



Daylight and Sunlight

39 Fitzjohn's Avenue

Prepared by: Conor Tierney

Reference: 12470

Date: 18/09/2017

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Client:

Godfrey London

Issue Date:

18th September 2017

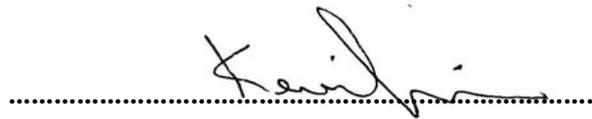
Document References:

12470-ct-17-0918-(DaySun)
Daylight and Sunlight Principles
Existing Drawings: 12470/REL01/IS01/01-03
Proposed Drawings: 12470/REL01/IS01-04-06
Daylight and Sunlight Results (REL01/IS01)

Author for and Behalf of GIA:

Conor Tierney

Authorisation for GIA:



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Appended to this report:

- Appendix 01 - Principles of Daylight and Sunlight
- Appendix 02 - Existing and Proposed Drawings
- Appendix 03 - Daylight and Sunlight Results

1.0 Executive Summary

GIA have been instructed to undertake a detailed technical assessment for the site at 39 Fitzjohn's Avenue to understand the potential daylight and sunlight changes that the proposed Bchitecture scheme (received 23rd August 2017) will have upon the surrounding properties.

The daylight and sunlight review within this report considers residential properties only as they are recognised by the Building Research Establishment (BRE) as having the highest expectation for natural light when compared to other uses, such as commercial. The criteria suggested within the BRE has been used to understand and compare the existing levels of light, and the light achieved subsequent to the development of the residential scheme.

In completing our assessments against the proposed scheme, our detailed technical analysis demonstrates that 37 of the 37 (100%) windows assessed are fully compliant with the BRE Guideline's primary daylight methodology, the Vertical Sky Component (VSC). Our analysis also demonstrates that 19 of the 20 rooms (95%) will demonstrate full BRE compliance to the No Sky Line (NSL) assessment. The one room which demonstrates transgressions shows a 22.15% change in NSL against a BRE target of 20%, which GIA would consider to be in keeping with the flexibility intended for the BRE.

In terms of sunlight, 24 windows which face within 90° of due south of the development site have been assessed with the Annual Probable Sunlight Hours (APSH) methodology. Of these 24 windows, 24 (100%) demonstrate full compliance with the BRE Guidelines.

In summary, our technical analysis concludes that the proposed scheme performs excellently from a daylight and sunlight perspective.

2.0 Introduction

Daylight and Sunlight

The technical analysis that forms the basis of this report has been predicated against the methodologies set out within the Building Research Establishment Guidelines entitled 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice (2011)'. 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 two main methodologies for daylight assessment, namely;

- **The Vertical Sky Component (VSC)**

The primary methodology is known as the Vertical Sky Component (VSC) which considers the potential for daylight by calculating the angle of vertical sky at the centre of each of the windows serving the residential buildings which look towards the site. This is a more simplistic approach and it could be considered as a "rule of thumb" to highlight whether there are any potential concerns to the amenity serving a particular property.

- **The No Sky Line (NSL);**

The second methodology is the No Sky Line or Daylight Distribution method. This simply assesses the change in position of the No Sky Line between the existing and proposed situations. It does consider the number and size of windows to a room, but still does not give any qualitative or quantitative assessment of the light in the room, only where sky can or cannot be seen.

The BRE provides one methodology for sunlight assessment:

- **Annual Probable Sunlight Hours (APSH)**

The APSH assessment considers any surrounding receptors that face within 90° due south of the development to be relevant for assessment. The BRE provides that a building will appear reasonably sunlit providing; at least one window wall faces within 90° due south, and the centre of at least one window to a living room can receive 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months.

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.

3.0 Sources of Information

In compiling this report we have used the following information:

GIA

Site Photographs

Google / Bing Maps

Aerial Imagery

FIND

OS Map

Vertex Modelling

IR02-12470_20170627_VERTEX-Photogrammetric Model

Proposed Scheme Model

IR05-230817-Bchitecture

4.0 Assumptions

- a) We have relied upon a photogrammetric model (circa 300mm tolerance) and site photographs to produce the three dimensional computer model which forms the basis of the technical analysis.
- b) All residential buildings have been identified by reference to the Valuation Office Agency (VOA) search and/or external observation.
- 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.
- d) Floor levels have been assumed for the adjoining properties. This dictates the level of the working plane which is relevant for the No Skyline assessment.

5.0 The Site

The site is located on Fitzjohn's Avenue, Hampstead in the London Borough of Camden. The site is bound to the east by Fitzjohn's Avenue, to the south by Nutley Terrace and to the west by Maresfield Gardens. The existing site occupies a corner of land on the junction of Fitzjohn's Avenue and Nutley Terrace, and currently comprises of a detached period house with a more modern extension.

GIA's understanding of the proposed scheme is illustrated in drawings 12470-REL01-IS01 01 to 03 shown within Appendix 02, and also within figure 01 below:



Figure 01 – Existing Site Condition (Shown in Green)

6.0 The Proposal

The proposal is for the comprehensive refurbishment of the existing building and an extension to provide additional floorspace. GIA's understanding of the proposed scheme is illustrated in drawings 12470-REL01-IS01 04 to 06 shown within Appendix 02, and also in blue within figure 02 below:



Figure 02 – Proposed Site Condition (Shown in Blue)

7.0 Surrounding Properties

We have created a three dimensional computer model of the site and the surrounding properties to allow for a detailed daylight and sunlight assessment.

It is well-established and accepted that the BRE Guidelines, which set out the numerical benchmark for daylight and sunlight assessments, are predicated on a relatively low rise suburban environment. The methodologies and the resultant BRE daylight and sunlight recommendations are also predicated upon this suburban model. The guidance provided by the BRE is not mandatory and it is principally proposed to aid the architects and planners in achieving good site design.

With regards to daylight, the BRE Guidelines state that, if following the construction of a proposed development, the Vertical Sky Component (VSC) remains greater than 27%, then the light entering a window should be sufficient. Where a window falls below this level, the guidelines suggest a 20% reduction from the existing value is unlikely to be noticeable to the occupants.

Within our assessment we have considered 43 and 37c Fitzjohn's Avenue only, owing to the fact that these properties face directly onto the development site and therefore the daylighting conditions have the potential to change as a result of the proposal. Based on professional judgement, any other properties near the site are unlikely to experience any alterations in daylight condition due to the increased separation distance. Additionally if the windows which we have included in our assessment do not demonstrate transgressions from what is permissible within the BRE document, the properties located further away are also unlikely to.

Our detailed technical analysis considers 37 windows within the surrounding receptors relevant for VSC assessment. Of these 37 windows, 37 (100%) demonstrate compliance to the recommendations set out within the BRE Guidelines and are therefore considered acceptable.

The second daylight methodology within the BRE Guidelines is the 'No Skyline'. The guidelines state that *'if, following construction of a new development, the no skyline moves so that the area of the existing room, which does not receive direct skylight, is reduced to less than 0.8 times its former value this will be noticeable to the occupants, and more of the room will appear poorly lit.'*

Our detailed technical analysis considers 20 rooms within the surrounding residential receptors relevant for NSL assessment. Of these 20 rooms, 19 (95%) demonstrate compliance to the recommendations set out within the BRE Guidelines and therefore should be considered acceptable. The one room which demonstrates transgressions shows a 22.15% change in NSL against a BRE target of 20%, which GIA would consider in keeping with the inherent flexibility of the BRE Guidelines.

In terms of sunlight, the BRE guidelines state that in order for a window to receive adequate sunlight, the window should receive at least 25% of Annual Probable Sunlight Hours (APSH) and at least 5% of winter APSH.

Our detailed technical analysis has considered 24 windows which face within 90° of due south of the development site, of which 24 (100%) demonstrate BRE compliance to both the Annual and Winter APSH criterion.

Tables 01 and 02 below summarise the VSC, NSL and APSH results for the surrounding properties.

Table 01 - VSC and NSL Summary Table

Address	VSC						NSL					
	Total No. of Windows	No. Windows that meet BRE criteria	Below BRE Guidelines				Total No. of Rooms	No. Rooms that meet the 0.8 times former value criteria	Below BRE Guidelines			
			20-30% Reduction	30-40% Reduction	>40% Reduction	Total			20-30% Reduction	30-40% Reduction	>40% Reduction	Total
45 Fitzjohn's Avenue	31	31	0	0	0	0	14	13	1	0	0	0
37c Fitzjohn's Avenue	6	6	0	0	0	0	6	6	0	0	0	0

Table 02 - APSH Summary Table

Address	Total No. Windows	No. Windows that meet BRE Criteria	Window which do not meet the BRE criteria								
			Below threshold for Winter APSH				Below threshold for Total APSH				Below Guidance for both Winter and Total APSH
			20-30% Reduction	30-40% Reduction	>40% Reduction	No. Below Guidance for Winter APSH	20-30% Reduction	30-40% Reduction	>40% Reduction	No. Below Guidance for Total APSH	
45 Fitzjohn's Avenue	20	20	0	0	0	0	0	0	0	0	0
37c Fitzjohn's Avenue	4	4	0	0	0	0	0	0	0	0	0

8.0 Conclusions

GIA have undertaken a detailed technical analysis from a 3D photogrammetric model for the 39 Fitzjohn's Avenue site. The daylight and sunlight review within this report considers residential properties only as they are recognised by the Building Research Establishment (BRE) as having the highest expectation for natural light. The criteria suggested within the BRE has been used to understand and compare the existing levels of light and the light achieved subsequent to the development of the residential scheme.

GIA have considered the daylight and sunlight impacts to 45 and 37c Fitzjohn's Avenue which neighbour the site to the north and south respectively. GIA's technical analysis demonstrates that both properties, when assessed against the primary daylight methodology (the VSC), are fully compliant for daylight. In terms of sunlight, 24 windows were assessed serving these two properties. Of these 24 windows, 24/24 (100%) are compliant with the BRE guidelines.

Therefore, GIA feel the scheme performs excellently and consequently should be considered acceptable from a Daylight and Sunlight perspective.

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 in 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 out 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".

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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 existing surrounding properties.

Each method is described below:

Vertical Sky Component

Methodology

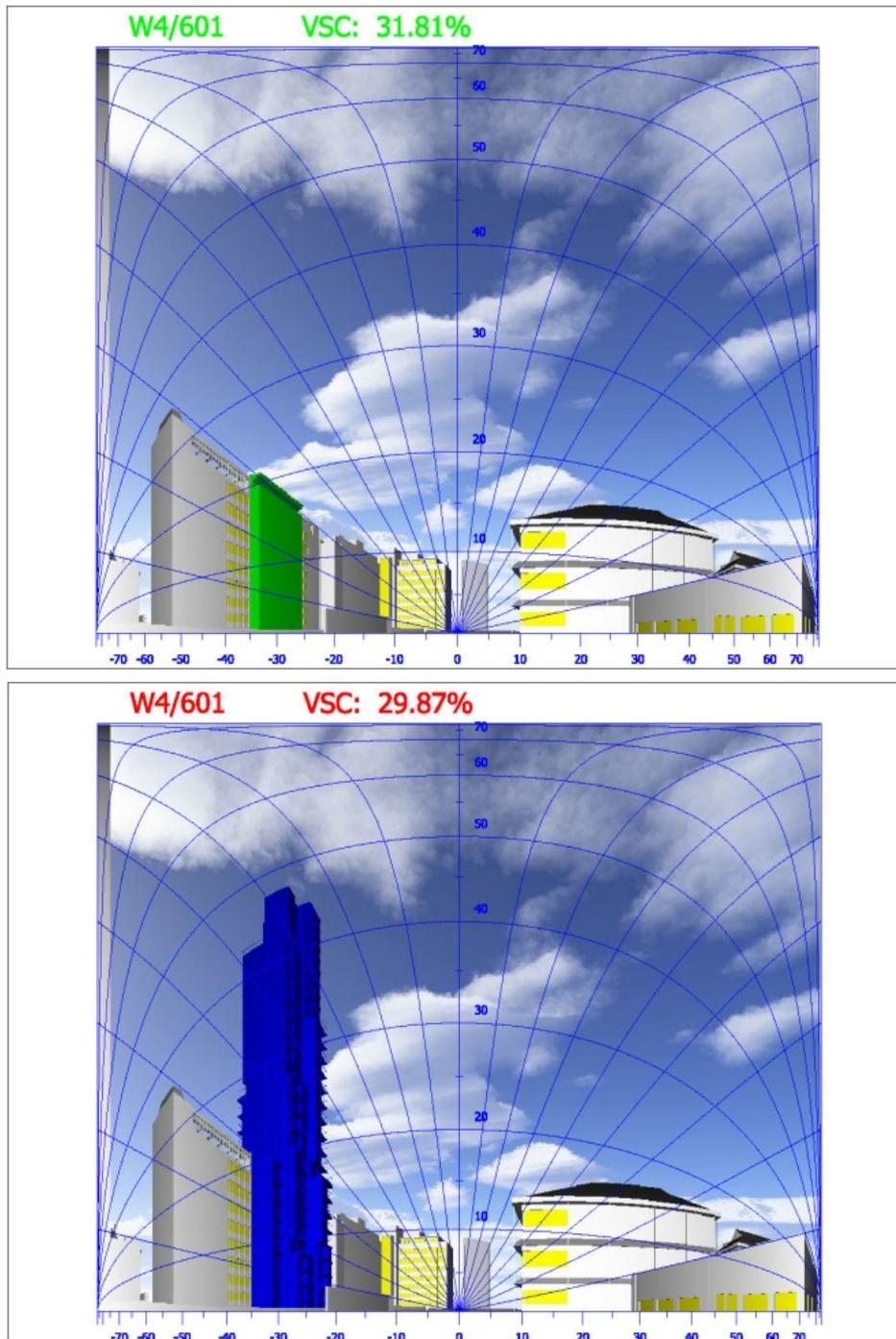
This is defined in the BRE as:-

"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 illuminate 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.

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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.

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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 provide 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.

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(c) Adjoining Development Land

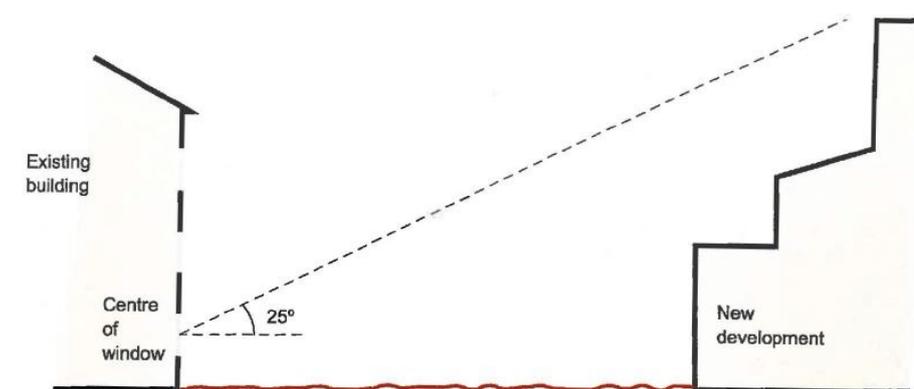
Paragraph 2.3.10 of the BRE guidelines states:

"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 16m 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 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.

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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."*

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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."

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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"; and*
- *"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

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- 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 sun's 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 2 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 2 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 sun set 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.

Principles of Daylight and Sunlight

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 of 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

Existing



SOURCES OF INFORMATION

VERTEX MODELLING
IR02-12470 27.06.17

BCRCHITECTURE
IR05-12470 23.08.17

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NOTES:
EXISTING SCENARIO SHOWN IN GREEN
ALL HEIGHTS AND DIMENSIONS GIVEN IN m AOD

N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:
39 FITZJOHNS AVENUE
LONDON

DRAWING NAME:
PLAN VIEW EXISTING
EXISTING SCENARIO

DWN BY	SCALE	CHK BY	STATUS	DATE
CRC	1:500 @ A3	IBI	-	24.08.17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12470	01	01	001	-



The Whitehouse
Belvedere Road
London SE1 8GA
t 020 7202 1400
f 020 7202 1401
mail@gia.uk.com
www.gia.uk.com



SOURCES OF INFORMATION

VERTEX MODELLING
 IR02-12470 27.06.17

BCRCHITECTURE
 IR05-12470 23.08.17

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PROJECT:
**39 FITZJOHNS AVENUE
 LONDON**

DRAWING NAME:
 3D VIEW EXISTING

EXISTING SCENARIO

DWN BY	SCALE	CHK BY	STATUS	DATE
CRC	NTS@A3	IBI	-	24.08.17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12470	01	01	002	-



The Whitehouse
 Belvedere Road
 London SE1 8GA
 t 020 7202 1400
 f 020 7202 1401
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PROJECT:
39 FITZJOHNS AVENUE
LONDON

DRAWING NAME:
3D VIEW EXISTING

EXISTING SCENARIO

DWN BY	SCALE	CHK BY	STATUS	DATE
CRC	NTS@A3	IBI	-	24.08.17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
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The Whitehouse
Belvedere Road
London SE1 8GA
t 020 7202 1400
f 020 7202 1401
mail@gia.uk.com
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NOTES:
PROPOSED SCHEME SHOWN IN BLUE
ALL HEIGHTS AND DIMENSIONS GIVEN IN m AOD

N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:
39 FITZJOHNS AVENUE
LONDON

DRAWING NAME:
PLAN VIEW PROPOSED

PROPOSED SCHEME RECEIVED IR05 23.08.2017

DWN BY	SCALE	CHK BY	STATUS	DATE
CRC	1:500 @ A3	IBI	-	24.08.17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12470	01	01	004	-

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The Whitehouse
Belvedere Road
London SE1 8GA
t 020 7202 1400
f 020 7202 1401
mail@gia.uk.com
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PLAN VIEW
SCALE 1:500



SOURCES OF INFORMATION

VERTEX MODELLING
 IR02-12470 27.06.17

BCRCHITECTURE
 IR05-12470 23.08.17

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PROJECT:
**39 FITZJOHNS AVENUE
 LONDON**

DRAWING NAME:
 3D VIEW PROPOSED

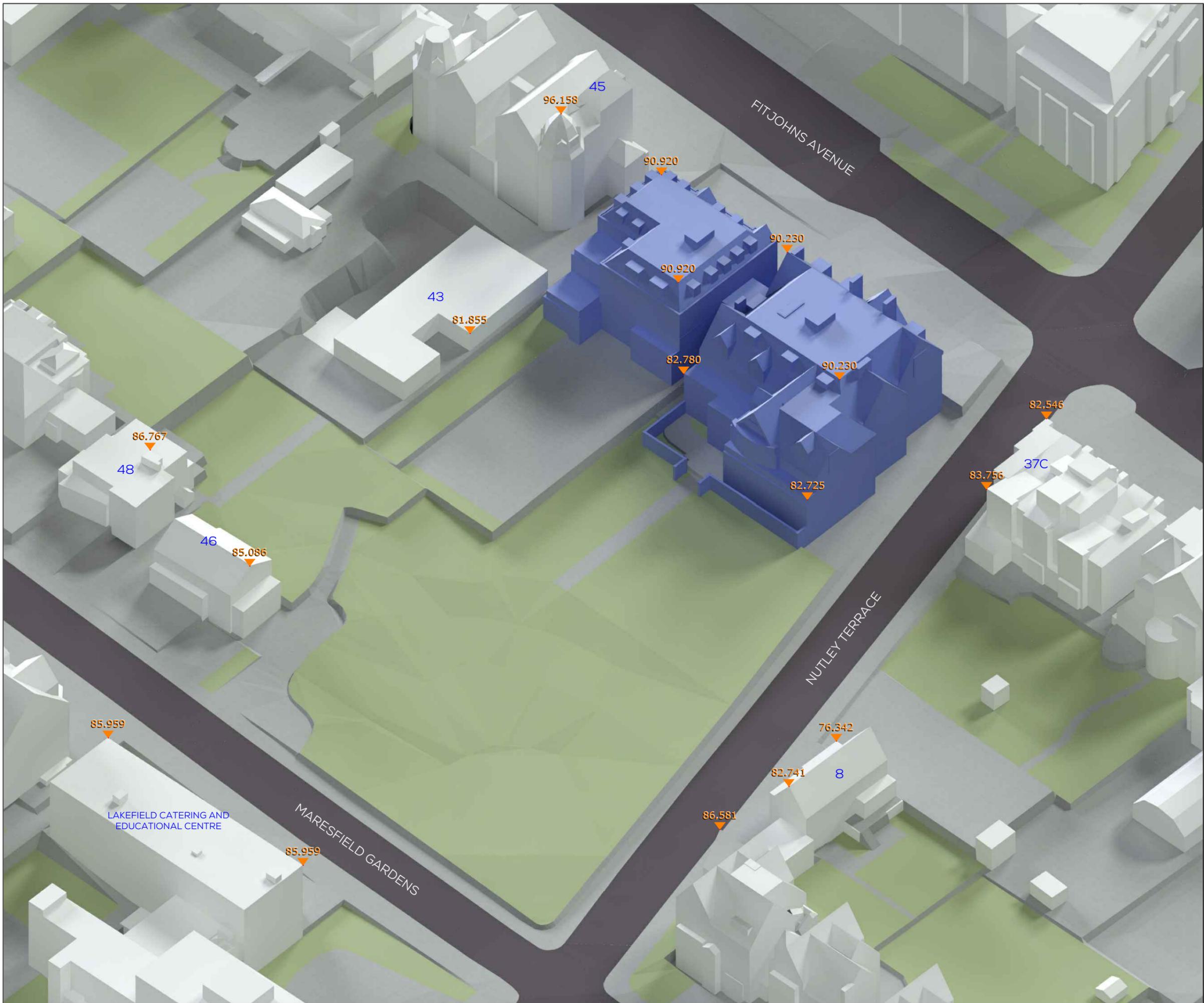
PROPOSED SCHEME RECEIVED IR05 23.08.2017

DWN BY	SCALE	CHK BY	STATUS	DATE
CRC	NTS@A3	IBI	-	24.08.17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
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The Whitehouse
 Belvedere Road
 London SE1 8GA
 t 020 7202 1400
 f 020 7202 1401
 mail@gia.uk.com
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PROPOSED SCHEME RECEIVED IR05 23.08.2017

DWN BY	SCALE	CHK BY	STATUS	DATE
CRC	NTS@A3	IBI	-	24.08.17
PROJ No.	REL No.	IS No.	DWG No.	REV No.
12470	01	01	006	-



The Whitehouse
Belvedere Road
London SE1 8GA
t 020 7202 1400
f 020 7202 1401
mail@gia.uk.com
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Appendix 03

*Daylight and Sunlight
Results*

Vertical Sky Component (VSC)

VERTICAL SKY COMPONENT											
FLOOR	ROOM	ROOM USE	WINDOW	EXISTING	PROPOSED I	LOSS	%	ROOM EXISTING	ROOM PROPOSED	ROOM LOSS	ROOM %
45 FITZJOHNS AVENUE											
F00	R1	UNKNOWN-F	W1	31.3	31.3	0.0	0.00	27.7	27.7	0.0	0.00
			W2	31.3	31.3	0.0	0.00				
			W3	20.5	20.5	0.0	0.00				
	R2	UNKNOWN-F	W4	28.3	24.5	3.8	13.43	28.3	24.5	3.8	13.43
F01	R1	UNKNOWN-F	W1	33.7	33.7	0.0	0.00	29.6	29.6	0.0	0.00
			W2	33.7	33.7	0.0	0.00				
			W3	21.5	21.5	0.0	0.00				
	R2	UNKNOWN-F	W4	25.2	25.2	0.0	0.00	29.6	27.1	2.5	8.45
			W5	24.2	24.2	0.0	0.00				
			W6	30.7	30.7	0.0	0.00				
			W7	29.4	29.4	0.0	0.00				
			W8	32.3	28.0	4.3	13.31				
			W9	31.1	26.8	4.3	13.83				
			W10	31.9	26.9	5.0	15.67				
			W11	30.8	25.7	5.1	16.56				
	R3	UNKNOWN-F	W12	30.4	25.7	4.7	15.46	30.4	25.7	4.7	15.46
	R4	UNKNOWN-F	W13	30.3	25.5	4.8	15.84	30.3	25.5	4.8	15.84
F02	R1	UNKNOWN-F	W1	36.0	36.0	0.0	0.00	31.5	31.5	0.0	0.00
			W2	36.0	36.0	0.0	0.00				
			W3	22.4	22.4	0.0	0.00				
	R2 (BLOCKED)	UNKNOWN-F	W4	37.5	34.5	3.0	8.00	37.7	35.0	2.7	7.16
			W5	38.1	35.7	2.4	6.30				
	R3	UNKNOWN-F	W6	37.2	33.8	3.4	9.14	37.4	34.3	3.1	8.29
			W7	37.8	35.2	2.6	6.88				
	R4	UNKNOWN-F	W8	35.0	30.5	4.5	12.86	35.0	30.5	4.5	12.86
	R5	UNKNOWN-F	W9	33.9	30.8	3.1	9.14	33.9	30.8	3.1	9.14
F03	R1	UNKNOWN-F	W1	39.1	38.6	0.5	1.28	39.1	38.6	0.5	1.28
	R2	UNKNOWN-F	W2	36.9	34.9	2.0	5.42	36.9	34.9	2.0	5.42
	R3	UNKNOWN-F	W3	38.1	38.1	0.0	0.00	37.1	37.1	0.0	0.00
			W4	39.5	39.5	0.0	0.00				
			W5	33.8	33.8	0.0	0.00				
37C FITZJOHNS AVENUE											
F01	R1	UNKNOWN-F	W1	24.2	23.6	0.6	2.48	24.2	23.6	0.6	2.48
	R2	UNKNOWN-F	W2	22.2	21.4	0.8	3.60	22.2	21.4	0.8	3.60
	R3	UNKNOWN-F	W3	36.8	36.2	0.6	1.63	36.8	36.2	0.6	1.63
F02	R1	UNKNOWN-F	W1	28.0	27.0	1.0	3.57	28.0	27.0	1.0	3.57
	R2	UNKNOWN-F	W2	27.2	26.2	1.0	3.68	27.2	26.2	1.0	3.68
	R3	UNKNOWN-F	W3	38.1	37.4	0.7	1.84	38.1	37.4	0.7	1.84

No Skyline (NSL)

NO SKY LINE						
FLOOR	ROOM	ROOM USE	EXISTING	PROPOSED I	LOSS	%
45 FITZJOHNS AVENUE						
F00	R1	UNKNOWN-F	99.7	99.7	0.0	0.00
	R2	UNKNOWN-F	65.9	51.3	14.6	22.15
F01	R1	UNKNOWN-F	99.7	99.7	0.0	0.00
	R2	UNKNOWN-F	100.0	100.0	0.0	0.00
	R3	UNKNOWN-F	99.3	99.3	0.0	0.00
	R4	UNKNOWN-F	89.9	89.9	0.0	0.00
F02	R1	UNKNOWN-F	99.7	99.7	0.0	0.00
	R2 (BLOCKED)	UNKNOWN-F	96.2	96.2	0.0	0.00
	R3	UNKNOWN-F	96.6	96.6	0.0	0.00
	R4	UNKNOWN-F	98.0	79.2	18.8	19.18
	R5	UNKNOWN-F	95.8	95.8	0.0	0.00
F03	R1	UNKNOWN-F	80.0	80.0	0.0	0.00
	R2	UNKNOWN-F	98.1	98.1	0.0	0.00
	R3	UNKNOWN-F	100.0	100.0	0.0	0.00
37C FITZJOHNS AVENUE						
F01	R1	UNKNOWN-F	86.5	73.7	12.8	14.80
	R2	UNKNOWN-F	93.6	93.6	0.0	0.00
	R3	UNKNOWN-F	100.0	100.0	0.0	0.00
F02	R1	UNKNOWN-F	94.7	91.5	3.2	3.38
	R2	UNKNOWN-F	97.4	97.4	0.0	0.00
	R3	UNKNOWN-F	100.0	100.0	0.0	0.00

Annual Probable Sunlight Hours (APSH)

ANNUAL PROBABLE SUNLIGHT HOURS																	
FLOOR	ROOM	ROOM USE	WINDOW	ORIENTATION	EXISTING		PROPOSED IR05		TOTAL % LOSS	WINTER % LOSS	EXISTING		PROPOSED IR05		TOTAL % LOSS	WINTER % LOSS	
					TOTAL	WINTER	TOTAL	WINTER			TOTAL	WINTER	TOTAL	WINTER			
45 FITZJOHNS AVENUE																	
F00	R1	UNKNOWN-F	W1	88	→	42	12	42	12	0	0	45	13	44	12	2.22	7.69
			W2	88	→	42	12	42	12	0	0						
			W3	178	→	44	13	43	12	2.27	7.69						
	R2	UNKNOWN-F	W4	178	↓	72	15	62	14	13.89	6.67	72	15	62	14	13.89	6.67
F01	R1	UNKNOWN-F	W1	88	→	46	13	46	13	0	0	49	14	49	14	0	0
			W2	88	→	46	13	46	13	0	0						
			W3	178	→	46	14	46	14	0	0						
	R2	UNKNOWN-F	W4	88	→	45	13	45	13	0	0	83	23	77	17	7.23	26.09
			W5	88	→	38	11	38	11	0	0						
			W6	88	→	45	13	45	13	0	0						
			W7	88	→	40	13	40	13	0	0						
				W8	178	↓	78	21	71	17	8.97	19.05					
				W9	178	↓	77	23	70	17	9.09	26.09					
				W10	178	↓	78	21	68	15	12.82	28.57					
				W11	178	↓	75	23	65	15	13.33	34.78					
	R3	UNKNOWN-F	W12	178	↓	64	22	54	12	15.63	45.45	64	22	54	12	15.63	45.45
	R4	UNKNOWN-F	W13	133	↓	64	21	55	12	14.06	42.86	64	21	55	12	14.06	42.86
F02	R1	UNKNOWN-F	W1	88	→	48	14	48	14	0	0	51	15	51	15	0	0
			W2	88	→	48	14	48	14	0	0						
			W3	178	↓	47	15	47	15	0	0						
	R2 (BLOCKED)	UNKNOWN-F	W4	178	↓	84	29	80	25	4.76	13.79	85	30	83	28	2.35	6.67
			W5	178	↓	85	30	83	28	2.35	6.67						
	R3	UNKNOWN-F	W6	178	↓	81	29	77	25	4.94	13.79	83	29	81	27	2.41	6.9
			W7	178	↓	83	29	81	27	2.41	6.9						
	R4	UNKNOWN-F	W8	178	↓	77	27	71	21	7.79	22.22	77	27	71	21	7.79	22.22
	R5	UNKNOWN-F	W9	133	↓	68	25	63	20	7.35	20	68	25	63	20	7.35	20
F03	R1	UNKNOWN-F	W1	178	↓	85	30	85	30	0	0	85	30	85	30	0	0
	R2	UNKNOWN-F	W2	178	↓	77	28	77	28	0	0	77	28	77	28	0	0
	R3	UNKNOWN-F	W3	133	↓	72	25	72	25	0	0	99	30	99	30	0	0
			W4	223	↑	73	26	73	26	0	0						
				W5	313	↑	27	5	27	5	0	0					

ADDRESS

THE WHITEHOUSE
BELVEDERE ROAD
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CONTACT

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