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DAYLIGHT & SUNLIGHT REPORT

159-161 Iverson Road

7th August 2014

Contents

1. Introduction

This practice has been instructed to report upon the daylight and sunlight implications of the proposed redevelopment of the 159-1661 Iverson Road site. This report is based upon the latest proposals prepared by Dexter Moran Associates.

The methodology and criteria used for these assessments is provided by the Building Research Establishments guidance 'Site layout planning for daylight and sunlight: a guide to good practice' (BRE, 2011).

Drawings showing our understanding of the proposal can be found at appendix 1. Drawings 1082-PL-01 and 1082-PL-02 illustrate the existing situation. Drawings 1082-PL-11 and 1082-PL-12 show the proposed development.

2. Guidance

Site layout planning for daylight and sunlight: a guide to good practice, BRE 2011

This document follows from previous guidance produced by Her Majesty's Stationary Office (HMSO) on daylight and sunlight in the built environment and is now the accepted methodology used by local authorities for assessing daylight and sunlight in relation to new developments. It provides methods for the calculation of daylight and sunlight to existing surrounding properties.

There are detailed three methods for calculating daylight, the Vertical Sky Component (VSC), the No-Sky Line Contour (NSC) and the Average Daylight Factor (ADF). For sunlight the Annual Probable Sunlight Hours (APSH) method is discussed.

The VSC method calculates the amount of visible sky available to each window or to points on the façade of a building where windows have not yet been designed. This method does not consider the size or nature of rooms behind the façade. By reference to the BRE guidance, should windows achieve sufficient levels of VSC they are seen as compliant in terms of daylight and no further tests are required.

The NSC method describes the distribution of daylight within rooms by calculating the area of the 'working plane' which can receive a direct view of the sky and hence 'sky light'. The working plane height is set at 850mm above floor level within a residential property and 700mm within a commercial property. The BRE does not state a required amount of no-sky line but merely suggests a recommended maximum reduction.

The ADF method calculates the average illuminance within a room as a proportion of the illuminance available to an unobstructed point outdoors under a sky of known luminance and luminance distribution. This is the most detailed of the daylight calculations and considers the physical nature of the room behind the window, including; window transmittance, and surface reflectivity.

For sunlight the APSH test calculates the percentage of statistically probable hours of sunlight received by each window in both the summer and winter months. March 21st through to September 21st is considered to be the summer period while September 21st to March 21st is considered the winter period. For properties surrounding a new development only those windows orientated within 90° of due south and which overlook the site of the proposal are relevant for assessment.

The opening paragraphs of the BRE guidelines state: -

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design. In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre a higher

degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings".

It is considered important to note that in high density areas, achieving good levels of daylight and sunlight in accordance with the BRE guidelines, can conflict with other beneficial design factors.

3. Assumptions

A measured survey, architects drawings, site photographs and Ordnance Survey information have been used to create the 3D computer model. Where it has not been possible to gain access to the surrounding properties, details of the internal layouts and floor level heights have been assumed from the external appearance of the building, and the locations of windows. Unless known or otherwise appropriate the depths of rooms have been assumed at 4.27m (14ft) for residential properties and 6m (20ft) for commercial properties.

4. Sources of Information

Dexter Moran Architects

July 2014 fixed scheme drawings and 3d model of proposal

EB7 Ltd

Site Photographs

Ordnance Survey Extracts

5. The Site and Proposal

The site at 159-161 Iverson Road is currently occupied by a tyre fitting centre, Iverson 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. This consented development consists of 33 apartments and 3 family houses. This consented scheme was also designed by Dexter Moren Associates and this current submission is intended to complement this earlier consent.

The 159-161 Iverson Road site has the benefit of an earlier planning approval (Ref:2013.7505/P) for a development of four to seven storeys.

The current proposal follows similar massing principles with no change to the design of the 'front block' to Iverson Road. A single storey addition to the 'rear' block is proposed and a link unit between the two elements of the scheme,

6. Results

Each of the surrounding residential properties with windows overlooking the site have been included within our assessments. Full results of these assessments can be found in appendix 2.

The properties considered to sufficiently close to the proposal be relevant for assessment are:

- 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 Iverson Road. The property is situated to a curve on Iverson Road such that its front elevation is broadly north west facing and looks obliquely past the proposals.

As the bulk and mass of the 'front' block to Iverson Road does not change under the revised proposals there is no material change in amenity impacts when compared with the previously consented scheme.

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 slight reduction to beyond 0.8 times its former VSC value (a 22% loss compared with the guideline 20% change) 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 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 Iverson Road are situated immediately to the east of the site. The 163 Iverson 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 Iverson Road with a rear block splitting to form a Y shape around open space to the western boundary.

The current proposal retains the site layout and design response to 163 Iverson Road as the earlier consented scheme. This allows daylight access to the 163 Iverson Road units both 'around' the proposed blocks and 'through' the open central area. Again the daylight / sunlight effects are very similar to those under the consented scheme.

Our technical analysis shows that Vertical Sky Component levels to the majority of rooms within the consented scheme at 163 Iverson Road retain VSC levels at or 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 within 0.8 times their former value and fully compliant with the BRE targets.

Four lower ground floor bedrooms (identified as R4 to R7 within our analysis) and a single bedroom at first floor (identified as R2) experience reductions in VSC exceeding the target guidelines and are only served by a single window. All of these rooms maintain No Sky Contour levels within 0.8 times of their former value and in line with the BRE targets.

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. First floor R2 does not achieve 1.0% ADF however the change between the existing and proposed position is 'de minimis' being only 0.04% 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 163 Iverson Road 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.

7. Conclusions

This practice has considered the potential daylight / sunlight effects of the proposed Dexter Moran Associates scheme for 159-161 Iverson Road. The quality of daylight amenity within the neighbouring residential properties and the consented scheme at 163 Iverson Road has been assessed using the VSC and NSC daylight assessment methods APSH sunlight assessment as recommended within the BRE document 'Site layout planning' and the British Standard document BS8206 pt2.

The scheme has been designed to complement the neighbouring scheme at 163 Iverson Road and follows the design principles of the earlier consented scheme for 159-161 Iverson Road (App Ref: 2013.7505/P). As such the amenity impacts of the proposal are very similar to the earlier consented scheme with no material changes in the nature or quantum of the effects.

The vast majority of windows to the neighbouring properties maintain Vertical Sky Component (VSC) levels within 0.8 times their former value and therefore comply with the most onerous of the BRE tests. No-Sky Contour analysis confirms that all rooms within the residential neighbours experience no material change in the No-Sky Contour and therefore fully comply with the BRE targets.

Where VSC deviations occur which exceed the BRE targets this generally affects constrained secondary windows within rooms which remain well-lit from their principal aspect with both No-Sky Contour analysis and Average Daylight Factor results confirming that good daylighting is maintained to the neighbours and that reductions in amenity are minimal.

In respect of direct sunlight our APSH results demonstrate minimal impacts upon sunlight amenity with all relevant windows fully complying with the BRE guideline targets.

Overall the development protects existing daylight and sunlight amenity and responds well to the site constraints and consented scheme at 163 Iverson Road. On this basis the development complies with the guidance set out by the BRE and relevant planning policy and results in no additional material impacts when compared to the earlier consented scheme for the 159-161 Iverson Road site.

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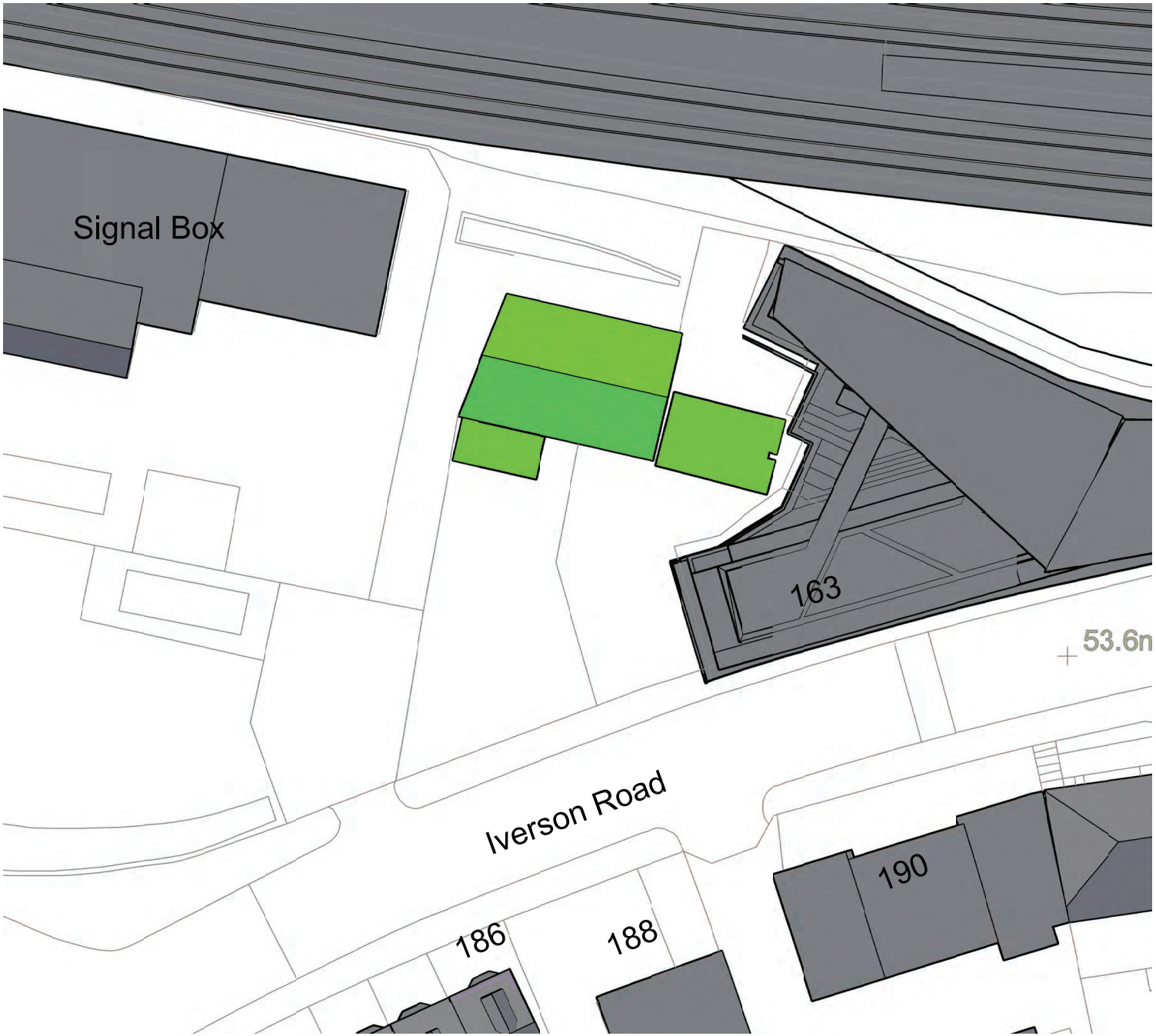
Appendix 1

Existing Situation and Window Maps



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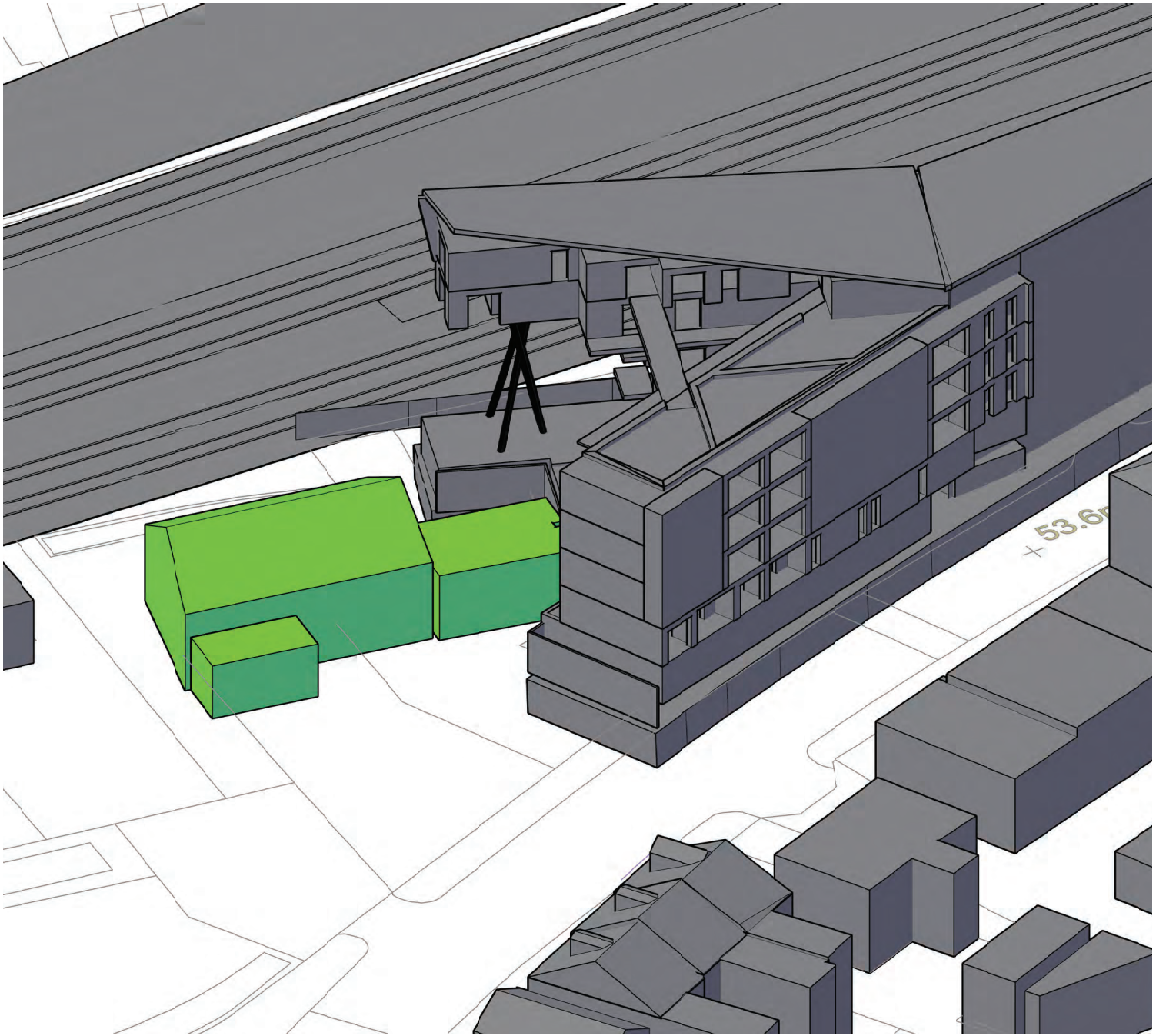
Sources of information

Project	Iverson Road London
Title	Plan View Existing Buildings
Drawn	DS
Checked	DF
Date	07/08/2014
Rel no.	03
Drawing no.	1082-01



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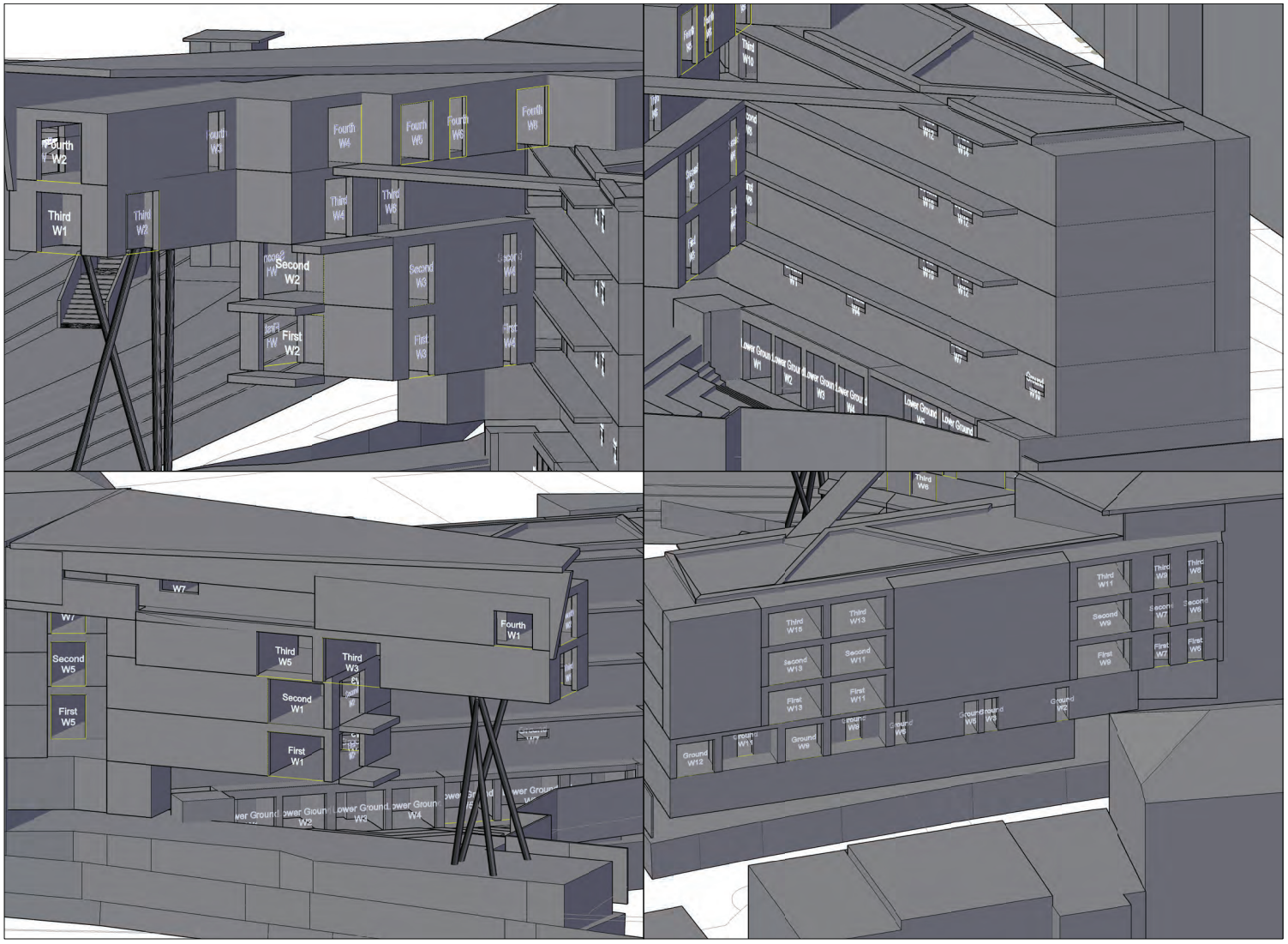
Sources of information

Project	Iverson Road London
Title	3D View Existing Buildings
Drawn	DS
Checked	DF
Date	07/08/2014
Rel no.	03
Drawing no.	1082-02



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Sources of information

0974_159-161 Iverson Road_Public Consultation Scheme_130718.dwg
SD13702-01_IVERSON_RD_ELEVATIONS_FINALS.DWG
SP11627_163 Iverson_Road_Topo_Final.dwg
SP12777_159-161 Iverson Road_Topo_Rev A_FINAL.dwg

Project: Iverson Road
London

Title: Window Map
163 Iverson Road

Drawn: DS
Checked: DF

Date: 20/11/2013
Rel no.: 01

Drawing no.: SV0335-05

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Sources of information

0974_159-161 Iverson Road_Public Consultation Scheme_130718.dwg
SD13702-01_IVERSON_RD_ELEVATIONS_FINALS.DWG
SP11627_163 Iverson_Road_Topo_Final.dwg
SP12777_159-161 Iverson Road_Topo_Rev A_FINAL.dwg

Project: Iverson Road
London

Title: Window Map
190, 188, 186 Iverson Road

Drawn: DS
Checked: DF

Date: 20/11/2013
Rel no.: 01

Drawing no.: SV0335-06

Appendix 2

Proposed Situation

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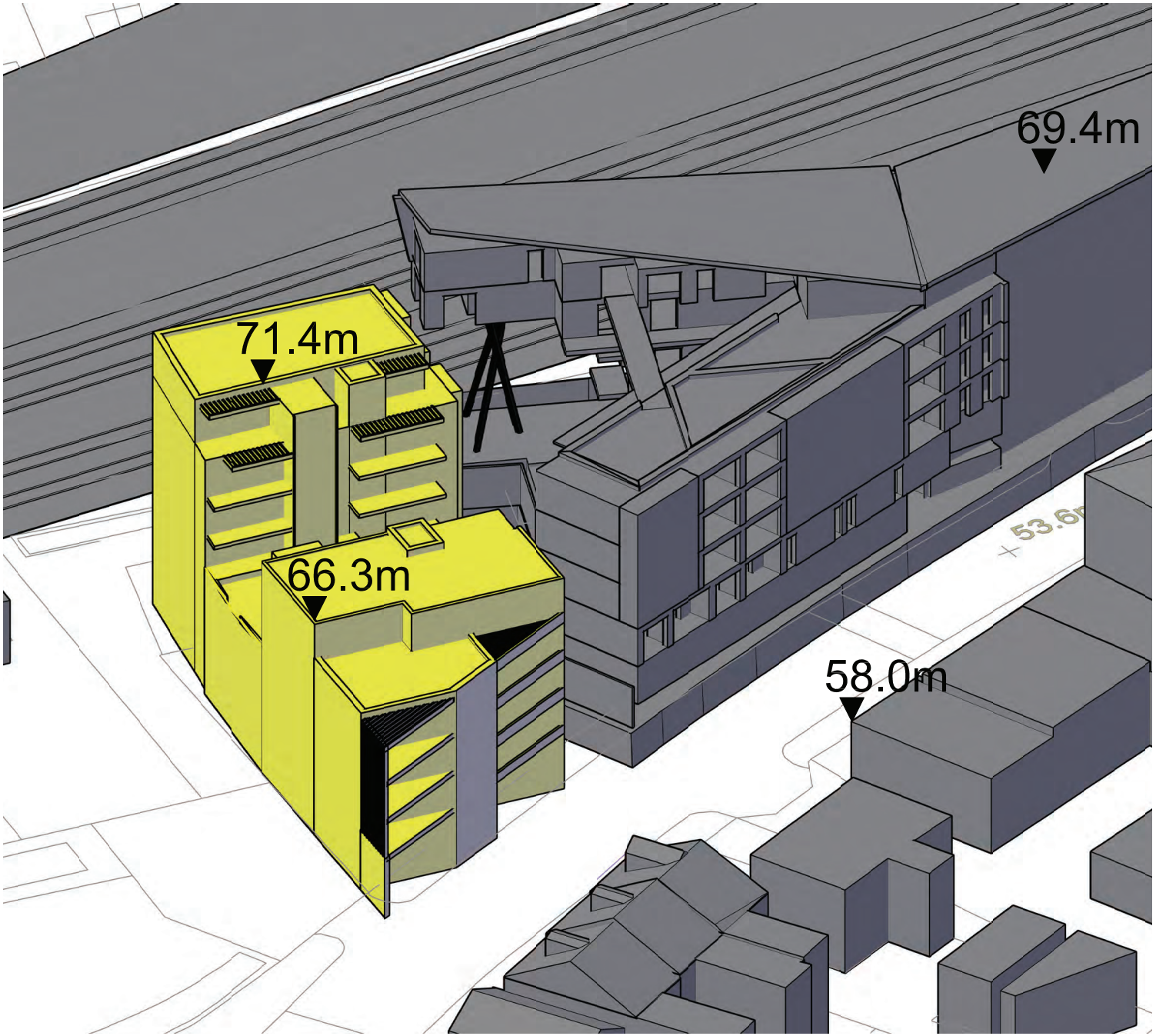
Sources of information

Project	Iverson Road London
Title	Plan View Proposed Scheme
Drawn	DS
Checked	DF
Date	07/08/2014
Rel no.	03
Drawing no.	1082-11



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Sources of information

Project	Iverson Road London
Title	3D View Proposed Scheme
Drawn	DS
Checked	DF
Date	07/08/2014
Rel no.	03
Drawing no.	1082-12

Appendix 3

Results of Daylight and Sunlight Study

Address	Room	Window	Room Use	EXISTING VSC	PROPOSED VSC	LOSS	%LOSS	ROOM AREA	EXISTING NSC	PROPOSED NSC	LOSS	%LOSS	EXISTING WINDOW	ADF TOTAL	PROPOSED WINDOW	ADF TOTAL	LOSS	% LOSS	EXISTING TOTAL	APSH WINTER	PROPOSED TOTAL	APSH WINTER	% TOTAL LOSS	% WINTER LOSS
186 Ivers																								
Ground	R1	W1	Unknown	32.22	25.05	7.18	22.27						0.71		0.58				N/A	N/A	N/A	N/A	N/A	N/A
	R1	W2		36.65	30.33	6.32	17.24						1.69		1.44				N/A	N/A	N/A	N/A	N/A	N/A
	R1	W3		34.22	31.73	2.49	7.28	178.41	177.34	177.34	0.00	0.00	0.75	3.15	0.73	2.75	0.40	12.83	N/A	N/A	N/A	N/A	N/A	N/A
First	R1	W1-L	Unknown	33.82	28.02	5.80	17.16						0.01		0.01				N/A	N/A	N/A	N/A	N/A	N/A
		W1-U											0.54		0.46									
	R1	W2-L		37.79	32.72	5.06	13.40						0.02		0.01				N/A	N/A	N/A	N/A	N/A	N/A
		W2-U											1.27		1.12									
	R1	W3-L		35.28	33.31	1.97	5.57						0.01		0.01				N/A	N/A	N/A	N/A	N/A	N/A
		W3-U											0.57		0.55									
	R1	W4-L		37.24	33.32	3.92	10.53						0.01		0.01				N/A	N/A	N/A	N/A	N/A	N/A
		W4-U						244.84	243.77	243.77	0.00	0.00	1.22	3.64	1.11	3.27	0.37	10.06						
Second	R1	W1	Unknown	38.62	35.31	3.30	8.55						1.20		1.10				N/A	N/A	N/A	N/A	N/A	N/A
	R1	W2		38.70	36.04	2.66	6.88	232.98	224.70	224.70	0.00	0.00	1.11	2.31	1.04	2.14	0.17	7.50	N/A	N/A	N/A	N/A	N/A	N/A
Third	R1	W1-L	Unknown	38.99	37.24	1.76	4.50						0.02		0.02				N/A	N/A	N/A	N/A	N/A	N/A
		W1-U						140.63	105.03	100.73	4.30	4.09	1.79	1.81	1.71	1.73	0.08	4.47						
163 Ivers																								
Lower Gro	R1	W1-L	Bedroom	13.48	11.75	1.73	12.82						0.13		0.12				N/A	N/A	N/A	N/A	N/A	N/A
		W1-U						135.78	134.97	134.97	0.00	0.00	2.00	2.13	1.86	1.98	0.16	7.34						
Lower Gro	R2	W2-L	Bedroom	17.64	15.29	2.35	13.32						0.15		0.14				N/A	N/A	N/A	N/A	N/A	N/A
		W2-U						137.79	136.96	136.96	0.00	0.00	2.04	2.19	1.88	2.01	0.18	8.12						
Lower Gro	R3	W3-L	Bedroom	20.40	17.11	3.29	16.14						0.19		0.17				N/A	N/A	N/A	N/A	N/A	N/A
		W3-U						135.78	134.97	134.97	0.00	0.00	2.50	2.69	2.25	2.42	0.28	10.35						
Lower Gro	R4	W4-L	Bedroom	22.55	18.01	4.55	20.16						0.18		0.16				N/A	N/A	N/A	N/A	N/A	N/A
		W4-U						137.79	136.96	136.96	0.00	0.00	2.37	2.54	2.05	2.20	0.34	13.34						
Lower Gro	R5	W5-L	Bedroom	13.74	9.30	4.44	32.33						0.18		0.15				N/A	N/A	N/A	N/A	N/A	N/A
		W5-U						138.72	137.87	137.87	0.00	0.00	1.91	2.09	1.63	1.78	0.31	15.00						
Lower Gro	R6	W6-L	Bedroom	13.00	7.59	5.41	41.62						0.20		0.16				N/A	N/A	N/A	N/A	N/A	N/A
		W6-U						116.52	115.77	115.77	0.00	0.00	2.28	2.48	1.81	1.96	0.51	20.72						
Lower Gro	R7	W7-L	Bedroom	8.43	3.91	4.51	53.57						0.12		0.09				N/A	N/A	N/A	N/A	N/A	N/A
		W7-U						138.72	137.87	137.61	0.26	0.19	1.65	1.77	1.19	1.28	0.50	28.01						
Ground	R1	W1	L/K/D	4.64	3.62	1.02	22.08						0.09		0.08				N/A	N/A	N/A	N/A	N/A	N/A
	R1	W2-L		31.86	31.84	0.02	0.08						0.03		0.03				53	18	53	18	0.00	0.00
		W2-U											0.43		0.43									
	R1	W3-L		32.75	32.72	0.03	0.09						0.03		0.03				53	18	53	18	0.00	0.00
		W3-U						410.29	357.71	357.54	0.17	0.05	0.44	1.03	0.44	1.02	0.01	0.95						
Ground	R2	W4	L/K/D	8.30	6.25	2.05	24.69						0.12		0.10				N/A	N/A	N/A	N/A	N/A	N/A
	R2	W5-L		32.99	32.96	0.03	0.09						0.03		0.03				54	19	54	19	0.00	0.00
		W5-U											0.45		0.45									
	R2	W6-L		33.84	33.80	0.04	0.11						0.04		0.04				55	20	55	20	0.00	0.00
		W6-U						410.29	397.83	397.83	0.00	0.00	0.46	1.09	0.46	1.08	0.02	1.45						

Address	Room	Window	Room Use	EXISTING VSC	PROPOSED VSC	LOSS	%LOSS	ROOM AREA	EXISTING NSC	PROPOSED NSC	LOSS	%LOSS	EXISTING WINDOW	ADF TOTAL	PROPOSED WINDOW	ADF TOTAL	LOSS	% LOSS	EXISTING TOTAL	APSH WINTER	PROPOSED TOTAL	APSH WINTER	% TOTAL LOSS	% WINTER LOSS
Ground	R3	W7	L/K/D	12.86	6.89	5.97	46.45						0.14		0.10				N/A	N/A	N/A	N/A	N/A	N/A
	R3	W8-L		15.17	15.17	0.00	0.00						0.03		0.03				20	18	20	18	0.00	0.00
		W8-U											0.23		0.23									
	R3	W9-L		34.79	34.74	0.05	0.14						0.10		0.10				75	25	75	25	0.00	0.00
		W9-U						451.44	445.35	442.50	2.85	0.64	1.23	1.73	1.23	1.69	0.04	2.29						
Ground	R4	W10	L/K/D	32.74	16.30	16.44	50.22						0.23		0.13				N/A	N/A	N/A	N/A	N/A	N/A
	R4	W11-L		16.11	16.11	0.00	0.00						0.03		0.03				21	19	21	19	0.00	0.00
		W11-U											0.25		0.25									
	R4	W12-L		35.70	35.55	0.15	0.41						0.10		0.10				74	24	74	24	0.00	0.00
		W12-U						451.44	443.78	439.71	4.07	0.92	1.25	1.86	1.25	1.76	0.10	5.42						
First	R1	W1-L	L/K/D	37.02	37.02	0.00	0.00						0.23		0.23				N/A	N/A	N/A	N/A	N/A	N/A
		W1-U											2.84		2.84									
	R1	W2-L		17.24	12.63	4.61	26.74						0.16		0.13				N/A	N/A	N/A	N/A	N/A	N/A
		W2-U											1.36		1.14									
	R1	W3-L		13.38	10.51	2.87	21.42						0.06		0.05				25	2	21	1	16.00	50.00
		W3-U						266.68	265.54	265.54	0.00	0.00	0.78	5.43	0.69	5.08	0.35	6.38						
First	R2	W4-L	Bedroom	5.76	4.37	1.39	24.19						0.03		0.02				5	1	4	0		
		W4-U						128.47	20.60	20.51	0.09	0.44	0.35	0.37	0.31	0.34	0.04	10.46						
First	R3	W5-L	L/K/D	8.92	8.92	0.00	0.00						0.04		0.04				N/A	N/A	N/A	N/A	N/A	N/A
		W5-U											0.44		0.44									
	R3	W6-L		32.77	32.75	0.01	0.04						0.05		0.05				59	20	59	20	0.00	0.00
		W6-U											0.60		0.60									
	R3	W7-L		33.53	33.52	0.01	0.04						0.05		0.05				59	20	59	20	0.00	0.00
		W7-U						409.68	368.08	368.08	0.00	0.00	0.61	1.78	0.61	1.78	0.00	0.00						
First	R4	W8-L	L/K/D	1.73	1.32	0.41	23.90						0.02		0.02				N/A	N/A	N/A	N/A	N/A	N/A
		W8-U											0.21		0.19									
	R4	W9-L		34.17	34.15	0.02	0.05						0.20		0.20				73	23	73	23	0.00	0.00
		W9-U						322.09	317.32	317.32	0.00	0.00	2.55	2.99	2.55	2.96	0.03	0.94						
First	R5	W10	L/K/D	11.08	6.43	4.65	41.97						0.19		0.14				N/A	N/A	N/A	N/A	N/A	N/A
	R5	W11-L		37.33	37.30	0.03	0.08						0.22		0.22				76	26	76	26	0.00	0.00
		W11-U						322.09	320.83	320.83	0.00	0.00	2.75	3.16	2.75	3.11	0.05	1.48						
First	R6	W12	L/K/D	12.44	5.82	6.62	53.20						0.20		0.13				N/A	N/A	N/A	N/A	N/A	N/A
	R6	W13-L		37.79	37.75	0.04	0.11						0.22		0.22				76	26	76	26	0.00	0.00
		W13-U						322.09	320.83	320.83	0.00	0.00	2.78	3.21	2.78	3.14	0.07	2.06						
Second	R1	W1-L	L/K/D	32.54	32.54	0.00	0.00						0.21		0.21				N/A	N/A	N/A	N/A	N/A	N/A
		W1-U											2.40		2.40									
	R1	W2-L		9.97	7.66	2.31	23.20						0.12		0.10				N/A	N/A	N/A	N/A	N/A	N/A
		W2-U											1.10		0.97									
	R1	W3-L		17.64	15.60	2.04	11.59						0.07		0.06				34	2	31	1	8.82	50.00
		W3-U						266.68	265.54	265.54	0.00	0.00	0.94	4.84	0.88	4.63	0.21	4.25						
Second	R2	W4-L	Bedroom	6.75	5.77	0.99	14.61						0.03		0.03				7	1	6	0		
		W4-U						128.47	27.09	27.09	0.00	0.01	0.39	0.42	0.37	0.40	0.02	5.55						
Second	R3	W5-L	L/K/D	6.25	6.25	0.00	0.00						0.03		0.03				N/A	N/A	N/A	N/A	N/A	N/A
		W5-U											0.35		0.35									
	R3	W6-L		35.15	35.14	0.01	0.02						0.05		0.05				64	25	64	25	0.00	0.00

Address	Room	Window	Room Use	EXISTING VSC	PROPOSED VSC	LOSS	%LOSS	ROOM AREA	EXISTING NSC	PROPOSED NSC	LOSS	%LOSS	EXISTING WINDOW	ADF TOTAL	PROPOSED WINDOW	ADF TOTAL	LOSS	% LOSS	EXISTING TOTAL	APSH WINTER	PROPOSED TOTAL	APSH WINTER	% TOTAL LOSS	% WINTER LOSS
		W6-U											0.64		0.64									
	R3	W7-L		35.89	35.88	0.01	0.02						0.05		0.05				63	24	63	24	0.00	0.00
		W7-U						409.68	368.71	368.71	0.00	0.00	0.65	1.77	0.65	1.77	0.00	0.00						
Second	R4	W8-L	L/K/D	1.36	1.03	0.33	24.08						0.02		0.02				N/A	N/A	N/A	N/A	N/A	N/A
		W8-U											0.20		0.18									
	R4	W9-L		36.31	36.30	0.01	0.03						0.22		0.22				77	27	77	27	0.00	0.00
		W9-U						322.09	320.69	320.69	0.00	0.00	2.69	3.13	2.69	3.11	0.03	0.89						
Second	R5	W10	L/K/D	10.26	5.95	4.31	42.02						0.18		0.13				N/A	N/A	N/A	N/A	N/A	N/A
	R5	W11-L		38.31	38.29	0.02	0.05						0.23		0.23				77	27	77	27	0.00	0.00
		W11-U						322.09	320.83	320.83	0.00	0.00	2.82	3.23	2.82	3.18	0.05	1.44						
Second	R6	W12	L/K/D	11.96	5.77	6.19	51.77						0.19		0.13				N/A	N/A	N/A	N/A	N/A	N/A
	R6	W13-L		38.61	38.59	0.02	0.06						0.23		0.23				77	27	77	27	0.00	0.00
		W13-U						322.09	320.83	320.83	0.00	0.00	2.84	3.27	2.84	3.20	0.06	1.97						
Third	R1	W1-L	Bedroom	39.20	35.49	3.71	9.45						0.25		0.22				N/A	N/A	N/A	N/A	N/A	N/A
		W1-U											3.05		2.78									
	R1	W2-L		36.41	30.04	6.37	17.50						0.23		0.19				66	25	56	19	15.15	24.00
		W2-U						138.40	137.52	137.52	0.00	0.00	2.87	6.40	2.47	5.66	0.74	11.51						
Third	R2	W3-L	L/K/D	39.30	39.30	0.00	0.00						0.24		0.24				N/A	N/A	N/A	N/A	N/A	N/A
		W3-U											2.86		2.86									
	R2	W4-L		18.50	16.55	1.95	10.55						0.08		0.07				34	15	31	14	8.82	6.67
		W4-U						269.64	268.38	268.38	0.00	0.00	0.81	3.98	0.75	3.92	0.06	1.53						
Third	R3	W5-L	L/K/D	39.26	39.26	0.00	0.00						0.23		0.23				N/A	N/A	N/A	N/A	N/A	N/A
		W5-U											2.83		2.83									
	R3	W6-L		22.60	21.34	1.26	5.56						0.08		0.07				46	23	44	23	4.35	0.00
		W6-U						279.48	278.28	277.89	0.39	0.14	0.98	4.12	0.95	4.09	0.03	0.72						
Third	R4	W7-L	L/K/D	2.06	2.04	0.02	0.73						0.02		0.02				N/A	N/A	N/A	N/A	N/A	N/A
		W7-U											0.17		0.17									
	R4	W8-L		37.38	37.38	0.00	0.01						0.05		0.05				64	25	64	25	0.00	0.00
		W8-U											0.68		0.68									
	R4	W9-L		38.06	38.05	0.00	0.01						0.05		0.05				64	25	64	25	0.00	0.00
		W9-U						409.68	363.84	363.84	0.00	0.00	0.68	1.66	0.68	1.66	0.00	0.00						
Third	R5	W10-L	L/K/D	1.32	0.89	0.43	32.66						0.02		0.02				N/A	N/A	N/A	N/A	N/A	N/A
		W10-U											0.17		0.13									
	R5	W11-L		38.27	38.27	0.00	0.01						0.23		0.23				78	28	78	28	0.00	0.00
		W11-U						322.09	320.83	320.83	0.00	0.00	2.83	3.25	2.83	3.20	0.04	1.33						
Third	R6	W12	L/K/D	8.23	4.98	3.25	39.46						0.16		0.12				N/A	N/A	N/A	N/A	N/A	N/A
	R6	W13-L		39.11	39.11	0.01	0.02						0.24		0.24				78	28	78	28	0.00	0.00
		W13-U						322.09	320.83	320.83	0.00	0.00	2.88	3.27	2.88	3.24	0.04	1.21						
Third	R7	W14	L/K/D	13.05	8.28	4.77	36.57						0.20		0.15				N/A	N/A	N/A	N/A	N/A	N/A
	R7	W15-L		39.25	39.24	0.01	0.02						0.24		0.24				78	28	78	28	0.00	0.00
		W15-U						322.09	320.83	320.83	0.00	0.00	2.89	3.33	2.89	3.28	0.05	1.47						
Fourth	R1	W1-L	Bedroom	39.34	39.34	0.00	0.00						0.25		0.25				N/A	N/A	N/A	N/A	N/A	N/A
		W1-U											2.03		2.03									
	R1	W2-L		38.16	36.08	2.08	5.44						0.24		0.23				N/A	N/A	N/A	N/A	N/A	N/A
		W2-U						138.40	137.42	137.42	0.00	0.00	2.95	5.47	2.81	5.31	0.16	2.85						

Address	Room	Window	Room Use	EXISTING VSC	PROPOSED VSC	LOSS	%LOSS	ROOM AREA	EXISTING NSC	PROPOSED NSC	LOSS	%LOSS	EXISTING WINDOW	ADF TOTAL	PROPOSED WINDOW	ADF TOTAL	LOSS	% LOSS	EXISTING TOTAL	APSH WINTER	PROPOSED TOTAL	APSH WINTER	% TOTAL LOSS	% WINTER LOSS
Fourth	R2	W3-L	Bedroom	23.67	22.04	1.63	6.91						0.10		0.10				35	15	33	13	5.71	13.33
		W3-U						115.08	104.35	104.35	0.00	0.00	1.18	1.28	1.13	1.23	0.06	4.41						
Fourth	R3	W4-L	L/K/D	30.67	29.88	0.79	2.59						0.13		0.13				49	16	48	16	2.04	0.00
		W4-U						269.99	256.61	256.61	0.00	0.00	1.55	1.68	1.53	1.65	0.03	1.83						
Fourth	R4	W5-L	Bedroom	37.80	37.28	0.52	1.37						0.22		0.22				64	25	63	25	1.56	0.00
		W5-U						167.94	166.88	166.88	0.00	0.00	2.67	2.89	2.64	2.86	0.04	1.22						
Fourth	R5	W6-L	Bedroom	32.22	31.85	0.37	1.16						0.11		0.10				48	23	48	23	0.00	0.00
		W6-U						157.04	152.55	152.55	0.00	0.00	1.16	1.27	1.16	1.26	0.01	0.74						
Fourth	R6	W7	L/K/D	8.73	8.73	0.00	0.00						0.43		0.43				N/A	N/A	N/A	N/A	N/A	N/A
	R6	W8-L		15.34	15.11	0.23	1.47						0.09		0.09				24	13	24	13	0.00	0.00
		W8-U						281.48	280.20	280.20	0.00	0.00	0.85	1.37	0.84	1.36	0.01	0.63						