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Client : Hastings International

Daylight and Sunlight Assessment for the Development at Elsworthy Road, London

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Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Written by	Checked by
1	0	First issue	8th Oct 2015	RM	SPH
2	1	Final	19th Nov 2015	RM	SPH
3	2	Revised following amended scheme drawings.	29th Jan 2016	NMM	SPH
4	3	Final	16th May 2016	NMM	SPH

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1 Background and Scope of Appraisal

Herrington Consulting has been commissioned by Hastings International to assess the potential impact of the proposed development at Elsworthy Road, London NW3 3DS in relation to daylight, sunlight and overshadowing on the neighbouring buildings. The key objectives of the assessment are to:

- assess the baseline conditions at the site;
- analyse the potential impacts of the development on the daylight and sunlight currently received by the neighbouring buildings, and;
- assess these impacts in line with any relevant planning policies and best practice guidance and;

This study also quantifies the provision of natural daylight and sunlight to the habitable rooms within the basement element of the proposed development.

2 The Site and Development Proposals

2.1 Site Location

The site is located within the London Borough of Camden. The location of the site is shown in Figure 2.1 and the site plan included in Appendix A.1 of this report gives a more detailed reference to the site location and layout.

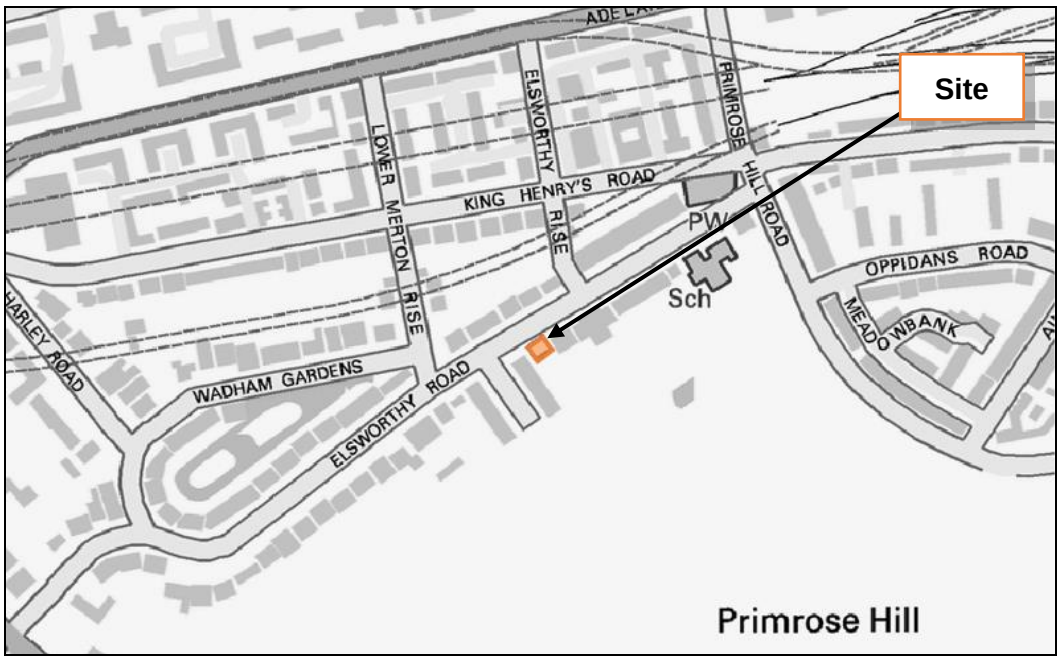


Figure 2.1 – Location map (Contains Ordnance Survey data © Crown copyright and database right 2011)

2.2 The Development

The proposals for development are to construct a four storey residential property on a previously undeveloped site, with two floors below ground and two above, and a sunken courtyard to the front of the property. Drawings of the proposed scheme are included in Appendix A.1 of this report.

3 Policy and Guidance

3.1 National Planning Policy

National Planning Policy Framework (2012)

The National Planning Policy Framework adopted on the 27th March 2012, replacing the Planning Policy Statements and Planning Policy Guidance, stipulates that *"…planning policies and decisions should always seek to secure a good standard of amenity for existing and future occupants of land and buildings."*

National Planning Practice Guidance (2014)

The National Planning Practice Guidance was launched in 2014, creating an online resource for planning practitioners. The guidance does not provide any further detail in terms of amenity beyond that stated above.

3.2 Regional Planning Policy

The London Plan – Spatial Development Strategy for Greater London (2011)

Policy 7.6: 'Architecture' of the adopted London Plan, includes the following statements: *"Buildings and structures should not cause unacceptable harm to the amenity of surrounding land and buildings… particularly residential buildings in relation to… overshadowing".*

Minor Alterations to the London Plan (2012)

On the 11th May 2015 the Mayor of London published for six weeks public consultation two sets of Minor Alterations to the London Plan – on Housing Standards and on Parking Standards. A number of minor alterations have been proposed to the London Plan; however, these changes do not alter the policies above.

Further Alterations to the London Plan (March 2015)

In March 2015, the Mayor published further updates to the London Plan in the Further Alteration to the London Plan document. This document proposes a number of further changes to the London Plan; however, these changes will not alter the policies listed above.

3.3 Local Planning Policy

Camden Development Policies (2010 - 2025)

Policy DP26 states that the council will only grant planning permission for development that does not cause harm to the amenity of existing and future occupiers and to nearby properties. To assess this impact, the council will consider; '*visual privacy and overlooking'; 'overshadowing and outlook',* and '*sunlight, daylight and artificial light levels'*. To assess whether a proposed development will have acceptable levels of daylight and sunlight provision, the council will follow

the standard recommendations of the British Research Establishment's Site Layout Planning for Daylight and Sunlight- A Guide to Good Practice.

Camden Supplementary Planning Guidance – CPG1 Design (2015)

The CPG1 document states in section 4 that, 'Alterations should always take into account the character and design of the property and its surroundings'. The guidance also states that any development should be of '*high quality design*' which '*respects and enhances the character and appearance of a property and its surroundings, and also covers matters such as outlook, privacy and overlooking*.'

3.4 Best Practice Guidance

In the absence of official national planning guidance / legislation on daylight and sunlight, the most recognised guidance document is published by the Building Research Establishment and entitled 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice', Second Edition, 2011; herein referred to as the 'BRE Guidelines'.

The BRE Guidelines are not mandatory and themselves state that they should not be used as an instrument of planning policy, however in practice they are heavily relied upon as they provide a good guide to approach, methodology and evaluation of daylight and sunlight impacts.

In conjunction with the BRE Guidelines further guidance is given within the British Standard (BS) 8206-2:2008: 'Lighting for buildings - Part 2: Code of practice for daylighting'.

In this assessment the BRE Guidelines have been used to establish the extent to which the Proposed Development meets current best practice guidelines. In cases where the Development is likely to reduce light to key windows the study has compared results against the BRE criteria.

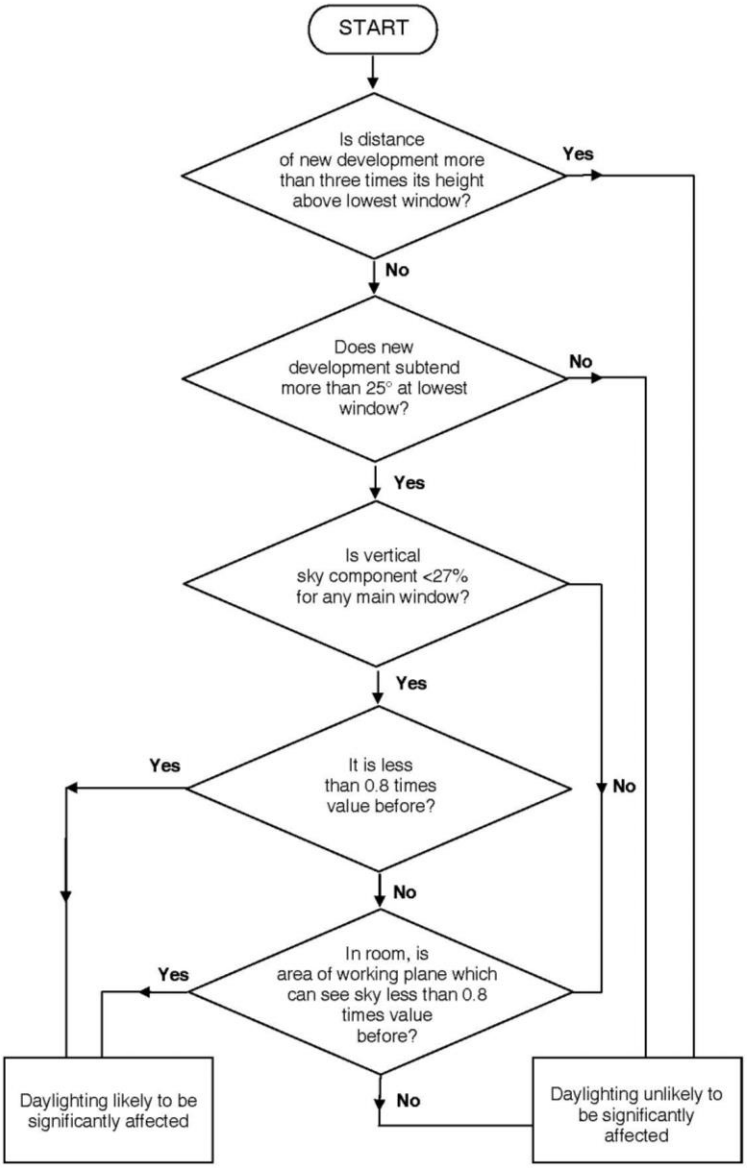
Whilst the BRE Guidelines provide numerical guidance for daylight, sunlight and overshadowing, these criteria should not be seen as absolute targets since, as the document states, the intention of the guide is to help rather than constrain the designer. The Guide is not an instrument of planning policy, therefore whilst the methods given are technically robust, it is acknowledged that some level of flexibility should be applied where appropriate.

4 Assessment Techniques

4.1 Background

Natural light refers to both daylight and sunlight. However, a distinction between these two concepts is required for the purpose of analysis and quantification of natural light in buildings. In this assessment, the term '*Daylight*' is used for natural light where the source is the sky in overcast conditions, whilst '*Sunlight*' refers specifically to the light coming directly from the sun.

The primary objective of this assessment is to quantify the impacts of the proposed development on the adjacent building[s] and therefore the methods employed by this study are focussed on this objective. These methodologies are described in the following sections of this report and follow the hierarchical approach set out by the BRE Guidelines. The 'decision chart' outlining this process (Figure 20 of the Guidelines) has been reproduced below.



The BRE guidelines are intended for use for rooms in adjoining dwellings. They may also be applied to any existing non-domestic buildings where the occupants have a reasonable expectation of daylight, which could include schools, hospitals, hotels and offices. For dwellings it states that living rooms, dining rooms and kitchens should be assessed. Bedrooms should also be checked, although it states that they are less important. Other rooms, such as bathrooms, toilets, storerooms, circulation areas and garages need not be assessed.

4.2 Vertical Sky Component (VSC)

The Vertical Sky Component (VSC) calculation is the ratio of the direct sky illuminance falling on the outside of a window, to the simultaneous horizontal illuminance under an unobstructed sky. The standard CIE (Commission Internationale d'Éclairage) Overcast Sky is used and the ratio is expressed as a percentage. For example, a window that has an unobstructed view over open fields would benefit from the maximum VSC, which would be close to 40%. For a window to be considered as having a reasonable amount of skylight reaching it, the BRE Guidelines suggests that a minimum VSC value of 27% should be achieved. When assessing the impact of a new development on an existing building the BRE Guidelines sets out the following specific requirement:

If the VSC with the new development in place is both less than 27% and less than 0.8 times its former value, then the reduction in light to the window is likely to be noticeable.

This means that a reduction in the VSC value of up to 20% its former value would be acceptable and thus the impact would be considered negligible. It is important to note that the VSC is a simple geometrical calculation, which provides an early indication of the potential for daylight entering the space. It does not, however, assess or quantify the actual daylight levels inside the rooms.

4.3 No Sky Line

The No Sky Line, or sometimes referred to as No Sky View method, describes the distribution of daylight within rooms by calculating the area of the 'working plane', which can receive a direct view of the sky and hence 'skylight'. The working plane height is generally set at 850mm above floor level within a residential property and 700mm within a commercial property.

The BRE Guidelines state that if following the construction of a new development the No Sky Line moves such that the area of existing room that does not receive direct skylight is reduced to less than 0.8 times its former value, the impact will be noticeable to the occupants. This is also true if the No Sky Line encroaches onto key areas like kitchen sinks and worktops.

One benefit of the daylight distribution test is that the resulting contour plans show where the light falls within a room, both in the existing and proposed conditions, and a judgment may be made as to whether the room will retain light to a reasonable depth.

This method can only be accurately used to examine the impact of new development on the daylight distribution within existing buildings when the internal room layout is known. However, in

circumstances where the internal layout and dimensions of the affected room are not known, best estimates are used.

4.4 Overshadowing

The BRE Guidance suggests that where new development may affect one or more amenity areas, then analysis can be undertaken to quantify the loss of sunlight resulting from overshadowing. Typical examples of areas that could be considered as open spaces or amenity areas are main back gardens of houses, allotments, parks and playing fields, children's playgrounds, outdoor swimming pools, sitting-out areas, such as in public squares and focal points for views, such as a group of monuments or fountains.

Sun Hours on Ground

The BRE Guidelines recommend that for a garden or amenity area to appear adequately sunlit throughout the year, at least 50% of an amenity area should receive at least 2 hours of sunlight on 21st March. The BRE Guidelines also suggest that if, as a result of a new development, an existing garden or amenity area does not meet these guidelines, and the area which can receive some sun on the 21st March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.

When undertaking this analysis, sunlight from an altitude of 10° or less has been ignored as this is likely to be obscured by planting and undulations in the surrounding topography. Driveways and hard standing for cars is also usually left out of the area used for this calculation. Fences or walls less than 1.5 metres high are also ignored. Front gardens which are relatively small and visible from public footpaths are omitted with only main back gardens needing to be analysed.

The Guidelines also state that "normally, trees and shrubs need not be included, partly because their shapes are almost impossible to predict, and partly because the dappled shade of a tree is more pleasant than a deep shadow of a building". This is especially the case for deciduous trees, which provide welcome shade in the summer whilst allowing sunlight to penetrate during the winter months.

Transient Overshadowing

The BRE Guidelines suggest that where large buildings are proposed, which may affect a number of open spaces or amenity areas, it is useful and illustrative to plot a shadow plan to show the location of shadows at different times of the day and at key times during the year. Typically the 21st March, 21st June and 21st December are used to represent the annual variance of sun position, noting that the position of the sun in the sky during the spring equinox (21st March) is equivalent to that of the autumn equinox.

The BRE Guidelines provide no criteria for the significance of transitory overshadowing other than to suggest that by establishing the different times of day and year when shadow would be cast over surrounding areas, provides an indication as to the significance of the likely effect of a new development. The assessment of transient overshadowing effects is therefore based upon expert

judgment, taking into consideration the likely effects of the various baseline conditions and comparing them with the likely significant transient overshadowing effects of the redevelopment proposals.

4.5 Annual Probable Sunlight Hours

It is also possible to quantify the amount of sunlight available to a new development and the recognised methodology for undertaking this analysis is the Annual Probable Sunlight Hours (APSH) method.

In the case of sunlight, the assessment is equally applied to adjoining dwellings and any existing non-domestic buildings where there is a particular requirement for sunlight. The BRE Guidelines set out a hierarchy of tests to determine whether the proposed development will have a significant impact. These are set out in order of complexity below:

Test 1 – Assess whether the windows to main living rooms and conservatories of the buildings surrounding the site are situated within 90° of due south. Obstruction to sunlight may become an issue if some part of the new development is situated within 90° of due south of a main window wall of an existing building.

Test 2 - Draw a section perpendicular from the centre of the window in any window walls identified by Test 1. If the angle subtended between the horizontal line drawn from the centre of the lowest window of the existing building and the proposed development is less than 25°, then the proposed development is unlikely to have a substantial effect on the direct sunlight enjoyed by the existing window.

Test 3 – If the window wall faces within 20° of due south and the reference point has a VSC of 27% or more, then the room is considered to receive sufficient sunlight.

Test 4 – If all of the above tests have been failed, then a more detailed analysis is required to determine the obstruction level to the existing building. In such cases, the BRE Guidance recommends the use of the Annual Probable Sunlight Hours (APSH) test to assess the impact on the availability of sunlight. To pass this test the centre point of the window will need to receive more than one quarter of APSH, including at least 5% APSH in the winter months between 21st September and the 21st March. The BRE Guidelines state that if 'post-development' the available sunlight hours are both less than the amount above and less than 0.8 times their 'pre-development' value, either over the whole year or just within the winter months, then the occupants of the existing building will notice the loss of sunlight. In addition, if the overall annual loss is greater than 4% of APSH, the room may appear colder and less pleasant.

4.6 Average Daylight Factor

The Average Daylight Factor (ADF) method calculates the average illuminance within a room as a proportion of the illuminance available to an unobstructed point outdoors under a sky of known luminance and luminance distribution. This is the most detailed of the daylight calculations and

considers the physical nature of the room behind the window, including; window transmittance, and surface reflectivity.

This method of quantifying the availability of daylight within a room does, however, require the internal layout to be known and is generally only used for establishing daylight provision in new rooms. The BRE Guide sets out the following guidelines for the assessment of the ADF:

If a predominantly daylit appearance is required, then the ADF should be 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary electric lighting is provided. In dwellings, the following minimum average daylight factors should be achieved: 1% in bedrooms, 1.5% in living rooms and 2% in kitchens.

For offices, the British Council for Offices (BCO) Guide to Lighting provides guidance on how to specify good office lighting. The main message is to use daylight effectively and use artificial lighting only where and when it's is needed. The new guide recognises that maximising natural daylight within offices can bring about tangible benefits for employee wellbeing and suggests that a well daylit office space is one that achieves an average daylight factor of between 2% and 5%.

5 Assessment Methodology

5.1 Method of Baseline Data Collation

The following data and information has been used to inform this study:

- OS Mastermap mapping
- Measured site and scheme drawings in AutoCAD format (Ko and Partners, London – January 2016)
- Aerial photography (Google Maps and Bing)

5.2 Identification of Key Sensitive Receptors

The BRE Guidelines are intended for use for rooms and adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms circulation areas and garages are not deemed as requiring daylight and therefore are not identified as sensitive receptors. The BRE document also states that the guidelines may also be applied to any non-domestic building where the occupants have a reasonable expectation of daylight. This would normally include schools, hospitals, hotels, hostels, small workshops and some offices.

The first step in this process is to determine the key sensitive receptors, i.e. which windows may be affected by the proposed development. Key receptors are those windows that face, or are located broadly perpendicular to the proposed development.

If a window falls into this category, the second step is to measure the obstruction angle. This is the angle at the level of the centre of the lowest window between the horizontal plane and the line joining the highest point of nearest obstruction formed from any part of the proposed development. If this angle is less than 25° then it is unlikely to have a substantial effect on the diffuse daylight enjoyed by the existing window and the window is not deemed to be a sensitive receptor. A graphical representation of the 25° rule is illustrated in Figure 5.1 below.

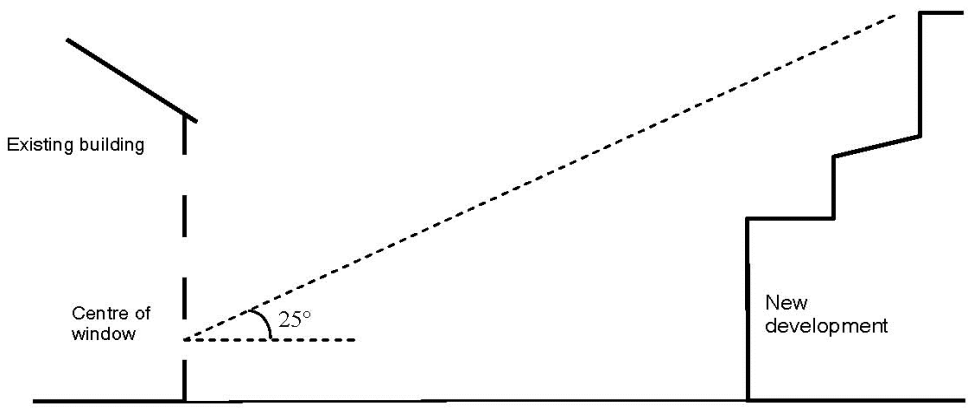


Figure 5.1 – Graphical representation of the 25° Rule

As part of this assessment a digital three dimensional model of the study area has been created for both the 'pre' and 'post' development scenarios. Images of these models are shown by the drawings appended to this report.

Whilst the use of the 25° obstruction angle test is useful in identifying sensitive receptors, it is only really applicable in situations where the proposed development is located directly in front of the neighbouring buildings. Consequently, for robustness, all potentially affected windows are included within the computational model and are analysed in detail.

Windows serving non-habitable spaces are not included within the assessment as these are not identified by planning policy or by the BRE Guidelines to be sensitive to changes in daylight and sunlight. Therefore, as part of the identification of sensitive receptor process, the use of each room is, where possible, established and windows serving non-habitable spaces such as toilets, store rooms, stairwells and circulation spaces are identified.

Windows serving rooms within commercial premises are assumed to be non-habitable and in accordance with the BRE Guidelines are not identified as sensitive receptors. However, there are special cases where it can be assumed that some non-domestic uses could be deemed to have a reasonable expectation of daylight and therefore could be taken forward for more detailed analysis. Typically these could be school classrooms, hospital wards, art studios etc, but professional judgement is generally relied upon to determine this and where considered appropriate, windows serving commercial premises are included.

A plan showing the location of all sensitive receptors that have been assessed as part of this study is included in Appendix A.2 of this report.

5.3 Numerical Modelling

The numerical analysis used in this assessment has been undertaken using the Waldrum Tools (Version 2.1) software package.

5.4 Calculation Assumptions

The following assumptions have been made when undertaking the analysis:

- When assessing the VSC the calculation is based on the centre point of the window position
- When assessing the ADF for internal rooms and in the absence of specific information, the following parameters are assumed:
    - Glazing type is assumed to be double glazing (Pilkington K Glass 4/16/4 Argon filled) with a light transmittance value of 0.75 (value for double glazed unit not per pane)

- Correction factor for frames and glazing bars = 0.8
- Where information from the designer is not available, the following values are used to derive the Maintenance Factor applied to the transmittance values.

Location / setting	**Building type (**Residential – good maintenance)	**Exposure (normal)**	**Special exposure**	**Maintenance Factor**
Urban	8%	x 1.0	x 1.0	0.94
Rural / suburban	4%	x 1.0	x 1.0	0.97

Table 5.1 – Parameters used for deriving Maintenance Factor (refer to BS 8206-2:2008 Tables A3, A4 and A5

The reflectance values used in the ADF analysis are as shown in Table 5.3 unless specified otherwise by the designer.

Surface	**Value**
Grass	10%
Pavement	20%
External brickwork	30%
External walls (concrete)	40%
External rendered wall (painted white)	60%
Internal walls (painted pale cream)	81%
Internal ceiling (painted white)	85%
Internal flooring	30%

Table 5.2 – Reflectance values used in ADF analysis

- Where information on internal room layouts of adjacent properties is not known, best estimates as to room layout and size have been made in order to undertake ADF and/or No Skyline analysis

- Where the internal arrangements and room uses have been estimated, it should be noted that this has no bearing upon the tests for VSC or APSH because the reference point is at the centre of the window being tested and windows have been accurately drawn from the survey information. It is relevant to the daylight distribution assessment, but in the absence of suitable plans, estimation is a conventional approach.

- In areas where survey data has not been provided or needs to be supplemented with additional information, photographs, OS mapping and brick counts have been used in the process of building the 3D model of the surrounding and existing buildings.

- When analysing the effect of the new building on the existing buildings, the shading effect of the existing trees has been ignored. This is the recommended practice where deciduous trees that do not form a dense belt or tree line are present (BRE Guidelines – Appendix H). This is because daylight is at its scarcest and most valuable in the winter when most trees will not be in leaf.

5.5 Assessment criteria

The numerical assessment criteria specified within the BRE Guidelines is designed to identify the threshold at which point a change in daylight or sunlight would become 'noticeable' to the occupants. Consequently, where the results of the daylight/sunlight analysis demonstrate compliance with the BRE criteria it can be concluded that the impact will be negligible.

However, a point that should be stressed here is that 'noticeable' does not necessarily equate to 'unacceptable' and the BRE's standard target values should not always be considered as pass/fail criteria. Whilst the BRE Guidelines provide numerical guidance for daylight, sunlight and overshadowing, these criteria should not be seen as absolute targets since, as the document states, the intention of the guide is to help rather than constrain the designer. The Guide is not an instrument of planning policy, therefore whilst the methods given are technically robust, it is acknowledged that some level of flexibility should be applied where appropriate.

Consequently, based on the numerical assessment criteria set out with the BRE Guidelines and the use of professional judgment, the following assessment criteria have been established and are used in describing the impacts of the proposed development.

Significance	Description	Typical Change Ratio
Negligible	No alteration or a small alteration from the existing scenario. Results demonstrate full compliance with the BRE assessment criteria and therefore occupants are unlikely to notice any change.	1.0 to 0.8
Minor adverse	An alteration from the existing scenario which may be marginally noticeable to the occupant. This may include a marginal infringement of the numerical levels suggested in the BRE Guidelines, which should be viewed in context. A typical change ratio for this level of significance would be 0.7	0.7 to 0.8
Moderate adverse	An alteration from the existing scenario which may cause a moderate noticeable change to the occupant. This may consist of a moderate infringement of the numerical BRE assessment criteria with	0.6 to 0.7
Major adverse	An alteration from the existing scenario which may cause a major noticeable change to the occupant. This may consist of a significant infringement of the numerical BRE assessment criteria.	Less than 0.6

Table 5.3 - Daylight & Sunlight Impact Descriptors

6 Daylight Analysis

6.1 Vertical Sky Component Assessment

Using the analytical techniques discussed in Section 4, the VSC for the key receptors has been calculated for the 'pre' and 'post' development conditions. The detailed outputs from the numerical analysis are included in Appendix A.3. The results are summarised in Table 6.1 below.

Floor	Receptor	VSC (pre-development)	VSC (post-development)	Ratio of change	BRE minimum requirements met?
BG	W1.0	22.7	20.91	0.92	Yes
	W2.0	29.95	26.92	0.90	Yes
	W3.0	27.77	26.40	0.95	Yes
	W4.0	27.47	26.46	0.96	Yes
G	W1.0	26.08	26.07	1.00	Yes
	W2.0	31.63	31.06	0.98	Yes
	W3.0	31.79	31.60	0.99	Yes
	W4.0	31.85	31.79	1.00	Yes
F1	W1.0	35.47	35.47	1.00	Yes
	W2.0	35.47	35.47	1.00	Yes
	W3.0	35.35	35.35	1.00	Yes
F2	W1.0	38.00	38.00	1.00	Yes
	W2.0	37.97	37.97	1.00	Yes

Table 6.1.1 – Comparison of 'pre' and 'post' development VSC Tests for ***No. 23 Elsworthy Road***

Floor	Receptor	VSC (pre-development)	VSC (post-development)	Ratio of change	BRE minimum requirements met?
BG	W1.0	28.62	27.58	0.96	Yes
	W2.0	30.44	28.47	0.94	Yes
	W3.0	11.67	10.73	0.92	Yes
G	W1.0	31.72	31.51	0.99	Yes
	W2.0	35.06	34.65	0.99	Yes
	W3.0	30.97	30.73	0.99	Yes
F1	W1.0	37.38	37.38	1.00	Yes

Table 6.1.2 – Comparison of 'pre' and 'post' development VSC Tests for ***No. 1 Elsworthy Terrace***

Floor	Receptor	VSC (pre-development)	VSC (post-development)	Ratio of change	BRE minimum requirements met?
BG	W1.0	25.29	23.75	0.94	Yes
	W2.0	30.97	29.53	0.95	Yes
	W3.0	21.51	21.10	0.98	Yes
G	W1.0	32.54	32.02	0.98	Yes
	W2.0	30.70	30.16	0.98	Yes
	W3.0	35.13	34.66	0.99	Yes
	W4.0	31.36	31.23	1.00	Yes
F1	W1.0	36.79	36.79	1.00	Yes
	W2.0	37.25	37.25	1.00	Yes

Table 6.1.3 – Comparison of 'pre' and 'post' development VSC Tests for ***No. 2 Elsworthy Terrace***

6.2 No Sky Line Assessment

In order to pass the No Sky Line Assessment, the BRE Guidelines state that the area of the working plane within the room that has a view of the sky should not be reduced to less than 0.8 times its former value as a result of new development. One benefit of the daylight distribution test is that the resulting contour plans show where the light falls within a room, both in the existing and proposed conditions, and a judgement may be made as to whether the room will retain light to a reasonable depth.

In this case the dimensions and exact layout of the rooms within the existing buildings are not known. However, in order to gain an understanding of the impact of the proposed development on the daylight distribution within the potentially affected rooms an estimate of the room dimension and layout has been made. The results of this analysis are summarised in Table 6.2 and detailed outputs of the analysis are included in the Appendix to this report.

Floor	Receptor	Percentage of working plane area with a sky view		Ratio of change
		Pre Development	Post Development	
B	R1	98.32	98.32	1.00
	R2	90.78	90.78	1.00
G	R1	40.32	40.32	1.00
	R2	96.13	96.13	1.00
	R3	90.53	90.53	1.00
F1	R1	98.90	98.90	1.00
	R2	81.05	81.05	1.00
F2	R1	90.53	90.53	1.00

Table 6.2.1 – Comparison of 'pre' and 'post' development No Sky Line tests for ***No. 23 Elsworthy Road***

Floor	Receptor	Percentage of working plane area with a sky view		Ratio of change
		Pre Development	Post Development	
B	R1	97.62	90.30	0.92
G	R2	99.88	99.88	1.00
F1	R3	97.94	97.94	1.00

Table 6.2.2 – Comparison of 'pre' and 'post' development No Sky Line tests for ***No. 1 Elsworthy Terrace***

Floor	Receptor	Percentage of working plane area with a sky view		Ratio of change
		Pre Development	Post Development	
B	R1	90.06	79.88	0.89
G	R1	86.12	86.12	1.00
	R2	93.60	93.60	1.00
F1	R1	99.39	99.39	1.00
	R2	98.78	98.78	1.00

Table 6.2.3 – Comparison of 'pre' and 'post' development No Sky Line tests for ***No. 2 Elsworthy Terrace***

6.3 Discussion of Daylighting Impacts

Based on the results of the numerical analysis summarised in the above tables it is possible to draw conclusions as to the impacts that the proposed development will have on the neighbouring buildings. These are discussed as follows:

Vertical Sky Component

The BRE Guidelines operate on the general principle where the retained VSC is 27% or greater, or where the VSC is below 27% and is not reduced to less than 0.8 times its former value, then the reduction in daylight is unlikely to be noticeable to the building's occupants and thus the impact can be deemed negligible.

Based on the results of the analysis summarised in Table 6.1 it can be seen that all of the windows either retain a VSC value greater than 27% post development, or have a ratio of change that is 0.8 or above and therefore are fully compliant. Consequently, in line with the assessment criteria set out within the BRE Guidelines it is possible to conclude that the impact will be **negligible**.

No Sky Line

The BRE Guidelines state that, if following the construction of a new development, the no sky line moves such that the area of the room that does receive direct skylight is reduced to less than 0.8

times its former value, this will be noticeable to the occupants, and more of the room will appear poorly lit.

From these results, it can be seen that as a result of the proposed development the area of the working plane within the assessed rooms that receives direct light from the sky will not be reduced to an extent such that the ratio of change is significantly less than the 0.8 recommended value.

Consequently, from this analysis it can be concluded that there will be no alteration or a small alteration from the existing scenario. The results demonstrate full compliance with the BRE assessment criteria and therefore occupants are unlikely to notice any change and the impact can be concluded as being **negligible**.

7 Sunlight and Overshadowing Analysis

7.1 Annual Probable Sunlight Hours Assessment

Whilst the application of the four-stage assessment outlined in Section 4.5 allows the use of the more simplistic tests (Tests 1 to 3) to be used where applicable, when using a computational numerical model, it is a more robust and efficient approach to test all windows using the most detailed methodology. Consequently, for all windows that do not face within 90 degrees of due north, the APSH values have been calculated.

To pass this test the centre point of the window will need to receive more than one quarter of APSH, including at least 5% APSH in the winter months between 21st September and the 21st March. The BRE Guidelines state that if 'post-development' the available sunlight hours are both less than the amount above and less than 0.8 times their 'pre-development' value, either over the whole year or just within the winter months, then the occupants of the existing building will notice the loss of sunlight.

The APSH test has been carried out and the detailed results of the analysis and model outputs are included in Appendix A.3 and a summary of the results are shown in Table 7.1 below.

	APSH - Assessment over Whole Year					
		Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Window	All year	Winter	All year	Winter	
B	W1	23%	0%	0.92	0.00	2%
	W2	51%	14%	0.91	0.88	5%
	W3	50%	14%	0.96	1.00	2%
	W4	49%	14%	0.94	1.00	3%
G	W1	34%	7%	1.00	1.00	0%
	W2	55%	15%	0.98	0.94	1%
	W3	56%	17%	0.99	1.00	0%
	W4	59%	18%	1.00	1.00	0%
F1	W1	64%	22%	1.00	1.00	0%
	W2	63%	21%	1.00	1.00	0%
	W3	63%	21%	1.00	1.00	0%
F2	W1	66%	24%	1.00	1.00	0%
	W2	66%	24%	1.00	1.00	0%

*Table 7.1.1 – Results of APSH analysis for **No. 23 Elsworthy Road.***

	APSH - Assessment over Whole Year					
		Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Window	All year	Winter	All year	Winter	
B	W1	n/a – North Facing Window				
	W2	n/a – North Facing Window				
	W3	0%	0%	0.00	0.00	0%
G	W1	n/a – North Facing Window				
	W2	n/a – North Facing Window				
	W3	30%	4%	1.00	1.00	0%
F1	W1	n/a – North Facing Window				

*Table 7.1.2 – Results of APSH analysis for **No. 1 Elsworthy Terrace**.*

	APSH - Assessment over Whole Year					
		Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Window	All year	Winter	All year	Winter	
B	W1	n/a – North Facing Window				
	W2	n/a – North Facing Window				
	W3	16%	0%	1.00	1.00	0%
G	W1	n/a – North Facing Window				
	W2	n/a – North Facing Window				
	W3	n/a – North Facing Window				
	W4	29%	4%	1.00	1.00	0%
F1	W1	n/a – North Facing Window				
	W2	n/a – North Facing Window				

*Table 7.1.3 – Results of APSH analysis for **No. 2 Elsworthy Terrace**.*

The assessment requirements set out in the BRE Guidelines have been reiterated below. For the assessment to conclude that the sunlighting of the existing dwelling could be adversely affected, all three of the following tests need to have been failed:

a) Does the window receive less than 25% of the APSH, or less than 5% the APSH between 21st September and 21st March?

b) Does the assessed window receive less than 0.8 times its former sunlight hours during either the 'whole year' or 'winter' period?

c) Is the reduction in sunlight received over the whole of the year greater than 4% of the APSH?

When the results of the APSH analysis summarised in Table 7.1 are inspected, it can be seen that in the majority of cases the 'all year' sunlight hours with the development in place remain above the 25% threshold and the winter value is well above 5%.

The only exception to this is found in table 7.1.1 – Window 1 in the basement floor of No. 23 Elsworthy Road. The APSH result for this window, when testing winter sunlight provision, reduces from 2% under the existing development, to 0% sunlight provision under the proposed scheme. The ratio of change therefore exceeds the 0.8 change ratio stipulated in BRE Guidelines. This is not unusual for any development in an urban environment because the sun is low in the sky during the winter months and therefore surrounding windows are sensitive to any change to the surrounding skyline.

Furthermore, whilst the room layout in this property is not known, photographic evidence suggests that this is not the only window serving this room and can therefore be assessed as a secondary window. Examining results from the other window serving this room (see Table 7.1.1- Window 2. Basement floor) it is clear that the overall daylight and sunlight provision to this room does not fall below the threshold set by BRE Guidelines. Consequently, it can be concluded that the impact of the proposed development will be **negligible**.

7.2 Sun on the Ground

The BRE Guidelines acknowledge that good site layout planning for daylight and sunlight should not limit itself to providing good natural light inside buildings. Sunlight in the space between buildings has an important effect on the overall appearance and ambiance of a development. The worst situation is to have significant areas on which the sun does not shine for a large part of the year. These areas would, in general, be damp, chilly and uninviting.

The 2011 BRE Guidelines suggest that the Spring Equinox (21st March) is a suitable date for the assessment and therefore using the specialist software described in Section 5.3, the path of the sun is tracked to determine where the sun would reach the ground and where it would not.

The BRE guidelines recommend that at least half of a garden or amenity area should receive at least 2 hours of sunlight on March 21st or the area which receives 2 hours of direct sunlight should not be reduced to less than 0.8 times its former value (i.e. there should be no more than a 20% reduction).

Typical examples of areas that could be considered as open spaces or amenity areas are main back gardens of houses, allotments, parks and playing fields, children's playgrounds, outdoor swimming pools, sitting-out areas, such as in public squares and focal points for views.

The following areas have been identified as sensitive amenity areas and the results of the sun on the ground analysis are summarise in Table 7.2:

- Area 1 – Rear gardens to No. 1 Elsworthy Terrace
- Area 2 – Rear gardens to No. 2 Elsworthy Terrace

The shadow positions have been plotted throughout the day (21st March) and the results of this analysis summarised in Table 7.2 below. The graphical results are included in Appendix A.2.

Amenity area	Percentage of area lit for 2 hours or more on the 21st March		Ratio of change	Compliant with BRE criteria?
	Existing	Proposed		
Area 1	84%	83%	0.98	Yes
Area 2	64%	64%	1.00	Yes

Table 7.2 – Results of the Sun on Ground analysis

From the above results, it can be seen that the two amenity areas benefit from direct sunlight to well over 50% of their area on the 21st March. Consequently, it can be concluded that the proposed development will not result in a noticeable increase in overshadowing to the neighbouring gardens.

7.3 Transient Overshadowing

The BRE Guidelines suggest that where large buildings are proposed, which may affect a number of open spaces or amenity areas, it is useful and illustrative to comment on the overshadowing that will occur throughout the day and at different times of the year.

In this situation it is not considered that the development is sufficiently large, nor that the potential overshadowing will impact a large number of amenity areas and therefore an assessment of transient overshadowing is not considered appropriate.

7.4 Solar Glare

Solar glare or dazzle can affect neighbouring buildings and pose potential hazards for road users under certain circumstances. The BRE Guidelines highlight two particular cases were this can be a problem; these being where there are large areas of reflective glass or cladding on the façade, or where large areas of glass or cladding slope back such that high altitude sunlight can be reflected along the ground.

When the proposed design is considered, it can be seen that the building does not slope back, nor does it include large areas of reflective glass or cladding. Given the building design and the BRE Guideline's stance on this matter, it is not considered necessary or appropriate to incorporate an analysis of solar glare.

8 Daylight Provision Within New Rooms

8.1 Assessment of Impact of Trees

Whilst the proposed buildings will not be significantly overshadowed by any of the adjacent buildings, there is potential for the provision of daylight to the new rooms within the development to be affected by the line of mature deciduous trees along the Seymour Road elevation.

Quantifying the impact that trees have on daylighting is not a straightforward process as the tree canopy only causes partial shade; additionally, the daylight radiating through it varies depending on the time of year and the amount of leaf cover. The BRE Guidelines include specific analytic procedures that allow the impact that trees have on the provision of daylight to be quantified and this is expressed in terms of the Average Daylight Factor (ADF). The procedure is different to that normally used when simply taking account of adjacent building and requires each tree to be accurately reproduced within the 3D numerical model. This has been achieved using the dimensions and descriptions of the trees included within the Measured Site and Scheme Drawings (Ko and Partners, London- Sept. 2015).

The basis of the analysis is that the VSC is calculated for two scenarios. The first calculation ignores the presence of the trees whilst the second includes the trees as fully opaque features. A formula is then applied that applies a transparency factor, which is specific to each species of tree for both 'in leaf' (summer) and 'bare branch' (winter) conditions. This analysis has been carried out for all of the habitable rooms of the proposed development that face Seymour Road.

The results of the ADF analysis is summarised in Table 8.1 below:

Floor	Analysis /room ref no.	ADF (Summer)	ADF (Winter)	Room Type	Recommended minimum value
B2 (lower basement)	R2 (Bedroom 5)	1.02%	1.23%	Bedroom	1.0%
B1 (basement)	R1 (Bedroom 4)	1.78%	3.18%	Bedroom	1.0%
	R2 (Bedroom 3)	0.68%	1.21%	Bedroom	1.0%
	R3 (Bedroom 2)	1.24%	1.80%	Bedroom	1.0%
Ground	R1	1.28%	2.14%	Living room	1.5%
	R2	2.06%	3.25%	Dining Room/ Kitchen	2.0%
First	R1 (Bedroom 1)	0.67%	1.88%	Bedroom	1.0%

Table 8.1 – Calculated ADF Values (values in red are below recommended minimum value)

The British Standard Code of Practice for Daylighting, BS8206-2 sets out the minimum recommended values of ADF for different types of room and these values are included in Table 8.1 for reference. When considering the impact of trees on daylight provision, the BRE Guidelines state the following:

- Where the ADF values are exceeded for both summer and winter conditions, the daylight would be considered to be adequate

- Where the ADF values are below the minimum recommended values for both summer and winter conditions the daylight would not be considered to be adequate

- For a room where the ADF value is exceeded in the winter but not the summer, daylight provision year round is likely to be adequate, although it is clear that the trees are having some effect on daylight.

From the results in Table 8.1 it can be seen that with the exception of Bedrooms 1 and 3 and the Living Room, all other rooms achieve or exceed the minimum ADF value during summer and winter conditions. However, Bedrooms 1 and 3 and the Living Room only achieve the target values in the winter months when the trees allow greater light transmission. Notwithstanding this, the fact that the winter ADF values exceed the recommended targets means that these rooms can still be considered as adequately lit throughout the year.

8.2 Annual Probable Sunlight Hours

The BRE Guidelines provide guidance in respect of sunlight quality for new developments stating: *"in housing, the main requirement for sunlight is in living rooms, where it is valued at any time of the day, but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchens where people prefer it in the morning rather than the afternoon."*

The assessment criteria set out within the BRE document are discussed in Section 4.3 of this report, but in general terms the overall objective sought by the guidelines is as follows:

"In general, a dwelling or non-domestic building which has a particular requirement for sunlight, will appear reasonably sunlit provided that at least one main window faces within 90 degrees of due south; and the centre of at least one window to a main living room can receive 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months between 21 September and 21 March.

It is also worth noting that in paragraph 3.1.11 of the BRE guidance it is suggested that if a room faces significantly north of due east or west it is unlikely to meet the recommended levels of sunlight. From this it can be deduced that only windows facing within 90 degrees of due south can be assessed using this methodology.

A further observation from paragraph 5.3 of the BS 8206-2 is that with regards to sunlight duration, the degree of satisfaction is related to the expectation of sunlight. Therefore, if a room is north facing or if the building is in a densely-built urban area, the absence of sunlight is more acceptable than when its exclusion seems arbitrary.

For the windows of the habitable rooms, the alignment and APSH tests have been undertaken. The results of this analysis are summarised in Table 8.2. Where a room has more than one window on the same elevation, then the larger, more dominant window is tested. The results of the ADF analysis is summarised in Table 8.1 below.

Floor	Window Ref.	Analysis /room ref no.	APSH 'all year'	APSH 'winter'
B2 (lower basement)	W2	R2 (Bedroom 5)	1%	0%
B1 (basement)	W1	R1 (Bedroom 4)	3%	0%
	W2	R2 (Bedroom 3)	7%	0%
	W3	R3 (Bedroom 2)	9%	0%
Ground	W1	R1 (Living Room)	17%	2%
	W2	R2 (Dining room)	18%	2%
	W3	R2 (Dining room)	18%	2%
First	W1	R1 (Bedroom 1)	18%	2%

Table 8.2 – Results of APSH analysis

From the results summarised in Table 8.2 it can be seen firstly that all rooms receive at least some degree of direct sunlight, albeit that the majority of this is during the summer months.

When the provision of sunlight to the main living spaces on the ground floor is examined, it can be seen that these rooms will receive sunlight all year round, with 2% being achieved during the winter months.

Whilst these values fall marginally below the aspirational target values of 25% of the annual, and 5% of the winter sunlight, it is first necessary to acknowledge the orientation of the windows. With the exception of windows of Bedrooms 4 and 5, all other windows face within 90 degrees of due north. For windows of such orientation the BRE Guidelines acknowledge that it is not possible to achieve the aspirational target values.

Consequently, it is necessary to make the assessment of whether the amount of sunlight to these rooms is adequate based on a degree of professional judgement. This approach is acknowledge and supported by the BRE Guidelines, which themselves state that the target vales set out within the document are purely for guidance and require interpretation based on the circumstances surroundings each case.

Taking all of the above factors into consideration, it is evident that the overall objective of the BRE Guidelines is fulfilled in that the main living rooms of the house receive sunlight throughout the year. The guidelines also acknowledge that sunlight in bedrooms is less important, but nevertheless, the proposed design has still managed to achieve a degree of sunlight. Therefore in summary, it is considered that the provision of sunlight to the habitable rooms within the development is more than sufficient to achieve the beneficial effects that sunlight brings to a room.

9 Conclusions

The detailed analysis undertaken as part of this assessment has examined the impact of the proposed development on the amount of daylight enjoyed by the neighbouring buildings. In line with the assessment criteria prescribed by the BRE Guideline, it has been shown that the reduction in daylighting to the windows of the neighbouring buildings is less than the value that is considered to represent a notable impact.

The assessment of the impact of the proposed development on the sunlight enjoyed by the neighbouring buildings has also shown that whilst there will be a reduction in the number of probable sunlight hours enjoyed by these windows, this reduction is again within the limits prescribed by the BRE Guidelines as being acceptable.

Furthermore, provision of daylight/ sunlight to rooms within the proposed development has shown to exceed limits stipulated in the BRE Guidelines and habitable rooms will therefore be well lit under the proposed scheme.

In summary, the development proposals have been appraised in line with the guidelines set out in the BRE document. When assessed against the criteria for establishing whether the proposed development will have a significant impact, it has been possible to conclude that the development will not result in a notable reduction in the amount of either daylight or sunlight enjoyed by the neighbouring buildings.

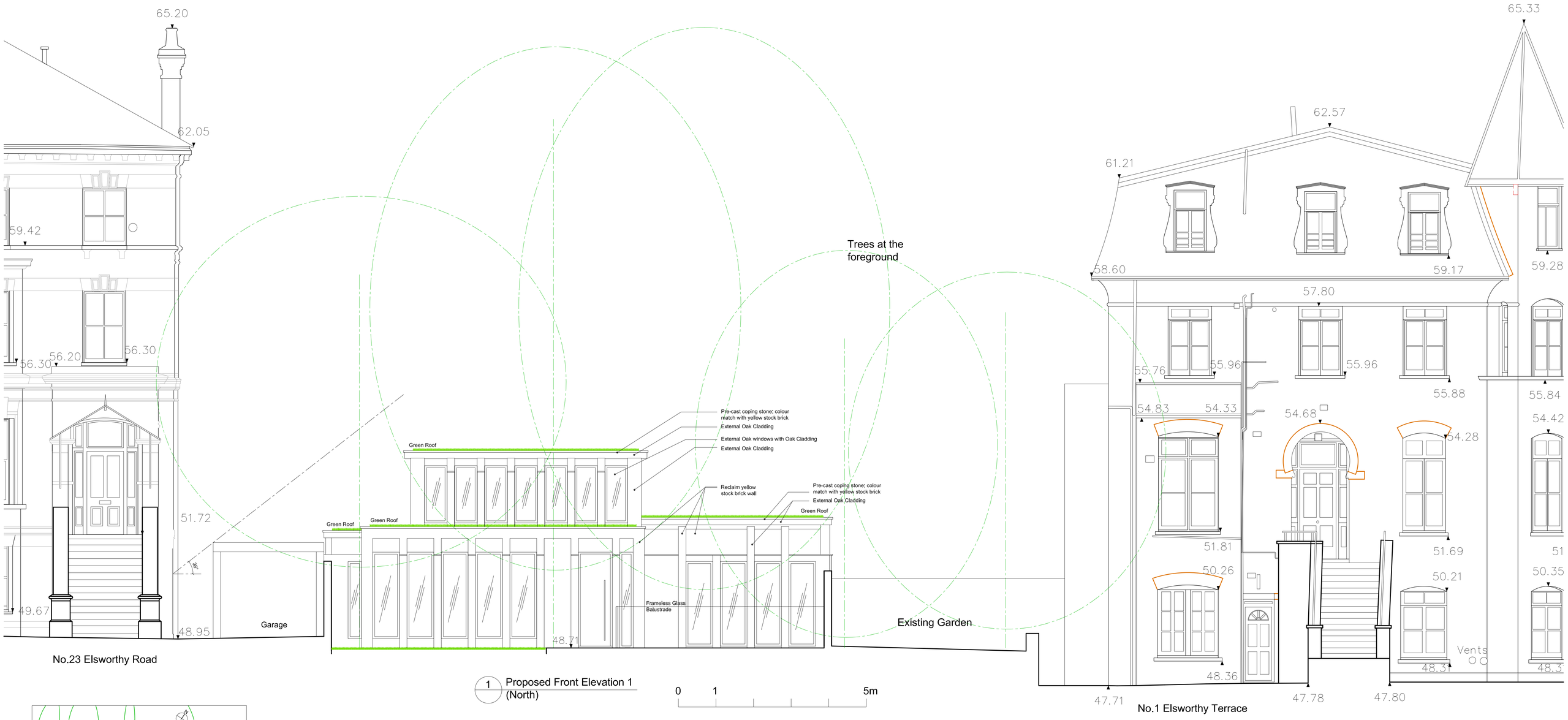
A Appendices

A.1 Appendix A.1 – Scheme Drawings

A.2 Appendix A.2 – Graphical Model Outputs

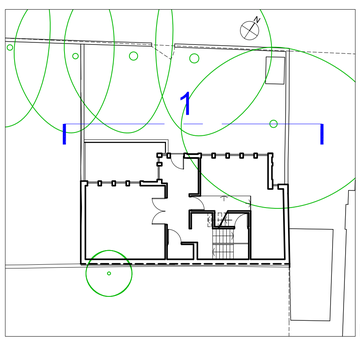
A.3 Appendix A.3 – Daylight and Sunlight Calculations

Appendix A.1 – Scheme Drawings



1 Proposed Front Elevation 1 (North)

0 1 5m



KEY

GENERAL NOTES

All dimensions are in millimetres

REVISION

A	OCT 15	Add details and annotations
B	OCT 15	Add details and annotations
C	JAN 16	Revised Elevations Design
D	FEB 16	Add Green Wall to the rear elevation (South)
E	APR 16	Issue for application

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Project: **Land to the rear of 1 Elsworthy Terrace, London NW3 3DR** **FOR APPLICATION**

PROPOSED FRONT ELEVATION 1

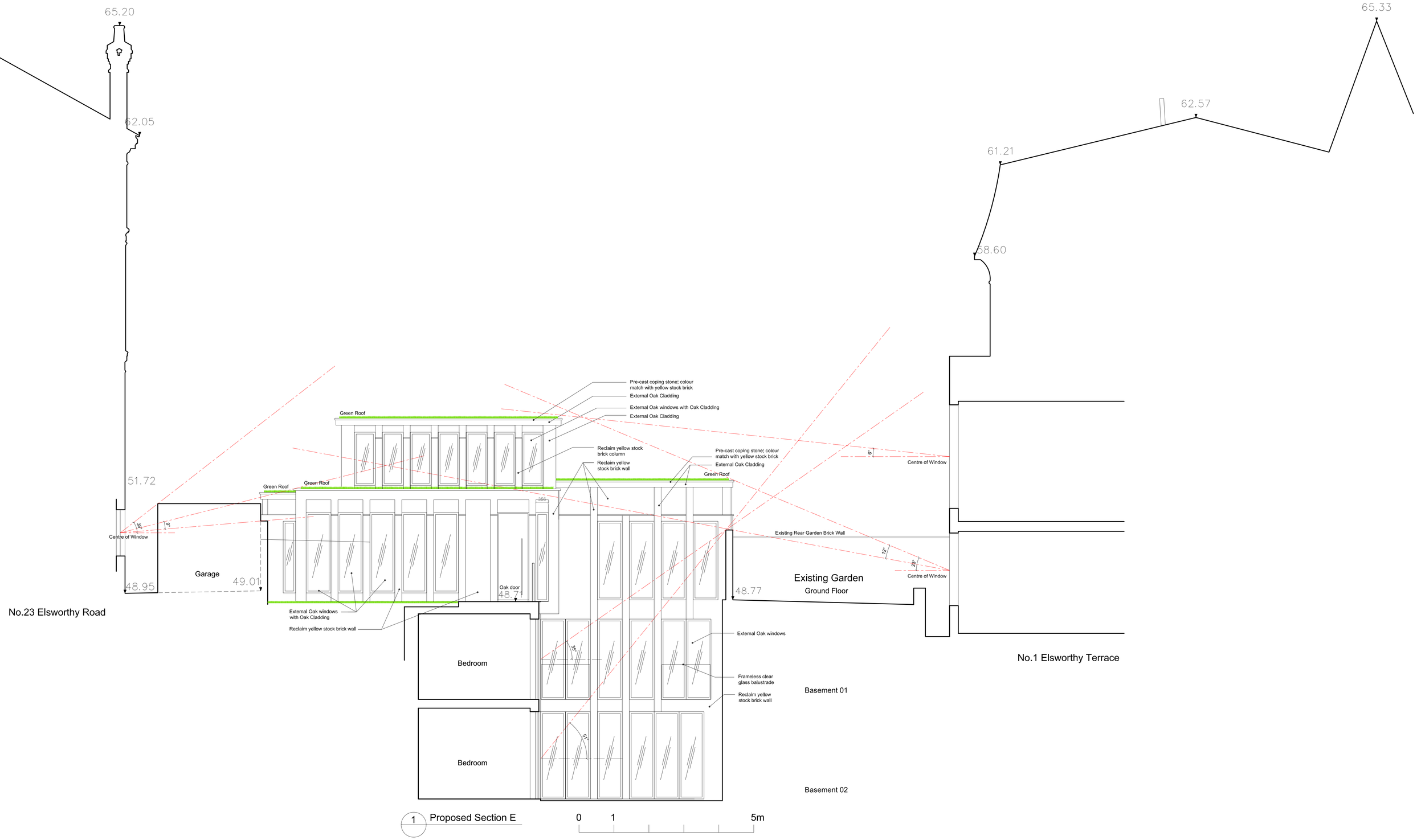
433-A-002

Revision: E

Date: APR 2016

Scale: 1:50@A1

Client: **Nourani**



GENERAL NOTES

All dimensions are in millimetres

REVISION

A	SEP 15	Add window details	
B	NOV 15	Revised Elevations Design	
C	JAN 16	Revised Elevations Design	
D	FEB 16	Add Green Wall to the rear elevation (South)	
E	APR 16	Issue for application	

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Project: **Land to the rear of 1 Elsworthy Terrace, London NW3 3DR** **FOR APPLICATION**

PROPOSED SECTION E

433-A-003

Revision: E

Date: APR 2016

Scale: 1:50@A1

Client: **Nourani**

Sample of Green Roof

Sample of Permeable Paving

GENERAL NOTES

All dimensions are in millimetres

REVISION

A	NOV 15	Revised Elevations Design
B	OCT 15	Add details and annotations
C	JAN 16	Revised Elevations Design
D	FEB 16	Add Green Wall to the rear elevation
E	APR 16	Issue for application

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Project: Land to the rear of 1 Elsworthy Terrace, London NW3 3DR

FOR APPLICATION

PROPOSED ROOF FLOOR PLAN

433-A-004

Date: APR 2016

Revision: E

Scale: 1:50@A1

Client: Nourani

Location Plan
scale 1:1250

ELSWORTHY ROAD

N

Dropped Kerb

GY 48.35

48.32 LP 48.38 48.52

WV

CL: BT 48.31m

CPS

48.55 48.67 SP

48.73 48.81 48.78 48.81 48.90 48.83 49.00

Gas

WV

48.29 48.36 48.43 48.60 48.68 Brick Wall 1.5h 48.78 48.88 48.91 48.98 49.03

Steps Up 48.29 48.34 48.32

48.33 48.40 48.60 48.40 48.59 48.67 48.77 48.85 48.61 48.27 48.41 48.61 48.59 48.60

Gravel

1 0.4/14/10 Unknown

2 0.4/14/10 Crab Apple

CBT 1.8h

Brick Retaining Wall 1.0h

Steps Up 47.77

47.74 48.62 47.70 47.77 48.63

58.53 Eave

62.55 Ridge

48.69 E 48.67 48.71

Grass

Existing Garden

2

F

48.71 Steps Up

47.82 48.63 48.78 48.77

No.1 Elsworthy Terrace

No.2 Elsworthy Terrace

Green Wall

0.2/3/7 6 Holly

Existing Garden

New Timber Door 49.13

Permeable Paving

Existing Trees to be retained; refer to the Arboriculture Report

Existing Garden

Shed

49.17 49.02 Brick Wall 1.5h 49.01

1 A B C D

New GRP Manhole

Manhole

Frameless Glass Balustrade

Void

Entrance Lobby

Store

Living Area = 26.1 sq m

Potential Aperture size for through floor lift, with size of 1000mm x 1500mm

Dining / Kitchen Area = 22.3 sq m

1200 manoeuvring zone

FD30

810

Lobby

Store

Kitchen

Dishwasher

1400x1700 Wheelchair turning Ellipse

Cloak Room

RWP SVP

Built-in Refrigerator

Built-in Oven

4

48.96 48.90

Garage

61.90 Eave

No.23 Elsworthy Road

65.92 Ridge

3

1 Proposed Ground Floor Plan
Area = 74.2 sq m

0 1 5m

GENERAL NOTES

All dimensions are in millimetres

REVISION

A	SEP 15	Add window details	
B	OCT 15	Add details and annotations	
C	JAN 16	Revised Elevations Design	
D	FEB 16	Add Green Wall to the rear elevation (South)	
E	APR16	Issue for planning	

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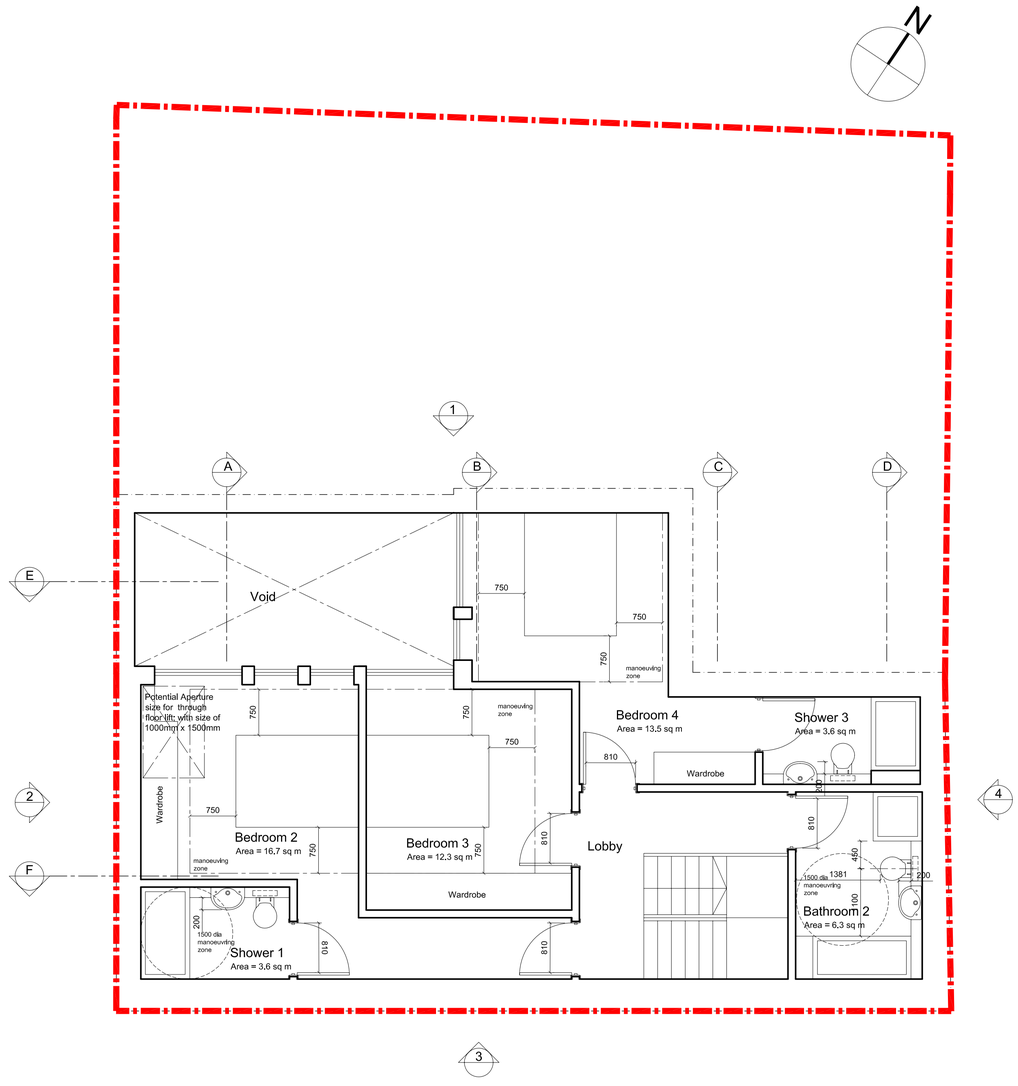
Project: **Land to the rear of 1 Elsworthy Terrace, London NW3 3DR** **FOR APPLICATION**

PROPOSED GROUND FLOOR PLAN

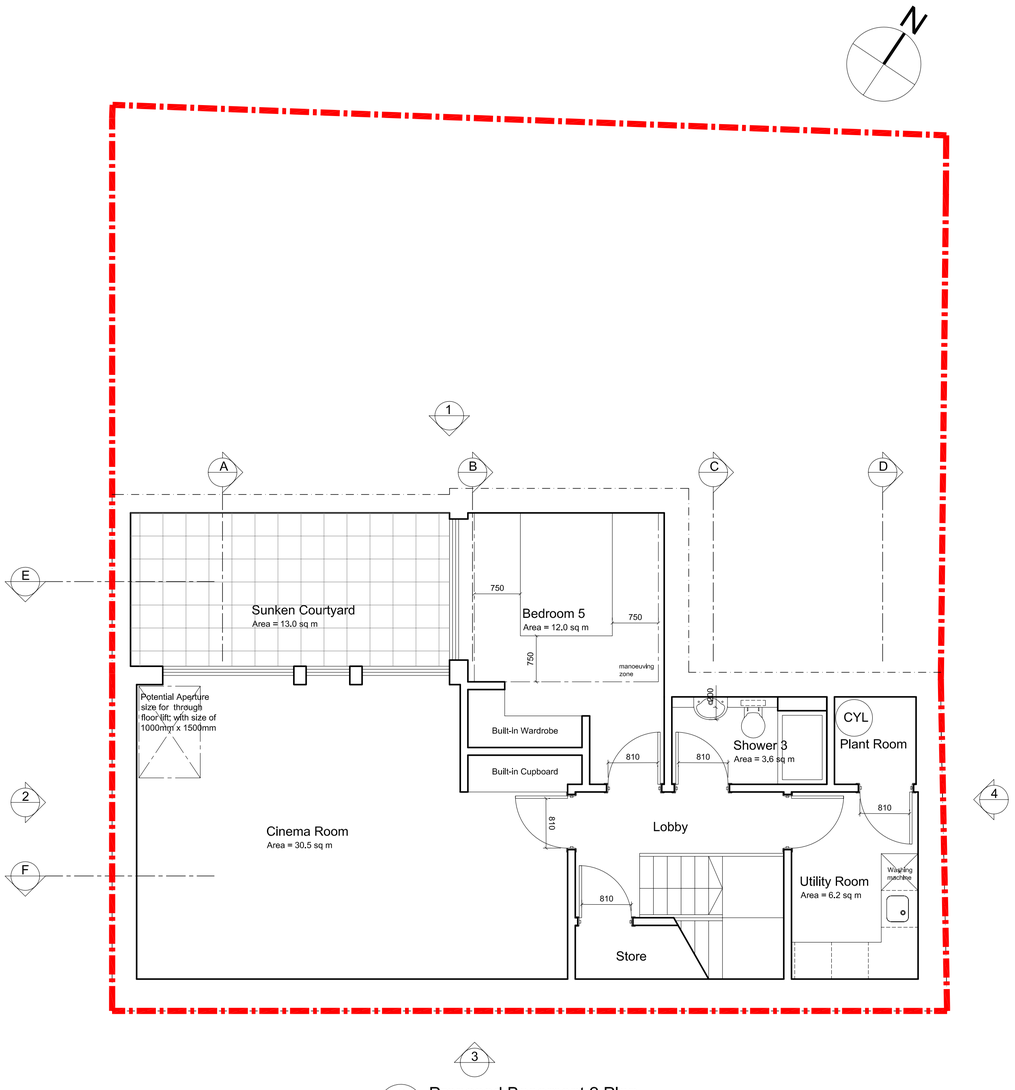
433-A-005

Revision: E
Scale: 1:50@A1
Date: ARP 2016

Client: **Nourani**



1 Proposed Basement 1 Plan
Area = 70.2 sq m



2 Proposed Basement 2 Plan
Area = 70.2 sq m

0 1 5m

GENERAL NOTES

All dimensions are in millimetres

REVISION

A	SEP 15	Add window details	
B	OCT 15	Add details and annotations	
C	JAN 16	Revised Elevations Design	
D	FEB 16	Add Green Wall to the rear elevation (South)	
E	APR 16	Issue for application	

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Project: **Land to the rear of 1 Elsworthy Terrace, London NW3 3DR** FOR APPLICATION

PROPOSED BASEMENT 1 AND 2 PLANS

Date: APR 2015

433-A-006

Revision: E

Scale: 1:50@A1

Client: **Nourani**

ELSWORTHY ROAD

N

Brick Wall 1.5h

New Timber Door

Permeable Paving

Existing Trees to be retained; refer to the Arboriculture Report

Existing Garden

Shed

Vold

Green Roof

Bathroom 1
Area = 5.5 sq m

Bedroom 1
Area = 15.5 sq m

Wardrobe

shower

manoeuvring zone

1500 dia manoeuvring zone

Gutter

Green Wall

Brick Wall 1.5h

Dropped Kerb

Steps Up

Brick Retaining Wall 1.0h

Steps Up

Grass

Existing Garden

No.1 Elsworthy Terrace

No.2 Elsworthy Terrace

No.23 Elsworthy Road

Garage

Existing Tree to be retained

0.2/13/7 Holly

0.4/14/10 Unknown

0.4/14/10 Crab Apple

58.53 Eave

62.55 Ridge

61.90 Eave

65.92 Ridge

Centre of Window

45° 45° 20° 6°

1 Proposed First Floor Plan
Area = 21.5 sq m

0 1 5m

GENERAL NOTES

All dimensions are in millimetres

REVISION

A	SEP 15	Add window details	
B	OCT 15	Add details and annotations	
C	JAN 16	Revised Elevations Design	
D	FEB 16	Add Green Wall to the rear elevation (South)	
E	APR 16	Issue for application	

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Project: **Land to the rear of 1 Elsworthy Terrace, London NW3 3DR** **FOR APPLICATION**

PROPOSED FIRST FLOOR PLAN

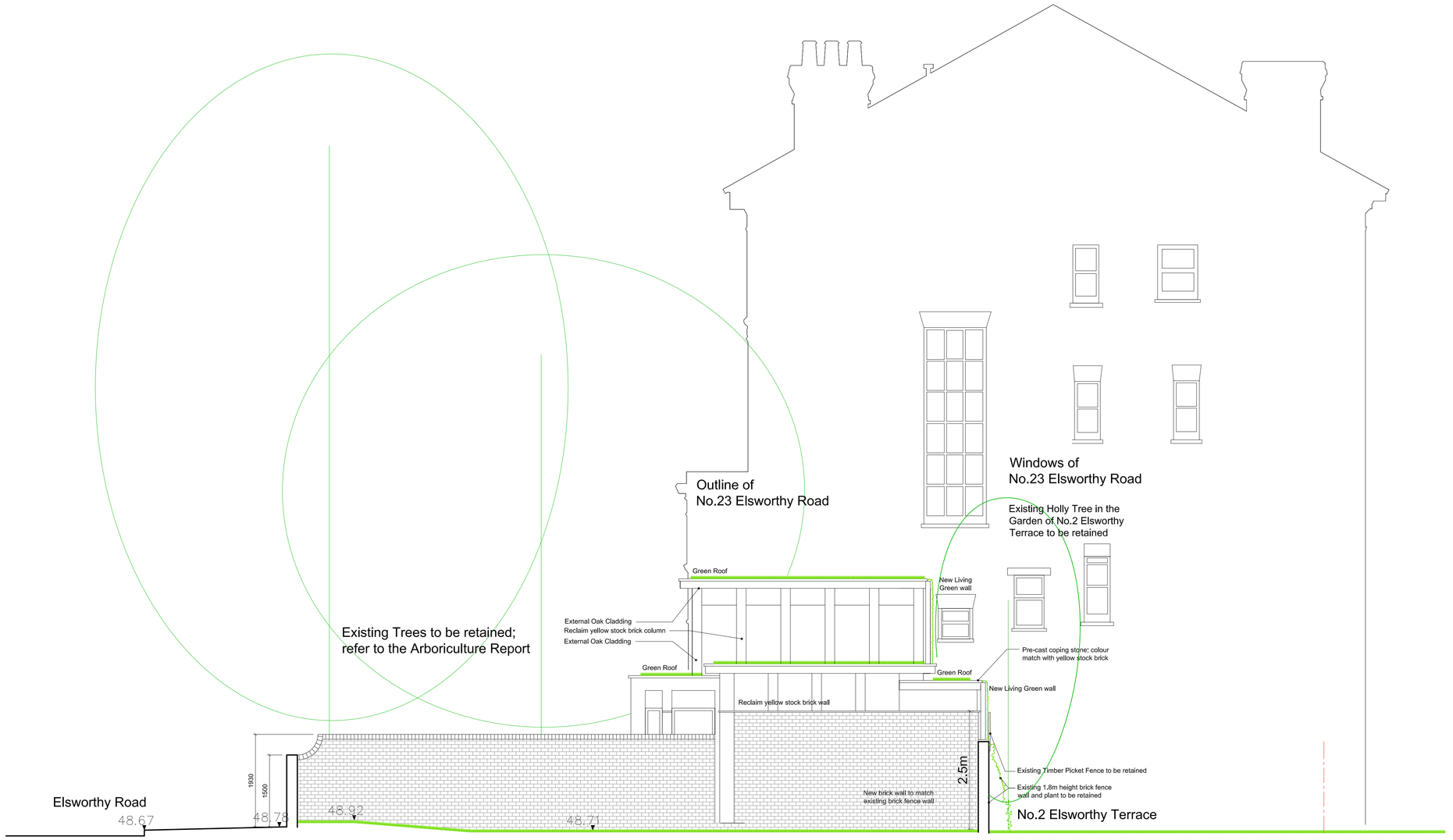
433-A-007

Revision: E

Date: APR 2016

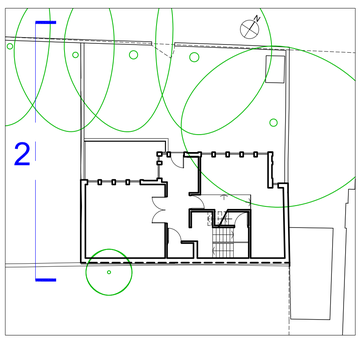
Scale: 1:50@A1

Client: **Nourani**



1 Proposed Side Elevation 2 (West)

0 1 5m



KEY

GENERAL NOTES

All dimensions are in millimetres

REVISION

A	OCT 15	Add details and annotations
B	OCT 15	Add details and annotations
C	JAN 16	Revised Elevations Design
D	FEB 16	Add Green Wall to the rear elevation (South)
E	APR 16	Issue for application

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Project: **Land to the rear of 1 Elsworthy Terrace, London NW3 3DR** **FOR APPLICATION**

PROPOSED SIDE ELEVATION

433-A-008

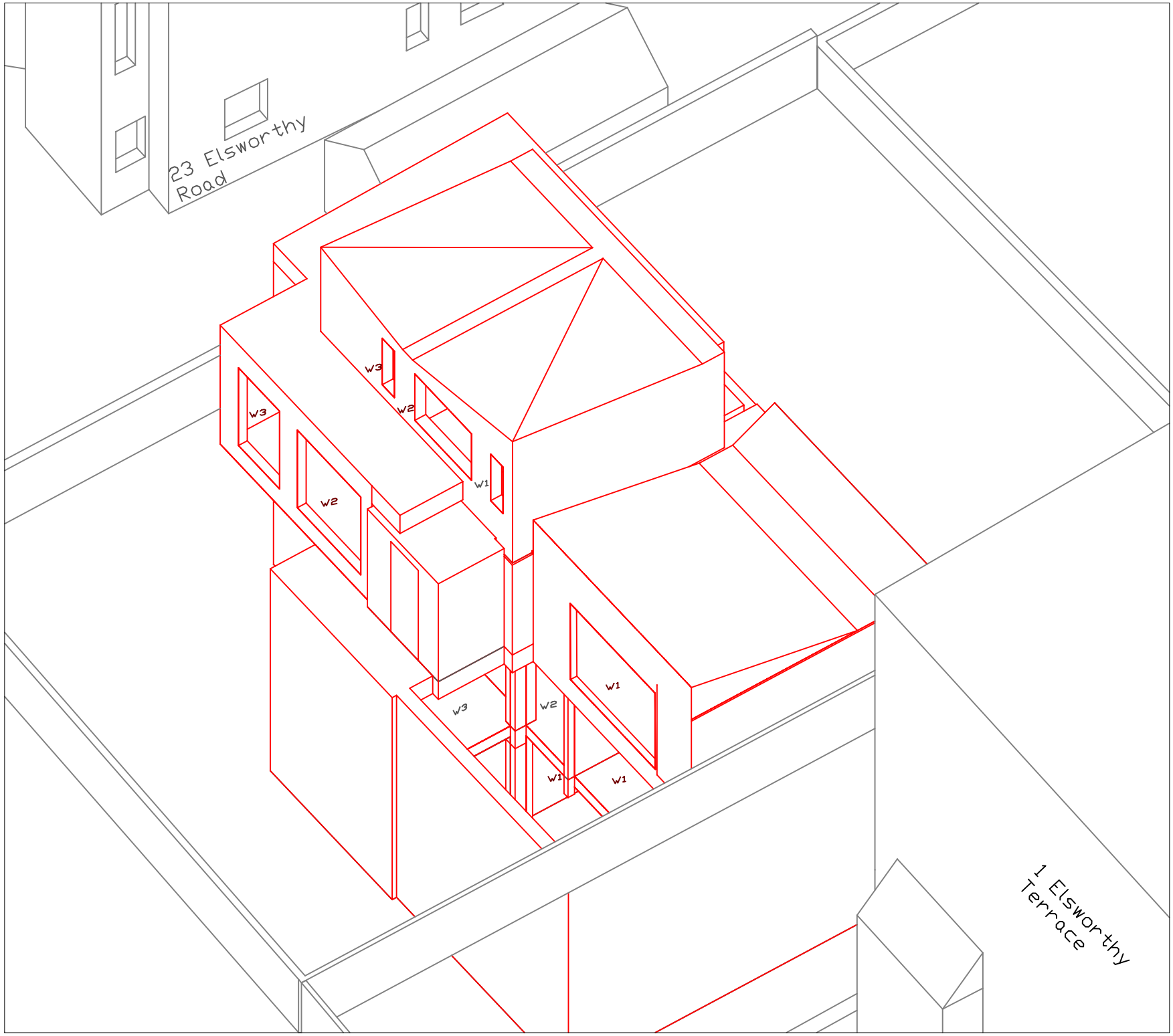
Date: APR 2016

Revision: E

Scale: 1:50@A1

Client: **Nourani**

Appendix A.2 – Graphical Model Outputs



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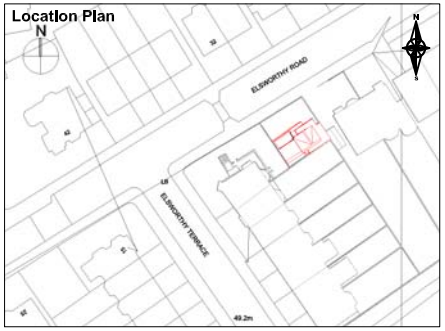
Legend

Location Plan



Rev	Description	Date
00	First issue	20/11/15

CLIENT: Hastings International

PROJECT: Elsworthy Road, London

SCALE	DATE	ANALYST	DRAWN BY
Not to scale	20th November 2015	RM	RM

DWG REF.: 3D Model Image

REV.: 0

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Legend

Location Plan

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Appendix A.3 – Daylight and Sunlight Calculations

Project Name: Elsworthy Road, London
Project No: 1289
Report Title: Daylight & Sunlight Assessment for the Development at Elsworthy Road, London
Architect: Ko and Partners
Scheme Iteration No: n/a
Iteration Description: n/a
Date of Analysis: 07/10/2015
Key drawings: n/a

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Scenario	VSC	Difference	Pass / Fail	Available Sunlight Hours					
								Annual %	Diff	Pass / Fail	Winter %	Diff	Pass / Fail
No. 23													
Basement	R1	Unknown	W1	Existing	22.7	0.92	PASS	25	0.92	PASS	2	0.00	FAIL
				Proposed	20.91			23			0		
Basement	R1	Unknown	W2	Existing	29.95	0.90	PASS	56	0.91	PASS	16	0.88	PASS
				Proposed	26.92			51			14		
Basement	R2	Unknown	W3	Existing	27.77	0.95	PASS	52	0.96	PASS	14	1.00	PASS
				Proposed	26.4			50			14		
Basement	R2	Unknown	W4	Existing	27.47	0.96	PASS	52	0.94	PASS	14	1.00	PASS
				Proposed	26.46			49			14		
Ground	R1	Unknown	W1	Existing	26.08	1.00	PASS	34	1.00	PASS	7	1.00	PASS
				Proposed	26.07			34			7		
Ground	R2	Unknown	W2	Existing	31.63	0.98	PASS	56	0.98	PASS	16	0.94	PASS
				Proposed	31.06			55			15		
Ground	R3	Unknown	W3	Existing	31.79	0.99	PASS	56	1.00	PASS	17	1.00	PASS
				Proposed	31.6			56			17		
Ground	R3	Unknown	W4	Existing	31.85	1.00	PASS	59	1.00	PASS	18	1.00	PASS
				Proposed	31.79			59			18		
First	R1	Unknown	W1	Existing	35.47	1.00	PASS	64	1.00	PASS	22	1.00	PASS
				Proposed	35.47			64			22		
First	R2	Unknown	W2	Existing	35.47	1.00	PASS	63	1.00	PASS	21	1.00	PASS
				Proposed	35.47			63			21		
First	R2	Unknown	W3	Existing	35.35	1.00	PASS	63	1.00	PASS	21	1.00	PASS
				Proposed	35.35			63			21		
Second	R1	Unknown	W1	Existing	38	1.00	PASS	66	1.00	PASS	24	1.00	PASS
				Proposed	38			66			24		
Second	R1	Unknown	W2	Existing	37.97	1.00	PASS	66	1.00	PASS	24	1.00	PASS
				Proposed	37.97			66			24		
No. 1													
Basement	R1	Unknown	W1	Existing	28.62	0.96	PASS	*North Facing					
				Proposed	27.58								
Basement	R1	Unknown	W2	Existing	30.44	0.94	PASS	*North Facing					
				Proposed	28.47								
Basement	R1	Unknown	W3	Existing	11.67	0.92	PASS	0	0.00	PASS	0	0.00	PASS
				Proposed	10.73			0			0		
Ground	R1	Unknown	W1	Existing	31.72	0.99	PASS	*North Facing					
				Proposed	31.51								
Ground	R1	Unknown	W2	Existing	35.06	0.99	PASS	*North Facing					
				Proposed	34.65								
Ground	R1	Unknown	W3	Existing	30.97	0.99	PASS	30	1.00	PASS	4	1.00	PASS
				Proposed	30.73			30			4		
First	R1	Unknown	W1	Existing	37.38	1.00	PASS	*North Facing					
				Proposed	37.38								

No. 2														
Basement	R1	Unknown	W1	Existing	25.29	0.94	PASS	*North Facing						
				Proposed	23.75									
Basement	R1	Unknown	W2	Existing	30.97	0.95	PASS	*North Facing						
				Proposed	29.53									
Basement	R1	Unknown	W3	Existing	21.51	0.98	PASS	16	1.00	PASS	0	0.00	PASS	
				Proposed	21.1			16			0			
Ground	R1	Unknown	W1	Existing	32.54	0.98	PASS	*North Facing						
				Proposed	32.02									
Ground	R2	Unknown	W2	Existing	30.7	0.98	PASS	*North Facing						
				Proposed	30.16									
Ground	R2	Unknown	W3	Existing	35.13	0.99	PASS	*North Facing						
				Proposed	34.66									
Ground	R2	Unknown	W4	Existing	31.36	1.00	PASS	29	1.00	PASS	4	1.00	PASS	
				Proposed	31.23			29			4			
First	R1	Unknown	W1	Existing	36.79	1.00	PASS	*North Facing						
				Proposed	36.79									
First	R2	Unknown	W2	Existing	37.25	1.00	PASS	*North Facing						
				Proposed	37.25									

Project Name: Elsworthy Road, London
Project No: 1289
Report Title: Daylight & Sunlight Assessment for the Development at Elsworthy Road, London
Architect: Ko and Partners
Scheme Iteration No: n/a
Iteration Description: n/a
Date of Analysis: 07/10/2015
Key drawings: n/a

Floor	Room	Room Use.	Window	Room Area	Lit Area Existing	Lit Area Proposed	Difference	Pass / Fail
No. 23								
Basement	R1	Unknown	Area m2	10.74	10.56	10.56	1.00	PASS
			% of room		98.32%	98.32%		
Basement	R2	Unknown	Area m2	14.31	12.99	12.99	1.00	PASS
			% of room		90.78%	90.78%		
Ground	R1	Unknown	Area m2	10.74	4.33	4.33	1.00	PASS
			% of room		40.32%	40.32%		
Ground	R2	Unknown	Area m2	1.55	1.49	1.49	1.00	PASS
			% of room		96.13%	96.13%		
Ground	R3	Unknown	Area m2	7.6	6.88	6.88	1.00	PASS
			% of room		90.53%	90.53%		
First	R1	Unknown	Area m2	1.81	1.79	1.79	1.00	PASS
			% of room		98.90%	98.90%		
First	R2	Unknown	Area m2	7.6	6.16	6.16	1.00	PASS
			% of room		81.05%	81.05%		
Second	R1	Unknown	Area m2	7.6	6.88	6.88	1.00	PASS
			% of room		90.53%	90.53%		
No. 1								
Basement	R1	Unknown	Area m2	40.81	39.84	36.85	0.92	PASS
			% of room		97.62%	90.30%		
Ground	R1	Unknown	Area m2	40.81	40.76	40.76	1.00	PASS
			% of room		99.88%	99.88%		
First	R1	Unknown	Area m2	37.9	37.12	37.12	1.00	PASS
			% of room		97.94%	97.94%		
No. 2								
Basement	R1	Unknown	Area m2	38.62	34.78	30.85	0.89	PASS
			% of room		90.06%	79.88%		
Ground	R1	Unknown	Area m2	4.9	4.22	4.22	1.00	PASS
			% of room		86.12%	86.12%		
Ground	R2	Unknown	Area m2	38.62	36.15	36.14	1.00	PASS
			% of room		93.60%	93.58%		
First	R1	Unknown	Area m2	4.89	4.86	4.86	1.00	PASS
			% of room		99.39%	99.39%		
First	R2	Unknown	Area m2	35.16	34.73	34.73	1.00	PASS
			% of room		98.78%	98.78%		

Project Name: Elsworthy Road, London
Project No: 1289
Report Title: Daylight & Sunlight Assessment for the Development at Elsworthy Road, London
Architect: Ko and Partners
Scheme Iteration No: n/a
Iteration Description: n/a
Date of Analysis: 07/10/2015
Key drawings: n/a

Floor Ref.	Amenity Ref.		Amenity Area	Lit Area Existing	Lit Area Proposed	Difference
No. 1						
Ground	Rear	Area m2	93.58	78.8	77.87	0.98819797
		Percentage		84%	83%	
No. 2						
Ground	Rear	Area m2	116.83	75.03	75.03	1
		Percentage		64%	64%	

Project Name: Elsworthy Road, London
Project No: 1289
Report Title: Daylight & Sunlight Assessment for the Development at Elsworthy Road, London
Architect: Ko and Partners
Scheme Iteration No: n/a
Iteration Description: n/a
Date of Analysis: 07/10/2015
Key drawings: n/a

Floor	Room	Tree type	Full leaf	Bare branch	ADF from model (Trees Opaque)	ADF from model (No Trees)	Recommended ADF	Summer ADF	Winter ADF	
Lower Basement	Bedroom R2	Lime (10, 55)	10	55	0.97	1.50	1.0	1.02	1.23	Pass
Upper Basement	Bedroom R1	Lime (10, 55)	10	55	1.42	4.97	1.0	1.78	3.18	Pass
	Bedroom R2	Lime (10, 55)	10	55	0.54	1.90	1.0	0.68	1.21	Pass
	Bedroom R3	Lime (10, 55)	10	55	1.10	2.52	1.0	1.24	1.80	Pass
Ground Floor	Living R1	Lime (10, 55)	10	55	1.06	3.24	1.5	1.28	2.14	Pass
	Dining/ Kitchen R2	Lime (10, 55)	10	55	1.76	4.78	2.0	2.06	3.25	Pass
First Floor	Bedroom R1	Lime (10, 55)	10	55	0.36	3.44	1.0	0.67	1.88	Pass

Project Name: 1289_Elsworthy Road, London_Rev0
Project No: 1289
Report Title: VSC and APSH Tests
Architect:
Scheme Iteration No:
Iteration Description:
Date of Analysis: 19/11/2015
Key drawings:

Proposed

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Scenario	VSC	Difference	Pass / Fail	Available Sunlight Hours					
								Annual %	Diff	Pass / Fail	Winter %	Diff	Pass / Fail
Basement	R1	Unknown	W1	Existing	4.41	1.00	PASS	0	0.00	PASS	0	0.00	PASS
				Proposed	4.41			0			0		
Basement	R2	Unknown	W2	Existing	3.87	1.00	PASS	1	1.00	PASS	0	0.00	PASS
				Proposed	3.87			1			0		
Below Ground	R1	Unknown	W1	Existing	19.09	1.00	PASS	3	1.00	PASS	0	0.00	PASS
				Proposed	19.09			3			0		
Below Ground	R2	Unknown	W2	Existing	13.65	1.00	PASS	7	1.00	PASS	0	0.00	PASS
				Proposed	13.65			7			0		
Below Ground	R3	Unknown	W3	Existing	9.94	1.00	PASS	9	1.00	PASS	0	0.00	PASS
				Proposed	9.94			9			0		
Ground	R1	Unknown	W1	Existing	37.67	1.00	PASS	17	1.00	PASS	2	1.00	PASS
				Proposed	37.67			17			2		
Ground	R2	Unknown	W2	Existing	39.56	1.00	PASS	17	1.00	PASS	2	1.00	PASS
				Proposed	39.56			17			2		
Ground	R2	Unknown	W3	Existing	39.6	1.00	PASS	18	1.00	PASS	2	1.00	PASS
				Proposed	39.6			18			2		
First	R1	Unknown	W1	Existing	39.58	1.00	PASS	17	1.00	PASS	2	1.00	PASS
				Proposed	39.58			17			2		
First	R1	Unknown	W2	Existing	39.59	1.00	PASS	18	1.00	PASS	2	1.00	PASS
				Proposed	39.59			18			2		
First	R2	Unknown	W3	Existing	39.59	1.00	PASS	18	1.00	PASS	2	1.00	PASS
				Proposed	39.59			18			2		