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Daylight and Sunlight

Fortess Grove

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12073-kb-17-1130 (DaySun Report)
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Sources of Information:

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1.0 Executive Summary

GIA have undertaken detailed technical daylight and sunlight analyses of BuckleyGrayYeoman architects scheme (Provided to GIA 01 November 2017), for the Studio B Fortess Grove site in the London Borough of Camden, to understand the potential alterations in light to neighbouring residential properties located in Fortess Grove and Railey Mews.

The assessment has tested 56 habitable rooms served by 97 windows which may have a view of the Site. The results of the assessment show that nos. 1, 19 and 22 Fortess Grove, Eleanor House and The Piano Works, are fully in accordance with the BRE guidelines following the construction of the proposed scheme.

The remaining two properties, 21 Fortess Grove and 1 Railey Mews, experience a small number of breaches of the BRE daylight criteria, however these are not considered to be likely to cause an adverse impact to the overall daylight amenity. Where light alterations do occur beyond the BRE thresholds, it is considered that adequate daylight is retained. Furthermore, the retained daylight levels can be considered commensurate with the urban grain of the densely built location.

2.0 Instructions

GIA have been instructed to undertake detailed technical assessments to understand the potential daylight and sunlight changes that the proposed BuckleyGrayYeoman proposed scheme received by GIA 01 November 2017 ("the Proposed Scheme"), for the Studio B, Fortess Grove redevelopment site ("the Site") will have upon the surrounding residential properties.

The daylight and sunlight review within this report considers residential properties only as they are recognised by the BRE guidelines, *"Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice"* (2011) ("the BRE"), as having the highest expectation for natural light when compared to other uses, such as commercial. The criteria suggested within the BRE have been used to understand and compare the existing levels of light and the light achieved subsequent to the development of the Proposed Scheme.

3.0 Introduction

Daylight and Sunlight

The technical analyses that form the bases of this report have been predicated against the methodologies set out within the BRE. The guidelines in question are precisely that; guidelines which provide a recommendation to inform site layout and design. They are not mandatory, nor do they form planning policy and their interpretation may be treated flexibly depending on the specifics of each site.

The BRE guidelines provide three methodologies for daylight assessment, namely;

1) The Vertical Sky Component ("VSC");
2) The No Sky Line ("NSL"); and
3) The Average Daylight Factor ("ADF").

We have used the VSC and NSL assessment methods to analyse the effects of the proposed scheme on the surrounding properties. ADF is not generally recommended by the BRE for assessing daylight to existing surrounding properties, however, it may be used in certain circumstances and these are explained in more detail within the BRE handbook.

In addition, we have used one methodology provided by the BRE guidelines for sunlight assessment, denoted as Annual Probable Sunlight Hours ("APSH").

Appendix 01 of this report elaborates on the mechanics of each of the above assessment criteria, explains the appropriateness of their use and the parameters of each specific recommendation.

4.0 Assumptions

a) We have relied upon a photogrammetric model (circa 300mm tolerance) and OS data to produce the three dimensional computer model which forms the basis of the technical analyses;

b) All residential buildings have been identified by reference to the Valuation Office Agency (VOA) search;

c) We have not sought access to the adjoining properties, thus have made reasonable assumptions as to the internal layouts of the rooms behind the fenestration based upon the building form and architecture. This is normal practice where access to adjoining properties is not available. Unless the building form dictates otherwise, we assume a standard 4.2m deep room (14ft) for residential properties; and,

d) Floor levels have been assumed for the adjoining properties. This dictates the level of the working plane which is relevant for the NSL assessment.

5.0 The Site

The Site is located in Fortess Grove in the London Borough of Camden. It is bounded by an existing warehouse building to the immediate north, residential properties on Fortess Grove to the south, and Eleanor House to the west. The existing buildings on Site comprise a former two storey vehicle repair centre. The existing Site condition is shown in Figure 01 below and in drawings within Appendix 02 of this report.

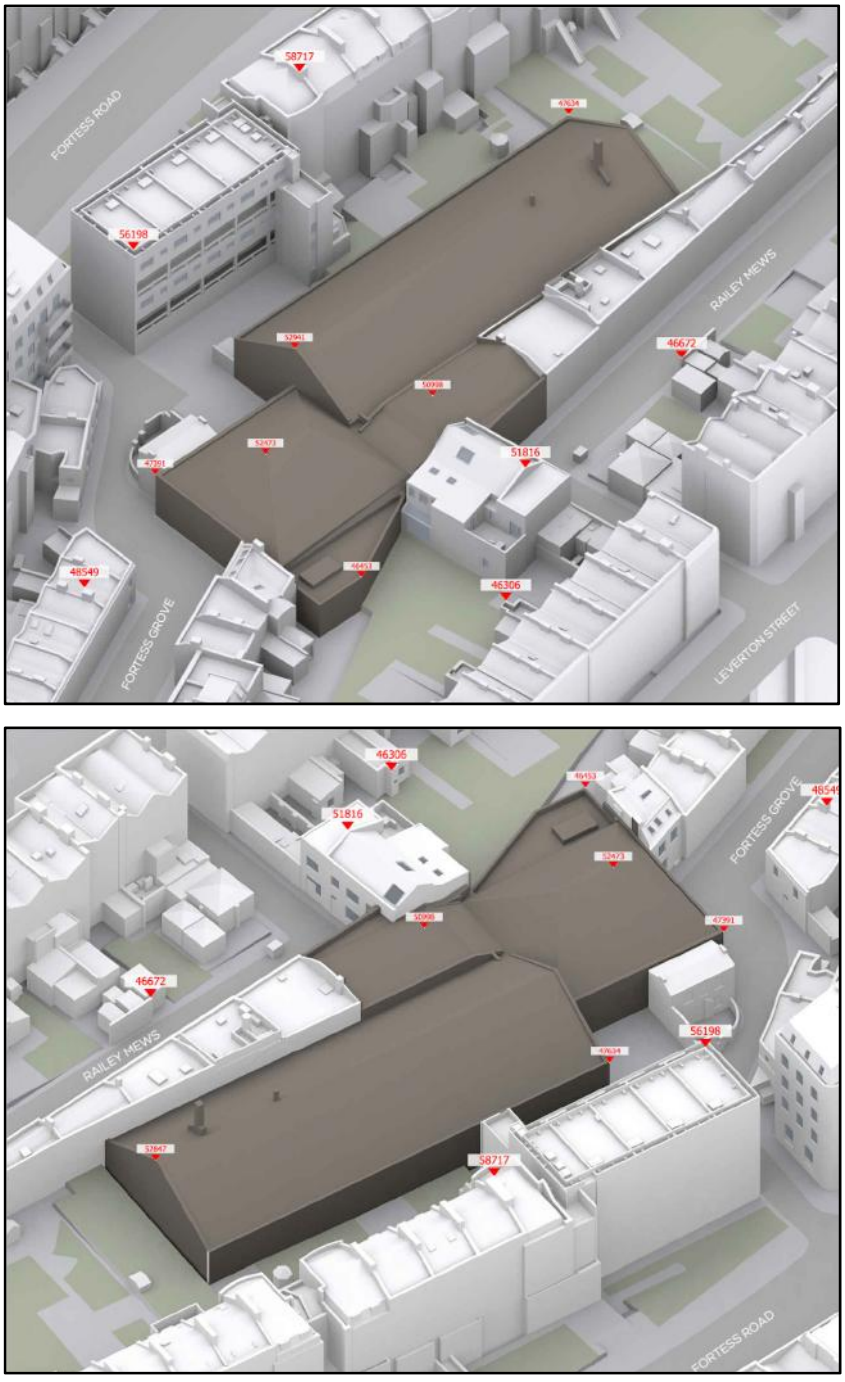


Figure 01 - Existing Site condition shown in brown

6.0 The Proposed Scheme

The Proposed Scheme seeks to redevelop the existing building on Site to provide office accommodation. GIA's understanding of the Proposed Scheme is illustrated in Figure 02 below and in drawings within Appendix 02 of this report.

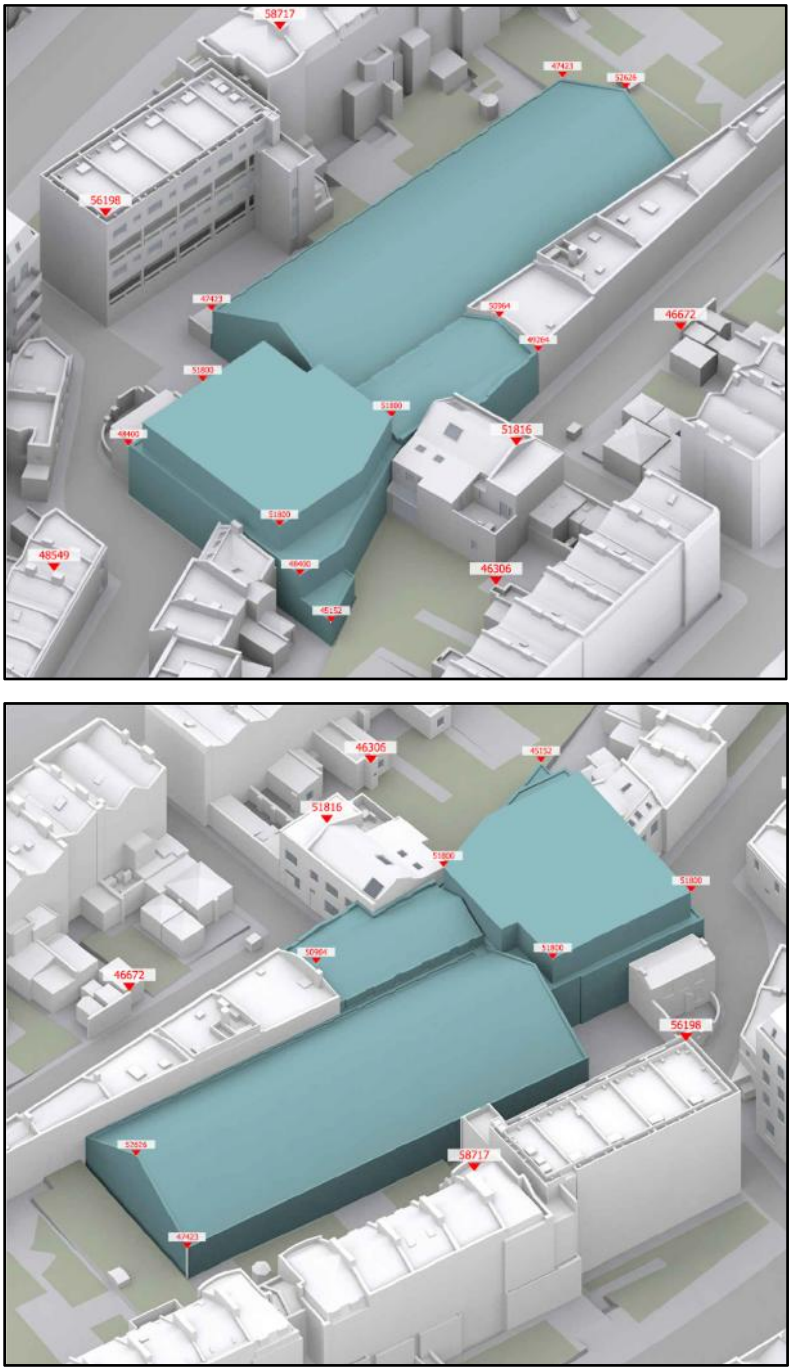


Figure 02 - Proposed scheme shown in green

7.0 Surrounding Properties

GIA have created a three dimensional computer model of the Site and surrounding properties using a photogrammetry model using high resolution aerial photography and OS data. Sensitive windows and rooms situated within these properties have been modelled and analysed in both the existing and proposed scenarios. The resultant technical information forms the bases of this report.

Only neighbouring residential properties have been considered as they are recognised by the BRE guidelines as having a greater requirement for natural light when compared to other uses, such as commercial. The BRE guidelines state:

> *"The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms."* (BRE Guidelines 2011 – Site Layout Planning for Daylight and Sunlight – A guide to good practice: paragraph 2.2.2, page 7)

Non-habitable rooms such as circulation spaces have not been considered, as recommended by the BRE guidelines as follows:

> *"Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed."* (BRE Guidelines 2011 – Site Layout Planning for Daylight and Sunlight – A guide to good practice: paragraph 2.2.2, page 7)

Further, only windows which face within 90 degrees of due south have been assessed for sunlight as per the BRE guidelines.

A full copy of the daylight and sunlight technical analyses are enclosed within Appendix 03.

Properties Experiencing No Material Loss

Technical analyses show that there will be no material loss of daylight to the following residential properties as a result of implementing the Proposed Scheme. The results show that they will retain sufficient levels of VSC and NSL and thus remain fully in accordance with the BRE guidance:

- 1 Fortess Grove;
- 19 Fortess Grove;
- 22 Fortess Grove;
- 1-12 Eleanor House; and,
- Piano Works, 28-34 Fortess grove.

Impacted Properties

The following properties will experience a technical breach of VSC and/or NSL to at least one or more windows and/or rooms when assessed against the BRE criteria:

21 Fortess Grove

This property, located on Fortess Grove, is situated immediately west of the Site and is residential in use.

Daylight – VSC & NSL

VSC and NSL daylight analyses have been undertaken for 4 habitable rooms served by 5 windows located on the ground and first floors, in both the existing and proposed scenario, as shown in the window map in Figure 03 below and enclosed within Appendix 04 of this report:

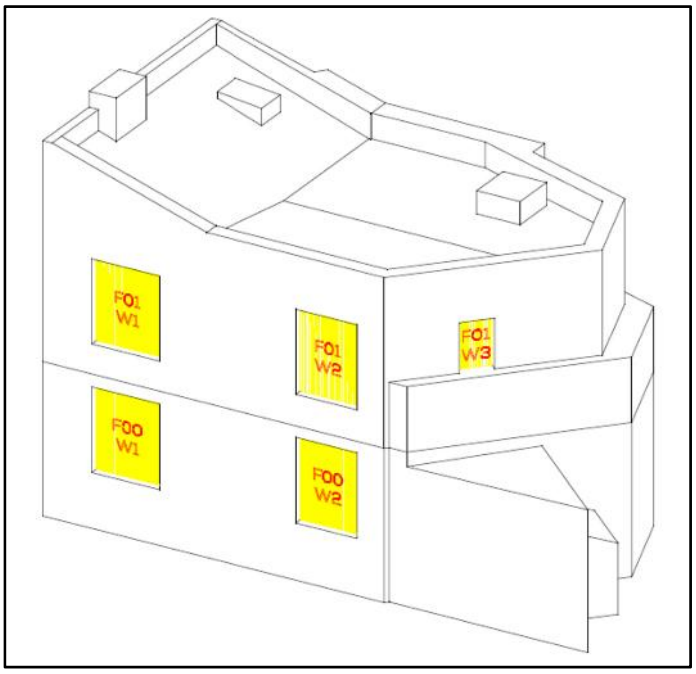


Figure 03 - Window map showing location of windows assessed in 21 Fortess Grove

Technical analysis found that all 5 windows assessed in this property will meet the VSC daylight criteria, meaning there will be a negligible alteration in light to these windows.

The 4 rooms assessed in respect of NSL experience reductions beyond the 20% BRE threshold. Three of the four reductions are considered to be minor at between 20-30% and one which is moderate at 33%. However, all four rooms retain at least 60% daylight distribution once the Proposed Scheme is built and therefore it is considered that they will remain adequately lit.

Overall this property demonstrates high BRE daylight compliance and is very unlikely to notice a material change in its daylight amenity, which is evident by way of full VSC compliance and only marginal NSL reductions.

Sunlight – APSH

No windows within this property face within 90 degrees of due south and therefore are not relevant for sunlight assessment as per the BRE guidelines.

1 Railey Mews

This property, located on Railey Mews, borders the eastern boundary of the Site and is residential in use.

Daylight – VSC & NSL

VSC and NSL daylight analyses have been undertaken for 7 habitable rooms served by 22 windows located on the ground and first floors, in both the existing and proposed scenario, as shown in the window map in Figure 04 below and enclosed within Appendix 04 of this report:

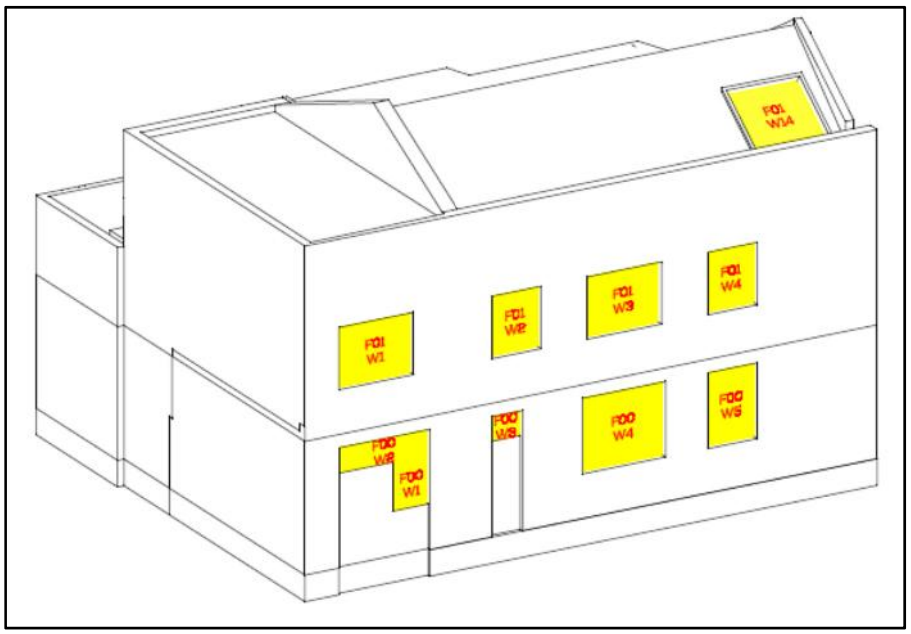


Figure 04 - Window map showing location of windows assessed in 1 Railey Mews

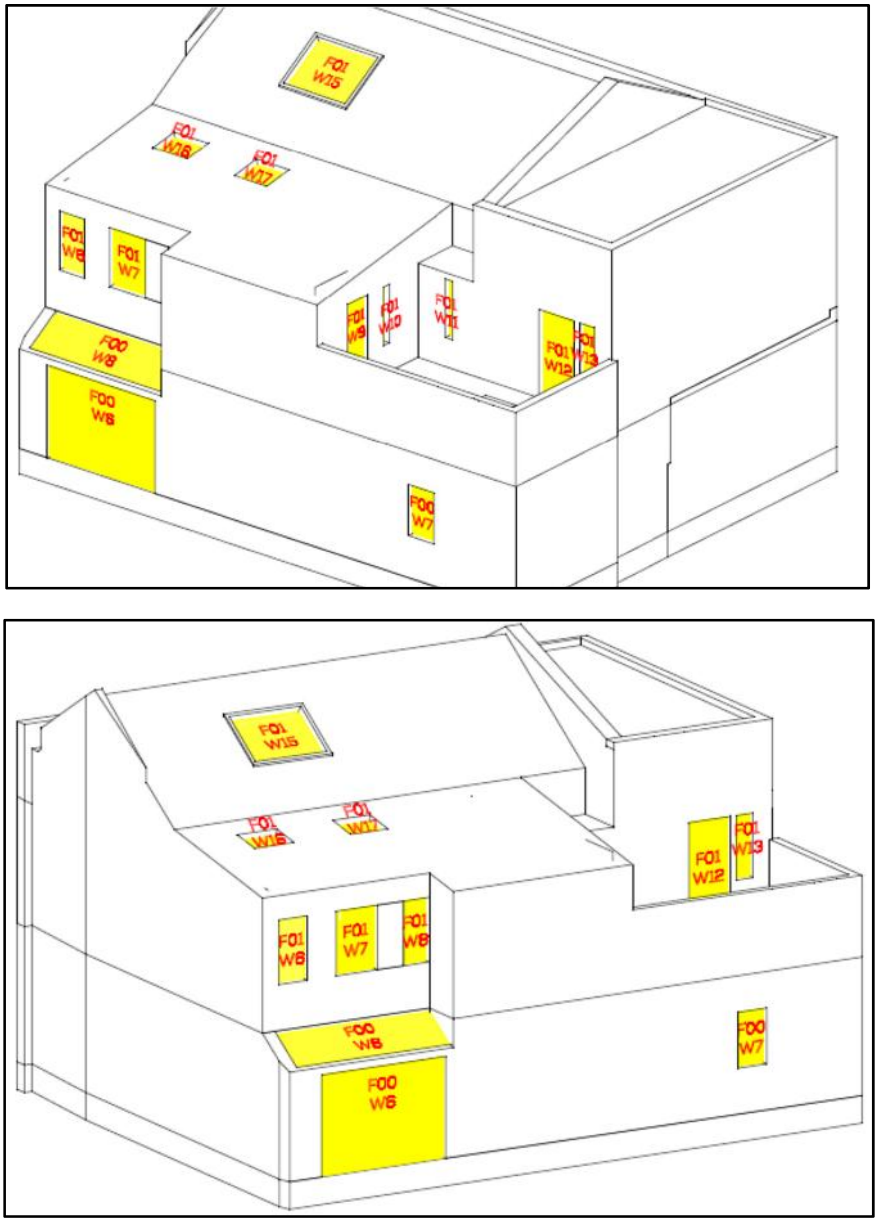


Figure 04 - Window map showing location of windows assessed in 1 Railey Mews

Technical analysis found that 18 windows out of 22 assessed in this property will meet the VSC daylight criteria, meaning there will be a negligible alteration in light to these windows.

The remaining 4 windows (F00W6, F01W6, F01W7, F01W8), experience VSC reductions beyond the 20% BRE recommendation. Of these, window F00W6 located on the ground floor experiences a reduction of 20.83%, which is only marginally above the 20% threshold and which would therefore be considered as having only a very minor potential impact upon daylight to this window.

The remaining three windows located on the first floor, all serve one room, which is served by a total of 7 windows. One of these, F01W8 experiences only a small transgression of the 20% threshold of 24%. Further, the remaining two windows retain 21.1% and 25.7% VSC respectively, once the Proposed Scheme is built, which could be considered to be commensurate and therefore reasonable VSC levels for densely built urban areas such as this.

Nonetheless, this room is served by four further windows which experience no change or virtually no change in VSC in the proposed scenario and therefore we do not consider the daylight amenity of this room to be adversely affected.

In terms of NSL, all 7 rooms assessed fully adhere to the BRE recommendations.

Overall, we conclude that this property experiences a high level of BRE daylight compliance and is very unlikely to notice a material change in its daylight amenity.

Sunlight – APSH

In total, 13 windows, serving 5 habitable rooms are relevant for APSH analysis as they are oriented within 90 degrees of due south and thus have been assessed against the BRE criteria.

Technical analysis found that all 13 windows will retain sufficient levels of both annual and winter sunlight and as a result meet the BRE recommendations for sunlight.

8.0 Conclusions

GIA have undertaken a detailed daylight and sunlight assessment of the Proposed Scheme for the existing residential accommodation surrounding the Site on Fortess Grove and Railey Mews. The results of the analyses show that implementation would cause no adverse daylight impact to nos. 1, 19 and 22 Fortess Grove, properties within Eleanor House and The Piano Works, as these properties fully comply with the BRE guidelines in the proposed scenario.

The remaining two properties assessed, namely 21 Fortess Grove and 1 Railey Mews, do experience a small number of breaches of the BRE daylight criteria. However, the breaches are considered to be very unlikely to cause adverse harm to daylight amenity. It should also be noted that the daylight levels once the Proposed Scheme is built in all cases could be considered reasonable and commensurate with the densely built urban location of the Site.

Overall, the properties assessed show an excellent level of BRE compliance. We consider that the Proposed Scheme will have only a minor impact upon daylight amenity to surrounding properties and on this basis, recommend that the scheme is acceptable in daylight and sunlight terms.

Appendix 01

Principles of Daylight and Sunlight

Principles of Daylight and Sunlight

Background

The quality of amenity and open spaces is often stipulated within planning policy for protection or enhancement and is often a concern for adjoining properties and other interested parties.

Historically the department of environment provided guidance with the issues, and in this country, this role has now been taken on by the Building Research Establishment (BRE), the British Standards Institutions (BSI) and the Chartered Institute of Building Services Engineers (CIBSE). Fortunately they have collaborated in many areas, to provide as much unified advice as possible in the form of industry best practice.

Many local planning authorities consider daylight and sunlight an important factor for determining planning applications. Policies refer to both the protection of daylight and sunlight amenity within existing properties as well as the creation of proposed dwellings with high levels of daylight and sunlight amenities.

In terms of considering what is material, local authorities typically refer to the BRE guidelines and apply their criteria set out within. The guidelines were originally produced in 1991, but superseded by the BRE guidelines (2011*) site layout planning for daylight and sunlight.*

Where developers are seeking to maximise their development value, it is often in the area of daylight and sunlight issues that they may seek to push the boundaries. Particularly in London, there is a priority on the creation of more housing thus resulting in the densification of urban areas. Local authorities vary in their attitude of how flexible they can be with the degree of impact on the daylight and sunlight amenity enjoyed by neighbouring owners and it is one factor among many planning aspects considered when determining an application. In city centres where high density is common, the protection of amenity is more challenging and there are many factors that need to be taken into account: each case has to be considered on its own merits.

The BRE Guidelines

The guidelines are typically referred to for daylight and sunlight amenity issues, however they were not intended to be used as an instrument of planning policy. In the introduction of 'Site Layout Planning for Daylight and Sunlight (2011)', section 1.6 (page 1), states that:-

> *"The guide is intended for building designers and their clients, consultants and planning officials. 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 (see Section 5). In special circumstances the developer or Planning Authority may wish to use different target values. For example, in an 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".*

Again, the paragraph 2.2.3 (page 7) of the document states:-

> *"Note that numerical values given here are purely advisory. Different criteria may be used, based on the requirements for daylighting in an area viewed against other site layout constraints".*

The numerical criteria suggested by the BRE are therefore designed to provide industry advice/guidance to plan/design with daylight in mind. Alternative values may be appropriate in certain circumstances such as highly dense urban areas around London, for e.g. the approach to creating alternative criteria is detailed within Appendix F of the BRE.

Measurement and Criteria for Daylight and Sunlight as set out in the BRE Guidelines

The BRE guidelines state that they are;

> *"intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedroom. Windows to bathrooms, toilets, garages need not be analysed."*

They are therefore primarily designed to be used for residential properties however, the BRE guidelines continue to state that they may be applied to any existing non-residential buildings where there may be a reasonable expectation of daylight including; schools, hospitals, hostels, small workshop and some offices.

Daylight

In the first instance, if a proposed development falls beneath a 25 degree angle taken from the centre point of the lowest window, then the BRE suggests that no further analysis is required as there will be adequate sky light (i.e. sky visibility). This rule is applied when considering the scope of any assessments.

The BRE guidelines provide two methods for calculating daylight to existing surrounding properties:

- Vertical Sky Component (VSC)
- No Sky Line (NSL) also referred to as daylight distribution

A further method, the Average Daylight Factor (ADF) is provided for calculating daylight within proposed properties. However, it is sometimes applied as a supplementary assessment for exiting surrounding properties.

Each method is described below:

Vertical Sky Component

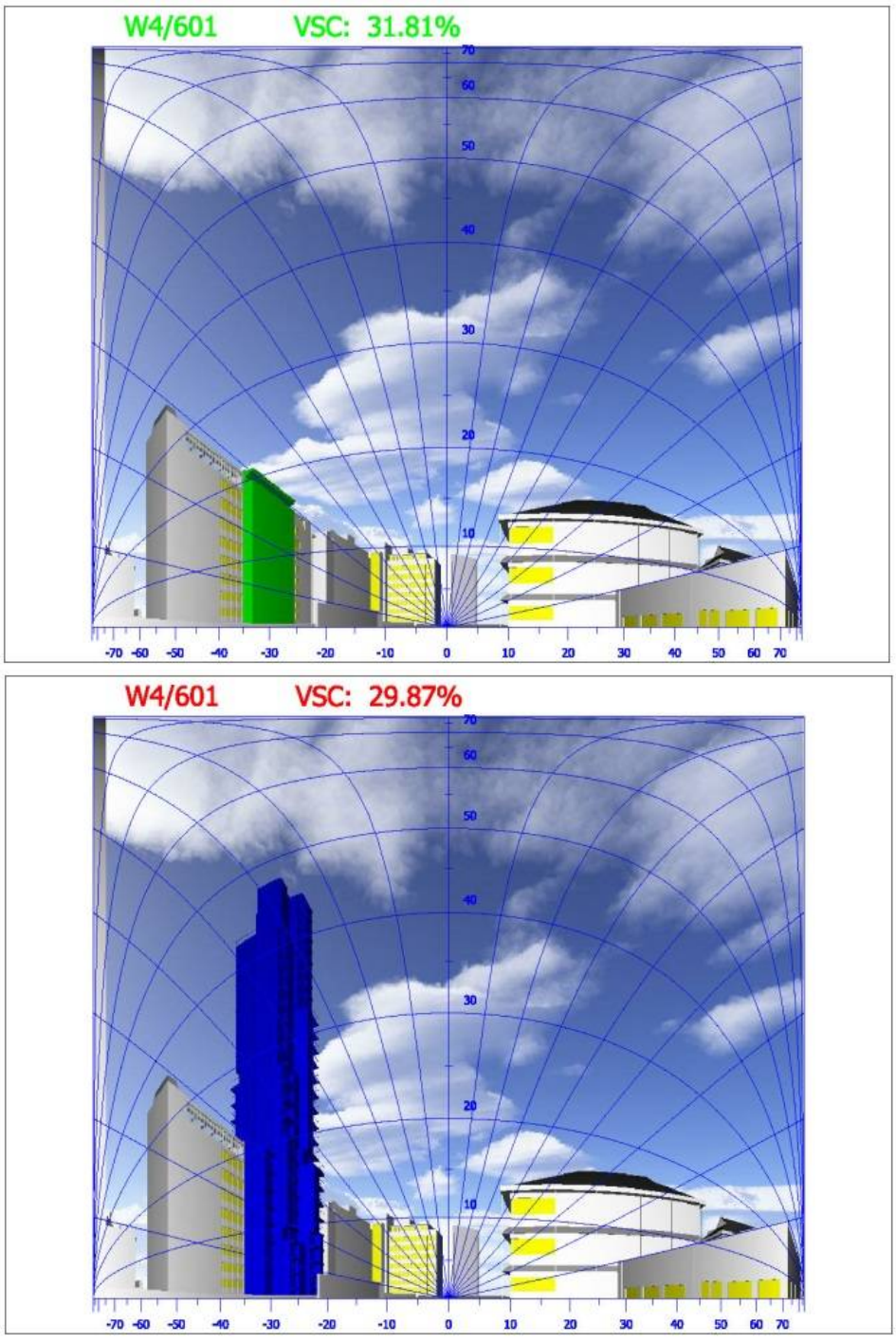
Methodology

This is defined in the BRE as:-

> *"Ratio of that part of illuminance, at a point on a given vertical plane that, is received directly from a CIE standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky."*

This statement means, in practice that if one had a totally unobstructed view of the sky, looking in a single direction, then just under 40% of the complete hemisphere would be visible. The measurement of this vertical sky component is undertaken using two indicators, namely a skylight indicator and a transparent direction finder.

Alternatively a further method of measuring the VSC, which is easier to understand both in concept and analysis, is often more precise and can deal with more complex instructions, is that of the Waldram diagram.



The point of reference is the same as for the skylight indicator, at the centre of the outward window face. Effectively a snap shot is taken from that point of the sky in front of the window, before and after the obstruction is put in place together with all the relevant obstructions to it, i.e. the buildings.

An unobstructed sky from that point of reference would give a vertical sky component of 39.6%, corresponding to 50% of the hemisphere, and therefore the purpose of the diagram is to discover how much sky remains once obstructions exist in front of that point.

Criteria

The BRE Handbook provides criteria for:

(a) New Development
(b) Existing Buildings
(c) Adjoining Development Land

(a) New Development

Paragraph 2.1.21 of the BRE states that:

"Obstructions can limit access to light from the sky. This can be checked by measuring or calculating the angle of visible sky 'theta', angle of obstruction or Vertical Sky Component (VSC) at the centre of the lowest window where daylight is required. If VSC is:

- at least 27% ('theta' is greater than 65 degrees, obstruction angle less than 25 degrees) conventional window design will usually give reasonable results.
- between 15% and 27% ('theta' is between 45 degrees and 65 degrees, obstruction angle between 25 degrees and 45 degrees) special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight.
- between 5% and 15% ('theta' is between 25 degrees and 45 degrees, obstruction angle between 45 degrees and 65 degrees) it is very difficult to provide adequate daylight unless very large windows are used.
- less than 5% ('theta' less than 25 degrees, obstruction angle more than 65 degrees) it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed."

(b) Existing Buildings

Para 2.2.21 (page 11) of the BRE states:

"If any part of a new building or extension measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25 degree to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if the vertical sky component measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value".

The VSC provides a quick and simple test which looks to give an early indication of the potential for light at the window face. However considered in isolation, it does not, in any fashion, indicate the quality of actual light within a space. It does not take into account the window size, the room size or room use. It helps by indicating that if there is an appreciable amount of sky visible from a given point there will be a reasonable potential for daylighting.

(c) Adjoining Development Land

Paragraph 2.3.10 of the BRE guidelines states:

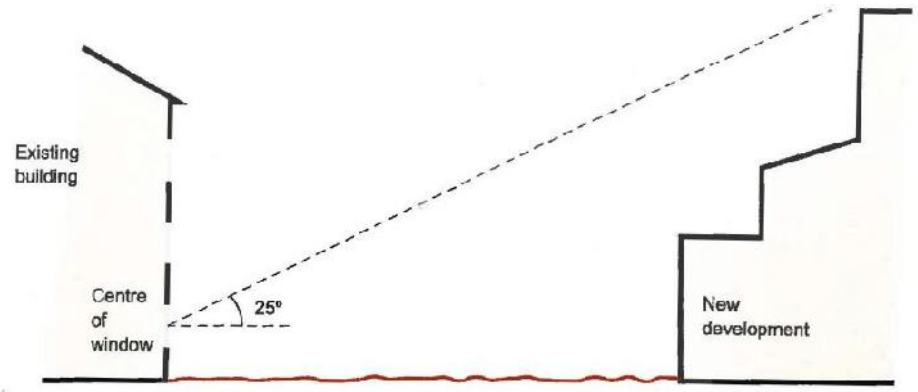
"in broad general terms, a development site next to a proposed new building will retain the potential for good diffuse daylighting provided that on each common boundary:

(a) no new building, measured in a vertical section perpendicular to the boundary, from a point 1.6m above ground level, subtends an angle of more than 43 degrees to the horizontal;

(b) or, If (a) is not satisfied, then all points 1.6m above the boundary line are within 4m (measured along the boundary) of a point which has a VSC (looking towards the new building(s)) of 17% or more 2m above ground level are within 4m (measured sideways) of a point which has a vertical sky component of 27% or more.

Alternative VSC criteria as per Appendix F of the BRE guidelines

The 27% VSC target criteria is based upon a sub-urban type environment whereby a 25 degree line was taken from the centre point on a ground floor window as shown below:



However, in city centre locations and urban areas where density levels are increasing, these values may not be considered appropriate. The BRE guidelines provide that "*different targets may be used based on the special requirements of the proposed development or its location*" (paragraph F1).

Appendix F of the BRE suggests several approaches as to how alternative targets may be considered including:

- Consented scheme - use of an extant planning permission to establish alternative benchmark criteria for VSC and APSH. It is not appropriate to treat a permitted scheme in the same manner as an existing building and allow a 20% reduction beyond this. If the levels of daylight and sunlight retained are similar to a previously consented scheme then it follows that these levels should be considered acceptable again, notwithstanding other planning considerations.
- Mirror massing – to ensure a development matches the height and proportions of existing buildings, the VSC and APSH targets could be set to those of a mirror image of the same height and size, an equal distance away from the boundary (paragraph F5).
- Consider surrounding context and existing obstruction angles as well as spacing to height ratios.

In addition, due to the requirements for external amenity space within local planning policies, many residential buildings are served by balconies. Balconies can restrict the view of the sky dome whereby even the modest obstruction may result in a large relative impact on the VSC. The BRE guidelines therefore provide that an assessment can be carried out comparing the levels of VSC with and without the balconies in place for both the existing and proposed scenarios, to establish whether it is the presence of the balcony or the size of the new obstruction that is the main factor in the loss of light (paragraph 2.2.11).

No Sky Line

Methodology

The NSL method is a measure of the distribution of daylight at the working plane within a room. The 'working plane' means a horizontal 'desktop' plane 0.85m in height for residential properties. The NSL divides those areas of the working plane which can receive direct sky light from those which cannot. If a significant area of the working plane lies beyond the NSL (i.e. it receives no direct sky light), then the distribution of daylight in the room will be poor and supplementary electric lighting may be required.

It is similar to the VSC approach in that a reduction of 0.8 times in the area of sky visibility at the working plane may be deemed to be noticeable. It is however, very dependent upon knowing the actual room layouts or having a reasonable understanding of the likely layouts.

It is assessed by plotting the area of a room which can see the sky and which cannot, referred to as the NSL contour or daylight distribution contour. The contours assist in helping to understand the way the daylight is distributed within a room and the comparisons of existing and limitations of proposed circumstances within neighbouring properties. Like the VSC method, it relates to the amount of visible sky but does not consider the room use in its criteria, it is simply a test to assess the change in position of the No Sky Line, between the existing and proposed situation. It does take into account the number and size of windows to a room, but does not give any quantitative or qualitative assessment of the light in the rooms, only where sky can or cannot be seen.

Criteria

BS 8206 Part 2 (para 5.7) that the:

> *"uniformity of daylight is considered to be unsatisfactory if a significant part of the working plane (normally more than 20%) lies behind the no-sky line".*

Therefore, it is implied that an NSL of at least 80% would be considered satisfactory in regards to deep rooms which are lit by windows on one side, the BRE Guidelines state (para, 2.2.10):

In regards to the alteration as a result of a proposed development or obstruction the BRE provide that the daylight may be adversely affected if *" the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value. ".*

Average Daylight Factor

Methodology

The Average Daylight Factor (ADF) is defined within the 2011 BRE Guidelines as:

> *'a ratio of total daylight flux incident on a reference area to the total area of the reference area, expressed as a percentage of outdoor luminance on a horizontal plane, due to an unobstructed sky of assumed or known luminance distribution'.*

Whilst the BRE guidelines provide this measure as a tool to understand daylight within proposed dwellings not existing dwellings, if room layouts are known it can provide a useful supplementary measure of daylight and is often requested by many local authorities.

The ADF method of assessment considers:

- The diffuse visible transmittance of the glazing to the room in question (i.e. how much light gets through the window glass). A transmittance value of 0.8% is assumed for single glazing and 0.65% for double glazed windows;
- The net glazed area of the window in question;
- The total area of the room surfaces (ceiling, walls, floor and windows); and
- The angle of visible sky reaching the window(s) in question

In addition, the ADF method makes allowance for the average reflectance of the internal surfaces of the room and of external obstruction (assumed to be 0.5 unless otherwise stated).

Criteria

The criteria for ADF is taken from the British Standard 8206 part II which gives the following criteria based on the room use:

- Bedroom – 1% ADF
- Living room – 1.5% ADF
- Kitchen – 2% ADF

Where a room has multiple uses such as a living kitchen diner (LKD) or a studio apartment, the highest value is taken so in these cases the required ADF is 2%.

Sunlight

Methodology

The BS 8206 part 2 (section 5.2) states that:

> *"Provided that the entry of sunlight is properly controlled, it is generally welcome in most buildings in the UK. Dissatisfaction can arise as much from the permanent exclusion of sunlight as from its excess. The provision of sunlight is important in dwellings, particularly during winter months. Sunlight is especially valued in habitable rooms used for long periods during the day."*

Principles of Daylight and Sunlight

Sunlight is measured using a sun indicator which contains 100 spots, each representing 1% of Annual Probable Sunlight Hours (APSH). Where no obstruction exists the total APSH would amount to 1486 hours and therefore each spot equates to 14.86 hours of the total annual sunlight hours.

The number of spots is calculated for both the whole year and also during the winter period (21st September to 21st March) prior to an obstruction and after the obstruction is put in place. This provides a percentage of APSH for each of the time periods for each window assessed. The 2011 BRE Guidelines note that:

- *"In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day, but especially in the afternoon."*

- *"all main living rooms of dwellings…should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun";*

- *"If the main living room to a dwelling has a main window facing within 90° of due north, but a secondary window facing within 90° of due south, sunlight to the secondary window should be checked."*

- *"…a south facing window will, in general, receive most sunlight, while a north facing one will receive it only on a handful of occasions. East and west facing windows will receive sunlight only at certain times of day".*

When a room has multiple windows, not all may have a southerly orientation however, these windows may contribute to the levels of sunlight within a given room even if by 1-2% APSH. As well as the assessment on a window basis the BRE guidelines provide that an assessment can be undertaken on a room basis.

Whilst the emphasis of the BRE guidelines is in regards to living rooms, it is not always possible to determine the room uses within all of the properties assessed and therefore typically all windows or all rooms with windows facing within 90 degrees of due south and facing the site are assessed.

Criteria

The BRE provide that for existing buildings a window maybe adversely affected if a point at the centre of a window receives:

- Less than 25% of the APSH during the whole year, of which 5% APSH must be in the winter period; and
- Receives less than 0.8 times its former sunlight hours in either time period; and
- Has a reduction in sunlight for the whole year more than 4% APSH.

In terms of the assessment on a room basis the criteria applied is the same.

For proposed buildings the BRE provide (paragraph 3.1.15) that a dwelling or building which has a particular requirement for sunlight will appear reasonably sunlit provided:

- At least one main window faces within 90 degrees of due south; and

- Centre of one main living room window can receive 25% of APSH including 5% APSH in the winter months.

It continues that where groups of dwellings are planned the layout should aim to maximise the number of living rooms that meet the above recommendations.

Overshadowing

As well as daylight and sunlight amenity to neighbouring dwellings, planning policy often refers to the levels of overshadowing to amenity areas such as parks, public squares, playgrounds etc. The BRE guidelines provide two methods of calculation in regards to overshadowing which are as follows:

Sun Hours on Ground

Methodology

This method of overshadowing assessment uses the sun on ground indicator to determine the areas which receive direct sunlight and those which do not. This method applies to both new and existing areas of amenity space. The BRE Guidelines suggest that the Spring Equinox (21st March) is a suitable date for the assessment as this is the midpoint of the suns position throughout the year. Using specialist software, the path of the sun is tracked to determine where the sun would reach the ground and where it would not.

Criteria

The BRE guidelines recommend that at least half of an amenity space should receive at least two hours of direct sunlight on March 21st. In regards to existing spaces where the existing sunlit area is less than half of the area, the area which receives two hours of sunlight should not be reduced by more than 20% (it should retain 0.8 times its former value).

Transient Overshadowing

The BRE guidelines suggest that where large buildings are proposed which may affect a number of gardens or open spaces, it is useful to plot a shadow plan to illustrate the location of shadows at different times of the day and year. For the purpose of this assessment, shadow has been mapped at the following times of the year:

- 21st March (Spring equinox)
- 21st June (Summer solstice)
- 21st December (Winter solstice)

The September equinox is not assessed as this would provide the same results as those for March 21st.

For each of these dates the overshadowing is calculated at hourly intervals throughout the day however some images may not be present given the early sunset during the Winter period.

The BRE guidelines do not provide any criteria for transient overshadowing. Therefore the analysis provides a description of where additional shadow is cast as a result of a development with professional judgement to determine the effect comparing the shadow resulting from the proposed development against that of the existing site.

Light pollution and Solar Glare

Light pollution is defined as any light emitting from artificial sources into spaces where it is not wanted for example from offices into neighbouring residential properties where it could cause a nuisance. The ILP Guidance notes provide details of how to measure light pollution and criteria based on the urban density of the respective area to determine the acceptability of the light levels.

Solar glare is particularly important at pedestrian and road junctions as well as along railway lines where the glare can cause a temporary blinding to drivers or pedestrians. Glare can occur from reflective materials such as glazed areas or metal cladding on the facades. This assessment is therefore undertaken from viewpoints surrounding the site at junctions and positioned at the driver's eye level. Focal points are dictated by the location of signals or oncoming traffic.

Other Amenity Considerations

Daylight and sunlight is one factor among many under the heading of residential amenity considerations for any given development design or planning application; others include:

- outlook
- sense of enclosure
- privacy
- access to outdoor space e.g. balconies or communal garden/courtyard

Appendix 02

Drawings

SOURCES OF INFORMATION

IR06-12073-VERTEX

IR16-17-1102-BGY

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NOTES:
EXISTING SCENARIO SHOWN IN GREY
.
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N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:

FORTESS GROVE

KENTISH TOWN, NW5 2HD

DRAWING NAME:

PLAN VIEW

EXISTING SCENARIO

DWN BY	SCALE	CHK BY	STATUS	DATE
BG	1:500@A3	AH	-	NOV 17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12073	02	01	01	-

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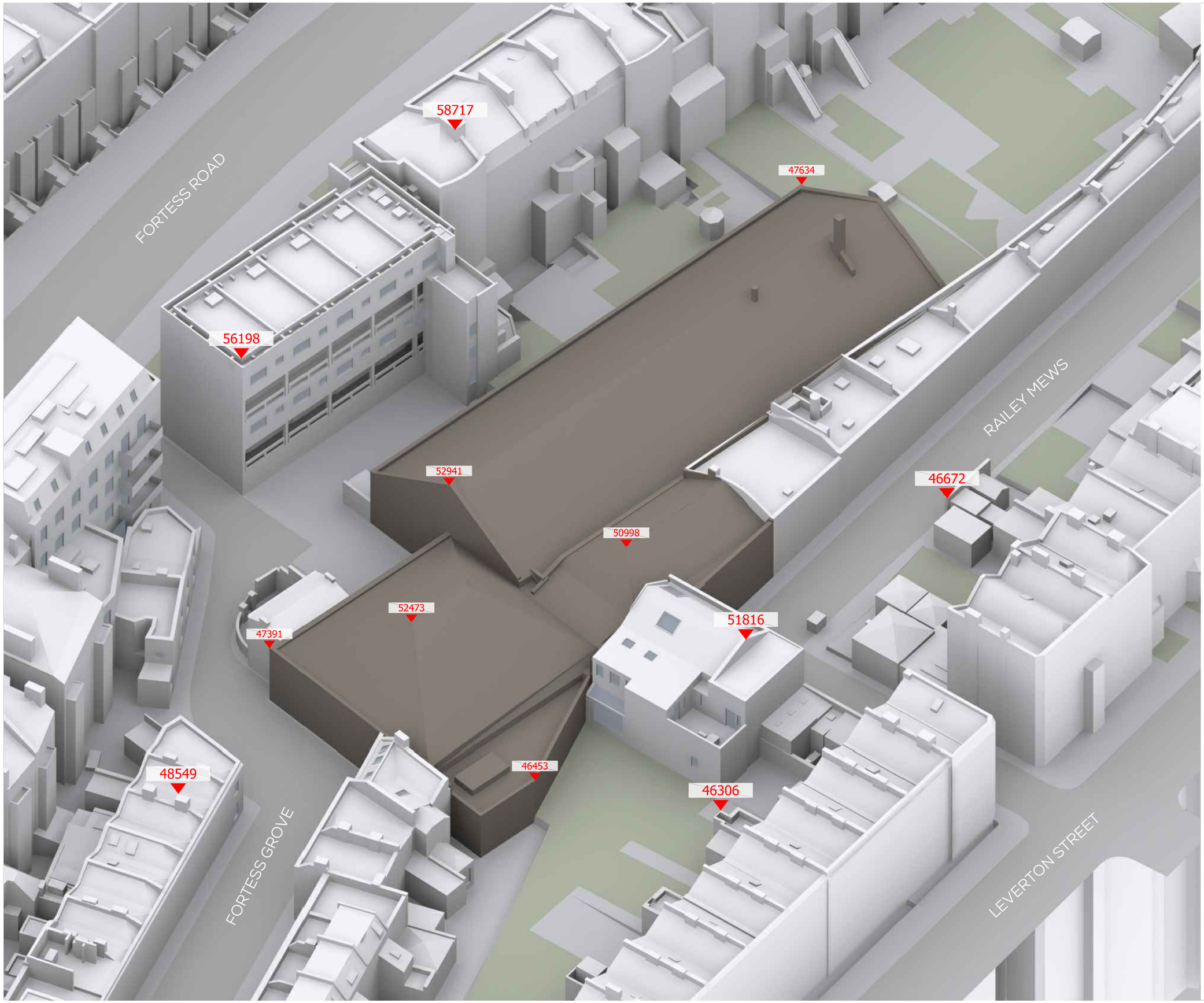

SOURCES OF INFORMATION

IR06-12073-VERTEX

IR16-17-1102-BGY

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NOTES:
EXISTING SCENARIO SHOWN IN GREY
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N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:

FORTESS GROVE

KENTISH TOWN, NW5 2HD

DRAWING NAME:

3D VIEW

EXISTING SCENARIO

DWN BY	SCALE	CHK BY	STATUS	DATE
BG	NTS	AH	-	NOV 17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12073	02	01	02	-

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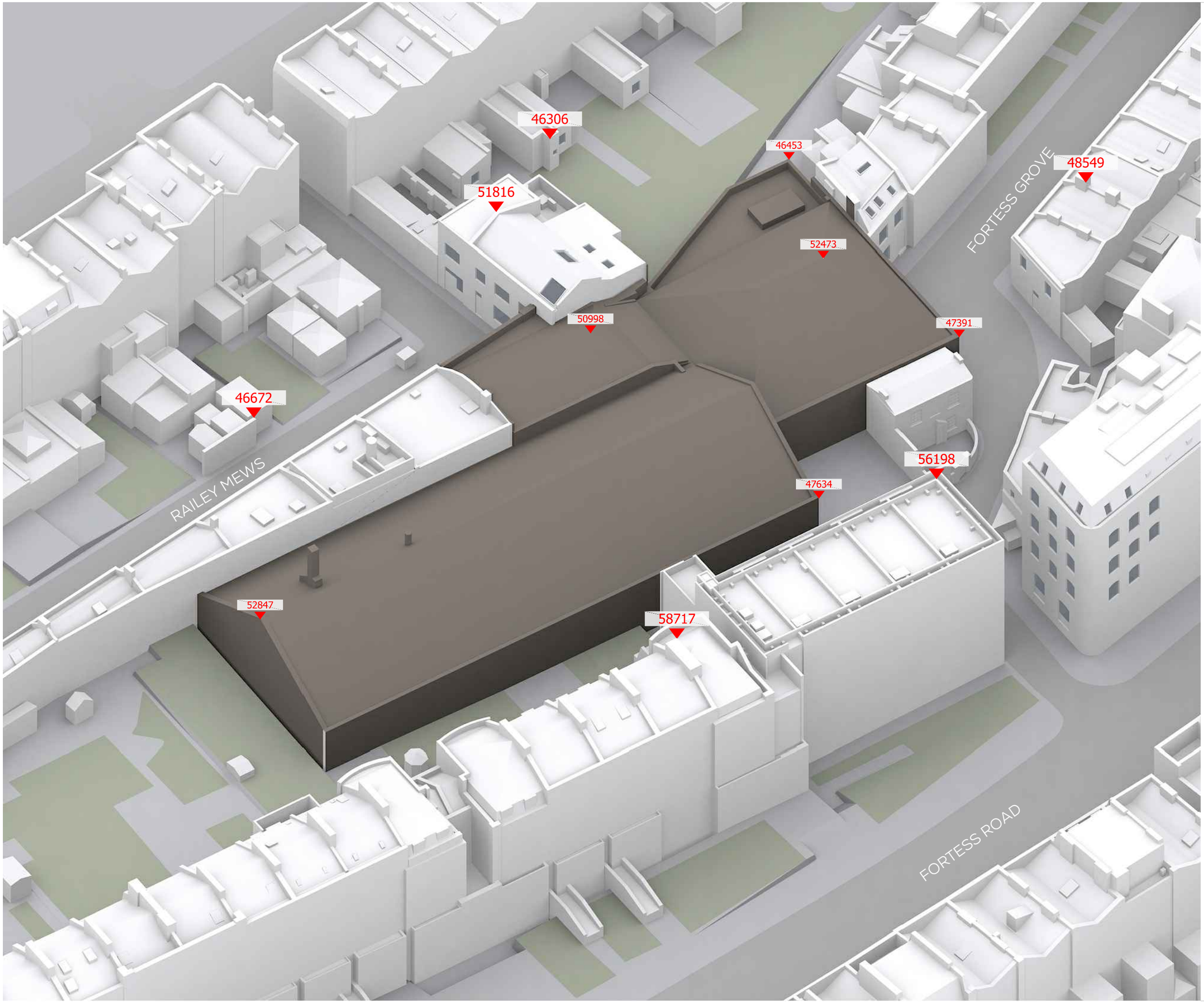

SOURCES OF INFORMATION

IR06-12073-VERTEX

IR16-17-1102-BGY

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NOTES:

EXISTING SCENARIO SHOWN IN GREY

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N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:

FORTESS GROVE

KENTISH TOWN, NW5 2HD

DRAWING NAME:

3D VIEW

EXISTING SCENARIO

DWN BY	SCALE	CHK BY	STATUS	DATE
BG	NTS	AH	-	NOV 17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12073	02	01	03	-

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Proposed

SOURCES OF INFORMATION

IR06-12073-VERTEX

IR16-17-1102-BGY

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NOTES:
PROPOSED SCHEME SHOWN IN TEAL
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N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:

FORTESS GROVE

KENTISH TOWN, NW5 2HD

DRAWING NAME:

PLAN VIEW

PROPOSED SCHEME IR-16
RECEIVED 02/11/17

DWN BY	SCALE	CHK BY	STATUS	DATE
BG	1:500@A3	AH	-	NOV 17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12073	02	01	04	-

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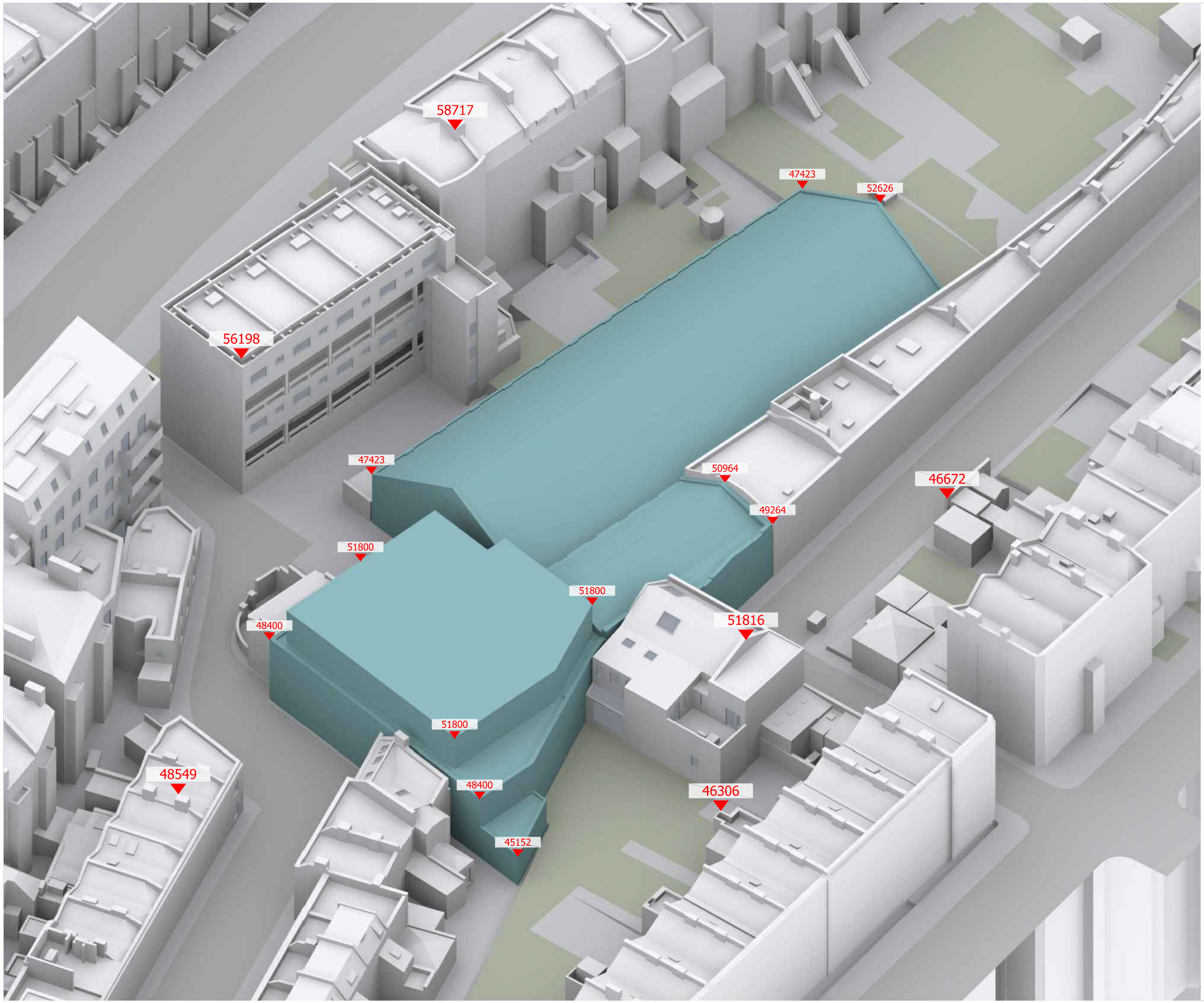

SOURCES OF INFORMATION

IR06-12073-VERTEX

IR16-17-1102-BGY

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NOTES:
PROPOSED SCHEME SHOWN IN TEAL
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N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:

FORTESS GROVE

KENTISH TOWN, NW5 2HD

DRAWING NAME:

3D VIEW

PROPOSED SCHEME IR-16
RECEIVED 02/11/17

DWN BY	SCALE	CHK BY	STATUS	DATE
BG	NTS	AH	-	NOV 17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12073	02	01	05	-

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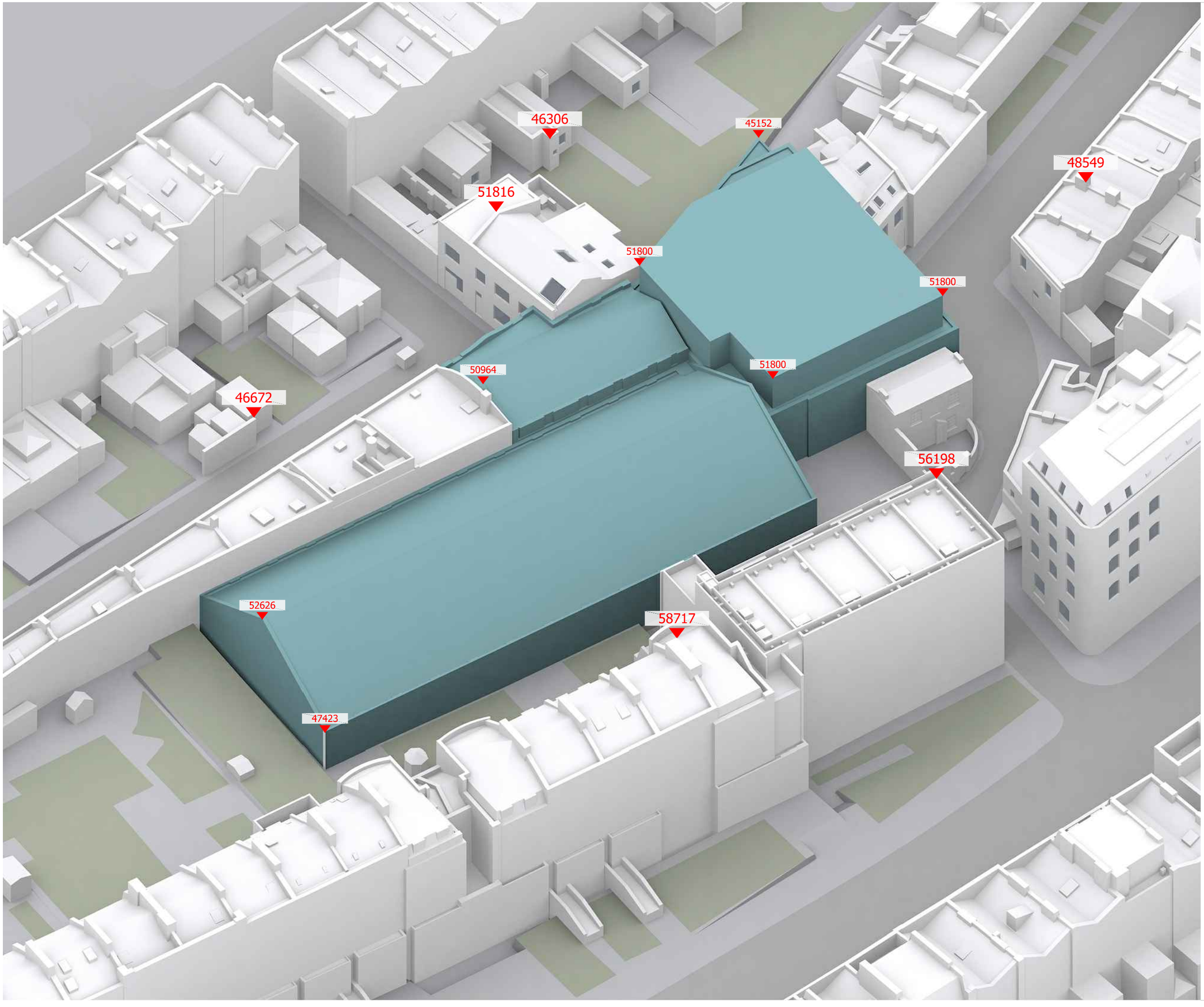

SOURCES OF INFORMATION

IR06-12073-VERTEX

IR16-17-1102-BGY

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NOTES:
PROPOSED SCHEME SHOWN IN TEAL
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N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:

FORTESS GROVE

KENTISH TOWN, NW5 2HD

DRAWING NAME:

3D VIEW

PROPOSED SCHEME IR-16
RECEIVED 02/11/17

DWN BY	SCALE	CHK BY	STATUS	DATE
BG	NTS	AH	-	NOV 17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12073	02	01	06	-

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Appendix 03

Daylight and SunlightResults

VERTICAL SKY COMPONENT

FLOOR	ROOM	ROOM USE	WINDOW	EXISTING	PROPOSED I	LOSS	%
1 FORTESS GROVE							
F00	R1	UNKNOWN	W1	23.4	21.6	1.8	7.69
			W2	25.1	20.6	4.5	17.93
F01	R1	UNKNOWN	W1	30.6	28.6	2.0	6.54
			W2	29.5	24.5	5.0	16.95
	R2	UNKNOWN	W3	29.9	25.9	4.0	13.38
19 FORTESS GROVE							
F00	R1	UNKNOWN	W1	23.7	22.9	0.8	3.38
F01	R1	UNKNOWN	W1	29.2	26.5	2.7	9.25
			W3[(2)]	79.3	70.0	9.3	11.73
			W2[(2)]	80.3	74.9	5.4	6.72
	R2	UNKNOWN	W4	29.0	27.2	1.8	6.21
			W5[(2)]	79.0	76.3	2.7	3.42
21 FORTESS GROVE							
F00	R1	UNKNOWN	W1	26.4	24.5	1.9	7.20
	R2	UNKNOWN	W2	27.3	25.0	2.3	8.42
F01	R1	UNKNOWN	W1	31.6	28.6	3.0	9.49
	R2	UNKNOWN	W2	31.3	28.9	2.4	7.67
			W3	24.8	24.4	0.4	1.61
22 FORTESS GROVE							
F00	R1[(1)]	KITCHEN	W1	26.0	23.0	3.0	11.54
	R2	LIVING ROOM	W2	25.7	24.4	1.3	5.06
1-12 ELEANOR HOUSE							
F01	R2[(1)]	KITCHEN	W2	0.6	0.6	0.0	0.00
	R3[(1)]	KITCHEN	W3	4.9	4.9	0.0	0.00
	R5[(1)]	KITCHEN	W5	6.5	6.3	0.2	3.08
	R7[(1)]	KITCHEN	W7	7.3	6.9	0.4	5.48
	R9[(1)]	KITCHEN	W9	8.4	7.4	1.0	11.90
F02	R3	BEDROOM	W2 (F01 Dup	17.9	18.0	-0.1	-0.56
	R5	BEDROOM	W4	29.2	29.3	-0.1	-0.34
	R7	BEDROOM	W6	33.4	33.3	0.1	0.30
	R9	BEDROOM	W8	34.7	34.4	0.3	0.86
	R11	BEDROOM	W10	35.5	34.8	0.7	1.97
F03	R1[(1)]	KITCHEN	W2	1.2	1.2	0.0	0.00
	R2[(1)]	KITCHEN	W3	10.1	10.2	-0.1	-0.99
	R5[(1)]	KITCHEN	W5	12.2	12.3	-0.1	-0.82
	R7[(1)]	KITCHEN	W7	12.7	12.8	-0.1	-0.79
	R9[(1)]	KITCHEN	W9	13.0	13.1	-0.1	-0.77
F04	R1	BEDROOM	W1	33.5	33.5	0.0	0.00
	R3	BEDROOM	W3	39.0	39.0	0.0	0.00
	R5	BEDROOM	W5	39.1	39.1	0.0	0.00
	R7	BEDROOM	W7	39.2	39.2	0.0	0.00
	R9	BEDROOM	W9	39.2	39.2	0.0	0.00
28-34 PIANO WORKS							
F00	R1	UNKNOWN	W2	17.0	16.2	0.8	4.71
			W1	13.8	13.7	0.1	0.72
	R2	UNKNOWN	W2 (F00 Dup	17.0	16.2	0.8	4.71
	R3	UNKNOWN	W3	5.9	5.9	0.0	0.00
	R4	UNKNOWN	W3 (F00 Dup	5.9	5.9	0.0	0.00
	R5	UNKNOWN	W5	19.5	19.3	0.2	1.03
			W4	2.8	2.8	0.0	0.00
F01	R1	BEDROOM	W1	16.7	16.7	0.0	0.00
			W2	24.0	23.3	0.7	2.92
	R6	LKD	W5	17.7	17.6	0.1	0.56
	R7	BEDROOM	W6	33.1	32.1	1.0	3.02
	R9	LKD	W7	34.4	34.4	0.0	0.00
			W8	33.8	33.8	0.0	0.00
			W9	24.1	24.1	0.0	0.00

[(1)] KITCHEN SMALLER THAN 13M^2
[(2)] WINDOW NOT VERTICAL

VERTICAL SKY COMPONENT

FLOOR	ROOM	ROOM USE	WINDOW	EXISTING	PROPOSED I	LOSS	%
			W10	19.6	19.6	0.0	0.00
F02	R1	BEDROOM	W2	26.7	26.6	0.1	0.37
			W1	22.0	22.0	0.0	0.00
	R6	BEDROOM	W7	34.7	34.7	0.0	0.00
			W8	30.2	30.2	0.0	0.00
	R7	LKD	W9	37.1	37.1	0.0	0.00
			W10	36.9	36.9	0.0	0.00
			W11	36.7	36.7	0.0	0.00
			W12	28.3	28.3	0.0	0.00
			W13	24.3	24.3	0.0	0.00
F03	R1	BEDROOM	W1	31.4	31.4	0.0	0.00
			W2	38.4	38.4	0.0	0.00
	R6	BEDROOM	W7	38.1	38.1	0.0	0.00
			W8	35.7	35.7	0.0	0.00
	R7	LKD	W10	38.6	38.6	0.0	0.00
			W11	38.6	38.6	0.0	0.00
			W12	34.6	34.6	0.0	0.00
			W13	32.5	32.5	0.0	0.00
F04	R8	LKD	W1(2)	54.6	54.6	0.0	0.00
			W2(2)	54.6	54.6	0.0	0.00
			W3(2)	56.1	56.1	0.0	0.00
			W4(2)	56.1	56.1	0.0	0.00
			W5(2)	56.1	56.1	0.0	0.00
			W6(2)	56.9	56.9	0.0	0.00
	R11	BEDROOM	W10(2)	55.1	55.1	0.0	0.00
			W11(2)	56.5	56.5	0.0	0.00
1 RAILEY MEWS							
F00	R2	BEDROOM	W1	27.6	27.7	-0.1	-0.36
			W2	28.9	29.0	-0.1	-0.35
	R3	BEDROOM	W4	25.0	25.3	-0.3	-1.20
			W5	19.3	19.4	-0.1	-0.52
	R4	BEDROOM	W6	24.0	19.0	5.0	20.83
			W8(2)	60.6	42.7	17.9	29.54
	R5	BEDROOM	W7	31.6	29.6	2.0	6.33
F01	R1	BEDROOM	W1	32.2	32.2	0.0	0.00
			W12	32.5	32.2	0.3	0.92
			W13	34.0	33.5	0.5	1.47
	R2	LIVING ROOM	W2	32.6	32.7	-0.1	-0.31
			W3	31.8	32.1	-0.3	-0.94
			W4	25.2	26.5	-1.3	-5.16
			W14(2)	84.5	84.5	0.0	0.00
			W15(2)	87.5	87.0	0.5	0.57
	R3	LKD	W6	35.0	21.1	13.9	39.71
			W7	34.6	25.7	8.9	25.72
			W8	24.5	18.5	6.0	24.49
			W9	23.8	23.8	0.0	0.00
			W10	22.5	22.5	0.0	0.00
			W17(2)	96.1	94.2	1.9	1.98
			W16(2)	96.3	91.2	5.1	5.30
41-49 LEVERTON STREET							
F00	R1	UNKNOWN	W3	32.2	30.4	1.8	5.59
	R2	UNKNOWN	W4	28.2	25.7	2.5	8.87
	R3	UNKNOWN	W5	29.8	27.1	2.7	9.06
	R4	UNKNOWN	W6	18.9	17.6	1.3	6.88
	R5	UNKNOWN	W7	22.8	21.8	1.0	4.39

(1) KITCHEN SMALLER THAN 13M^2
(2) WINDOW NOT VERTICAL

NO SKY LINE

FLOOR	ROOM	ROOM USE	EXISTING	PROPOSED I	LOSS	%
1 FORTESS GROVE						
F00	R1	UNKNOWN	91.8	91.2	0.6	0.65
F01	R1	UNKNOWN	99.1	99.1	0.0	0.00
	R2	UNKNOWN	98.0	88.4	9.6	9.80
19 FORTESS GROVE						
F00	R1	UNKNOWN	50.3	47.5	2.8	5.57
F01	R1	UNKNOWN	98.8	97.8	1.0	1.01
	R2	UNKNOWN	99.1	98.8	0.3	0.30
21 FORTESS GROVE						
F00	R1	UNKNOWN	85.7	62.0	23.7	27.65
	R2	UNKNOWN	86.8	63.0	23.8	27.42
F01	R1	UNKNOWN	90.7	60.8	29.9	32.97
	R2	UNKNOWN	82.2	60.4	21.8	26.52
22 FORTESS GROVE						
F00	R1[1]	KITCHEN	93.6	87.9	5.7	6.09
	R2	LIVING ROOM	75.6	64.7	10.9	14.42
1-12 ELEANOR HOUSE						
F01	R2[1]	KITCHEN	30.2	31.5	-1.3	-4.30
	R3[1]	KITCHEN	86.3	86.3	0.0	0.00
	R5[1]	KITCHEN	89.6	89.6	0.0	0.00
	R7[1]	KITCHEN	90.2	90.2	0.0	0.00
	R9[1]	KITCHEN	90.1	90.1	0.0	0.00
F02	R3	BEDROOM	93.5	93.5	0.0	0.00
	R5	BEDROOM	99.0	99.0	0.0	0.00
	R7	BEDROOM	99.6	99.6	0.0	0.00
	R9	BEDROOM	99.6	99.6	0.0	0.00
	R11	BEDROOM	99.6	99.6	0.0	0.00
F03	R1[1]	KITCHEN	34.4	34.4	0.0	0.00
	R2[1]	KITCHEN	88.6	88.6	0.0	0.00
	R5[1]	KITCHEN	90.1	90.1	0.0	0.00
	R7[1]	KITCHEN	90.3	90.3	0.0	0.00
	R9[1]	KITCHEN	90.1	90.1	0.0	0.00
F04	R1	BEDROOM	98.7	98.7	0.0	0.00
	R3	BEDROOM	99.4	99.4	0.0	0.00
	R5	BEDROOM	99.6	99.6	0.0	0.00
	R7	BEDROOM	99.6	99.6	0.0	0.00
	R9	BEDROOM	99.6	99.6	0.0	0.00
28-34 PIANO WORKS						
F00	R1	UNKNOWN	93.2	93.2	0.0	0.00
	R2	UNKNOWN	78.1	78.1	0.0	0.00
	R3	UNKNOWN	63.0	63.0	0.0	0.00
	R4	UNKNOWN	99.0	99.0	0.0	0.00
	R5	UNKNOWN	72.2	71.7	0.5	0.69
F01	R1	BEDROOM	99.1	99.1	0.0	0.00
	R6	LKD	54.8	54.8	0.0	0.00
	R7	BEDROOM	96.1	96.1	0.0	0.00
	R9	LKD	99.9	99.9	0.0	0.00
F02	R1	BEDROOM	99.5	99.5	0.0	0.00
	R6	BEDROOM	98.4	98.4	0.0	0.00
	R7	LKD	99.9	99.9	0.0	0.00
F03	R1	BEDROOM	99.5	99.5	0.0	0.00
	R6	BEDROOM	98.8	98.8	0.0	0.00
	R7	LKD	100.0	100.0	0.0	0.00
F04	R8	LKD	99.1	99.1	0.0	0.00
	R11	BEDROOM	97.2	97.2	0.0	0.00
1 RAILEY MEWS						

[1] KITCHEN SMALLER THAN 13M^2

NO SKY LINE						
FLOOR	ROOM	ROOM USE	EXISTING	PROPOSED I	LOSS	%
F00	R2	BEDROOM	99.3	99.3	0.0	0.00
	R3	BEDROOM	99.4	99.5	-0.1	-0.10
	R4	BEDROOM	99.4	98.6	0.8	0.80
	R5	BEDROOM	90.4	86.5	3.9	4.31
F01	R1	BEDROOM	96.7	96.7	0.0	0.00
	R2	LIVING ROOM	100.0	100.0	0.0	0.00
	R3	LKD	99.1	99.1	0.0	0.00
41-49 LEVERTON STREET						
F00	R1	UNKNOWN	91.7	77.0	14.7	16.03
	R2	UNKNOWN	76.7	48.3	28.4	37.03
	R3	UNKNOWN	44.8	19.1	25.7	57.37
	R4	UNKNOWN	88.2	88.0	0.2	0.23
	R5	UNKNOWN	59.2	49.2	10.0	16.89

(1) KITCHEN SMALLER THAN 13M^2

Annual Probable Sunlight Hours (APSH)

ANNUAL PROBABLE SUNLIGHT HOURS

FLOOR	ROOM	ROOM USE	WINDOW	ORIENTATIO	EXISTING		PROPOSED IR16		TOTAL	WINTER
					TOTAL	WINTER	TOTAL	WINTER	% LOSS	% LOSS
1 FORTESS GROVE										
F00	R1	UNKNOWN	W1	84 →	N/A	N/A	N/A	N/A	N/A	N/A
			W2	18 ↑	N/A	N/A	N/A	N/A	N/A	N/A
F01	R1	UNKNOWN	W1	84 →	N/A	N/A	N/A	N/A	N/A	N/A
			W2	18 ↑	N/A	N/A	N/A	N/A	N/A	N/A
	R2	UNKNOWN	W3	18 ↑	N/A	N/A	N/A	N/A	N/A	N/A
19 FORTESS GROVE										
F00	R1	UNKNOWN	W1	263 ←	39	10	39	10	0	0
F01	R1	UNKNOWN	W1	263 ←	44	13	44	13	0	0
			W3(2)	263 ←	47	15	47	15	0	0
			W2(2)	263 ←	47	15	47	15	0	0
	R2	UNKNOWN	W4	263 ←	34	7	34	7	0	0
			W5(2)	263 ←	45	12	45	12	0	0
21 FORTESS GROVE										
F00	R1	UNKNOWN	W1	69 →	N/A	N/A	N/A	N/A	N/A	N/A
	R2	UNKNOWN	W2	69 →	N/A	N/A	N/A	N/A	N/A	N/A
F01	R1	UNKNOWN	W1	69 →	N/A	N/A	N/A	N/A	N/A	N/A
	R2	UNKNOWN	W2	69 →	N/A	N/A	N/A	N/A	N/A	N/A
			W3	22 ↑	N/A	N/A	N/A	N/A	N/A	N/A
22 FORTESS GROVE										
F00	R1(1)	KITCHEN	W1	69 →	N/A	N/A	N/A	N/A	N/A	N/A
	R2	LIVING ROOM	W2	69 →	N/A	N/A	N/A	N/A	N/A	N/A
1-12 ELEANOR HOUSE										
F01	R2(1)	KITCHEN	W2	108 ↘	1	1	1	1	0	0
	R3(1)	KITCHEN	W3	108 ↘	11	6	11	6	0	0
	R5(1)	KITCHEN	W5	108 ↘	13	6	14	6	-7.69	0
	R7(1)	KITCHEN	W7	108 ↘	13	6	14	6	-7.69	0
	R9(1)	KITCHEN	W9	108 ↘	14	7	15	6	-7.14	14.29
F02	R3	BEDROOM	W2 (F01 D	108 ↘	46	18	46	18	0	0
	R5	BEDROOM	W4	108 ↘	57	18	57	18	0	0
	R7	BEDROOM	W6	108 ↘	57	18	57	18	0	0
	R9	BEDROOM	W8	108 ↘	58	19	58	19	0	0
	R11	BEDROOM	W10	108 ↘	58	19	57	18	1.72	5.26
F03	R1(1)	KITCHEN	W2	108 ↘	1	1	1	1	0	0
	R2(1)	KITCHEN	W3	108 ↘	15	9	15	9	0	0
	R5(1)	KITCHEN	W5	108 ↘	19	9	19	9	0	0
	R7(1)	KITCHEN	W7	108 ↘	19	9	19	9	0	0
	R9(1)	KITCHEN	W9	108 ↘	19	9	19	9	0	0
F04	R1	BEDROOM	W1	108 ↘	59	20	59	20	0	0
	R3	BEDROOM	W3	108 ↘	60	20	60	20	0	0
	R5	BEDROOM	W5	108 ↘	60	20	60	20	0	0
	R7	BEDROOM	W7	108 ↘	60	20	60	20	0	0
	R9	BEDROOM	W9	108 ↘	60	20	60	20	0	0
28-34 PIANO WORKS										
F00	R1	UNKNOWN	W2	94 →	16	0	12	0	25	0
			W1	18 ↑	11	0	10	0	9.09	0
	R2	UNKNOWN	W2 (F00 I	94 →	16	0	12	0	25	0
	R3	UNKNOWN	W3	94 →	6	0	6	0	0	0
	R4	UNKNOWN	W3 (F00 I	94 →	6	0	6	0	0	0
	R5	UNKNOWN	W5	94 →	26	5	26	5	0	0
			W4	3 ↑	0	0	0	0	0	0
F01	R1	BEDROOM	W1	18 ↑	12	0	12	0	0	0
			W2	94 →	34	11	33	10	2.94	9.09
	R6	LKD	W5	3 ↑	N/A	N/A	N/A	N/A	N/A	N/A
	R7	BEDROOM	W6	94 →	33	6	33	6	0	0
	R9	LKD	W7	273 ←	N/A	N/A	N/A	N/A	N/A	N/A
			W8	273 ←	N/A	N/A	N/A	N/A	N/A	N/A
			W9	18 ↑	N/A	N/A	N/A	N/A	N/A	N/A
			W10	18 ↑	N/A	N/A	N/A	N/A	N/A	N/A

(1) KITCHEN SMALLER THAN 13M^2
(2) WINDOW NOT VERTICAL

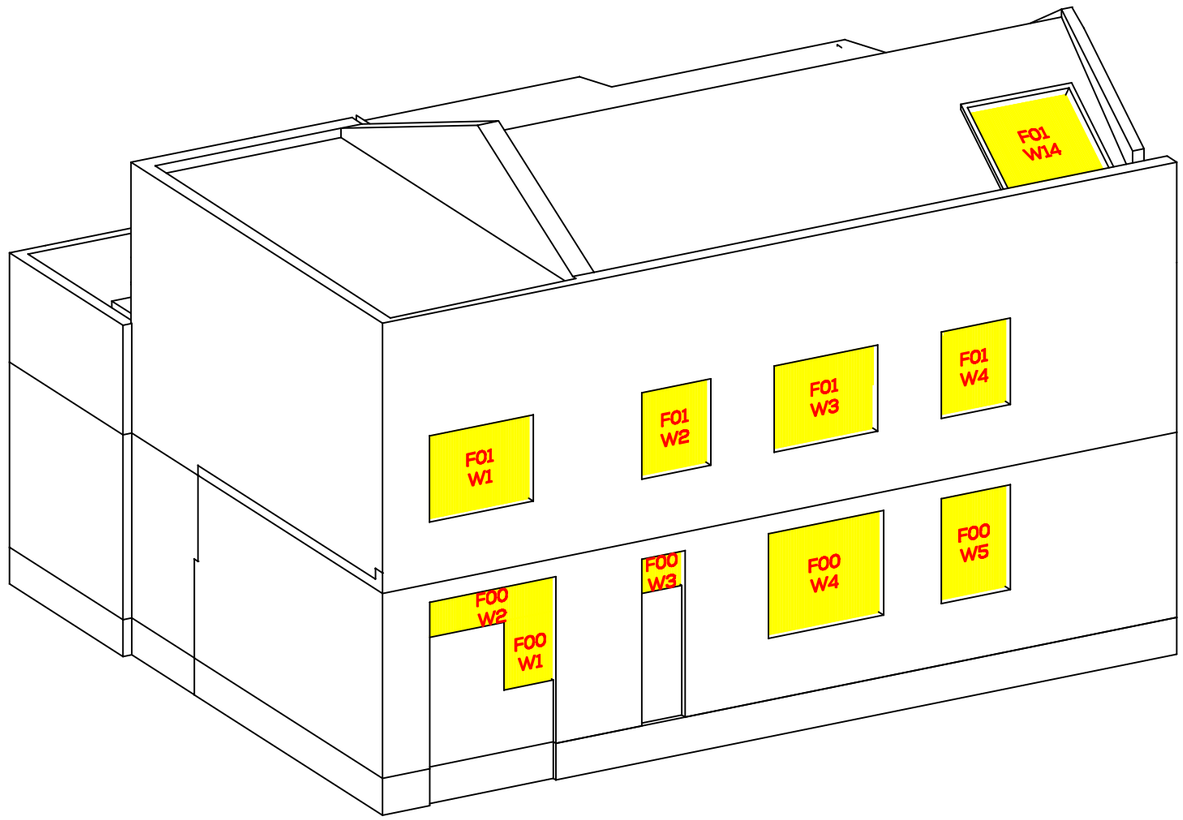
ANNUAL PROBABLE SUNLIGHT HOURS

FLOOR	ROOM	ROOM USE	WINDOW	ORIENTATIO	EXISTING		PROPOSED IR16		TOTAL	WINTER
					TOTAL	WINTER	TOTAL	WINTER	% LOSS	% LOSS
F02	R1	BEDROOM	W2	94 →	36	12	36	12	0	0
			W1	18 ↑	13	0	13	0	0	0
	R6	BEDROOM	W7	94 →	41	7	41	7	0	0
			W8	94 →	27	1	27	1	0	0
	R7	LKD	W9	273 ←	N/A	N/A	N/A	N/A	N/A	N/A
			W10	273 ←	N/A	N/A	N/A	N/A	N/A	N/A
			W11	273 ←	N/A	N/A	N/A	N/A	N/A	N/A
			W12	18 ↑	N/A	N/A	N/A	N/A	N/A	N/A
			W13	18 ↑	N/A	N/A	N/A	N/A	N/A	N/A
F03	R1	BEDROOM	W1	18 ↑	13	0	13	0	0	0
			W2	94 →	52	15	52	15	0	0
	R6	BEDROOM	W7	94 →	52	15	52	15	0	0
			W8	94 →	40	7	40	7	0	0
	R7	LKD	W10	273 ←	N/A	N/A	N/A	N/A	N/A	N/A
			W11	273 ←	N/A	N/A	N/A	N/A	N/A	N/A
			W12	18 ↑	N/A	N/A	N/A	N/A	N/A	N/A
			W13	18 ↑	N/A	N/A	N/A	N/A	N/A	N/A
F04	R8	LKD	W1[(2)]	273 ←	49	15	49	15	0	0
			W2[(2)]	273 ←	49	15	49	15	0	0
			W3[(2)]	19 ↑	14	0	14	0	0	0
			W4[(2)]	19 ↑	14	0	14	0	0	0
			W5[(2)]	19 ↑	14	0	14	0	0	0
			W6[(2)]	93 →	51	15	51	15	0	0
	R11	BEDROOM	W10[(2)]	93 →	51	15	51	15	0	0
			W11[(2)]	93 →	51	15	51	15	0	0
1 RAILEY MEWS										
F00	R2	BEDROOM	W1	9 ↑	N/A	N/A	N/A	N/A	N/A	N/A
			W2	9 ↑	N/A	N/A	N/A	N/A	N/A	N/A
	R3	BEDROOM	W4	9 ↑	N/A	N/A	N/A	N/A	N/A	N/A
			W5	9 ↑	N/A	N/A	N/A	N/A	N/A	N/A
	R4	BEDROOM	W6	189 ↓	54	15	45	13	16.67	13.33
			W8[(2)]	189 ↓	69	23	41	14	40.58	39.13
	R5	BEDROOM	W7	189 ↓	70	19	65	19	7.14	0
F01	R1	BEDROOM	W1	9 ↑	5	0	5	0	0	0
			W12	189 ↓	76	24	75	23	1.32	4.17
			W13	189 ↓	76	23	75	22	1.32	4.35
	R2	LIVING ROOM	W2	9 ↑	5	0	6	0	-20	0
			W3	9 ↑	4	0	4	0	0	0
			W4	9 ↑	5	0	5	0	0	0
			W14[(2)]	9 ↑	10	0	10	0	0	0
			W15[(2)]	189 ↓	86	28	85	27	1.16	3.57
	R3	LKD	W6	189 ↓	78	24	47	15	39.74	37.5
			W7	189 ↓	75	24	55	20	26.67	16.67
			W8	189 ↓	46	14	30	10	34.78	28.57
			W9	99 →	45	12	45	12	0	0
			W10	99 →	49	15	49	15	0	0
			W17[(2)]	189 ↓	84	27	78	24	7.14	11.11
			W16[(2)]	189 ↓	84	27	69	21	17.86	22.22
41-49 LEVERTON STREET										
F00	R1	UNKNOWN	W3	278 ←	N/A	N/A	N/A	N/A	N/A	N/A
	R2	UNKNOWN	W4	278 ←	N/A	N/A	N/A	N/A	N/A	N/A
	R3	UNKNOWN	W5	278 ←	N/A	N/A	N/A	N/A	N/A	N/A
	R4	UNKNOWN	W6	278 ←	N/A	N/A	N/A	N/A	N/A	N/A
	R5	UNKNOWN	W7	278 ←	N/A	N/A	N/A	N/A	N/A	N/A

[(1)] KITCHEN SMALLER THAN 13M^2
[(2)] WINDOW NOT VERTICAL

Appendix 04

Window Maps



ELEVATION AA

SOURCES OF INFORMATION

IR06-12073-VERTEX

IR16-17-1102-BGY

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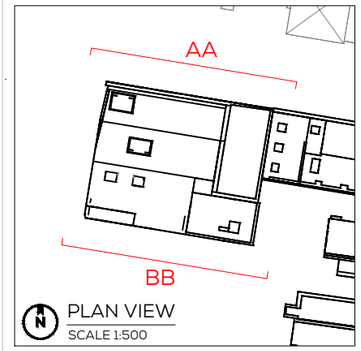

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NOTES:

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N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:

FORTESS GROVE

KENTISH TOWN, NW5 2HD

DRAWING NAME:

WINDOW MAP

1 RAILEY MEWS

DWN BY	SCALE	CHK BY	STATUS	DATE
BG	NTS @A3	AH	-	NOV 17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12073	02	02	02	-

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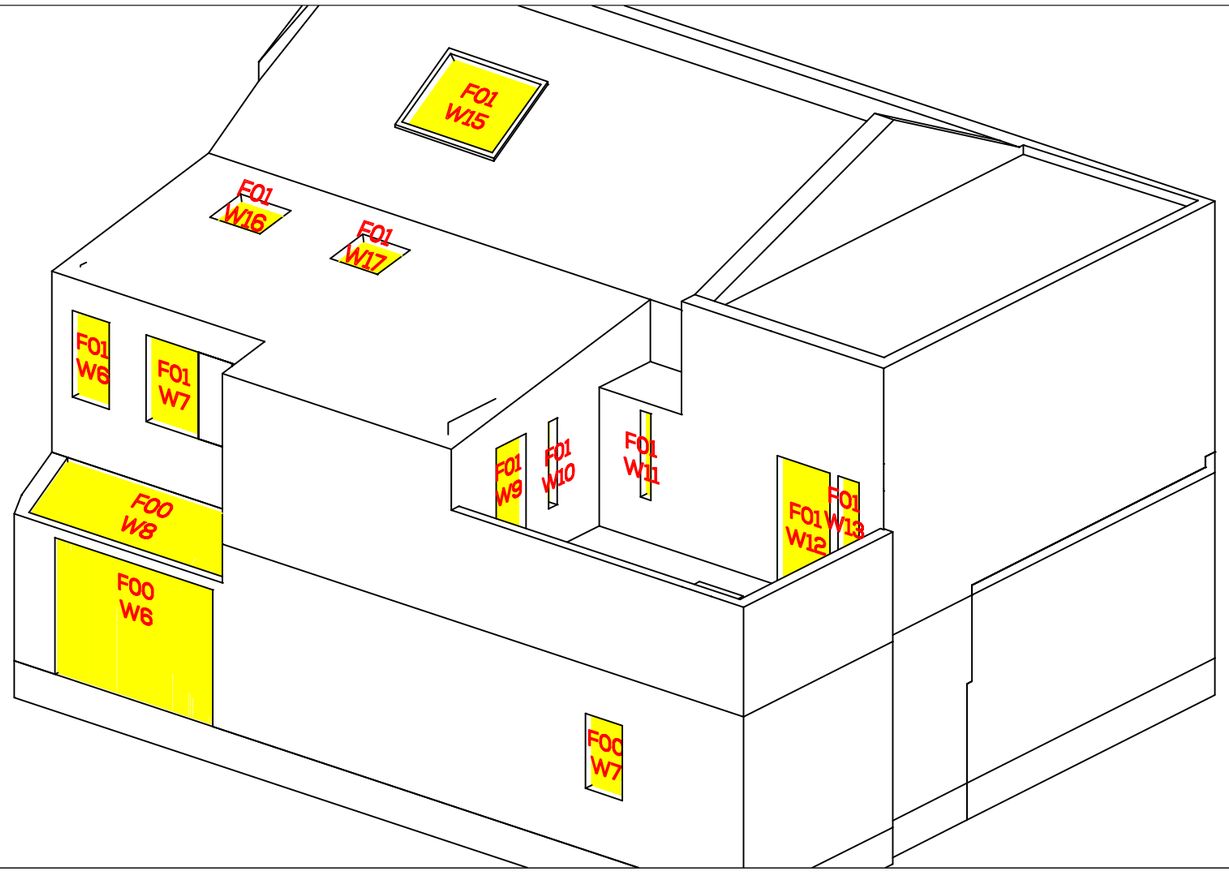
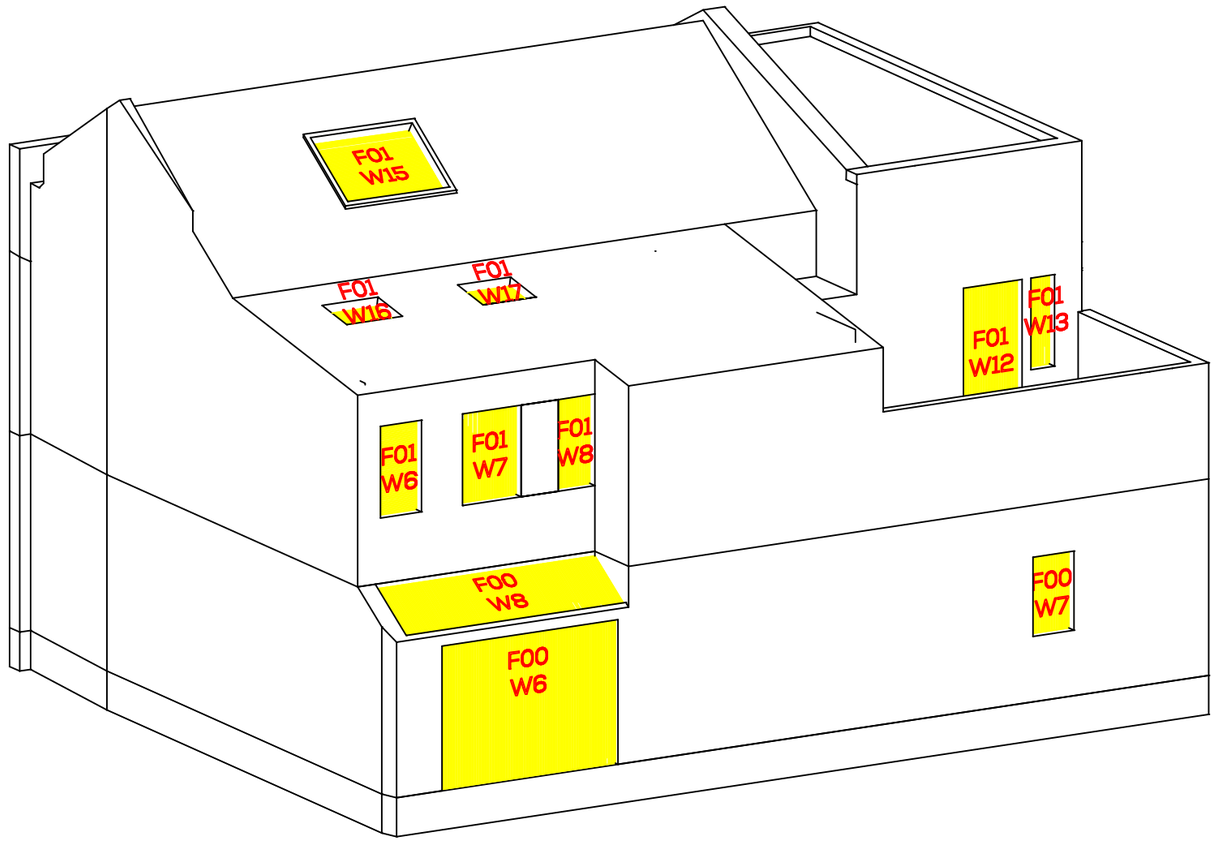


ELEVATION BB



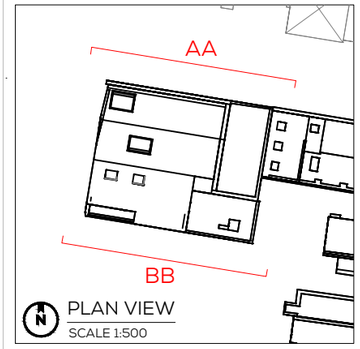
ELEVATION BB

SOURCES OF INFORMATION

IR06-12073-VERTEX

IR16-17-1102-BGY

ALL INFORMATION DISPLAYED IS SUBJECT TO A COMPLETE VERIFIABLE SITE SURVEY BEING UNDERTAKEN. GIA TAKES NO RESPONSIBILITY ON THE ACCURACY OR RELIABILITY OF THE DISPLAYED DATA SINCE A VERIFIED SITE SURVEY WAS NOT MADE AVAILABLE PRIOR TO THE GENERATION OF SUCH INFORMATION.



NOTES:

N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:

FORTESS GROVE

KENTISH TOWN, NW5 2HD

DRAWING NAME:

WINDOW MAP

1 RAILEY MEWS

DWN BY	SCALE	CHK BY	STATUS	DATE
BG	NTS @A3	AH	-	NOV 17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12073	02	02	03	-

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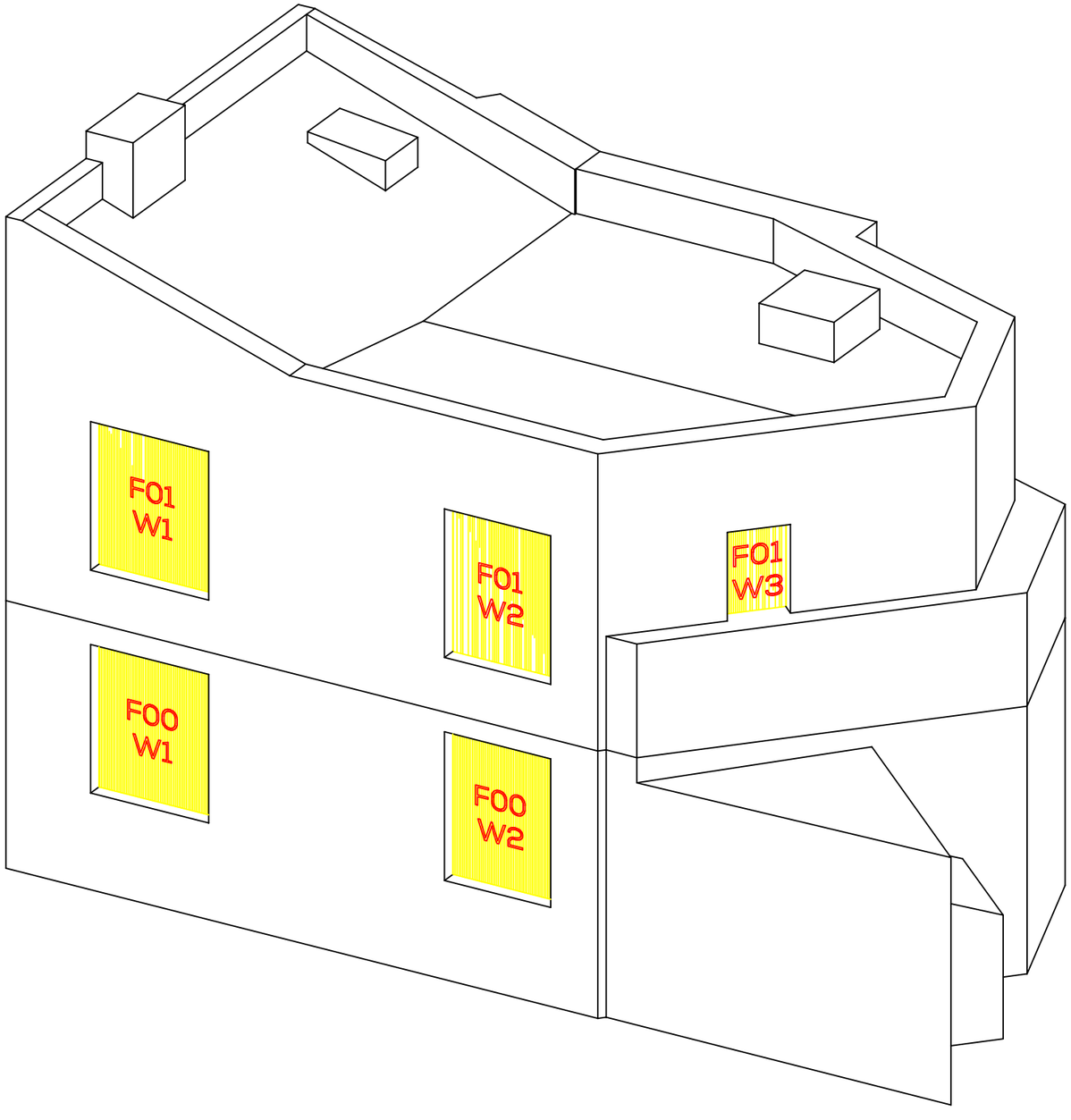

ELEVATION AA

SOURCES OF INFORMATION

IR06-12073-VERTEX

IR16-17-1102-BGY

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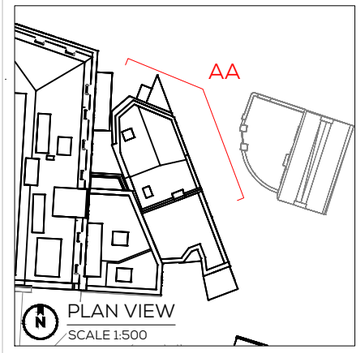

NOTES:

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N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:

FORTESS GROVE

KENTISH TOWN, NW5 2HD

DRAWING NAME:

WINDOW MAP

21 FORTESS GROVE

DWN BY	SCALE	CHK BY	STATUS	DATE
BG	NTS @A3	AH	-	NOV 17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12073	02	02	01	-

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