Daylight / Sunlight Report

159 – 161 Iverson Road

DATE: November 2013

Prepared by:

Savills (UK) Limited 25 Finsbury Circus London EC2M 7EE

Prepared for:

McGregor Homes

1 Holmhills Cottages Conford Hampshire GU30 7QP

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159 - 161 IVERSON ROAD - DAYLIGHT AND SUNLIGHT

1.0 INTRODUCTION

McGregor Homes have instructed Savills (UK) Ltd to provide a Daylight and Sunlight report to accompany a detailed planning application for the redevelopment of the 159 – 161 lverson Road site. The scheme has been prepared by Dexter Moren Associates and this report is based upon the latest November 2013 scheme proposals as referenced at 2.0 below.

This report, and the associated technical appendices, assess the daylight and sunlight amenity and to the relevant neighbouring units by reference to BRE Guidance Note: Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice (2011).

Appendix 1 contains drawings illustrating the existing situation (drawings SA335-05 to 06) and the proposal (SA335 – 07 to 08). Window maps showing the window references utilised in our analysis can be found at appendix 2.

Appendix 4 contains details of the sunlight availability study undertaken to the neighbouring amenity areas which is considered in detail in section 6.0 below.

2.0 SOURCES OF INFORMATION

Proposed scheme drawings

Dexter Moren Architects Drawing-747120.pdf Proposed Floor Plans.pdf Drawing-747121.pdf Proposed ElevationSection .pdf HELELall.dwg HEL111FPall.dwg

Site Photography

Savills Commercial Ltd

Digital Superplan Data

Ordnance Survey

3.0 BRIEF DESCRIPTION OF THE SITE AND APPLICATION PROPOSALS

The site at 159-161 lverson Road is currently occupied by a tyre fitting centre, lverson Tyres Ltd. It comprises a one storey warehouse building, 3 portacabins and a forecourt. The site is irregular shaped, is approximately 910sqm in size and slopes from east to west.

The site is surrounded by a mixture of uses with principally residential properties across Iverson Road to the south and a Network Rail signal box to the west across Liddell Road.

To the east of the site, at 163 Iverson Road, there is a vacant plot previously occupied by a garden centre. Planning Permission (REF: 2012/0099/P) was granted dated 12.12.12 for a 36 unit residential development on this site. The development consisted of 33 apartments and 3 family houses. This scheme was also designed by Dexter Moren Associates and this submission is intended to complement this earlier consent.

The proposal consists of 19 residential units in total, distributed in 2 distinct blocks. The street facing block is ground + four floors with a substantially set back fourth floor to minimise impact on Iverson Road and Maygrove Road. The rear block, of ground + five floors, is connected to the front block via only the ground floor which give both blocks a distinct separation in form. The ground floor roof deck is designed as a roof garden to provide both visual and potentially usable amenity for residents. At ground level, beneath the residential blocks, is an employment unit fronting Iverson Road.

4.0 STANDARD SURVEY LIMITATIONS

In producing our report we have utilised the information set out at 2.0 above including the use of measured survey information where available.

In addition to Standard Survey Limitations the following assumptions also apply.

- Best estimates were made in establishing building use (residential or commercial) and room uses; generally these were made from external observations and recourse to planning records where available.
- When floor plans of surrounding properties were not available, room depths have been assumed from external observations. Where no indicators of room depth were available a standard of 14ft was used in respect of residential properties.

5.0 DAYLIGHT AND SUNLIGHT (NEIGHBOURING PROPERTIES)

The impact of a proposal in respect of daylight and sunlight amenity should be assessed by reference to the BRE guidance report: Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice (2011). Explanatory notes providing details of the various assessment methodologies utilised under the guidelines can be found in appendix 5 of this report.

It is important to note that the BRE Guide states that 'the advice given here is not mandatory and should not be seen as an instrument of planning policy'. Furthermore, daylight criteria should be 'interpreted flexibly because natural lighting is only one of many factors'. Based upon these statements it is important to apply the guidance and target levels sensibly and flexibly taking into account the context of the site.

Similarly it is also important to understand that the design or positioning of a neighbouring property may not allow for good daylight/sunlight regardless any development on a neighbouring site. The guidelines acknowledge that the need for good daylighting should be weighed against other site specific considerations and that, in some cases, different target values than those suggested in the guidelines should be applied.

The initial assessment methodology in respect of daylighting set out in the BRE guidelines is that of Vertical Sky Component (VSC). This assessment considers sky visibility at the window face of neighbouring properties and expresses this as a percentage. The guidelines recommend that the windows of neighbouring properties enjoy total VSC of at least 27% following construction of a proposal or that the VSC level is reduced to no less than 0.8 times its former value (i.e. a 20% reduction) by a proposal.

Further to the VSC test set out a test related to the position of the no-sky line within properties. This No-Sky Line (also known as the no-sky contour or daylight distribution) test considers the area of a room at desk height that can see a small proportion of sky. The BRE guidelines do not set absolute target levels for no sky-line but suggest that the No-Sky Contour should not be reduced by more than 20% when comparing an existing situation to that following construction of a planning proposal.

An appendix to the BRE guidelines contains a further daylight assessment method known as Average Dayilght Factor (ADF) which is also codified in the British Standard for daylighting. The ADF seeks to provide a ratio of internal to external illuminance. The ADF test takes into account a number of variable including VSC, window transmittance, surface reflectance, room area and room use and may therefore be particularly representative of resultant light levels. The BRE guidelines / British Standard sets the following recommended ADF levels for habitable room uses:

- 1% Bedroom

1.5% Living Room 2.0% Kitchens

Only those windows facing within 90 degrees of due south can receive direct sunlight in the UK and therefore windows outside of this orientation are not relevant for analysis. The BRE guidelines states that the main windows of living rooms and conservatories are relevant for analysis and that the impact of a proposed scheme should be assessed by reference to the Annual Probable Sunlight Hours (APSH) methodology. APSH provides an indication of sunlight enjoyed by a window as a percentage of the total potential maximum sunlighting. The guidelines suggest that following a development windows should receive at least 25% total APSH with 5% of this total being enjoyed in the winter months. The guidelines also allow for a 20% reduction in sunlighting when compared to the former value.

Daylight and Sunlight Detail

Planning policy seeks to protect daylight and sunlight to residential occupiers within the Borough. As in most Local Authorities, Daylight and Sunlight is assessed by reference to BRE Guidance Note 209: Site Layout Planning for Daylight and Sunlight.

The following neighbouring residential properties were found to be sufficiently proximate to the site to be relevant for assessment

- 186 Iverson Road

- Consented scheme at 163 Iverson Road (REF: 2012/0099/P)

186 Iverson Road

This residential property, the end of a terrace of houses, is situated to the south of the proposal across lverson Road. The property is situated to a curve on lverson Road such that its front elevation is broadly north west facing such that it looks obliquely past the proposals.

The results of our technical analysis show that all main windows serving the habitable rooms of 186 Iverson Road retain Vertical Sky Component levels in excess of 0.8 times their former value. In addition there is no material change to the no-sky line within any rooms of this property such that the effects upon daylighting are fully compliant with the BRE targets.

A single window, identified as W1 in our analysis and serving the ground floor living room (R1), experiences a reduction to below 0.8 times its former VSC value however this is a secondary bay of the window with the main bay and west facing bay both achieving the BRE target levels. This is again therefore fully compliant with the BRE guide.

The windows of this property facing the proposal are north facing and are not therefore relevant for APSH sunlight assessment under the BRE guide.

Consented scheme at 163 Iverson Road (REF: 2012/0099/P)

The consented proposals to 163 lverson Road are situated immediately to the east of the site. The 163 lverson Road scheme was designed by Dexter Moren Associates and the current proposal has been designed to complement its neighbour. The majority of this earlier scheme fronts lverson Road with a rear block splitting to form a Y shape around open space to the western boundary.

Our technical analysis shows that Vertical Sky Component levels to the majority of rooms within the consented scheme retain VSC levels well in excess of 0.8 times their former value. In respect of the principal living rooms and L/K/D's many of these spaces are served by more than one window and whilst some of the more constrained windows experience localised deviations to the VSC targets all of these rooms retain at least one principal window which is fully compliant with the BRE targets. No Sky Contour results show that no room experiences a material reduction in No Sky Contour levels which remain fully compliant with the BRE targets.

Four lower ground floor bedrooms (identified as R4 to R7 within our analysis) and a single bedroom at 1st and second floors (identified as R2) experience reduction in VSC exceeding the target guidelines. All of these rooms maintain No Sky Contour levels within 0.8 times of their former value and in line with the BRE targets. Additionally where a developer achieves consent for successive neighbouring developments and therefore has detailed knowledge of the design and layout of the neighbouring property appendix F of the BRE guide suggests that assessment of the Average Daylight Factor (ADF) levels to the neighbours may be considered. Our Average Daylight Factor tests show that the ground floor bedrooms remain ADF's well in excess of the 1.0% target for bedroom use and are considered acceptable. The first and second floor R2 rooms are constrained in their existing outlook and, whilst they do no achieve 1.0% ADF the change between the existing and proposed position is 'de minimis' being only 0.06% and 0.04% in absolute ADF which would be wholly unnoticeable.

In addition to the internal daylighting we have considered direct sunlight levels to those main living room / L/K/D windows of the proposal which are within 90 degrees of due south. Our analysis shows that the scheme has no material effect on direct sunlighting with all windows either maintaining Annual Probable Sunlight Hour (APSH) levels in excess of 25% total APSH with at least 5% in the winter months or experiencing changes of less than 4% absolute APSH which is considered unnoticeable and fully complies with the BRE targets.

6.0 SUNLIGHT AVAILABILITY / PERMANENT SHADING (APPENDIX 4)

In addition to the daylight and sunlight to neighbouring properties we have considered the effect of the proposal upon shading / sunlight availability of neighbouring amenity space. Any neighbouring gardens to residential properties are to the south of the proposal and will therefore be unaffected in respect of shading. We have however considered the potential effects to the shared amenity areas of the consented scheme at 163 Iverson Road. A drawing (SV0335-PS03) illustrating the results of these studies is attached at appendix 4.

The revised 2011 BRE guidelines suggest that at least half of the provided amenity space to a development should receive at least 2 hours of sunlight on 21 March. Our Sunlight Amenity study considers both the roof terrace and ground floor amenity space of the 163 Iverson Road proposals.

Overall c.51% of the provided amenity space achieves more than 2 hours sunlight under the proposal and is therefore compliant with the BRE targets.

It can be seen that the areas receiving more than 2 hours direct sunlight to the ground floor amenity / circulation space is reduced under the proposal however this is already achieves less than the 50% target area in the existing position due to the overshadowing caused by the arrangement of the 163 lverson Road buildings. Even in the existing condition therefore it is more likely that this 'courtyard' space would be of greater amenity value during the summer months than on the March 21st assessment date.

We have also considered a permanent shading assessment, utilising the March 21st assessment date, of the proposed amenity areas at 163 Iverson Road. This illustrates that the site layout of the 159-161 Iverson Road proposal is effective in maintaining elements of direct sunlight to 163 Iverson Road with only small areas of the ground floor space experiencing permanent shade on the assessment date and overall only c.16% of the total amenity space at 163 Iverson Road experiences any permanent overshadowing.

7.0 <u>CONCLUSION</u>

This practice has undertaken a detailed daylight / sunlight and sunlight availability study to assess the potential amenity effects of the 159-161 lverson Road proposals prepared by Dexter Moren Associates..

The scheme has been designed to complement the earlier Dexter Moren Associates buildings consented to 163 Iverson Road as well as to respond to the wider site constraints.

Our technical assessment shows that overall levels of BRE compliance are very good with the vast majority of neighbouring residential windows, both existing and consented, fully complying with most

onerous Vertical Sky Component (VSC) assessment of diffuse daylight. There are 6 minor derogations to the VSC targets in respect of bedrooms within the 163 lverson Road consent however the percentage losses to these rooms are exacerbated by the constrained pre-existing position. No Sky Contour and Average Daylight Factor analysis of these rooms confirms that the changes are minimal and fully acceptable under the BRE guide.

The effect of the proposal upon direct sunlighting to relevant neighbouring windows is found to be fully compliant with the BRE targets.

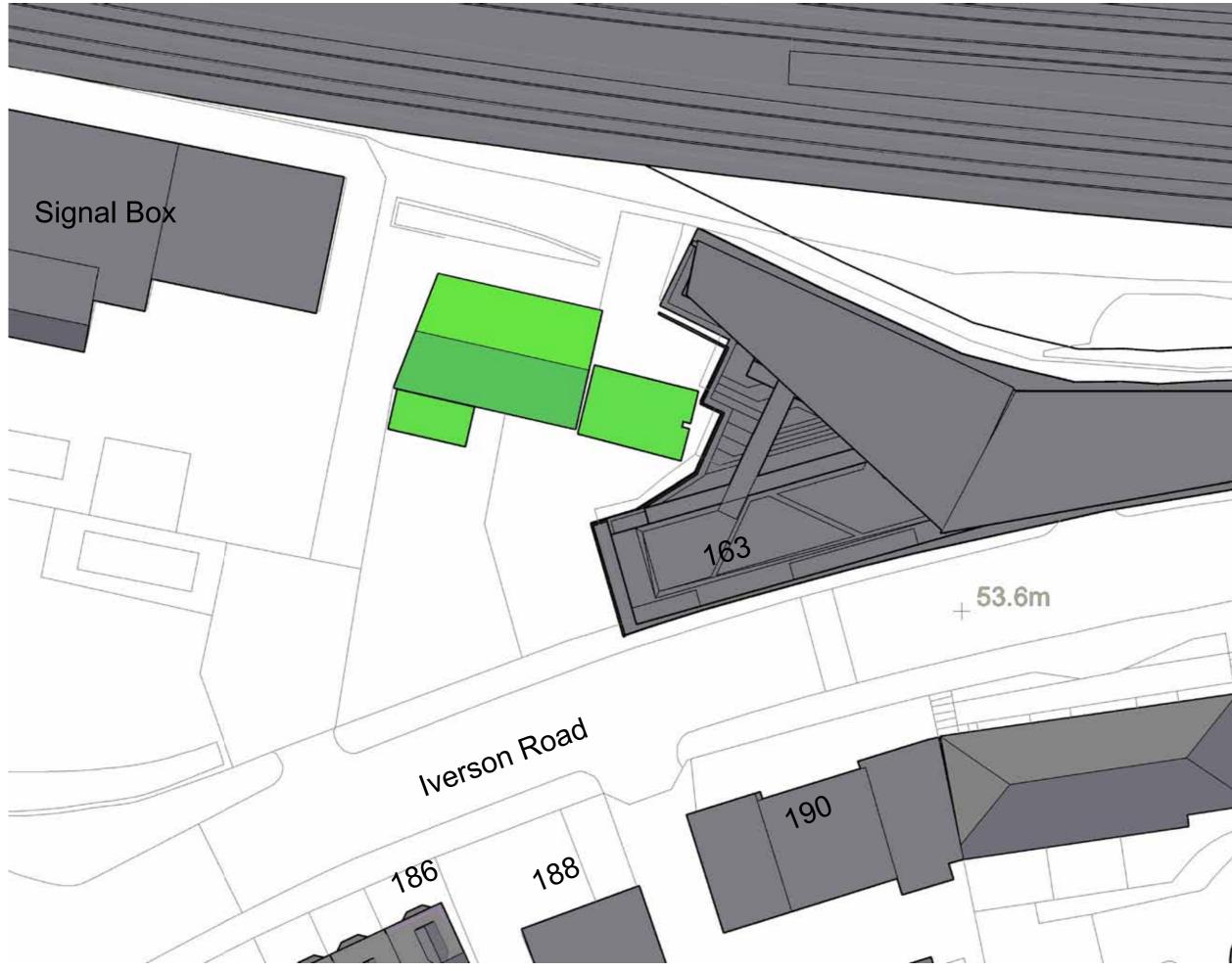
We have also considered the Sunlight Amenity / Permanent Overshadowing under the proposal which shows that overall the effect upon the neighbouring consent at 163 Iverson Road complies with the BRE targets that at least 50% of the provided amenity areas achieve 2 hours of sunlight on March 21st and that there is little permanent shading under the proposal.

Overall the development protects existing daylight and sunlight amenity and responds well to the site constraints. On this basis the development complies with the guidance set out by the BRE and relevant planning policy.

Savills (UK) Limited

APPENDIX 1

Existing / Proposed Drawings



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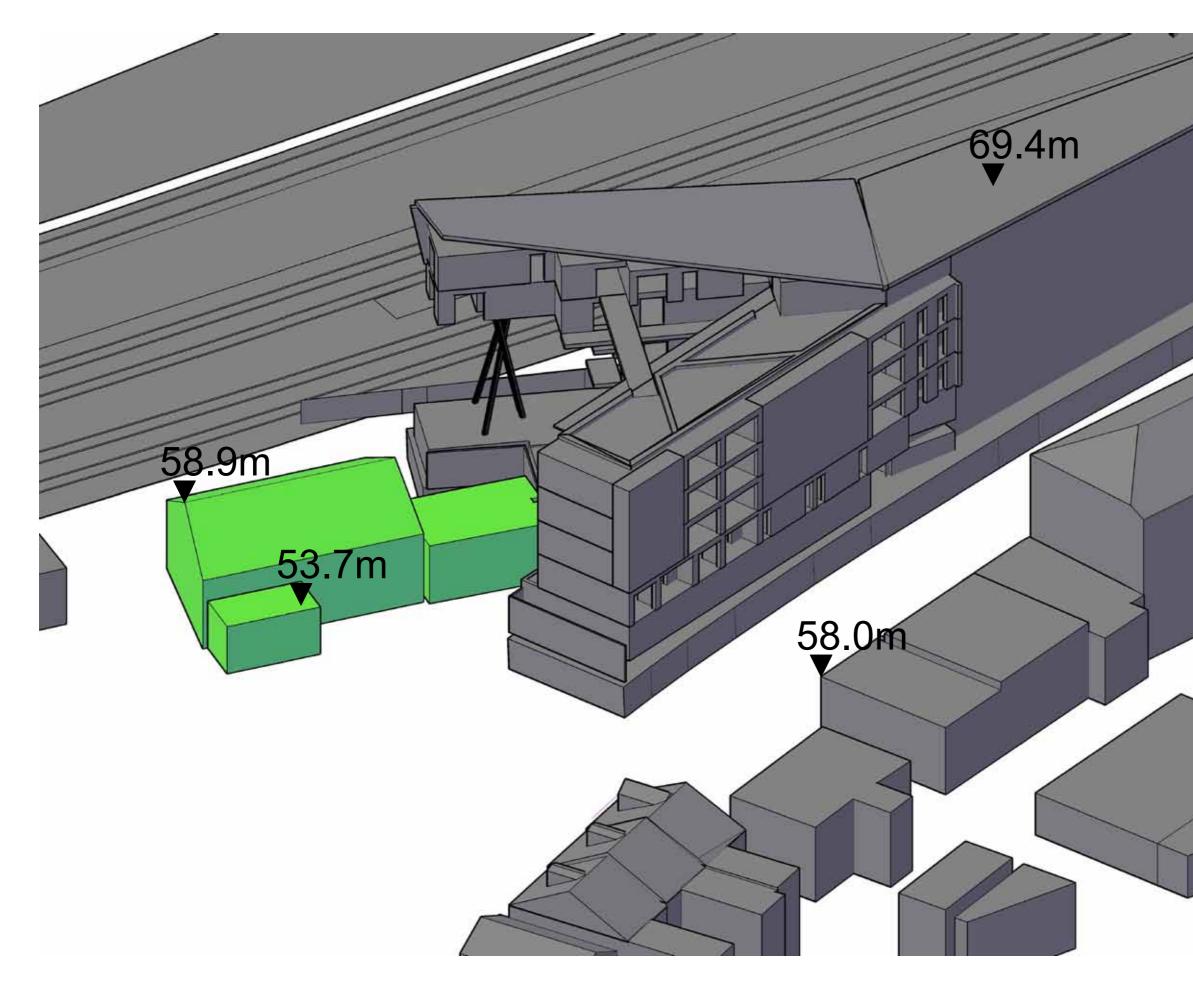
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Project Iverson Road London

Drawing Existing Condition Plan View

Date	12/11/2013	Scale	NTS				
Drawn By	DS	Checked By	IT				
Drawing I	No.	•	Rev.				
S	V0335	05	SA02				



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Project Iverson Road London

Drawing Existing Condition 3D View

Date	12/11/2013	Scale	NTS
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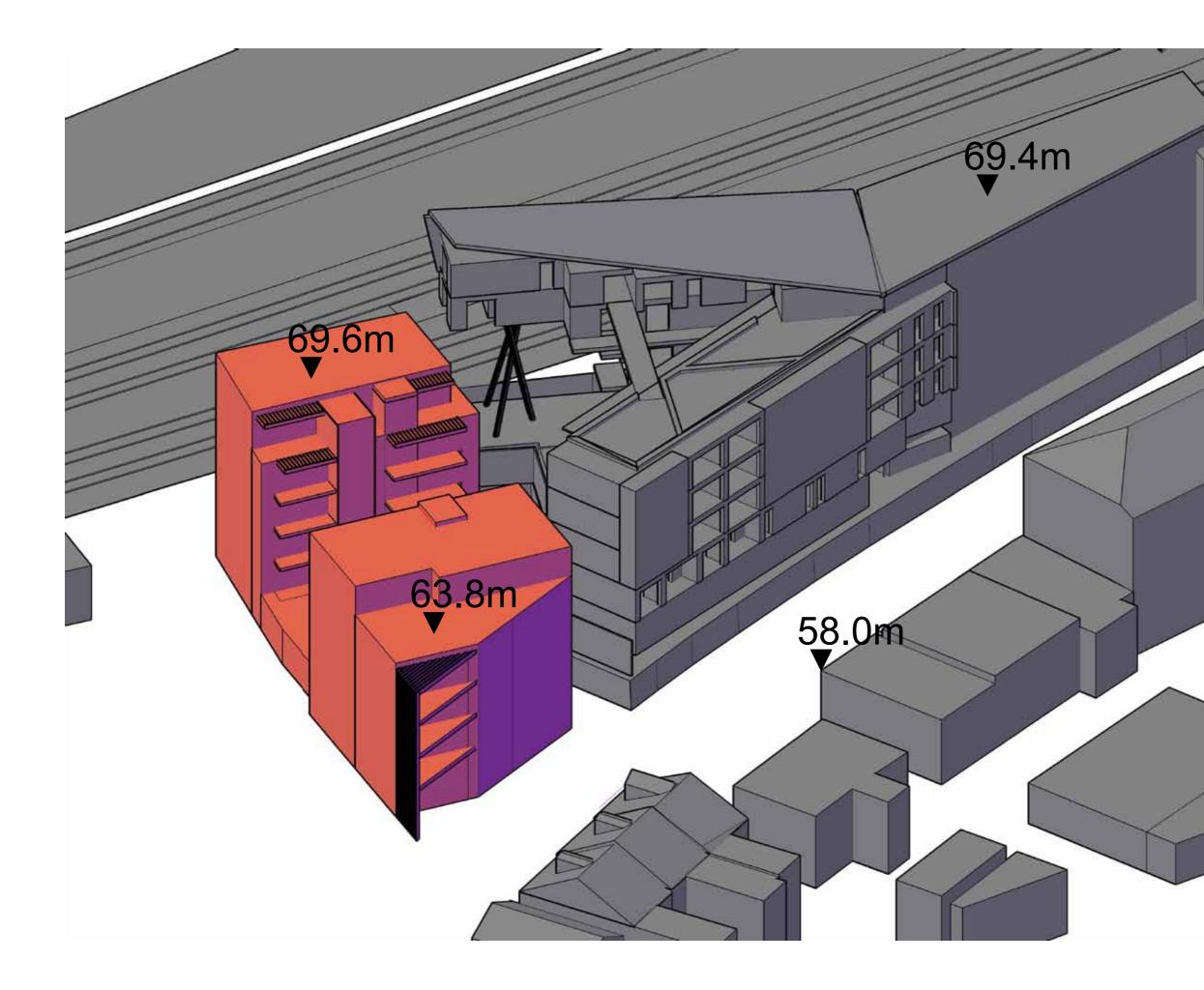
Project Iverson Road London

Drawing

Proposed Development Plan View

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BUILDING CONSULTANCY DESIGN SERVICES, BUILDING SURVEYING PROJECT MANAGEMENT, COST CONSULTANCY

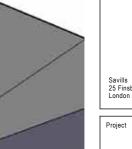
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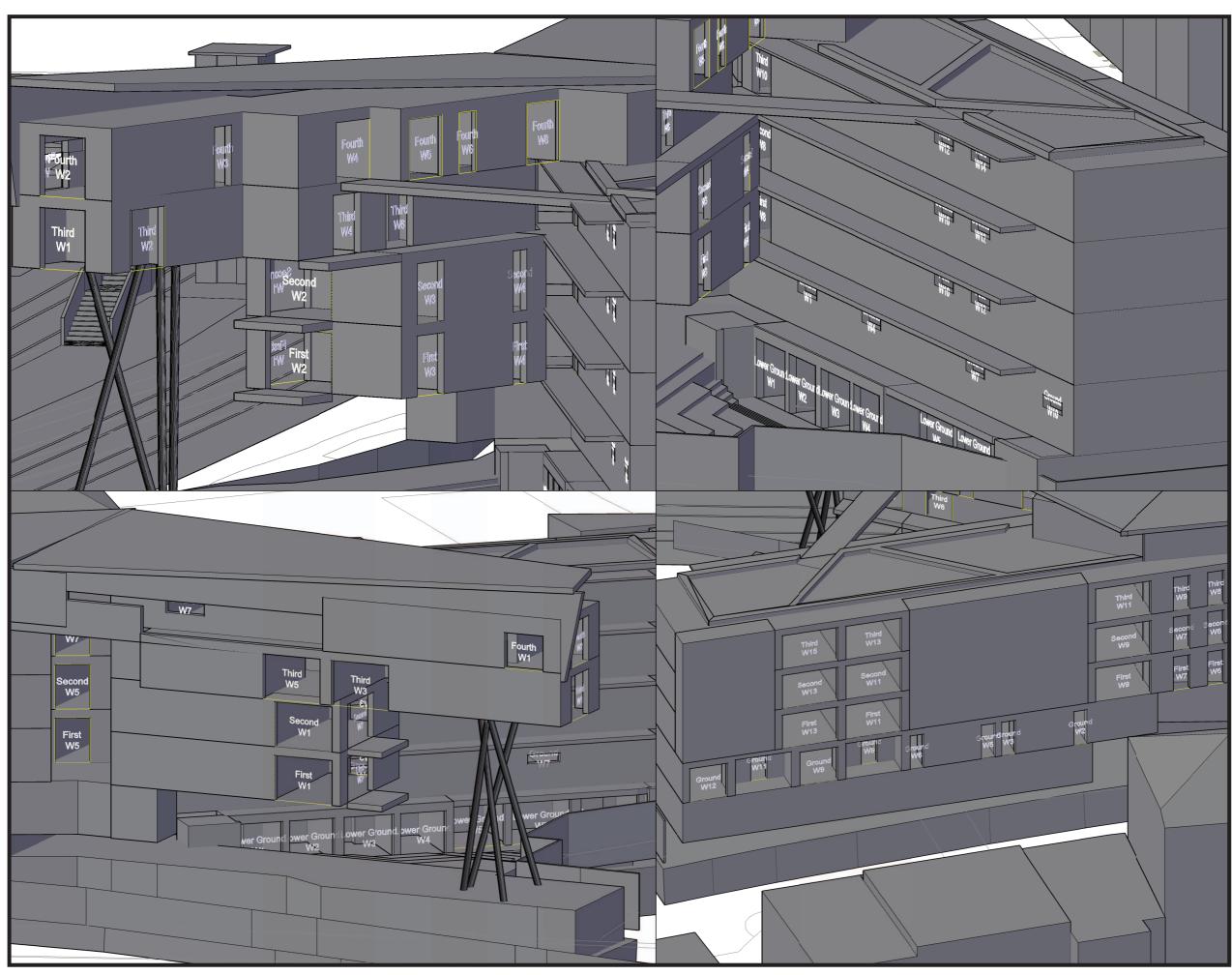
Drawing Proposed Development 3D View

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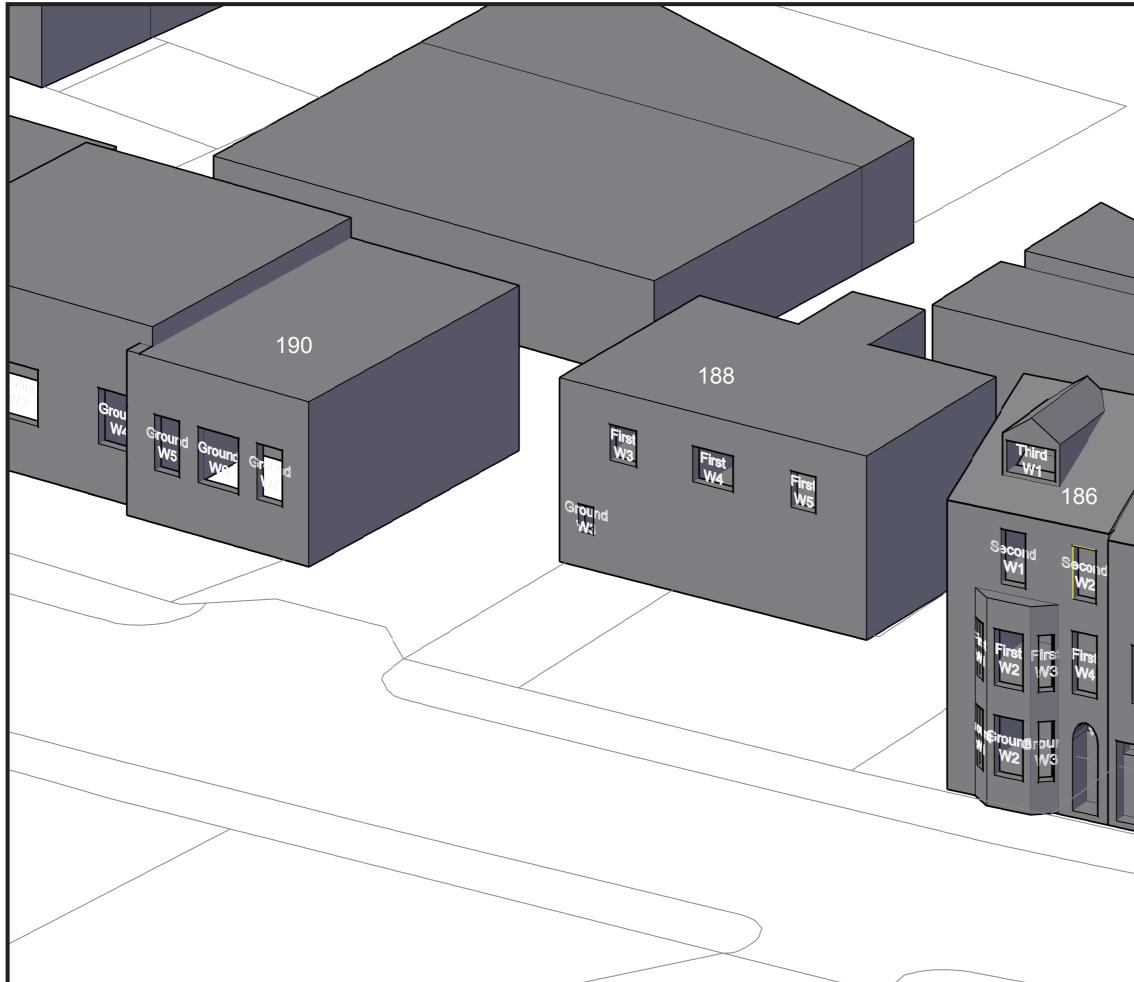


APPENDIX 2

Window Maps



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Savills BUILDING CONSULTANCY DESIGN SERVICES, BUILDING SURVEYING PROJECT MANAGEMENT, COST CONSULTANCY Tel +44 (0) 20 7409 8544 Fax +44 (0) 20 7454 1333 www.savills.com Savills 25 Finsbury Circus London EC2M 7EE Project Iverson Road London Drawing Window Map 190,188 and 186 Iverson Road Date 20/11/2013 Scale Drawn By DS Checke NTS Checked By IT Drawing No. Rev. 02 SV0335 10

APPENDIX 3

Daylight / Sunlight Results

Iverson Road

VSC and ADF Analysis Rel-01

Address Room Window VSC VSC VSC Room Window Use ADF TOTAL ADF TOTAL LOSS ADF 168 Version Road Ground R1 W1 32.22 24.31 7.90 24.54 R1 W1 Unknown 0.71 0.57 1.42 2.71 0.44 13.99 First R1 W1 33.81 27.14 6.67 19.74 R1 W1-L Unknown 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02				EXISTING	PROPOS	SEC LOSS	%LOSS			Room	EXIST	NG	PROPO	OSED	TOTAL	%LOSS
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M238.7035.263.448.89M21.112.311.022.090.229.53ThirdR1W138.9936.322.686.87R1W1-LUnknown 0.02 1.791.81 0.02 1.871.69 0.12 6.72 163 Versor Road1.442.0415.12R1W1-LBedroom 0.02 2.092.13 1.63 1.83 1.95 0.18 8.66 Lower Grour R1W11.3481.442.0415.12R1W1-LBedroom 2.03 2.04 2.13 1.63 1.85 1.95 0.18 0.18 8.66 Lower Grour R2W217.6414.922.7215.41R2 $W2L$ W2LBedroom 2.05 2.09 2.19 1.85 1.85 1.98 1.85 0.21 9.33 9.38 Lower Grour R3W320.3816.66 3.72 18.24R3 $W3L$ W3LBedroom 2.19 2.09 2.17 2.19 2.37 2.16 0.37 1.47 1.85Lower Grour R4W42.5117.485.032.235R4 $W4L$ W4LBedroom 2.16 2.66 2.16 2.16 0.37 1.47 Lower Grour R5W51.3749.81 3.92 2.657 R5 $W5L$ W5LBedroom 2.16 2.66 2.16 0.41 2.16 1.52 Lower Grour R6W51.297 8.13 4.84 3.92 3.732 R6 $W6L$ W5LBedroom </td <td>Second</td> <td>R1</td> <td>W/1</td> <td>38 62</td> <td>34 36</td> <td>1 25</td> <td>11.01</td> <td>R1</td> <td>W/1</td> <td>Linknown</td> <td>1 20</td> <td></td> <td>1 07</td> <td></td> <td></td> <td></td>	Second	R1	W/1	38 62	34 36	1 25	11.01	R1	W/1	Linknown	1 20		1 07			
Third R1 W1 38.99 36.32 2.68 6.87 R1 W1.U Unknow 0.27 1.81 0.167 1.69 0.12 6.72 163 Iverson Road	Second	111						пі		UTKIOWI		2 31	-	2.09	0.22	9.53
1.79 1.81 1.67 1.69 0.12 6.72 163 Iverson Road 1.09 1.81 1.67 1.69 0.12 6.72 163 Iverson Road 1.09 1.3.48 11.44 2.04 15.12 R1 M1-U Bedroom 0.13 2.13 1.83 1.95 0.18 8.66 Lower Grour R2 W2 17.64 14.92 2.72 15.41 R2 W2-U Bedroom 0.15 2.19 1.13 1.98 0.21 9.38 Lower Grour R3 W3 20.38 16.66 3.72 18.24 R3 W3-U Bedroom 0.15 2.69 2.17 2.37 0.31 11.69 Lower Grour R4 W4 2.51 17.48 5.03 2.235 R4 W4-U Bedroom 0.18 2.69 2.15 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 2.857 R5 M5-U Bedroom 0.18 2.69 1.65 1.64 0.25 12.01 1.64 0.25 12.01 1.			** ~	00.70	00.20	0.44	0.03		** ~		1.11	2.01	1.02	2.03	0.22	0.00
1.79 1.81 1.67 1.69 0.12 6.72 163 Iverson Road 1.69 0.12 0.12 1.65 1.65 0.12 0.13 1.03 1.05 0.12 0.13 0.12 0.13 1.05 1.05 0.18 8.66 Lower Grour R2 W2 17.64 14.92 2.72 15.41 R2 W2-L Bedroom 0.15 2.19 0.13 1.98 0.21 9.38 Lower Grour R3 W3 20.38 16.66 3.72 18.24 R3 W3-L Bedroom 0.15 2.69 2.17 2.37 0.31 11.69 14.92 2.37 14.74 Lower Grour R4 W4 2.51 17.48 5.03 2.235 R4 W4-L Bedroom 0.18 2.69 1.51 2.16 0.37 14.74 Lower Grour R5 <td< td=""><td>Third</td><td>B1</td><td>W1</td><td>38.99</td><td>36.32</td><td>2.68</td><td>6.87</td><td>B1</td><td>W1-I</td><td>Unknown</td><td>0.02</td><td></td><td>0.02</td><td></td><td></td><td></td></td<>	Third	B1	W1	38.99	36.32	2.68	6.87	B1	W1-I	Unknown	0.02		0.02			
163 Iverson Road Lower Grour R1 V1 13.48 1.44 2.04 15.12 R1 V1-U Bedroom 1.03 2.13 1.83 1.95 0.18 8.66 Lower Grour R2 V2 17.64 14.92 2.72 15.41 R2 V2-U Bedroom 2.05 2.19 1.85 1.98 0.21 9.38 Lower Grour R3 V3 2.038 16.66 3.72 18.24 R3 V3-U 2.69 2.17 2.37 0.31 11.69 Lower Grour R4 V4 2.51 17.48 5.03 22.35 R4 V4-U Bedroom 1.18 2.04 2.16 0.37 1.47 Lower Grour R4 V4 2.51 17.48 5.03 2.35 R4 V4-U Bedroom 1.18 2.16 0.37 1.47 Lower Grour R5 V5 13.74 9.81 3.92 28.57 R5 V5-U Bedroom 1.18 2.04 0.25 1.21 0.37 1.48 0.25 1.21 1.49 0.25 1.21 1.49 0.2				00.00	00.02	2.00	0.07			Children		1.81		1.69	0.12	6.72
Lower Grour R1 W1 13.48 11.44 2.04 15.12 R1 W1-U Bedroom 2.03 2.13 1.83 1.95 0.18 8.66 Lower Grour R2 W2 17.64 14.92 2.72 15.41 R2 W2-U Bedroom 2.04 2.19 1.33 1.98 0.21 9.38 Lower Grour R3 W3 20.38 16.66 3.72 18.24 R3 W3-U 2.69 2.17 2.37 0.31 1.69 Lower Grour R4 W4 2.51 17.48 5.03 22.35 R4 W4-U Bedroom 2.16 2.51 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-U Bedroom 1.18 2.09 1.65 1.84 0.25 12.01 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-U Bedroom 1.91 2.09 1.65 1.84 0.25 12.01 Lower Grour R6 W6 12.97 8.13 4.8											1.70	1.01	1.07	1.00	0.12	0.72
Lower Grour R1 W1 13.48 11.44 2.04 15.12 R1 W1-L Bedroom 2.03 2.13 1.83 1.95 0.18 8.66 Lower Grour R2 W2 17.64 14.92 2.72 15.41 R2 W2-L Bedroom 2.05 2.19 1.85 1.98 0.21 9.38 Lower Grour R3 W3 20.38 16.66 3.72 18.24 R3 W3-L Bedroom 2.16 2.19 1.85 1.98 0.21 9.38 Lower Grour R4 W4 2.51 17.48 5.03 22.35 R4 W4-L Bedroom 2.18 2.51 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-L Bedroom 2.18 2.51 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-L Bedroom 2.18 2.01 2.06 0.41 16.62 Lower Grour R6 W6 12.97 8.13	163 Iversoi	n Road														
M1-U 2.00 2.13 1.83 1.95 0.18 8.66 Lower Grour R2 W2 17.64 14.92 2.72 15.41 R2 W2-U Bedroom 0.15 2.19 1.85 1.98 0.21 9.38 Lower Grour R3 W3 20.38 16.66 3.72 18.24 R3 W3-U Bedroom 0.19 2.69 2.19 1.18 1.98 0.21 9.38 Lower Grour R4 W4 22.51 17.48 5.03 22.35 R4 W4-U Bedroom 0.18 2.54 2.01 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-U Bedroom 0.18 2.09 1.65 1.84 0.25 12.01 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-U Bedroom 0.20 2.47 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-U Bedroom																
Lower Grour R2 W2 17.64 14.92 2.72 15.41 R2 W2-L Bedroom 2.04 2.19 1.85 1.98 0.21 9.38 Lower Grour R3 W3 20.38 16.66 3.72 18.24 R3 W3-L Bedroom 0.15 2.69 0.17 2.37 0.31 11.69 Lower Grour R4 W4 22.51 17.48 5.03 22.35 R4 W4-L Bedroom 0.18 2.69 0.17 2.16 0.37 14.74 Lower Grour R4 W4 22.51 17.48 5.03 22.35 R4 W4-L Bedroom 0.18 2.69 0.15 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-L Bedroom 0.18 2.09 0.15 1.84 0.25 12.01 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-L Bedroom 0.22 2.47 0.15 2.66 0.41 6.62 Lower Grour R7 <	Lower Grou	ur R1	W1	13.48	11.44	2.04	15.12	R1	W1-L	Bedroom	0.13		0.12			
W2-U 2.04 2.19 1.85 1.98 0.21 9.38 Lower Grour R3 W3 20.38 16.66 3.72 18.24 R3 W3-L Bedroom 0.19 2.69 2.21 2.37 0.31 11.69 Lower Grour R4 W4 22.51 17.48 5.03 22.35 R4 W4-L Bedroom 0.18 2.54 2.01 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-L Bedroom 0.18 2.09 1.69 1.84 0.25 12.01 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-L Bedroom 0.20 2.47 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.20 2.47 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.12									W1-U		2.00	2.13	1.83	1.95	0.18	8.66
W2-U 2.04 2.19 1.85 1.98 0.21 9.38 Lower Grour R3 W3 20.38 16.66 3.72 18.24 R3 W3-L Bedroom 0.19 2.69 2.21 2.37 0.31 11.69 Lower Grour R4 W4 22.51 17.48 5.03 22.35 R4 W4-L Bedroom 0.18 2.54 2.01 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-L Bedroom 0.18 2.09 1.69 1.84 0.25 12.01 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-L Bedroom 0.20 2.47 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.20 2.47 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.12																
Lower Grour R3 W3 20.38 16.66 3.72 18.24 R3 W3-L Bedroom 1.59 2.69 1.71 2.37 0.31 11.69 Lower Grour R4 W4 22.51 17.48 5.03 22.35 R4 W4-L Bedroom 1.82 2.69 1.15 2.01 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-L Bedroom 0.18 2.09 1.65 1.84 0.25 12.01 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-L Bedroom 0.18 2.09 1.65 1.84 0.25 12.01 Lower Grour R7 W6 12.97 8.13 4.84 37.32 R6 W6-L Bedroom 0.22 2.47 1.51 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.12 1.77 1.28 1.36 0.41 23.02 Ground </td <td>Lower Grou</td> <td>ur R2</td> <td>W2</td> <td>17.64</td> <td>14.92</td> <td>2.72</td> <td>15.41</td> <td>R2</td> <td></td> <td>Bedroom</td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td>	Lower Grou	ur R2	W2	17.64	14.92	2.72	15.41	R2		Bedroom		_				
Lower Grour R4 W4 22.51 17.48 5.03 22.35 R4 W4-L Bedroom 0.18 2.54 2.61 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-L Bedroom 0.18 2.09 0.15 2.16 0.37 14.74 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-L Bedroom 0.20 2.47 0.15 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.12 1.77 0.08 1.36 0.41 23.02 Ground R1 W1 4.64 3.67 0.08 21.01 W1 L/K/D 0.09 0.08									W2-U		2.04	2.19	1.85	1.98	0.21	9.38
Lower Grour R4 W4 22.51 17.48 5.03 22.35 R4 W4-U Bedroom 0.18 2.54 2.61 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-U Bedroom 0.18 2.09 0.15 2.16 0.37 14.74 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-U Bedroom 0.20 2.47 0.15 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.12 1.77 0.08 1.36 0.41 23.02 Ground R1 W1 4.64 3.67 0.08 R1 W1 L/K/D 0.09 0.08		Do	14/0	00.00	10.00	0 70	10.01	Do		D 1	0.40		0.47			
Lower Grour R4 W4 22.51 17.48 5.03 22.35 R4 W4-U Bedroom 0.18 2.54 0.15 2.16 0.37 14.74 Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-U Bedroom 0.18 2.09 0.15 1.84 0.25 12.01 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-U Bedroom 0.22 2.47 0.15 1.84 0.25 12.01 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-U Bedroom 0.12 1.77 0.08 1.36 0.41 16.62 Ground R1 W12 4.64 3.67 0.98 21.01 M7-U Bedroom 0.12 1.77 0.08 1.36 0.41 23.02 Ground R1 W12 4.64 3.67 0.98 21.01 M1 M2-U 1.04 0.09 1.04 0.08 1.36 0.41 23.02	Lower Grou	ur H3	W3	20.38	16.66	3.72	18.24	K3		Bedroom		0.00		0.07	0.01	11.00
Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-L Bedroom 0.18 2.09 0.15 1.84 0.25 12.01 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-L Bedroom 0.20 2.47 0.15 1.84 0.25 12.01 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.12 1.77 0.08 1.36 0.41 23.02 Ground R1 W1 4.64 3.67 0.98 21.01 W1 L/K/D 0.09 0.09 0.08 0.08 1.36 1.47									W3-U		2.50	2.69	2.21	2.37	0.31	11.69
Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-L Bedroom 0.18 2.09 0.15 1.84 0.25 12.01 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-L Bedroom 0.20 2.47 0.15 1.84 0.25 12.01 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.12 1.77 0.08 1.36 0.41 23.02 Ground R1 W1 4.64 3.67 0.98 21.01 W1 L/K/D 0.09 0.09 0.08 0.08 1.36 1.47		UV DA	10/4	00 E1	17 40	5.02	00 0E	D4		Podroom	0.19		0.15			
Lower Grour R5 W5 13.74 9.81 3.92 28.57 R5 W5-L Bedroom 0.18 1.91 2.09 1.69 1.84 0.25 12.01 Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-L Bedroom 0.20 2.47 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.12 1.65 1.77 0.08 1.36 0.41 23.02 Ground R1 W1 4.64 3.67 0.98 0.02 21.01 0.08 R1 W1 L/K/D 0.09 0.03 0.08 0.08	Lower Grou	ui N4	VV4	22.31	17.48	5.03	22.30	Π4		Denioolij		2 54		2 16	0.37	14 74
W6 12.97 8.13 4.84 37.32 R6 W6-L W6-U Bedroom 0.20 2.27 2.47 0.15 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L W7-U Bedroom 0.12 1.65 1.77 0.08 1.28 1.36 0.41 23.02 Ground R1 W1 W2 4.64 31.44 3.67 31.42 0.98 0.02 21.01 0.08 R1 W1 W2-L L/K/D 0.09 0.03 0.08 0.03									VV4-U		2.00	2.04	2.01	2.10	0.37	14./4
W6 12.97 8.13 4.84 37.32 R6 W6-L W6-U Bedroom 0.20 2.27 2.47 0.15 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L W7-U Bedroom 0.12 1.65 1.77 0.08 1.28 1.36 0.41 23.02 Ground R1 W1 W2 4.64 31.44 3.67 31.42 0.98 0.02 21.01 0.08 R1 W1 W2-L L/K/D 0.09 0.03 0.08 0.03	Lower Grou	ur B5	W5	13 74	9.81	3 92	28 57	B5	W5-I	Bedroom	0.18		0 15			
Lower Grour R6 W6 12.97 8.13 4.84 37.32 R6 W6-L Bedroom 0.20 2.47 0.15 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.12 1.65 1.77 0.08 1.28 1.36 0.41 23.02 Ground R1 W1 4.64 3.67 0.98 0.02 0.98 0.08 R1 W1 W2-L L/K/D 0.09 0.03 0.08 0.03			**0	10.74	5.01	0.02	20.07	110		Dearoon		2 09		1 84	0.25	12 01
W6-U 2.27 2.47 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L W7-U Bedroom 0.12 1.65 1.77 0.08 1.28 1.36 0.41 23.02 Ground R1 W1 W2 4.64 31.44 3.67 31.42 0.98 0.02 21.01 0.08 R1 W1 W2-L L/K/D 0.09 0.03 0.08 0.03 0.01 23.02											1.01	2.00	1.00	1.04	0.20	12.01
W6-U 2.27 2.47 1.91 2.06 0.41 16.62 Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L W7-U Bedroom 0.12 1.65 1.77 0.08 1.28 1.36 0.41 23.02 Ground R1 W1 W2 4.64 31.44 3.67 31.42 0.98 0.02 21.01 0.08 R1 W1 W2-L L/K/D 0.09 0.03 0.08 0.03	Lower Grou	ur R6	W6	12.97	8.13	4.84	37.32	R6	W6-L	Bedroom	0.20		0.15			
Lower Grour R7 W7 8.39 4.27 4.12 49.08 R7 W7-L Bedroom 0.12 1.65 1.77 0.08 1.28 1.36 0.41 23.02 Ground R1 W1 4.64 3.67 0.98 21.01 R1 W1 W1 L/K/D 0.09 0.03 0.08 0.08		-	-					-				2.47		2.06	0.41	16.62
W7-U 1.65 1.77 1.28 1.36 0.41 23.02 Ground R1 W1 4.64 3.67 0.98 21.01 R1 W1 L/K/D 0.09 0.08 W2 31.44 31.42 0.02 0.08 W2-L 0.03 0.03									-							
Ground R1 W1 4.64 3.67 0.98 21.01 R1 W1 L/K/D 0.09 0.08 W2 31.44 31.42 0.02 0.08 W2-L 0.03 0.03	Lower Grou	ur R7	W7	8.39	4.27	4.12	49.08	R7	W7-L	Bedroom	0.12		0.08			
Ground R1 W1 4.64 3.67 0.98 21.01 R1 W1 L/K/D 0.09 0.08 W2 31.44 31.42 0.02 0.08 W2-L 0.03 0.03												1.77		1.36	0.41	23.02
W2 31.44 31.42 0.02 0.08 W2-L 0.03 0.03																
	Ground	R1						R1		L/K/D						
			W2	31.44	31.42	0.02	0.08									
VVZ-U U.43 U.43									W2-U		0.43		0.43			

Iverson Road

Addrees	Deem	Window	EXISTING			%LOSS	Deem	Window	Room	EXISTI		PROPC		TOTAL	%LOS
dress	Room	Window	VSC	VSC	VSC	VSC	Room	Window	Use	ADF	TOTAL	ADF	TOTAL	LOSS	ADF
		W3	32.46	32.43	0.03	0.09		W3-L		0.03	1.00	0.03	1.00	0.01	0.00
								W3-U		0.44	1.03	0.44	1.02	0.01	0.89
round	R2	W4	8.30	6.45	1.85	22.27	R2	W4	L/K/D	0.12		0.10			
		W5	32.73	32.70	0.03	0.10		W5-L	21102	0.03		0.03			
			02.70	02.70	0.00	0.10		W5-U		0.44		0.44			
		W6	33.64	33.60	0.04	0.12		W6-L		0.04		0.04			
			00101	00100	0101	0.12		W6-U		0.45	1.09	0.45	1.07	0.01	1.27
around	R3	W7	12.84	7.72	5.12	39.88	R3	W7	L/K/D	0.14		0.11			
		W8	15.15	15.15	0.00	0.00		W8-L		0.03		0.03			
								W8-U		0.23		0.23			
		W9	34.63	34.54	0.09	0.25		W9-L		0.10		0.10			
			-	•• .				W9-U		1.22	1.72	1.22	1.69	0.03	1.86
iround	R4	W10	32.72	13.93	18.79	57.42	R4	W10	L/K/D	0.23		0.12			
		W11	16.10	16.10	0.00	0.00		W11-L		0.03		0.03			
								W11-U		0.25		0.25			
		W12	35.58	35.17	0.41	1.15		W12-L		0.10		0.10			
					-	-		W12-U		1.25	1.85	1.24	1.73	0.12	6.50
irst	R1	W1	36.82	36.82	0.00	0.00	R1	W1-L	L/K/D	0.23		0.23			
								W1-U		2.82		2.82			
		W2	17.24	12.41	4.83	28.01		W2-L		0.16		0.13			
								W2-U		1.36		1.13			
		W3	13.38	9.65	3.73	27.85		W3-L		0.06		0.05			
								W3-U		0.78	5.42	0.66	5.02	0.40	7.35
ïrst	R2	W4	5.76	3.73	2.04	35.32	R2	W4-L	Bedroom	0.03		0.02			
								W4-U		0.35	0.37	0.29	0.31	0.06	17.05
irst	R3	W5	8.92	8.92	0.00	0.00	R3	W5-L	L/K/D	0.04		0.04			
								W5-U		0.44		0.44			
		W6	32.21	32.20	0.01	0.04		W6-L		0.05		0.05			
								W6-U		0.59		0.59			
		W7	33.08	33.06	0.01	0.04		W7-L		0.05		0.05			
								W7-U		0.60	1.76	0.60	1.76	0.00	0.00
irst	R4	W8	1.71	1.25	0.46	27.00	R4	W8-L	L/K/D	0.02		0.02			
								W8-U		0.21		0.18			
		W9	33.84	33.82	0.02	0.04		W9-L		0.20		0.20			
								W9-U		2.53	2.96	2.53	2.93	0.03	1.05
irst	R5	W10	11.08	6.34	4.74	42.76	R5	W10	L/K/D	0.19		0.14			
		W11	37.15	37.12	0.03	0.08		W11-L		0.22		0.22			
								W11-U		2.74	3.15	2.74	3.10	0.05	1.48

SV0335

Iverson Road

Address First Second Second Second	Room R6 R1 R2	Window W12 W13 W1 W2 W3 W4	EXISTING VSC 12.44 37.59 32.51 9.97 17.64 6.75	VSC 5.71 37.53 32.51 7.52 14.75	VSC 6.73 0.06 0.00 2.45 2.89	%LOSS VSC 54.12 0.16 0.00 24.58 16.38	Room R6 R1	Window W12 W13-L W13-U W1-L W1-U W1-U W2-L	Room Use L/K/D	EXISTII ADF 0.20 0.22 2.77 0.21 2.40	TOTAL 3.19	PROPO ADF 0.13 0.22 2.77 0.21 2.40	TOTAL 3.13	0.07	%LOSS ADF 2.06
Second	R1 R2	W13 W1 W2 W3	37.59 32.51 9.97 17.64	37.53 32.51 7.52 14.75	0.06 0.00 2.45	0.16 0.00 24.58		W13-L W13-U W1-L W1-U W2-L		0.22 2.77 0.21	3.19	0.22 2.77 0.21	3.13	0.07	2.06
Second	R1 R2	W13 W1 W2 W3	37.59 32.51 9.97 17.64	37.53 32.51 7.52 14.75	0.06 0.00 2.45	0.16 0.00 24.58		W13-L W13-U W1-L W1-U W2-L		0.22 2.77 0.21	3.19	0.22 2.77 0.21	3.13	0.07	2.06
Second	R2	W1 W2 W3	32.51 9.97 17.64	32.51 7.52 14.75	0.00 2.45	0.00 24.58	R1	W13-U W1-L W1-U W2-L	L/K/D	2.77 0.21	3.19	2.77 0.21	3.13	0.07	2.06
Second	R2	W2 W3	9.97 17.64	7.52 14.75	2.45	24.58	R1	W1-L W1-U W2-L	L/K/D	0.21		0.21			
Second	R2	W2 W3	9.97 17.64	7.52 14.75	2.45	24.58	R1	W1-U W2-L	L/K/D						
Second	R2	W3	17.64	7.52 14.75				W2-L							
		W3	17.64	14.75											
					2.89	16.38				0.12		0.10			
					2.89	16.38		W2-U		1.10		0.97			
		W4	6.75	5.00				W3-L		0.07		0.06			
		W4	6.75					W3-U		0.94	4.83	0.85	4.59	0.24	4.95
Second	50			5.23	1.53	22.63	R2	W4-L	Bedroom	0.03		0.03			
Second	Do							W4-U		0.39	0.42	0.36	0.38	0.04	9.81
0000110	R3	W5	6.25	6.25	0.00	0.00	R3	W5-L	L/K/D	0.03		0.03			
	110		0.20	0.20	0.00	0.00	110	W5-U	LIND	0.35		0.35			
		W6	34.93	34.92	0.01	0.02		W6-L		0.05		0.05			
				•		•••-		W6-U		0.64		0.64			
		W7	35.71	35.70	0.01	0.02		W7-L		0.05		0.05			
								W7-U		0.65	1.76	0.65	1.76	0.00	0.00
Second	R4	W8	1.35	0.95	0.41	30.10	R4	W8-L	L/K/D	0.02		0.02			
								W8-U		0.20		0.18			
		W9	36.17	36.16	0.01	0.02		W9-L		0.22		0.22			
								W9-U		2.68	3.12	2.68	3.09	0.03	0.99
Second	R5	W10	10.26	5.05	5.21	50.80	R5	W10	L/K/D	0.18		0.12			
		W11	38.25	38.24	0.02	0.04		W11-L		0.23		0.23			
								W11-U		2.82	3.22	2.82	3.17	0.06	1.72
Second	R6	W12	11.96	4.54	7.43	62.09	R6	W12	L/K/D	0.19		0.11			
		W13	38.56	38.53	0.03	0.07		W13-L		0.23		0.23			
								W13-U		2.84	3.26	2.84	3.19	0.08	2.37
Third	R1	W1	39.20	34.86	4.34	11.06	R1	W1-L	Bedroom	0.25		0.22			
								W1-U		3.05		2.74			
		W2	36.41	27.22	9.19	25.24		W2-L		0.23		0.18			
								W2-U		2.87	6.40	2.29	5.43	0.97	15.15
Third	R2	W3	39.30	39.30	0.00	0.00	R2	W3-L	L/K/D	0.24		0.24			
								W3-U		2.86		2.86			
		W4	18.50	15.56	2.94	15.89		W4-L		0.08		0.07			
								W4-U		0.81	3.98	0.72	3.89	0.09	2.38
Third	R3	W5	39.26	39.26	0.00	0.00	R3	W5-L	L/K/D	0.23		0.23			
								W5-U		2.83		2.83			
		W6	22.60	20.88	1.72	7.60		W6-L		0.08		0.07			

Iverson Road

Address			EXISTING			%LOSS			Room	EXISTING		PROPOSED		TOTAL	%LOSS
Audress	Room	Window	VSC	VSC	VSC	VSC	Room	Window	Use	ADF	TOTAL	ADF	TOTAL	LOSS	ADF
								W6-U		0.98	4.12	0.94	4.08	0.04	1.01
Third	R4	W7	2.06	2.04	0.02	0.73	R4	W7-L	L/K/D	0.02		0.02			
								W7-U		0.17		0.17			
		W8	37.35	37.35	0.00	0.01		W8-L		0.05		0.05			
								W8-U		0.68		0.68			
		W9	38.03	38.03	0.00	0.01		W9-L		0.05		0.05			
								W9-U		0.68	1.66	0.68	1.66	0.00	0.00
Third	R5	W10	1.32	0.71	0.61	46.22	R5	W10-L	L/K/D	0.02		0.02			
								W10-U		0.17		0.11			
		W11	38.25	38.25	0.00	0.01		W11-L		0.23		0.23			
								W11-U		2.83	3.25	2.83	3.18	0.06	1.92
Third	R6	W12	8.23	3.22	5.01	60.89	R6	W12	L/K/D	0.16		0.09			
		W13	39.11	39.10	0.01	0.01		W13-L		0.24		0.24			
								W13-U		2.88	3.27	2.88	3.21	0.06	1.97
Third	R7	W14	13.05	5.75	7.30	55.96	R7	W14	L/K/D	0.20		0.12			
		W15	39.24	39.23	0.01	0.02		W15-L		0.24		0.24			
								W15-U		2.89	3.33	2.89	3.25	0.08	2.31
Fourth	R1	W1	39.34	20.24	0.00	0.00	R1	W1-L	Bedroom	0.25		0.25			
Fourth	ΠI	VVI	39.34	39.34	0.00	0.00	пі	₩1-L W1-U	Degroom	2.03		2.03			
		W2	38.16	35.42	2.74	7.17		W2-L		2.03 0.24		0.22			
		VVZ	30.10	55.42	2.74	7.17		W2-L W2-U		2.95	5.47	2.76	5.27	0.20	3.69
								WZ-0		2.35	5.47	2.70	5.21	0.20	5.05
Fourth	R2	W3	23.67	20.79	2.88	12.19	R2	W3-L	Bedroom	0.10		0.09			
								W3-U		1.18	1.28	1.08	1.18	0.10	8.00
Fourth	R3	W4	30.67	29.11	1.56	5.09	R3	W4-L	L/K/D	0.13		0.12			
								W4-U		1.55	1.68	1.50	1.62	0.06	3.69
Fourth	R4	W5	37.80	36.70	1.10	2.92	R4	W5-L	Bedroom	0.22		0.21			
								W5-U		2.67	2.89	2.61	2.82	0.08	2.62
													-		-
Fourth	R5	W6	32.22	31.39	0.83	2.59	R5	W6-L	Bedroom	0.11		0.10			
								W6-U		1.16	1.27	1.14	1.25	0.02	1.76
Fourth	R6	W7	8.73	8.73	0.00	0.00	R6	W7	L/K/D	0.43		0.43			
-	-	W8	15.34	14.80	0.54	3.49	-	W8-L		0.09		0.09			
								W8-U		0.85	1.37	0.83	1.35	0.02	1.53

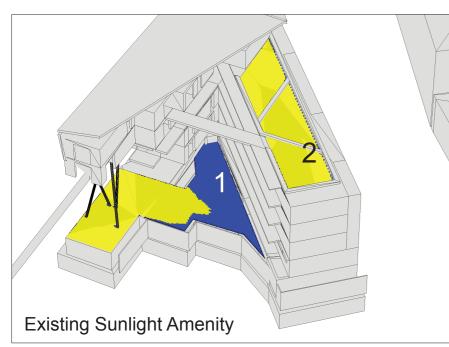
SV0335 Iverson Road		Daylig	ht Distribu Rel-C	ition Analys	is		11/06/201
Floor	Room/	Room use	Whole	Prev	New	Loss	%Loss
	Floor		Room	sq ft	sq ft	sq ft	
186 Iverson Road							
Ground	R1	Unknown	178.41	177.34	177.34	0.00	0.00
Ground	R2	Unknown	46.47	2.09	2.09	0.00	0.00
First	R1	Unknown	244.84	243.77	243.77	0.00	0.00
Second	R1	Unknown	232.98	224.70	224.70	0.00	0.00
Third	R1	Unknown	140.63	105.03	99.73	5.30	5.04
163 Iverson Road							
Lower Ground	R1	Bedroom	135.78	134.97	134.97	0.00	0.00
Lower Ground	R2	Bedroom	137.79	136.96	136.96	0.00	0.00
Lower Ground	R3	Bedroom	135.78	134.97	134.97	0.00	0.00
Lower Ground	R3 R4	Bedroom	135.78	136.96	136.96	0.00	0.00
Lower Ground	R5	Bedroom	138.72	137.87	137.87	0.00	0.00
Lower Ground	R5 R6	Bedroom	116.52	115.77	115.77	0.00	0.00
	R7		138.72				0.00
Lower Ground		Bedroom		137.87	137.86	0.00	
Ground	R1	L/K/D	410.29	357.74	357.54	0.20	0.06
Ground	R2	L/K/D	410.29	397.83	397.83	0.00	0.00
Ground	R3	L/K/D	451.44	445.35	445.22	0.13	0.03
Ground	R4	L/K/D	451.44	443.78	439.71	4.07	0.92
First	R1	L/K/D	266.68	265.54	265.54	0.00	0.00
First	R2	Bedroom	128.47	20.60	20.48	0.12	0.58
First	R3	L/K/D	409.68	368.08	368.08	0.00	0.00
First	R4	L/K/D	322.09	317.32	317.32	0.00	0.00
First	R5	L/K/D	322.09	320.83	320.83	0.00	0.00
First	R6	L/K/D	322.09	320.83	320.83	0.00	0.00
Second	R1	L/K/D	266.68	265.54	265.54	0.00	0.00
Second	R2	Bedroom	128.47	27.09	27.09	0.00	0.01
Second	R3	L/K/D	409.68	368.71	368.71	0.00	0.00
Second	R4	L/K/D	322.09	320.69	320.69	0.00	0.00
Second	R5	L/K/D	322.09	320.83	320.83	0.00	0.00
Second	R6	L/K/D	322.09	320.83	320.83	0.00	0.00
Third	R1	Bedroom	138.40	137.52	137.52	0.00	0.00
Third	R2	L/K/D	269.64	268.38	268.38	0.00	0.00
Third	R3	L/K/D	279.48	278.28	277.84	0.43	0.16
Third	R4	L/K/D	409.68	363.84	363.84	0.00	0.00
Third	R5	L/K/D	322.09	320.83	320.83	0.00	0.00
Third	R6	L/K/D	322.09	320.83	320.83	0.00	0.00
Third	R7	L/K/D	322.09	320.83	320.83	0.00	0.00
Fourth	R1	Bedroom	138.40	137.42	137.41	0.01	0.01
Fourth	R2	Bedroom	115.08	104.35	104.35	0.00	0.00
Fourth	R3	L/K/D	269.99	256.61	256.61	0.00	0.00
Fourth	R4	Bedroom	167.94	166.88	166.88	0.00	0.00
Fourth	R5	Bedroom	157.04	152.55	152.55	0.00	0.00
Fourth	R6	L/K/D	281.48	280.20	280.20	0.00	0.00
i ourtin	110		201.40	200.20	200.20	0.00	0.00

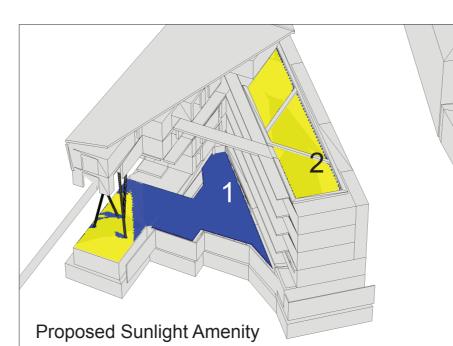
SV0335	
Iverson Road	

			E	XISTING	Р	ROPOSE	D	% Loss	% Loss
Floor	Room	Window	Room Us	Total	Winter	Total	Winter	Total	Winter
163 Iverson Road									
Ground	R1	W2	L/K/D	53	18	53	18	0.00	0.00
Ground	R1	W3	L/K/D	53	18	53	18	0.00	0.00
Ground	R2	W5	L/K/D	54	19	54	19	0.00	0.00
Ground	R2	W6	L/K/D	55	20	55	20	0.00	0.00
Ground	R3	W8	L/K/D	20	18	20	18	0.00	0.00
Ground	R3	W9	L/K/D	75	25	75	25	0.00	0.00
Ground	R4	W11	L/K/D	21	19	21	19	0.00	0.00
Ground	R4	W12	L/K/D	74	24	74	24	0.00	0.00
First	R1	W3	L/K/D	25	2	21	1	16.00	50.00
First	R3	W6	L/K/D	59	20	59	20	0.00	0.00
First	R3	W7	L/K/D	59	20	59	20	0.00	0.00
First	R4	W9	L/K/D	73	23	73	23	0.00	0.00
First	R5	W11	L/K/D	76	26	76	26	0.00	0.00
First	R6	W13	L/K/D	76	26	76	26	0.00	0.00
Second	R1	W3	L/K/D	34	2	31	1	8.82	50.00
Second	R3	W6	L/K/D	64	25	64	25	0.00	0.00
Second	R3	W7	L/K/D	63	24	63	24	0.00	0.00
Second	R4	W9	L/K/D	77	27	77	27	0.00	0.00
Second	R5	W11	L/K/D	77	27	77	27	0.00	0.00
Second	R6	W13	L/K/D	77	27	77	27	0.00	0.00
Third	R2	W4	L/K/D	34	15	32	15	5.88	0.00
Third	R3	W6	L/K/D	46	23	45	23	2.17	0.00
Third	R4	W8	L/K/D	64	25	64	25	0.00	0.00
Third	R4	W9	L/K/D	64	25	64	25	0.00	0.00
Third	R5	W11	L/K/D	78	28	78	28	0.00	0.00
Third	R6	W13	L/K/D	78	28	78	28	0.00	0.00
Third	R7	W15	L/K/D	78	28	78	28	0.00	0.00
Fourth	R3	W4	L/K/D	49	16	49	16	0.00	0.00
Fourth	R6	W8	L/K/D	24	13	24	13	0.00	0.00

APPENDIX 4

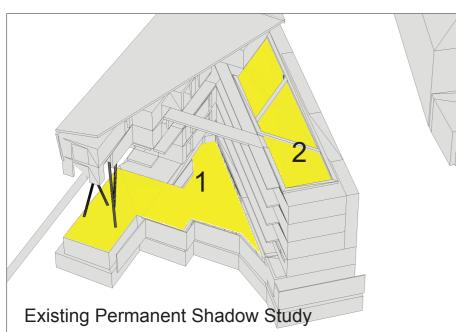
Sunlight Amenity / Permanent Shading Study

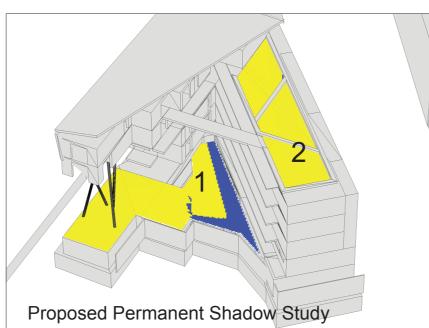


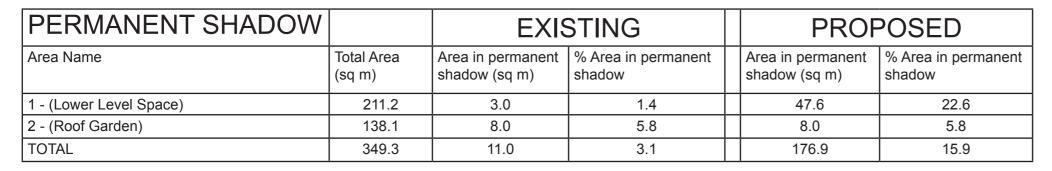




SUNLIGHT AMENITY		EXISTING		PROP		
Area Name	Total Area (sq m)	Area > 2 Hrs Sunlight (sq m)	% Area > 2 Hrs Sunlight	Area > 2 Hrs Sunlight (sq m)	% Area > 2 Hrs Sunlight	Retained (Pr/Ex)
1 - (Lower Level Space)	211.2	126.9	60.1	52.4	24.8	0.41
2 - (Roof Garden)	138.1	124.5	90.1	124.5	90.1	1
TOTAL	349.3	251.4	72.0	176.9	50.6	0.70









< 2 Hours Sunlight March 21st

> 2 Hours Sunlight March 21st

Area in Permanent Shadow (March 21st)

Area with sunlight (March 21st)

Savills

BUILDING CONSULTANCY

DESIGN SERVICES, BUILDING SURVEYING PROJECT MANAGEMENT, COST CONSULTANCY

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Project	Iverson Ro London	ad				
Drawing Amenity areas Sunlight availability and permanent overshadowing study to 163 Iverson Road						
Date 2	20/11/2013	Scale NTS				
Drawn By	DS	Checked By IT				
Drawing N	lo.		Rev.			
SV0335		PS03a	02			

APPENDIX 5

Savills Guidance Note – Daylight and Sunlight

Daylight and Sunlight Guidance Notes

October 2011

Prepared By:



Savills Commercial Limited 25 Finsbury Circus London EC2M 7EE



SAVILLS COMMERCIAL LIMITED

SAVILLS GUIDANCE NOTES - AN OVERVIEW OF DAYLIGHT AND SUNLIGHT

1.0 INTRODUCTION

- 1.1 Daylight and sunlight are amenities enjoyed by the inhabitants of a building. Whilst 'Rights to Light' have been acknowledged in England and Wales for hundreds of years, recently issues surrounding the need for adequate lighting has become more important to Local Authorities, particularly when assessing the design of a development and the impact it may have on surrounding properties.
- 1.2 Daylight and sunlight considerations are now commonly incorporated within Unitary Development Plans (UDP's) and Local Plans and play an important part in many planning applications. This is principally enforced via Environmental Impact Assessments (EIAs), which were introduced under the EIA Regulations 1999¹.
- 1.3 Clearly, where analysis is required, this must follow relevant guidance, most notably Building Research Establishment (BRE) Guidance Note 209 '*Site Layout Planning for Daylight and Sunlight A Guide to Good Practice*'.²
- 1.4 Broadly speaking, the aim of the BRE guide is to help to ensure that conditions in the local environment are considered. The aim of this is to secure sufficient sunlight and daylight for new developments and surrounding neighbours in order to promote good interior and exterior conditions. Needless to say, where daylight and sunlight is not considered or is not provided for in accordance with the relevant guidance, the Planning Application would be subject to potential failure and an extensive redesign process in order to rectify any shortfalls.
- 1.5 Although Local Authorities do have subtle differences in their application of daylight and sunlight criteria, BRE Guidance Note 209 provides the basis of most Local Authority requirements.
- 1.6 There are many factors that need to be taken into account when assessing daylight and sunlight in respect of a proposed development, therefore it is important that a holistic case specific approach is taken in order that all variables can be accounted for.

2.0 BRE GUIDANCE NOTE 209

- 2.1 The BRE Guide is often the main document used by Local Authorities when considering daylight and sunlight as part of the planning approval process. It provides the basis of what level of loss can be considered 'material' (i.e. at which point levels become unacceptable) therefore assisting in the process of development control.
- 2.2 It is important to emphasise that whilst the BRE Guidelines are not mandatory and should not to be used as an instrument of planning policy, they have become an important 'guide' to planners when considering the design of a proposed development and the impact it will have upon the surrounding urban area.
- 2.3 The BRE Guide states:

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument in planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design. In special circumstances the developer or Planning Authority

¹ Correct title being the 'Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999'.

² This document was first published in 1991 as a direct commission from the Department of the Environment. BRE 209 was most recently updated in October 2011. The document superseded the 1971 Department of the Environment '*Sunlight and daylight*' guidance document. BRE Guide 209 takes into account the British Standard Code of Practice for Daylighting; BS8206 Part 2 - a stand alone document which also provides guidance on this matter.

Savills Commercial Limited: Guidance Notes – An Overview of Daylight and Sunlight



may wish to use different target values. For example, in an historic city centre, or in an area with modern high rise buildings, a higher degree of obstruction may be un avoidable if new developments are to match the height and proportions of existing buildings".

- 2.4 BRE Guide 209 (2011) sets out a number of circumstances where it may be appropriate to consider alternative daylight and sunlight target levels which are particularly relevant in respect of dense city-centre development. These circumstances include:
 - Where the provision of balconies to neighbouring properties makes them particularly sensitive to development of neighbouring properties it may be appropriate to analyse the position without these balconies in place.
 - Where there is an extant planning consent for a site the effect of the permitted scheme may be used as a benchmark when considering future revised or alternative schemes.
 - The target levels adopted should be consistent with the site context. Therefore where a higher degree of obstruction is evident to existing neighbouring properties similar targets may be considered in respect of new development.
 - Where a neighbouring property has windows close to a joint site boundary it should not take more than its share of light and there should be parity between the constraints imposed on neighbouring sites. This may be assessed by considering a 'mirror-image' of the affected property as the baseline position for development of the neighbouring site.
- 2.5 The greatest need, under normal circumstances, for daylight and sunlight is to 'habitable' rooms of residential buildings. This is acknowledged within the guidelines, which place the most emphasis on these uses. Indeed Local Authorities are usually only concerned with the impact to 'habitable' rooms and this is often reflected in the drafting of local planning policy.
- 2.6 The BRE Guide considers both daylight and sunlight. These factors are discussed separately below.

3.0 DAYLIGHT

- 3.1 Daylight, or skylight, is the amount of light that enters a room and should not be confused with sunlight (discussed later) which is direct sunlight. Daylight can be used to determine the loss of light to a building as a result of a neighbouring development or the internal quality of daylight within a room.
- 3.2 Initially, when considering the impact to a nearby building the BRE Guide states that where a new development falls beneath a 25 degree angle, taken from the centre of a neighbouring window or a point 1.6m above ground level in relation to floor to ceiling windows, then there will be no material impact on daylight and no further analysis is required. If this is not the case then the BRE Guide recommends that further analysis is undertaken to establish if there will be adequate daylight or, to be precise, light from the sky.
- 3.3 The BRE Guide and other relevant supporting documentation suggests various methods for calculating daylight;
 - Vertical Sky Component (VSC)
 - No Sky Contours or Daylight Distribution (NSC/DD)
 - Average Daylight Factor (ADF)

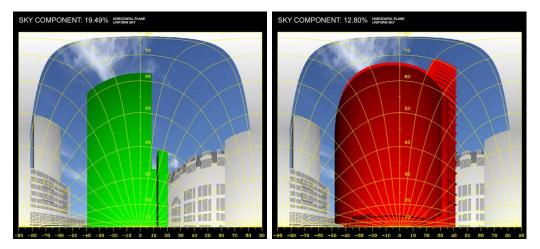
4.0 VERTICAL SKY COMPONENT (VSC)

4.1 This is the measure of the amount of skylight incident on a vertical plane (i.e. a window). Where establishing the daylight falling upon a window we consider the light at the centre of the window. The VSC is calculated by assessing the ratio of skylight available as a percentage of the unobstructed skylight



available at that same point. For a uniform sky, the maximum value is 50% (since the point is on a vertical plane, clearly only half the hemisphere of light can contribute). For a CIE³ sky, the maximum value is 39.6%.

- 4.2 The guidelines state that if the VSC at the centre of a window is less than 27% and less than 0.8 times its former value as a result of the development in question, the diffuse day lighting of the existing building will be adversely affected. A value of 27% corresponds to an infinite obstruction angle of 25 degrees which is why at 25 degrees and above we can normally discount the need for any further daylight and sunlight analysis (see 3.2 Above). Again it is important to note that the BRE Guide (as with all the BRE guidelines) can be interpreted with a degree of flexibility and this is not a hard and fast rule.
- 4.3 One way of measuring the VSC and displaying any change clearly is by using a Waldram Diagram. As can be seen (below), this method can be used to provide an easy to understand pictorial representation of the pre and post construction VSC.



An Example Of A Waldram Diagram Analysis

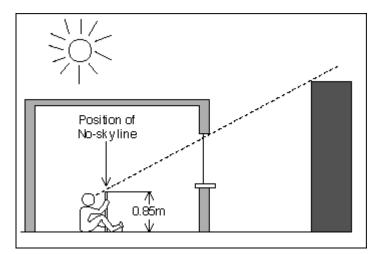
4.4 As already established an unobstructed view from the vertical plane of a window would give a VSC value of 39.6%, this would correspond to 50% of the hemisphere. The diagram shows how 12.8% of the sky remains after an obstruction has been erected which, when compared with the existing situation shows a marked decrease from the original 19.49% VSC. This is less than 0.8 times it's former value and is less than the 27% recommended. Consequently the VSC for this window would fall beneath the guideline BRE target value – and, as a result, introduce potential planning risk. Accordingly, on this hypothetical project, we would need to work closely with Planners and Architects in order to mitigate this problem and secure planning consent.

³ Commission Internationale d'Eclairage – the creator of the model for a standard overcast sky. Savills Commercial Limited: Guidance Notes – An Overview of Daylight and Sunlight



5.0 NO SKY CONTOUR (NSC) / DAYLIGHT DISTRIBUTION (DD)

5.1 The NSC measures the point, at desktop level, where sky is no longer visible through a window. See below:

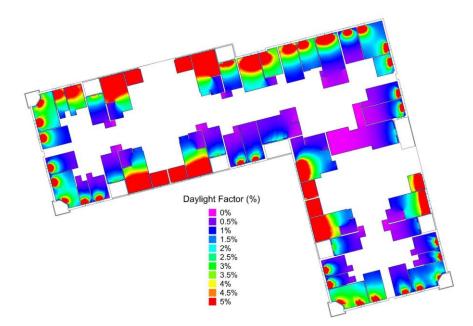


How To Establish The Location Of The No Sky Contour

- 5.2 The NSC is similar to the VSC approach in that the BRE guidelines state that 20% reduction to the existing area of sky visibility at the is considered acceptable. Accurate assessment of the position of the No-Sky Contour is reliant upon knowing room layout although an adequate indication of the position may achieved by adopting appropriate assumptions based upon external observations.
- 5.3 The NSC, which is sometimes referred to as the Daylight Distribution (DD), enables a greater understanding of the spread of daylighting within a room. The BRE Guide does not relate this methodology of analysis to 'room use', instead it is used to simply provide an understanding of the 'change' caused by the proposed development.

6.0 AVERAGE DAYLIGHT FACTOR

6.1 Average Daylight Factor or ADF is qualitative assessment of the amount of daylight within a room, in other words it is used to show how well a room is illuminated (see diagram below).



Daylight Factor Analysis With Results Indicated On A Floor Plan In False Colour Savills Commercial Limited: Guidance Notes – An Overview of Daylight and Sunlight



6.2 The BRE Guidelines define ADF as;

"Ratio of total daylight flux⁴ incident upon the working plane, expressed as a percentage of the outdoor luminance on a horizontal plan due to an unobstructed CIE Standard Overcast Sky"

- 6.3 ADF values can be calculated for rooms within a proposed development to ensure the quality of daylight will be adequate.
- 6.4 Factors on which the ADF depend are: VSC at the face of each window, the Total Window Area, Total Wall Area, Wall Reflectivity and Window Transmission. There are no specific BRE criteria for reduction in ADF if a proposed development were to be implemented, but since the ADF is related to the VSC via the obstruction angle, a reduction in VSC leads to a reduction in ADF.
- 6.5 The BRE Guide states that for a predominantly daylit room the ADF should be 5% or more if there is no supplementary electric lighting, or 2% or more if there is supplementary electric lighting. There are additional recommended ADF levels for dwellings with supplementary lighting.
- 6.6 They are⁵;
 - 2.0% Kitchens
 - 1.5% Living Rooms
 - 1.0% Bedrooms
- 6.7 The ADF methodology is not cited in the main text of the BRE Guide and is principally intended as design tool to ensure appropriate amenity within new-build units. Consideration of the Average Daylight Factor can however have several benefits over the VSC method of analysis given its consideration of both room use and layout. It is also the principal method used by both the British Standard, the British Standards Institute and CIBSE⁶ bodies of reference used in the compilation of BRE Guide 209.
- 6.8 Accurate assessment of the Average Daylight Factor requires knowledge of the layout, use and specification of finishes / materials of neighbouring properties. Where exact floor plans and room uses are not available the professional may make realistic assumptions regarding room size and use from external observations and experience and utilise standard transmittance and reflectivity values as set out in Daylight and Window Design: CIBSE Guide LG10.

7.0 SUNLIGHT

- 7.1 Sunlight to windows is assessed by APSH (Annual Probable Sunlight Hours), which seeks to ascertain the likelihood of a building elevation, within 90 degrees of due south, receiving sunlight in a typical year.
- 7.2 The BRE guide states that main living room windows and conservatories are relevant for detailed sunlight assessment with other habitable spaces being considered less important.
- 7.3 The calculation was designed to establish the percentage of APSH on the basis of sunlight availability. The maximum total of annual unobstructed sunlight hours is 1,486 - the percentage APSH relates to this.
- 7.4 The BRE Guide states;

"If a 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 a room should still receive enough sunlight".

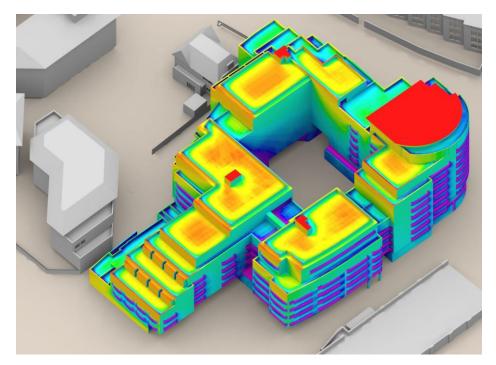
⁶ Chartered Institute of Building Services Engineers Savills Commercial Limited: Guidance Notes – An Overview of Daylight and Sunlight

⁴ Luminous Flux – 'The light emitted by source, or received by a surface (expressed in lumens). The quantity is derived from radiant flux (power) by evaluations the radiation in accordance with the spectral sensitivity of the "standard" eye'.

⁵ These figures are also recommended in BS 8206 Part 2 1992 entitled 'Code of Practice for Daylighting'.



7.5 The sunlight amenity to relevant windows is only considered to be materially affected if following a development APSH levels are less than 0.8 times their former value. Additionally reductions of 4% total APSH or less are not considered an adverse affect upon a neighbour.



False Colour APSH For A Building

- 7.6 The diagram, above, provides a false colour representation of the numerical results for sunlight analysis, the red areas show high levels of APSH. Of particular interest is the effect that balconies have on the sunlight hours to vertical surfaces.
- 7.7
- 7.8 Diagrams like this can be invaluable in providing a pictorial representation of an otherwise incomprehensible table of results. Together, the tables and images provide background information and graphical representation for planning documents in order that they can be simply and quickly deciphered. This mayuseful for all parties not regularly involved in this type of analysis. Namely, planners, architects, developers and non-professionals, such as the members of the public who may become involved as part of any public consultation exercise (which is common to most, if not all Planning Applications). This level of clarity enables us to make the complicated field of daylight and sunlight more understandable, therefore helping to speed up the grant of planning consent in this area, whilst providing detailed information for those with a more in depth knowledge in this field.

8.0 SUMMARY

- 8.1 These brief Guidance Notes are intended as an overview of the topic of daylight and sunlight and are not intended to be exhaustive. They have been drafted in order to provide an insight into the various documents referred to and relied on by planning, development, construction, legal, building services, architectural etc professionals.
- 8.2 In addition to the core constraints of daylight and sunlight the BRE guideline also deal with additional amenity constraints such as overshadowing of amenity spaces. Larger, more complex, development schemes may also require detailed analysis of factors such as light pollution and solar glare. Our specialist teams are able to fully advise on these issues and assist in the production of Environmental Statements (ES / EIA's) to accompany complex planning applications.



8.3 It is most important to note that where a problem exists with daylight and sunlight, once identified, it can almost certainly be overcome. However, it will need careful analysis and professional assistance to do so. Should any queries Savills professionals are available to provide focused, professional advice.