Daylight and Sunlight Report

75 Norcutt Road

Twickenham

TW2 6SR

Leek Real Estate Ltd

9th May 2019

LUMINA
LONDON • LIMITED

9 Heneage Street, Spitalfields, London E1 5LJ

CONTENTS

APPENDICES

1 INTRODUCTION AND SCOPE OF REPORT

1.1 Lumina London Limited are retained by the Leek Real Estate Ltd to assess the performance and impact of the proposed redevelopment of the proposed redevelopment of 75 Norcutt Road, Twickenham, TW2 6SR in respect of Daylight and Sunlight.

1.2 The purpose of this Report is to assess the impact of the proposed development on the daylight and sunlight enjoyed by existing neighbouring residential buildings in accordance with the standards in the Building Research Establishment (BRE) Guidelines "*Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice*" 2011, to ensure that the proposed development will not result in any material impact on the amenity enjoyed by existing neighbouring residents.

1.3 The Site has the benefit of an extant planning consent (Ref: 17/1033/FUL) secured at appeal (Ref: APP/L5810/W/17/3187677) for:

Demolition of Lockcorp House; erection of a part four, part five-storey building comprising 9 no. student cluster flats (49 study/bedrooms in total); three car parking spaces including one disabled space, ancillary cycle and refuse storage and landscaping.

The impact of the "massing" of the Appeal Scheme has been established as a benchmark and care has been taken to ensure that the current proposals do not result in any further material impact in comparison to the approved Appeal Scheme.

1.4 As part of the development of the design we have worked closely with Brookes Architects to provide advice on various "massing" studies and Building Envelopes in order to establish a form of "massing" that will continue to maintain a reasonable level of amenity to the existing neighbouring residential dwellings and perform in the same way as the approved Appeal Scheme.

1.5 In addition, as the proposed development is for new residential accommodation the adequacy of daylight within those "new" habitable rooms has been tested in accordance with the

recommendations taken from the British Standard Code of Practice for Daylighting, BS8206 Part 2, and Appendix C of the BRE Guidelines to ensure that the future occupants of the new development will enjoy an adequate level of amenity.

2 SOURCES OF INFORMATION AND LIMITATIONS

2.1 The existing and surrounding buildings have been modelled from a 3D model provided by Brookes Architects reference 5076_75 Norcutt Road_11-01-19 Daylight Model.dwg. For the "massing" of the approved Appeal Scheme we have relied upon the MAA-Architects' 3-D model Ref: Student Scheme 3D Model.DWG and Drawing Nos. P_102, P_102, P_201

2.2 For the internal room uses and layouts for Alcott House to the south of the Application Site, we have obtained the record design drawings lodged with the Planning records under Planning Ref: 06/2018/FUL.

2.3 The proposed scheme has been based on the Brookes Architects' 3-D model Ref 5076_75 Norcutt Road_11-01-19 Daylight Model.dwg, 5076_3_Norcutt Road-3D Export-08-05-19.DWG and 5076_3_02 Rev P3.

3 DAYLIGHT AND SUNLIGHT STANDARDS

3.1 The BRE Guidelines: *"Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice"* are well established and are adopted by most Local Authorities, including the London Borough of Richmond upon Thames as the appropriate scientific and empirical methods of measuring daylight and sunlight in order to provide objective data from which to apply their planning policies. The guidelines are not fixed standards but should be applied flexibly to take account of the specific circumstances of each case.

3.2 The Introduction of the Guidelines states that:

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the developer. Although it gives numerical guidelines, these should be interpreted flexibly because natural light is only one of many factors in site layout design."

3.3 The "flexibility" recommended in the Guidelines should reflect the specific circumstances of each case being considered. For example, as the numerical standards within the Guidelines have been derived on the basis of a low-density suburban housing model, it is entirely appropriate to apply a more flexible approach when dealing with a denser urban environment where the height and scale of buildings is generally greater. The approved student housing building on the site is five storeys in height and this is the height and "massing" against which the numerical targets should be set. In addition, where existing and proposed buildings have specific design features such as projecting balconies, deep recesses, consecutive projecting rear extensions, bay windows etc….., it is equally valid to apply common sense and a degree of flexibility to take account of the effect of these particular design features. This does not mean that the recommendations and targets within the Guidelines can be disregarded, but instead, the "flexibility" that should be applied should be founded on sound scientific principles that can be supported and justified. This requires a certain degree of professional value judgement and experience, and general guidance on setting alternative numerical targets in such circumstances, is set out in Appendix F of the Guidelines.

Daylighting

3.4 It is not always necessary for detailed modelling and testing to be undertaken in every case as this can be costly and time-consuming especially with relatively small developments or domestic extensions. The Guidelines therefore contain two initial rudimentary trigonometric tests that can be applied to determine if there is a probability of daylight being affected by a proposed development. It is probably fair to describe the initial trigonometric tests as "screening" tests.

3.5 The first is a simple height and distance calculation. If the distance of the new development is more than three times its height above the lowest window serving a habitable room, daylight is unlikely to be seriously affected and it is unnecessary for any further detailed modelling and testing to be undertaken.

3.6 The second is similar in application and relies upon a simple angular measurement taken from the midpoint of the lowest window serving a habitable room in an existing neighbouring dwelling. If the profile of a new development will not subtend an angle of more than 25° from the midpoint of the lowest window serving a habitable room, then daylight is again unlikely to be seriously affected and it is unnecessary for any further detailed modelling and testing to be undertaken.

3.7 The scientific basis of the 25° angle test is that if a proposed development is below an angle of 25°, the corresponding Vertical Sky Component (VSC) value will remain above 27% VSC.

3.8 This angular test is simple and crude as it does not take account of buildings or obstructions that present an irregular profile that is not directly opposite and parallel to the plane of the window being assessed.

3.9 If these initial screening tests are satisfied it is unnecessary for more detailed modelling and testing to be undertaken.

3.10 The first technical method for measuring the adequacy of daylight received by existing neighbouring buildings is the use of Vertical Sky Components (VSC).

3.11 VSC is a "spot" measurement of daylight taken on the face of the window and is a measure of the availability of direct light from the sky received from over and around the "existing" and "proposed" obstruction caused by the buildings or structures in front of the window. As it is measured on the outside face of the window, one of the inevitable shortcomings is that it does not take account of the size of the window or the size of the room served by the window. For this reason, the BRE Guidelines recommend that where the internal layouts of the neighbouring properties are known, the internal Daylight Distribution should be measured in addition to VSC to determine the extent of daylight penetration and direct sky visibility from within the room. If the internal layouts are not known, it is common practice to use estimated and assumed room layouts. It does however need to be recognised that in such circumstances the results of the internal Daylight Distribution analysis will not be as accurate or reliable.

3.12 It should also be noted that it is unrealistic to expect to achieve good natural lighting conditions where rooms are sub-terranean or partially sub-terranean. Although not specifically stated in the Guidelines, it is logical that the use of the numerical values in the VSC and Daylight Distribution tests for establishing adequate Block-Spacing should really be taken from the notional ground floor level.

3.13 Although the maximum VSC value that should be achieved for a totally unobstructed vertical window should theoretically and logically be 50% VSC, it is in fact approximately 40% VSC due to the adjustment made for direct light received from the sky at extreme angles of altitude and azimuth. The target VSC value for good daylighting conditions measured on an absolute scale is 27% VSC and this represents a typical VSC value that would be achieved on the face of a window on the main elevation of a well-spaced 2 storey suburban housing development. It is unrealistic to expect values in excess of 27% VSC in an inner-city urban environment or where the general pattern of development is greater than two storeys.

3.14 In simple terms, 27% VSC equates to being able to see 27% of the Sky Dome, i.e. the hemisphere of sky above a given reference point. A VSC value of 27% will be achieved where the obstruction in front of a vertical window is continuous and parallel to the plane of that window, and where it subtends a vertical angle of 25° when measured from the midpoint of that window. It therefore follows that if a proposed new development is below a vertical angle of

25°, the resultant VSC value will remain above 27%. This is an obvious reason why it is unrealistic to expect VSC values in excess of 27% in a denser urban environment. This is the scientific basis for the initial "screening" test in the BRE Guidelines mentioned above where it is unnecessary for any further daylight tests to be undertaken where a proposed development will remain below a vertical angle of 25°. It is clear that in a denser urban environment, the relationship with the vast majority of existing buildings already exceeds a vertical angle of 25° and the general profile of the skyline will be irregular. VSC values in excess of 27% VSC are therefore uncommon and the prevailing values will usually be below 27% VSC as a norm. In such circumstances, VSC values in the mid-teens are seen as typical and therefore represent the reasonable expectation of daylight in an urban environment and values in excess of 20% VSC will be considered to be good. It is only where VSC values fall into single figures that it becomes difficult to achieve good interior lighting conditions without the need to provide supplementary artificial lighting for longer periods during the day.

3.15 In respect of daylighting, the BRE Guidelines adopt different methods of measurement depending on whether the assessment is for the impact on existing neighbouring premises or for measuring the adequacy of daylight that will be received within proposed new dwellings. For safeguarding the daylight received by existing neighbouring residential buildings around a proposed development, the relevant recommendations are set out in Section 2.2 of the Guidelines.

3.16 As mentioned above, the adequacy of daylight received by existing neighbouring dwellings is measured using two methods of measurement. The first is the use of Vertical Sky Components (VSC) which is then followed by the measurement of internal Daylight Distribution by plotting the position of the "existing" and "proposed" no skyline contour where the internal layouts of the neighbouring properties are known.

3.17 VSC is measured at the mid-point on the external face of a window serving a habitable room. For the purpose of the Guidelines, a "*habitable*" room is defined as a Kitchen, Living Room or Bedroom. Bathrooms, hallways and corridors are excluded from this definition. In addition, there is often a further distinction in respect of small kitchens. Where the internal area of a small kitchen limits the use of the kitchen to food preparation only and is not of sufficient size to accommodate some other form of "*habitable*" use such as dining, the kitchen need not be

classed as a "*habitable*" room in its own right. A net area of 13m² is usually taken as an appropriate threshold. The exclusion can also apply to relatively small internalised or galley-type kitchens and can also apply to relatively small kitchen areas which form part of a larger Living/Kitchen/Diner. This distinction is not however set out in the Guidelines but has been accepted and applied by the author, Dr Paul Littlefair himself on occasions where the BRE have been appointed to advise Applicants on a number of developments. It is therefore a consistent approach.

3.18 The "no skyline" contour plotted for the purpose of measuring internal Daylight Distribution, identifies those areas within the room, usually measured on a horizontal working plane set at worktop level, where there is direct sky visibility. This therefore represents those parts within the room where the sky can be seen through the window. This second measure takes account of the size of the window, number of windows where a room is served by more than one window and the size of the room, and when interpreted with the VSC value, it is easier to determine the likely internal lighting conditions, and hence the overall quality of lighting within the room can be assessed. As with VSC, the measurement of a no skyline contour has its own shortcoming. As it simply represents those parts on the Working Plane within a room where there is direct sky visibility, a seemingly good level of internal Daylight Distribution may be achieved even where only a very small amount of light can actually penetrate into the room. As the contour is set at the threshold of "zero" it cannot identify the intensity of natural daylight in those parts of the room where higher levels of direct daylight are achieved. There will therefore be circumstances where rooms that have good internal daylight distribution when measured using a no skyline contour will in fact experience poor internal levels of daylight.

3.19 As both methods of measurement have their own shortcomings and measure different aspects of daylight, the results of both sets of tests should usually be taken together and interpreted in order to judge the quality of daylight that will prevail.

3.20 For VSC, the Guidelines state that:

"If this Vertical Sky Component is greater than 27% then enough skylight should still be reaching the window of the existing building. Any reduction below this level should be kept to a minimum. If the Vertical Sky Component with the new development in place is both less than

27% and less than 0.8 times its former value, then the occupants of the existing building will notice the reduction in the amount of skylight".

We have emphasised the word "notice" as just because a change in lighting conditions is noticeable does not necessarily equate to the loss of light being a material reduction to the level of amenity enjoyed by the neighbouring property.

3.21 In context, as mentioned above, the maximum VSC value that can be achieved for a totally unobstructed vertical window is 40% VSC. It is therefore permissible for an obstruction to reduce the amount of visible sky seen from that window by 13% of the Sky Dome to 27% VSC, even before the level of daylight received by the window could be below-standard. There are however many circumstances where the VSC value is already below 27%. In such circumstances, it is permissible to reduce existing VSC values by a factor of 0.2 (i.e. 20%) so that the VSC value under "proposed" conditions remains more than 0.8 times its former value. The scientific foundation for this permissible margin is that it has been established that existing daylight (and sunlight) levels can be reduced by a factor of 20% before the loss becomes materially noticeable. This factor of reduction applies to VSC, Daylight Distribution, Sunlight and Overshadowing. Where existing windows enjoy very high levels of daylight under existing conditions, the percentage reduction can be higher provided that the residual VSC value remains adequate.

3.22 By contrast, the adequacy of daylight for proposed "New-Build" dwellings is measured using the standards in the British Standard Code of Practice for Daylighting, BS8206 Part 2 and Appendix C of the BRE Guidelines.

3.23 The British Standard relies upon the use of Average Daylight Factors (ADF) rather than VSC and Daylight Distribution. The use and calculation of ADF is set out in Appendix C of the BRE Guidelines and requires a larger amount of design data.

3.24 ADF is not one of the tests usually used for assessing the impact on existing dwellings, but can be used as "check" of internal daylight adequacy as it can supplement the results of a VSC and Daylight Distribution analysis, and partially addresses the main shortcoming of the no skyline test for internal Daylight Distribution.

Sunlighting

3.25 The requirements for protecting sunlight to existing residential buildings are set out in Section 3.2 of the BRE Guidelines.

3.26 The availability of sunlight varies throughout the year, with the maximum amount of sunlight being available on the summer solstice and the minimum on the winter solstice. In view of this, the accepted test date for measuring sunlight is the median between the two, the Spring Equinox (21st March), on which day the United Kingdom has equal periods of daylight and darkness and sunlight is available from approximately 0830 to 1730. In addition, on that date, sunlight received perpendicular to the face of a window will only be received where that window faces within 90 degrees of due south. The BRE Guidelines therefore limit the extent of testing for sunlight to where a window faces within 90 degrees of due south.

3.27 The sunlight standards are primarily applied to the principal Living Room within each dwelling although sunlight availability to kitchens and bedrooms should also be checked.

3.28 The recommendation for sunlight is:

"If this window reference point can receive more than one quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months of 21st September and 21st March, then the room should receive enough sunlight…….any reduction in sunlight access below this level should be kept to a minimum. If the availability of sunlight hours are both less than the amounts given and less than 0.8 times their former value, either over the whole year or just during the winter months, then the occupants of the existing building will notice the loss of sunlight".

3.29 A good level of sunlight will therefore be achieved where a window receives more than 25% APSH, of which 5% of those APSH should be received in the winter months. Where sunlight levels fall below this suggested recommendation, a comparison with the existing condition should be undertaken and if the reduction ratio is less than 0.2, i.e. the window continues to receive more than 0.8 times its existing sunlight levels, the impact on sunlight will be acceptable.

3.30 It should however be noted that the BRE Sunlight recommendations also have their own shortcomings which should be taken into account when interpreting any numerical measurements. First, there is no recommended adjustment to take account of the actual orientation of the window being assessed. The same numerical targets are applied to a window that faces due south in comparison to a window that faces due east or due west even though a window that faces due south will be able to receive twice as much sunlight as a window facing due east or due west. In addition, during the winter months, the angle of the sun is much lower, and sunlight is only available at relatively low vertical angles. A consequence of this is that even relatively small and modest increases in the height or "massing" of a new development can have a disproportionate impact on the availability of winter sunlight. This is a further example of where common sense, professional judgement and flexibility may be appropriate.

Overshadowing

3.30 The Overshadowing recommendations in the BRE Guidelines should be applied to gardens and other amenity and recreational areas such as playgrounds and areas used for sitting-out. General areas of hardstanding and car parking which are not used as designated amenity space are not usually included although it is important to avoid large areas that will be in permanent shadow especially where there is soft landscaping.

3.31 The recommendation in the BRE Guidelines is that for an existing garden or amenity area to remain adequately sunlit throughout the year, at least 50% of the garden or amenity area should remain capable of receiving at least two hours of sun-on-the-ground on the Spring Equinox, (21st March). If as a result of new development in existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21st March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.

3.32 With regard to calculating the extent of overshadowing, it is necessary to be cognizant of the effect of trees and fences. In the case of the former, the advice given in the Guidelines is that the effect of trees and high hedges should be taken into account where they form a dense belt or group of evergreens. In the case of the latter, boundary walls or opaque fences that are higher than 1.5 m should be included in the calculations. There is however no advice relating to how

fences should be treated on sloping sites or where there is a significant difference in ground-level on the boundary and between neighbouring sites. In such circumstances, common sense should be applied.

3.33 In the present circumstances the extant approval has already set the permitted level of impact on existing neighbouring amenity and the appropriate methodology to be followed for the "new" application is to ensure that the new development does not result in any further loss or impact in comparison to that approved scheme. This is the approach that has been adopted and each of the Daylight & Sunlight tests have therefore directly compared the performance of the approved scheme against the current proposals.

4 IMPACT ON NEIGHBOURING AMENITY

4.1 For the purpose of Planning, the tests within the BRE Guidelines are usually limited to habitable rooms within existing neighbouring residential buildings. Non-domestic and commercial buildings are usually excluded as it is generally accepted that these uses normally rely primarily on supplementary artificial lighting throughout the day and are therefore not dependent on natural light for their main source of amenity. We have not had access to the interior of any of the existing neighbouring buildings and have therefore relied upon an external inspection and review of any publically available records to establish the extent and location of existing residential premises. The only existing neighbouring residential building in close proximity to the site that could be affected by the proposed development is Alcott House which lies directly to the south of the site. Record drawings of that building have been obtained from the Planning Records under Application Ref: 06/2018/FUL. The room uses, layouts and dimensions used in the analysis should therefore be reasonably accurate.

4.2 Annexed at Appendix 1 are Drawing Nos.NR2018-001-01-1000 to 1003 which are images of the site plan and 3D computer model of the "consented" and "proposed" massing set in context with its neighbours. They are followed in Appendix 2 by Drawing No. NR2018-001-01-3000 which shows the room location plans indicating the location of the various rooms and windows included within the analysis. The window references on those drawings should be cross-referenced with the equivalent window references in the Vertical Sky Component Analysis, Daylight Distribution Analysis Tables annexed at Appendices 3 and 4.

Daylight

4.3 In the Vertical Sky Component (VSC) Table annexed at Appendix 3, the figures set out in the fourth column in green are the VSC values that would be achieved with the approved Student Housing scheme in place. The corresponding figures in fifth column in red are the VSC values that will be achieved with the current Application Scheme. Those results demonstrate that there will be no material difference in the amount of direct light received by the windows in Alcott House which have a direct or partial outlook onto the Application Site when the current

Application Scheme is compared to the approved Student Housing Scheme and that of the 16 windows in Alcott House that need to be tested, five will in fact experience a net improvement.

4.4 The results of the No Skyline Daylight Distribution Analysis set out in Appendix 4 shows that of the 10 rooms that have a direct or partial outlook onto the Application Site, nine will experience a net improvement with only one experiencing a net loss of just 0.16 ft.².

4.5 Although the use of Average Daylight Factors (ADF) is usually applied to "New-Build" dwellings and not usually applied for assessing the impact on "existing" habitable rooms, as the flats within the Alcott House are relatively new dwellings, a supplementary ADF analysis has been run as a "check" of the internal daylight quality. Those results are set out in the table annexed at Appendix 5 and correlate with the results of the VSC and Daylight Distribution tests in that they show that there will be no material difference in the internal ADF values.

4.6 The results of all three Daylight tests show that there will be no perceivable difference in respect of the daylight received on the face of the windows or within the rooms themselves in Alcott House between the approved Student Housing Scheme and the current proposed Residential Scheme.

Sunlight

4.7 The BRE Sunlight Criteria only applies to windows that face within 90° of due south and should be applied to the principal Living Room in each dwelling. Alcott House lies to the south of the Application Site and none of the windows with a direct or partial outlook onto the Application Site fall within the BRE Sunlight Criteria. The impact on Sunlight or Overshadowing will therefore not be an issue and need not be assessed.

5 DAYLIGHT AMENITY WITHIN THE PROPOSED NEW DEVELOPMENT

5.1 The quality of daylight in proposed new habitable rooms is measured using Average Daylight Factors (ADF) taken from the British Standard Code of Practice for Daylight, BS8206, Part 2 and Appendix C of the BRE Guidelines.

5.2 The locations of those rooms are shown on Drawing Nos. NR2018-001-02-3010 to 3014 annexed at Appendix 6 and the numerical results are set out in the table at Appendix 7.

5.3 Considerable input has been put into window design, sizing of the windows and design and proportions of the proposed habitable rooms in order to ensure that each room will satisfy the targets Designed Standard for Daylight for its proposed use. The results of the Average Daylight Factor (ADF) Analysis in Appendix 7 shows that all of the proposed "new" habitable rooms will meet the target design standard for daylight from the British Standard Code of Practice for Daylighting, BS 8206 Part 2 and Appendix C of the BRE Guidelines and therefore demonstrates that the future occupiers of these rooms will enjoy a reasonable level of "*amenity*".

6 SUMMARY AND CONCLUSION

6.1 The results of the Daylight analysis show that there will be no perceivable difference in the levels of Daylight that will be received by, and within, the habitable rooms in Alcott House as a result of the proposed development when it is compared against the results obtained for the approved Student Housing Scheme.

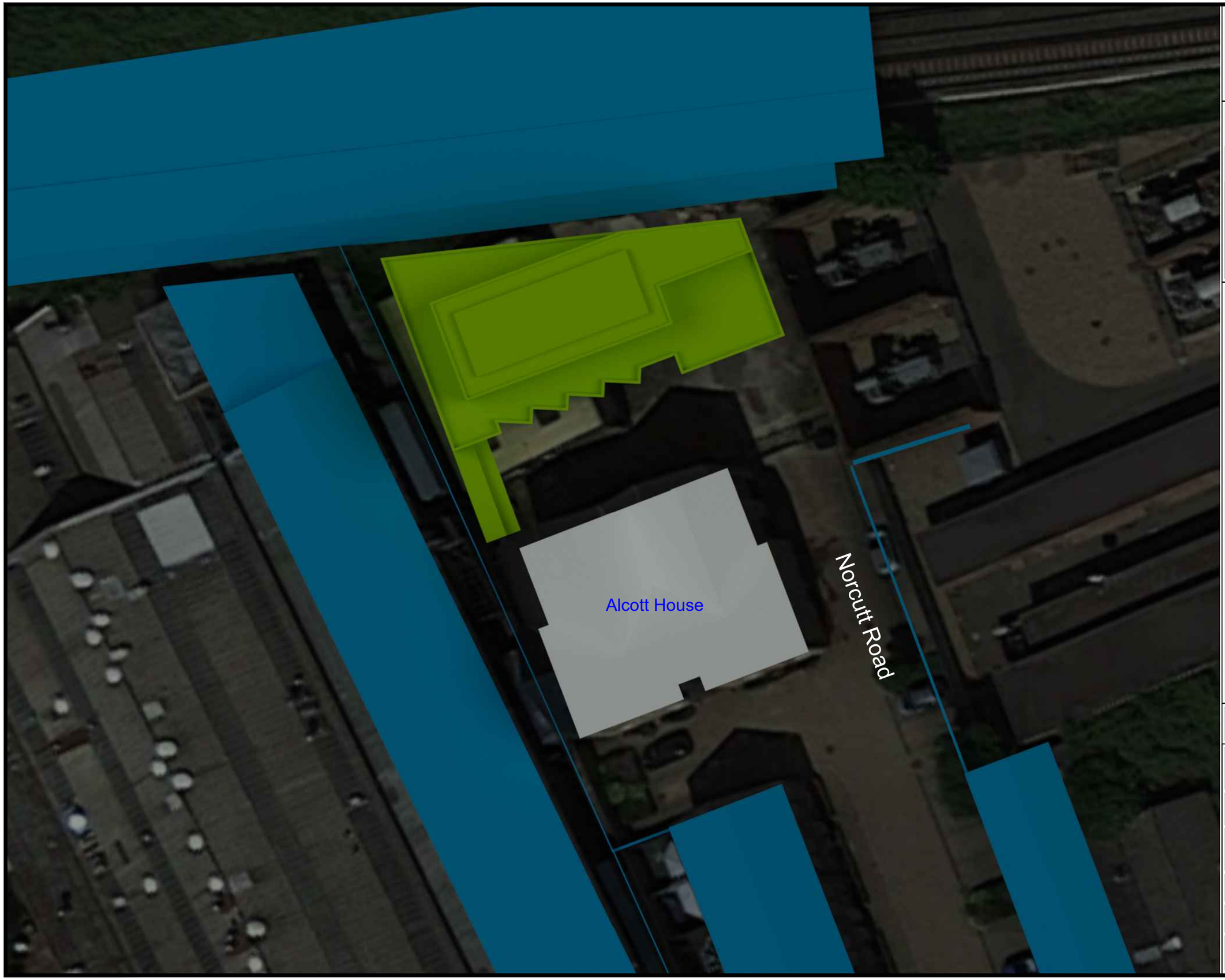
6.2 The results of the daylight analysis for the habitable rooms in the new development show that all of those rooms will achieve ADF values in excess of 1.0%*df* for Bedrooms and 1.50%*df* for Living Rooms.

6.3 In overall conclusion, as there will be no perceivable difference between the performance of the current proposals in comparison to the approved Student Housing Scheme, the potential impact will be the same and it should therefore follow that the impact on existing residential "*amenity*" should be acceptable. In addition, the internal daylight levels within all of the proposed "new" habitable rooms will meet the Design Standards for Daylight for New-Build Dwellings taken from the British Standard Code of Practice, BS 8206 Part 2, and the future occupants will therefore enjoy adequate levels of internal Daylight Amenity.

Lumina London Limited

APPENDIX 1

Drawing Nos. NR2018-001-01-1000 to 1003



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VIEWS

Legend

- Existing Site
- Proposed Scheme
- Analysed Buildings
- Surrounding Buildings

N

Source of Information

Existing And Surrounding Buildings
Brookes Architects
3d Model
5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Consented Building
MAA-Architects
3d Model
Student Schem 3D Model.dwg
Drawing No's:
P_102, P_102, P_201

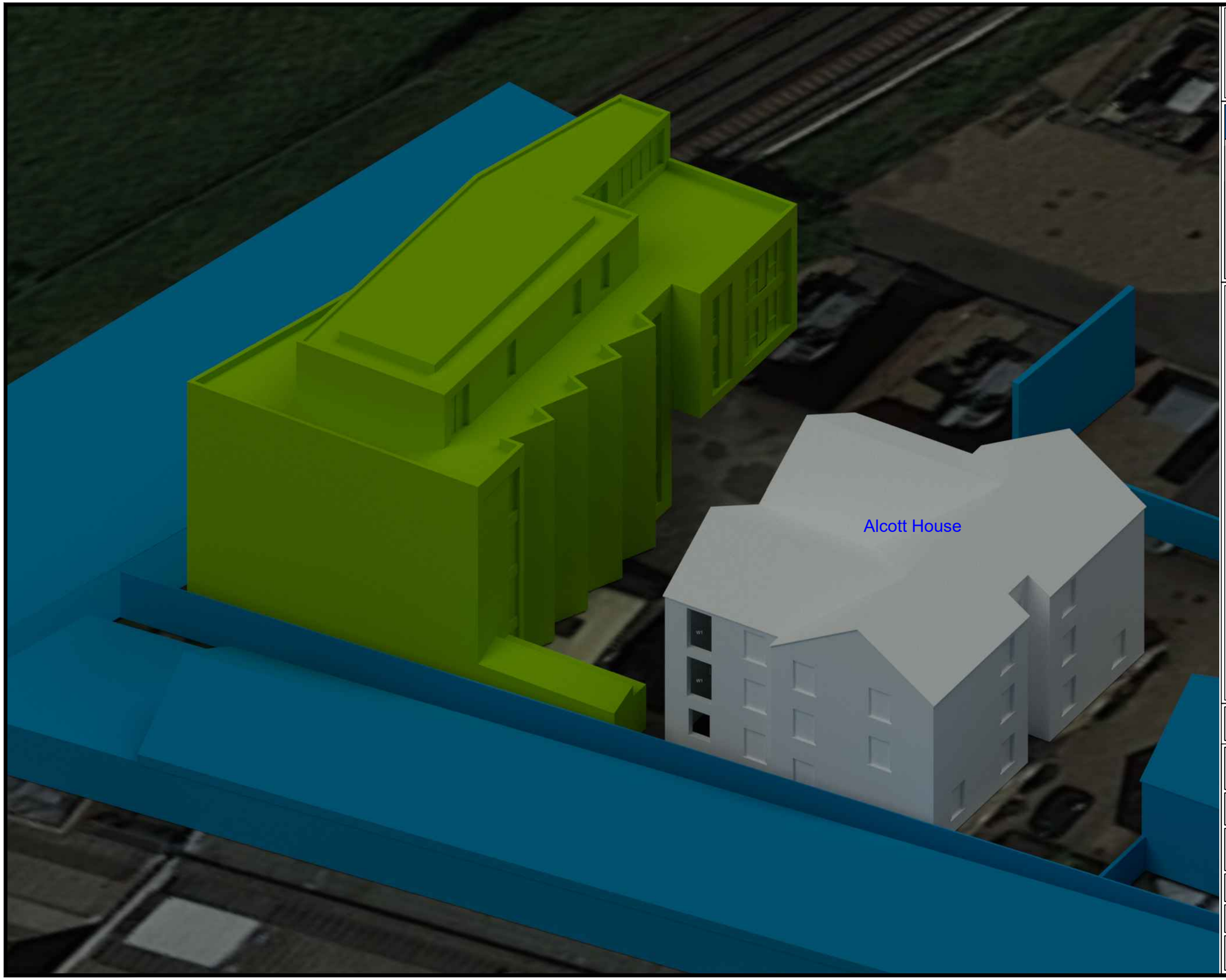
Proposed Scheme
Brookes Architects
3d Model
5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Project Title
Norcutt Road
Twickenham
TW2

Client
Leek Real Estate (No. 1) Ltd

Drawing Title
Consented Site Plan

Drawn By	Scale @A3
Mo	N\A
Project No	**Date**
NR2018-001	13/03/2019
Drawing No	**Rev**
01-1000	



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VIEWS

Legend

- Existing Site
- Proposed Scheme
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Source of Information

Existing And Surrounding Buildings
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3d Model
5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Consented Building
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3d Model
Student Schem 3D Model.dwg
Drawing No's:
P_102, P_102, P_201

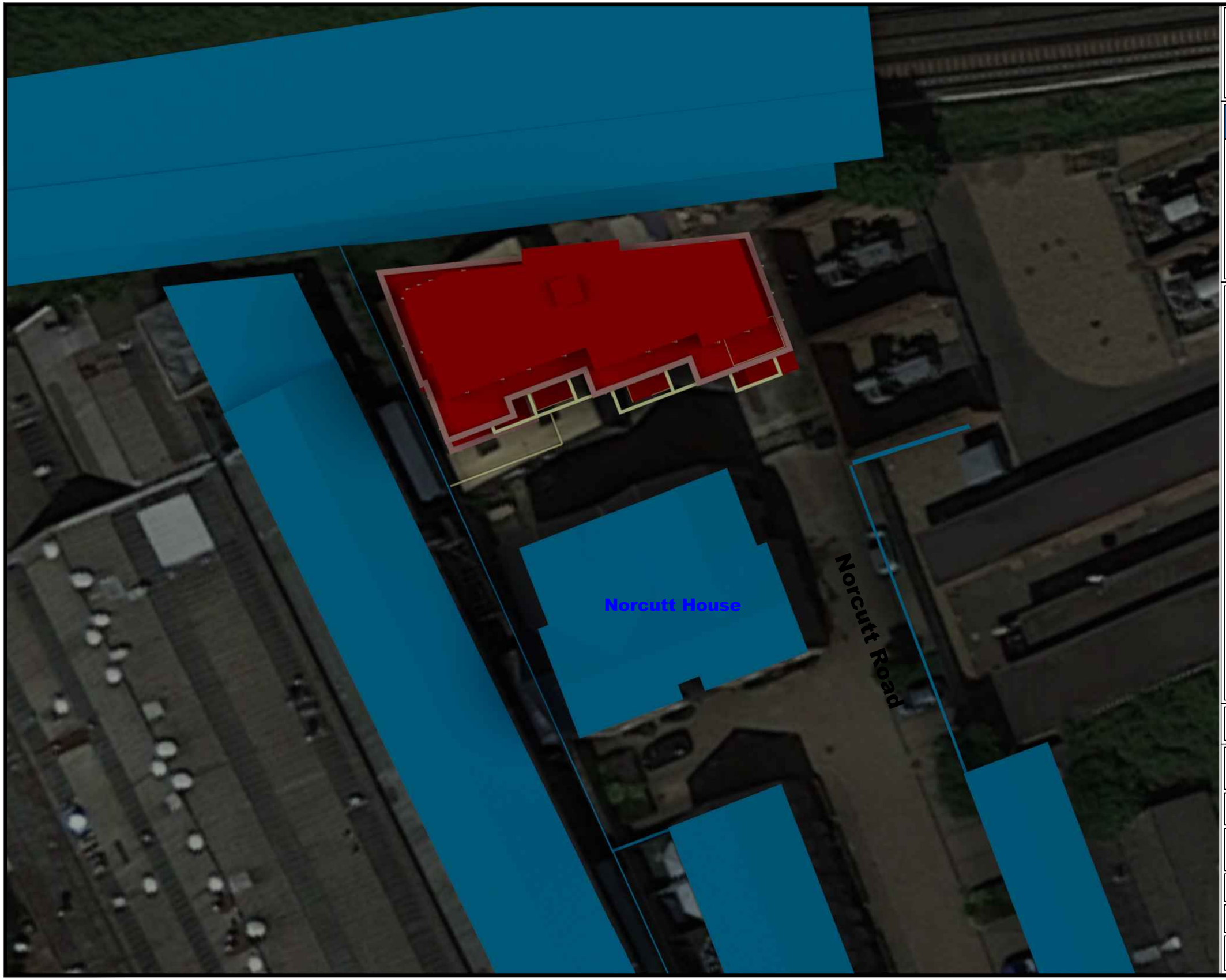
Proposed Scheme
Brookes Architects
3d Model
5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Project Title
Norcutt Road
Twickenham
TW2

Client
Leek Real Estate (No. 1) Ltd

Drawing Title
Consented 3D View

Drawn By	Scale @A3
Mo	N\A
Project No	**Date**
NR2018-001	13/03/2019
Drawing No	**Rev**
01-1001	



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Legend

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- Surrounding Buildings

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Source of Information

Existing And Surrounding Buildings
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5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Consented Building
MAA-Architects
3d Model
Student Schem 3D Model.dwg
Drawing No's:
P_102, P_102, P_201

Proposed Scheme
Brookes Architects
3d Model
5076_3_Norcutt Road - 3D Export - 08-05-19.dwg
Drawing No's:
5076_3_02 Rev P3

Project Title
Norcutt Road
Twickenham
TW2

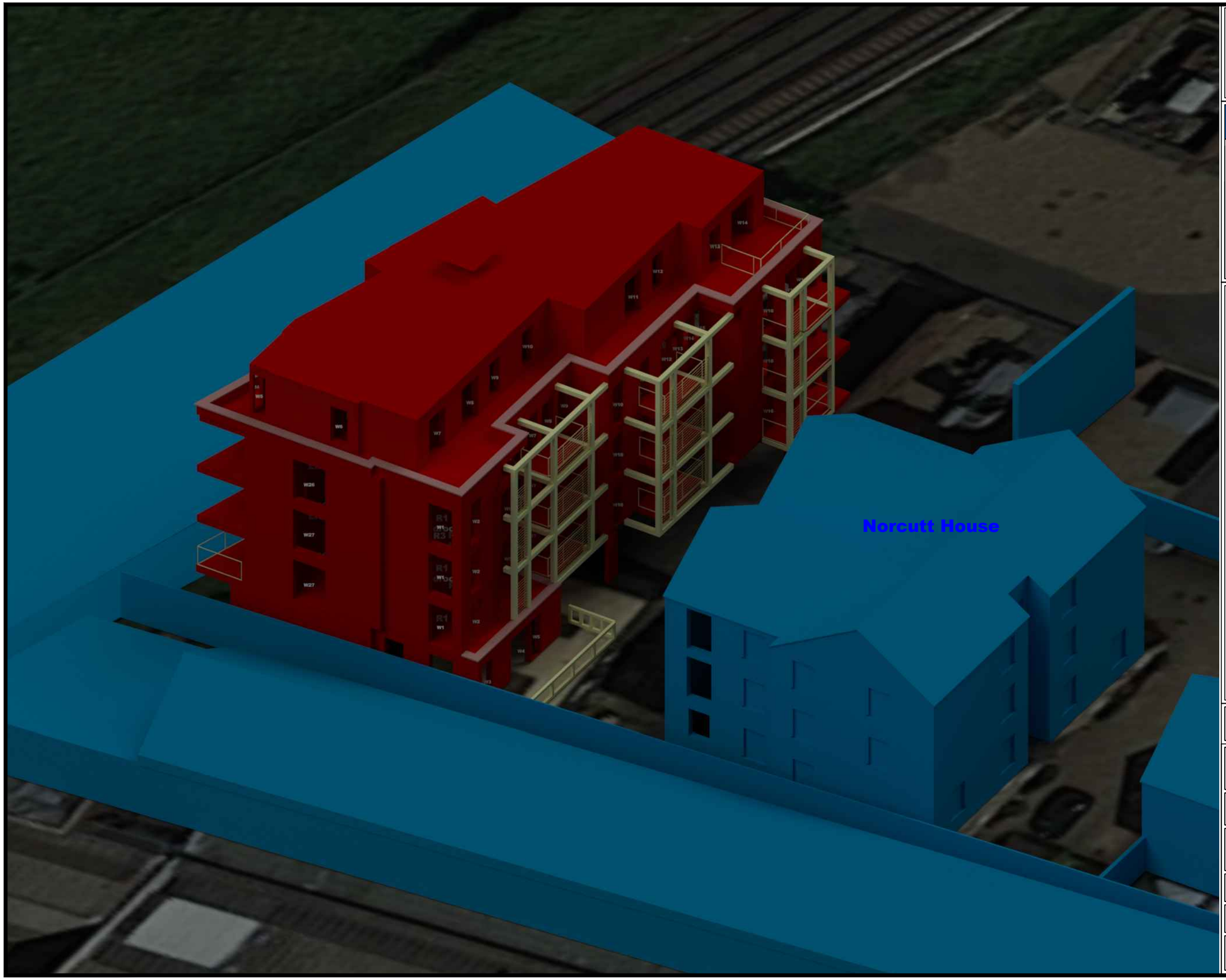
Client
Leek Real Estate (No. 1) Ltd

Drawing Title
Proposed Site Plan

Drawn By	Scale @A3
Mo	N\A

Project No	Date
NR2018-001	08/05/2019

Drawing No	Rev
02-1002	



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Source of Information

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Proposed Scheme
Brookes Architects
3d Model
5076_3_Norcutt Road - 3D Export - 08-05-19.dwg
Drawing No's:
5076_3_02 Rev P3

Project Title
Norcutt Road
Twickenham
TW2

Client
Leek Real Estate (No. 1) Ltd

Drawing Title
Proposed 3D View

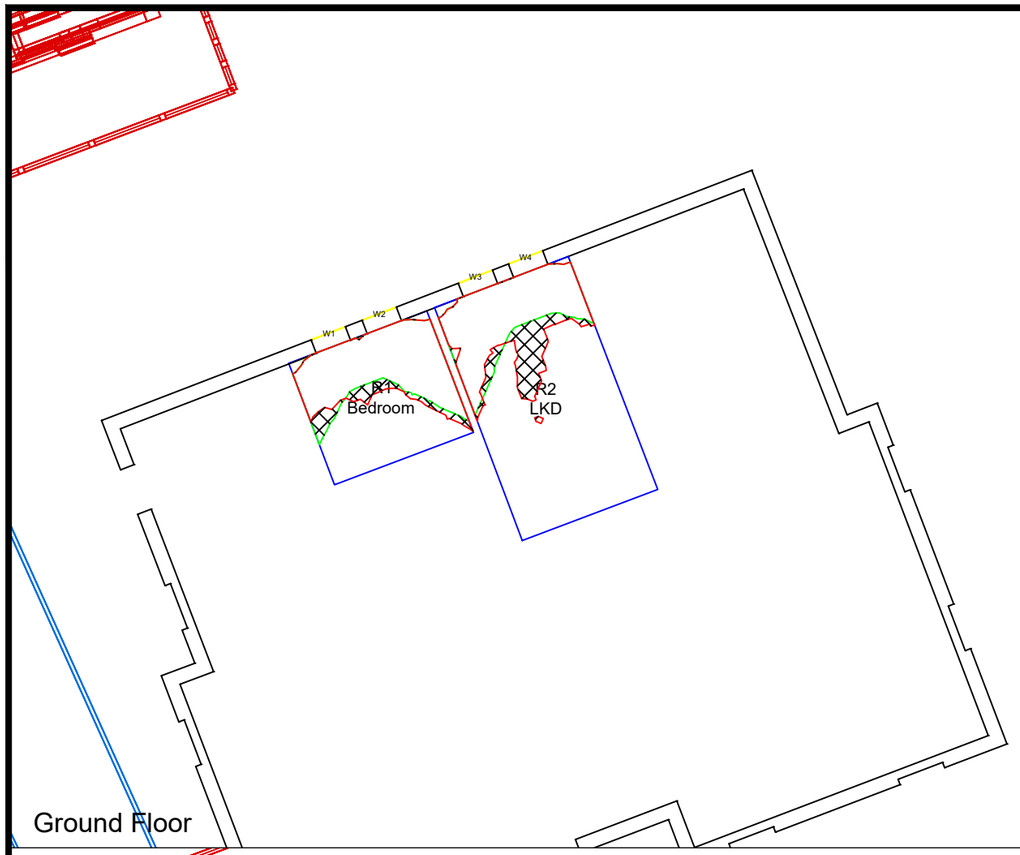
Drawn By	Scale @A3
Mo	N\A

Project No	Date
NR2018-001	08/05/2019

Drawing No	Rev
02- 1003	

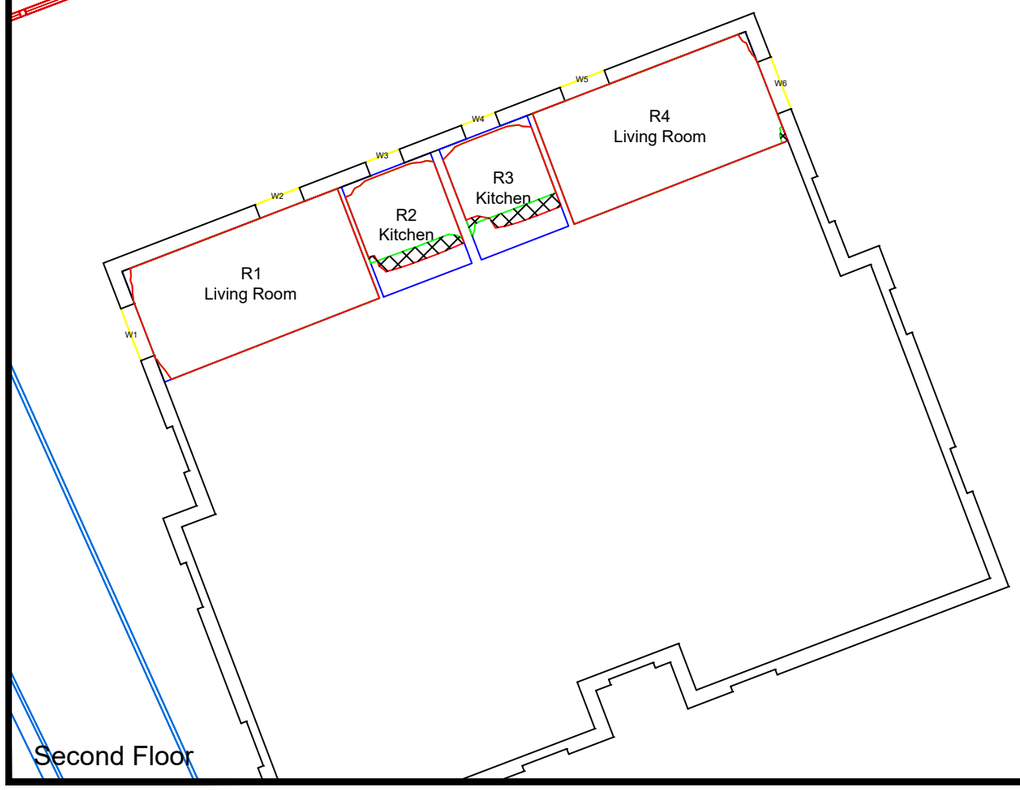
APPENDIX 2

Drawing No. NR2018-001-01-3000



Ground Floor

First Floor



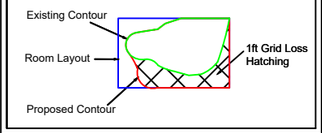
Second Floor

LUMINA
LONDON • LIMITED
9 Heneage Street, Spitalfields, London, E1 5LJ Tel: 0203 6375691

DAYLIGHT

Legend

- Existing Site
- Proposed Scheme
- Analysed Buildings
- Surrounding Buildings



Source of Information

Existing And Surrounding Buildings
Brookes Architects
3d Model
5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Consented Building
MAA-Architects
3d Model
Student Schem 3D Model.dwg
Drawing No's:
P_102, P_102, P_201

Proposed Scheme
Brookes Architects
3d Model
5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Project Title
Norcutt Road
Twickenham
TW2

Client
Leek Real Estate (No. 1) Ltd

Drawing Title
Daylight Analysis
Alcott House

Drawn By	Scale @A3
Mo	1/150

Project No	Date
NR2018-001	13/03/2019

Drawing No	Rev
01-3000	

APPENDIX 3

Vertical Sky Component Table

Proj: NR2018-001
Rel: 01
Date: 13/03/2019

VSC Analysis
Norcutt Road

LUMINA
LONDON • LIMITED

			CONSENTED	PROPOSED
ROOM	Window	Room Use	VSC	VSC
Alcott House				
Ground				
R1	W1	Bedroom	15.01	15.01
R1	W2	Bedroom	14.65	14.35
R2	W3	LKD	14.34	13.39
R2	W4	LKD	14.35	13.07
First				
R1	W1	Living Room	34.82	34.82
R1	W2	Living Room	20.08	20.70
R2	W3	Kitchen	19.34	19.61
R3	W4	Kitchen	18.87	18.61
R4	W6	Living Room	36.58	35.51
R4	W5	Living Room	18.29	17.21
Second				
R1	W1	Living Room	39.10	39.11
R1	W2	Living Room	25.05	25.78
R2	W3	Kitchen	24.49	24.91
R3	W4	Kitchen	24.11	24.06
R4	W6	Living Room	37.39	36.69
R4	W5	Living Room	23.48	22.80

APPENDIX 4

Daylight Distribution Analysis Table

Proj: NR2018-001
Rel: 01
Date: 13/03/2019

Daylight Analysis
Norcutt Road

LUMINA
LONDON • LIMITED

Room/ Floor	Room Use	Whole Room	Consented sq ft	Proposed sq ft
Alcott House				
Ground				
R1	Bedroom	131.42	67.90	71.10
R2	LKD	245.03	62.20	76.19
First				
R1	Living Room	185.72	184.24	184.08
R2	Kitchen	76.30	32.94	36.57
R3	Kitchen	75.73	33.06	35.27
R4	Living Room	183.82	182.42	182.73
Second				
R1	Living Room	185.72	184.10	184.10
R2	Kitchen	76.30	50.72	58.46
R3	Kitchen	75.73	50.17	55.84
R4	Living Room	183.82	182.55	183.04

APPENDIX 5

Average Daylight Factor Table for Alcott House

Proj: NR2018-001
Rel: 01
Date: 13/03/2019

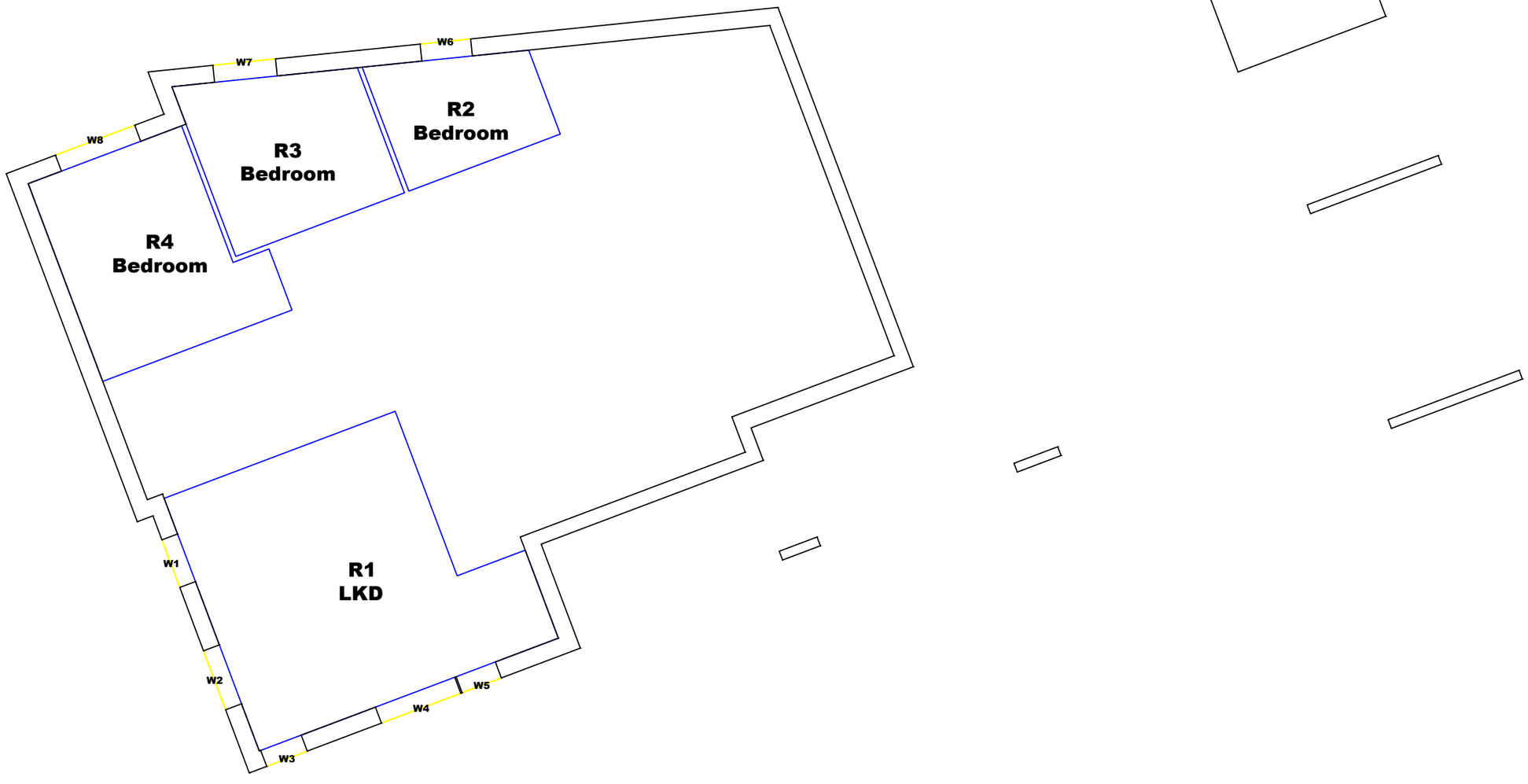
ADF Table
Norcutt Road

LUMINA
LONDON • LIMITED

			Average Daylight Factor			
			Consented		Proposed	
Room	Window	Room Use	ADF	Total	ADF	Total
Alcott House						
Ground						
R1	W1	Bedroom	0.82		0.82	
R1	W2	Bedroom	0.81	1.64	0.80	1.63
R2	W3	LKD	0.50		0.48	
R2	W4	LKD	0.50	1.00	0.47	0.95
First						
R1	W1	Living Room	1.77		1.77	
R1	W2	Living Room	0.87	2.63	0.88	2.65
R2	W3	Kitchen	0.91	0.91	0.92	0.92
R3	W4	Kitchen	0.90	0.90	0.89	0.89
R4	W6	Living Room	1.83		1.78	
R4	W5	Living Room	0.82	2.66	0.79	2.58
Second						
R1	W1	Living Room	1.92		1.93	
R1	W2	Living Room	1.01	2.94	1.04	2.96
R2	W3	Kitchen	1.06	1.06	1.08	1.08
R3	W4	Kitchen	1.06	1.06	1.06	1.06
R4	W6	Living Room	1.86		1.82	
R4	W5	Living Room	0.98	2.84	0.96	2.78

APPENDIX 6

Location plans for daylight analysis for proposed new Habitable Rooms,
Drawing Nos. NR2018-001-02-3010 to 3014



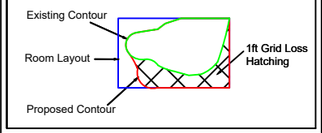
Ground Floor

LUMINA
LONDON • LIMITED
9 Heneage Street, Spitalfields, London, E1 5LJ Tel: 0203 6375691

DAYLIGHT

Legend

- Existing Site
- Proposed Scheme
- Analysed Buildings
- Surrounding Buildings



Source of Information

Existing And Surrounding Buildings
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3d Model
5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Consented Building
MAA-Architects
3d Model
Student Schem 3D Model.dwg
Drawing No's:
P_102, P_102, P_201

Proposed Scheme
Brookes Architects
3d Model
5076_3_Norcutt Road - 3D Export - 08-05-19.dwg
Drawing No's:
5076_3_02 Rev P3

Project Title
Norcutt Road
Twickenham
TW2

Client
Leek Real Estate (No. 1) Ltd

Drawing Title
Daylight Amenity Analysis
Proposed Scheme

Drawn By	Scale @A3
Mo	1/100

Project No	Date
NR2018-001	08/05/2019

Drawing No	Rev
02-3010	

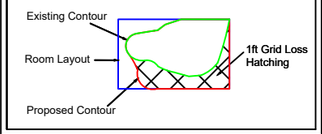
First Floor

LUMINA
LONDON • LIMITED
9 Heneage Street, Spitalfields, London, E1 5LJ Tel: 0203 6375691

DAYLIGHT

Legend

- Existing Site
- Proposed Scheme
- Analysed Buildings
- Surrounding Buildings



Source of Information

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5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Consented Building
MAA-Architects
3d Model
Student Schem 3D Model.dwg
Drawing No's:
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Proposed Scheme
Brookes Architects
3d Model
5076_3_Norcutt Road - 3D Export - 08-05-19.dwg
Drawing No's:
5076_3_02 Rev P3

Project Title
Norcutt Road
Twickenham
TW2

Client
Leek Real Estate (No. 1) Ltd

Drawing Title
Daylight Amenity Analysis
Proposed Scheme

Drawn By	Scale @A3
Mo	1/100

Project No	Date
NR2018-001	08/05/2019

Drawing No	Rev
02-3011	

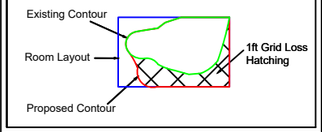
Second Floor

LUMINA
LONDON • LIMITED
9 Heneage Street, Spitalfields, London, E1 5LJ Tel: 0203 6375691

DAYLIGHT

Legend

- Existing Site
- Proposed Scheme
- Analysed Buildings
- Surrounding Buildings



Source of Information

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5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Consented Building
MAA-Architects
3d Model
Student Schem 3D Model.dwg
Drawing No's:
P_102, P_102, P_201

Proposed Scheme
Brookes Architects
3d Model
5076_3_Norcutt Road - 3D Export - 08-05-19.dwg
Drawing No's:
5076_3_02 Rev P3

Project Title
Norcutt Road
Twickenham
TW2

Client
Leek Real Estate (No. 1) Ltd

Drawing Title
Daylight Amenity Analysis
Proposed Scheme

Drawn By	Scale @A3
Mo	1/100
Project No	**Date**
NR2018-001	08/05/2019
Drawing No	**Rev**
02-3012	

Third Floor

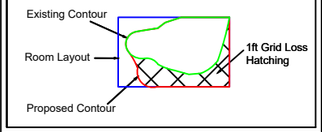
LUMINA
LONDON * LIMITED

9 Heneage Street, Spitalfields, London, E1 5LJ Tel: 0203 6375691

DAYLIGHT

Legend

- Existing Site
- Proposed Scheme
- Analysed Buildings
- Surrounding Buildings



Source of Information

Existing And Surrounding Buildings
Brookes Architects
3d Model
5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Consented Building
MAA-Architects
3d Model
Student Schem 3D Model.dwg
Drawing No's:
P_102, P_102, P_201

Proposed Scheme
Brookes Architects
3d Model
5076_3_Norcutt Road - 3D Export - 08-05-19.dwg
Drawing No's:
5076_3_02 Rev P3

Project Title
Norcutt Road
Twickenham
TW2

Client
Leek Real Estate (No. 1) Ltd

Drawing Title
Daylight Amenity Analysis
Proposed Scheme

Drawn By	Scale @A3
Mo	1/100

Project No	Date
NR2018-001	08/05/2019

Drawing No	Rev
02-3013	

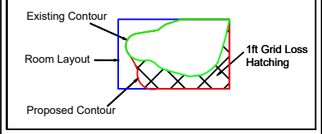
Fourth Floor

LUMINA
LONDON * LIMITED
9 Heneage Street, Spitalfields, London, E1 5LJ Tel: 0203 6375691

DAYLIGHT

Legend

- Existing Site
- Proposed Scheme
- Analysed Buildings
- Surrounding Buildings



Source of Information

Existing And Surrounding Buildings
Brookes Architects
3d Model
5076_75 Norcutt Road_11-01-19 Daylight Model.dwg

Consented Building
MAA-Architects
3d Model
Student Schem 3D Model.dwg
Drawing No's:
P_102, P_102, P_201

Proposed Scheme
Brookes Architects
3d Model
5076_3_Norcutt Road - 3D Export - 08-05-19.dwg
Drawing No's:
5076_3_02 Rev P3

Project Title
Norcutt Road
Twickenham
TW2

Client
Leek Real Estate (No. 1) Ltd

Drawing Title
Daylight Amenity Analysis
Proposed Scheme

Drawn By	Scale @A3
Mo	1/100
Project No	**Date**
NR2018-001	08/05/2019
Drawing No	**Rev**
02-3014	

APPENDIX 7

Internal Daylight Analysis Table for proposed new dwellings

Proj: NR2018-001
Rel: 02
Date: 08/05/2019

Daylight Amenity Table
Norcutt Road

LUMINA
LONDON • LIMITED

Average Daylight Factor				
			Proposed	
Room	Window	Room Use	ADF	Total
Proposed Scheme				
Ground				
R1	W1	LKD	0.51	
R1	W2	LKD	0.64	
R1	W3	LKD	0.52	
R1	W4	LKD	0.99	
R1	W5	LKD	0.46	3.12
R2	W6	Bedroom	2.49	2.49
R3	W7	Bedroom	2.33	2.33
R4	W8	Bedroom	1.31	1.31
First				
R1	W1	Bedroom	2.48	
R1	W2	Bedroom	1.47	3.95
R2	W3	Bedroom	1.07	
R2	W4	Bedroom	1.24	2.30
R3	W5	LKD	0.48	
R3	W6	LKD	0.38	
R3	W7	LKD	0.19	
R3	W24	LKD	0.44	1.50
R4	W8	Bedroom	0.44	
R4	W9	Bedroom	0.73	1.17
R5	W10	Bedroom	0.92	
R5	W11	Bedroom	0.49	1.41
R6	W12	LKD	0.29	
R6	W13	LKD	0.47	
R6	W14	LKD	0.53	
R6	W15	LKD	0.47	1.77
R7	W16	Bedroom	1.41	1.41
R8	W17	LKD	0.42	
R8	W18	LKD	0.41	
R8	W19	LKD	0.45	
R8	W20	LKD	1.94	
R8	W21	LKD	0.85	4.07
R9	W22	Bedroom	2.35	
R9	W23	Bedroom	3.60	5.96
R10	W25	LKD	1.18	
R10	W26	LKD	0.89	
R10	W27	LKD	1.49	3.56
Second				
R1	W1	Bedroom	2.78	
R1	W2	Bedroom	1.66	4.44
R2	W3	Bedroom	1.22	
R2	W4	Bedroom	1.43	2.65

Proj: NR2018-001
Rel: 02
Date: 08/05/2019

Daylight Amenity Table
Norcutt Road

LUMINA
LONDON • LIMITED

Average Daylight Factor				
			Proposed	
Room	Window	Room Use	ADF	Total
R3	W5	LKD	0.58	
R3	W6	LKD	0.48	
R3	W7	LKD	0.32	
R3	W24	LKD	0.44	1.82
R4	W8	Bedroom	0.73	
R4	W9	Bedroom	0.93	1.67
R5	W10	Bedroom	1.14	
R5	W11	Bedroom	0.65	1.79
R6	W12	LKD	0.41	
R6	W13	LKD	0.55	
R6	W14	LKD	0.60	
R6	W15	LKD	0.55	2.11
R7	W16	Bedroom	1.67	1.67
R8	W17	LKD	0.47	
R8	W18	LKD	0.47	
R8	W19	LKD	0.49	
R8	W20	LKD	1.96	
R8	W21	LKD	0.85	4.23
R9	W22	Bedroom	2.36	
R9	W23	Bedroom	3.60	5.97
R10	W25	LKD	1.18	
R10	W26	LKD	0.89	
R10	W27	LKD	1.60	3.67
Third				
R1	W1	Bedroom	2.78	
R1	W2	Bedroom	1.78	4.56
R2	W3	Bedroom	1.00	
R2	W4	Bedroom	1.20	2.21
R3	W5	LKD	0.69	
R3	W6	LKD	0.76	
R3	W7	LKD	0.68	
R3	W23	LKD	0.43	2.56
R4	W8	Bedroom	1.61	
R4	W9	Bedroom	1.30	2.90
R5	W10	Bedroom	1.38	
R5	W11	Bedroom	1.30	2.68
R6	W12	LKD	0.83	
R6	W13	LKD	0.76	
R6	W14	LKD	0.70	
R6	W15	LKD	0.55	2.84
R7	W16	Bedroom	2.16	2.16
R8	W17	LKD	0.82	
R8	W18	LKD	0.83	
R8	W19	LKD	1.96	
R8	W20	LKD	0.85	4.46
R9	W21	Bedroom	2.36	
R9	W22	Bedroom	3.60	5.97
R10	W24	LKD	1.18	
R10	W25	LKD	0.87	
R10	W26	LKD	1.60	3.65

Proj: NR2018-001
Rel: 02
Date: 08/05/2019

Daylight Amenity Table
Norcutt Road

LUMINA
LONDON • LIMITED

Average Daylight Factor				
			Proposed	
Room	Window	Room Use	ADF	Total
Fourth				
R1	W1	LKD	0.82	
R1	W2	LKD	1.14	
R1	W12	LKD	0.70	
R1	W13	LKD	0.62	
R1	W14	LKD	0.70	
R1	W15	LKD	0.64	4.62
R2	W3	Bedroom	2.99	2.99
R3	W4	Bedroom	2.61	2.61
R4	W5	Bedroom	2.40	2.40
R5	W6	Bedroom	2.55	2.55
R6	W7	Bedroom	2.29	2.29
R7	W8	Bedroom	2.63	2.63
R8	W9	LKD	1.72	
R8	W10	LKD	0.89	
R8	W11	LKD	0.90	3.51