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Client : Melview Ltd

Daylight and Sunlight Assessment for the Development at No. 338 Kilburn High 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	5th June 2015	SPH	NMM
2	1	Revised following scheme changes.	8th August 2016	NMM	SPH

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Contents

1 Background and Scope of Appraisal

Herrington Consulting has been commissioned by Melview Ltd. to assess the potential impact of the proposed development at 338 Kilburn High Road, London NW6 2QN in relation to daylight, sunlight and overshadowing on the neighbouring building(s). 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 to;
- assess these impacts in line with any relevant planning policies and best practice guidance

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 additional storeys on top of the existing building. 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 Local Development Framework Camden Development Policies - Adoption version 2010

Policy DP26 - Managing the impact of development on occupiers and neighbours

The Council will protect the quality of life of occupiers and neighbours by only granting permission for development that does not cause harm to amenity. The factors we will consider include: a)

visual privacy and overlooking; b) overshadowing and outlook; c) sunlight, daylight and artificial light levels;

Visual privacy, overlooking, overshadowing, outlook, sunlight and daylight

26.3 A development's impact on visual privacy, overlooking, overshadowing, outlook, access to daylight and sunlight and disturbance from artificial light can be influenced by its design and layout, the distance between properties, the vertical levels of onlookers or occupiers and the angle of views. These issues will also affect the amenity of the new occupiers. We will expect that these elements are considered at the design stage of a scheme to prevent potential negative impacts of the development on occupiers and neighbours. To assess whether acceptable levels of daylight and sunlight are available to habitable spaces, the Council will take into account the standards recommended in the British Research Establishment's Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice (1991).

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.

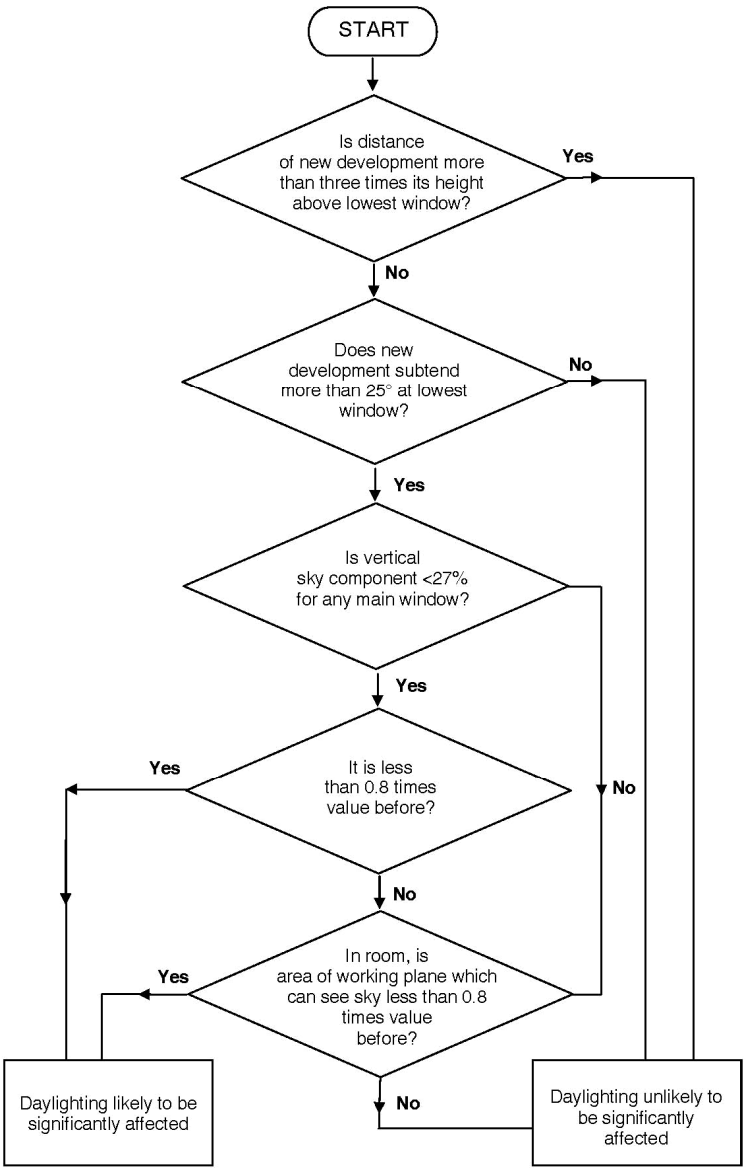
Whilst the BRE Guidelines provide numerical guidance for daylight, sunlight and overshadowing, these criteria should not be seen as absolute targets since, as the document states, the intention of the guide is to help rather than constrain the designer. The Guide is not an instrument of planning policy, 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.

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 scheme drawings in AutoCAD format (Interurban Studios, London – July 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.

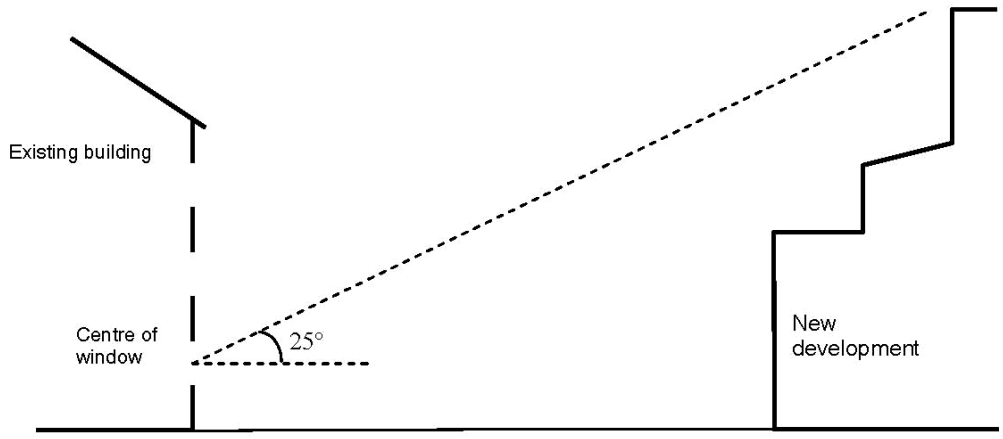


Figure 5.1 – Graphical representation of the 25° Rule (indicative buildings used for illustration purposes only)

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.

Using the 3D model, it is possible to identify all windows having an obstruction angle greater than 25°. Impacts to these windows are therefore deemed to be negligible in line with the criteria set out within the BRE Guidelines.

There are, however, circumstances where the 25-degree rule is not wholly appropriate, for example where the development facing the window does not create a uniform obstruction along the skyline, or where the proposals are not directly adjacent to the receptor window. In these situations, professional judgement is used to differentiate between windows that require more detailed analysis and those that will clearly not be impacted. Where any level of uncertainty exists, the window is taken forward for detailed analysis.

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.

Drawings showing the location of all sensitive receptors that have been assessed as part of this study are included in Appendix A.2 of this report. In summary, habitable rooms in the following residential buildings have been identified as potential sensitive receptors and have therefore been tested.

- Spring Court, Iverson Road
- No. 334 Kilburn High Road
- No. 336 Kilburn High Road
- No. 375 Kilburn High Road

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 5.2 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.

- In situations where windows are deeply set-back beneath balconies or other overhanging features, it is common for these rooms to have low VSC values as a result of the obstruction caused by the balcony. It widely accepted and acknowledged within the BRE Guidelines that the presence of balconies can mask the impact of a proposed development when using the VSC test and therefore the Guidelines suggest that the window should be tested both ‘with’ and ‘without’ the balcony in place. If the ratio of change with the development in place, but with the balconies removed, remains above 0.8, then it can be concluded that it is the presence of the balcony

rather than the introduction of a new building that is the main factor in the relative loss of light.

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 Discussion of Daylighting Impacts

Based on the results of the numerical analysis summarised in Appendix A.3 it is possible to draw conclusions as to the impacts that the proposed development will have on the neighbouring buildings. These are based on the principal numerical tests that are discussed below.

6.1 Vertical Sky Component Assessment

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.

The results of the VSC analysis are summarised below.

Receptor Address	No. of windows tested	No. passing BRE test (negligible impact)	Transgression		
			Minor adverse	Moderate adverse	Major adverse
334 Kilburn High Rd	1	1	0	0	0
336 Kilburn High Rd	5	5	0	0	0
375 Kilburn High Rd	8	8	0	0	0
Spring Court, Iverson Rd	55	55	0	0	0
Total	**69**	**69**	**0**	**0**	**0**

Table 6.1 – Results of Vertical Sky Component (VSC) Analysis

Inspection of the results of this test show that all of the windows either retain a VSC value greater than 27% post development, or have a ratio of change that is greater than 0.8 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**.

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 so that the No Skyline Assessment can be undertaken. The results of the No Sky Line/Daylight Distribution analysis are summarised below.

Receptor Address	No. of rooms tested	No. passing BRE test (negligible impact)	Transgression		
			Minor adverse	Moderate adverse	Major adverse
334 Kilburn High Rd	1	1	0	0	0
336 Kilburn High Rd	3	3	0	0	0
375 Kilburn High Rd	6	6	0	0	0
Spring Court, Iverson Rd	45	45	0	0	0
Total	**55**	**55**	**0**	**0**	**0**

Table 6.2 – Results of No Sky Line (NSL) Analysis

From the results summarised above, it can be seen that as a result of the proposed development, the impact on the daylight distribution within the assessed rooms will be negligible. The reduction in the area of the working plane that has a direct view of the sky will less than 20% therefore occupants are unlikely to notice any change.

6.3 Average Daylight Factor

The 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.

In this situation, the application of the ADF test is important as it allows the light entering the room through each window of the room to be taken into account. The ADF test takes into account the size and number of windows serving each room and therefore allows a more quantitative assessment to be undertaken.

As for the No Sky Line test, the room dimensions are assumed where no internal layout information can be obtained. The numerical results from this analysis are included in the Appendix to this report.

When the more detailed internal daylight analysis is undertaken, the results demonstrate that there is only a very small reduction to the ADF resulting from the proposed development. This level of reduction is significantly less than the 20% permitted by the BRE Guidelines and thus it can be concluded that the daylight received within the assessed rooms will not be substantially reduced as a result of the proposed development at No. 338 Kilburn High Road.

6.4 Summary of Daylighting Impacts

From the results of the daylight analysis, it is evident that there will be a very small reduction in the amount of daylight reaching some of the windows that surround the development site, with the majority of windows and rooms registering little or no reduction whatsoever. When the magnitude of change to those windows that are shown to have reduced daylighting as a result of the proposed development, are examined it is evident that this change represents a reduction of no greater than 11%. When this is compared to the acceptable limits set out within the BRE Guidelines, it can be seen that this is well below the permissible level of 20% reduction and thus represents a negligible change, which is unlikely to be noticeable by the occupants.

In summary, the proposals will result in no change in daylighting levels to the majority of the surrounding windows and only a negligible reduction to the remaining minority.

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.

It should also be noted that where rooms have windows on more than one elevation, it is acceptable to sum the non-coincident sunlight hours to achieve a 'room total'. This approach is acknowledged by the BRE Guidelines and facilitates a greater understanding of the sunlight received within a room by taking into account the fact that some windows will receive sunlight at different times during the day.

The assessment requirements for the APSH test, as 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:

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

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

Test C - Is the reduction in sunlight received over the whole of the year greater than 4% of the APSH?

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.

Receptor Address	No. of windows tested	No. of rooms tested	Test A		Test B	Test C	No. of windows passing at least one test
			Windows passing	Rooms passing			
334 Kilburn High Rd	1	1	1	1	1	1	1
336 Kilburn High Rd	5	3	5	3	5	5	5
375 Kilburn High Rd	8	6	6	6	8	8	8
Spring Court, Iverson Rd	55	45	52	42	51	48	55
Totals	**69**	**55**	**64**	**52**	**65**	**62**	**69**

Table 7.1 – Results of APSH Analysis

When examining the results of the three sunlight tests described above, it is first necessary to understand why there are three separate tests and more importantly, why it is not necessary to pass all three to demonstrate that there is no adverse impact. The BRE Guidelines clearly state that for the proposed development to be considered to have an adverse effect on the available sunlight to neighbouring windows, all three tests would need to have been failed.

This is because sunlight is not assessed in terms of its contribution to the overall lighting levels within the room. The value attributed to sunlight is its transient presence and the way in which it can make a room appear bright and cheerful. There are also therapeutic values associated with sunlight and therefore it can be seen that these are not quantitative metrics that can be assessed using a single pass/fail criteria test. It is also necessary to understand that the amount of sunlight received by a window is strongly influenced by the orientation of the window elevation and any surrounding obstructions.

As a consequence of these factors, the assessment methodology embodied within the three separate tests allows the change in sunlight to be assessed in terms of the magnitude of change, absolute change and the retained level of sunlight. To conclude that a new development has no adverse impact, all that is required is for one of the three tests to be passed.

When the results of the APSH analysis in the appendix are inspected in conjunction with the summarised results in Table 7.1, it can be seen that all windows pass at least one of the three sunlight tests. Consequently, it has been demonstrated that the proposed scheme will have a **negligible** impact on neighbouring buildings.

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.

Inspection of the aerial photographs shows that the land to the rear of Nos. 322 to 336 Kilburn High Road, is situated closest to the site of development. These areas could be viewed as amenity spaces for these properties. However, these areas are located due south of the proposed development site and therefore there is no potential for these areas to be overshadowed by any elements of the proposed scheme.

7.3 Transient Overshadowing

Where amenity areas are used at specific times of day or year, it is useful and illustrative to comment on the overshadowing that will occur throughout the day and at different times of the year. However, with traditional rear gardens and public open spaces that are potentially used all year-round, it is acknowledged by the BRE Guidelines that the 21st March equinox is used, as this represents a much worst case than an assessment during the summer when shadows are shorter and impacts of new development are less magnified.

It is also worth highlighting that whilst the BRE Guidelines do not provide any thresholds or assessment criteria for overshadowing analysis carried out at any date other than the 21st March. All that is quoted in the Guidelines is an acknowledgement that some degree of transient overshadowing should be expected from new development. Consequently, unless there is a specific reason to assess overshadowing at a specific time of day, the use of transient shadow plots is not recommended by the BRE Guidelines.

In this situation it is not considered that any of the amenity areas that are potentially affected by the proposed development would be described as being sensitive to overshadowing at any particular time of day. Consequently, transient overshadowing is not considered appropriate for this assessment.

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 where 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 elevation 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 a detailed analysis of solar glare.

8 Conclusions

The detailed analysis undertaken as part of this assessment has examined the impact of the proposed development at No. 338 Kilburn High Road, in London, on the amount of daylight enjoyed by the neighbouring buildings. In line with the assessment criteria prescribed by the BRE Guidelines, 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.

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.

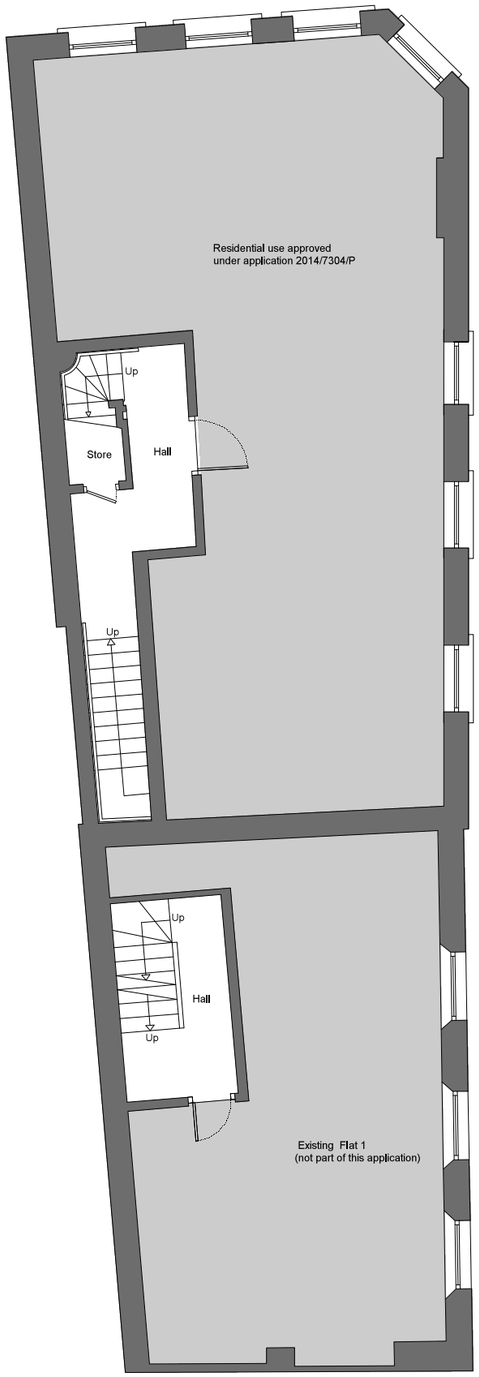
A Appendices

A.1 Appendix A.1 – Scheme Drawings

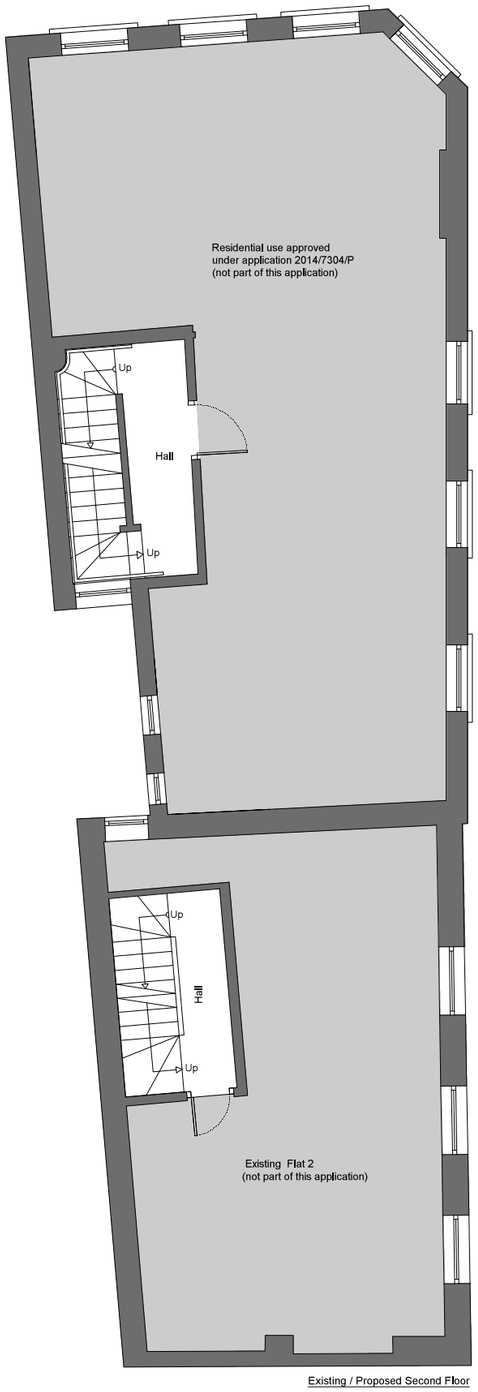
A.2 Appendix A.2 – Graphical Model Outputs

A.3 Appendix A.3 – Tabulated Results for Daylight & Sunlight Calculations

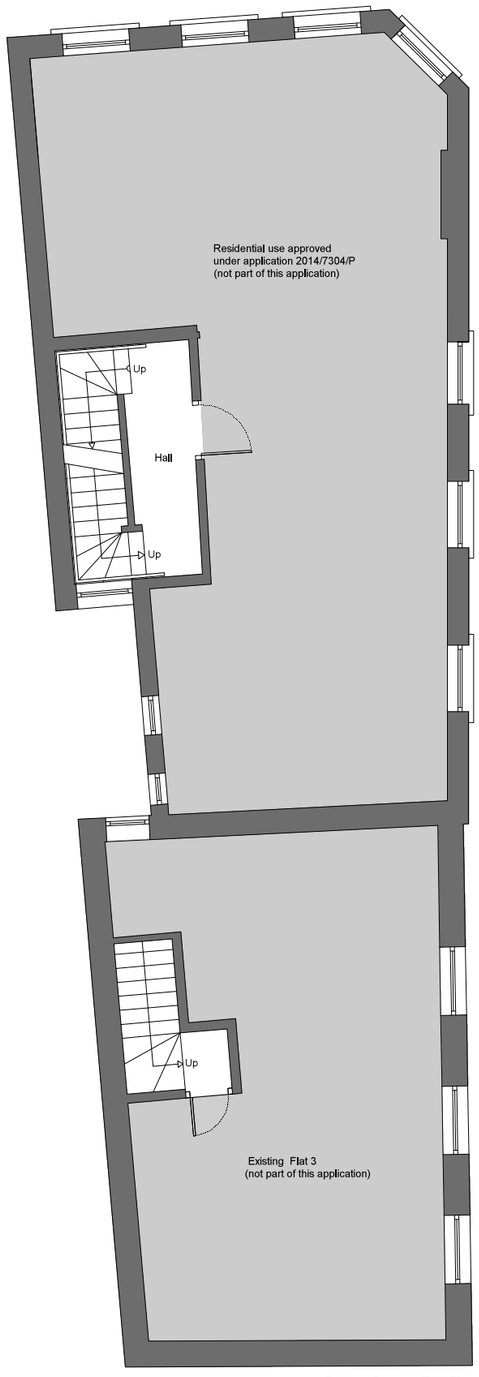
Appendix A.1 – Scheme Drawings



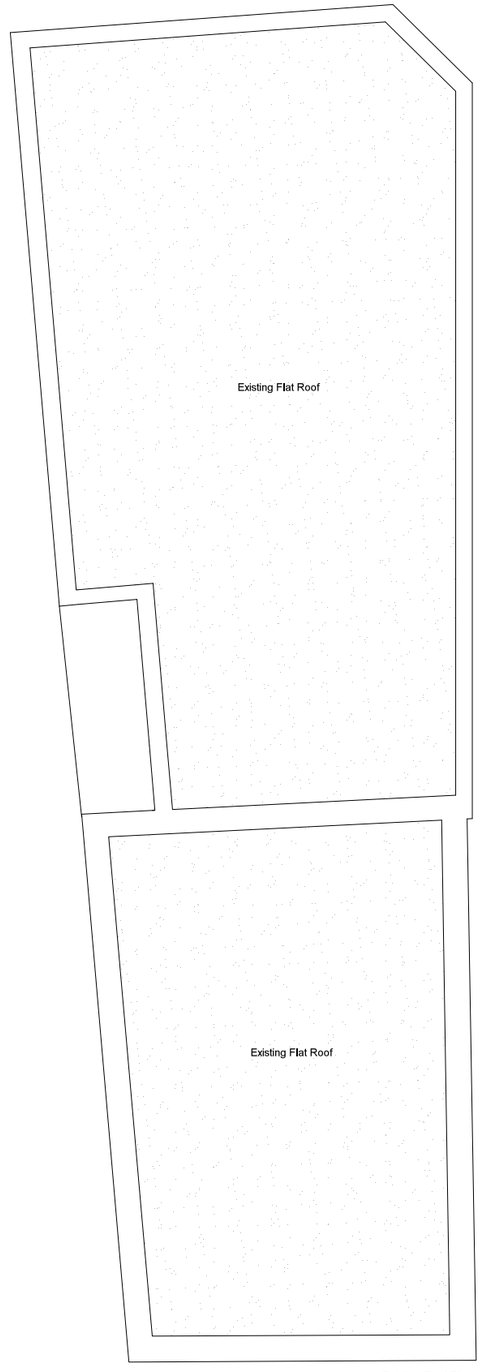
Existing / Proposed First Floor



Existing / Proposed Second Floor



Existing / Proposed Third Floor



Existing Roof Plan

Inter
Urban
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1 Westgate Street
London E8 3RL
020 3095 9748
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info@interurbanstudios.com

PROJECT
338 Kilburn High Road
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CLIENT
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9 Craven Walk
London
N16 6BS

DATE
18.07.2016

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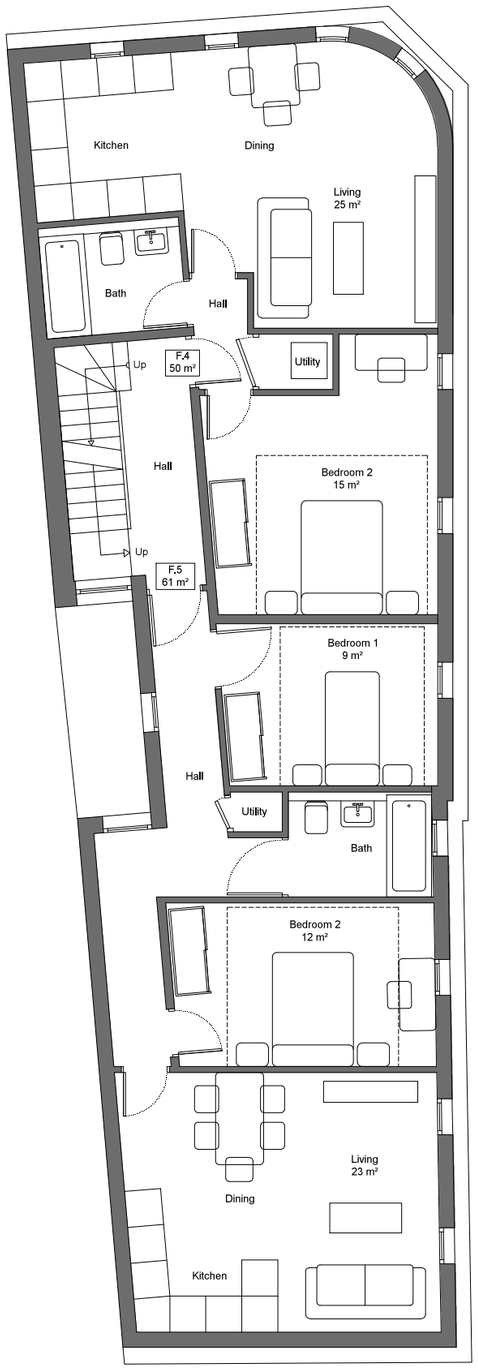
PLANNING

DRAWING
Existing and Proposed
First, Second, and Third
Floor Plans and Existing Roof Plan

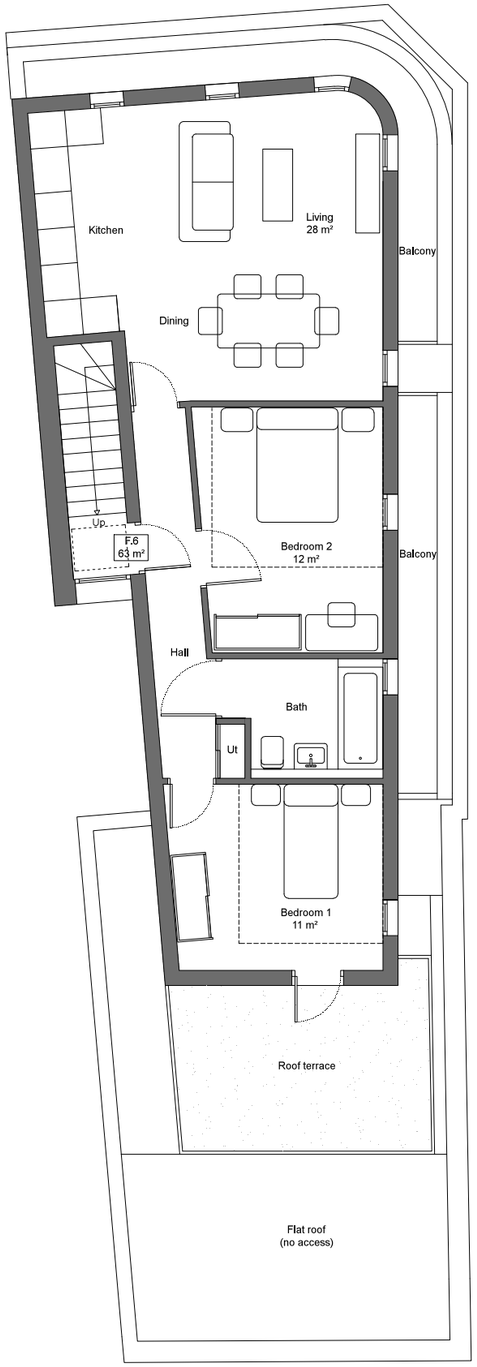
DRAWING NUMBER

PL-02



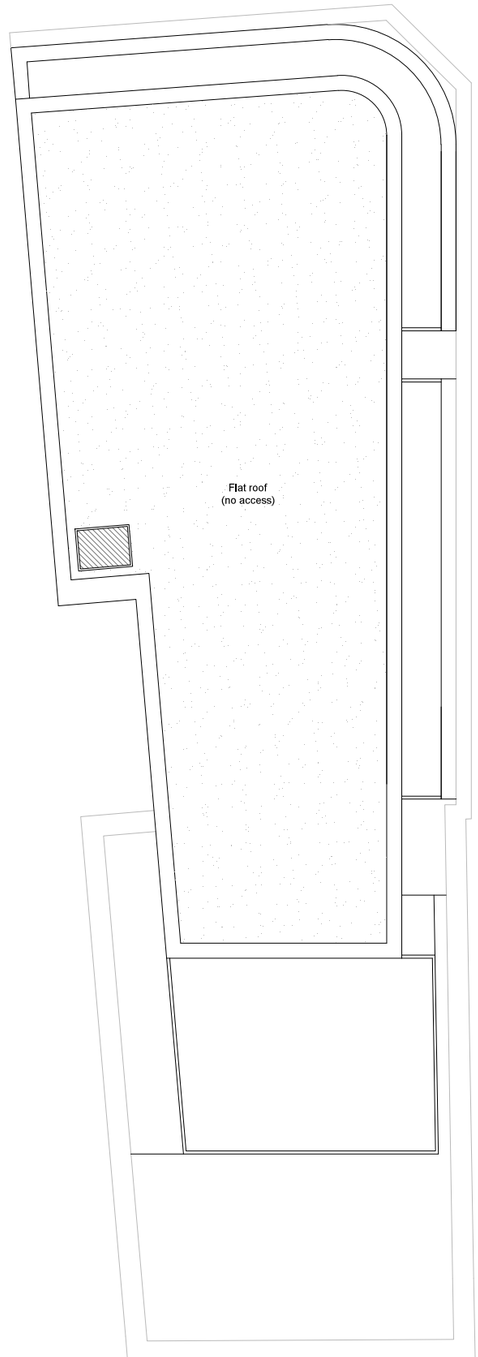
Proposed Fourth Floor

Note: Proposed floor to ceiling height is 2500 mm



Proposed Fifth Floor

Note: Proposed floor to ceiling height is 2500 mm



Proposed Roof Plan

N

0 0.5 1 2 3 4 5

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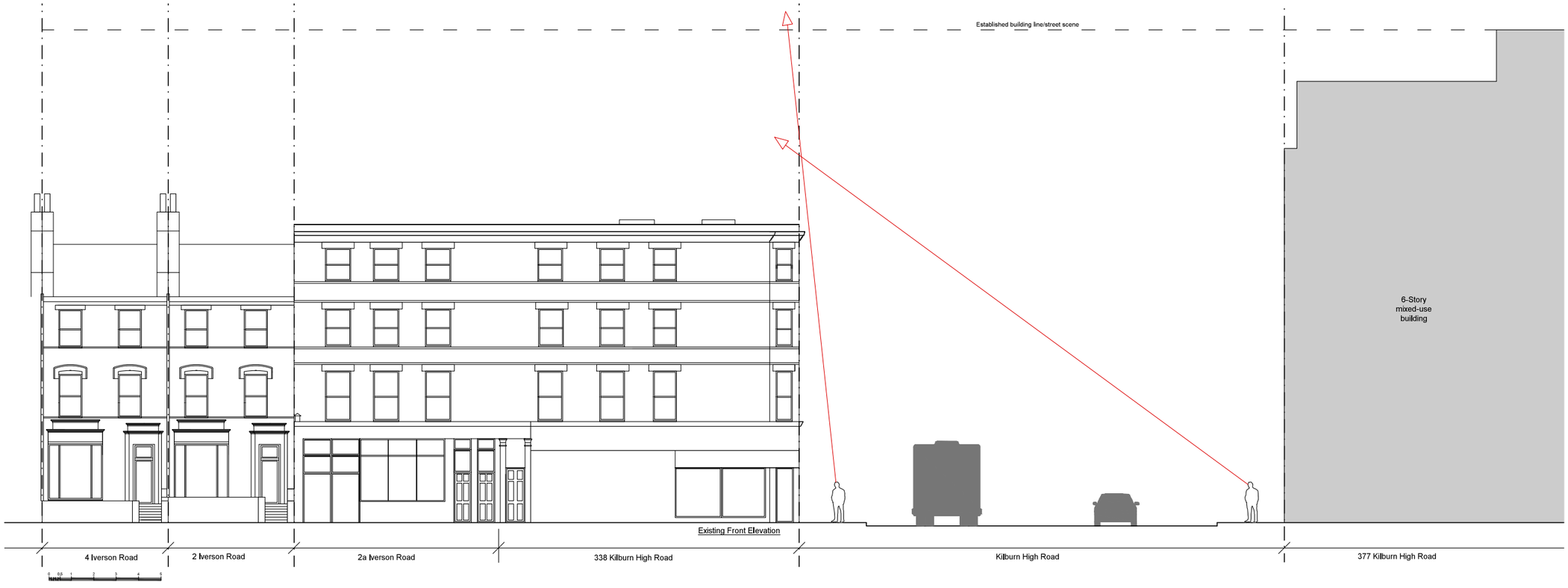
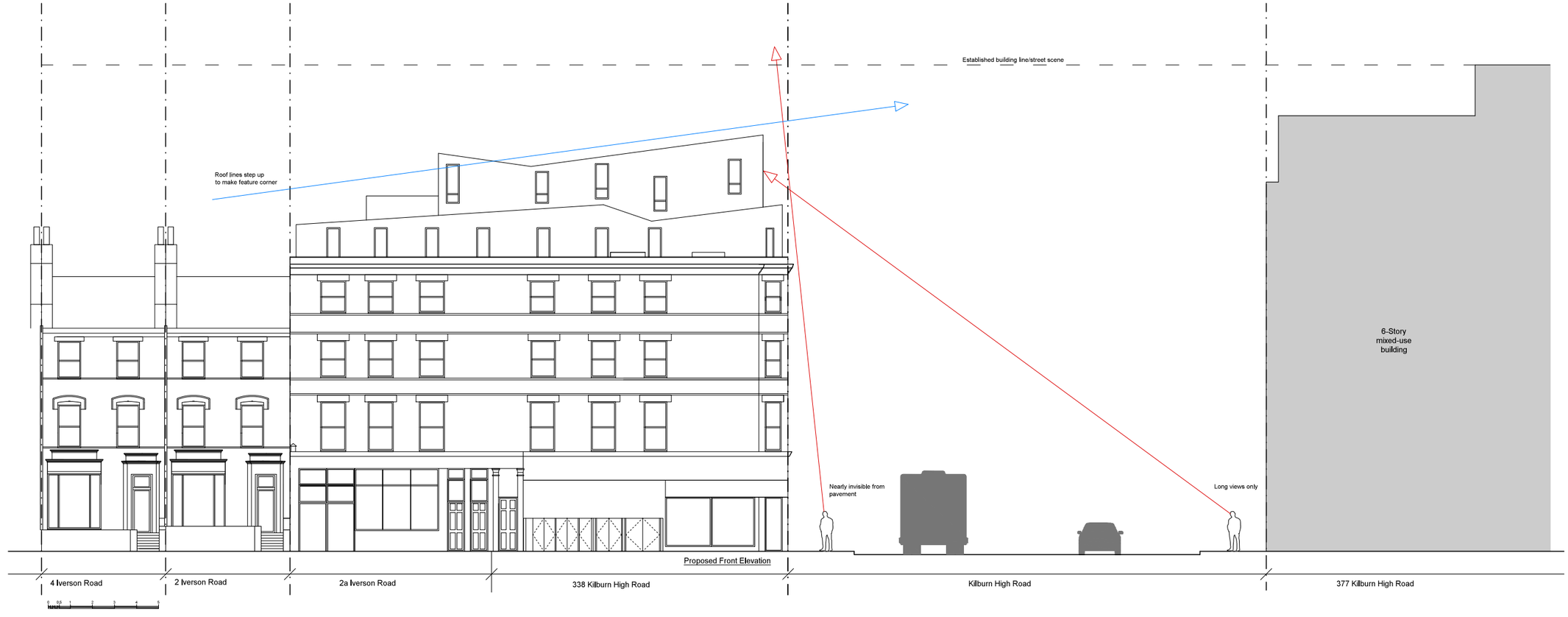
Proposed Fourth, Fifth and Roof Plans

DRAWING NUMBER

PL-03





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Existing and Proposed
Street Elevation Diagrams

DRAWING NUMBER

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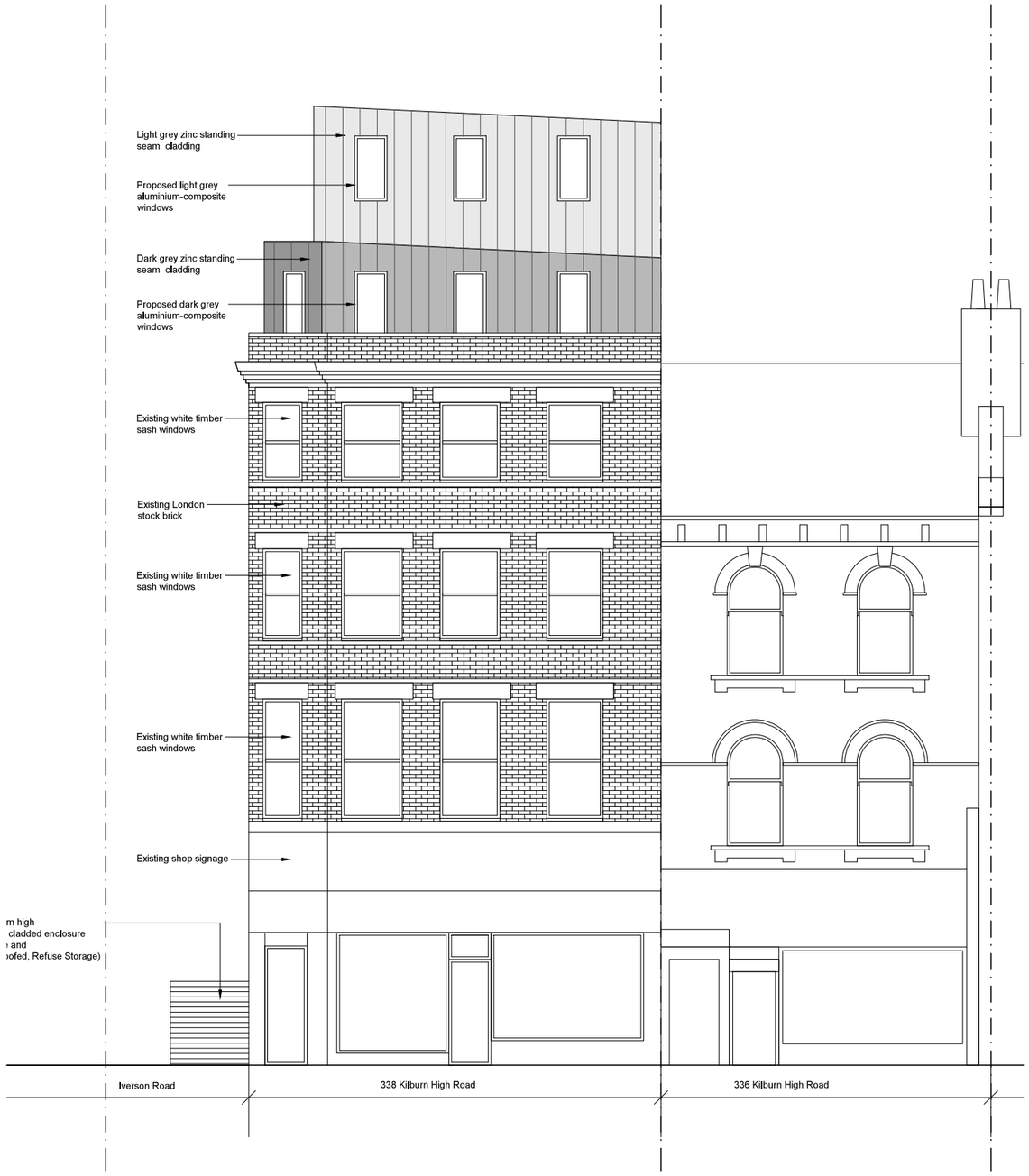

0 0.5 1 2 3 4 5

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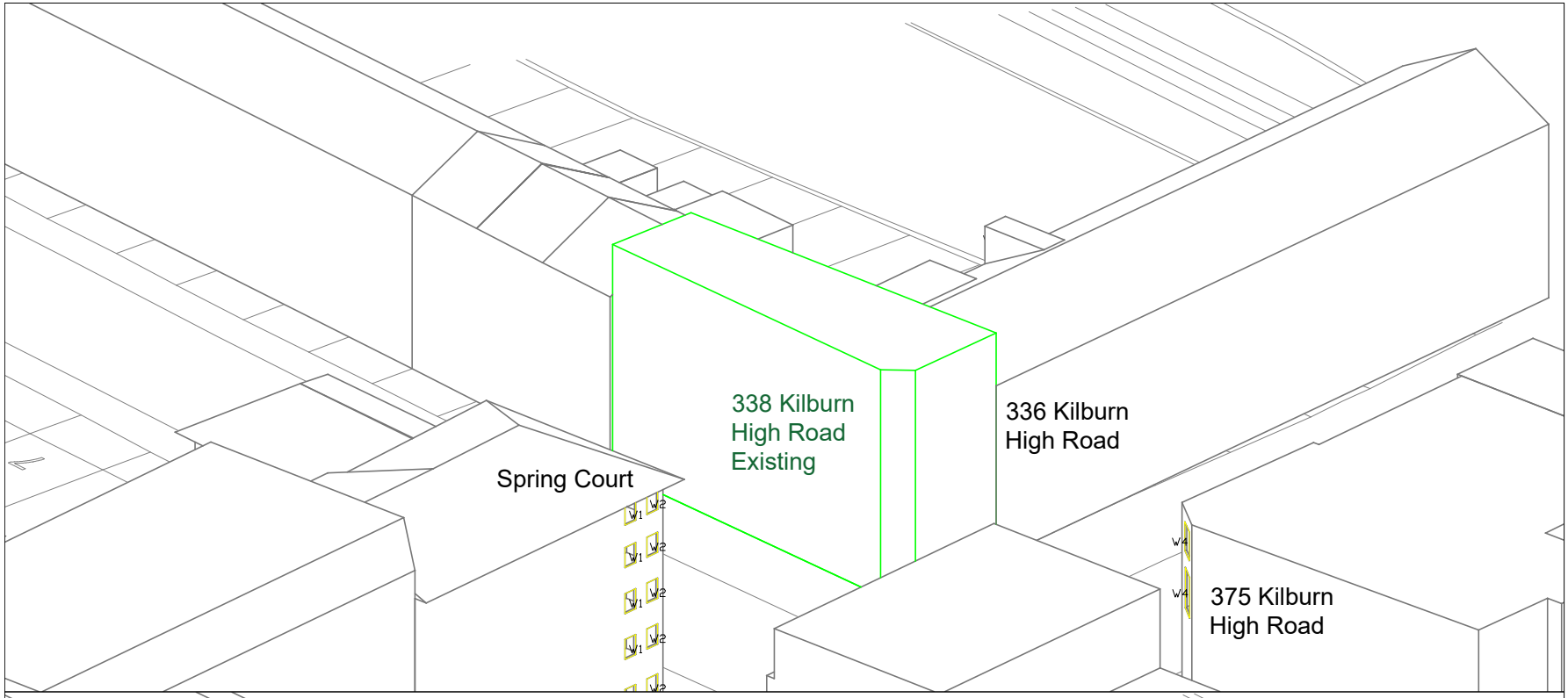
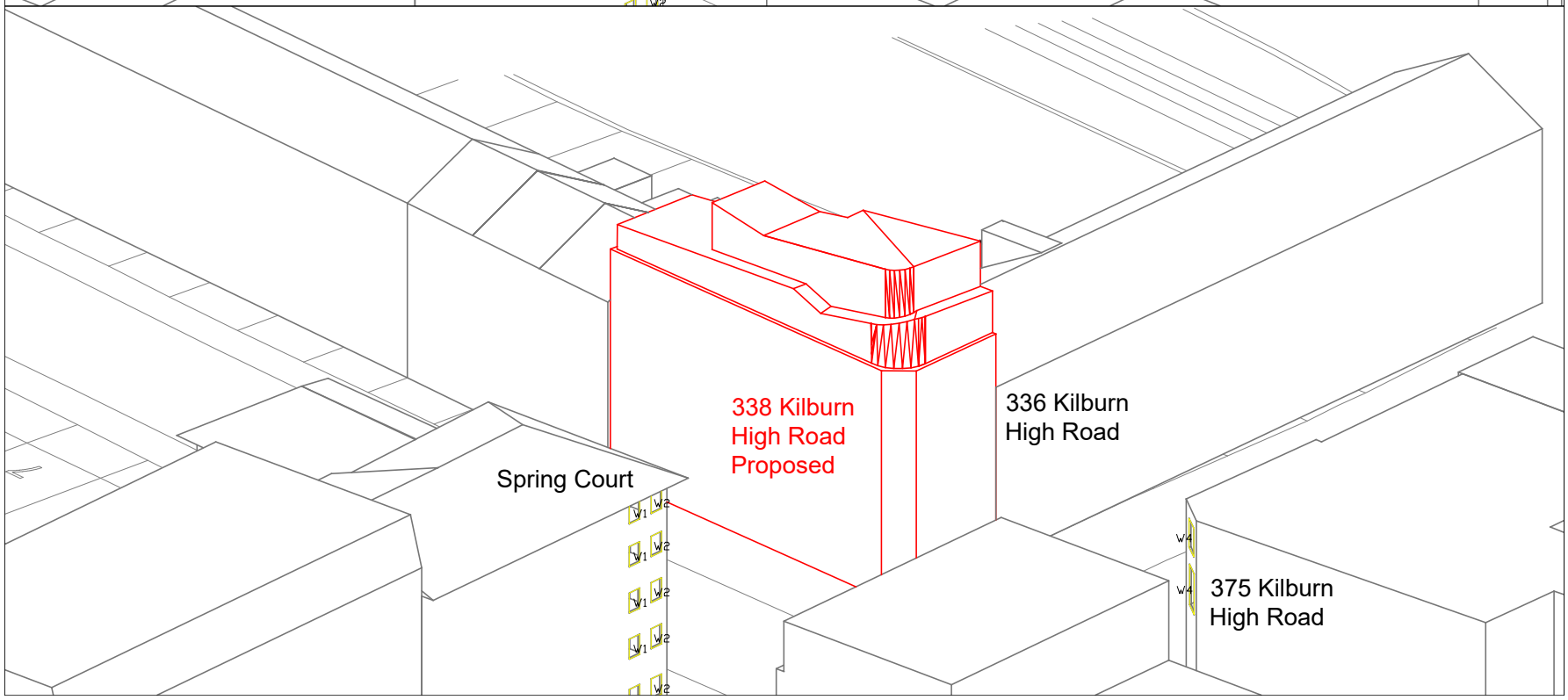
Existing and Proposed Side Elevation

DRAWING NUMBER

PL-06

Appendix A.2 – Graphical Model Outputs





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Legend

Existing Site Location Plan

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PROJECT: No. 338 Kilburn High Road, London

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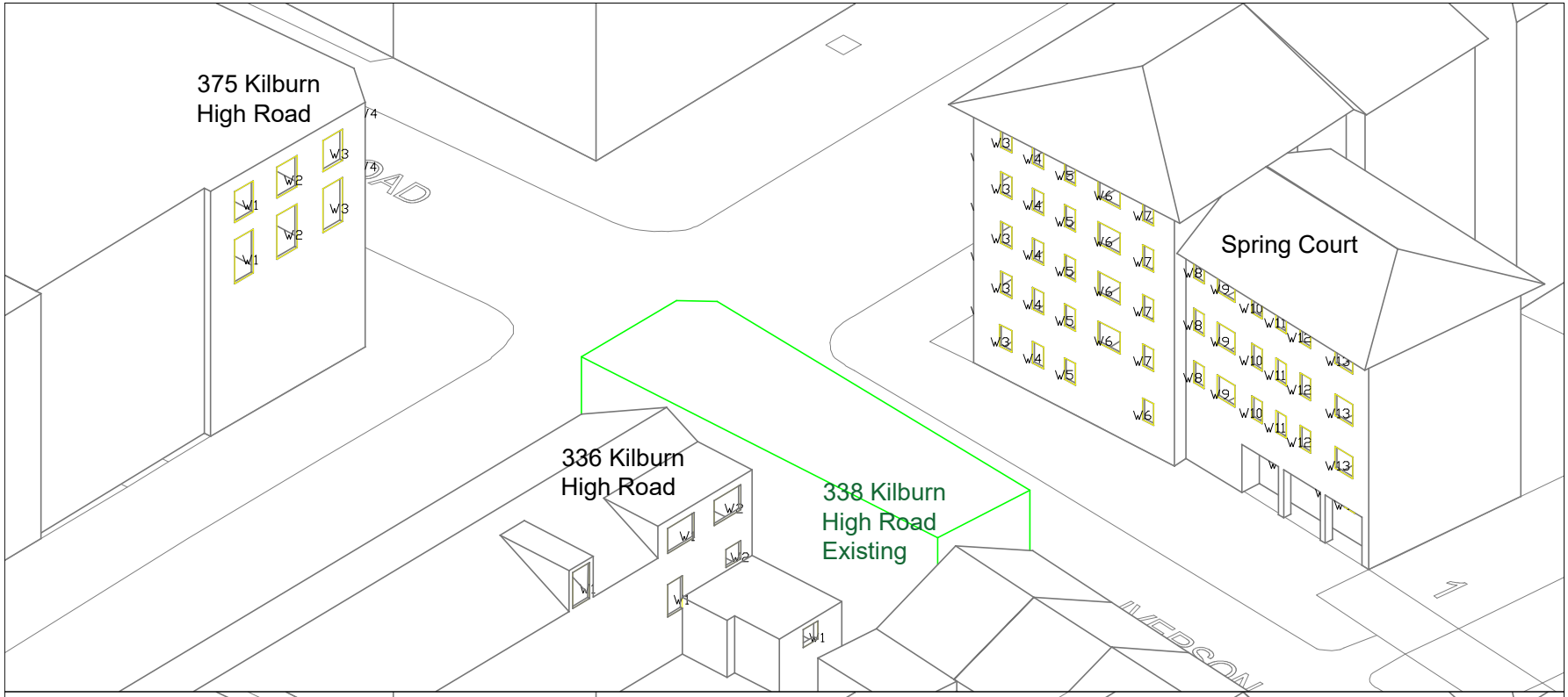
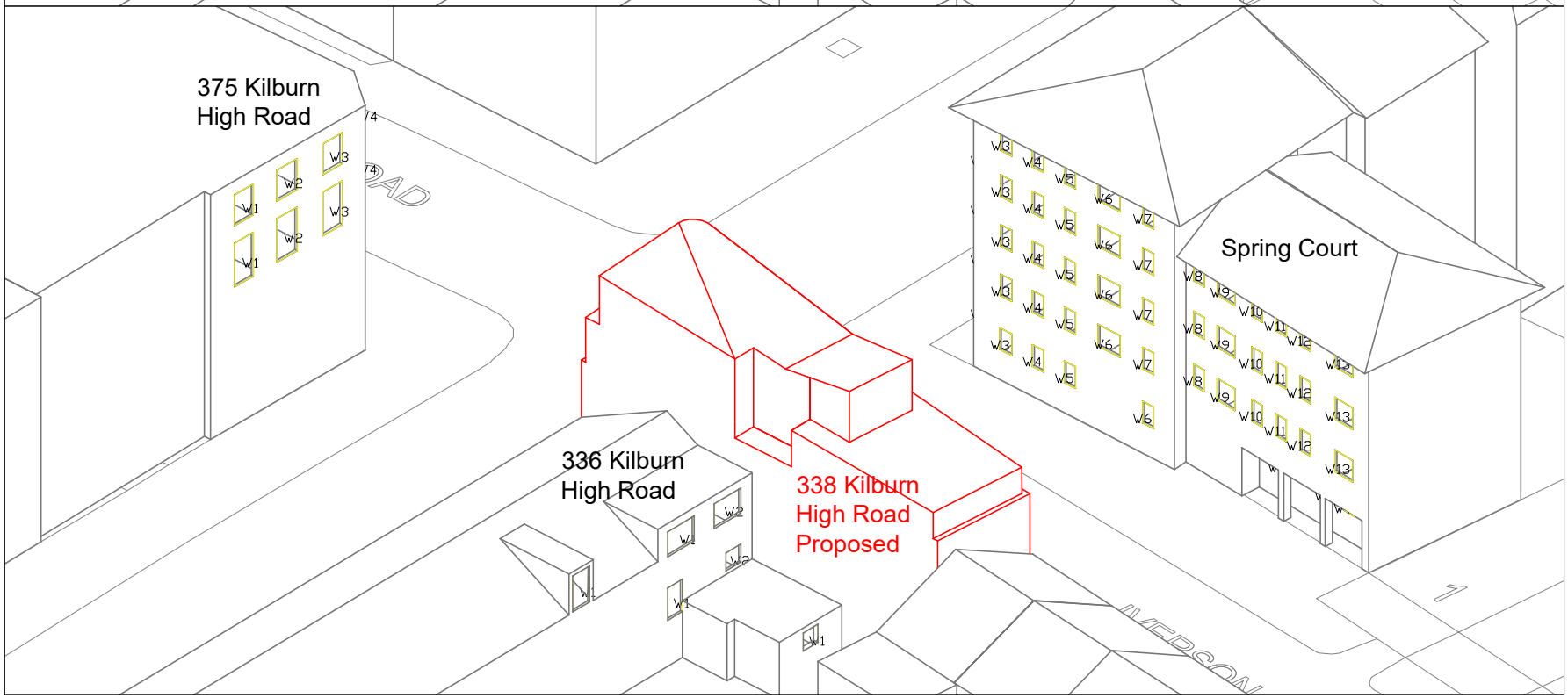
DWG REF.: 3D Model Views - Existing & Proposed Site Scenarios

REV.: 0





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Existing Site Location Plan

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PROJECT
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DWG REF.
3D Model Views - Existing & Proposed Site Scenarios

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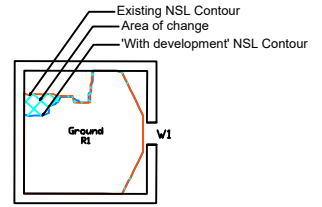
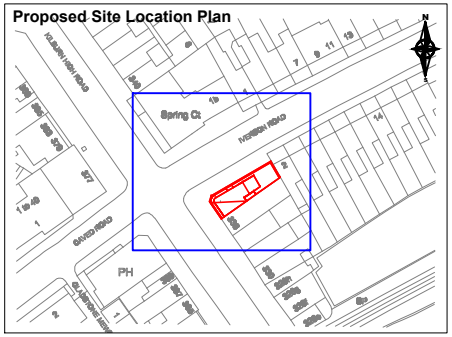


Proposed Site Location Plan



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DWG REF.
Ground level window & room locations, with NSL / daylight distribution contours to existing rooms.

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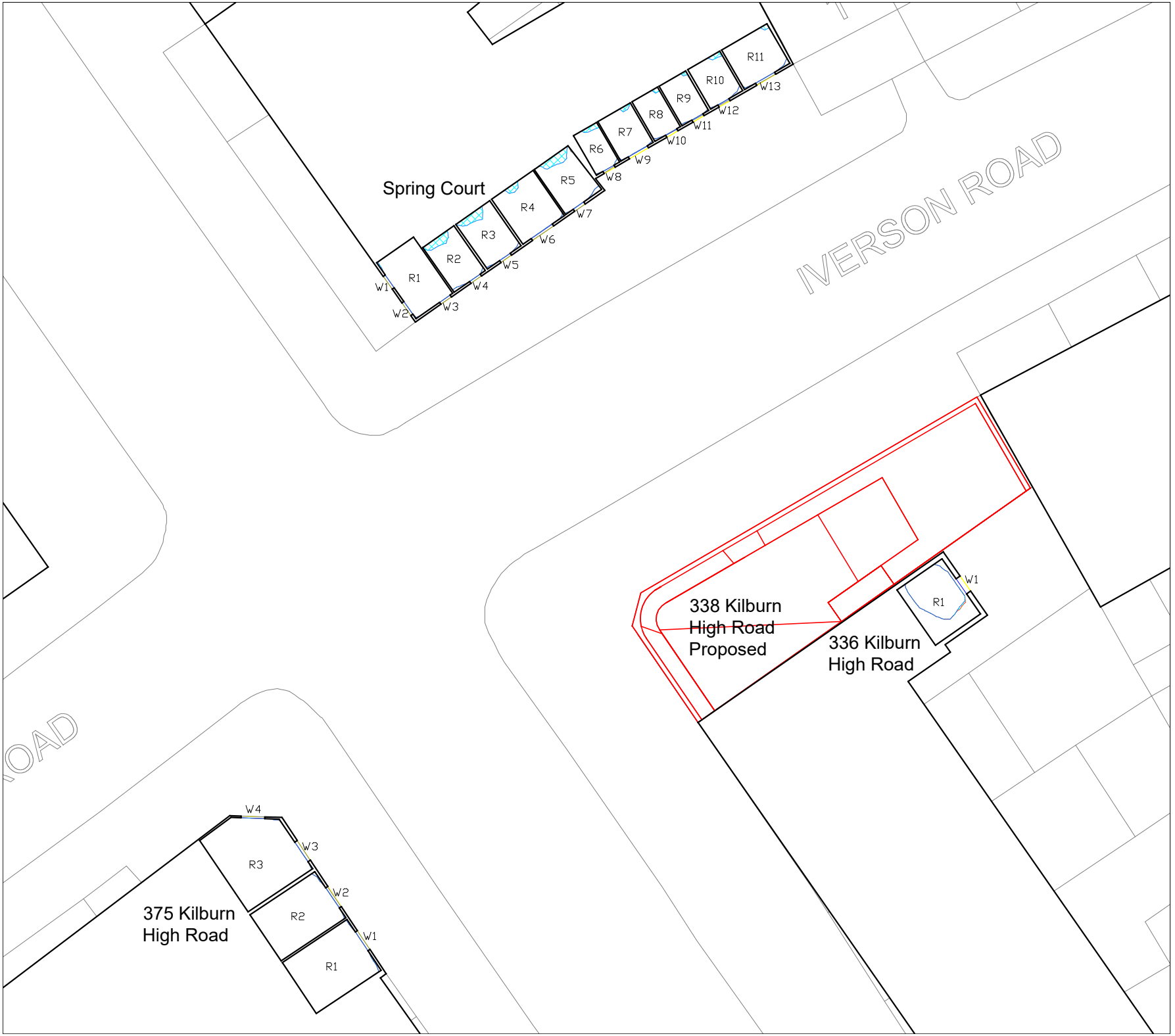

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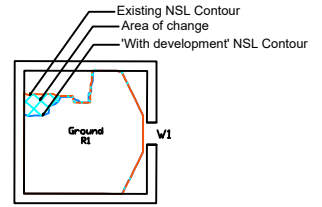

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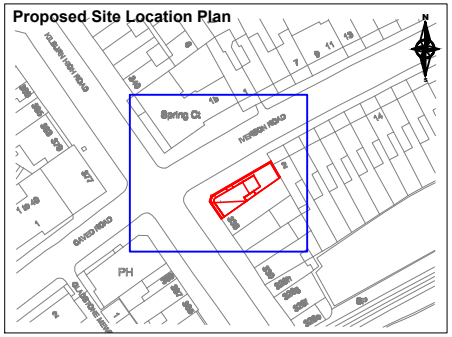

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DWG REF.
First floor window & room locations, with NSL / daylight distribution contours to existing rooms.

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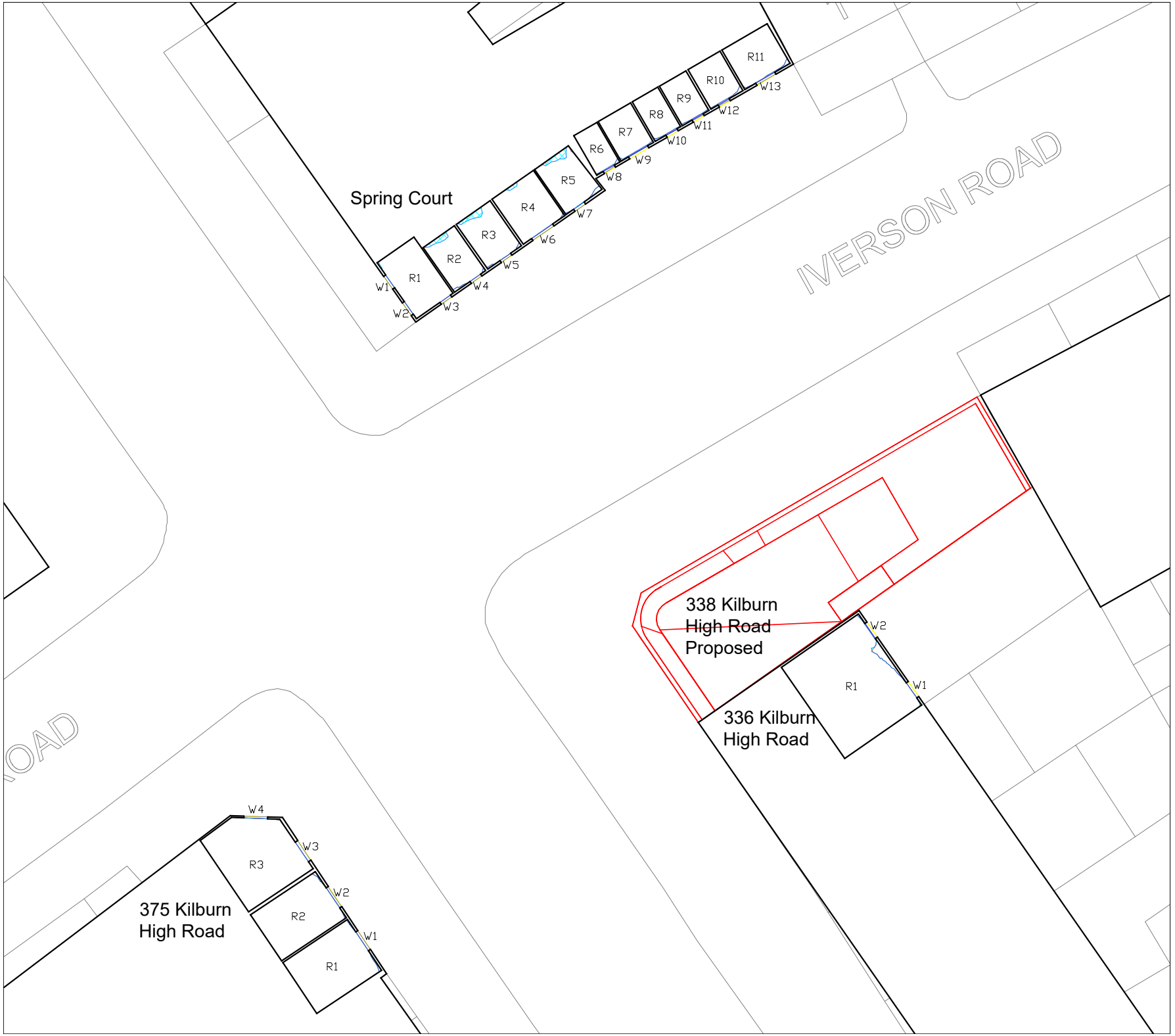

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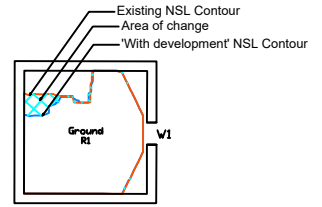

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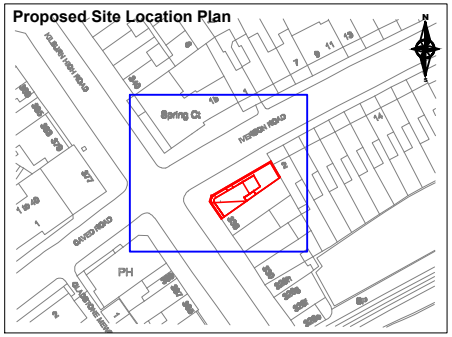

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Rev	**Description**	**Date**

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Second floor window & room locations, with NSL / daylight distribution contours to existing rooms.

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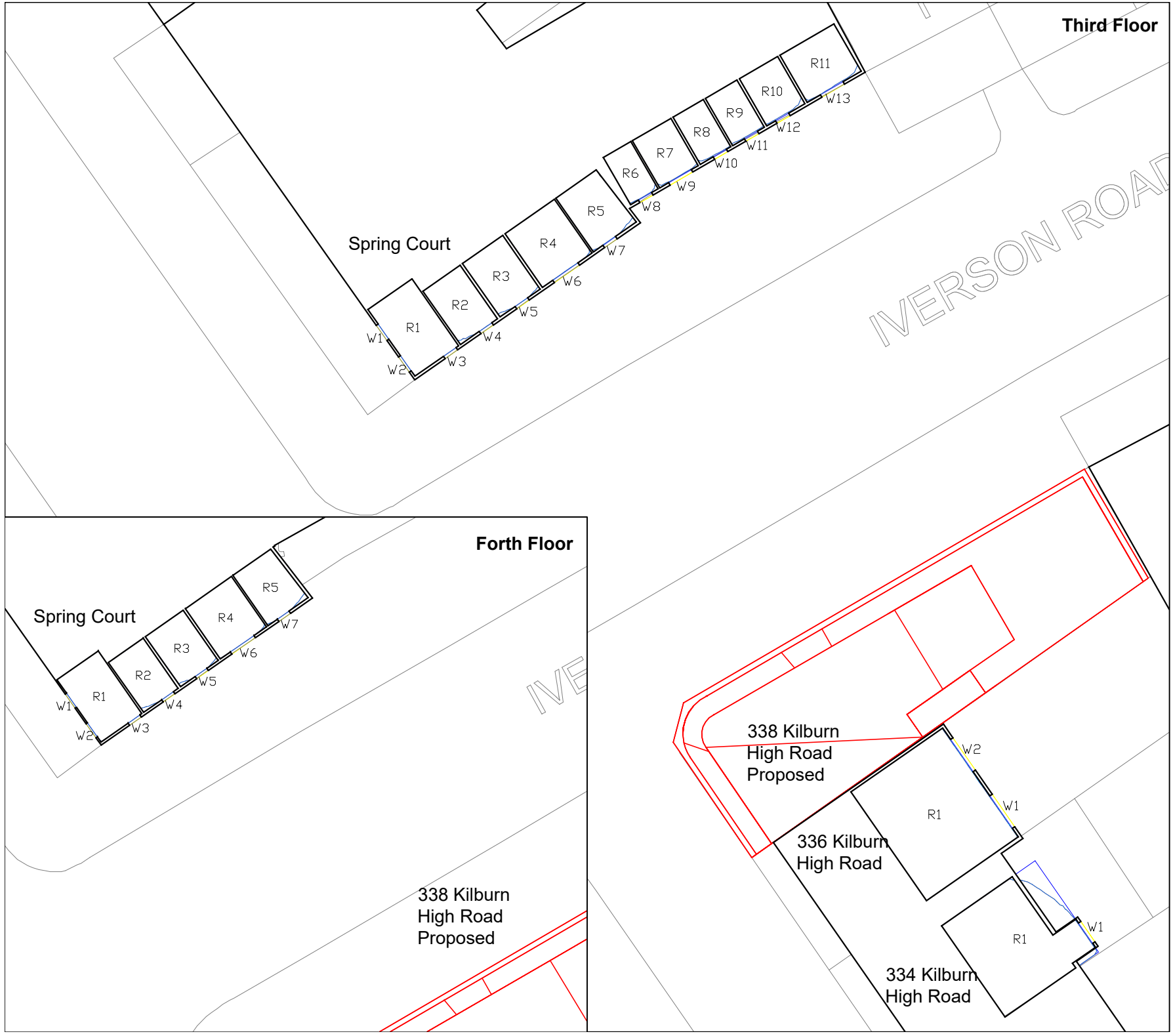

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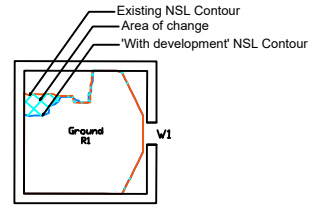
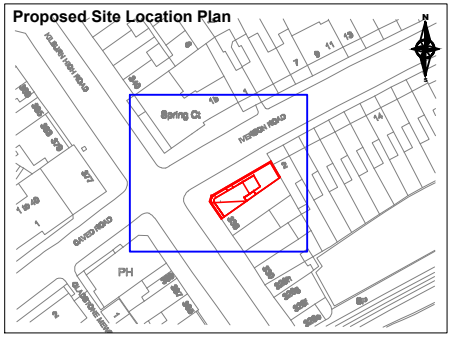


Proposed Site Location Plan



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DWG REF.
Third & forth floor window & room locations, with NSL / daylight distribution contours to existing rooms.

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Appendix A.3 – Tabulated Results for Daylight and Sunlight Calculations

Project Name: No. 338 Kilburn High Road, London
Project No: 1239
Report Title: Daylight, Sunlight, & Overshadowing Assessment
Architect: Interurban Studios
Scheme Iteration No: 1239_Model.dwg
Iteration Description: VSC (Daylight) & APSH (Sunlight) Analysis to Existing Windows & Rooms
Date of Analysis: 03/08/2016
Key drawings: See Appendix

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Scenario	VSC	Difference	Pass / Fail	Available Sunlight Hours						Room	
								Annual %	Diff	Pass / Fail	Winter %	Diff	Pass / Fail	Annual %	Winter %
334 Kilburn High Rd															
Third	**R1**	Residential	W1	Existing	38.59			33			6			33	6
				Proposed	37.79	0.98	PASS	33	1.00	PASS	6	1.00	PASS	33	6
336 Kilburn High Rd															
First	**R1**	Residential	W1	Existing	15.89			27			6			27	6
				Proposed	15.55	0.98	PASS	27	1.00	PASS	6	1.00	PASS	27	6
Second	**R1**	Residential	W1	Existing	29.92			32			6				
				Proposed	28.59	0.96	PASS	32	1.00	PASS	6	1.00	PASS		
Second	**R1**	Residential	W2	Existing	21.85			32			6			32	6
				Proposed	21.22	0.97	PASS	32	1.00	PASS	6	1.00	PASS	32	6
Third	**R1**	Residential	W1	Existing	35.56			33			6				
				Proposed	32.72	0.92	PASS	33	1.00	PASS	6	1.00	PASS		
Third	**R1**	Residential	W2	Existing	29.14			33			6			33	6
				Proposed	26.21	0.90	PASS	33	1.00	PASS	6	1.00	PASS	33	6
375 Kilburn High Rd															
First	**R1**	Residential	W1	Existing	36.31			31			5			31	5
				Proposed	35.2	0.97	PASS	31	1.00	PASS	5	1.00	PASS	31	5
First	**R2**	Residential	W2	Existing	36.23			32			6			32	6
				Proposed	35.08	0.97	PASS	32	1.00	PASS	6	1.00	PASS	32	6
First	**R3**	Residential	W3	Existing	36.2			32			6				
				Proposed	35.05	0.97	PASS	32	1.00	PASS	6	1.00	PASS		
First	**R3**	Residential	W4	Existing	33.3			9			0			36	6
				Proposed	32.9	0.99	PASS	7	0.78	PASS	0	0.00	PASS	36	6
Second	**R1**	Residential	W1	Existing	38.34			33			6			33	6
				Proposed	37.25	0.97	PASS	33	1.00	PASS	6	1.00	PASS	33	6
Second	**R2**	Residential	W2	Existing	38.26			33			6			33	6
				Proposed	37.11	0.97	PASS	32	0.97	PASS	6	1.00	PASS	32	6
Second	**R3**	Residential	W3	Existing	38.18			33			6				
				Proposed	37.04	0.97	PASS	32	0.97	PASS	6	1.00	PASS		
Second	**R3**	Residential	W4	Existing	35.55			10			0			37	6
				Proposed	35.15	0.99	PASS	10	1.00	PASS	0	0.00	PASS	37	6
Spring Court Iverson Rd															
Ground	**R1**	Residential	W1	Existing	29.67			56			18				
				Proposed	29.67	1.00	PASS	56	1.00	PASS	18	1.00	PASS		
Ground	**R1**	Residential	W2	Existing	29.87			58			19				
				Proposed	29.87	1.00	PASS	58	1.00	PASS	19	1.00	PASS		
Ground	**R1**	Residential	W3	Existing	29.36			71			19			82	19
				Proposed	27.63	0.94	PASS	67	0.94	PASS	19	1.00	PASS	78	19
Ground	**R2**	Residential	W4	Existing	28.81			70			18			70	18
				Proposed	26.96	0.94	PASS	65	0.93	PASS	17	0.94	PASS	65	17
Ground	**R3**	Residential	W5	Existing	28.33			69			17			69	17
				Proposed	26.4	0.93	PASS	65	0.94	PASS	16	0.94	PASS	65	16
Ground	**R4**	Residential	W6	Existing	27.58			67			16			67	16
				Proposed	25.58	0.93	PASS	63	0.94	PASS	15	0.94	PASS	63	15
Ground	**R5**	Residential	W7	Existing	2.01			4			4			4	4
				Proposed	1.79	0.89	PASS	4	1.00	PASS	4	1.00	PASS	4	4
Ground	**R6**	Residential	W8	Existing	2.11			3			3			3	3
				Proposed	1.89	0.90	PASS	3	1.00	PASS	3	1.00	PASS	3	3
Ground	**R7**	Residential	W9	Existing	3.78			5			3			5	3
				Proposed	3.36	0.89	PASS	4	0.80	PASS	2	0.67	FAIL	4	2
First	**R1**	Residential	W1	Existing	31.41			60			20				
				Proposed	31.41	1.00	PASS	60	1.00	PASS	20	1.00	PASS		
First	**R1**	Residential	W2	Existing	31.64			62			21				
				Proposed	31.64	1.00	PASS	62	1.00	PASS	21	1.00	PASS		
First	**R1**	Residential	W3	Existing	32.03			74			22			87	22
				Proposed	29.96	0.94	PASS	71	0.96	PASS	21	0.95	PASS	84	21
First	**R2**	Residential	W4	Existing	31.62			74			22			74	22
				Proposed	29.4	0.93	PASS	71	0.96	PASS	20	0.91	PASS	71	20
First	**R3**	Residential	W5	Existing	31.26			74			21			74	21
				Proposed	28.93	0.93	PASS	70	0.95	PASS	18	0.86	PASS	70	18
First	**R4**	Residential	W6	Existing	30.93			72			20			72	20
				Proposed	28.52	0.92	PASS	69	0.96	PASS	17	0.85	PASS	69	17
First	**R5**	Residential	W7	Existing	30.73			71			20			71	20
				Proposed	28.32	0.92	PASS	68	0.96	PASS	17	0.85	PASS	68	17
First	**R6**	Residential	W8	Existing	25.39			51			12			51	12
				Proposed	23.15	0.91	PASS	48	0.94	PASS	9	0.75	PASS	48	9
First	**R7**	Residential	W9	Existing	29.69			65			18			65	18
				Proposed	27.52	0.93	PASS	61	0.94	PASS	14	0.78	PASS	61	14
First	**R8**	Residential	W10	Existing	30.23			69			19			69	19
				Proposed	28.17	0.93	PASS	66	0.96	PASS	16	0.84	PASS	66	16
First	**R9**	Residential	W11	Existing	30.42			69			19			69	19
				Proposed	28.47	0.94	PASS	66	0.96	PASS	16	0.84	PASS	66	16
First	**R10**	Residential	W12	Existing	30.65			70			20			70	20
				Proposed	28.82	0.94	PASS	68	0.97	PASS	18	0.90	PASS	68	18

First	**R11**	Residential	W13	Existing	31.06			70			20			70	20
				Proposed	29.44	0.95	PASS	68	0.97	PASS	18	0.90	PASS	68	18
Second	**R1**	Residential	W1	Existing	32.96			64			21				
				Proposed	32.96	1.00	PASS	64	1.00	PASS	21	1.00	PASS		
Second	**R1**	Residential	W2	Existing	33.23			65			22				
				Proposed	33.23	1.00	PASS	65	1.00	PASS	22	1.00	PASS		
Second	**R1**	Residential	W3	Existing	34.44			79			26			94	26
				Proposed	32.13	0.93	PASS	75	0.95	PASS	22	0.85	PASS	90	22
Second	**R2**	Residential	W4	Existing	34.13			79			26			79	26
				Proposed	31.65	0.93	PASS	74	0.94	PASS	21	0.81	PASS	74	21
Second	**R3**	Residential	W5	Existing	33.89			78			26			78	26
				Proposed	31.28	0.92	PASS	74	0.95	PASS	22	0.85	PASS	74	22
Second	**R4**	Residential	W6	Existing	33.68			76			25			76	25
				Proposed	30.99	0.92	PASS	72	0.95	PASS	21	0.84	PASS	72	21
Second	**R5**	Residential	W7	Existing	33.59			75			25			75	25
				Proposed	30.9	0.92	PASS	71	0.95	PASS	21	0.84	PASS	71	21
Second	**R6**	Residential	W8	Existing	27.7			57			18			57	18
				Proposed	25.23	0.91	PASS	52	0.91	PASS	13	0.72	PASS	52	13
Second	**R7**	Residential	W9	Existing	32.09			70			24			70	24
				Proposed	29.7	0.93	PASS	64	0.91	PASS	18	0.75	PASS	64	18
Second	**R8**	Residential	W10	Existing	32.56			73			26			73	26
				Proposed	30.3	0.93	PASS	68	0.93	PASS	21	0.81	PASS	68	21
Second	**R9**	Residential	W11	Existing	32.7			76			27			76	27
				Proposed	30.56	0.93	PASS	70	0.92	PASS	21	0.78	PASS	70	21
Second	**R10**	Residential	W12	Existing	32.84			76			27			76	27
				Proposed	30.84	0.94	PASS	70	0.92	PASS	21	0.78	PASS	70	21
Second	**R11**	Residential	W13	Existing	33.2			76			27			76	27
				Proposed	31.45	0.95	PASS	71	0.93	PASS	22	0.81	PASS	71	22
Third	**R1**	Residential	W1	Existing	33.83			61			21				
				Proposed	33.83	1.00	PASS	61	1.00	PASS	21	1.00	PASS		
Third	**R1**	Residential	W2	Existing	34.22			65			22				
				Proposed	34.22	1.00	PASS	65	1.00	PASS	22	1.00	PASS		
Third	**R1**	Residential	W3	Existing	36.03			80			27			96	27
				Proposed	33.64	0.93	PASS	77	0.96	PASS	24	0.89	PASS	93	24
Third	**R2**	Residential	W4	Existing	35.8			75			27			75	27
				Proposed	33.24	0.93	PASS	73	0.97	PASS	25	0.93	PASS	73	25
Third	**R3**	Residential	W5	Existing	35.67			73			27			73	27
				Proposed	32.98	0.92	PASS	70	0.96	PASS	24	0.89	PASS	70	24
Third	**R4**	Residential	W6	Existing	35.59			72			26			72	26
				Proposed	32.81	0.92	PASS	68	0.94	PASS	22	0.85	PASS	68	22
Third	**R5**	Residential	W7	Existing	35.65			72			26			72	26
				Proposed	32.89	0.92	PASS	68	0.94	PASS	22	0.85	PASS	68	22
Third	**R6**	Residential	W8	Existing	21.83			48			18			48	18
				Proposed	19.32	0.89	PASS	44	0.92	PASS	14	0.78	PASS	44	14
Third	**R7**	Residential	W9	Existing	23.94			52			25			52	25
				Proposed	21.51	0.90	PASS	50	0.96	PASS	23	0.92	PASS	50	23
Third	**R8**	Residential	W10	Existing	23.64			47			24			47	24
				Proposed	21.36	0.90	PASS	44	0.94	PASS	21	0.88	PASS	44	21
Third	**R9**	Residential	W11	Existing	23.35			48			25			48	25
				Proposed	21.19	0.91	PASS	45	0.94	PASS	22	0.88	PASS	45	22
Third	**R10**	Residential	W12	Existing	23.08			46			25			46	25
				Proposed	21.06	0.91	PASS	43	0.93	PASS	22	0.88	PASS	43	22
Third	**R11**	Residential	W13	Existing	22.8			47			25			47	25
				Proposed	21.03	0.92	PASS	46	0.98	PASS	24	0.96	PASS	46	24
Fourth	**R1**	Residential	W1	Existing	25.18			44			17				
				Proposed	25.18	1.00	PASS	44	1.00	PASS	17	1.00	PASS		
Fourth	**R1**	Residential	W2	Existing	25.66			47			20				
				Proposed	25.66	1.00	PASS	47	1.00	PASS	20	1.00	PASS		
Fourth	**R1**	Residential	W3	Existing	27.71			56			25			85	28
				Proposed	25.45	0.92	PASS	54	0.96	PASS	23	0.92	PASS	83	26
Fourth	**R2**	Residential	W4	Existing	27.62			57			25			57	25
				Proposed	25.2	0.91	PASS	56	0.98	PASS	24	0.96	PASS	56	24
Fourth	**R3**	Residential	W5	Existing	27.61			57			25			57	25
				Proposed	25.06	0.91	PASS	56	0.98	PASS	24	0.96	PASS	56	24
Fourth	**R4**	Residential	W6	Existing	27.6			57			25			57	25
				Proposed	24.99	0.91	PASS	57	1.00	PASS	25	1.00	PASS	57	25
Fourth	**R5**	Residential	W7	Existing	27.69			56			24			56	24
				Proposed	25.09	0.91	PASS	56	1.00	PASS	24	1.00	PASS	56	24

Project Name: No. 338 Kilburn High Road, London
Project No: 1239
Report Title: Daylight, Sunlight, & Overshadowing Assessment
Architect: Interurban Studios
Scheme Iteration No: 1239_Model.dwg
Iteration Description: NSL Analysis to Existing Rooms
Date of Analysis: 03/08/2016
Key drawings: See Appendix

Floor	Room	Room Use.	Window	Room Area	Lit Area Existing	Lit Area Proposed	Difference	Pass / Fail
334 Kilburn High Rd								
Third	**R1**	Residential	Area m2	26.6	24.94	24.94		
			% of room		93.75%	93.75%	1.00	PASS
336 Kilburn High Rd								
First	**R1**	Residential	Area m2	11.06	6.15	6.10		
			% of room		55.61%	55.14%	0.99	PASS
Second	**R1**	Residential	Area m2	31.12	30.42	30.40		
			% of room		97.74%	97.68%	1.00	PASS
Third	**R1**	Residential	Area m2	31.12	30.94	30.94		
			% of room		99.42%	99.41%	1.00	PASS
375 Kilburn High Rd								
First	**R1**	Residential	Area m2	14.24	14.14	14.14		
			% of room		99.29%	99.29%	1.00	PASS
First	**R2**	Residential	Area m2	12.95	12.85	12.85		
			% of room		99.26%	99.26%	1.00	PASS
First	**R3**	Residential	Area m2	18.75	18.71	18.71		
			% of room		99.80%	99.80%	1.00	PASS
Second	**R1**	Residential	Area m2	14.24	14.14	14.14		
			% of room		99.28%	99.28%	1.00	PASS
Second	**R2**	Residential	Area m2	12.95	12.85	12.85		
			% of room		99.26%	99.26%	1.00	PASS
Second	**R3**	Residential	Area m2	18.75	18.74	18.74		
			% of room		99.95%	99.95%	1.00	PASS
Spring Court Iverson Rd								
Ground	**R1**	Residential	Area m2	9.16	9.09	9.07		
			% of room		99.22%	99.02%	1.00	PASS
Ground	**R2**	Residential	Area m2	6.2	6.08	5.09		
			% of room		98.05%	82.12%	0.84	PASS
Ground	**R3**	Residential	Area m2	6.74	6.66	5.63		
			% of room		98.76%	83.56%	0.85	PASS
Ground	**R4**	Residential	Area m2	7.2	7.01	5.80		
			% of room		97.41%	80.62%	0.83	PASS
Ground	**R5**	Residential	Area m2	5.36	3.66	3.53		
			% of room		68.27%	65.92%	0.97	PASS
Ground	**R6**	Residential	Area m2	5.36	3.86	3.71		
			% of room		71.94%	69.13%	0.96	PASS
Ground	**R7**	Residential	Area m2	4.29	2.86	2.47		
			% of room		66.61%	57.52%	0.86	PASS
First	**R1**	Residential	Area m2	9.16	9.15	9.11		
			% of room		99.89%	99.48%	1.00	PASS
First	**R2**	Residential	Area m2	6.2	6.08	5.46		
			% of room		98.08%	88.02%	0.90	PASS
First	**R3**	Residential	Area m2	6.74	6.66	6.00		
			% of room		98.81%	89.03%	0.90	PASS
First	**R4**	Residential	Area m2	8.29	8.25	8.00		
			% of room		99.49%	96.47%	0.97	PASS

First	**R5**	Residential	Area m2	7.01	6.84	6.10		
			% of room		97.56%	86.97%	0.89	PASS
First	**R6**	Residential	Area m2	3.64	3.59	3.36		
			% of room		98.50%	92.40%	0.94	PASS
First	**R7**	Residential	Area m2	5.1	5.07	4.95		
			% of room		99.35%	97.12%	0.98	PASS
First	**R8**	Residential	Area m2	4.03	3.98	3.90		
			% of room		98.65%	96.84%	0.98	PASS
First	**R9**	Residential	Area m2	4.2	4.16	4.10		
			% of room		99.02%	97.66%	0.99	PASS
First	**R10**	Residential	Area m2	5.07	4.96	4.79		
			% of room		97.83%	94.54%	0.97	PASS
First	**R11**	Residential	Area m2	7.17	7.04	6.96		
			% of room		98.24%	97.04%	0.99	PASS
Second	**R1**	Residential	Area m2	9.16	9.16	9.13		
			% of room		100.00%	99.69%	1.00	PASS
Second	**R2**	Residential	Area m2	6.2	6.09	5.76		
			% of room		98.27%	92.89%	0.95	PASS
Second	**R3**	Residential	Area m2	6.74	6.67	6.29		
			% of room		98.94%	93.31%	0.94	PASS
Second	**R4**	Residential	Area m2	8.29	8.25	8.15		
			% of room		99.54%	98.26%	0.99	PASS
Second	**R5**	Residential	Area m2	7.01	6.85	6.43		
			% of room		97.67%	91.68%	0.94	PASS
Second	**R6**	Residential	Area m2	3.64	3.54	3.54		
			% of room		97.27%	97.27%	1.00	PASS
Second	**R7**	Residential	Area m2	5.1	4.98	4.98		
			% of room		97.63%	97.63%	1.00	PASS
Second	**R8**	Residential	Area m2	4.03	3.93	3.93		
			% of room		97.41%	97.41%	1.00	PASS
Second	**R9**	Residential	Area m2	4.2	4.10	4.10		
			% of room		97.73%	97.73%	1.00	PASS
Second	**R10**	Residential	Area m2	5.07	4.91	4.91		
			% of room		96.76%	96.76%	1.00	PASS
Second	**R11**	Residential	Area m2	7.17	6.98	6.98		
			% of room		97.34%	97.34%	1.00	PASS
Third	**R1**	Residential	Area m2	9.16	9.16	9.16		
			% of room		100.00%	100.00%	1.00	PASS
Third	**R2**	Residential	Area m2	6.2	6.11	6.11		
			% of room		98.61%	98.61%	1.00	PASS
Third	**R3**	Residential	Area m2	6.74	6.64	6.64		
			% of room		98.47%	98.47%	1.00	PASS
Third	**R4**	Residential	Area m2	8.29	8.25	8.25		
			% of room		99.49%	99.49%	1.00	PASS
Third	**R5**	Residential	Area m2	7.01	6.85	6.85		
			% of room		97.77%	97.77%	1.00	PASS
Third	**R6**	Residential	Area m2	3.64	3.56	3.56		
			% of room		97.93%	97.93%	1.00	PASS
Third	**R7**	Residential	Area m2	5.1	5.01	5.01		
			% of room		98.30%	98.30%	1.00	PASS
Third	**R8**	Residential	Area m2	4.03	3.93	3.93		
			% of room		97.61%	97.61%	1.00	PASS
Third	**R9**	Residential	Area m2	4.2	4.10	4.10		
			% of room		97.68%	97.68%	1.00	PASS
Third	**R10**	Residential	Area m2	5.07	4.90	4.90		
			% of room		96.71%	96.71%	1.00	PASS
Third	**R11**	Residential	Area m2	7.17	6.98	6.98		
			% of room		97.33%	97.33%	1.00	PASS
Fourth	**R1**	Residential	Area m2	9.16	9.16	9.16		
			% of room		99.99%	99.99%	1.00	PASS
Fourth	**R2**	Residential	Area m2	6.2	6.10	6.10		
			% of room		98.38%	98.38%	1.00	PASS
Fourth	**R3**	Residential	Area m2	6.74	6.64	6.64		
			% of room		98.48%	98.48%	1.00	PASS

Fourth	**R4**	Residential	Area m2	8.29	8.25	8.25		
			% of room		99.57%	99.57%	1.00	PASS
Fourth	**R5**	Residential	Area m2	7.01	6.86	6.86		
			% of room		97.85%	97.85%	1.00	PASS

Project Name: No. 338 Kilburn High Road, London
Project No: 1239
Report Title: Daylight, Sunlight, & Overshadowing Assessment
Architect: Interurban Studios
Scheme Iteration No: 1239_Model.dwg
Iteration Description: ADF Analysis to Existing Rooms
Date of Analysis: 03/08/2016
Key drawings: See Appendix

Floor	Room	Room Use.	Window	Glass Transmittance	Glazed Area	Clear Sky Angle Existing	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Existing	ADF Proposed	Req'd Value	Difference
334 Kilburn High Rd														
Third	R1	Residential	W1	0.68	1.81	83.35	81.93	104.78	0.65	1.00	1.70	1.67		
											1.70	1.67	1.5	0.98
336 Kilburn High Rd														
First	R1	Residential	W1	0.68	0.80	42.56	42.10	55.54	0.65	1.00	0.72	0.71		
											0.72	0.71	1.5	0.99
Second	R1	Residential	W1-L	0.68	0.11	64.94	63.16	118.23	0.65	0.15	0.01	0.01		
			W1-U	0.68	1.33	66.92	64.72	118.23	0.65	1.00	0.89	0.86		
			W2	0.68	0.80	52.35	51.30	118.23	0.65	1.00	0.42	0.41		
											1.32	1.28	1.5	0.97
Third	R1	Residential	W1	0.68	2.01	77.18	71.87	118.23	0.65	1.00	1.55	1.44		
			W2	0.68	2.00	65.69	60.93	118.23	0.65	1.00	1.31	1.21		
											2.86	2.66	1.5	0.93
375 Kilburn High Rd														
First	R1	Residential	W1-L	0.68	0.44	77.79	75.65	66.50	0.65	0.15	0.09	0.09		
			W1-U	0.68	1.96	79.01	76.78	66.50	0.65	1.00	2.74	2.66		
											2.83	2.75	1.5	0.97
First	R2	Residential	W2-L	0.68	0.48	78.03	75.78	62.38	0.65	0.15	0.10	0.10		
			W2-U	0.68	2.11	79.21	76.86	62.38	0.65	1.00	3.16	3.06		
											3.26	3.16	1.5	0.97
First	R3	Residential	W3-L	0.68	0.46	77.79	75.56	80.02	0.65	0.15	0.08	0.08		
			W3-U	0.68	2.06	78.94	76.62	80.02	0.65	1.00	2.39	2.32		
			W4-L	0.68	0.46	72.42	71.69	80.02	0.65	0.15	0.07	0.07		
			W4-U	0.68	2.06	73.49	72.73	80.02	0.65	1.00	2.22	2.20		
											4.76	4.67	1.5	0.98
Second	R1	Residential	W1-L	0.68	0.08	82.38	80.02	66.50	0.65	0.15	0.02	0.02		
			W1-U	0.68	1.61	82.54	80.22	66.50	0.65	1.00	2.36	2.29		
											2.38	2.31	1.5	0.97
Second	R2	Residential	W2-L	0.68	0.09	82.61	80.12	62.38	0.65	0.15	0.02	0.02		
			W2-U	0.68	1.74	82.71	80.27	62.38	0.65	1.00	2.72	2.64		
											2.74	2.66	1.5	0.97
Second	R3	Residential	W3-L	0.68	0.09	82.24	79.78	80.02	0.65	0.15	0.02	0.02		
			W3-U	0.68	1.69	82.35	79.93	80.02	0.65	1.00	2.05	1.99		
			W4-L	0.68	0.09	76.73	75.92	80.02	0.65	0.15	0.01	0.01		
			W4-U	0.68	1.69	77.00	76.21	80.02	0.65	1.00	1.92	1.90		
											4.00	3.92	1.5	0.98
Spring Court Iverson Rd														
Ground	R1	Residential	W1	0.68	0.81	63.84	63.84	48.04	0.65	1.00	1.27	1.27		
			W2	0.68	0.81	64.17	64.17	48.04	0.65	1.00	1.28	1.28		
			W3	0.68	0.75	62.71	59.84	48.04	0.65	1.00	1.15	1.10		
											3.70	3.65	1.5	0.99
Ground	R2	Residential	W4	0.68	0.67	61.11	58.07	36.70	0.65	1.00	1.32	1.25		
											1.32	1.25	1.5	0.95
Ground	R3	Residential	W5	0.68	0.67	60.37	57.18	38.68	0.65	1.00	1.24	1.17		
											1.24	1.17	1.5	0.95
Ground	R4	Residential	W6	0.68	0.67	59.23	55.95	40.32	0.65	1.00	1.16	1.10		
											1.16	1.10	1.5	0.94
Ground	R5	Residential	W7	0.68	1.05	12.37	12.37	33.03	0.65	1.00	0.46	0.46		
											0.46	0.46	1.5	1.00
Ground	R6	Residential	W8	0.68	0.56	13.45	13.45	33.03	0.65	1.00	0.27	0.27		
											0.27	0.27	1.5	1.00
Ground	R7	Residential	W9	0.68	0.53	17.36	17.36	28.48	0.65	1.00	0.38	0.38		
											0.38	0.38	1.5	1.00
First	R1	Residential	W1	0.68	0.81	66.95	66.95	48.04	0.65	1.00	1.33	1.33		
			W2	0.68	0.81	67.30	67.30	48.04	0.65	1.00	1.34	1.34		
			W3	0.68	0.67	66.57	63.03	48.04	0.65	1.00	1.10	1.04		
											3.77	3.71	1.5	0.98
First	R2	Residential	W4	0.68	0.67	65.93	62.18	36.70	0.65	1.00	1.42	1.34		
											1.42	1.34	1.5	0.94
First	R3	Residential	W5	0.68	0.67	65.37	61.44	38.68	0.65	1.00	1.34	1.26		
											1.34	1.26	1.5	0.94
First	R4	Residential	W6	0.68	1.34	68.01	63.88	44.26	0.65	1.00	2.43	2.28		
											2.43	2.28	1.5	0.94
First	R5	Residential	W7	0.68	0.67	64.53	60.50	39.64	0.65	1.00	1.29	1.21		
											1.29	1.21	1.5	0.94
First	R6	Residential	W8	0.68	0.67	56.91	53.26	26.29	0.65	1.00	1.71	1.60		
											1.71	1.60	1.5	0.94
First	R7	Residential	W9	0.68	1.15	66.49	62.80	32.01	0.65	1.00	2.82	2.66		
											2.82	2.66	1.5	0.94
First	R8	Residential	W10	0.68	0.67	64.50	61.06	27.80	0.65	1.00	1.84	1.74		
											1.84	1.74	1.5	0.95
First	R9	Residential	W11	0.68	0.67	64.66	61.38	28.47	0.65	1.00	1.80	1.71		
											1.80	1.71	1.5	0.95

First	R10	Residential	W12	0.68	0.67	64.92	61.83	31.89	0.65	1.00	1.61	1.53		
											1.61	1.53	1.5	0.95
First	R11	Residential	W13	0.68	1.15	68.34	65.53	40.09	0.65	1.00	2.31	2.22		
											2.31	2.22	1.5	0.96
Second	R1	Residential	W1	0.68	0.81	70.05	70.05	48.04	0.65	1.00	1.40	1.40		
			W2	0.68	0.81	70.41	70.41	48.04	0.65	1.00	1.40	1.40		
			W3	0.68	0.67	71.12	67.04	48.04	0.65	1.00	1.17	1.10		
											3.97	3.90	1.5	0.98
Second	R2	Residential	W4	0.68	0.67	70.70	66.34	36.70	0.65	1.00	1.52	1.43		
											1.52	1.43	1.5	0.94
Second	R3	Residential	W5	0.68	0.67	70.32	65.76	38.68	0.65	1.00	1.44	1.35		
											1.44	1.35	1.5	0.94
Second	R4	Residential	W6	0.68	1.34	73.38	68.52	44.26	0.65	1.00	2.62	2.45		
											2.62	2.45	1.5	0.93
Second	R5	Residential	W7	0.68	0.67	69.78	65.12	39.64	0.65	1.00	1.39	1.30		
											1.39	1.30	1.5	0.93
Second	R6	Residential	W8	0.68	0.67	61.44	57.37	26.29	0.65	1.00	1.85	1.73		
											1.85	1.73	1.5	0.93
Second	R7	Residential	W9	0.68	1.15	71.85	67.60	32.01	0.65	1.00	3.05	2.86		
											3.05	2.86	1.5	0.94
Second	R8	Residential	W10	0.68	0.67	69.87	65.92	27.80	0.65	1.00	1.99	1.88		
											1.99	1.88	1.5	0.94
Second	R9	Residential	W11	0.68	0.67	69.93	66.19	28.47	0.65	1.00	1.94	1.84		
											1.94	1.84	1.5	0.95
Second	R10	Residential	W12	0.68	0.67	70.05	66.53	31.89	0.65	1.00	1.74	1.65		
											1.74	1.65	1.5	0.95
Second	R11	Residential	W13	0.68	1.15	73.33	70.12	40.09	0.65	1.00	2.48	2.37		
											2.48	2.37	1.5	0.96
Third	R1	Residential	W1	0.68	0.81	72.98	72.98	48.04	0.65	1.00	1.45	1.45		
			W2	0.68	0.81	73.38	73.38	48.04	0.65	1.00	1.46	1.46		
			W3	0.68	0.67	75.42	70.99	48.04	0.65	1.00	1.24	1.17		
											4.16	4.08	1.5	0.98
Third	R2	Residential	W4	0.68	0.67	75.22	70.48	36.70	0.65	1.00	1.62	1.52		
											1.62	1.52	1.5	0.94
Third	R3	Residential	W5	0.68	0.67	75.04	70.08	38.68	0.65	1.00	1.54	1.43		
											1.54	1.43	1.5	0.93
Third	R4	Residential	W6	0.68	1.34	78.50	73.11	44.26	0.65	1.00	2.81	2.61		
											2.81	2.61	1.5	0.93
Third	R5	Residential	W7	0.68	0.67	74.81	69.75	39.64	0.65	1.00	1.49	1.39		
											1.49	1.39	1.5	0.93
Third	R6	Residential	W8	0.68	0.67	50.21	46.05	26.29	0.65	1.00	1.51	1.39		
											1.51	1.39	1.5	0.92
Third	R7	Residential	W9	0.68	1.15	54.59	50.63	32.01	0.65	1.00	2.31	2.15		
											2.31	2.15	1.5	0.93
Third	R8	Residential	W10	0.68	0.67	53.35	49.62	27.80	0.65	1.00	1.52	1.41		
											1.52	1.41	1.5	0.93
Third	R9	Residential	W11	0.68	0.67	52.92	49.39	28.47	0.65	1.00	1.47	1.37		
											1.47	1.37	1.5	0.93
Third	R10	Residential	W12	0.68	0.67	52.54	49.22	31.89	0.65	1.00	1.30	1.22		
											1.30	1.22	1.5	0.94
Third	R11	Residential	W13	0.68	1.15	52.89	49.99	40.09	0.65	1.00	1.79	1.69		
											1.79	1.69	1.5	0.95
Fourth	R1	Residential	W1-L	0.68	0.04	65.76	65.76	48.04	0.65	0.15	0.01	0.01		
			W1-U	0.68	0.77	55.38	55.38	48.04	0.65	1.00	1.05	1.05		
			W2-L	0.68	0.04	66.32	66.32	48.04	0.65	0.15	0.01	0.01		
			W2-U	0.68	0.77	55.86	55.86	48.04	0.65	1.00	1.06	1.06		
			W3-L	0.68	0.03	69.13	65.14	48.04	0.65	0.15	0.01	0.01		
			W3-U	0.68	0.64	58.91	55.23	48.04	0.65	1.00	0.92	0.86		
											3.05	2.99	1.5	0.98
Fourth	R2	Residential	W4-L	0.68	0.03	69.09	64.82	36.70	0.65	0.15	0.01	0.01		
			W4-U	0.68	0.64	58.90	54.95	36.70	0.65	1.00	1.20	1.12		
											1.22	1.13	1.5	0.93
Fourth	R3	Residential	W5-L	0.68	0.03	69.06	64.58	38.68	0.65	0.15	0.01	0.01		
			W5-U	0.68	0.64	58.90	54.75	38.68	0.65	1.00	1.14	1.06		
											1.15	1.07	1.5	0.93
Fourth	R4	Residential	W6-L	0.68	0.07	70.87	66.18	44.26	0.65	0.15	0.02	0.02		
			W6-U	0.68	1.27	59.94	55.67	44.26	0.65	1.00	2.03	1.89		
											2.05	1.91	1.5	0.93
Fourth	R5	Residential	W7-L	0.68	0.03	69.04	64.47	39.64	0.65	0.15	0.01	0.01		
			W7-U	0.68	0.64	58.89	54.66	39.64	0.65	1.00	1.11	1.03		
											1.13	1.04	1.5	0.93