SYNTEGRA CONSULTING

Daylight, Sunlight & Overshadowing Report

217 Kingston Road, Teddington, TW11 9JN

October 2019

Ref: 16-2501

Quality Standards Control

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Revision	*Initial*	*Rev A*	*Rev B*	*Rev C*
Date	19/01/2017	25/05/2018	30/10/2019	
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1 EXECUTIVE SUMMARY

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

The results of the assessment show that in terms of:

- ✓ Daylight, this report demonstrates that the levels of daylight for the surrounding buildings located at **213, 217, and 219 Kingston Road** will not be adversely affected by the proposed development. The loss of daylight for one surface at **215 Kingston Road** is not considered a concern as it serves a non-habitable room.

- ✓ Sunlight, this report demonstrates that the levels of sunlight for the surrounding buildings located at **213, 217, and 219 Kingston Road** will not be adversely affected by the proposed development. The loss of sunlight for one surface at **215 Kingston Road** is not considered a concern as it serves a non-habitable room.

- ✓ Overshadowing, the existing amenity area/garden/open spaces located at **the rear of 213, 215 and 219 Kingston Road** will not be adversely affected by the proposed development.

On balance, it can be concluded that the proposed development is not expected to cause any significant impact to daylight and sunlight access for surrounding properties at **213, 215, 217, and 219 Kingston Road.**

2 INTRODUCTION

This report has been prepared to support the planning application for the proposed development at **217 Kingston Road, Teddington, TW11 9JN**. The proposed scheme involves the demolition of the existing Victorian house and the new construction of an apartment of seven flats and a new "eco-house" to the rear with associated car parking.

The report assesses the daylight, sunlight and overshadowing effect of the proposed development on the surrounding buildings. 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 **Create Design** and have been used in preparing this report. Please note that some of the surrounding buildings elevations have not been provided to carry out this assessment. Hence the size and location of the assessed windows have been assumed based on the provided pictures and Google maps.

No.	Document Name	Format	Received Date
1	8938-01	dwg	17-10-2016
2	8938-02	dwg	17-10-2016
3	8938-03	dwg	17-10-2016
4	8938-04	dwg	17-10-2016
5	8938-05	dwg	17-10-2016
6	8938-06	dwg	17-10-2016
7	8938-07	dwg	17-10-2016
8	8938-08	dwg	17-10-2016
9	8938-09	dwg	17-10-2016
10	8938-10	dwg	17-10-2016
11	240 2 PL10 P00-I	dwg	01-10-2019
12	240 PL20 E02-G	dwg	01-10-2019
13	240 PL20 P00-I	dwg	01-10-2019
14	240 PL20 P01-H	dwg	01-10-2019
15	240 PL20 P-1-I	dwg	01-10-2019
16	240 PL20 P02-I	dwg	01-10-2019
	240 PL20 P03-E	dwg	01-10-2019

Table 1 Document list used for assessment

The study has been undertaken by constructing a 3D IES model of the existing site, the proposed site and the surrounding buildings. This model analyses 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 is 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 must accompany the planning application.

The daylight and sunlight assessment includes the necessary information to meet the criteria outlined in Building Research Establishment report **BRE 209: Site layout planning for daylight and sunlight (Second Edition 2011)**

It is important to note that the BRE 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.

4 ASSESSMENT METHODOLOGY

4.1 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 **213, 215 Kingston Road located at the north-west of 217 Kingston Road, and 219 Kingston Road located at the south-east of 217 Kingston Road**. Specifically, it takes into consideration the possible effect and influence that the new development would have on the property and on the amenity area.

Fourteen windows (S1-S14) have been assessed for external levels of daylight VSCs (Vertical Sky Components) and sunlight APSHs (Annual Probable Sunlight Hours). And, **three existing amenity area/gardens (A1-A3)** have been assessed for overshadowing impacts. The location of the assessed windows and gardens can be found in appendix 7.4.2 for this report.

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.

4.2 BRE 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.

4.2.1 Daylight

The BRE guidelines *"Site layout planning for daylight and sunlight"* set out methods for assessing the daylight within section 2.

Vertical Sky Component (VSC)

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. The BRE guidelines at paragraph 2.2.6 and 2.2.7 state:

"Any reduction in the total amount of skylight can be calculated by finding the VSC at the centre of each main window." and "If the VSC, with the new development in place, is both less than 27% and less than 0.8 times its former value, occupants of the existing building will notice the reduction in the amount of skylight."

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.

No Sky Line (NSL)

The No Sky Line method of assessment is a test to indicate how good the distribution of daylight is in a room, taking into account external obstructions and divide those areas of the working plane that can receive direct skylight and those that cannot.

The BRE guidelines suggest that the daylight distribution test is carried out to existing surrounding properties when the internal room arrangements are known. To assess the impact of any reduction the BRE guidelines at paragraph 2.2.9 state:

"If, following construction of a new development, the no sky line moves so that the area of the existing room, which does receive direct skylight, is reduced to less than 0.8 times its former value this will be noticeable to the occupants, and more of the room will appear poorly lit."

4.2.2 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.

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. To provide a concise and comprehensive indicative analysis, the closest surfaces within the surrounding properties were analysed for both daylight and sunlight.

4.2.3 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)

4.2.4 Criteria for assessing daylight, sunlight and overshadowing effects

The table 2 is a summary of the criteria to assess daylight, sunlight and overshadowing impacts as per the BRE 209 guidance. Based on that, Syntegra classifies the magnitude of effect according to the ratio.

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 2 Criteria for assessing daylight, sunlight and overshadowing effects

5 ASSESSMENT

5.1 Daylight

The daylight results and Waldram Diagrams are presented in section 7.6 in Appendix. The images and results show and compare the external levels of daylight (VSC – Vertical Sky Components) on the surfaces at **213, 215 Kingston Road located at the north-west of 217 Kingston Road, and 219 Kingston Road located at the south-east of 217 Kingston Road** with the existing and the proposed development.

A summary of results is displayed in the table below. Location of the assessed windows can be found in section 7.4 of this report.

Daylight assessment (Surrounding buildings)				
Assessed Window	**Existing VSC >27%**	**Proposed VSC >27%**	**Ratio**	**Result**
S1 – 215 Kingston Road – north-east elevation - GF	15.51	14.37	0.93	Negligible
S2 – 215 Kingston Road – south-east elevation – GF	12.12	8.77	0.72	Minor Adverse (non-habitable)
S3 – 215 Kingston Road – north-east elevation - 1F	22.25	22.52	1.01	Negligible
S4 – 215 Kingston Road – south-east elevation - 1F	20.89	19.12	0.92	Negligible
S5 - 215 Kingston Road – north-east elevation - 2F	38.59	38.18	0.99	Negligible
S6 - 215 Kingston Road – north-east elevation - 2F	39.59	39.24	0.99	Negligible
S7 - 215 Kingston Road – north-east elevation - GF	34.66	34.94	1.01	Negligible
S8 - 213 Kingston Road – north-east elevation - GF	35.16	35.16	1.00	Negligible
S9 - 215 Kingston Road – north-east elevation - 1F	39.55	39.52	1.00	Negligible
S10 - 213 Kingston Road – north-east elevation - 1F	39.48	39.46	1.00	Negligible
S11 - 219 Kingston Road – north-east elevation - GF	35.14	34.98	1.00	Negligible
S12 - 219 Kingston Road – north-east elevation - GF	38.52	38.35	1.00	Negligible
S13 - 219 Kingston Road – South-east elevation - GF	38.77	37.09	0.96	Negligible
S14 - 219 Kingston Road – South-east elevation - GF	39.08	37.52	0.96	Negligible

Table 3 Daylight results

As shown in the above table, only one window S2 on the Southeast elevation at 215 Kingston Road will receive a relative VSC level (ratio) of less than 0.8 due to its location directly facing the proposed development.

It should be noted that as there were no drawings showing internal layouts of 215 Kingston Road available, the no sky line test has not been carried out. However, it has been confirmed by the client that the impacted room facing the proposed scheme is a non-habitable room (Toilet).

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 to the above statement, the impact on the window S2 is not considered to be of concern as it serves a toilet and the occupants do not have a reasonable expectation of daylight.

The slight loss in daylight for the other surfaces is not considered to be a 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.

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

5.2 Sunlight

Where necessary (as defined in the Assessment Methodology section of this report) the Annual Probable Sunlight Hours (APSH) tests have been undertaken with the results and Waldram diagrams presented in section 7.7 in the appendix.

The table below indicates the likely levels of sunlight on the surfaces at **213, 215 Kingston Road located at the north-west of 217 Kingston Road, and 219 Kingston Road located at the south-east of 217 Kingston Road** with the existing and the proposed development.

A summary of results is displayed in the table below. Location of the assessed windows can be found in section 7.4 of this report.

Assessed Window	Sunlight assessment (Surrounding buildings)					
	Total APSH >25%		Winter APSH >5%		Ratio Annual	Result
	Existing	Proposed	Existing	Proposed		
S1 – 215 Kingston Road – north-east elevation - GF	N/A	N/A	N/A	N/A	N/A	N/A
S2 – 215 Kingston Road – south-east elevation – GF	21	9	1	0	0.43	Major Adverse (non-habitable)
S3 – 215 Kingston Road – north-east elevation - 1F	N/A	N/A	N/A	N/A	N/A	N/A
S4 – 215 Kingston Road – south-east elevation - 1F	37	38	4	1	1.03	Negligible
S5 - 215 Kingston Road – north-east elevation - 2F	N/A	N/A	N/A	N/A	N/A	N/A
S6 - 215 Kingston Road – north-east elevation - 2F	N/A	N/A	N/A	N/A	N/A	N/A
S7 - 215 Kingston Road – north-east elevation - GF	N/A	N/A	N/A	N/A	N/A	N/A
S8 - 213 Kingston Road – north-east elevation - GF	N/A	N/A	N/A	N/A	N/A	N/A
S9 - 215 Kingston Road – north-east elevation - 1F	N/A	N/A	N/A	N/A	N/A	N/A
S10 - 213 Kingston Road – north-east elevation - 1F	N/A	N/A	N/A	N/A	N/A	N/A
S11 - 219 Kingston Road – north-east elevation - GF	N/A	N/A	N/A	N/A	N/A	N/A
S12 - 219 Kingston Road – north-east elevation - GF	N/A	N/A	N/A	N/A	N/A	N/A
S13 - 219 Kingston Road – South-east elevation - GF	33	33	6	6	1.00	Negligible
S14 - 219 Kingston Road – South-east elevation - GF	33	33	6	6	1.00	Negligible

Table 4 Sunlight results

NOTE: 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 the sunlight is directional and the 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 table above demonstrates that, only one window S2 will be adversely impacted by the proposed development in terms of sunlight. However, as mentioned in the previous section, the impact will not be considered of a concern as the impacted window serves a non-habitable room (Toilet).

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

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

5.3 Overshadowing

The following results represent the cumulative overshadowing impacts of the proposed development. As identified from the AutoCAD drawings and/or site plan**, three existing amenity areas are located at the rear of 213, 215 and 219 Kingston Road**. In accordance with the BRE guidelines, overshadowing has been assessed during times of the day where the sun's altitude is above 10° (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 detailed results are presented in section 7.8 in the appendix, and the pictures showing the overshadowing impact are indicated in section 7.9 of the Appendix.

A summary of results is displayed in the table below. Location of the assessed amenity areas can be found in section 7.4 of this report.

Overshadowing assessment from 7.30am to 5.00pm % of area receiving sunlight on 21st March				
Amenity area	**Existing (%)**	**Proposed (%)**	**Ratio**	**Result**
A1 – 215 Kingston Road – Garden	24.55	22.73	0.93	Negligible
A2 – 213 Kingston Road - Garden	19.93	19.99	1.00	Negligible
A3 – 219 Kingston Road - Garden	77.53	77.57	1.00	Negligible

Table 5 Overshadowing results

As shown in the table above, the existing amenity area/garden/open spaces will not be impacted by the proposed development. Hence, **in terms of overshadowing the proposed scheme is considered acceptable.**

The slight loss in sunlight for other amenity areas is not considered to be a 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.

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

6 CONCLUSION

6.1 Daylight

This report demonstrates that the levels of daylight at the surrounding buildings at **213, 217, and 219 Kingston Road** will not be adversely affected by the proposed development. The loss of daylight for one surface at **215 Kingston Road** is not considered a concern as it serves a non-habitable room.

6.2 Sunlight

This report demonstrates that the levels of sunlight at the surrounding buildings at **213, 217, and 219 Kingston Road** will not be adversely affected by the proposed development. The loss of sunlight for one surface at **215 Kingston Road** is not considered a concern as it serves a non-habitable room.

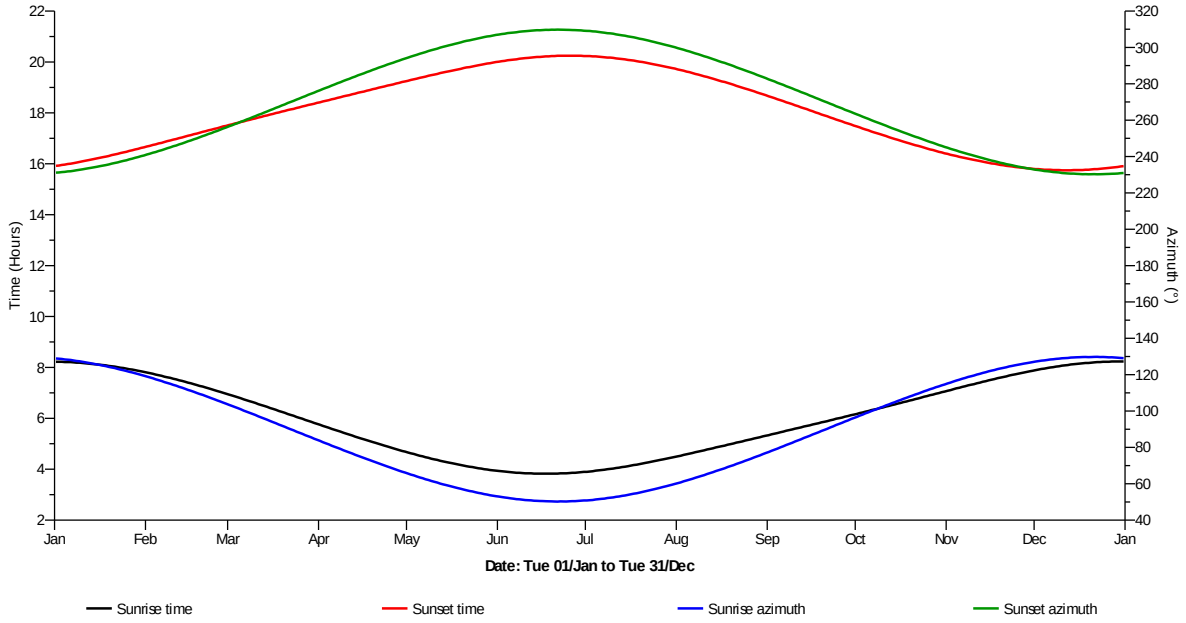
6.3 Overshadowing

This report demonstrates that the existing amenity area/garden/open spaces located at **the rear of 213, 215, and 219 Kingston Road** will not be adversely affected by the proposed development.

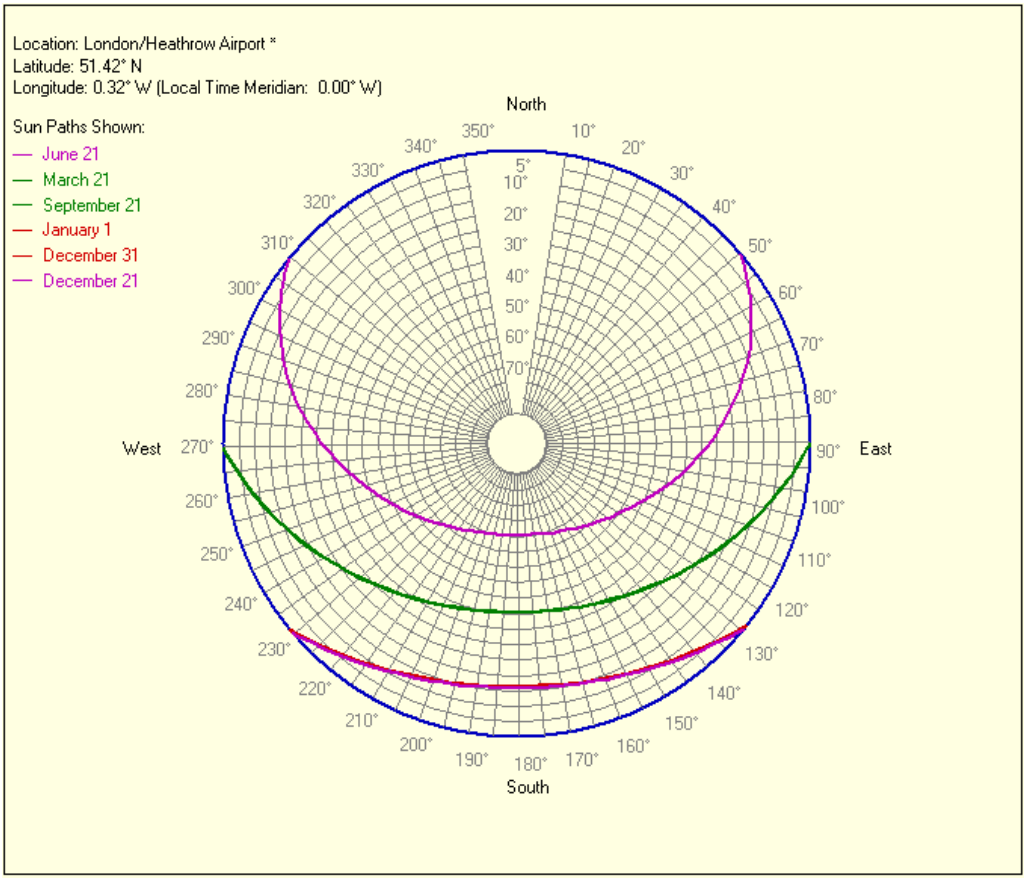
On balance, it can be concluded that the proposed development is not expected to cause any significant impact to daylight and sunlight access for surrounding properties at **213, 215, 217, and 219 Kingston Road.**

7 APPENDIX

7.1 Sunrise and sunset time

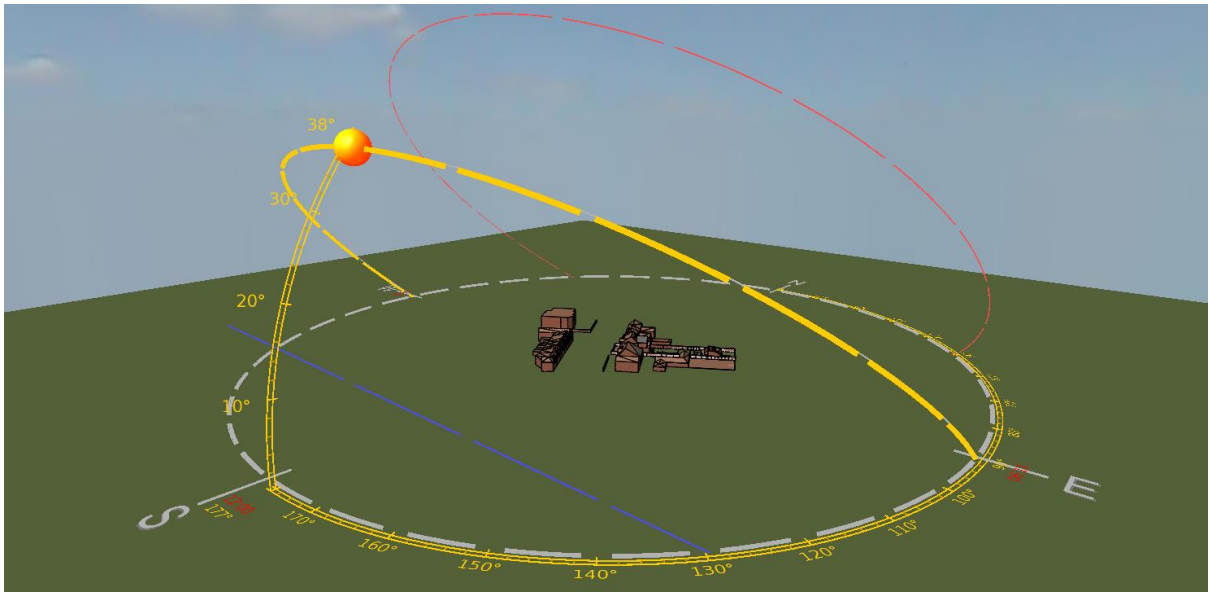


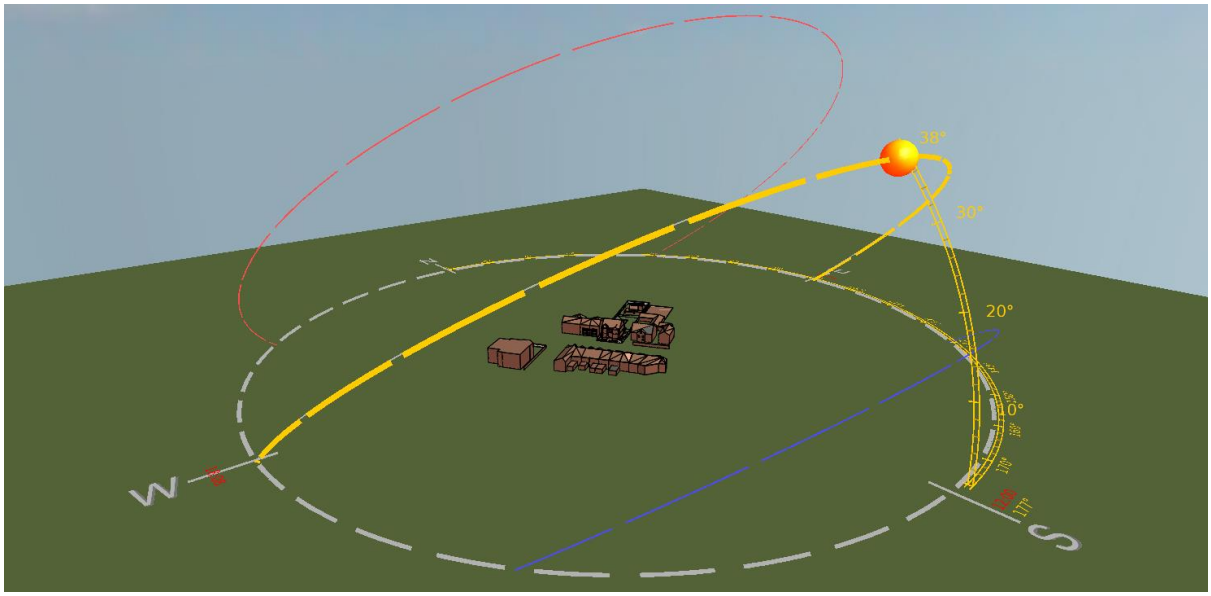
7.2 Sun path



7.3 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.

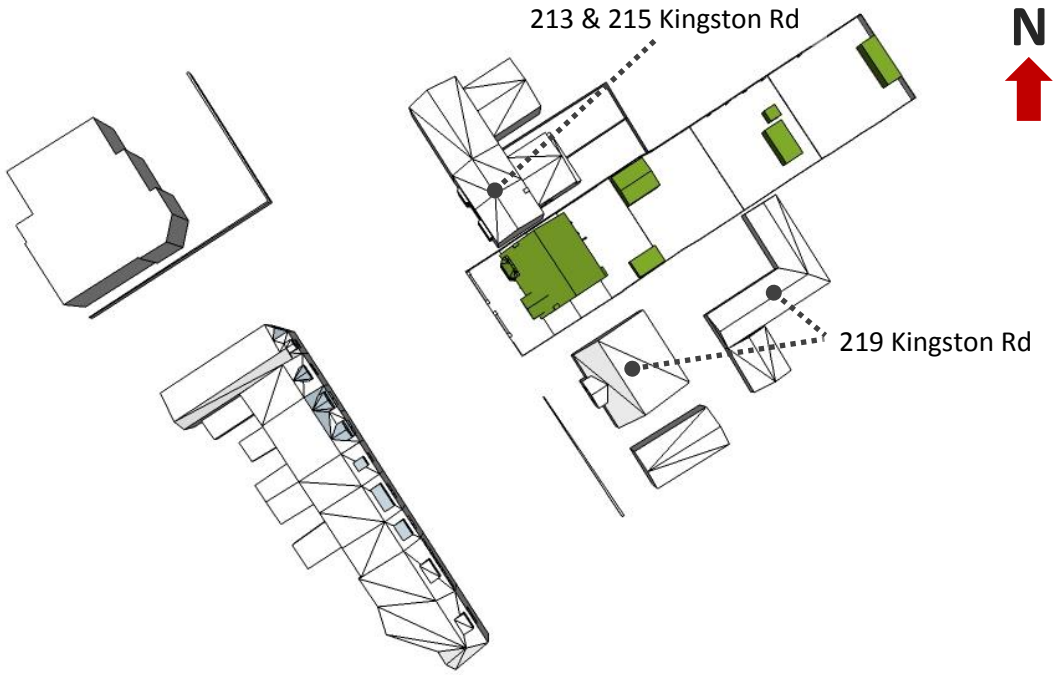




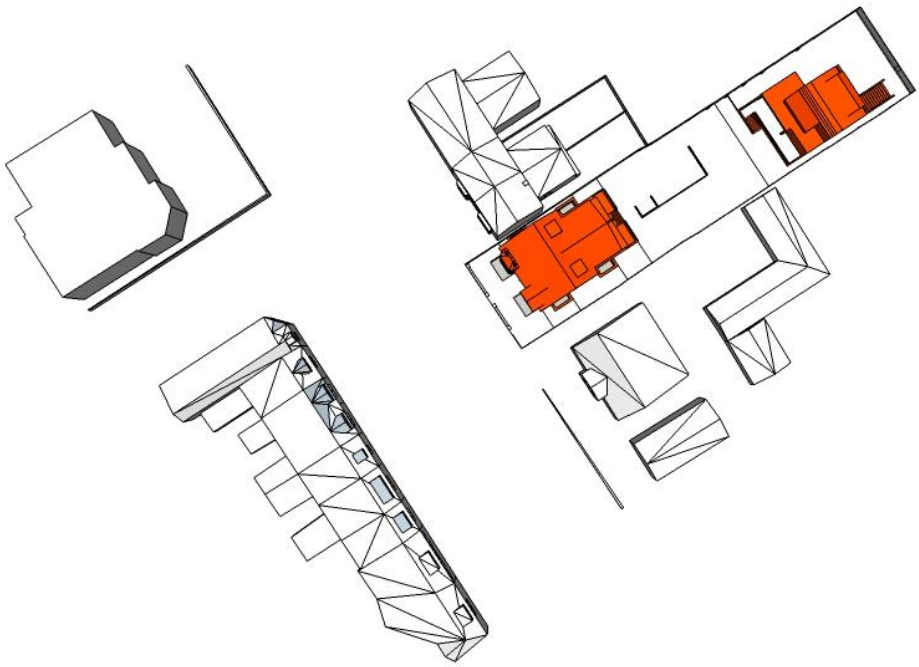
7.4 Site plan and location

Location	217 Kingston Road, Teddington, TW11 9JN
Latitude (°)	51.42 N
Longitude (°)	0.32 W

7.4.1 Site Plans

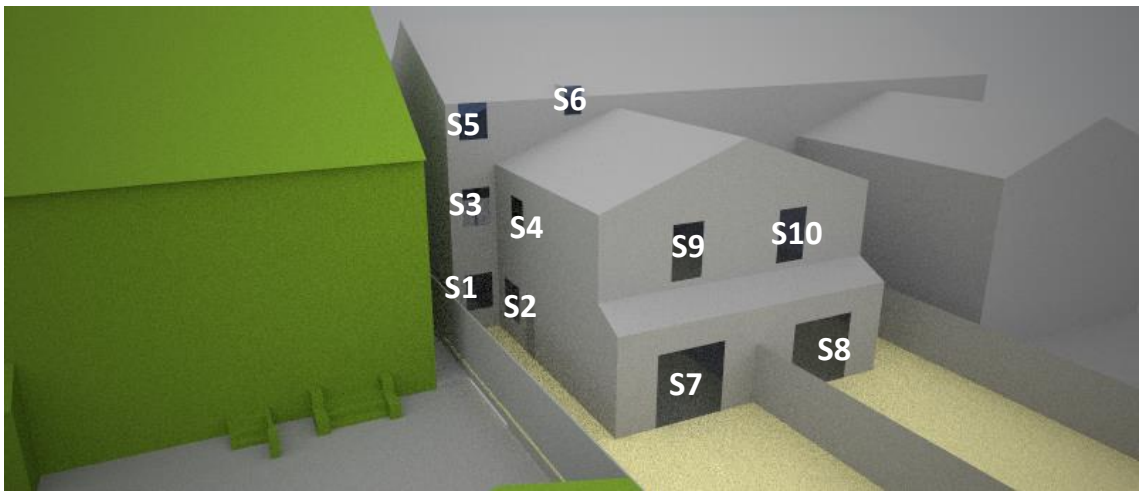


Existing site layout

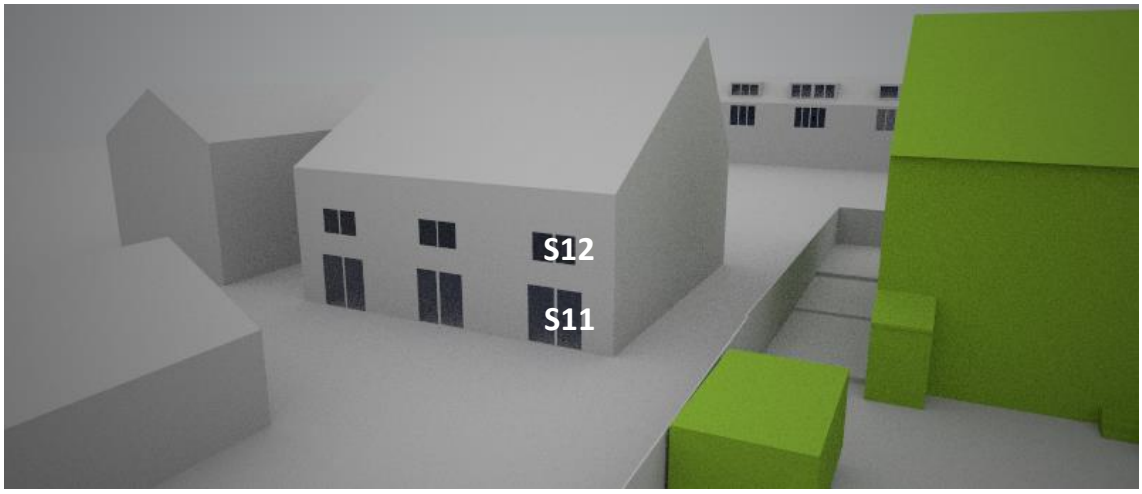


Proposed site layout

7.4.2 Location of Assessed Surfaces and Amenities

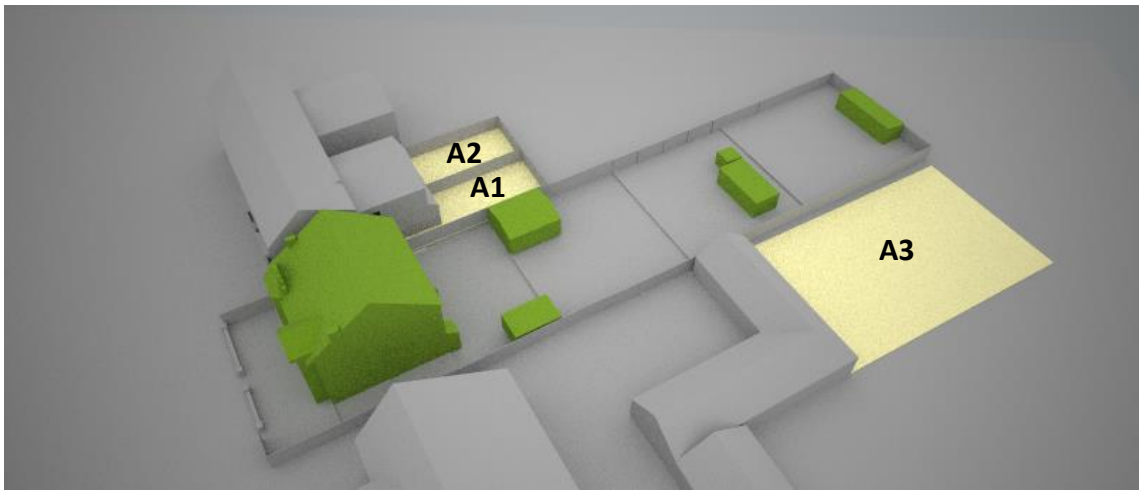


213 and 215 Kingston Road – North-east and South-east Elevation



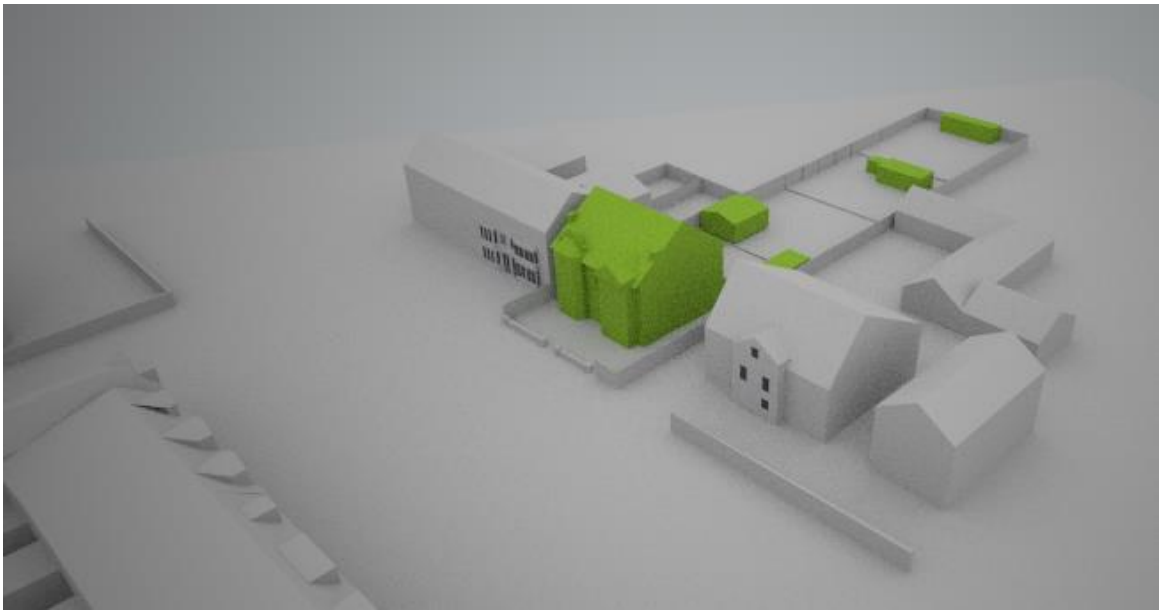
219 Kingston Road – North-east Elevation

219 Kingston Road – South-east Elevation

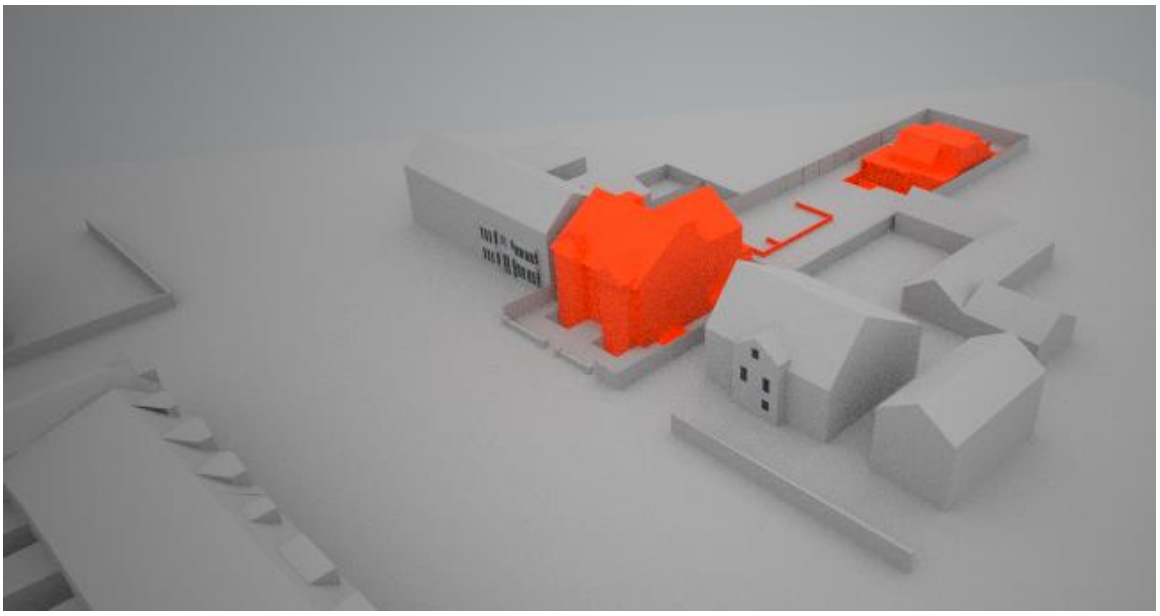


Gardens at the rear of 213, 215, and 219 Kingston Road

7.5 Model images

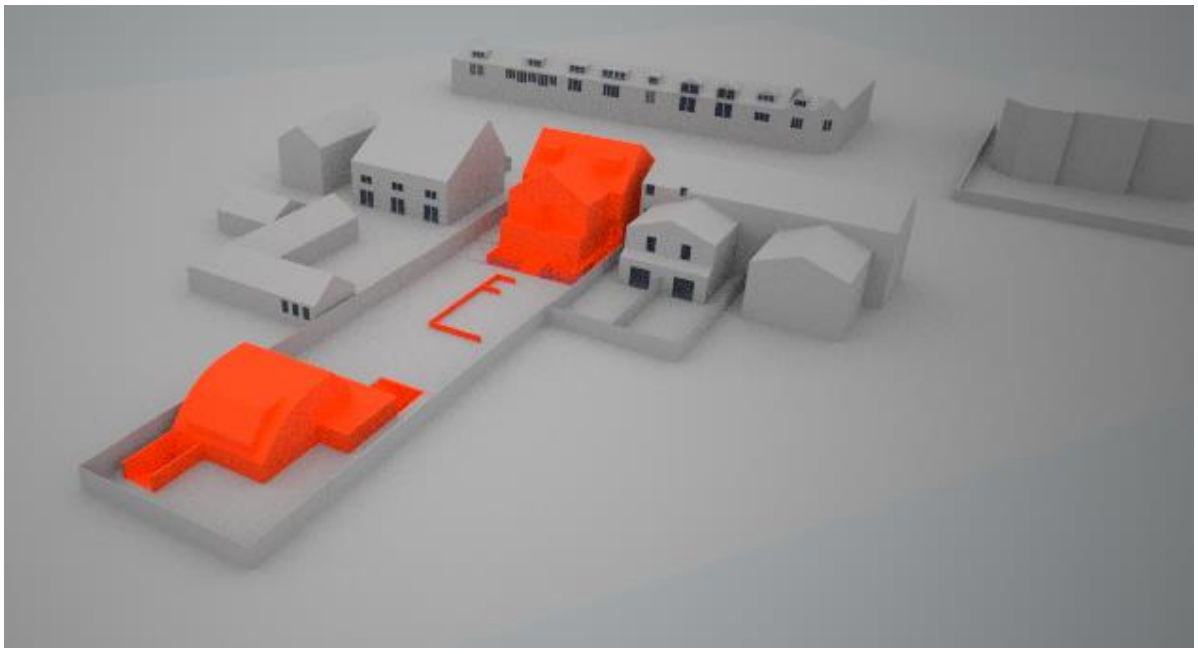


Existing image 1



Proposed image 1

Existing image 2

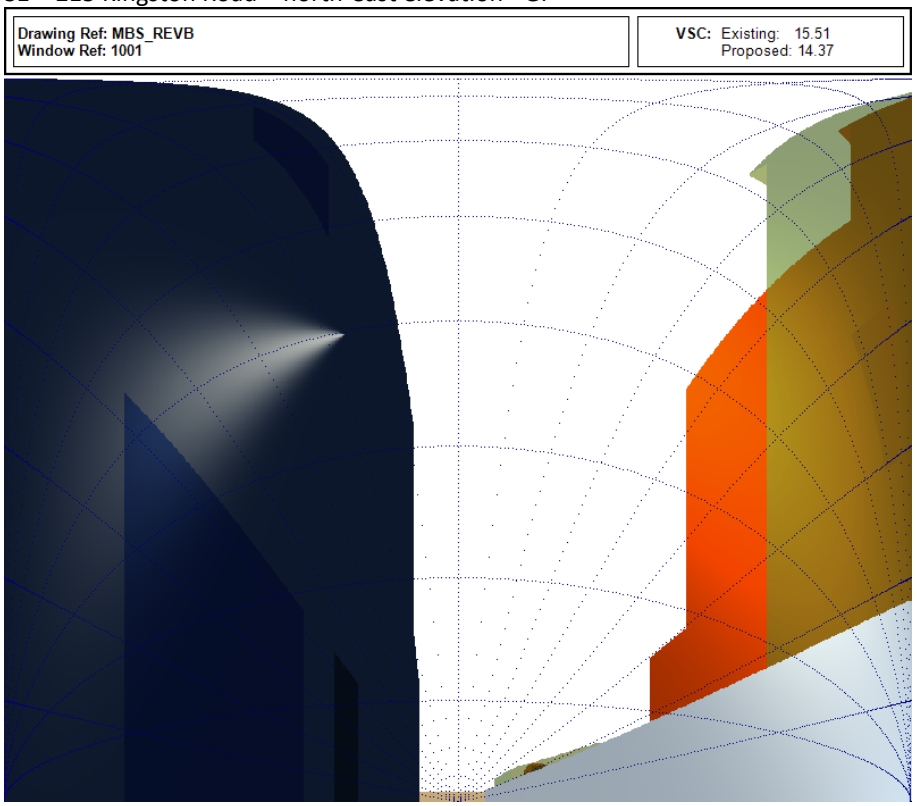


Proposed image 2

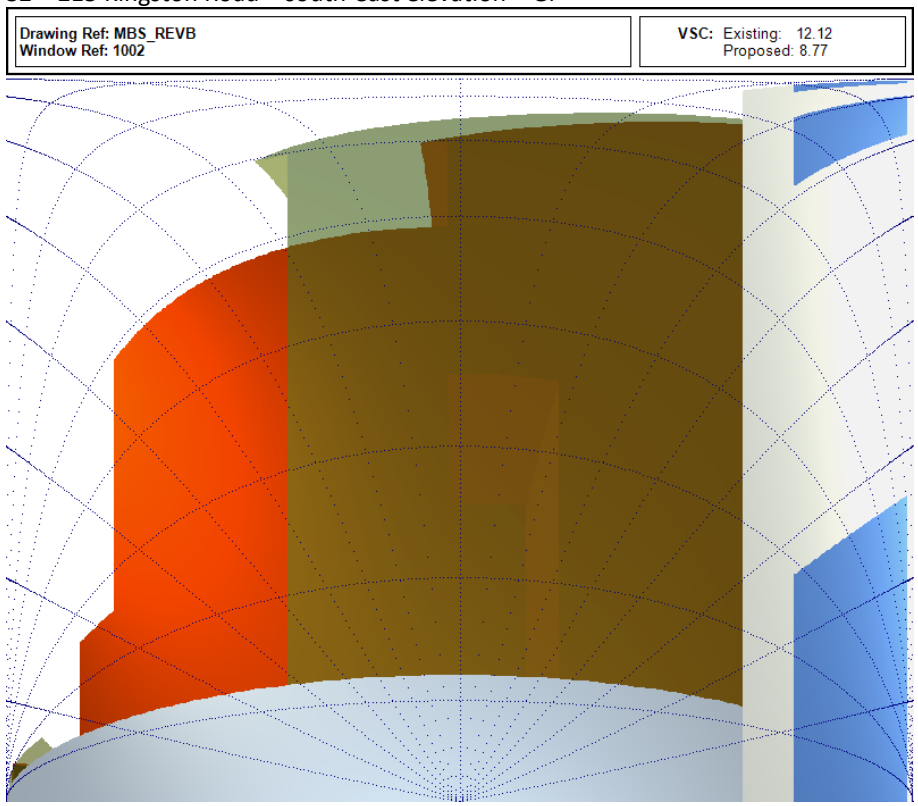
7.6 Daylight results

7.6.1 External daylight results

S1 – 215 Kingston Road – north-east elevation - GF

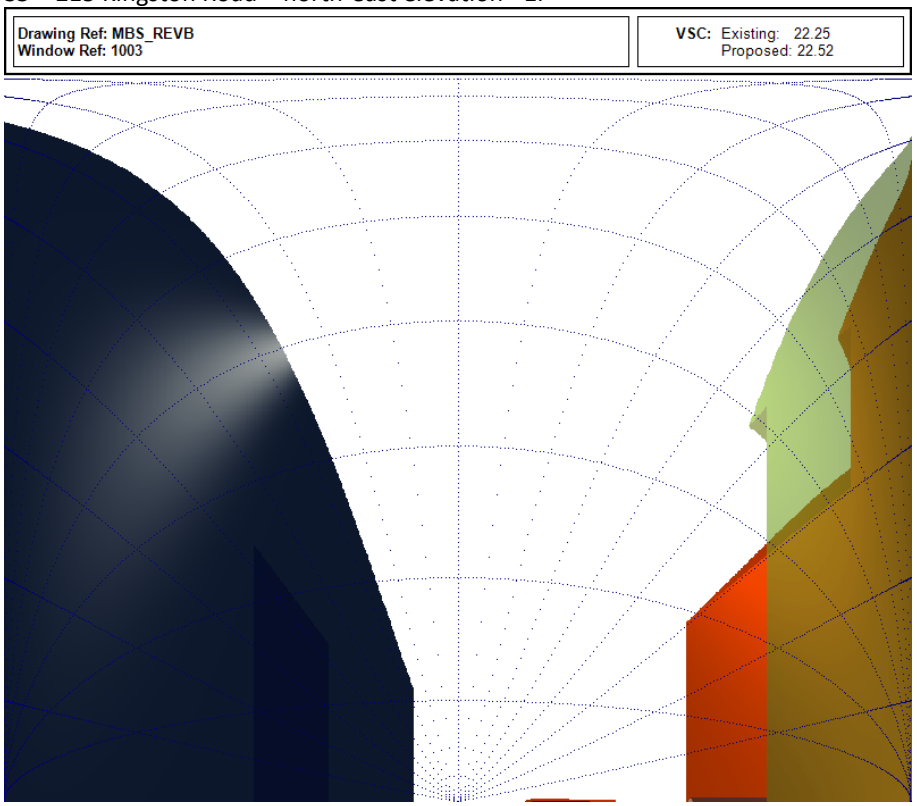


S2 – 215 Kingston Road – south-east elevation – GF

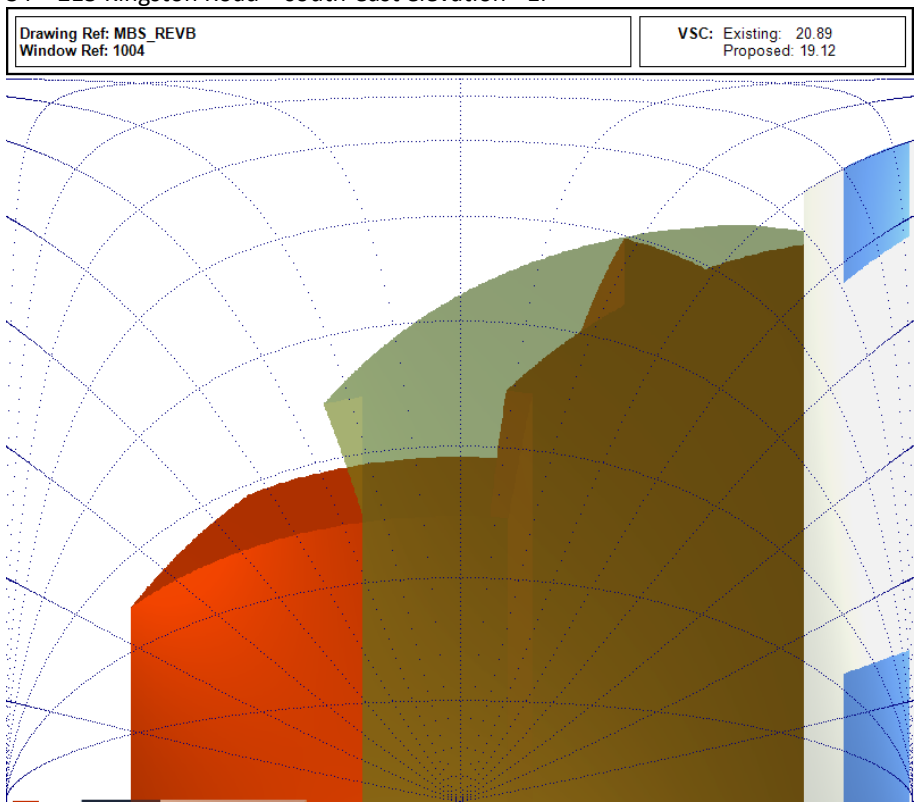


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.

S3 – 215 Kingston Road – north-east elevation - 1F

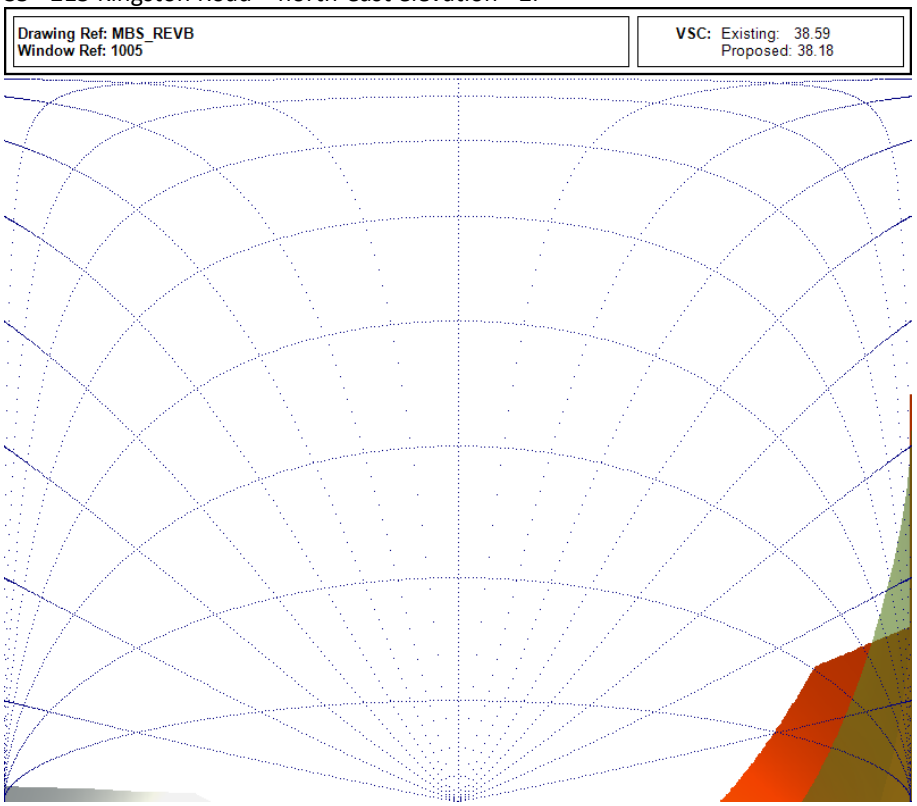


S4 – 215 Kingston Road – south-east elevation - 1F

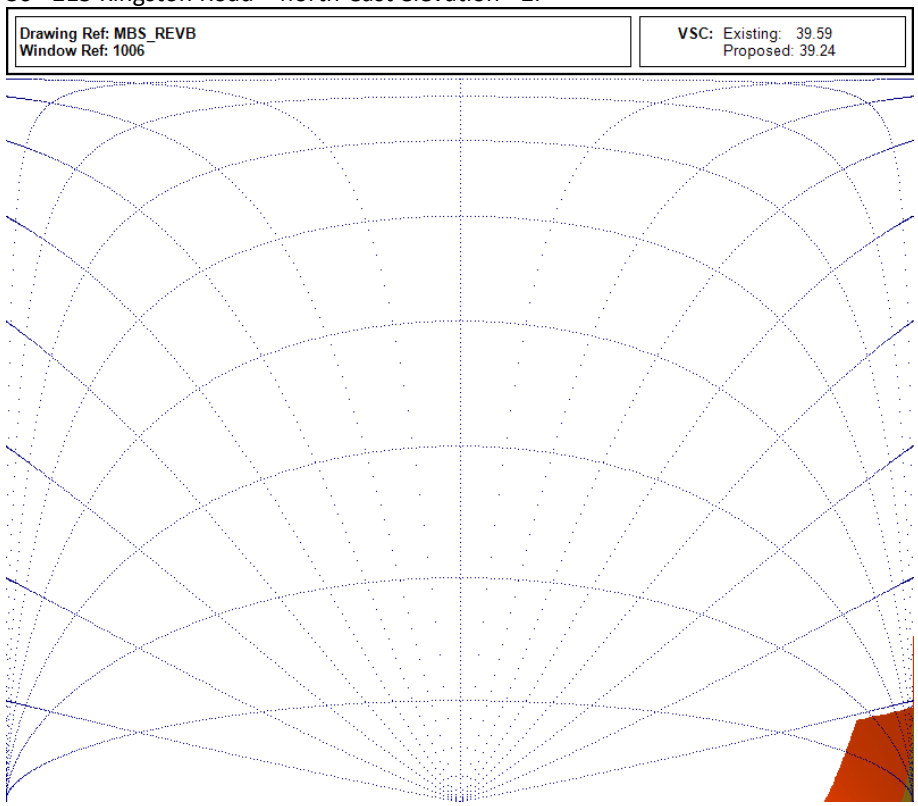


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.

S5 - 215 Kingston Road – north-east elevation - 2F

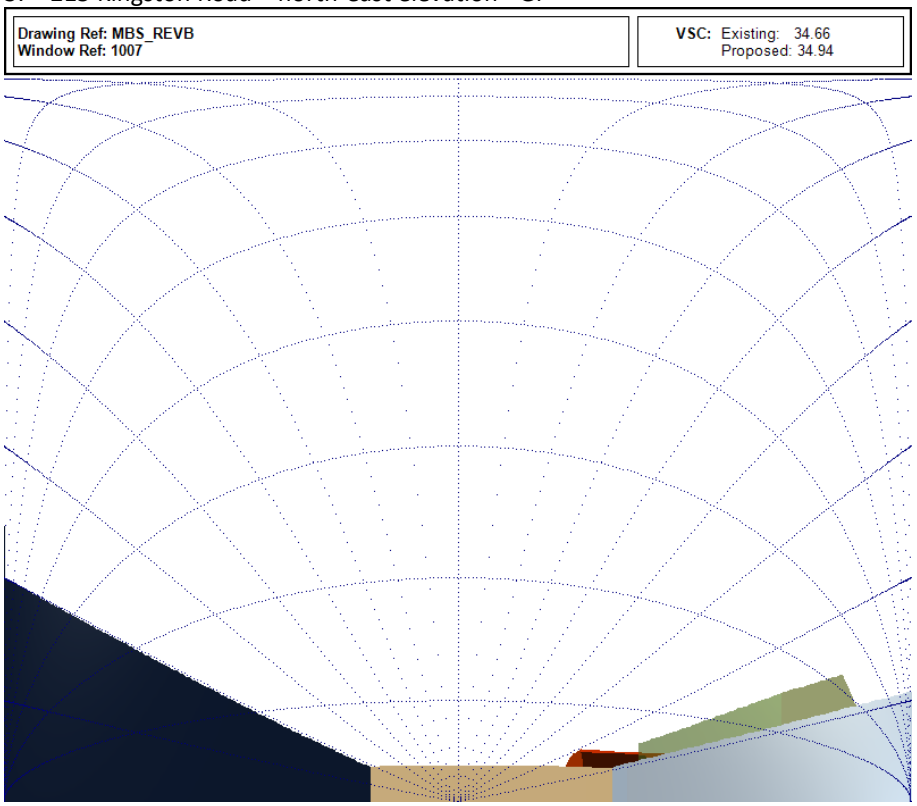


S6 - 215 Kingston Road – north-east elevation - 2F

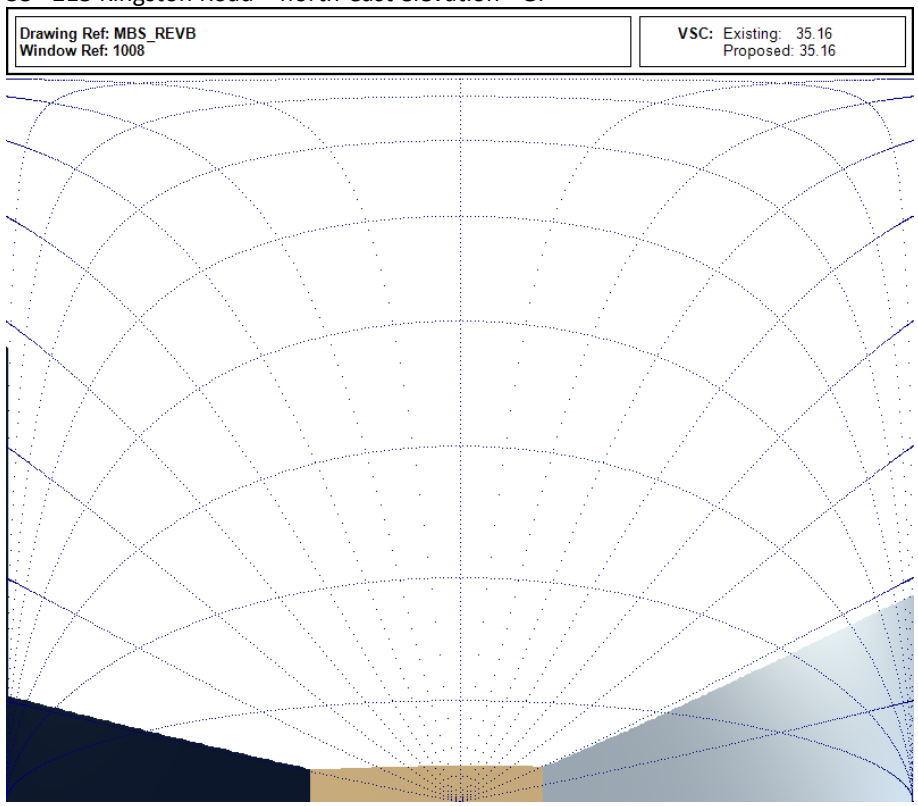


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.

S7 - 215 Kingston Road – north-east elevation - GF

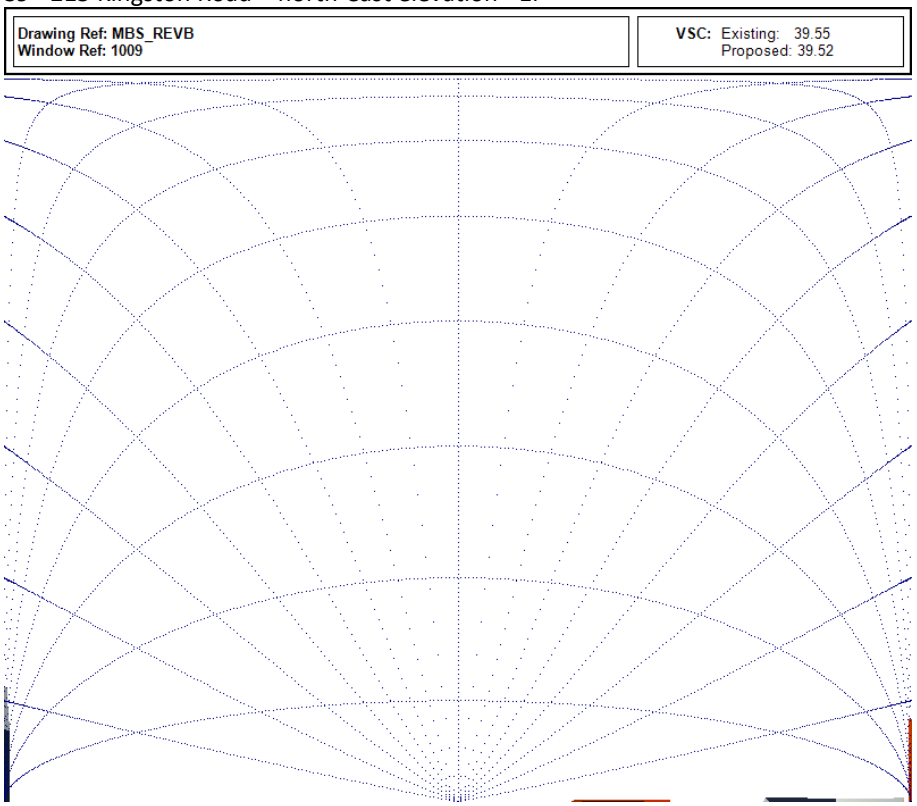


S8 - 213 Kingston Road – north-east elevation - GF

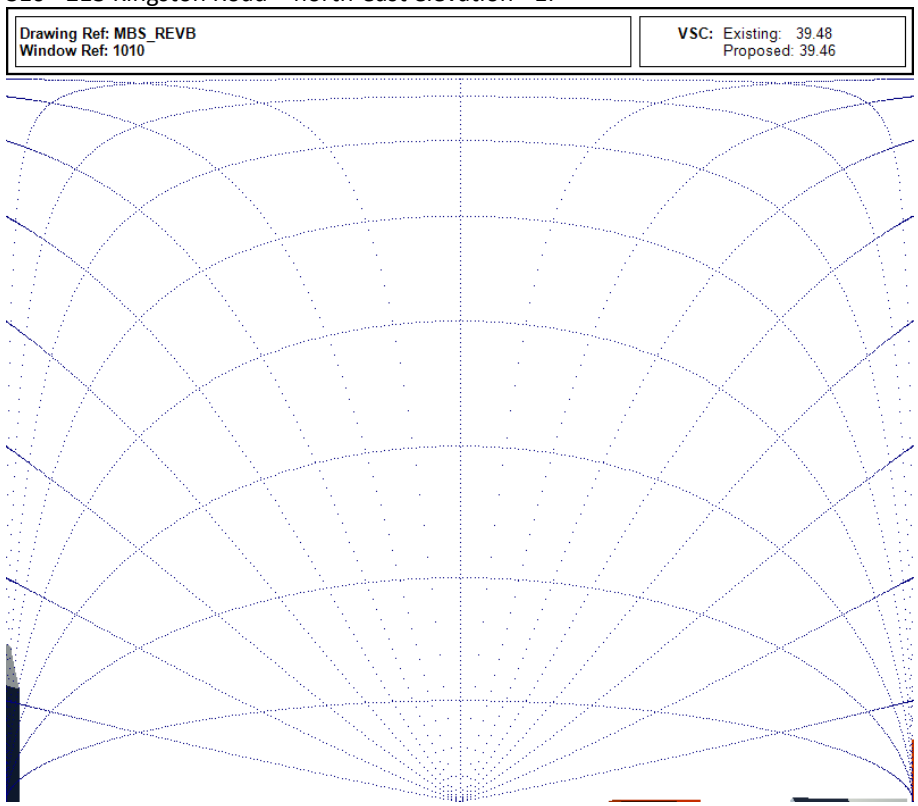


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.

S9 - 215 Kingston Road – north-east elevation - 1F

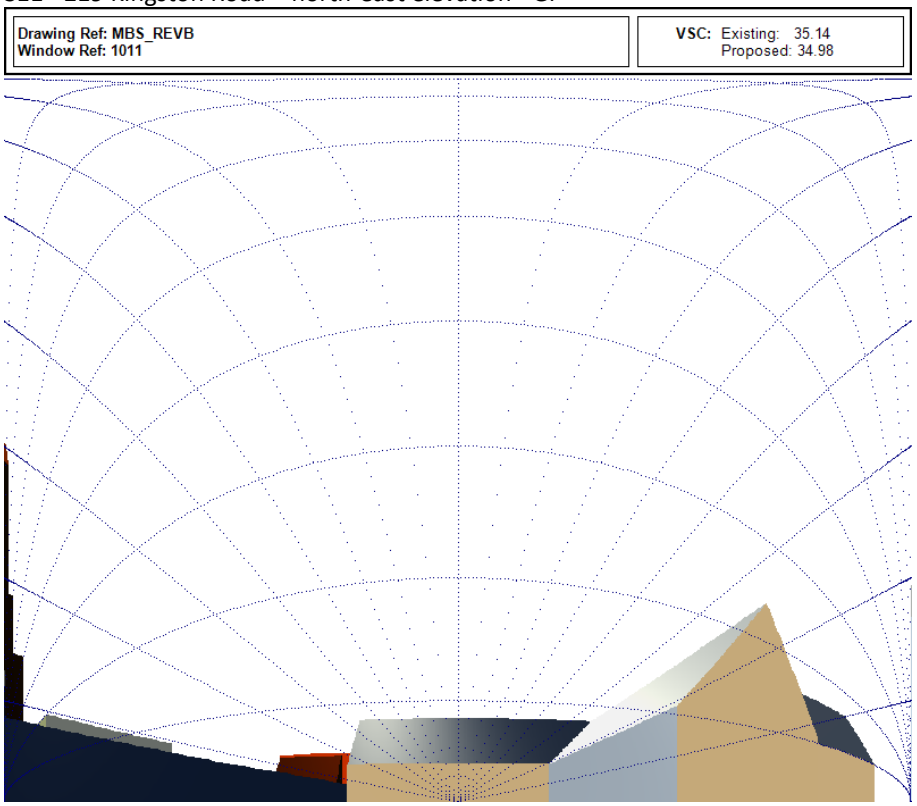


S10 - 213 Kingston Road – north-east elevation - 1F

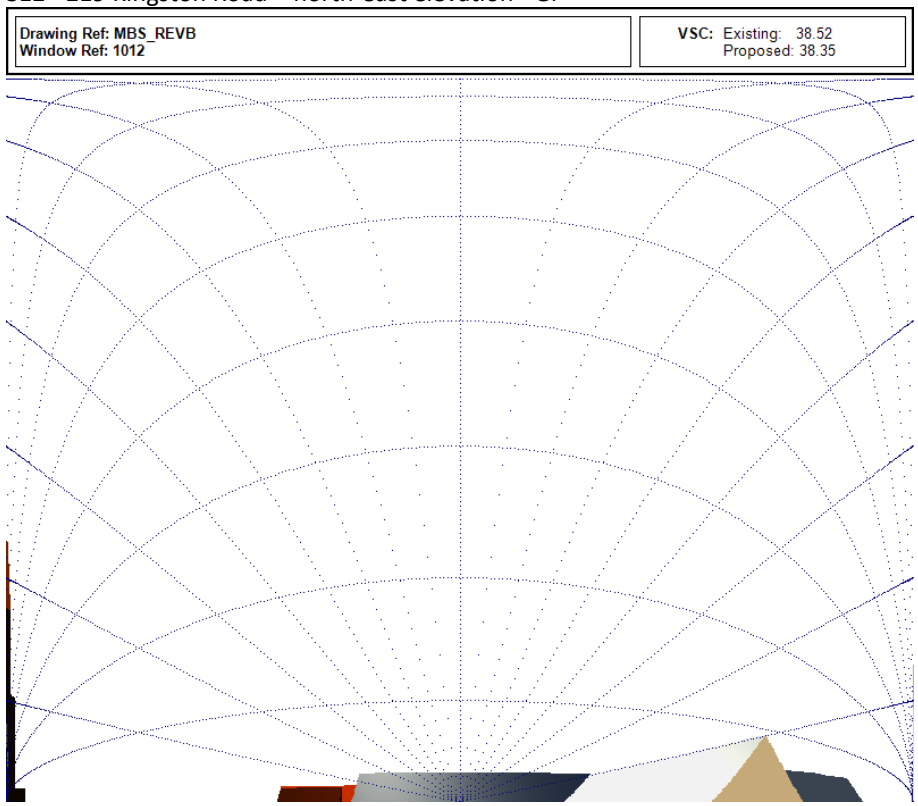


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.

S11 - 219 Kingston Road – north-east elevation - GF

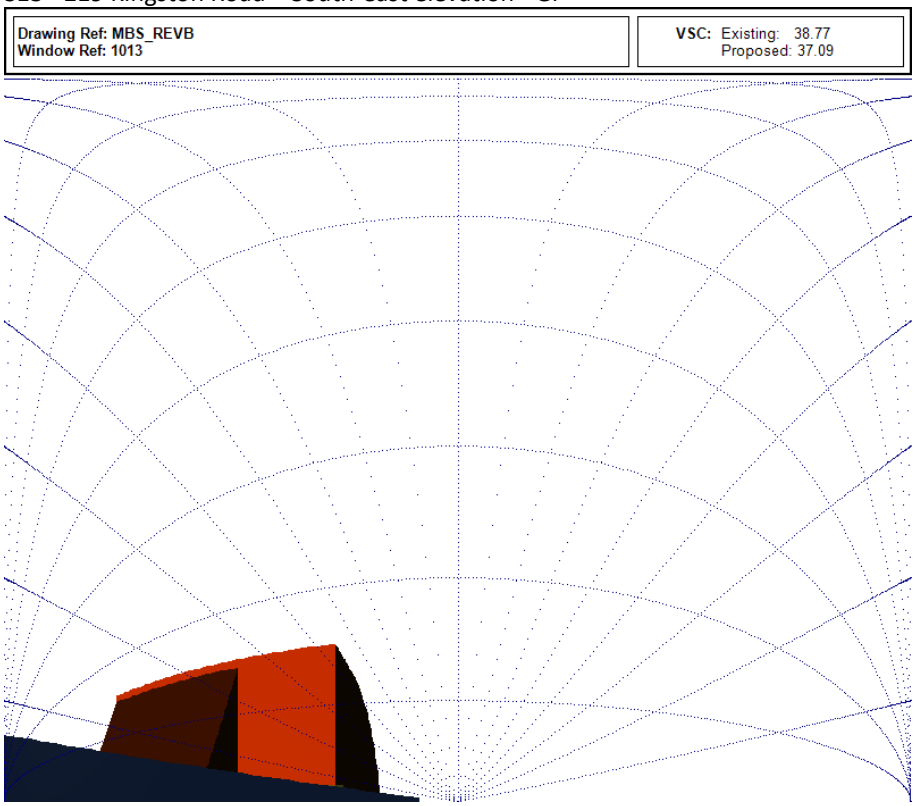


S12 - 219 Kingston Road – north-east elevation - GF

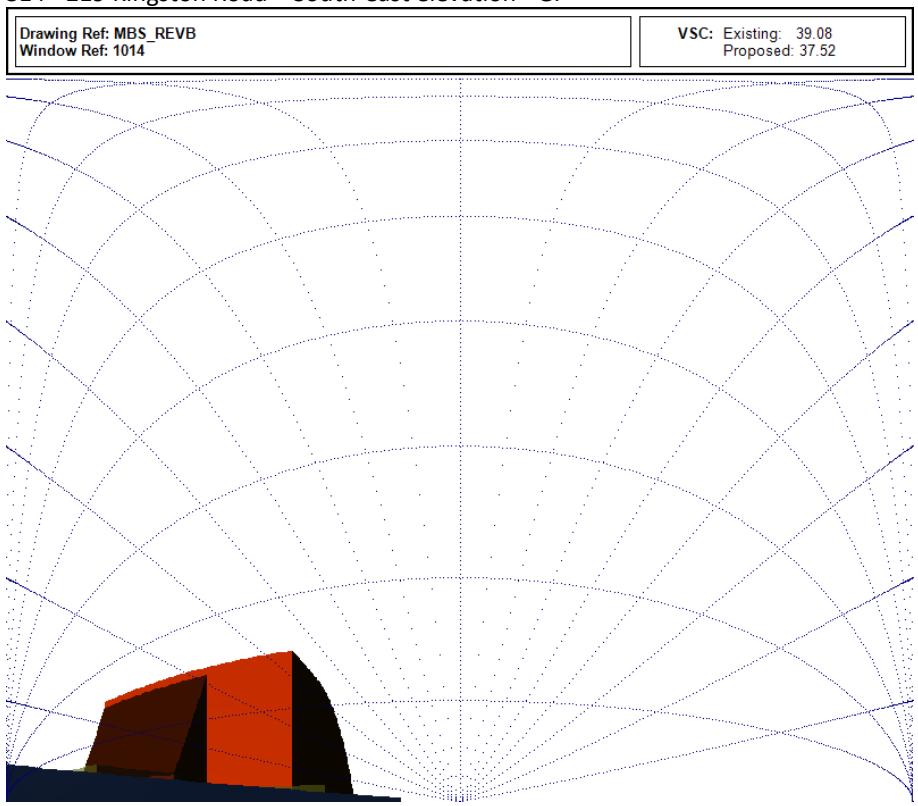


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.

S13 - 219 Kingston Road – South-east elevation - GF



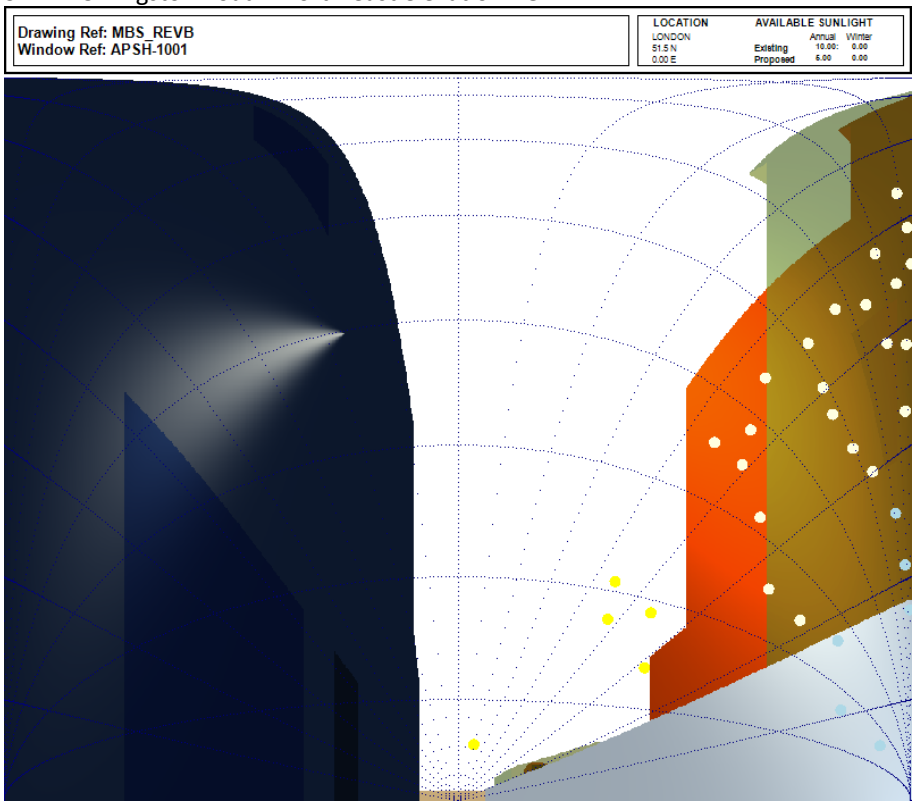
S14 - 219 Kingston Road – South-east elevation - GF



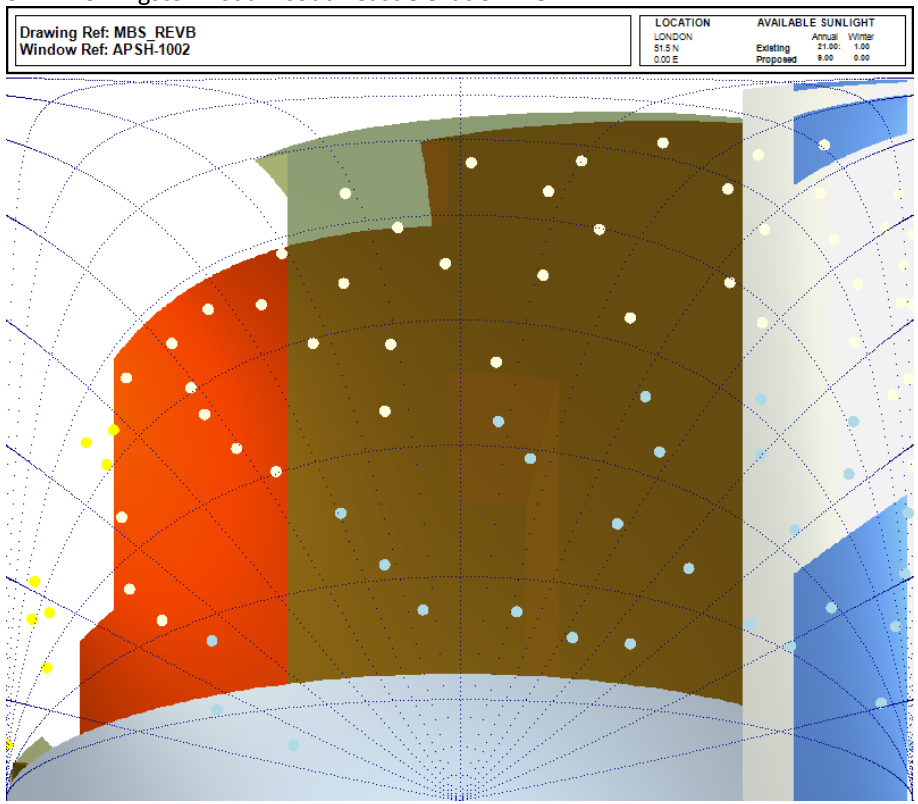
- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.

7.7 Sunlight results

S1 – 215 Kingston Road – north-east elevation - GF

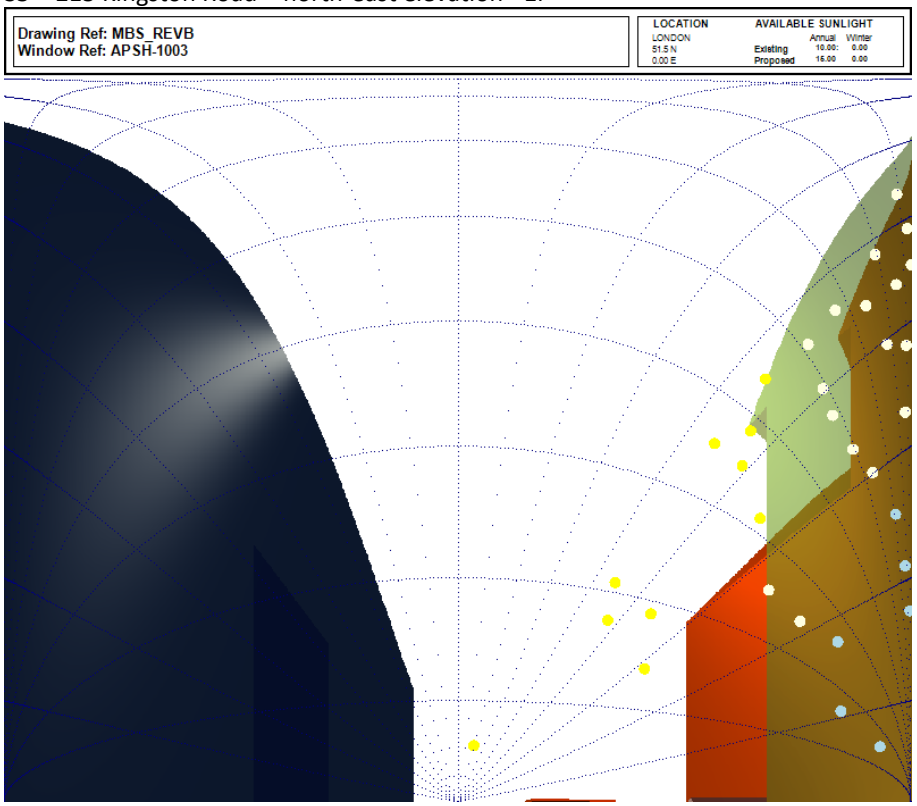


S2 – 215 Kingston Road – south-east elevation – GF

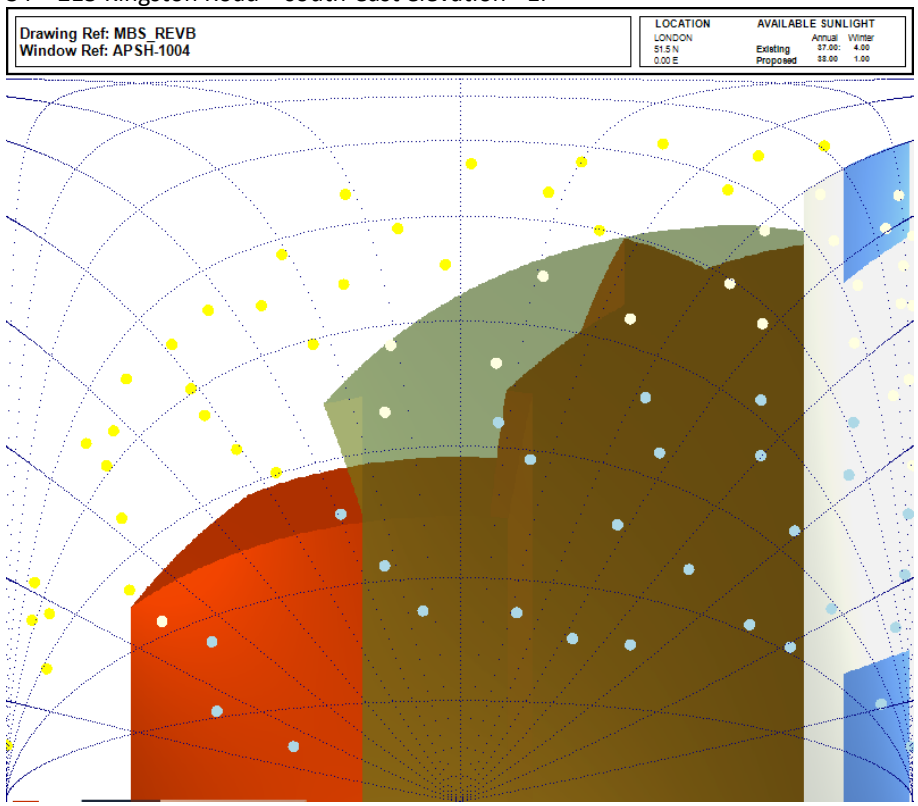


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.
- The yellow dot represents the available sunlight during the summer months (Summer).
- The blue dot represents the available sunlight during the winter months (Winter).
- The sum of the yellow and blue dots gives the available sunlight for the whole year (Annual).
- The white dot represents the sunlight blocked by buildings.

S3 – 215 Kingston Road – north-east elevation - 1F

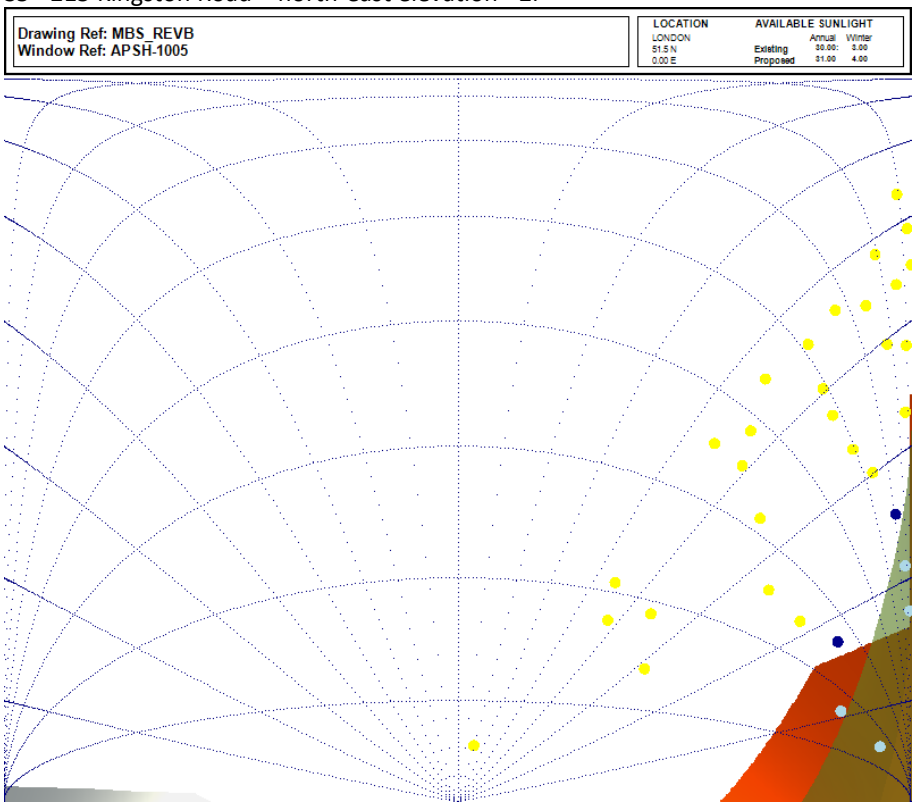


S4 – 215 Kingston Road – south-east elevation - 1F

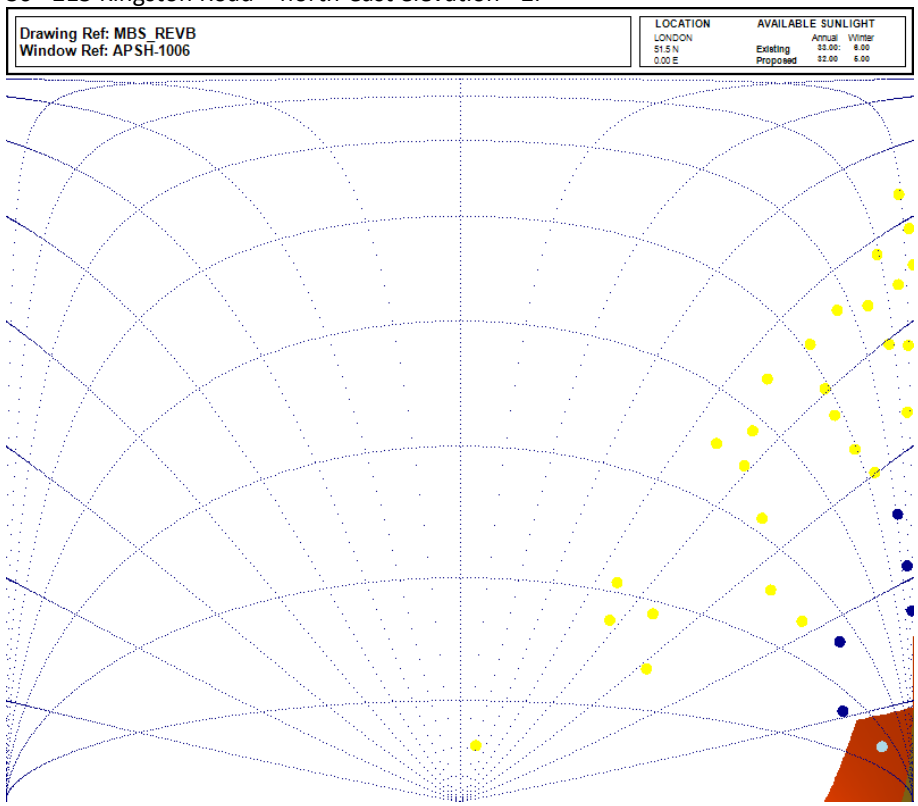


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.
- The yellow dot represents the available sunlight during the summer months (Summer).
- The blue dot represents the available sunlight during the winter months (Winter).
- The sum of the yellow and blue dots gives the available sunlight for the whole year (Annual).
- The white dot represents the sunlight blocked by buildings.

S5 - 215 Kingston Road – north-east elevation - 2F

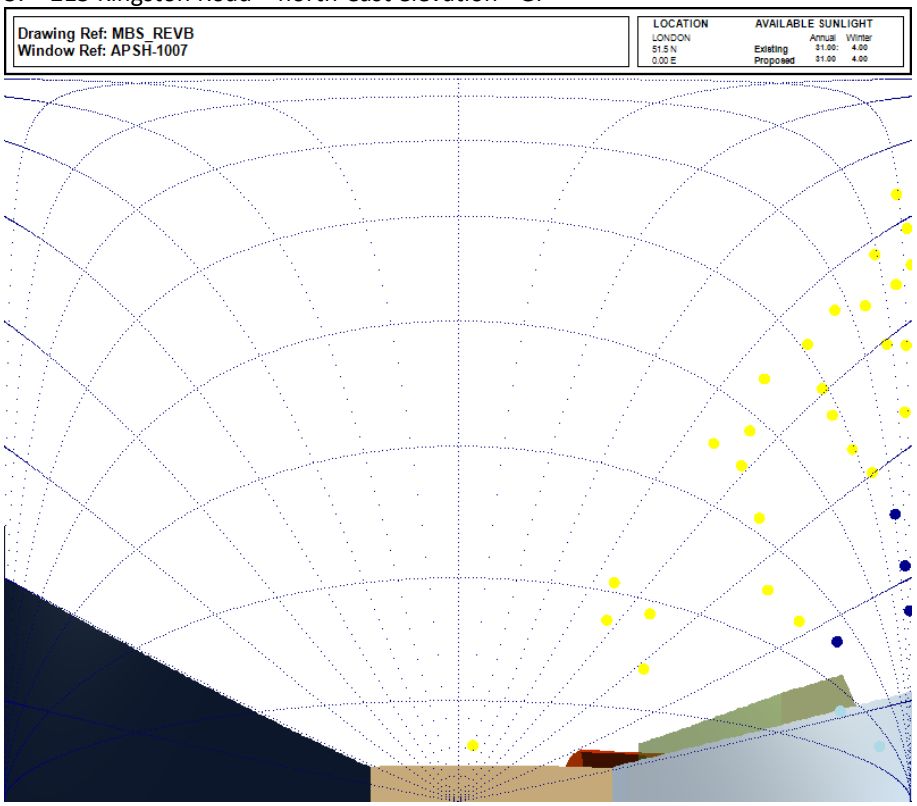


S6 - 215 Kingston Road – north-east elevation - 2F

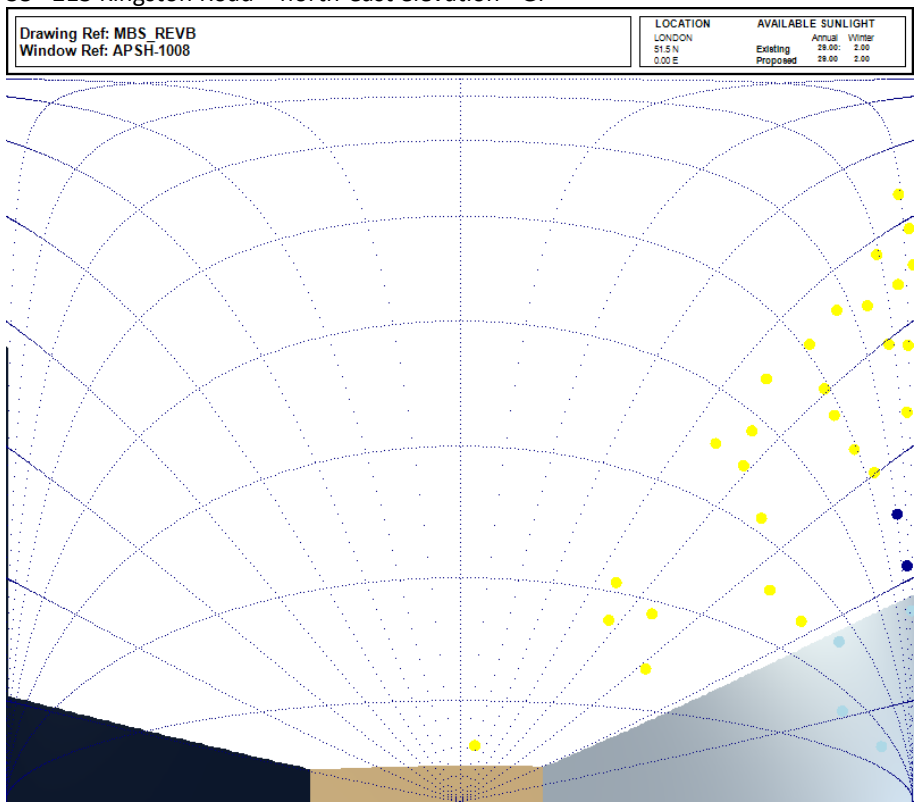


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.
- The yellow dot represents the available sunlight during the summer months (Summer).
- The blue dot represents the available sunlight during the winter months (Winter).
- The sum of the yellow and blue dots gives the available sunlight for the whole year (Annual).
- The white dot represents the sunlight blocked by buildings.

S7 - 215 Kingston Road – north-east elevation - GF

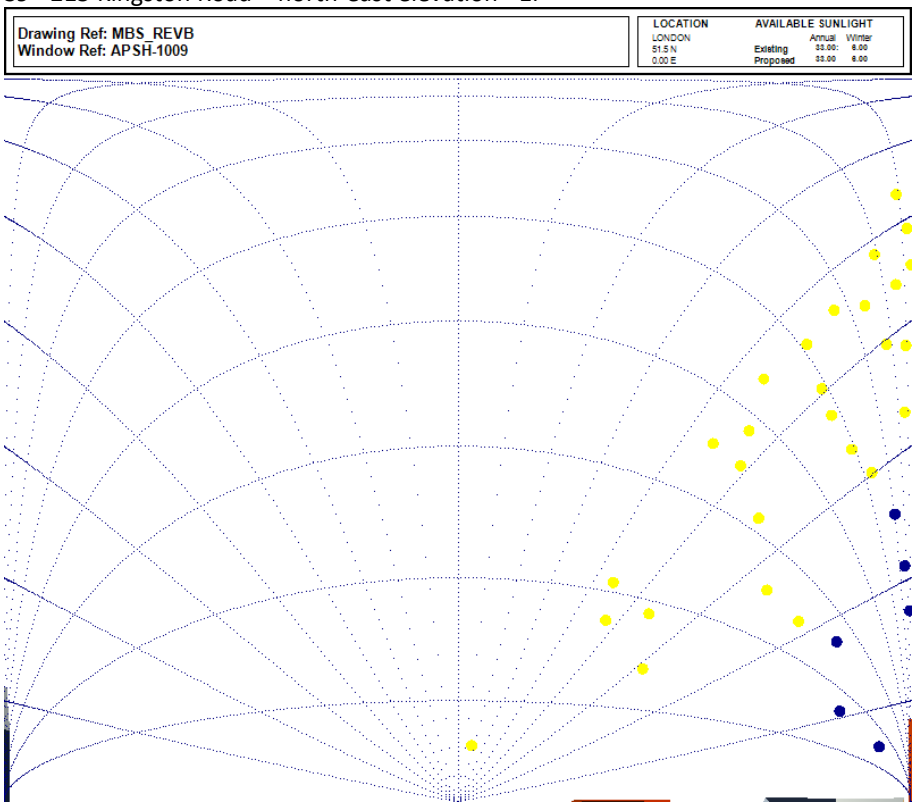


S8 - 213 Kingston Road – north-east elevation - GF

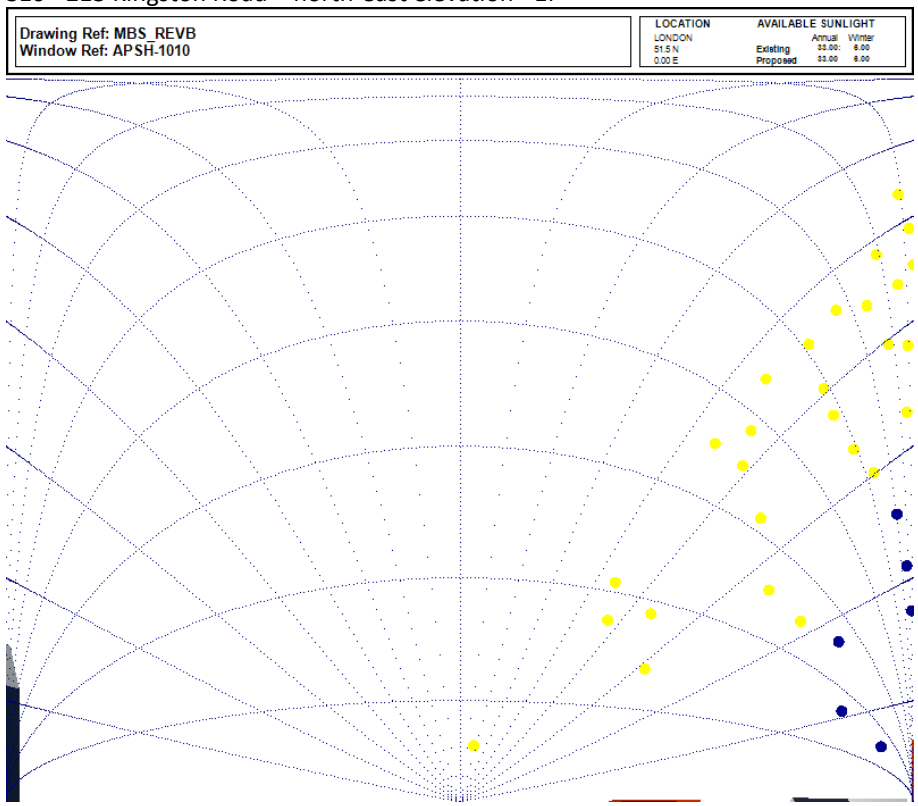


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.
- The yellow dot represents the available sunlight during the summer months (Summer).
- The blue dot represents the available sunlight during the winter months (Winter).
- The sum of the yellow and blue dots gives the available sunlight for the whole year (Annual).
- The white dot represents the sunlight blocked by buildings.

S9 - 215 Kingston Road – north-east elevation - 1F

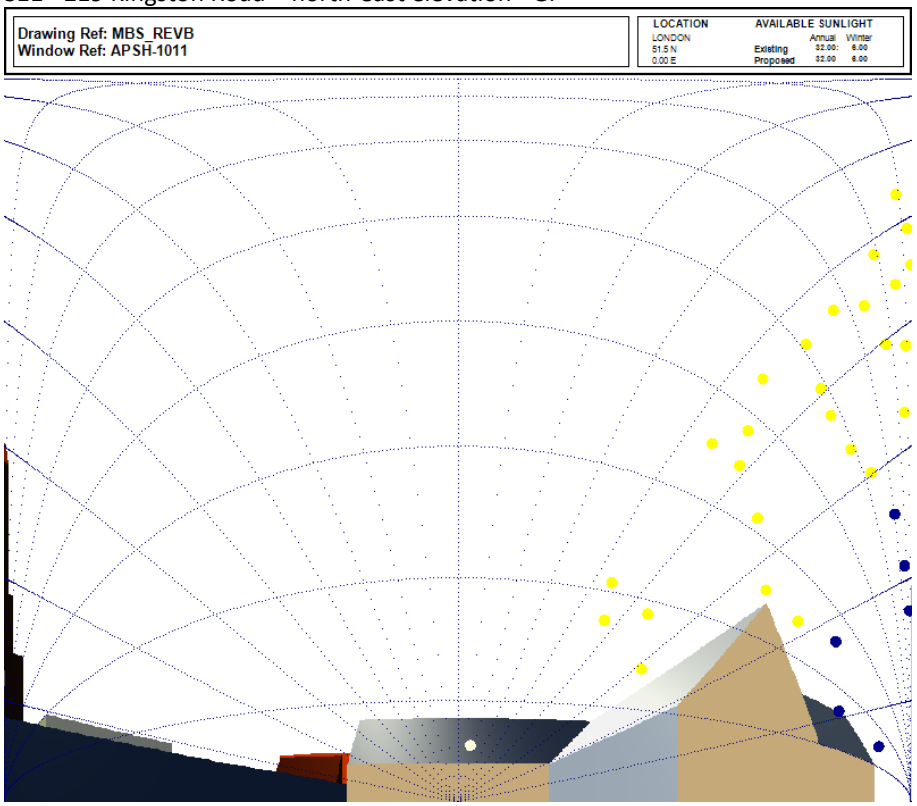


S10 - 213 Kingston Road – north-east elevation - 1F

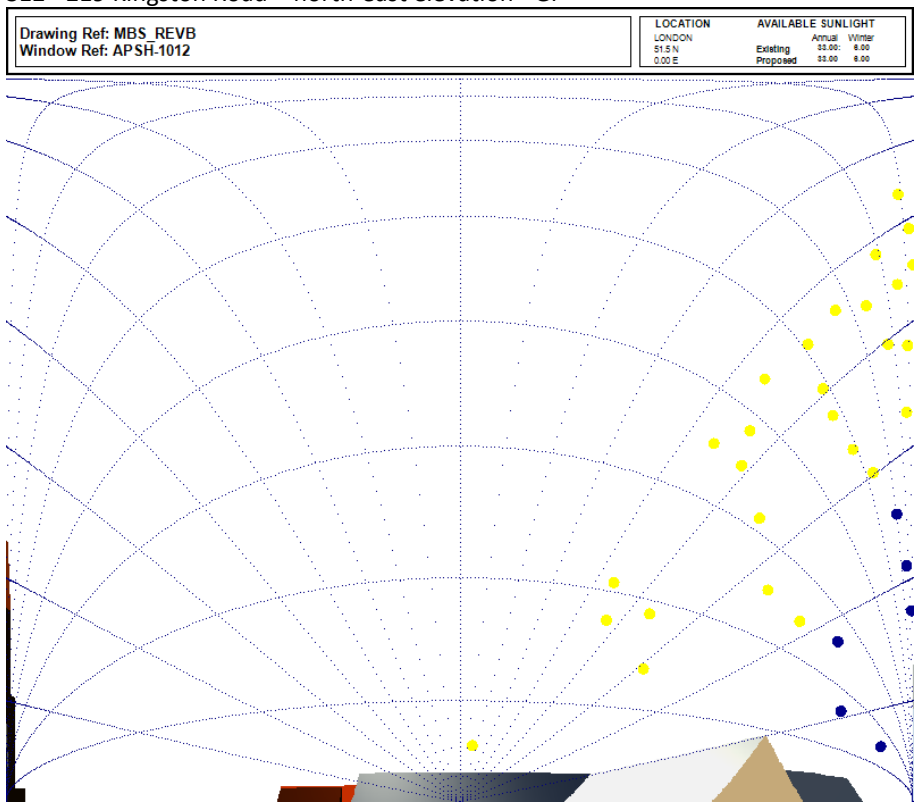


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.
- The yellow dot represents the available sunlight during the summer months (Summer).
- The blue dot represents the available sunlight during the winter months (Winter).
- The sum of the yellow and blue dots gives the available sunlight for the whole year (Annual).
- The white dot represents the sunlight blocked by buildings.

S11 - 219 Kingston Road – north-east elevation - GF

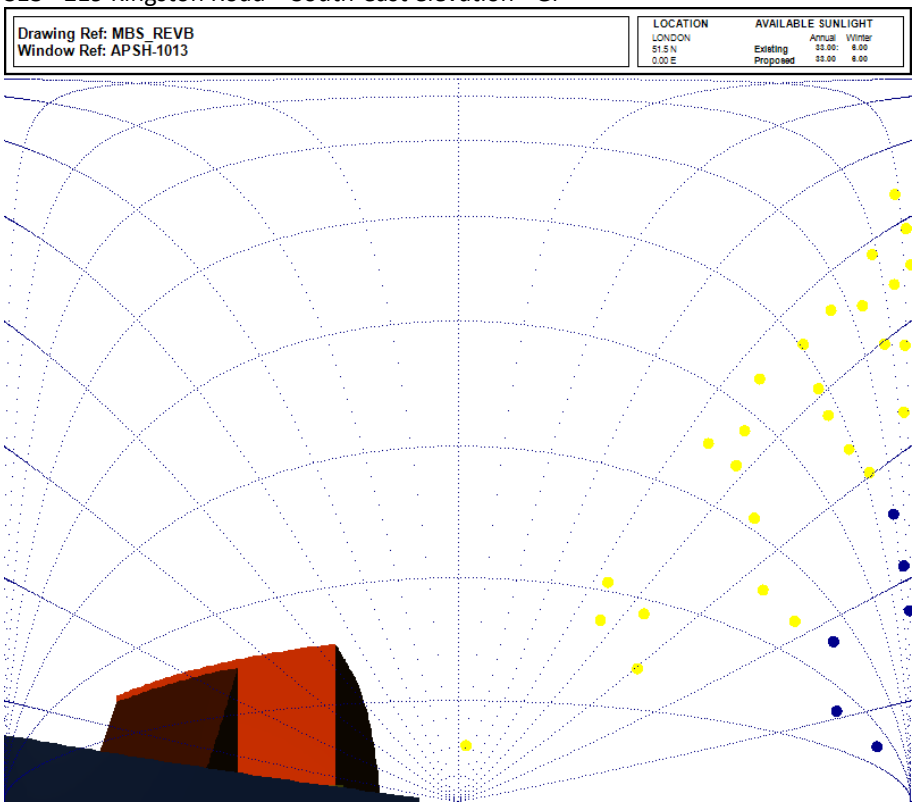


S12 - 219 Kingston Road – north-east elevation - GF

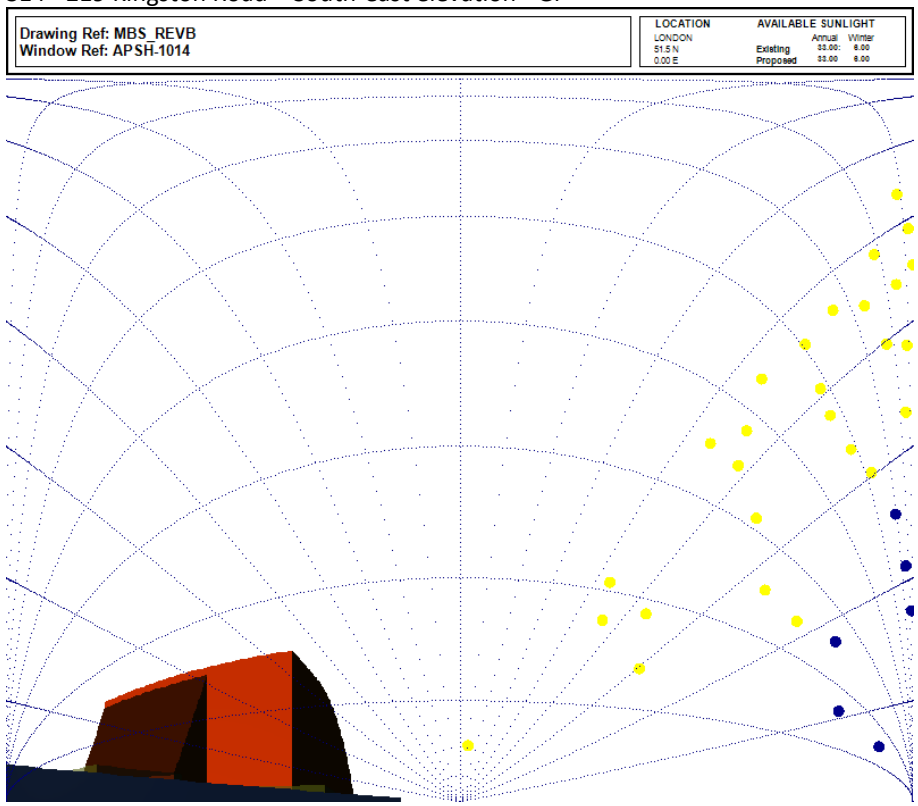


- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.
- The yellow dot represents the available sunlight during the summer months (Summer).
- The blue dot represents the available sunlight during the winter months (Winter).
- The sum of the yellow and blue dots gives the available sunlight for the whole year (Annual).
- The white dot represents the sunlight blocked by buildings.

S13 - 219 Kingston Road – South-east elevation - GF



S14 - 219 Kingston Road – South-east elevation - GF



- The green contour represents the existing building.
- The orange contour represents the proposed building.
- The grey/black contour represents the surrounding buildings.
- The yellow dot represents the available sunlight during the summer months (Summer).
- The blue dot represents the available sunlight during the winter months (Winter).
- The sum of the yellow and blue dots gives the available sunlight for the whole year (Annual).
- The white dot represents the sunlight blocked by buildings.

7.8 Overshadowing results (21st March)

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

A1 – 215 Kingston Road – Garden

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	0.10	3.20	10.20	2.50	0.00	0.00	0.00				
Feb					0.00	0.10	16.90	28.90	35.00	31.60	6.00	0.00	8.30	0.00			
Mar				**0.10**	**13.10**	**32.10**	**42.30**	**47.40**	**49.80**	**49.70**	**39.20**	**20.90**	**0.00**	**0.00**	**0.00**		
Apr			20.90	38.10	46.60	52.40	57.30	61.30	62.00	59.40	54.50	34.40	2.00	0.00	0.00		
May		53.90	53.90	55.60	59.00	63.40	67.20	69.50	69.40	67.60	67.60	43.50	19.40	7.90	0.00	0.00	
Jun	89.80	72.80	62.60	61.90	64.40	67.30	70.10	72.40	72.00	72.00	71.80	48.50	26.50	14.80	8.40	0.00	0.00
Jul		55.80	54.60	55.70	58.90	63.20	67.00	69.80	69.70	68.10	69.40	47.60	22.90	9.80	2.10	0.00	
Aug			19.70	37.90	46.50	52.30	57.10	61.40	62.20	59.90	54.70	38.10	3.50	0.00	0.00	0.00	
Sep			0.00	0.10	20.30	35.70	44.70	48.40	50.60	48.10	33.40	19.00	0.00	0.00			
Oct				0.00	0.10	4.80	22.70	31.40	33.70	18.70	0.00	5.40	0.00				
Nov					0.00	0.10	0.10	6.70	8.00	0.00	0.00	0.00					
Dec						0.00	0.10	0.00	0.20	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	0.10	5.30	6.40	0.00	0.00	0.00	0.00				
Feb					0.00	0.10	20.50	27.10	20.50	2.80	1.90	0.00	8.60	0.00			
Mar				**0.10**	**12.40**	**30.40**	**42.70**	**47.10**	**41.40**	**41.60**	**34.70**	**22.30**	**0.00**	**0.00**	**0.00**		
Apr			3.10	24.90	38.60	48.00	55.70	59.80	59.00	59.90	55.60	35.40	2.00	0.00	0.00		
May		0.70	27.10	40.50	49.50	56.90	62.90	67.70	70.80	69.10	68.20	43.50	19.40	7.90	0.00	0.00	
Jun	2.60	11.00	35.10	46.20	53.80	59.80	65.00	72.50	73.60	73.30	71.80	48.50	26.50	14.80	8.40	0.00	0.00
Jul		0.30	24.70	39.30	48.60	56.20	62.30	67.60	71.10	69.80	69.60	48.40	22.90	9.80	2.10	0.00	
Aug			2.10	24.20	38.10	47.70	55.40	59.90	59.20	60.40	55.90	39.10	3.50	0.00	0.00	0.00	
Sep			0.00	0.10	18.40	34.40	45.70	45.40	41.40	41.90	30.90	19.70	0.00	0.00			
Oct				0.00	0.10	8.30	24.80	24.40	12.20	2.80	0.00	5.60	0.00				
Nov					0.00	0.10	0.10	7.30	2.30	0.00	0.00	0.00					
Dec						0.00	0.10	0.10	1.60	0.00	0.00	0.00					

Overshadowing assessment % of the amenity area receiving direct sunlight on 21st March		
Existing	Proposed	Ratio
24.55	22.73	0.93

A2 – 213 Kingston Road - Garden

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	7.50	13.70	0.00	0.00	0.00	0.00				
Feb					0.00	0.00	22.30	31.60	29.20	19.50	1.80	0.00	0.00	0.00			
Mar				**0.00**	**15.00**	**32.50**	**44.20**	**48.50**	**42.70**	**32.80**	**19.10**	**4.40**	**0.00**	**0.00**	**0.00**		
Apr			7.10	28.60	41.40	50.10	57.00	59.90	54.80	47.20	42.00	39.00	25.00	0.00	0.00		
May		7.40	33.10	44.60	51.90	57.70	62.80	66.00	63.10	58.00	58.80	54.00	40.50	7.80	0.00	0.10	
Jun	0.30	17.30	40.30	48.80	54.70	59.70	64.30	68.40	66.70	63.60	65.40	58.90	46.40	18.30	0.00	0.00	0.50
Jul		4.00	31.30	43.60	51.20	57.10	62.20	66.40	64.50	58.40	59.80	55.50	44.50	15.20	0.00	0.00	
Aug			6.00	27.90	41.00	49.80	56.70	60.10	55.50	47.90	42.40	40.30	27.30	0.00	0.00	0.20	
Sep			0.00	0.00	21.00	36.30	47.00	48.10	40.80	29.90	15.30	4.50	0.00	0.00			
Oct				0.00	0.00	10.40	27.40	30.70	24.40	10.90	0.00	0.00	0.00				
Nov					0.00	0.00	0.00	10.70	9.00	0.00	0.00	0.00					
Dec						0.00	0.00	0.00	3.00	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	5.30	2.40	0.00	0.00	0.00	0.00				
Feb					0.00	0.00	22.30	28.00	29.20	19.50	1.80	0.00	0.00	0.00			
Mar				**0.00**	**15.00**	**32.50**	**44.20**	**48.50**	**42.70**	**32.80**	**19.10**	**5.10**	**0.00**	**0.00**	**0.00**		
Apr			7.10	28.60	41.40	50.10	57.00	59.90	54.80	47.20	42.00	40.00	25.00	0.00	0.00		
May		7.40	33.10	44.60	51.90	57.70	62.80	66.00	63.10	58.00	59.50	54.20	40.90	7.80	0.60	1.80	
Jun	3.00	17.30	40.30	48.80	54.70	59.70	64.30	68.40	66.70	63.60	65.40	59.10	46.90	19.00	1.30	1.90	3.00
Jul		4.00	31.30	43.60	51.20	57.10	62.20	66.40	64.50	58.40	59.80	56.40	44.90	15.20	0.10	1.70	
Aug			6.00	27.90	41.00	49.80	56.70	60.10	55.50	47.90	42.40	41.30	27.50	0.00	0.00	1.40	
Sep			0.00	0.00	21.00	36.30	47.00	48.10	40.80	29.90	15.30	5.00	0.00	0.00			
Oct				0.00	0.00	10.40	27.40	26.60	24.40	10.80	0.00	0.00	0.00				
Nov					0.00	0.00	0.00	5.80	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
19.93	19.99	1.00

A3 – 219 Kingston Road - Garden

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						100.00	99.80	94.10	88.80	80.50	67.30	32.60	0.00				
Feb					100.00	100.00	100.00	96.60	92.60	88.10	79.40	64.40	22.10	0.00			
Mar				**100.00**	**100.00**	**100.00**	**100.00**	**97.90**	**94.60**	**91.30**	**87.30**	**77.20**	**61.60**	**20.40**	**0.00**		
Apr			100.00	100.00	100.00	100.00	100.00	98.70	96.00	93.40	90.50	86.50	79.40	60.90	30.40		
May		100.00	100.00	100.00	100.00	100.00	100.00	99.30	97.00	94.70	92.00	90.00	86.60	74.00	54.80	15.20	
Jun	97.30	100.00	100.00	100.00	100.00	100.00	100.00	99.70	97.50	95.40	93.30	91.10	88.40	79.00	63.60	37.00	0.00
Jul		100.00	100.00	100.00	100.00	100.00	100.00	99.70	97.40	95.10	92.90	90.00	87.70	76.70	59.20	27.40	
Aug			100.00	100.00	100.00	100.00	100.00	98.90	96.20	93.60	90.80	86.80	80.40	62.80	34.00	0.00	
Sep			100.00	100.00	100.00	100.00	100.00	97.00	93.80	90.40	85.40	74.10	57.30	0.00			
Oct				100.00	100.00	100.00	98.70	94.40	90.30	83.80	72.50	47.20	0.50				
Nov					100.00	100.00	97.30	91.90	85.50	75.70	58.00	0.60					
Dec						100.00	97.80	91.80	84.90	75.00	57.40	5.50					

Proposed:

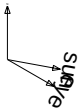
Month	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00
Jan						100.00	99.80	94.10	88.80	80.50	67.30	32.60	0.00				
Feb					100.00	100.00	100.00	96.60	92.60	88.10	79.40	64.40	24.20	0.00			
Mar				**100.00**	**100.00**	**100.00**	**100.00**	**97.90**	**94.60**	**91.30**	**87.30**	**78.10**	**62.80**	**18.80**	**0.00**		
Apr			100.00	100.00	100.00	100.00	100.00	98.70	96.00	93.40	90.50	87.00	79.20	57.00	27.00		
May		100.00	100.00	100.00	100.00	100.00	100.00	99.30	97.00	94.70	92.40	90.00	86.10	70.90	45.10	10.50	
Jun	97.30	100.00	100.00	100.00	100.00	100.00	100.00	99.70	97.50	95.40	93.30	91.10	88.10	76.50	55.60	23.40	0.00
Jul		100.00	100.00	100.00	100.00	100.00	100.00	99.70	97.40	95.10	92.90	90.50	87.60	74.30	50.70	18.80	
Aug			100.00	100.00	100.00	100.00	100.00	98.90	96.20	93.60	90.80	87.30	80.30	59.20	30.10	0.00	
Sep			100.00	100.00	100.00	100.00	100.00	97.00	93.80	90.40	85.40	75.10	57.10	0.00			
Oct				100.00	100.00	100.00	98.70	94.40	90.30	83.80	72.50	48.80	0.50				
Nov					100.00	100.00	97.30	91.90	85.50	75.70	58.00	1.10					
Dec						100.00	97.80	91.80	84.90	75.00	57.40	6.60					

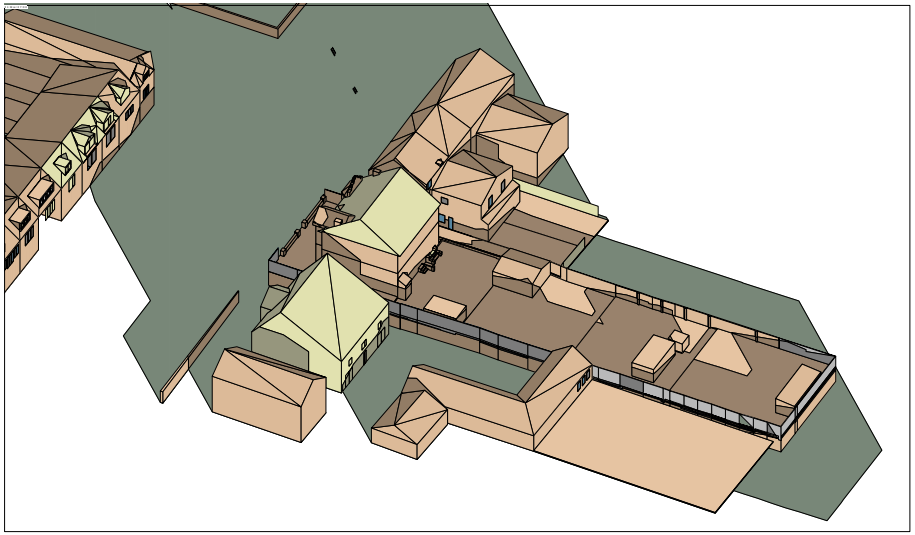
Overshadowing assessment % of the amenity area receiving direct sunlight on 21st March		
Existing	Proposed	Ratio
77.53	77.57	1.00

7.9 SunCast Images

Suncast Image (21 March 07:00)

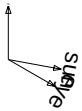
Suncast image:
View time = 21 Mar 07:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 100.26 alt = 7.57
Eye: azi = 120.00 alt = 40.00

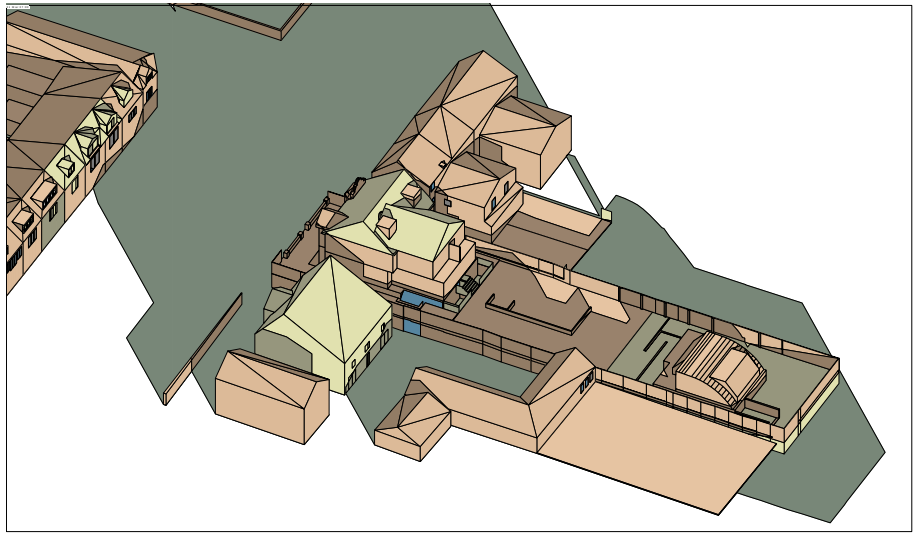




Existing

Suncast image:
View time = 21 Mar 07:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 100.26 alt = 7.57
Eye: azi = 120.00 alt = 40.00

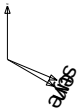


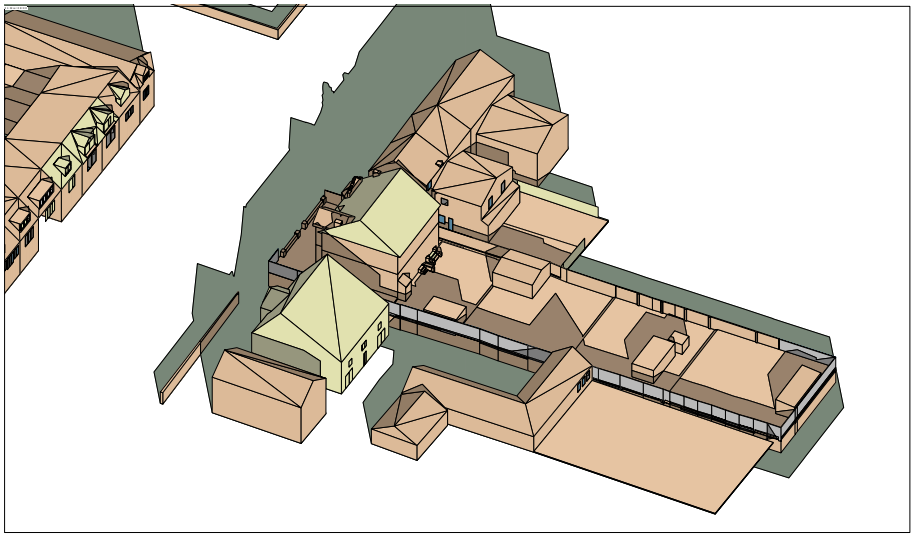


Proposed

Suncast Image (21 March 08:00)

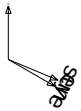
Suncast image:
View time = 21 Mar 08:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 112.58 alt = 16.53
Eye: azi = 120.00 alt = 40.00

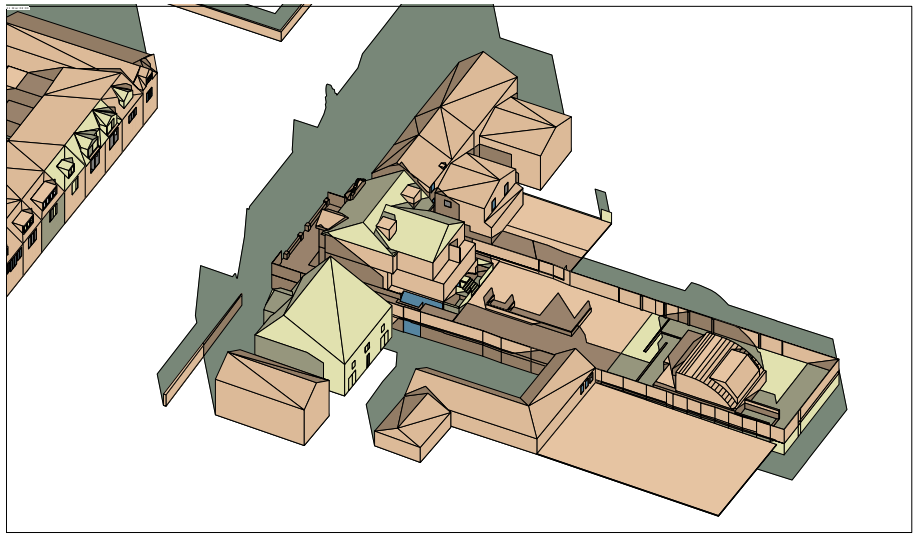




Existing

Suncast image:
View time = 21 Mar 08:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 112.58 alt = 16.53
Eye: azi = 120.00 alt = 40.00

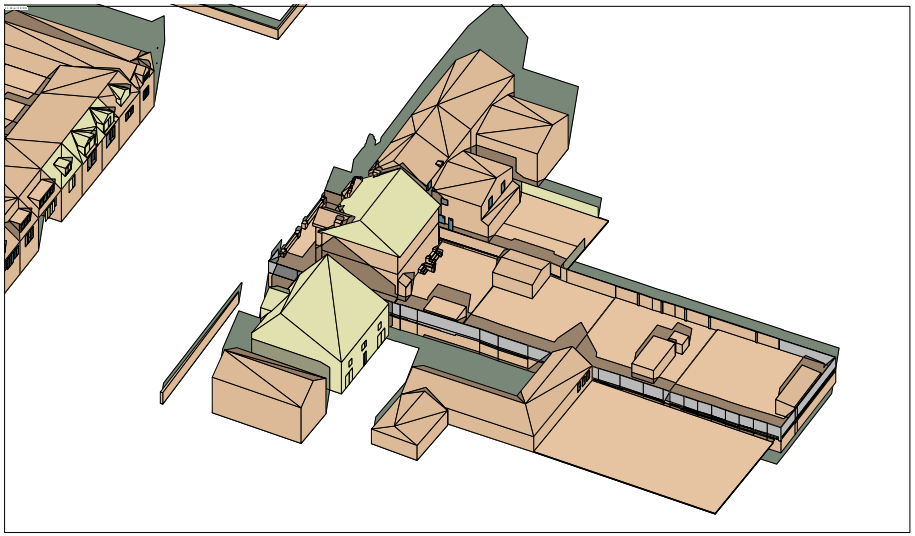




Proposed

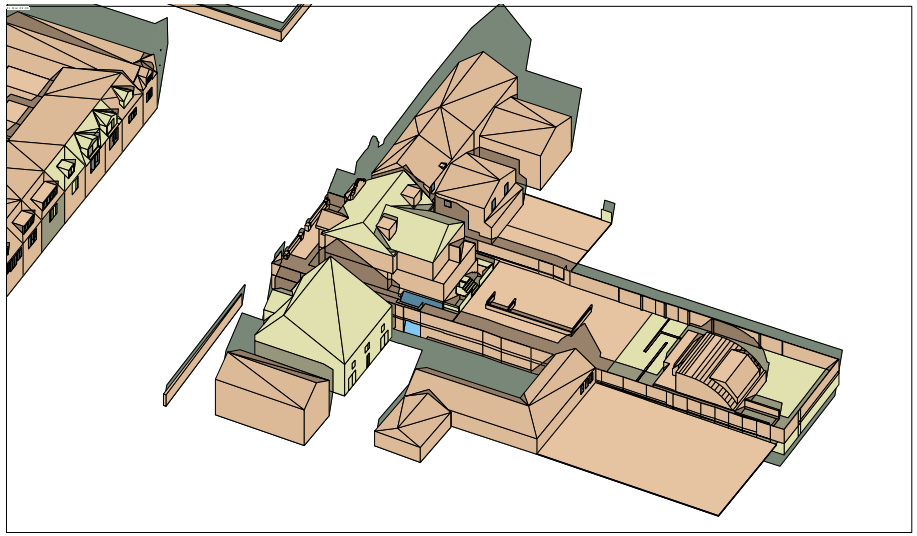
Suncast Image (21 March 09:00)

Suncast image:
View time = 21 Mar 09:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 126.05 alt = 24.68
Eye: azi = 120.00 alt = 40.00



Existing

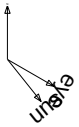
Suncast image:
View time = 21 Mar 09:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 126.05 alt = 24.68
Eye: azi = 120.00 alt = 40.00

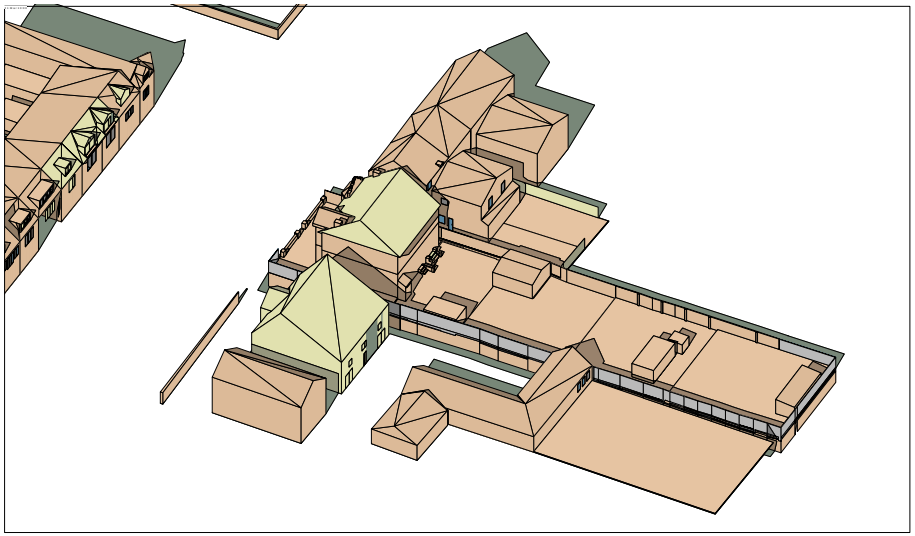


Proposed

Suncase Image (21 March 10:00)

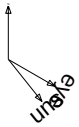
Suncast image:
View time = 21 Mar 10:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 141.25 alt = 31.44
Eye: azi = 120.00 alt = 40.00

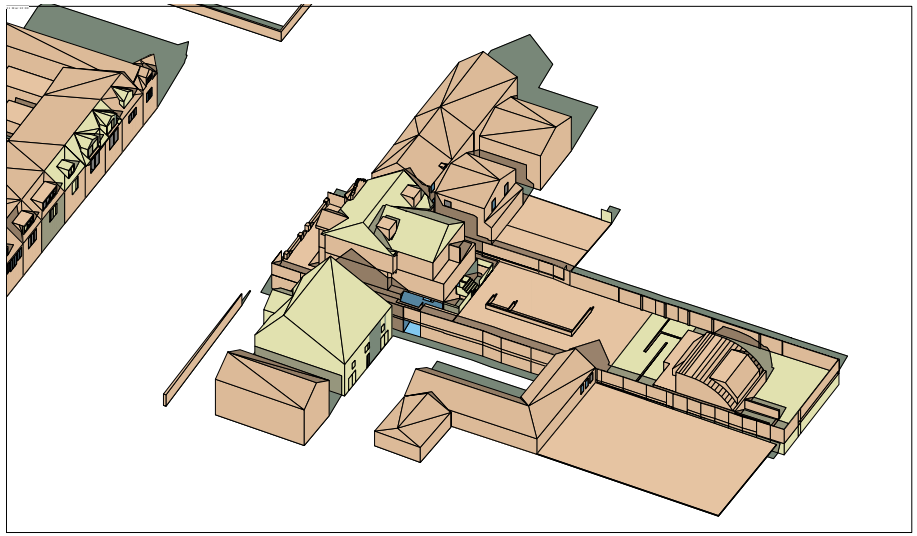




Existing

Suncast image:
View time = 21 Mar 10:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 141.25 alt = 31.44
Eye: azi = 120.00 alt = 40.00

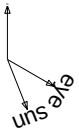


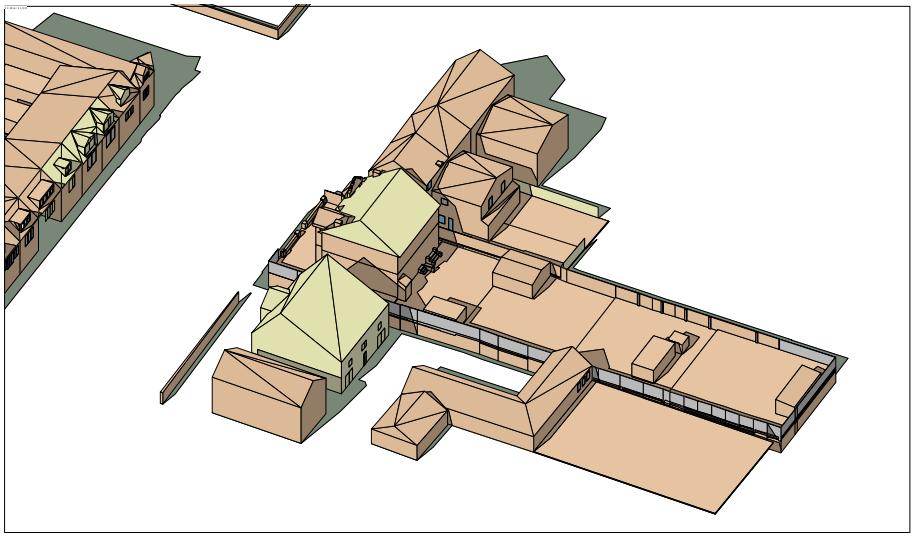


Proposed

Suncase Image (21 March 11:00)

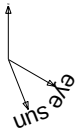
Suncast image:
View time = 21 Mar 11:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 158.42 alt = 36.15
Eye: azi = 120.00 alt = 40.00

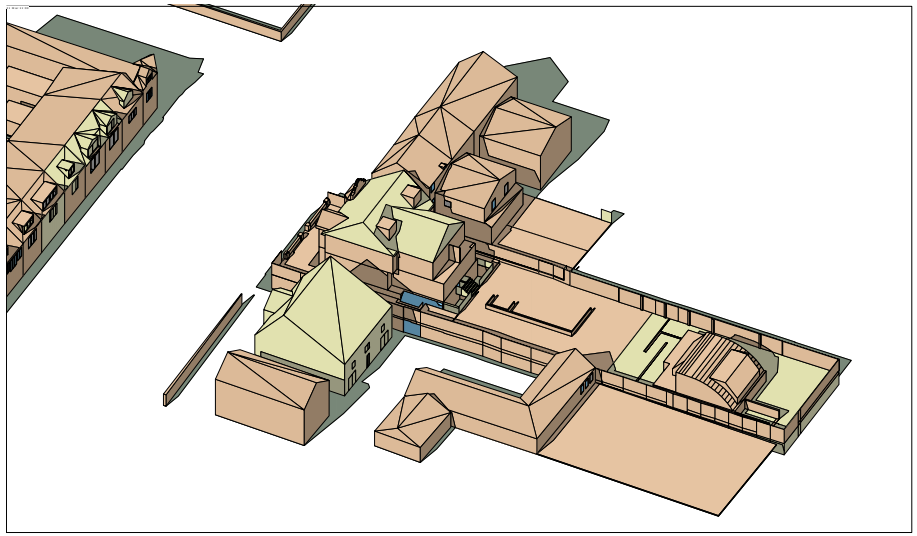




Existing

Suncast image:
View time = 21 Mar 11:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 158.42 alt = 36.15
Eye: azi = 120.00 alt = 40.00

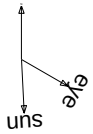


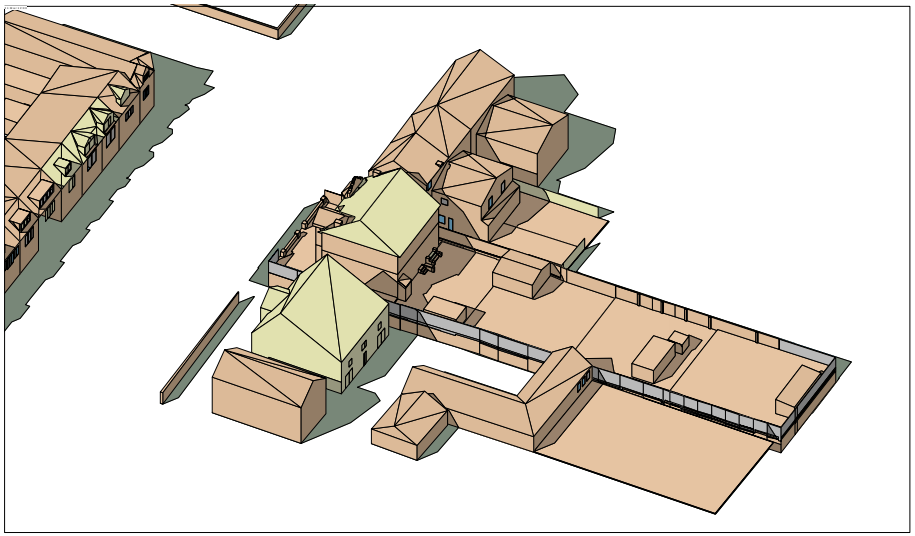


Proposed

Suncast Image (21 March 12:00)

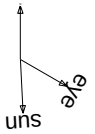
Suncast image:
View time = 21 Mar 12:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 177.10 alt = 38.14
Eye: azi = 120.00 alt = 40.00

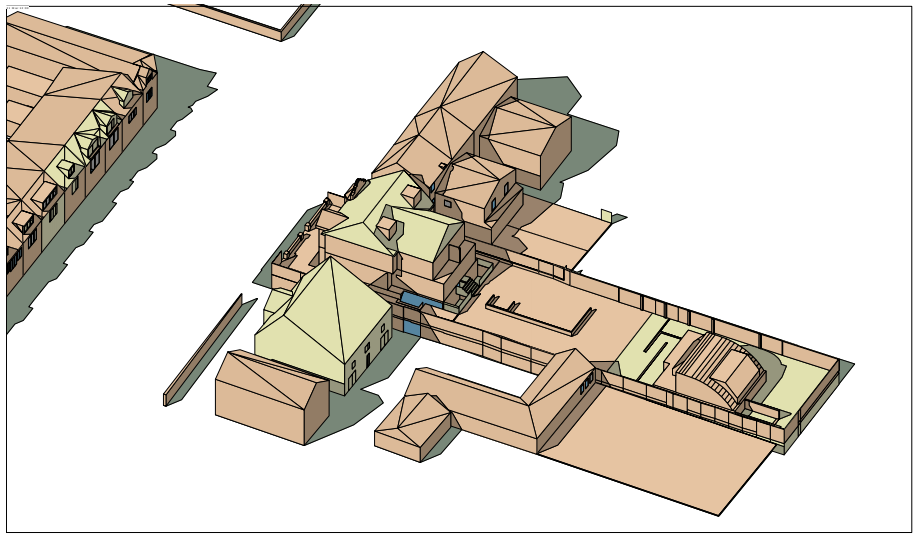




Existing

Suncast image:
View time = 21 Mar 12:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 177.10 alt = 38.14
Eye: azi = 120.00 alt = 40.00

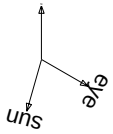


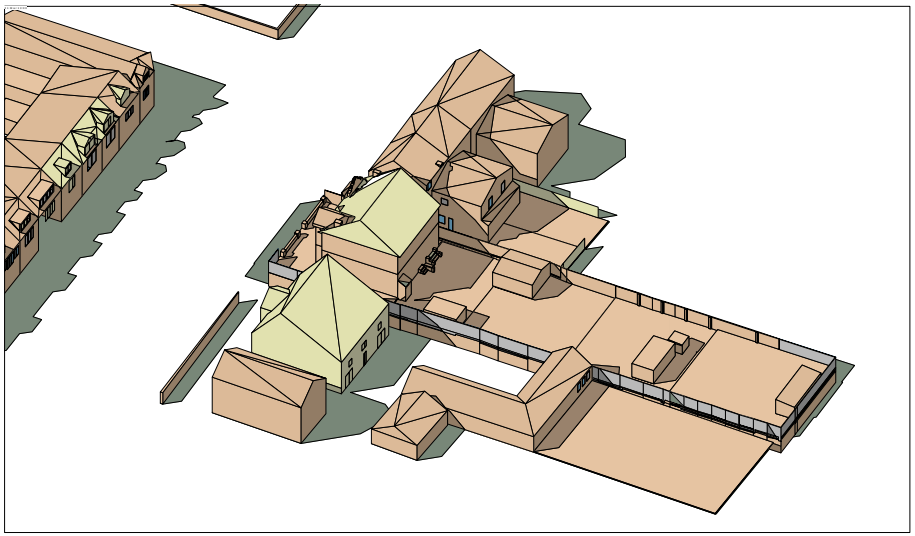


Proposed

Suncast Image (21 March 13:00)

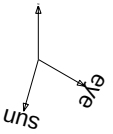
Suncast image:
View time = 21 Mar 13:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 196.02 alt = 37.07
Eye: azi = 120.00 alt = 40.00

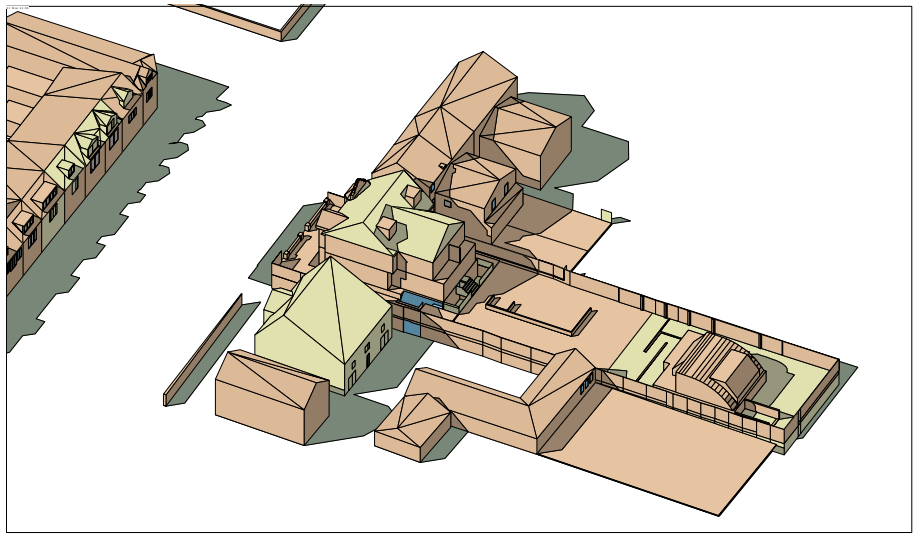




Existing

Suncast image:
View time = 21 Mar 13:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 196.02 alt = 37.07
Eye: azi = 120.00 alt = 40.00

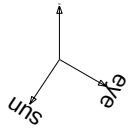


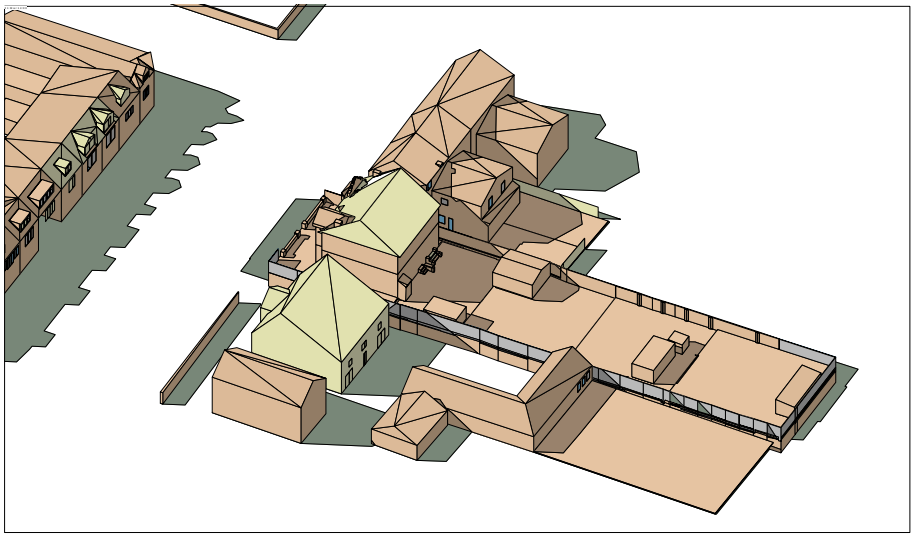


Proposed

Suncast Images (21 March 14:00)

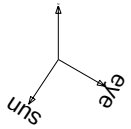
Suncast image:
View time = 21 Mar 14:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 213.74 alt = 33.12
Eye: azi = 120.00 alt = 40.00

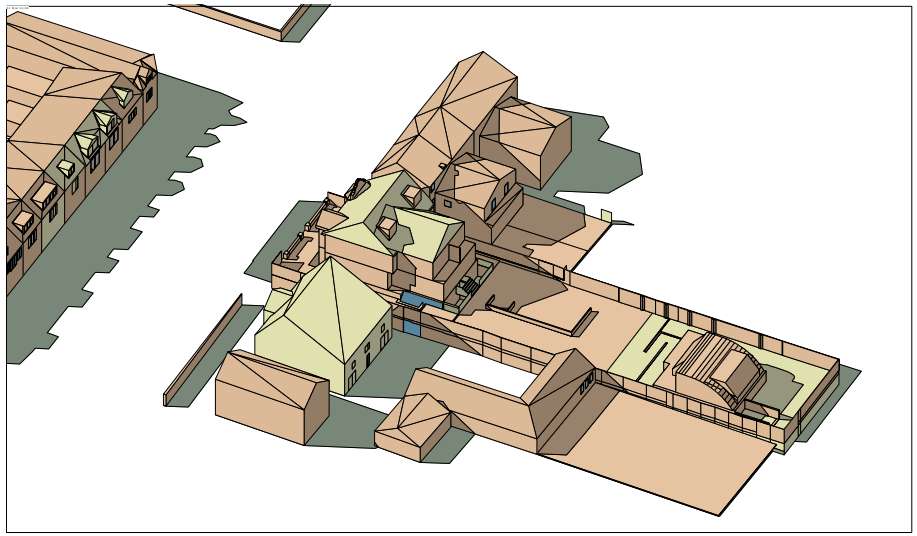




Existing

Suncast image:
View time = 21 Mar 14:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 213.74 alt = 33.12
Eye: azi = 120.00 alt = 40.00

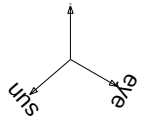


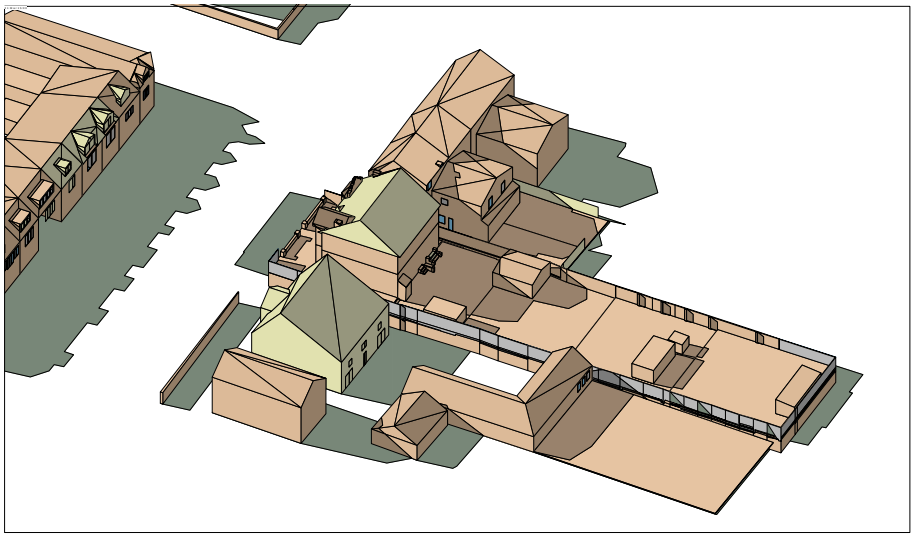


Proposed

Suncast Images (21 March 15:00)

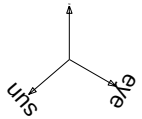
Suncast image:
View time = 21 Mar 15:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 229.53 alt = 26.91
Eye: azi = 120.00 alt = 40.00

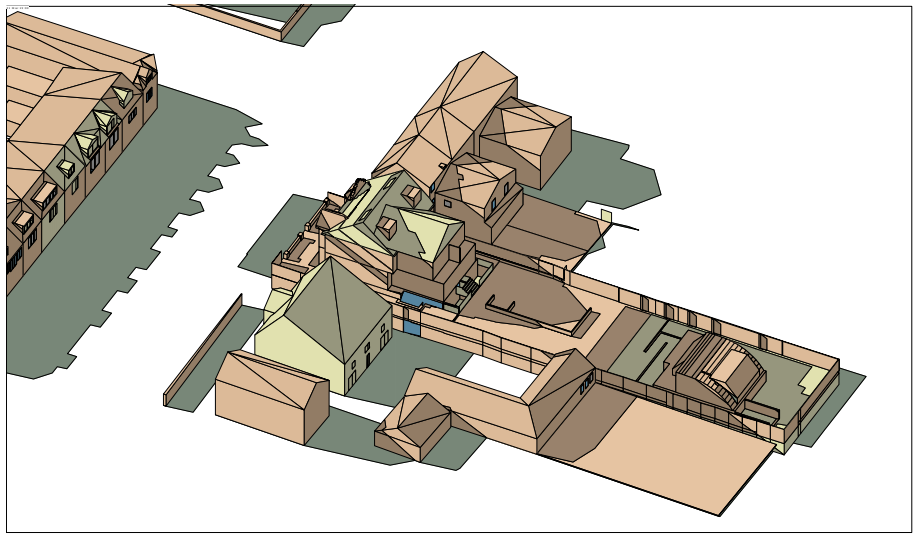




Existing

Suncast image:
View time = 21 Mar 15:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 229.53 alt = 26.91
Eye: azi = 120.00 alt = 40.00

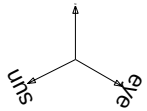


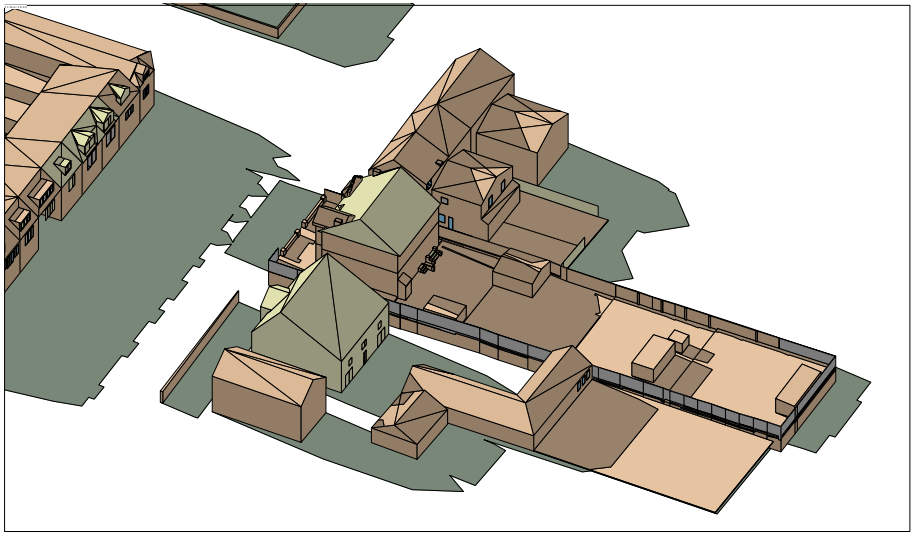


Proposed

Suncast Images (21 March 16:00)

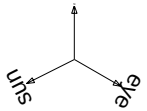
Suncast image:
View time = 21 Mar 16:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 243.48 alt = 19.12
Eye: azi = 120.00 alt = 40.00

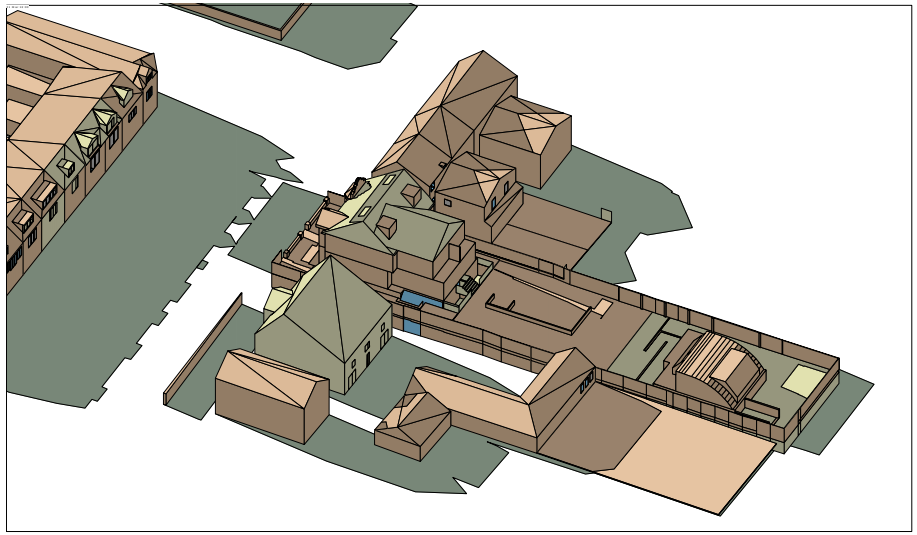




Existing

Suncast image:
View time = 21 Mar 16:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 243.48 alt = 19.12
Eye: azi = 120.00 alt = 40.00

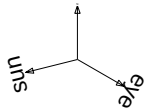


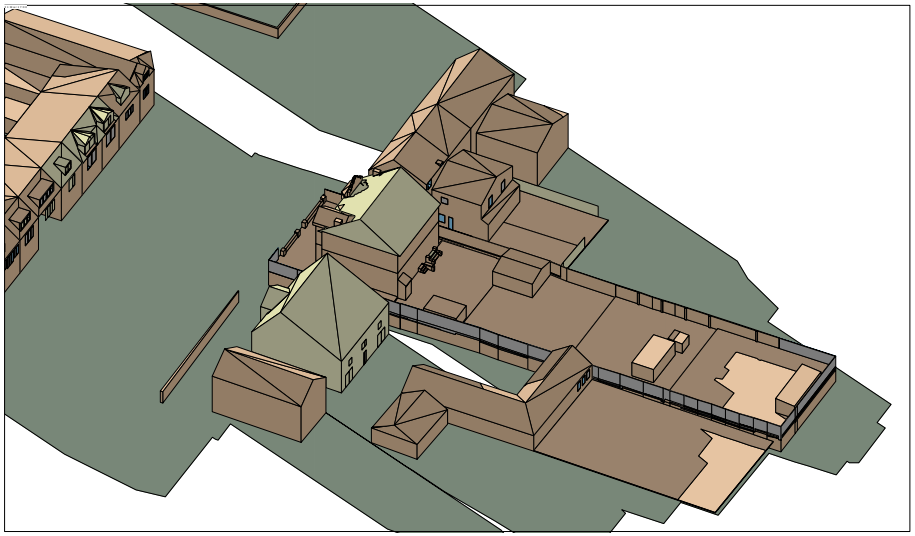


Proposed

Suncast Images (21 March 17:00)

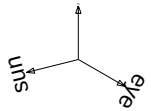
Suncast image:
View time = 21 Mar 17:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 256.08 alt = 10.35
Eye: azi = 120.00 alt = 40.00

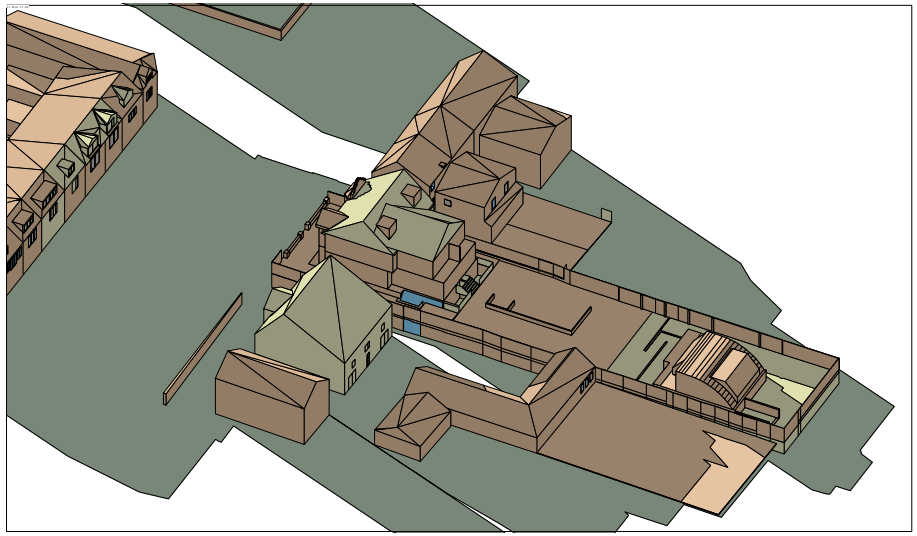




Existing

Suncast image:
View time = 21 Mar 17:00
Site Latitude = 51.42
Longitude diff. = -0.32
Model Bearing = 0.00
Sun: azi = 256.08 alt = 10.35
Eye: azi = 120.00 alt = 40.00





Proposed