Hawkins environmental

Daylight/Sunlight Assessment: 150 Haverstock Hill

Andrew Kirkwood

2nd August 2016

Report Details:

Report Title	Daylight/Sunlight Assessment: 150 Haverstock Hill
Client	Andrew Kirkwood
Client Address	Unit 7, Brentford Business Centre, Commerce Road, Brentford, TW8 8LG
Project Number	H2162

Version History:

Version No.	Date Issued	Comments	Author	Checked
V01	8th February 2016	Original Issue	Nick Hawkins MIOA MIAQM	Nick Hawkins MIOA MIAQM
V02	2nd Augsut 2016	Minor Amendments	Nick Hawkins MIOA MIAQM	Nick Hawkins MIOA MIAQM

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1. INTRODUCTION

Hawkins Environmental Limited has been instructed by Andrew Kirkwood to undertake a daylight/sunlight assessment for the redevelopment of 150 Haverstock Hill, situated in the Belsize Park area of the London Borough of Camden. The site currently comprises a single storey commercial unit, situated between two dwellings. The proposals will see the extension of the existing building to form a two storey, two-bedroom dwelling. A site location plan can be seen in **Appendix 1**.

During the planning process, it has been identified that the site may require a daylight/sunlight assessment to determine whether the proposed development may have an adverse impact on the levels of daylight and sunlight falling on the windows of adjacent buildings. As a consequence, a daylight/sunlight assessment has been carried out in accordance with The Building Research Establishment (BRE) report, "Site layout planning for daylight and sunlight" by PJ Littlefair. This report summarises an assessment of the impacts of the proposed development on the surrounding properties potential to receive daylight and sunlight.

This report fully incorporates the changes in methodology as a consequence of the publication of the Second Edition of the BRE Report in 2011.

2. POLICY & ASSESSMENT CRITERIA

2.1. Daylight and Sunlight

The provision of daylight is as important as ensuring low levels of noise, or low levels of odour, in maintaining the enjoyment of one's property. Adequate levels of daylight are important not only to light and heat the home, but also for an occupant's emotional well being. Daylight is widely accepted to have a positive psychological effect on human beings and there is a great deal of evidence to suggest that people who are deprived of daylight are more susceptible to depression and mood swings. This is common in northern countries, such as Norway, Iceland and Canada where daylight is scarce during the winter months.

When assessing the effects of proposed building projects on the potential to cause issues relating to light, it is important to recognise the distinction between daylight and sunlight. Daylight is the combination of all direct and indirect sunlight during the daytime, whereas sunlight (for the purposes of this report) comprises only the direct elements of sunlight. On a cloudy or overcast day diffused daylight still shines through windows, even when sunlight is absent.

2.2. National Policy

The Department for Communities and Local Government (DCLG) sets national planning policy. Their document 'The Planning System: General Principles (2005), published in conjunction with Planning Policy Statement 1: Delivering Sustainable Development, now replaced by the National Planning Policy Framework (NPPF), discusses the need to protect amenities in the public's interest, of which the need for daylight/sunlight could be considered one such amenity. However, the government does not have an adopted policy on daylight, sunlight and the effects of overshadowing, and does not have targets, criteria or relevant planning guidance, in the way it has for other environmental impacts such as noise, landscape or air quality.

However, the **Building Research Establishment (BRE) report, *"Site layout planning for daylight and sunlight"* Second Edition 2011 by PJ Littlefair** (referred to as the BRE Report) is almost universally used as the official method in the UK and Ireland for determining whether a development meets good practice standards of daylight and sunlight and for determining the impact of a development on daylight and sunlight availability; In addition, the **British Standard BS 8206:2008 Lighting for buildings – Part 2: Code of practice for daylighting** contains guidance on the minimum recommended levels of interior daylighting and introduces some of the calculation procedures used in the BRE Report.

2.3. The BRE Report

The BRE Report contains guidance on how to design developments, whilst minimising the impacts on existing buildings from overshadowing and reduced levels of daylight and sunlight. In addition, the BRE Report provides advice on how to design buildings to ensure that they retain good practice levels of daylight and sunlight. As well as advice, the report contains a methodology to assess levels of daylight, sunlight and overshadowing, and contains criteria to determine the potential impacts of a new development on surrounding buildings and to determine whether new developments are well lit internally. However, the report does state that the good practice guidelines are not mandatory, but should be considered a guide to help rather than constrain the designer.

The BRE Report looks at three separate areas when considering the impacts on lighting:

- **Daylight** – i.e. the combined impacts of all direct sunlight and indirect skylight during the daytime;
- **Sunlight** – i.e. the impacts of only the direct sunlight; and
- **Overshadowing of Gardens and Open spaces**.

It is important to note that the BRE Report "Site Layout Planning for Daylight and Sunlight" is not a test to determine whether a development "Passes" or "Fails", rather "*A Guide to Good Practice*". Therefore, whilst one should try to achieve the numerical guidance within the report (e.g. ADF, VSC, APSH etc.), the failure to do so does not indicate that the development is unsuitable, nor is it an indication that planning permission should be refused.

2.4. Daylight Impact Assessment Criteria

The assessment of daylight is required for windows serving rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, store rooms, circulation areas and garages need not be assessed. The guidelines also apply to any room that may have a reasonable expectation of daylight, including schools, hospitals, hotels and some offices.

When assessing daylight, the numerical criteria must be viewed flexibly and should be considered against other site layout constraints. In addition, it is important to consider whether the existing building is itself a good neighbour, standing a reasonable distance from the boundary and not taking more than its fair share of light.

Figure 2.1 shows the decision chart, showing the processes involved in determining daylight impact. The assessment takes on several specific stages:

1) **The Distance Test**: loss of light to windows need not be analysed if the distance from the existing window to the development is three of more times its height above the centre of the existing window;

2) **The 25° Rule**: loss of light to windows need not be analysed if the angle to the horizontal subtended by the new development from the centre of the existing window is less than 25°;

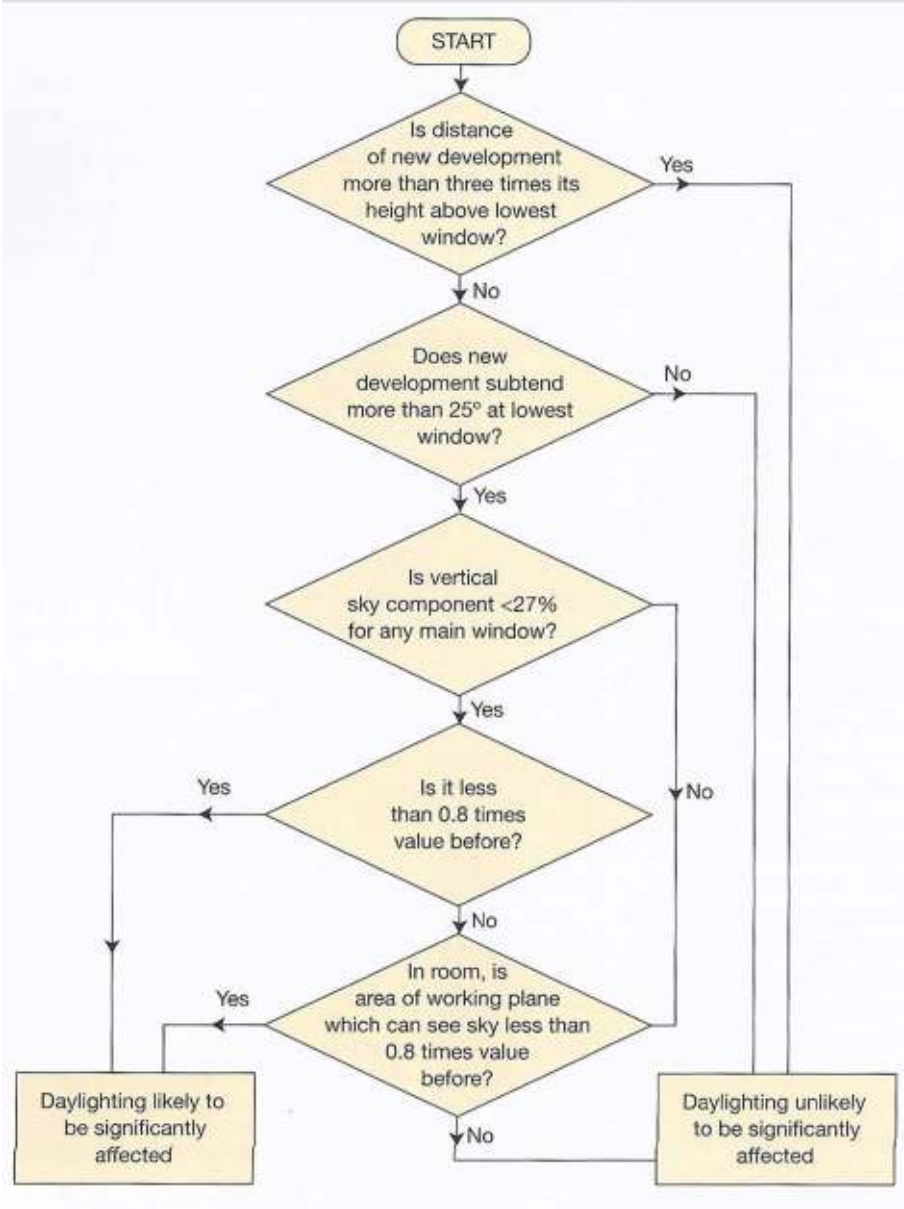
3) **Daylight Assessment**: diffuse daylight of an existing may be adversely affected by a proposed development if either:

   a. the Vertical Sky Component (VSC) measured at the centre of an existing main window is less than 27%, **and** less than 0.8 times its former value; or

   b. the area of the working plane which can receive direct skylight is reduced to less than 0.8 times its former value.

It should be noted at determining the area of the working plane with can receive direct light from the sky (which is often referred to as the No-Sky Line or NSL) is seen as an additional assessment, rather than as an alternative to VSC. However, since plotting the NSL requires knowledge of the room geometry, which is not usually available during an impact assessment, it is not always possible to calculate the NSL since the use of too many assumptions would make the results meaningless and unreliable.

Figure 2.1: Decision Chart – Diffuse Daylight in Existing Buildings (taken from the BRE Report)



2.5. Sunlight Impact Assessment Criteria

The assessment of sunlight is required for rooms in adjoining dwellings where sunlight is required. Generally, all main living rooms and conservatories should have access to direct sunlight. Kitchens and bedrooms are less important, although care should be taken not to block too much sun.

As with daylight, the numerical criteria for sunlight should be viewed flexibly and should be considered against other site layout constraints. It is important to understand that people like and appreciate sunlight and may resent the loss of sunlight, although is not an essential requirement of a dwelling, unlike daylight availability or access to a quiet noise environment. Therefore, larger reductions in sunlight may be acceptable, for example if new development is to match the height and proportion of existing buildings nearby.

The assessment of sunlight takes on several specific stages:

1. **Facing South**: loss of sunlight to windows only needs to be assessed if the window faces within 90° of due south;
2. **The Distance Test**: loss of sunlight to windows need not be analysed if the distance from the existing window to the development is three of more times its height above the centre of the existing window;
3. **The 25° Rule**: loss of sunlight to windows need not be analysed if the angle to the horizontal subtended by the new development from the centre of the existing window is less than 25°;
4. **Sunlight Assessment**: direct sunlight of an existing windows may be adversely effected by a proposed development if at the centre of a window:
    a. receives less than 25% of Annual Probable Sunlight Hours (APSH), or less than 5% APSH between 21st September and 21st March; **and**
    b. receives less lean 0.8 times its former APSH during either period; **and**
    c. has a reduction in sunlight over the whole year of greater than 4% APSH.

2.6. Overshadowing of Gardens and Open Spaces Impact Assessment Criteria

The effects of overshadowing and the loss of sunlight on open spaces and gardens is another important element of any sunlight or daylight assessment. Assessments should not restrict themselves to looking at just the effects on providing good natural lighting within buildings as sunlight in the spaces between buildings has an important impact on the overall appearance and ambience of a development.

The Second Edition of the BRE Report, published in 2011, requires at least 50% of the garden or amenity space must receive at least two hours of direct sunlight on the 21st March. If this cannot be achieved, providing that the area overshadowed was greater than 0.8 times its former value, no impact would have occurred. The BRE Report suggests that the following open spaces should be checked:

- Gardens, usually the main back garden of a house;
- Parks and playing fields;
- Children's playgrounds;
- Outdoor swimming pools and paddling pools;

- Sitting out areas such as those between non-domestic buildings and in public squares; and
- Focal points for views such as a group of monuments or fountains.

2.7. The Impacts of Vegetation

It is important to note that according to the BRE Report, calculations normally do not take into account vegetation. The exception is when evergreen vegetation exists that forms a continuous barrier.

2.8. Determining Significance

The previous edition of the BRE Report has often been significantly misapplied when determining whether an impact to a development is significant and whether a development should be refused planning permission. Page 1 of the BRE Report states:

> *"The advice given (in the report) is not mandatory and guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in layout design."*

Often, Local Planning Authorities interpret the failure of a development to meet the guideline criteria as an indicator as to whether a development is acceptable. However, this is not the case and the BRE report suggests that the numerical values are purely advisory and there are times where alternative targets may be used, as described in Appendix F of the 2011 Edition of the BRE Report. For example:

- where the site already has an extant planning permission that the developer wants to vary, the VSC and APSH of the permitted scheme may be used as alternative benchmarks;
- in historic city centre environments, it is often not possible to achieve 27% VSC, therefore it is sensible to use a target value consistent with levels of daylight typically experienced in the street. For example, if the obstruction angle from ground floor level at other properties in the street is typically 40°, which corresponds to a VSC of 18%, this level could be used as a target value for development in that street, if new development is to match the scale and size of the existing development;
- where an existing building has windows that are unusually close to the site boundary and taking more than their fair share of light, to ensure that new development matches the height and proportions of existing buildings, the VSC and APSH targets for these windows could be set to those for a "mirror-image" building of the same height and size, an equal distance away on the other side of the boundary.

In addition, Appendix I of the 2011 Edition of the BRE Report provides new guidance on how to assess impact, which suggests that a semantic scale can be used to describe the impact, which can then be used help place the impact in context. **Table 2.1** summarises the impact magnitude criteria as described in the BRE Report.

Table 2.1: Impact Magnitude Criteria (adapted from Appendix I of the BRE Report 2011)

Criteria	Impact Magnitude
Where the decrease in daylight or sunlight fails to meet the guidelines, and one or more of the following scenarios applies: • a large number of windows or large area of open space is affected; • the loss of light is substantially outside the guidelines; • all windows in a particular property are affected; • the affected building or outdoor space has a particularly strong requirement for light, e.g. a living room in a dwelling or a children's playground.	Major Adverse
Where the decrease in daylight or sunlight is only just within the guidelines and a larger number of windows or open space are affected; or Where the decrease in daylight or sunlight fails to meets the guidelines, but one or more of the following scenarios applies: • only a small number of windows or limited area of open space is affected; • the loss of light is only just outside the guidelines; • an affected room has other sources of light; • the affected building or outdoor space has a low level requirement for light.	Minor Adverse
Where the increase/decrease in daylight or sunlight fully meets the guidelines and only a small number of windows are affected; and If there is an increase in daylight or sunlight, the increase is "tiny".	Negligible
Where the increase in daylight or sunlight is small and/or the number of affected windows or area of open space affected is small.	Minor Beneficial
Where the increase in daylight or sunlight is large and/or the number of affected windows or area of open space affected is large.	Major Beneficial

Note: Appendix I of the BRE report also suggests the use of "moderate adverse" and "moderate beneficial" impacts. However, there is no guidance on how to designate moderate impacts, although the guidance suggests that judgement should be used when classifying impact magnitude.

2.9. The London Plan

The London Plan[1], published in 2011 with minor revisions in 2013 and March 2015, provides an overall strategic plan for London, and it sets out a fully integrated economic, environmental, transport and social framework for the development of the capital to 2031. The Plan brings together the Mayor's strategies, including policy on a range on environmental issues, such as climate change, air quality, noise and waste. London boroughs' local plans need to be in general conformity with the London Plan, and its policies guide decisions on planning applications by councils and the Mayor.

Policy 3.5 relates to the quality and design of housing developments and states that

"Housing developments should be of the highest quality internally, externally and in relation to their context and to the wider environment, taking account of strategic policies in this Plan to protect and enhance London's residential environment and attractiveness as a place to live."

2.10. London Plan – Housing Supplementary Planning Guidance

The Housing SPG, published in November 2012 highlights the elements of the London Plan that are relevant to housing development, and where applicable, provides more detail. The SPG states:

"Daylight and sunlight good practice:

Standard 5.5.1 - Glazing to all habitable rooms should be not less than 20% of the internal floor area of the room.

Standard 5.5.2 - All homes should provide for direct sunlight to enter at least one habitable room for part of the day. Living areas and kitchen dining spaces should preferably receive direct sunlight.

2.3.38 Daylight enhances residents' enjoyment of an interior and reduces the energy needed to provide light for everyday activities, while controlled sunlight can help to meet part of the winter heating requirement. Sunlight is particularly desirable in living areas and kitchen dining spaces. The risk of overheating should be taken into account when designing for sunlight (see Standard 6.3.1).

2.3.39 The Code for Sustainable Homes requires a minimum average daylight factor of 2% in kitchens and 1.5% in living rooms, dining rooms and bedrooms in order to achieve credits. These measures define a minimum acceptable level to make an interior feel day-lit, but they do not guarantee a comfortable level of light for a range of daily activities. Good practice standards 5.5.1 and 5.5.2 seek to achieve that higher level of comfort."

1 The London Plan - Spatial Development Strategy for Greater London (July 2011), Mayor of London.

3. DAYLIGHT/SUNLIGHT IMPACT ASSESSMENT

This section summarises the impact of the proposed development on levels of daylight and sunlight on surrounding windows.

3.1. Identification of Receptors

Based on a site visit, and also based on the plans of the development, a number of windows have been identified as of being of concern. The properties of concern can be seen in the site plan in **Appendix 1**. The windows under consideration can be seen in **Appendix 2**.

The main properties of interest are:

- 148 Haverstock Hill;
- 150a Haverstock Hill; and
- 152 Haverstock Hill.

3.2. Methodology

This section summarises the daylight and sunlight impacts of the proposed development on surrounding properties. To determine these impacts, the software packages created by MBS Survey Software Limited have been utilised to create both Waldram Diagrams which plot VSC, as well as the Sunlight Availability Indicators which plot APSH. The tools created by MBS are one of the only tools in the Daylight/Sunlight sector that fully incorporate the methodologies introduced in the Building Research Establishment (BRE) report, *"Site layout planning for daylight and sunlight"* Second Edition 2011 by PJ Littlefair and is widely acknowledged to be a suitable tool for undertaking daylight, sunlight and overshadowing assessments in accordance with the BRE Guidance. For the purposes of the assessment, a three dimensional computer model was constructed both with and without the proposed development in place. **Figures 3.1** to **Figure 3.10** show the three dimensional model of the development, with and without the proposed development.

At this site, Hawkins Environmental were provided with a site survey of the existing site layout and plans and elevations of the proposed development. This information has been used to construct the three dimensional computer model. Wherever possible, survey information provided by the client and their agents has been utilised to add information to the model; however, where details were not present in the survey information, professional judgement has been used to estimate information where necessary.

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Figure 3.1: 3D model without new development from the North

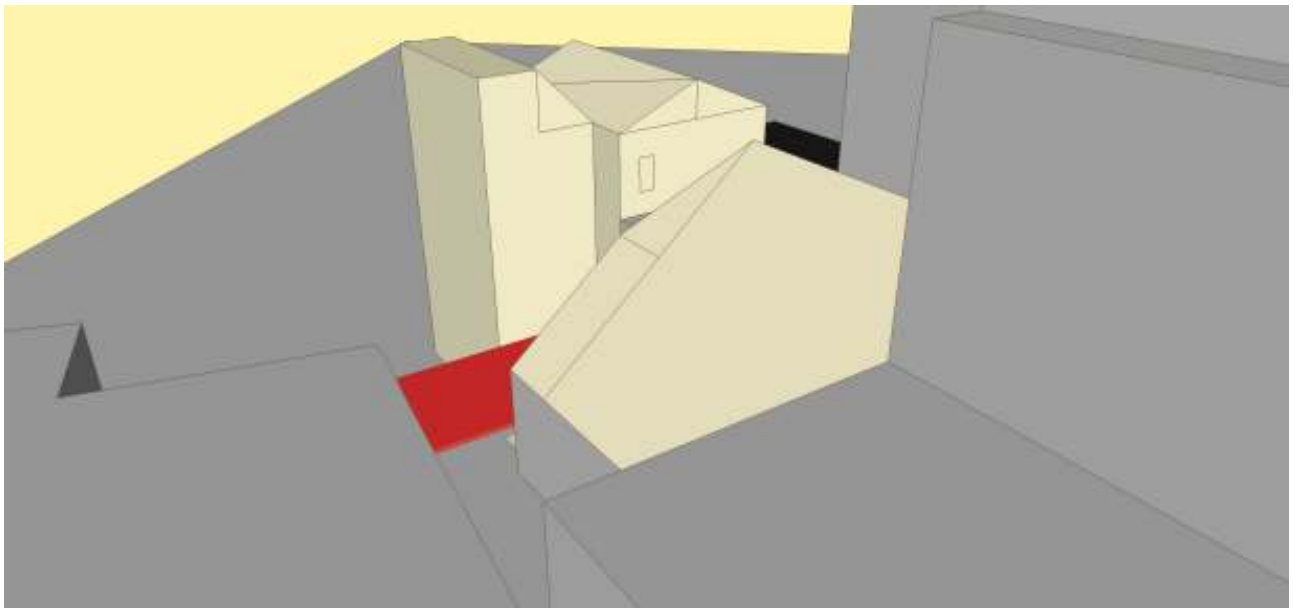


Figure 3.2: 3D model with new development from the North

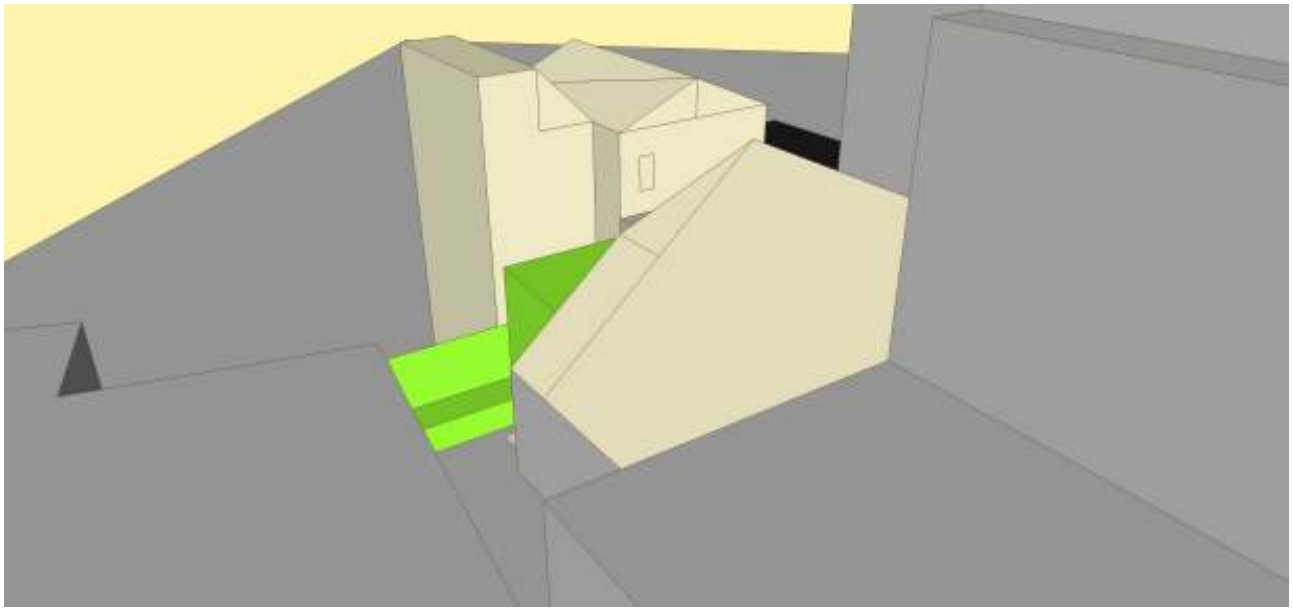


Figure 3.3: 3D model without new development from the East

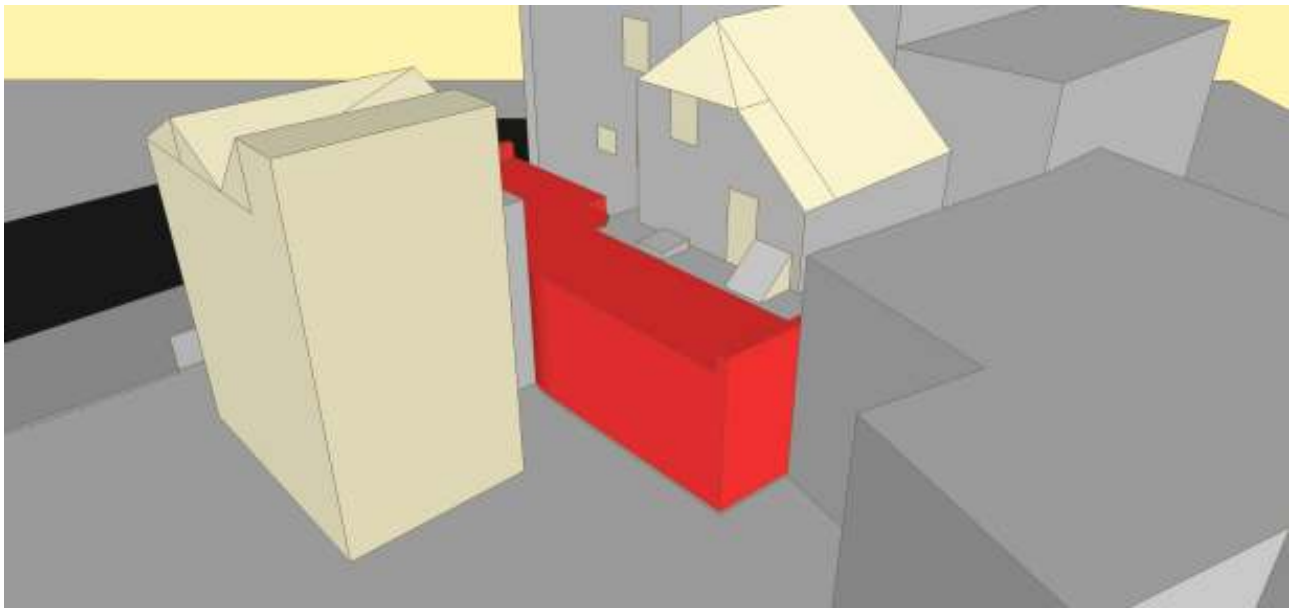


Figure 3.4: 3D model with new development from the East

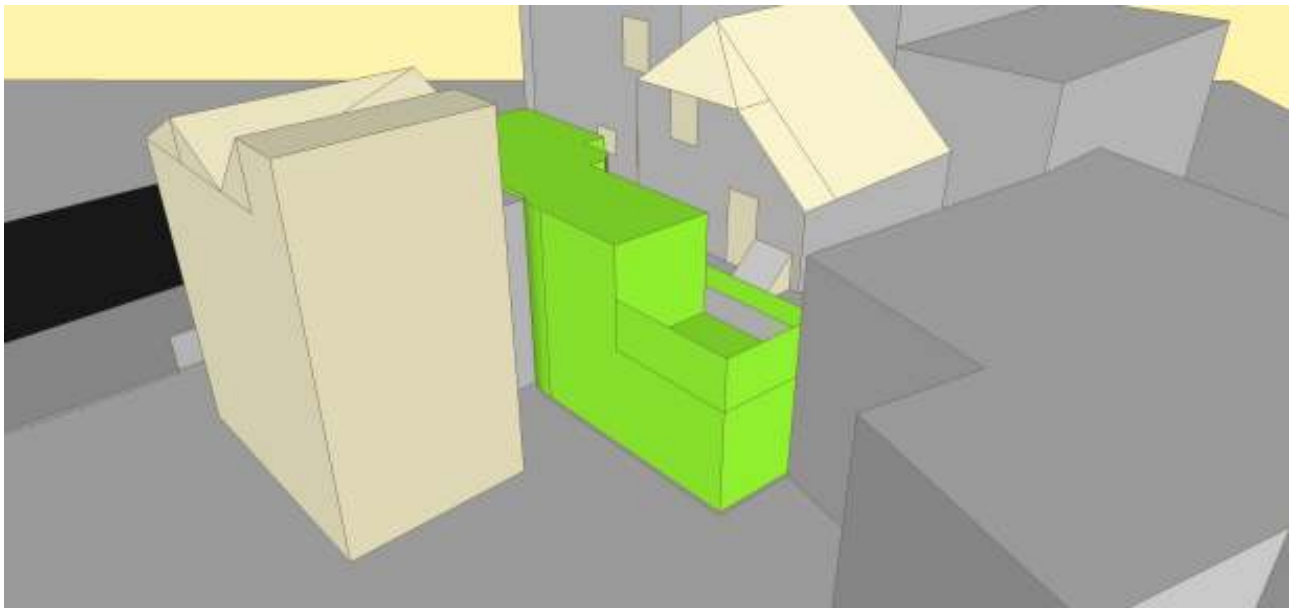


Figure 3.5: 3D model without new development from the South

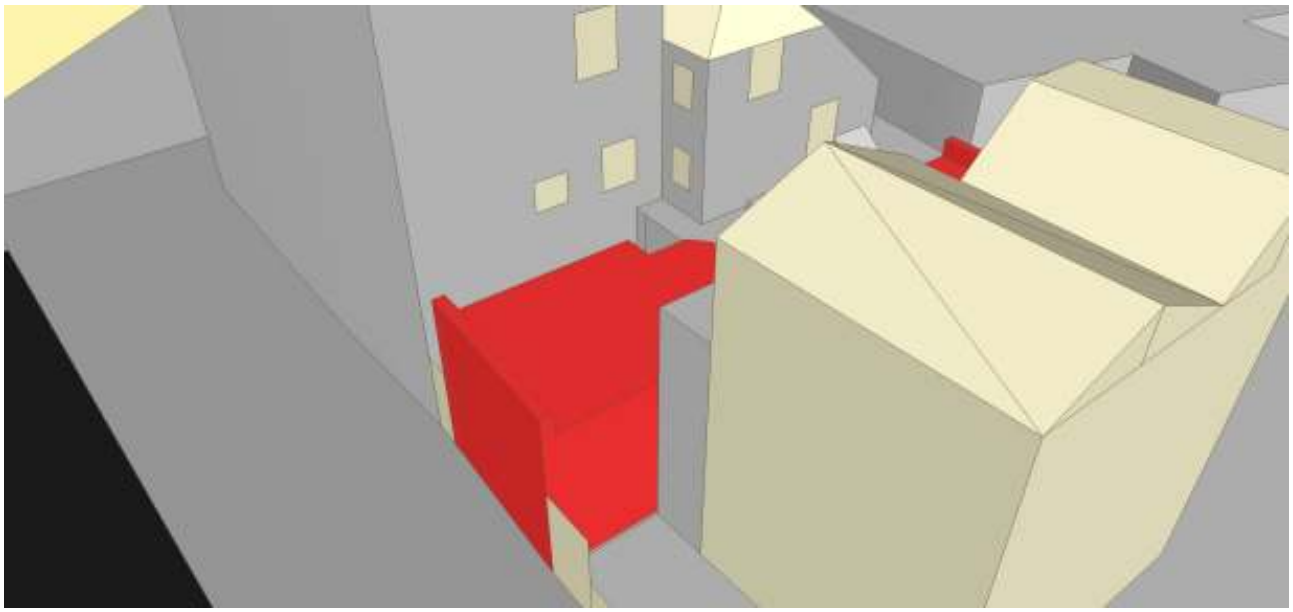


Figure 3.6: 3D model with new development from the South

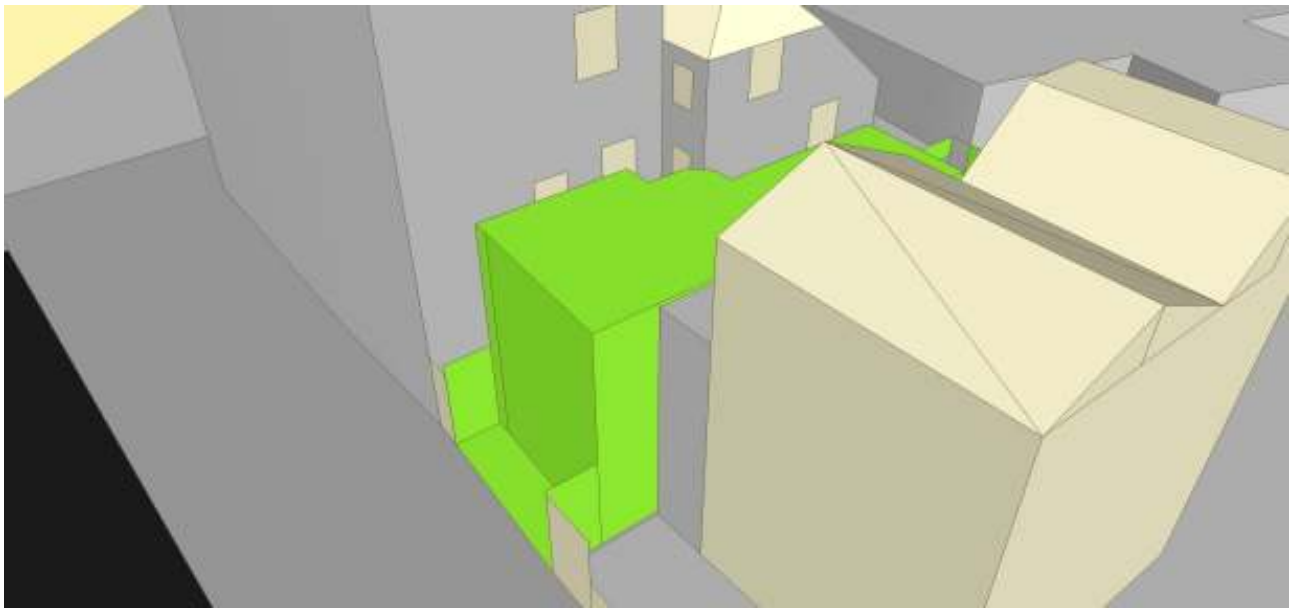


Figure 3.7: 3D model without new development from the West

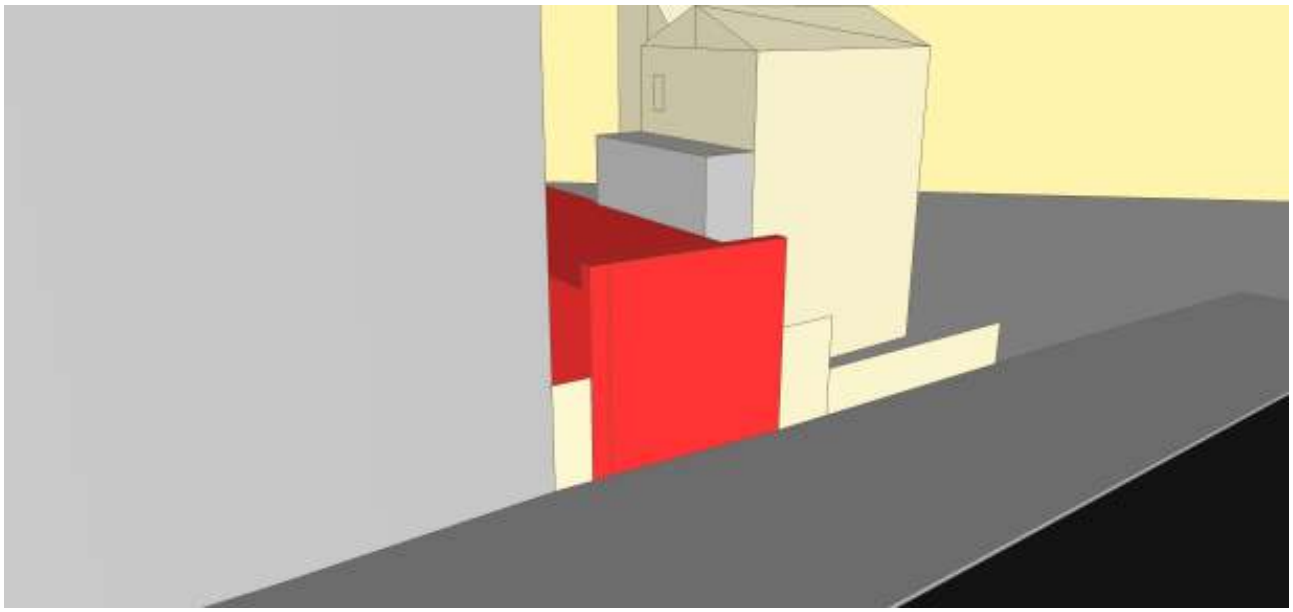


Figure 3.8: 3D model with new development from the West

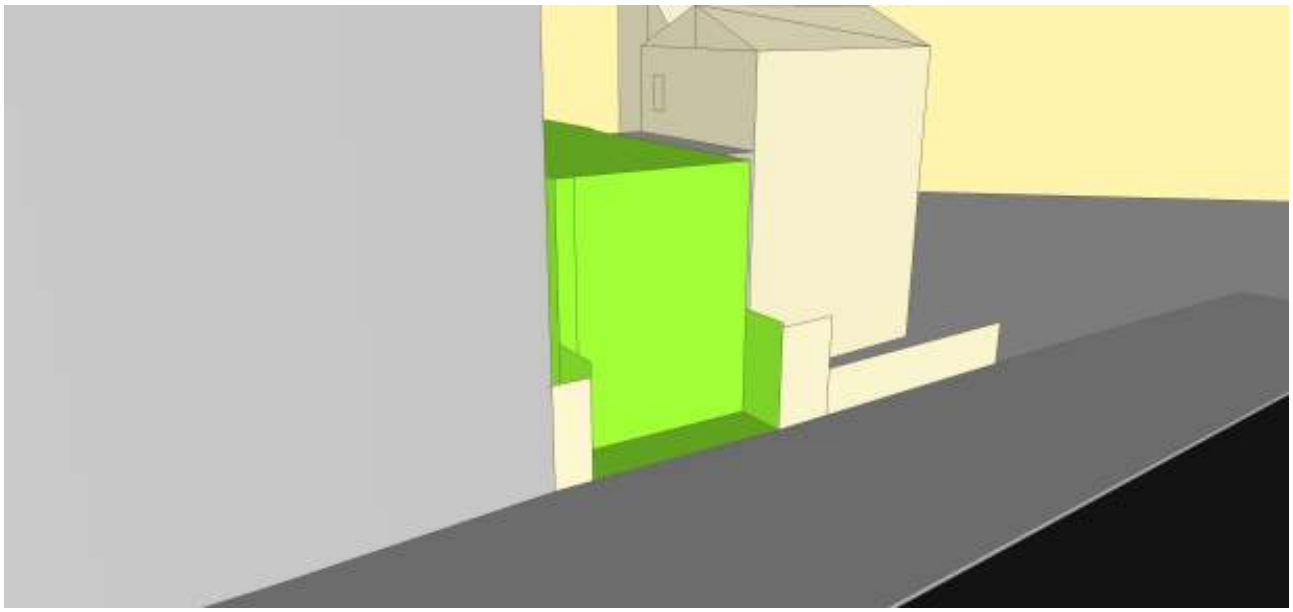


Figure 3.9: 3D model without new development from Overhead

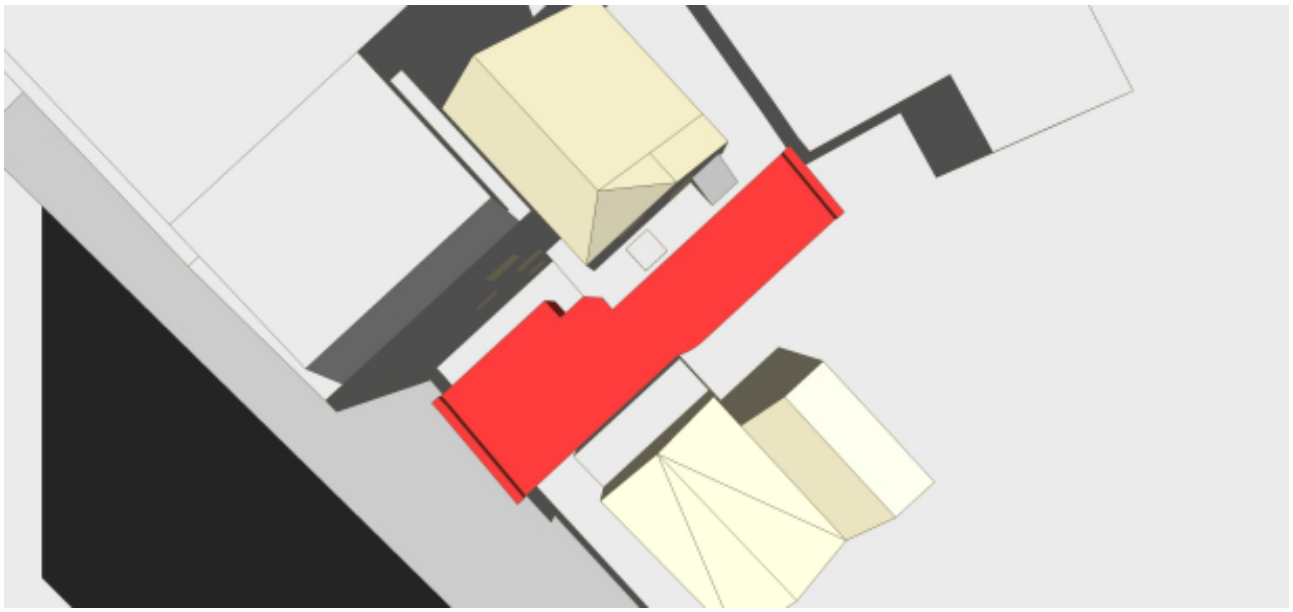
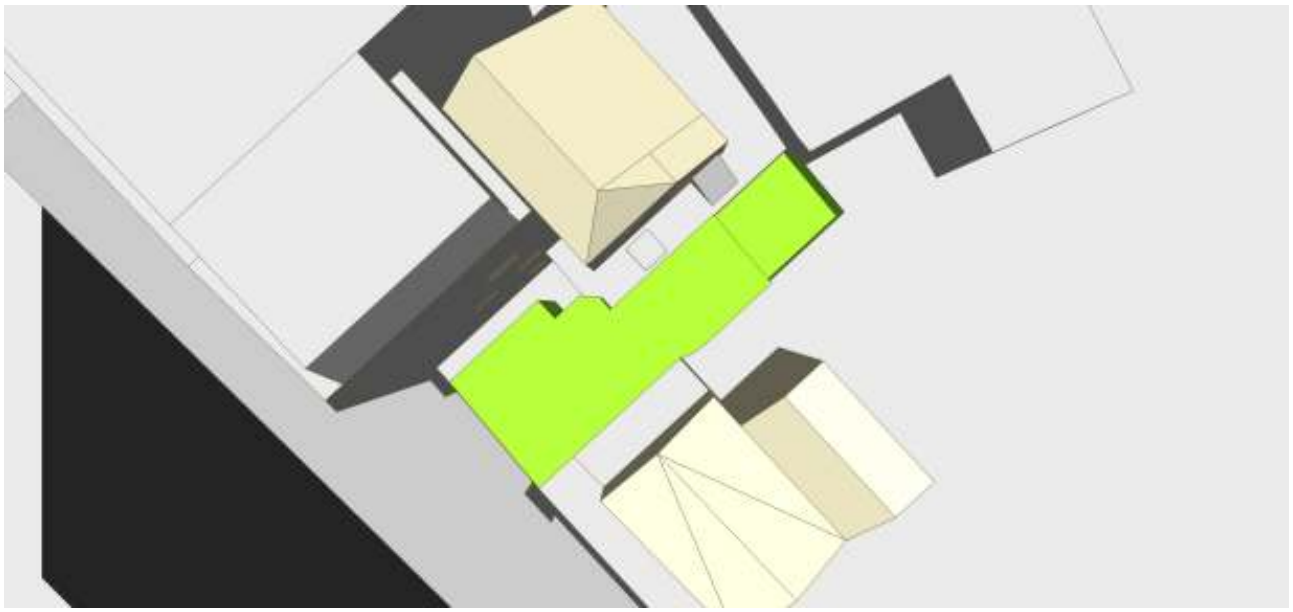


Figure 3.10: 3D model with new development from the Overhead



3.3. Daylight Assessment

When undertaking a daylight assessment, the BRE Report suggests a VSC of 27% or more should be achieved if a room is to be adequately daylit. It also suggests that when existing levels of daylight are below 27% VSC, a reduction of more than 20% from the existing level will be noticeable to the inhabitants, i.e. an impact will occur.

Based on the plans of the site and the positions of the closest buildings, it is possible to calculate the vertical sky component for the residential buildings, for both with and without the proposed development. The Waldram Diagrams can be seen in **Appendix 3** and the results summarised in **Table 3.1**.

It can be seen from **Table 3.1** that at 148 Haverstock Hill, all windows will continue to receive the minimum recommended 27% VSC and/or the proposed level of daylight would be greater than 0.8 times the former. Therefore, at these windows, under the guidance contained within Appendix I of the BRE Report and replicated in **Table 2.1** of this report, the impact on these windows is considered to be *"negligible"*.

At 152 Haverstock Hill, windows 1001 and 1003 will continue to receive the minimum recommended 27% VSC and/or the proposed level of daylight would be greater than 0.8 times the former. Therefore, at these windows, under the guidance contained within Appendix I of the BRE Report and replicated in **Table 2.1** of this report, the impact on these windows is considered to be *"negligible"*. However, at windows 1002 and 1004, the proposed level of daylight is expected to be both below 27% VSC and less than 0.8 times the existing level of daylight. Therefore, the reduction in daylight might be noticeable. However, it has been observed that at both windows, the glass is frosted suggesting that both windows serve bathrooms. Consequently, both windows are considered to be non-habitable rooms and therefore do not require further consideration. Therefore, overall the impact to 152 Haverstock Hill is considered to be *"negligible"*.

At 150a Haverstock Hill, with the exception of window 1007, all windows will continue to receive the minimum recommended 27% VSC and/or the proposed level of daylight would be greater than 0.8 times the former; therefore, at these windows, under the guidance contained within Appendix I of the BRE Report and replicated in Table 2.1 of this report, the impact on these windows is considered to be *"negligible"*. At window 1007, the proposed level of daylight will be 0.77 times the existing and less than 27% VSC and therefore the reduction in daylight might be noticeable. However, 1007 serves a study, which is also served by 1008, plus a third window facing northeast that has not been assessed, plus also receives borrowed daylight from 1010 which serves the lounge below. It can be seen from the results of the assessment that at 1008 (and 1010), the proposed level of daylight will remain in excess of 27% VSC; therefore, under the BRE Guidance, this room will remain adequately daylit even with the reduction in daylight to 1007. Therefore, overall the impact to 150a Haverstock Hill is considered to be "*negligible".*

3.4. Sunlight Assessment

In order to assess the impact of a development on the levels of sunlight, the APSH has been calculated for windows that face within 90° of due south.

According to the BRE Report, direct sunlight on an existing window may be adversely effected by the proposed development if the centre of a window receives less than 25% of Annual Probable Sunlight Hours (APSH), or

less than 5% APSH between 21st September and 21st March; **and** receives less lean 0.8 times its former APSH during either period; **and** has a reduction in sunlight over the whole year of greater than 4% APSH.

Table 3.1 details the results of the Annual Probable Sunlight Hours (APSH) calculations for the windows under consideration. **Appendix 4** shows the Sunlight Availability Indicators for these windows.

It can be seen from **Table 3.1** that whilst the windows will experience a reduction in the amount of sunlight that they receive, generally, the reduction is small such that it is not considered to be significant according to the BRE guidance, even with the construction of the proposed development. The two exceptions to this is window 1004, which as previously noted is likely to serve a bathroom, and window 1009 where there is a larger reduction in sunlight. However, it should be noted that window 1009 (which serves a living room, with no wall mounted windows, only two ceiling lights) is also served by window 1010, which will retain a good level of sunlight with the APSH in excess of 25% and the winter sunlight hours in excess of 5%. Therefore, whilst it is acknowledged that there will be a large reduction in sunlight to the room, the room will continue to receive what is considered to be a reasonable level of sunlight. Consequently, any impact on sunlight at any of the windows with the development in place will be considered *"negligible"* under Appendix I of the BRE Report.

Table 3.1: Daylight and Sunlight Impact Assessment

Address	Window No.	Sky Component			Annual Probable Sunlight Hours					
		Existing	Proposed	Ratio*	Existing		Proposed		Ratio*	
					Full Year	Winter Only	Full Year	Winter Only	Full Year	Winter Only
152 Haverstock Hill	1001	38.50%	38.50%	1.00	74%	25%	74%	25%	1.00	1.00
152 Haverstock Hill	1002	32.06%	23.79%	0.74	62%	18%	53%	10%	0.85	0.56
152 Haverstock Hill	1003	26.28%	22.83%	0.87	58%	18%	54%	14%	0.93	0.78
152 Haverstock Hill	1004	8.97%	3.66%	0.41	23%	2%	6%	2%	0.26	1.00
150a Haverstock Hill	1005	21.36%	21.36%	1.00	53%	23%	53%	23%	1.00	1.00
150a Haverstock Hill	1006	36.55%	36.55%	1.00	76%	26%	76%	26%	1.00	1.00
150a Haverstock Hill	1007	19.75%	15.12%	0.77	44%	16%	39%	11%	0.89	0.69
150a Haverstock Hill	1008	31.99%	29.07%	0.91	66%	17%	62%	14%	0.94	0.82
150a Haverstock Hill	1009	58.5%	31.00%	0.52	53%	16%	8%	0%	0.15	0.00
150a Haverstock Hill	1010	63.20%	58.60%	0.93	56%	21%	40%	8%	0.71	0.38
148 Haverstock Hill	1011	23.99%	23.99%	1.00	Sunlight Assessment Not Required					

*= Ratio of proposed levels compared to existing levels

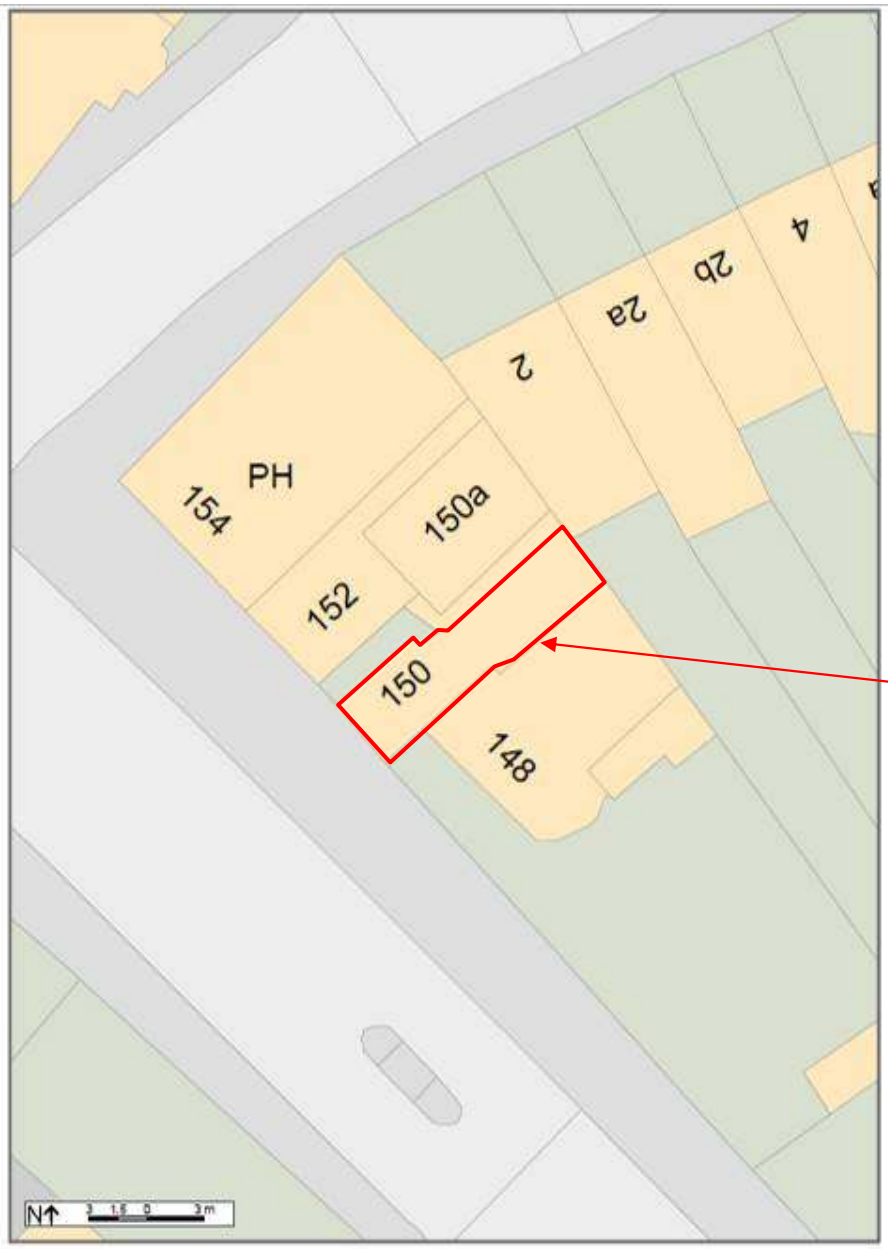
4. CONCLUSIONS

Calculations were conducted in accordance with the BRE Report in order to determine the extent to which the proposed redevelopment of 150 Haverstock Hill will affect the levels of daylight and sunlight at adjacent properties.

The calculations have shown that at surrounding properties, there will be a reduction in both daylight and sunlight to a number of windows. However, the reductions in both daylight and sunlight will be fairly small and as such, under the BRE Guidance, the impacts are considered to be *"negligible"*.

Appendix 1
Site Location Plan

Appendix 1: Site Location Plan



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Reference	H2162
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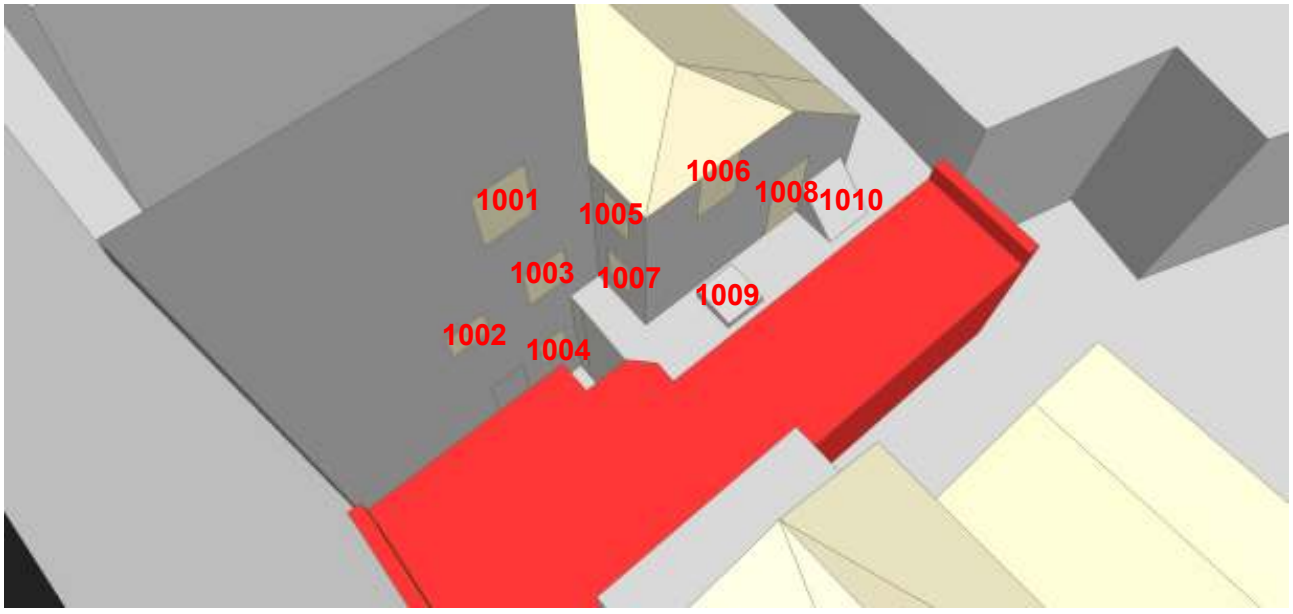
Map data

FIND
PROFESSIONAL MAPPING INTELLIGENCE
Created at findmaps.co.uk

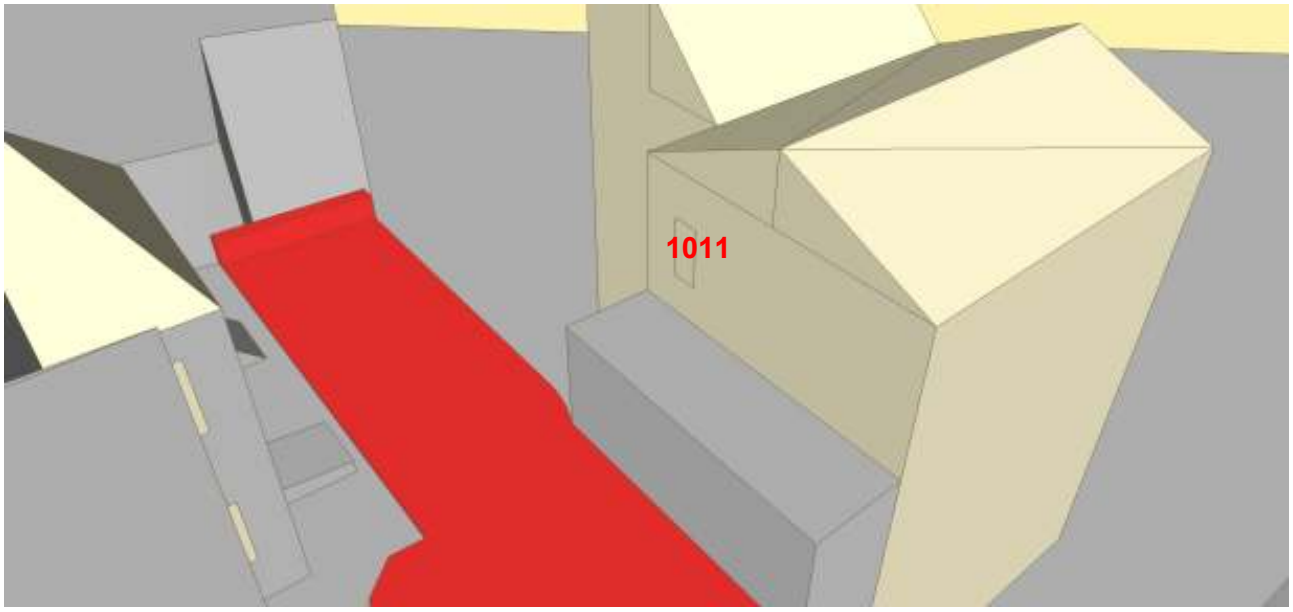
Appendix 2
Window Schedules

Appendix 2: Window Schedules

152 and 150a Haverstock Hill



148 Haverstock Hill



Appendix 3
Waldram Diagams

Appendix 3: Waldram Diagrams

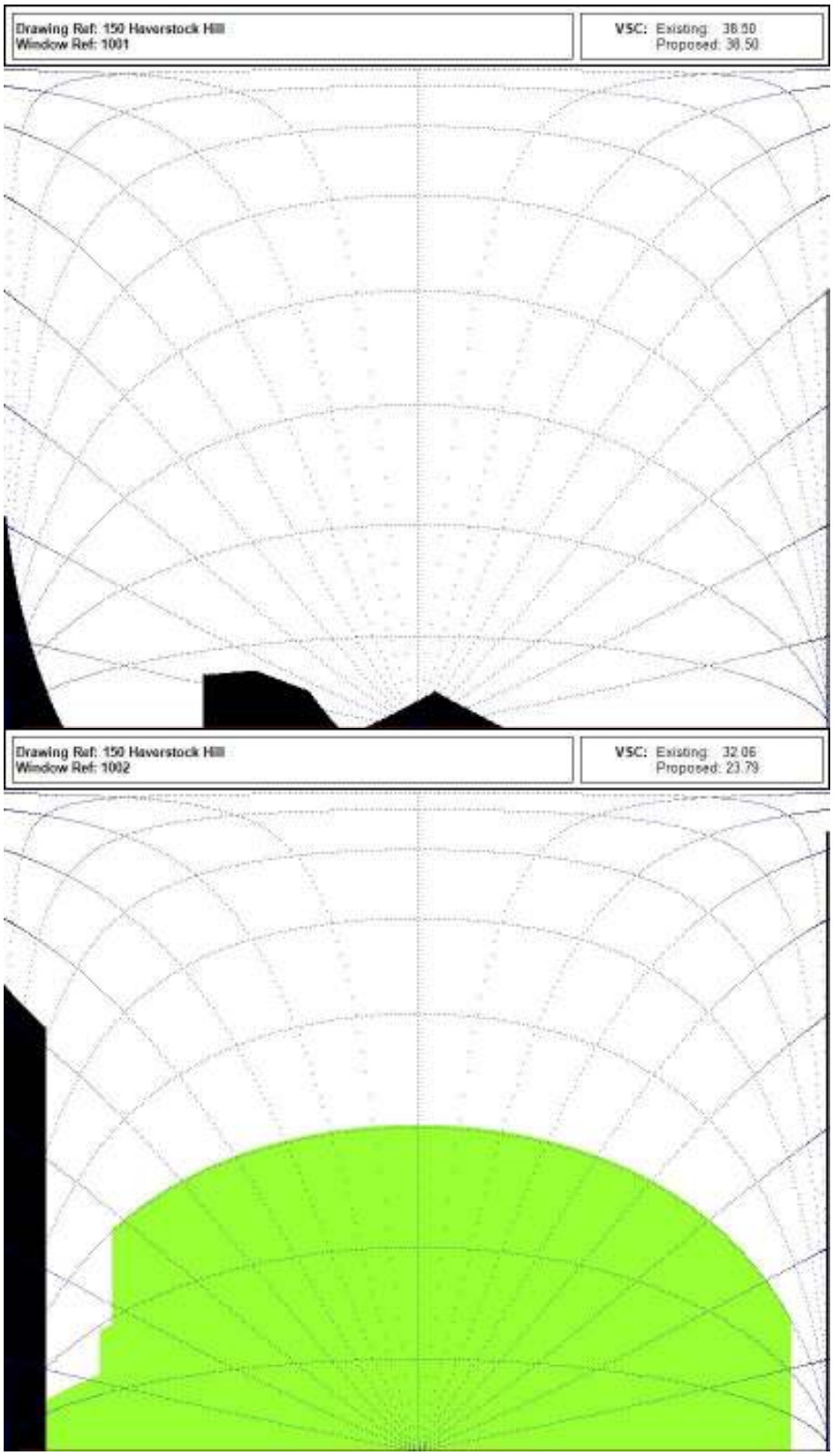
The methodology for calculating the VSC using the Waldram Diagrams is detailed within Appendix B of the Building Research Establishment (BRE) report, "Site layout planning for daylight and sunlight – a guide to good practice" by PJ Littlefair.

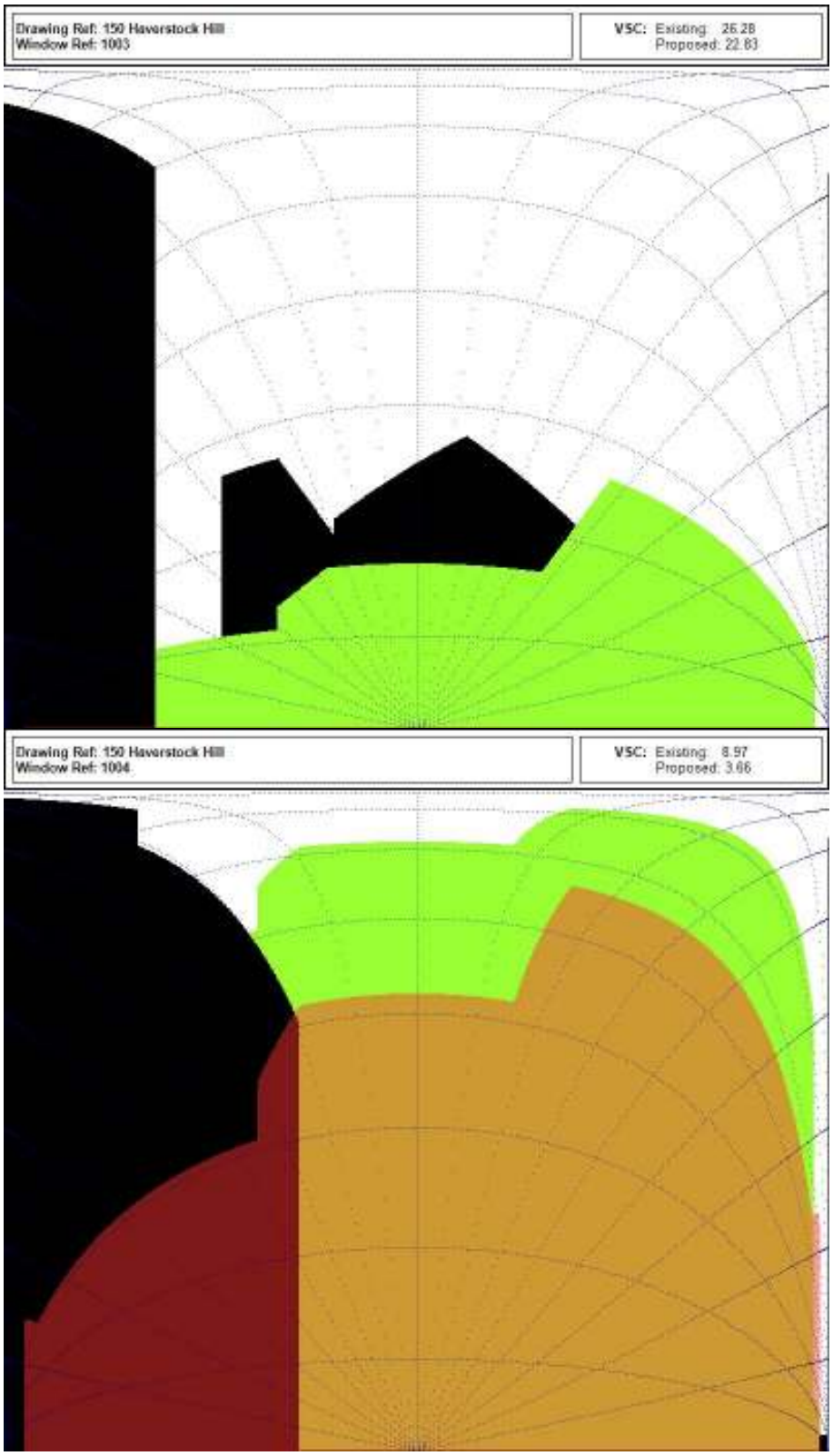
The Waldram Diagram dates back to 1923 and consists of a grid of squares, each representing an equal portion of available daylight. Upon the grid, it is possible to draw projections of obstructions as seen from a reference point, plotted with reference to the azimuth angles and altitude angles measured from a reference point. The area of the diagram un-obscured equates to the VSC. If the Waldram Diagram is totally un-obscured by obstructions, this represents the maximum possible VSC of 39.6%. The diagram has been designed in such a way that vertical edges remain vertical in projection, but horizontal edges follow the so called "droop" lines in order to take the cosine law of illumination and the non-uniform luminance of the sky into account. The Waldram Diagram method is a more complex method than the skylight indicator method also described in the BRE report. However, it tends to be more accurate and less open to interpretation and error.

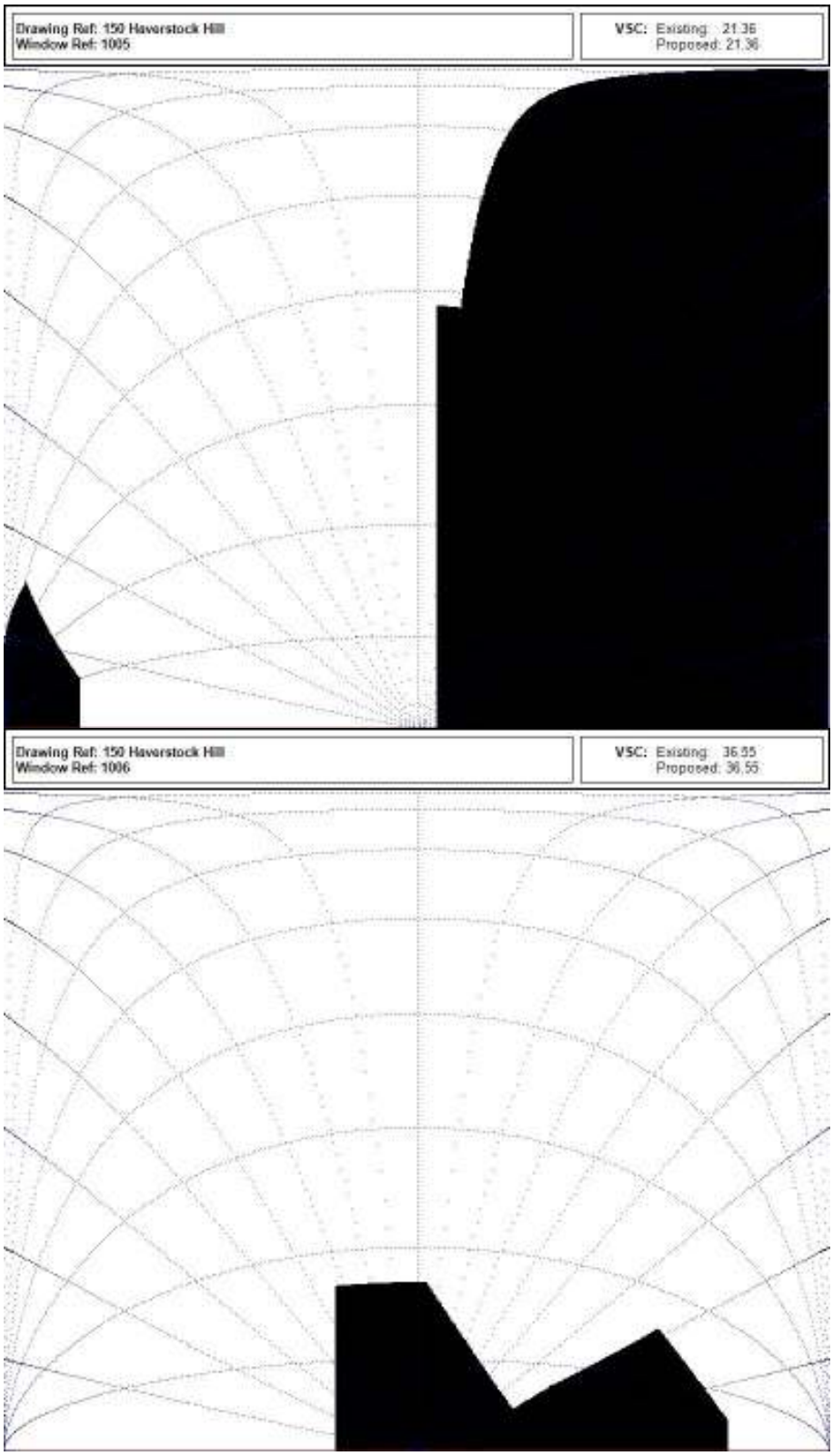
The following pages show a copy of the Waldram Diagrams for each of the affected windows. In the following Waldram Diagrams, the green areas represent the obstructions formed by the proposed development.

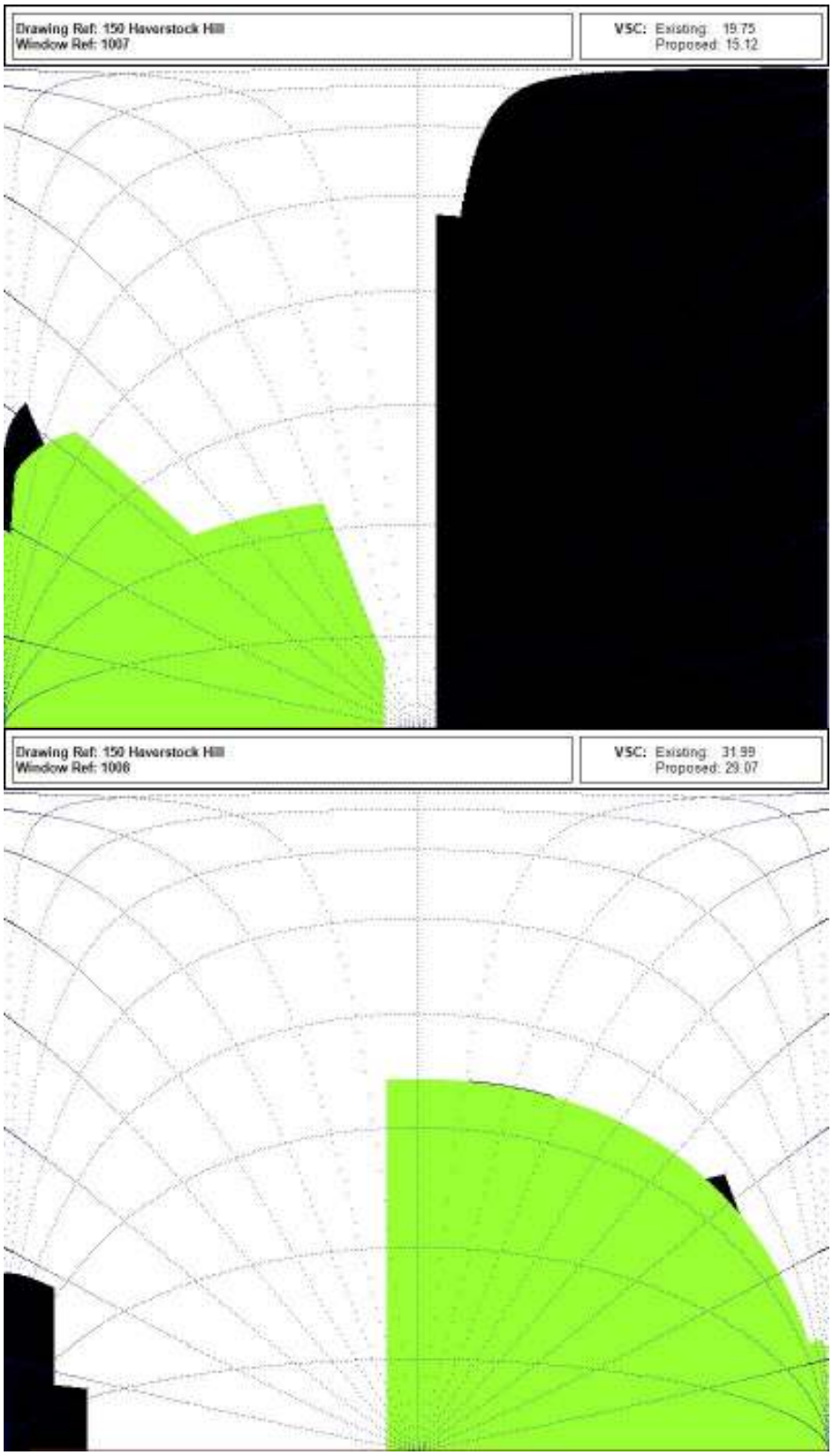
It should be noted that the Waldram Diagrams provided here are for information only. The Waldram Diagrams should only be interpreted by professionals with appropriate experience. The full results from these diagrams are provided earlier in the report.

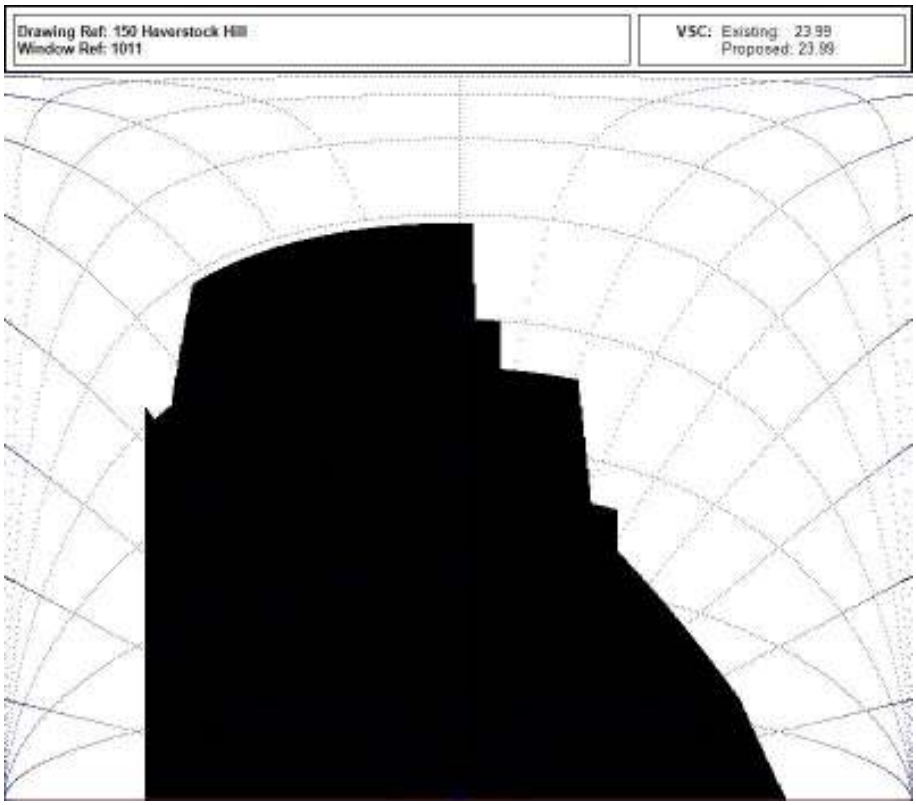
Waldram Diagrams have not been produced for windows 1009 and 1010, as Waldram Diagrams cannot be drawn for non-vertical glazing. IES's VE-Pro lighting simulation software has been used to calculate the Horizontal Sky Component and APSH for the non-vertical glazing.


Drawing Ref: 150 Haverstock Hill
Window Ref: 1001
VSC: Existing: 38.50
Proposed: 38.50
Drawing Ref: 150 Haverstock Hill
Window Ref: 1002
VSC: Existing: 32.06
Proposed: 23.79


Drawing Ref: 150 Haverstock Hill
Window Ref: 1003
VSC: Existing: 26.28
Proposed: 22.83
Drawing Ref: 150 Haverstock Hill
Window Ref: 1004
VSC: Existing: 8.97
Proposed: 3.66

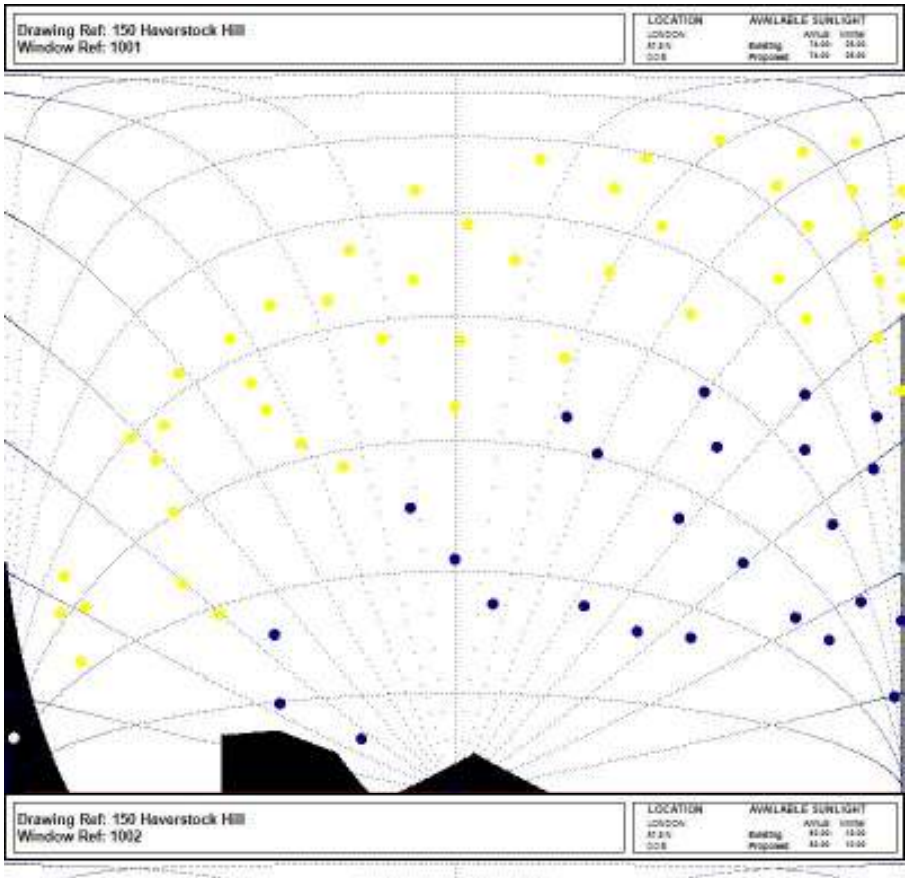

Drawing Ref: 150 Haverstock Hill
Window Ref: 1005
VSC: Existing: 21.36
Proposed: 21.36
Drawing Ref: 150 Haverstock Hill
Window Ref: 1006
VSC: Existing: 36.55
Proposed: 36.55

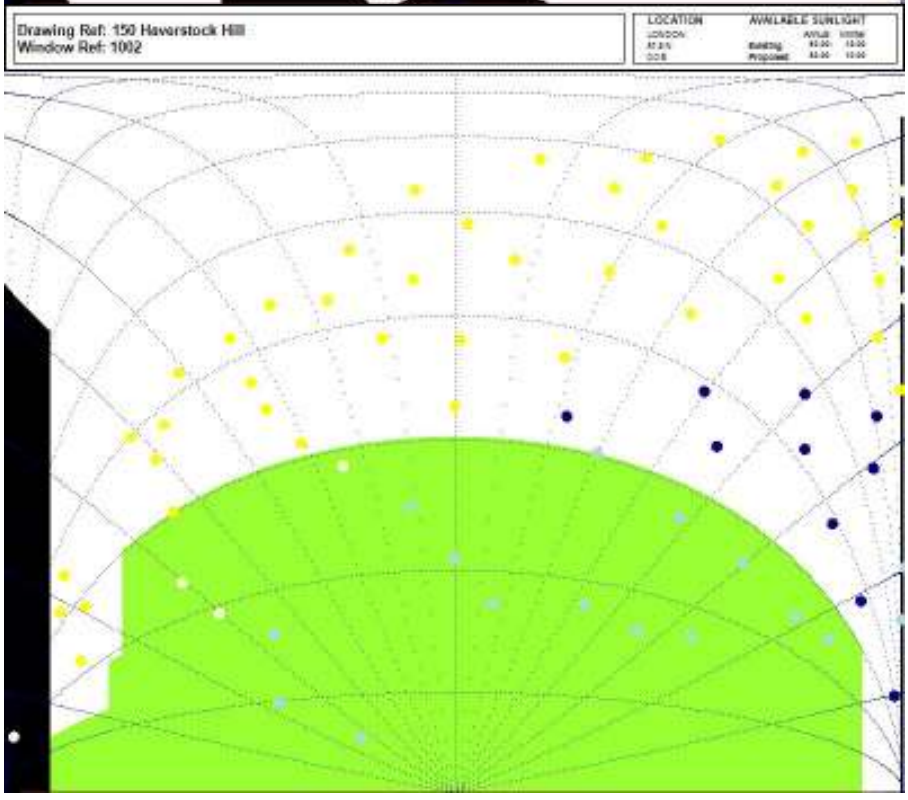

Drawing Ref: 150 Haverstock Hill
Window Ref: 1007
VSC: Existing: 19.75
Proposed: 15.12
Drawing Ref: 150 Haverstock Hill
Window Ref: 1008
VSC: Existing: 31.99
Proposed: 29.07

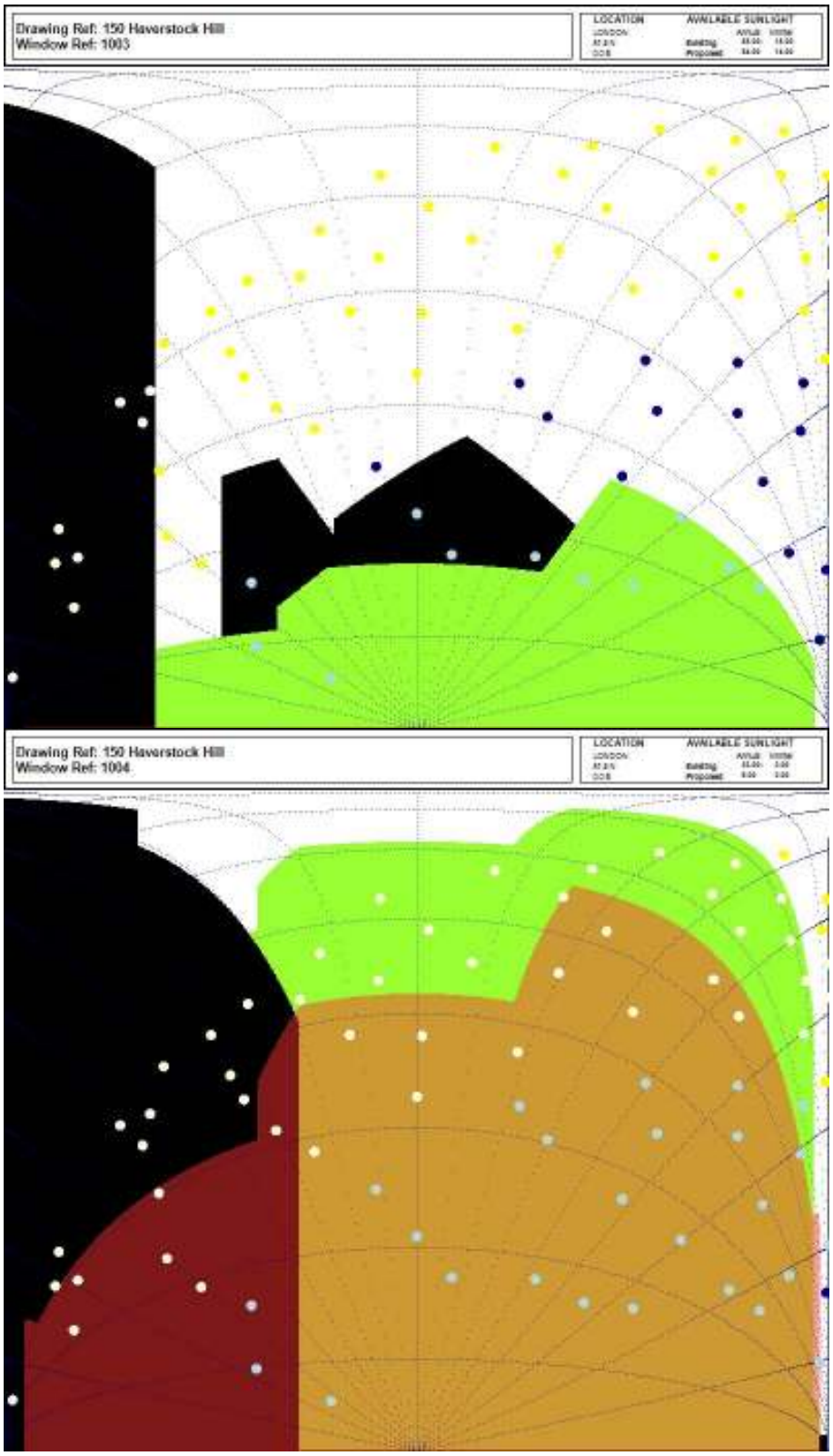

Drawing Ref: 150 Haverstock Hill
Window Ref: 1011
VSC: Existing: 23.99
Proposed: 23.99

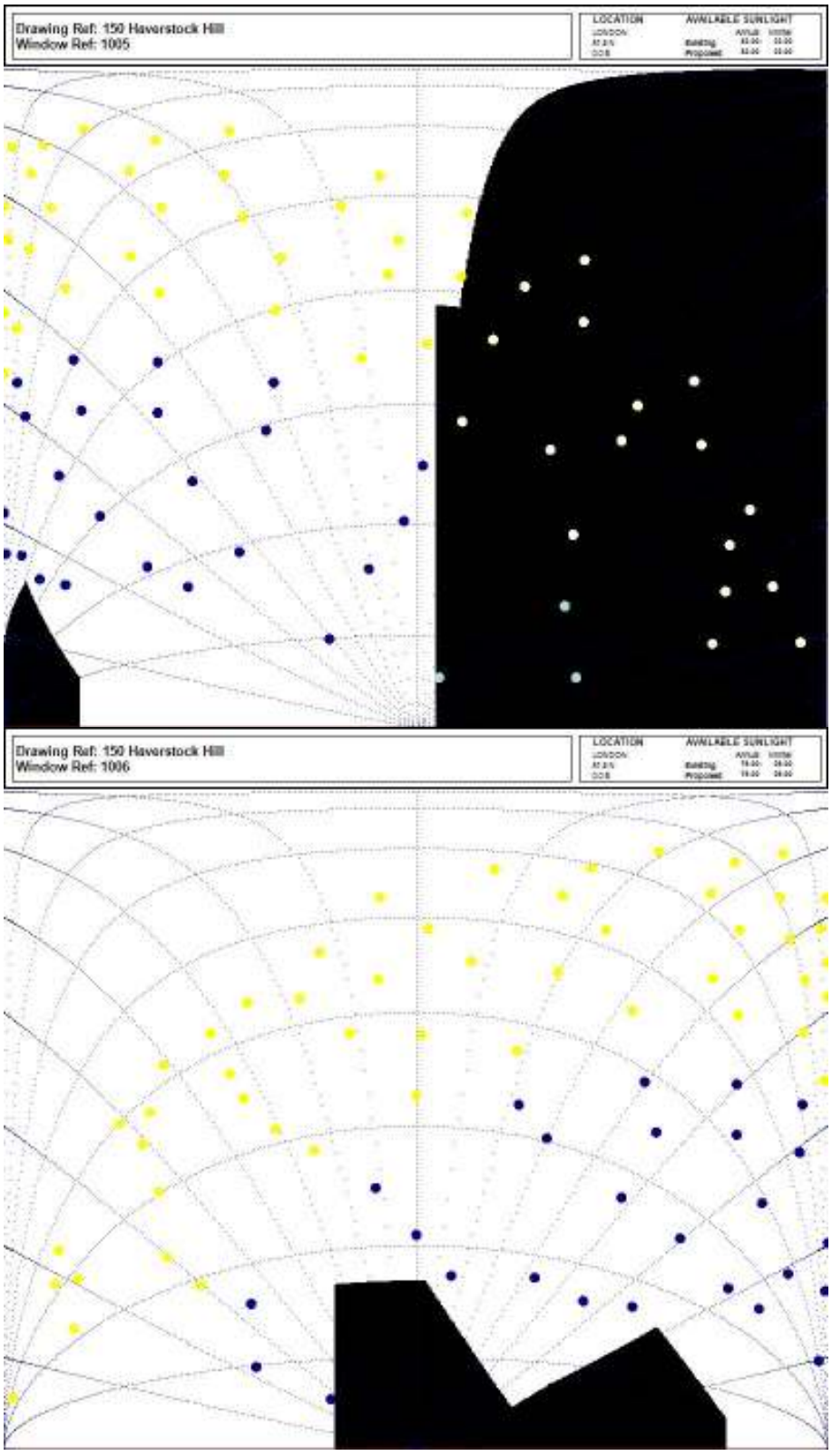
Appendix 4
Sunlight Availability Indicators

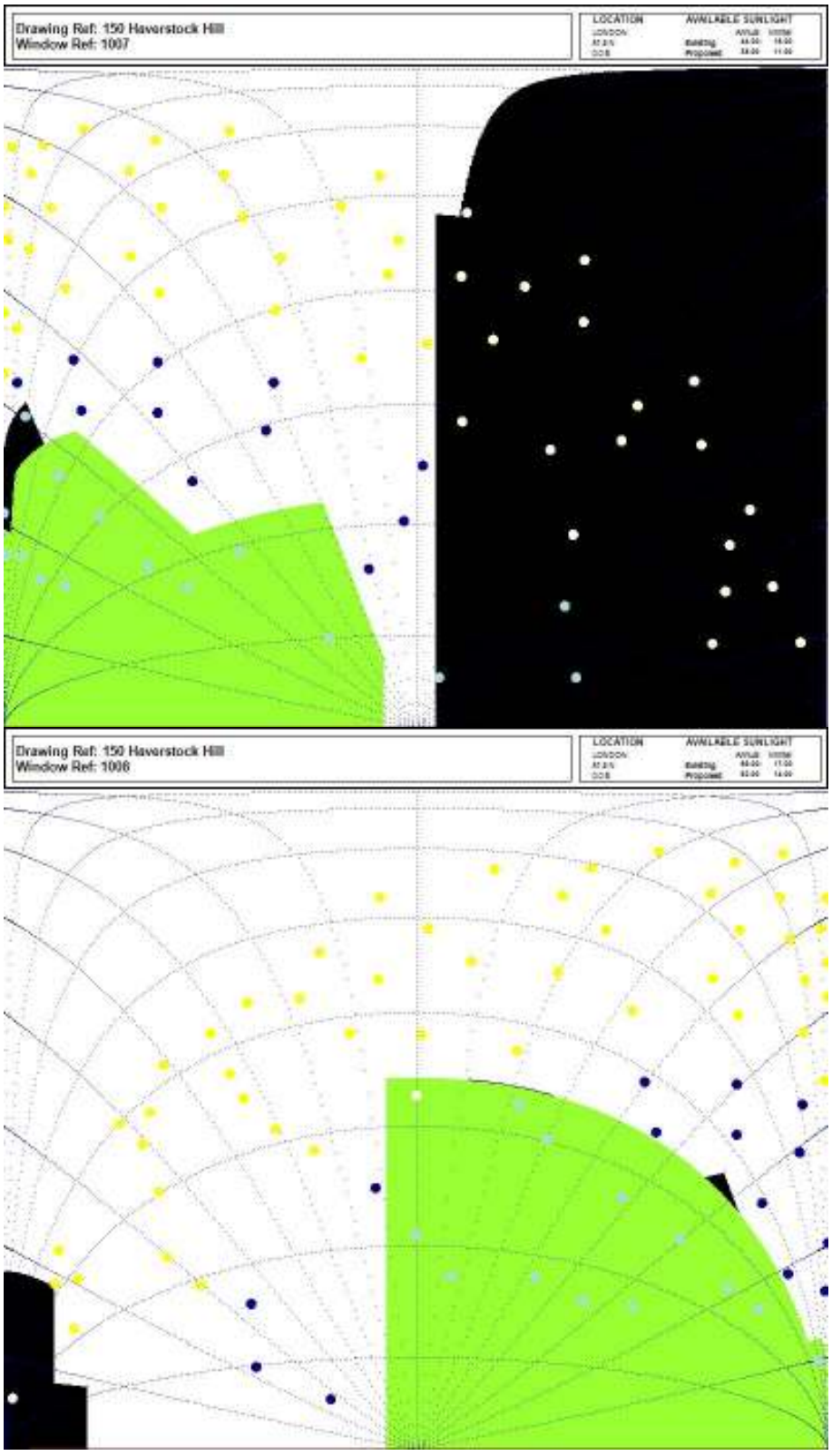
Appendix 4: Sunlight Availability Indicators

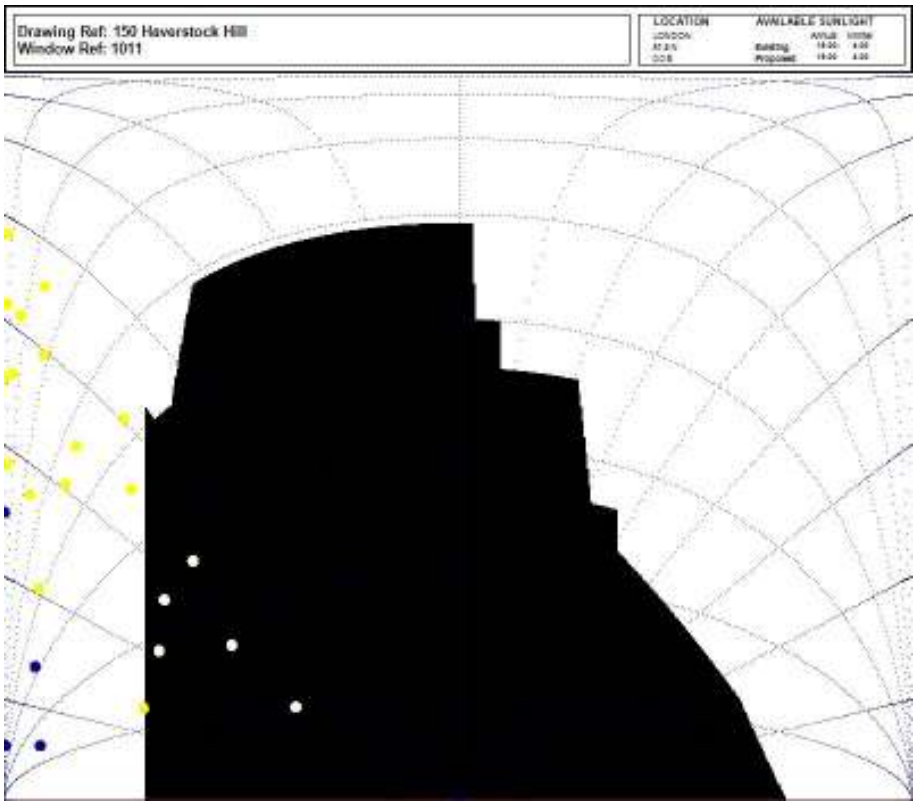





Drawing Ref: 150 Haverstock Hill
Window Ref: 1003
LOCATION
AVAILABLE SUNLIGHT
Drawing Ref: 150 Haverstock Hill
Window Ref: 1004
LOCATION
AVAILABLE SUNLIGHT


Drawing Ref: 150 Haverstock Hill
Window Ref: 1005
LOCATION
AVAILABLE SUNLIGHT
Drawing Ref: 150 Haverstock Hill
Window Ref: 1006
LOCATION
AVAILABLE SUNLIGHT


Drawing Ref: 150 Haverstock Hill
Window Ref: 1007
LOCATION
AVAILABLE SUNLIGHT
Drawing Ref: 150 Haverstock Hill
Window Ref: 1008
LOCATION
AVAILABLE SUNLIGHT


Drawing Ref: 150 Haverstock Hill
Window Ref: 1011
LOCATION
AVAILABLE SUNLIGHT