SYNTEGRA
CONSULTING

Daylight, Sunlight & Overshadowing Report

RevB

Informer House,

2 High Street,

Teddington,

TW11 8EW

May. 2016

Ref: 16-2280

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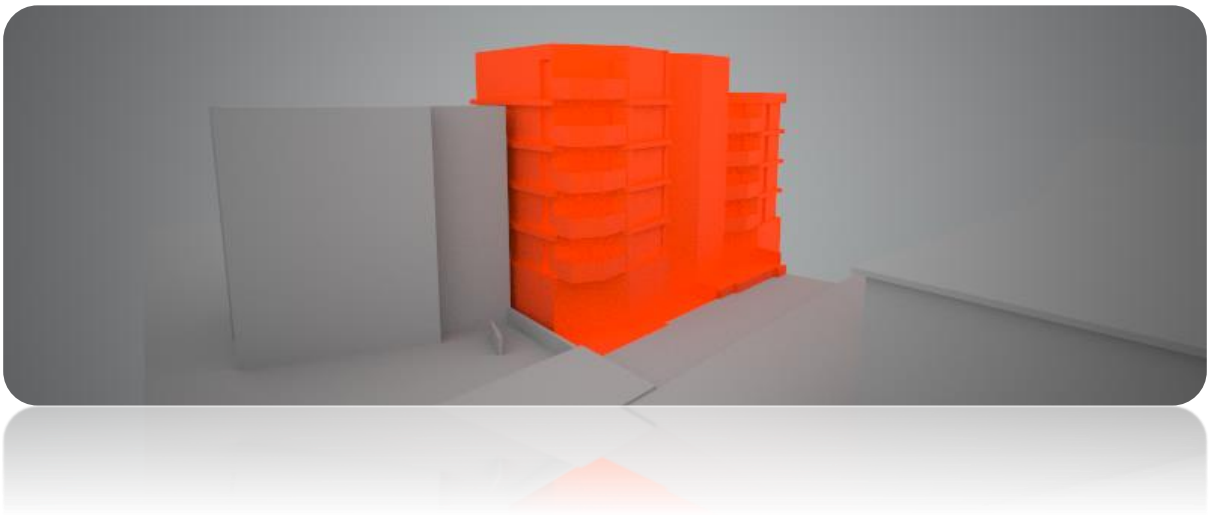
DATE	PRODUCED BY	CHECKED BY	APPROVED BY
24/05/2016	DC	DC	DC



Revision	*REVA*	*REVB*
Date	12.11.2015	24.05.2016
Prepared by	YC	DC
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Authorised by	DC	DC

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The methodology adopted and the sources of information used by SC in providing its services are outlined in this report. The work described in this report was undertaken in **May 2016** and is based on the conditions encountered and the information available during the said period of time. The scope of this report and the services are accordingly factually limited by these circumstances.

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Forecast cost estimates do not include such costs associated with any negotiations, appeals or other non-technical actions associated with the agreement on measures to meet the requirements of the authorities, nor are potential business loss and interruption costs considered that may be incurred as part of any technical measures.

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1. Executive summary

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

The results of the assessment show that in terms of:

- Daylight, this report demonstrates that the levels of sunlight at the surrounding buildings **at 10-11 Enterprise Way, at 3 High Street and at 1 to 9 Park House** are adequate.

  BRE criteria met: ☑

- Sunlight, this report demonstrates that the levels of sunlight at the surrounding buildings **at 10-11 Enterprise Way, at 3 High Street and at 1 to 9 Park House** are adequate.

  BRE criteria met: ☑

- Overshadowing, this report demonstrates that the existing balcony located **at 1 to 9 Park House** will not be adversely impacted by the proposed development.

  BRE criteria met: ☑

On balance, it can be concluded that the surrounding buildings **at 10-11 Enterprise Way**, **at 3 High Street and at 1 to 9 Park House** will not be affected by the proposed scheme.

2. Introduction

This report has been prepared to support the planning application for the proposed development at **Informer House, 2 High Street, Teddington, TW11 8EW**. 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 10-11 Enterprise Way, at 3 High Street and at 1 to 9 Park House 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 **Wimshurst Pelleriti** on the **20th May. 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 3 High Street, at 10-11 Enterprise way and at 1 to 9 Park House**. 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/balcony has been identified on the drawings and/or site plan at 1 to 9 Park House.

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.

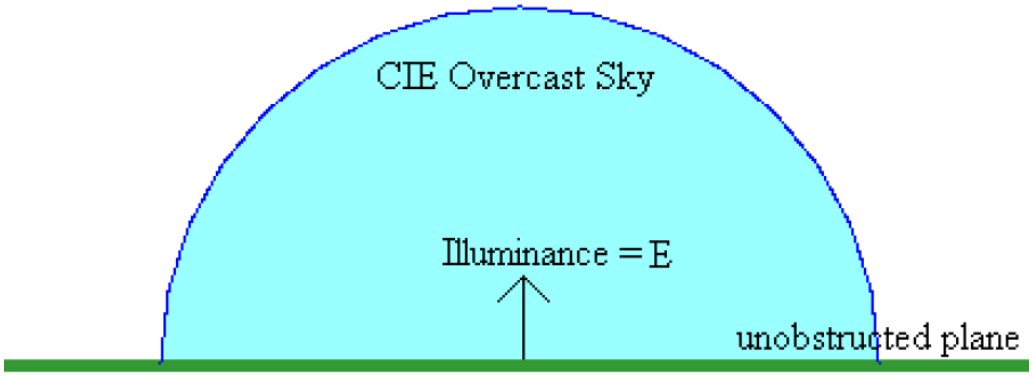
5.2. BRE Digest 209: "Site layout planning for daylight and sunlight"

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.

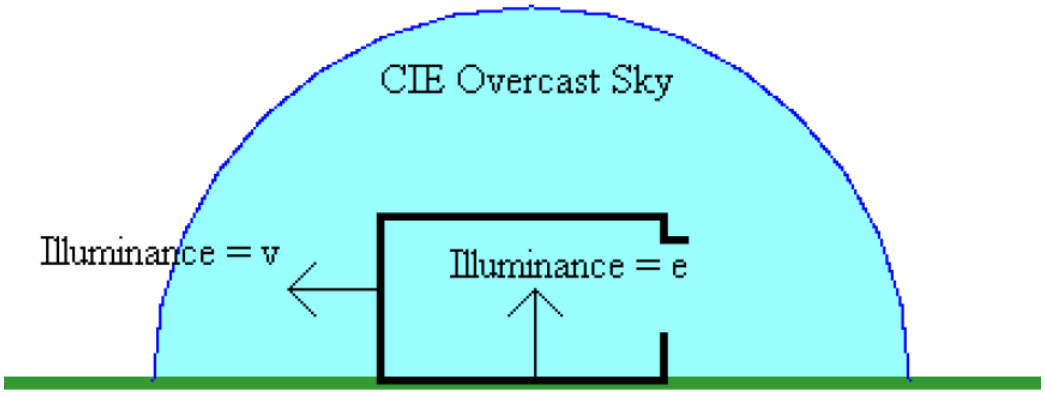
5.2.1. Daylight

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 10-11 Enterprise Way, at 1 to 9 Park House and at 3 High Street** 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 – 10 Enterprise Way - FF	17.82	12.24	0.69	Moderate adverse
S2 – 10 Enterprise Way - FF	18.17	6.91	0.38	Major adverse
S3 – 10 Enterprise Way - FF	14.84	3.89	0.26	Major adverse
S4 – 11 Enterprise Way - FF	21.87	16.62	0.76	Minor adverse
S5 – 11 Enterprise Way - FF	3.25	0.22	0.07	Major adverse
S6 – 11 Enterprise Way - FF	3.91	0.22	0.06	Major adverse
S7 – 11 Enterprise Way - GF	6.68	0.51	0.08	Major adverse
S8 – 11 Enterprise Way - FF	5.38	0.17	0.03	Major adverse
S9 – 1 to 9 Park house - GF	27.07	17.33	0.64	Moderate adverse
S10 – 1 to 9 Park house - GF	25.71	15.88	0.62	Moderate adverse
S11 – 1 to 9 Park house - GF	21.88	13.62	0.62	Moderate adverse
S12 – 1 to 9 Park house - FF	35.02	15.55	0.44	Major adverse
S13 – 1 to 9 Park house - 2F	39.49	16.37	0.41	Major adverse
S14 - 1 to 9 Park house - 3F	39.55	18.33	0.46	Major adverse
S15 – 3 High Street - GF	33.62	25.22	0.75	Minor 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, the surfaces will be adversely impacted by the proposed development.

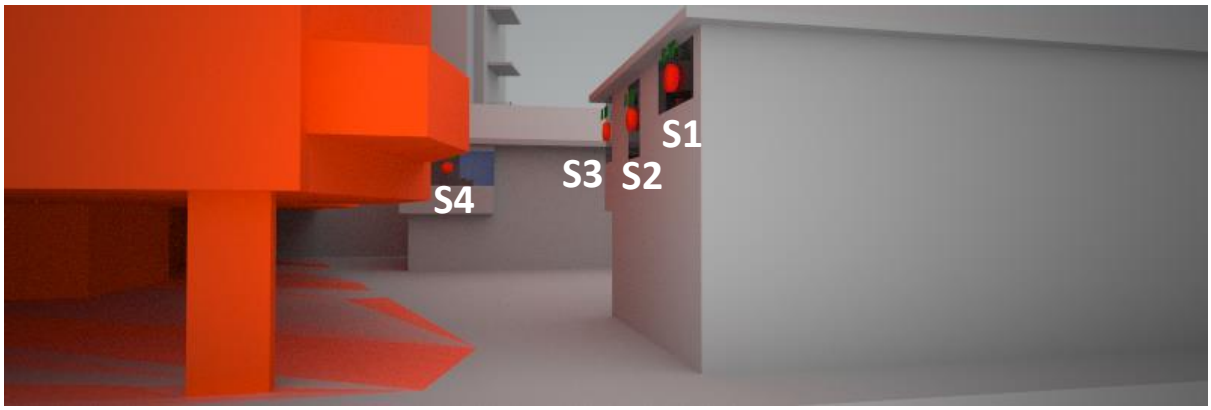
10-11 Enterprise way

The majority of the windows will experience more than a 20% loss in existing VSC values between 3.25% and 21.87%, the reduction with existing scheme will be approximately between 19% and 88%. Therefore under this circumstance it is not surprising to see proposed VSC values under the target of 27%, where the existing levels of daylight are already poor and do not meet the BRE criteria. Therefore any changes in the skyline will adversely impact these windows.

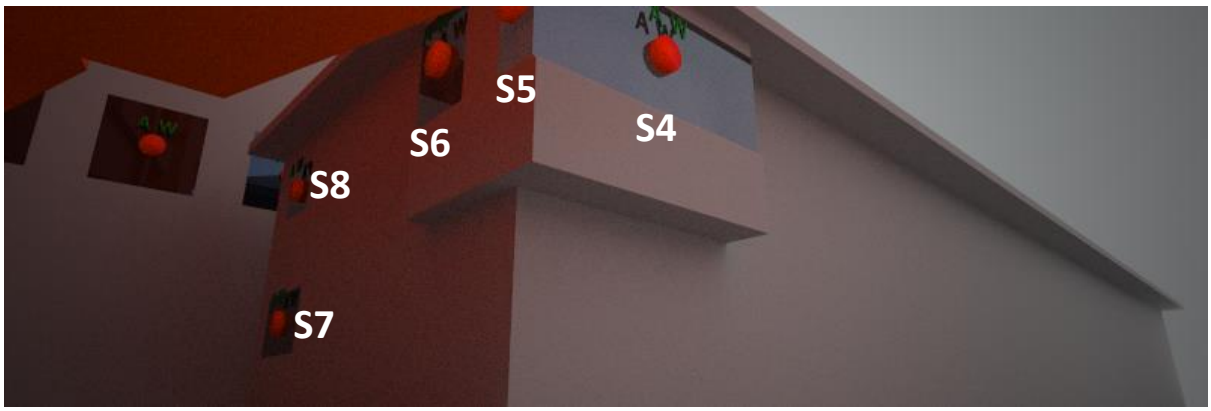
As mentioned in the BRE guide *"The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed. The guidelines may 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 the above statement, the windows located at 10-11 Enterprise way are not been considered as they appear to be non-domestic units. It is assumed 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.

10-11 Enterprise Way are commercial / light industrial premises with the upper floor used as offices (S1 to S6 including S8) with S7 used for storage. Therefore the surfaces S1 to S8 can be considered negligible for the assessment as they are to non-habitable rooms.



North West Elevation – 10 Enterprise Way

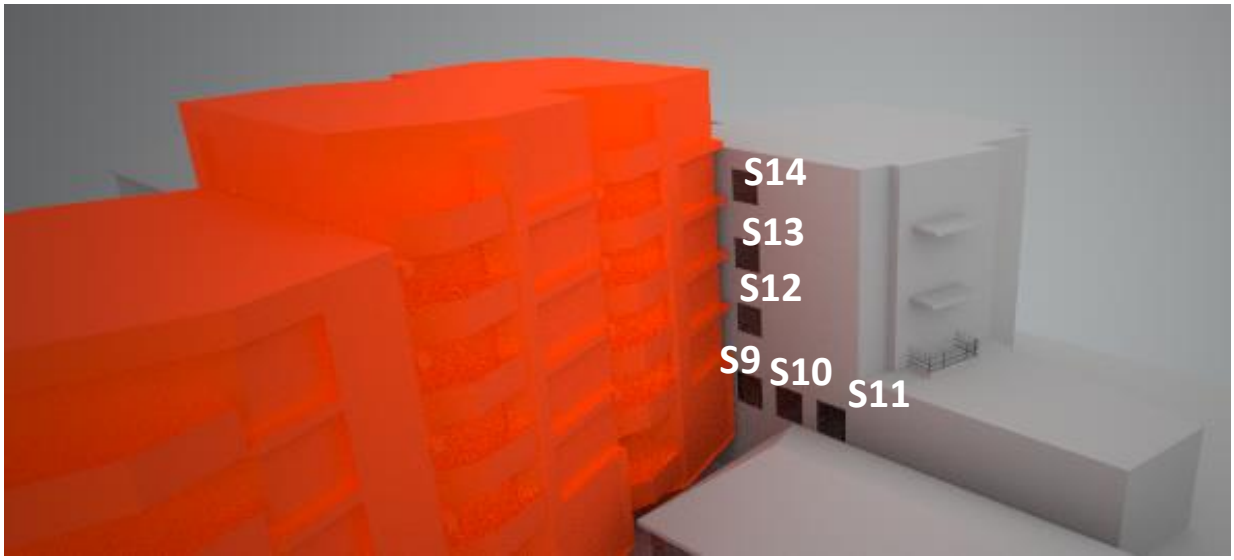


North West Elevation – 11 Enterprise Way

1 to 9 Park House

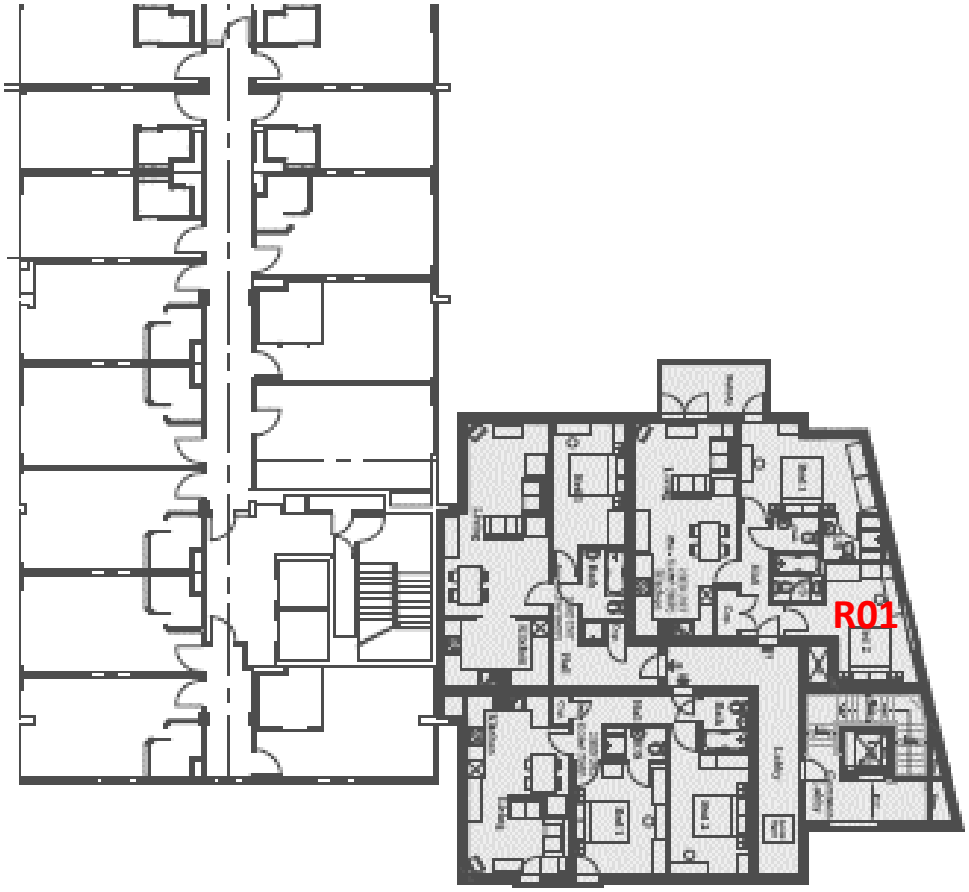
5 windows out of 15 will experience more than a 20% loss in proposed VSC values due to their location facing the new extension (proposed development). The existing windows with proposed scheme in place will achieve VSC values between 13.62% and 18.33% with a daylight reduction from existing scheme between 32%-49% (higher than 20%).
The reference document for this analysis, BRE Digest 209, gives the methodology for undertaking the calculations and also provides benchmarks figures of the acceptable reduction in the daylight on existing properties which might be affect by development.
Specifically, the guidance gives figures for the Vertical Sky Component as percentage reductions. There are also prescribed values for the ideal average daylight factor for various types of rooms and various uses. Although no percentage reduction for ADF is given in the BRE guidance, BS8206-2 gives minimum values of ADF for kitchens (2.0%), for living/dining rooms (1.5%) and for bedrooms (1.0%).
The standard procedure in such situation is to measure the VSC first. Should this show a reduction below 80%, then the proceeds moves on to the more details calculations of ADF.

This is important, since a reduction in the VSC to less than 80% does not necessarily mean the room will be poorly lit. VSC does not consider the room that the window serves, nor how many windows serves a particular room. It also does not consider the internal finishes, glazing type of the windows, or the reflected light from nearby surfaces. ADF is much more representative of the actual illuminance that the occupants will experience.

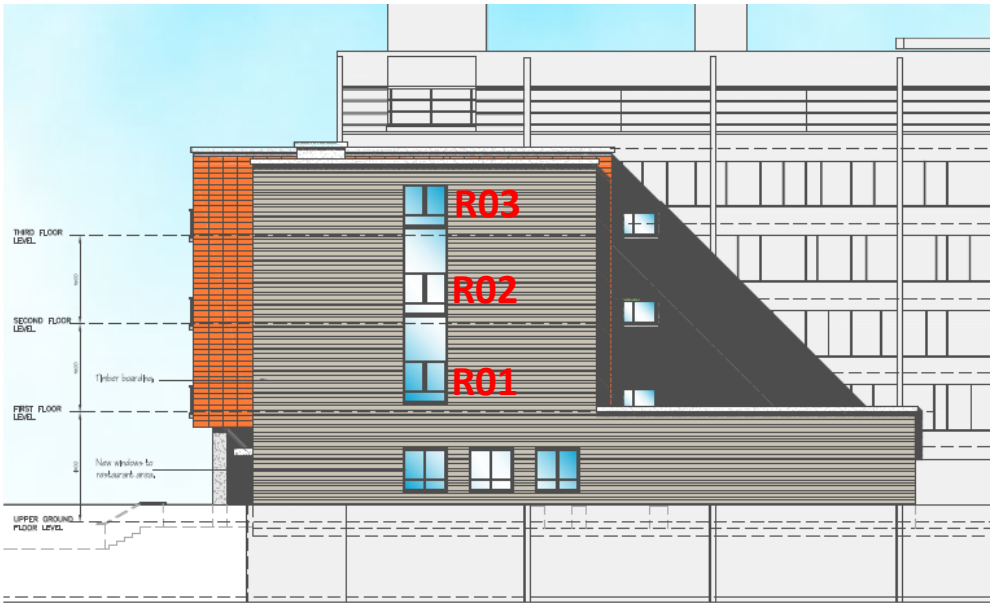


South West Elevation – 11 Enterprise Way

In this instance it is relevant to include the ADF calculations since the configuration of the VSC test is not always a reliable indicator of the actual daylight experience by the occupants of the neighbouring building. A layout for the property at 1 to 9 House Park High has been used to establish the window positions and room layouts.



Park House Planning – third floor



Park House Planning – 4 High Street – south west elevation

The ADF calculations were produced for the first/second/third floor impacted bedrooms where the VSC ratios were below 80%.

BS8206-2 gives minimum values of ADF of 2% for kitchens, 1.5% for living/dining rooms and 1% for bedrooms. The results of the ADF test are shown below. For the purpose of this test, the internal finishes are assumed as cream walls, mid grey floor and white ceiling, which is a reasonable presumption.

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

Daylight assessment (Surrounding buildings)				
Building	**Target surface**	**ADF (criteria)**	**ADF (proposed)**	**Result**
R01 – House Park – 1F	Bedroom 1	1.0%	1.7%	PASS
R02 – House Park – 2F	Bedroom 2	1.0%	1.5%	PASS
R03 – House Park – 3F	Bedroom 3	1.0%	1.9%	PASS

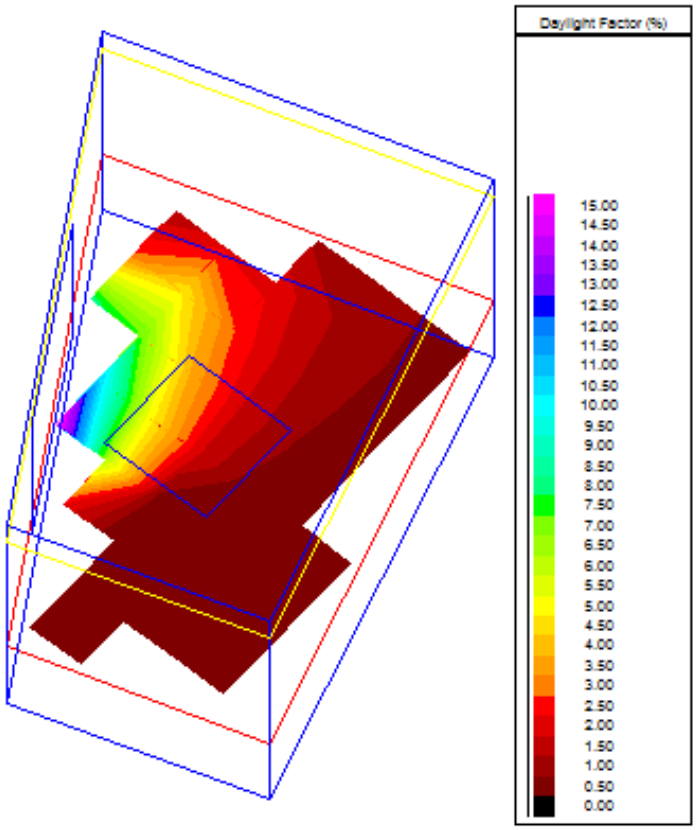
Table 3: Daylight results

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

Using approved and industry standard methodology, we have made numerical and visual analyses to show the likely effect. As we have shown, although there is an effect on the VSC with some loss below the recommended 80% threshold, this does not mean that the room will be poorly lit following the development.

→ In conclusion, when the ADF calculation is run, it is shown that the affected rooms retain daylight levels above the recommended amount from the British Standard, meaning that the impact on neighbouring living conditions will be minimal.

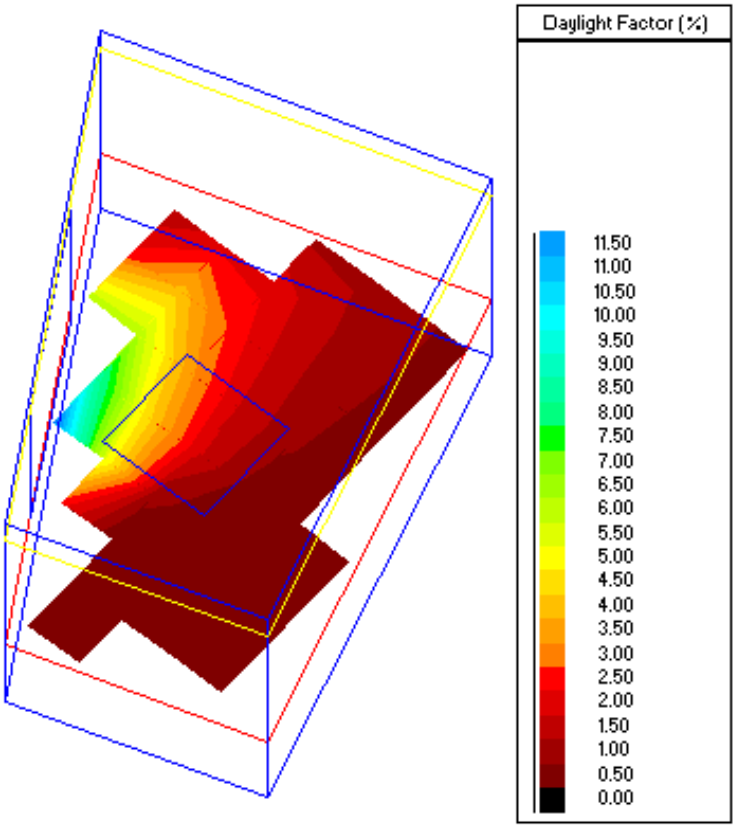
R01 – House Park – 1F



Summary results for working planes and floor

Surface	Quantity	Values			Uniformity (Min./Ave.)	Diversity (Min./Max.)
		Min.	Ave.	Max.		
Working plane 1 Reflectance=0% Transmittance=100% Grid size=0.50 m Area=11.528m² Margin=0.00 m	Daylight factor	0.0 %	1.7 %	15.4 %	0.00	0.00
	Daylight illuminance	0.07 lux	209.95 lux	1883.84 lux	0.00	0.00
	Sky view	0.00	0.64	1.00	0.00	0.00

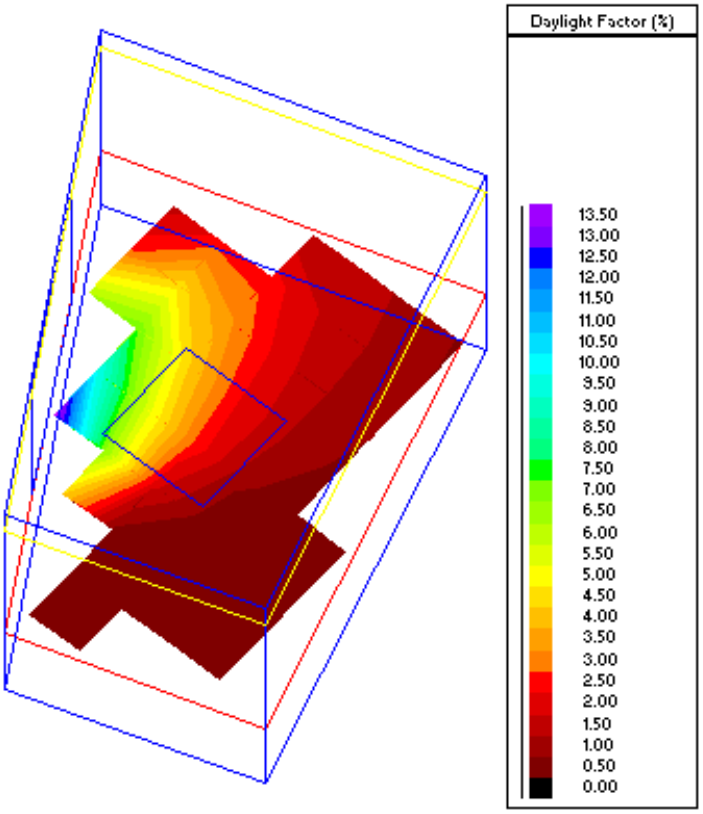
R02 – House Park – 2F



Summary results for working planes and floor

Surface	Quantity	Values			Uniformity (Min./Ave.)	Diversity (Min./Max.)
		Min.	Ave.	Max.		
Working plane 1 Reflectance=0% Transmittance=100% Grid size=0.50 m Area=11.528m² Margin=0.00 m	Daylight factor	0.0 %	1.5 %	11.9 %	0.00	0.00
	Daylight illuminance	0.48 lux	184.70 lux	1450.34 lux	0.00	0.00
	Sky view	0.00	0.66	1.00	0.00	0.00

R03 – House Park – 3F



Summary results for working planes and floor

Surface	Quantity	Values			Uniformity (Min./Ave.)	Diversity (Min./Max.)
		Min.	Ave.	Max.		
Working plane 1 Reflectance=0% Transmittance=100% Grid size=0.50 m Area=11.528m² Margin=0.00 m	Daylight factor	0.0 %	1.9 %	13.6 %	0.00	0.00
	Daylight illuminance	0.85 lux	232.90 lux	1662.31 lux	0.00	0.00
	Sky view	0.00	0.77	1.00	0.00	0.00

3 High Street

The slight loss in daylight for the surface (S15) located on the ground floor is not considered of concern as the proposed VSC level is above 20% (25.22%) and close enough the BRE criteria and it will still provide adequate levels of daylight.

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 10-11 Enterprise Way, at 1 to 9 Park House and at 3 High Street** 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 – 10 Enterprise Way - FF	N/A	N/A	N/A	N/A	N/A	N/A
S2 – 10 Enterprise Way - FF	N/A	N/A	N/A	N/A	N/A	N/A
S3 – 10 Enterprise Way - FF	N/A	N/A	N/A	N/A	N/A	N/A
S4 – 11 Enterprise Way - FF	43.0	39.0	19.0	19.0	0.91	negligible
S5 – 11 Enterprise Way - FF	N/A	N/A	N/A	N/A	N/A	N/A
S6 – 11 Enterprise Way - FF	N/A	N/A	N/A	N/A	N/A	N/A
S7 – 11 Enterprise Way - GF	N/A	N/A	N/A	N/A	N/A	N/A
S8 – 11 Enterprise Way - FF	N/A	N/A	N/A	N/A	N/A	N/A
S9 – 1 to 9 Park house - GF	54.0	47.0	19.0	19.0	0.87	negligible
S10 – 1 to 9 Park house - GF	53.0	46.0	22.0	21.0	0.87	negligible
S11 – 1 to 9 Park house - GF	49.0	41.0	21.0	19.0	0.84	negligible
S12 – 1 to 9 Park house - FF	60.0	41.0	23.0	19.0	0.68	negligible
S13 – 1 to 9 Park house - 2F	66.0	41.0	24.0	19.0	0.62	negligible
S14 - 1 to 9 Park house - 3F	66.0	46.0	24.0	21.0	0.70	negligible
S15 – 3 High Street - GF	75.0	60.0	24.0	15.0	0.80	negligible

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 will be adversely impacted by the proposed development.

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 surface is not considered of concern as the proposed total APSH is above >25% of which more than 5% is in winter months.**

→ **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 balcony is located at **1 to 9 House Park south east facing.** 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 6 below:

Overshadowing assessment from 7.30am to 5.00pm % of area receiving sunlight on 21st March				
Amenity area	**Existing (%)**	**Proposed (%)**	**Ratio**	**Result**
A1 – 1 to 9 Park House - balcony	14.11	13.34	**0.94**	**Negligible**

Table 6: 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.

As can be seen in the table above, the existing amenity area/garden/open space will not be impacted by the proposed development.

- ✓ **The slight loss in sunlight for the balcony at 1 to 9 Park House is not considered of concern as at least half of its area will receive at least two hours of sunlight on 21st March or have a ratio existing/proposed more than 0.8 and will provide adequate levels of sunlight.**

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

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

8. Conclusion

8.1. Daylight

This report demonstrates that the levels of daylight at the surrounding buildings **at 3-4 High Street** are adequate.

- ✓ 8 out of 15 windows site at **10-11 Enterprise Way** will experience more than a 20% loss in existing VSC values due to their location at ground floor level facing the proposed scheme. However, as the surfaces located at 10 and 11 Enterprise Way appear to be non-domestic units, the impact can be considered negligible.

- ✓ 6 out of 15 windows located at **1 to 9 House Park** will experience more than a 20% loss in proposed VSC values due to their location next to the new extension (proposed development).
  Using approved and industry standard methodology, we have made numerical and visual analyses to show the likely effect. As we have shown, although there is an effect on the VSC with some loss below the recommended 80% threshold, this does not mean that the room will be poorly lit following the development.
  In conclusion, when the ADF calculation is run, it is shown that the affected habitable rooms retain daylight levels above the recommended amount from the British Standard, meaning that the impact on neighbouring living conditions will be minimal.

- ✓ The slight loss in daylight for the surface at **3 High street** is not considered of concern as the proposed VSC levels is above 20% and it will provide adequate levels of daylight.

BRE criteria met: ☑

8.2. Sunlight

This report demonstrates that the levels of sunlight at the surrounding buildings **at 10-11 Enterprise Way, at 1 to 9 House Park, at 3 High Street** are adequate.

BRE criteria met: ☑

8.3. Overshadowing

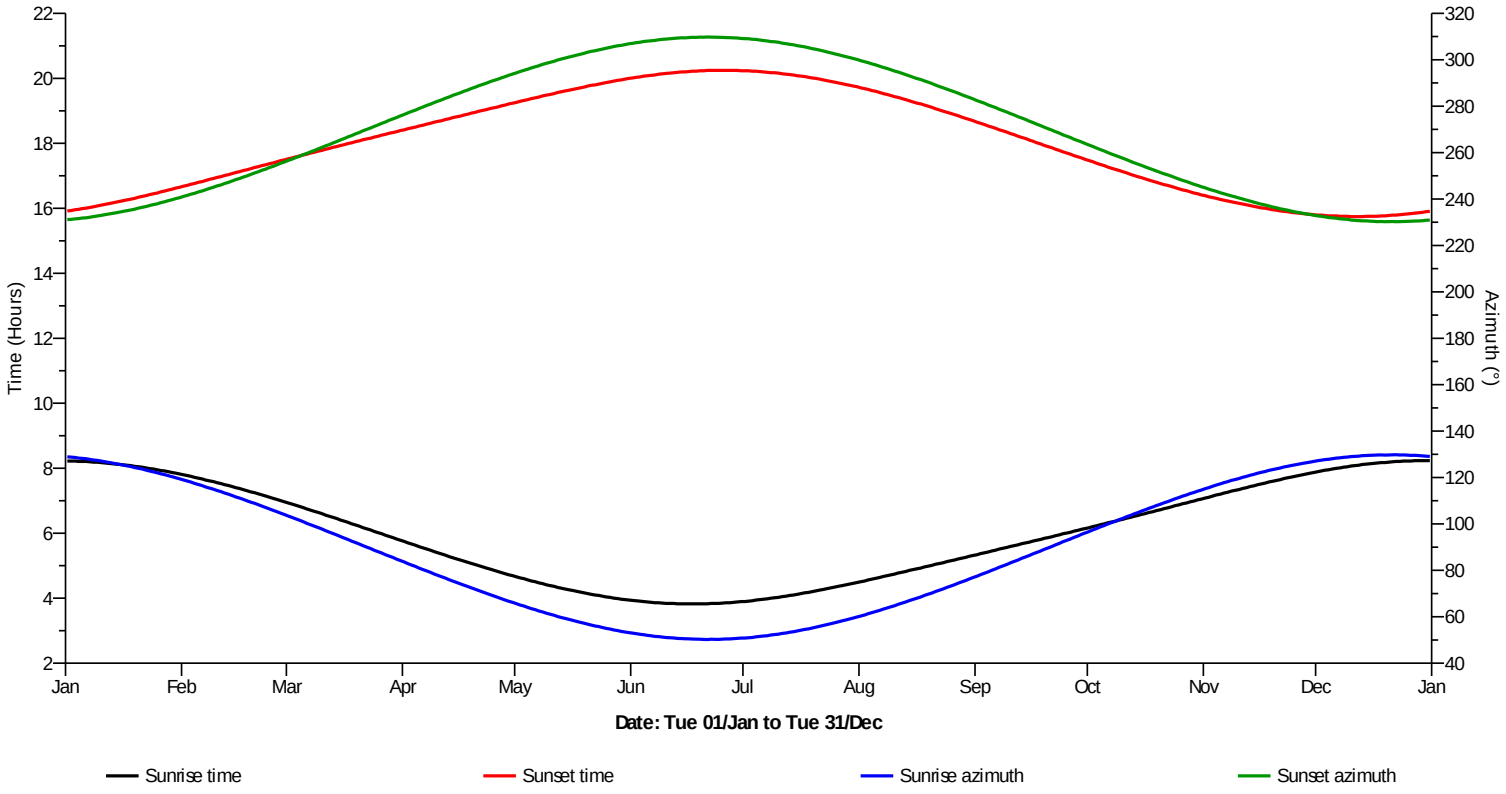
This report demonstrates that the existing balcony located **at the back of 1 to 9 House Park** will not be adversely impacted by the proposed development.

BRE criteria met: ☑

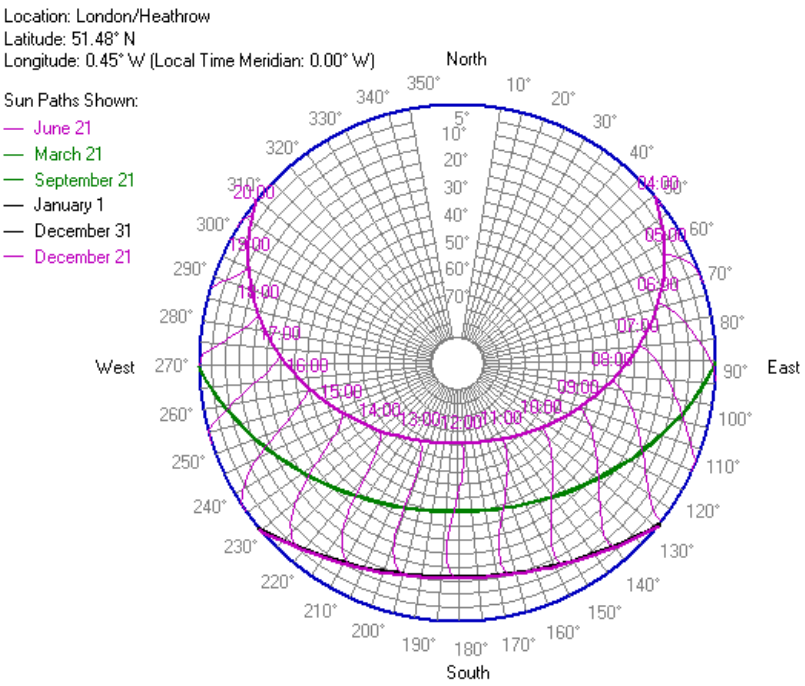
On balance, it can be concluded that the surroundings buildings **at 10-11 Enterprise Way, at 1 to 9 House Park and at 3 High Street** will not be adversely impacted by the proposed development.

9. Appendix

9.1. Sunrise and sunset time

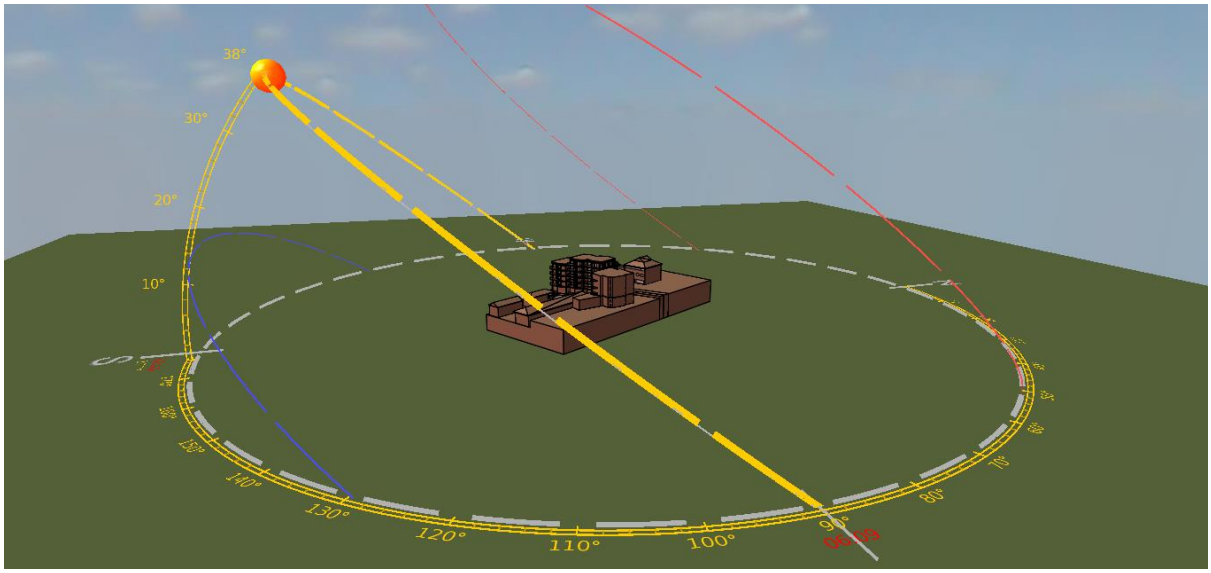


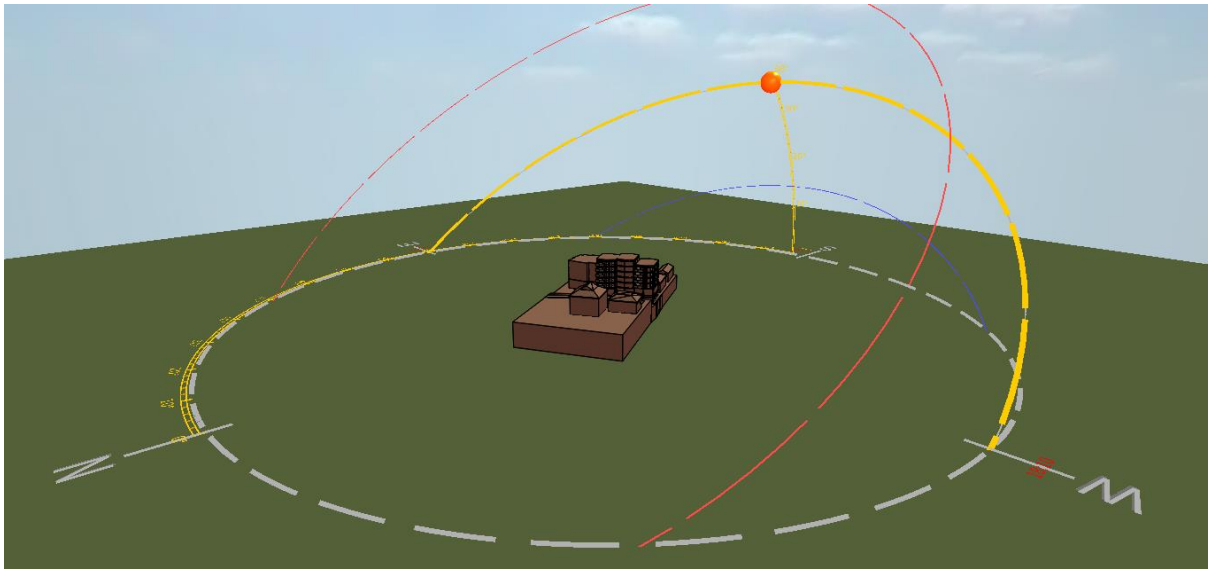
9.2. Sun path



9.3. Suntrace

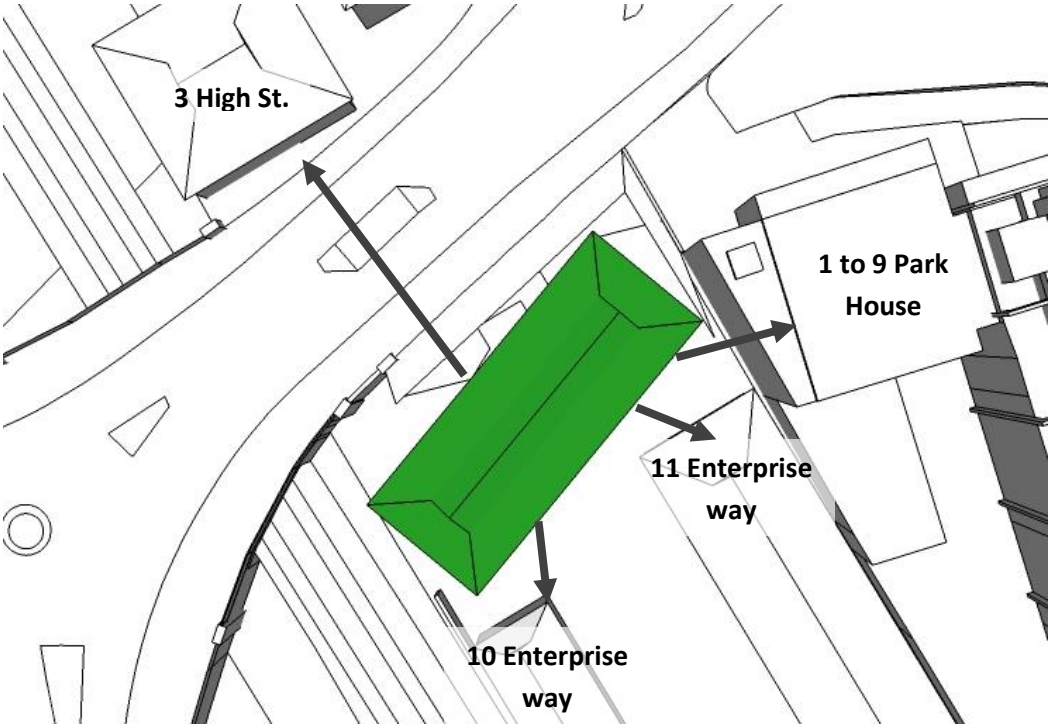
- The red line represents the sun's path during June.
- The yellow line represents the sun's path during March/September.
- The blue line represents the sun's path during December.



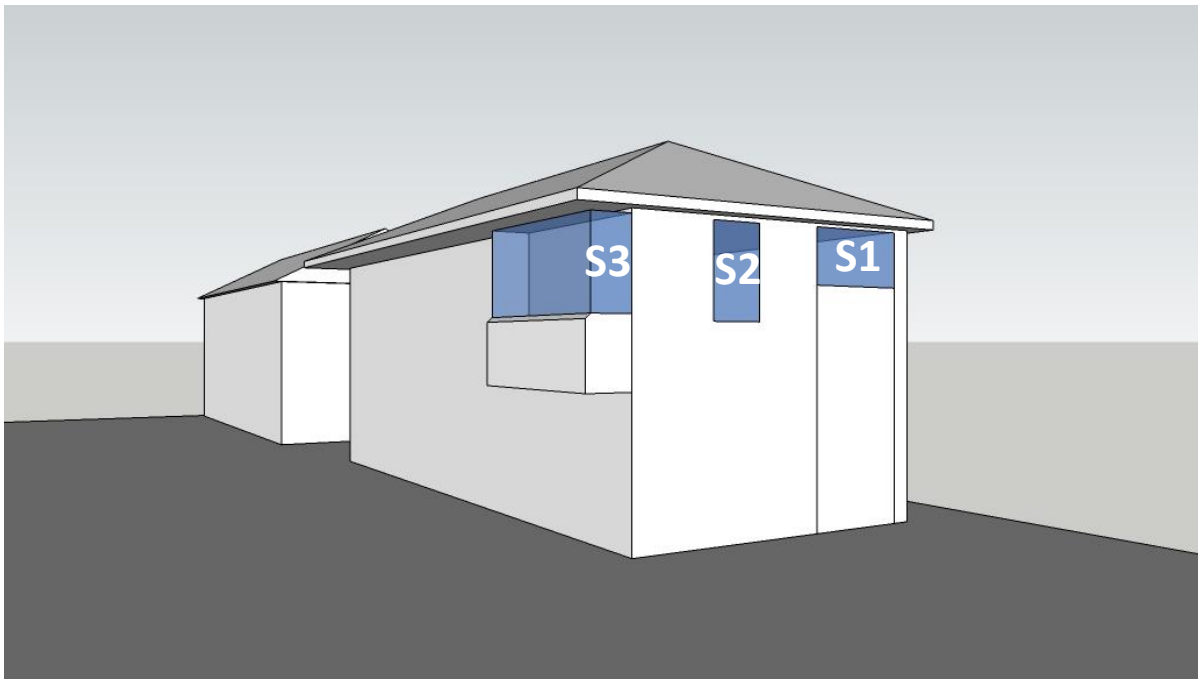


9.4. Site plan and location

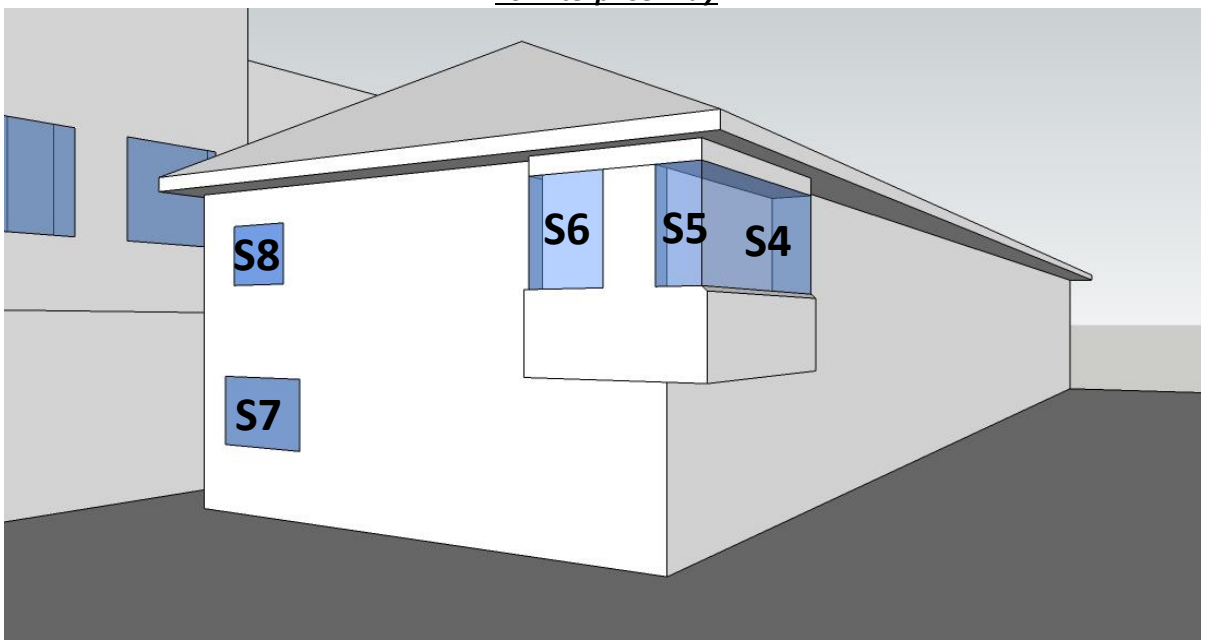
9.4.1. Existing site layout



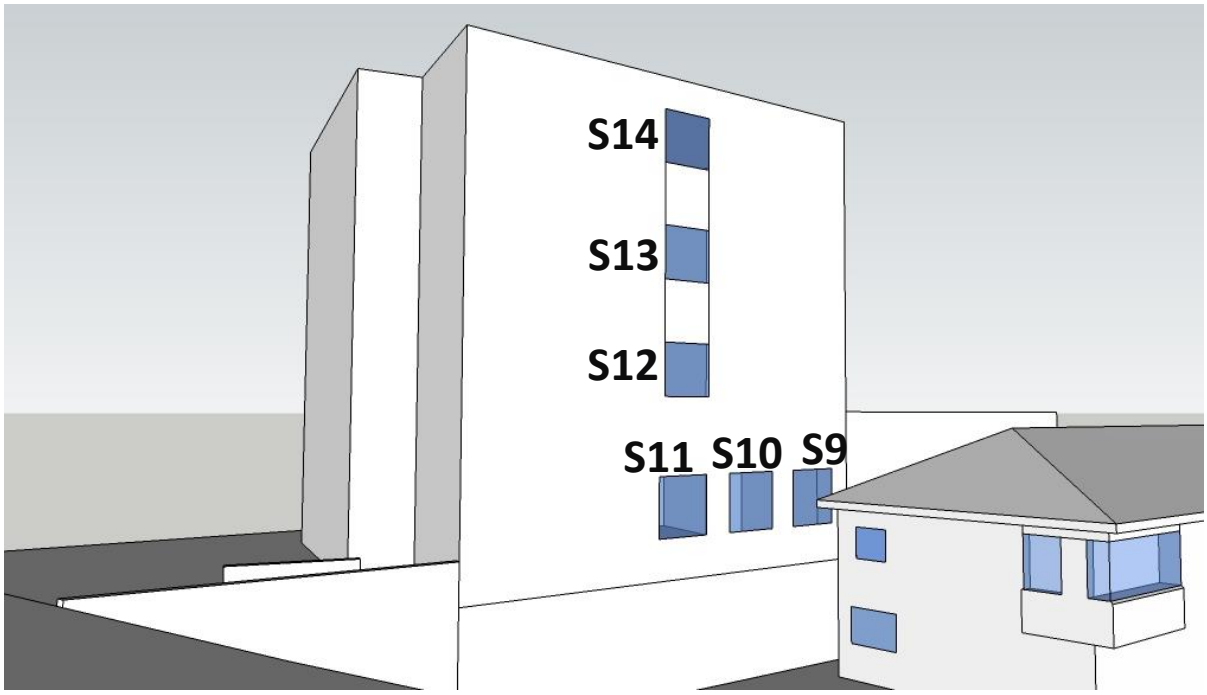
9.4.2. Proposed site layout



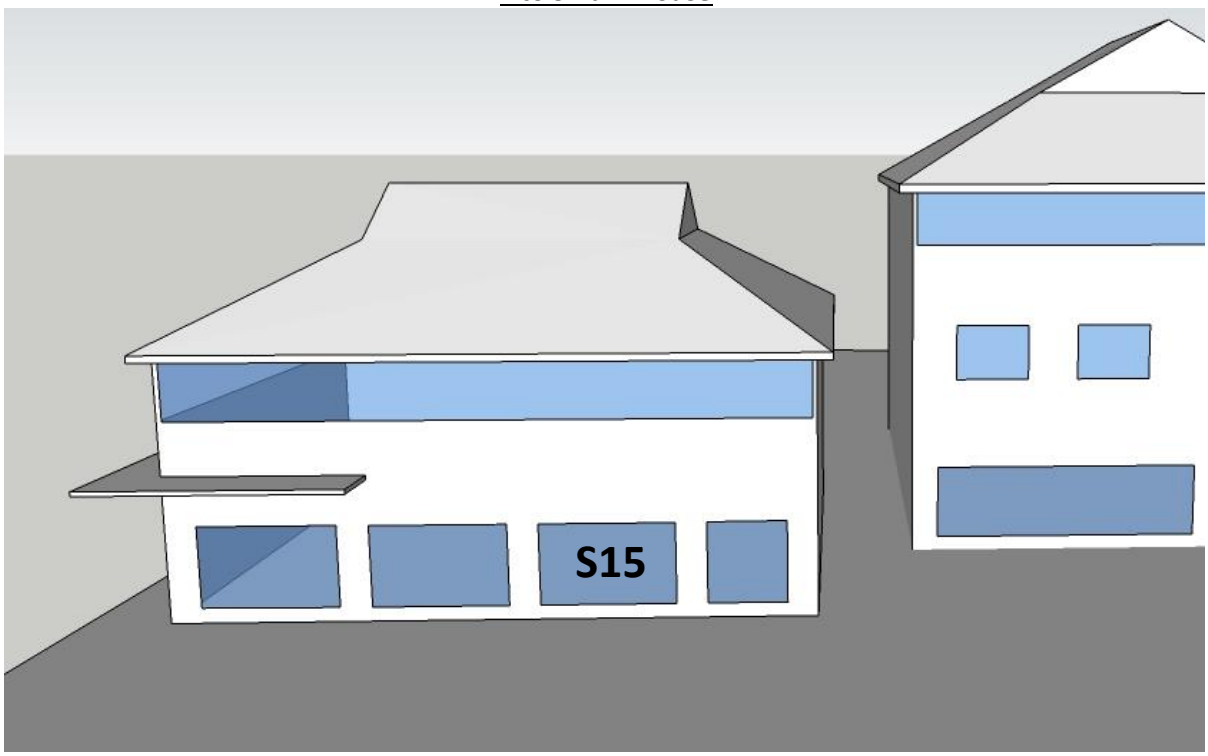
10 Enterprise Way



11 Enterprise Way



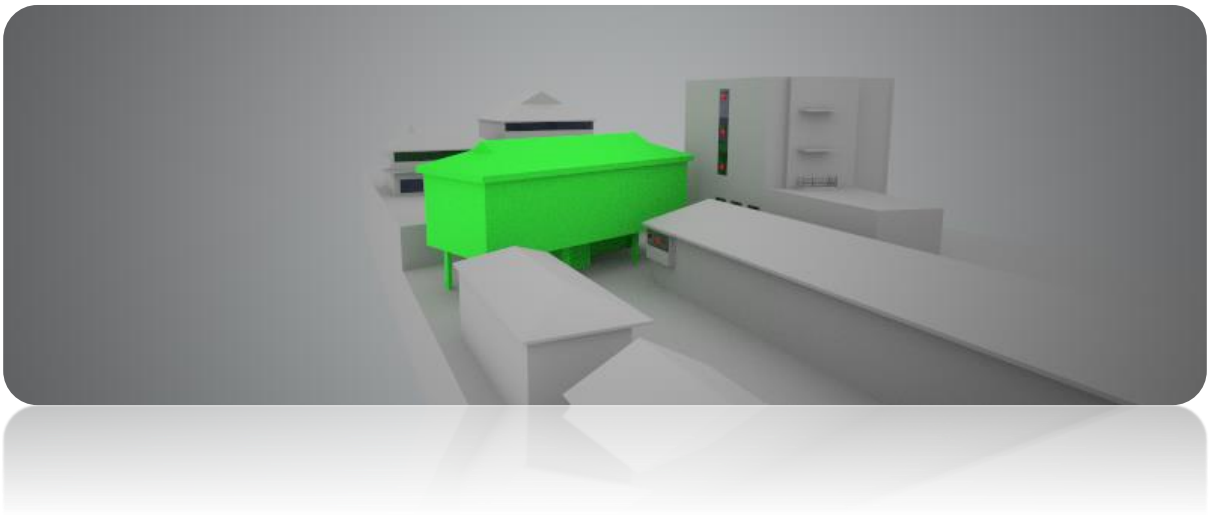
1 to 9 Park House



3 High Street

Location	Informer House, 2 High Street, Teddington, TW11 8EW
Latitude (°)	51.43 N
Longitude (°)	0.33 W

9.5. Model images

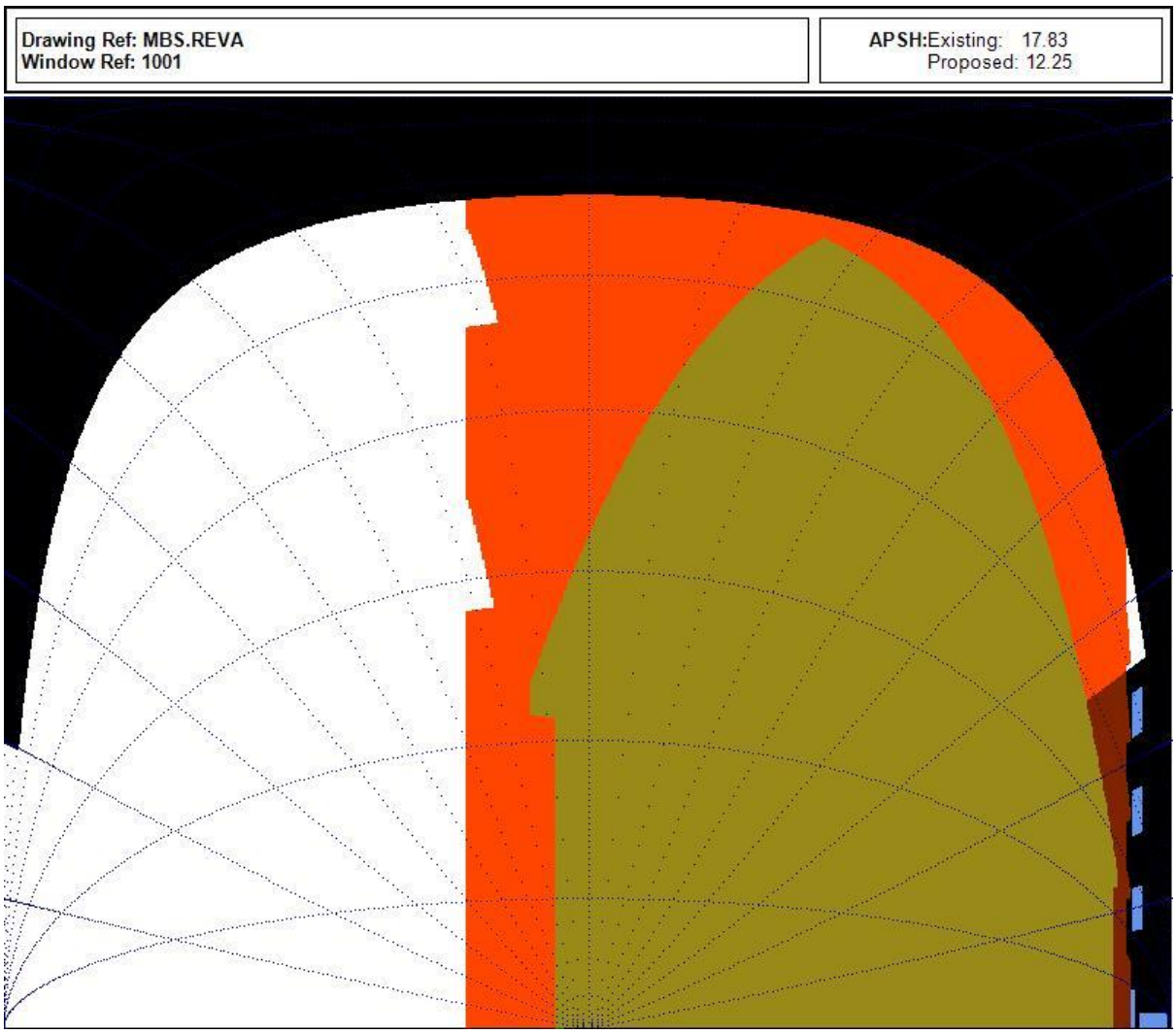


Existing scheme

Proposed scheme

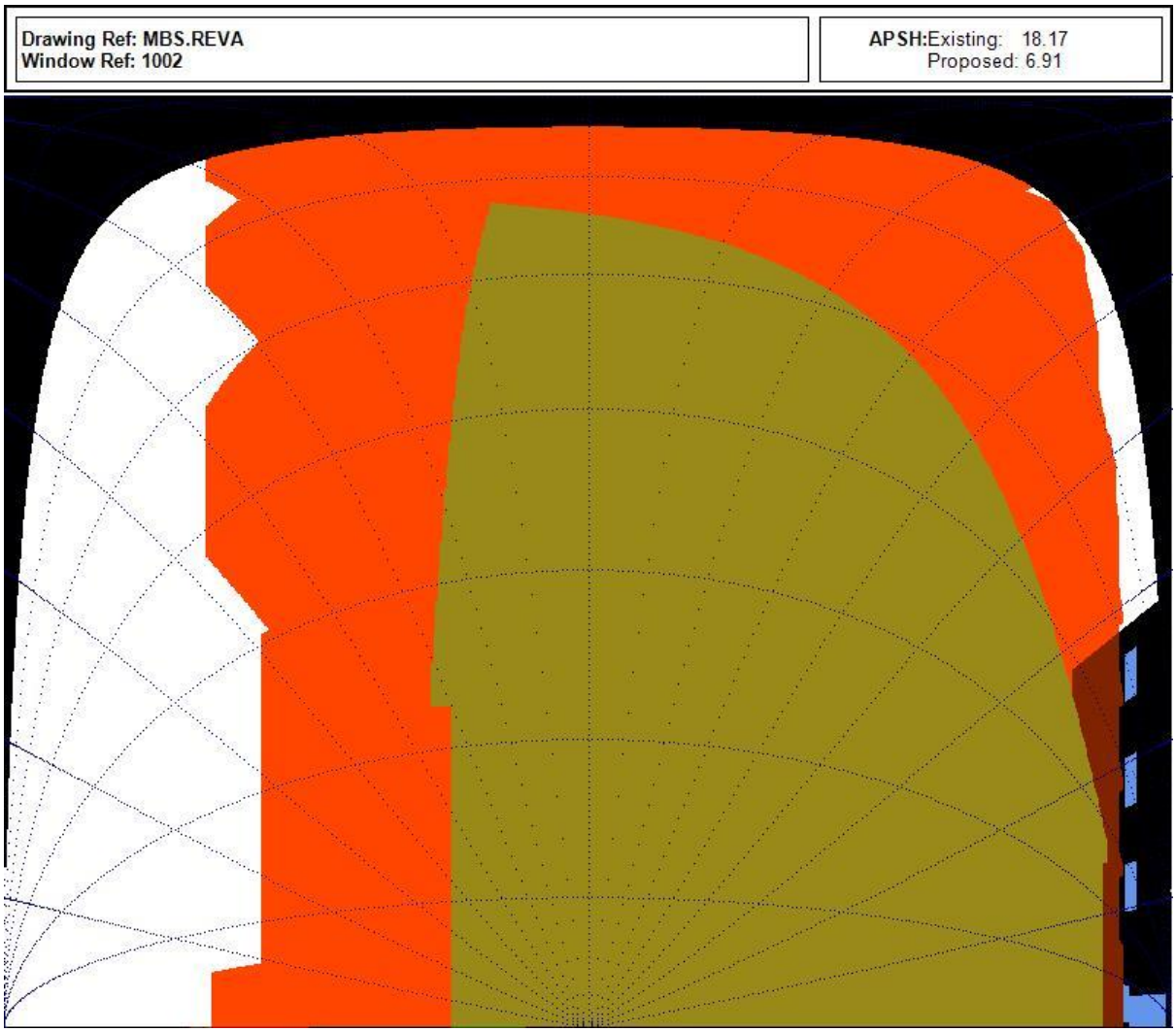
9.6. Daylight results

S1 – 10 Enterprise Way - FF



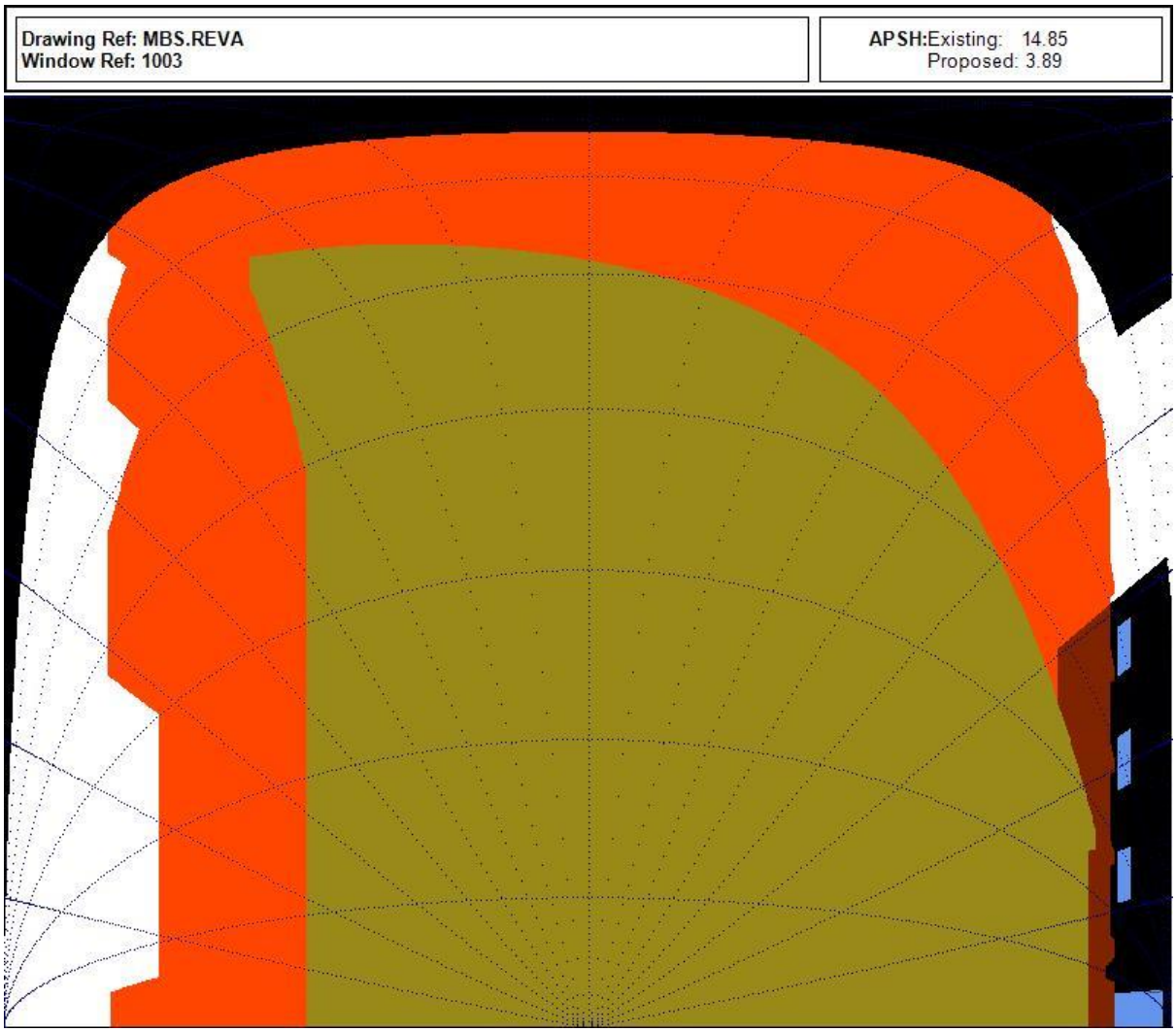
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S2 – 10 Enterprise Way - FF



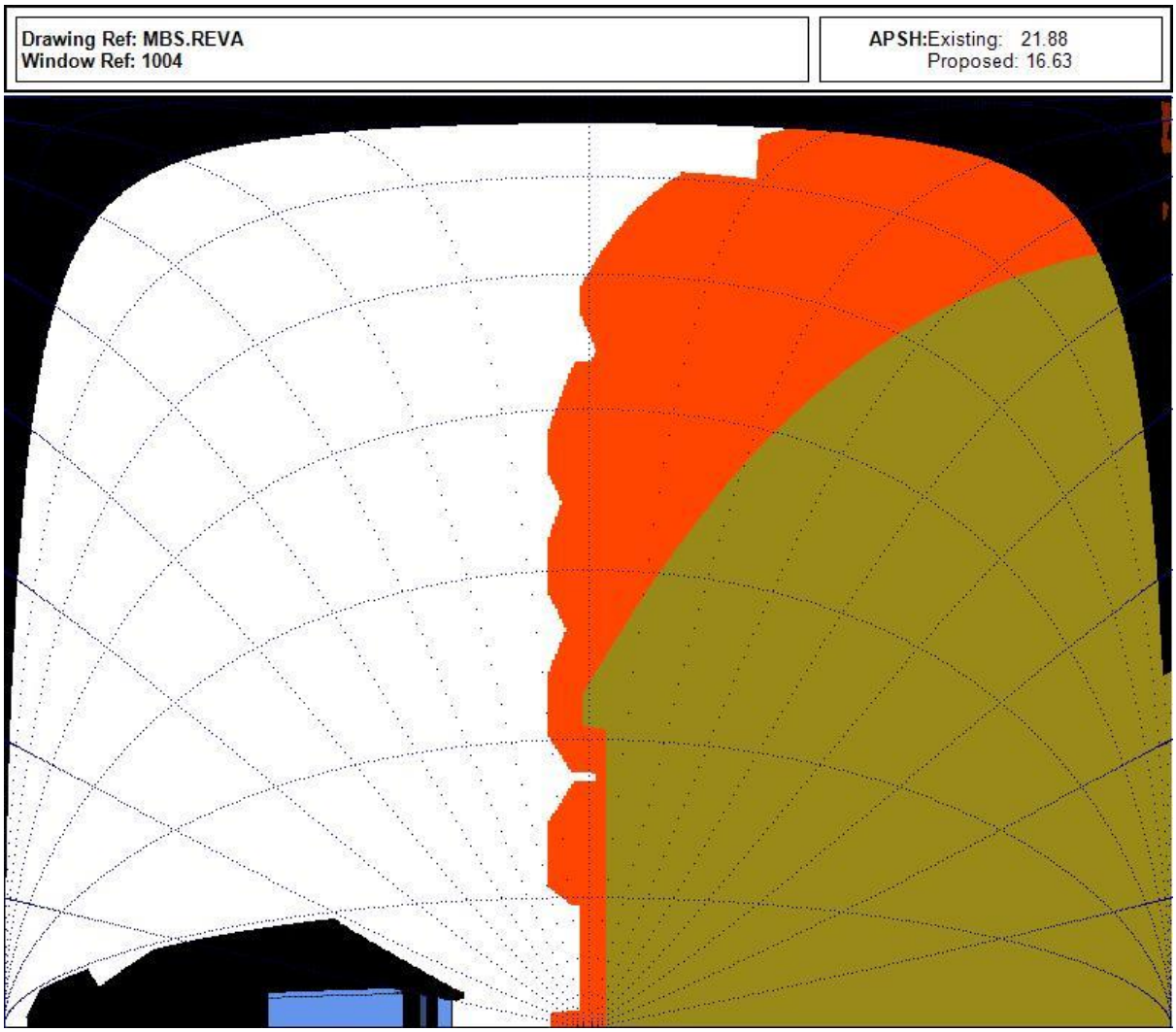
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S3 – 10 Enterprise Way - FF



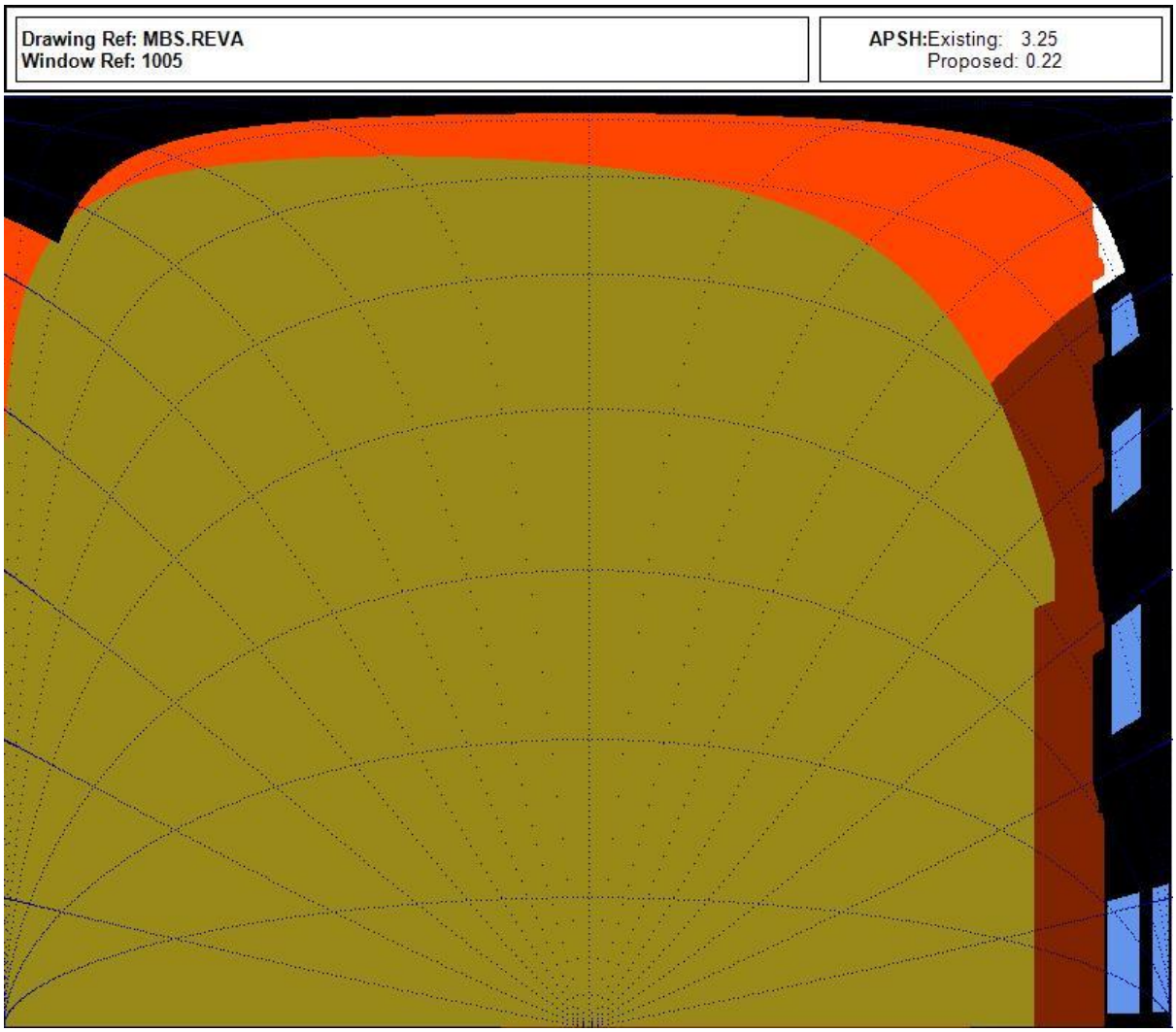
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S4 – 11 Enterprise Way - FF



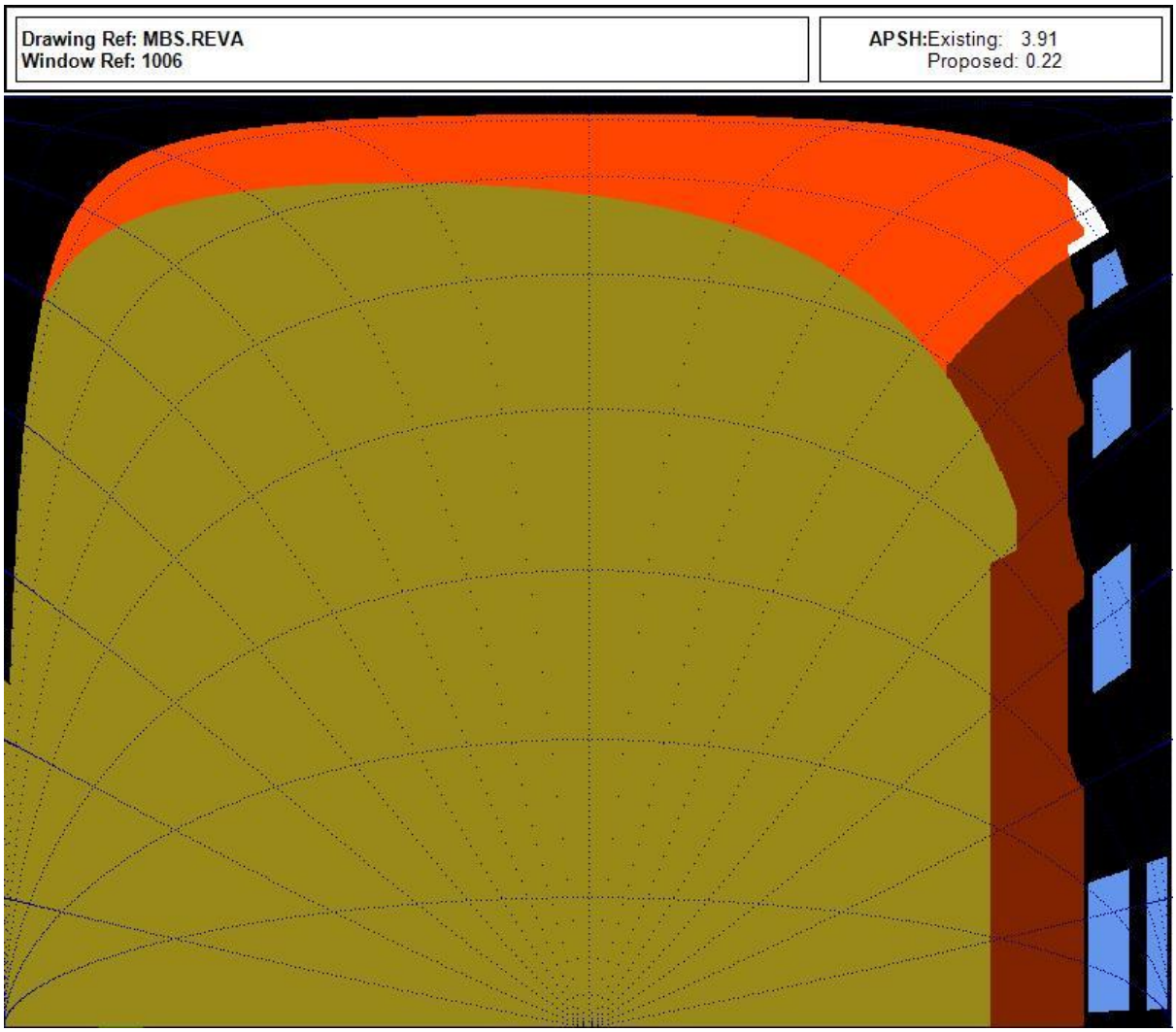
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S5 – 11 Enterprise Way - FF



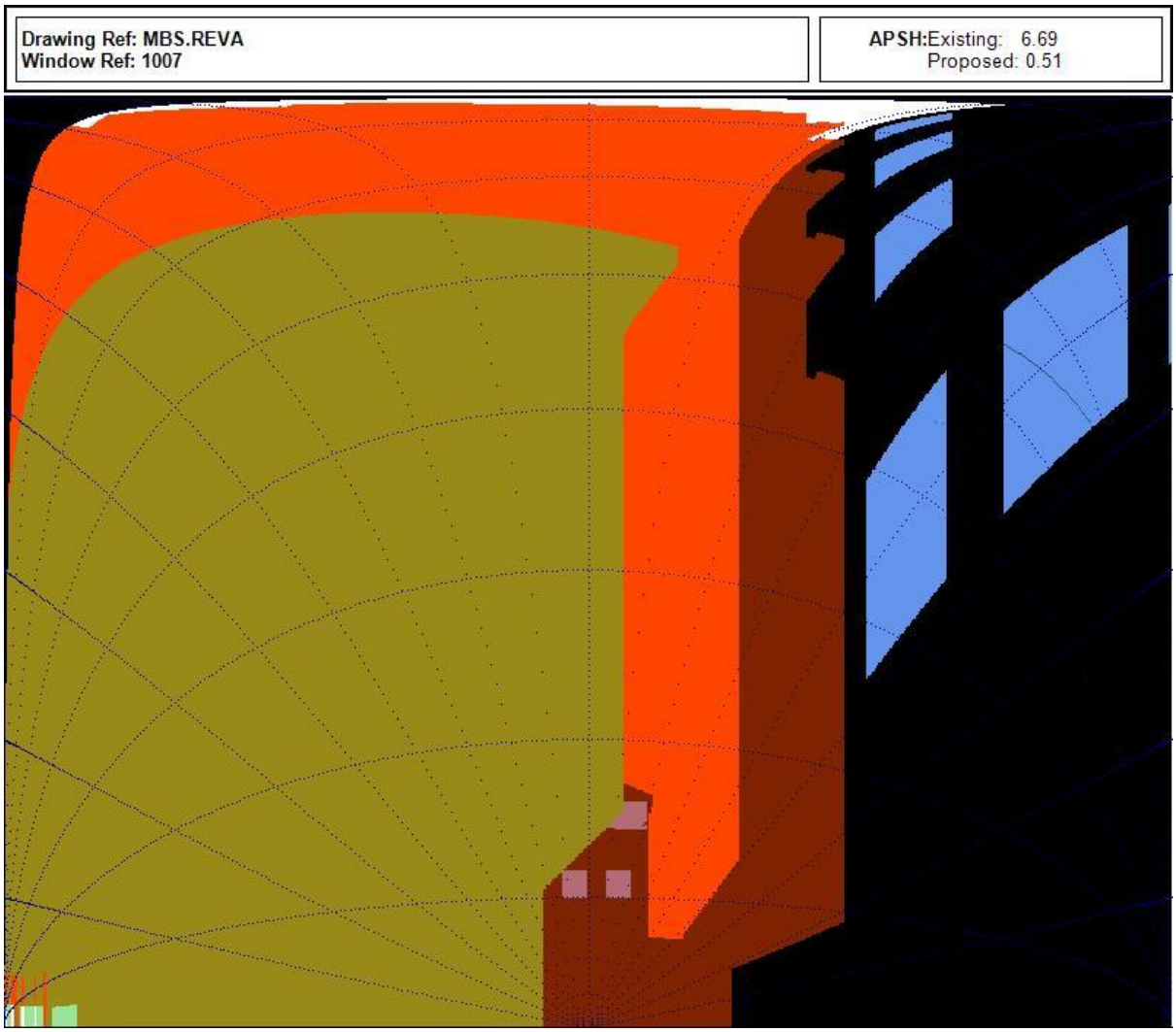
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S6 – 11 Enterprise Way - FF



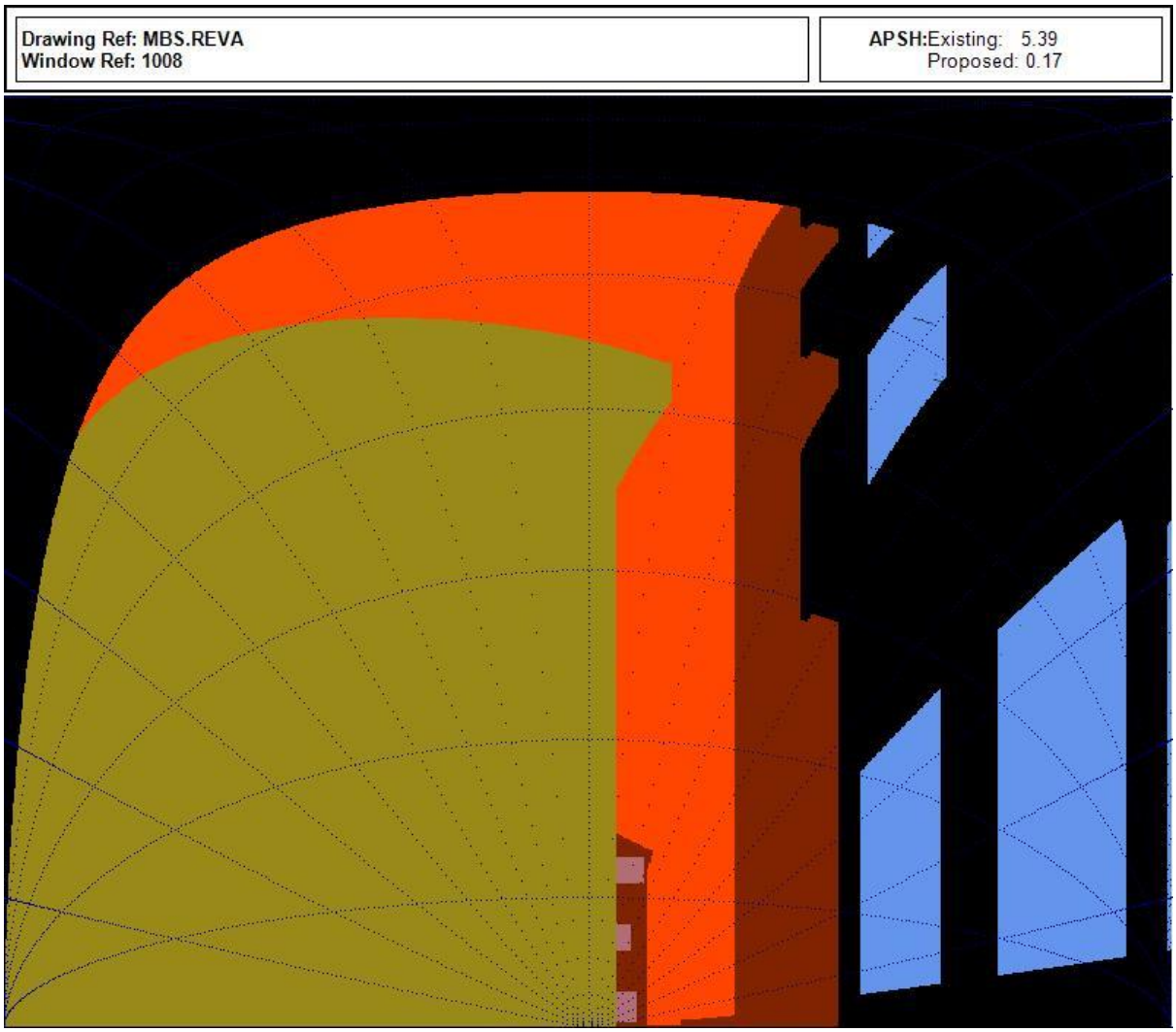
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S7 – 11 Enterprise Way - GF



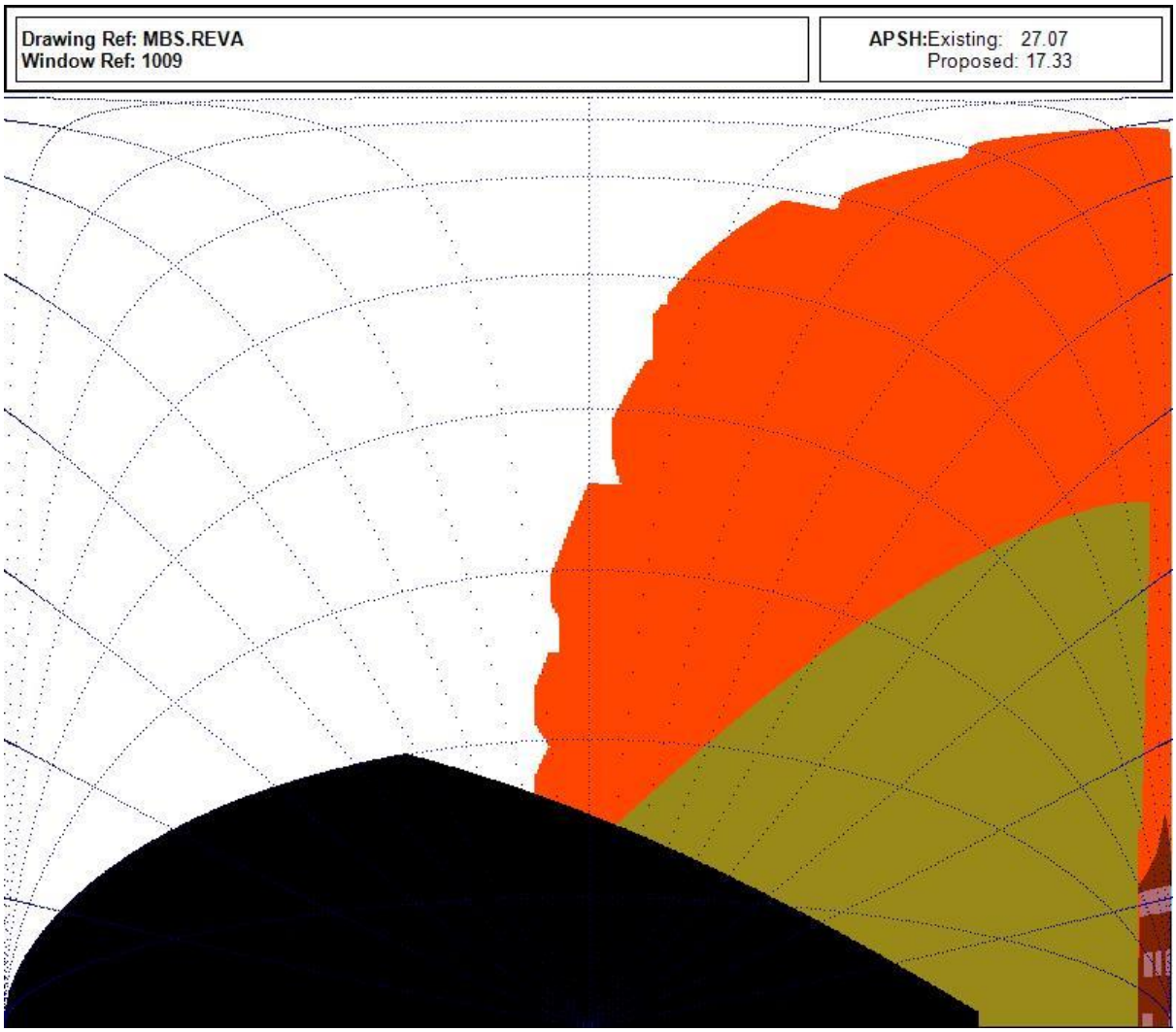
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S8 – 11 Enterprise Way - FF



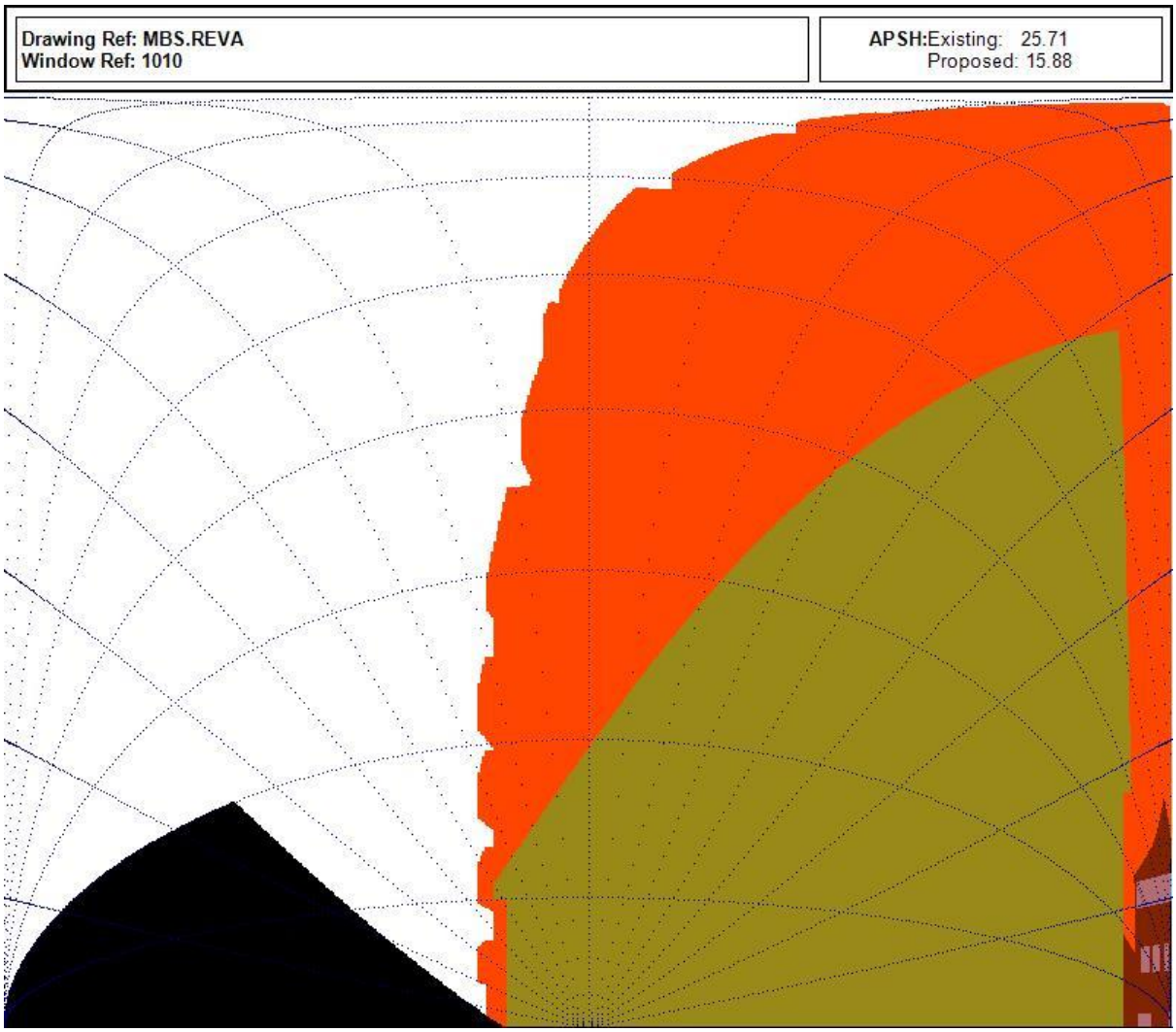
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S9 – 1 to 9 Park house - GF



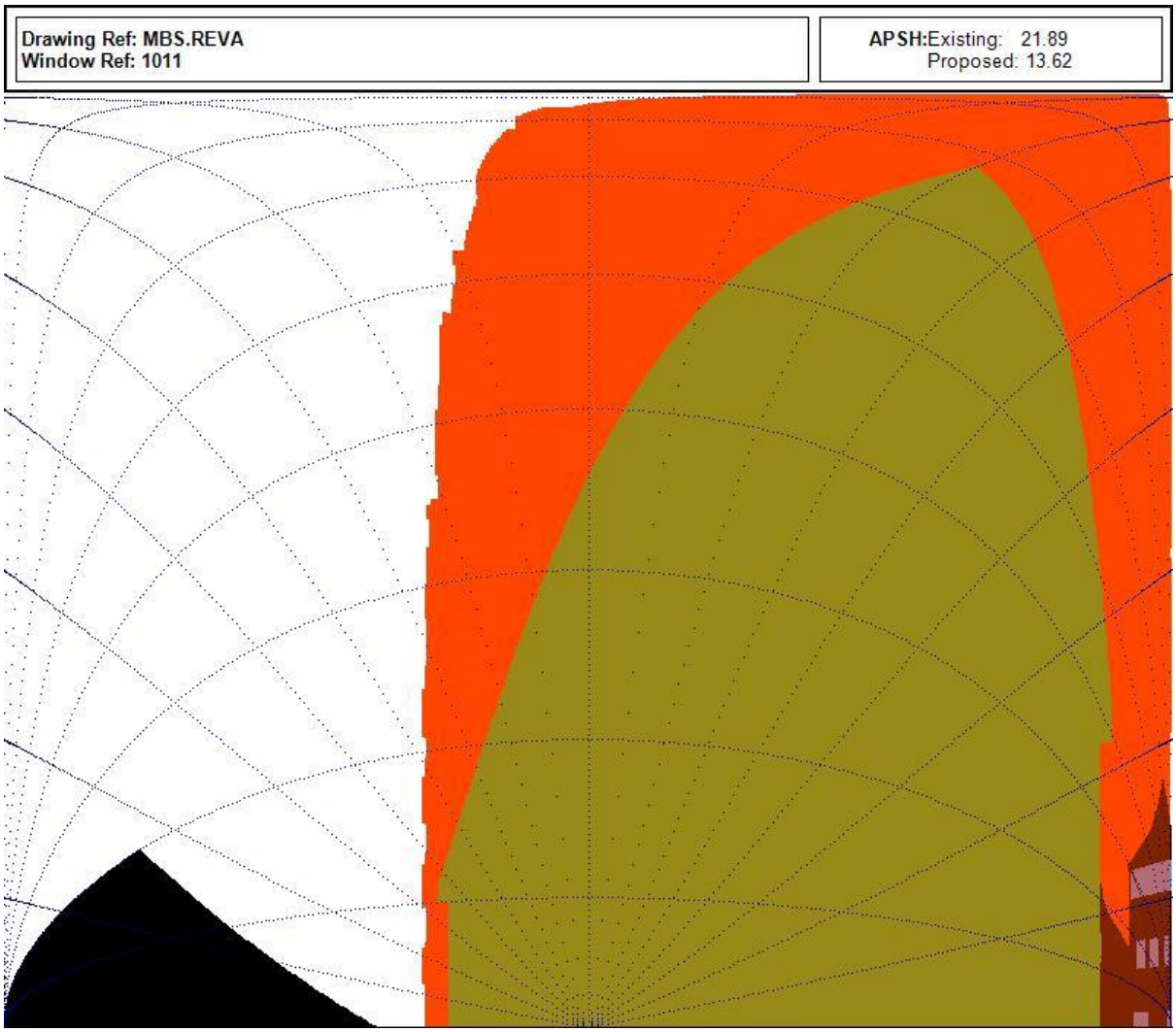
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S10 – 1 to 9 Park house - GF



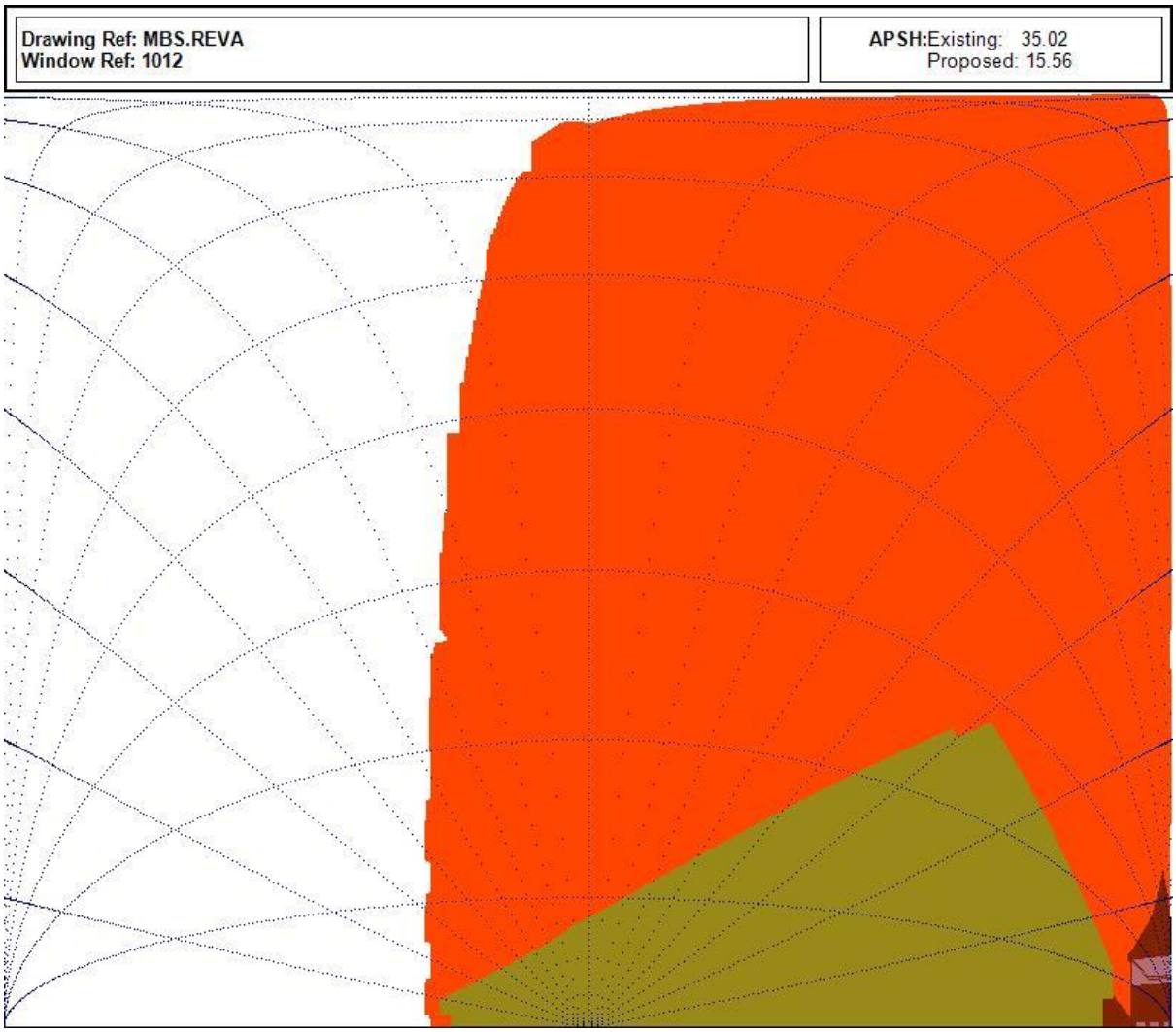
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S11 – 1 to 9 Park house - GF



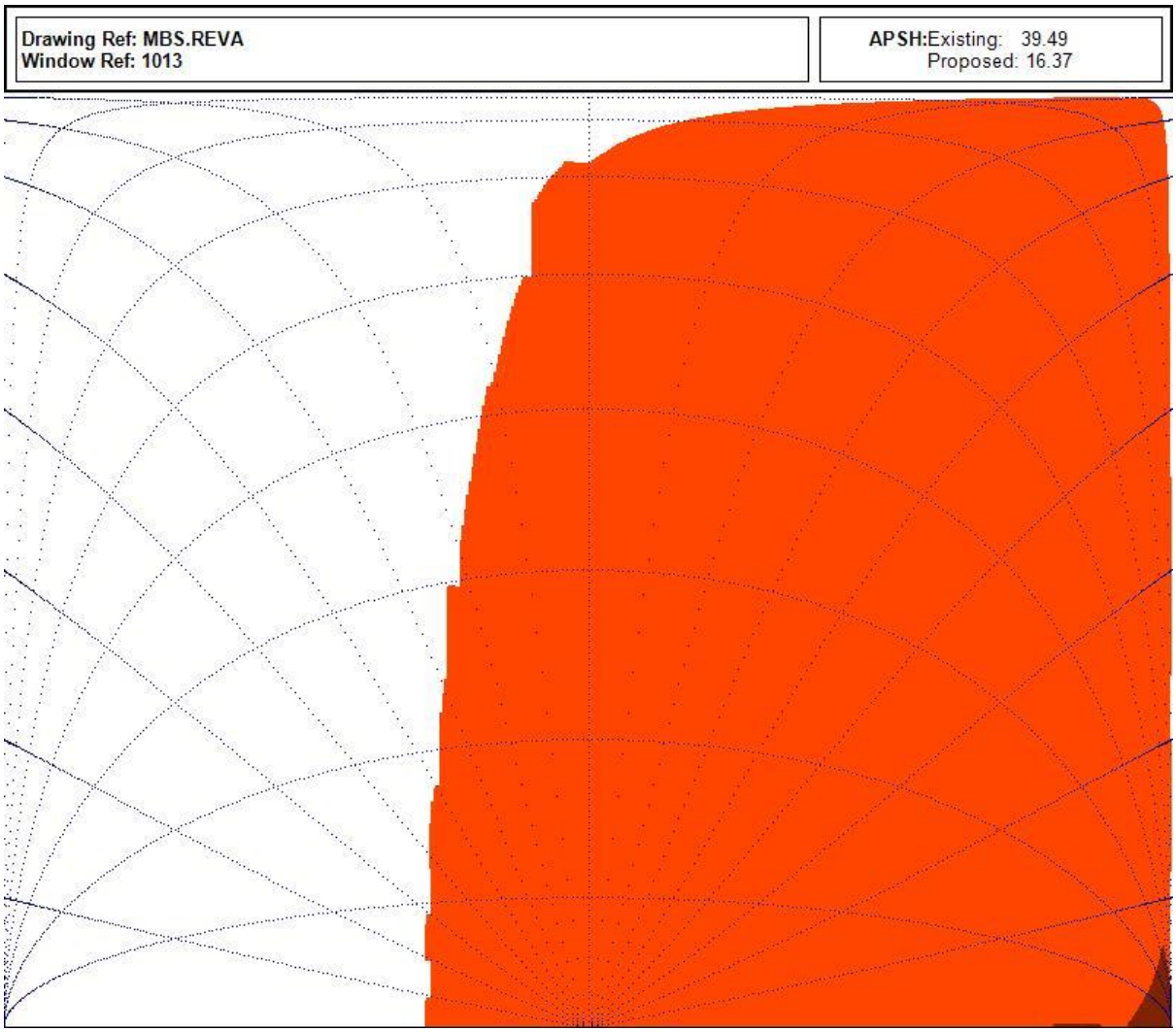
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S12 – 1 to 9 Park house - FF



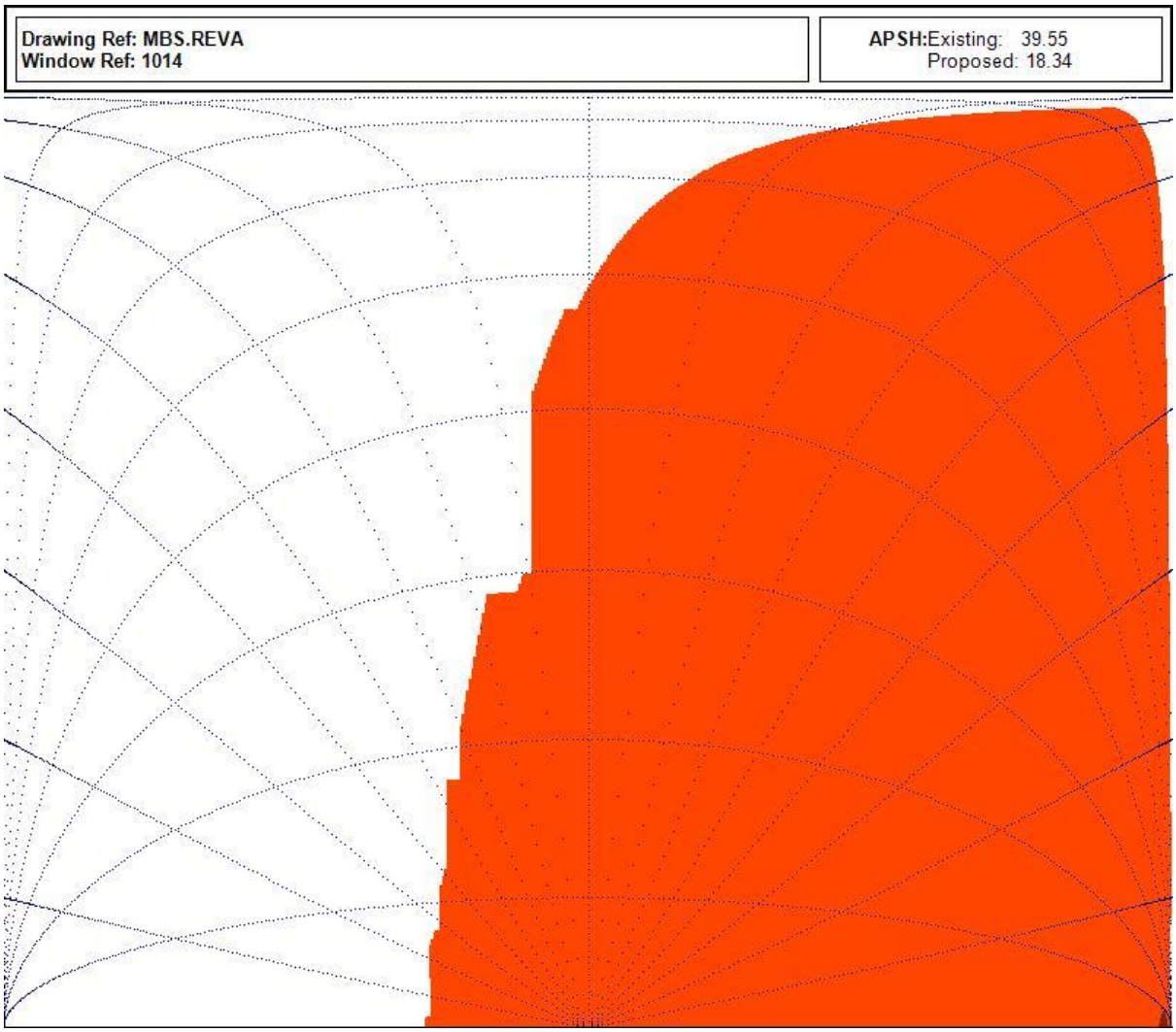
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S13 – 1 to 9 Park house - 2F



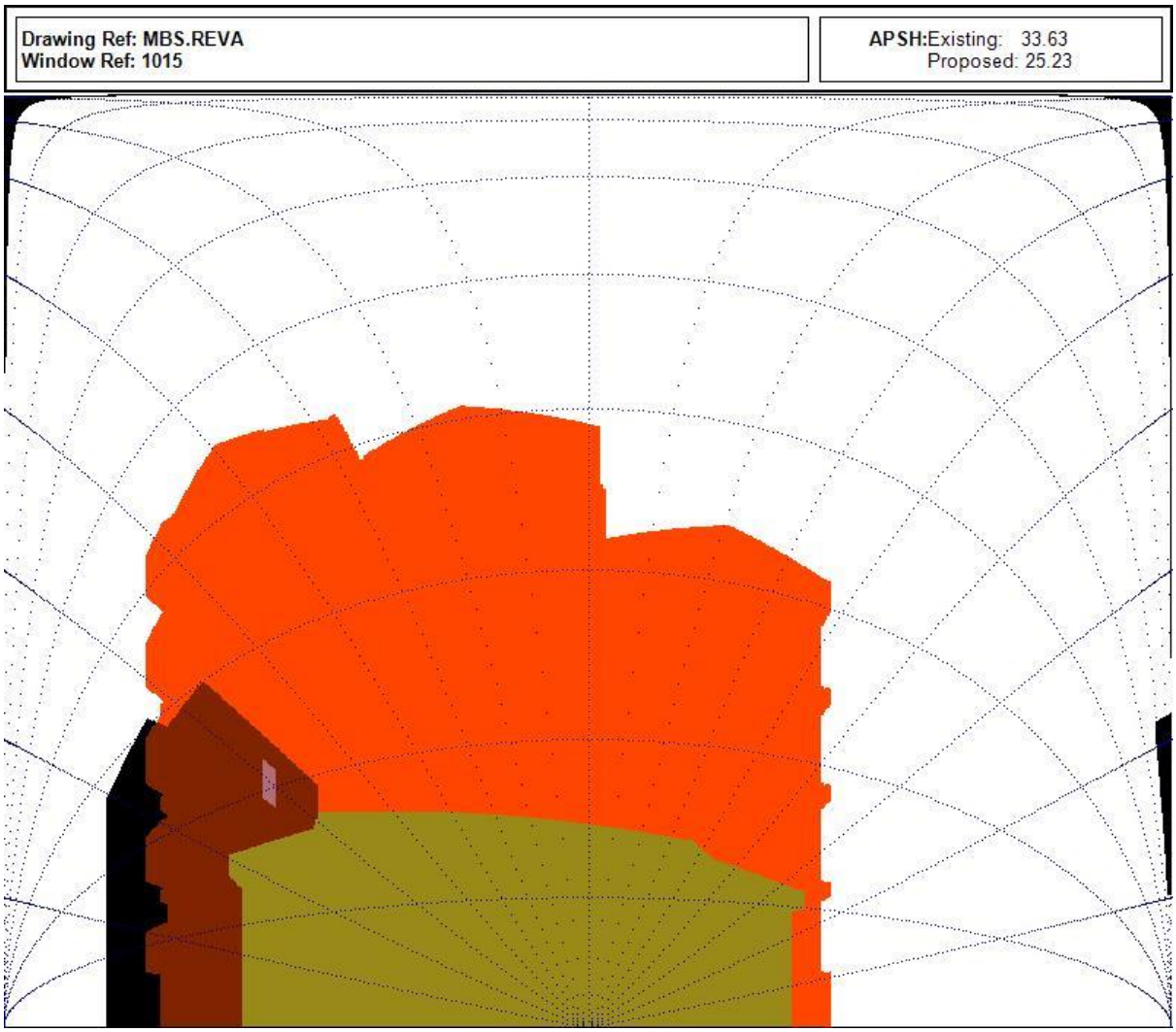
The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

S14 - 1 to 9 Park house - 3F



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

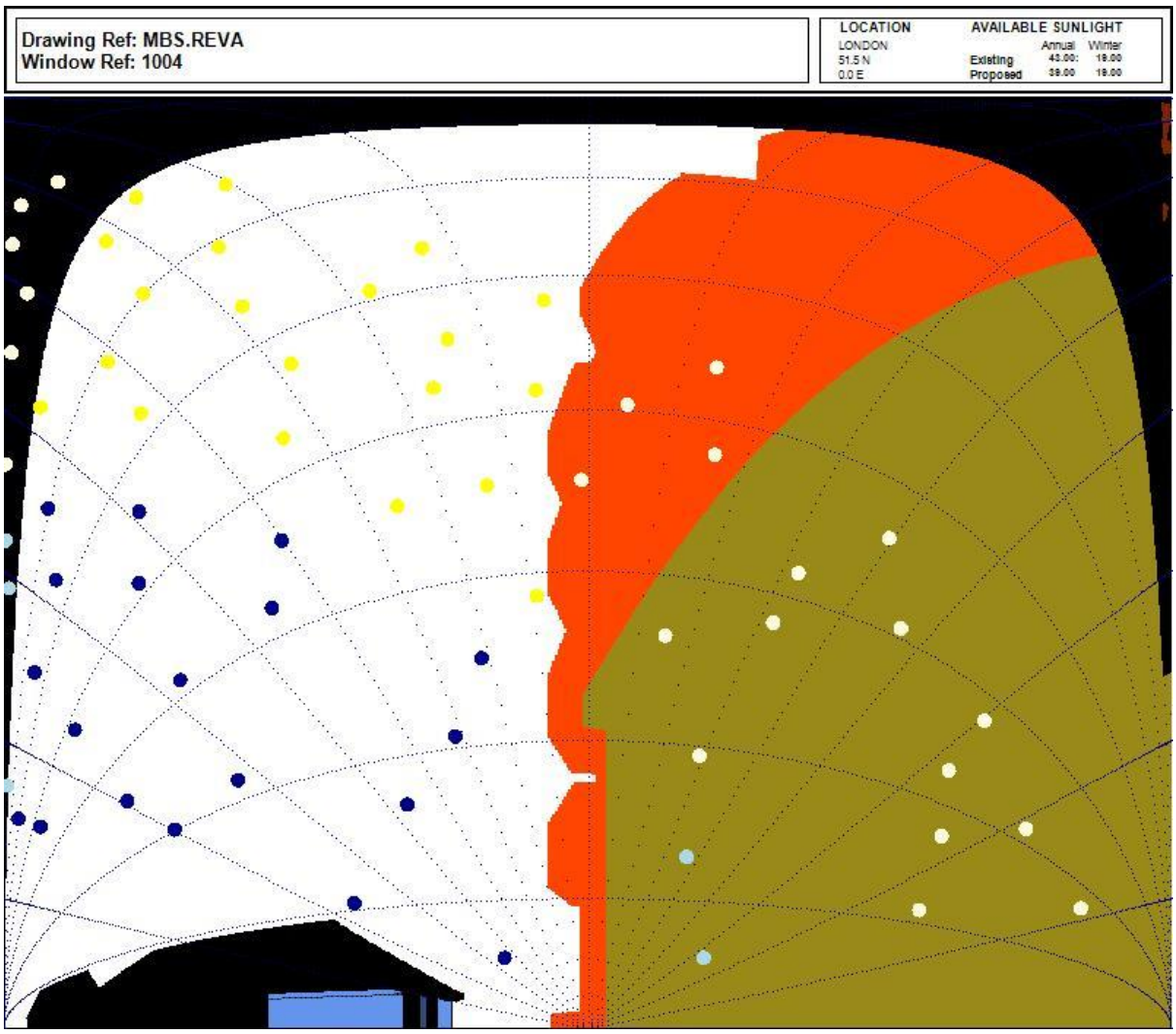
S15 – 3 High Street - GF



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

S4 – 11 Enterprise Way - FF

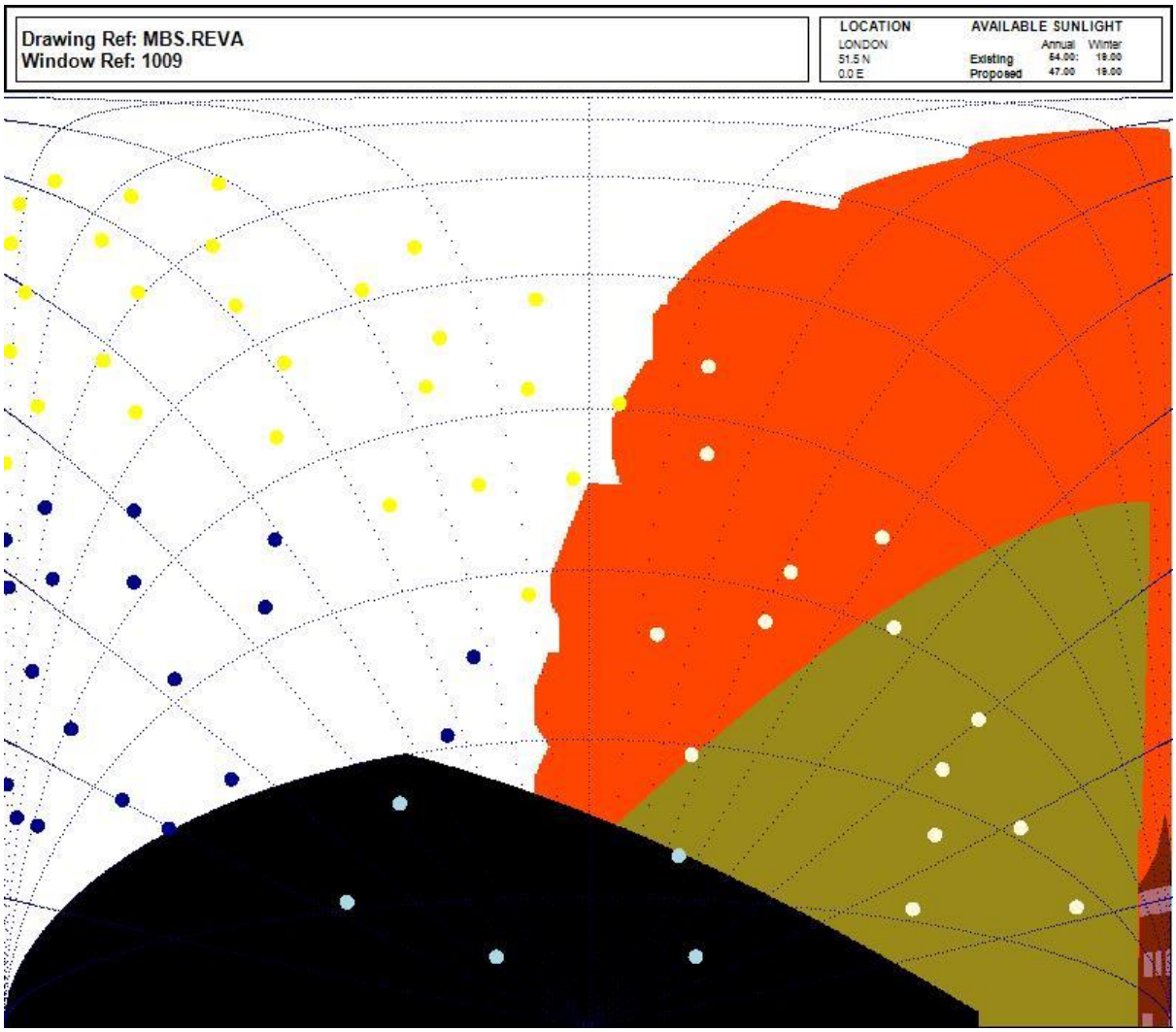


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

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 – 1 to 9 Park house - GF

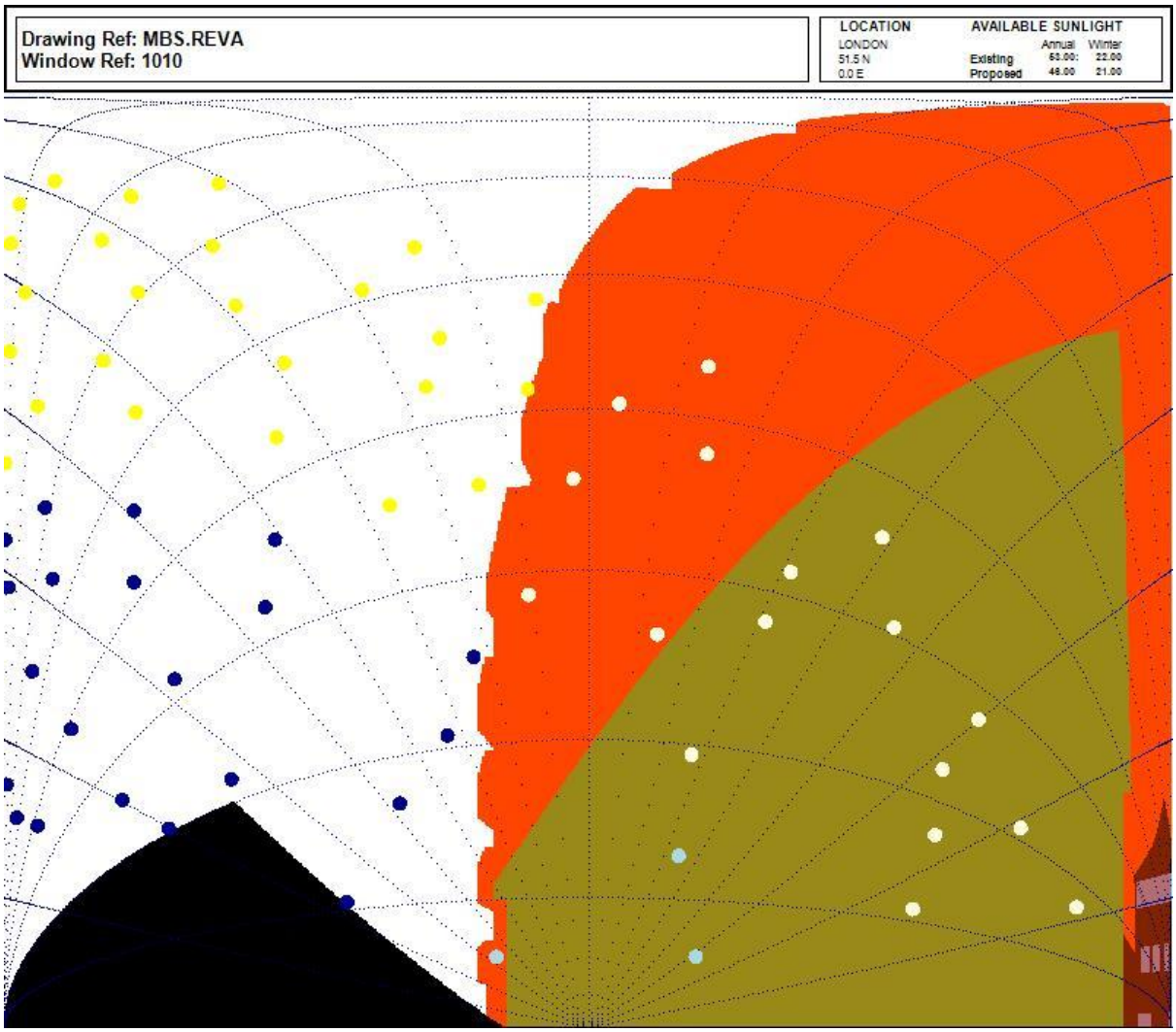


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

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 – 1 to 9 Park house - GF

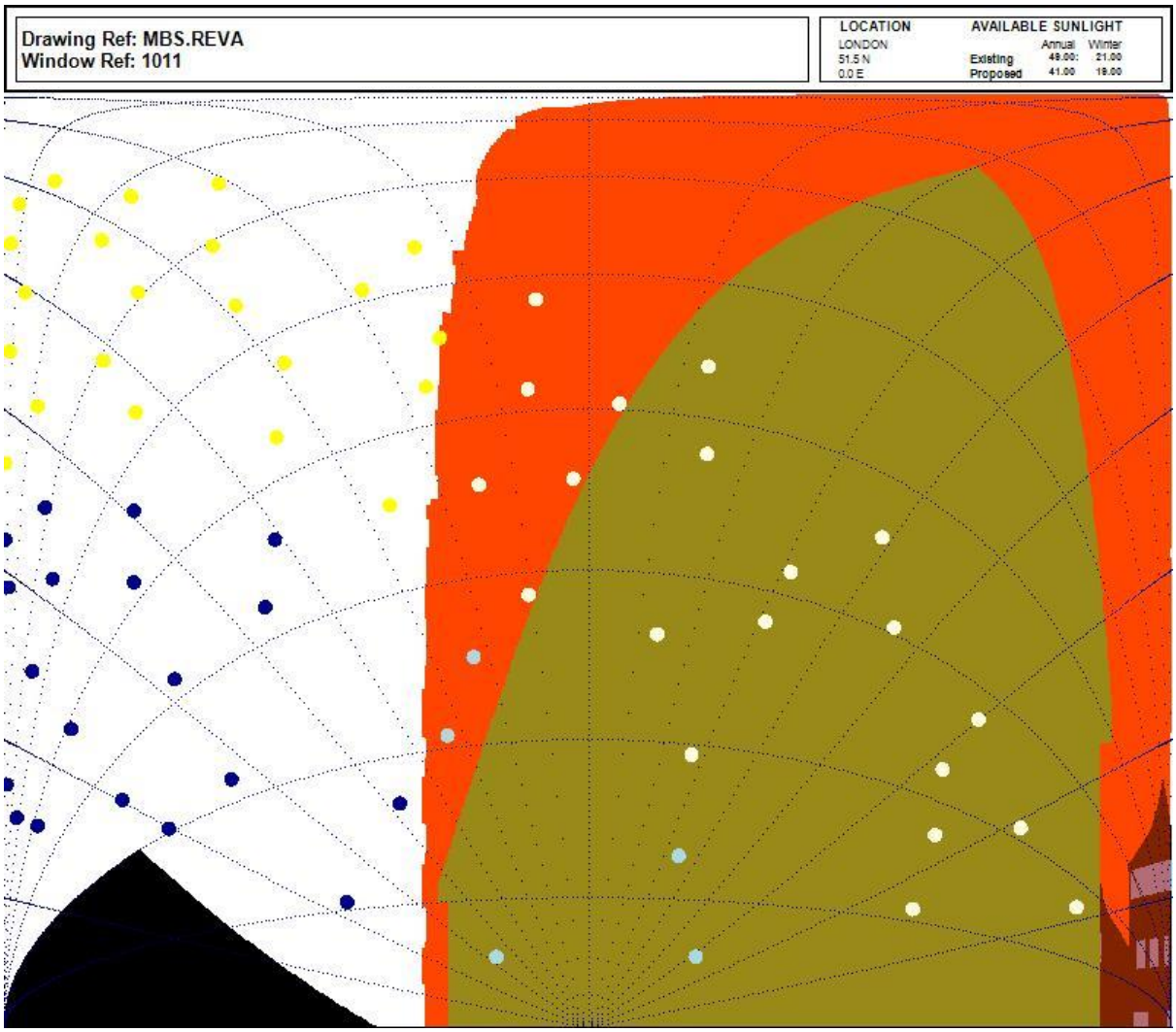


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

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 – 1 to 9 Park house - GF

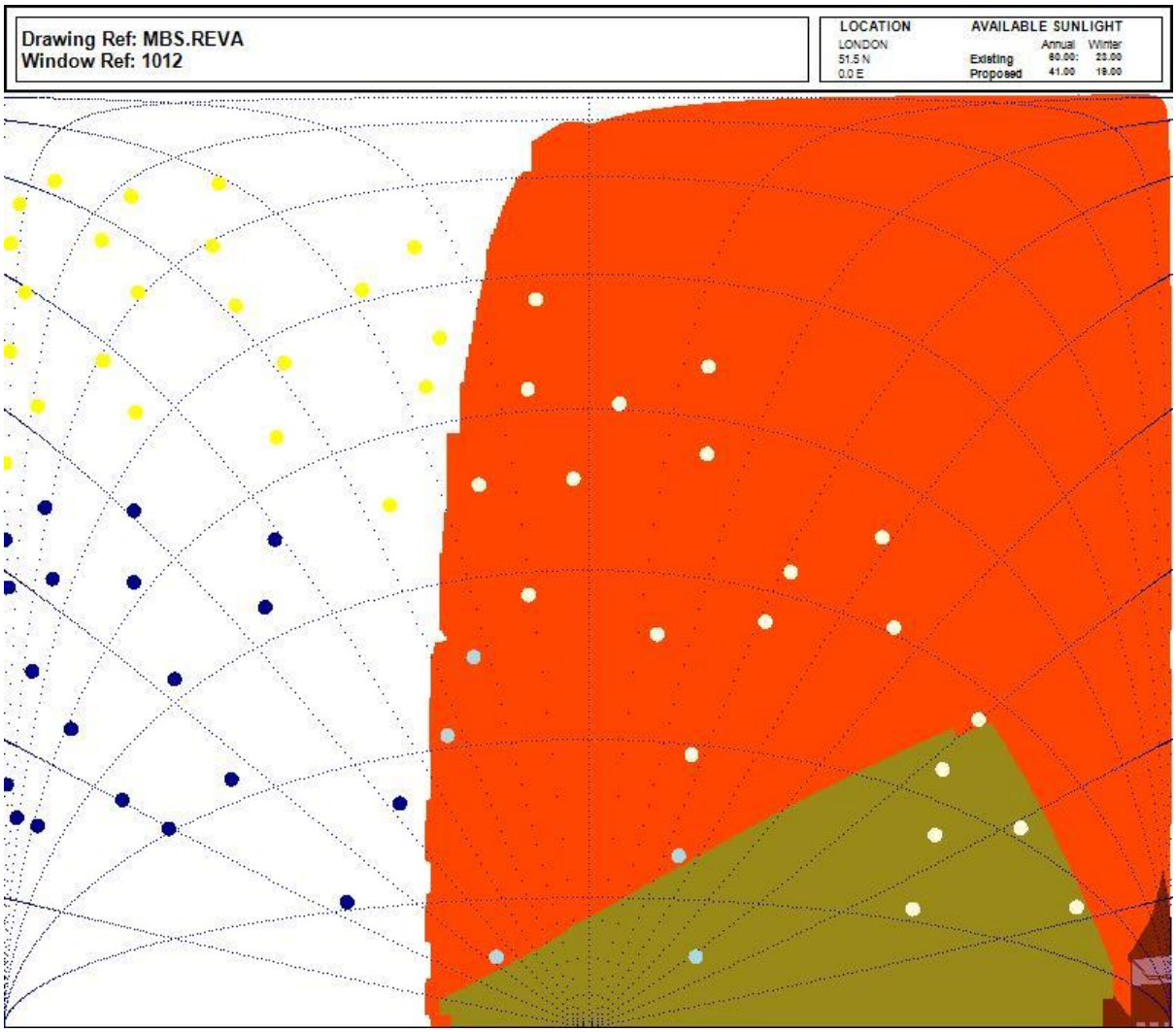


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

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 – 1 to 9 Park house - FF

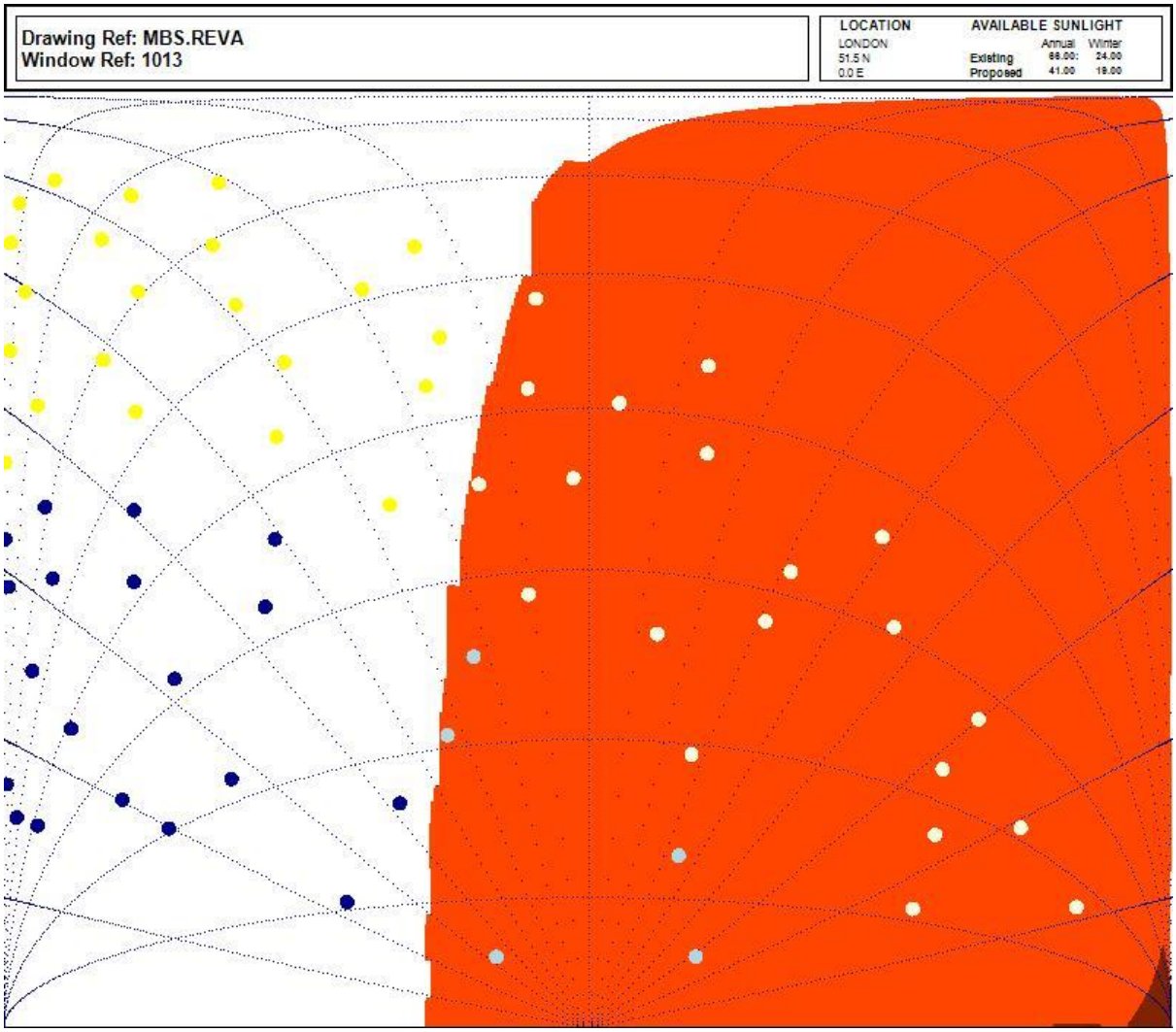


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

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.

S13 – 1 to 9 Park house - 2F

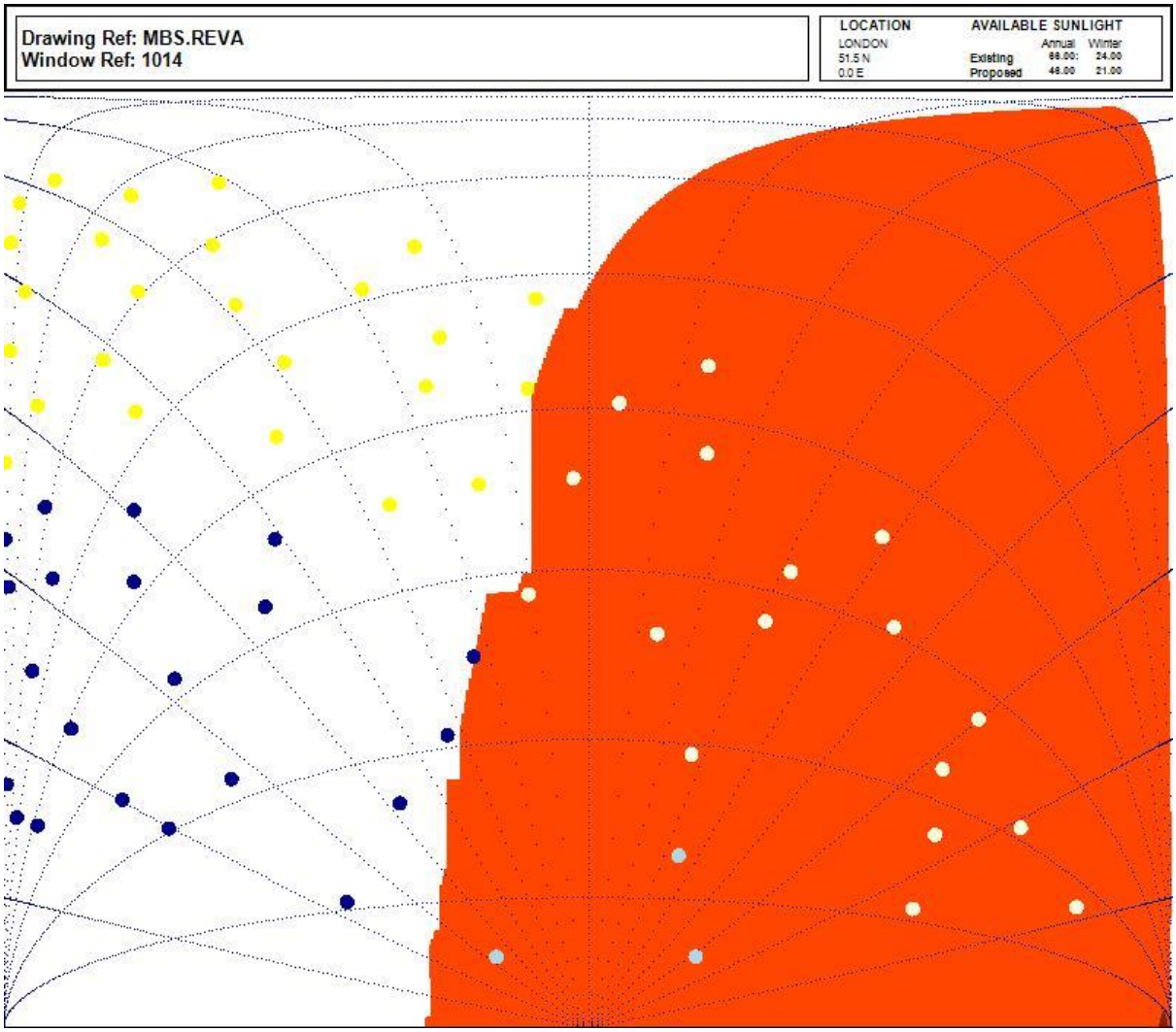


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

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.

S14 - 1 to 9 Park house - 3F

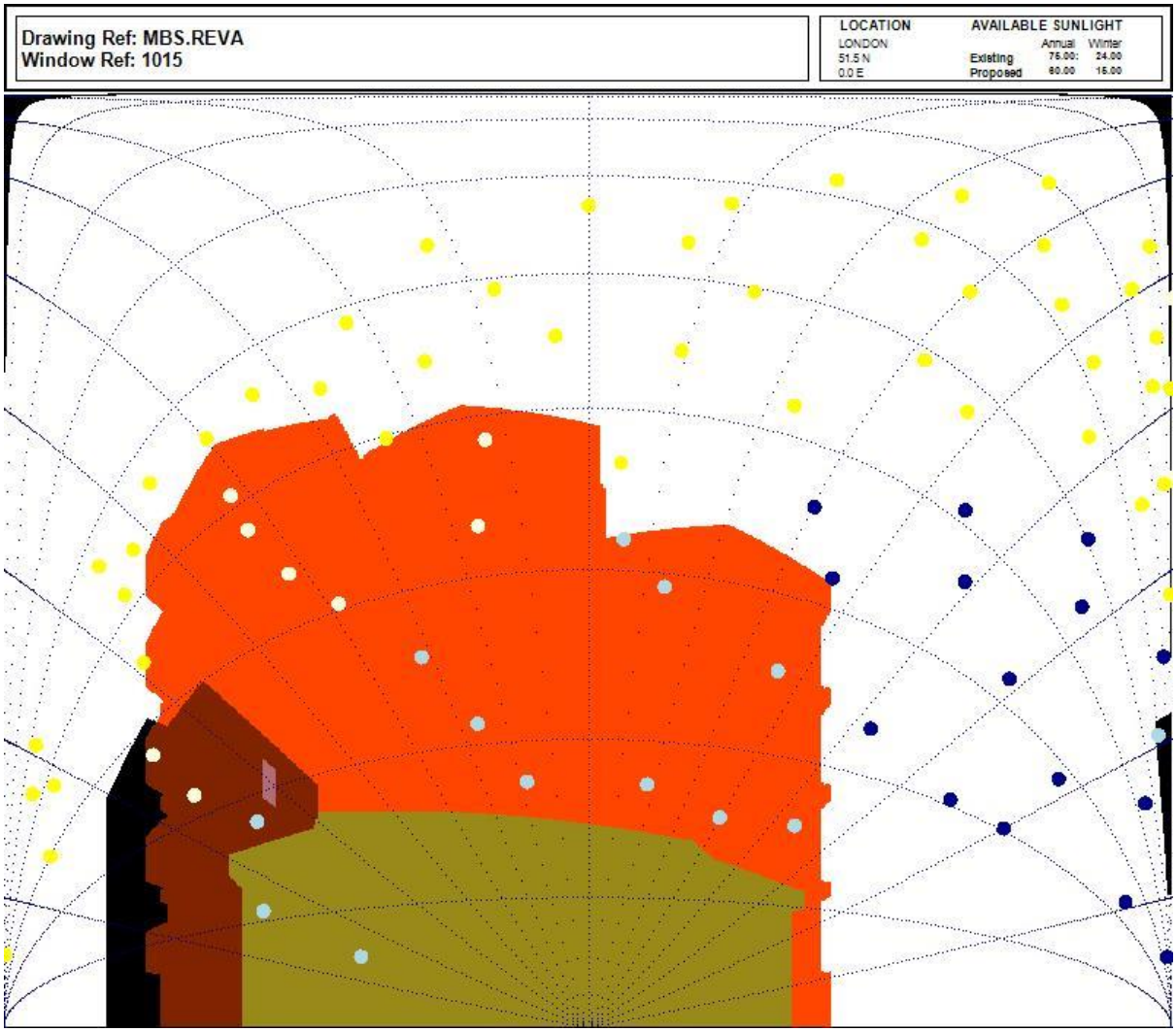


The green contour represents the existing building.
The orange contour represents the proposed building.
The grey/black contour represents the surrounding buildings.

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.

S15 – 3 High Street - 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.

9.8. Overshadowing results and pictures (21st March)

A1 – 1 to 9 Park House - **balcony**

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

Existing

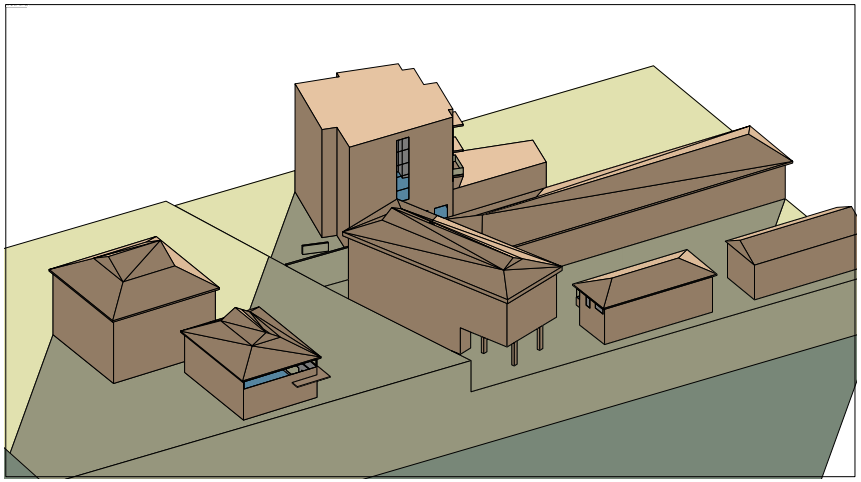
Month	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00
Jan						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Feb					0.00	0.00	0.00	0.00	0.00	1.40	4.40	3.30	0.00	0.00			
Mar				**0.00**	**0.00**	**1.50**	**12.20**	**22.50**	**27.90**	**30.10**	**30.60**	**28.20**	**16.30**	**0.00**	**0.00**		
Apr			0.00	9.00	22.60	32.00	40.40	49.00	51.40	51.80	52.20	51.70	47.60	9.30	0.00		
May		0.00	4.10	29.90	40.10	47.30	54.20	61.80	64.00	63.00	56.70	65.30	45.50	9.50	0.00	0.00	
Jun	0.00	0.00	14.00	36.30	45.30	51.80	58.10	65.30	68.40	59.70	54.80	66.30	45.90	7.80	0.00	0.00	0.00
Jul		0.00	0.00	28.30	39.30	46.70	53.50	60.90	64.50	64.30	56.60	65.70	51.50	15.90	0.00	0.00	
Aug			0.00	8.20	22.30	31.80	40.10	48.70	51.70	52.10	52.40	52.10	48.60	11.60	0.00	0.00	
Sep			0.00	0.00	0.00	4.90	15.50	25.80	29.10	30.90	30.80	27.10	9.40	0.00			
Oct				0.00	0.00	0.00	0.00	0.00	0.00	1.70	3.10	0.10	0.00				
Nov					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Dec						0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00				
Feb					0.00	0.00	0.00	0.00	0.00	1.40	4.40	3.30	0.00	0.00			
Mar				**0.00**	**0.00**	**1.50**	**12.20**	**22.50**	**27.90**	**30.10**	**30.60**	**28.20**	**7.10**	**0.00**	**0.00**		
Apr			0.00	9.00	22.60	32.00	40.40	49.00	51.40	51.80	52.20	51.70	0.00	0.00	0.00		
May		0.00	4.10	29.90	40.10	47.30	54.20	61.80	64.00	63.00	56.70	65.40	0.00	0.00	0.00	0.00	
Jun	0.00	0.00	14.00	36.30	45.30	51.80	58.20	65.30	68.50	59.70	54.80	66.30	0.50	0.00	0.00	0.00	0.00
Jul		0.00	0.00	28.30	39.40	46.70	53.50	60.90	64.60	64.30	56.60	65.70	3.40	0.00	0.00	0.00	
Aug			0.00	8.20	22.30	31.80	40.20	48.70	51.70	52.10	52.40	52.10	0.00	0.00	0.00	0.00	
Sep			0.00	0.00	0.00	4.90	15.50	25.80	29.10	30.90	30.80	27.10	0.00	0.00			
Oct				0.00	0.00	0.00	0.00	0.00	0.00	1.80	3.10	0.10	0.00				
Nov					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Dec						0.00	0.00	0.00	0.00	0.00	0.00	0.00					

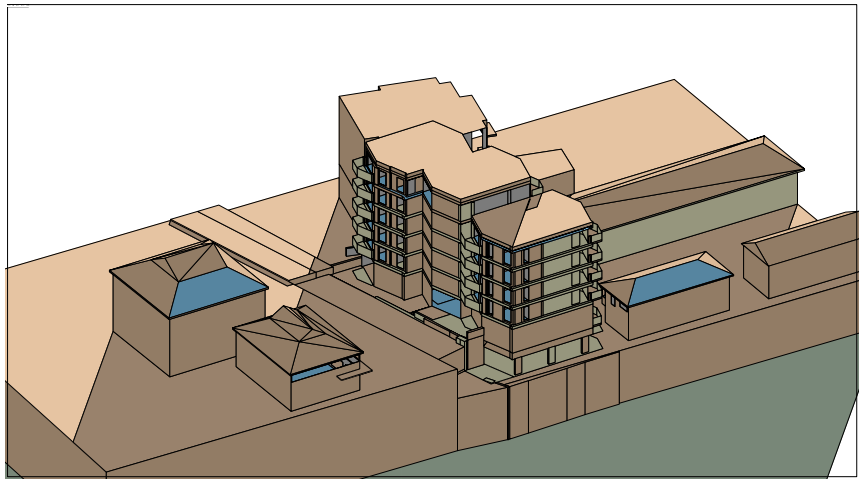
Overshadowing assessment % of the amenity area receiving direct sunlight on 21st March		
Existing	Proposed	Ratio
14.11	13.34	0.94

Suncast image:
View time = 21 Mar 07:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 100.25 alt = 7.56
Eye: azi = 270.00 alt = 30.00



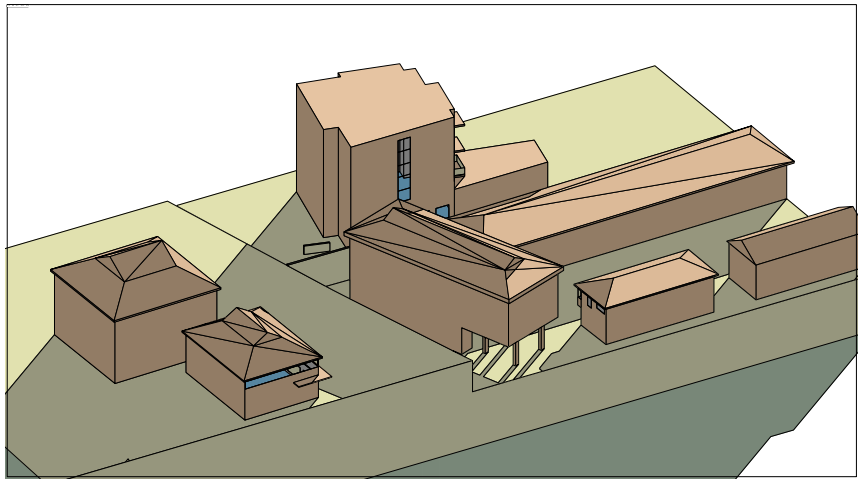
Existing

Suncast image:
View time = 21 Mar 07:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 100.25 alt = 7.56
Eye: azi = 270.00 alt = 30.00



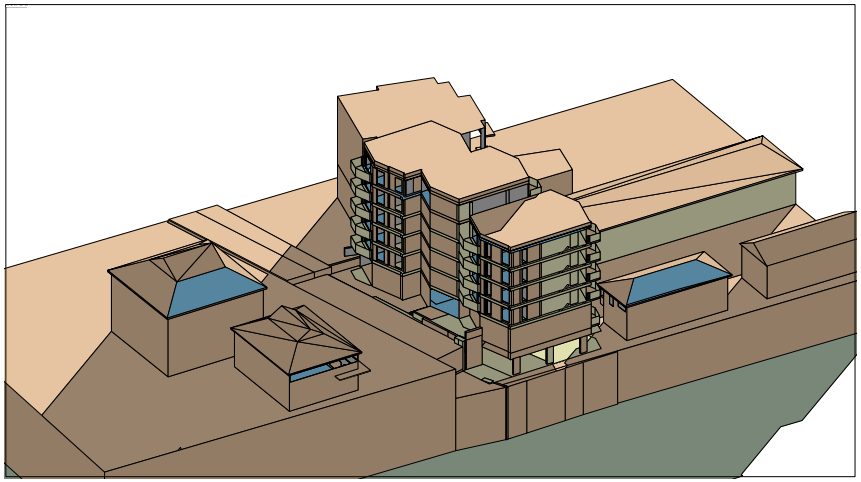
Proposed

Suncast image:
View time = 21 Mar 08:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 112.57 alt = 16.52
Eye: azi = 270.00 alt = 30.00



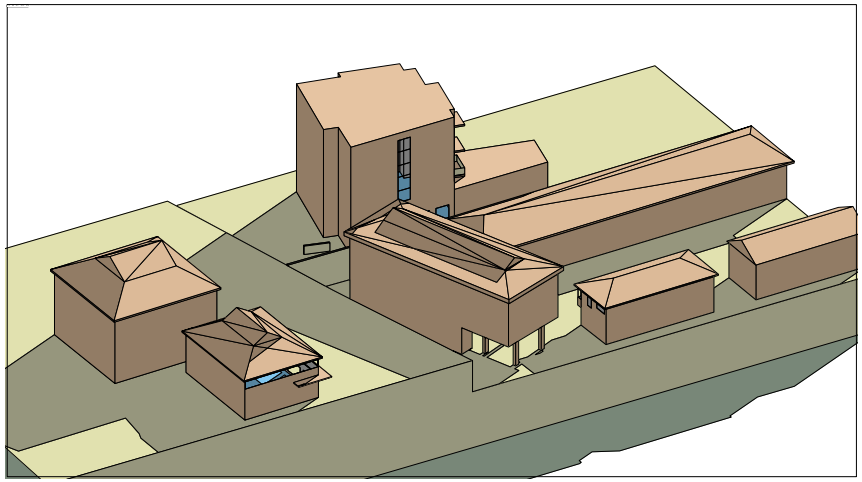
Existing

Suncast image:
View time = 21 Mar 08:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 112.57 alt = 16.52
Eye: azi = 270.00 alt = 30.00



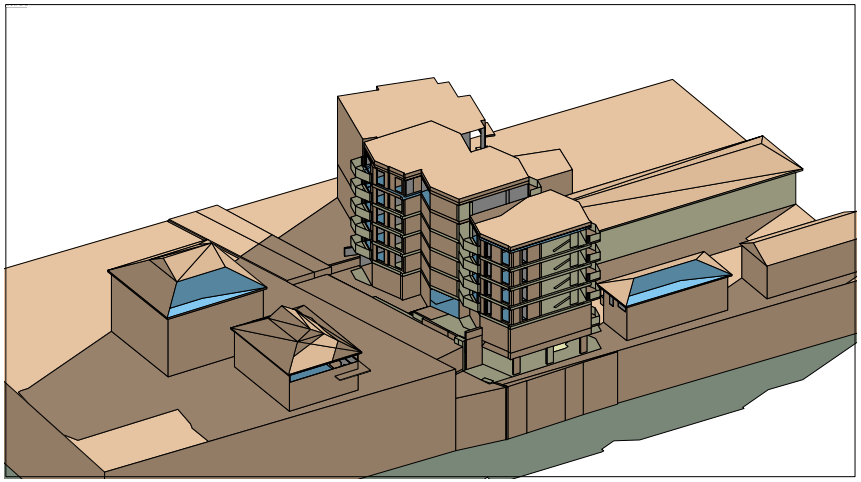
Proposed

Suncast image:
View time = 21 Mar 09:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 126.04 alt = 24.67
Eye: azi = 270.00 alt = 30.00



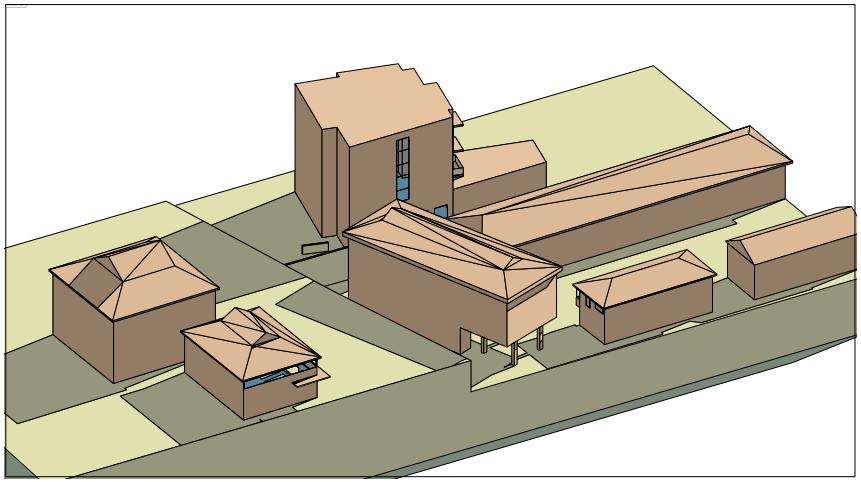
Existing

Suncast image:
View time = 21 Mar 09:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 126.04 alt = 24.66
Eye: azi = 270.00 alt = 30.00



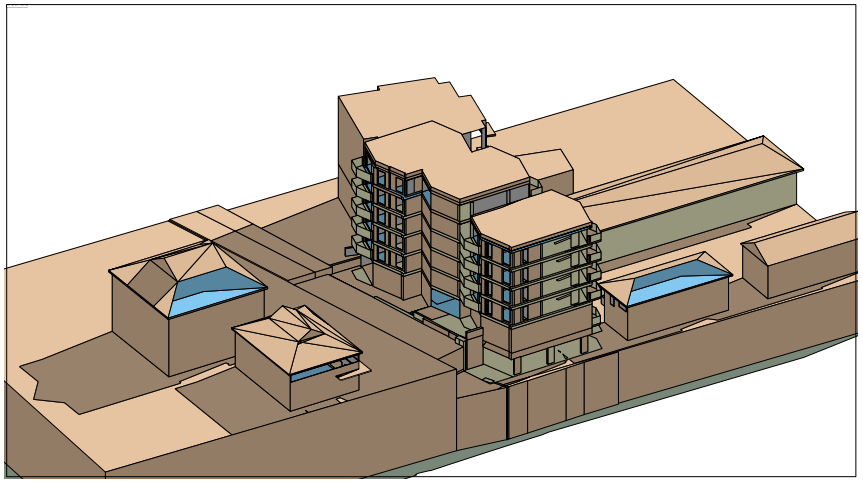
Proposed

Suncast image:
View time = 21 Mar 10:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 141.23 alt = 31.43
Eye: azi = 270.00 alt = 30.00



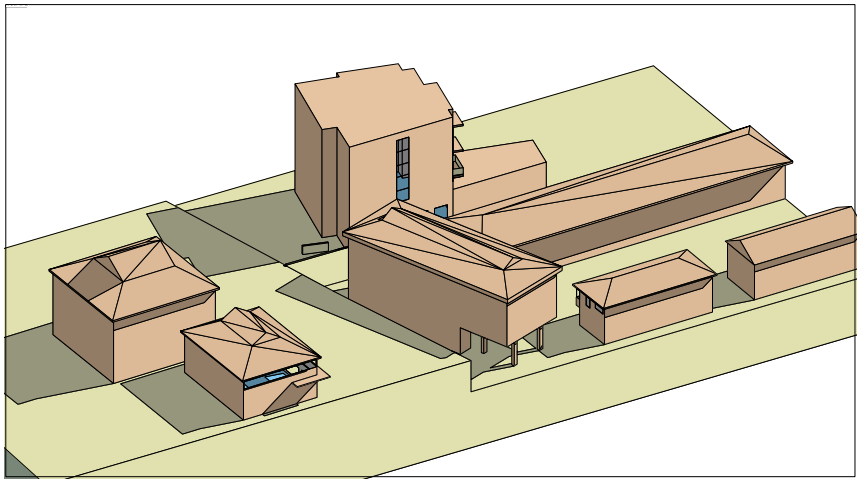
Existing

Suncast image:
View time = 21 Mar 10:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 141.24 alt = 31.43
Eye: azi = 270.00 alt = 30.00



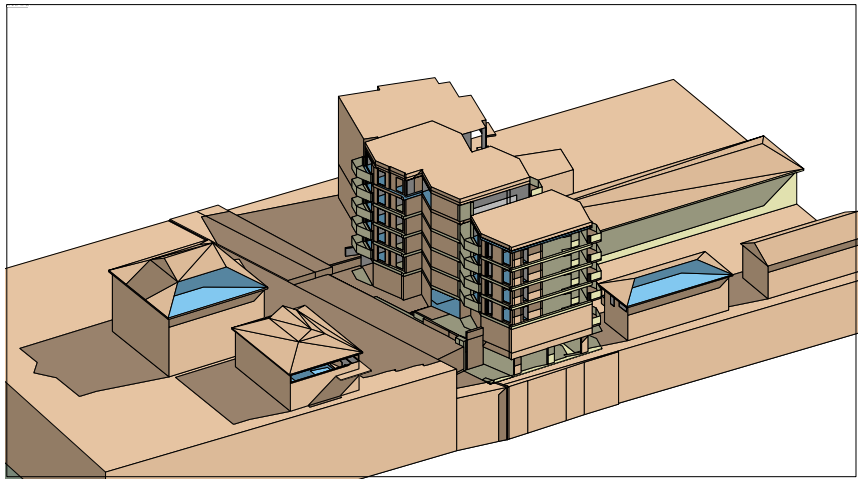
Proposed

Suncast image:
View time = 21 Mar 11:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 158.40 alt = 36.14
Eye: azi = 270.00 alt = 30.00



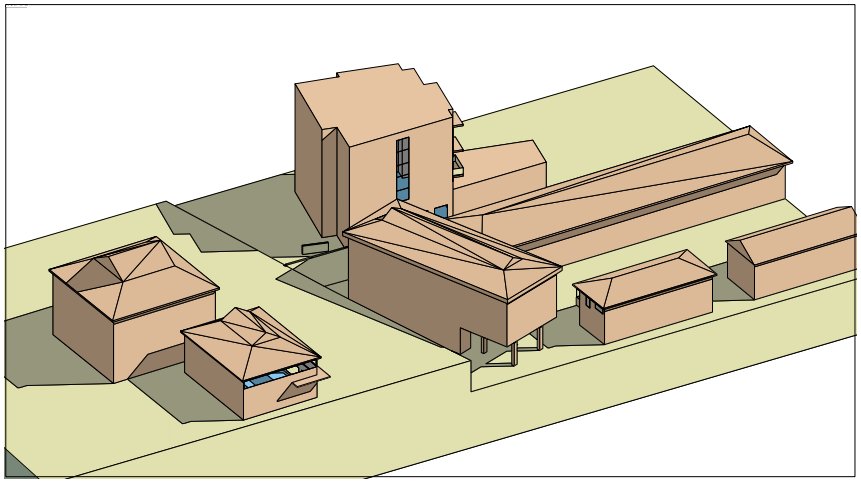
Existing

Suncast image:
View time = 21 Mar 11:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 158.41 alt = 36.14
Eye: azi = 270.00 alt = 30.00



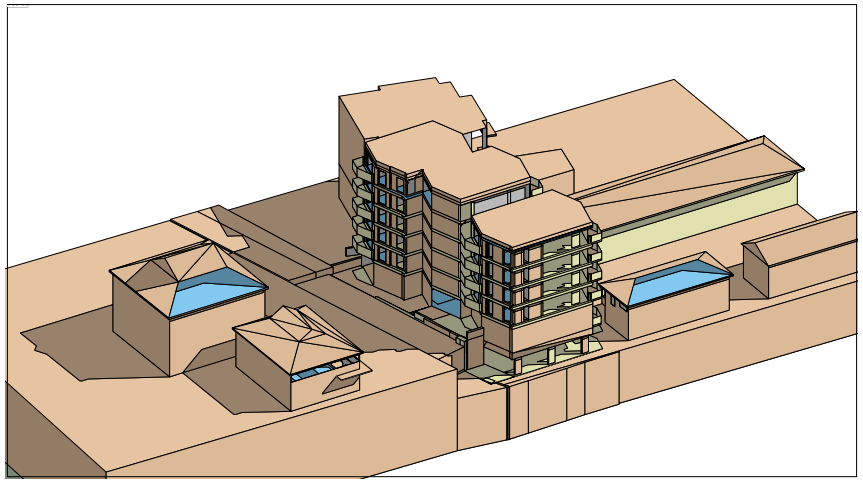
Proposed

Suncast image:
View time = 21 Mar 12:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 177.08 alt = 38.13
Eye: azi = 270.00 alt = 30.00



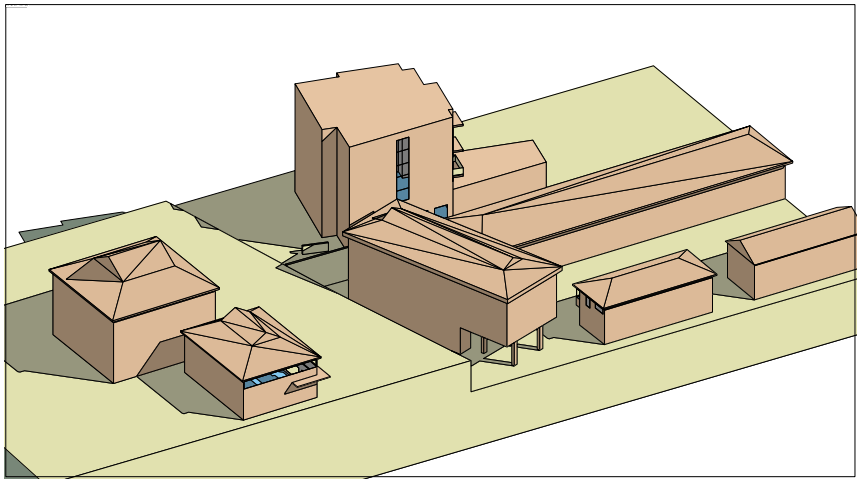
Existing

Suncast image:
View time = 21 Mar 12:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 177.09 alt = 38.13
Eye: azi = 270.00 alt = 30.00



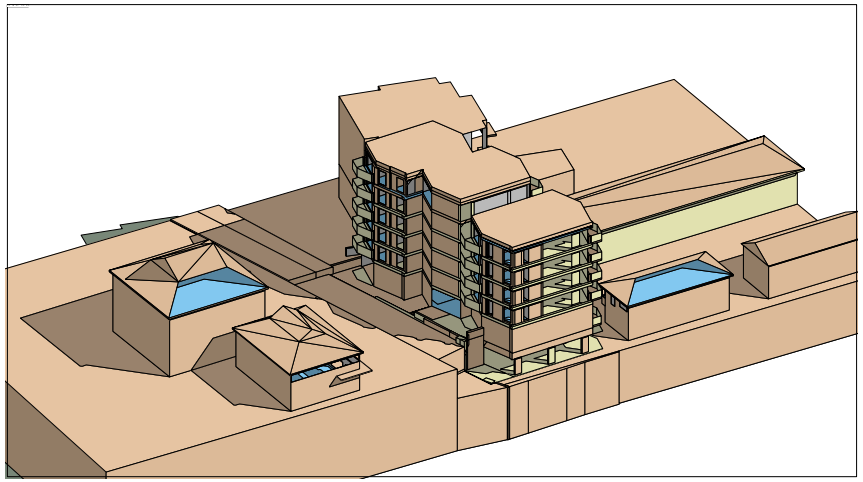
Proposed

Suncast image:
View time = 21 Mar 13:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 196.00 alt = 37.06
Eye: azi = 270.00 alt = 30.00



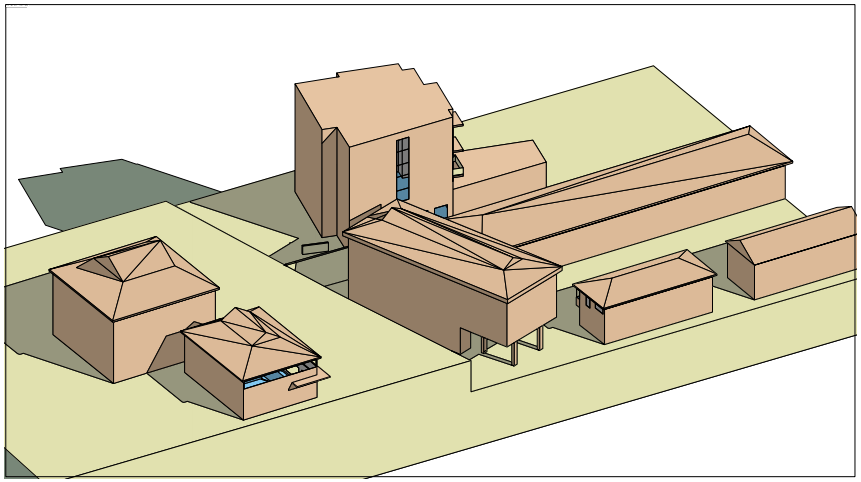
Existing

Suncast image:
View time = 21 Mar 13:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 196.00 alt = 37.06
Eye: azi = 270.00 alt = 30.00



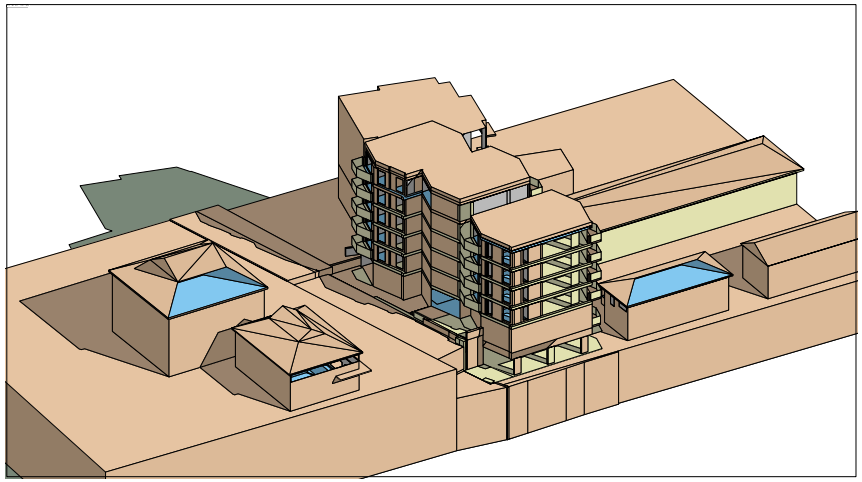
Proposed

Suncast image:
View time = 21 Mar 14:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 213.72 alt = 33.12
Eye: azi = 270.00 alt = 30.00



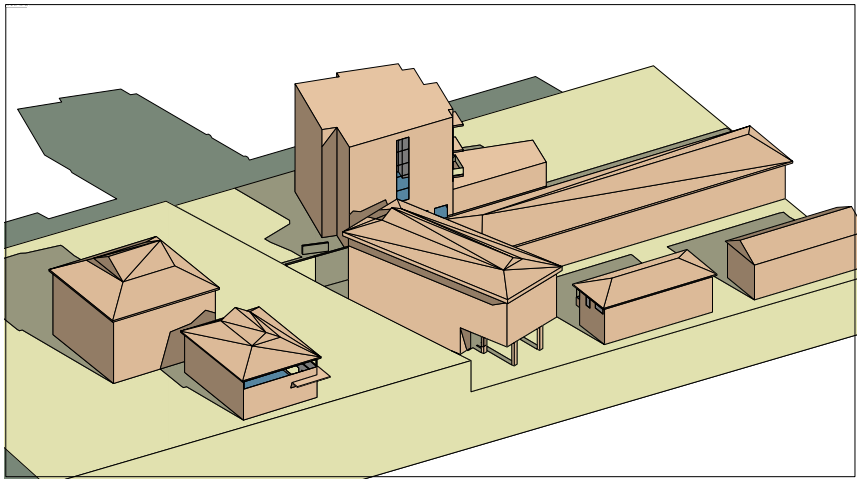
Existing

Suncast image:
View time = 21 Mar 14:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 213.72 alt = 33.12
Eye: azi = 270.00 alt = 30.00



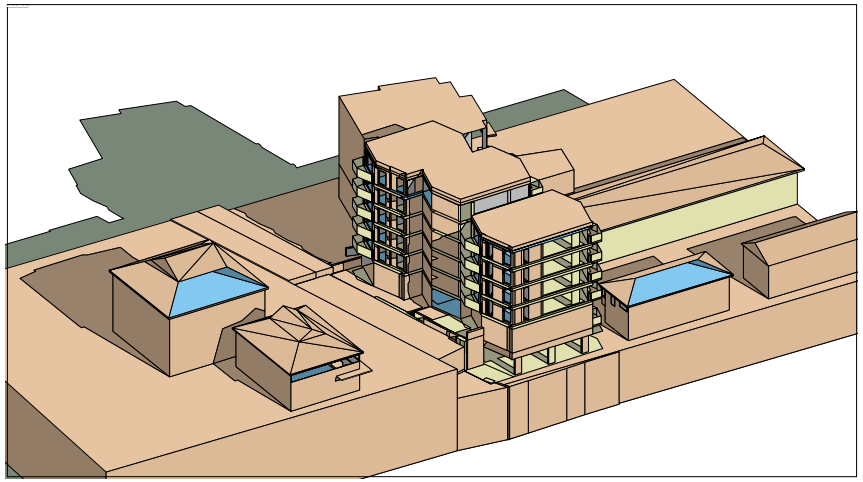
Proposed

Suncast image:
View time = 21 Mar 15:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 229.52 alt = 26.91
Eye: azi = 270.00 alt = 30.00



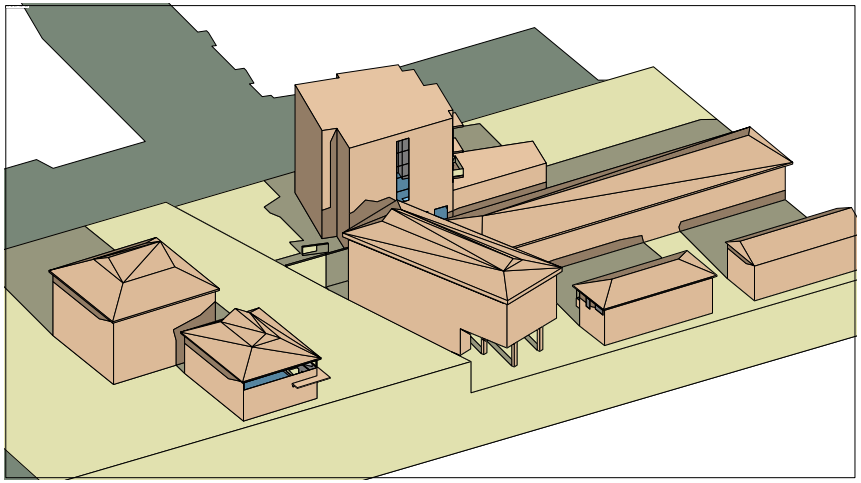
Existing

Suncast image:
View time = 21 Mar 15:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 229.52 alt = 26.91
Eye: azi = 270.00 alt = 30.00



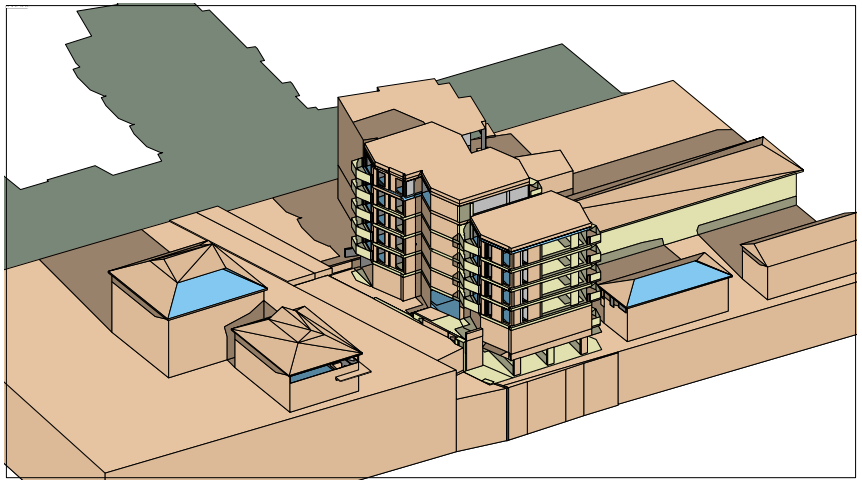
Proposed

Suncast image:
View time = 21 Mar 16:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 243.46 alt = 19.12
Eye: azi = 270.00 alt = 30.00



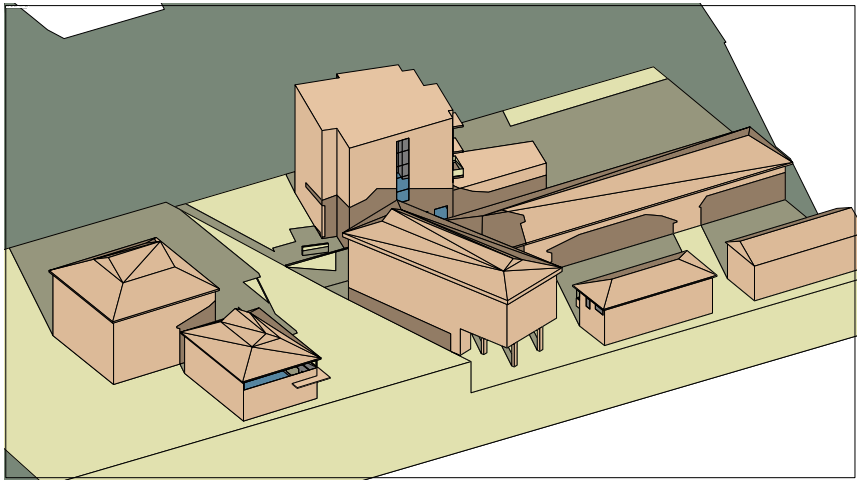
Existing

Suncast image:
View time = 21 Mar 16:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 243.47 alt = 19.12
Eye: azi = 270.00 alt = 30.00



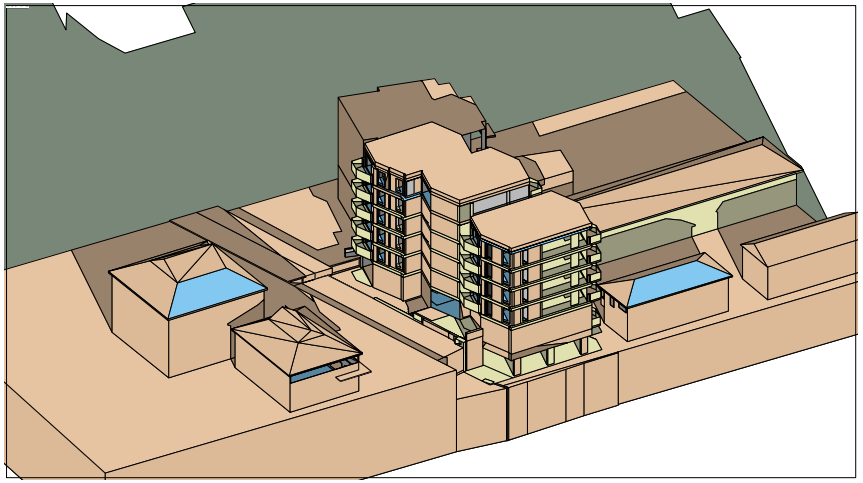
Proposed

Suncast image:
View time = 21 Mar 17:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 256.07 alt = 10.36
Eye: azi = 270.00 alt = 30.00



Existing

Suncast image:
View time = 21 Mar 17:00
Site Latitude = 51.43
Longitude diff. = -0.33
Model Bearing = 0.00
Sun: azi = 256.07 alt = 10.35
Eye: azi = 270.00 alt = 30.00



Proposed