

Daylight and Sunlight Report

Shamim Shafi

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08 April 2015

Prepared by

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This document must only be treated as a draft unless it is has been signed by the Originator and approved by a Business or Associate Director.

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Limitations

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1 INSTRUCTIONS AND BRIEF

- 1.1 In accordance with instructions received from Shamim Shafi on 19 September 2014, we have analysed the effect the proposed scheme on the daylight and sunlight amenity to the neighbouring residential properties.
- 1.2 We have also assessed the light levels received to the proposed residential accommodation within the scheme and have undertaken overshadowing analysis of the external amenity areas.
- 1.3 We have received the following documents and used them in preparing this report:
 - Anthony Brookes Surveys Limited plans and elevations dated September 2011 (verified by site inspection December 2014)
 - KSR Architects drawings and 3D model received 27 February 2015
- Our study has been undertaken by preparing a three-dimensional computer model of the site and surrounding buildings and analysing the effect of the proposed development on the daylight and sunlight levels received by the neighbouring buildings using our bespoke software. Our assessment is based on a visual inspection, the information detailed above and estimates of relevant distances, dimensions and levels which are as accurate as the circumstances allow.

2 PLANNING POLICY

2.1 The 'Camden Development Policies 2010-2025 Local Development Framework' document, contains the following references to daylight and sunlight amenity:

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 ...'
- 2.2 The document goes on to say, in paragraph 26.3 ('Visual privacy, overlooking, overshadowing, outlook, sunlight and daylight'):

'A development's impact on visual privacy, overlooking, overshadowing, outlook, access to daylight and sunlight and disturbance from artificial light, can be influenced by design and layout, the distance between properties, the vertical levels of onlookers of 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 in to account the standards recommended in the British Research Establishment's 'Site layout planning for daylight and sunlight – a guide to good practice' (1991).'

2.3 Part one of the core strategy adoption document, states at paragraph 5.7 ('Protecting amenity'):

'Camden's high level of amenity – the features of a place that contribute to its attractiveness and comfort – is a major factor in the quality of life of the borough's residents, workers and visitors and fundamental to Camden's attractiveness and success. However, Camden's inner London location, and close proximity of various uses and the presence of major roads and railways, can mean that privacy, noise and light can be particular issues in the borough.'

- 3 BRE REPORT "SITE LAYOUT PLANNING FOR DAYLIGHT AND SUNLIGHT: A GUIDE TO GOOD PRACTICE" SECOND EDITION (2011) ('THE REPORT')
- 3.1 Principles
- 3.1.1 The Second Edition of the Report replaces the 1991 document of the same name with effect from October 2011.
- 3.1.2 It is important to note that the introduction to the report stresses that the document is provided for guidance purposes only and it is not intended to be interpreted as a strict set of rules. It also suggests that it may be appropriate to adopt a flexible approach and alternative target values in dealing with "special circumstances" for example "in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings." This is amplified by the following extracts from the introduction (P1, para. 6) and Section 2.2:

"The advice given here is not mandatory and this document should not be seen as an instrument of planning policy; Its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design..." (P1, para. 1.6)

"In special circumstances the Developer or Planning Authority may wish to use different target values." (P1, para. 1.6)

"Note that numerical values given here are purely advisory. Different criteria may be used, based upon the requirements for daylighting in an area viewed against other site layout constraints. Another important issue is whether the existing building is itself a good neighbour, standing a

reasonable distance from the boundary and taking no more than its fair share of light". (P7 para. 2.2.3)

3.1.3 The examples given in the Report can be applied to any part of the country: suburban, urban and rural areas. The inflexible application of the target values given in the Report may make reaching the BRE criteria difficult in a tight, urban environment where there is unlikely to be the same expectation of daylight and sunlight amenity as in a suburban or rural environment.

3.2 Daylight

3.2.1 In summary, the BRE Report states that:

"If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building from the centre of the lowest window, subtends an angle of more than 25 degrees to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if either:

- the vertical sky component ['VSC'] measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value; or
- the area of the working plane (0.85m above floor level in residential properties) in a room which can receive direct skylight is reduced to less than 0.8 times it former value.

The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, store rooms, circulation areas and garages need not be analysed. The guidelines may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight; this would normally include, schools, hospitals, hotels and hostels, small workshops and some offices."

3.2.2 Further guidance has been provided in the Second Edition of the report in relation to existing windows with balconies:

"Existing windows with balconies above them typically receive less daylight. Because the balcony cuts out light from the top part of the sky, even a modest obstruction may result in a large relative impact on the VSC, and on the area receiving direct skylight. One way to demonstrate this would be to carry out an additional calculation of the VSC and area receiving direct skylight, for both the existing and proposed situations, without the balcony in place. For example, if the proposed VSC with the balcony was under 0.8 times the existing value with the balcony, but the same ratio for the values without the balcony was well over 0.8, this would show that the presence of the balcony, rather than the size of the new obstruction, was the main factor in the relative loss of light." (2.2.11)

A larger relative reduction in VSC may also be unavoidable if the existing window has projecting wings on one or both sides of it, or is recessed into the building so that it is obstructed on both sides as well as above." (2.2.12)

3.3 Appendix F

- 3.3.1 This appendix gives guidelines on setting alternative target values for skylight and sunlight access. This allows a developer to set alternative targets for vertical sky component levels which can be generated from the layout dimensions of existing development or derived from the internal layouts and direct daylighting needs of the proposed development itself. The Report uses the example of a mews in an historic city centre, where a typical obstruction angle from the ground floor window level might be closer to 40 degrees, which would correspond to a VSC of 18%. This can then be used as a target value for development in that street if new development is to match the existing layout.
- 3.3.2 A similar approach may also be adopted in cases where an existing building has windows that are close to the site boundary and take more than their fair share of light. To ensure that new development matches the height and proportions of existing buildings, the Report suggests that the VSC and Annual Probable Sunlight Hours ('APSH') target for these windows could be set to those for a 'mirror-image' building of the same height and size and equal distance away on the other side of boundary.
- 3.3.3 Useful guidance is provided on the types of tests to be applied when considering the loss of light to an existing building. F6 states the following:

"In assessing the loss of light to an existing building, the VSC is generally recommended as the appropriate parameter to use. This is because the VSC depends only on obstruction, and is therefore a measure of the daylit environment as a whole. The average daylight factor (ADF) (Appendix C) also depends on the room and window dimensions, the reflectance of interior surfaces and the type of glass, as well as the obstruction outside. It is an appropriate measure to use in new buildings because most of these factors are within the developer's control."

"Use of the ADF for loss of light to existing buildings is not generally recommended. The use of the ADF as a criterion tends to penalise well-daylit existing buildings, because they can take a much bigger and closer obstruction and still remain above the minimum ADFs recommended in BS 8206-2. Because BS 8206-2 quotes a number of recommended ADF values for different qualities of daylight provision, such a reduction in light would still constitute a loss of amenity to the rooms. Conversely if the ADF in an existing building were only just over the recommended minimum, even a tiny reduction in light from a new development would cause it to go below the minimum, restricting what could be built nearby." (F6 and F7)

- 3.3.4 This appendix also clarifies the situations when meeting a set ADF target value with a new development in place could be appropriate as a criterion for loss of light. These are:
 - "(i) where the existing building is one of a series of new buildings that are being built one after another, and each building has been designed as part of the larger group
 - (ii) as a special case of (i), where the existing building is proposed but not built. A typical situation might be where the neighbouring building has received planning permission but not yet been constructed
 - (iii) where the developer of the new building also owns the existing nearby building and proposes to carry out improvements to the existing building (e.g. by increasing window sizes) to compensate for the loss of light. However, where there is a long-term occupier of the existing building it would be appropriate for there to be no reduction in ADF, or at worst only a small reduction. BS 8206-2 states that a reduction in VSC to 0.8 times its former value corresponds to a reduction in the ADF in the rooms served by the window to between 0.85 times and 0.92 times its former value when the original VSC was more than >27% or 5% respectively
 - (iv) where the developer of the new building also owns the existing nearby buildings and the affected rooms are either unoccupied or would be occupied by different people following construction of the new building" (F8)

3.3.5 The Report also states that:

"Where room layouts are known, the impact on the daylighting distribution in the existing building can be found by plotting the 'no-sky line' in each of the main rooms. For houses this would include living rooms, dining rooms and kitchens; bedrooms should also be analysed, although they are less important. In non-domestic buildings each main room where daylight is expected should be investigated."

...Windows to bathrooms, toilets, store rooms, circulation areas and garages need not be analysed."

3.3.6 Appendix C of the Report provides details of BS8206: Part 2 British Standard for Daylighting and the Chartered Institution of Building Services Engineers (CIBSE) Applications Manual: Windows Design which provide advice and guidance on interior daylighting. The BRE Report is intended to be used in conjunction with these documents, and its guidance is intended to fit-in with their recommendations. The British Standard and the CIBSE manual put forward three main criteria for interior daylighting, one of which is the use of the Average Daylight Factor (df) calculation. Essentially, the documents recommend that, if a supplementary electric lighting is provided, a df value of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms should be attained.

3.3.7 The British Standard also suggests, that if a predominately daylit appearance is required, then df should be 5% or more if there is no supplementary electric lighting. However, in all modern living accommodation supplementary electric lighting is provided and, as such, df values detailed above are used as target values.

3.4 Sunlight

3.4.1 The BRE Report advises that new development should take care to safeguard access to sunlight for existing buildings and any non-domestic buildings where there is a particular requirement for sunlight. In summary, the report states:

"If a living room of an existing dwelling has a main window facing within 90 degrees of due south, and any part of a new development subtends an angle of more than 25 degrees to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:

- receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March and
- receives less than 0.8 times its former sunlight hours during either period and
- has a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours"

3.4.2 The report also states that:

"...It is suggested that all main living rooms of dwellings, and conservatories, should be checked if they have a window facing within ninety-degrees of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun. In non-domestic buildings any spaces which are deemed to have a special requirement for sunlight should be checked; they will normally face within ninety-degrees of due south anyway." (3.2.3)

4 DAYLIGHTING AND WINDOW DESIGN, (CIBSE) LIGHTING GUIDE LG 10: 2014 ('THE GUIDE')

4.1 The publication is primarily intended to provide guidance to those responsible for the design, installation, commissioning, operation and maintenance of building services. Section 1.1 states:

"In modern buildings, good daylighting is a balancing act: on one side is the need for sufficient access to daylight and sunlight, and on the other is the need to control its unwanted effects. The design team need to work together to achieve this balance, exploring the options to arrive at a s satisfactory solution."

4.2 Section 2.2.1 states that:

"A well daylit space needs both adequate lighting levels and light that is well distributed. In some rooms, the lighting level at the back falls dramatically below the level close to a window, to such an extent that occupants feel deprived even though their actual task illuminance is otherwise acceptable."

4.2.1 Section 3.4 provides detailed guidance on daylight calculation. Section 3.4.3 provides guidance on the use of Average Daylight Factor (ADF) calculations and states:

"Average daylight factor calculations can provide a quick overview of the overall level of daylight within a room, and can be useful when comparing different design solutions."

- 4.3 The Guide also states that:
- 4.4 "The BS 8206 code of practice(10) recommends average daylight factors of at least 1% in bedrooms, 1.5% in living rooms and 2% in kitchens, even if a predominantly daylit appearance is not required."

5 ASSESMENT OF SURROUNDING PROPERTIES

- 5.1 We have analysed the effect of the proposed scheme on the daylight and sunlight amenity to the properties detailed below. These properties are the only residential buildings that could be affected by the proposed scheme as all other adjacent buildings will pass the preliminary 25-degree line test recommended by the BRE Report.
- 5.2 The location of the tested properties and window references are shown on the drawings appended to this report; the results are also included in the appendices in the relevant spread sheets.
- 5.3 We set-out below the results of our daylight and sunlight assessment for each property:

5.4 <u>46 - 48 Fitzjohn's Avenue (Fitzjohn's House)</u>

- 5.4.1 This six storey apartment building is situated to the north of the proposed scheme on the opposite side of Nutley Terrace.
- 5.4.2 We have undertaken daylight amenity analysis of the windows overlooking the proposed scheme using the Vertical Sky Component (VSC) analysis test. Our analysis shows that all windows will comply with the BRE Report guidance of retaining either 0.8 times their existing values or achieving a VSC values in excess of 27%.
- 5.4.3 In line with BRE Report guidance we have analysed all windows overlooking the proposed scheme that face within 90° of due south. Our analysis, using the Annual Probable Sunlight Hours (APSH) test shows that all windows will receive sunlight levels far in excess of the BRE Report guidance and, hence, will remain BRE Report compliant.

5.5 5 Nutley Terrace

- 5.5.1 This is a recently constructed building directly north of the proposed scheme. We have obtained internal arrangement drawings from the local planning database and used these in our analysis. The building is formed of apartments at all levels other than ground floor where there are garages and circulation spaces.
- 5.5.2 Daylight amenity analysis using the VSC test shows that all windows serving residential rooms will comply with the BRE Report guidance.
- 5.5.3 In line with BRE Report guidance, where internal arrangements are known, we have undertaken a supplemental daylight amenity test using the daylight distribution test. Our analysis shows that there will be little or no modification to the existing distribution of light and that all rooms will comply with the BRE Report guidance.
- 5.5.4 In line with BRE Report guidance we have analysed all windows overlooking the proposed scheme that face within 90° of due south. Our APSH tests show that all rooms will comply with the BRE Report guidance.

5.6 <u>3 Nutley Terrace</u>

5.6.1 This three storey house is north east of the proposed scheme. Both daylight and sunlight analysis of the windows overlooking the proposed scheme show that there will be little or no revision to the existing values and that all windows will comply with the BRE Report guidance.

5.7 4 Nutley Terrace

- 5.7.1 This property is located next-door to 6 Nutley Terrace to the east. We have obtained planning drawings of the property to verify the internal layouts.
- 5.7.2 The planning information shows that only the windows serving the ground floor kitchen have a requirement for testing under BRE Report guidance.
- 5.7.3 Our analysis shows the kitchen will continue to comply fully with the BRE Report guidance.

5.8 Nutley Cottage

- 5.8.1 This two storey house is next door to 6 Nutley Terrace to the west. We have obtained internal arrangement information from the local planning database and have used this in our analysis.
- 5.8.2 Our analysis shows that all of the tested windows would comfortably meet the VSC assessment with the exception of one of the ground floor windows, W1. This window would still achieve 0.78 times the existing value. The VSC value for window W1 are revised from 27.38% to 21.38%, while this is a noticeable reduction it should be remembered that the window is one of four serving the ground floor living space. The VSC values of the other windows mean this marginal transgression would be imperceptible to the occupants. This synopsis is verified by the additional daylighting test of daylight distribution within the room which shows that the room will see no modification of its existing daylight penetration levels.
- 5.8.3 Sunlight amenity testing of the south facing windows shows that the rooms served would comply with the BRE Report guidance.

5.9 44 Fitzjohn's Avenue

- 5.9.1 These flats are located to the west of 6 Nutley Terrace. We have used estate agent information to establish rooms layouts and uses.
- 5.9.2 All of the assessed windows would comfortably meet the VSC and daylight distribution daylight amenity tests.
- 5.9.3 The windows facing towards the proposed scheme do not face within 90-degrees of due south and, as such, sunlight has not been assessed to these windows as the sunlight amenity will not be adversely affected.

5.10 Overshadowing

5.10.1 We have undertaken overshadowing analysis of all neighbouring gardens where there is a possibility of increased overshadowing attributable to the proposed scheme. Our analysis shows all gardens will comply with the BRE Report guidance with all areas maintaining 2 hrs or more sunlight access to over 50% of their areas on the 21 March.

6 LIGHT LEVELS TO RESIDENTIAL ACCOMMODATION WITHIN THE PROPOSED SCHEME

6.1 Daylight

- 6.1.1 We have analysed the daylight received using the Average Daylight Factor assessment (ADF). As recommended by the BRE, we have used a glass transmittance value of 0.68 for standard double glazing and an internal reflectance value of 0.5. Additionally, we have undertaken daylight distribution analysis as recommended by the BRE Report.
- 6.1.2 The location of the tested rooms and window references are shown on the drawings appended to this report; the results are also included in the appendices and relevant spread sheets.
- 6.1.3 Analysis shows that 19 of the 25 rooms assessed would meet the ADF target values for the specific room type with many rooms achieving values far in excess of the recommended minimum. Transgressions, where they exist, are mainly to bedrooms and one study. It should be remembered that the BRE Report considers daylight amenity to these secondary living spaces to be of a lesser significance than main living spaces. Two lounge/kitchen/dining (LKD) rooms will also transgress the guidance. Room R2 at ground floor level will achieve an ADF of 1.98 and room R5 at first floor level will achieve 1.77. Both of these values are only slightly below the ADF guidance of 2%.
- 6.1.4 Daylight distribution analysis shows that the majority of rooms, including rooms R2 at ground floor and R5 at first floor level, will comfortably meet the BRE Report guidance.

6.2 Sunlight

- 6.2.1 We have used the annual probable sunlight hours (APSH) test to assess sunlight amenity to those rooms with windows facing within 90-degrees of due south.
- 6.2.2 Our analysis shows that all rooms at ground, first, second and third floor will comply with the BRE Report guidance. Analysis of the lower ground floor rooms show that where transgressions exist they are limited to bedrooms. Once again the BRE Report considers sunlight amenity to bedrooms to be of a lesser significance than to main living spaces due to their predominantly night time use.

6.3 Overshadowing

6.3.1 Analysis of the proposed scheme gardens show that the spaces will fully comply with the BRE Report guidance.

7 CONCLUSION

7.1 Effect on surrounding residential properties

7.1.1 Our analysis demonstrates that the proposed development of 6 Nutley Terrace, would not materially affect the daylight and sunlight amenity received to the existing surrounding properties when assessed in accordance with the guidelines given in Camden's planning policies and more specifically, with the guidelines set-out in BRE Report.

7.2 Light received to proposed habitable rooms

7.2.1 Foreword to BS 8206-2:1992 states that:

"The aim of the standard is to give guidance to architects, builders and others who carry out lighting design. It is recognised that lighting is only one of many matters that influence fenestration. These include other aspects of environmental performance (such as noise, thermal equilibrium and the control of energy use), fire hazards, constructional requirements, the external appearance and the surroundings of the site. The best design for a building does not necessarily incorporate the ideal solution for any individual function. For this reason, careful judgement should be exercised when using the criteria given in the standards for other purposes, particularly town planning control."

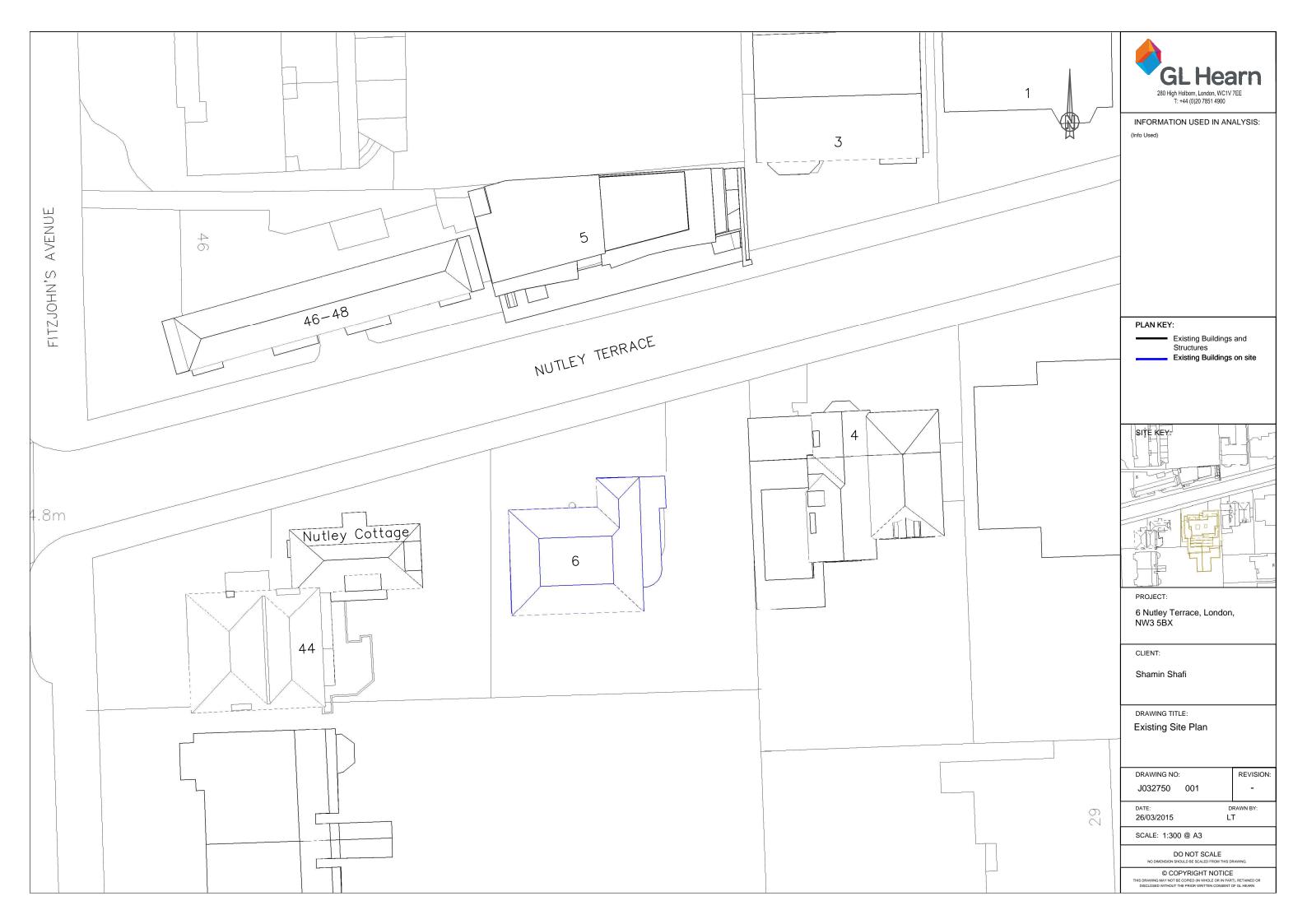
- 7.2.2 Our ADF analysis shows that the majority of the rooms assessed would meet, or exceed, the guideline values given in the British Standard for daylight amenity and that all the main living spaces would meet the daylight distribution criteria.
- 7.2.3 All of the windows serving the L/K/D's and requiring assessment would meet the BRE sunlight criteria.
- 7.2.4 Given the high level of compliance and the constraints placed upon these buildings by the site orientation, we would consider that the levels of daylight and sunlight amenity achieved are consistent with the expectations of the area.
- 7.2.5 We therefore submit that our analysis demonstrates that the flats within the proposed development would receive adequate light when assessed in accordance with the guidelines set-out in the BRE Report.

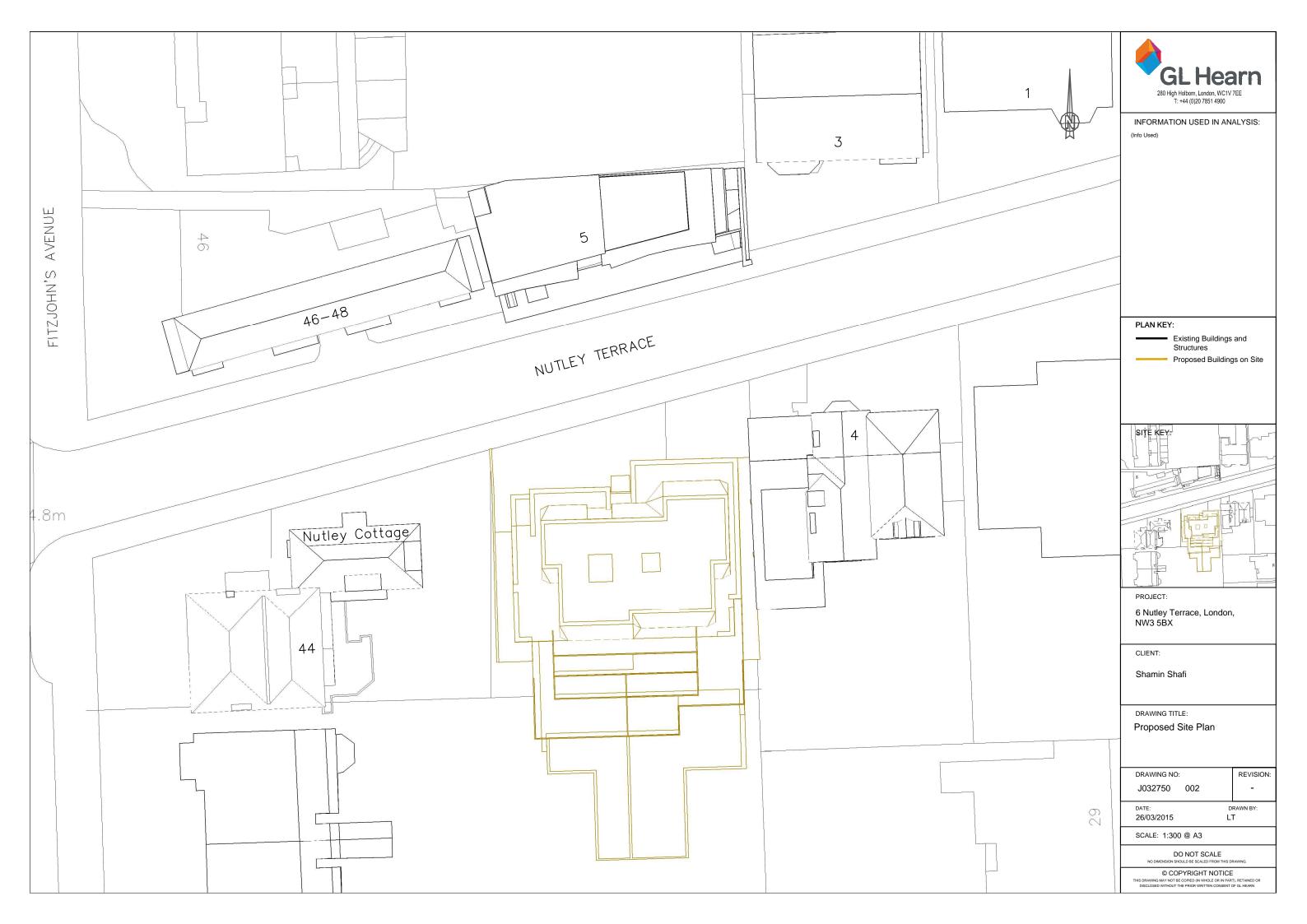
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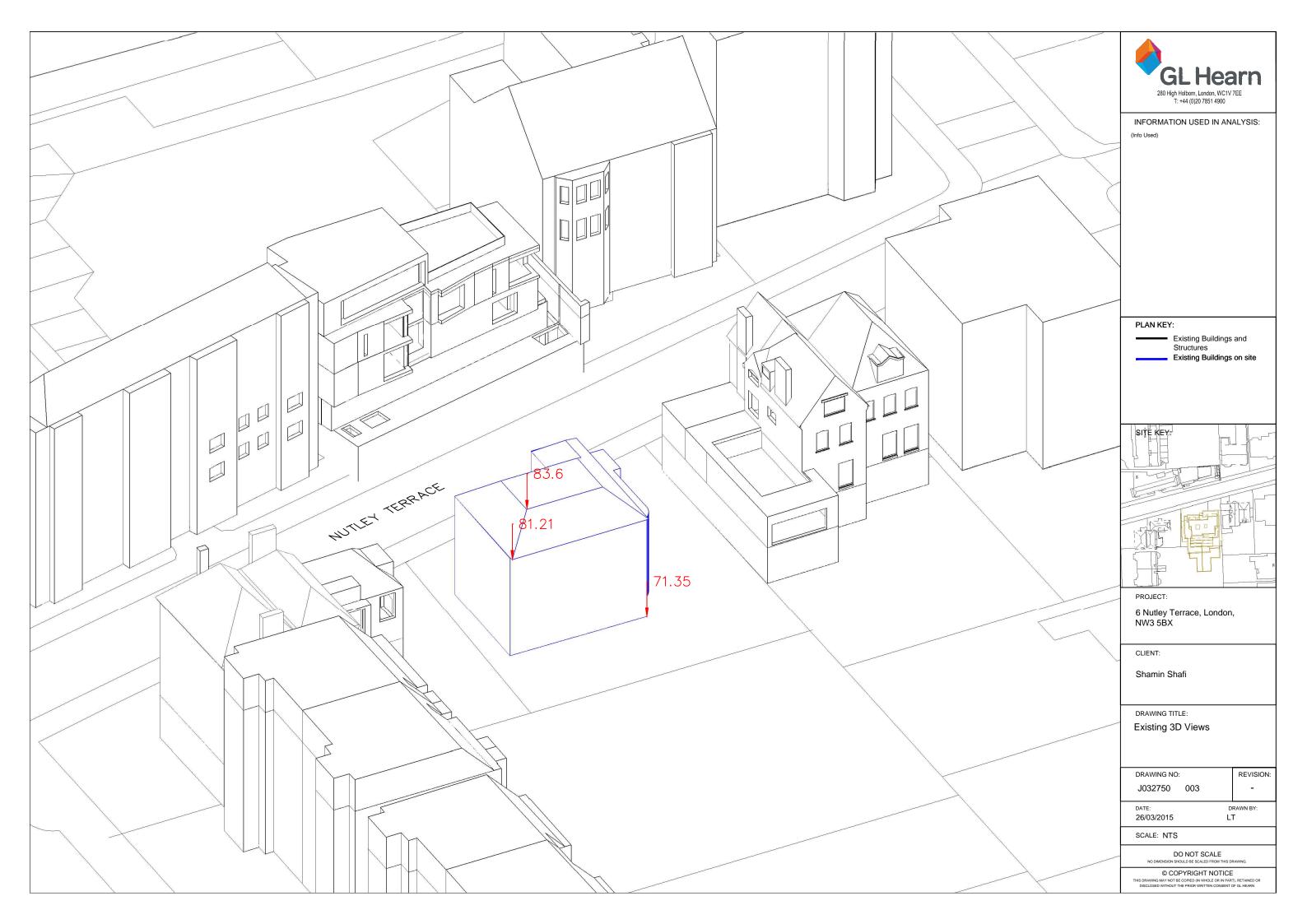
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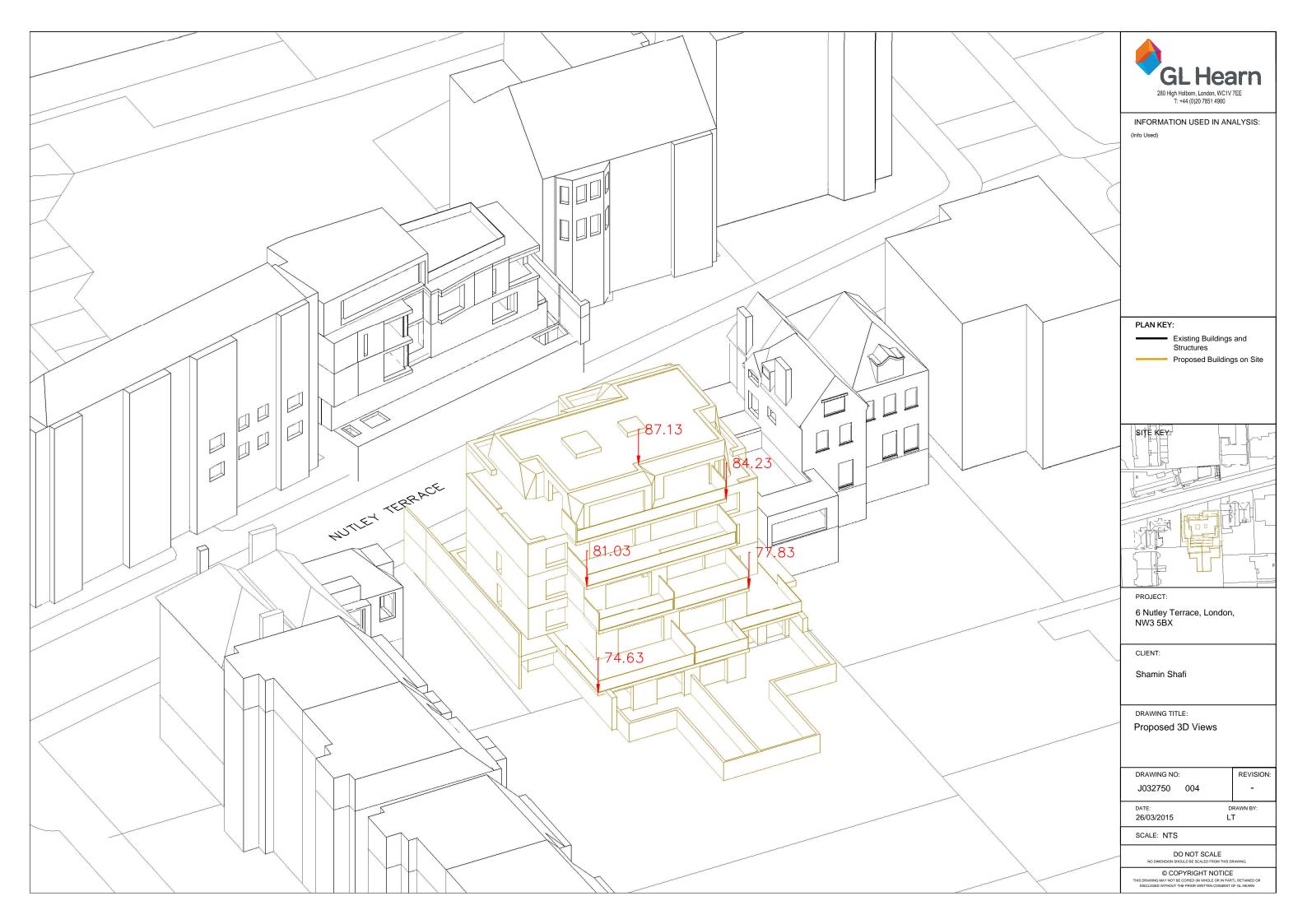
APPENDIX A

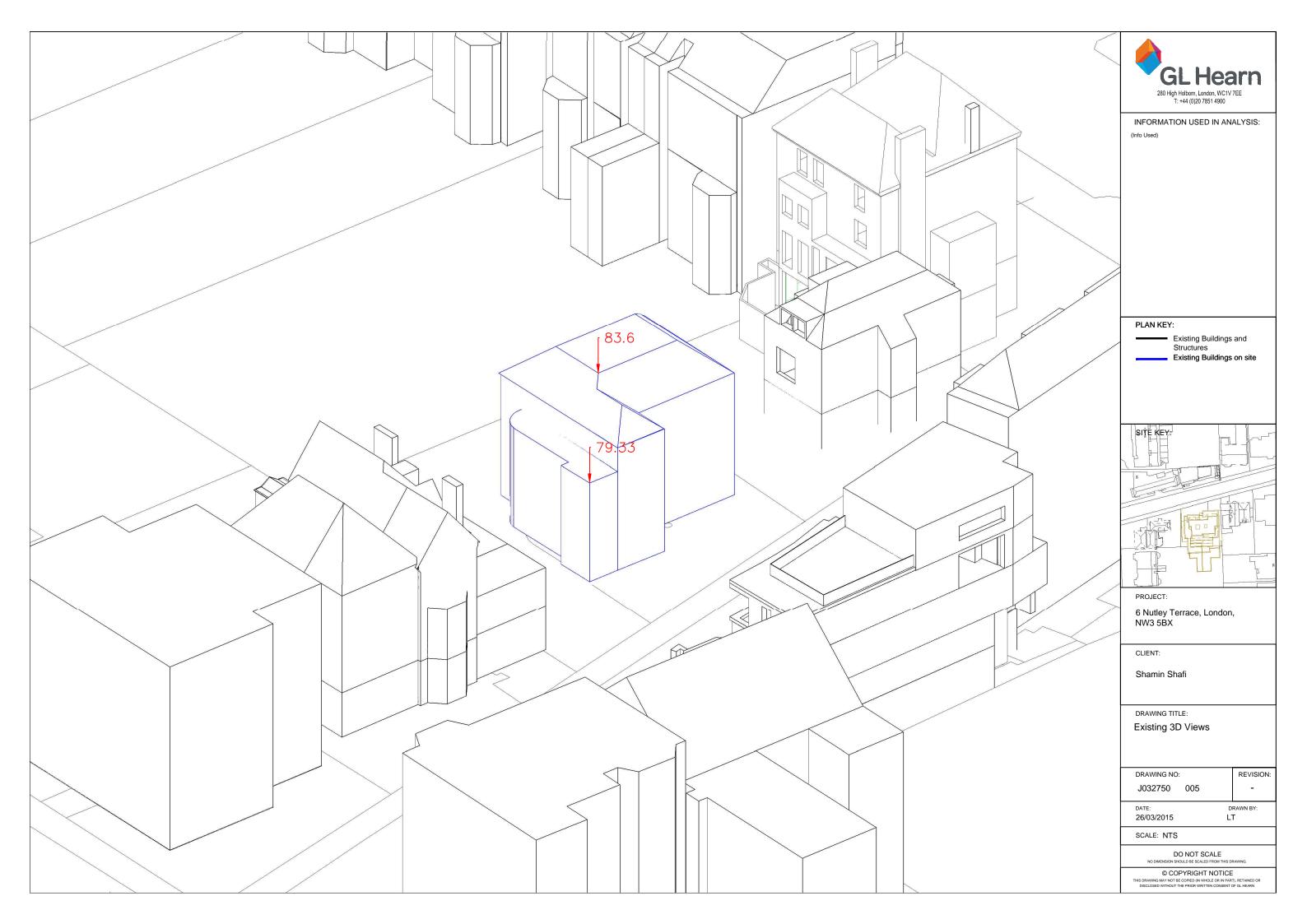
DRAWINGS

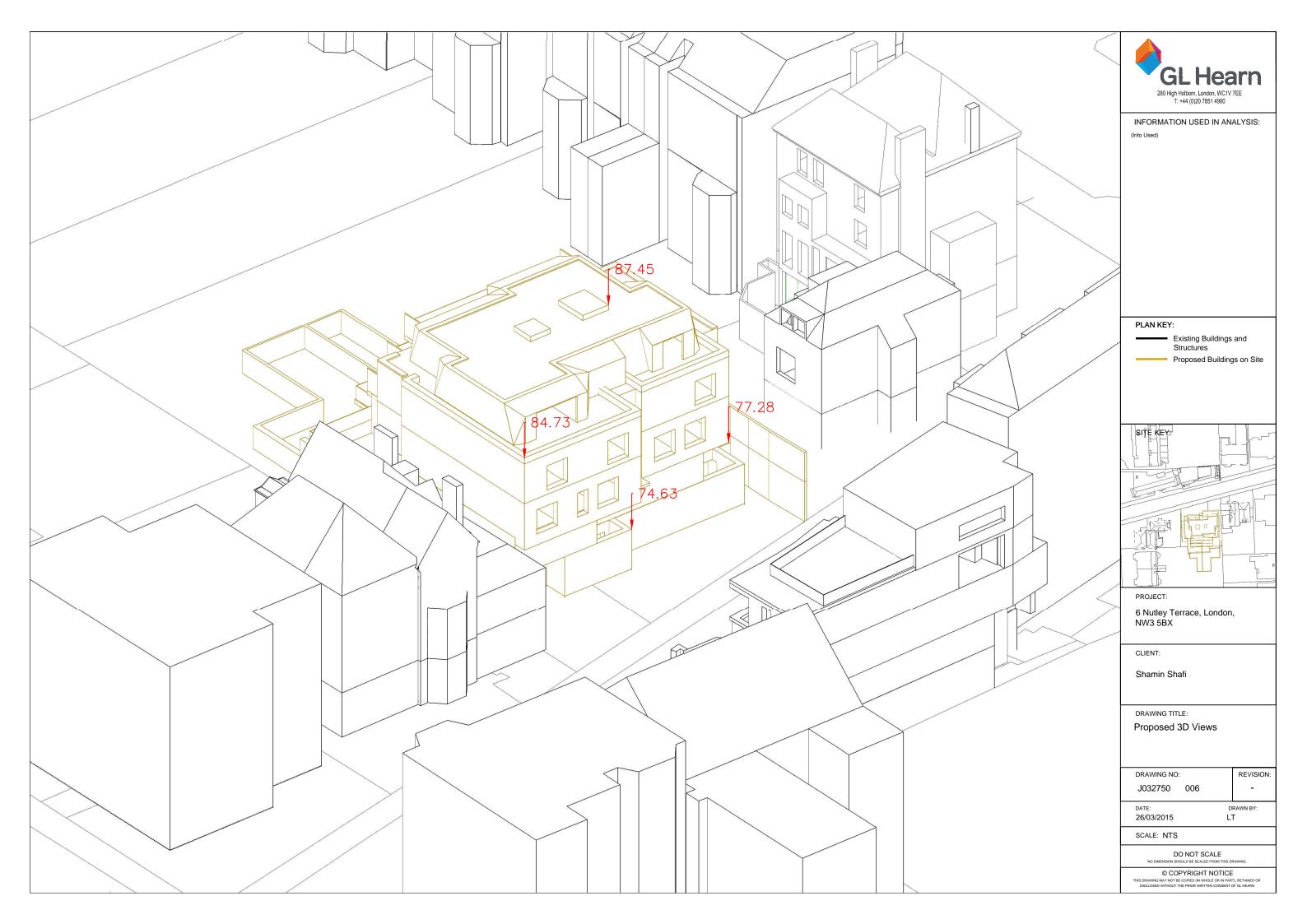




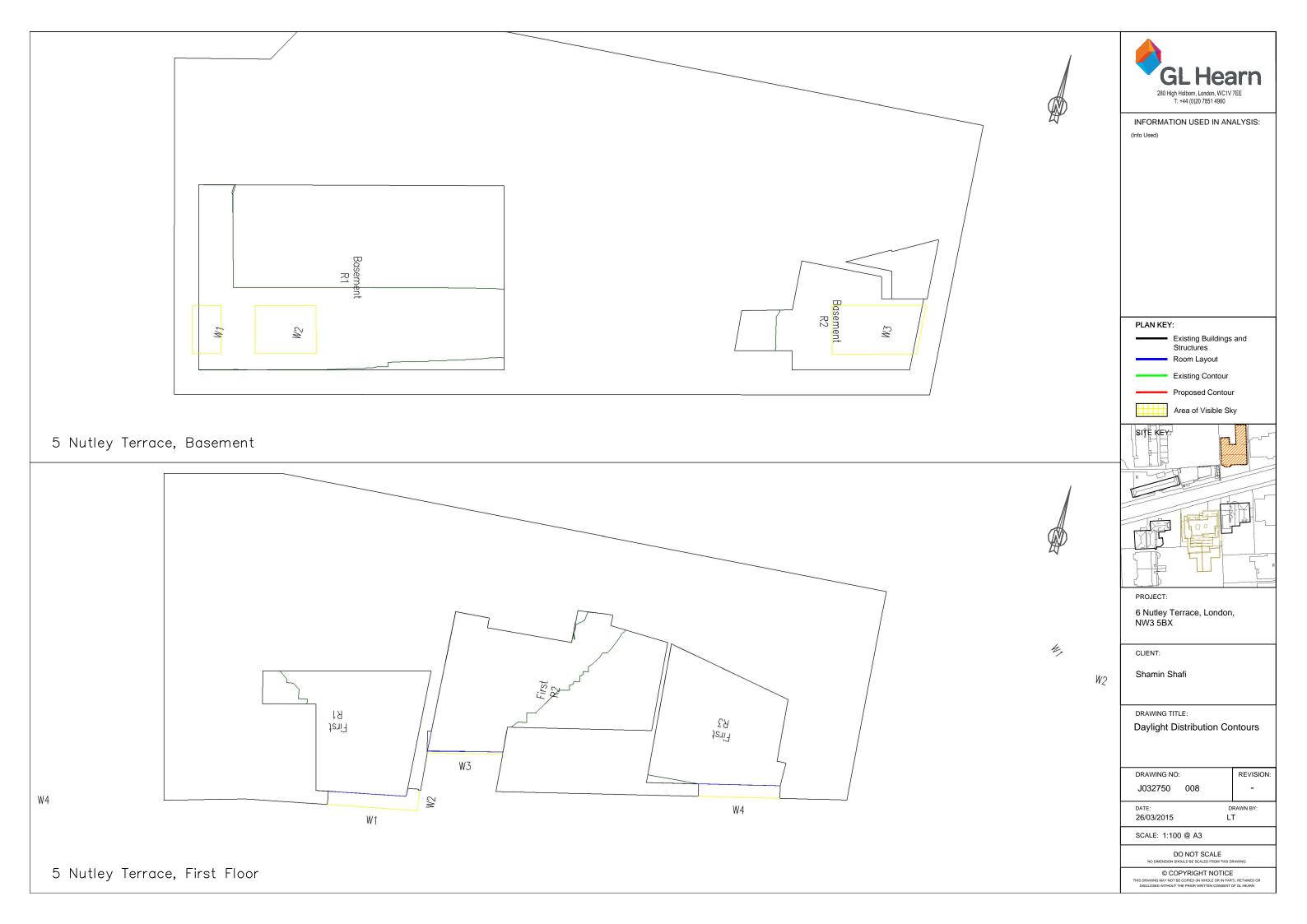


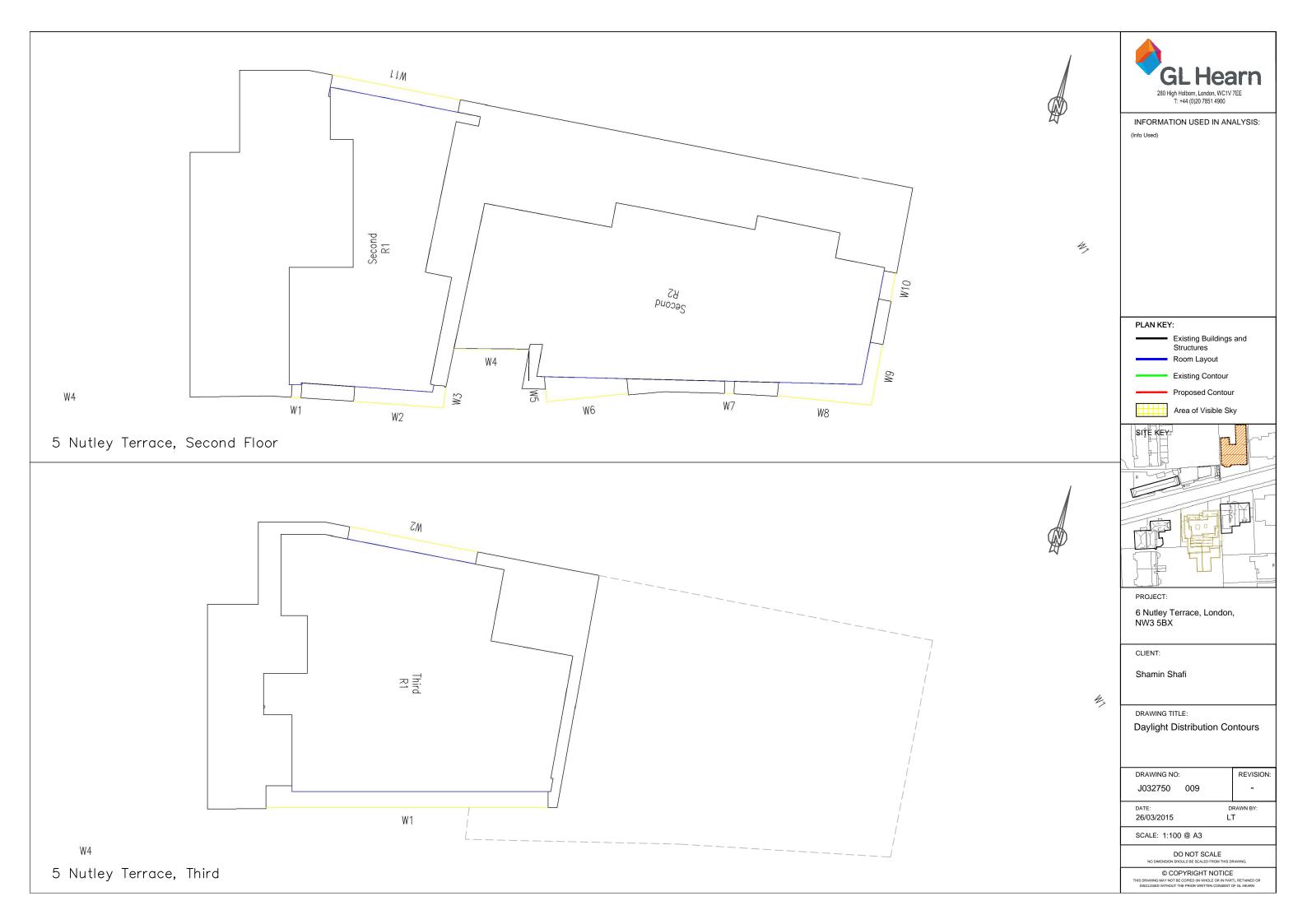


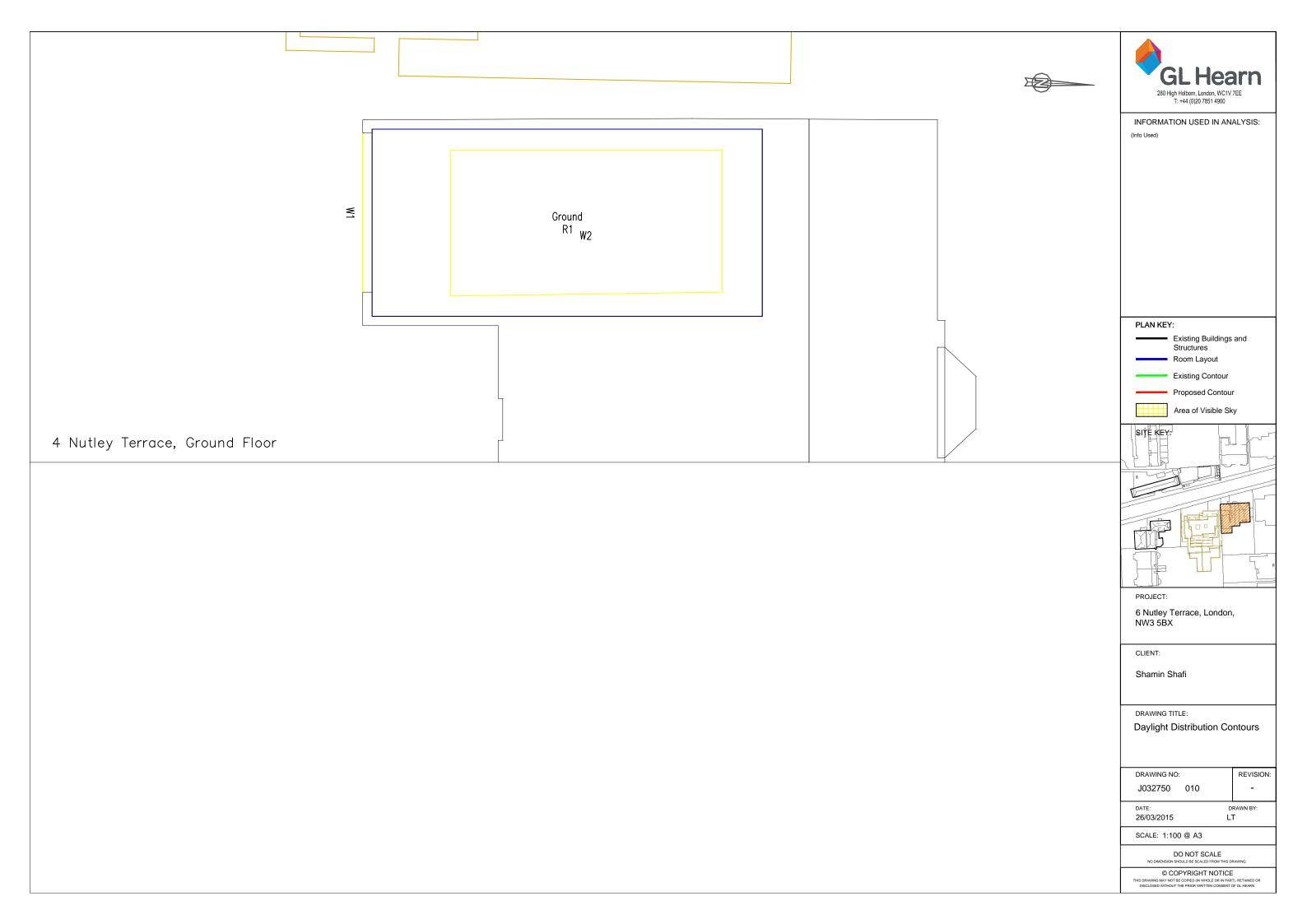


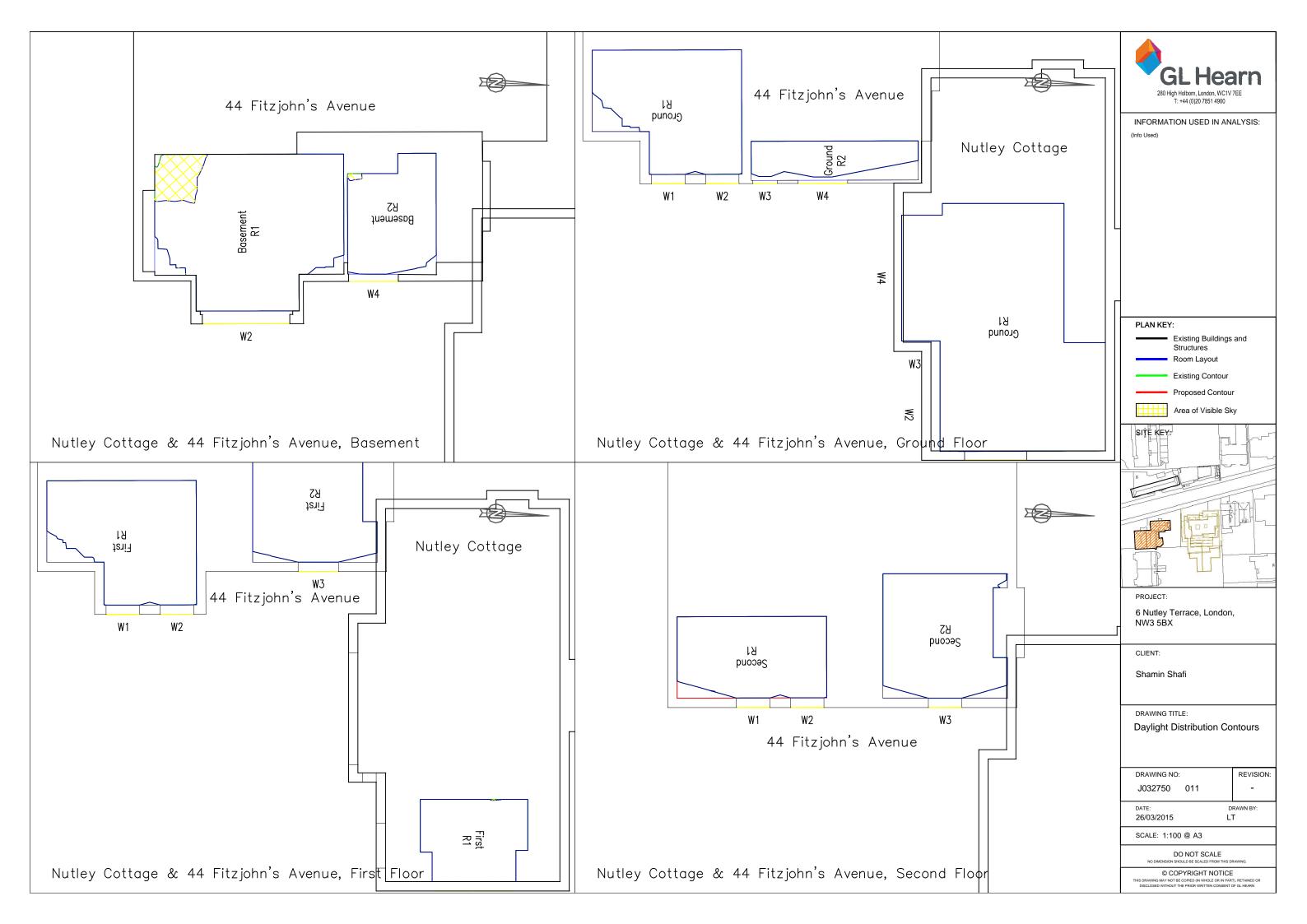


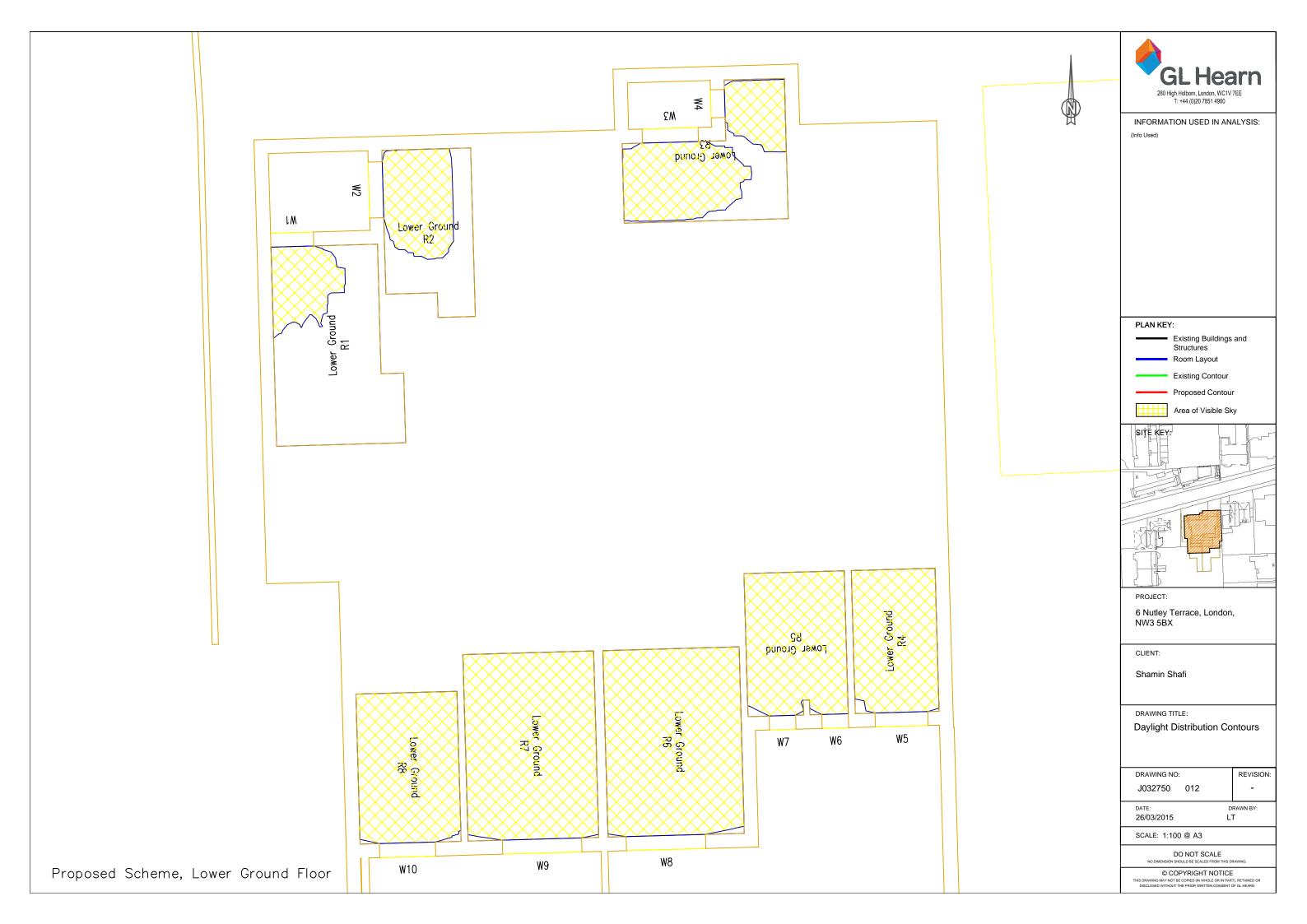


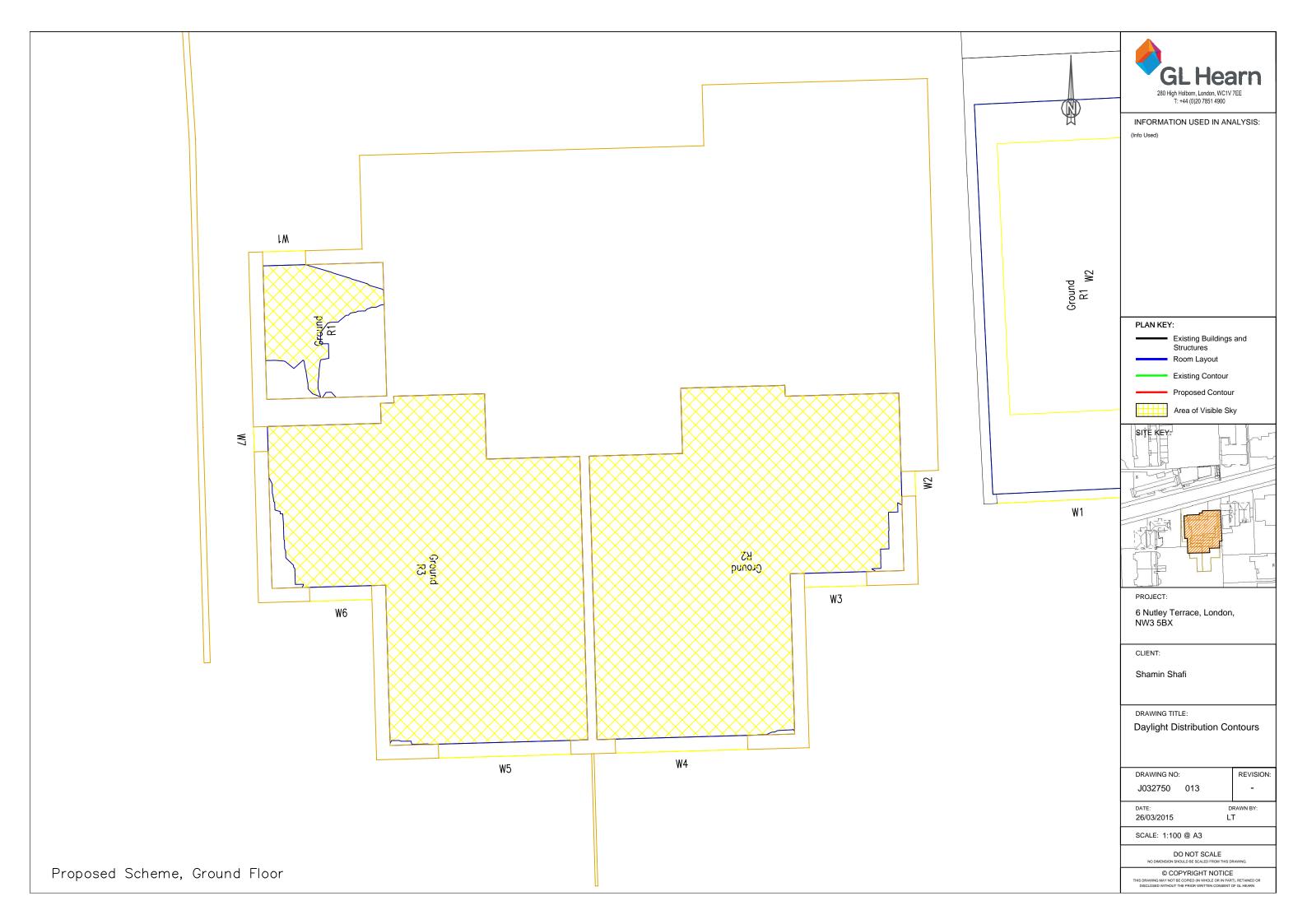


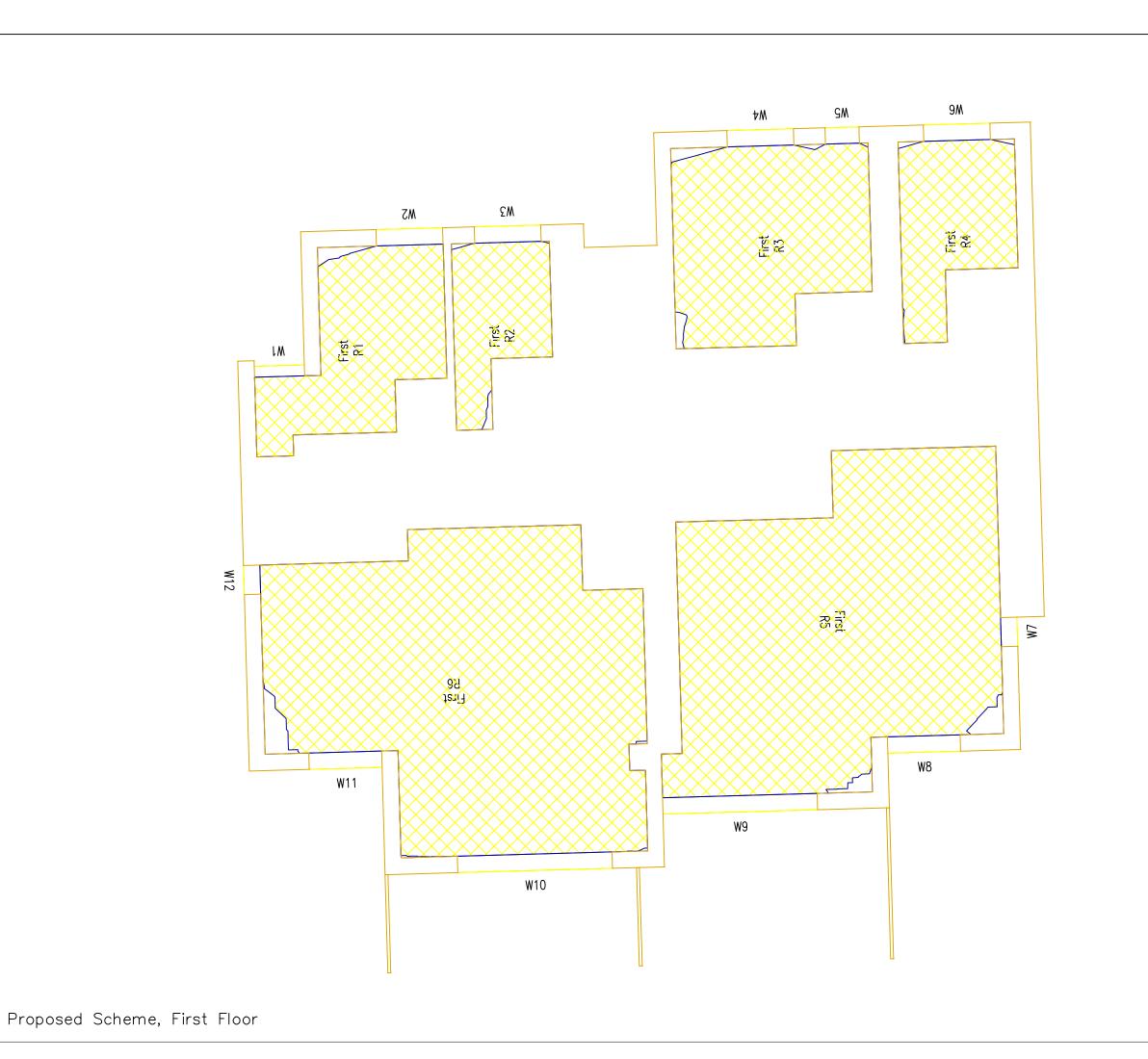
















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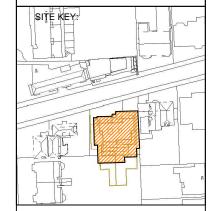
Existing Buildings and Structures

Room Layout

Existing Contour

Proposed Contour

Area of Visible Sky



PROJECT:

6 Nutley Terrace, London, NW3 5BX

CLIEN

Shamin Shafi

DRAWING TITLE:

Daylight Distribution Contours

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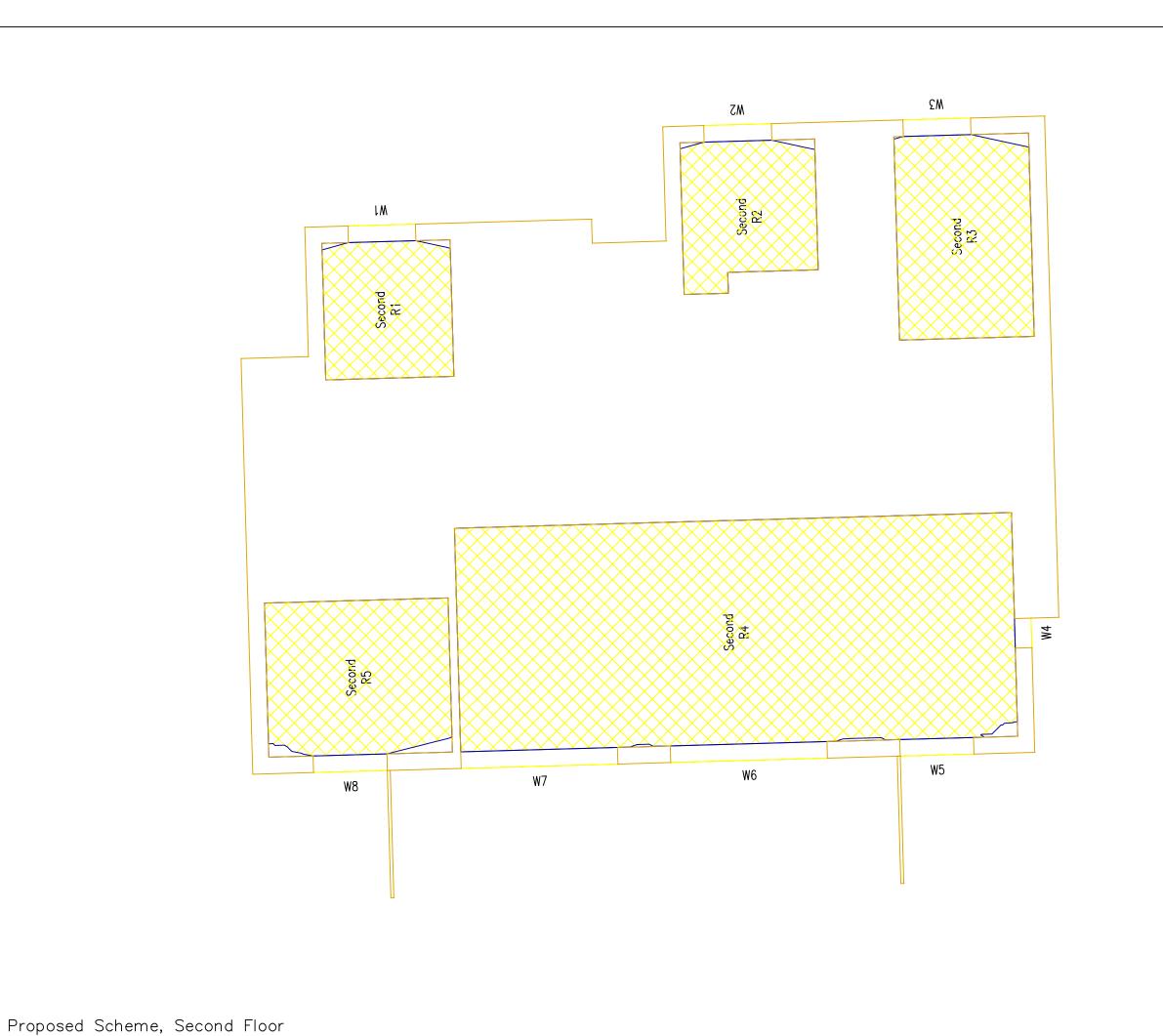
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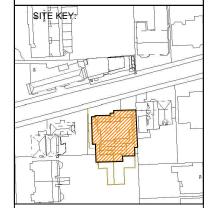
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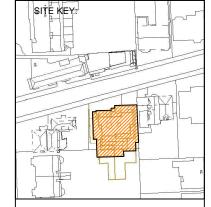
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