Our Ref: 2010554

Date: 29 July 2011

behan partnership LLP
chartered surveyors

First Floor Annexe
New Barnes Mill
Cottonmill Lane
St Albans
Hertfordshire
AL12HA

T: 01727 800075
www.behanllp.co.uk

Mr Jon Freer
Civic Centre,
44 York Street,
Twickenham TW1 3BZ

Dear Mr Freer

Re: Twickenham Station, London Road, Twickenham Application Ref: 11/1443/FUL EIA Assessment, Chapter 14, Daylight / Sunlight /Overshadowing / Solar Glare Assessment

On 22 June 2011 you wrote to David Maddox of Maddox & Associates in regard of Regulation 19 (1) and 19 (10) of the Town and Country Planning (Environmental Assessment) (England and Wales) Regulations 1999 requesting additional studies be carried out. We have been instructed by Solum Regeneration to look into the implications of Chapter 14 daylight / sunlight / overshadowing / solar glare.

As a reminder I have re used your text below to deal with each query / request in turn with my answers beneath. We have compiled an Addendum Report in response enclosed with this letter and references are detailed below on where to find the relevant requested information.

1. This chapter and its appendices do not differentiate between the shadows cast by the development and the existing built form beyond the northern bank of the River Crane i.e. the blue shade does not extend beyond the river bank.

    a. The shadows illustrated on the transient shadow assessment on drawings 2010554-23 to 25 show the effect of the proposed development solely. The shadows are continuous for each hourly interval, however where the shadow affects the River Crane and the amenity area within the development itself this has been hatched in solid blue. There are instances where the shadow projects beyond the River Crane such as 9am. The shadow here is demonstrated reaching the rear garden of 4 Cole Park Road whereby the shadow changes shade from solid blue to light grey.

    b. An assessment of the existing shadow can be seen in the appendices of the smaller scheme application 11/1443/FUL.

2. It is also noted that the shadow cast by the approved hotel adjoining Regal House to the south has not been shown or its implications on the station's plaza or development contained within the southern wing of Block B and a conclusion of negligible impact is made without demonstration.

a. The hotel adjoining Regal House has been included in the assessment, the shadow cast by this building is depicted in grey. This building will cause no permanent shadow effect to the station's plaza. There will be a slightly additional transient effect on the plaza from 7am – 10am, however the plaza will meet BRE criteria for permanent shadow.

3. There is no consideration within this chapter of the impact of the development on itself, i.e. levels of light and glare between Block A and B or comment on the impact on the new plaza and other public spaces proposed.

    a. A self-test daylight and sunlight assessment for this scheme submission was carried out on a sample of the worst case scenario units within the scheme and reported under the application 11/1443/FUL

    b. A solar glare assessment can be found with the Addendum report paragraphs 1.28, 1.29, 2.9 to 2.21, 3.6, 3.9 and Appendix 3.

4. No consideration has been given to the impact of daylight, sunlight and solar glare on the rooms within the approved hotel now under construction. It is not accepted that consideration should only be given primarily to residential properties.

    a. A full daylight and sunlight assessment has been carried out on this property; the results of which are detailed with the Addendum Report under titles 1-3 and Appendix 2.

    b. A solar glare assessment of the Regal Hotel is shown on test point 14 within Appendix 3 of the Addendum Report.

5. Within the chapter and associated appendices there is no 'skylight indicator chart' submitted to demonstrate the VSC figures set out in Appendix I.

    a. A sample VSC waldram for window 15 at fourth and fifth floors are contained within Appendix 2 of the Addendum Report showing existing and proposed waldram diagrams which generate the VSC figures.

6. Under paragraph 14.3.32 can clarification be given to what these loss values are and where these are?

    a. There are no exact higher tolerance loss values to work to other than applying common sense depending on the density of the environment the development site is in.

    b. With regards to the results it can be seen from the table 14-4 that all rooms will meet BRE criteria for daylight distribution therefore no higher tolerance levels are required in this instance. For the daylight VSC assessment (Table 14-3) there are 13 windows which experience a minor adverse impact and 2 which experience moderate adverse impact. If we applied a higher level of tolerance the 13 minor adverse windows would shift to a negligible impact and the 2 moderate adverse windows would shift to a minor adverse impact.

7. No difference has been made between primary and secondary windows tested for BRE compliance in the document or the tables submitted.

    a. For daylight assessments all windows have been assessed whether primary or secondary, for sunlight assessments only the primary window for each habitable living room has been assessed.

8. Paragraph 14.6.2 references no. 5 Cole Park Road although this property is not referred to elsewhere. Can you confirm that this is a typographical error?

    a. This is a typographical error; it should read 4 Cole Park Road.

9. Table 14.3 and 14.4 do not tally in terms of the number of windows tested. The title 'windows/rooms' is confusing and logically should table 14.4 refer to rooms solely?

    a. This has been corrected in the Addendum Report

10. The information on solar glare is currently being assessed and the London Borough of Richmond upon Thames reserves the right to offer further comment on this part of the chapter once this exercise has been completed.

    a. We have received the document 'REVIEW OF POTENTIAL SOLAR GLARE EFFECTS FROM NEW DEVELOPMENT, TWICKENHAM STATION' 1 July 2011 by Paul J Littlefair. Our Solar Glare analysis within the attached Addendum report has been undertaken base on the recommendations within titles 4 & 5 of this report.

I hope this satisfies the additional requirements for Chapter 14, if you have any queries regarding this please contact me.

Yours sincerely

Dan Wade
Associate
Rights of Light
Daylight & Sunlight
For and on behalf of Behan Partnership LLP

Email: dan@behanllp.co.uk
DDI: 01727 890940
Mobile: 07771 818113

Enc.

behan partnership LLP
chartered surveyors

EIA CHAPTER 14 ADDENDUM REPORT

Daylight/ Sunlight/ Solar Glare

of

Twickenham Station, London Road, Twickenham Application Ref: 11/1443/FUL

on behalf of

SOLUM REGENERATION

Revision Reference: Final
Reference No. 2010554
Date of Publication: 29 July 2011

First Floor Annexe
New Barnes Mill
Cottonmill Lane
St Albans
Hertfordshire
AL12HA

T: 01727 800075

www.behanllp.co.uk

Contents

Appendices

Appendix 1-	3D drawings	2011554-02-01 to 10
Appendix 2-	Daylight Distribution VSC, ADF & DD Results, Waldram Diagrams	2011554-02-11 to 15 – Regal Hotel
Appendix 3-	Solar Glare Analysis	2011554-03-01 to 04

.....

Prepared & Authorised by

Mark Behan BSc (Hons) MRICS

Date: 29 July 2010

1. Scope of Instructions & Brief

Introduction

1.1 Following feedback from Richmond Borough Council planning department regarding Chapter 14 of the ES statement, Solum Regeneration have instructed Behan Partnership LLP to prepare an addendum report to assess the daylight, and solar glare effect of the proposed scheme for the development of the site known as Twickenham Station Ref 11/1443/FUL on neighbouring properties previously not considered in the analysis. This addendum report covers the points raised by Jon Freer's (Assistant Director of Environment) letter 22nd June 2011, and his Detailed Comments on Environmental Statement. This report also considers the points raised by Paul J Littlefair in a recent document prepared in regard to 'Review Of Potential Solar Glare Effect From New Development, Twickenham Station' 1 July 2011.

1.2 The study has been carried out in accordance with the recommendations of the Building Research Establishment Report "Site Layout Planning for Daylight & Sunlight 1991" and the provisions of British Standard Code of Practice for Daylighting, BS8206 Part 2, 2008.

1.3 The result tables and drawings, which are attached at the rear, illustrate the results for the daylight and solar glare assessments.

Planning Policy Context

1.4 The section below reviews the existing national, regional and local planning policy relevant to daylight, sunlight and overshadowing.

National Legislation and Policy

1.5 There is no specific National Planning Policy relating to developments and their potential impacts on daylight, sunlight and overshadowing.

1.6 There is no general right to sunlight established in English law. The common law rules, statutory rules and procedures that exist are complex and complicated and no set criteria exist under which a right would be upheld.

1.7 A right to light can exist and will come into existence if it has been enjoyed for 20 years or more, granted by deed, or registered under the Rights to Light Act 1959. The right to light is a matter of property law rather than planning law.

The Regulatory Reform (Housing Assistance) (England and Wales) Order 2002

1.8 The Regulatory Reform Order (Ref. 9-1), which came into force on 6 June 2002, documents the statutory requirement for the adequate provision of lighting to housing. The order states:

9.1 "In assessing the severity and extent of defects in respect of natural and artificial lighting, regard may be had to the following standard, draft for development, code and specification for new building work, although failure to meet these would not, in itself, necessarily constitute grounds for unfitness.

(1) British Standard (BS) 8206: Lighting for buildings, Part 2: 2008 Code of practice for daylighting;

(2) CIBSE: Code for interior lighting 1994; and

(3) Site layout planning for daylight and sunlight: a guide to good practice, Building Research Establishment (BRE), 1991. Also: Site layout for sunlight and solar gain, BRE IP/92, and Site layout planning for daylight, BRE IP5/92."

Planning Policy Statement 1: Delivering Sustainable Communities (PPS1)

1.9 Paragraph 34 of Planning Policy Statement 1: Delivering Sustainable Communities (PPS1) (Ref. 9-2) advises that design should contribute positively to making places better for people.

Regional Planning Policy

1.10 There is no regional planning policy for the development specifically relevant to daylight, sunlight and overshadowing. English Heritage and the Commission for Architecture and the Built Environment have, however, produced guidance on the design of tall buildings in which reference is made to overshadowing.

Policy Guidelines

1.11 This study has been carried out in accordance with the recommendations of the Building Research Establishment Report "Site Layout Planning for Daylight & Sunlight 1991" and in accordance with the provisions of British Standard Code of Practice for Daylighting, BS8206 Part 2, 2008.

1.12 The London Borough of Richmond UDP confirms that the Council will normally have regard to the guidelines:-

UDP March 2005 - BLT 15

"DAYLIGHTING AND SUNLIGHTING

The Council will generally seek to ensure that the design and layout of buildings enables sufficient sunlight and daylight to penetrate into and between buildings, and that adjoining land or properties are protected.

The Council will be guided by the standards set out in Site Layout, Planning for Sunlight and Daylight, and in Sun on Ground Indicators (BRE 1991); or any standards replacing them, to ensure this."

1.13 The BRE Guide is intended for building designers and their clients, consultants and planning officials. The advice given is not mandatory and the Report should not be seen as a part 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 certain circumstances, the developer or planning authority may wish to use alternative target values.

1.14 Whilst technical analysis can be carried out in accordance with numerical guidelines and reported by comparison with those guidelines, the final assessment as to whether affected dwellings are left with acceptable amounts of daylight and sunlight is a matter of subjective opinion.

English Heritage/Commission for Architecture and the Built Environment Guidance on Tall Buildings, March 2003

1.15 Paragraph 4.6(vi) of this guidance (Ref. 9-3) recommends that consideration be given to:

9.2 *"the effect on the local environment, including microclimate, overshadowing, night time appearance, vehicle movements and the environment and those in the vicinity of the building."*

Reference Documents

1.16 There are two documents frequently referred to in planning guidance for daylight sunlight and overshadowing. These are the British Standard (BS) 8206-2:2008 Lighting for Buildings Part 2 Code of Practice for Daylighting (Ref. 9-5) and the Building Research Establishment (BRE) report Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (Ref. 9-6).

1.17 These documents describe the methodology by which daylight, sunlight and overshadowing can be assessed and provide guidance values.

METHODOLOGY

1.18 The BRE Report advises that daylight and sunlight levels should be assessed for the main habitable rooms of neighbouring residential properties. Habitable rooms in residential properties are defined as kitchens, living rooms and dining rooms. Bedrooms are less important as they are mainly occupied at night time. The Report also makes reference to other property types, which may be regarded as "sensitive receptors" such as schools, hospitals, hotels and hostels, small workshops and most offices.

Daylight

1.19 The BRE Guide states that:-

"If, for any part of the new development, the angle from the centre of the lowest affected window to the head of the new development is more than 25°, then a more detailed check is needed to find the loss of skylight to the existing buildings."

1.20 The BRE Guidelines propose several methods for calculating daylight. The 3 main methods predominantly used are those involving the measurement of the total amount of skylight available:-

- Vertical Sky Component (VSC)
- Average Daylight Factor (ADF)
- Daylight Distribution (DD) or No-Sky Line

i. The VSC calculation is a general test of potential for daylight to a building, measuring the light available on the outside plane of windows.

ii. The second recognised method of assessment for daylight is the Average Daylight Factor (ADF) calculation which assesses the quality and distribution of light within a room served by a window and takes into account the VSC value, the size and number of the windows and room and the use to which the room is put. The ADF is the effective proportion of sky visibility available as luminance within a room. Rather than simply assessing the external obstructions as seen from a window, as in the VSC

analysis, the ADF calculation takes the external sky visibility and incorporates it within a calculation that takes account of window size, number of windows, internal room surface area, glass transmittance and internal surface reflectance.

Where the analysis shows that the VSC results show values outside the BRE standards, we would then analyse the ADF results and this has been provided for completeness.

The ADF is calculated using the following formula:-

$$df = \frac{TA_w \theta}{A(1-R^2)} \%$$

Where:

- T is the diffuse visible transmittance of the glazing, including corrections for dirt on glass and any blinds or curtains. (For clean clear single glass, a value of 0.8 can be used)

- Aw is the net glazed area of the window (m^2)
- A is the total area of the room surfaces: ceiling, floor, walls, doors and windows (m^2)
- R is their average reflectance. For fairly light-coloured rooms a value of 0.5 can be taken
- Θ is the angle of visible sky in degrees derived from the vertical sky component

The BRE Report advises that, where supplementary electric lighting is available, the minimum standards of ADF that should be attained are 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.

The workings included in Appendix 4 identify the key data used for the ADF analysis and the results for the rooms, in comparison with the room use. The theta value in the calculation has been derived from the same VSC results also reported in this summary.

1.21 The ADF assesses actual light distribution within defined room areas, whereas the VSC considers potential light. British Standard 8206, Code of Practice for Daylighting recommends ADF values of 1% in bedrooms, 1.5% in living rooms and 2% in kitchens. For other uses, where it is expected that supplementary electric lighting will be used throughout the daytime,

such as in offices, the ADF value should be 2%. The Average Daylight Factor is a reliable daylight test. This is because the Average Daylight Factor test takes into account a range of variables, for example, the size of the window and whether the room has more than one window. These are important factors which affect the level of illumination within a room.

1.22 The third method, Daylight Distribution (DD), divides those areas of the working plane (838mm above floor level) which can receive direct skylight, from those which cannot. A room may be adversely affected if, following the development, the area of the working plane that can receive direct skylight is less than 0.8 times its former value.

1.23 At the time of the assessment, we were able to source detailed and accurate information available on the internal arrangements of the neighbouring properties adjacent to the site direct from Dexter Moren Architects who designed the Regal Hotel development.

1.24 The daylight assessment has been undertaken using all methods. All windows have been considered for each of these methods.

Sunlight

1.25 The BRE have produced sunlight templates for London, Manchester and Edinburgh, indicating the Annual probable Sunlight Hours (APSH) for these regions. The London template has been selected for this study as the London indicator template is the closest of the three available from BRE in terms of latitude.

1.26 Sunlight analysis is undertaken by measuring annual probable sunlight hours (APSH) for the main windows of rooms which face within 90° of due south. The maximum number of annual probable sunlight hours for the London orientation is 1,486 hours. The BRE guidelines propose that the appropriate date for undertaking a sunlight assessment is on 21st March, being the spring equinox. Calculations of both summer and winter availability are made with the winter analysis covering the period from the 21st September to 21st March. For residential accommodation, the main requirement for sunlight is in living rooms and it is regarded as less important in bedrooms and kitchens.

1.27 Due to the orientation of the windows assessed for daylight analysis within the Regal Hotel a Sunlight assessment has not been undertaken. This is because the windows which overlook the Twickenham Station development have a northern aspect therefore making the windows exempt from sunlight analysis.

Solar Glare

1.28 Solar glare principally occurs when the sun is low in the sky and dazzles the eye either directly or indirectly via a reflected surface. It is a highly localised and temporary effect dependent on the direction of the viewer is "looking, the position of the sun relative to the viewer and reflecting surface, plus localised weather conditions. The effect of Solar Glare, the reflected image of the sun on the glass façade of the Development was analysed at specific locations chosen on the basis that they are most likely to be significantly affected by any development generated glare. The locations previously assessed and reported are: -

- Test Point 1-3: Along London Road looking toward the development site.
- Test Point 4: On the railway platform

The additional locations assessed in accordance with Paul J Littlefair's recommendations and illustrated on drawing 2010554-03-01 within Appendix 3 are: -

- Test Point 5: Railway located West on the approach to Twickenham Station at drivers eye level.
- Test Point 6: Railway located East on the approach to Twickenham Station at drivers eye level.
- Test Point 7: At road junction of Arragon Road and London Road looking Northwest at drivers eye level.
- Test Point 8: At road junction of Whitton Road and London Road looking Southeast at drivers eye level.
- Test Point 9: On eastside pavement of London Road at junction of Whitton Road looking Southeast at pedestrian eye level.

- Test Point 10: On westside pavement of London Road at junction of Whitton Road looking Southeast at pedestrian eye level.
- Test Point 11: On proposed unit within the development on Block C south elevation looking southeast.
- Test Point 12: On proposed unit within the development on Block A northeast elevation looking northeast.
- Test Point 13: On neighbouring property 14 Mary's Terrace first floor north elevation looking northwest.
- Test Point 14: On proposed Regal Hotel development north elevation, fourth floor looking northwest.

1.29 The solar glare assessments have been carried out by reference to the Building Research Establishment (BRE) Information Paper "Solar dazzle reflected from sloping glazed facades" by P J Littlefair. The BRE paper presents a technique which can be used to predict solar reflection at the design stage. At the heart of the technique is the mathematical modelling of reflection from a sloping plane. For this assessment, the analysis was carried out using the 3D model of the Development and surrounding area and the specialist lighting software within AutoCAD to identify where, when and if any glare occurs and whether the glare is likely to create a safety issue to local pedestrian and vehicular daytime traffic. The solar glare template drawing is contained in Appendix 3.

Daylight, Sunlight and Solar Glare

1.30 The BRE Guidance is summarised in the below table and this has been used as the basis for the criteria used in the assessment of daylight, sunlight and solar glare impacts.

Test:	Building Research Establishment (BRE) Criteria:
Daylight	A window may be adversely affected if the vertical sky component **(VSC)** measured at the centre of the window is less than 27% and less than 0.8 times its former value. A room may be adversely affected if the average daylight factor **(ADF)** is less than 1% for a bedroom, 1.5% for a living room or 2% for a kitchen. For offices a minimum figure of 2% is required. Daylight distribution **(DD)**; a room may be adversely affected if, following the development, the area of the working plane that can receive direct skylight is less than 0.5* times its former value.
Sunlight	A window may be adversely affected if a point at the centre of the window receives in the year less than 25% of the annual probable sunlight hours including at least 5% of the annual probable sunlight hours during the winter months (21 September to 21 March) and less than 0.8 times its former sunlight hours during either period.
Solar Glare	There are no specific standards setting out what constitutes an acceptable level of solar glare.
*	An urban setting figure

1.31 This BRE guidance has been used to generate significance criteria that have been used to assess the impact of the Development. For VSC criteria, they are:

- Windows experiencing less than 20% reduction represent negligible to minor beneficial impacts;
- Windows experiencing between 20 and 29.9% reduction represent minor adverse impacts;

- Windows experiencing between 30 and 39.9% reduction represent moderate adverse impacts; and
- Windows experiencing greater than 40% reduction represents major adverse impacts.

1.32 A room within a neighbouring residential property is considered to suffer a materially adverse impact if, as a result of development proposals, the room fails to meet the minimum BRE standard for any of the three assessments. It should be noted that VSC results which can only be viewed as "…a general test of potential for daylight." The BRE Guide intends this assessment to be used as a tool to aid window positioning during the building design process. When testing neighbouring properties it should, be accompanied by an assessment of internal daylight distribution by calculation of the Daylight Distribution (DD). It is noted that the DD form of assessment is an accurate indication of the distribution of light within a room and takes the room and window dimensions into account.

Baseline Conditions

1.33 An analysis of the impact of the existing buildings (the baseline conditions) against which to compare any potential impact arising from the development has been undertaken based on the survey information provided by EWL Surveys and the information provided by Dexter Moren Architects on the Regal Hotel.

1.34 An analysis of the existing daylight levels enjoyed by the proposed Regal Hotel bedrooms been undertaken in order to provide a baseline against which the impacts arising from the proposed development can be assessed. The full results are confirmed in the tables appended at Appendix 2.

1.35 An analysis of the existing solar glare has not been undertaken as there are no specific requirements for significance criteria to compare to.

2. Results – Proposed Development

Daylight

2.1 The results of the VSC, DD and ADF analysis on the relevant overlooking windows are presented in the respective table at Appendix 2.

The findings may be summarised as follows.

Regal Hotel

VSC

2.2 The VSC analysis for Regal Hotel demonstrates that of 88 windows assessed 23 will automatically meet BRE criteria, 5 windows will experience a minor adverse impact, and 4 windows will experience a moderate adverse impact with 56 windows experiencing a substantial impact as shown in table 2.1 below. A sample of VSC Waldram templates can be found in Appendix 2 for windows 15 on the 4th and 5th floor.

Table 2.1 Number of Windows Experiencing Negligible and Adverse Daylight Impacts as a Result of the Development

Address	Total Number of Windows Tested	Windows Meeting BRE Guidelines for VSC	Number of Windows Experiencing Adverse Impacts			
			<20% reduction (negligible impact)	20-29.9% reduction (minor adverse impact)	30-39.9% reduction (moderate adverse impact	>40% reduction (major adverse impact)
Regal Hotel	88	23	23	5	4	56

ADF

2.3 The ADF analysis for Regal Hotel demonstrates that of 86 Hotel bedrooms assessed 35 will automatically meet BRE criteria, 17 rooms will experience a minor adverse impact, and 19 rooms will experience a moderate adverse impact with 15 rooms experiencing a substantial impact as shown in table 2.2 below.

2.4 Particular attention should be drawn to the baseline figures for VSC and ADF, considering the current excellent existing sky visibility as shown in the VSC figures they are not converted to what one would expect as high ADF room value. The existing figures are all within 1% – 2% which signifies that window sizes within the development are marginal to just ensure BRE compliance. The Hotel window design does not take into consideration potential future reduction in sky visibility caused by a neighbouring development and therefore is considered to be a "bad neighbour". This adds additional constraint to any neighbouring development.

Table 2.2 Number of Hotel bedrooms Experiencing Negligible and Adverse Daylight Impacts as a Result of the Development

Address	Total Number of Hotel bedrooms Tested	Hotel bedrooms Meeting BRE Guidelines for ADF	Number of Hotel bedrooms Experiencing Adverse Impacts			
			>1% reduction (negligible impact)	>0.66-1% reduction (minor adverse impact)	>0.33 - 0.66% reduction (moderate adverse impact	<0.32% reduction (major adverse impact)
Regal Hotel	86	35	35	17	19	15

Daylight Distribution (DD)

2.5 With the Dexter Moren Architects drawings it was possible to produce a detailed study and attached are the resultant drawings and tables at Appendix 2.

2.6 The Daylight Distribution drawings show a visual representation of the light contour at working plane height (838mm) within the room for both existing and proposed conditions.

2.7 The daylight distribution analysis for Regal Hotel demonstrates that of 86 Hotel bedrooms assessed 35 will automatically meet BRE criteria, 4 rooms will experience a minor adverse impact, and 11 rooms will experience a moderate adverse impact with 36 rooms experiencing a substantial impact as shown in table 2.3 below.

Table 2.3 Number of Hotel bedrooms Experiencing Negligible and Adverse Daylight Impacts as a Result of the Development

Address	Total Number Of Hotel Bedrooms Tested	Hotel Bedrooms Meeting BRE Guidelines for DD @ >50%	Number of Hotel bedrooms/Windows Experiencing Adverse Impacts			
			<20% reduction (negligible impact)	20-29.9% reduction (minor adverse impact)	30-39.9% reduction (moderate adverse impact	>40% reduction (major adverse impact)
Regal Hotel	86	35	35	4	11	36

2.8 The overall daylight results show that whilst more windows will experience an impact on the sky visibility (VSC) the light penetration (ADF & DD) into the rooms give better overall results. However the hotel bedrooms assessed should be considered non habitable in that occupants will only be using the room for a temporary period. The requirement for light into bedrooms is less than other residential habitable rooms notwithstanding that the hotel bedrooms will be artificially lit.

Solar Glare

2.9 The results of the Solar Glare analysis are presented in the drawings contained within Appendix 3 drawing numbers 2010554-03-01to 04.

2.10 On each solar glare template a colour system has been employed to show the particular elevation which is capable of reflective glare to give an easier understanding, this is highlighted within the legend on each drawing. Building A west and south elevations are shown as orange and its north elevation shown as magenta. Building B is shown as yellow on the west and south elevations and red on the east elevation. Building C is also shown as Red

on the south elevation. The description of each glare effect at the different test points are shown below, for British Summer Time + 1 hour. Test points 1 – 4 were covered in the previous report.

Test Point 5

2.11 This location is to test for dazzle received by a train driver on the western approach to Twickenham Station. There will be very limited glare impacts at this position; reflection occurs in two months only November and January between 8:20 am to 8:40am due to the south elevation of Building A and 15:15 to 15:45 due to the west elevation of Building B. Therefore the reflected glare is classed as negligible.

Test Point 6

2.12 This location is to test for dazzle received by a train driver on the eastern approach to Twickenham Station. There will be no glare impacts at this position despite the mathematical calculation showing a reflected facade, due to the geographic location the sun path will not cause any glare. Therefore the reflected glare is classed as negligible.

Test Point 7

2.13 Point 7 tests reflection dazzling a vehicle driving NW up London Road through the junction of Arragon Road. There will be limited intermittent instances of glare at this position: reflection occurs in November and January for a period of 5mins at 8:15am and 8:25am, Reflection occurs in December from sunrise to 9:30am due to the south elevation of Building B. Reflection occurs in December from 14:30 till dusk due to the south elevation of Building A. Therefore the reflected glare is classed as negligible.

Test Point 8

2.14 Point 8 tests reflection dazzling a vehicle driving SE down London Road through the junction of Whitton Road. There will be limited intermittent instances of glare at this position: reflection occurs in April and August for a period of 10mins at sunrise approx 5:45am, May and July for a period of 10mins at sunrise approx 5:00am, June Sunrise for 10mins, due to the north elevations of Building A. Reflection will also occur from Building A west elevation from November through to January for 10 -15mins from 9:45am. The west elevation of Building B will cause reflection intermittently in the months of February, March, September,

October between the hours of 16:00 and 17:15. Therefore the reflected glare is classed as negligible.

Test Point 9

2.15 Point 9 tests reflection dazzling a pedestrian walking SE down London Road's eastern pavement through the junction of Whitton Road. There will be limited intermittent instances of glare at this position: reflection occurs in April and August for a period of 10mins at sunrise approx 5:45am, May and July for a period of 10mins at sunrise approx 5:00am, June Sunrise for 10mins, due to the north elevations of Building A. Reflection will also occur from Building A west elevation from November through to January for 10 -15mins from 9:40am. The west elevation of Building B will cause reflection intermittently in the months of February, March, September, October between the hours of 16:00 and 17:15. Therefore the reflected glare is classed as negligible.

Test Point 10

2.16 Point 10 tests reflection dazzling a pedestrian walking SE down London Road's western pavement through the junction of Whitton Road. There will be limited intermittent instances of glare at this position: reflection occurs in March and September for a period of 10mins at sunrise approx 6:30am, April and August sunrise approx 6:00am and, May through to July for 10mins from 5:30am, due to the north elevations of Building A. Reflection will also occur from Building A west elevation in December for 25mins from 10:20am. The west elevation of Building B will cause reflection intermittently in the months of March and September between the hours of 16:50 and 17:45. Therefore the reflected glare is classed as negligible.

Test Point 11

2.17 Point 11 assesses the proposed units within the development on Block C south elevation looking southeast. The exact location can be found in the viewport to bottom right of the solar glare template. There will be instances of glare at this position: reflection occurs in the morning between the summer months of February through to October from sunrise until 8:30am this is due to the east elevations of Building B. Therefore the reflected glare is classed as negligible to minor adverse.

Test Point 12

2.18 Point 12 assesses the proposed unit within the development on Block A northeast elevation looking northeast. The exact location can be found in the viewport to bottom right of the solar glare template. There will be instances of glare at this position: reflection occurs in the afternoon between the winter months of October through to February from 11:30am until 16:30pm this is due to the west elevations of Building B. Therefore the reflected glare is classed as minor adverse.

Test Point 13

2.19 Point 13 assesses the neighbouring property 14 Mary's Terrace first floor north elevation looking northwest. There will be very limited glare impacts at this position; reflection occurs in the months of March and September for 10mins between the hours of 6:30 am to 7:00am due to the east elevation of Building B and 9:30am to 10:30am in the months November through to January due to the south elevation of Building C. Therefore the reflected glare is classed as negligible.

Test Point 14

2.20 Point 14 assesses the neighbouring proposed Regal Hotel development fourth floor north elevation looking northwest. There will be a varied degree of glare impacts at this position; reflection occurs in the months of February to April and August to October from sunrise until 8:30am, May through to July from 6:30am to 10:30am. In the winter months from August to April from 10:30am to 11:20am and then 13:30 to 16:20 all due to the south elevation and recessed elevations of Building B. In its crude form the reflected glare impact is classed as moderate adverse. However if the glazed area of the elevation is factored into the solar glare analysis at approximately 60% and other mitigation measures are employed such as Solar absorbent glass the overall impact would be considered to be minor adverse.

2.21 The technical analysis on the recommended points surrounding the development by Paul J Littlefair show that for the majority of the year there would be a negligible impact from solar glare. The nature of the proposed glazed cladding does mean that reflected solar glare would be unavoidable at certain times of the day and at certain times of the year assuming that there are actually clear skies at these times to allow the sun to reflect off the building

facades. The analysis shows, however, that at worse this would be a highly localised minor adverse impact lasting only a few hours at any one time.

2.22 The solar glare analysis reveals that there is a negligible / minor adverse impact from daytime solar glare but this is not considered to be detrimental to the safe movement around the neighbouring roads, railways, building occupants and pavements surrounding the development.

3 Conclusion

3.1 The site is situated in the London Borough of Richmond upon Thames and is in close proximity to the adjacent properties surrounding the development.

3.2 Richmond Borough Council planning department have requested that additional studies are carried out in accordance to Regulation 19 (1) and 19 (10) of the Town and Country Planning (Environmental Assessment) (England and Wales) Regulations 1999 in relation to planning application ref 11/1443/FUL. This relates to the additional assessment for daylight quality of the proposed neighbouring development Regal Hotel which is yet to be built. This is an unusual request considering the hotel is a commercial property and Behan Partnership were unaware why this property was considered a sensitive receptor.

3.3 To assess the development's potential impact on daylight and sunlight neighbouring properties a baseline assessment has been undertaken. The main methods of assessment included the Vertical Sky Component (VSC) and No-sky line/daylight distribution (DD) method for daylight and sunlight analysis using the template drawings provide by the Building Research Establishment.

3.4 The daylight results show that approximately 40% of the proposed Hotel Bedrooms assessed will meet BRE criteria for DD and ADF with the remaining rooms falling short, these bedrooms will experience a range of results from Minor adverse to substantial adverse. However the Regal Hotel windows have been designed as such to just meet BRE criteria for ADF in the baseline scenario which therefore increases the constraint this has on any neighbouring

development. The Regal Hotel is therefore considered to be a "bad neighbour" in terms of daylight constraints.

3.5 The sunlight assessment was not required due to the northern aspect of the overlooking windows on the proposed Regal Hotel development.

3.6 Following advice from Paul J Littlefair, Richmond Borough Council planners have requested additional points are tested for glare surrounding the development. Therefore eight additional points have been assessed at positions recommended within Paul J Littlefair's 'Review Of Potential Solar Glare Effects From New Development, Twickenham Station' 1 July 2011. The test point positions are detailed on paragraph 1.28.

3.7 The majority of the test points are positioned further away from the development where the glare effect is reduced. Whilst all ten additional positions will experience instances of glare they will be for limited periods and the overall effect is considered to range from negligible to minor adverse if mitigation measures such as the use of Solar Absorbent glass at key locations within the development.

3.8 Whilst this study reveals that there will be a reduction in daylight to the Regal Hotel it is considered that this is a commercial development containing temporary residence which is yet to be implemented and conventionally not assessed within daylight and sunlight scope of work. The hotel bedrooms will be artificially lit which will ensure that where there are any shortfalls in BRE criteria will still be adequately lit.

3.9 The Solar Glare analysis demonstrates that there can be continued safe passage and movement for pedestrians, road users, rail drivers and neighbouring occupants surrounding the completed Twickenham Station development.

Mark Behan BSc (Hons) MRICS
Chartered Building Surveyor

APPENDIX 1

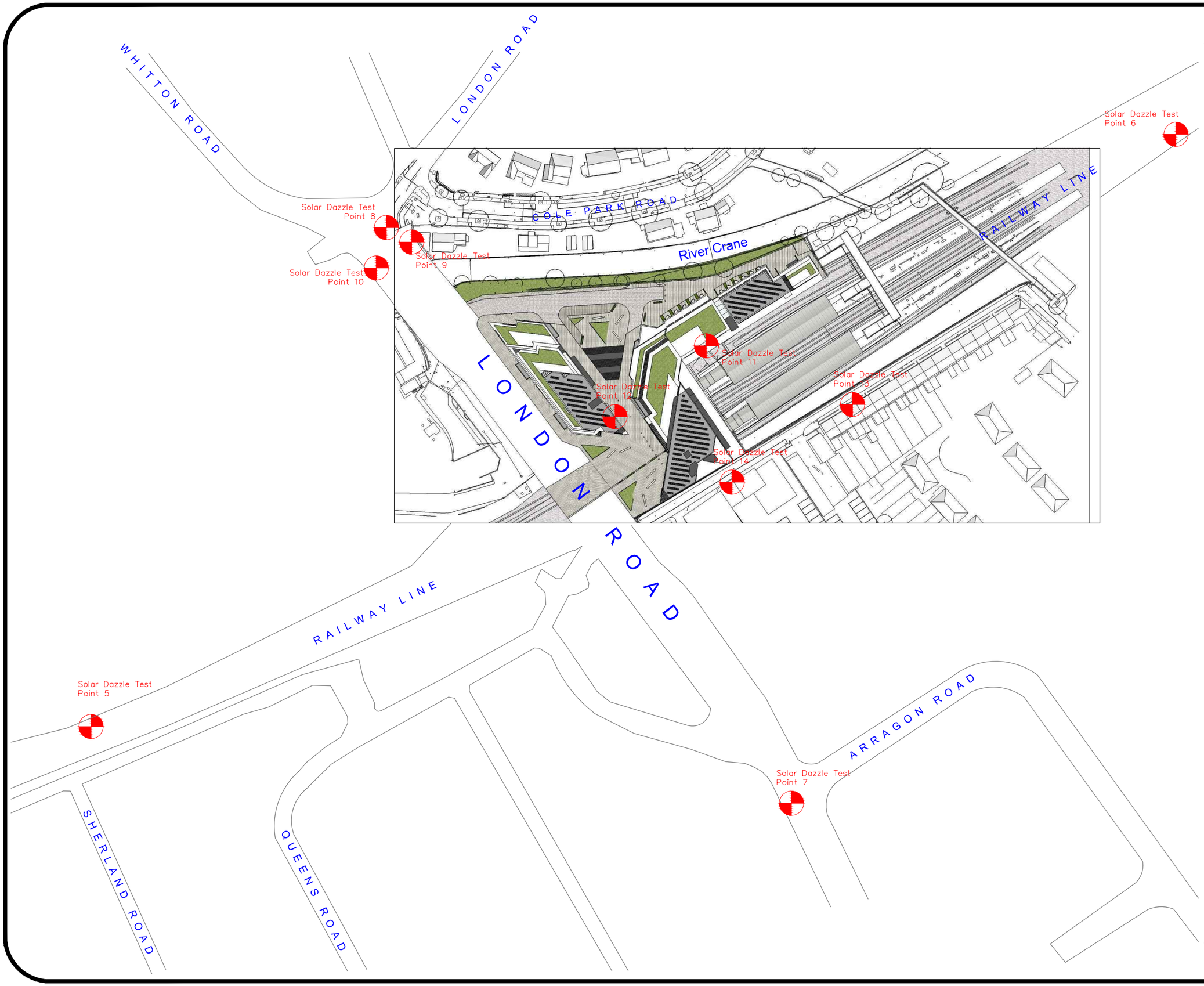
3D Drawings
2011554-02-01 to 10

APPENDIX 2

VSC, ADF & DD Results
2011554-02-11 to 15 – Regal Hotel
Waldram Diagrams

APPENDIX 3

Solar Glare Assessment
2011554-03-01 to 04



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

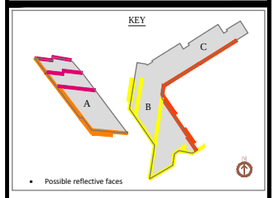
EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

KEY



- Possible reflective faces

No.	Revision/Issue	Date

behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

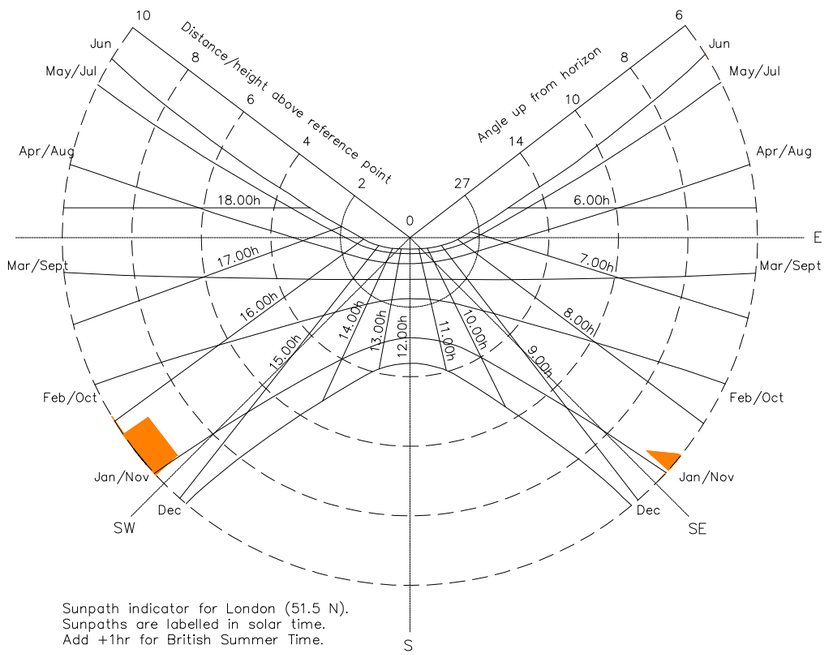
Drawing Description
SOLAR DAZZLE
ANALYSIS

Project Reference
2010554

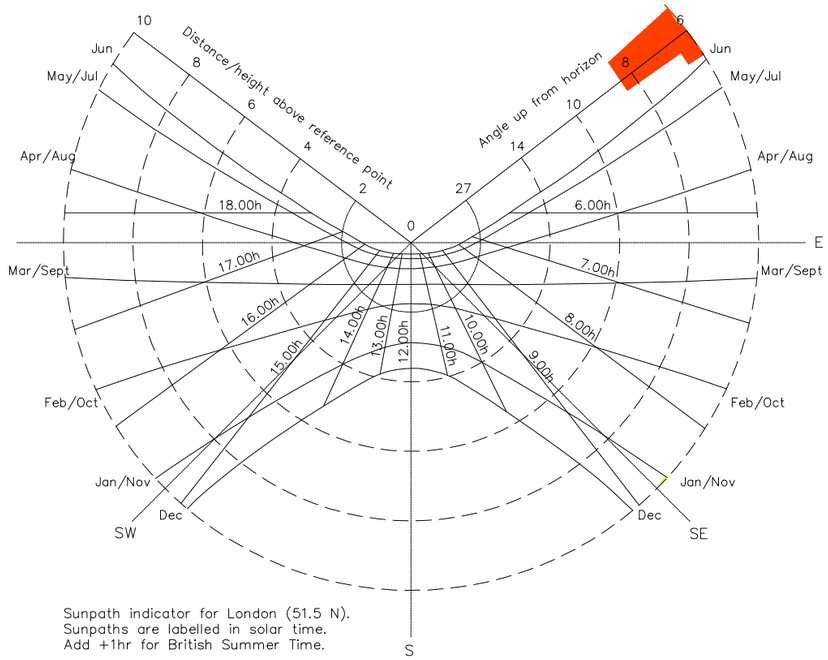
Date
27/07/2011

Scale
NTS

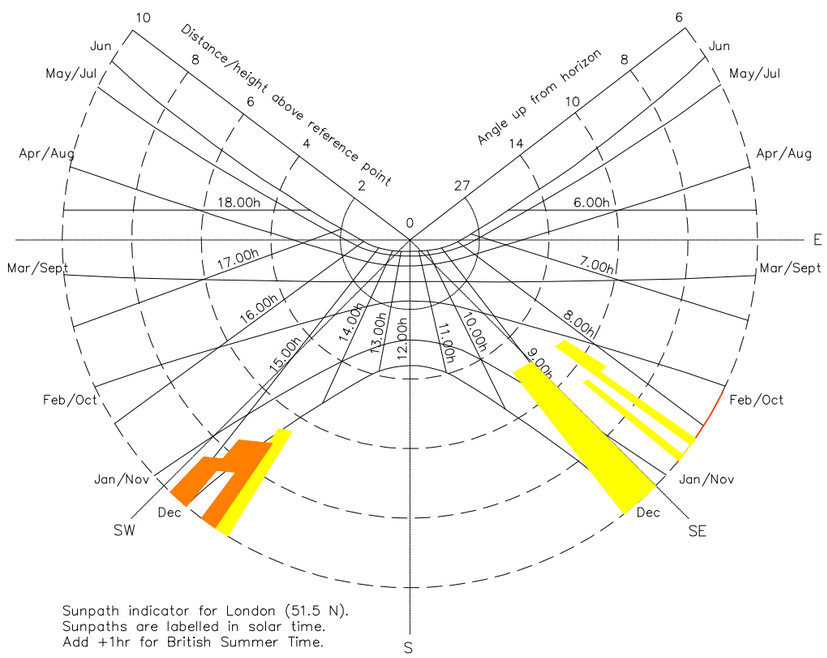
Drawing Sheet No
2010554-03-01



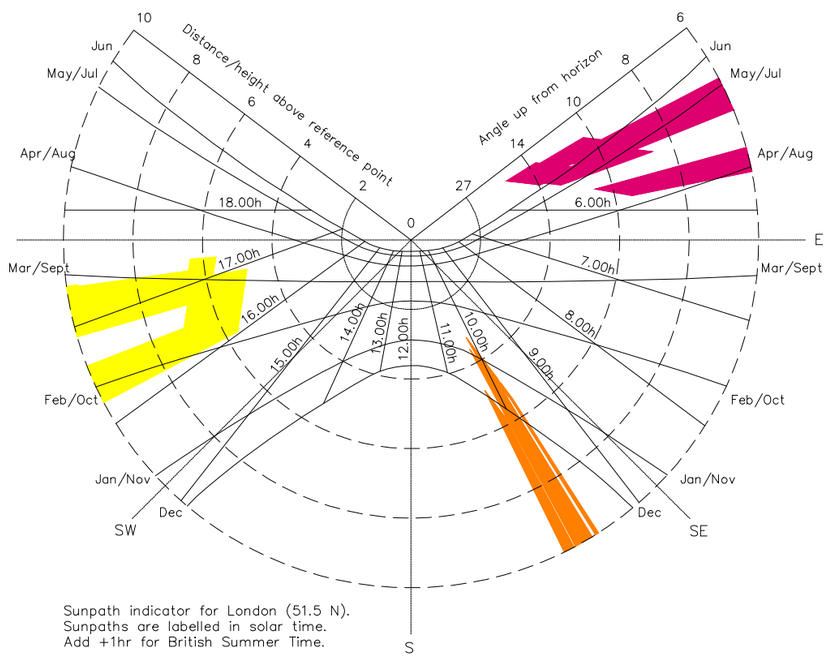
Solar Dazzle Test Point 5 (1.23m above platform)



Solar Dazzle Test Point 6 (1.23m above platform)



Solar Dazzle Test Point 7 (1.2m above road)



Solar Dazzle Test Point 8 (1.2m above road)

Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

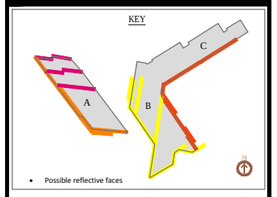
EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

KEY



- Possible reflective faces

NOTES

The Sun path diagram shows the suns angles that may cause dazzle where unobstructed.

No.	Revision/Issue	Date

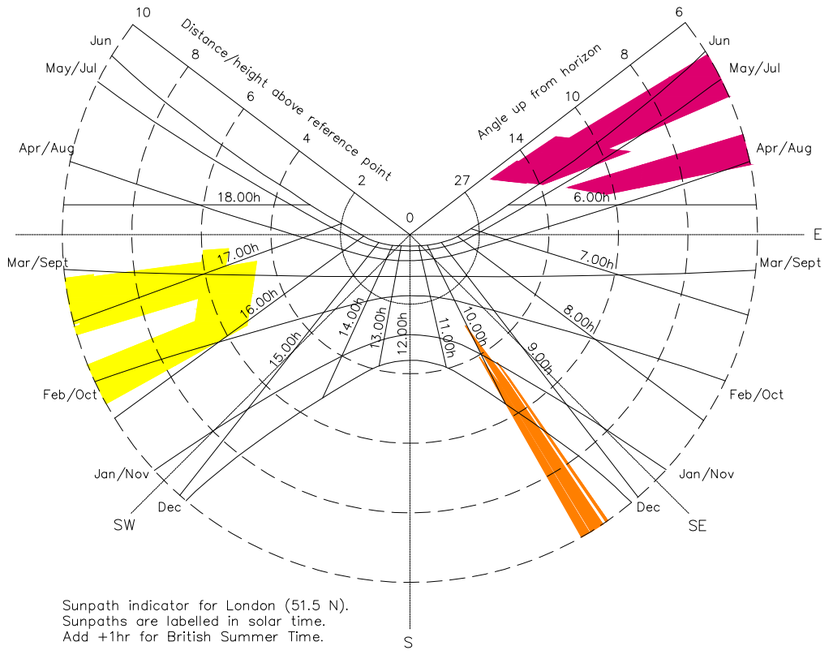
behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

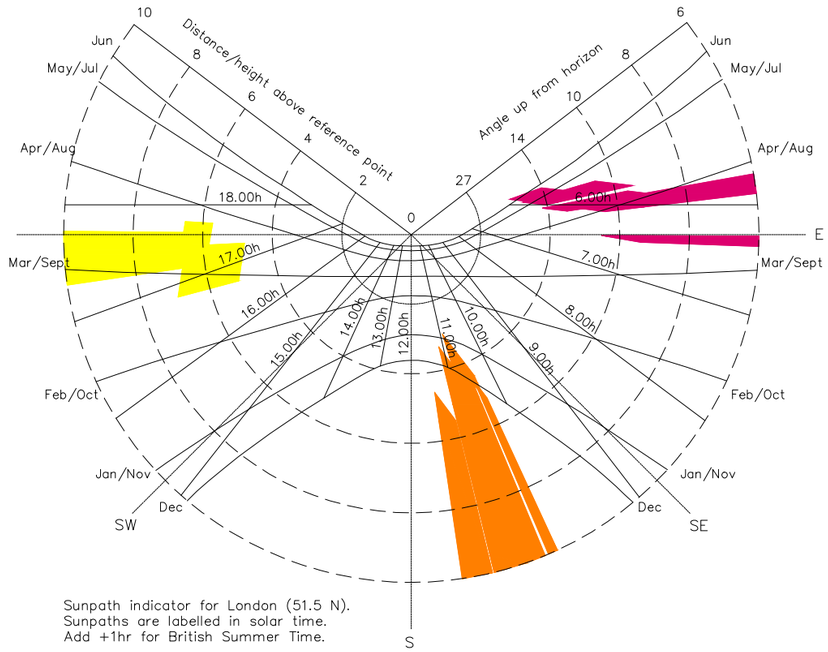
Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

Drawing Description
SOLAR DAZZLE ANALYSIS
Sun Path Diagrams for spot locations showing areas where dazzle may occur

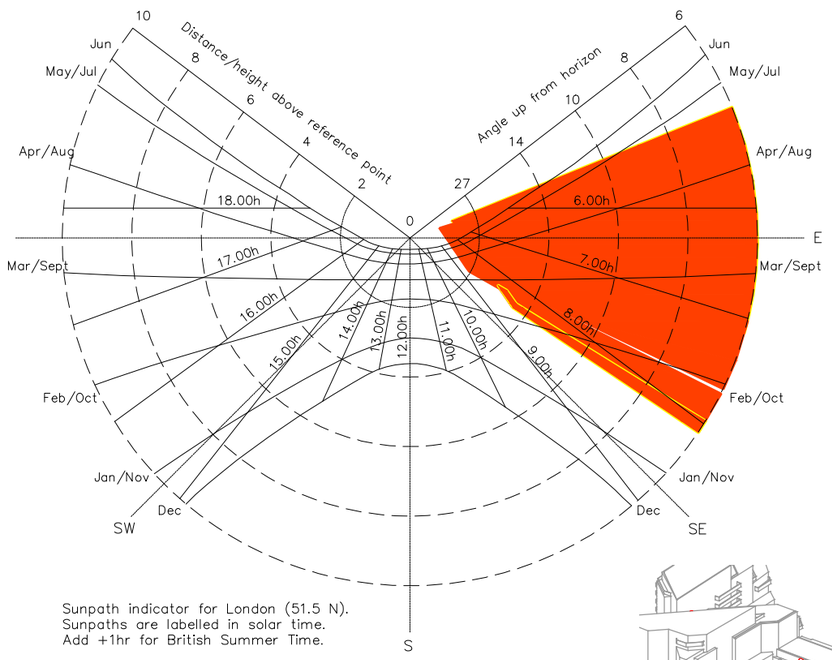
Project Reference: 2010554
Date: 27/07/2011
Scale: NTS
Drawing Sheet No: 2010554-03-02

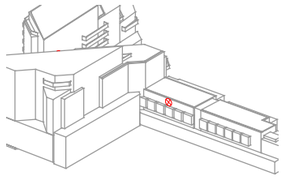


Solar Dazzle Test Point 9 (1.7m above pavement)

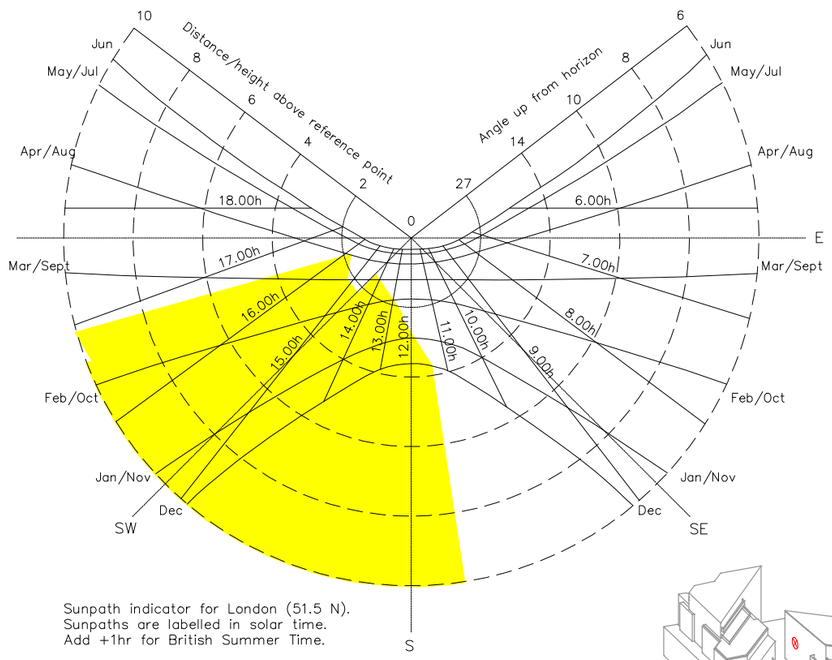


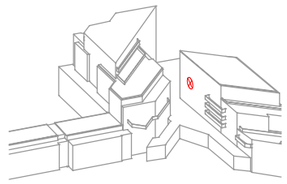
Solar Dazzle Test Point 10 (1.7m above pavement)





Solar Dazzle Test Point 11 (Block C)





Solar Dazzle Test Point 12 (Block A)

Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

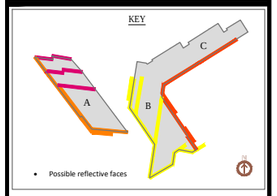
EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

KEY



NOTES

The Sun path diagram shows the suns angles that may cause dazzle where unobstructed.

No.	Revision/Issue	Date

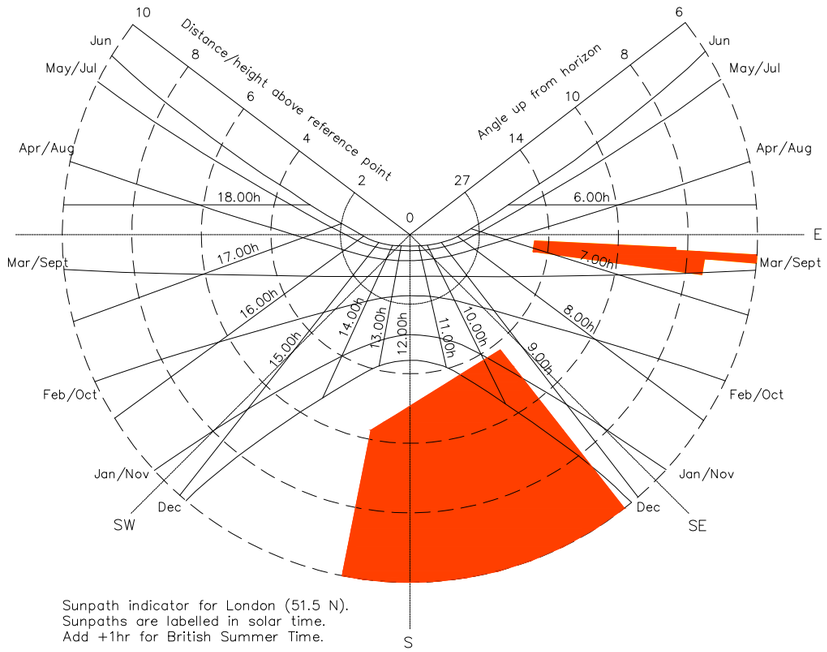
behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

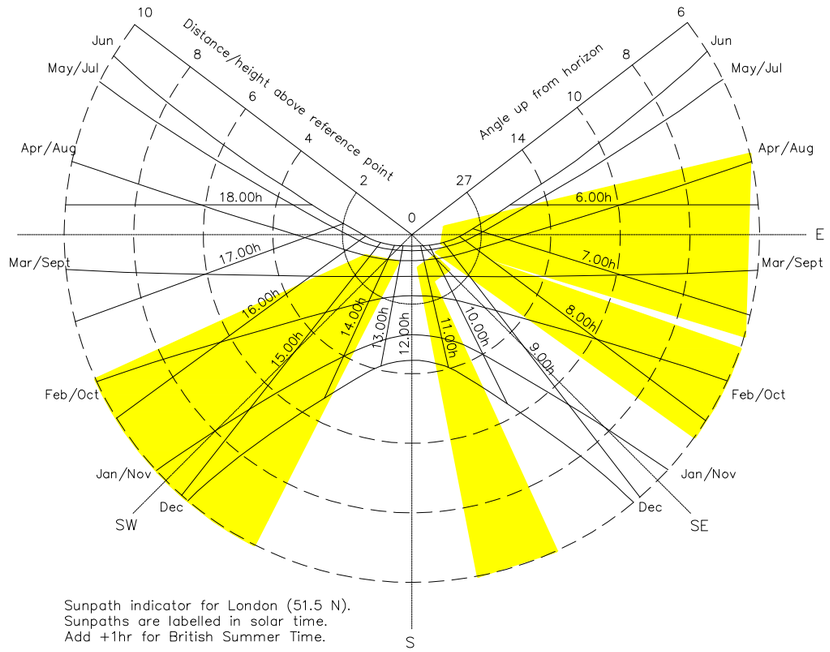
Drawing Description
SOLAR DAZZLE ANALYSIS
Sun Path Diagrams for spot locations showing areas where dazzle may occur

Project Reference: 2010554
Date: 27/07/2011
Scale: NTS
Drawing Sheet No: 2010554-03-03



Sunpath indicator for London (51.5 N).
Sunpaths are labelled in solar time.
Add +1hr for British Summer Time.

Solar Dazzle Test Point 13 1st Floor No.14 Mary's Terrace



Sunpath indicator for London (51.5 N).
Sunpaths are labelled in solar time.
Add +1hr for British Summer Time.

Solar Dazzle Test Point 14 4th Floor Regal Hotel

Sources

ANALYSIS

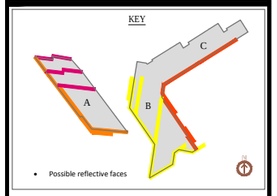
PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL



NOTES

The Sun path diagram shows the suns angles that may cause dazzle where unobstructed.

No.	Revision/Issue	Date

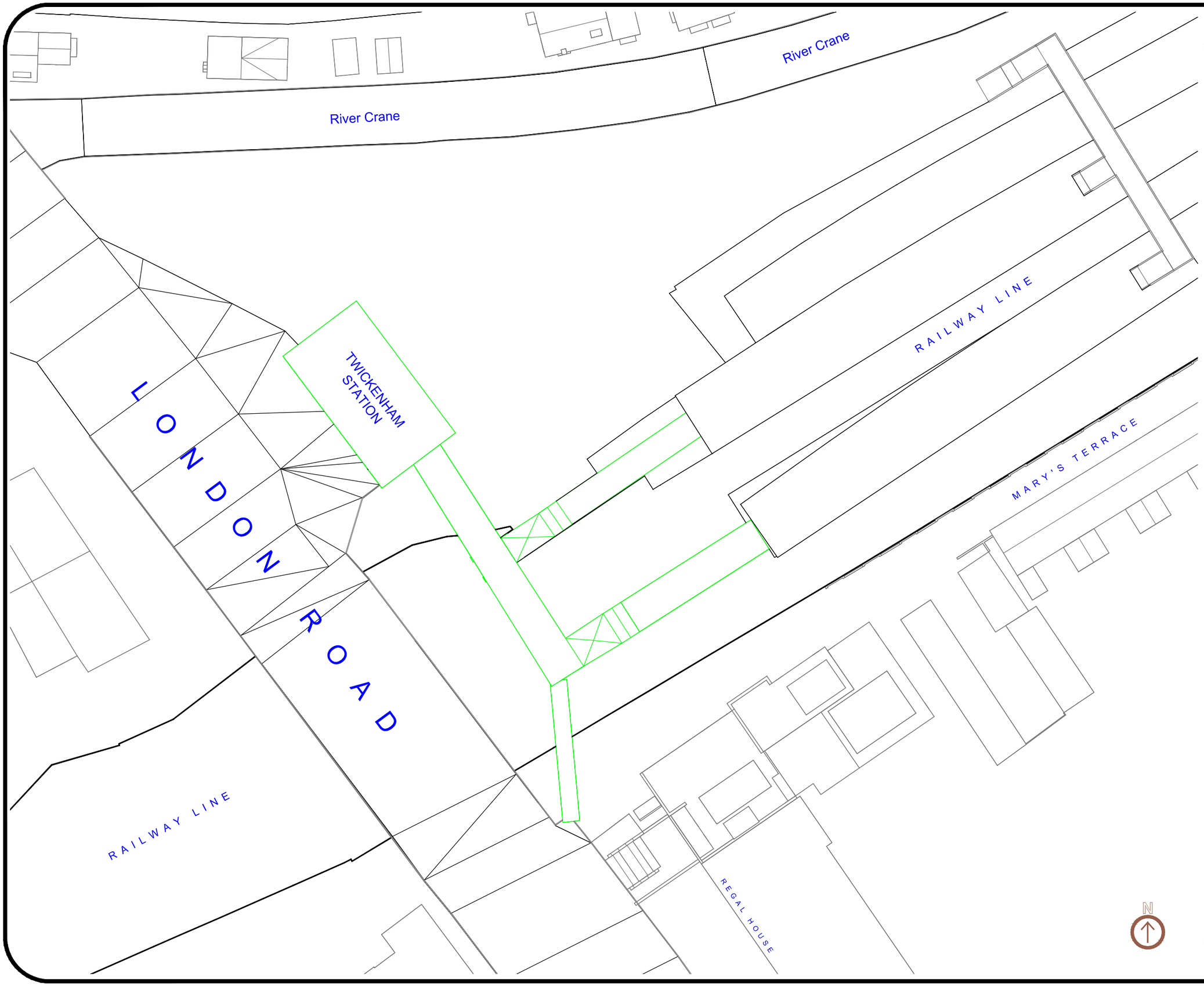
behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

Drawing Description
SOLAR DAZZLE ANALYSIS
Sun Path Diagrams for spot locations showing areas where dazzle may occur

Project Reference: 2010554
Date: 27/07/2011
Scale: NTS
Drawing Sheet No: 2010554-03-04



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

LEGEND

No.	Revision/Issue	Date

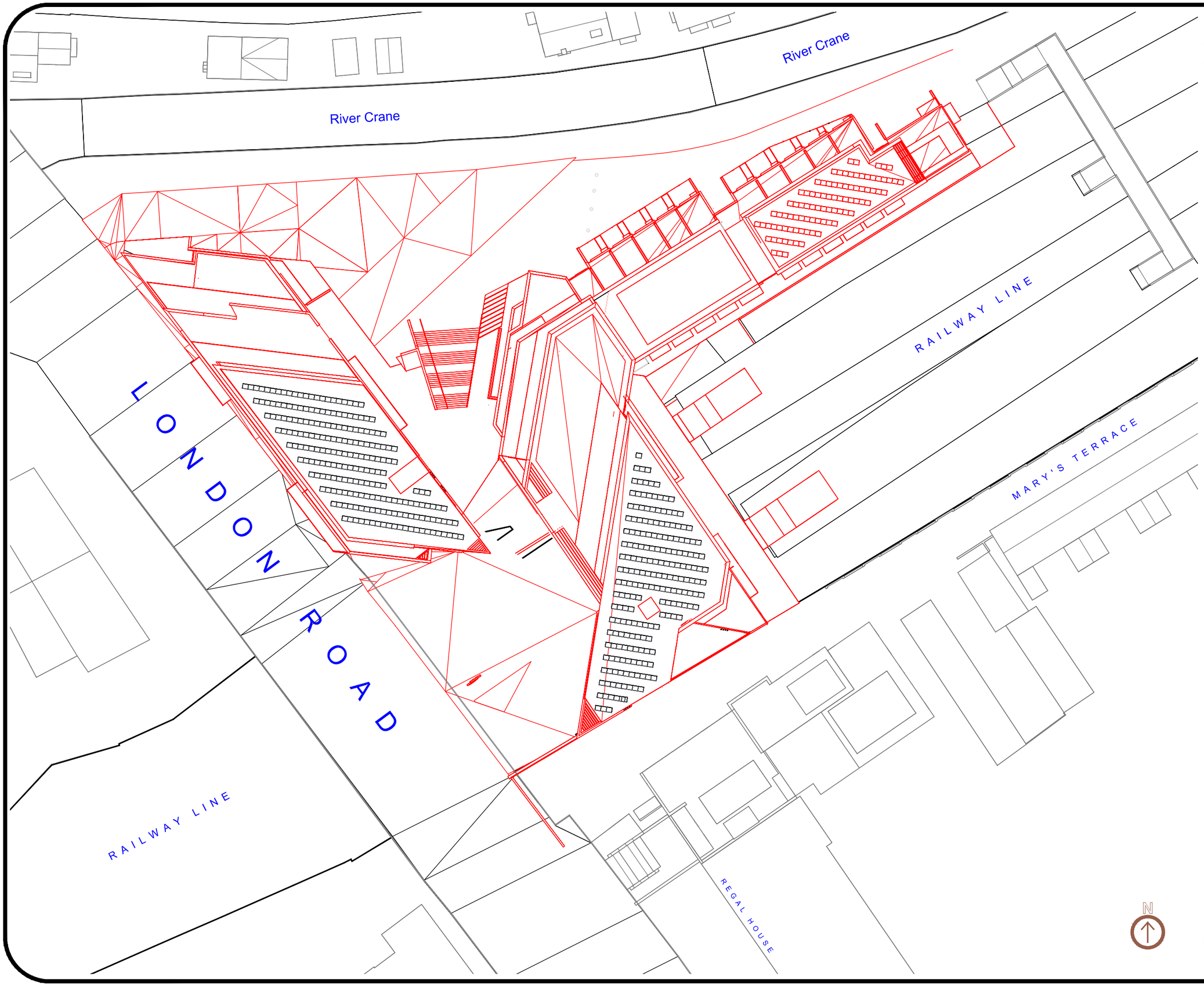
behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

Drawing Description
SITE PLAN
EXISTING BUILDINGS
The Regal Hotel

Project Reference	Drawing Sheet No
2010554	2010554-02-01
Date: 22/07/2011	
Scale: NTS	



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

LEGEND

No.	Revision/Issue	Date

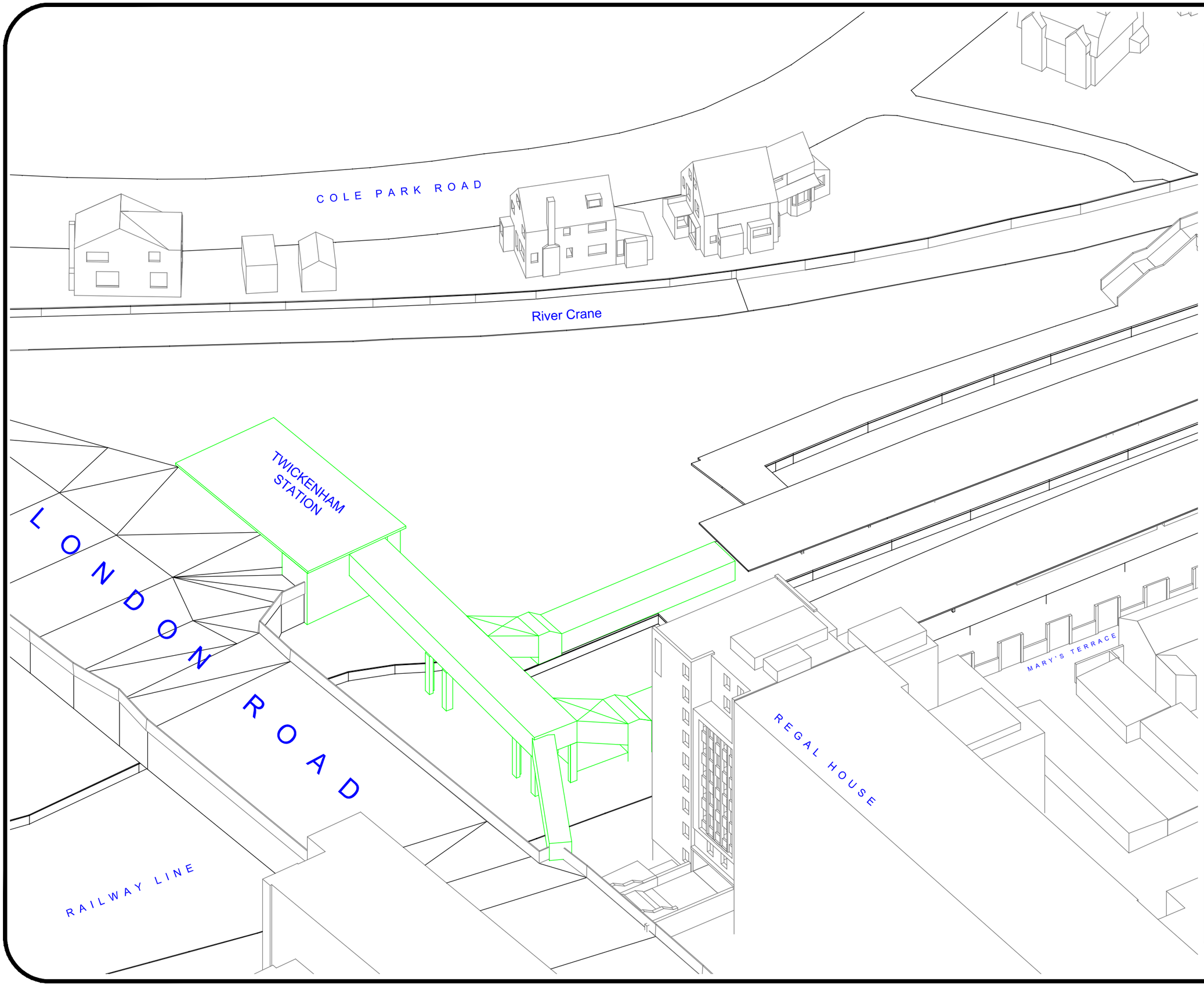
behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

Drawing Description
SITE PLAN
PROPOSED BUILDINGS
The Regal Hotel

Project Reference	Drawing Sheet No
2010554	2010554-02-02
Date: 22/07/2011	
Scale: NTS	



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

LEGEND

No.	Revision/Issue	Date

behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

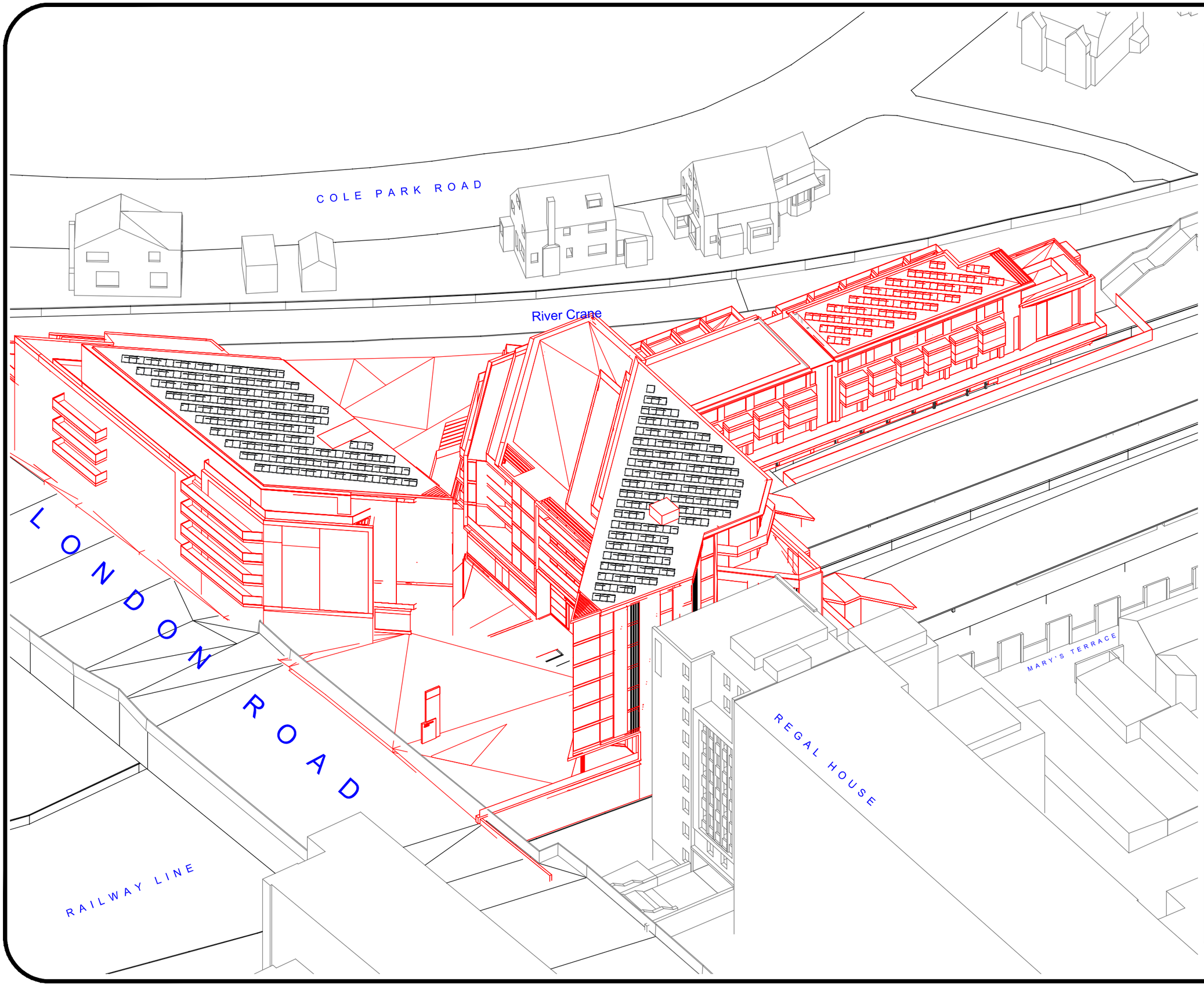
Drawing Description
EXISTING 3D VIEW
LOOKING NORTH
The Regal Hotel

Project Reference
2010554

Date
22/07/2011

Scale
NTS

Drawing Sheet No
2010554-02-03



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

LEGEND

No.	Revision/Issue	Date

behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

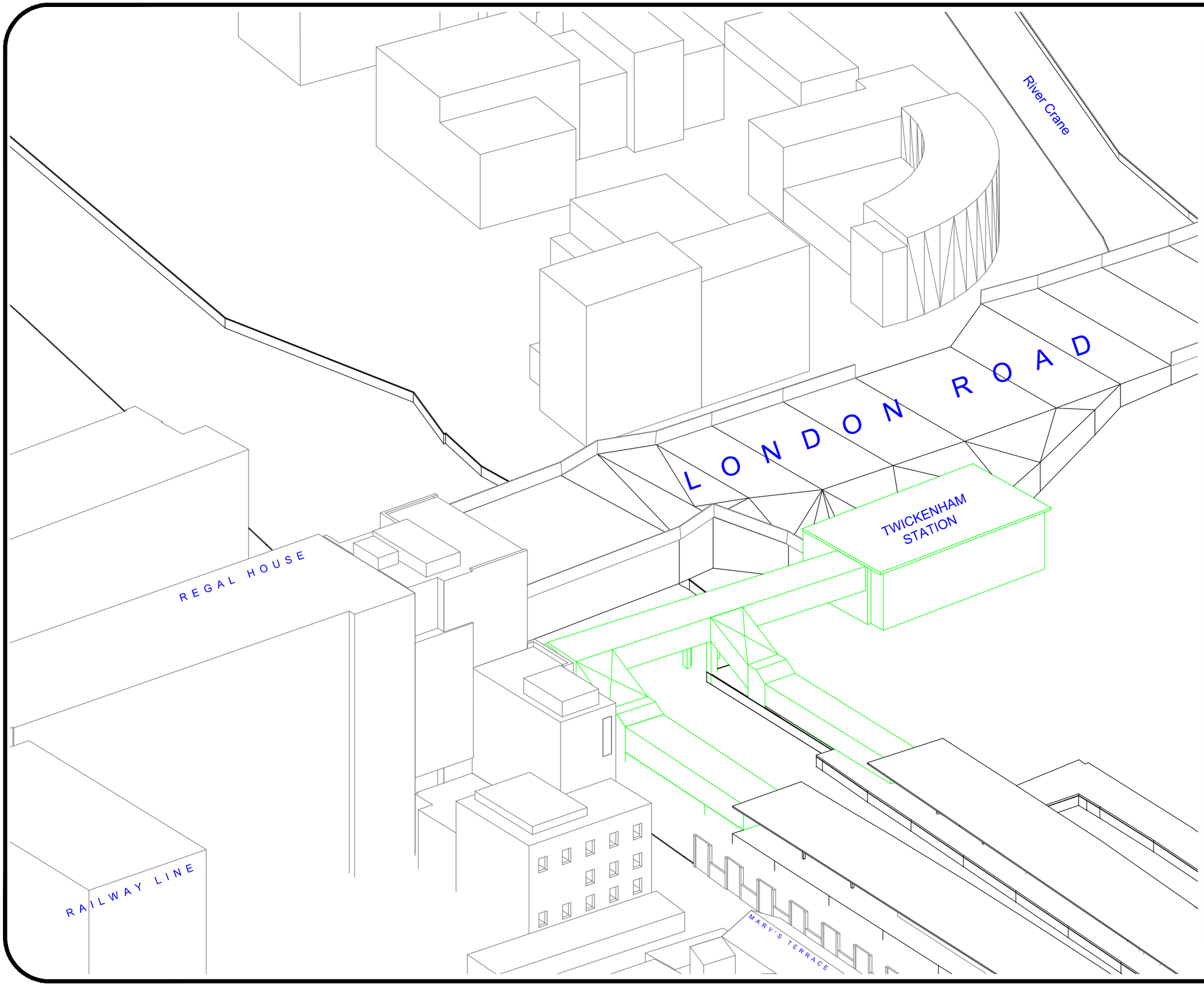
Drawing Description
PROPOSED 3D VIEW
LOOKING NORTH
The Regal Hotel

Project Reference
2010554

Date
22/07/2011

Scale
NTS

Drawing Sheet No
2010554-02-04



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

LEGEND

No.	Revision/Issue	Date

behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

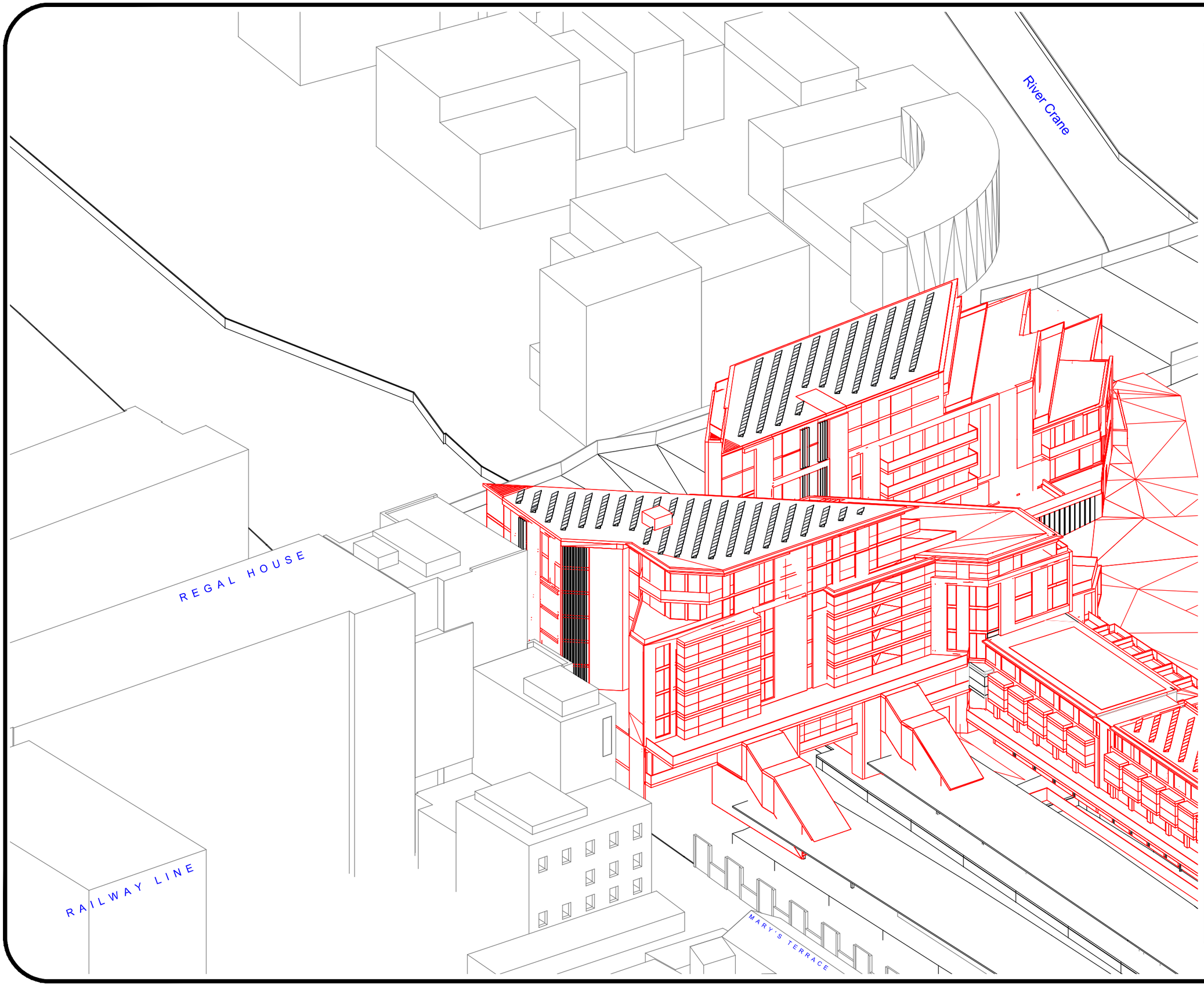
Drawing Description
EXISTING 3D VIEW
LOOKING WEST
The Regal Hotel

Project Reference
2010554

Date
22/07/2011

Scale
NTS

Drawing Sheet No
2010554-02-05



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

LEGEND

No.	Revision/Issue	Date

behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

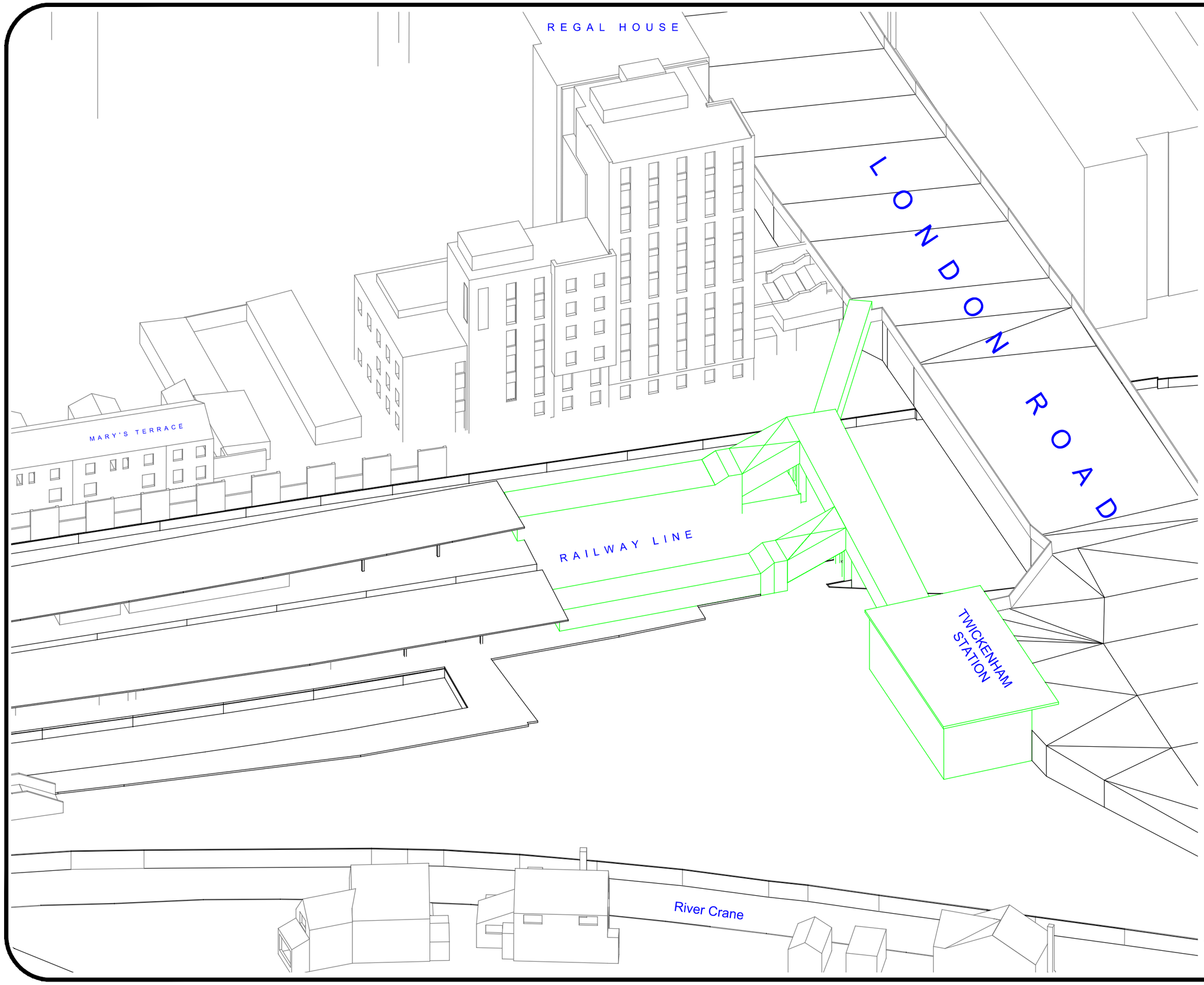
Drawing Description
PROPOSED 3D VIEW
LOOKING WEST
The Regal Hotel

Project Reference
2010554

Date
22/07/2011

Scale
NTS

Drawing Sheet No
2010554-02-06



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

LEGEND

No.	Revision/Issue	Date

behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

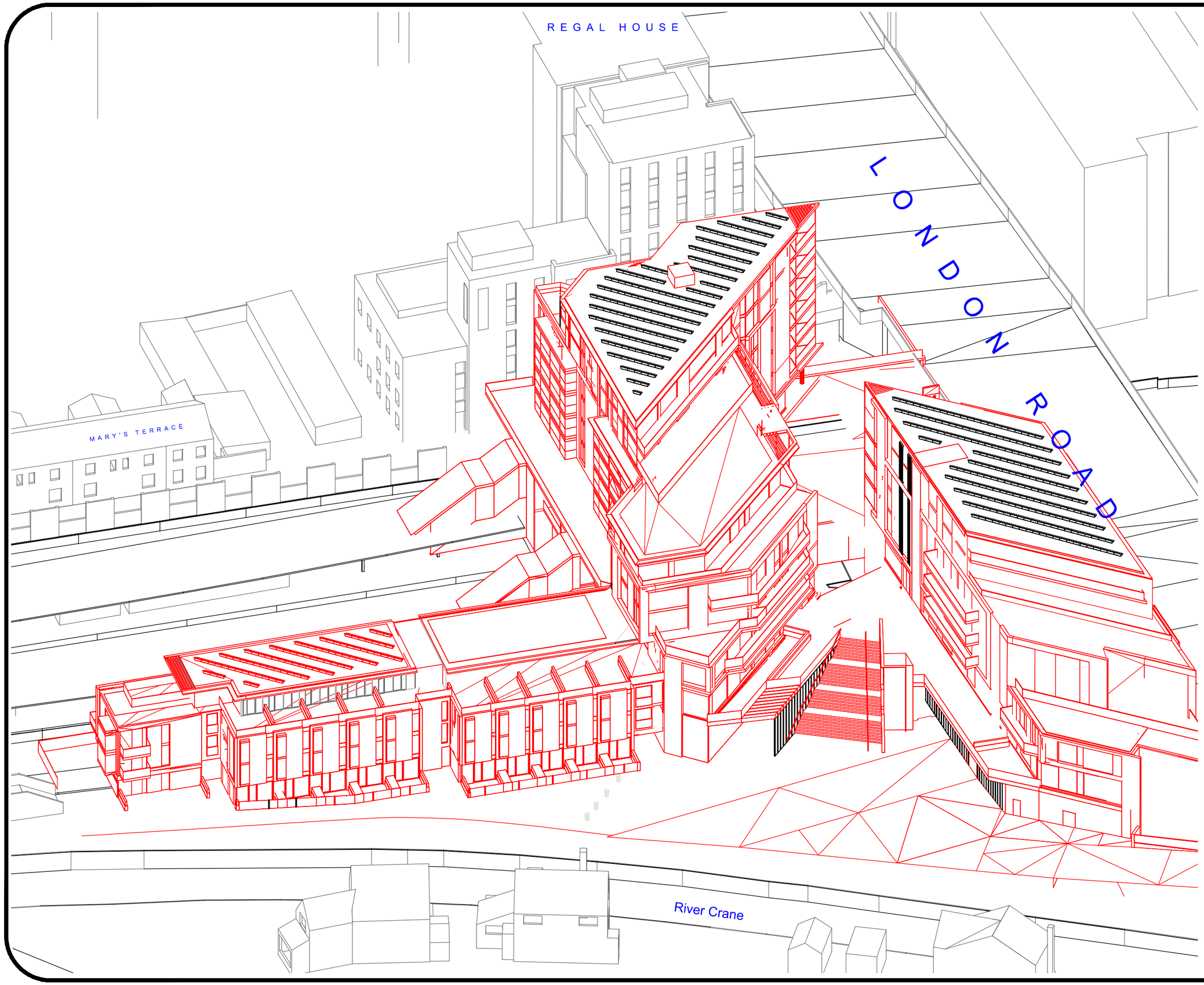
Drawing Description
EXISTING 3D VIEW
LOOKING SOUTH
The Regal Hotel

Project Reference
2010554

Date
22/07/2011

Scale
NTS

Drawing Sheet No
2010554-02-07



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

LEGEND

No.	Revision/Issue	Date

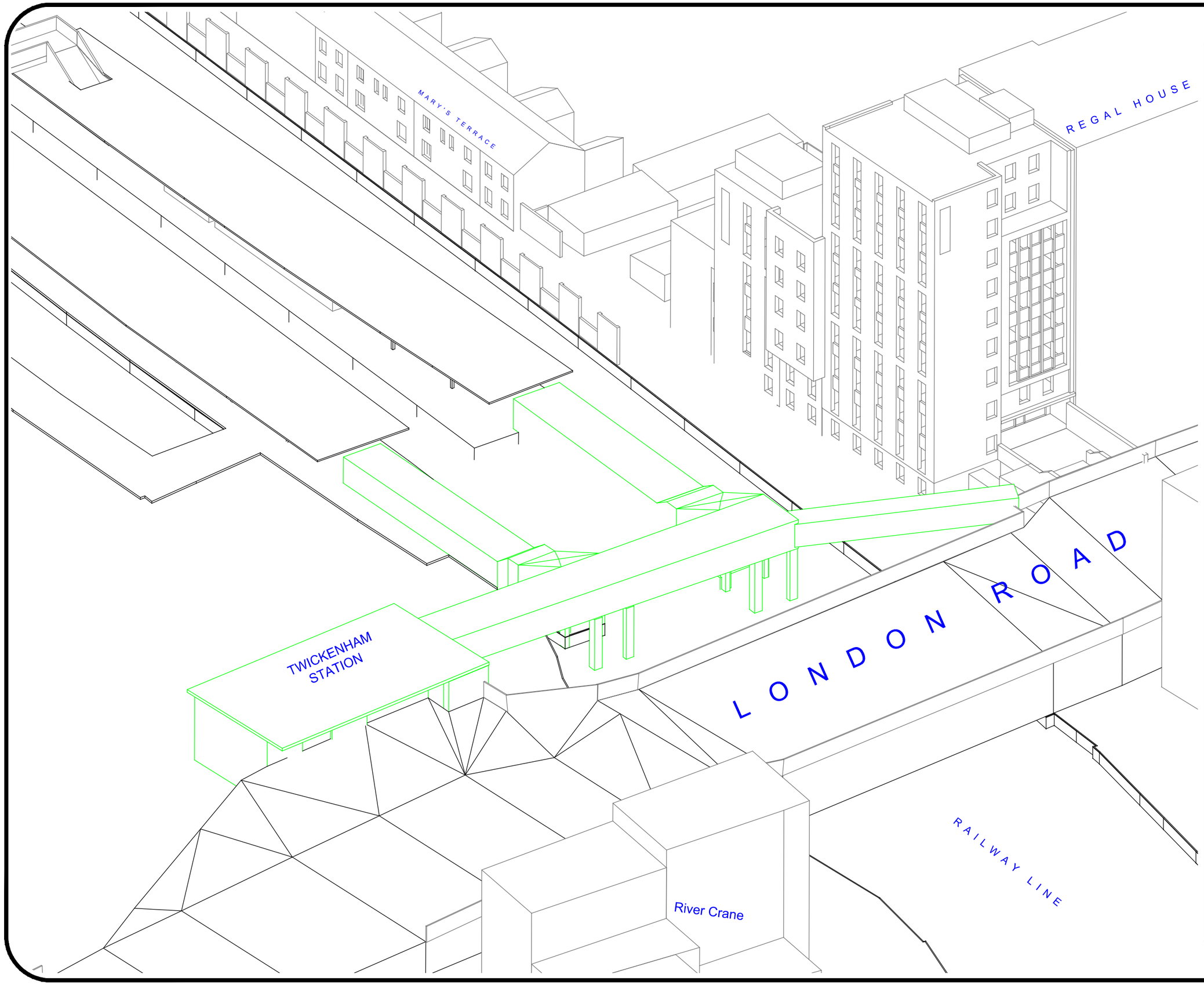
behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

Drawing Description
PROPOSED 3D VIEW
LOOKING SOUTH
The Regal Hotel

Project Reference: 2010554
Date: 22/07/2011
Scale: NTS
Drawing Sheet No: 2010554-02-08



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

LEGEND

No.	Revision/Issue	Date

behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

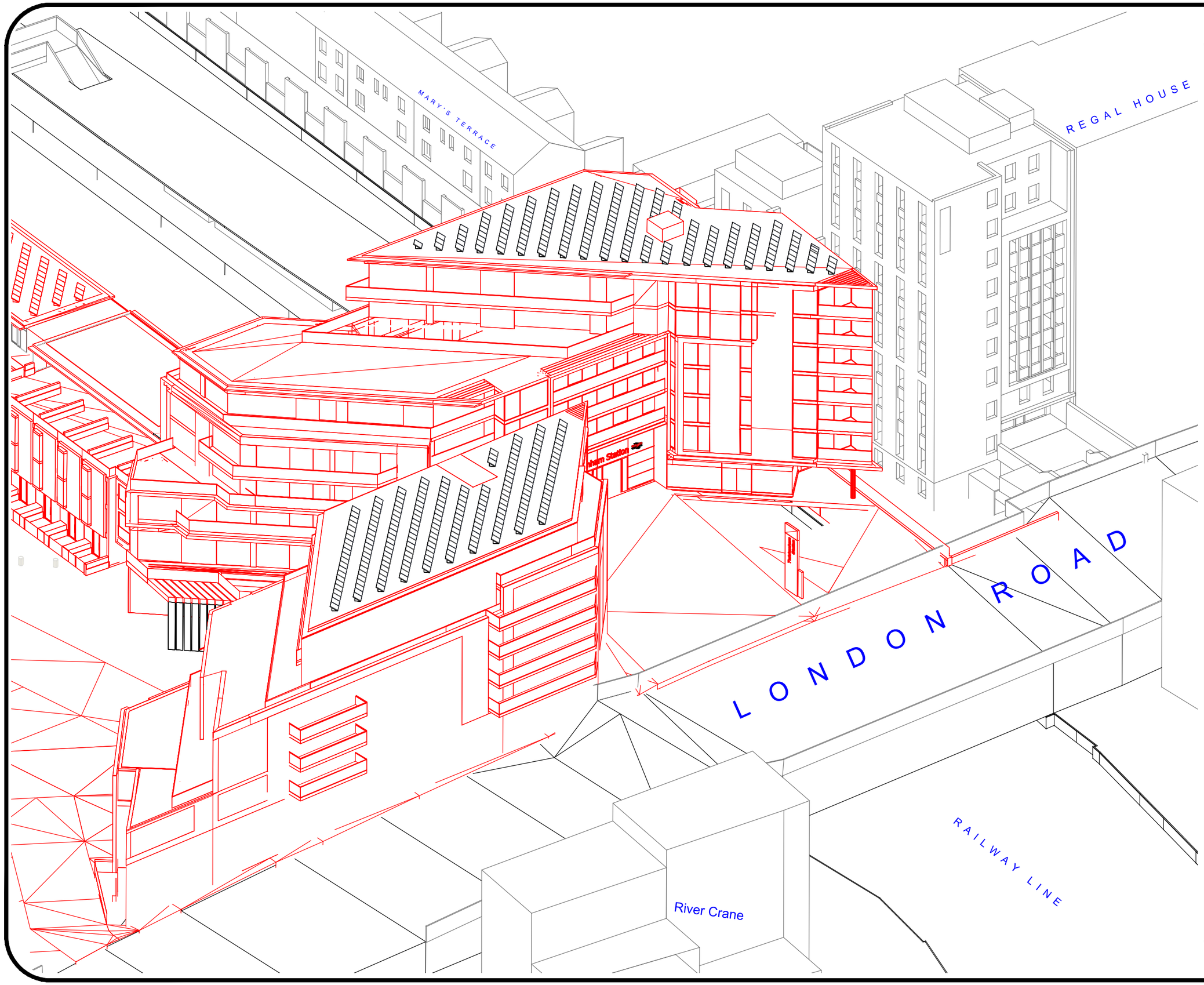
Drawing Description
EXISTING 3D VIEW
LOOKING EAST
The Regal Hotel

Project Reference
2010554

Date
22/07/2011

Scale
NTS

Drawing Sheet No
2010554-02-09



Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

LEGEND

No.	Revision/Issue	Date

behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

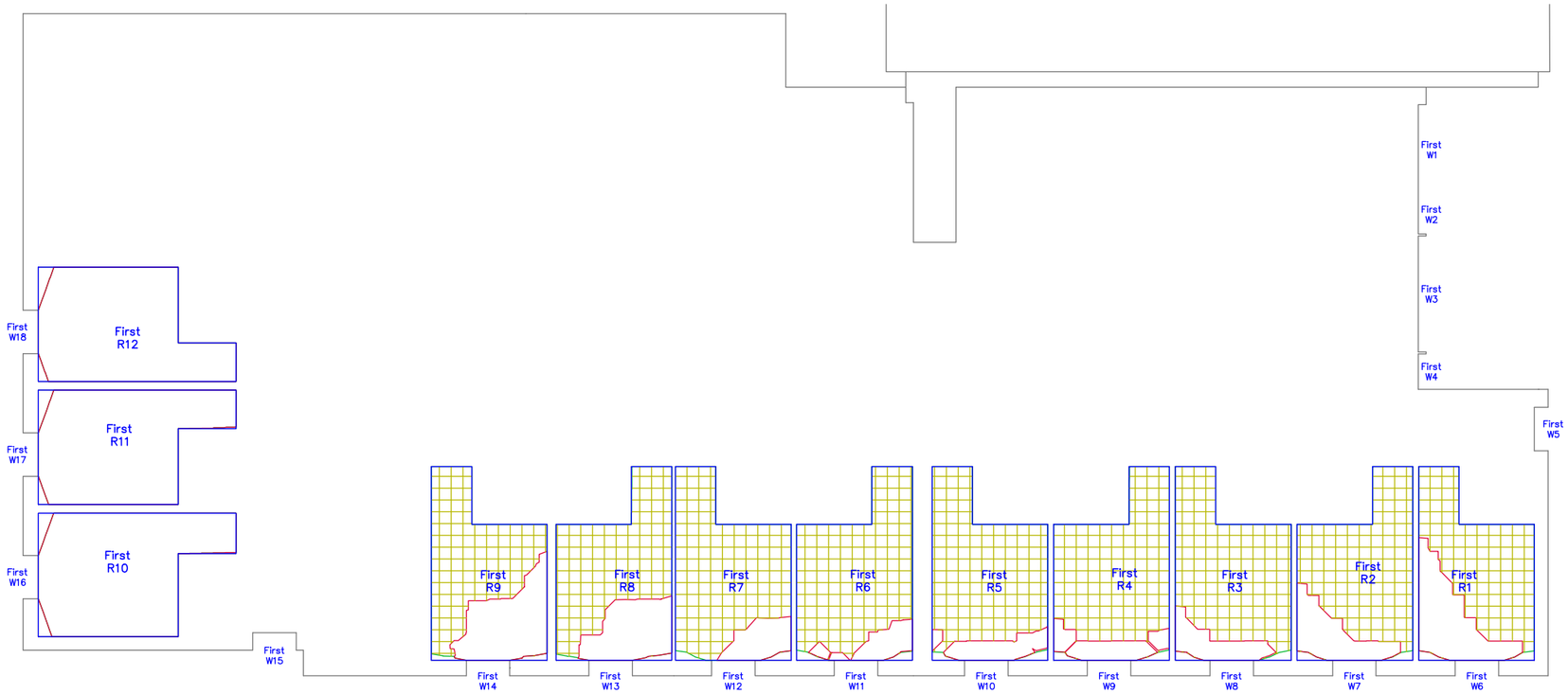
Drawing Description
EXISTING 3D VIEW
LOOKING EAST
The Regal Hotel

Project Reference
2010554

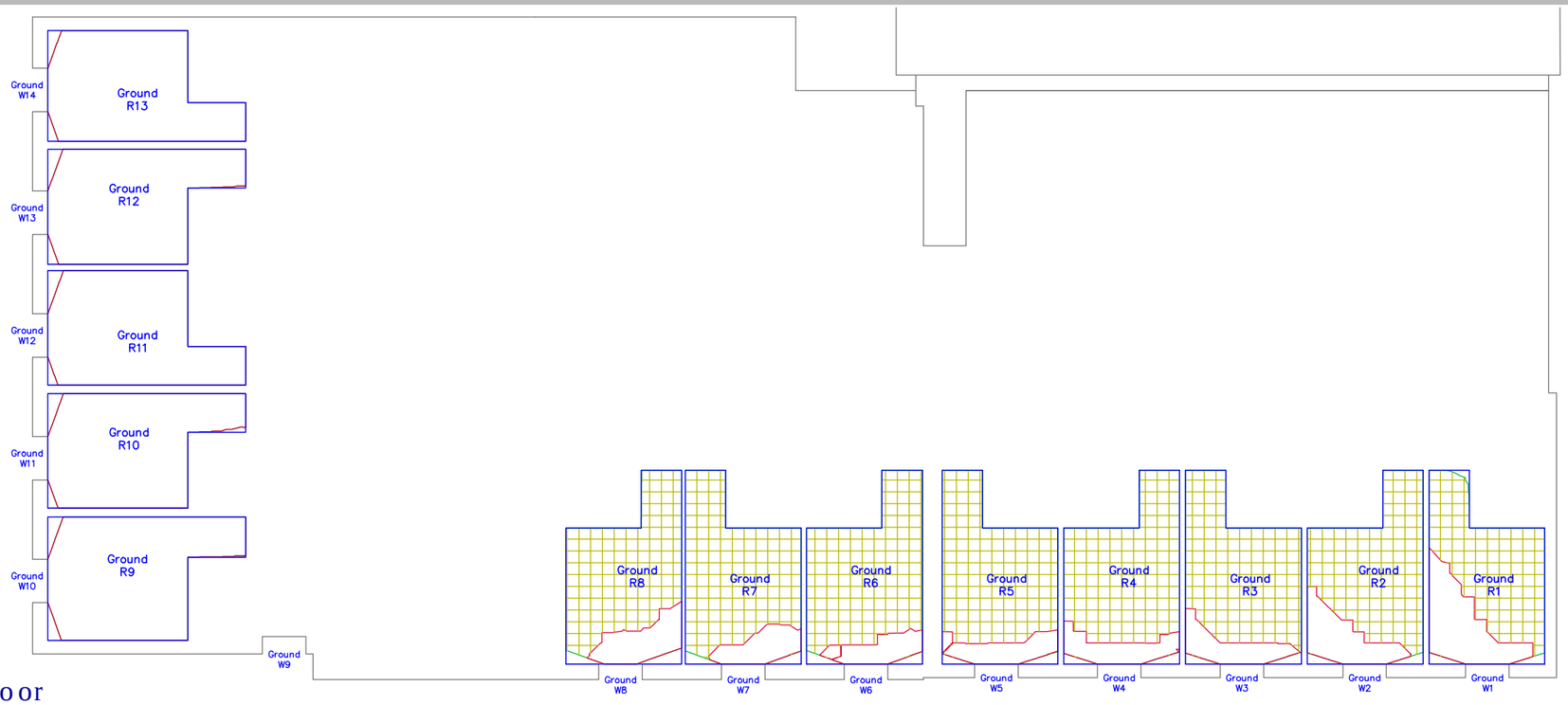
Date
22/07/2011

Scale
NTS

Drawing Sheet No
2010554-02-10



First Floor
The Regal Hotel



Ground Floor
The Regal Hotel

Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

KEY

- Room Area (Measured Layout)
- Room Area (Assumed Layout)
- Existing Lit Area Area
- Proposed Lit Area Area
- Area of Loss/Gain

No.	Revision/Issue	Date

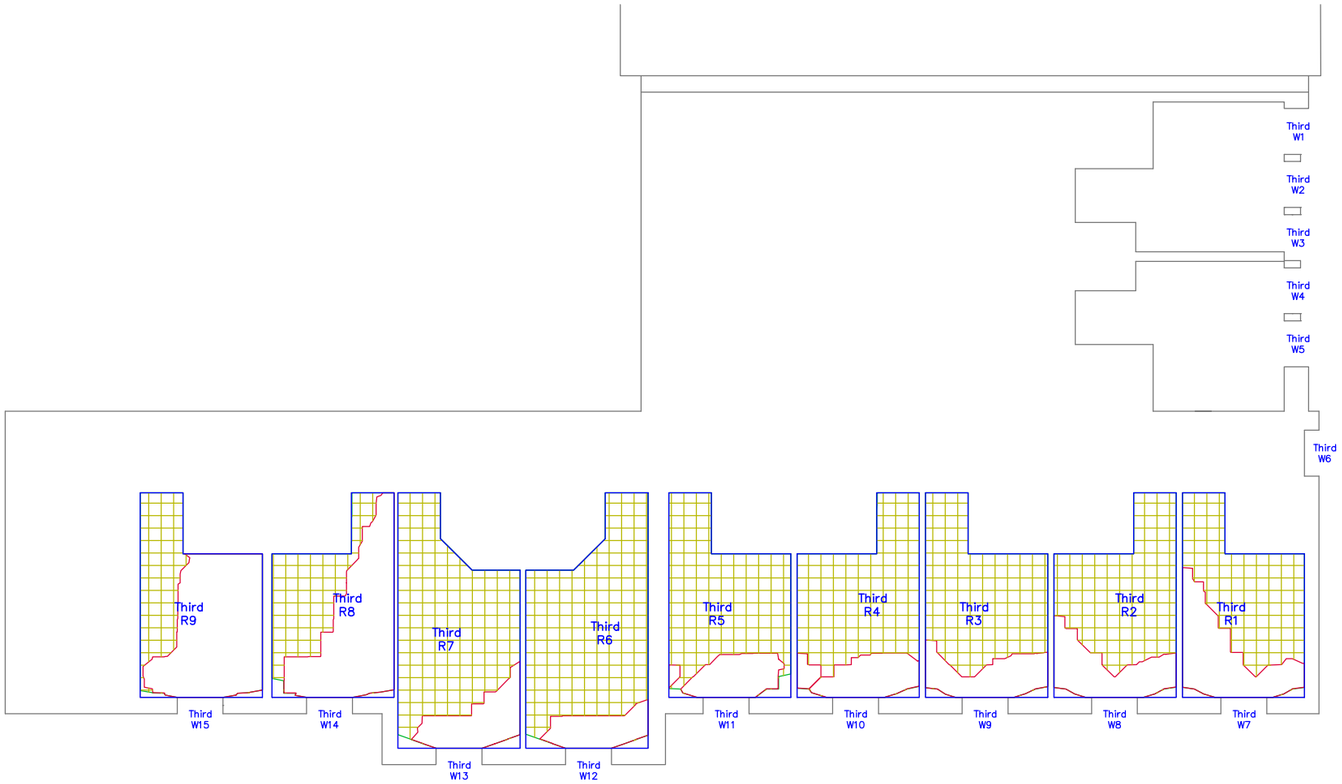
behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

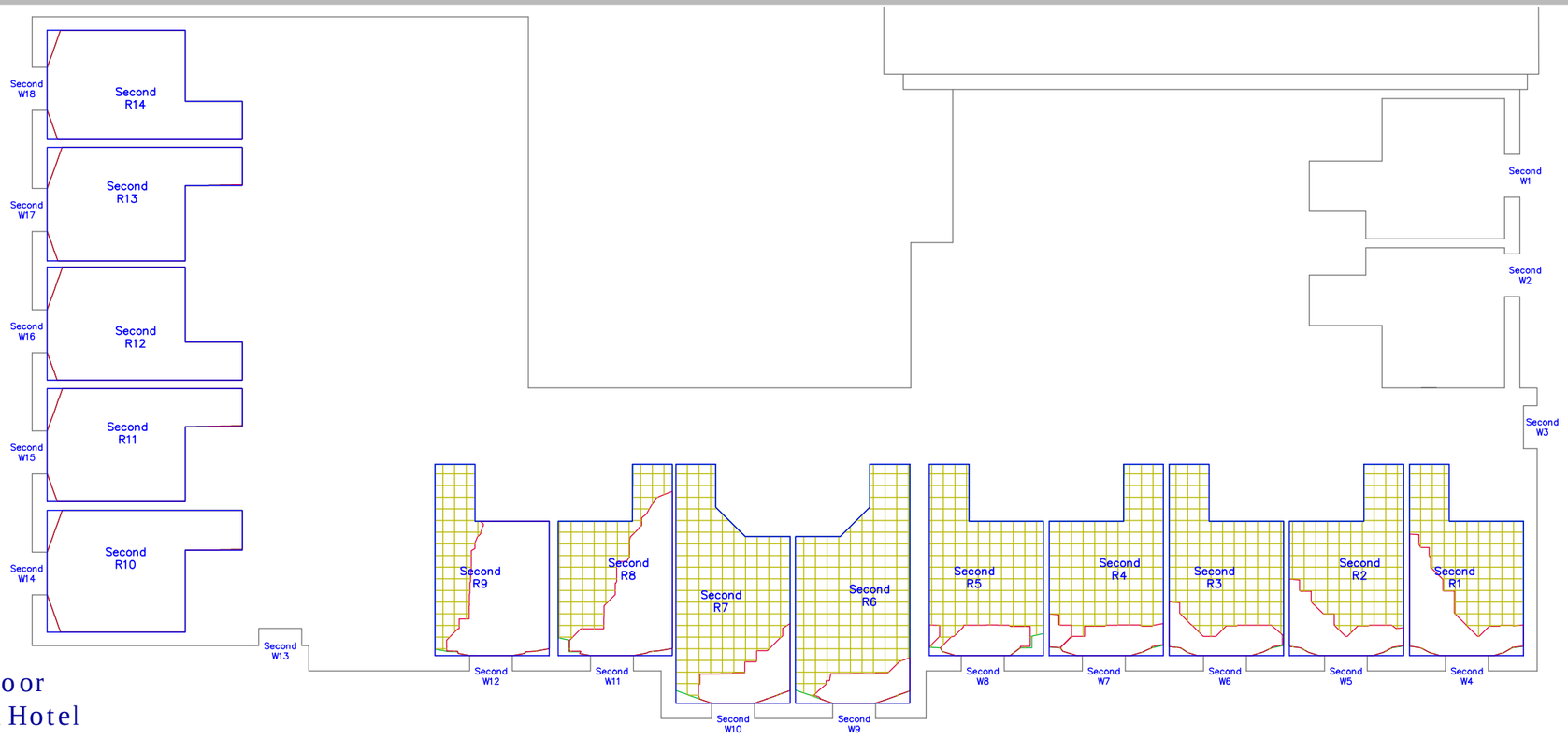
Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

Drawing Description
DAYLIGHT DISTRIBUTION
The Regal Hotel
Ground & First Floors

Project Reference: 2010554
Date: 22/07/2011
Scale: NTS
Drawing Sheet No: 2010554-02-11



Third Floor
The Regal Hotel



Second Floor
The Regal Hotel

Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

KEY

- Room Area (Measured Layout)
- Room Area (Assumed Layout)
- Existing Lit Area Area
- Proposed Lit Area Area
- Area of Loss/Gain

No.	Revision/Issue	Date

behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

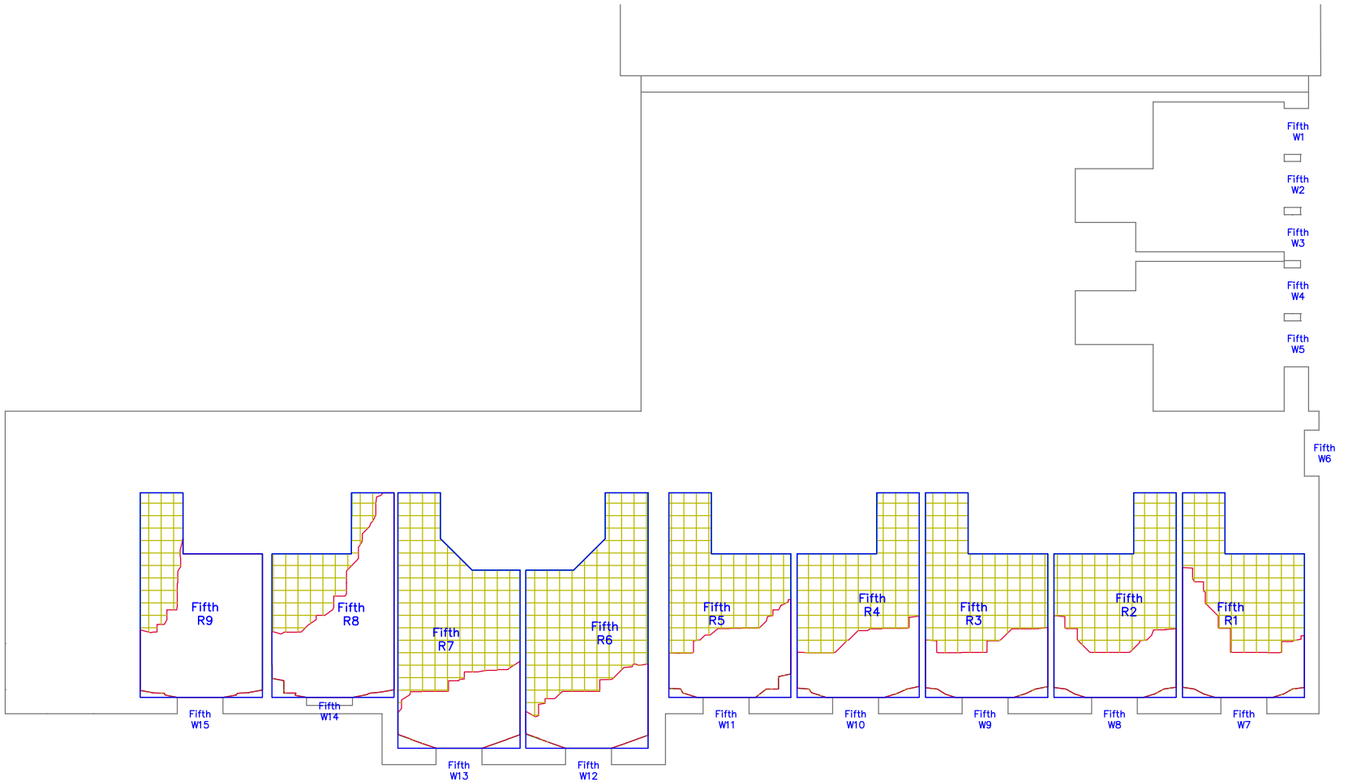
Drawing Description
DAYLIGHT DISTRIBUTION
The Regal Hotel
Second & Third Floors

Project Reference
2010554

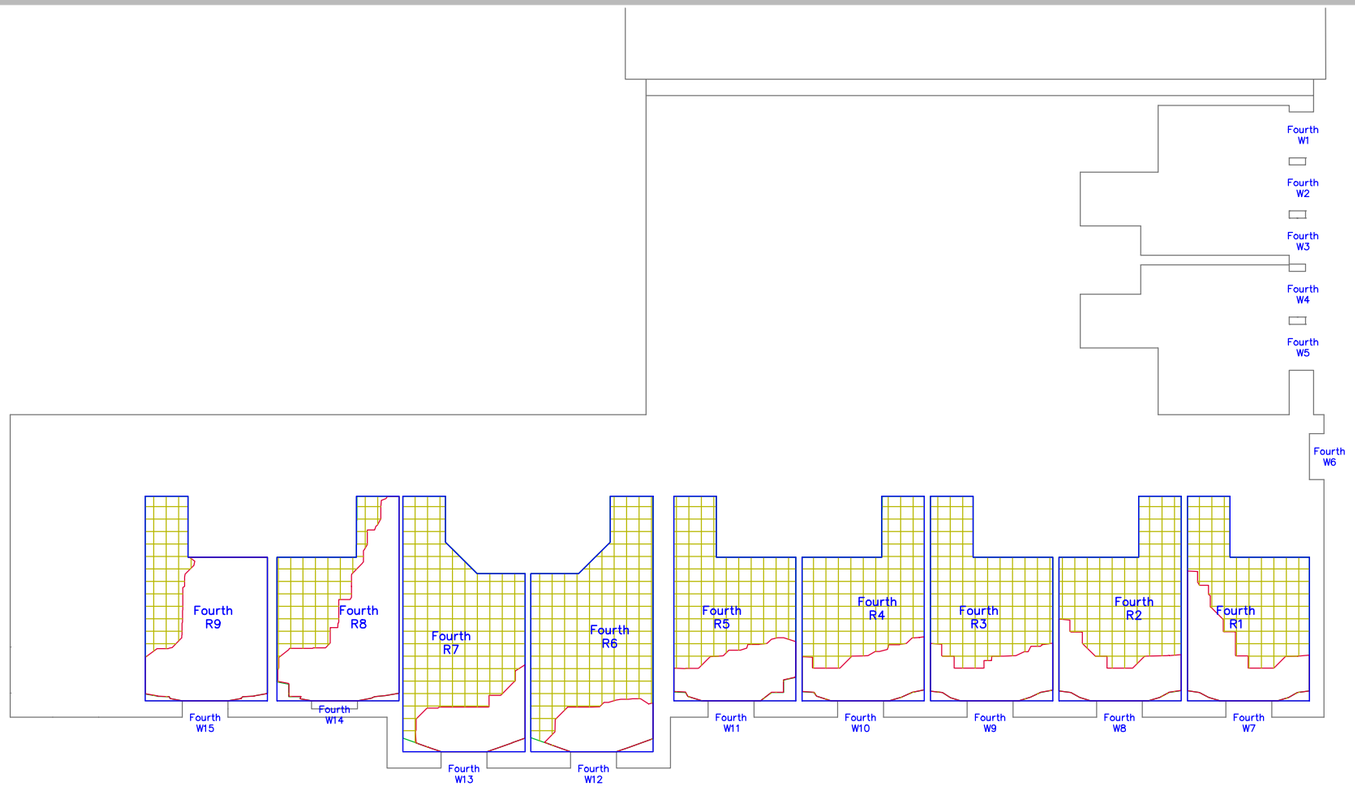
Date
22/07/2011

Scale
NTS

Drawing Sheet No
2010554-02-12



Fifth Floor
The Regal Hotel



Fourth Floor
The Regal Hotel

Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

KEY

- Room Area (Measured Layout)
- Room Area (Assumed Layout)
- Existing Lit Area Area
- Proposed Lit Area Area
- Area of Loss/Gain

No.	Revision/Issue	Date

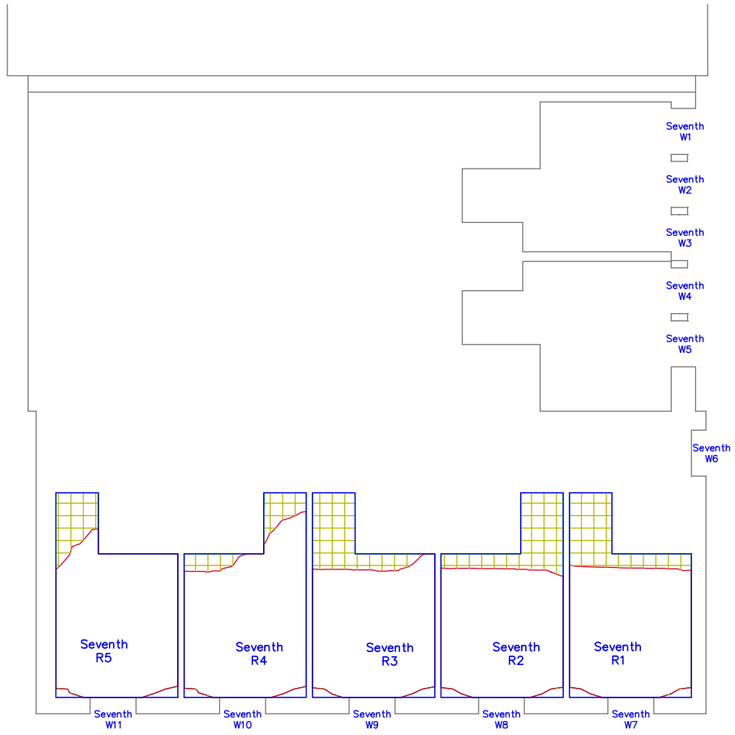
behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

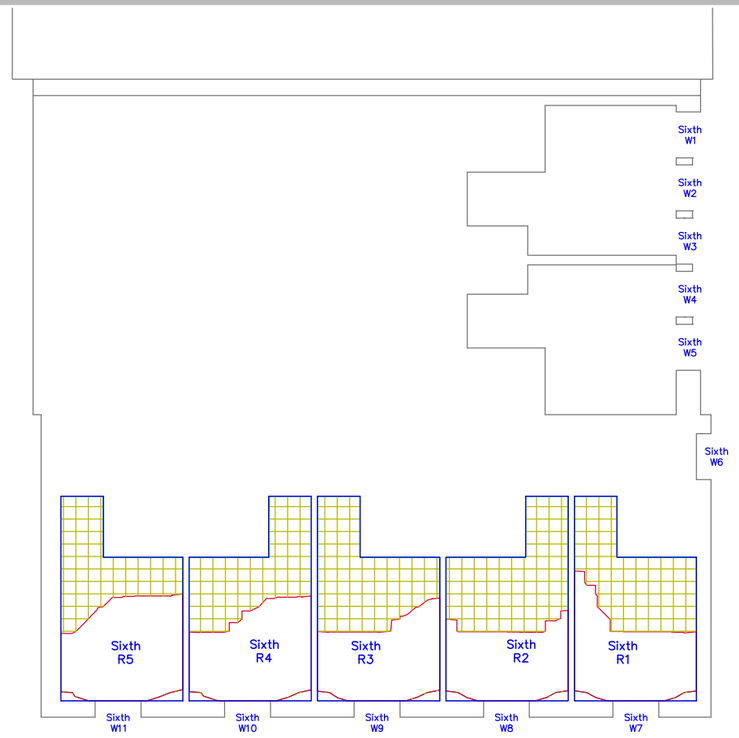
Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

Drawing Description
DAYLIGHT DISTRIBUTION
The Regal Hotel
Fourth & Fifth Floors

Project Reference	Drawing Sheet No
2010554	2010554-02-13
Date: 22/07/2011	
Scale: NTS	



Seventh Floor
The Regal Hotel



Sixth Floor
The Regal Hotel

Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

KEY

- Room Area (Measured Layout)
- Room Area (Assumed Layout)
- Existing Lit Area Area
- Proposed Lit Area Area
- Area of Loss/Gain

No.	Revision/Issue	Date

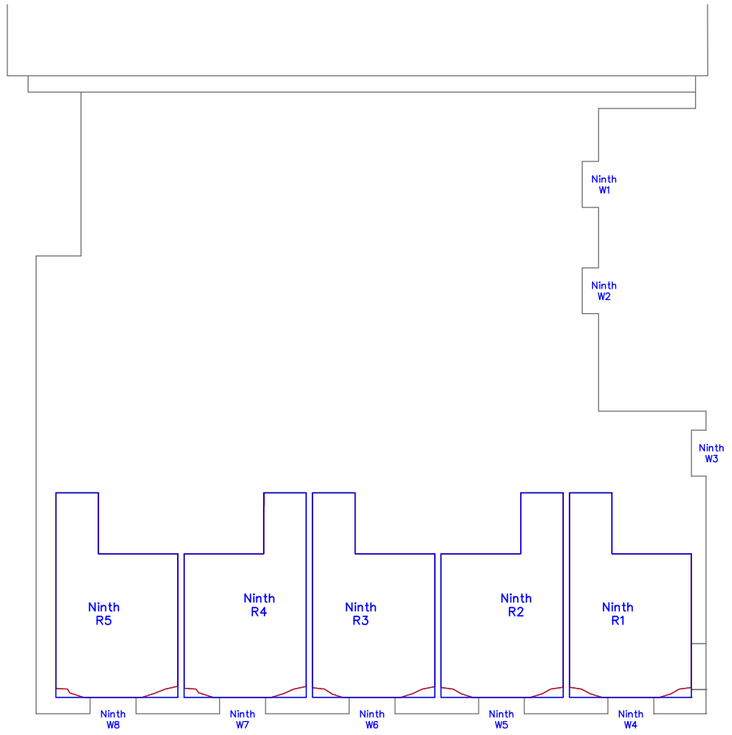
behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

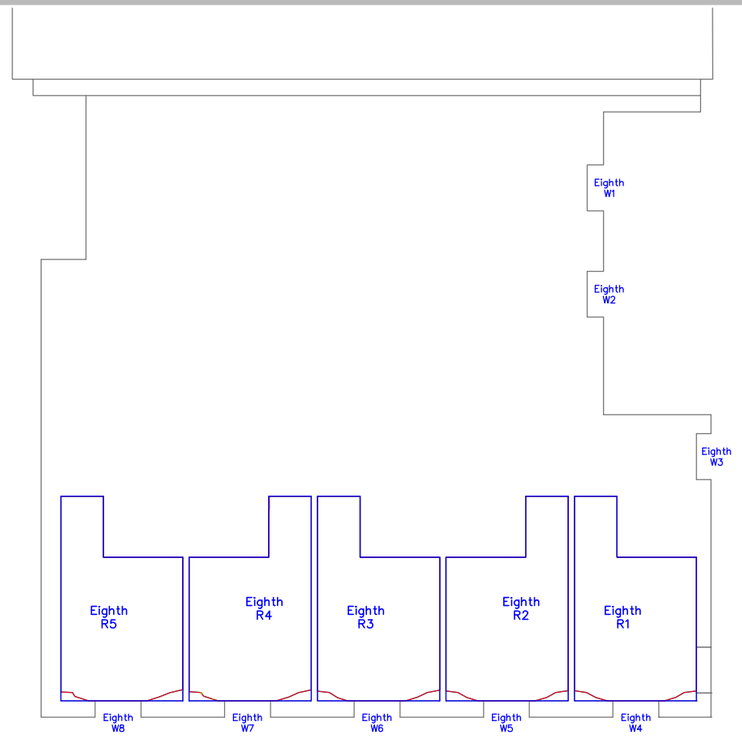
Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

Drawing Description
DAYLIGHT DISTRIBUTION
The Regal Hotel
Sixth & Seventh Floors

Project Reference: 2010554
Date: 22/07/2011
Scale: NTS
Drawing Sheet No: 2010554-02-14



Ninth Floor
The Regal Hotel



Eighth Floor
The Regal Hotel

Sources

ANALYSIS

PRODUCED USING WALDRAM TOOLS
MBS SURVEY SOFTWARE LTD (WWW.SURVEYMBS.COM)

EXISTING MODEL

3d model, associated room polylines and window locations as supplied by the client. converted to solids by mbs survey software ltd.
Ref: regal House.dwg
70 London Rd-Ground Floor Plan
70 London Rd 1-2 Floor Plan
70 London Rd 3-4 Floor Plan
70 London Rd 5-6 Floor Plan
70 London Rd 7-8 Floor Plan
70 London Rd 9th Floor and Roof Plan

PROPOSED MODEL

ROLFE JUDD ARCHITECTS
4674/T(20)E01 - E06, P00 B, P01 - P07, P-1, P-1M, S01 - S04.
SCHEME 7 PROPOSED SKETCHUP MODEL

KEY

- Room Area (Measured Layout)
- Room Area (Assumed Layout)
- Existing Lit Area Area
- Proposed Lit Area Area
- Area of Loss/Gain

No.	Revision/Issue	Date

behan partnership LLP
chartered surveyors

Behan Partnership LLP
Chartered Surveyors
Party Wall & Rights to Light
Experts
New Barnes Mill, Cottonmill Lane
St Albans, Hertfordshire AL1 2HA
01727 800075
mark@behanllp.co.uk

Project name and Address
TWICKENHAM STATION
TWICKENHAM
LONDON

Drawing Description
DAYLIGHT DISTRIBUTION
The Regal Hotel
Eighth & Ninth Floors

Project Reference
2010554

Date
22/07/2011

Scale
NTS

Drawing Sheet No
2010554-02-15

Behan Partnership LLP - Average Daylight Factor

Floor Ref.	Room Ref.	Room Use	Window Ref.	Glass Transmittance	Glazed Area	Clear Sky Angle Existing	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	ADF Existing	ADF Proposed	Req'd Value	Pass/Fail
The Regal Hotel													
Ground	R1	Bedroom	W1	0.65	1.52	57.14	20.89	67.29	0.50	1.12	0.41		
										1.12	0.41	1.0	FAIL
Ground	R2	Bedroom	W2	0.65	1.52	59.38	14.36	67.29	0.50	1.16	0.28		
										1.16	0.28	1.0	FAIL
Ground	R3	Bedroom	W3	0.65	1.52	61.12	8.30	67.29	0.50	1.20	0.16		
										1.20	0.16	1.0	FAIL
Ground	R4	Bedroom	W4	0.65	1.52	62.49	4.03	67.29	0.50	1.22	0.08		
										1.22	0.08	1.0	FAIL
Ground	R5	Bedroom	W5	0.65	1.52	63.39	4.09	67.29	0.50	1.24	0.08		
										1.24	0.08	1.0	FAIL
Ground	R6	Bedroom	W6	0.65	1.52	63.89	6.96	67.29	0.50	1.25	0.14		
										1.25	0.14	1.0	FAIL
Ground	R7	Bedroom	W7	0.65	1.52	64.23	10.53	67.29	0.50	1.26	0.21		
										1.26	0.21	1.0	FAIL
Ground	R8	Bedroom	W8	0.65	1.52	64.42	17.05	67.29	0.50	1.26	0.33		
										1.26	0.33	1.0	FAIL
Ground	R9	Bedroom	W10	0.65	1.52	60.88	60.79	70.94	0.50	1.13	1.13		
										1.13	1.13	1.0	PASS
Ground	R10	Bedroom	W11	0.65	1.52	58.79	58.68	67.92	0.50	1.14	1.14		
										1.14	1.14	1.0	PASS
Ground	R11	Bedroom	W12	0.65	1.52	57.94	57.94	67.88	0.50	1.12	1.12		
										1.12	1.12	1.0	PASS
Ground	R12	Bedroom	W13	0.65	1.52	57.79	57.79	68.03	0.50	1.12	1.12		
										1.12	1.12	1.0	PASS
Ground	R13	Bedroom	W14	0.65	1.52	57.64	57.64	66.69	0.50	1.14	1.14		
										1.14	1.14	1.0	PASS
First	R1	Bedroom	W6	0.65	2.02	67.97	27.83	72.09	0.50	1.65	0.68		
										1.65	0.68	1.0	FAIL
First	R2	Bedroom	W7	0.65	2.02	69.51	21.87	72.09	0.50	1.69	0.53		
										1.69	0.53	1.0	FAIL
First	R3	Bedroom	W8	0.65	2.02	70.38	17.60	72.09	0.50	1.71	0.43		
										1.71	0.43	1.0	FAIL
First	R4	Bedroom	W9	0.65	2.02	70.81	16.42	72.09	0.50	1.72	0.40		
										1.72	0.40	1.0	FAIL
First	R5	Bedroom	W10	0.65	2.02	69.25	15.56	72.09	0.50	1.68	0.38		
										1.68	0.38	1.0	FAIL
First	R6	Bedroom	W11	0.65	2.02	57.37	4.05	67.29	0.50	1.49	0.11		
										1.49	0.11	1.0	FAIL
First	R7	Bedroom	W12	0.65	2.02	57.53	8.47	67.29	0.50	1.50	0.22		
										1.50	0.22	1.0	FAIL
First	R8	Bedroom	W13	0.65	2.02	69.22	26.40	67.29	0.50	1.80	0.69		
										1.80	0.69	1.0	FAIL
First	R9	Bedroom	W14	0.65	2.02	71.81	33.81	67.29	0.50	1.87	0.88		
										1.87	0.88	1.0	FAIL
First	R10	Bedroom	W16	0.65	1.52	67.44	67.20	70.94	0.50	1.25	1.25		

Behan Partnership LLP - Average Daylight Factor

Floor Ref.	Room Ref.	Room Use	Window Ref.	Glass Transmittance	Glazed Area	Clear Sky Angle Existing	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	ADF Existing	ADF Proposed	Req'd Value	Pass/Fail
										1.25	1.25	1.0	PASS
First	R11	Bedroom	W17	0.65	1.52	67.48	67.30	67.92	0.50	1.31	1.31		
										1.31	1.31	1.0	PASS
First	R12	Bedroom	W18	0.65	1.52	67.58	67.46	67.88	0.50	1.31	1.31		
										1.31	1.31	1.0	PASS
Second	R1	Bedroom	W4	0.65	2.02	72.51	29.95	72.09	0.50	1.76	0.73		
										1.76	0.73	1.0	FAIL
Second	R2	Bedroom	W5	0.65	2.02	72.56	24.31	72.09	0.50	1.76	0.59		
										1.76	0.59	1.0	FAIL
Second	R3	Bedroom	W6	0.65	2.02	72.60	20.78	72.09	0.50	1.76	0.50		
										1.76	0.50	1.0	FAIL
Second	R4	Bedroom	W7	0.65	2.02	72.64	20.14	72.09	0.50	1.77	0.49		
										1.77	0.49	1.0	FAIL
Second	R5	Bedroom	W8	0.65	2.02	67.60	19.17	72.09	0.50	1.64	0.47		
										1.64	0.47	1.0	FAIL
Second	R6	Bedroom	W9	0.65	1.52	68.35	10.52	79.33	0.50	1.13	0.17		
										1.13	0.17	1.0	FAIL
Second	R7	Bedroom	W10	0.65	1.52	68.38	17.25	79.33	0.50	1.14	0.29		
										1.14	0.29	1.0	FAIL
Second	R8	Bedroom	W11	0.65	2.02	66.23	33.16	67.29	0.50	1.72	0.86		
										1.72	0.86	1.0	FAIL
Second	R9	Bedroom	W12	0.65	2.02	72.86	41.18	67.29	0.50	1.90	1.07		
										1.90	1.07	1.0	PASS
Second	R10	Bedroom	W14	0.65	1.52	68.88	68.75	70.94	0.50	1.28	1.28		
										1.28	1.28	1.0	PASS
Second	R11	Bedroom	W15	0.65	1.52	68.88	68.79	67.92	0.50	1.34	1.33		
										1.34	1.33	1.0	PASS
Second	R12	Bedroom	W16	0.65	1.52	68.88	68.82	67.88	0.50	1.34	1.34		
										1.34	1.34	1.0	PASS
Second	R13	Bedroom	W17	0.65	1.52	68.88	68.84	68.03	0.50	1.33	1.33		
										1.33	1.33	1.0	PASS
Second	R14	Bedroom	W18	0.65	1.52	68.89	68.86	66.69	0.50	1.36	1.36		
										1.36	1.36	1.0	PASS
Third	R1	Bedroom	W7	0.65	2.02	70.90	30.03	67.29	0.50	1.85	0.78		
										1.85	0.78	1.0	FAIL
Third	R2	Bedroom	W8	0.65	2.02	70.92	24.66	67.29	0.50	1.85	0.64		
										1.85	0.64	1.0	FAIL
Third	R3	Bedroom	W9	0.65	2.02	70.94	21.69	67.29	0.50	1.85	0.56		
										1.85	0.56	1.0	FAIL
Third	R4	Bedroom	W10	0.65	2.02	70.97	21.65	67.29	0.50	1.85	0.56		
										1.85	0.56	1.0	FAIL
Third	R5	Bedroom	W11	0.65	2.02	66.28	20.94	67.29	0.50	1.73	0.55		
										1.73	0.55	1.0	FAIL
Third	R6	Bedroom	W12	0.65	1.52	68.63	17.15	79.33	0.50	1.14	0.28		
										1.14	0.28	1.0	FAIL
Third	R7	Bedroom	W13	0.65	1.52	68.65	23.81	79.33	0.50	1.14	0.40		
										1.14	0.40	1.0	FAIL

Behan Partnership LLP - Average Daylight Factor

Floor Ref.	Room Ref.	Room Use	Window Ref.	Glass Transmittance	Glazed Area	Clear Sky Angle Existing	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	ADF Existing	ADF Proposed	Req'd Value	Pass/Fail
Third	R8	Bedroom	W14	0.65	2.02	64.81	38.10	67.29	0.50	1.69	0.99		
										1.69	0.99	1.0	FAIL
Third	R9	Bedroom	W15	0.65	2.02	71.09	46.95	67.29	0.50	1.85	1.22		
										1.85	1.22	1.0	PASS
Fourth	R1	Bedroom	W7	0.65	2.02	73.18	35.41	67.29	0.50	1.91	0.92		
										1.91	0.92	1.0	FAIL
Fourth	R2	Bedroom	W8	0.65	2.02	73.19	31.09	67.29	0.50	1.91	0.81		
										1.91	0.81	1.0	FAIL
Fourth	R3	Bedroom	W9	0.65	2.02	73.20	29.15	67.29	0.50	1.91	0.76		
										1.91	0.76	1.0	FAIL
Fourth	R4	Bedroom	W10	0.65	2.02	73.21	29.71	67.29	0.50	1.91	0.77		
										1.91	0.77	1.0	FAIL
Fourth	R5	Bedroom	W11	0.65	2.02	68.12	28.52	67.29	0.50	1.77	0.74		
										1.77	0.74	1.0	FAIL
Fourth	R6	Bedroom	W12	0.65	1.52	68.80	24.58	79.33	0.50	1.14	0.41		
										1.14	0.41	1.0	FAIL
Fourth	R7	Bedroom	W13	0.65	1.52	68.80	29.55	79.33	0.50	1.14	0.49		
										1.14	0.49	1.0	FAIL
Fourth	R8	Bedroom	W14	0.65	2.02	66.36	42.97	67.29	0.50	1.73	1.12		
										1.73	1.12	1.0	PASS
Fourth	R9	Bedroom	W15	0.65	2.02	73.26	52.10	67.29	0.50	1.91	1.36		
										1.91	1.36	1.0	PASS
Fifth	R1	Bedroom	W7	0.65	2.02	73.36	39.86	67.29	0.50	1.91	1.04		
										1.91	1.04	1.0	PASS
Fifth	R2	Bedroom	W8	0.65	2.02	73.36	36.35	67.29	0.50	1.91	0.95		
										1.91	0.95	1.0	FAIL
Fifth	R3	Bedroom	W9	0.65	2.02	73.36	35.23	67.29	0.50	1.91	0.92		
										1.91	0.92	1.0	FAIL
Fifth	R4	Bedroom	W10	0.65	2.02	73.36	36.33	67.29	0.50	1.91	0.95		
										1.91	0.95	1.0	FAIL
Fifth	R5	Bedroom	W11	0.65	2.02	68.71	35.45	67.29	0.50	1.79	0.92		
										1.79	0.92	1.0	FAIL
Fifth	R6	Bedroom	W12	0.65	1.52	68.90	33.45	79.33	0.50	1.14	0.56		
										1.14	0.56	1.0	FAIL
Fifth	R7	Bedroom	W13	0.65	1.52	68.90	37.40	79.33	0.50	1.14	0.62		
										1.14	0.62	1.0	FAIL
Fifth	R8	Bedroom	W14	0.65	2.02	64.98	46.14	67.29	0.50	1.69	1.20		
										1.69	1.20	1.0	PASS
Fifth	R9	Bedroom	W15	0.65	2.02	71.31	54.46	67.29	0.50	1.86	1.42		
										1.86	1.42	1.0	PASS
Sixth	R1	Bedroom	W7	0.65	2.02	71.31	44.48	67.29	0.50	1.86	1.16		
										1.86	1.16	1.0	PASS
Sixth	R2	Bedroom	W8	0.65	2.02	71.31	41.93	67.29	0.50	1.86	1.09		
										1.86	1.09	1.0	PASS
Sixth	R3	Bedroom	W9	0.65	2.02	71.31	41.46	67.29	0.50	1.86	1.08		
										1.86	1.08	1.0	PASS
Sixth	R4	Bedroom	W10	0.65	2.02	71.31	42.91	67.29	0.50	1.86	1.12		
										1.86	1.12	1.0	PASS

Behan Partnership LLP - Average Daylight Factor

Floor Ref.	Room Ref.	Room Use	Window Ref.	Glass Transmittance	Glazed Area	Clear Sky Angle Existing	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	ADF Existing	ADF Proposed	Req'd Value	Pass/Fail
Sixth	R5	Bedroom	W11	0.65	2.02	71.17	45.18	67.29	0.50	1.85	1.18		
										1.85	1.18	1.0	PASS
Seventh	R1	Bedroom	W7	0.65	2.02	73.36	55.67	67.29	0.50	1.91	1.45		
										1.91	1.45	1.0	PASS
Seventh	R2	Bedroom	W8	0.65	2.02	73.36	54.14	67.29	0.50	1.91	1.41		
										1.91	1.41	1.0	PASS
Seventh	R3	Bedroom	W9	0.65	2.02	73.36	54.07	67.29	0.50	1.91	1.41		
										1.91	1.41	1.0	PASS
Seventh	R4	Bedroom	W10	0.65	2.02	73.36	55.37	67.29	0.50	1.91	1.44		
										1.91	1.44	1.0	PASS
Seventh	R5	Bedroom	W11	0.65	2.02	73.36	57.35	67.29	0.50	1.91	1.49		
										1.91	1.49	1.0	PASS
Eighth	R1	Bedroom	W4	0.65	2.02	73.36	67.03	67.29	0.50	1.91	1.75		
										1.91	1.75	1.0	PASS
Eighth	R2	Bedroom	W5	0.65	2.02	73.36	66.48	67.29	0.50	1.91	1.73		
										1.91	1.73	1.0	PASS
Eighth	R3	Bedroom	W6	0.65	2.02	73.36	66.47	67.29	0.50	1.91	1.73		
										1.91	1.73	1.0	PASS
Eighth	R4	Bedroom	W7	0.65	2.02	73.36	66.95	67.29	0.50	1.91	1.74		
										1.91	1.74	1.0	PASS
Eighth	R5	Bedroom	W8	0.65	2.02	73.36	67.70	67.29	0.50	1.91	1.76		
										1.91	1.76	1.0	PASS
Ninth	R1	Bedroom	W4	0.65	2.02	71.31	71.31	67.29	0.50	1.86	1.86		
										1.86	1.86	1.0	PASS
Ninth	R2	Bedroom	W5	0.65	2.02	71.31	71.31	67.29	0.50	1.86	1.86		
										1.86	1.86	1.0	PASS
Ninth	R3	Bedroom	W6	0.65	2.02	71.31	71.31	67.29	0.50	1.86	1.86		
										1.86	1.86	1.0	PASS
Ninth	R4	Bedroom	W7	0.65	2.02	71.31	71.31	67.29	0.50	1.86	1.86		
										1.86	1.86	1.0	PASS
Ninth	R5	Bedroom	W8	0.65	2.02	71.31	71.31	67.29	0.50	1.86	1.86		
										1.86	1.86	1.0	PASS

Behan Partnership LLP - Daylight/Sunlight Analysis

The Regal Hotel

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Proposed / Existing	VSC	Available Sunlight Hours Annual %	Winter %
Ground	R1	Bedroom	W1	Existing	30.54	0.30	*North Facing
				Proposed	9.08		
Ground	R2	Bedroom	W2	Existing	32.24	0.23	*North Facing
				Proposed	7.29		
Ground	R3	Bedroom	W3	Existing	33.49	0.19	*North Facing
				Proposed	6.28		
Ground	R4	Bedroom	W4	Existing	34.34	0.17	*North Facing
				Proposed	5.68		
Ground	R5	Bedroom	W5	Existing	34.63	0.15	*North Facing
				Proposed	5.25		
Ground	R6	Bedroom	W6	Existing	34.41	0.14	*North Facing
				Proposed	4.97		
Ground	R7	Bedroom	W7	Existing	34.66	0.17	*North Facing
				Proposed	5.87		
Ground	R8	Bedroom	W8	Existing	35.52	0.23	*North Facing
				Proposed	8.20		
Ground			W9	Existing	30.59	0.60	*North Facing
				Proposed	18.25		
Ground	R9	Bedroom	W10	Existing	33.63	0.99	*North Facing
				Proposed	33.45		
Ground	R10	Bedroom	W11	Existing	32.10	0.99	*North Facing
				Proposed	31.90		
Ground	R11	Bedroom	W12	Existing	31.61	0.99	*North Facing
				Proposed	31.42		
Ground	R12	Bedroom	W13	Existing	31.41	1.00	*North Facing
				Proposed	31.30		
Ground	R13	Bedroom	W14	Existing	31.26	1.00	*North Facing
				Proposed	31.17		
First	R1	Bedroom	W6	Existing	35.61	0.31	*North Facing
				Proposed	11.07		
First	R2	Bedroom	W7	Existing	36.62	0.24	*North Facing
				Proposed	8.71		
First	R3	Bedroom	W8	Existing	37.18	0.20	*North Facing
				Proposed	7.40		
First	R4	Bedroom	W9	Existing	37.20	0.18	*North Facing
				Proposed	6.56		
First	R5	Bedroom	W10	Existing	35.86	0.15	*North Facing
				Proposed	5.32		
First	R6	Bedroom	W11	Existing	30.05	0.08	*North Facing
				Proposed	2.39		
First	R7	Bedroom	W12	Existing	30.20	0.11	*North Facing
				Proposed	3.45		
First	R8	Bedroom	W13	Existing	36.07	0.26	*North Facing
				Proposed	9.51		
First	R9	Bedroom	W14	Existing	37.92	0.35	*North Facing
				Proposed	13.24		
First			W15	Existing	34.05	0.62	*North Facing

Behan Partnership LLP - Daylight/Sunlight Analysis

Floor Ref.	Room Ref.	Room Use.	Window Ref.		VSC	Proposed / Existing	Available Sunlight Hours Annual %	Winter %
First			W15	Proposed	21.15	0.62	*North Facing	
First	R10	Bedroom	W16	Existing	38.61	0.99	*North Facing	
				Proposed	38.13			
First	R11	Bedroom	W17	Existing	38.62	0.99	*North Facing	
				Proposed	38.20			
First	R12	Bedroom	W18	Existing	38.66	0.99	*North Facing	
				Proposed	38.29			
Second	R1	Bedroom	W4	Existing	39.04	0.32	*North Facing	
				Proposed	12.64			
Second	R2	Bedroom	W5	Existing	38.98	0.26	*North Facing	
				Proposed	10.19			
Second	R3	Bedroom	W6	Existing	38.92	0.23	*North Facing	
				Proposed	8.87			
Second	R4	Bedroom	W7	Existing	38.48	0.21	*North Facing	
				Proposed	7.98			
Second	R5	Bedroom	W8	Existing	34.59	0.17	*North Facing	
				Proposed	5.89			
Second	R6	Bedroom	W9	Existing	39.27	0.20	*North Facing	
				Proposed	7.85			
Second	R7	Bedroom	W10	Existing	39.29	0.24	*North Facing	
				Proposed	9.34			
Second	R8	Bedroom	W11	Existing	33.88	0.37	*North Facing	
				Proposed	12.54			
Second	R9	Bedroom	W12	Existing	38.53	0.45	*North Facing	
				Proposed	17.36			
Second			W13	Existing	34.55	0.68	*North Facing	
				Proposed	23.55			
Second	R10	Bedroom	W14	Existing	39.50	0.99	*North Facing	
				Proposed	39.23			
Second	R11	Bedroom	W15	Existing	39.49	0.99	*North Facing	
				Proposed	39.26			
Second	R12	Bedroom	W16	Existing	39.47	0.99	*North Facing	
				Proposed	39.27			
Second	R13	Bedroom	W17	Existing	39.45	1.00	*North Facing	
				Proposed	39.27			
Second	R14	Bedroom	W18	Existing	39.42	1.00	*North Facing	
				Proposed	39.26			
Third	R1	Bedroom	W7	Existing	39.31	0.36	*North Facing	
				Proposed	14.09			
Third	R2	Bedroom	W8	Existing	39.25	0.30	*North Facing	
				Proposed	11.76			
Third	R3	Bedroom	W9	Existing	39.18	0.27	*North Facing	
				Proposed	10.60			
Third	R4	Bedroom	W10	Existing	38.73	0.26	*North Facing	
				Proposed	9.93			
Third	R5	Bedroom	W11	Existing	34.80	0.22	*North Facing	
				Proposed	7.64			
Third	R6	Bedroom	W12	Existing	39.46	0.26	*North Facing	
				Proposed	10.09			
Third	R7	Bedroom	W13	Existing	39.47	0.31	*North Facing	
				Proposed	12.04			

Behan Partnership LLP - Daylight/Sunlight Analysis

Floor Ref.	Room Ref.	Room Use.	Window Ref.		VSC	Proposed / Existing	Available Sunlight Hours Annual %	Winter %
Third	R8	Bedroom	W14	Existing	33.99	0.48	*North Facing	
				Proposed	16.20			
Third	R9	Bedroom	W15	Existing	38.74	0.58	*North Facing	
				Proposed	22.29			
Fourth	R1	Bedroom	W7	Existing	39.47	0.40	*North Facing	
				Proposed	15.88			
Fourth	R2	Bedroom	W8	Existing	39.42	0.35	*North Facing	
				Proposed	13.74			
Fourth	R3	Bedroom	W9	Existing	39.35	0.33	*North Facing	
				Proposed	12.81			
Fourth	R4	Bedroom	W10	Existing	38.92	0.32	*North Facing	
				Proposed	12.43			
Fourth	R5	Bedroom	W11	Existing	34.96	0.29	*North Facing	
				Proposed	10.08			
Fourth	R6	Bedroom	W12	Existing	39.56	0.32	*North Facing	
				Proposed	12.83			
Fourth	R7	Bedroom	W13	Existing	39.56	0.37	*North Facing	
				Proposed	14.67			
Fourth	R8	Bedroom	W14	Existing	34.07	0.53	*North Facing	
				Proposed	18.20			
Fourth	R9	Bedroom	W15	Existing	38.89	0.63	*North Facing	
				Proposed	24.58			
Fifth	R1	Bedroom	W7	Existing	39.59	0.47	*North Facing	
				Proposed	18.55			
Fifth	R2	Bedroom	W8	Existing	39.57	0.42	*North Facing	
				Proposed	16.70			
Fifth	R3	Bedroom	W9	Existing	39.52	0.41	*North Facing	
				Proposed	16.11			
Fifth	R4	Bedroom	W10	Existing	39.21	0.41	*North Facing	
				Proposed	16.19			
Fifth	R5	Bedroom	W11	Existing	35.33	0.39	*North Facing	
				Proposed	13.92			
Fifth	R6	Bedroom	W12	Existing	39.62	0.43	*North Facing	
				Proposed	17.09			
Fifth	R7	Bedroom	W13	Existing	39.62	0.48	*North Facing	
				Proposed	18.92			
Fifth	R8	Bedroom	W14	Existing	34.35	0.62	*North Facing	
				Proposed	21.39			
Fifth	R9	Bedroom	W15	Existing	39.17	0.71	*North Facing	
				Proposed	27.71			
Sixth	R1	Bedroom	W7	Existing	39.62	0.57	*North Facing	
				Proposed	22.61			
Sixth	R2	Bedroom	W8	Existing	39.62	0.54	*North Facing	
				Proposed	21.22			
Sixth	R3	Bedroom	W9	Existing	39.62	0.53	*North Facing	
				Proposed	20.99			
Sixth	R4	Bedroom	W10	Existing	39.61	0.55	*North Facing	
				Proposed	21.68			
Sixth	R5	Bedroom	W11	Existing	39.47	0.58	*North Facing	
				Proposed	22.84			
Seventh	R1	Bedroom	W7	Existing	39.62	0.72	*North Facing	

Behan Partnership LLP - Daylight/Sunlight Analysis

Floor Ref.	Room Ref.	Room Use.	Window Ref.		VSC	Proposed / Existing	Available Sunlight Hours Annual %	Available Sunlight Hours Winter %
Seventh	R1	Bedroom	W7	Proposed	28.63	0.72	*North Facing	
Seventh	R2	Bedroom	W8	Existing	39.62	0.70	*North Facing	
				Proposed	27.77			
Seventh	R3	Bedroom	W9	Existing	39.62	0.70	*North Facing	
				Proposed	27.76			
Seventh	R4	Bedroom	W10	Existing	39.62	0.72	*North Facing	
				Proposed	28.49			
Seventh	R5	Bedroom	W11	Existing	39.62	0.75	*North Facing	
				Proposed	29.63			
Eighth	R1	Bedroom	W4	Existing	39.62	0.91	*North Facing	
				Proposed	35.86			
Eighth	R2	Bedroom	W5	Existing	39.62	0.90	*North Facing	
				Proposed	35.56			
Eighth	R3	Bedroom	W6	Existing	39.62	0.90	*North Facing	
				Proposed	35.56			
Eighth	R4	Bedroom	W7	Existing	39.62	0.90	*North Facing	
				Proposed	35.83			
Eighth	R5	Bedroom	W8	Existing	39.62	0.91	*North Facing	
				Proposed	36.24			
Ninth	R1	Bedroom	W4	Existing	39.62	1.00	*North Facing	
				Proposed	39.62			
Ninth	R2	Bedroom	W5	Existing	39.62	1.00	*North Facing	
				Proposed	39.62			
Ninth	R3	Bedroom	W6	Existing	39.62	1.00	*North Facing	
				Proposed	39.62			
Ninth	R4	Bedroom	W7	Existing	39.62	1.00	*North Facing	
				Proposed	39.62			
Ninth	R5	Bedroom	W8	Existing	39.62	1.00	*North Facing	
				Proposed	39.62			

* Window faces within 90 degrees of North

Behan Partnership LLP - Daylight Distribution

The Regal Hotel

Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Existing	Lit Area Proposed	Proposed / Existing
Ground	R1	Bedroom	Area m^2	12.06	11.70	3.57	0.31
			% of room		97%	30%	
Ground	R2	Bedroom	Area m^2	12.06	11.79	2.41	0.20
			% of room		98%	20%	
Ground	R3	Bedroom	Area m^2	12.06	11.79	1.73	0.15
			% of room		98%	14%	
Ground	R4	Bedroom	Area m^2	12.06	11.78	1.71	0.15
			% of room		98%	14%	
Ground	R5	Bedroom	Area m^2	12.06	11.79	1.63	0.14
			% of room		98%	13%	
Ground	R6	Bedroom	Area m^2	12.06	11.75	1.43	0.12
			% of room		97%	12%	
Ground	R7	Bedroom	Area m^2	12.06	11.75	1.56	0.13
			% of room		97%	13%	
Ground	R8	Bedroom	Area m^2	12.06	11.64	2.04	0.17
			% of room		96%	17%	
Ground	R9	Bedroom	Area m^2	13.08	12.67	12.67	1.00
			% of room		97%	97%	
Ground	R10	Bedroom	Area m^2	12.18	11.80	11.80	1.00
			% of room		97%	97%	
Ground	R11	Bedroom	Area m^2	12.17	11.85	11.85	1.00
			% of room		97%	97%	
Ground	R12	Bedroom	Area m^2	12.21	11.87	11.87	1.00
			% of room		97%	97%	
Ground	R13	Bedroom	Area m^2	11.83	11.55	11.55	1.00
			% of room		98%	98%	
First	R1	Bedroom	Area m^2	12.06	11.85	3.66	0.31
			% of room		98%	30%	
First	R2	Bedroom	Area m^2	12.06	11.85	2.37	0.20
			% of room		98%	20%	
First	R3	Bedroom	Area m^2	12.06	11.85	1.58	0.13
			% of room		98%	13%	
First	R4	Bedroom	Area m^2	12.06	11.85	1.63	0.14
			% of room		98%	14%	
First	R5	Bedroom	Area m^2	12.06	11.85	1.43	0.12
			% of room		98%	12%	
First	R6	Bedroom	Area m^2	12.06	11.84	1.27	0.11

Behan Partnership LLP - Daylight Distribution

Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Existing	Lit Area Proposed	Proposed / Existing
First	R6	Bedroom	% of room		98%	11%	0.11
First	R7	Bedroom	Area m^2	12.06	11.84	1.50	0.13
			% of room		98%	12%	
First	R8	Bedroom	Area m^2	12.06	11.88	3.04	0.26
			% of room		99%	25%	
First	R9	Bedroom	Area m^2	12.06	11.89	3.94	0.33
			% of room		99%	33%	
First	R10	Bedroom	Area m^2	13.08	12.67	12.67	1.00
			% of room		97%	97%	
First	R11	Bedroom	Area m^2	12.18	11.84	11.84	1.00
			% of room		97%	97%	
First	R12	Bedroom	Area m^2	12.17	11.85	11.85	1.00
			% of room		97%	97%	
Second	R1	Bedroom	Area m^2	12.06	11.85	4.01	0.34
			% of room		98%	33%	
Second	R2	Bedroom	Area m^2	12.06	11.85	2.84	0.24
			% of room		98%	24%	
Second	R3	Bedroom	Area m^2	12.06	11.85	2.12	0.18
			% of room		98%	18%	
Second	R4	Bedroom	Area m^2	12.06	11.85	2.10	0.18
			% of room		98%	17%	
Second	R5	Bedroom	Area m^2	12.06	11.73	1.66	0.14
			% of room		97%	14%	
Second	R6	Bedroom	Area m^2	15.32	15.00	1.75	0.12
			% of room		98%	11%	
Second	R7	Bedroom	Area m^2	15.32	15.00	2.50	0.17
			% of room		98%	16%	
Second	R8	Bedroom	Area m^2	12.06	11.79	6.04	0.51
			% of room		98%	50%	
Second	R9	Bedroom	Area m^2	12.06	11.89	7.44	0.63
			% of room		99%	62%	
Second	R10	Bedroom	Area m^2	13.08	12.68	12.68	1.00
			% of room		97%	97%	
Second	R11	Bedroom	Area m^2	12.18	11.85	11.85	1.00
			% of room		97%	97%	
Second	R12	Bedroom	Area m^2	12.17	11.85	11.85	1.00
			% of room		97%	97%	
Second	R13	Bedroom	Area m^2	12.21	11.89	11.89	1.00
			% of room		97%	97%	
Second	R14	Bedroom	Area m^2	11.83	11.55	11.55	1.00

Behan Partnership LLP - Daylight Distribution

Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Existing	Lit Area Proposed	Proposed / Existing
Second	R14	Bedroom	% of room		98%	98%	1.00
Third	R1	Bedroom	Area m^2	12.06	11.85	4.13	0.35
			% of room		98%	34%	
Third	R2	Bedroom	Area m^2	12.06	11.85	3.06	0.26
			% of room		98%	25%	
Third	R3	Bedroom	Area m^2	12.06	11.85	2.51	0.21
			% of room		98%	21%	
Third	R4	Bedroom	Area m^2	12.06	11.85	2.54	0.21
			% of room		98%	21%	
Third	R5	Bedroom	Area m^2	12.06	11.73	2.17	0.18
			% of room		97%	18%	
Third	R6	Bedroom	Area m^2	15.32	15.00	1.92	0.13
			% of room		98%	13%	
Third	R7	Bedroom	Area m^2	15.32	15.00	2.63	0.18
			% of room		98%	17%	
Third	R8	Bedroom	Area m^2	12.06	11.79	6.95	0.59
			% of room		98%	58%	
Third	R9	Bedroom	Area m^2	12.06	11.89	7.84	0.66
			% of room		99%	65%	
Fourth	R1	Bedroom	Area m^2	12.06	11.85	4.39	0.37
			% of room		98%	36%	
Fourth	R2	Bedroom	Area m^2	12.06	11.85	3.30	0.28
			% of room		98%	27%	
Fourth	R3	Bedroom	Area m^2	12.06	11.85	3.07	0.26
			% of room		98%	25%	
Fourth	R4	Bedroom	Area m^2	12.06	11.85	3.18	0.27
			% of room		98%	26%	
Fourth	R5	Bedroom	Area m^2	12.06	11.73	3.21	0.27
			% of room		97%	27%	
Fourth	R6	Bedroom	Area m^2	15.32	15.00	2.65	0.18
			% of room		98%	17%	
Fourth	R7	Bedroom	Area m^2	15.32	15.00	3.13	0.21
			% of room		98%	20%	
Fourth	R8	Bedroom	Area m^2	12.06	11.79	7.43	0.63
			% of room		98%	62%	
Fourth	R9	Bedroom	Area m^2	12.06	11.89	8.20	0.69
			% of room		99%	68%	
Fifth	R1	Bedroom	Area m^2	12.06	11.85	4.79	0.40
			% of room		98%	40%	
Fifth	R2	Bedroom	Area m^2	12.06	11.85	3.98	0.34

Behan Partnership LLP - Daylight Distribution

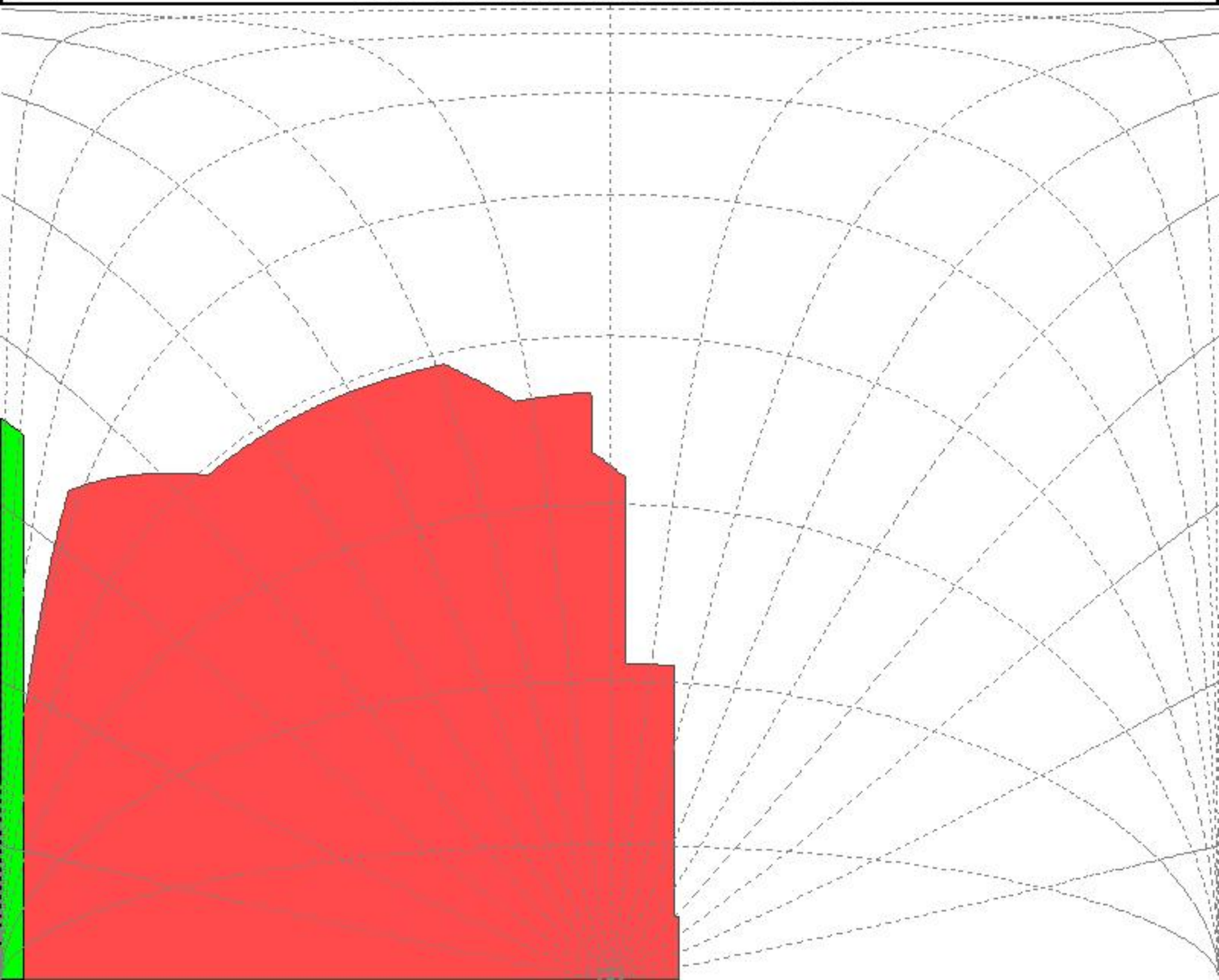
Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Existing	Lit Area Proposed	Proposed / Existing
Fifth	R2	Bedroom					0.34
			% of room		98%	33%	
Fifth	R3	Bedroom	Area m^2	12.06	11.85	3.87	0.33
			% of room		98%	32%	
Fifth	R4	Bedroom	Area m^2	12.06	11.85	4.15	0.35
			% of room		98%	34%	
Fifth	R5	Bedroom	Area m^2	12.06	11.73	4.54	0.39
			% of room		97%	38%	
Fifth	R6	Bedroom	Area m^2	15.32	15.00	4.16	0.28
			% of room		98%	27%	
Fifth	R7	Bedroom	Area m^2	15.32	15.00	4.62	0.31
			% of room		98%	30%	
Fifth	R8	Bedroom	Area m^2	12.06	11.79	8.08	0.69
			% of room		98%	67%	
Fifth	R9	Bedroom	Area m^2	12.06	11.89	8.77	0.74
			% of room		99%	73%	
Sixth	R1	Bedroom	Area m^2	12.06	11.85	5.69	0.48
			% of room		98%	47%	
Sixth	R2	Bedroom	Area m^2	12.06	11.85	5.10	0.43
			% of room		98%	42%	
Sixth	R3	Bedroom	Area m^2	12.06	11.85	5.50	0.46
			% of room		98%	46%	
Sixth	R4	Bedroom	Area m^2	12.06	11.85	6.18	0.52
			% of room		98%	51%	
Sixth	R5	Bedroom	Area m^2	12.06	11.85	6.72	0.57
			% of room		98%	56%	
Seventh	R1	Bedroom	Area m^2	12.06	11.85	9.25	0.78
			% of room		98%	77%	
Seventh	R2	Bedroom	Area m^2	12.06	11.85	9.14	0.77
			% of room		98%	76%	
Seventh	R3	Bedroom	Area m^2	12.06	11.85	9.31	0.79
			% of room		98%	77%	
Seventh	R4	Bedroom	Area m^2	12.06	11.85	10.56	0.89
			% of room		98%	88%	
Seventh	R5	Bedroom	Area m^2	12.06	11.85	10.48	0.88
			% of room		98%	87%	
Eighth	R1	Bedroom	Area m^2	12.06	11.85	11.85	1.00
			% of room		98%	98%	
Eighth	R2	Bedroom	Area m^2	12.06	11.85	11.85	1.00
			% of room		98%	98%	
Eighth	R3	Bedroom	Area m^2	12.06	11.85	11.85	1.00

Behan Partnership LLP - Daylight Distribution

Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Existing	Lit Area Proposed	Proposed / Existing
			% of room		98%	98%	
Eighth	R4	Bedroom	Area m^2	12.06	11.85	11.84	1.00
			% of room		98%	98%	
Eighth	R5	Bedroom	Area m^2	12.06	11.85	11.85	1.00
			% of room		98%	98%	
Ninth	R1	Bedroom	Area m^2	12.06	11.85	11.85	1.00
			% of room		98%	98%	
Ninth	R2	Bedroom	Area m^2	12.06	11.85	11.85	1.00
			% of room		98%	98%	
Ninth	R3	Bedroom	Area m^2	12.06	11.85	11.85	1.00
			% of room		98%	98%	
Ninth	R4	Bedroom	Area m^2	12.06	11.85	11.85	1.00
			% of room		98%	98%	
Ninth	R5	Bedroom	Area m^2	12.06	11.85	11.85	1.00
			% of room		98%	98%	

Drawing Ref: The Regal Hotel & Small Model.dwg
Window Ref: The Regal Hotel-Fifth-W15

VSC: Existing 39.17
Proposed 27.71



Drawing Ref: The Regal Hotel & Small Model.dwg
Window Ref: The Regal Hotel-Fourth-W15

VSC: Existing 38.89
Proposed 24.58