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Daylight & Sunlight Report

Station Yard, Twickenham, TW1

A REPORT PREPARED

FOR PROPOSED DEVELOPMENT

AT STATION YARD, TWICKENHAM, TW1

Issue Date: 11 November 2019

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ISSUING OFFICE:	The Harlequin Building, 65 Southwark Street, London SE1 0HR Tel: 020 7125 0112
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	For and on behalf of Paragon Building Consultancy Limited

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DAYLIGHT & SUNLIGHT REPORT

1.0 INTRODUCTION

1.1	Solum Regeneration (Twickenham) LLP (hereafter referred to as 'the Applicant') are proposing a development at Station Yard, Twickenham. The Applicant are conscious of the need to minimise impact on the light to neighbouring properties, particularly those with residential content, and therefore instructed Paragon Building Consultancy to work with the project architect so that the effects of the proposed development could be properly understood and, wherever possible, minimised.
1.2	Paragon Building Consultancy Ltd has been commissioned to undertake a formal technical assessment of the effect of the planning application scheme upon the existing surrounding properties around the site, having regard to the recommendations in BRE Report 209 *'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice'* (second edition, 2011). We have also been instructed to assess the internal daylight amenity that the new occupiers of the building will experience.
1.3	Our study has been carried out using 3D computer modelling and our specialist computer simulation software.
1.4	This report summarises the basic principles of daylighting and sunlighting, the methods used to assess the potential impact of the development, the information used in compiling our 3D computer model and the results of our technical assessment. Drawings and full tables of results of our technical assessment are attached in the appendices.

2.0 THE SITE AND THE SURROUNDING AREA

2.1	The Site is located on the north side of Station Yard, to the immediate south of the railway line and comprises an open car park area.
2.2	The site is surrounded by the following buildings which have all or some element of residential accommodation: • 2 Grosvenor Road • 2 Station Yard • 4 Station Yard • 1 Queen's Road (The Albany PH) • 1 Brewery Lane • 2 Brewery Lane It is intended to construct a new residential apartment building on the site'.
2.3	We also attach a copy of our drawings numbered 190589/02/01 – 06 that show the existing site and proposed development in plan and 3D format, these are attached at Appendix 1.

3.0 APPLICATION OF THE BRE GUIDELINES

3.1	In the UK, assessment of the effect of new development on the daylight enjoyed by the occupiers of existing residential buildings is conventionally made by reference to the Building Research Establishment Report (2011) entitled "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice" ("the BRE Guide"). However, before turning to the guidance contained in therein, it is first necessary to take account of its limitations, as set out in the Guide itself. The final paragraph of the introduction to the Guide (page 1) states that:
3.2	"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design. In special circumstances, the developer or planning authority may wish to use different target values. For example, in an historic city centre a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings."
3.3	Further, the second paragraph of Section 2.2 of the Guide states for daylight that:
3.4	"Note that numerical values given here are purely advisory. Different criteria may be used, based on the requirements for daylighting in an area viewed against other site layout constraints."
3.5	In this regard, we make the following points. *Firstly*, Central London and other city centres are developed to a higher density than most of the rest of the country. Further, those who choose to locate in town centres do so for the many advantages and the general amenities that they offer. However, given the density of development, it must be accepted that the amount of daylight that is enjoyed in other locations, cannot necessarily be expected in Central London and other city centres.
3.6	*Secondly*, we wish to draw attention to the importance of the standard of daylight that an existing building will enjoy once a new development is in place. In our view, although it is of course relevant to take account of the loss that will be experienced, what is of most importance is whether what is left in terms of daylighting is of an acceptable standard for that unit in that location. We would suggest that in the flexible application of any standards relating to light it is important to bear in mind both the likely use to which the room in question is put and the overall effect on the living conditions of the dwelling as a whole from any identified reduction in daylight in any given room within that dwelling. The Guide also states that "Bedrooms should also be analysed, although they are less important".
3.7	There are two main methods of measurement of the impact of a new development on the daylight enjoyed by an existing property, namely Vertical Sky Component ("VSC") and the No–Sky Line. Both are described in detail in the BRE Handbook. Here, I describe them in summary only.

	Daylight to Existing Surrounding Buildings
3.8	Section 2.2 of the BRE Report makes recommendations concerning the impact on daylight to existing buildings. In summary, the BRE Guide 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° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if either:* • *the VSC [vertical sky component] measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value; [or]* • *the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value."*
3.9	So, where the angle to the horizontal subtended by the new development measured at the centre of the lowest window in an existing surrounding building (the angle of obstruction) is less than 25°, the diffuse daylight to that building is unlikely to be significantly affected and need not be tested.
3.10	Where the obstruction angle is greater than 25°, both of the more detailed daylight tests should be undertaken, namely vertical sky component ('VSC') and daylight distribution. For each test the guidelines operate on the general principle that if the amount of daylight is reduced to less than 0.8 times its former value (i.e. there will be more than a 20% loss) the reduction will be noticeable to the building's occupants. "Noticeable" does not necessarily equate to "unacceptable" and the BRE's standard target values should not be considered as pass/fail criteria. Ultimately the local planning authority will need to make a judgement as to whether any impacts are acceptable when weighed against the many other planning considerations.
3.11	The VSC test measures the amount of skylight available at the centre of a window on the external plane of the window wall. It has a maximum value of almost 40% for a completely unobstructed vertical window wall. If a room has two or more windows of equal size, the mean of their VSCs may be taken. As the VSC calculation takes no account of the size of the window being tested, the size of the room it lights or multiple windows of unequal size, it does not measure light inside the room. It merely measures the potential conditions in the room. The VSC results can therefore be misleading if considered in isolation and should be read in conjunction with those of the second test - daylight distribution.
3.12	The daylight distribution test calculates the area at working plane level inside a room that will have a direct view of the sky. This is done by plotting the no-sky line, i.e. the line on the working plane that divides those areas that receive direct skylight from those that do not.
3.13	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.
3.14	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.

3.15	ADF is a method of daylight measurement which considers the light within a room behind the fenestration which serves it. In other words, it considers the interior daylighting of a room. It is defined in Appendix C of the BRE Guide as:
3.16	"The ratio of total daylight flux incident on the working plane, expressed as a percentage of the outdoor illuminance on a horizontal plane due to an unobstructed CIE Standard Overcast Sky".
3.17	So far as ADF is concerned, Appendix C to the BRE Guide gives interior daylighting recommendations. Where, as in the overwhelming majority of cases, electric lighting is provided, it is recommended that there should be a 2% ADF if a predominantly daylit appearance is required. Additional recommendations for dwellings of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms are set out.
3.18	ADF considers the light within the room behind the windows that serve it. It is a more accurate indicator of the daylighting within the room because it takes into account the following: (a) All the windows serving the room in question, and not just one; (b) The use of the room; (c) The size and layout of the room; (d) The size of the window (e) The glazing transmittance (f) The reflectance of finishes of the room surfaces.
	Sunlight to Existing Surrounding Buildings
3.19	Section 3.2 of the BRE Guide makes recommendations concerning the impact on sunlight to existing dwellings or non-domestic buildings where there is a particular requirement for sunlight. The guide notes at paragraph 3.2.1 that *"obstruction to sunlight may become an issue if:* • *some part of a new development is situated within 90° of due south of a main window wall of an existing building; and* • *in the section drawn perpendicular to the existing window wall, the new development subtends an angle greater than 25° to the horizontal measured from the centre of the lowest window to a main living room."*
3.20	If these angle criteria are not met, the guide recommends a more detailed check to calculate the impact of the proposed development on the available sunlight.
3.21	The Guide suggests "*all main living rooms of dwellings, and conservatories, should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun. In non-domestic buildings any spaces which are deemed to have a special requirement for sunlight should be checked; they will normally face within 90° of due south anyway."* (Para. 3.2.3).

3.22	The available sunlight is measured in terms of the percentage of annual probable sunlight hours ('APSH') at the centre point of the window. 'Probable sunlight hours' is defined as *"the long-term average of the total number of hours during a year in which direct sunlight reaches the unobstructed ground (when clouds are taken into account)."*
3.23	Paragraph 3.2.11 of the BRE Guide summarises its sunlight guidance as follows: *"If a living room of an existing dwelling has a main window facing within 90º of due south, and any part of a new development subtends an angle of more than 25º 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 received over the whole year greater than 4% of annual probable sunlight hours".* **Daylight within new development** Section 2.1 of the BRE guide makes recommendations concerning daylight in new buildings. At the site layout stage of the design process, when window positions and sizes are unknown, the potential for daylight may be checked at a series of reference points on each main face of the building. Where window positions and sizes are known, it is more informative to calculate the interior daylighting inside the building. The guidelines recommend calculating the Average Daylight Factor (ADF), which is the mean daylight factor on the horizontal working plane inside the room. In carrying out the ADF calculation we use 3D computer modelling and specialist software to calculate the angle of visible sky at each window. The software uses the more accurate Waldram method, as described in Appendix B of the BRE guide, rather than the manual skylight indicator method described in Appendix A of the guide. In the assessment the following values were taken: T = 0.65 for clear double glazing (the light transmittance); Aw = window aperture area measured from 3D computer model multiplied by 0.8 for the frame correction factor; A = (total area of all the room surfaces) was measured from the 3D computer model; and R = (area weighted average reflectance for the room surfaces) = 0.75 BS8206 and BRE Report 209 recommend the following minimum ADF values in dwellings:- 1% for bedrooms 1.5% for living rooms 2% for kitchens BS8206-2: 2008 notes that "Where one room serves more than one purpose, the minimum average daylight factor should be that for the room type with the highest value. For example, in a space which combines a living room and a kitchen the minimum average daylight factor should be 2%".

The guidelines also recommend that the distribution of daylight in the room should be checked. This can be done by plotting the no-sky line, i.e. the line on the working plane that divides those areas that can receive direct skylight from those that cannot, as described in Appendix D of the BRE guide. The BRE guidelines suggest that "if a significant area of the working plane (normally more than 20%) lies beyond the no-skyline (i.e. it receives no direct skylight), then the distribution of daylight in the room will look poor and supplementary electric lighting will be required".

Sunlight within new development

BRE Report 209 advises that "In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchens, where people prefer it in the mornings rather than the afternoon."

The BRE guidance advises that site layout can be used to affect the duration of sunlight in buildings. It notes that "A dwelling with no window wall within 90° of due south is likely to be perceived as insufficiently sunlit. This is usually an issue only for flats. Sensitive layout design of flats will ensure that each dwelling has at least one main living room which can receive a reasonable amount of sunlight."

Access to sunlight can be quantified. BS8206 recommends that "Interiors in which the occupants have a reasonable expectation of direct sunlight should receive at least 25% of probable sunlight hours. At least 5% of probable sunlight hours should be received during the winter months, between 21 September and 21 March. Sunlight is taken to enter an interior when it reaches one or more window reference points".

'Probable sunlight hours' means "the total amount of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question." The calculation uses a sunlight probability model that is based on sunlight statistics. The sunlight probability diagram is shown in Figure A.3 of BS8206-2:2008. There are 100 dots on the diagram, with each dot representing 1% of probable sunlight hours. The density of dots on the diagram is proportional to the probability of the sun shining from a particular area of sky.

The annual probable sunlight hours on an unobstructed plane varies according to location, with London receiving 1,486 sunlight hours, Manchester 1,392 hours and Glasgow 1,267 hours. So, in London a figure of 1% APSH equates 14.86 probable sunlight hours over the course of the year.

Whilst the BRE guidelines may, in theory, be applied anywhere, APSH values of 25% annually and 5% in the winter months are often not possible on modern, dense, city-centre sites.

The British Standard notes that "The degree of satisfaction is related to the expectation of sunlight. If a room is necessarily north facing or if the building is in a densely-built urban area, the absence of sunlight is more acceptable than when its exclusion seems arbitrary. It is the duration of sunlight in an interior, rather than its intensity or the size of the sunny patch, which correlates best with the occupants' satisfaction."

The BRE guide notes that whilst the British Standard is intended to give good access to sunlight for amenity purposes and a range of situations, "In some circumstances the designer or planning authority may wish to choose a different target value for hours of sunlight."

4.0 SOURCES OF INFORMATION

4.1 In order to carry out the tests recommended in the BRE Guide, we have built a 3D computer model of the existing buildings on the site, the existing surrounding buildings to be studied, other relevant background massing (without trees) and the proposed scheme, based on the information listed below.

Proposed Scheme

4.2
- Wimshurst Pelleriti Architects 3D Model and drawings:
  - WP-0689-A-3D-00
  - WP-0689-A-0100-106
  - WP-0689-A-0201-204
  - WP-0689-A-0300-301

4.3 **Existing Building on the Site and Existing Surrounding Buildings**:

- MBS Software Ltd:
  - 3D Laser Scan Model
- OS map
- Aerial photography from Google Maps
- Site visit, photographs and measurements

Internal Arrangements within Existing Surrounding Buildings

4.4 Internal arrangements for the surrounding properties have been obtained where possible from Local Planning Authority records or Estate Agent marketing literature.

4.5 Where we have had to estimate the internal arrangements and room uses, as noted above, 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.

5.0 ASSESSMENT RESULTS

5.1 Appended to this report are copies of our drawings numbered 190450/02/01-06 that show the plans and 3D views of the existing site and development proposals. The drawings can be viewed at Appendix 1.

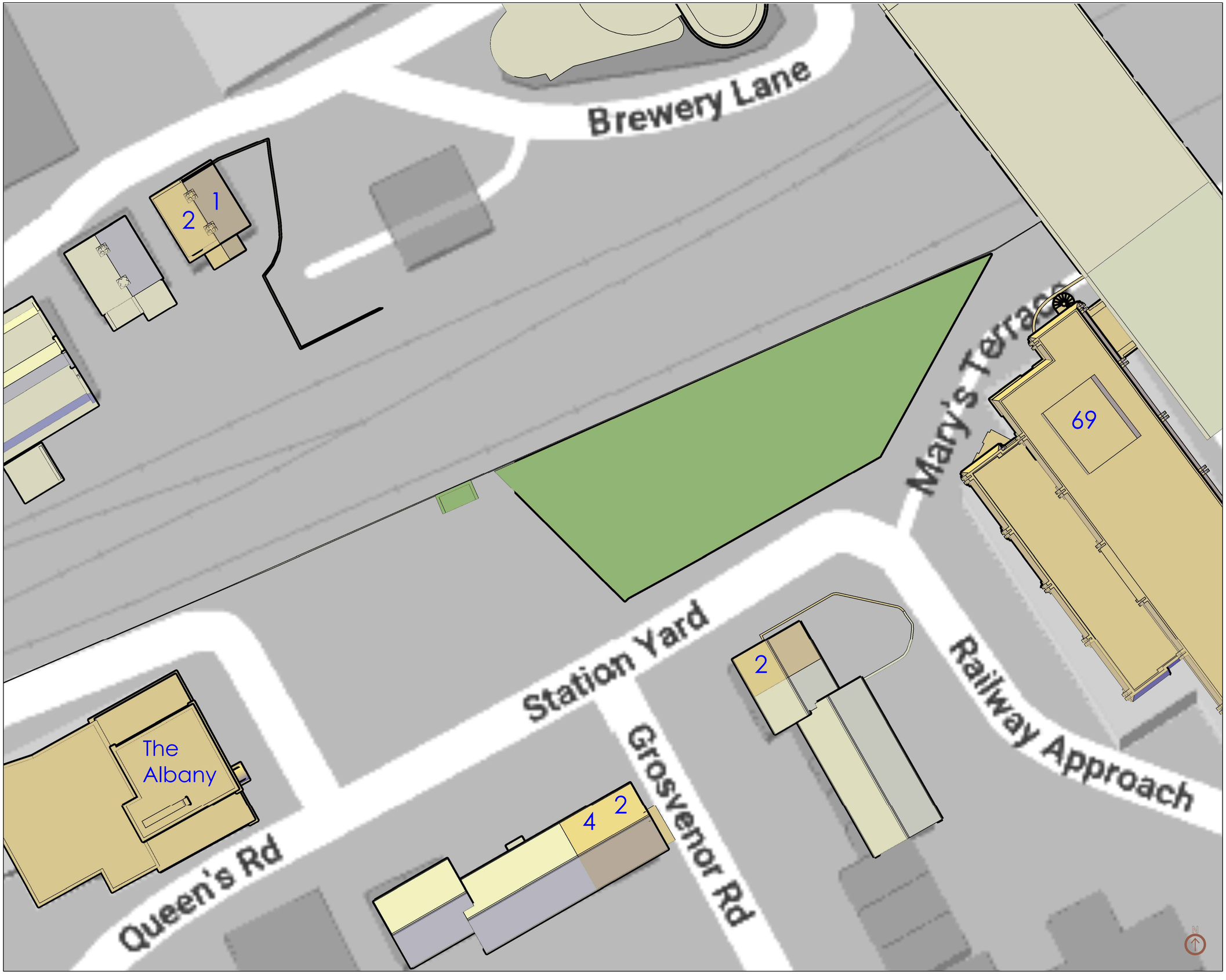
5.2	Drawings numbered 190450/02/12-15 show the No Sky Contours (daylight distribution) for the surrounding property assessed. When the drawing of the surrounding property is viewed, the Red No Sky Contour represents the existing NSL and the green represents the proposed. The area lost is shaded. The drawing can be viewed at Appendix 2.
5.3	A table spreadsheet is also attached for ease of reference that show the numerical values for the Vertical Sky Component, No Sky Contour and the Annual Probable Sunlight. The spreadsheets can be viewed at Appendix 3.
	Impact on Neighbours
	2 Grosvenor Road
5.4	This three-storey house is located to the south of the site and has windows on the flank elevation that face the site. The windows on the front and rear elevations have an oblique view of the site. We were able to obtain internal floor plans of the building from the LPA website.
5.5	The VSC and NSL analysis indicates full adherence with the BRE Guide as all windows will retain more than 0.84 times the former VSC value. The NSL analysis indicated that all of the rooms assessed retain more than 0.97 times the former NSL value.
5.6	With respect to sunlight (APSH), the windows overlooking the site and on the rear elevation do not face within 90 degrees of due south and have therefore not been considered. The results indicate that all of the windows on the front elevation meet the BRE targets. The results therefore show full adherence with the BRE Guide.
5.7	**2 and 4 Station Yard** These properties are three storey buildings located to the south of the site, the front elevations have a view of the site. We were able to obtain internal floor plans from the LPA. The analysis indicates that the VSC, NSL and APSH are fully adherent with the BRE guide and that there will be no material harm to amenity.
5.8	**1 Queen's Road (The Albany PH)** This property is located to the east of the site and is a public house. We have only assessed the first and second floors of the building as there could be residential accommodation above the bar area at ground floor. We were not able to obtain internal floor plans from the LPA. The analysis indicates that the VSC, NSL and APSH are fully adherent with the BRE guide and that there will be no material harm to amenity.
5.9	**1 and 2 Brewery Lane** These two storey properties are located to the north of the site on the opposite side of the railway line. We were able to find internal room layout information. The analysis indicates that the VSC, NSL and APSH are fully adherent with the BRE guide and that there will be no material harm to amenity.

5.10	**Internal Daylight and Sunlight Amenity Results** We have assessed the internal daylight and sunlight amenity for the new apartments (habitable rooms) so that the amenity levels can be determined for the future occupants. The Average Daylight Factor (ADF) results can be found tabulated at Appendix 5 and the NSL contours can be viewed on attached drawings numbered 190589/02/16-21 at Appendix 4. We have assessed all habitable rooms between ground and fifth floors.
5.11	We have assessed a total of 84 Habitable rooms within the proposed building. Of the 84 rooms assessed (87%) a total 73 either meet or exceed the target ADF values. Of the 11 that do not, one is a Studio at ground floor (Room R1), the remaining 19 rooms are Living Kitchen Diners (LKD) (Rooms R4 Ground, R1,R5 and R6 at first, R5 and R6 at second, R5 and R6 at third and R5 and R6 at fourth floors).
5.12	All of the rooms assessed meet or exceed the NSL criteria in that more than 80% of the room area on the working plane will receive direct light from the sky.
5.13	The rooms that do not meet the ADF targets do so due to the fact that the main window serving the subject room is underneath a deep balcony that reduced the daylight availability. This is a recognised reason not to meet an ADF target due to the fact that the provision of private external amenity space is traded for interior daylight. 87% of rooms meeting the targets is commensurate with apartment buildings within urban locations. All rooms addressed meet the targets with the exception of rooms R14 at first, second, third and fourth floors (4 Rooms). This is due to the fact that its windows are north facing with the exception of one window set within a recessed balcony. These rooms are north facing with a recessed balcony, the main windows faced within 90 degrees of due north and need not be considered, the window to these rooms that do not meet the target values, faces south west and is a side window to the balcony. Given it's orientation and the fact that it is recessed, this significantly limits sunlight availability.

6.0 CONCLUSION

6.1	We have undertaken a comprehensive study of the impact of the proposed development on the relevant rooms in all of the surrounding dwellings. The tests were undertaken in accordance with the BRE Report 209 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' (second edition, 2011).
6.2	In conclusion, the layout of the proposed development follows the BRE guidelines and does not significantly reduce sunlight or daylight to existing surrounding properties and the daylight and sunlight values will be adherent with the suggestions contained within the BRE Guide. The properties remain fully adherent to the BRE Guide. As such, we are satisfied that there will not be harm caused to amenity. With respect to internal daylight and sunlight amenity, 87% of the rooms assessed meet the criteria for ADF whilst 100% of the rooms meet or exceed the NSL criteria. Sunlight amenity is excellent for those rooms with windows that face within 90 degrees of due south with the exception of four rooms with a windows within a recess. Amenity for future occupiers is deemed acceptable.

APPENDIX 1: EXISTING & PROPOSED DRAWINGS



Notes:

Existing Model & Surrounding Model

Models derived from 3d terrestrial laser scan survey pointcloud.
Internal room layouts derived from pointcloud wherever possible.
All other room information is assumed or from plans.
Supplemented with site photography, Bing maps and Google Streetmaps.

For room layouts please reference document:
2732377 Existing Elevations and Sections
2732378 Existing Plans
2732380 Proposed Plans

Proposed Model

Information received 24.10.2019.
Ref: WP-0689-A-3D-00
WP-0689-A-0100-106
WP-0689-A-0201-204
WP-0689-A-0300-301

Rev.	Description	Date

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Client:
Solum Regeneration (Twickenham) LLP.

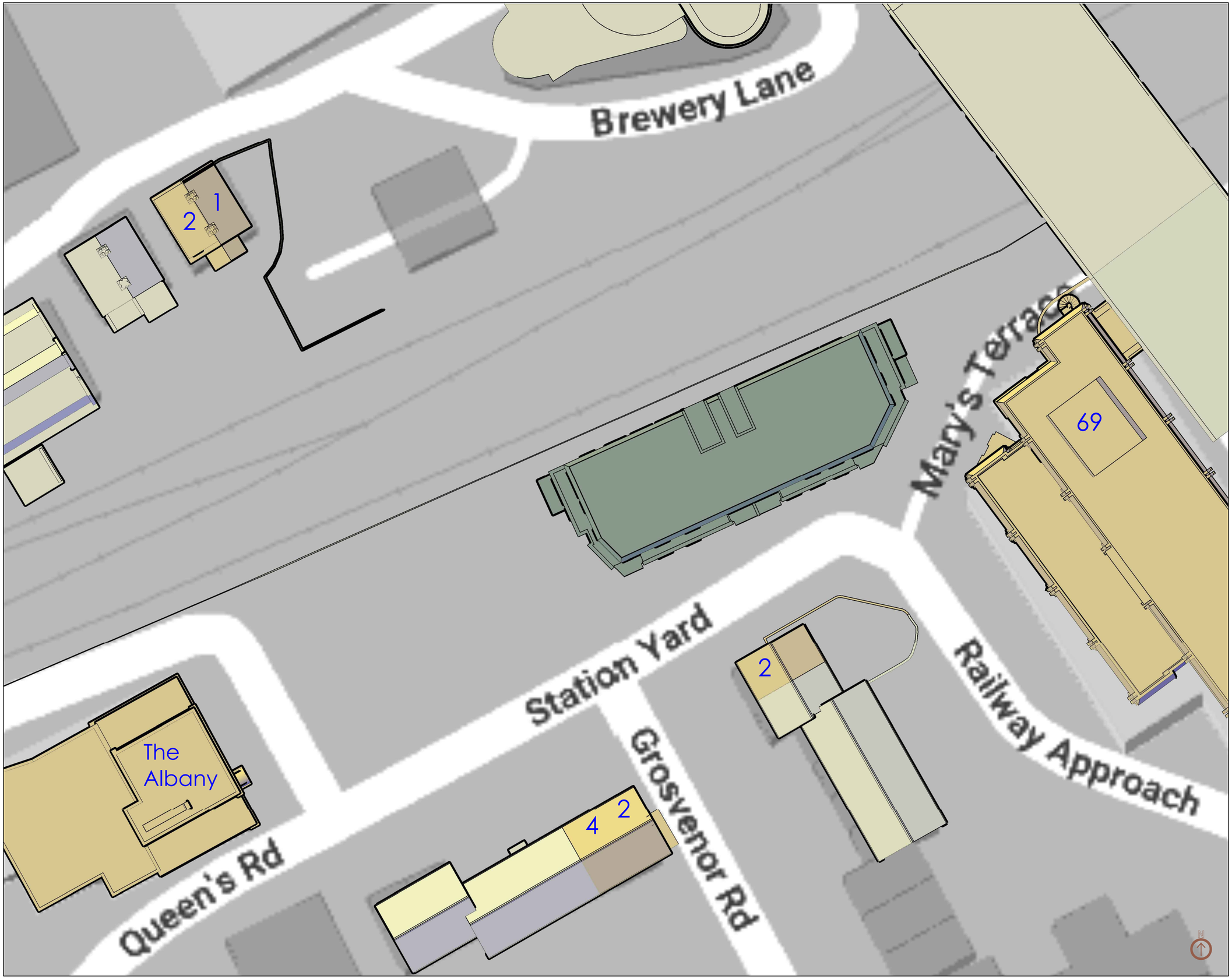
Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Existing Site Plan

Project Number:	Drawing Number:	Revision:
19589	02-01	-

Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019
Drawn By:	Checked By:
AH	AH



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Client:
Solum Regeneration (Twickenham) LLP.

Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Proposed Site Plan

Project Number:	Drawing Number:	Revision:
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Drawing Status:
Information

Scale:	Date:
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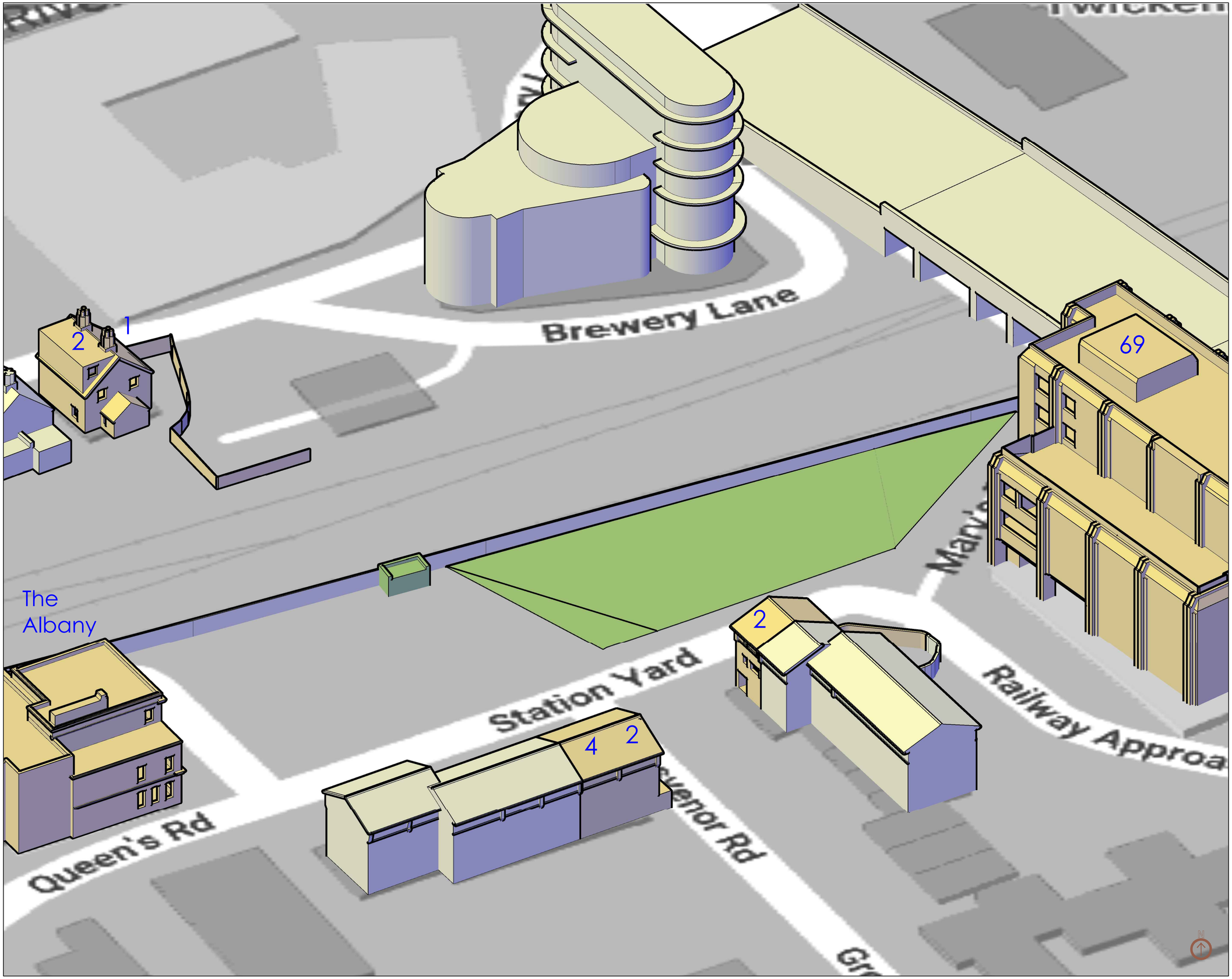
Drawn By:	Checked By:
AH	AH



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Client:
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Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Existing 3d View
Looking North.

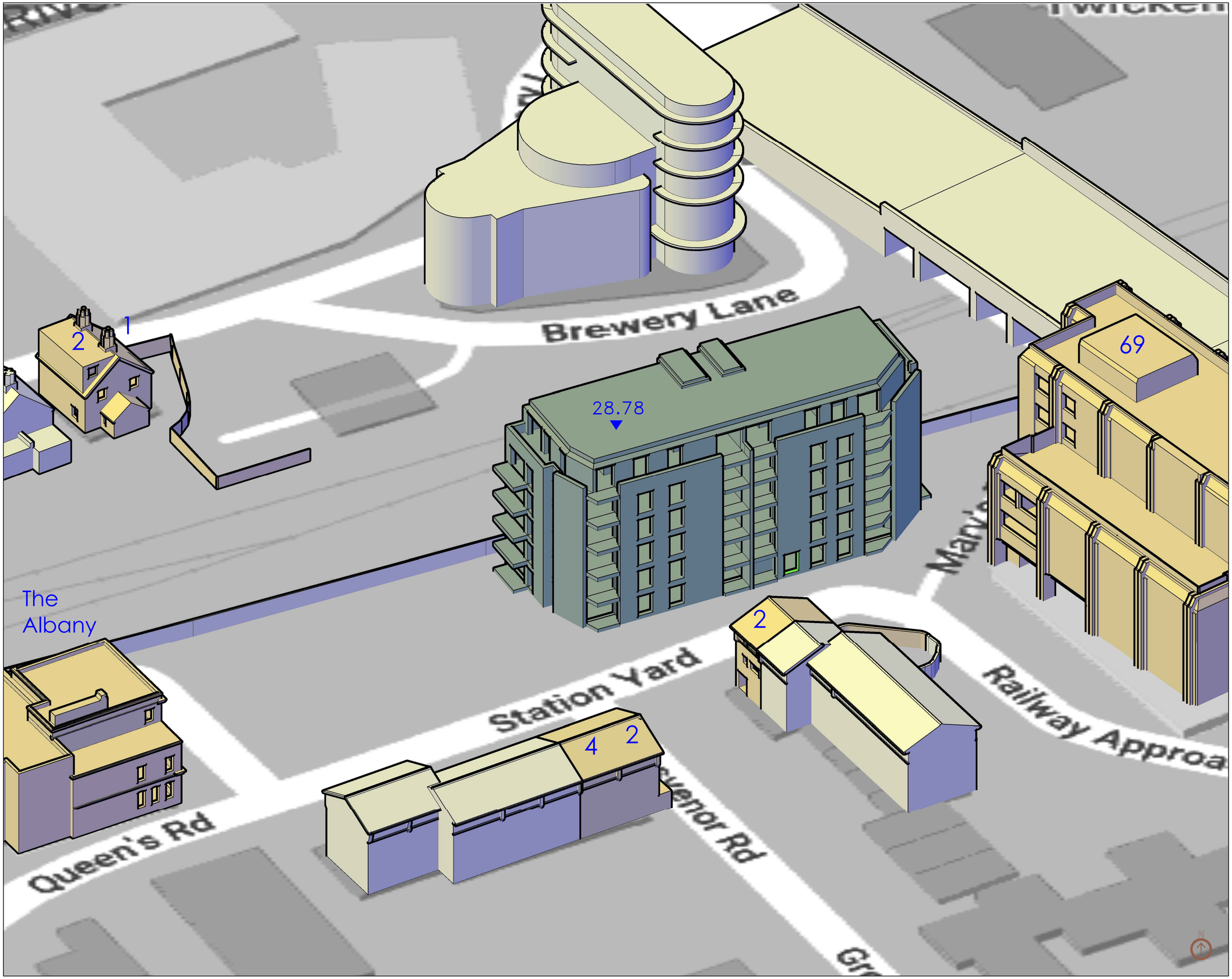
Project Number:	Drawing Number:	Revision:
19589	02-03	-

Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019

Drawn By:	Checked By:
AH	AH

All dimensions are in millimetres unless otherwise stated.



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Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Proposed 3d View
Looking North.

Project Number:	Drawing Number:	Revision:
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Drawing Status:
Information

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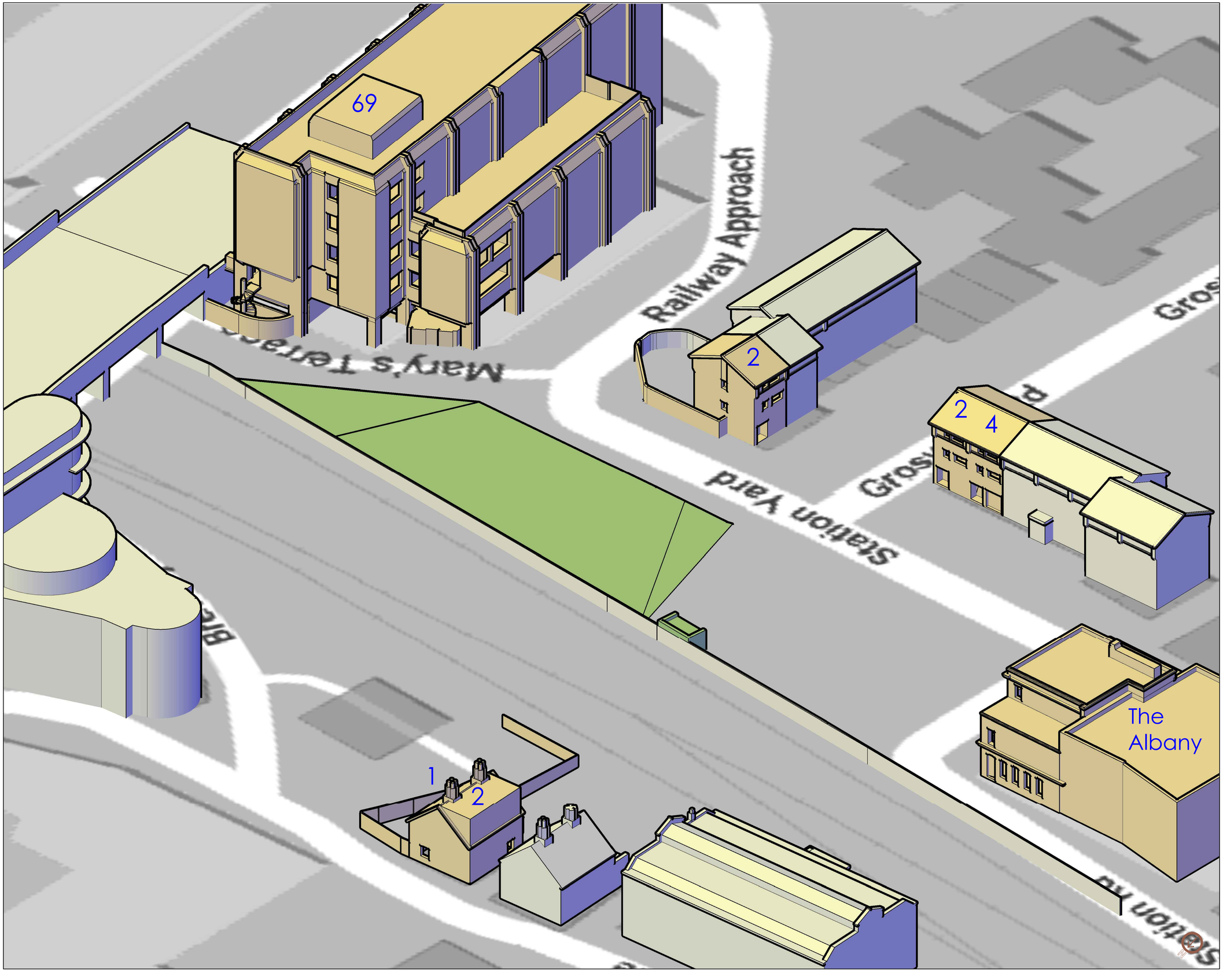
Drawn By:	Checked By:
AH	AH



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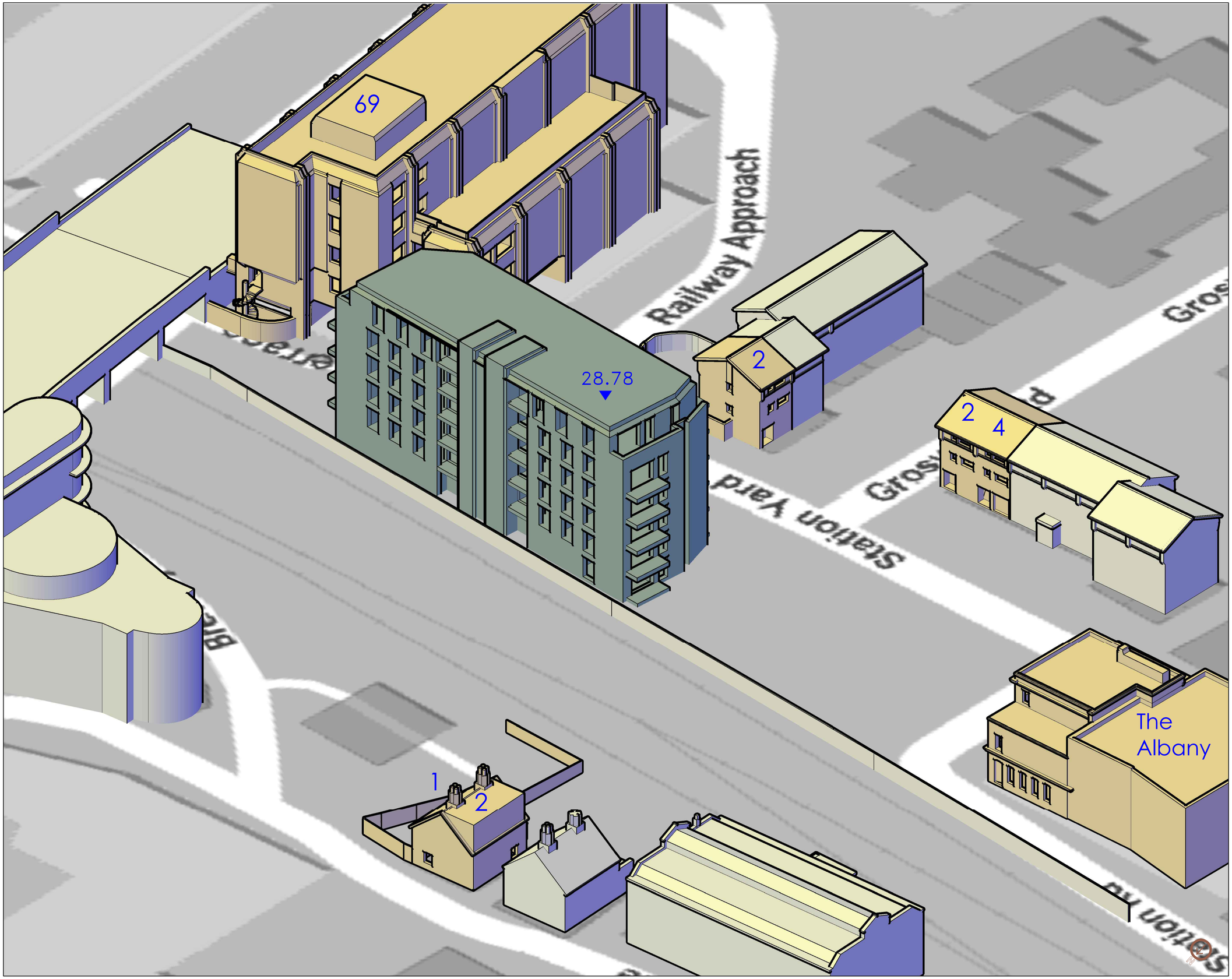
Drawing Title:
Existing 3d View
Looking Southeast.

Project Number:	Drawing Number:	Revision:
19589	02-05	-

Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019

Drawn By:	Checked By:
AH	AH



Notes:

Existing Model & Surrounding Model

Models derived from 3d terrestrial laser scan survey pointcloud.
Internal room layouts derived from pointcloud wherever possible.
All other room information is assumed or from plans.
Supplemented with site photography, Bing maps and Google Streetmaps.

For room layouts please reference document:
2732377 Existing Elevations and Sections
2732378 Existing Plans
2732380 Proposed Plans

Proposed Model

Information received 24.10.2019.
Ref: WP-0689-A-3D-00
WP-0689-A-0100-106
WP-0689-A-0201-204
WP-0689-A-0300-301

Rev.	Description	Date

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Client:
Solum Regeneration (Twickenham) LLP.

Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Proposed 3d View
Looking Southeast.

Project Number:	Drawing Number:	Revision:
19589	02-06	-

Drawing Status:
Information

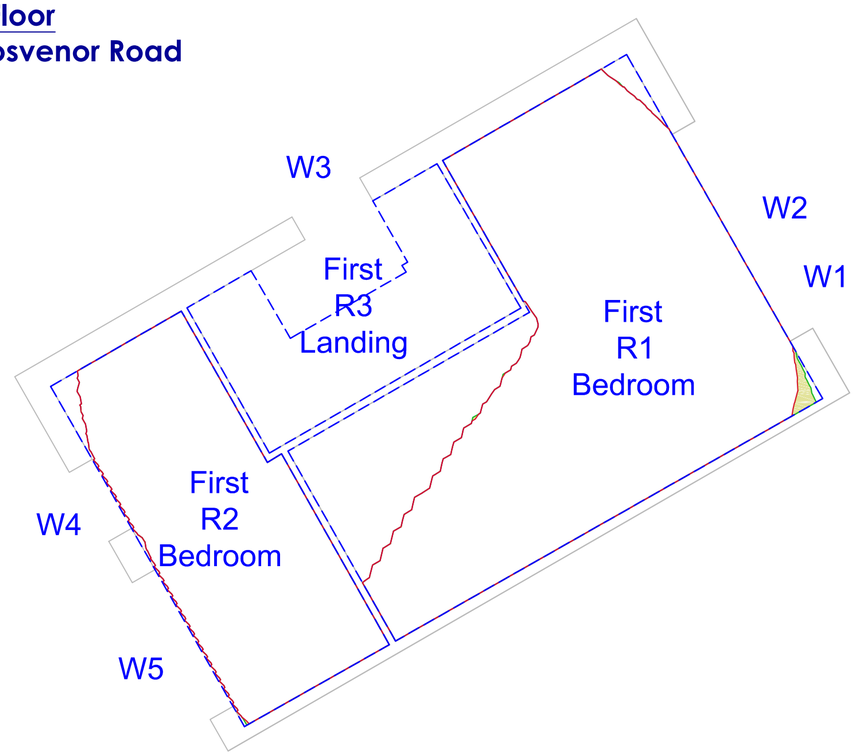
Scale:	Date:
NTS	29/10/2019

Drawn By:	Checked By:
AH	AH

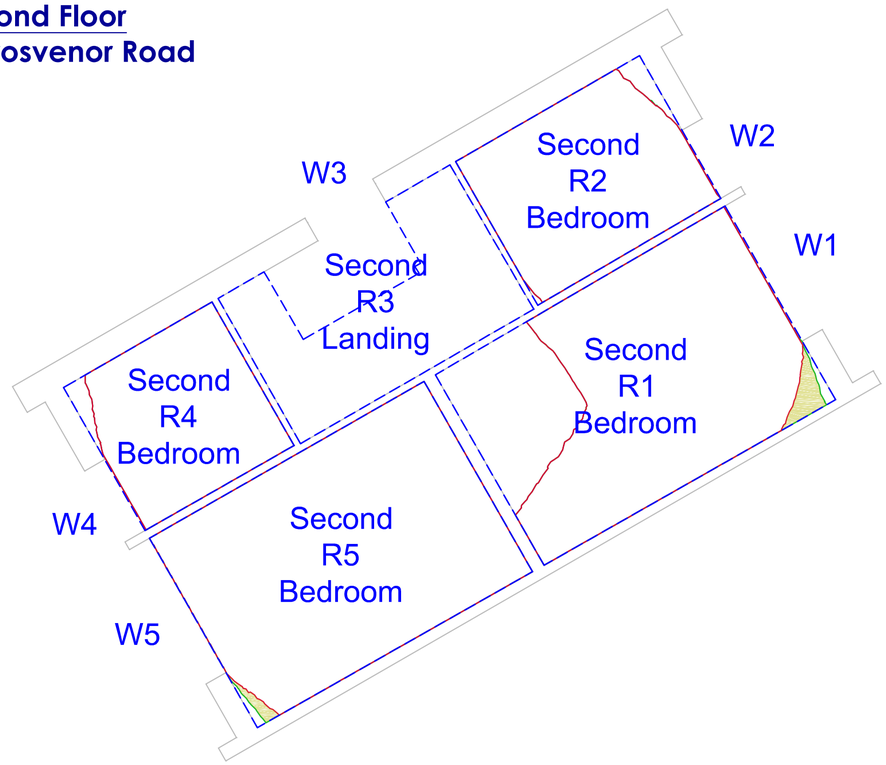
APPENDIX 2: NSL CONTOURS

Ground Floor
2 Grosvenor Road

First Floor
2 Grosvenor Road



Second Floor
2 Grosvenor Road



Notes:

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Ref: WP-0689-A-3D-00
WP-0689-A-0100-106
WP-0689-A-0201-204
WP-0689-A-0300-301

KEY

- Room Area (Measured Layout)
- Room Area (Assumed Layout)
- Existing No Sky Area
- Proposed No Sky Area
- Area of Loss/Gain

Rev.	Description	Date

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Client:
Solum Regeneration (Twickenham) LLP.

Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Daylight Distribution Contours

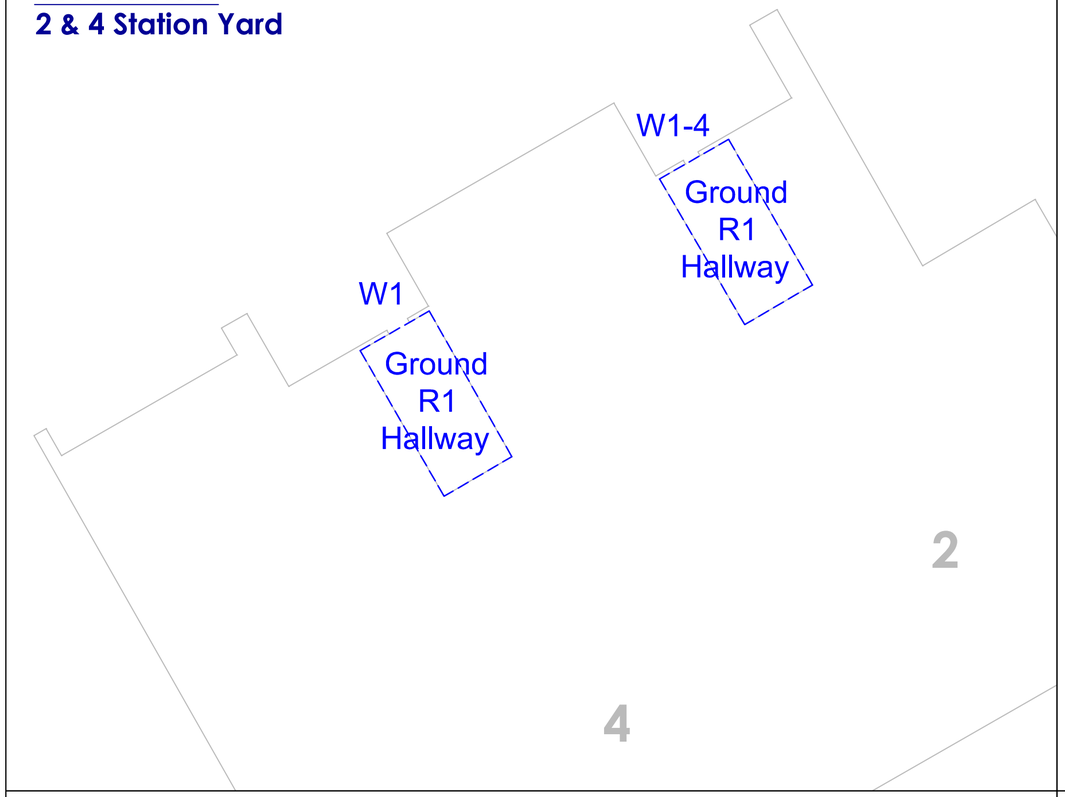
Project Number:	Drawing Number:	Revision:
19589	02-12	-

Drawing Status:
Information

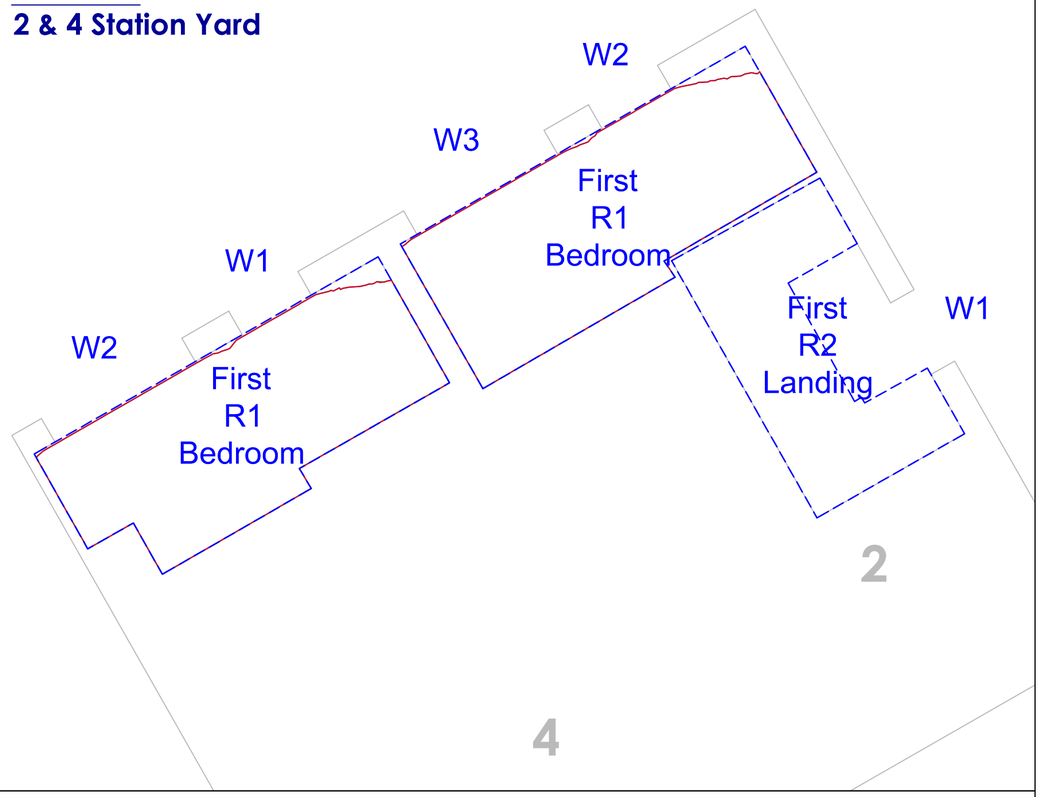
Scale:	Date:
NTS	29/10/2019
Drawn By:	Checked By:
AH	AH

N

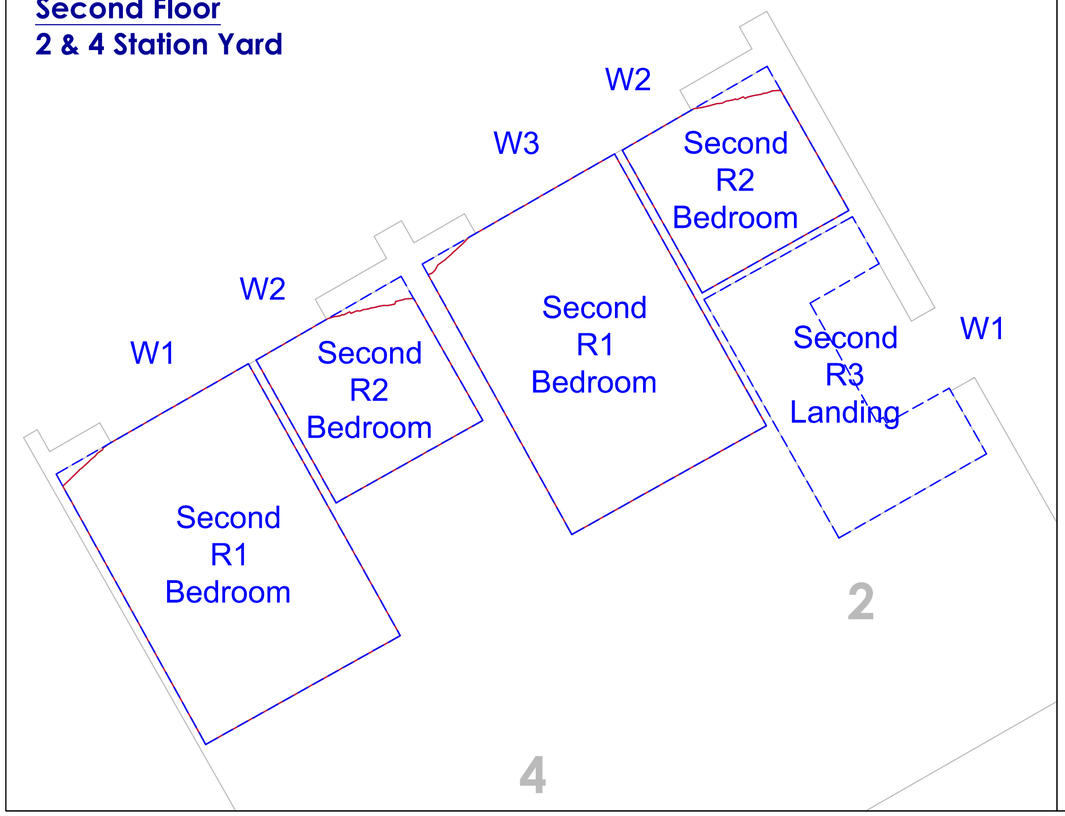
Ground Floor
2 & 4 Station Yard



First Floor
2 & 4 Station Yard



Second Floor
2 & 4 Station Yard



Notes:

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WP-0689-A-0100-106
WP-0689-A-0201-204
WP-0689-A-0300-301

KEY

- Room Area (Measured Layout)
- Room Area (Assumed Layout)
- Existing No Sky Area
- Proposed No Sky Area
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Client:
Solum Regeneration (Twickenham) LLP.

Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Daylight Distribution Contours

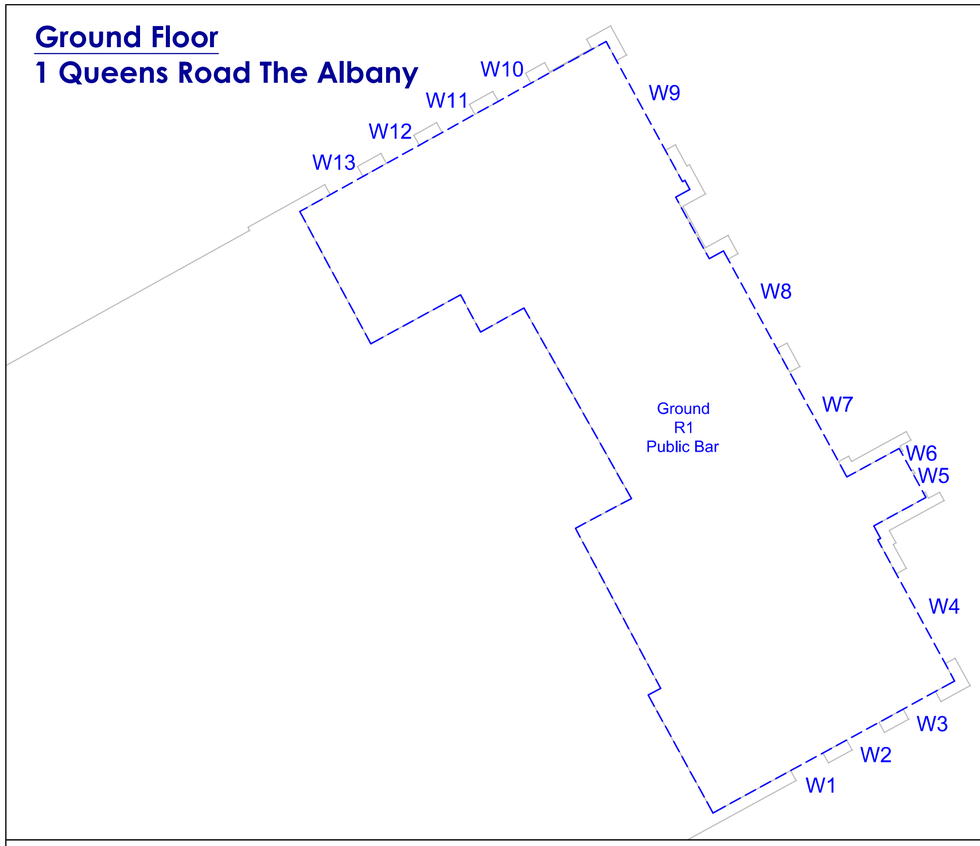
Project Number:	Drawing Number:	Revision:
19589	02-13	-

Drawing Status:
Information

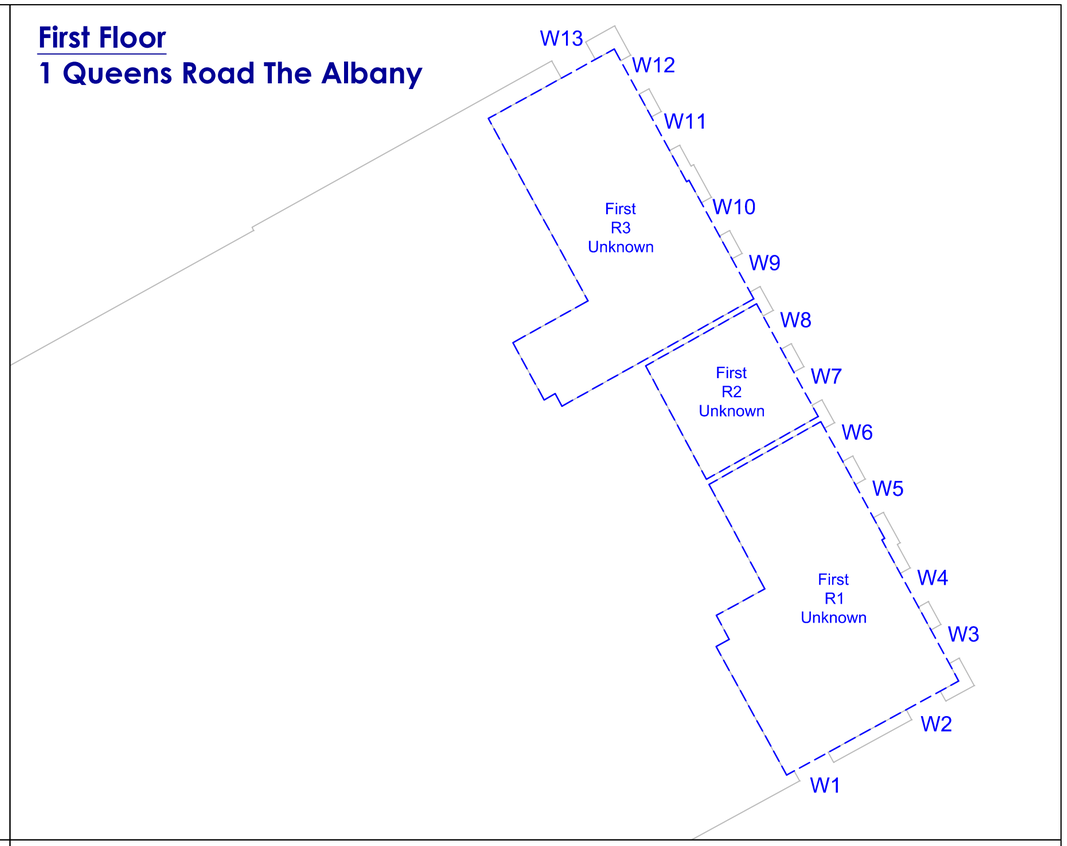
Scale:	Date:
NTS	29/10/2019
Drawn By:	Checked By:
AH	AH

All dimensions are in millimetres unless otherwise stated.

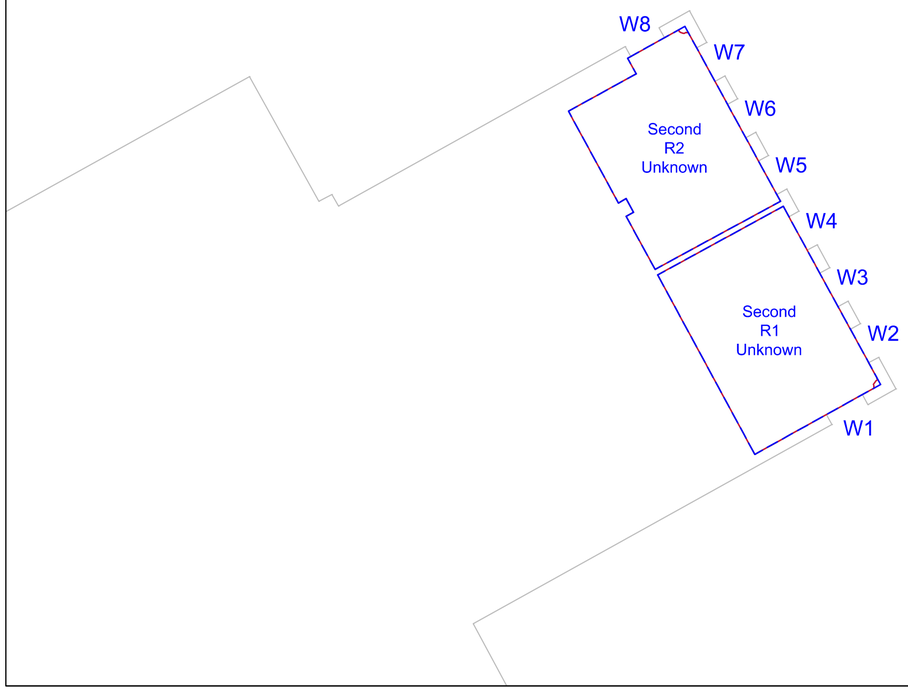
Ground Floor
1 Queens Road The Albany



First Floor
1 Queens Road The Albany



Second Floor
1 Queens Road The Albany



Notes:

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WP-0689-A-0100-106
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WP-0689-A-0300-301

KEY

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Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Daylight Distribution Contours

Project Number:	Drawing Number:	Revision:
19589	02-14	-

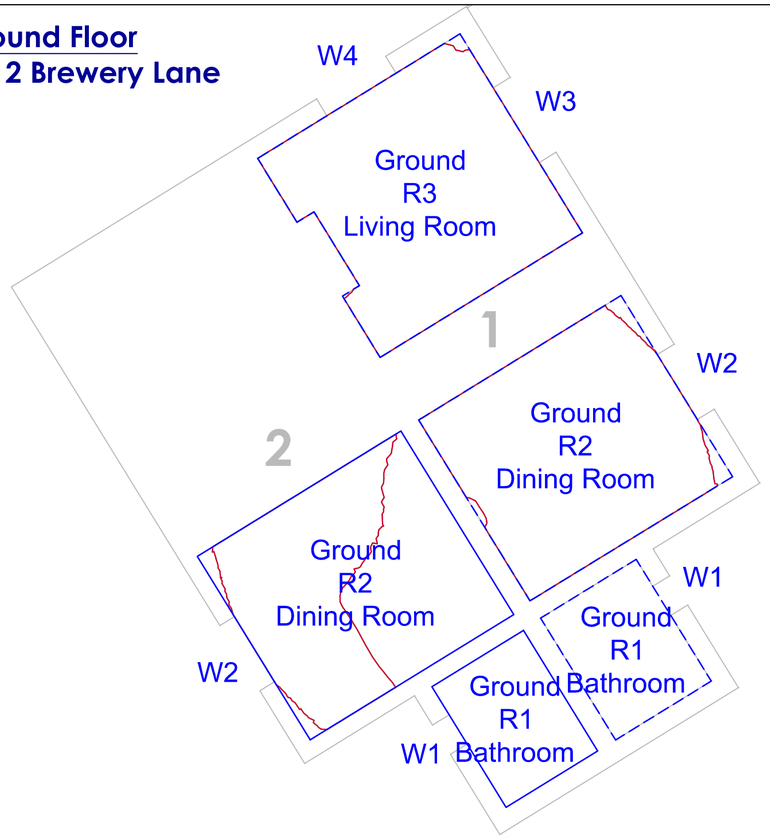
Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019
Drawn By:	Checked By:
AH	AH

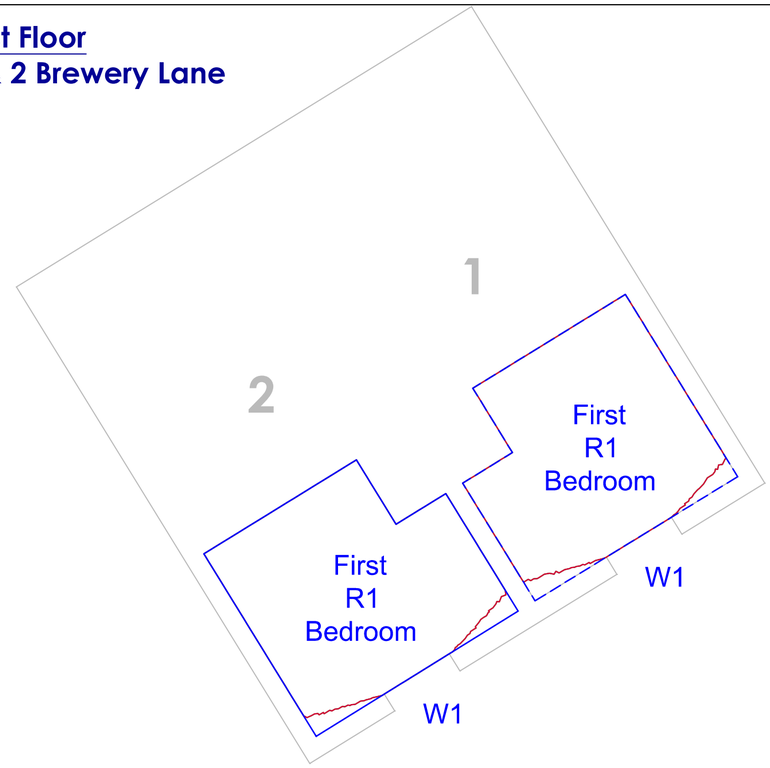
All dimensions are in millimetres unless otherwise stated.

N

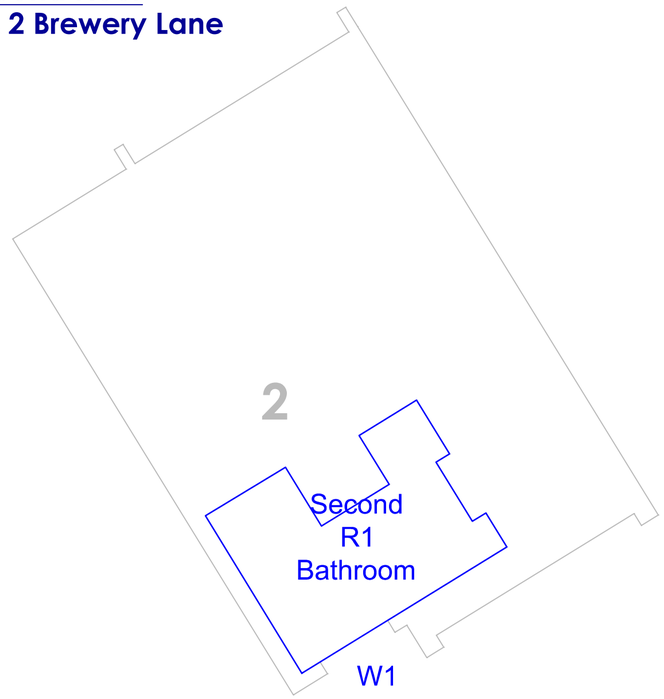
Ground Floor
1 & 2 Brewery Lane



First Floor
1 & 2 Brewery Lane



Second Floor
1 & 2 Brewery Lane



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WP-0689-A-0100-106
WP-0689-A-0201-204
WP-0689-A-0300-301

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- Room Area (Assumed Layout)
- Existing No Sky Area
- Proposed No Sky Area
- Area of Loss/Gain

Rev.	Description	Date

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Client:
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Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Daylight Distribution Contours

Project Number:	Drawing Number:	Revision:
19589	02-15	-

Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019
Drawn By:	Checked By:
AH	AH

APPENDIX 3: VSC, NSL & APSH RESULTS

Project Name: Twickenham Station Yard
Project No.: 19589-02
Report Title: Daylight & Sunlight - Neighbour Analysis
Date of Analysis: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.	Window Ref.		VSC	Pr/Ex	Meets BRE Criteria	Window Orientation	Annual	Pr/Ex	Meets BRE Criteria	Winter	Pr/Ex	Meets BRE Criteria
2 Grosvenor Road																
Ground	R1	Partial Pointcloud	Residential	Kitchen	W1	Existing	27.54	0.86	YES	60°N		*North*			*North*	
						Proposed	23.72									
					W2	Existing	27.87	0.85	YES	60°N		*North*			*North*	
						Proposed	23.63									
					W3	Existing	27.24	0.86	YES	60°N		*North*			*North*	
						Proposed	23.38									
First	R1	Partial Pointcloud	Residential	Bedroom	W1	Existing	28.72	0.87	YES	60°N		*North*			*North*	
						Proposed	25.07									
					W2	Existing	29.50	0.87	YES	60°N		*North*			*North*	
						Proposed	25.66									
	R2	Partial Pointcloud	Residential	Bedroom	W4	Existing	36.56	0.97	YES	240°	0	Infinity	YES	0	Infinity	YES
						Proposed	35.62				42			13		
					W5	Existing	36.42	0.98	YES	240°	0	Infinity	YES	0	Infinity	YES
						Proposed	35.69				45			16		
Second	R1	Partial Pointcloud	Residential	Bedroom	W1	Existing	18.84	0.86	YES	60°N		*North*			*North*	
						Proposed	16.20									
	R2	Partial Pointcloud	Residential	Bedroom	W2	Existing	19.06	0.84	YES	60°N		*North*			*North*	
						Proposed	16.09									
	R4	Partial Pointcloud	Residential	Bedroom	W4	Existing	25.22	0.99	YES	240°	0	Infinity	YES	0	Infinity	YES
						Proposed	24.86				29			13		
	R5	Partial Pointcloud	Residential	Bedroom	W5	Existing	25.23	0.99	YES	240°	0	Infinity	YES	0	Infinity	YES
						Proposed	24.91				29			13		
2 Station Yard																
First	R1	Partial Pointcloud	Residential	Bedroom	W2	Existing	37.08	0.89	YES	330°N		*North*			*North*	
						Proposed	32.95									
					W3	Existing	37.00	0.90	YES	330°N		*North*			*North*	
						Proposed	33.29									
Second	R1	Partial Pointcloud	Residential	Bedroom	W3	Existing	24.99	0.87	YES	330°N		*North*			*North*	
						Proposed	21.76									
	R2	Partial Pointcloud	Residential	Bedroom	W2	Existing	25.03	0.86	YES	330°N		*North*			*North*	
						Proposed	21.53									
4 Station Yard																
First	R1	Partial Pointcloud	Residential	Bedroom	W1	Existing	36.92	0.91	YES	330°N		*North*			*North*	
						Proposed	33.74									
					W2	Existing	36.86	0.92	YES	330°N		*North*			*North*	
						Proposed	34.01									
Second	R1	Partial Pointcloud	Residential	Bedroom	W1	Existing	24.95	0.90	YES	330°N		*North*			*North*	
						Proposed	22.48									
	R2	Partial Pointcloud	Residential	Bedroom	W2	Existing	24.98	0.89	YES	330°N		*North*			*North*	
						Proposed	22.31									
1 Queens Road The Albany																
Second	R1	Partial Pointcloud	Residential	Unknown	W1	Existing	38.59	1.00	YES	151°	0	Infinity	YES	0	Infinity	YES
						Proposed	38.59				63			23		
					W2	Existing	36.62	0.98	YES	61°N		*North*			*North*	

Project Name: Twickenham Station Yard
Project No.: 19589-02
Report Title: Daylight & Sunlight - Neighbour Analysis
Date of Analysis: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.	Window Ref.		VSC	Pr/Ex	Meets BRE Criteria	Window Orientation	Annual	Pr/Ex	Meets BRE Criteria	Winter	Pr/Ex	Meets BRE Criteria
						Proposed	35.73									
					W3	Existing	36.55	0.98	YES	61°N		*North*			*North*	
						Proposed	35.68									
					W4	Existing	36.59	0.98	YES	61°N		*North*			*North*	
						Proposed	35.74									
	R2	Partial Pointcloud	Residential	Unknown	W5	Existing	36.59	0.98	YES	61°N		*North*			*North*	
						Proposed	35.78									
					W6	Existing	36.60	0.98	YES	61°N		*North*			*North*	
						Proposed	35.82									
					W7	Existing	36.68	0.98	YES	61°N		*North*			*North*	
						Proposed	35.93									
					W8	Existing	38.25	1.00	YES	331°N		*North*			*North*	
						Proposed	38.23									
1 Brewery Lane																
Ground	R2	Assumed	Residential	Dining Room	W2	Existing	35.04	0.97	YES	58°N		*North*			*North*	
						Proposed	34.15									
	R3	Assumed	Residential	Living Room	W3	Existing	34.13	0.98	YES	58°N		*North*			*North*	
						Proposed	33.39									
					W4	Existing	39.29	1.00	YES	328°N		*North*			*North*	
						Proposed	39.29									
First	R1	Assumed	Residential	Bedroom	W1	Existing	37.04	0.96	YES	148°	0	Infinity	YES	0	Infinity	YES
						Proposed	35.51				59			20		
2 Brewery Lane																
Ground	R2	Plans	Residential	Dining Room	W2	Existing	22.09	1.00	YES	238°	0	Infinity	YES	0	Infinity	YES
						Proposed	22.09				25			9		
First	R1	Plans	Residential	Bedroom	W1	Existing	36.90	0.96	YES	148°	0	Infinity	YES	0	Infinity	YES
						Proposed	35.60				59			20		

Project Name: Twickenham Station Yard
Project No.: 19589-02
Report Title: Daylight Distribution Analysis - Neighbour
Date of Analysis: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.		Room Area	Lit Area Existing	Lit Area Proposed	Pr/Ex	Meets BRE Criteria
2 Grosvenor Road										
Ground	R1	Partial Pointcloud	Residential	Kitchen	Area m2	14.55	13.70	13.33		
					% of room		94%	92%	0.97	YES
First	R1	Partial Pointcloud	Residential	Bedroom	Area m2	18.83	15.62	15.53		
					% of room		83%	83%	0.99	YES
	R2	Partial Pointcloud	Residential	Bedroom	Area m2	8.14	7.91	7.91		
					% of room		97%	97%	1.00	YES
Second	R1	Partial Pointcloud	Residential	Bedroom	Area m2	9.64	7.57	7.39		
					% of room		79%	77%	0.98	YES
	R2	Partial Pointcloud	Residential	Bedroom	Area m2	4.54	4.37	4.37		
					% of room		96%	96%	1.00	YES
	R4	Partial Pointcloud	Residential	Bedroom	Area m2	3.67	3.53	3.53		
					% of room		96%	96%	1.00	YES
	R5	Partial Pointcloud	Residential	Bedroom	Area m2	8.98	8.94	8.88		
					% of room		100%	99%	0.99	YES
2 Station Yard										
First	R1	Partial Pointcloud	Residential	Bedroom	Area m2	7.82	7.60	7.60		
					% of room		97%	97%	1.00	YES
Second	R1	Partial Pointcloud	Residential	Bedroom	Area m2	8.65	8.60	8.60		
					% of room		99%	99%	1.00	YES
	R2	Partial Pointcloud	Residential	Bedroom	Area m2	3.47	3.32	3.32		
					% of room		96%	96%	1.00	YES
4 Station Yard										
First	R1	Partial Pointcloud	Residential	Bedroom	Area m2	7.46	7.25	7.25		
					% of room		97%	97%	1.00	YES
Second	R1	Partial Pointcloud	Residential	Bedroom	Area m2	8.65	8.60	8.60		
					% of room		99%	99%	1.00	YES
	R2	Partial Pointcloud	Residential	Bedroom	Area m2	3.47	3.33	3.33		
					% of room		96%	96%	1.00	YES
1 Queens Road The Albany										
Second	R1	Partial Pointcloud	Residential	Unknown	Area m2	20.20	20.18	20.18		
					% of room		100%	100%	1.00	YES
	R2	Partial Pointcloud	Residential	Unknown	Area m2	18.59	18.56	18.56		
					% of room		100%	100%	1.00	YES
1 Brewery Lane										
Ground	R2	Assumed	Residential	Dining Room	Area m2	11.62	11.30	11.30		
					% of room		97%	97%	1.00	YES
	R3	Assumed	Residential	Living Room	Area m2	12.37	12.32	12.32		
					% of room		100%	100%	1.00	YES
First	R1	Assumed	Residential	Bedroom	Area m2	10.67	10.28	10.28		
					% of room		96%	96%	1.00	YES
2 Brewery Lane										
Ground	R2	Plans	Residential	Dining Room	Area m2	11.85	6.61	6.61		
					% of room		56%	56%	1.00	YES
First	R1	Plans	Residential	Bedroom	Area m2	10.68	10.29	10.29		
					% of room		96%	96%	1.00	YES

APPENDIX 4: NSL CONTOURS

Ground Floor
Station Yard

Notes:

Existing Model & Surrounding Model

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Proposed Model

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Ref: WP-0689-A-3D-00
WP-0689-A-0100-106
WP-0689-A-0201-204
WP-0689-A-0300-301

KEY

Room Area (Measured Layout)

Proposed No Sky Area

Area of Loss/Gain

Rev.	Description	Date

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Client:
Solum Regeneration (Twickenham) LLP.

Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Daylight Distribution & ADF Values

Project Number:	Drawing Number:	Revision:
19589	02-16	-

Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019

Drawn By:	Checked By:
AH	AH

All dimensions are in millimetres unless otherwise stated.

First Floor
Station Yard

Notes:

Existing Model & Surrounding Model

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KEY

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Daylight Distribution & ADF Values

Project Number:	Drawing Number:	Revision:
19589	02-17	-

Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019

Drawn By:	Checked By:
AH	AH

Second Floor
Station Yard

Notes:

Existing Model & Surrounding Model

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WP-0689-A-0300-301

KEY

- Room Area (Measured Layout)
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- Area of Loss/Gain

Rev.	Description	Date

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Client:
Solum Regeneration (Twickenham) LLP.

Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Daylight Distribution & ADF Values

Project Number:	Drawing Number:	Revision:
19589	02-18	-

Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019

Drawn By:	Checked By:
AH	AH

Third Floor
Station Yard

Notes:

Existing Model & Surrounding Model

Models derived from 3d terrestrial laser scan survey pointcloud.
Internal room layouts derived from pointcloud wherever possible.
All other room information is assumed or from plans.
Supplemented with site photography, Bing maps and Google Streetmaps.

For room layouts please reference document:
2732377 Existing Elevations and Sections
2732378 Existing Plans
2732380 Proposed Plans

Proposed Model

Information received 24.10.2019.
Ref: WP-0689-A-3D-00
WP-0689-A-0100-106
WP-0689-A-0201-204
WP-0689-A-0300-301

KEY

- Room Area (Measured Layout)
- Proposed No Sky Area
- Area of Loss/Gain

Rev.	Description	Date

paragon building & project consultants

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Client:
Solum Regeneration (Twickenham) LLP.

Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Daylight Distribution & ADF Values

Project Number:	Drawing Number:	Revision:
19589	02-19	-

Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019

Drawn By:	Checked By:
AH	AH

Fourth Floor
Station Yard

Notes:

Existing Model & Surrounding Model

Models derived from 3d terrestrial laser scan survey pointcloud.
Internal room layouts derived from pointcloud wherever possible.
All other room information is assumed or from plans.
Supplemented with site photography, Bing maps and Google Streetmaps.

For room layouts please reference document:
2732377 Existing Elevations and Sections
2732378 Existing Plans
2732380 Proposed Plans

Proposed Model

Information received 24.10.2019.
Ref: WP-0689-A-3D-00
WP-0689-A-0100-106
WP-0689-A-0201-204
WP-0689-A-0300-301

KEY

- Room Area (Measured Layout)
- Proposed No Sky Area
- Area of Loss/Gain

Rev.	Description	Date

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Client:
Solum Regeneration (Twickenham) LLP.

Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Daylight Distribution & ADF Values

Project Number:	Drawing Number:	Revision:
19589	02-20	-

Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019

Drawn By:	Checked By:
AH	AH

Fifth Floor
Station Yard

Notes:

Existing Model & Surrounding Model

Models derived from 3d terrestrial laser scan survey pointcloud.
Internal room layouts derived from pointcloud wherever possible.
All other room information is assumed or from plans.
Supplemented with site photography, Bing maps and Google Streetmaps.

For room layouts please reference document:
2732377 Existing Elevations and Sections
2732378 Existing Plans
2732380 Proposed Plans

Proposed Model

Information received 24.10.2019.
Ref: WP-0689-A-3D-00
WP-0689-A-0100-106
WP-0689-A-0201-204
WP-0689-A-0300-301

KEY

- Room Area (Measured Layout)
- Proposed No Sky Area
- Area of Loss/Gain

Rev.	Description	Date

paragon building & project consultants

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Client:
Solum Regeneration (Twickenham) LLP.

Project Address:
Twickenham Station Yard,
London.

Drawing Title:
Daylight Distribution & ADF Values

Project Number:	Drawing Number:	Revision:
19589	02-21	-

Drawing Status:
Information

Scale:	Date:
NTS	29/10/2019

Drawn By:	Checked By:
AH	AH

All dimensions are in millimetres unless otherwise stated.

APPENDIX 5: AMENITY ADF, NSL, APSH, TABLES

Project Name: Station Yard Twickenham
Project No.: 19589-02
Report Title: Average Daylight Analysis - Proposed Scheme
Date: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value	Meets BRE Criteria
Station Yard															
Ground	R1	Plans	Residential	Studio	W1-L	0.68	0.92	1.70	51.71	133.45	0.50	0.15	0.08		
					W1-U	0.68	0.92	3.38	50.91	133.45	0.50	1.00	1.08		
					W2-L	0.68	0.92	0.87	38.90	133.45	0.50	0.15	0.03		
					W2-U	0.68	0.92	1.72	39.52	133.45	0.50	1.00	0.43		
													1.62	2.00	NO
Ground	R2	Plans	Residential	Studio	W3-L	0.68	0.92	2.80	51.75	129.10	0.50	0.15	0.14		
					W3-U	0.68	0.92	5.80	34.55	129.10	0.50	1.00	1.29		
					W4-L	0.68	0.92	0.64	14.24	129.10	0.50	0.15	0.01		
					W4-U	0.68	0.92	1.33	6.44	129.10	0.50	1.00	0.06		
					W5-L	0.68	0.92	1.20	69.00	129.10	0.50	0.15	0.08		
					W5-U	0.68	0.92	2.49	69.06	129.10	0.50	1.00	1.11		
													2.69	2.00	YES
Ground	R3	Plans	Residential	Studio	W6-L	0.68	0.92	1.20	69.25	138.12	0.50	0.15	0.08		
					W6-U	0.68	0.92	2.49	69.44	138.12	0.50	1.00	1.04		
					W7-L	0.68	0.92	1.20	69.03	138.12	0.50	0.15	0.07		
					W7-U	0.68	0.92	2.48	69.49	138.12	0.50	1.00	1.04		
													2.23	2.00	YES
Ground	R4	Plans	Residential	LKD	W9-L	0.68	0.92	0.64	22.44	112.92	0.50	0.15	0.02		
					W9-U	0.68	0.92	1.33	13.39	112.92	0.50	1.00	0.13		
					W8-L	0.68	0.92	2.10	44.98	112.92	0.50	0.15	0.10		
					W8-U	0.68	0.92	4.36	30.48	112.92	0.50	1.00	0.98		
													1.23	2.00	NO
Ground	R5	Plans	Residential	Bedroom	W10-L	0.68	0.92	1.20	70.74	62.05	0.50	0.15	0.17		
					W10-U	0.68	0.92	2.49	70.93	62.05	0.50	1.00	2.37		
													2.54	1.00	YES
Ground	R6	Plans	Residential	Bedroom	W11-L	0.68	0.92	1.20	72.03	61.12	0.50	0.15	0.18		
					W11-U	0.68	0.92	2.49	71.89	61.12	0.50	1.00	2.44		
													2.62	1.00	YES
Ground	R7	Plans	Residential	LKD	W13-L	0.68	0.92	2.31	55.82	114.72	0.50	0.15	0.14		
					W13-U	0.68	0.92	4.80	37.73	114.72	0.50	1.00	1.32		
					W14-L	0.68	0.92	0.85	53.62	114.72	0.50	0.15	0.05		
					W14-U	0.68	0.92	1.76	53.64	114.72	0.50	1.00	0.69		
					W12-L	0.68	0.92	0.64	35.57	114.72	0.50	0.15	0.02		
					W12-U	0.68	0.92	1.33	24.03	114.72	0.50	1.00	0.23		
													2.45	2.00	YES
Ground	R8	Plans	Residential	Bedroom	W15-L	0.68	0.92	0.93	70.95	62.93	0.50	0.15	0.13		
					W15-U	0.68	0.92	1.92	65.99	62.93	0.50	1.00	1.68		
													1.81	1.00	YES
Ground	R9	Plans	Residential	LKD	W16-L	0.68	0.92	2.19	62.82	110.97	0.50	0.15	0.16		

Project Name: Station Yard Twickenham
Project No.: 19589-02
Report Title: Average Daylight Analysis - Proposed Scheme
Date: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value	Meets BRE Criteria
					W16-U	0.68	0.92	4.54	41.79	110.97	0.50	1.00	1.43		
					W17-L	0.68	0.92	1.20	66.08	110.97	0.50	0.15	0.09		
					W17-U	0.68	0.92	2.49	76.73	110.97	0.50	1.00	1.43		
													3.11	2.00	YES
First	R1	Plans	Residential	LKD	W1-L	0.68	0.92	2.24	50.57	121.75	0.50	0.15	0.12		
					W1-U	0.68	0.92	4.50	34.25	121.75	0.50	1.00	1.06		
					W2-L	0.68	0.92	0.95	54.62	121.75	0.50	0.15	0.05		
					W2-U	0.68	0.92	1.90	50.73	121.75	0.50	1.00	0.66		
													1.89	2.00	NO
First	R2	Plans	Residential	LKD	W3-L	0.68	0.92	0.87	42.69	123.93	0.50	0.15	0.04		
					W3-U	0.68	0.92	1.74	43.54	123.93	0.50	1.00	0.51		
					W4-L	0.68	0.92	2.85	55.36	123.93	0.50	0.15	0.16		
					W4-U	0.68	0.92	5.74	37.71	123.93	0.50	1.00	1.46		
													2.17	2.00	YES
First	R3	Plans	Residential	Bedroom	W5-L	0.68	0.92	0.65	18.15	61.59	0.50	0.15	0.02		
					W5-U	0.68	0.92	1.31	8.94	61.59	0.50	1.00	0.16		
					W6-L	0.68	0.92	1.22	73.77	61.59	0.50	0.15	0.18		
					W6-U	0.68	0.92	2.46	73.05	61.59	0.50	1.00	2.44		
													2.80	1.00	YES
First	R4	Plans	Residential	Bedroom	W7-L	0.68	0.92	1.22	74.41	63.87	0.50	0.15	0.18		
					W7-U	0.68	0.92	2.46	73.81	63.87	0.50	1.00	2.37		
													2.55	1.00	YES
First	R5	Plans	Residential	LKD	W8-L	0.68	0.92	0.65	28.15	111.98	0.50	0.15	0.02		
					W8-U	0.68	0.92	1.32	20.67	111.98	0.50	1.00	0.20		
					W9-L	0.68	0.92	2.14	48.82	111.98	0.50	0.15	0.12		
					W9-U	0.68	0.92	4.31	34.12	111.98	0.50	1.00	1.10		
													1.44	2.00	NO
First	R6	Plans	Residential	LKD	W10-L	0.68	0.92	2.14	48.89	112.92	0.50	0.15	0.12		
					W10-U	0.68	0.92	4.31	34.30	112.92	0.50	1.00	1.09		
					W11-L	0.68	0.92	0.65	24.52	112.92	0.50	0.15	0.02		
					W11-U	0.68	0.92	1.31	15.68	112.92	0.50	1.00	0.15		
													1.38	2.00	NO
First	R7	Plans	Residential	Bedroom	W12-L	0.68	0.92	1.22	76.18	62.05	0.50	0.15	0.19		
					W12-U	0.68	0.92	2.46	75.84	62.05	0.50	1.00	2.51		
													2.70	1.00	YES
First	R8	Plans	Residential	Bedroom	W13-L	0.68	0.92	1.22	77.05	61.12	0.50	0.15	0.19		
					W13-U	0.68	0.92	2.46	76.56	61.12	0.50	1.00	2.57		
													2.77	1.00	YES
First	R9	Plans	Residential	LKD	W14-L	0.68	0.92	0.65	36.69	114.72	0.50	0.15	0.03		
					W14-U	0.68	0.92	1.31	25.39	114.72	0.50	1.00	0.24		
					W15-L	0.68	0.92	2.36	59.10	114.72	0.50	0.15	0.15		
					W15-U	0.68	0.92	4.75	41.10	114.72	0.50	1.00	1.42		

Project Name: Station Yard Twickenham
Project No.: 19589-02
Report Title: Average Daylight Analysis - Proposed Scheme
Date: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value	Meets BRE Criteria
					W16-L	0.68	0.92	0.87	54.42	114.72	0.50	0.15	0.05		
					W16-U	0.68	0.92	1.74	54.23	114.72	0.50	1.00	0.69		
													2.58	2.00	YES
First	R10	Plans	Residential	LKD	W17-L	0.68	0.92	0.94	73.23	116.47	0.50	0.15	0.07		
					W17-U	0.68	0.92	1.90	67.36	116.47	0.50	1.00	0.92		
					W18-L	0.68	0.92	2.24	65.67	116.47	0.50	0.15	0.16		
					W18-U	0.68	0.92	4.50	43.52	116.47	0.50	1.00	1.40		
													2.55	2.00	YES
First	R11	Plans	Residential	Bedroom	W19-L	0.68	0.92	1.22	80.60	61.92	0.50	0.15	0.20		
					W19-U	0.68	0.92	2.46	78.91	61.92	0.50	1.00	2.62		
													2.82	1.00	YES
First	R12	Plans	Residential	Bedroom	W20-L	0.68	0.92	1.22	80.31	61.15	0.50	0.15	0.20		
					W20-U	0.68	0.92	2.46	78.67	61.15	0.50	1.00	2.64		
													2.84	1.00	YES
First	R13	Plans	Residential	Studio	W21-L	0.68	0.92	1.22	79.98	135.58	0.50	0.15	0.09		
					W21-U	0.68	0.92	2.46	78.39	135.58	0.50	1.00	1.19		
					W22-L	0.68	0.92	0.75	32.10	135.58	0.50	0.15	0.02		
					W22-U	0.68	0.92	1.50	24.77	135.58	0.50	1.00	0.23		
					W23-L	0.68	0.84	2.32	N/A	135.58	0.50	0.20	0.22		
					W23-U	0.68	0.84	4.66	N/A	135.58	0.50	1.00	0.75		
													2.50	2.00	YES
First	R14	Plans	Residential	Studio	W24-L	0.68	0.84	2.32	N/A	135.58	0.50	0.20	0.22		
					W24-U	0.68	0.84	4.66	N/A	135.58	0.50	1.00	0.74		
					W25-L	0.68	0.92	0.75	32.25	135.58	0.50	0.15	0.02		
					W25-U	0.68	0.92	1.50	24.80	135.58	0.50	1.00	0.23		
					W26-L	0.68	0.92	1.22	78.55	135.58	0.50	0.15	0.09		
					W26-U	0.68	0.92	2.46	77.28	135.58	0.50	1.00	1.17		
													2.46	2.00	YES
First	R15	Plans	Residential	Bedroom	W27-L	0.68	0.92	1.22	78.50	67.46	0.50	0.15	0.18		
					W27-U	0.68	0.92	2.46	77.29	67.46	0.50	1.00	2.35		
													2.53	1.00	YES
First	R16	Plans	Residential	Bedroom	W28-L	0.68	0.92	1.22	78.50	57.85	0.50	0.15	0.21		
					W28-U	0.68	0.92	2.46	77.39	57.85	0.50	1.00	2.75		
													2.96	1.00	YES
Second	R1	Plans	Residential	LKD	W1-L	0.68	0.92	2.24	55.16	121.75	0.50	0.15	0.13		
					W1-U	0.68	0.92	4.50	35.89	121.75	0.50	1.00	1.11		
					W2-L	0.68	0.92	0.95	59.43	121.75	0.50	0.15	0.06		
					W2-U	0.68	0.92	1.90	54.57	121.75	0.50	1.00	0.71		
													2.00	2.00	YES
Second	R2	Plans	Residential	LKD	W3-L	0.68	0.92	0.87	46.44	123.93	0.50	0.15	0.04		
					W3-U	0.68	0.92	1.74	47.02	123.93	0.50	1.00	0.55		
					W4-L	0.68	0.92	2.85	58.73	123.93	0.50	0.15	0.17		

Project Name: Station Yard Twickenham
Project No.: 19589-02
Report Title: Average Daylight Analysis - Proposed Scheme
Date: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value	Meets BRE Criteria
					W4-U	0.68	0.92	5.74	40.88	123.93	0.50	1.00	1.58		
													2.34	2.00	YES
Second	R3	Plans	Residential	Bedroom	W5-L	0.68	0.92	0.65	21.73	61.59	0.50	0.15	0.03		
					W5-U	0.68	0.92	1.31	11.21	61.59	0.50	1.00	0.20		
					W6-L	0.68	0.92	1.22	77.83	61.59	0.50	0.15	0.19		
					W6-U	0.68	0.92	2.46	76.94	61.59	0.50	1.00	2.57		
													2.99	1.00	YES
Second	R4	Plans	Residential	Bedroom	W7-L	0.68	0.92	1.22	78.75	63.87	0.50	0.15	0.19		
					W7-U	0.68	0.92	2.46	77.88	63.87	0.50	1.00	2.50		
													2.69	1.00	YES
Second	R5	Plans	Residential	LKD	W8-L	0.68	0.92	0.65	29.12	111.98	0.50	0.15	0.02		
					W8-U	0.68	0.92	1.32	21.86	111.98	0.50	1.00	0.21		
					W9-L	0.68	0.92	2.14	51.60	111.98	0.50	0.15	0.12		
					W9-U	0.68	0.92	4.31	36.94	111.98	0.50	1.00	1.19		
													1.55	2.00	NO
Second	R6	Plans	Residential	LKD	W10-L	0.68	0.92	2.14	51.91	112.92	0.50	0.15	0.12		
					W10-U	0.68	0.92	4.31	37.38	112.92	0.50	1.00	1.19		
					W11-L	0.68	0.92	0.65	25.66	112.92	0.50	0.15	0.02		
					W11-U	0.68	0.92	1.31	17.31	112.92	0.50	1.00	0.17		
													1.50	2.00	NO
Second	R7	Plans	Residential	Bedroom	W12-L	0.68	0.92	1.22	81.52	62.05	0.50	0.15	0.20		
					W12-U	0.68	0.92	2.46	80.76	62.05	0.50	1.00	2.67		
													2.87	1.00	YES
Second	R8	Plans	Residential	Bedroom	W13-L	0.68	0.92	1.22	82.03	61.12	0.50	0.15	0.21		
					W13-U	0.68	0.92	2.46	80.98	61.12	0.50	1.00	2.72		
													2.93	1.00	YES
Second	R9	Plans	Residential	LKD	W14-L	0.68	0.92	0.65	37.74	114.72	0.50	0.15	0.03		
					W14-U	0.68	0.92	1.31	26.68	114.72	0.50	1.00	0.25		
					W15-L	0.68	0.92	2.36	62.04	114.72	0.50	0.15	0.16		
					W15-U	0.68	0.92	4.75	43.86	114.72	0.50	1.00	1.52		
					W16-L	0.68	0.92	0.87	55.14	114.72	0.50	0.15	0.05		
					W16-U	0.68	0.92	1.74	54.90	114.72	0.50	1.00	0.70		
													2.70	2.00	YES
Second	R10	Plans	Residential	LKD	W17-L	0.68	0.92	0.94	75.23	116.47	0.50	0.15	0.08		
					W17-U	0.68	0.92	1.90	69.02	116.47	0.50	1.00	0.94		
					W18-L	0.68	0.92	2.24	67.47	116.47	0.50	0.15	0.16		
					W18-U	0.68	0.92	4.50	45.17	116.47	0.50	1.00	1.46		
													2.63	2.00	YES
Second	R11	Plans	Residential	Bedroom	W19-L	0.68	0.92	1.22	82.71	61.92	0.50	0.15	0.20		
					W19-U	0.68	0.92	2.46	80.71	61.92	0.50	1.00	2.68		
													2.88	1.00	YES
Second	R12	Plans	Residential	Bedroom	W20-L	0.68	0.92	1.22	82.49	61.15	0.50	0.15	0.21		

Project Name: Station Yard Twickenham
Project No.: 19589-02
Report Title: Average Daylight Analysis - Proposed Scheme
Date: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value	Meets BRE Criteria
					W20-U	0.68	0.92	2.46	80.52	61.15	0.50	1.00	2.70		
													2.91	1.00	YES
Second	R13	Plans	Residential	Studio	W21-L	0.68	0.92	1.22	82.24	135.58	0.50	0.15	0.09		
					W21-U	0.68	0.92	2.46	80.31	135.58	0.50	1.00	1.22		
					W22-L	0.68	0.92	0.75	32.67	135.58	0.50	0.15	0.02		
					W22-U	0.68	0.92	1.50	25.10	135.58	0.50	1.00	0.23		
					W23-L	0.68	0.84	2.32	N/A	135.58	0.50	0.20	0.23		
					W23-U	0.68	0.84	4.66	N/A	135.58	0.50	1.00	0.79		
													2.58	2.00	YES
Second	R14	Plans	Residential	Studio	W24-L	0.68	0.84	2.32	N/A	135.58	0.50	0.20	0.22		
					W24-U	0.68	0.84	4.66	N/A	135.58	0.50	1.00	0.78		
					W25-L	0.68	0.92	0.75	32.74	135.58	0.50	0.15	0.02		
					W25-U	0.68	0.92	1.50	25.35	135.58	0.50	1.00	0.23		
					W26-L	0.68	0.92	1.22	81.32	135.58	0.50	0.15	0.09		
					W26-U	0.68	0.92	2.46	79.51	135.58	0.50	1.00	1.20		
													2.56	2.00	YES
Second	R15	Plans	Residential	Bedroom	W27-L	0.68	0.92	1.22	81.40	67.46	0.50	0.15	0.18		
					W27-U	0.68	0.92	2.46	79.55	67.46	0.50	1.00	2.42		
													2.61	1.00	YES
Second	R16	Plans	Residential	Bedroom	W28-L	0.68	0.92	1.22	81.53	57.85	0.50	0.15	0.22		
					W28-U	0.68	0.92	2.46	79.67	57.85	0.50	1.00	2.83		
													3.04	1.00	YES
Third	R1	Plans	Residential	LKD	W1-L	0.68	0.92	2.24	58.17	121.75	0.50	0.15	0.13		
					W1-U	0.68	0.92	4.50	37.10	121.75	0.50	1.00	1.14		
					W2-L	0.68	0.92	0.95	63.24	121.75	0.50	0.15	0.06		
					W2-U	0.68	0.92	1.90	59.02	121.75	0.50	1.00	0.77		
													2.11	2.00	YES
Third	R2	Plans	Residential	LKD	W3-L	0.68	0.92	0.87	50.06	123.93	0.50	0.15	0.04		
					W3-U	0.68	0.92	1.74	50.99	123.93	0.50	1.00	0.60		
					W4-L	0.68	0.92	2.85	61.28	123.93	0.50	0.15	0.18		
					W4-U	0.68	0.92	5.74	43.07	123.93	0.50	1.00	1.66		
													2.48	2.00	YES
Third	R3	Plans	Residential	Bedroom	W5-L	0.68	0.92	0.65	26.05	61.59	0.50	0.15	0.03		
					W5-U	0.68	0.92	1.31	14.10	61.59	0.50	1.00	0.25		
					W6-L	0.68	0.92	1.22	81.22	61.59	0.50	0.15	0.20		
					W6-U	0.68	0.92	2.46	79.30	61.59	0.50	1.00	2.64		
													3.13	1.00	YES
Third	R4	Plans	Residential	Bedroom	W7-L	0.68	0.92	1.22	82.10	63.87	0.50	0.15	0.20		
					W7-U	0.68	0.92	2.46	80.03	63.87	0.50	1.00	2.57		
													2.77	1.00	YES
Third	R5	Plans	Residential	LKD	W8-L	0.68	0.92	0.65	29.70	111.98	0.50	0.15	0.02		
					W8-U	0.68	0.92	1.32	22.14	111.98	0.50	1.00	0.22		

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					W9-L	0.68	0.92	2.14	52.98	111.98	0.50	0.15	0.13		
					W9-U	0.68	0.92	4.31	37.60	111.98	0.50	1.00	1.21		
													1.57	2.00	NO
Third	R6	Plans	Residential	LKD	W10-L	0.68	0.92	2.14	53.26	112.92	0.50	0.15	0.13		
					W10-U	0.68	0.92	4.31	37.86	112.92	0.50	1.00	1.21		
					W11-L	0.68	0.92	0.65	26.75	112.92	0.50	0.15	0.02		
					W11-U	0.68	0.92	1.31	18.84	112.92	0.50	1.00	0.18		
													1.53	2.00	NO
Third	R7	Plans	Residential	Bedroom	W12-L	0.68	0.92	1.22	84.55	62.05	0.50	0.15	0.21		
					W12-U	0.68	0.92	2.46	82.04	62.05	0.50	1.00	2.72		
													2.92	1.00	YES
Third	R8	Plans	Residential	Bedroom	W13-L	0.68	0.92	1.22	84.82	61.12	0.50	0.15	0.21		
					W13-U	0.68	0.92	2.46	82.26	61.12	0.50	1.00	2.76		
													2.98	1.00	YES
Third	R9	Plans	Residential	LKD	W14-L	0.68	0.92	0.65	38.52	114.72	0.50	0.15	0.03		
					W14-U	0.68	0.92	1.31	27.24	114.72	0.50	1.00	0.26		
					W15-L	0.68	0.92	2.36	63.72	114.72	0.50	0.15	0.16		
					W15-U	0.68	0.92	4.75	44.56	114.72	0.50	1.00	1.54		
					W16-L	0.68	0.92	0.87	55.70	114.72	0.50	0.15	0.05		
					W16-U	0.68	0.92	1.74	55.28	114.72	0.50	1.00	0.70		
													2.74	2.00	YES
Third	R10	Plans	Residential	LKD	W17-L	0.68	0.92	0.94	77.10	116.47	0.50	0.15	0.08		
					W17-U	0.68	0.92	1.90	70.67	116.47	0.50	1.00	0.96		
					W18-L	0.68	0.92	2.24	68.77	116.47	0.50	0.15	0.17		
					W18-U	0.68	0.92	4.50	45.90	116.47	0.50	1.00	1.48		
													2.68	2.00	YES
Third	R11	Plans	Residential	Bedroom	W19-L	0.68	0.92	1.22	84.27	61.92	0.50	0.15	0.21		
					W19-U	0.68	0.92	2.46	81.89	61.92	0.50	1.00	2.72		
													2.92	1.00	YES
Third	R12	Plans	Residential	Bedroom	W20-L	0.68	0.92	1.22	84.11	61.15	0.50	0.15	0.21		
					W20-U	0.68	0.92	2.46	81.78	61.15	0.50	1.00	2.75		
													2.96	1.00	YES
Third	R13	Plans	Residential	Studio	W21-L	0.68	0.92	1.22	83.94	135.58	0.50	0.15	0.09		
					W21-U	0.68	0.92	2.46	81.65	135.58	0.50	1.00	1.24		
					W22-L	0.68	0.92	0.75	32.76	135.58	0.50	0.15	0.02		
					W22-U	0.68	0.92	1.50	25.21	135.58	0.50	1.00	0.23		
					W23-L	0.68	0.84	2.32	N/A	135.58	0.50	0.20	0.23		
					W23-U	0.68	0.84	4.66	N/A	135.58	0.50	1.00	0.83		
													2.64	2.00	YES
Third	R14	Plans	Residential	Studio	W24-L	0.68	0.84	2.32	N/A	135.58	0.50	0.20	0.23		
					W24-U	0.68	0.84	4.66	N/A	135.58	0.50	1.00	0.82		
					W25-L	0.68	0.92	0.75	33.04	135.58	0.50	0.15	0.02		

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					W25-U	0.68	0.92	1.50	25.51	135.58	0.50	1.00	0.24		
					W26-L	0.68	0.92	1.22	83.27	135.58	0.50	0.15	0.09		
					W26-U	0.68	0.92	2.46	81.17	135.58	0.50	1.00	1.23		
													2.63	2.00	YES
Third	R15	Plans	Residential	Bedroom	W27-L	0.68	0.92	1.22	83.33	67.46	0.50	0.15	0.19		
					W27-U	0.68	0.92	2.46	81.20	67.46	0.50	1.00	2.47		
													2.66	1.00	YES
Third	R16	Plans	Residential	Bedroom	W28-L	0.68	0.92	1.22	83.41	57.85	0.50	0.15	0.22		
					W28-U	0.68	0.92	2.46	81.29	57.85	0.50	1.00	2.89		
													3.11	1.00	YES
Fourth	R1	Plans	Residential	LKD	W1-L	0.68	0.92	2.24	78.61	121.75	0.50	0.15	0.18		
					W1-U	0.68	0.92	4.50	77.29	121.75	0.50	1.00	2.38		
					W2-L	0.68	0.92	0.95	73.45	121.75	0.50	0.15	0.07		
					W2-U	0.68	0.92	1.90	73.41	121.75	0.50	1.00	0.96		
													3.59	2.00	YES
Fourth	R2	Plans	Residential	LKD	W3-L	0.68	0.92	0.87	54.57	123.93	0.50	0.15	0.05		
					W3-U	0.68	0.92	1.74	55.77	123.93	0.50	1.00	0.65		
					W4-L	0.68	0.92	2.85	62.99	123.93	0.50	0.15	0.18		
					W4-U	0.68	0.92	5.74	44.72	123.93	0.50	1.00	1.73		
													2.61	2.00	YES
Fourth	R3	Plans	Residential	Bedroom	W5-L	0.68	0.92	0.65	30.14	61.59	0.50	0.15	0.04		
					W5-U	0.68	0.92	1.31	18.35	61.59	0.50	1.00	0.33		
					W6-L	0.68	0.92	1.22	82.94	61.59	0.50	0.15	0.21		
					W6-U	0.68	0.92	2.46	80.88	61.59	0.50	1.00	2.70		
													3.27	1.00	YES
Fourth	R4	Plans	Residential	Bedroom	W7-L	0.68	0.92	1.22	83.53	63.87	0.50	0.15	0.20		
					W7-U	0.68	0.92	2.46	81.34	63.87	0.50	1.00	2.62		
													2.82	1.00	YES
Fourth	R5	Plans	Residential	LKD	W8-L	0.68	0.92	0.65	29.70	111.98	0.50	0.15	0.02		
					W8-U	0.68	0.92	1.32	22.15	111.98	0.50	1.00	0.22		
					W9-L	0.68	0.92	2.14	53.10	111.98	0.50	0.15	0.13		
					W9-U	0.68	0.92	4.31	37.72	111.98	0.50	1.00	1.21		
													1.58	2.00	NO
Fourth	R6	Plans	Residential	LKD	W10-L	0.68	0.92	2.14	53.26	112.92	0.50	0.15	0.13		
					W10-U	0.68	0.92	4.31	37.86	112.92	0.50	1.00	1.21		
					W11-L	0.68	0.92	0.65	27.78	112.92	0.50	0.15	0.02		
					W11-U	0.68	0.92	1.31	20.19	112.92	0.50	1.00	0.20		
													1.55	2.00	NO
Fourth	R7	Plans	Residential	Bedroom	W12-L	0.68	0.92	1.22	85.14	62.05	0.50	0.15	0.21		
					W12-U	0.68	0.92	2.46	82.59	62.05	0.50	1.00	2.73		
													2.94	1.00	YES
Fourth	R8	Plans	Residential	Bedroom	W13-L	0.68	0.92	1.22	85.33	61.12	0.50	0.15	0.21		

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					W13-U	0.68	0.92	2.46	82.73	61.12	0.50	1.00	2.78		
													2.99	1.00	YES
Fourth	R9	Plans	Residential	LKD	W14-L	0.68	0.92	0.65	38.58	114.72	0.50	0.15	0.03		
					W14-U	0.68	0.92	1.31	27.25	114.72	0.50	1.00	0.26		
					W15-L	0.68	0.92	2.36	63.72	114.72	0.50	0.15	0.16		
					W15-U	0.68	0.92	4.75	44.57	114.72	0.50	1.00	1.54		
					W16-L	0.68	0.92	0.87	55.94	114.72	0.50	0.15	0.05		
					W16-U	0.68	0.92	1.74	55.53	114.72	0.50	1.00	0.70		
													2.75	2.00	YES
Fourth	R10	Plans	Residential	LKD	W17-L	0.68	0.92	0.94	84.33	116.47	0.50	0.15	0.09		
					W17-U	0.68	0.92	1.90	81.98	116.47	0.50	1.00	1.12		
					W18-L	0.68	0.92	2.24	88.14	116.47	0.50	0.15	0.21		
					W18-U	0.68	0.92	4.50	84.55	116.47	0.50	1.00	2.72		
													4.14	2.00	YES
Fourth	R11	Plans	Residential	Bedroom	W19-L	0.68	0.92	1.22	85.04	61.92	0.50	0.15	0.21		
					W19-U	0.68	0.92	2.46	82.51	61.92	0.50	1.00	2.74		
													2.95	1.00	YES
Fourth	R12	Plans	Residential	Bedroom	W20-L	0.68	0.92	1.22	84.96	61.15	0.50	0.15	0.21		
					W20-U	0.68	0.92	2.46	82.45	61.15	0.50	1.00	2.77		
													2.98	1.00	YES
Fourth	R13	Plans	Residential	Studio	W21-L	0.68	0.92	1.22	84.87	135.58	0.50	0.15	0.10		
					W21-U	0.68	0.92	2.46	82.39	135.58	0.50	1.00	1.25		
					W22-L	0.68	0.92	0.75	32.85	135.58	0.50	0.15	0.02		
					W22-U	0.68	0.92	1.50	25.31	135.58	0.50	1.00	0.23		
					W23-L	0.68	0.84	2.32	N/A	135.58	0.50	0.20	0.23		
					W23-U	0.68	0.84	4.66	N/A	135.58	0.50	1.00	0.85		
													2.68	2.00	YES
Fourth	R14	Plans	Residential	Studio	W24-L	0.68	0.84	2.32	N/A	135.58	0.50	0.20	0.23		
					W24-U	0.68	0.84	4.66	N/A	135.58	0.50	1.00	0.84		
					W25-L	0.68	0.92	0.75	33.04	135.58	0.50	0.15	0.02		
					W25-U	0.68	0.92	1.50	25.51	135.58	0.50	1.00	0.24		
					W26-L	0.68	0.92	1.22	84.58	135.58	0.50	0.15	0.10		
					W26-U	0.68	0.92	2.46	82.17	135.58	0.50	1.00	1.24		
													2.68	2.00	YES
Fourth	R15	Plans	Residential	Bedroom	W27-L	0.68	0.92	1.22	84.63	67.46	0.50	0.15	0.19		
					W27-U	0.68	0.92	2.46	82.19	67.46	0.50	1.00	2.50		
													2.69	1.00	YES
Fourth	R16	Plans	Residential	Bedroom	W28-L	0.68	0.92	1.22	84.70	57.85	0.50	0.15	0.22		
					W28-U	0.68	0.92	2.46	82.27	57.85	0.50	1.00	2.92		
													3.15	1.00	YES
Fifth	R1	Plans	Residential	LKD	W1-L	0.68	0.92	2.24	68.31	103.05	0.50	0.15	0.19		
					W1-U	0.68	0.92	5.39	82.80	103.05	0.50	1.00	3.61		

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					W24-L	0.68	0.92	1.22	85.52	103.05	0.50	0.15	0.13		
					W24-U	0.68	0.92	2.95	84.03	103.05	0.50	1.00	2.01		
													5.93	2.00	YES
Fifth	R2	Plans	Residential	Bedroom	W2-L	0.68	0.92	0.95	66.52	48.95	0.50	0.15	0.16		
					W2-U	0.68	0.92	2.28	79.38	48.95	0.50	1.00	3.08		
													3.24	1.00	YES
Fifth	R3	Plans	Residential	Studio	W4-L	0.68	0.92	1.76	80.87	129.46	0.50	0.15	0.14		
					W4-U	0.68	0.92	4.25	83.94	129.46	0.50	1.00	2.30		
					W5-L	0.68	0.92	1.22	58.39	129.46	0.50	0.15	0.07		
					W5-U	0.68	0.92	2.95	83.42	129.46	0.50	1.00	1.59		
					W3-L	0.68	0.92	0.82	66.50	129.46	0.50	0.15	0.05		
					W3-U	0.68	0.92	1.97	77.64	129.46	0.50	1.00	0.98		
													5.13	2.00	YES
Fifth	R4	Plans	Residential	Studio	W6-L	0.68	0.92	1.22	58.31	146.24	0.50	0.15	0.06		
					W6-U	0.68	0.92	2.95	83.64	146.24	0.50	1.00	1.41		
					W7-L	0.68	0.92	2.04	79.60	146.24	0.50	0.15	0.14		
					W7-U	0.68	0.92	4.92	84.96	146.24	0.50	1.00	2.38		
													3.99	2.00	YES
Fifth	R5	Plans	Residential	Studio	W8-L	0.68	0.92	2.11	80.00	145.47	0.50	0.15	0.15		
					W8-U	0.68	0.92	5.08	85.20	145.47	0.50	1.00	2.48		
					W9-L	0.68	0.92	1.22	58.32	145.47	0.50	0.15	0.06		
					W9-U	0.68	0.92	2.95	84.20	145.47	0.50	1.00	1.42		
													4.12	2.00	YES
Fifth	R6	Plans	Residential	Studio	W10-L	0.68	0.92	1.22	58.49	136.62	0.50	0.15	0.07		
					W10-U	0.68	0.92	2.95	84.27	136.62	0.50	1.00	1.52		
					W11-L	0.68	0.92	1.47	81.41	136.62	0.50	0.15	0.11		
					W11-U	0.68	0.92	3.54	84.81	136.62	0.50	1.00	1.83		
					W12-L	0.68	0.92	0.86	49.42	136.62	0.50	0.15	0.04		
					W12-U	0.68	0.92	2.08	82.37	136.62	0.50	1.00	1.05		
													4.61	2.00	YES
Fifth	R7	Plans	Residential	LKD	W13-L	0.68	0.92	0.95	65.49	114.38	0.50	0.15	0.07		
					W13-U	0.68	0.92	2.28	83.13	114.38	0.50	1.00	1.38		
					W14-L	0.68	0.92	2.24	67.52	114.38	0.50	0.15	0.17		
					W14-U	0.68	0.92	5.39	85.85	114.38	0.50	1.00	3.38		
					W15-L	0.68	0.92	1.22	85.70	114.38	0.50	0.15	0.11		
					W15-U	0.68	0.92	2.95	84.14	114.38	0.50	1.00	1.81		
													6.92	2.00	YES
Fifth	R8	Plans	Residential	Bedroom	W16-L	0.68	0.92	1.22	85.64	66.07	0.50	0.15	0.20		
					W16-U	0.68	0.92	2.95	84.10	66.07	0.50	1.00	3.13		
													3.33	1.00	YES
Fifth	R9	Plans	Residential	Studio	W17-L	0.68	0.92	1.22	85.59	136.19	0.50	0.15	0.10		
					W17-U	0.68	0.92	2.95	84.07	136.19	0.50	1.00	1.52		

Project Name: Station Yard Twickenham
Project No.: 19589-02
Report Title: Average Daylight Analysis - Proposed Scheme
Date: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value	Meets BRE Criteria
					W18-L	0.68	0.92	0.75	36.31	136.19	0.50	0.15	0.02		
					W18-U	0.68	0.92	1.80	27.59	136.19	0.50	1.00	0.30		
					W19-L	0.68	0.92	2.32	56.42	136.19	0.50	0.15	0.12		
					W19-U	0.68	0.92	5.59	39.15	136.19	0.50	1.00	1.34		
													3.41	2.00	YES
Fifth	R10	Plans	Residential	Studio	W20-L	0.68	0.92	2.32	56.39	136.20	0.50	0.15	0.12		
					W20-U	0.68	0.92	5.59	39.12	136.20	0.50	1.00	1.34		
					W21-L	0.68	0.92	0.75	36.63	136.20	0.50	0.15	0.03		
					W21-U	0.68	0.92	1.81	27.84	136.20	0.50	1.00	0.31		
					W22-L	0.68	0.92	1.23	85.46	136.20	0.50	0.15	0.10		
					W22-U	0.68	0.92	2.95	83.99	136.20	0.50	1.00	1.52		
													3.41	2.00	YES
Fifth	R11	Plans	Residential	Bedroom	W23-L	0.68	0.92	1.22	85.48	60.50	0.50	0.15	0.22		
					W23-U	0.68	0.92	2.95	84.00	60.50	0.50	1.00	3.42		
													3.63	1.00	YES

Project Name: Station Yard Twickenham
Project No.: 19589-02
Report Title: Daylight Distribution Analysis - Proposed Scheme
Date of Analysis: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.		Room Area	Lit Area Proposed	Meets BRE Criteria
Station Yard								
Ground	R1	Plans	Residential	Studio	Area m2	29.84	28.88	
					% of room		97%	YES
	R2	Plans	Residential	Studio	Area m2	29.88	29.74	
					% of room		100%	YES
	R3	Plans	Residential	Studio	Area m2	34.02	32.30	
					% of room		95%	YES
	R4	Plans	Residential	LKD	Area m2	25.85	24.13	
					% of room		93%	YES
	R5	Plans	Residential	Bedroom	Area m2	12.56	12.34	
					% of room		98%	YES
	R6	Plans	Residential	Bedroom	Area m2	12.29	12.03	
					% of room		98%	YES
	R7	Plans	Residential	LKD	Area m2	26.28	26.27	
					% of room		100%	YES
	R8	Plans	Residential	Bedroom	Area m2	12.82	12.20	
					% of room		95%	YES
	R9	Plans	Residential	LKD	Area m2	26.46	26.44	
					% of room		100%	YES
First	R1	Plans	Residential	LKD	Area m2	28.25	27.17	
					% of room		96%	YES
	R2	Plans	Residential	LKD	Area m2	30.57	30.57	
					% of room		100%	YES
	R3	Plans	Residential	Bedroom	Area m2	11.93	11.78	
					% of room		99%	YES
	R4	Plans	Residential	Bedroom	Area m2	13.10	12.92	
					% of room		99%	YES
	R5	Plans	Residential	LKD	Area m2	25.63	24.66	
					% of room		96%	YES
	R6	Plans	Residential	LKD	Area m2	25.85	24.52	
					% of room		95%	YES
	R7	Plans	Residential	Bedroom	Area m2	12.56	12.34	
					% of room		98%	YES
	R8	Plans	Residential	Bedroom	Area m2	12.29	12.03	
					% of room		98%	YES
	R9	Plans	Residential	LKD	Area m2	26.28	26.27	
					% of room		100%	YES
	R10	Plans	Residential	LKD	Area m2	27.01	26.42	
					% of room		98%	YES
	R11	Plans	Residential	Bedroom	Area m2	12.24	12.14	
					% of room		99%	YES
	R12	Plans	Residential	Bedroom	Area m2	12.23	12.13	
					% of room		99%	YES
	R13	Plans	Residential	Studio	Area m2	31.88	31.79	
					% of room		100%	YES
	R14	Plans	Residential	Studio	Area m2	31.88	31.76	
					% of room		100%	YES
	R15	Plans	Residential	Bedroom	Area m2	13.58	13.37	
					% of room		98%	YES
	R16	Plans	Residential	Bedroom	Area m2	9.97	9.78	
					% of room		98%	YES
Second	R1	Plans	Residential	LKD	Area m2	28.25	27.58	
					% of room		98%	YES
	R2	Plans	Residential	LKD	Area m2	30.57	30.57	
					% of room		100%	YES

Project Name: Station Yard Twickenham
Project No.: 19589-02
Report Title: Daylight Distribution Analysis - Proposed Scheme
Date of Analysis: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.		Room Area	Lit Area Proposed	Meets BRE Criteria
	R3	Plans	Residential	Bedroom	Area m2	11.93	11.83	
					% of room		99%	YES
	R4	Plans	Residential	Bedroom	Area m2	13.10	12.92	
					% of room		99%	YES
	R5	Plans	Residential	LKD	Area m2	25.63	24.64	
					% of room		96%	YES
	R6	Plans	Residential	LKD	Area m2	25.85	24.72	
					% of room		96%	YES
	R7	Plans	Residential	Bedroom	Area m2	12.56	12.34	
					% of room		98%	YES
	R8	Plans	Residential	Bedroom	Area m2	12.29	12.03	
					% of room		98%	YES
	R9	Plans	Residential	LKD	Area m2	26.28	26.27	
					% of room		100%	YES
	R10	Plans	Residential	LKD	Area m2	27.01	26.41	
					% of room		98%	YES
	R11	Plans	Residential	Bedroom	Area m2	12.24	12.14	
					% of room		99%	YES
	R12	Plans	Residential	Bedroom	Area m2	12.23	12.13	
					% of room		99%	YES
	R13	Plans	Residential	Studio	Area m2	31.88	31.79	
					% of room		100%	YES
	R14	Plans	Residential	Studio	Area m2	31.88	31.76	
					% of room		100%	YES
	R15	Plans	Residential	Bedroom	Area m2	13.58	13.37	
					% of room		98%	YES
	R16	Plans	Residential	Bedroom	Area m2	9.97	9.78	
					% of room		98%	YES
Third	R1	Plans	Residential	LKD	Area m2	28.25	27.63	
					% of room		98%	YES
	R2	Plans	Residential	LKD	Area m2	30.57	30.57	
					% of room		100%	YES
	R3	Plans	Residential	Bedroom	Area m2	11.93	11.86	
					% of room		99%	YES
	R4	Plans	Residential	Bedroom	Area m2	13.10	12.92	
					% of room		99%	YES
	R5	Plans	Residential	LKD	Area m2	25.63	24.63	
					% of room		96%	YES
	R6	Plans	Residential	LKD	Area m2	25.85	24.76	
					% of room		96%	YES
	R7	Plans	Residential	Bedroom	Area m2	12.56	12.34	
					% of room		98%	YES
	R8	Plans	Residential	Bedroom	Area m2	12.29	12.03	
					% of room		98%	YES
	R9	Plans	Residential	LKD	Area m2	26.28	26.27	
					% of room		100%	YES
	R10	Plans	Residential	LKD	Area m2	27.01	26.41	
					% of room		98%	YES
	R11	Plans	Residential	Bedroom	Area m2	12.24	12.14	
					% of room		99%	YES
	R12	Plans	Residential	Bedroom	Area m2	12.23	12.13	
					% of room		99%	YES
	R13	Plans	Residential	Studio	Area m2	31.88	31.79	
					% of room		100%	YES
	R14	Plans	Residential	Studio	Area m2	31.88	31.76	
					% of room		100%	YES
	R15	Plans	Residential	Bedroom	Area m2	13.58	13.37	

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Project No.: 19589-02
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Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.		Room Area	Lit Area Proposed	Meets BRE Criteria
					% of room		98%	YES
	R16	Plans	Residential	Bedroom	Area m2	9.97	9.78	
					% of room		98%	YES
Fourth	R1	Plans	Residential	LKD	Area m2	28.25	27.64	
					% of room		98%	YES
	R2	Plans	Residential	LKD	Area m2	30.57	30.57	
					% of room		100%	YES
	R3	Plans	Residential	Bedroom	Area m2	11.93	11.86	
					% of room		99%	YES
	R4	Plans	Residential	Bedroom	Area m2	13.10	12.92	
					% of room		99%	YES
	R5	Plans	Residential	LKD	Area m2	25.63	24.63	
					% of room		96%	YES
	R6	Plans	Residential	LKD	Area m2	25.85	24.78	
					% of room		96%	YES
	R7	Plans	Residential	Bedroom	Area m2	12.56	12.34	
					% of room		98%	YES
	R8	Plans	Residential	Bedroom	Area m2	12.29	12.03	
					% of room		98%	YES
	R9	Plans	Residential	LKD	Area m2	26.28	26.27	
					% of room		100%	YES
	R10	Plans	Residential	LKD	Area m2	27.01	26.45	
					% of room		98%	YES
	R11	Plans	Residential	Bedroom	Area m2	12.24	12.14	
					% of room		99%	YES
	R12	Plans	Residential	Bedroom	Area m2	12.23	12.13	
					% of room		99%	YES
	R13	Plans	Residential	Studio	Area m2	31.88	31.79	
					% of room		100%	YES
	R14	Plans	Residential	Studio	Area m2	31.88	31.76	
					% of room		100%	YES
	R15	Plans	Residential	Bedroom	Area m2	13.58	13.37	
					% of room		98%	YES
	R16	Plans	Residential	Bedroom	Area m2	9.97	9.78	
					% of room		98%	YES
Fifth	R1	Plans	Residential	LKD	Area m2	25.34	25.32	
					% of room		100%	YES
	R2	Plans	Residential	Bedroom	Area m2	8.90	8.77	
					% of room		98%	YES
	R3	Plans	Residential	Studio	Area m2	30.46	30.46	
					% of room		100%	YES
	R4	Plans	Residential	Studio	Area m2	33.59	32.97	
					% of room		98%	YES
	R5	Plans	Residential	Studio	Area m2	33.37	32.76	
					% of room		98%	YES
	R6	Plans	Residential	Studio	Area m2	28.81	28.64	
					% of room		99%	YES
	R7	Plans	Residential	LKD	Area m2	27.10	27.09	
					% of room		100%	YES
	R8	Plans	Residential	Bedroom	Area m2	13.75	13.27	
					% of room		97%	YES
	R9	Plans	Residential	Studio	Area m2	32.19	31.98	
					% of room		99%	YES
	R10	Plans	Residential	Studio	Area m2	32.18	31.94	
					% of room		99%	YES
	R11	Plans	Residential	Bedroom	Area m2	12.11	11.92	
					% of room		98%	YES

Project Name: Station Yard Twickenham
Project No.: 19589-02
Report Title: Daylight & Sunlight Analysis - Proposed Scheme
Date of Analysis: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.	Window Ref.	VSC	Meets BRE Criteria	Window Orientation	Annual	Meets BRE Criteria	Winter	Meets BRE Criteria
				Station Yard								
Ground	R1	Plans	Residential	Studio	W1	20.56	NO	66°N	10	NO	2	NO
					W2	14.77	NO	66°N	4	NO	0	NO
	R2	Plans	Residential	Studio	W3	16.00	NO	156°	30	YES	20	YES
					W4	2.72	NO	66°N	16	NO	3	NO
					W5	31.43	YES	156°	68	YES	23	YES
	R3	Plans	Residential	Studio	W6	31.59	YES	156°	68	YES	23	YES
					W7	31.54	YES	156°	68	YES	21	YES
	R4	Plans	Residential	LKD	W9	5.42	NO	66°N	21	NO	4	NO
					W8	13.28	NO	156°	21	NO	14	YES
	R5	Plans	Residential	Bedroom	W10	32.51	YES	156°	76	YES	25	YES
	R6	Plans	Residential	Bedroom	W11	33.08	YES	156°	74	YES	24	YES
	R7	Plans	Residential	LKD	W13	18.40	NO	155°	40	YES	25	YES
					W14	24.10	NO	246°	34	YES	8	YES
					W12	9.22	NO	246°	21	NO	18	YES
	R8	Plans	Residential	Bedroom	W15	31.45	YES	246°	62	YES	21	YES
	R9	Plans	Residential	LKD	W16	21.02	NO	246°	37	YES	19	YES
					W17	35.57	YES	336°N	17	NO	2	NO
First	R1	Plans	Residential	LKD	W1	14.61	NO	66°N	6	NO	3	NO
					W2	21.85	NO	66°N	14	NO	2	NO
	R2	Plans	Residential	LKD	W3	17.41	NO	66°N	7	NO	0	NO
					W4	18.31	NO	156°	35	YES	20	YES
	R3	Plans	Residential	Bedroom	W5	3.47	NO	66°N	16	NO	3	NO
					W6	33.82	YES	156°	71	YES	25	YES
	R4	Plans	Residential	Bedroom	W7	34.19	YES	156°	73	YES	26	YES
	R5	Plans	Residential	LKD	W8	6.68	NO	246°	18	NO	15	YES
					W9	15.36	NO	156°	28	YES	19	YES
	R6	Plans	Residential	LKD	W10	15.49	NO	156°	25	YES	18	YES
					W11	5.76	NO	66°N	24	NO	6	YES
	R7	Plans	Residential	Bedroom	W12	35.30	YES	156°	79	YES	28	YES
	R8	Plans	Residential	Bedroom	W13	35.68	YES	156°	78	YES	27	YES
	R9	Plans	Residential	LKD	W14	9.98	NO	246°	20	NO	17	YES
					W15	20.44	NO	155°	41	YES	26	YES
					W16	24.66	NO	246°	37	YES	12	YES
	R10	Plans	Residential	LKD	W17	32.54	YES	246°	62	YES	21	YES
					W18	22.28	NO	246°	38	YES	18	YES
	R11	Plans	Residential	Bedroom	W19	37.29	YES	336°N	17	NO	2	NO
	R12	Plans	Residential	Bedroom	W20	37.16	YES	336°N	17	NO	2	NO
	R13	Plans	Residential	Studio	W21	37.01	YES	336°N	17	NO	2	NO
					W22	8.23	NO	66°N	0	NO	0	NO
					W23	17.33	NO	336°N	1	NO	0	NO
	R14	Plans	Residential	Studio	W24	17.09	NO	336°N	1	NO	0	NO
					W25	8.93	NO	246°	8	NO	0	NO
					W26	36.41	YES	336°N	15	NO	1	NO
	R15	Plans	Residential	Bedroom	W27	36.41	YES	336°N	15	NO	1	NO
	R16	Plans	Residential	Bedroom	W28	36.44	YES	336°N	15	NO	1	NO
Second	R1	Plans	Residential	LKD	W1	16.45	NO	66°N	9	NO	5	YES
					W2	24.53	NO	66°N	17	NO	4	NO
	R2	Plans	Residential	LKD	W3	19.88	NO	66°N	9	NO	1	NO
					W4	20.37	NO	156°	36	YES	20	YES
	R3	Plans	Residential	Bedroom	W5	4.25	NO	66°N	19	NO	3	NO
					W6	35.92	YES	156°	74	YES	25	YES
	R4	Plans	Residential	Bedroom	W7	36.38	YES	156°	75	YES	27	YES
	R5	Plans	Residential	LKD	W8	7.51	NO	246°	18	NO	15	YES
					W9	17.03	NO	156°	28	YES	19	YES
	R6	Plans	Residential	LKD	W10	17.33	NO	156°	26	YES	19	YES
					W11	6.21	NO	66°N	24	NO	6	YES
	R7	Plans	Residential	Bedroom	W12	37.92	YES	156°	81	YES	28	YES
	R8	Plans	Residential	Bedroom	W13	38.02	YES	156°	81	YES	28	YES
	R9	Plans	Residential	LKD	W14	10.75	NO	246°	21	NO	18	YES
					W15	22.11	NO	155°	43	YES	28	YES
					W16	25.25	NO	246°	37	YES	12	YES
	R10	Plans	Residential	LKD	W17	33.62	YES	246°	63	YES	22	YES
					W18	23.29	NO	246°	39	YES	19	YES
	R11	Plans	Residential	Bedroom	W19	38.20	YES	336°N	17	NO	2	NO
	R12	Plans	Residential	Bedroom	W20	38.10	YES	336°N	17	NO	2	NO
	R13	Plans	Residential	Studio	W21	37.99	YES	336°N	17	NO	2	NO
					W22	8.56	NO	66°N	0	NO	0	NO
					W23	18.08	NO	336°N	1	NO	0	NO
	R14	Plans	Residential	Studio	W24	17.92	NO	336°N	1	NO	0	NO
					W25	9.16	NO	246°	8	NO	0	NO
					W26	37.59	YES	336°N	15	NO	1	NO
	R15	Plans	Residential	Bedroom	W27	37.62	YES	336°N	15	NO	1	NO
	R16	Plans	Residential	Bedroom	W28	37.68	YES	336°N	15	NO	1	NO
Third	R1	Plans	Residential	LKD	W1	17.99	NO	66°N	13	NO	5	YES
					W2	27.27	YES	66°N	26	YES	5	YES
	R2	Plans	Residential	LKD	W3	22.43	NO	66°N	13	NO	1	NO
					W4	21.81	NO	156°	39	YES	20	YES
	R3	Plans	Residential	Bedroom	W5	5.51	NO	66°N	21	NO	4	NO
					W6	37.31	YES	156°	78	YES	27	YES
	R4	Plans	Residential	Bedroom	W7	37.68	YES	156°	77	YES	27	YES
	R5	Plans	Residential	LKD	W8	7.80	NO	246°	18	NO	15	YES
					W9	17.59	NO	156°	29	YES	20	YES
	R6	Plans	Residential	LKD	W10	17.82	NO	156°	27	YES	20	YES
					W11	6.64	NO	66°N	24	NO	6	YES
	R7	Plans	Residential	Bedroom	W12	38.78	YES	156°	83	YES	28	YES
	R8	Plans	Residential	Bedroom	W13	38.86	YES	156°	82	YES	28	YES
	R9	Plans	Residential	LKD	W14	11.13	NO	246°	21	NO	18	YES
					W15	22.72	NO	155°	43	YES	28	YES
					W16	25.60	NO	246°	37	YES	12	YES
	R10	Plans	Residential	LKD	W17	34.60	YES	246°	63	YES	22	YES
					W18	23.82	NO	246°	39	YES	19	YES
	R11	Plans	Residential	Bedroom	W19	38.82	YES	336°N	17	NO	2	NO
	R12	Plans	Residential	Bedroom	W20	38.75	YES	336°N	17	NO	2	NO
	R13	Plans	Residential	Studio	W21	38.68	YES	336°N	17	NO	2	NO
					W22	8.75	NO	66°N	0	NO	0	NO
					W23	18.72	NO	336°N	1	NO	0	NO
	R14	Plans	Residential	Studio	W24	18.65	NO	336°N	1	NO	0	NO
					W25	9.25	NO	246°	8	NO	0	NO
					W26	38.43	YES	336°N	15	NO	1	NO
	R15	Plans	Residential	Bedroom	W27	38.45	YES	336°N	15	NO	1	NO
	R16	Plans	Residential	Bedroom	W28	38.49	YES	336°N	15	NO	1	NO
Fourth	R1	Plans	Residential	LKD	W1	35.91	YES	66°N	32	YES	5	YES
					W2	34.88	YES	66°N	29	YES	5	YES
	R2	Plans	Residential	LKD	W3	25.51	NO	66°N	18	NO	1	NO
					W4	22.92	NO	156°	42	YES	21	YES
	R3	Plans	Residential	Bedroom	W5	7.33	NO	66°N	25	YES	5	YES
					W6	38.16	YES	156°	82	YES	28	YES
	R4	Plans	Residential	Bedroom	W7	38.41	YES	156°	82	YES	28	YES
	R5	Plans	Residential	LKD	W8	7.75	NO	246°	17	NO	14	YES
					W9	17.71	NO	156°	29	YES	20	YES

Project Name: Twickenham Station Yard
Project No.: 19589-02
Report Title: Daylight & Sunlight Analysis - Proposed Scheme
Date of Analysis: 29/10/2019

Floor Ref.	Room Ref.	Room Attribute	Property Type	Room Use.	Window Ref.	VSC	Meets BRE Criteria	Window Orientation	Annual	Meets BRE Criteria	Winter	Meets BRE Criteria
	R6	Plans	Residential	LKD	W10	17.84	NO	156°	27	YES	20	YES
					W11	7.05	NO	66°N	24	NO	6	YES
	R7	Plans	Residential	Bedroom	W12	39.09	YES	156°	83	YES	28	YES
	R8	Plans	Residential	Bedroom	W13	39.14	YES	156°	83	YES	28	YES
	R9	Plans	Residential	LKD	W14	11.10	NO	246°	20	NO	17	YES
					W15	22.72	NO	155°	43	YES	28	YES
					W16	25.79	NO	246°	37	YES	12	YES
	R10	Plans	Residential	LKD	W17	39.62	YES	246°	63	YES	22	YES
					W18	39.62	YES	246°	63	YES	22	YES
	R11	Plans	Residential	Bedroom	W19	39.12	YES	336°N	17	NO	2	NO
	R12	Plans	Residential	Bedroom	W20	39.08	YES	336°N	17	NO	2	NO
	R13	Plans	Residential	Studio	W21	39.04	YES	336°N	17	NO	2	NO
					W22	8.93	NO	66°N	0	NO	0	NO
					W23	19.09	NO	336°N	1	NO	0	NO
	R14	Plans	Residential	Studio	W24	19.09	NO	336°N	1	NO	0	NO
					W25	9.25	NO	246°	8	NO	0	NO
					W26	38.92	YES	336°N	15	NO	1	NO
	R15	Plans	Residential	Bedroom	W27	38.94	YES	336°N	15	NO	1	NO
	R16	Plans	Residential	Bedroom	W28	38.99	YES	336°N	15	NO	1	NO
Fifth	R1	Plans	Residential	LKD	W1	38.06	YES	66°N	36	YES	7	YES
					W24	39.32	YES	336°N	16	NO	1	NO
	R2	Plans	Residential	Bedroom	W2	37.58	YES	66°N	36	YES	7	YES
	R3	Plans	Residential	Studio	W4	38.77	YES	156°	83	YES	28	YES
					W5	38.95	YES	156°	83	YES	28	YES
					W3	37.20	YES	66°N	37	YES	8	YES
	R4	Plans	Residential	Studio	W6	39.07	YES	156°	83	YES	28	YES
					W7	39.23	YES	156°	83	YES	28	YES
	R5	Plans	Residential	Studio	W8	39.29	YES	156°	83	YES	28	YES
					W9	39.37	YES	156°	83	YES	28	YES
	R6	Plans	Residential	Studio	W10	39.41	YES	156°	83	YES	28	YES
					W11	39.44	YES	156°	83	YES	28	YES
					W12	39.62	YES	246°	63	YES	22	YES
	R7	Plans	Residential	LKD	W13	39.62	YES	246°	63	YES	22	YES
					W14	39.62	YES	246°	63	YES	22	YES
					W15	39.38	YES	336°N	17	NO	2	NO
	R8	Plans	Residential	Bedroom	W16	39.36	YES	336°N	17	NO	2	NO
	R9	Plans	Residential	Studio	W17	39.33	YES	336°N	17	NO	2	NO
					W18	9.33	NO	66°N	0	NO	0	NO
					W19	19.03	NO	336°N	1	NO	0	NO
	R10	Plans	Residential	Studio	W20	19.01	NO	336°N	1	NO	0	NO
					W21	9.54	NO	246°	7	NO	0	NO
					W22	39.25	YES	336°N	15	NO	1	NO
	R11	Plans	Residential	Bedroom	W23	39.30	YES	336°N	15	NO	1	NO