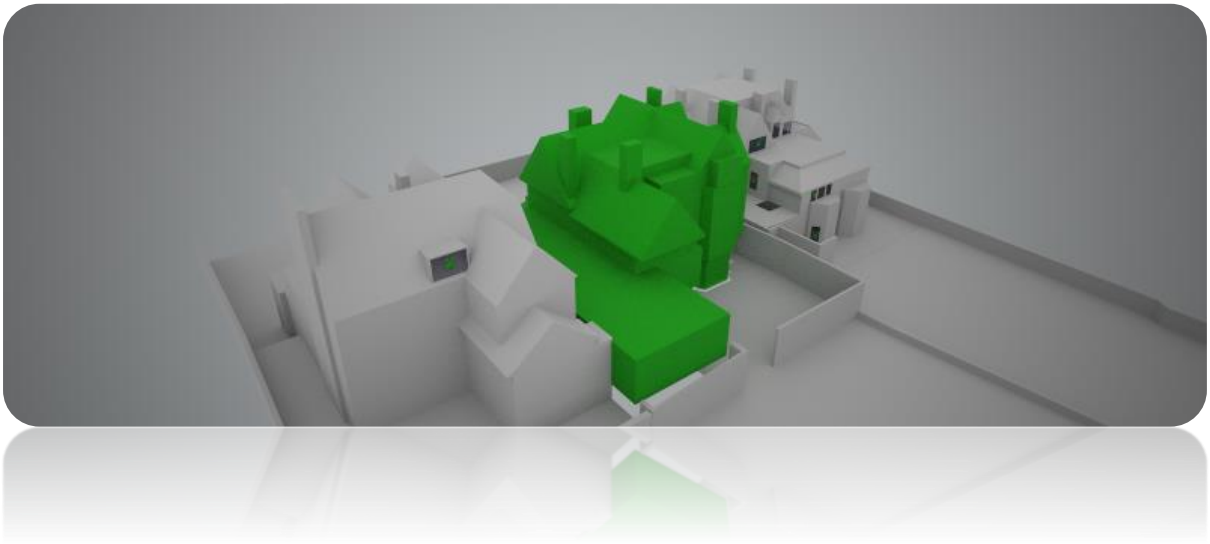
30 Redington Road – South east Elevation



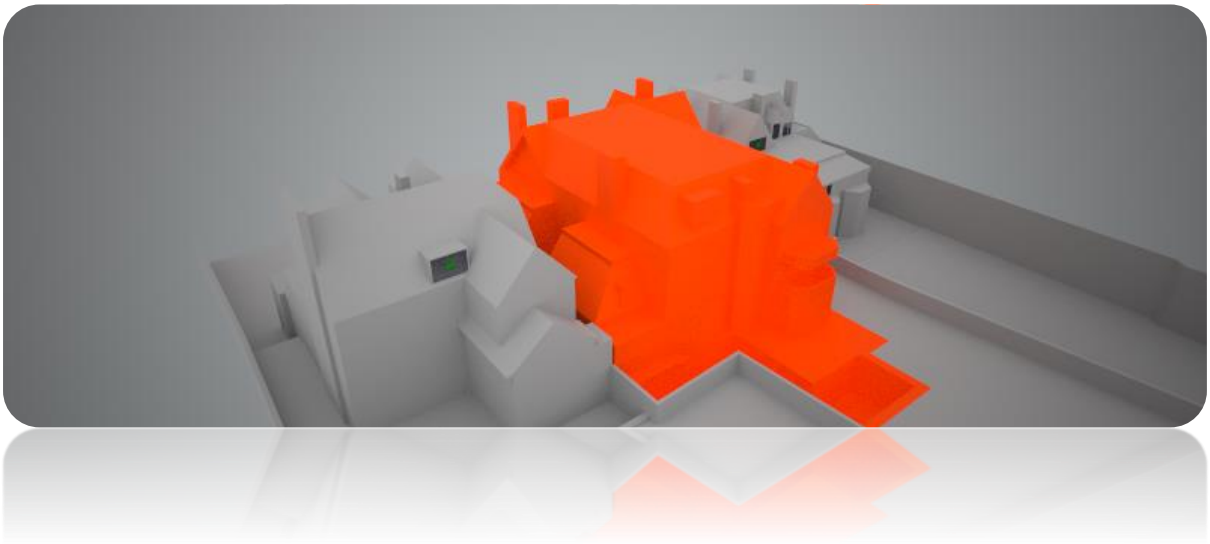
Rear of 30 Redington Road – garden

Location	28 Redington Road, Hampstead, London, NW3 7RB
Latitude (°)	51.55 N
Longitude (°)	0.18 W

9.5. Model images



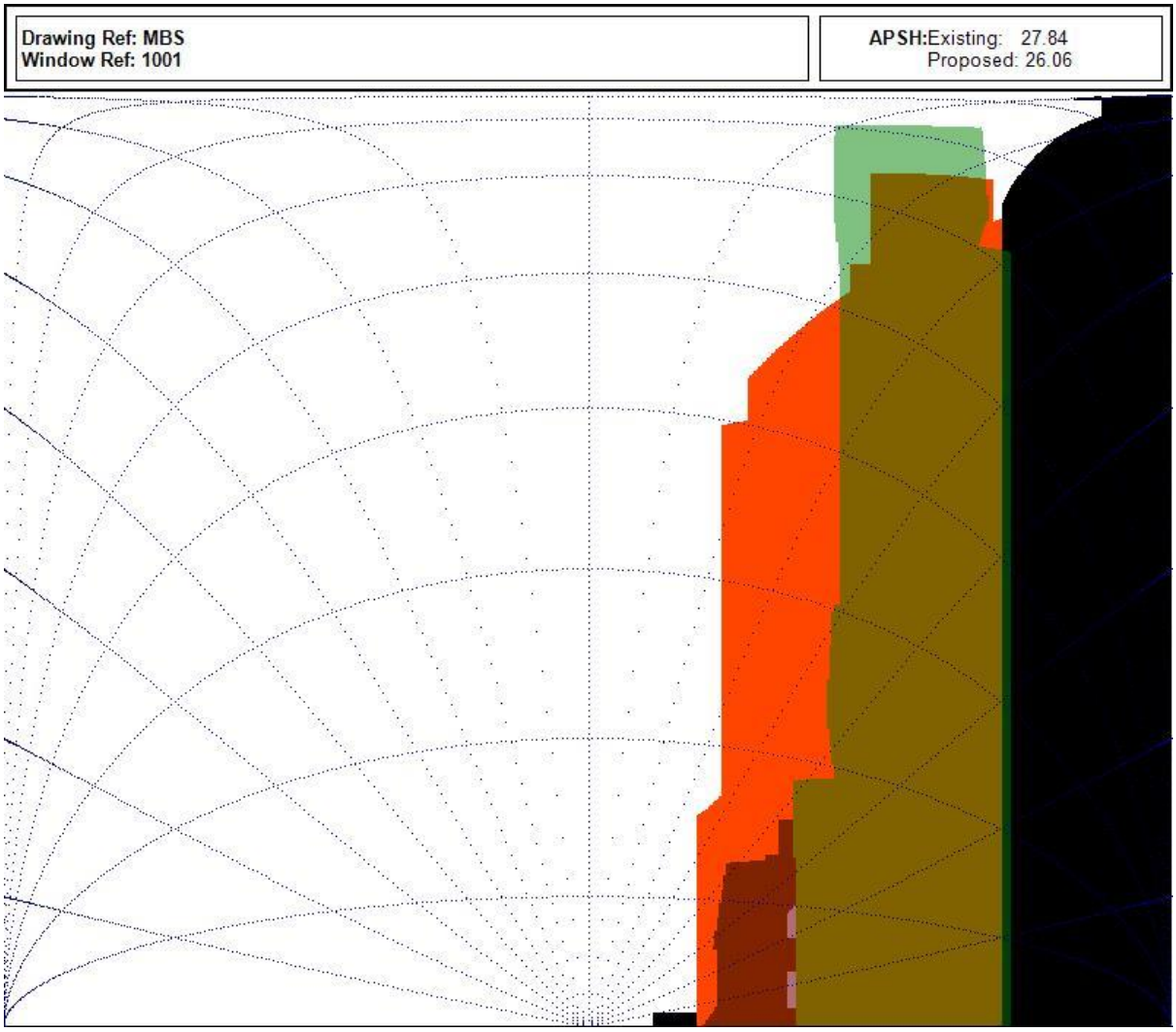
Existing scheme



Proposed scheme

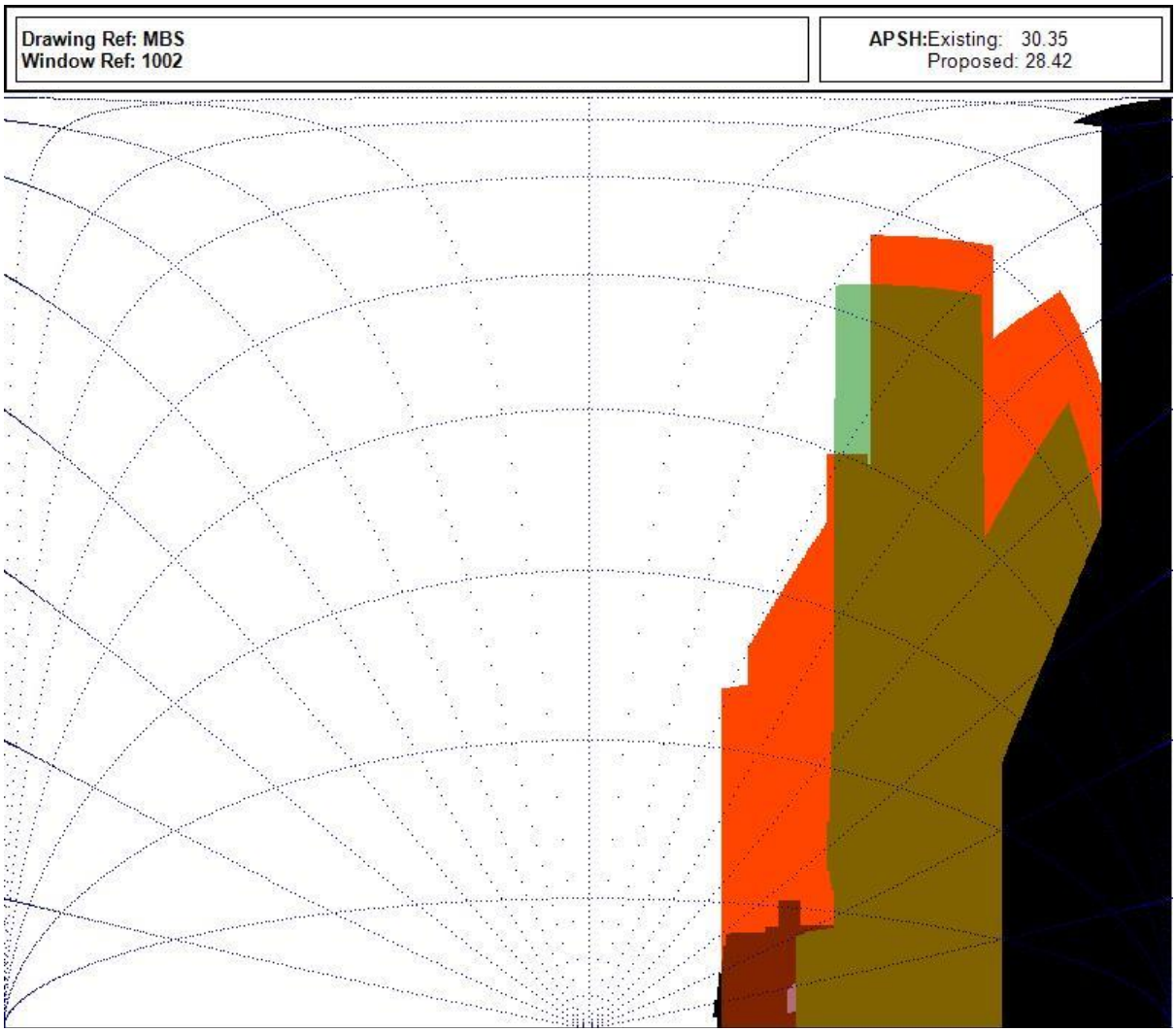
9.6. Daylight results

S1 – 26 redington road – North Elevation – GF



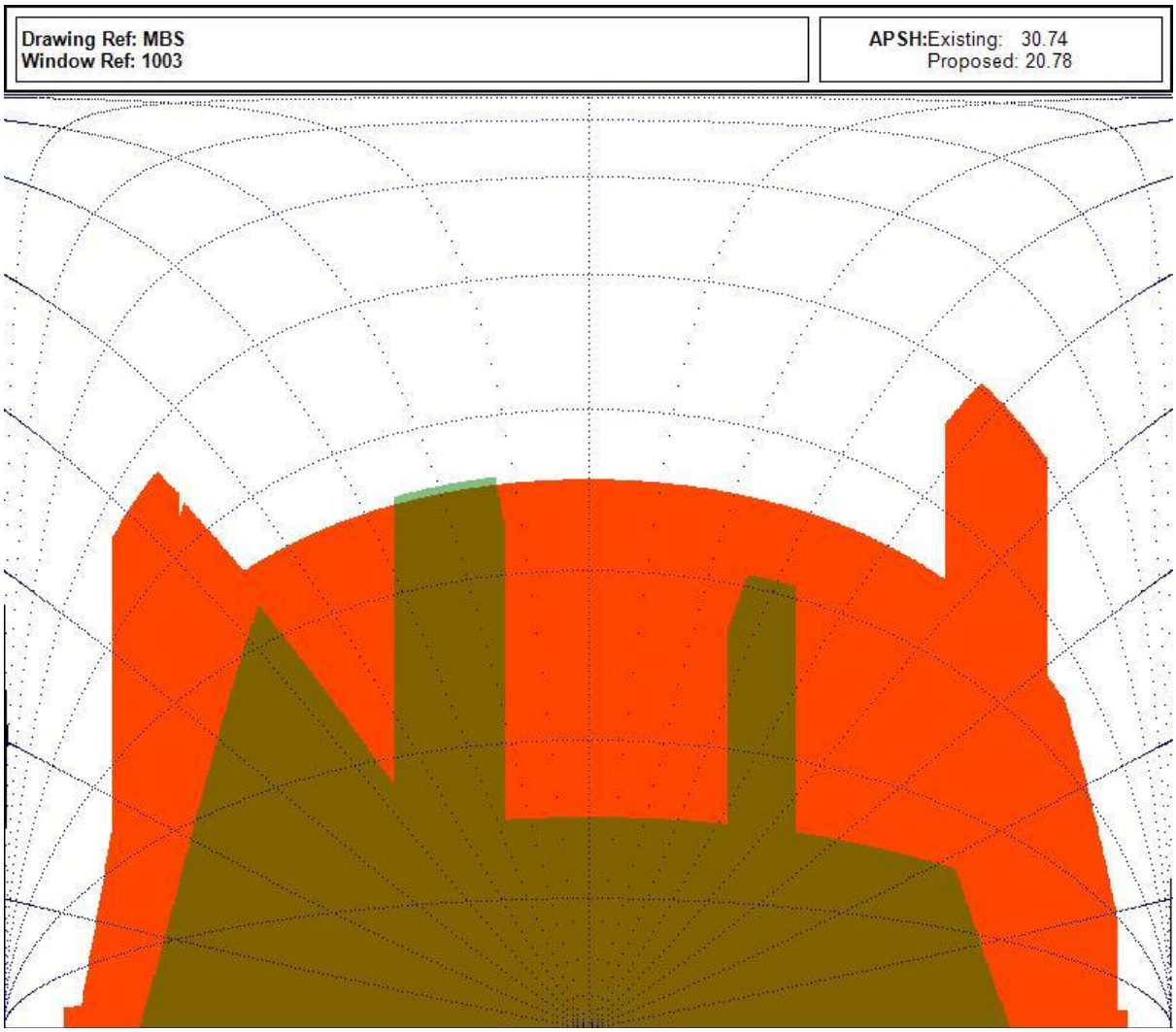
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S2 - 26 Redington Road – North Elevation - 1F



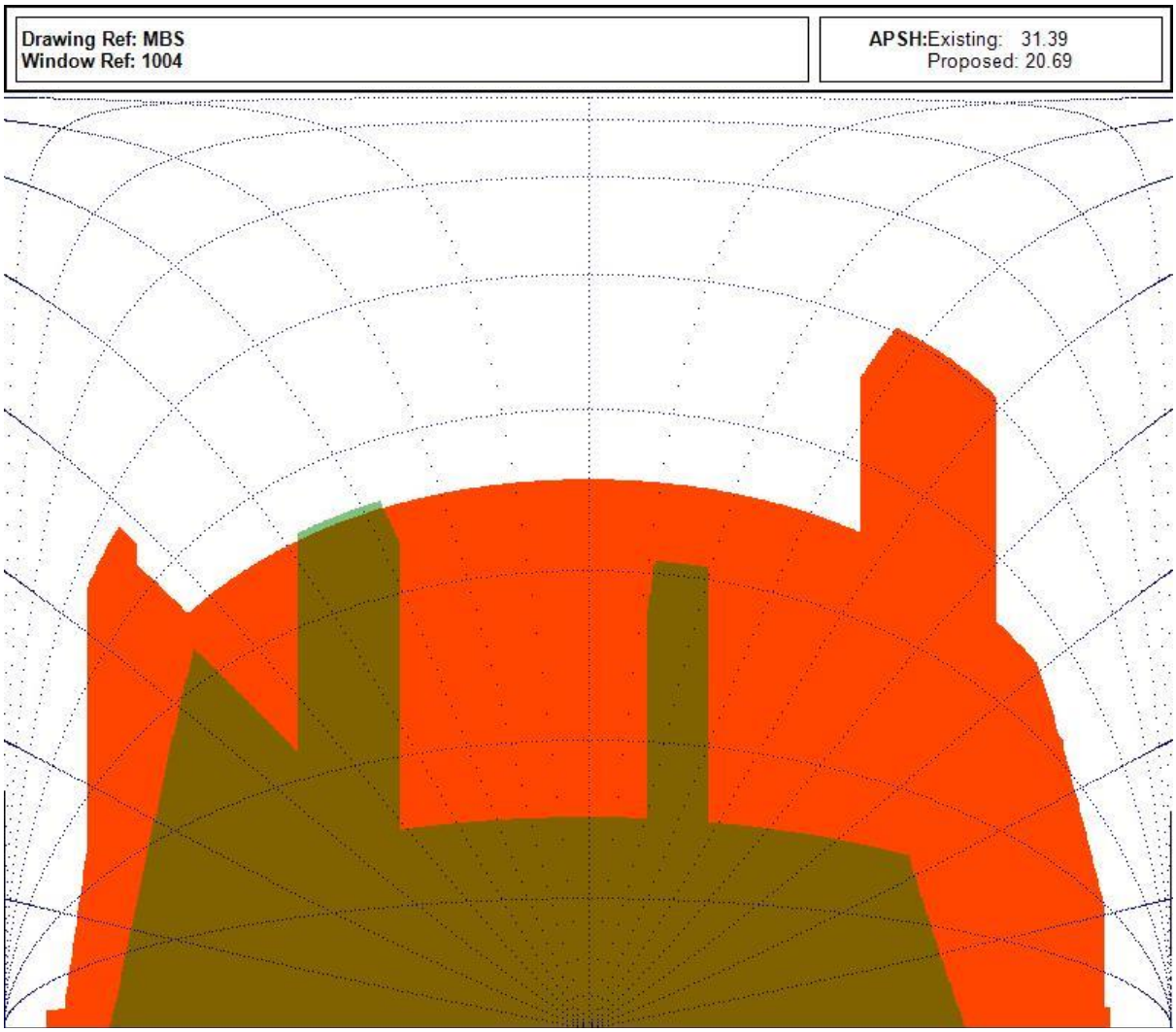
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S3 - 26 Redington Road – North Elevation - 1F



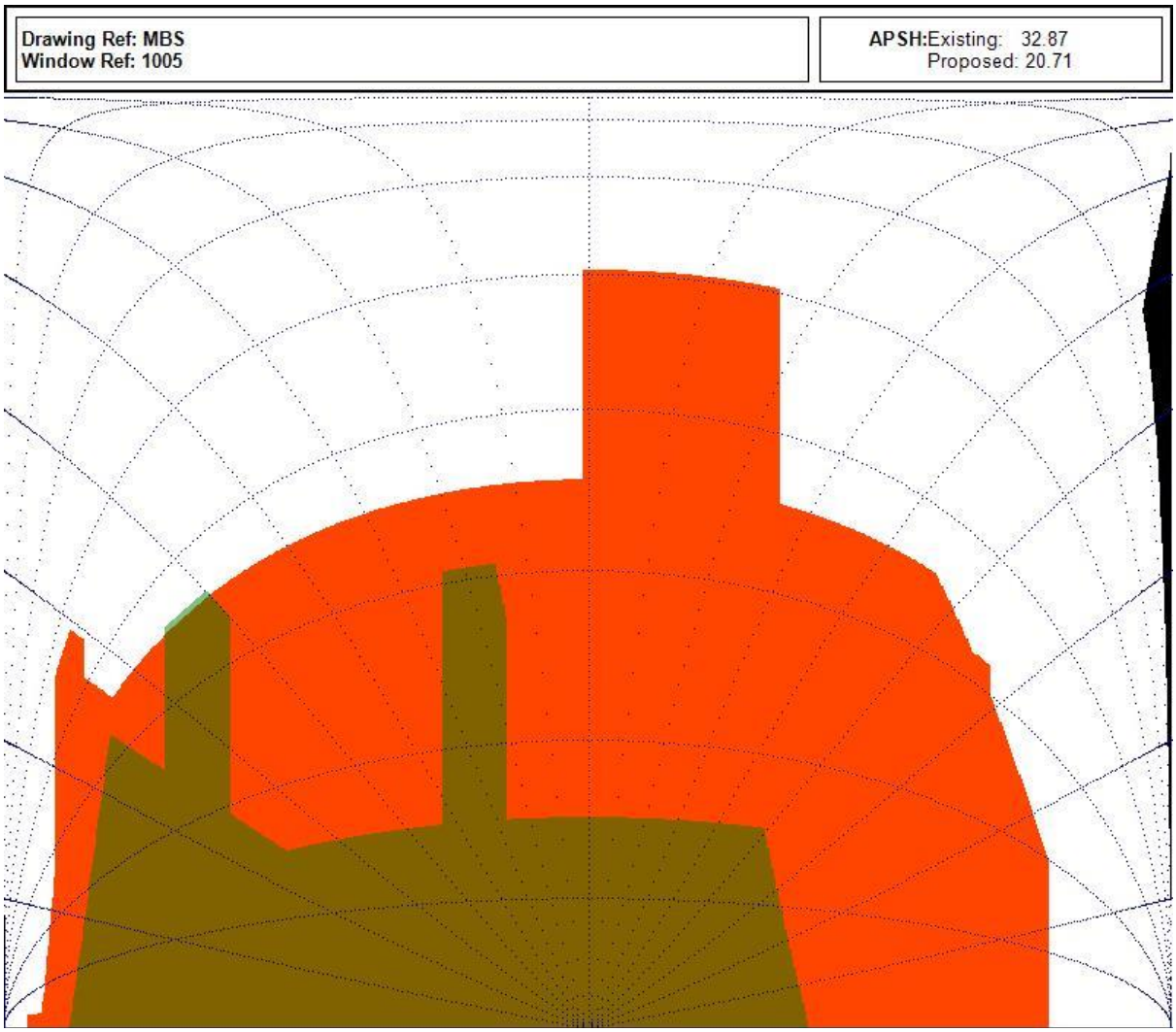
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S4 - 26 Redington Road – North Elevation - 1F



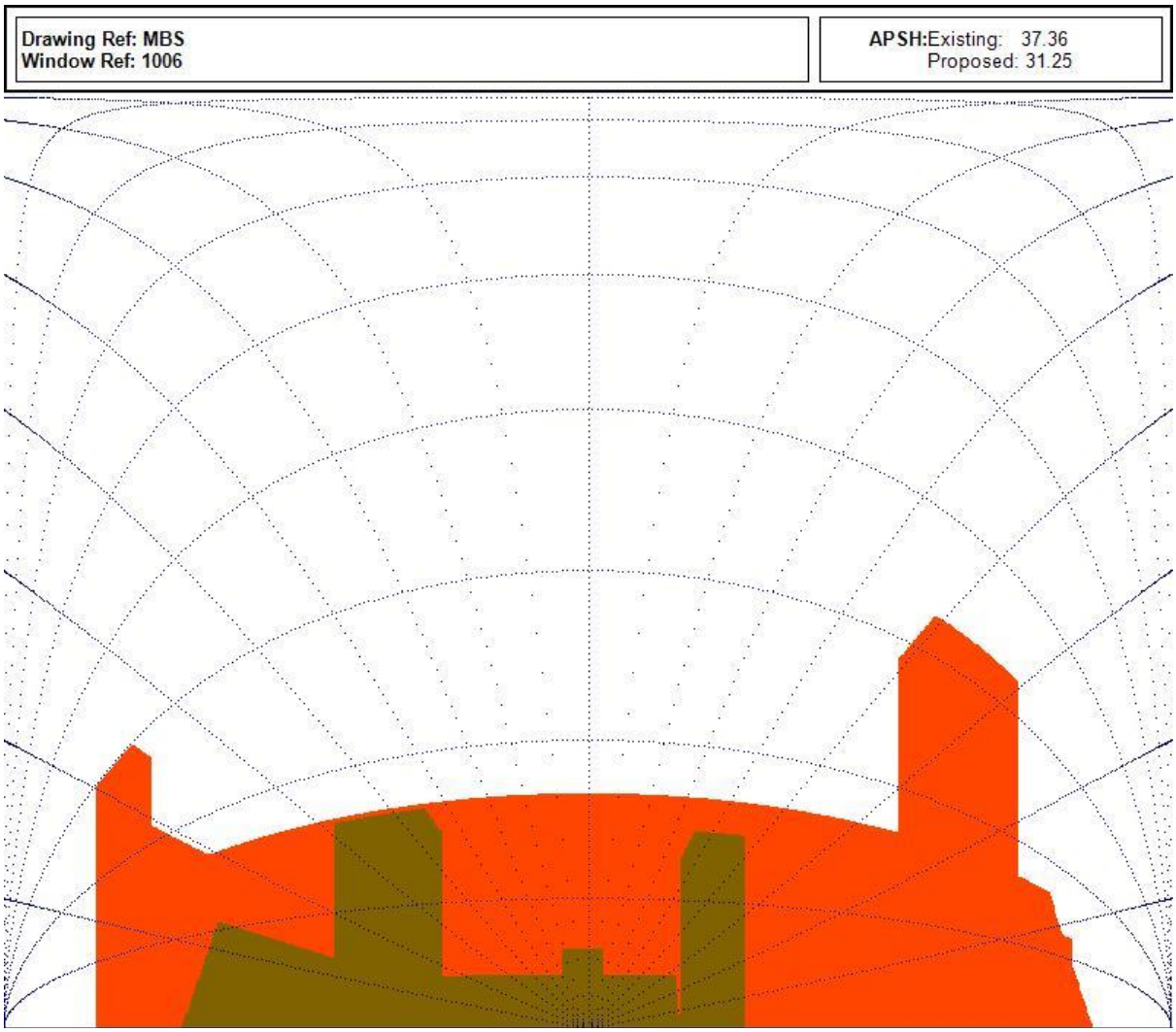
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S5 - 26 Redington Road – North Elevation - 1F



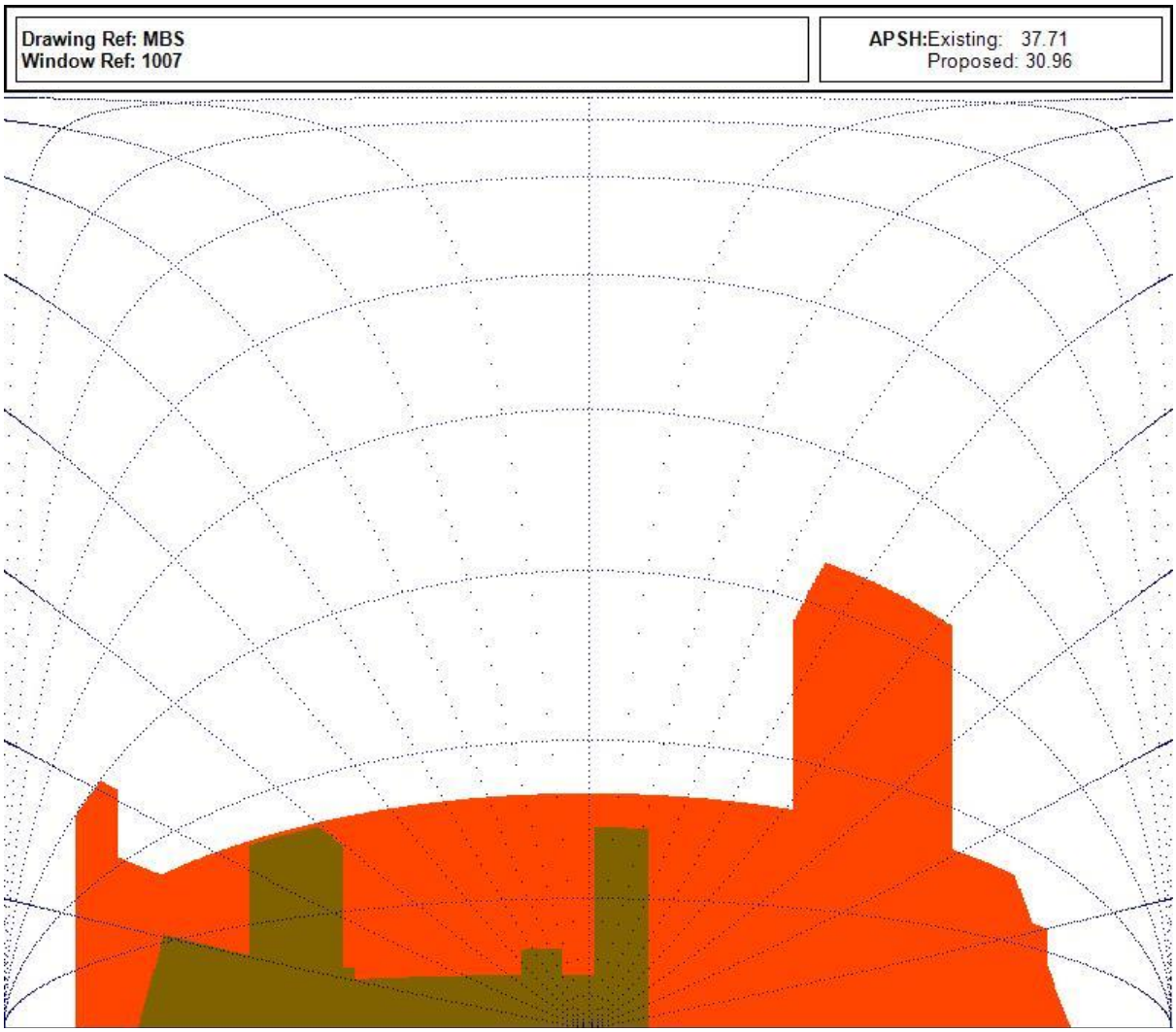
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S6 – 26 Redington road – 2F



The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S7 – 26 Redington road – 2F

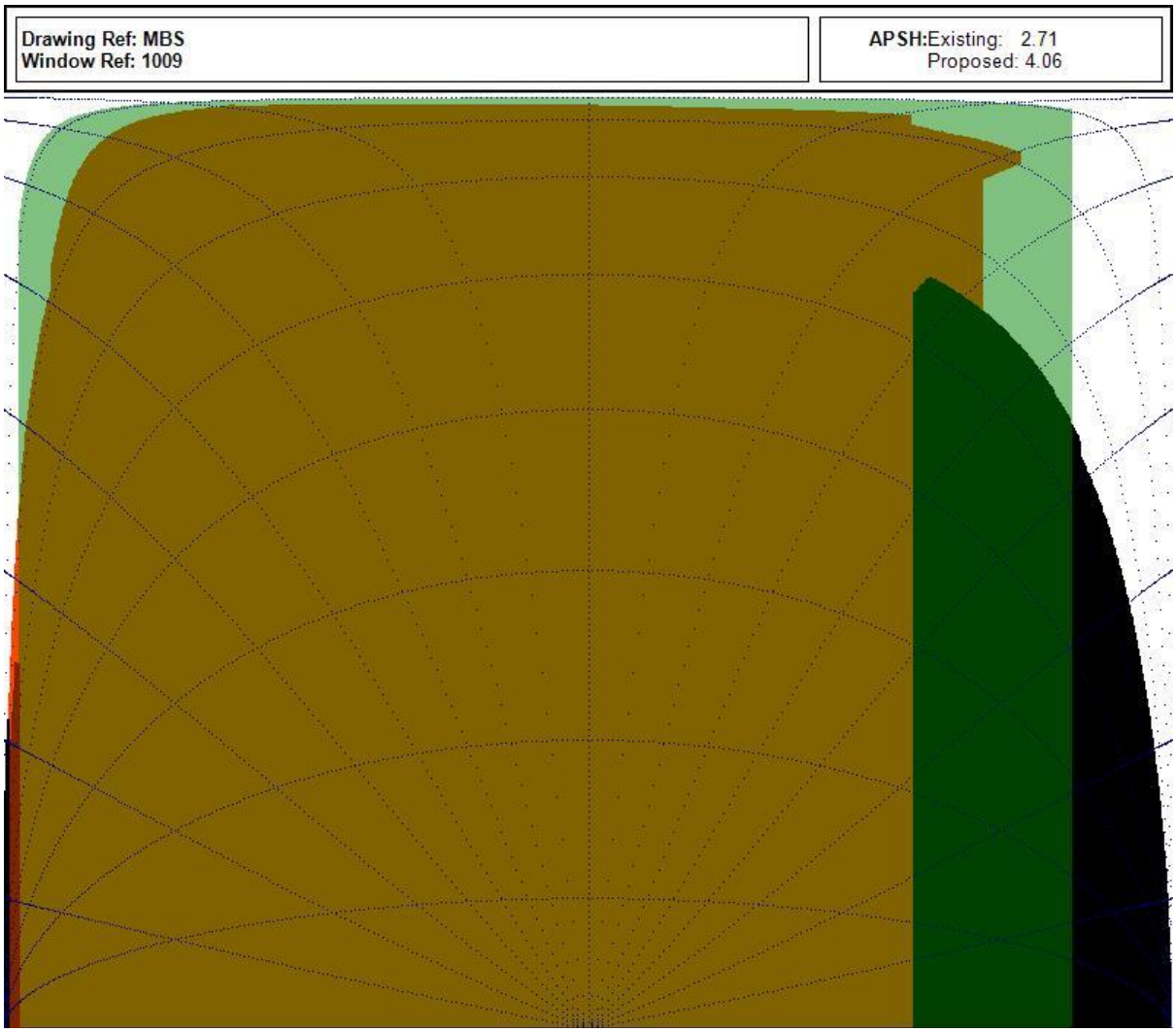


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S8 - 30 Redington Road – South Elevation - GF

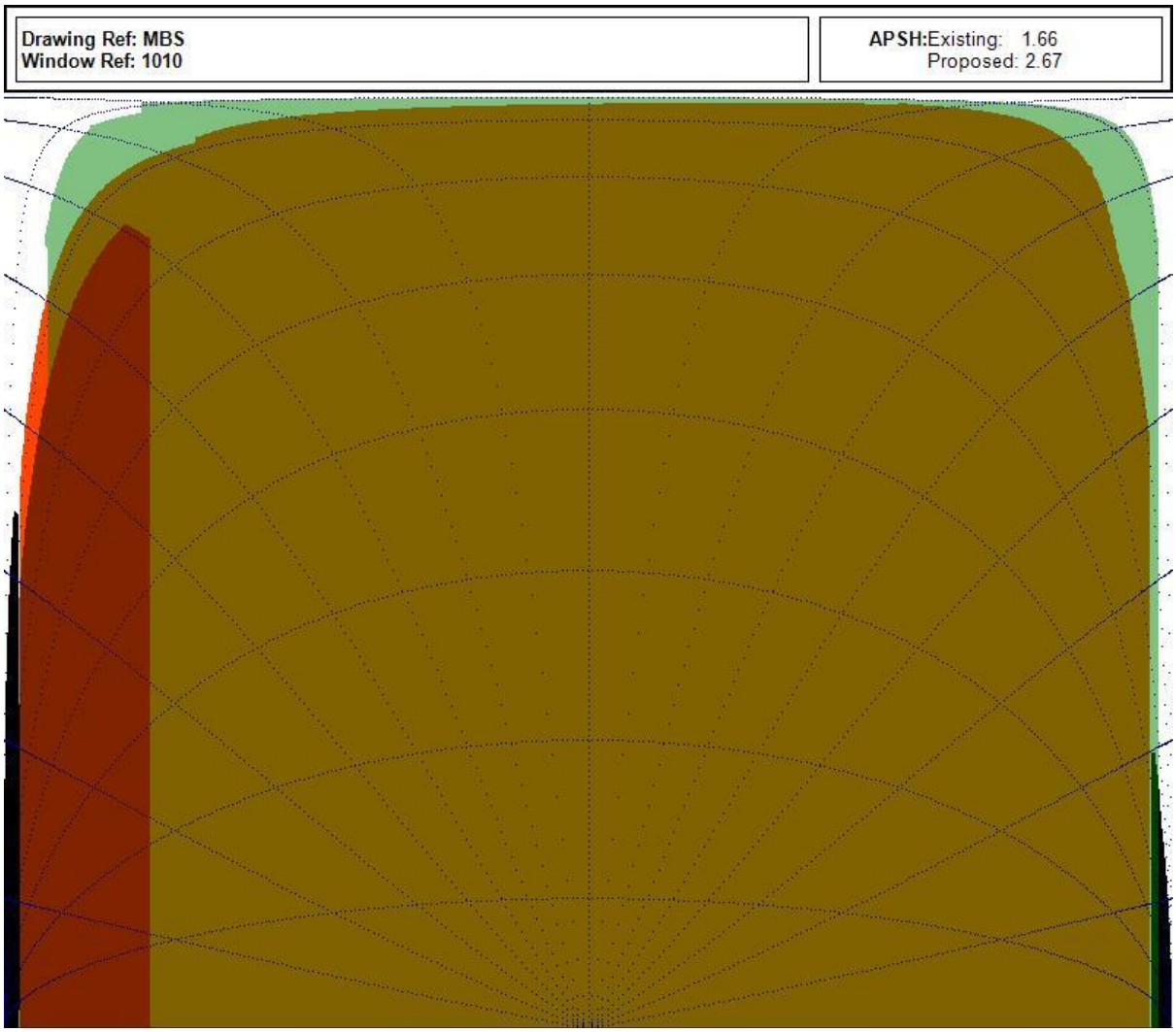
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S9 - 30 Redington Road – South Elevation - GF



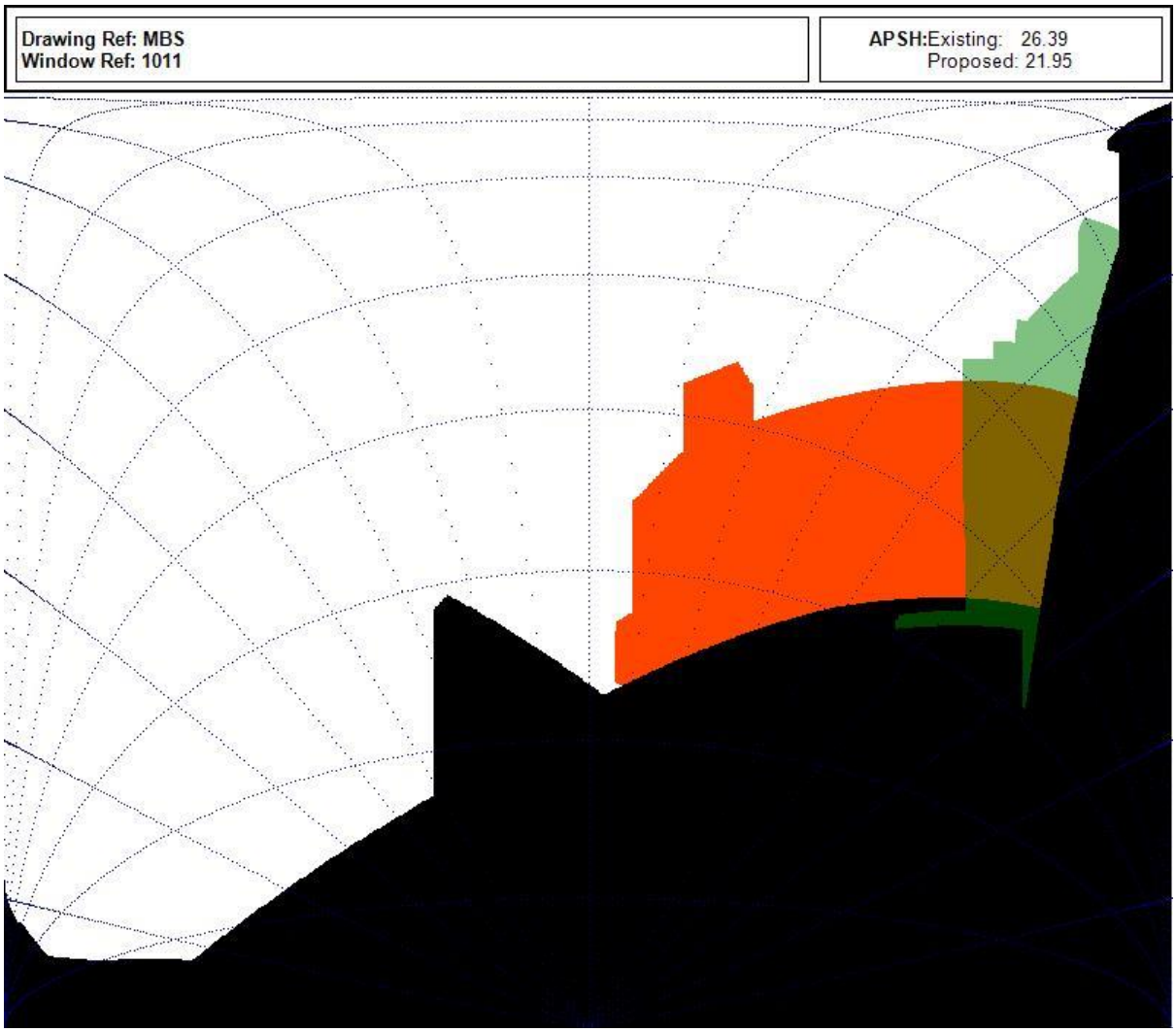
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S10 - 30 Redington Road – South Elevation - GF



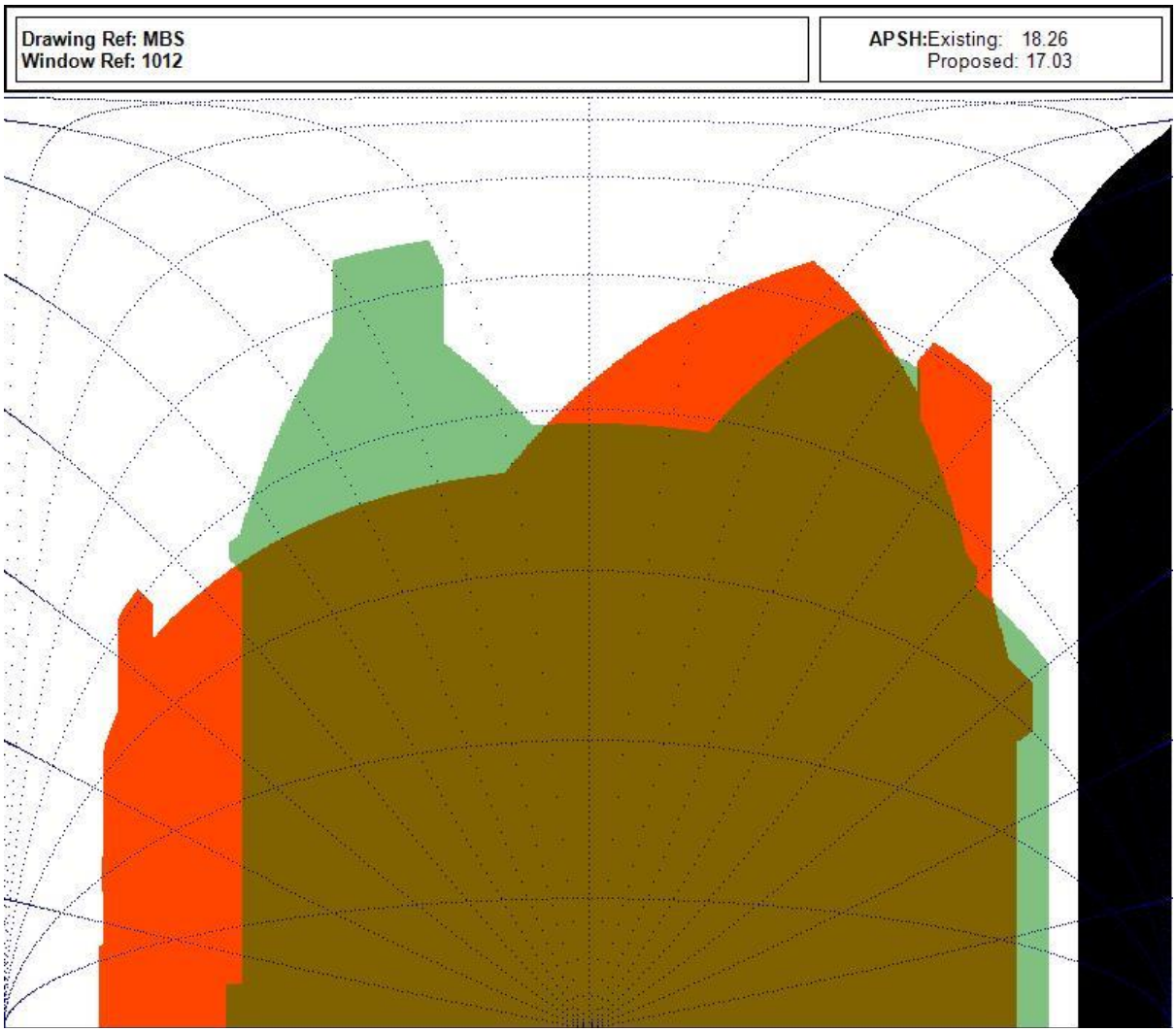
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S11 – 30 Redington Road – south east - GF



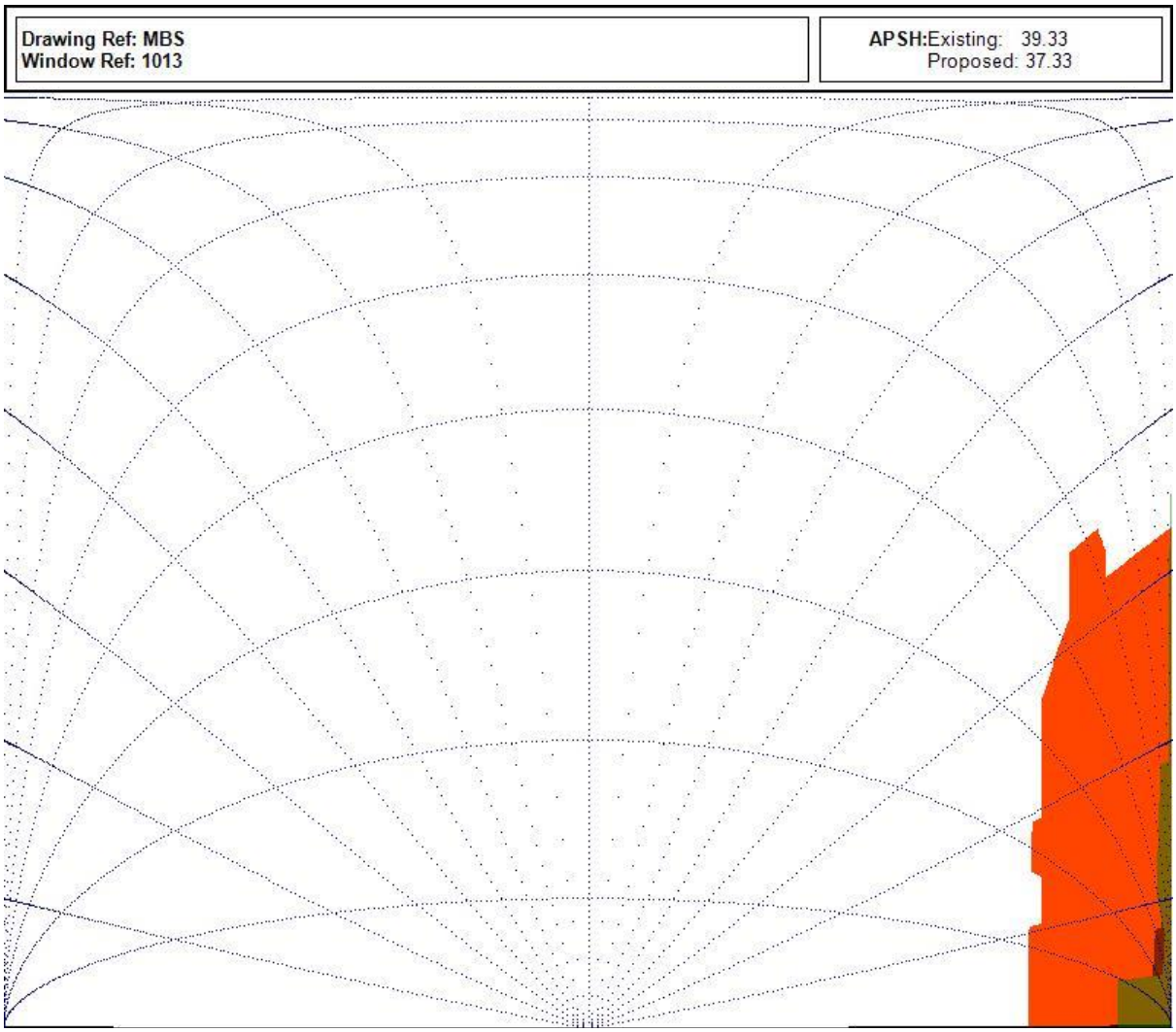
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S12 – 30 Redington Road – south – 1F



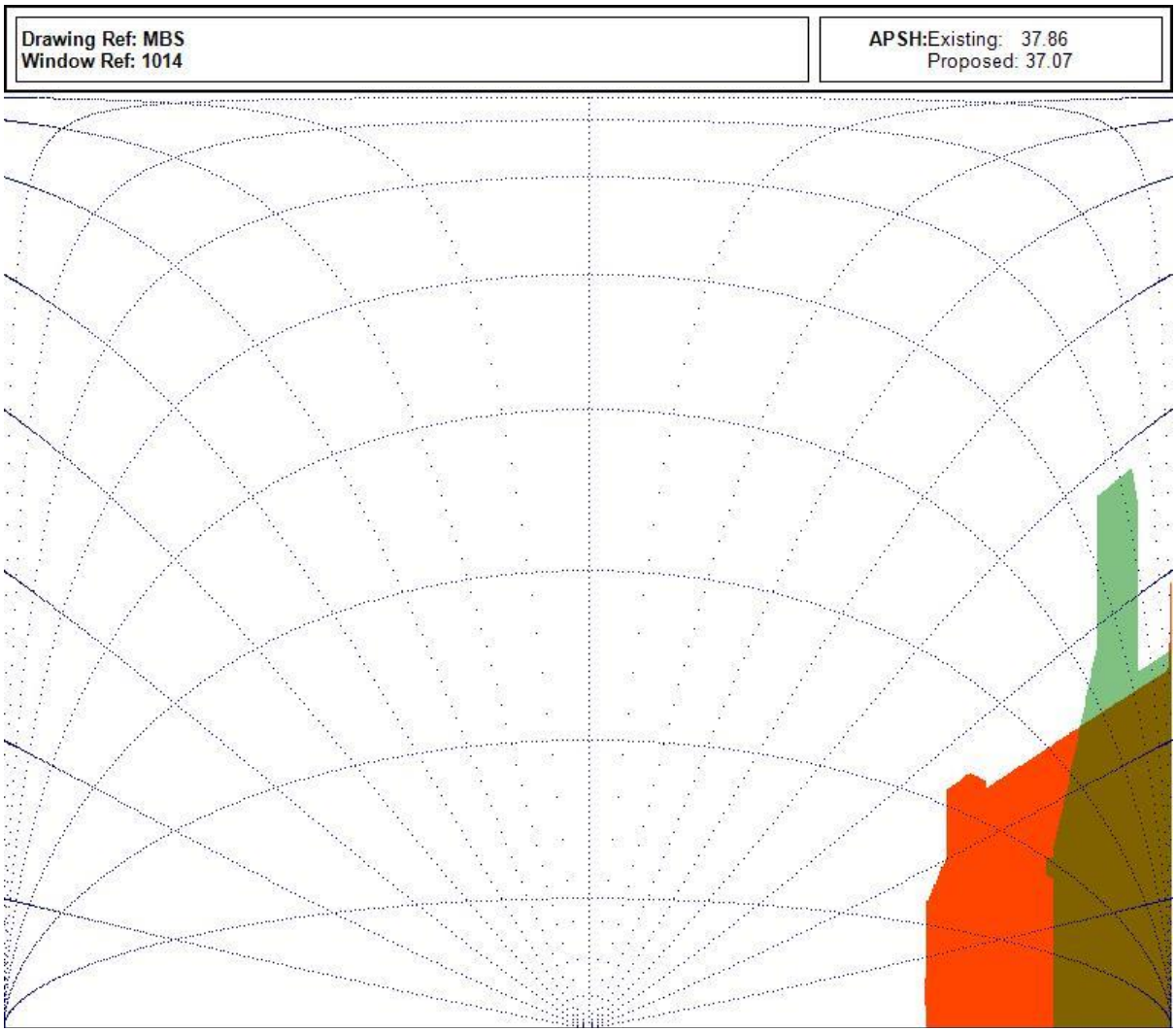
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S13 – 30 Redington Road – north east – 1F



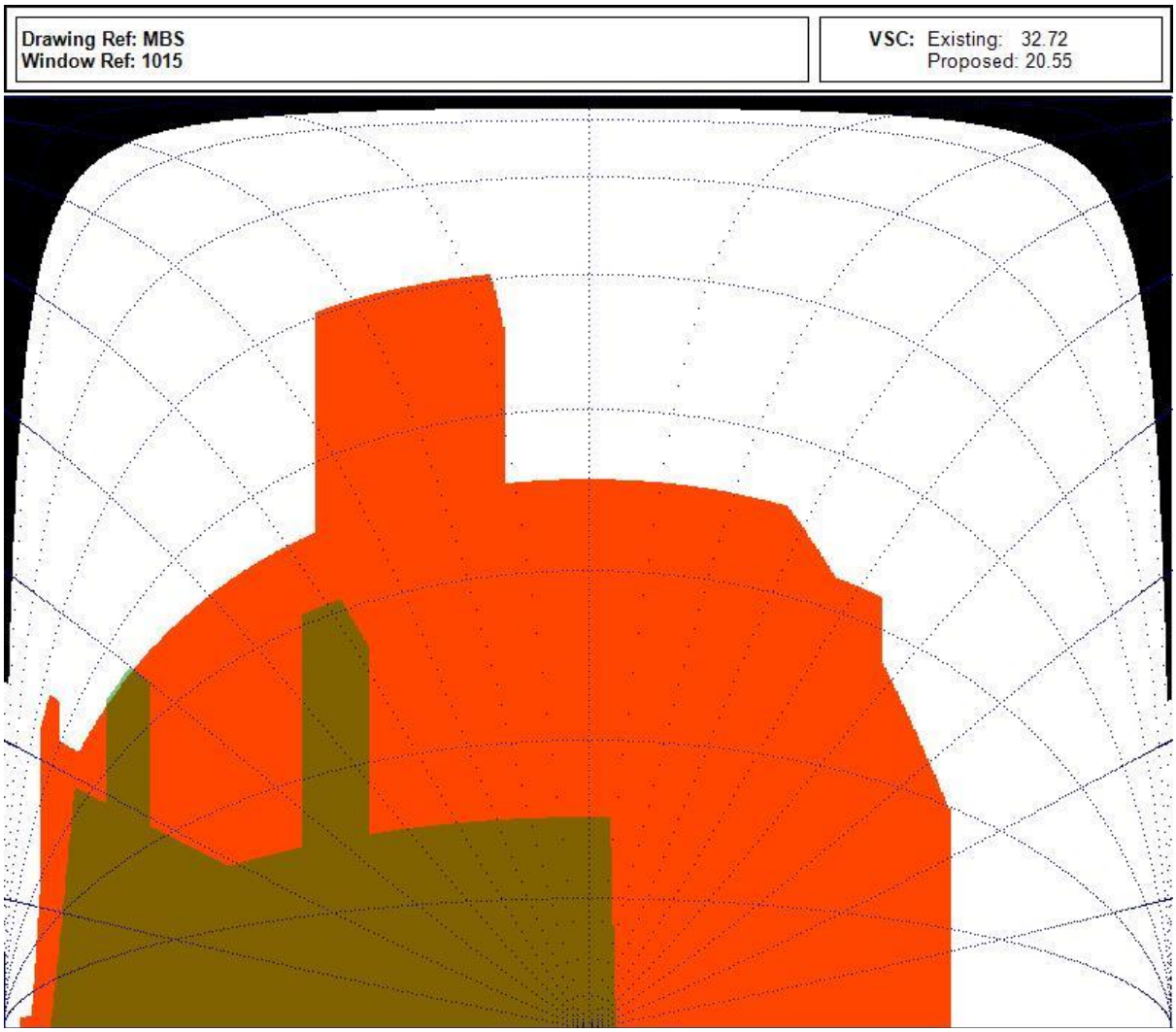
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S14 – 30 Redington Road – north east – 2F



The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

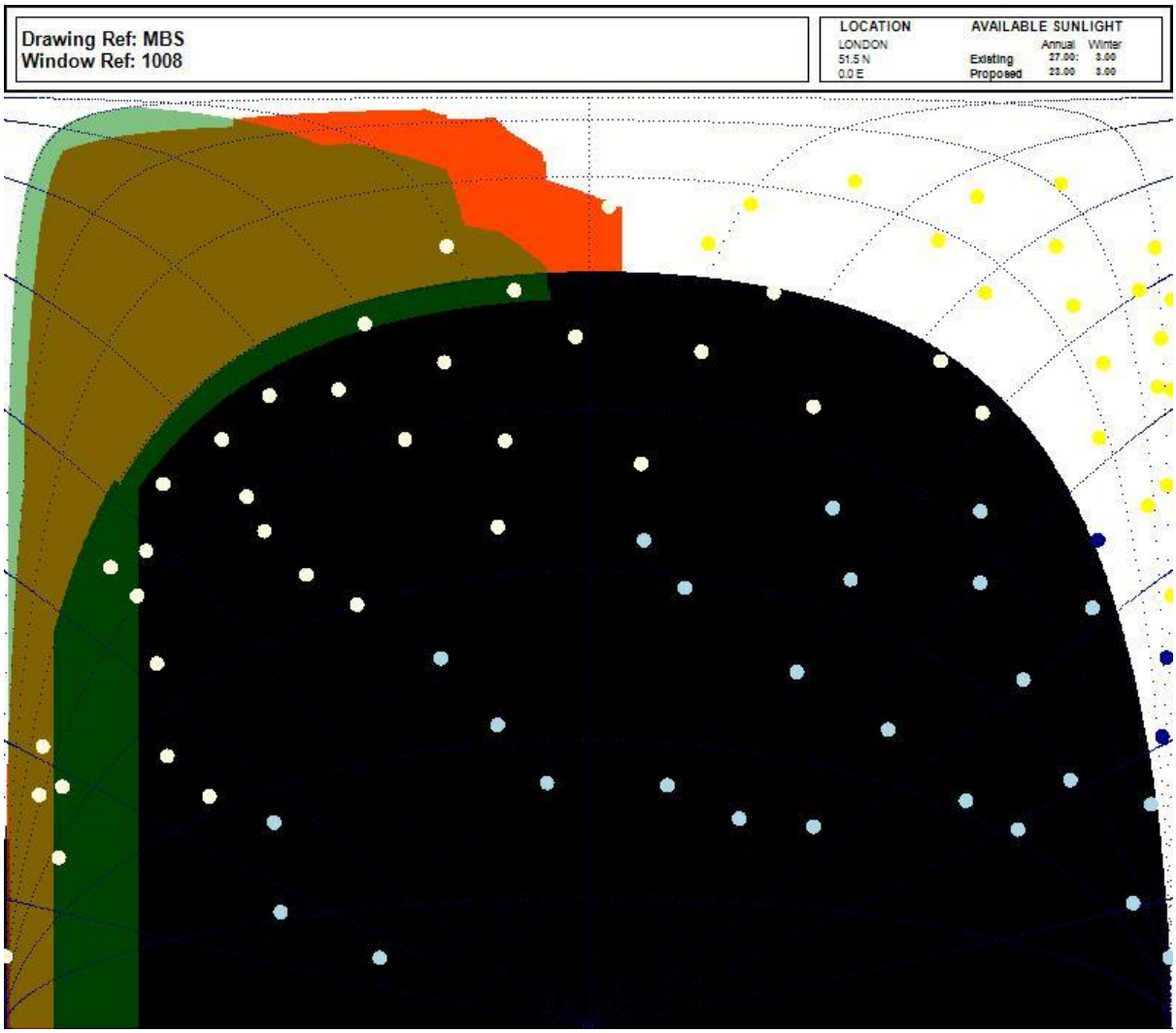
S15 - 26 Redington Road – North Elevation - 1F



The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

9.7. Sunlight results

S8 - 30 Redington Road – South Elevation - GF

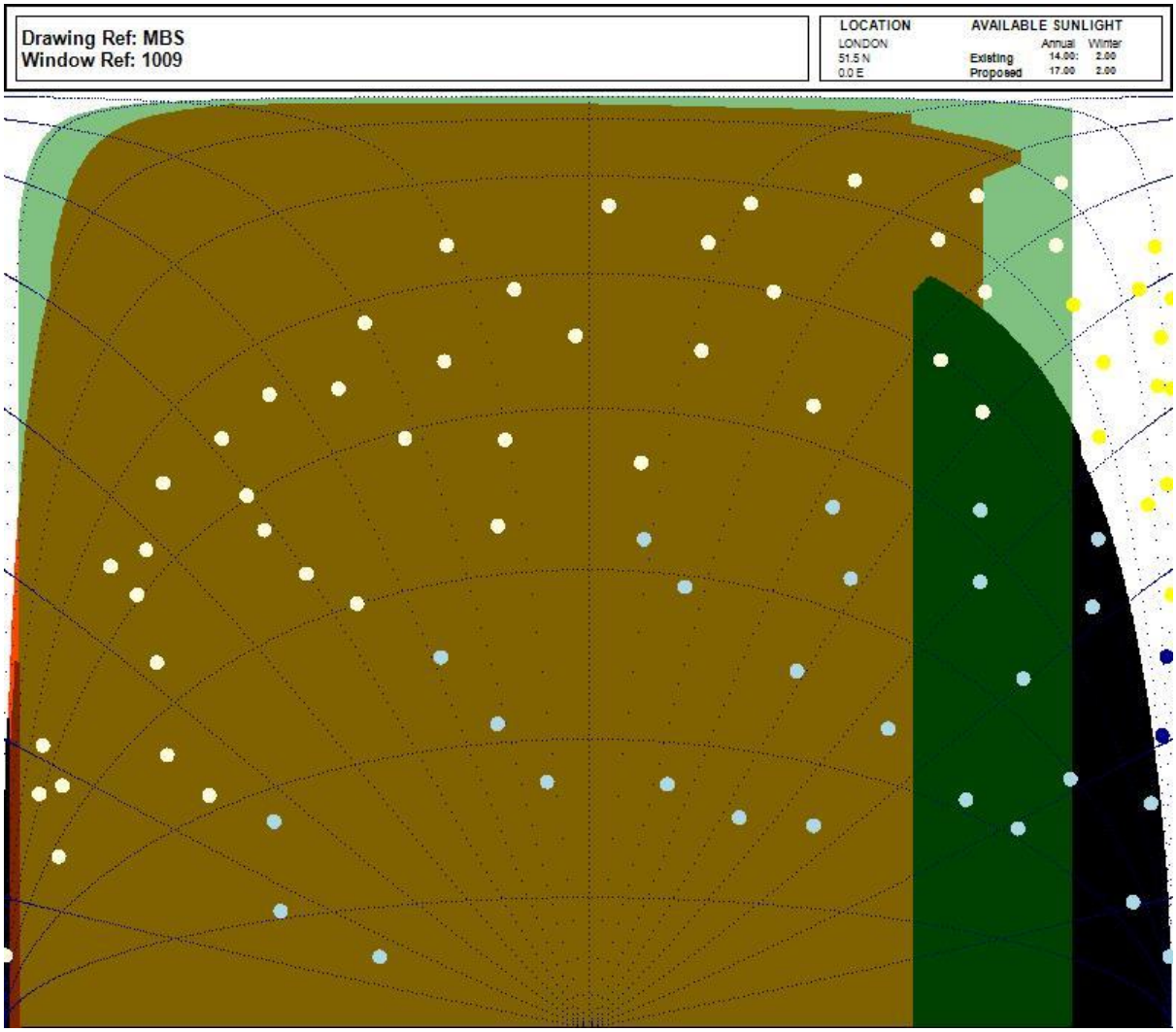


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

The yellow dot represents the available sunlight during the summer months (Summer).
The blue dot represent the available sunlight during the winter months (Winter).
The sum of the yellow and blue dots give the available sunlight for the whole year (Annual).

The white dot represents the sunlight blocked by buildings.

S9 - 30 Redington Road – South Elevation - GF

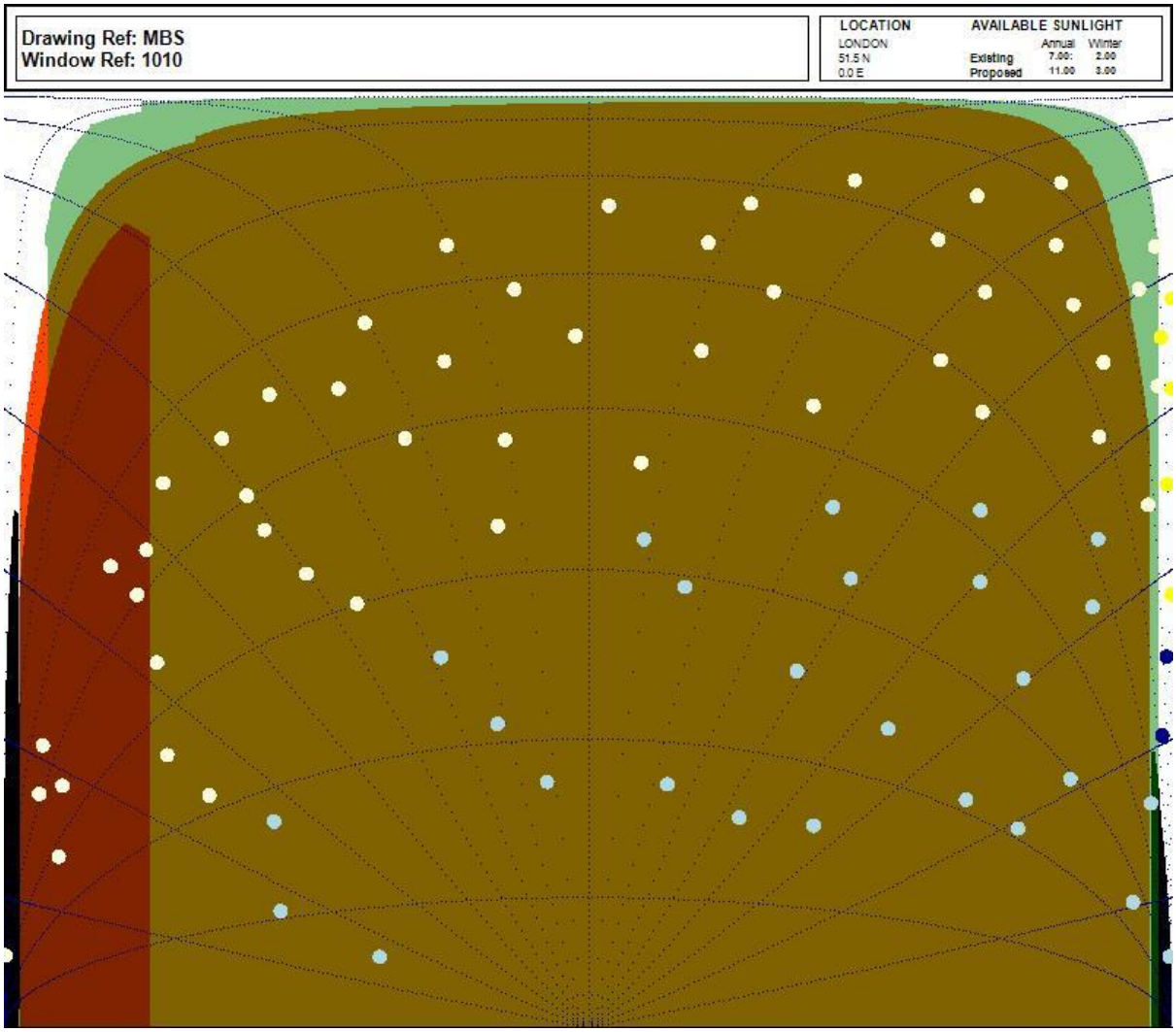


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

The yellow dot represents the available sunlight during the summer months (Summer).
The blue dot represent the available sunlight during the winter months (Winter).
The sum of the yellow and blue dots give the available sunlight for the whole year (Annual).

The white dot represents the sunlight blocked by buildings.

S10 - 30 Redington Road – South Elevation - GF

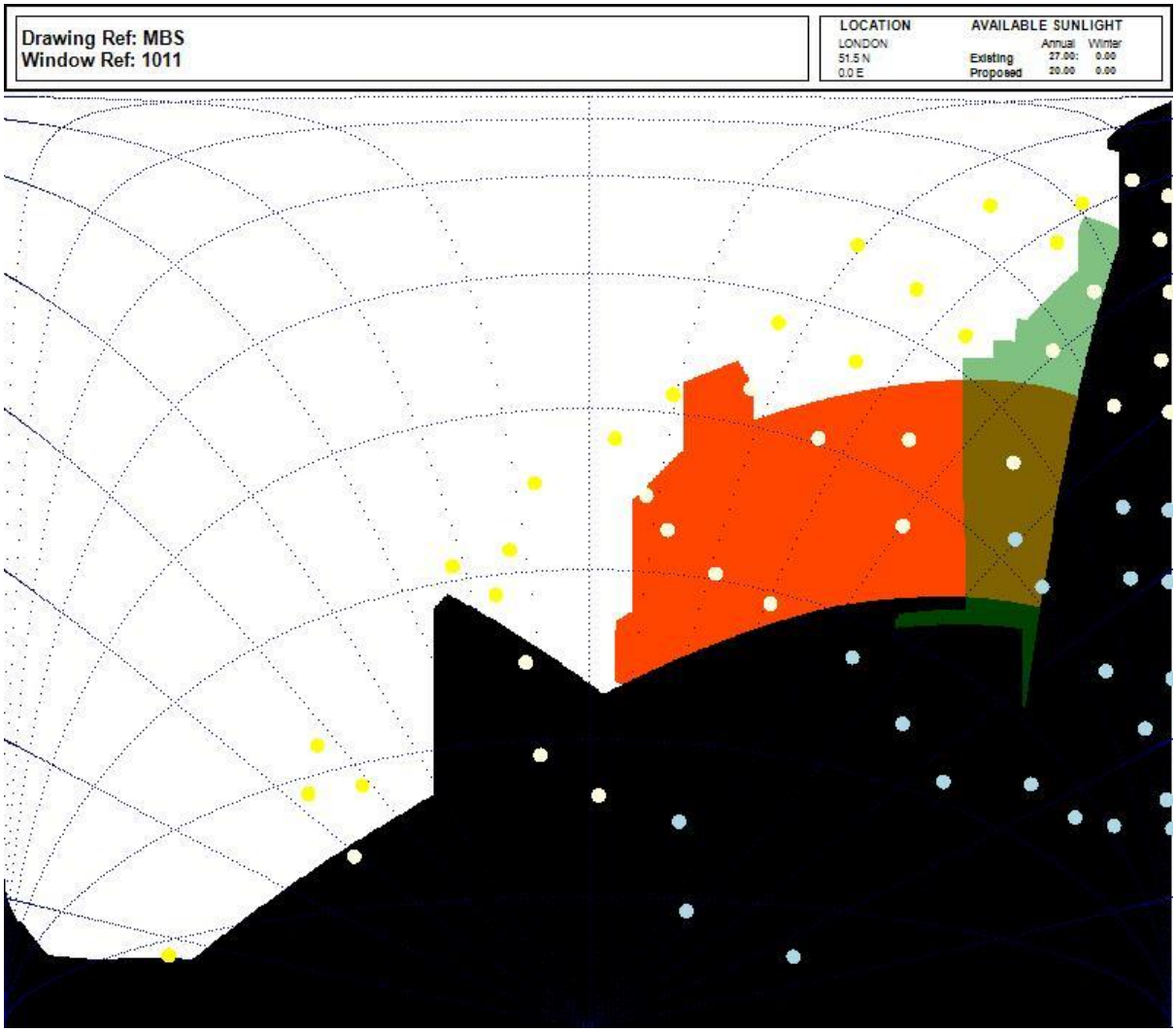


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

The yellow dot represents the available sunlight during the summer months (Summer).
The blue dot represent the available sunlight during the winter months (Winter).
The sum of the yellow and blue dots give the available sunlight for the whole year (Annual).

The white dot represents the sunlight blocked by buildings.

S11 – 30 Redington Road – south east - GF

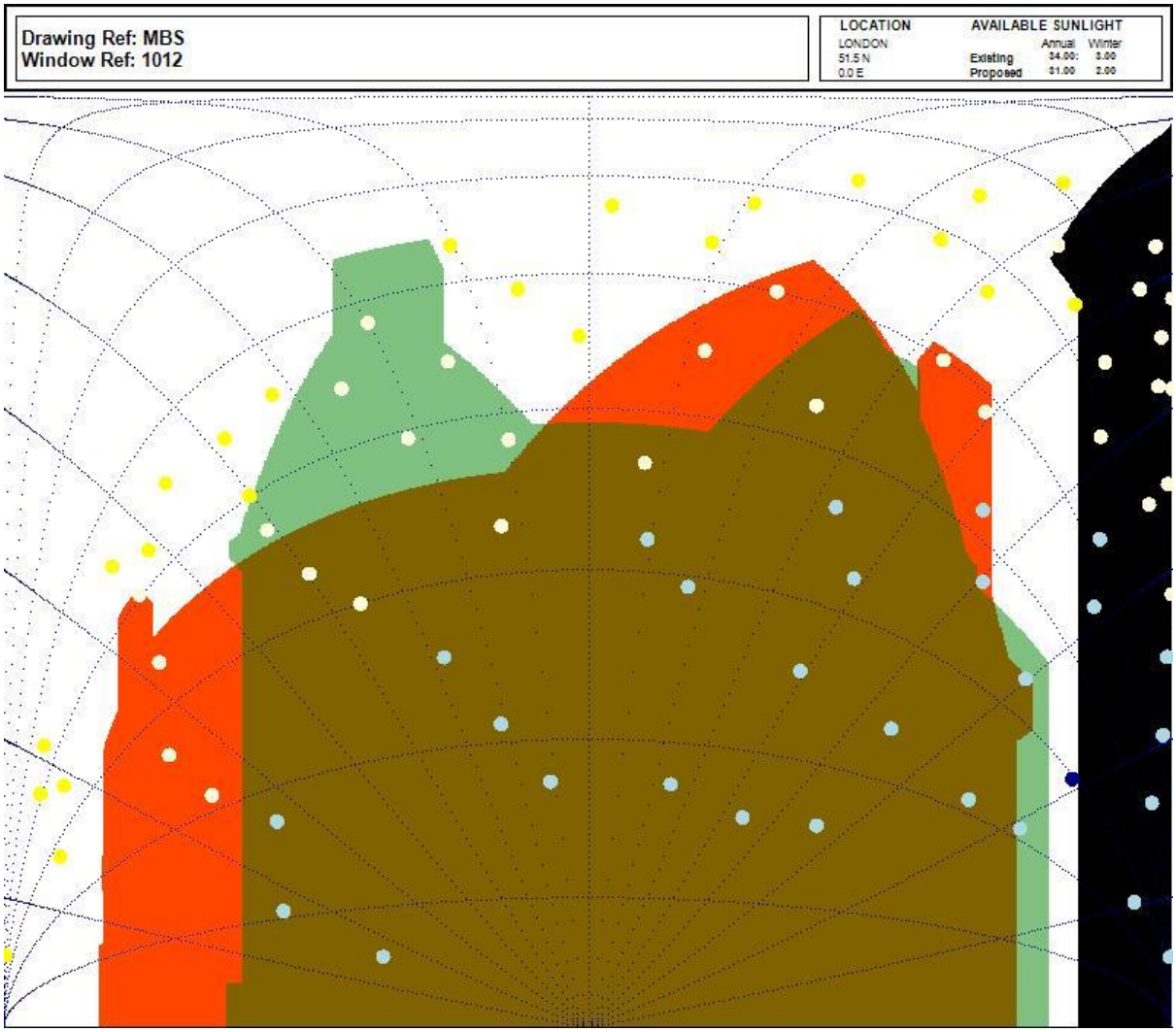


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

The yellow dot represents the available sunlight during the summer months (Summer).
The blue dot represent the available sunlight during the winter months (Winter).
The sum of the yellow and blue dots give the available sunlight for the whole year (Annual).

The white dot represents the sunlight blocked by buildings.

S12 – 30 Redington Road – south – 1F



The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

The yellow dot represents the available sunlight during the summer months (Summer).
The blue dot represent the available sunlight during the winter months (Winter).
The sum of the yellow and blue dots give the available sunlight for the whole year (Annual).

The white dot represents the sunlight blocked by buildings.

9.8. Overshadowing results and pictures (21st March)

A1 - 30 Redington Road - garden

The results are expressed as a percentage of area receiving direct sunlight on 21st March.

Existing

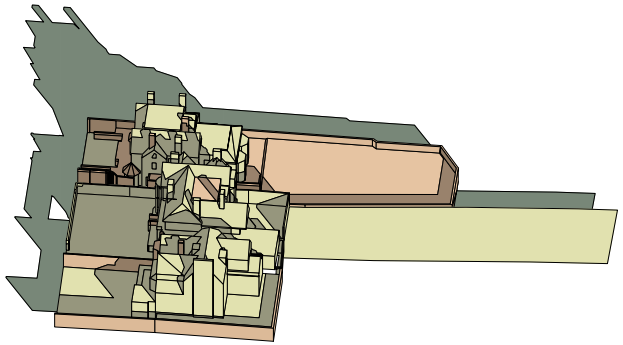
Month	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00
Jan						28.40	50.10	44.80	33.40	18.60	0.80	5.50	0.00				
Feb					32.50	62.30	72.00	70.30	63.30	55.70	47.10	33.50	10.40	4.80			
Mar				**44.30**	**70.60**	**78.00**	**82.60**	**84.70**	**82.50**	**80.50**	**77.70**	**76.30**	**57.40**	**49.10**	**0.00**		
Apr		0.50	58.70	76.30	82.40	86.00	88.60	90.20	91.30	92.20	92.50	90.40	80.70	70.50	55.60		
May		58.00	77.10	83.50	86.80	89.30	91.30	92.80	94.10	95.40	97.20	93.80	87.30	80.00	71.00	34.50	
Jun	0.00	67.60	80.20	85.10	87.90	90.20	92.00	93.60	94.70	96.20	98.30	95.10	89.60	83.60	75.50	56.40	0.00
Jul		52.50	75.90	83.00	86.50	89.10	91.10	92.80	93.90	95.40	97.30	94.70	88.60	81.60	73.10	47.80	
Aug			57.10	75.90	82.30	85.80	88.50	90.20	91.40	92.40	92.50	91.10	81.60	71.30	58.30	0.00	
Sep			1.60	56.20	73.40	79.50	83.60	84.50	82.20	80.00	77.30	75.30	52.80	48.40			
Oct				3.10	52.20	67.00	71.50	65.70	57.90	49.60	38.30	20.10	11.70				
Nov					2.80	40.70	48.90	39.80	26.50	9.70	1.90	2.70					
Dec						9.50	38.40	32.60	14.70	0.80	0.00	0.00					

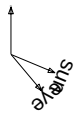
Proposed:

Month	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00
Jan						0.00	0.00	0.00	5.10	0.00	0.00	0.00	0.00				
Feb					0.00	0.00	0.00	22.50	0.00	0.00	0.00	37.60	8.50	0.00			
Mar				**0.00**	**10.70**	**35.00**	**0.00**	**0.00**	**24.20**	**71.00**	**0.00**	**78.40**	**42.10**	**0.80**	**0.00**		
Apr		0.00	1.00	27.30	21.40	58.50	38.10	72.20	12.40	8.60	91.20	0.00	68.90	0.00	0.00		
May		0.00	29.80	0.00	0.00	0.00	0.00	0.00	0.00	8.80	0.00	16.00	32.50	14.30	0.00	0.00	
Jun	0.00	0.00	26.60	0.00	14.30	0.00	76.90	5.30	87.30	0.00	25.30	90.70	24.70	0.00	27.90	0.00	0.00
Jul		0.00	0.00	45.60	57.70	67.00	0.00	80.20	0.00	90.80	0.00	48.00	11.80	0.00	0.00	0.00	
Aug			0.40	0.00	44.90	11.30	65.60	0.00	0.00	38.50	0.00	5.10	30.20	0.00	0.00	0.00	
Sep			0.00	0.00	0.00	0.00	47.30	16.30	0.00	0.00	0.00	69.20	16.20	0.00			
Oct				0.00	0.00	5.20	18.80	21.10	0.00	0.00	0.00	3.60	0.00				
Nov					0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00					
Dec						0.00	0.00	0.00	0.00	0.00	0.00	0.00					

Overshadowing assessment % of the amenity area receiving direct sunlight on 21st March		
Existing	Proposed	Ratio
65.31	21.85	0.34

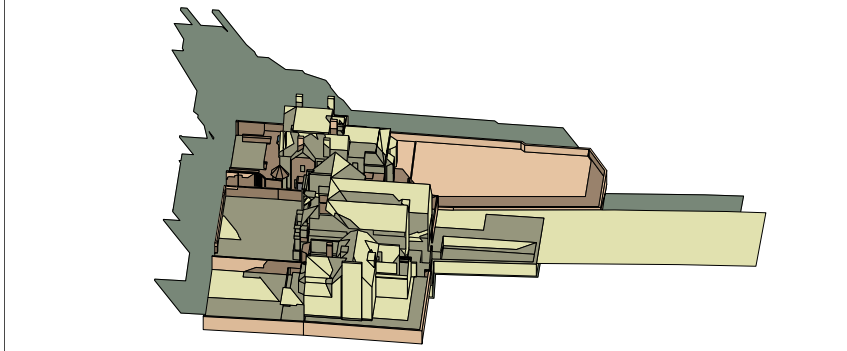
Suncast image:
View time = 21 Mar 08:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 112.79 alt = 16.62
Eye: azi = 140.00 alt = 40.00

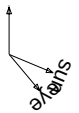




Existing

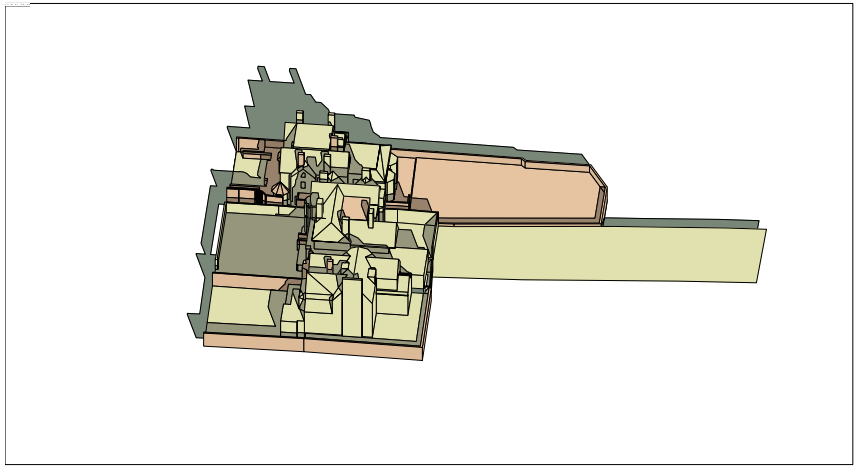
Suncast image:
View time = 21 Mar 08:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 112.79 alt = 16.62
Eye: azi = 140.00 alt = 40.00





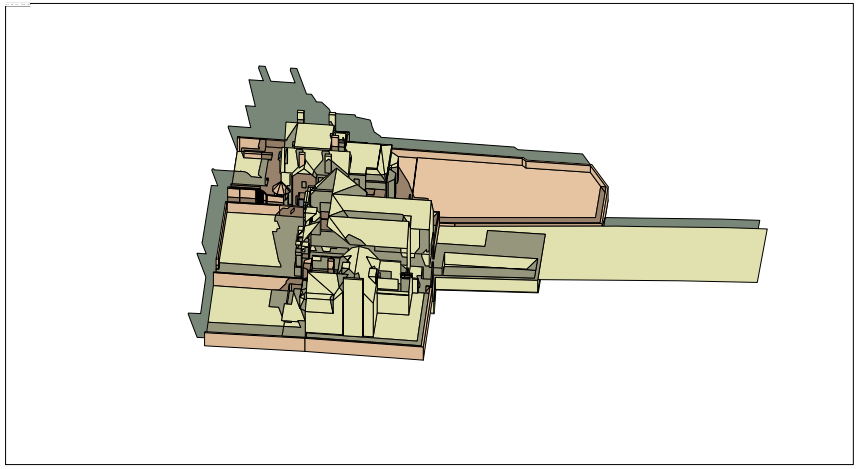
Proposed

Suncast image:
View time = 21 Mar 09:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 126.30 alt = 24.73
Eye: azi = 140.00 alt = 40.00



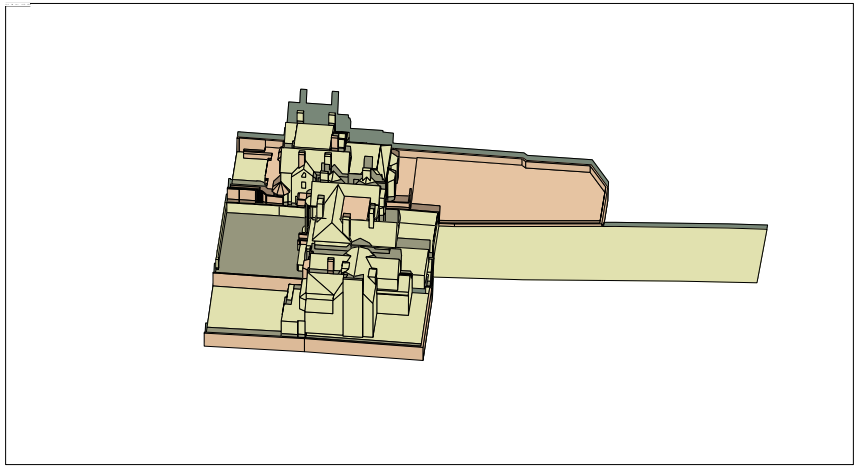
Existing

Suncast image:
View time = 21 Mar 09:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 126.30 alt = 24.73
Eye: azi = 140.00 alt = 40.00



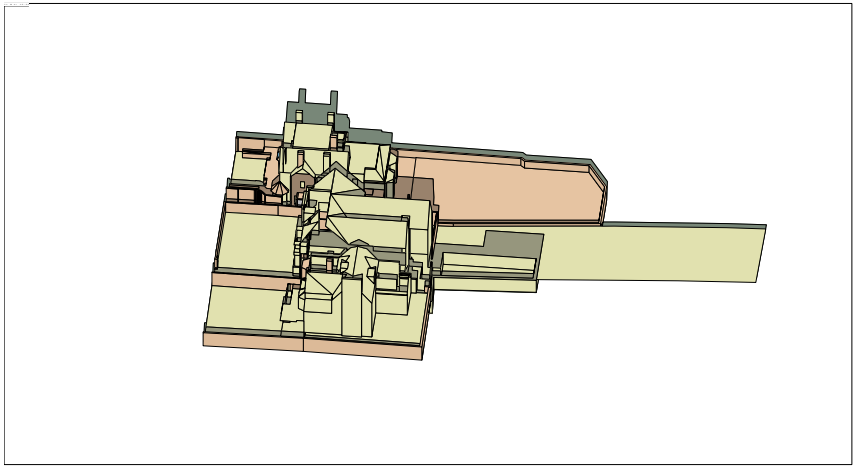
Proposed

Suncast image:
View time = 21 Mar 10:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 141.52 alt = 31.45
Eye: azi = 140.00 alt = 40.00



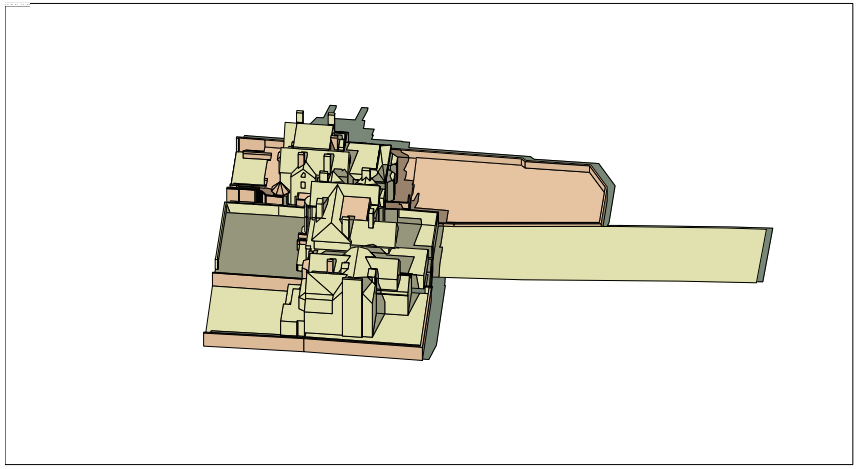
Existing

Suncast image:
View time = 21 Mar 10:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 141.52 alt = 31.45
Eye: azi = 140.00 alt = 40.00



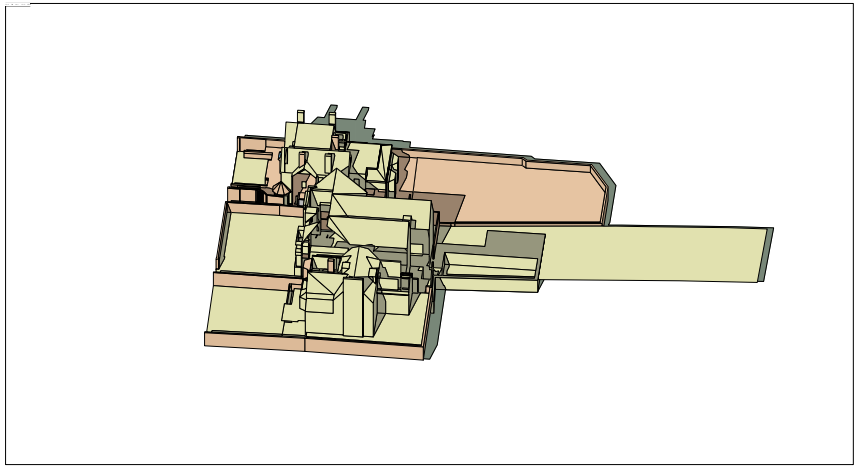
Proposed

Suncast image:
View time = 21 Mar 11:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 158.71 alt = 36.11
Eye: azi = 140.00 alt = 40.00



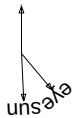
Existing

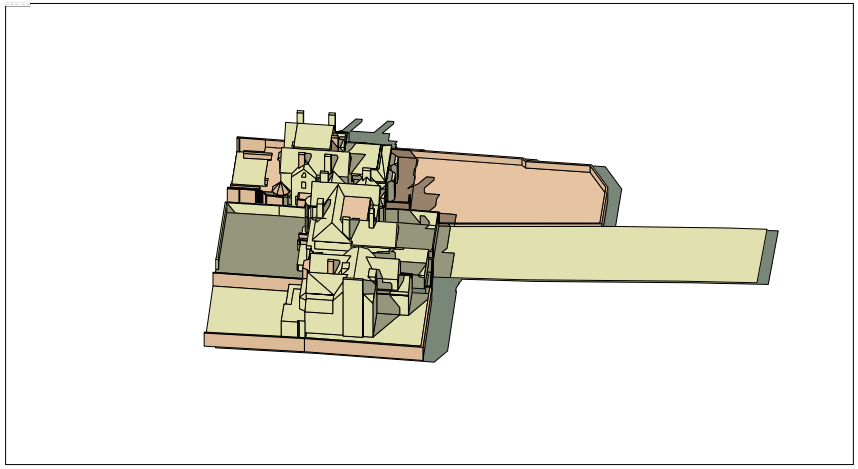
Suncast image:
View time = 21 Mar 11:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 158.71 alt = 36.11
Eye: azi = 140.00 alt = 40.00



Proposed

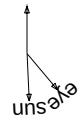
Suncast image:
View time = 21 Mar 12:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 177.38 alt = 38.04
Eye: azi = 140.00 alt = 40.00

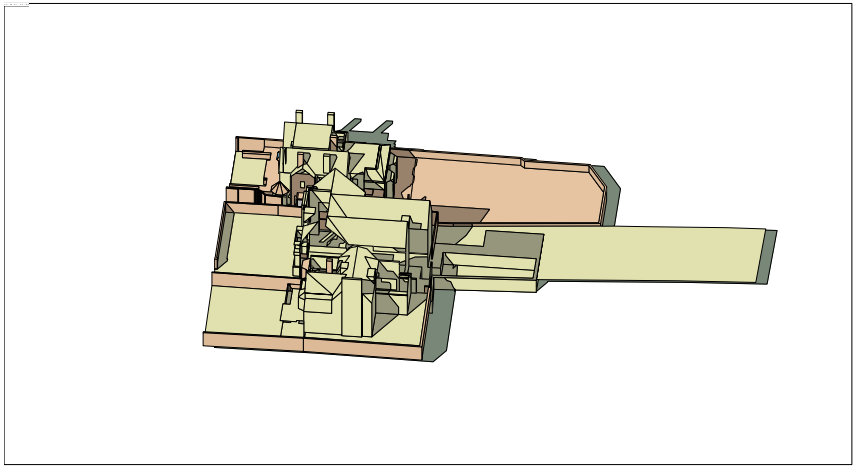




Existing

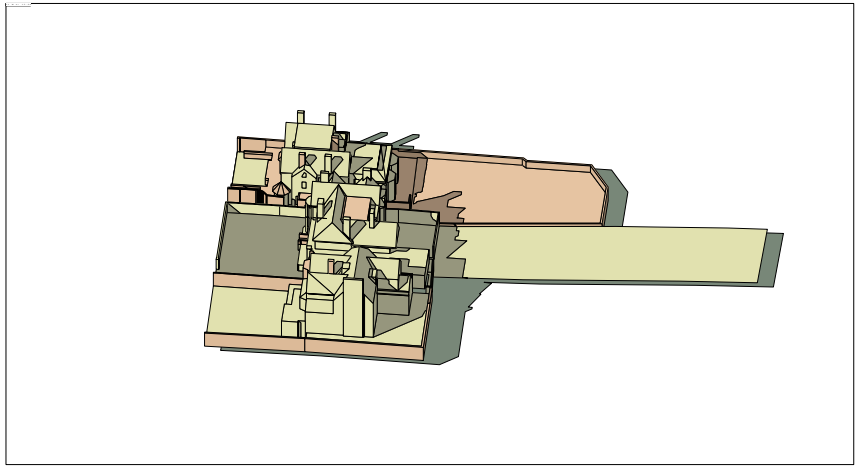
Suncast image:
View time = 21 Mar 12:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 177.38 alt = 38.04
Eye: azi = 140.00 alt = 40.00





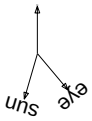
Proposed

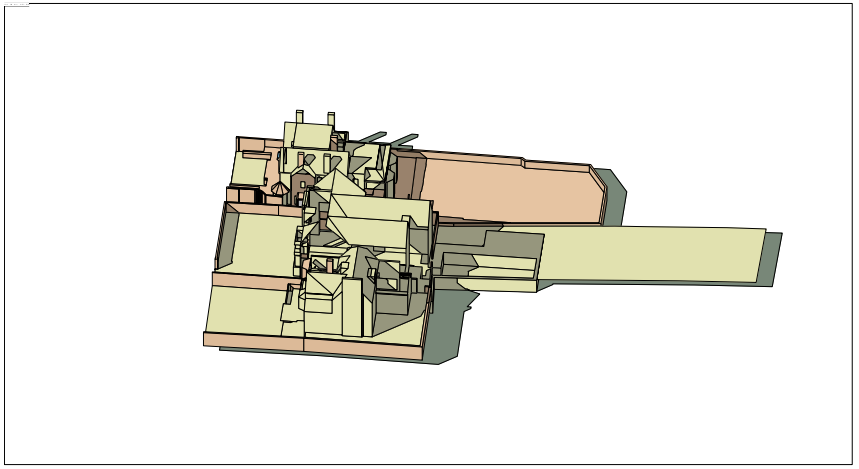
Suncast image:
View time = 21 Mar 13:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 196.27 alt = 36.93
Eye: azi = 140.00 alt = 40.00



Existing

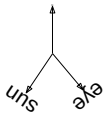
Suncast image:
View time = 21 Mar 13:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 196.27 alt = 36.93
Eye: azi = 140.00 alt = 40.00

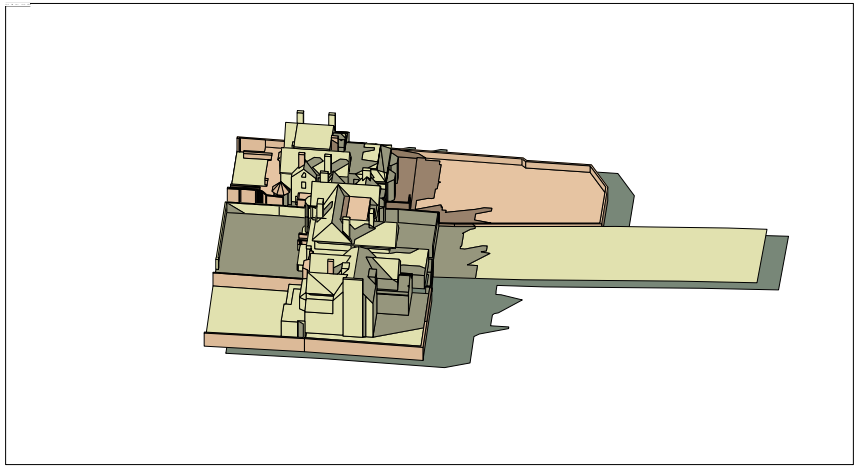




Proposed

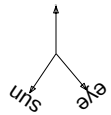
Suncast image:
View time = 21 Mar 14:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 213.95 alt = 32.97
Eye: azi = 140.00 alt = 40.00

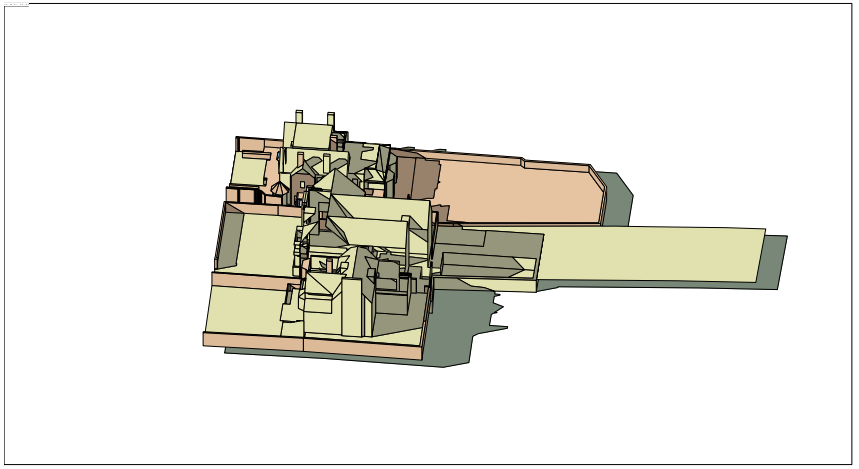




Existing

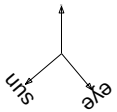
Suncast image:
View time = 21 Mar 14:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 213.95 alt = 32.97
Eye: azi = 140.00 alt = 40.00

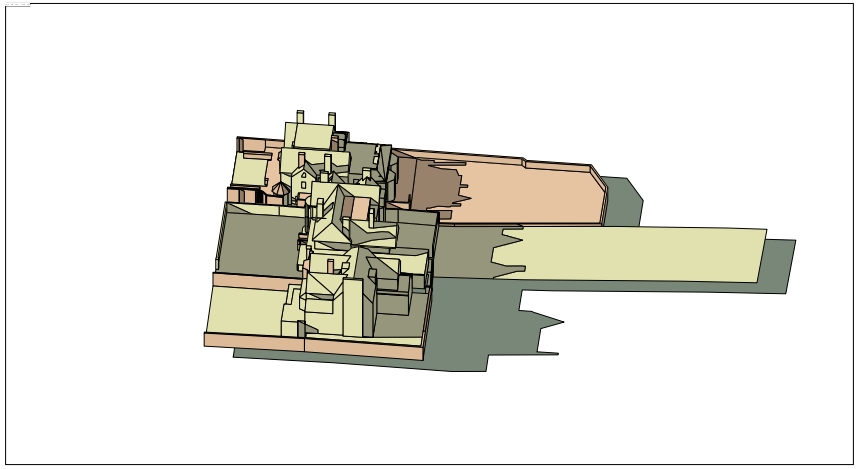




Proposed

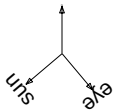
Suncast image:
View time = 21 Mar 15:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 229.71 alt = 26.74
Eye: azi = 140.00 alt = 40.00

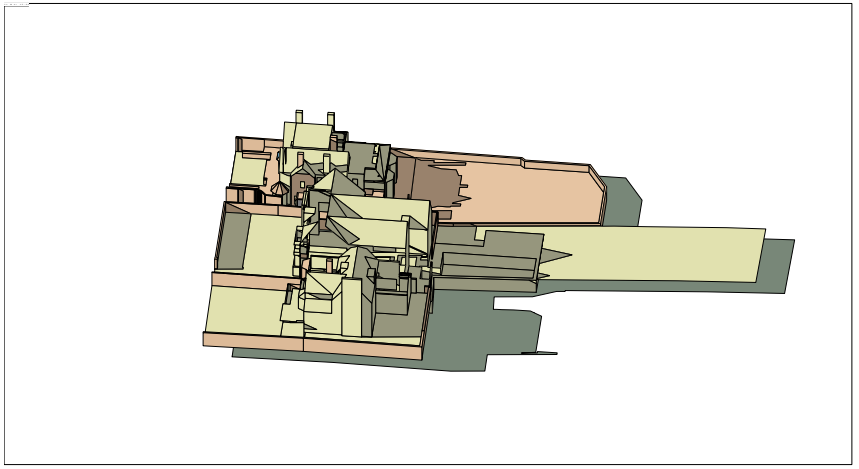




Existing

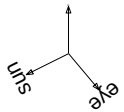
Suncast image:
View time = 21 Mar 15:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 229.71 alt = 26.74
Eye: azi = 140.00 alt = 40.00

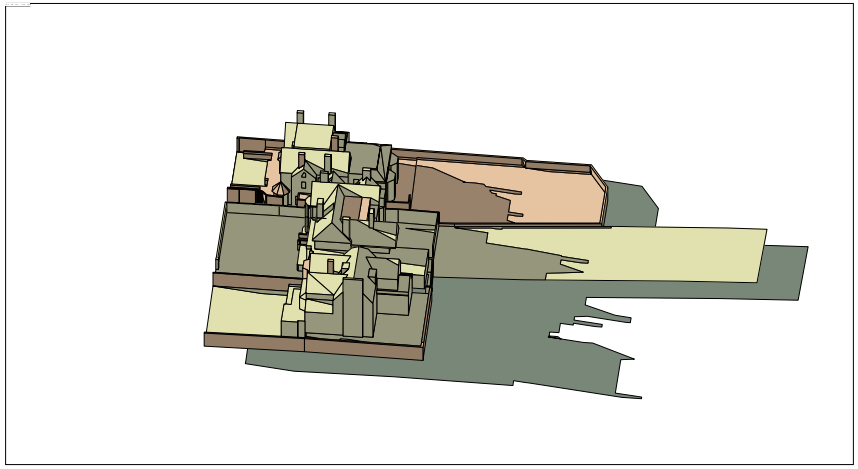




Proposed

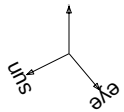
Suncast image:
View time = 21 Mar 16:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 243.64 alt = 18.95
Eye: azi = 140.00 alt = 40.00

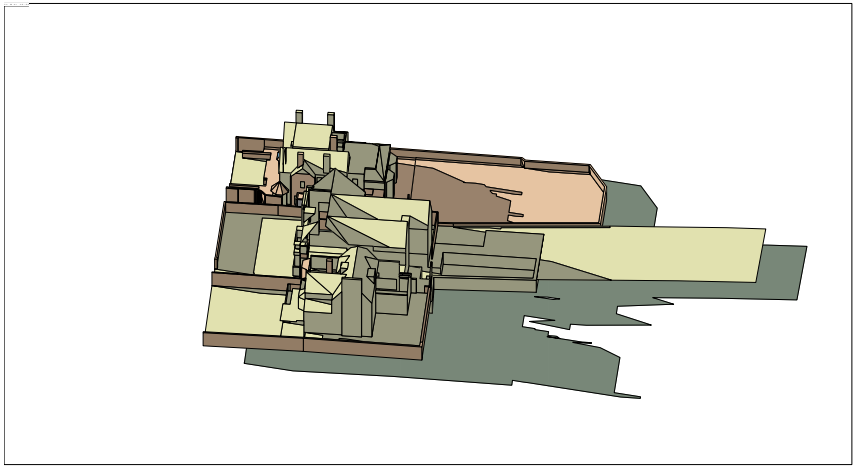




Existing

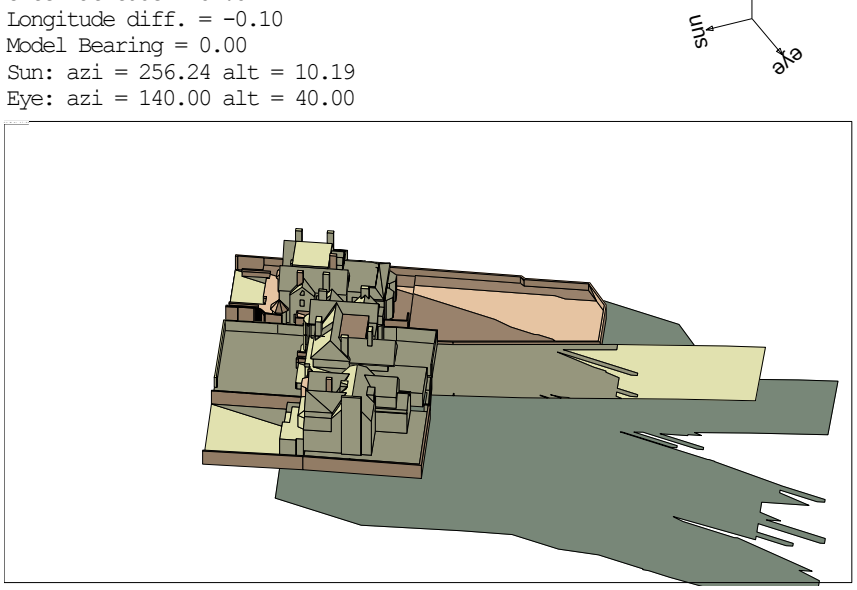
Suncast image:
View time = 21 Mar 16:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 243.64 alt = 18.95
Eye: azi = 140.00 alt = 40.00





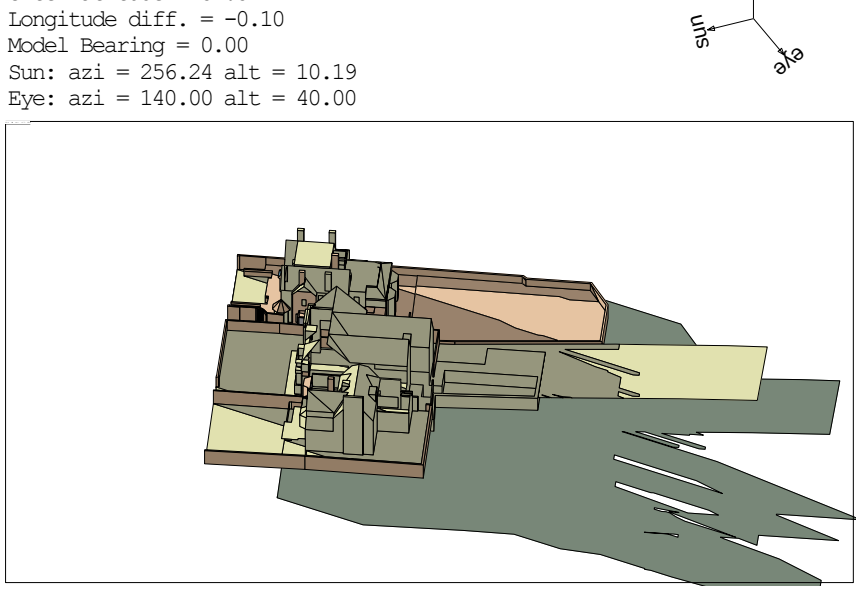
Proposed

Suncast image:
View time = 21 Mar 17:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 256.24 alt = 10.19
Eye: azi = 140.00 alt = 40.00



Existing

Suncast image:
View time = 21 Mar 17:00
Site Latitude = 51.52
Longitude diff. = -0.10
Model Bearing = 0.00
Sun: azi = 256.24 alt = 10.19
Eye: azi = 140.00 alt = 40.00



Proposed