SYNTEGRA
CONSULTING

Daylight, Sunlight & Overshadowing Report

Land adjacent to 35 York Way, London N7 9QF

September 2015

Ref: 14-1230

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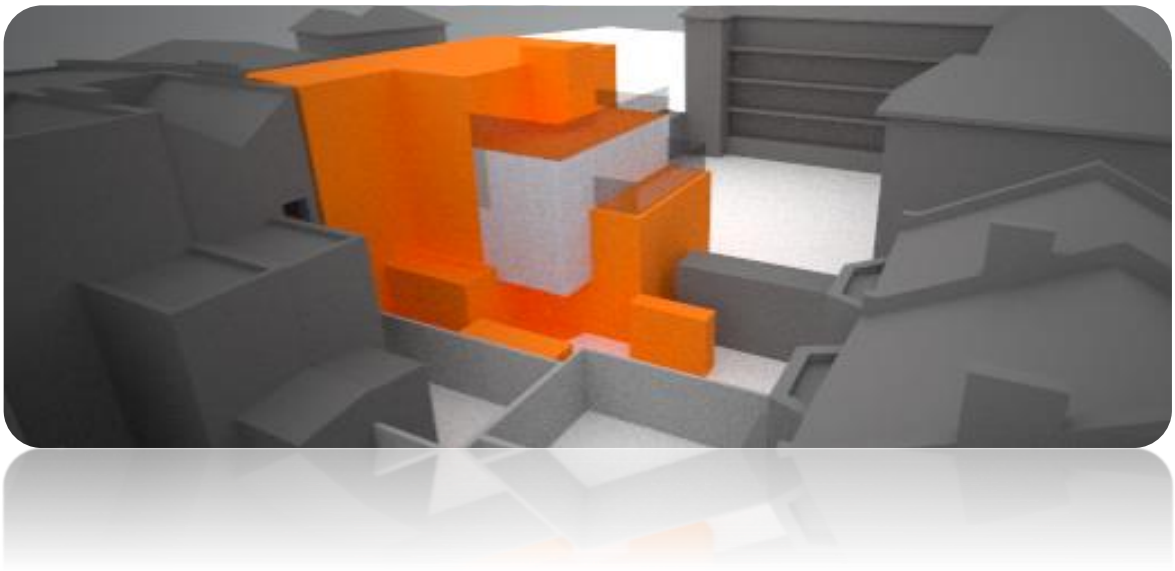

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1. Executive summary

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, **none of the residential surrounding buildings (35 York Way, 22 Marquis Road and 1-24 Grangefield)** will be adversely impacted by the proposed development.

  For the surface S1 the presence of the balcony is the main factor in the relative loss of light rather than the size of the proposed scheme. Therefore the daylight reduction to the existing will not be noticeable by the occupants.

  When the ADF calculation is run, it is shown that the affected room R01 on ground floor at 35 York way, facing directly the proposed scheme (S6-S7), will achieve the recommended amount from the British Standard (1%), meaning that the impact on neighbouring living conditions will be minimal.

  The slight loss in daylight for the surfaces located on first and second floor (S9-S11) at the rear of 35 York Way is not considered of concern as the impacted windows are secondary.

The BRE criteria are met: ☑

- Sunlight, **none of the residential surrounding buildings (35 York Way, 22 Marquis Road and 1-24 Grangefield)** will be adversely impacted by the proposed development.

  The windows from S6 to S8 will be adversely impacted by the proposed building, however the surface S6 and S7 will experience a loss in annual probable sunlight less than 20%, and it compensates the loss in the winter months. The window S8 due to their particular location near an internal corner, doesn't achieve the Annual probable sunlight. However it will still receive adequate levels in the winter months as the loss from the existing to proposed is 0%.

  Using alternative APSH targets as stated in the BRE guidebook we have demonstrated that the impact on windows is due to the particular location of some windows being too close to the boundary wall.

- Overshadowing, the existing amenity area/garden/open space located at **35 York Way and 22 Marquis Road** will not be impacted by the proposed development.

The BRE criteria are met: ☑

On balance, it can be concluded that the surrounding buildings at **(35 York Way, 22 Marquis Road and 1-24 Grangefield)** will not be adversely impacted by the proposed development.

↳ **The proposed scheme is considered acceptable.**

2. Introduction

This report has been prepared to support the planning application for the proposed development at 35 York Way, London N7 9QF. The proposed development consists of the construction of a new four-storey building including 7 residential units. The report assesses the daylight, sunlight and overshadowing effect of the proposed development on the surrounding buildings and specifically focuses on the windows of the residential buildings at 35 York Way, 22 Marquis Road and 1-24 Grangefield. 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 **WYG** on the **14th September 2015** 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 buildings at 35 York Way, 22 Marquis Road and 1-24 Grangefield. Specifically, it takes into consideration the possible effect and influence that the new development would have on the properties.

12 target surfaces (S1 to S12) 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".*

Two existing amenity areas/gardens/open spaces have been identified on the drawings and/or site plan at 35 York Way and 22 Marquis 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.

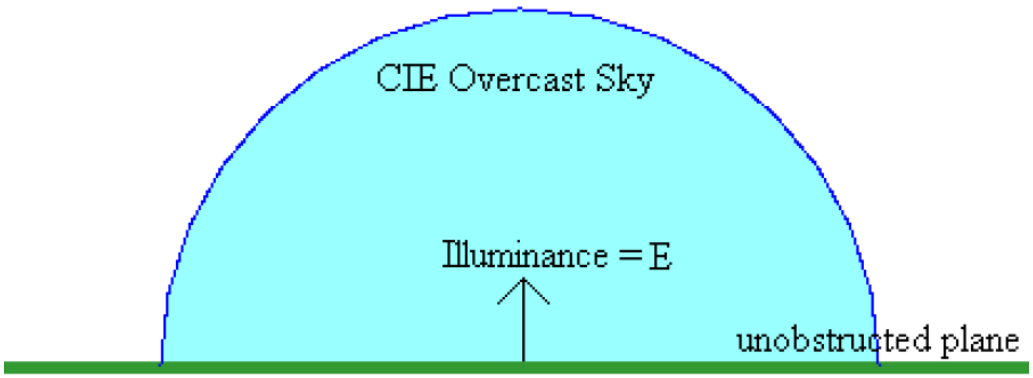
5.2. BRE Digest 209: "Site layout planning for daylight and sunlight"

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.

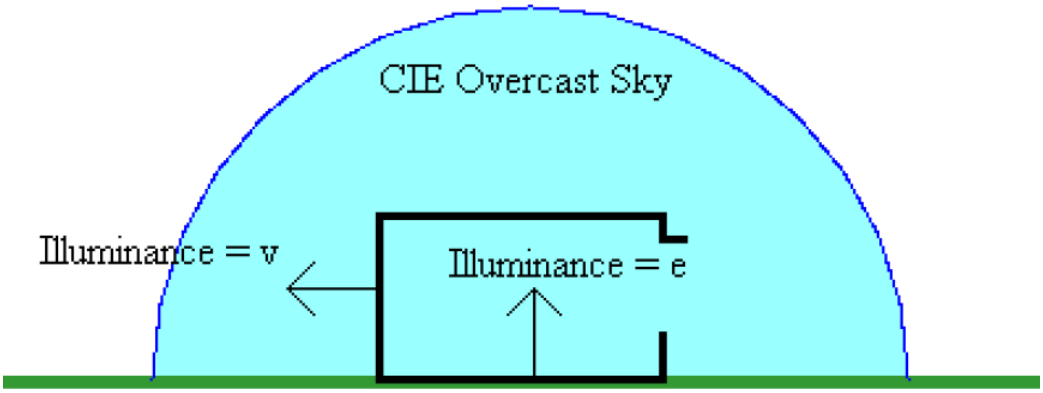
5.2.1. Daylight

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 35 York Way, 22 Marquis Road and 1-24 Grangefield 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
Surface 1 – 1-24 Grangefield - GF	10.49	5.97	0.57	Major adverse
Surface 2 – 1-24 Grangefield - FF	35.78	30.99	0.87	Negligible
Surface 3 – 22 Marquis Road - GF	26.51	21.87	0.82	Negligible
Surface 4 – 22 Marquis Road - FF	32.41	28.73	0.89	Negligible
Surface 5 – 22 Marquis Road - FF	34.48	30.75	0.89	Negligible
Surface 6 – 35 York Way - GF	21.94	8.8	0.40	Major adverse
Surface 7 – 35 York Way - GF	18.28	6.52	0.36	Major adverse
Surface 8 – 35 York Way - GF	14.13	12.48	0.91	Negligible
Surface 9 – 35 York Way - FF	24.70	8.33	0.34	Major adverse
Surface 10 – 35 York Way - FF	20.80	16.62	0.80	Negligible
Surface 11 – 35 York Way - SF	29.15	13.04	0.45	Major adverse
Surface 12 – 35 York Way - SF	31.84	29.03	0.91	Negligible

Table 2: Daylight results

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

S1 - 1-24 Grangefield - GF:

Although the window failed to achieve the VSC criteria for daylight we believe that the impact is mainly caused by the existing balcony.

Bird-eye view of 1-24 Grangefield

Indeed, BRE paragraph 2.2.11 states that "*Existing windows with balconies above them typically receive less daylight. Because the balcony cuts out light from the top part of the sky, even a modest obstruction opposite may result in a large relative impact on the VSC, and on the area receiving direct skylight. One way to demonstrate this would be to carry out an additional calculation of the VSC and area receiving direct skylight, for both the existing and proposed situations, without the balcony in place. For example, if the proposed VSC with the balcony was under 0.8 times the existing value with the balcony, but the same ratio for the values without the balcony was well over 0.8, this would show that the presence of the balcony, rather than the size of the new obstruction, was the main factor in the relative loss of light*".

Further to the above statement, an additional assessment without the balcony in place has been carried out for the purposes of establishing the significance the effect.

Daylight assessment (Without balcony)					
Window reference	**Building Target surface**	**VSC (existing) >27%**	**VSC (proposed) >27%**	**Ratio**	**Result**
S1	**1-24 Grangefield - GF**	25.67	21.80	0.85	Negligible

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

As the ratio is above 0.80 without the balcony we can confirm that the presence of the balcony is the main factor in the relative loss of light rather than the size of the proposed scheme.

35 York Way:

→ All the windows directly facing the proposed scheme **failed** to achieve the VSC (daylight criteria).

4 out of 12 windows will experience more than a 20% loss in proposed VSC values due to their location directly facing the proposed obstruction and due to the fact that the existing windows are close to the boundary.

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.

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 35 York has been used to establish the window positions and room layouts.

35 York Way - Floor plans dated 1987

The ADF calculation was produced for the ground floor double bedroom at 35 Work Way 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**
S6-S7 - 35 York Way - Double Bedroom - GF	Room 1	1.0%	1.0%	PASS

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 room at ground floor retains that daylight level complies with the recommended amount from the British Standard, meaning that the impact on neighbouring living conditions will be minimal.**

→ **The above floor plans show that the bedrooms at first and second floor actually have primary windows facing towards the garden. This is also confirmed by the below picture. We can therefore consider that the impact on S9-S11 is negligible as they are secondary windows.**

35 York Way - Rear elevation

- **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.**

→ **Following the above BRE guidance it can be considered that the proposed scheme is acceptable in terms of daylight.**

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 35 York Way, 22 Marquis Road and 1-24 Grangefield with and without the proposed development.

A summary of results is displayed in the table 4 below:

Building Target surface	Sunlight assessment (Surrounding buildings) Total APSH >25% Existing	Total APSH >25% Proposed	Winter APSH >5% Existing	Winter APSH >5% Proposed	Ratio Annual	Ratio Winter	Result
Surface 1 – 1-24 Grangefield - GF	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Surface 2 – 1-24 Grangefield - FF	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Surface 3 – 22 Marquis Road - GF	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Surface 4 – 22 Marquis Road - FF	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Surface 5 – 22 Marquis Road - FF	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Surface 6 – 35 York Way - GF	56	23	9	0	0.41	0.0	Major adverse
Surface 7 – 35 York Way - GF	48	21	9	2	0.44	0.22	Major adverse
Surface 8 – 35 York Way - GF	27	18	1	1	0.67	1.00	Moderate adverse
Surface 9 – 35 York Way - FF	56	27	20	3	0.48	0.15	Major adverse (Winter only)
Surface 10 – 35 York Way - FF	44	27	15	4	0.61	0.27	Major adverse (Winter only)
Surface 11 – 35 York Way - SF	62	37	23	6	0.60	0.26	Negligible
Surface 12 – 35 York Way - SF	49	38	16	6	0.78	0.38	Negligible

Table 4: Sunlight results

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

N/A: Not applicable. The buildings surrounding or adjacent to each 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.

S6 - 35 York Way - GF:

The window facing south it will experience a loss in proposed APSH value lower than 20% (23%) close enough the BRE criteria therefore it will not be noticeable by the occupants, but it **failed** the winter APSH.

S7 - 35 York Way - GF:

The window facing south it will experience a loss in proposed APSH result lower than 20% (21%) close enough the BRE criteria therefore it will not be noticeable by the occupants, but it **failed** the winter APSH.

S8 - 35 York Way - GF:

The window **failed** to achieve the annual APSH but met winter APSH. The impact is considered moderate.

S9-S10 - 35 York Way - FF:

All the windows achieved the criteria for the annual APSH as they will experience proposed value more than 25%, but **failed** the winter APSH (values between 3% and 4%).

S11-S12 - 35 York Way - SF:

All the windows achieved both the annual APSH (37%-38%) and winter APSH (6%). The impact is considered negligible.

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

- The windows from S6 to S8 will be adversely impacted by the proposed building, however the surface S6 and S7 will experience a loss in annual probable sunlight less than 20%, it will compensate the loss in the winter months. The window S8 due to their particular location near an internal corner, doesn't achieve the Annual probable sunlight. However it will still receive adequate levels in the winter months as the loss from the existing to proposed is 0%.

→ **However, due to the existing site being formed by row of low level garages we consider that it is appropriate in this case to use alternative VSC and ASPH targets as per BRE Appendix F1. This has been demonstrated in the daylight assessment of this report.**

As per the above statement, we believe that the proposed scheme will follow the existing heights and proportions of the road and therefore in this case it is acceptable to create a mirror-image **of the existing building** at 35 York Way in order to set the APSH targets.

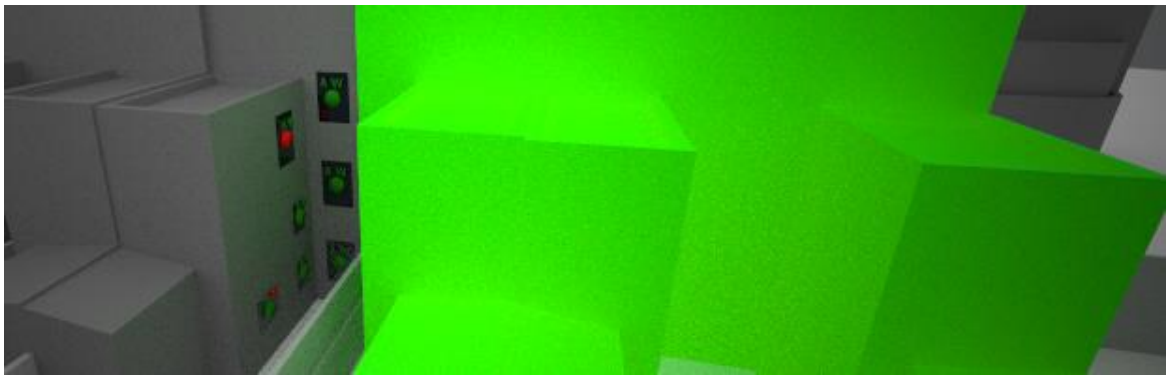
A summary of results is displayed in the table 5 below:

Building Target surface	Sunlight assessment (Surrounding buildings) Total APSH >25% Existing	Total APSH >25% Proposed	Winter APSH >5% Existing	Winter APSH >5% Proposed	Ratio Annual	Ratio Winter	Result
Surface 6 – 35 York Way - GF	22	23	2	0	1.05	0.0	Major adverse (Winter only)
Surface 7 – 35 York Way - GF	17	21	2	2	1.24	1.0	Beneficial
Surface 8 – 35 York Way - GF	13	18	1	1	1.38	1.0	Beneficial
Surface 9 – 35 York Way - FF	27.0	27.0	3.0	3.0	1.0	1.0	Negligible
Surface 10 – 35 York Way - FF	23.0	27.0	2.0	4.0	1.17	2.0	Beneficial
Surface 11 – 35 York Way - SF	43.0	37.0	12.0	6.0	0.86	0.50	Negligible
Surface 12 – 35 York Way - SF	42.0	38.0	12.0	6.0	0.90	0.50	Negligible

Table 5: Sunlight results

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

Creating a mirror-image of the building at 35 York Way gives different existing VSC and APSH values for the windows.

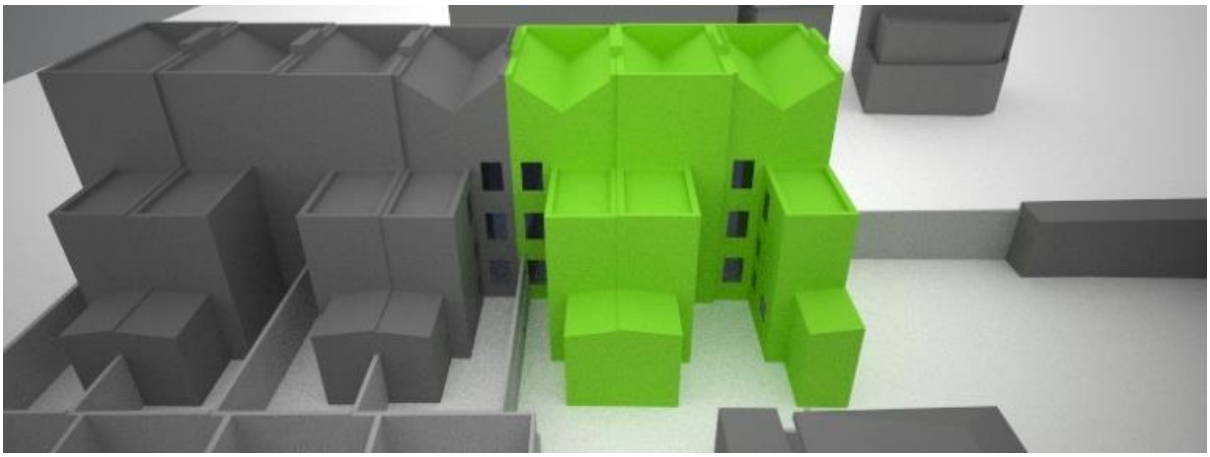


- ✓ **As can be seen in the above table, some of the windows will actually receive more sunlight with the proposed (values between 18% and 23% APSH) scheme than with the mirror-image of 35 York Way (existing building).**

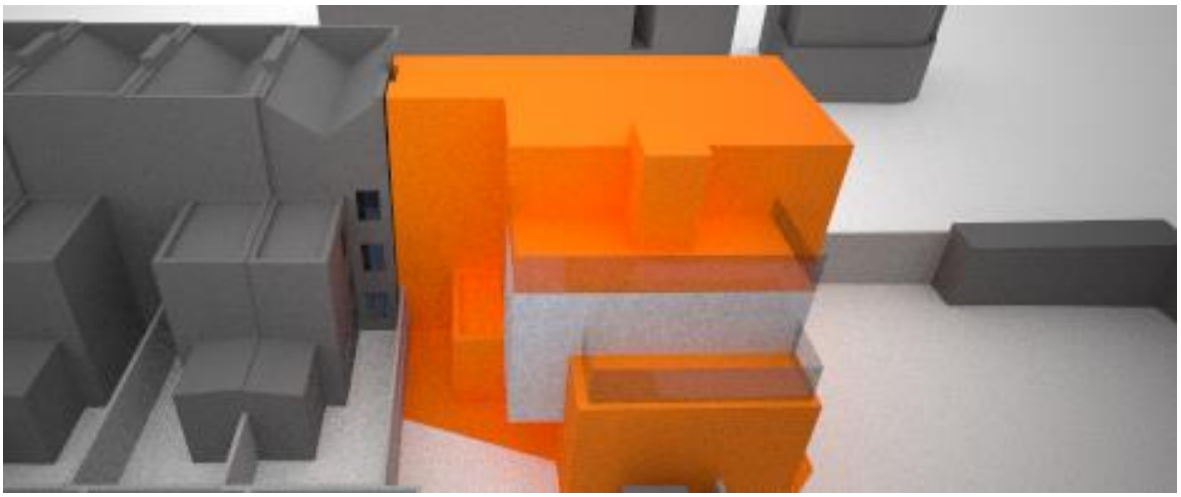
- ➢ **The loss of winter sunlight for the window S6 is of 2% from (2% to 0%). However, it should be noted that this loss is compensated by the increase of annual sunlight from 22% to 23%. It can therefore be considered that this impact is negligible.**

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

Following the above BRE guidance it can be considered that the proposed scheme is acceptable in terms of sunlight.



Existing



Proposed

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, two existing amenity areas are located at 35 York Way and 22 Marquis 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 6 below:

Overshadowing assessment from 7.30am to 5.00pm % of area receiving sunlight on 21st March				
Amenity area	**Existing (%)**	**Proposed (%)**	**Ratio**	**Result**
A1 – 35 York WayA1 – 35 York Way	10.66	8.20	0.77	Minor adverse
A2 – Marquis Road	6.93	5.8	0.84	Negligible

Table 6: Overshadowing results

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

→ **The amenity at Marquis Road will not be impacted by the proposed scheme, however 35 York Way will be minor adverse.**

→ The above table shows that the overshadowing impact will mainly occur on the garden at 35 York Way in the morning from 09.00am to 12.00am (4hours). The loss will vary from 5.90 m^2 to a maximum of 18.8 m^2 at 11.00am on the 21st March.

Furthermore, another assessment has been done in June in order to show that the impact will be negligible on the garden located at the back of 35 York Way, when the occupants are more likely to use their garden.

A summary of results is displayed in the table 7 below:

Overshadowing assessment from 7.30am to 5.00pm (Mirror-image) % of area receiving sunlight on 21st March				
Amenity area	**Existing (%)**	**Proposed (%)**	**Ratio**	**Result**
A1 – 35 York Way	22.38	25.58	1.1	No Impact

Table 7: Overshadowing results

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

- ✓ With the proposed development, at least half of the amenity area receives direct sunlight from 12.00pm to 16.00pm (4 hours) on 21st June as shown below.

Month	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
Jun	**0.00**	**0.00**	**10.00**	**32.00**	**42.40**	**52.30**	**61.20**	**70.30**	**81.30**	**66.80**	**18.60**

→ **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 **(35 York Way, 22 Marquis Road and 1-24 Grangefield)** are adequate.

BRE criteria met: ☑

8.2. Sunlight

This report demonstrates that the levels of sunlight at the surrounding buildings **(35 York Way, 22 Marquis Road and 1-24 Grangefield)** are adequate.

BRE criteria met: ☑

8.3. Overshadowing

This report demonstrates that the existing amenity area/garden/open spaces located at **35 York Way and 22 Marquis Road** will not be adversely impacted by the proposed development.

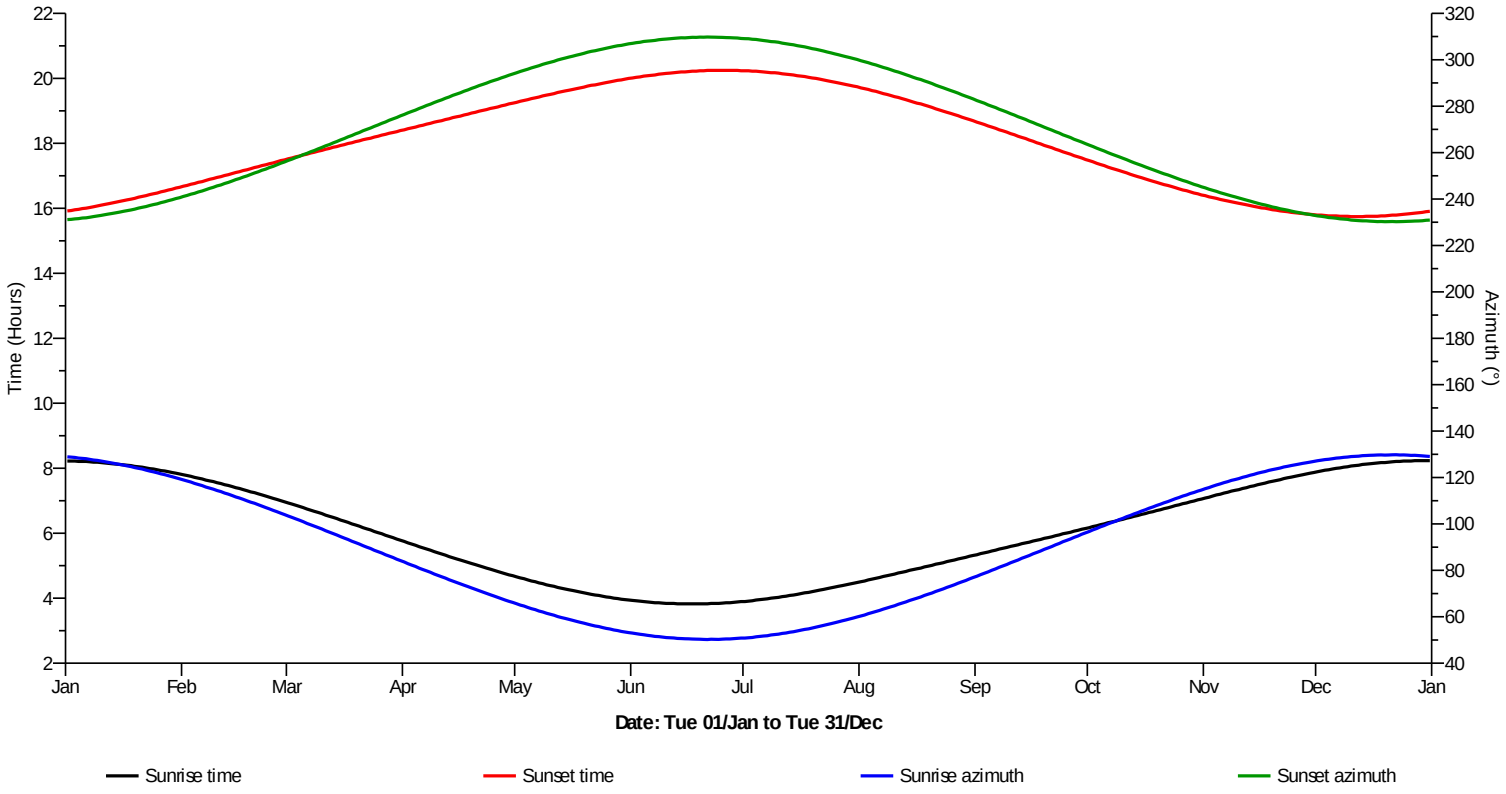
BRE criteria met: ☑

On balance, it can be concluded that the surrounding buildings at **(35 York Way, 22 Marquis Road and 1-24 Grangefield)** will not be adversely impacted by the proposed development.

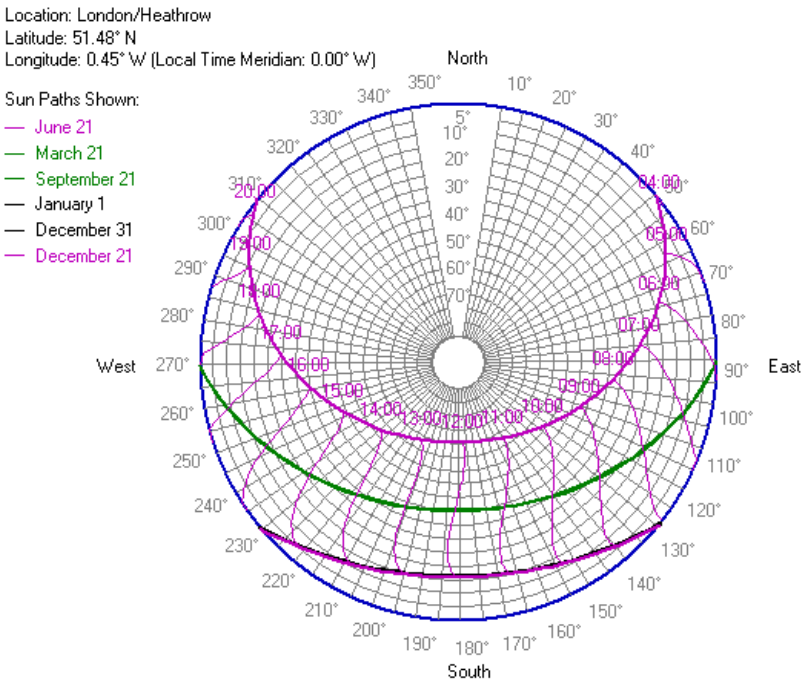
↳ **The proposed scheme is considered acceptable.**

9. Appendix

9.1. Sunrise and sunset time

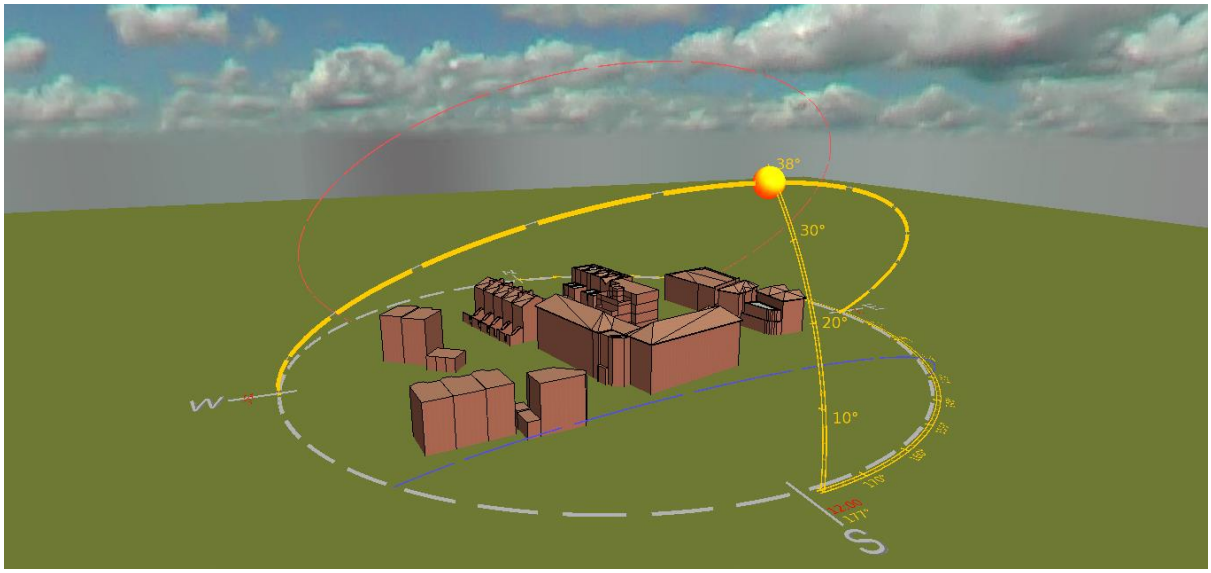


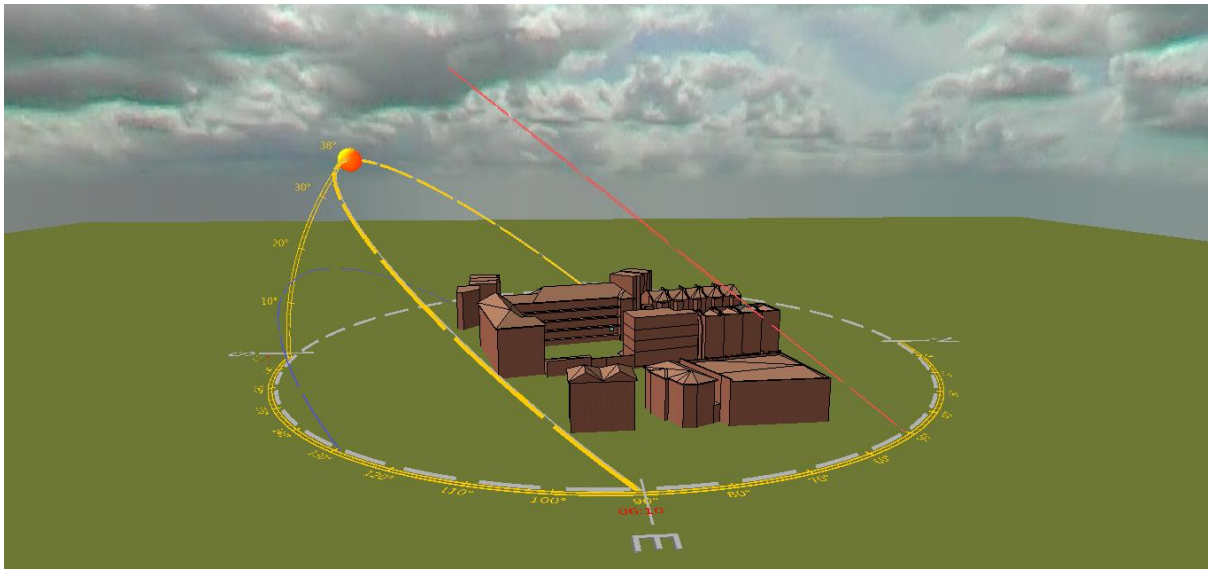
9.2. Sun path



9.3. Suntrace

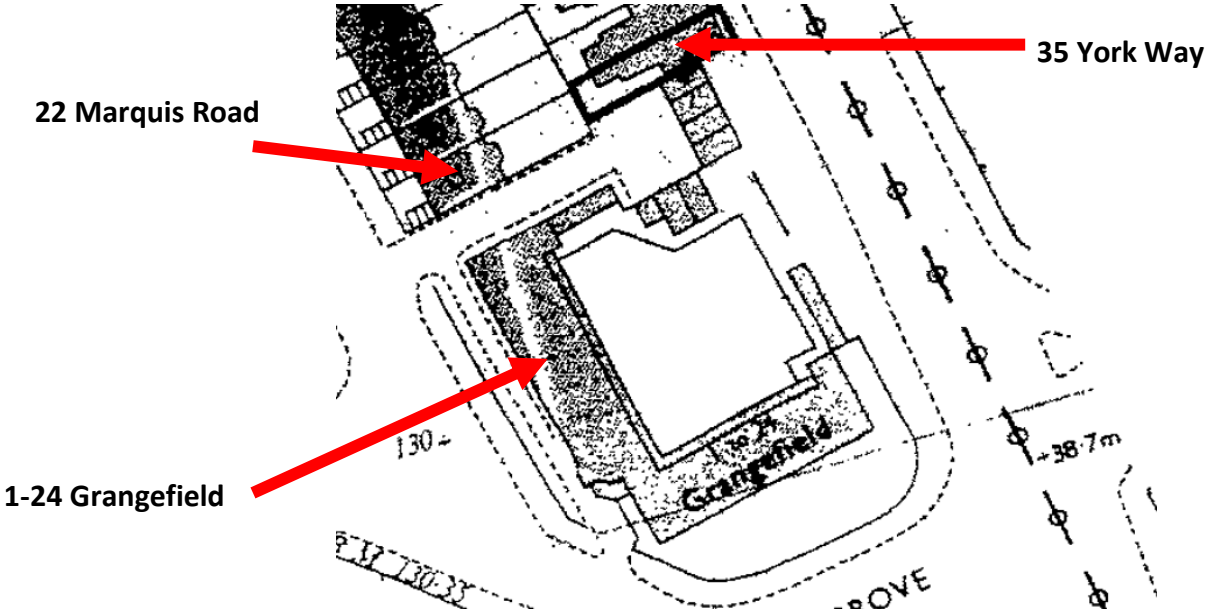
- The red line represents the sun's path during June.
- The yellow line represents the sun's path during March/September.
- The blue line represents the sun's path during December.



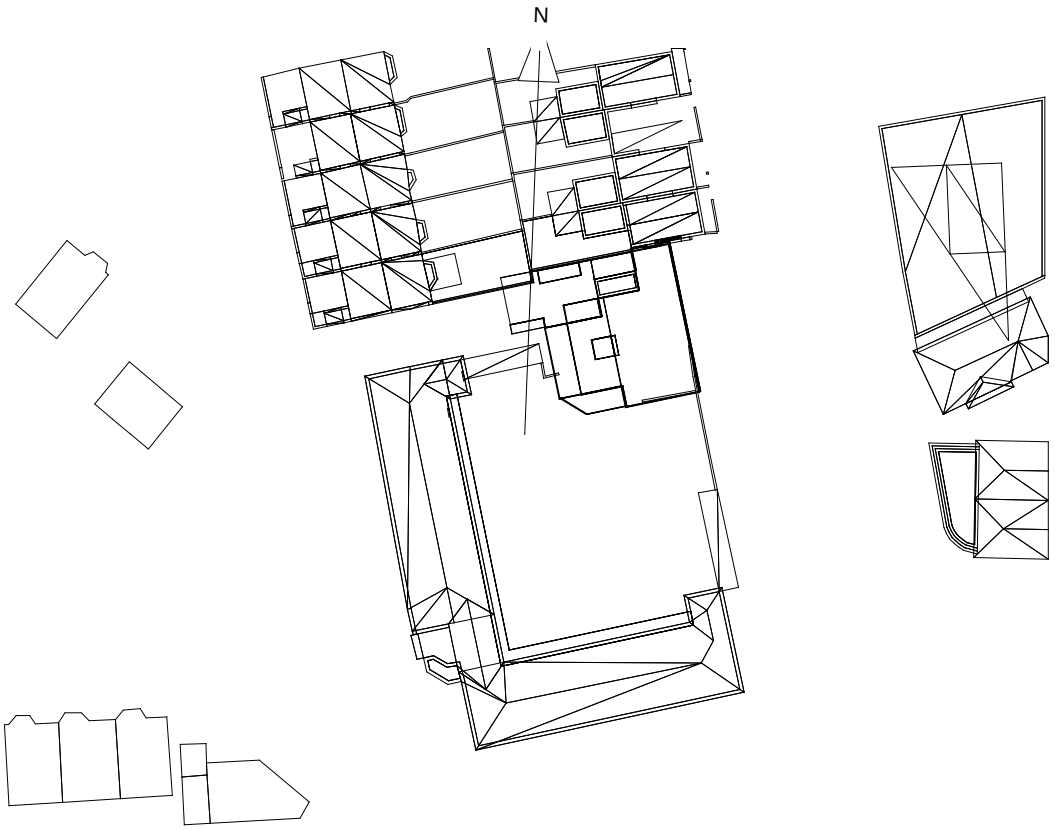


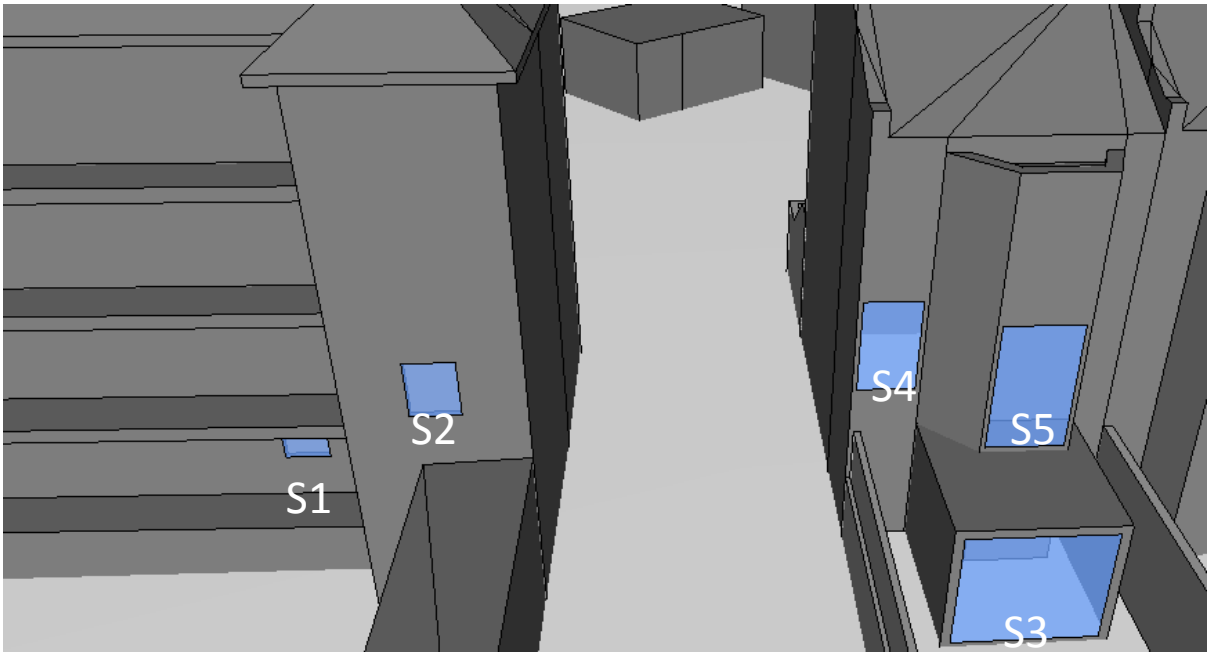
9.4. Site plan and location

9.4.1. Existing site layout

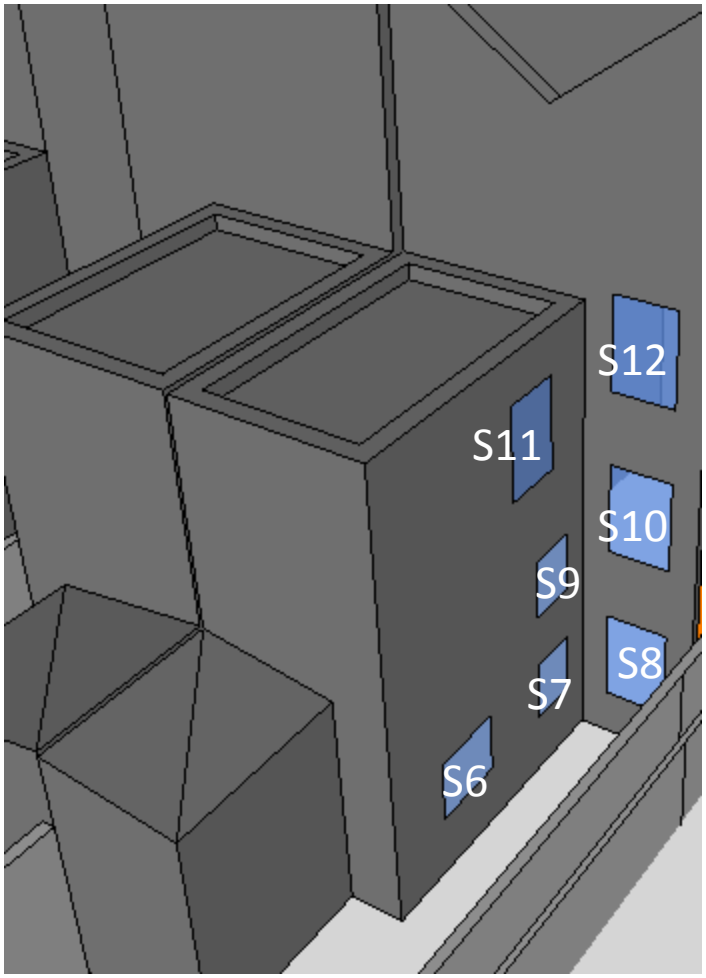


9.4.2. Proposed site layout

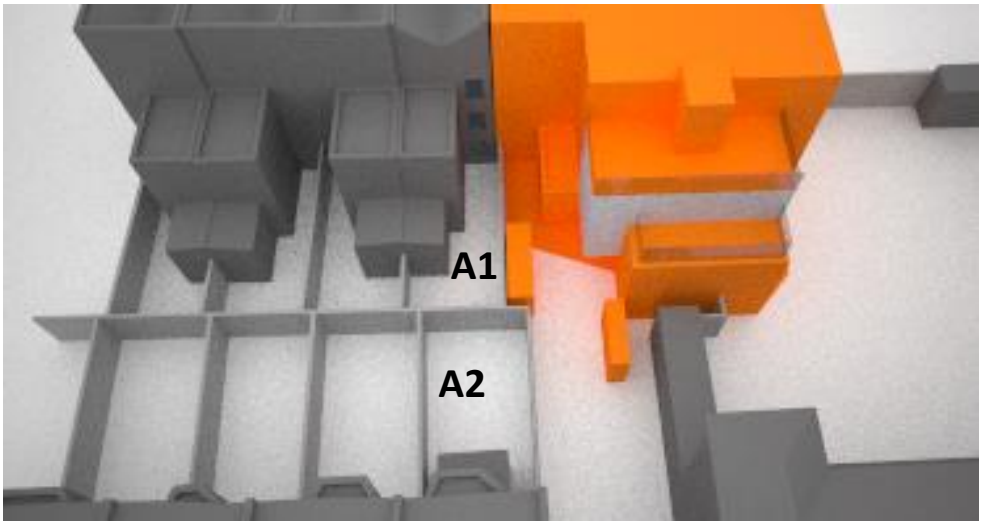




1-24 Grangefield Road and 22 Marquis Road



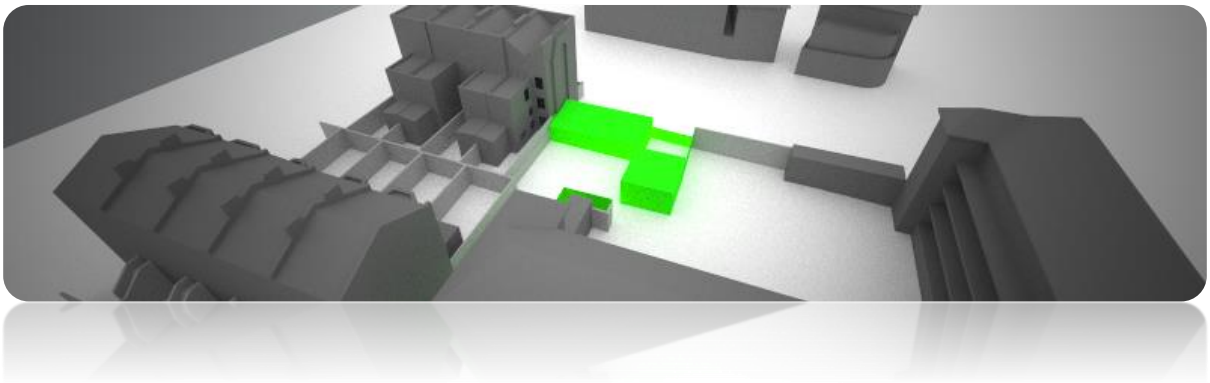
35 York Way



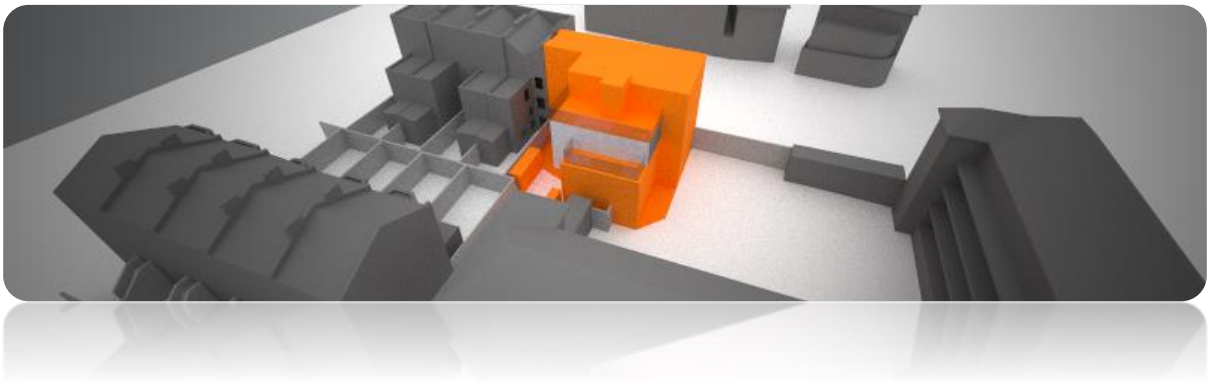
Amenity areas / gardens

Location	35 York Way, Camden, London N7 9QF
Latitude (°)	51.54 N
Longitude (°)	0.12 W

9.5. Model images



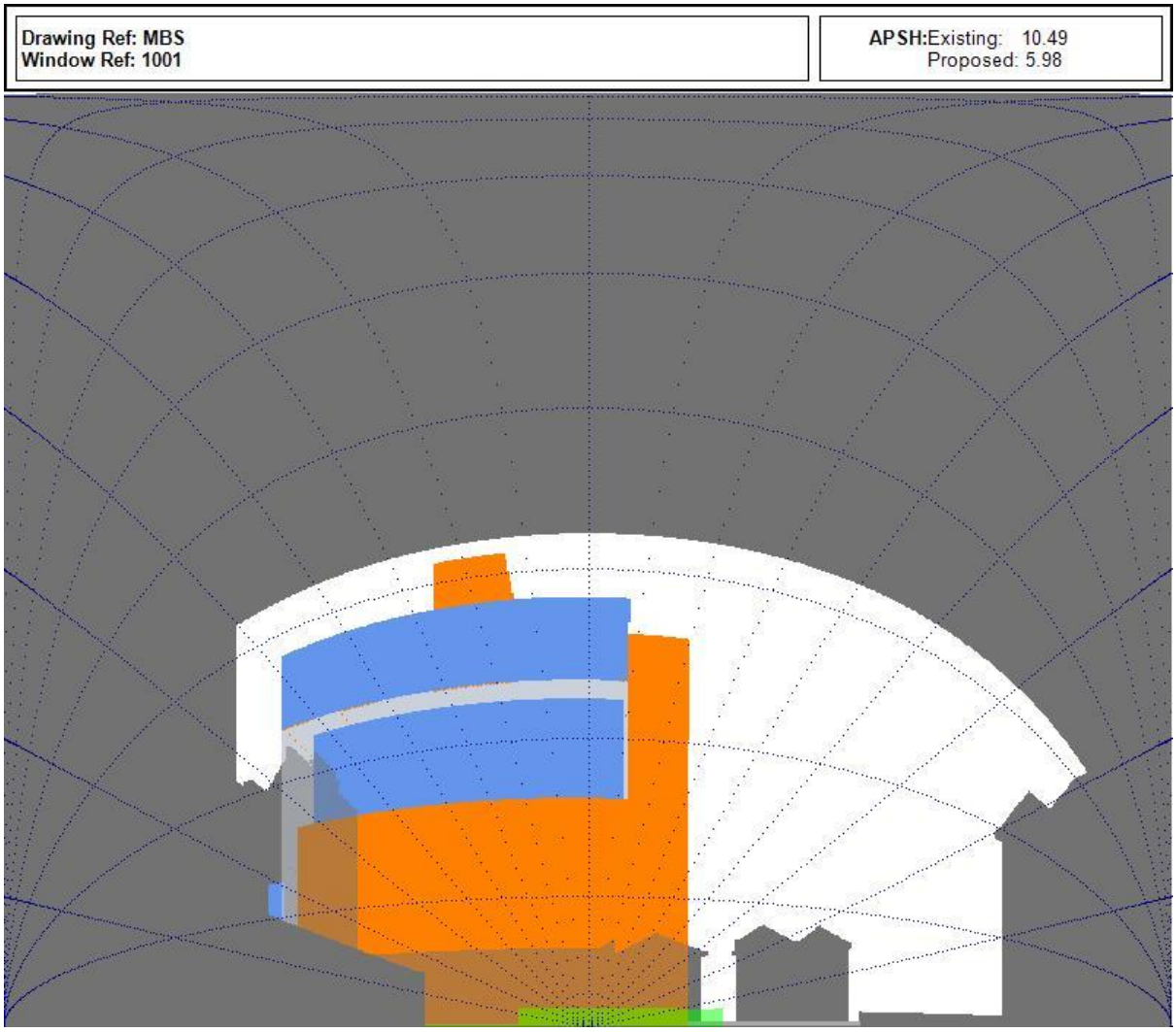
Existing scheme



Proposed scheme

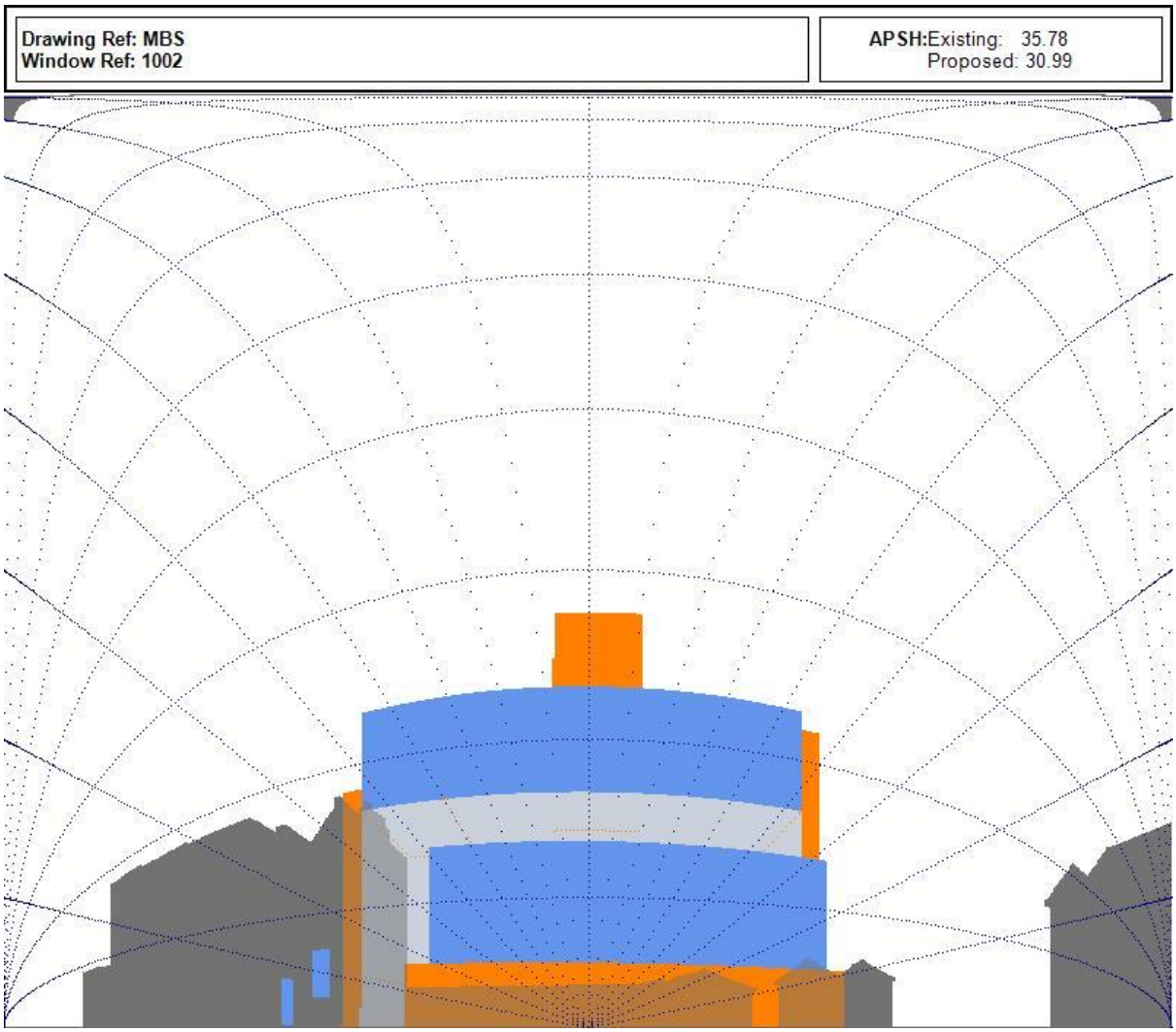
9.6. Daylight results

Surface 1 – 1-24 Grangefield - GF



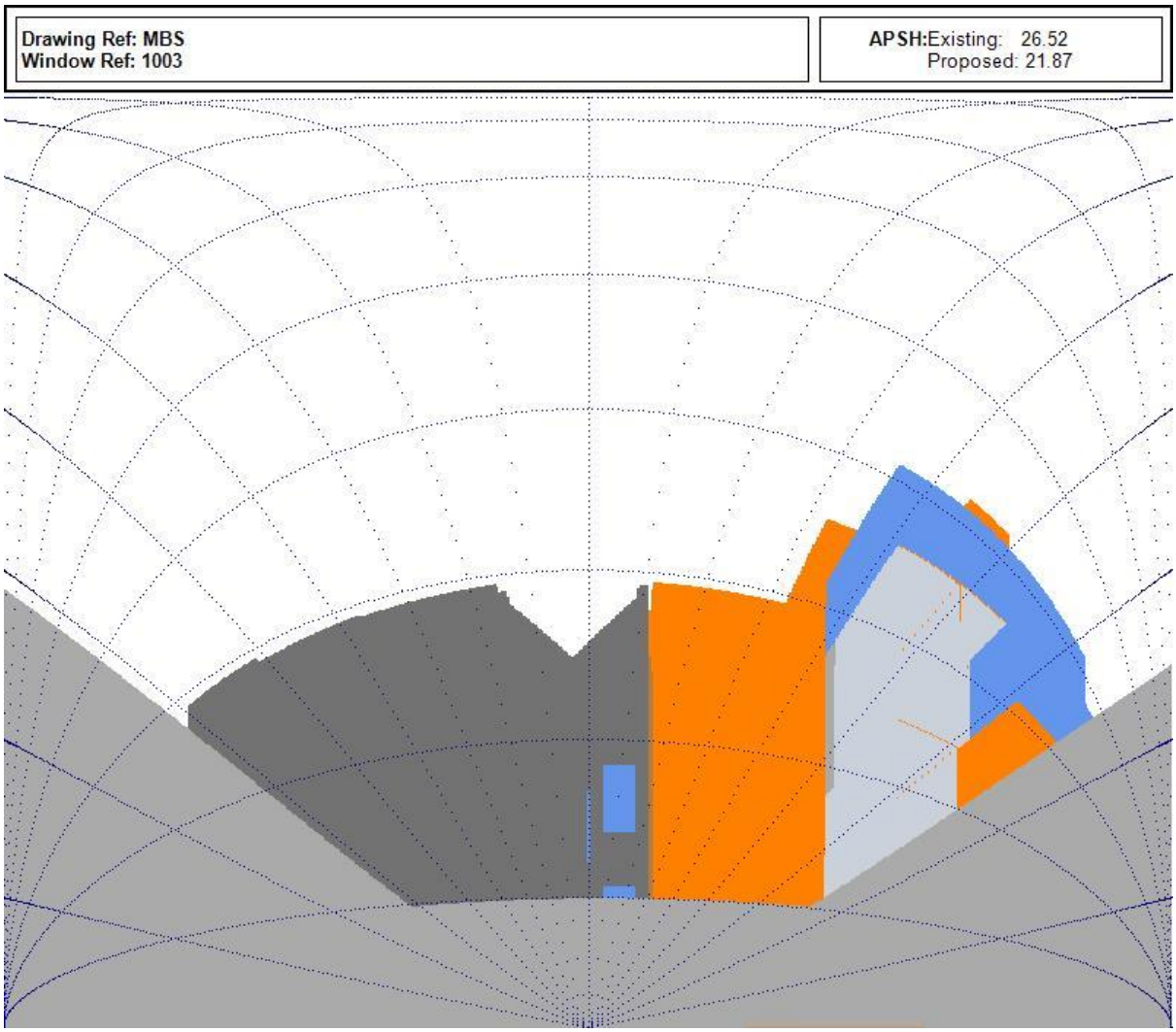
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 2 – 1-24 Grangefield - FF



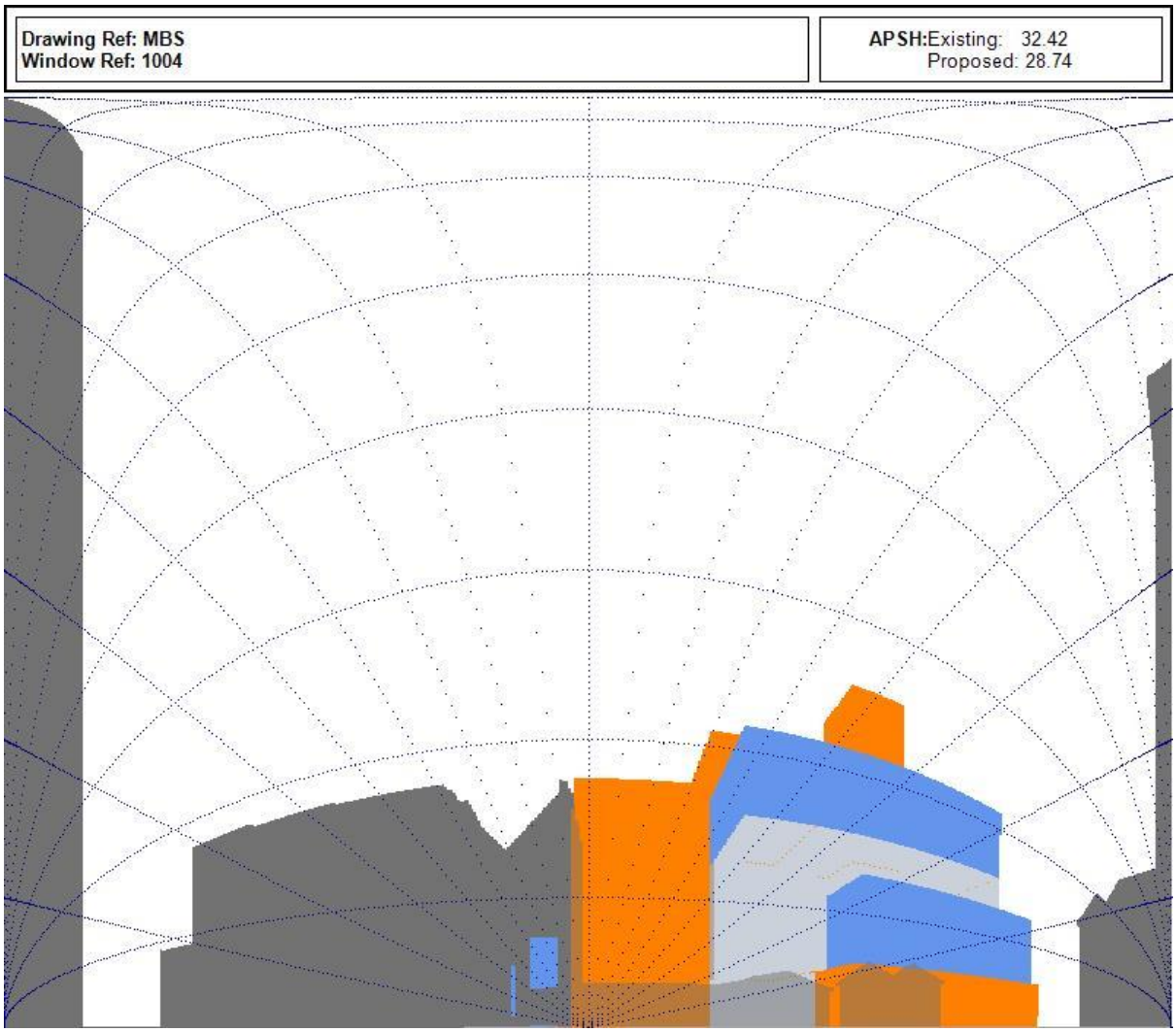
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 3 – 22 Marquis Road - GF



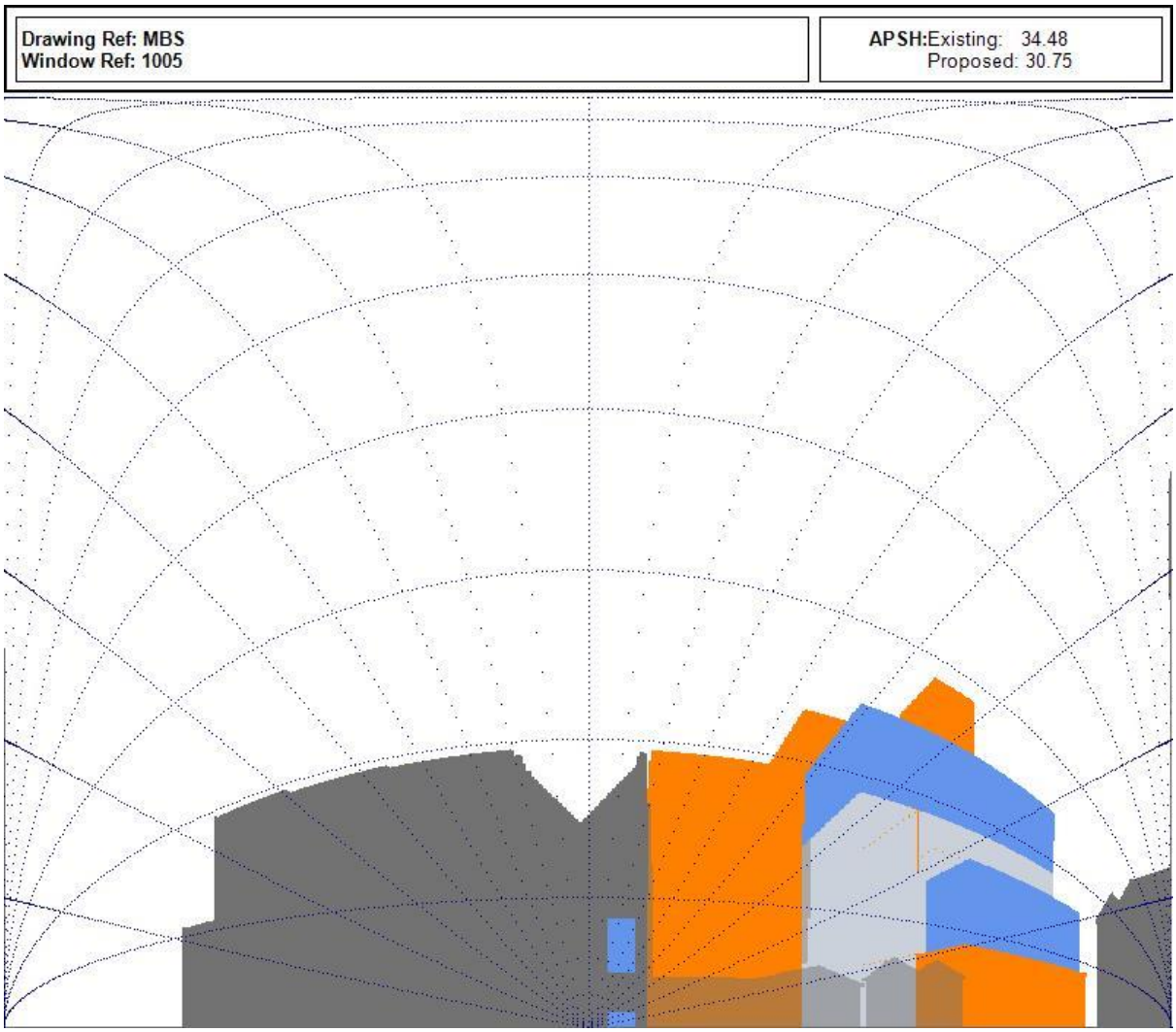
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 4 – 22 Marquis Road - FF



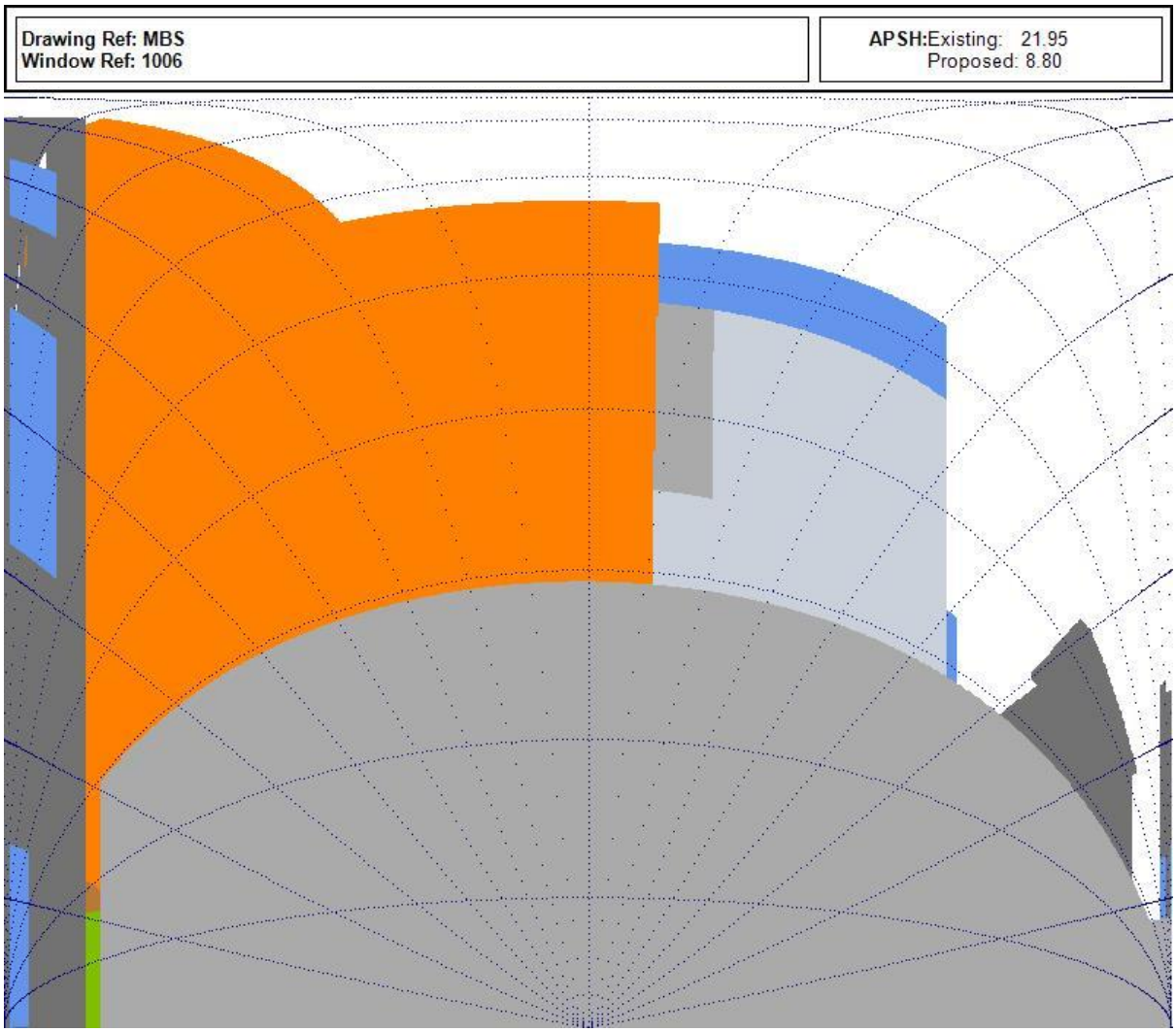
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 5 – 22 Marquis Road - FF



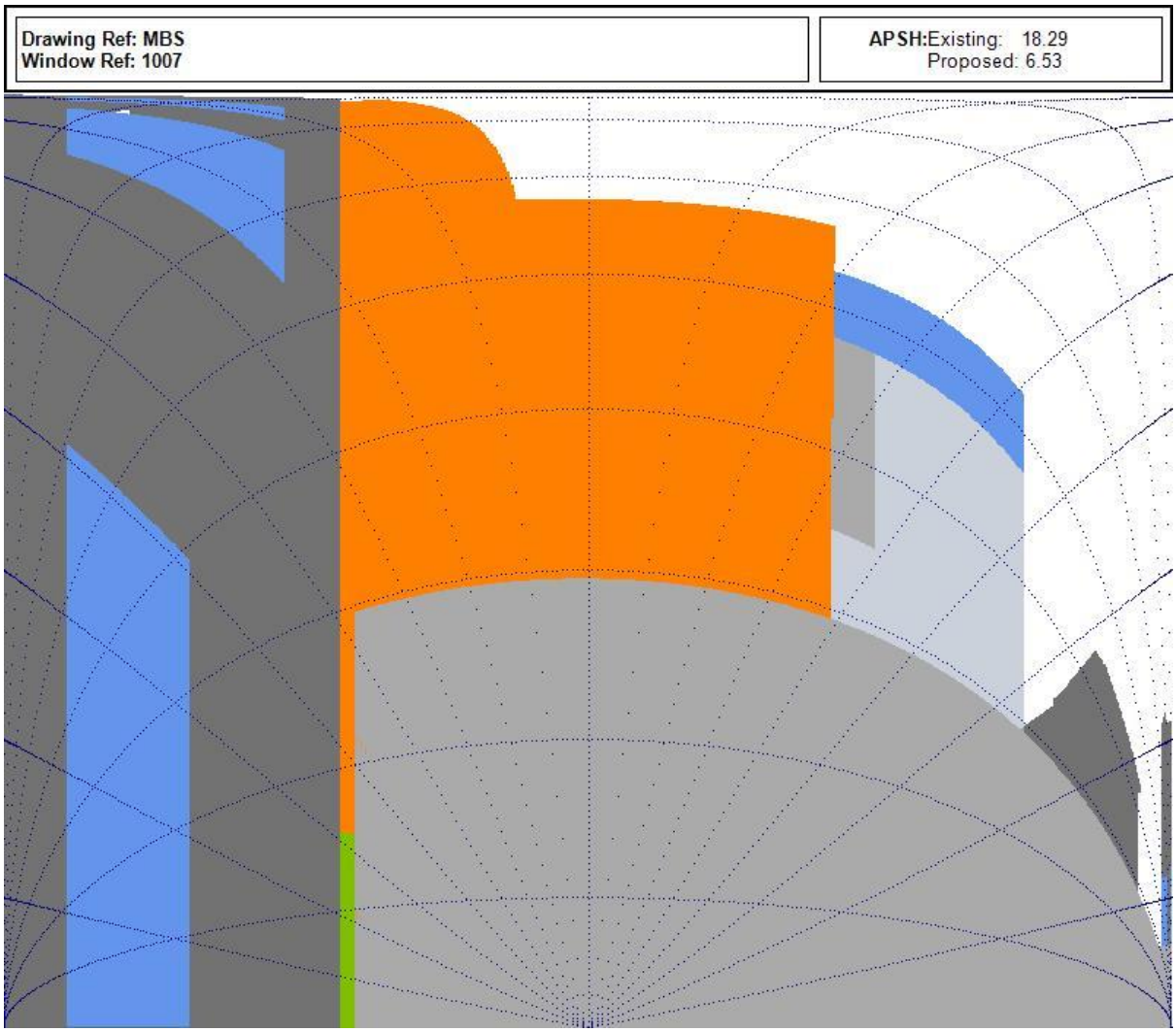
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 6 – 35 York Way - GF



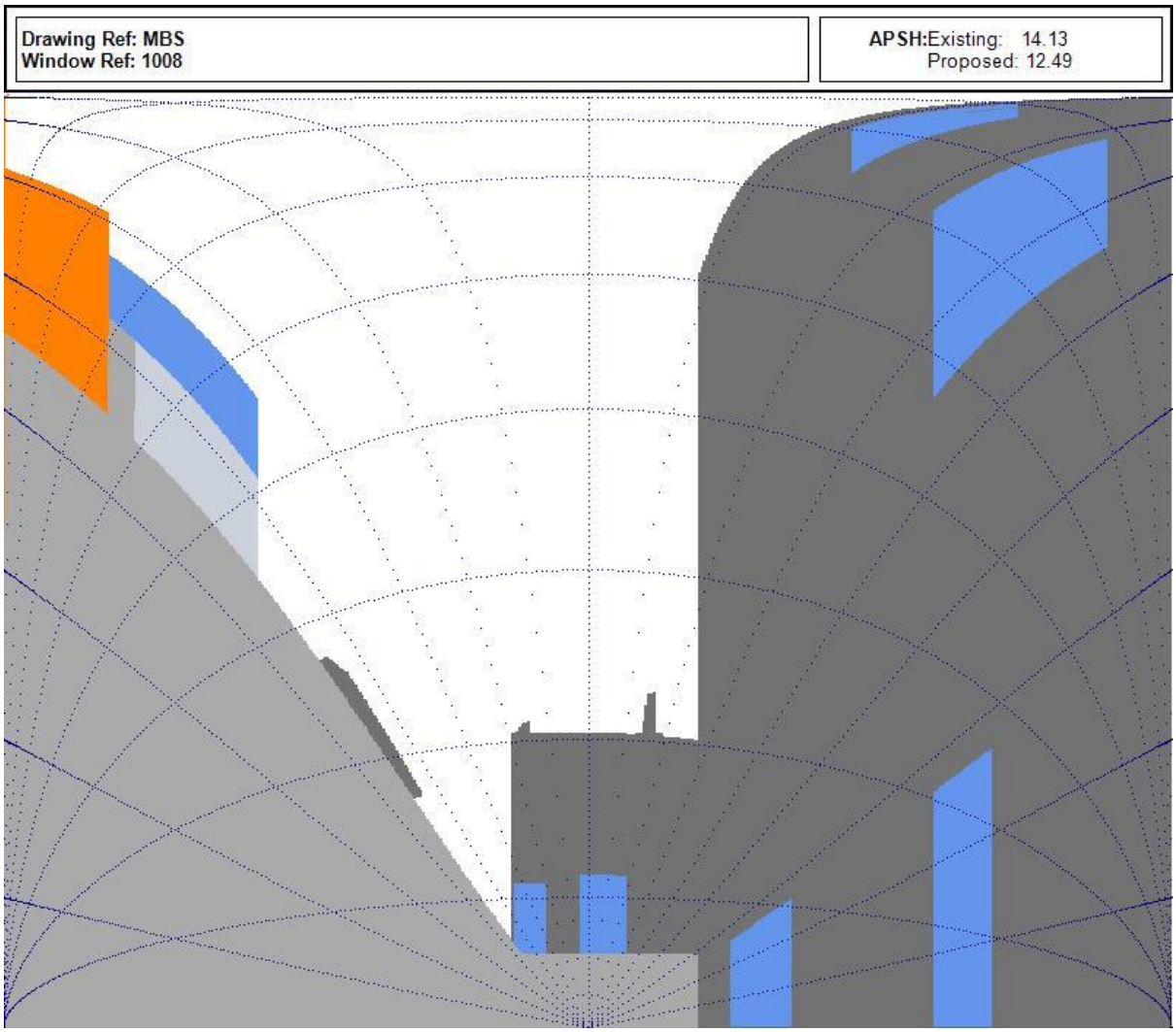
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 7 – 35 York Way - GF



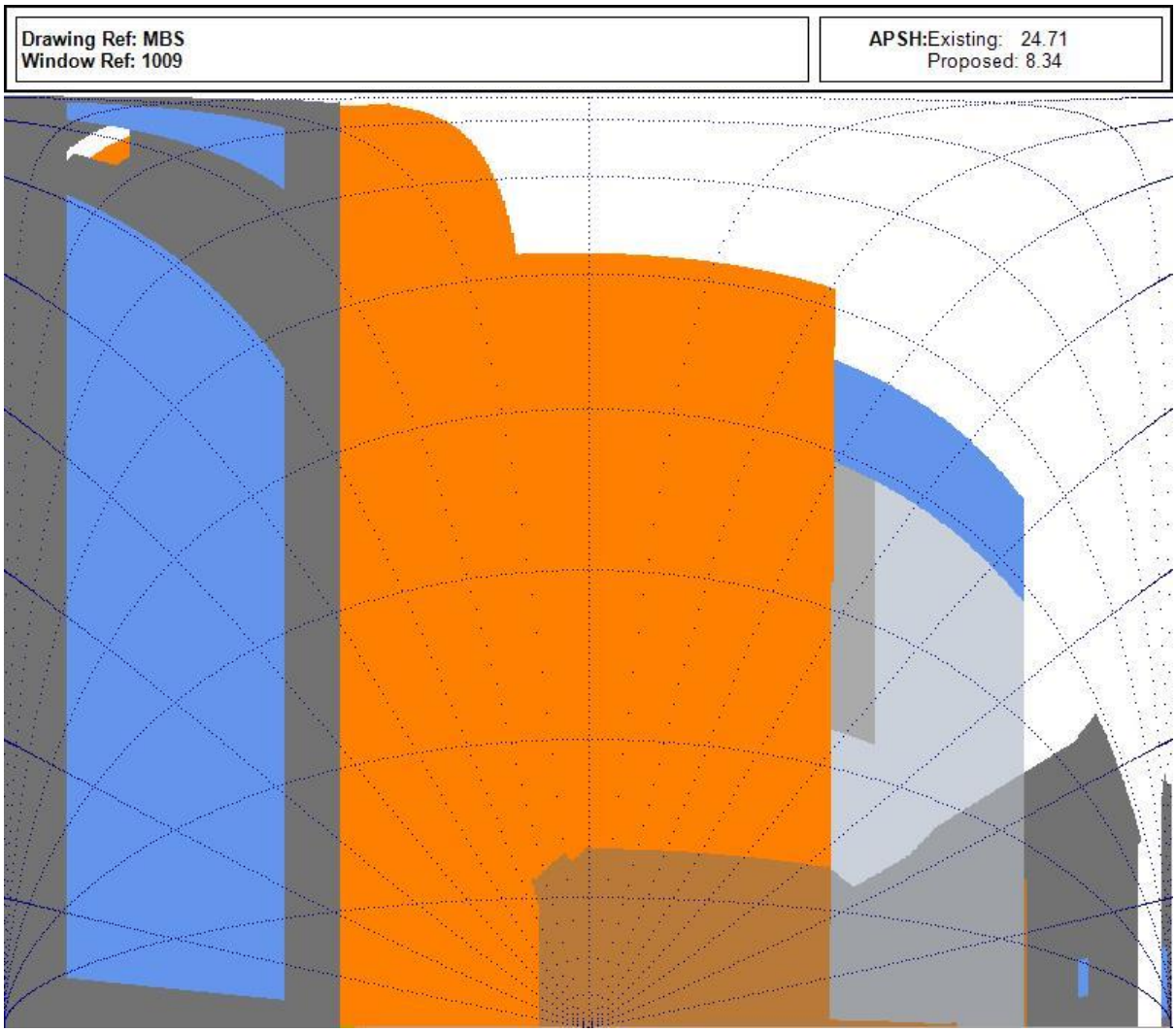
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 8 – 35 York Way - GF



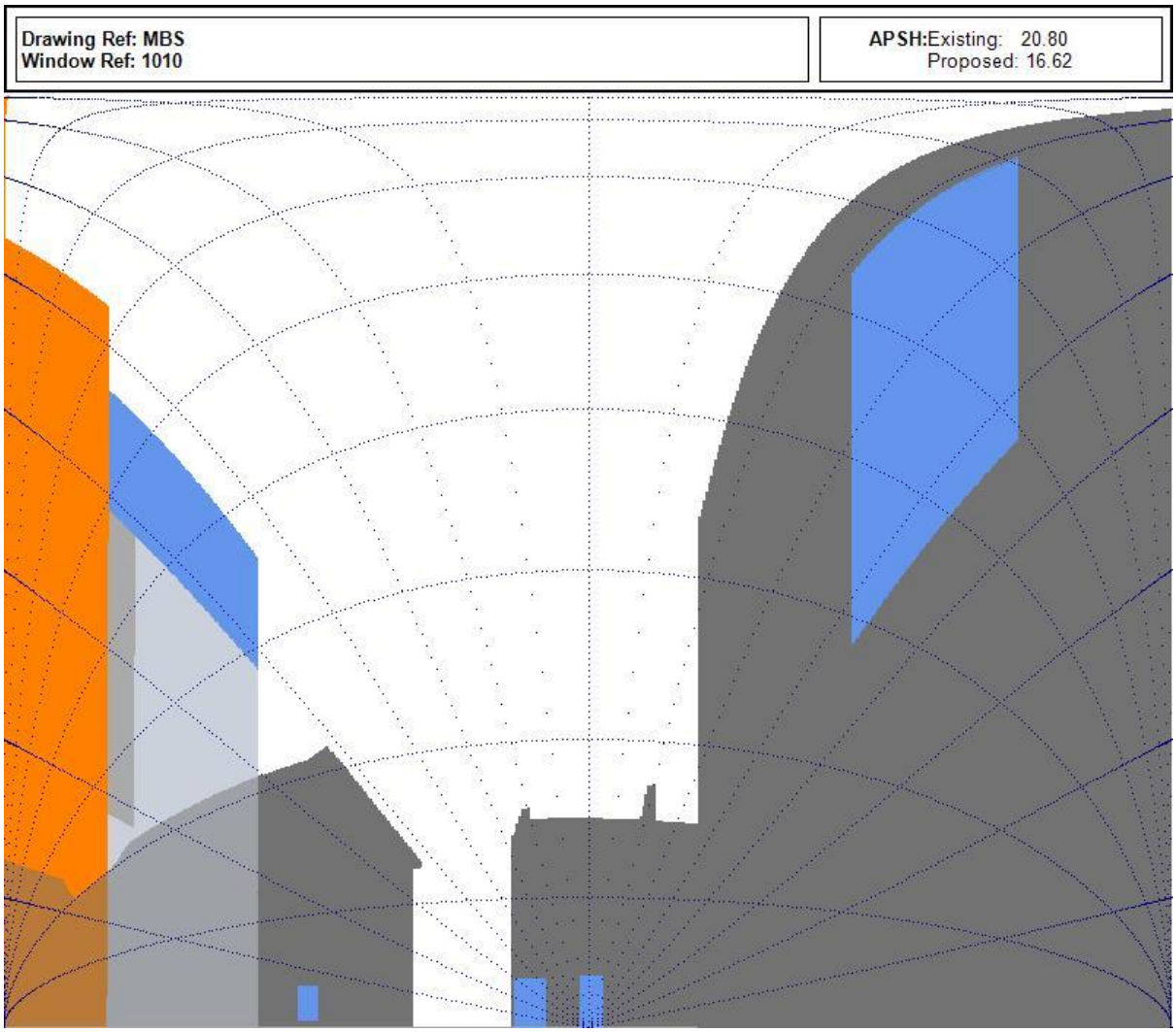
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 9 – 35 York Way - FF



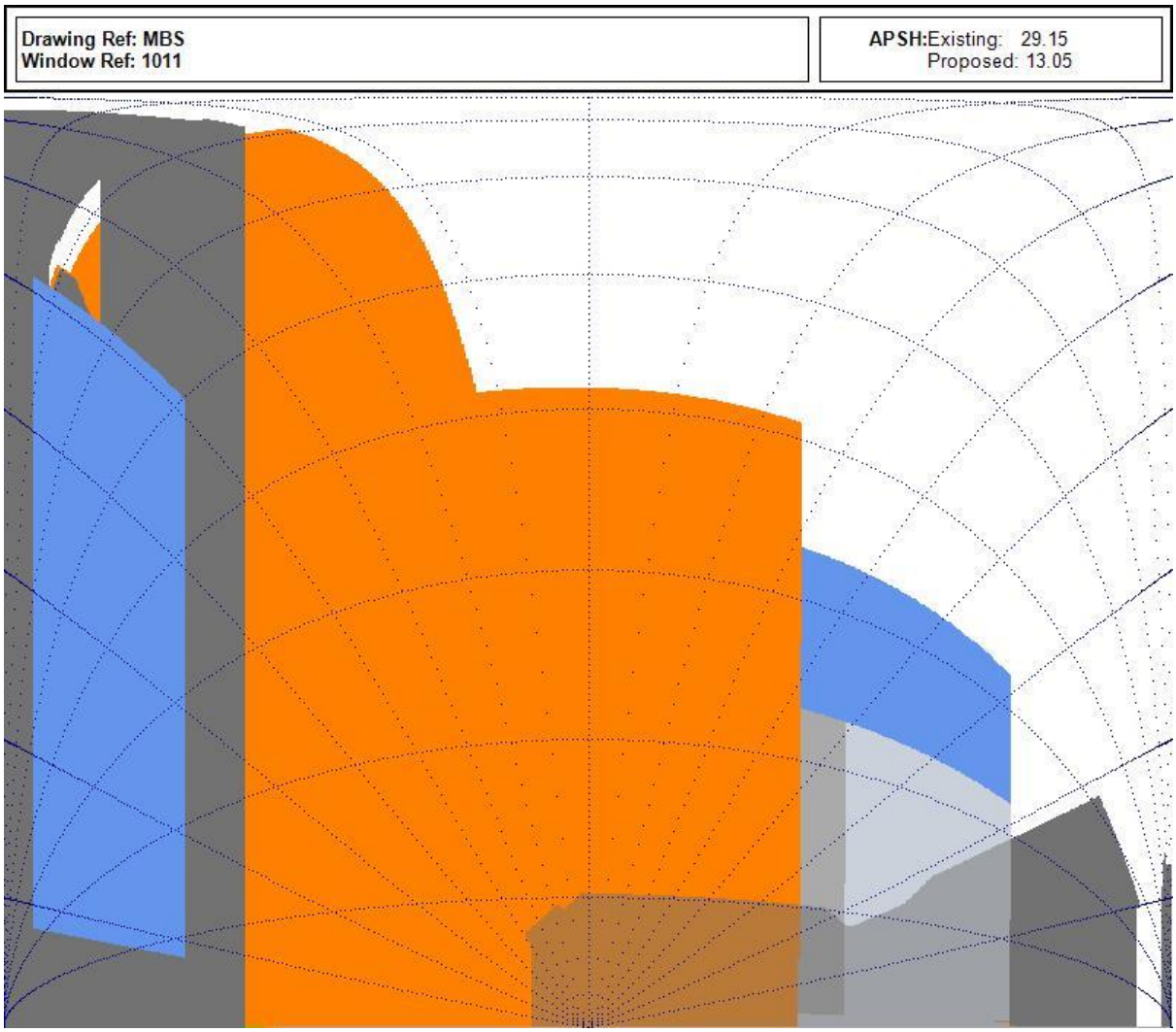
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 10 – 35 York Way - FF



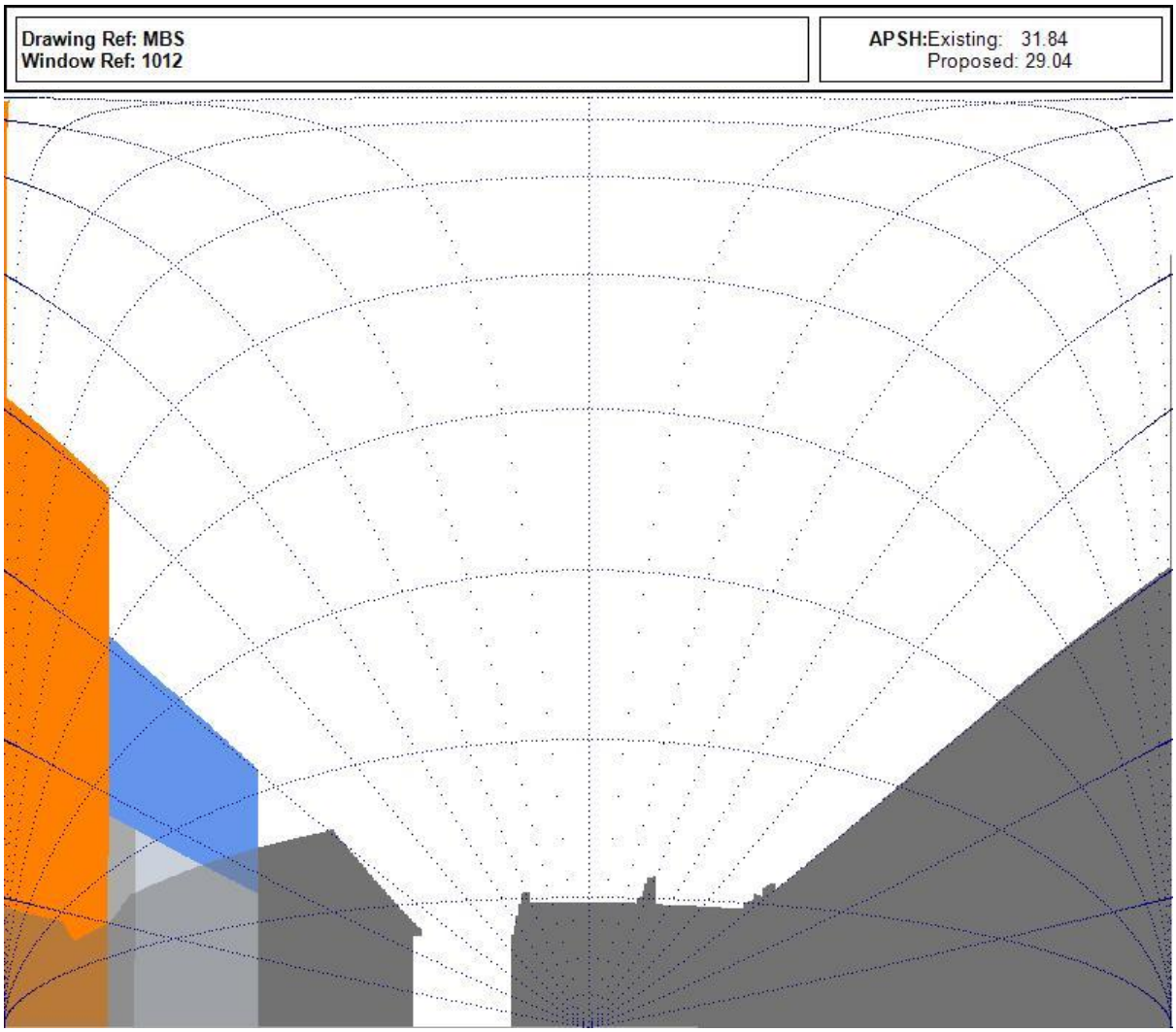
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 11 – 35 York Way - SF



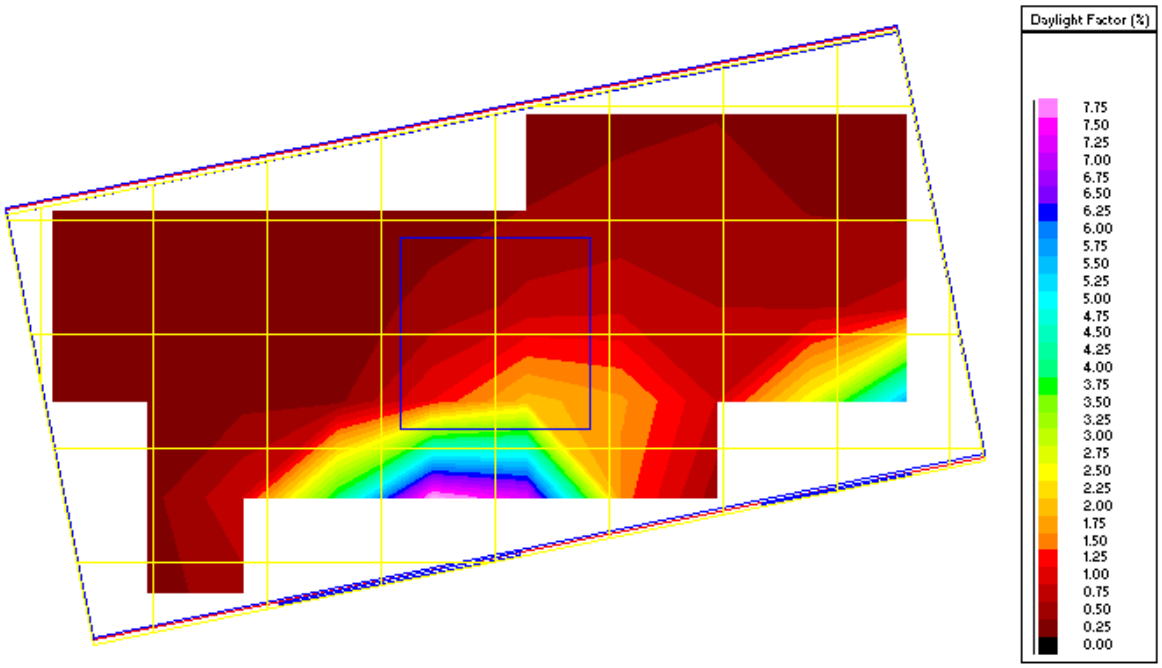
The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

Surface 12 – 35 York Way - SF



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

S6-S7 - 35 York Way - Double Bedroom - GF

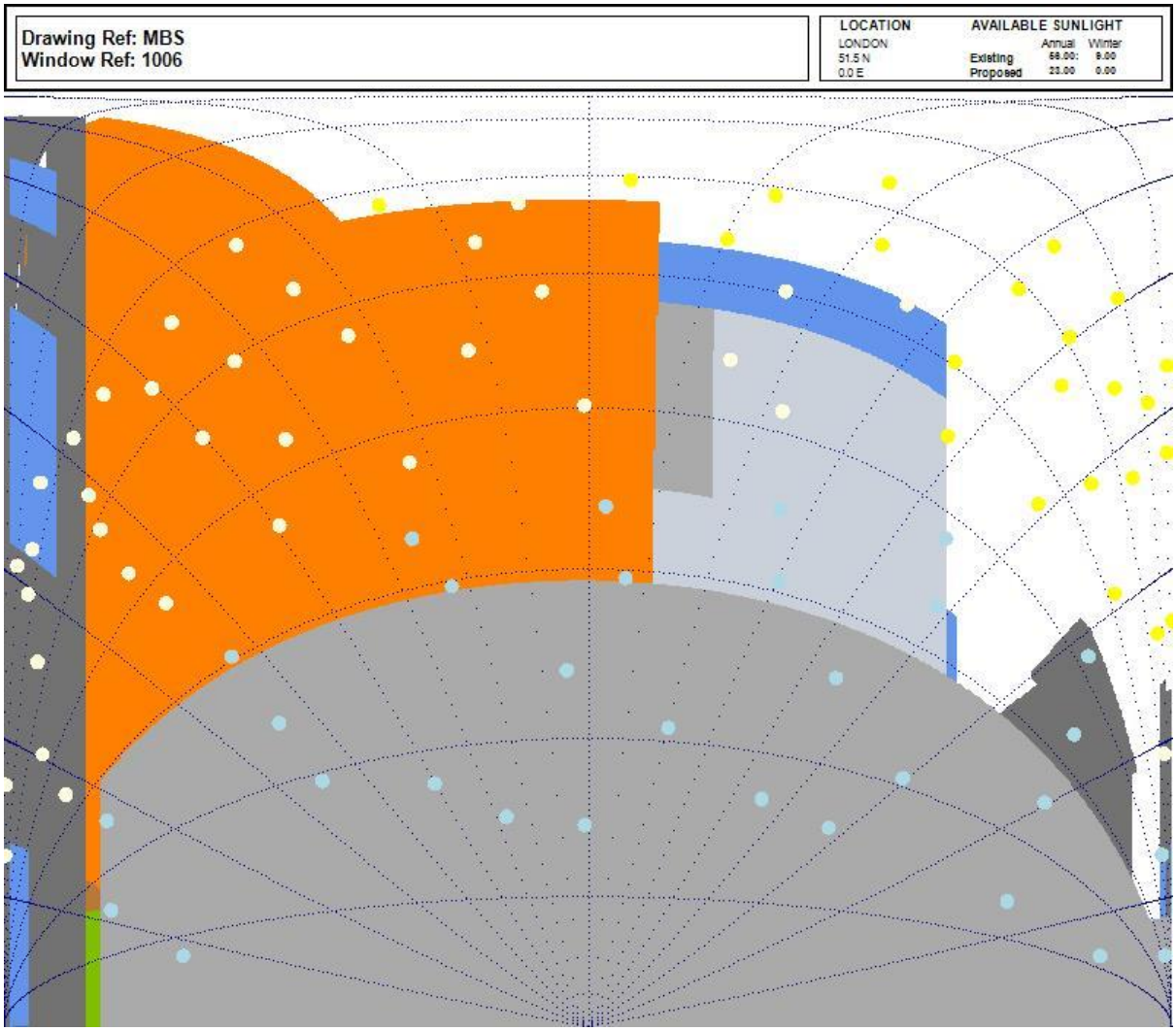


Summary results for working planes and floor

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=11.041m² Margin=0.00 m	Daylight factor	0.1 %	1.0 %	7.8 %	0.10	0.01
	Daylight illuminance	11.64 lux	117.48 lux	957.58 lux	0.10	0.01
	Sky view	0.00	0.52	1.00	0.00	0.00

9.7. Sunlight results

Surface 6 – 35 York Way - GF

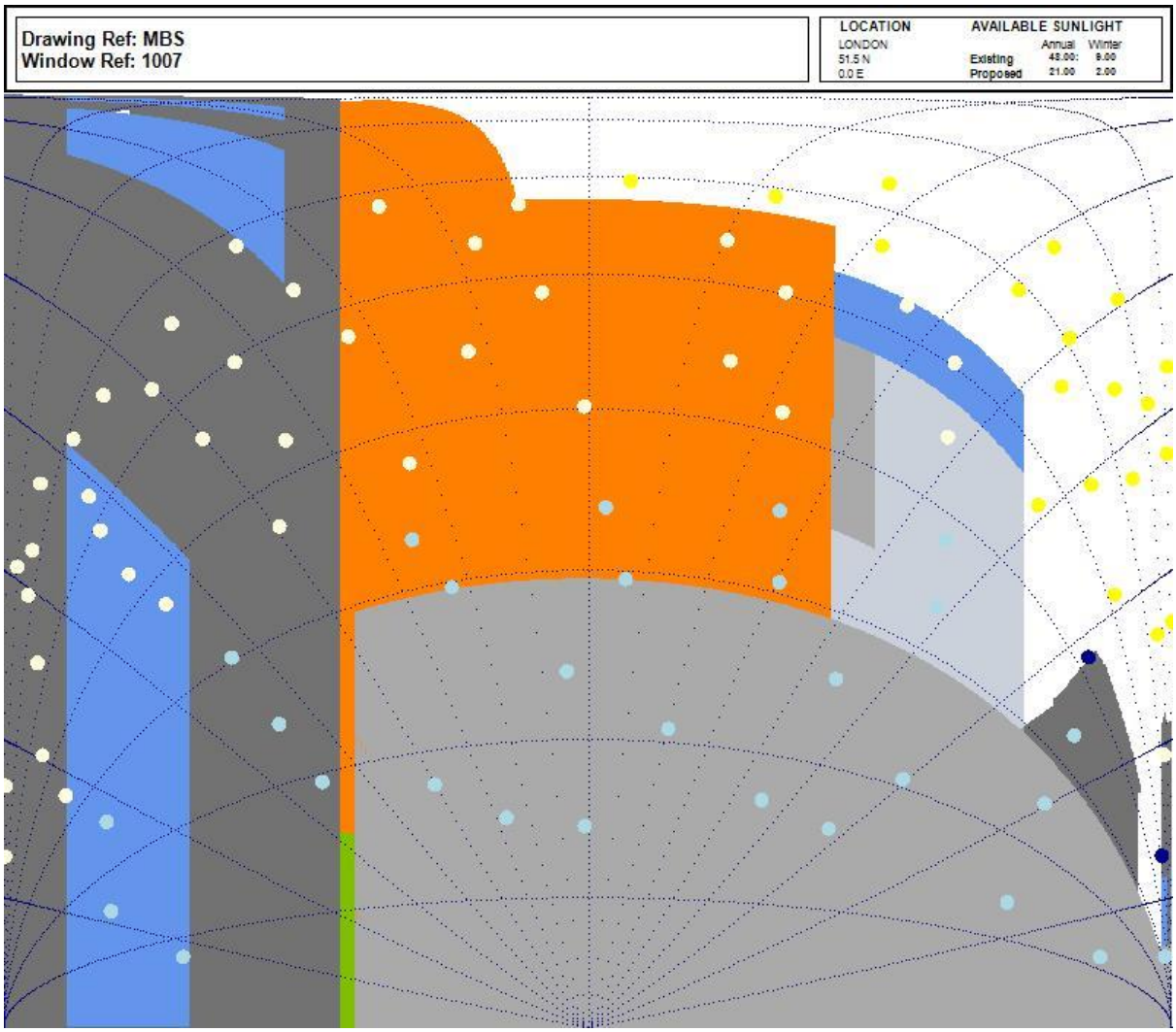


The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

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.

Surface 7 – 35 York Way - GF

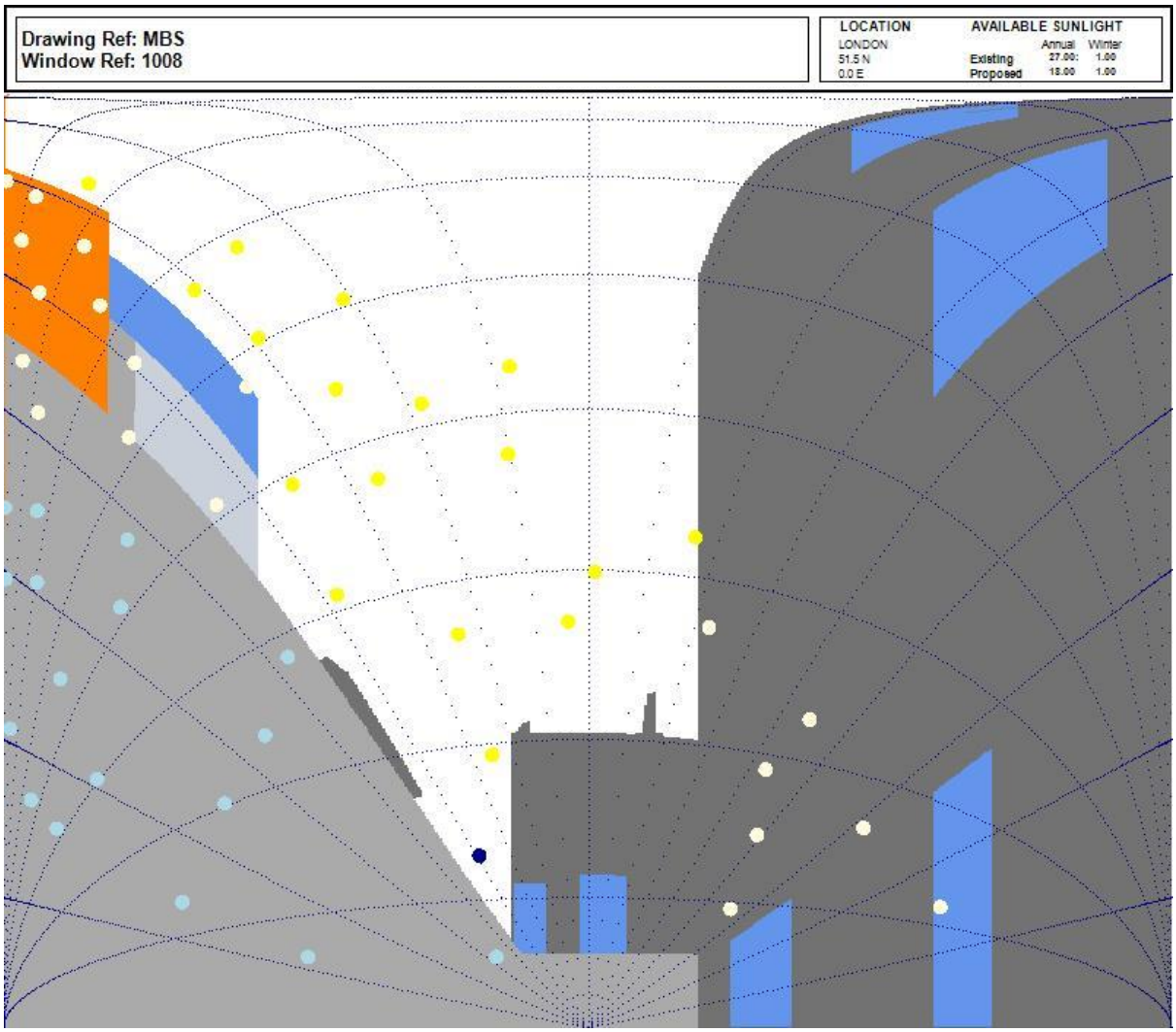


The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

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.

Surface 8 – 35 York Way - GF

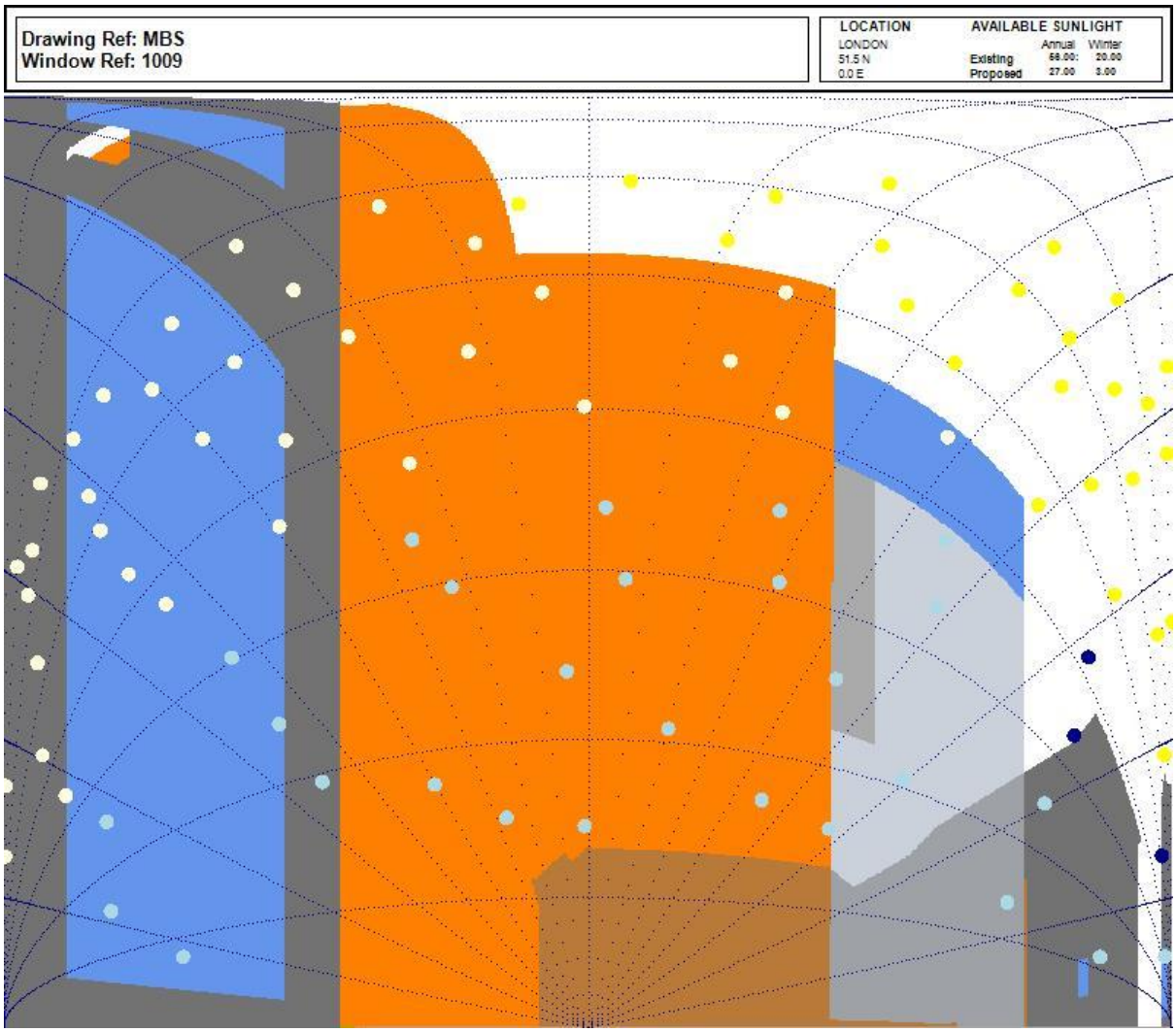


The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

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.

Surface 9 – 35 York Way - FF

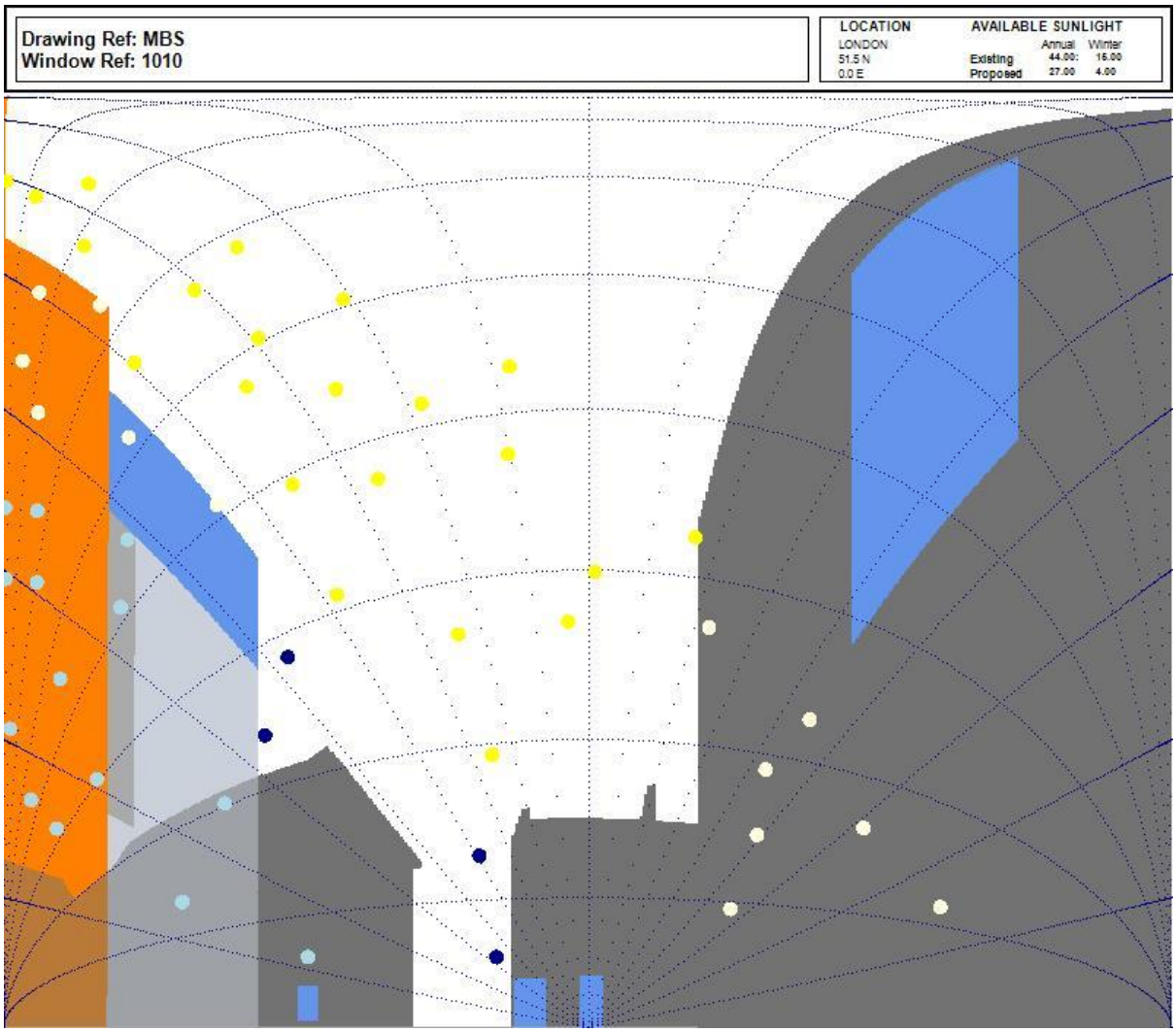


The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

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.

Surface 10 – 35 York Way - FF

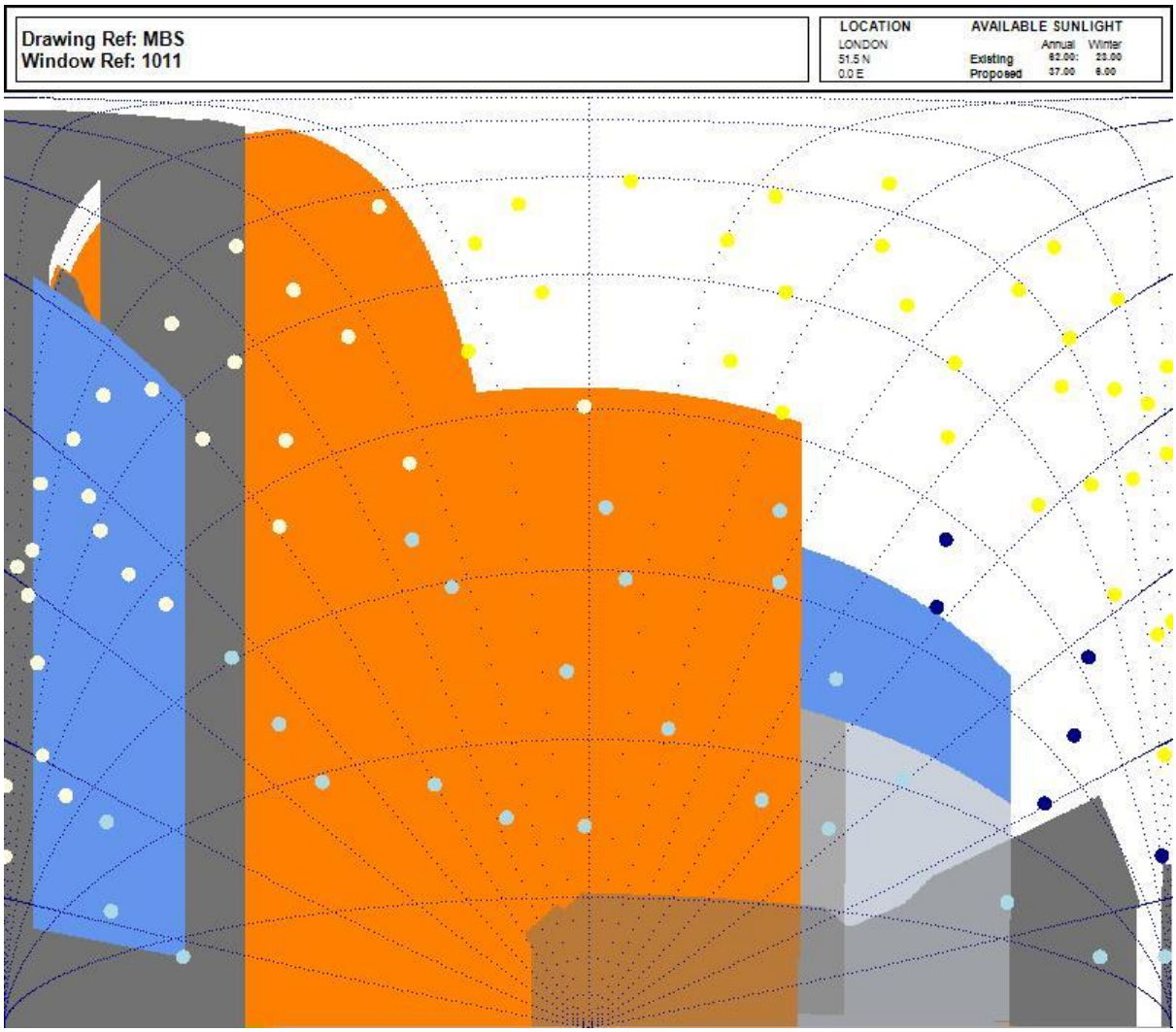


The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

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.

Surface 11 – 35 York Way - SF

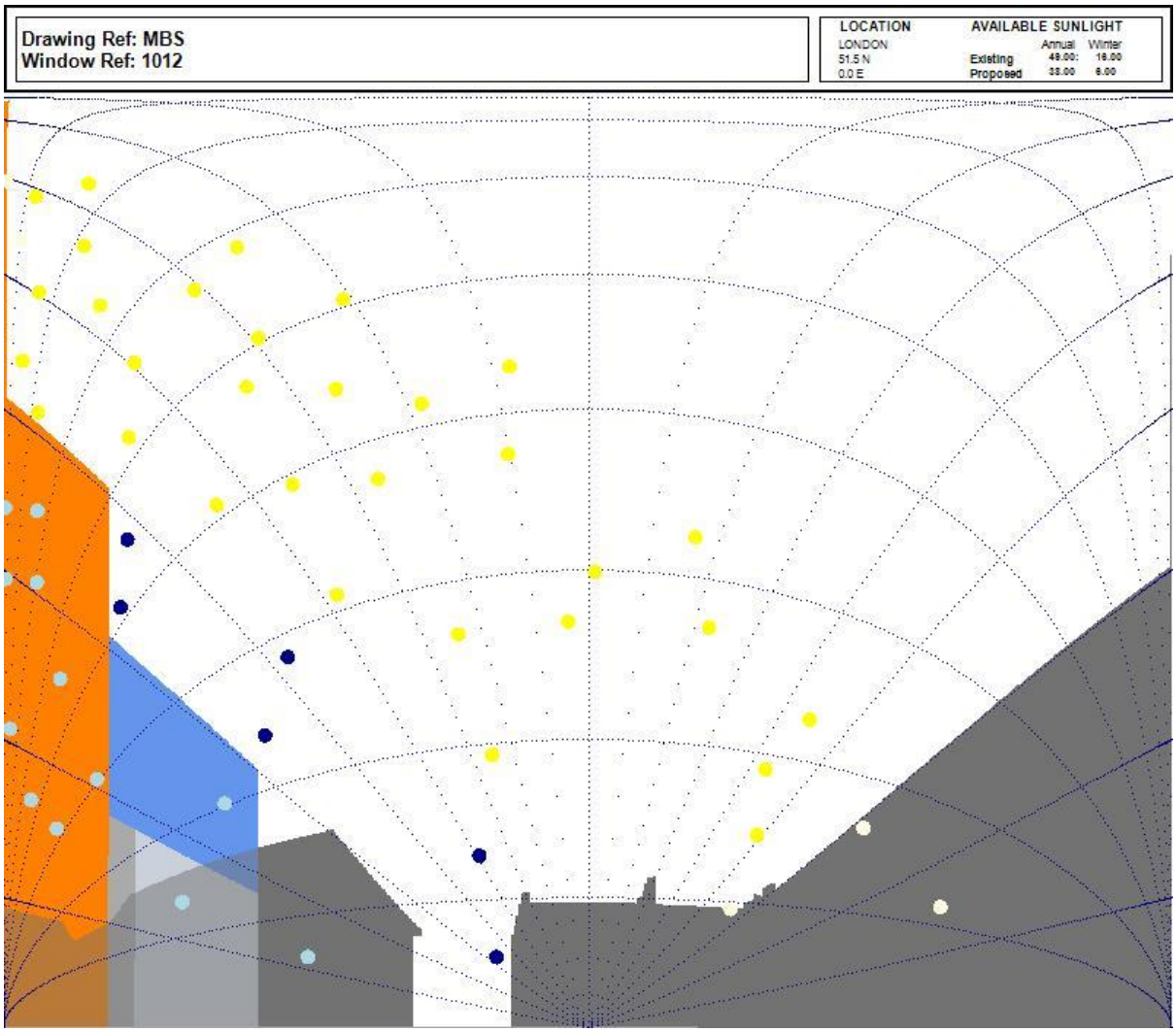


The green contour represents the existing building.
The orange contour represents the proposed building.
The black contour represents the surrounding buildings.

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.

Surface 12 – 35 York Way - SF



The green contour represents the existing building.
The orange contour represents the proposed building.
The 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 – 35 York Way

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	2.30	9.00	0.00	0.00	0.10	0.00			
Mar				**0.00**	**0.00**	**7.00**	**11.20**	**14.10**	**16.20**	**21.20**	**9.90**	**26.40**	**22.00**	**0.00**	**0.00**		
Apr		0.00	0.00	7.90	20.80	26.00	27.80	30.40	32.10	40.00	51.40	58.70	20.80	0.00	0.00		
May		0.00	0.00	13.10	33.90	41.10	42.90	46.00	48.70	56.50	66.40	78.20	50.50	5.90	0.00	0.00	
Jun	0.00	0.00	0.00	9.90	35.20	44.90	48.30	51.60	54.20	61.20	70.30	81.40	66.80	18.60	0.00	0.00	0.00
Jul		0.00	0.00	9.50	32.70	40.90	43.20	45.90	48.30	55.60	65.20	76.60	60.90	13.30	0.00	0.00	
Aug			0.00	6.90	20.60	26.10	28.00	30.50	31.90	39.80	50.90	60.80	23.10	0.00	0.00	0.00	
Sep			0.00	0.00	2.00	8.60	12.30	15.00	17.70	22.70	13.80	31.00	11.40	0.00			
Oct				0.00	0.00	0.00	0.00	0.00	5.00	1.60	0.00	9.60	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	2.10	9.00	0.00	0.00	0.10	0.00			
Mar				**0.00**	**0.00**	**0.00**	**0.00**	**2.80**	**16.20**	**21.20**	**9.90**	**26.40**	**22.00**	**0.00**	**0.00**		
Apr		0.00	0.00	0.00	0.00	0.00	0.40	13.00	27.90	38.30	51.40	58.70	20.80	0.00	0.00		
May		0.00	0.00	0.00	0.00	5.90	21.00	34.30	45.30	56.50	66.40	78.20	50.50	5.90	0.00	0.00	
Jun	0.00	0.00	0.00	0.00	0.00	10.00	32.00	42.40	52.30	61.20	70.30	81.30	66.80	18.60	0.00	0.00	0.00
Jul		0.00	0.00	0.00	0.00	2.10	20.00	32.60	44.10	55.60	65.20	76.60	60.90	13.30	0.00	0.00	
Aug			0.00	0.00	0.00	0.00	0.40	11.80	27.40	38.00	50.90	60.80	23.10	0.00	0.00	0.00	
Sep			0.00	0.00	0.00	0.00	0.00	8.40	17.70	22.70	13.80	31.00	11.40	0.00			
Oct				0.00	0.00	0.00	0.00	0.00	5.00	1.50	0.00	9.60	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
10.66	8.20	0.77

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

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	2.30	9.00	0.00	0.00	0.10	0.00			
Mar				0.00	0.00	7.00	11.20	14.10	16.20	21.20	9.90	26.40	22.00	0.00	0.00		
Apr		0.00	0.00	7.90	20.80	26.00	27.80	30.40	32.10	40.00	51.40	58.70	20.80	0.00	0.00		
May		0.00	0.00	13.10	33.90	41.10	42.90	46.00	48.70	56.50	66.40	78.20	50.50	5.90	0.00	0.00	
Jun	**0.00**	**0.00**	**0.00**	**9.90**	**35.20**	**44.90**	**48.30**	**51.60**	**54.20**	**61.20**	**70.30**	**81.40**	**66.80**	**18.60**	**0.00**	**0.00**	**0.00**
Jul		0.00	0.00	9.50	32.70	40.90	43.20	45.90	48.30	55.60	65.20	76.60	60.90	13.30	0.00	0.00	
Aug			0.00	6.90	20.60	26.10	28.00	30.50	31.90	39.80	50.90	60.80	23.10	0.00	0.00	0.00	
Sep			0.00	0.00	2.00	8.60	12.30	15.00	17.70	22.70	13.80	31.00	11.40	0.00			
Oct				0.00	0.00	0.00	0.00	0.00	5.00	1.60	0.00	9.60	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	2.10	9.00	0.00	0.00	0.10	0.00			
Mar				0.00	0.00	0.00	0.00	2.80	16.20	21.20	9.90	26.40	22.00	0.00	0.00		
Apr		0.00	0.00	0.00	0.00	0.00	0.40	13.00	27.90	38.30	51.40	58.70	20.80	0.00	0.00		
May		0.00	0.00	0.00	0.00	5.90	21.00	34.30	45.30	56.50	66.40	78.20	50.50	5.90	0.00	0.00	
Jun	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**10.00**	**32.00**	**42.40**	**52.30**	**61.20**	**70.30**	**81.30**	**66.80**	**18.60**	**0.00**	**0.00**	**0.00**
Jul		0.00	0.00	0.00	0.00	2.10	20.00	32.60	44.10	55.60	65.20	76.60	60.90	13.30	0.00	0.00	
Aug			0.00	0.00	0.00	0.00	0.40	11.80	27.40	38.00	50.90	60.80	23.10	0.00	0.00	0.00	
Sep			0.00	0.00	0.00	0.00	0.00	8.40	17.70	22.70	13.80	31.00	11.40	0.00			
Oct				0.00	0.00	0.00	0.00	0.00	5.00	1.50	0.00	9.60	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
22.38	25.58	1.1

A2 – Marquis Road

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

Existing

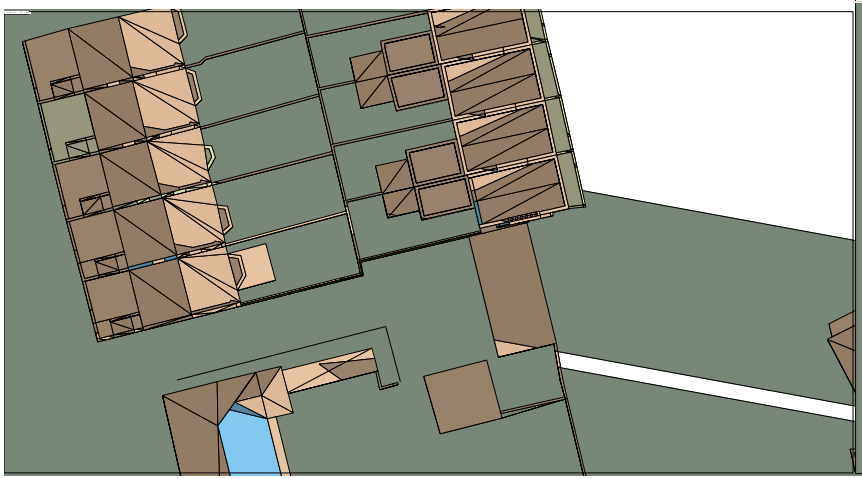
Month	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00
Jan						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Feb					0.00	0.00	0.00	0.00	2.80	1.30	0.00	0.50	0.00	0.00			
Mar				**0.00**	**0.00**	**5.90**	**14.40**	**21.60**	**21.60**	**5.70**	**0.90**	**12.30**	**0.80**	**0.00**	**0.00**		
Apr		0.00	1.00	22.40	27.00	31.00	34.70	38.60	39.00	37.90	32.20	11.40	0.00	0.00	0.00		
May		0.00	2.70	35.10	41.80	42.50	44.30	46.90	47.90	46.10	39.10	10.90	0.00	0.00	0.00	0.00	
Jun	0.00	0.00	0.70	28.50	46.40	46.10	47.30	49.50	51.10	49.30	43.60	17.90	0.00	0.00	0.00	0.00	0.00
Jul		0.00	0.70	28.40	42.30	42.60	44.20	46.70	48.60	46.70	41.50	17.20	0.00	0.00	0.00	0.00	
Aug			0.40	22.80	27.10	31.00	34.70	38.50	39.50	38.20	33.10	12.60	0.10	0.00	0.00	0.00	
Sep			0.00	0.00	1.00	8.30	16.90	23.60	18.30	0.50	4.30	9.00	0.00	0.00			
Oct				0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	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	0	0	0	0	0	0	0				
Feb					0	0	0	0	2.8	1.3	0	0.5	0	0			
Mar				**0**	**0**	**0**	**7.2**	**21.2**	**21.6**	**5.7**	**0.9**	**12.3**	**0.8**	**0**	**0**		
Apr		0	0	0	0	2.2	26	38.6	39	37.9	32.2	11.4	0	0	0		
May		0	0	0	8.6	26.1	41.5	46.9	47.9	46.1	39.1	10.9	0	0	0	0	
Jun	0	0	0	0	19.1	37.8	46	49.5	51.1	49.3	43.6	17.9	0	0	0	0	0
Jul		0	0	0	7.2	24.5	40.3	46.7	48.6	46.7	41.5	17.2	0	0	0	0	
Aug			0	0	0	0.6	24.8	38.5	39.5	38.2	33.1	12.6	0.1	0	0	0	
Sep			0	0	0	0	11	23.6	18.3	0.5	4.3	9	0	0			
Oct				0	0	0	0	0	2.5	0	0	0.1	0				
Nov					0	0	0	0	0	0	0	0					
Dec						0	0	0	0	0	0	0					

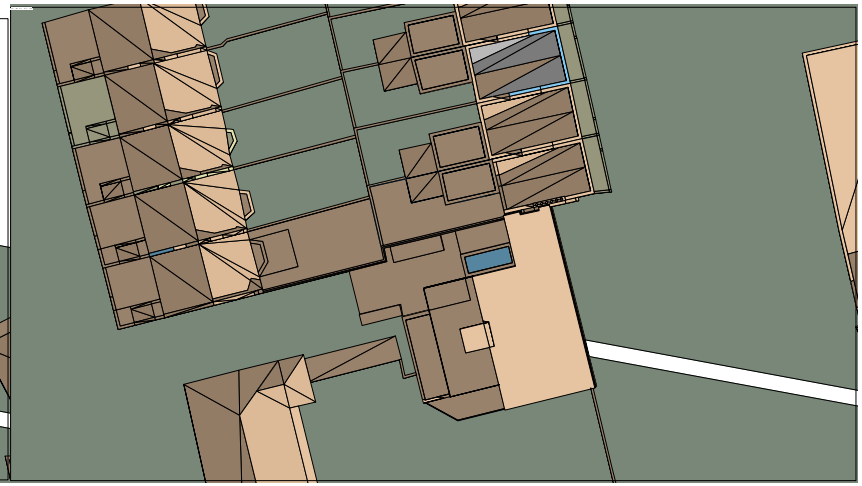
Overshadowing assessment % of the amenity area receiving direct sunlight on 21st March		
Existing	Proposed	Ratio
6.93	5.8	0.84

Suncast image:
View time = 21 Mar 07:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 100.43 alt = 7.67
Eye: azi = 180.00 alt = 90.00



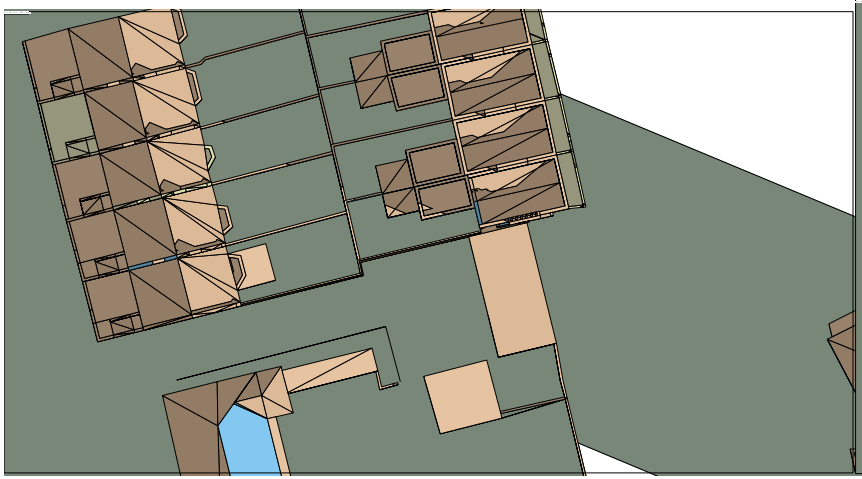
Existing

Suncast image:
View time = 21 Mar 07:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 100.43 alt = 7.67
Eye: azi = 180.00 alt = 90.00



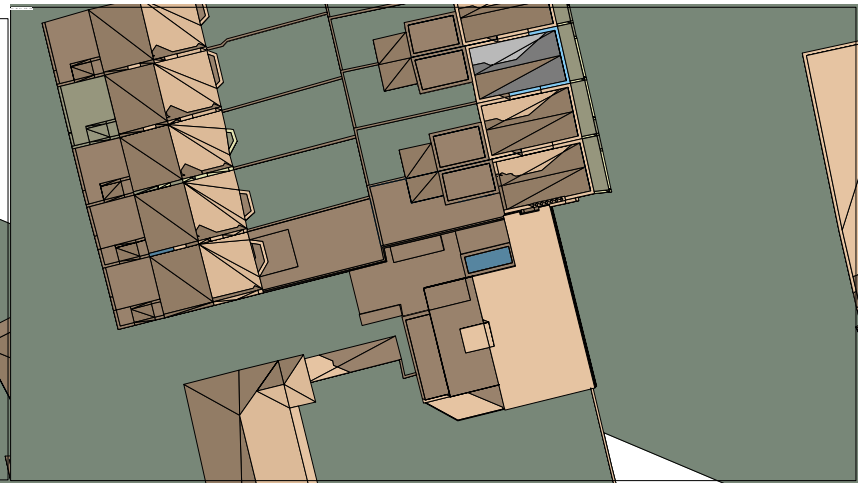
Proposed

Suncast image:
View time = 21 Mar 08:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 112.77 alt = 16.59
Eye: azi = 180.00 alt = 90.00



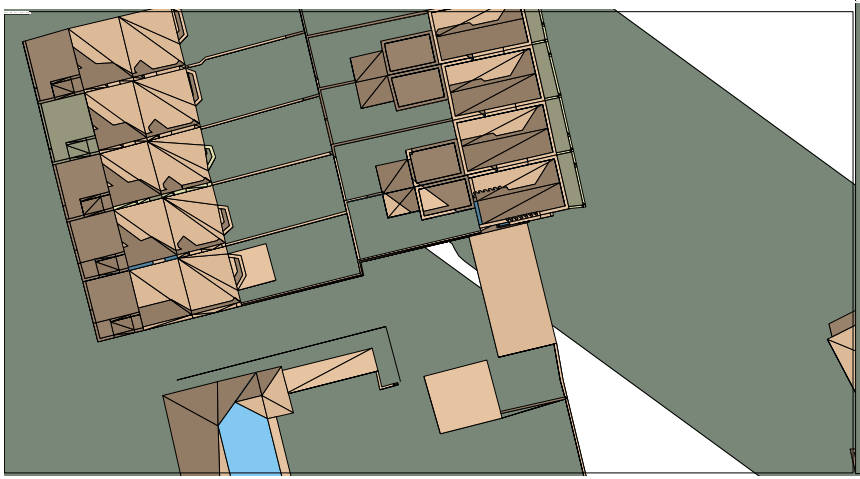
Existing

Suncast image:
View time = 21 Mar 08:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 112.77 alt = 16.59
Eye: azi = 180.00 alt = 90.00



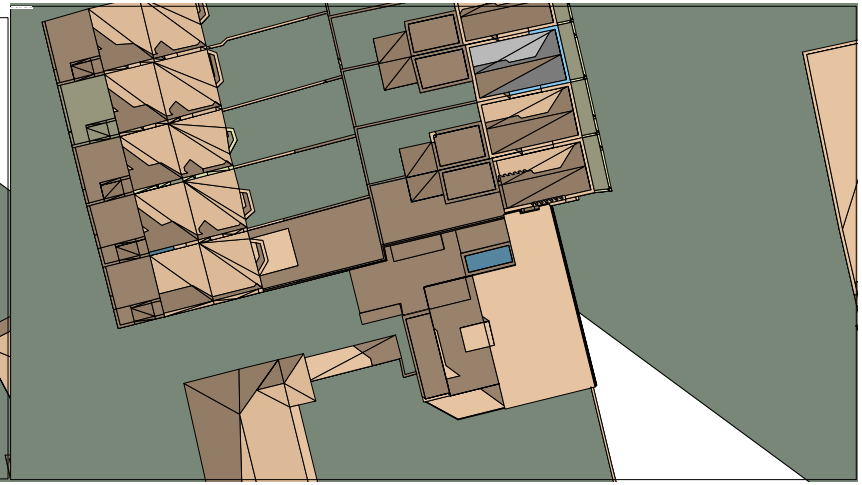
Proposed

Suncast image:
View time = 21 Mar 09:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 126.28 alt = 24.70
Eye: azi = 180.00 alt = 90.00



Existing

Suncast image:
View time = 21 Mar 09:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 126.28 alt = 24.70
Eye: azi = 180.00 alt = 90.00



Proposed

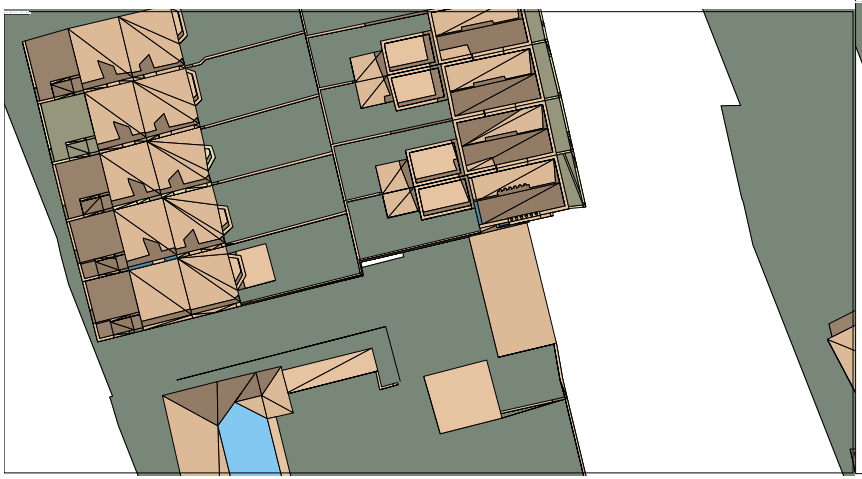
Suncast image:
View time = 21 Mar 10:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 141.50 alt = 31.42
Eye: azi = 180.00 alt = 90.00

Existing

Suncast image:
View time = 21 Mar 10:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 141.50 alt = 31.42
Eye: azi = 180.00 alt = 90.00

Proposed

Suncast image:
View time = 21 Mar 11:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 158.68 alt = 36.08
Eye: azi = 180.00 alt = 90.00



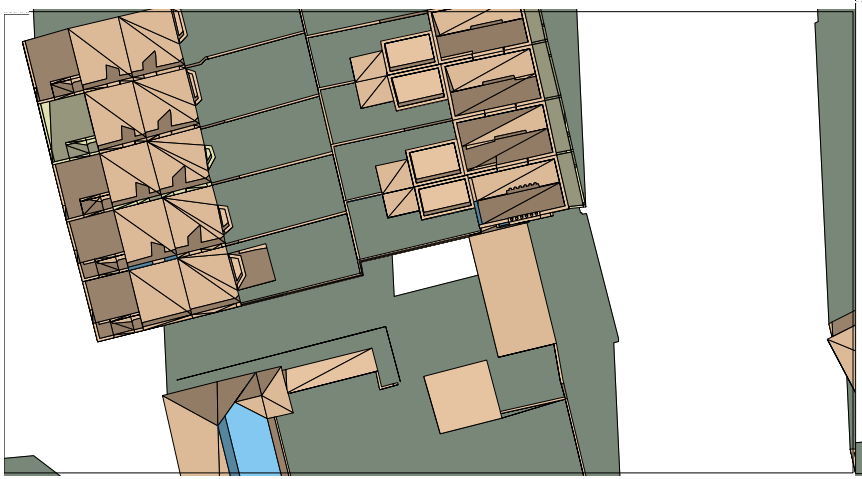
Existing

Suncast image:
View time = 21 Mar 11:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 158.68 alt = 36.08
Eye: azi = 180.00 alt = 90.00

Proposed

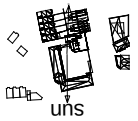
Suncast image:
View time = 21 Mar 12:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 177.35 alt = 38.02
Eye: azi = 180.00 alt = 90.00

uns



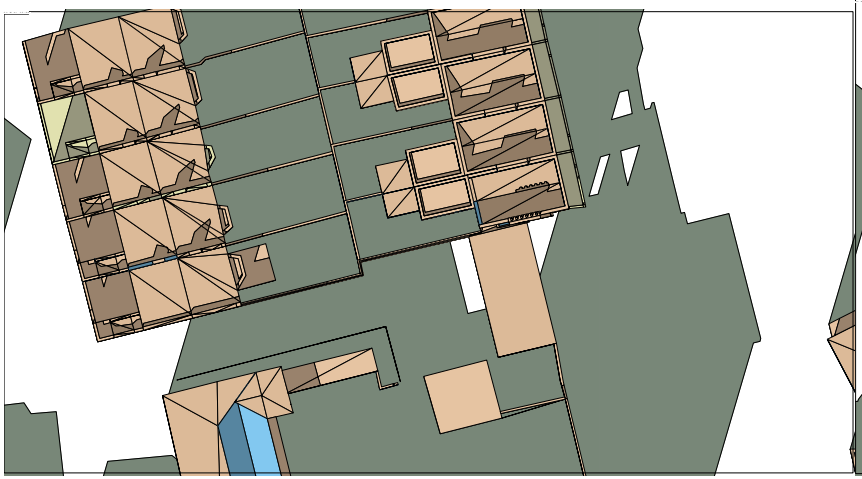
Existing

Suncast image:
View time = 21 Mar 12:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 177.35 alt = 38.02
Eye: azi = 180.00 alt = 90.00



Proposed

Suncast image:
View time = 21 Mar 13:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 196.23 alt = 36.91
Eye: azi = 180.00 alt = 90.00

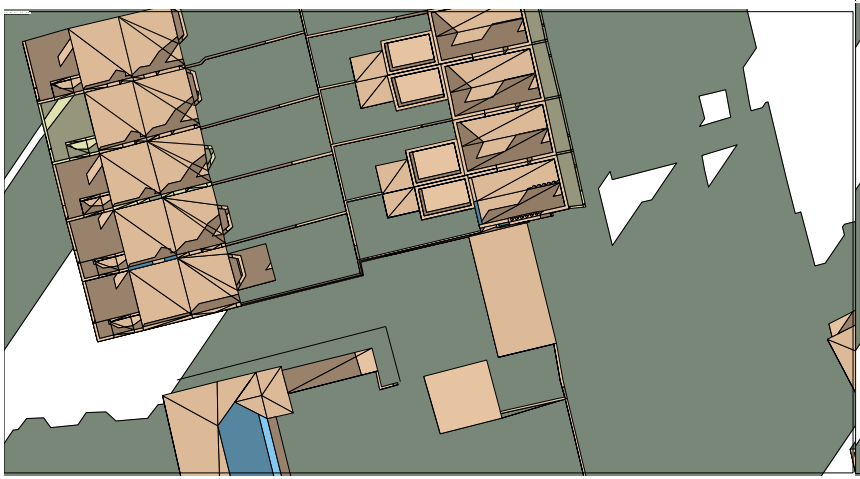


Existing

Suncast image:
View time = 21 Mar 13:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 196.23 alt = 36.91
Eye: azi = 180.00 alt = 90.00

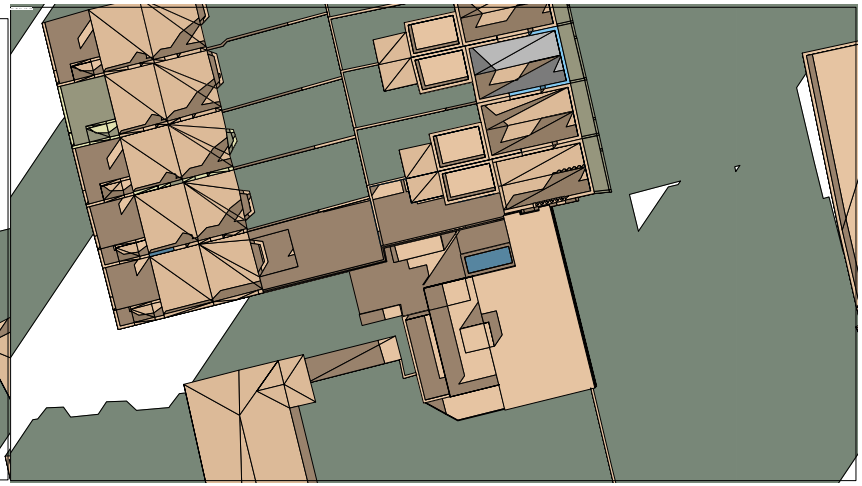
Proposed

Suncast image:
View time = 21 Mar 14:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 213.91 alt = 32.96
Eye: azi = 180.00 alt = 90.00



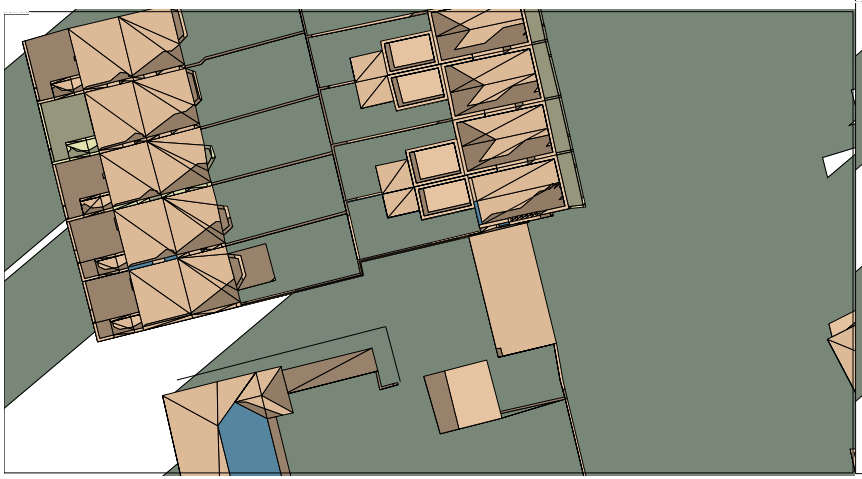
Existing

Suncast image:
View time = 21 Mar 14:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 213.91 alt = 32.96
Eye: azi = 180.00 alt = 90.00



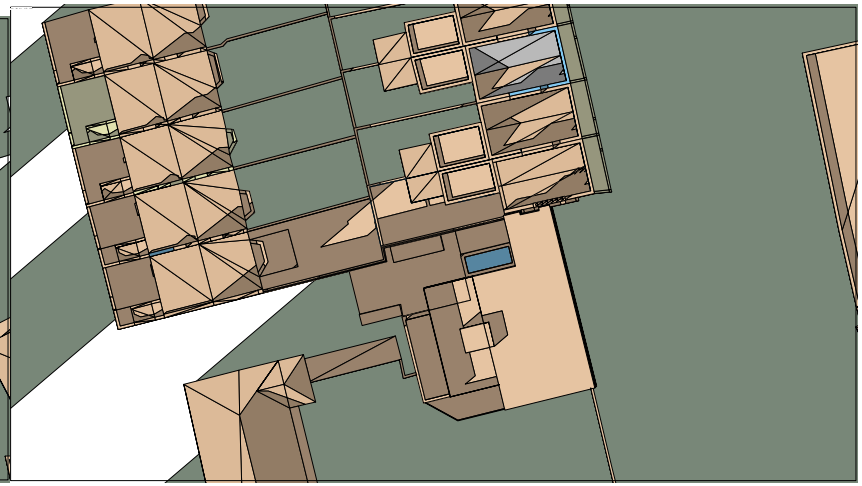
Proposed

Suncast image:
View time = 21 Mar 15:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 229.67 alt = 26.74
Eye: azi = 180.00 alt = 90.00



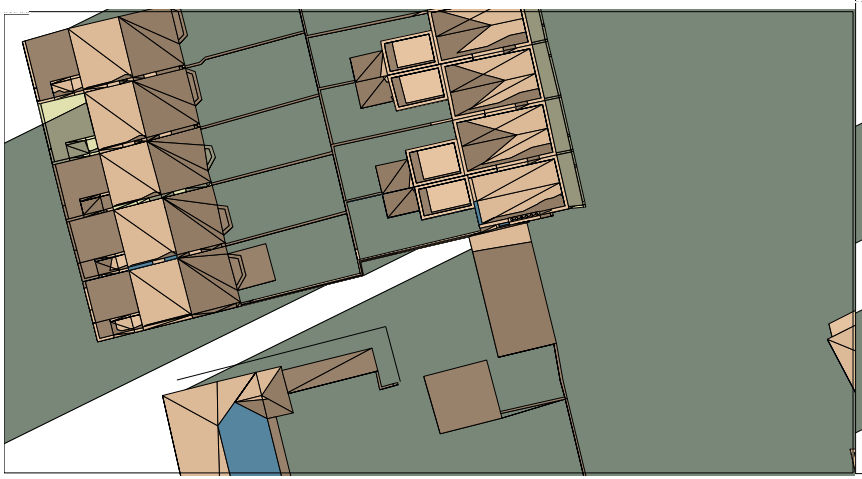
Existing

Suncast image:
View time = 21 Mar 15:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 229.67 alt = 26.74
Eye: azi = 180.00 alt = 90.00



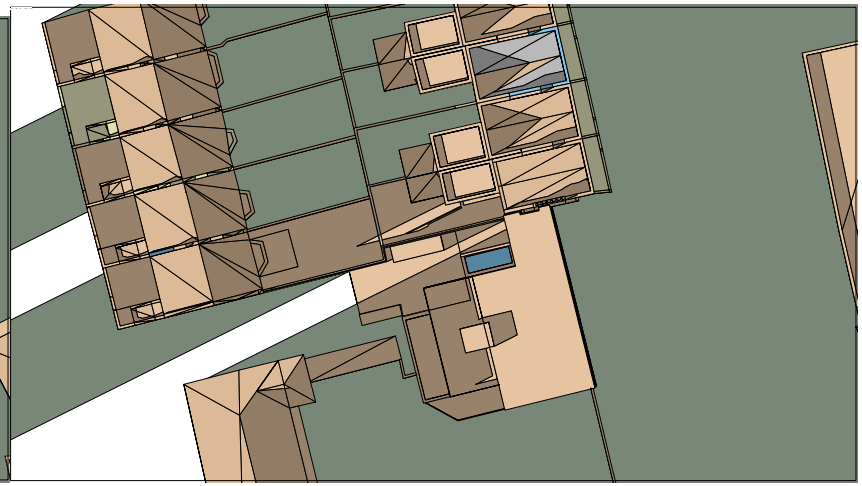
Proposed

Suncast image:
View time = 21 Mar 16:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 243.61 alt = 18.95
Eye: azi = 180.00 alt = 90.00



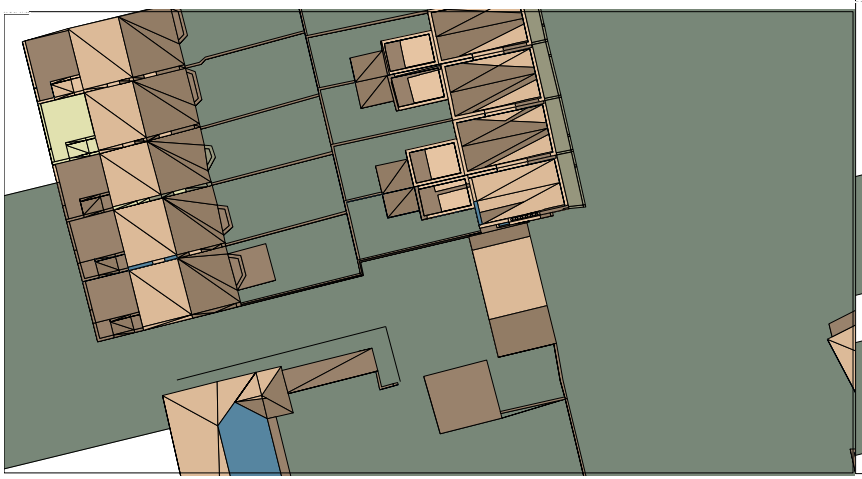
Existing

Suncast image:
View time = 21 Mar 16:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 243.61 alt = 18.95
Eye: azi = 180.00 alt = 90.00



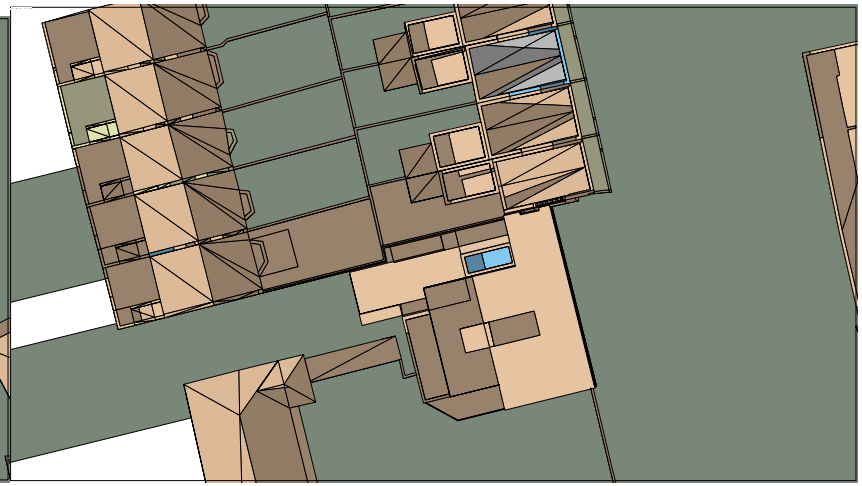
Proposed

Suncast image:
View time = 21 Mar 17:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 256.21 alt = 10.20
Eye: azi = 180.00 alt = 90.00



Existing

Suncast image:
View time = 21 Mar 17:00
Site Latitude = 51.54
Longitude diff. = -0.13
Model Bearing = 357.75
Sun: azi = 256.21 alt = 10.20
Eye: azi = 180.00 alt = 90.00



Proposed