



# Daylight & Sunlight Analysis

19 Between Towns Road,  
Oxford, OX4 3LX

**PR7296**

**Date:** 18/01/2021



27-31 High Street  
Kidlington, OX5 2DH



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## EXECUTIVE SUMMARY

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ERS Consultants Ltd. has been instructed to carry out a detailed daylight & sunlight analysis on the potential changes to light amenity to the neighbouring properties of 19 Between Towns Road, Oxford proposed project.

The analysis is based upon the Building Research Establishment (BRE) guidelines '**Site Layout Planning for Daylight and Sunlight**', which provides the criteria and methodology for calculation in connection to daylight and sunlight.

The RADIANCE lighting simulation package, developed by the Lawrence Berkeley Laboratory in California, in conjunction with IES modelling software and interface has been used to perform the daylight simulations.

Calculations for Annual Sunlight Availability were performed using IES modelling software SUNCAST.

The results of the assessment indicate that the neighbouring properties are not affected by the proposed development.

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# SECTION 1 INTRODUCTION

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## GENERAL

- ERS Consultant Ltd. has been appointed to carry out an analysis on the potential changes to light amenity to the neighbouring properties for 19 Between Towns Road, Oxford proposed project.
- The BRE document; 'Site Layout Planning for Daylight and Sunlight' has been used as the base for this assessment.
- The proposed building and the neighbouring buildings have been modelled using Integrated Environmental Solutions Virtual Environment (IES-VE), 2019 v3.1.0.
- All of the windows and rooms, which face the site of the proposed development, within the neighbouring properties have been included within this assessment.
- Existing buildings facing the site include, Student accommodation at 15 Between Towns Road, Domestic property at 62 St Luke's Road, British Telecom building, Community Learning Disability property, New Testament Church, Broadfield House (Student accommodation) and the Cowley Workers Social Club could be at risk due to the proposed changes to the 19 Between Towns Road property. The aforementioned neighbouring buildings have been assessed under the daylight criteria.
- Based on the BRE document, the following methods were used for measuring the daylight and sunlight:
  - Vertical Sky Component (VSC)
  - No Sky Line
  - Average Daylight Factor (ADF)
  - Annual probable sunlight hours (APSH)

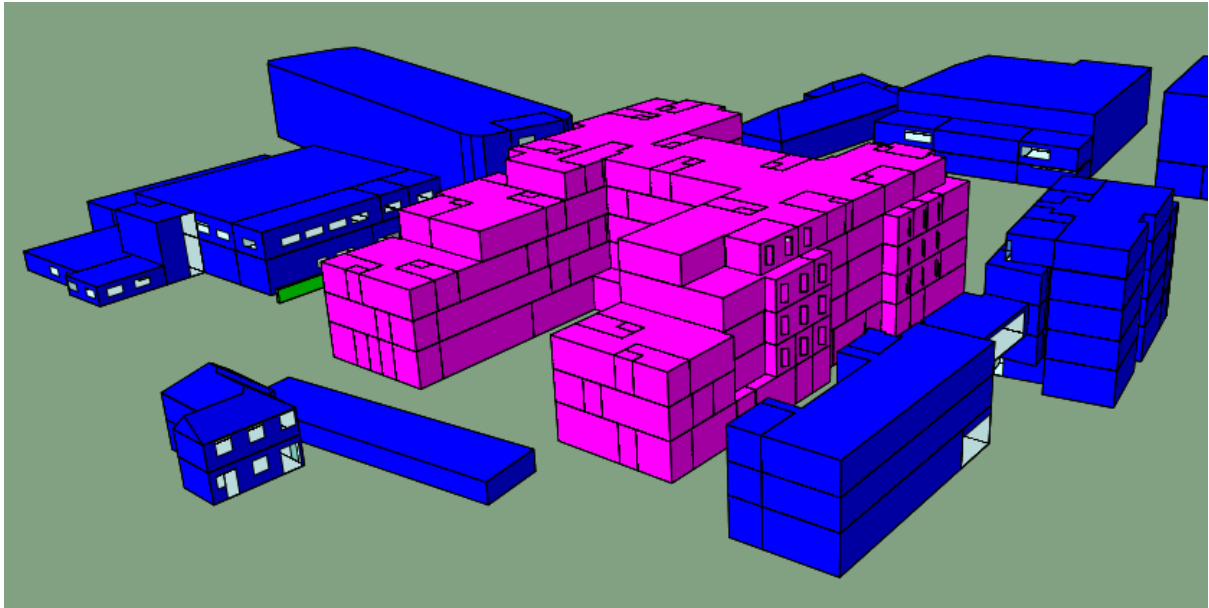


Figure 1: Proposed Development and surrounding area – IES Model

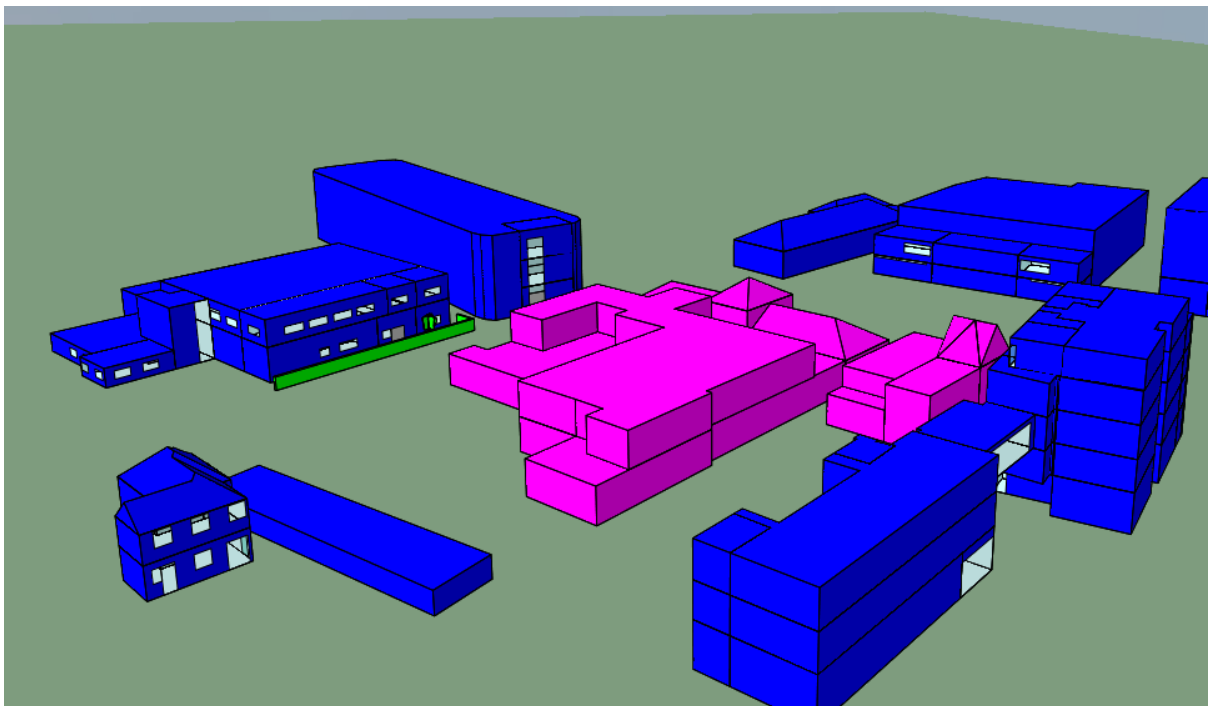


Figure 2: Base case scenario and Surrounding area – IES Model

### SITE LOCATION

The site is located in Oxford (19 Between Towns Road, Oxford, OX4 3LX), the location in the IES model was assigned as Swindon.

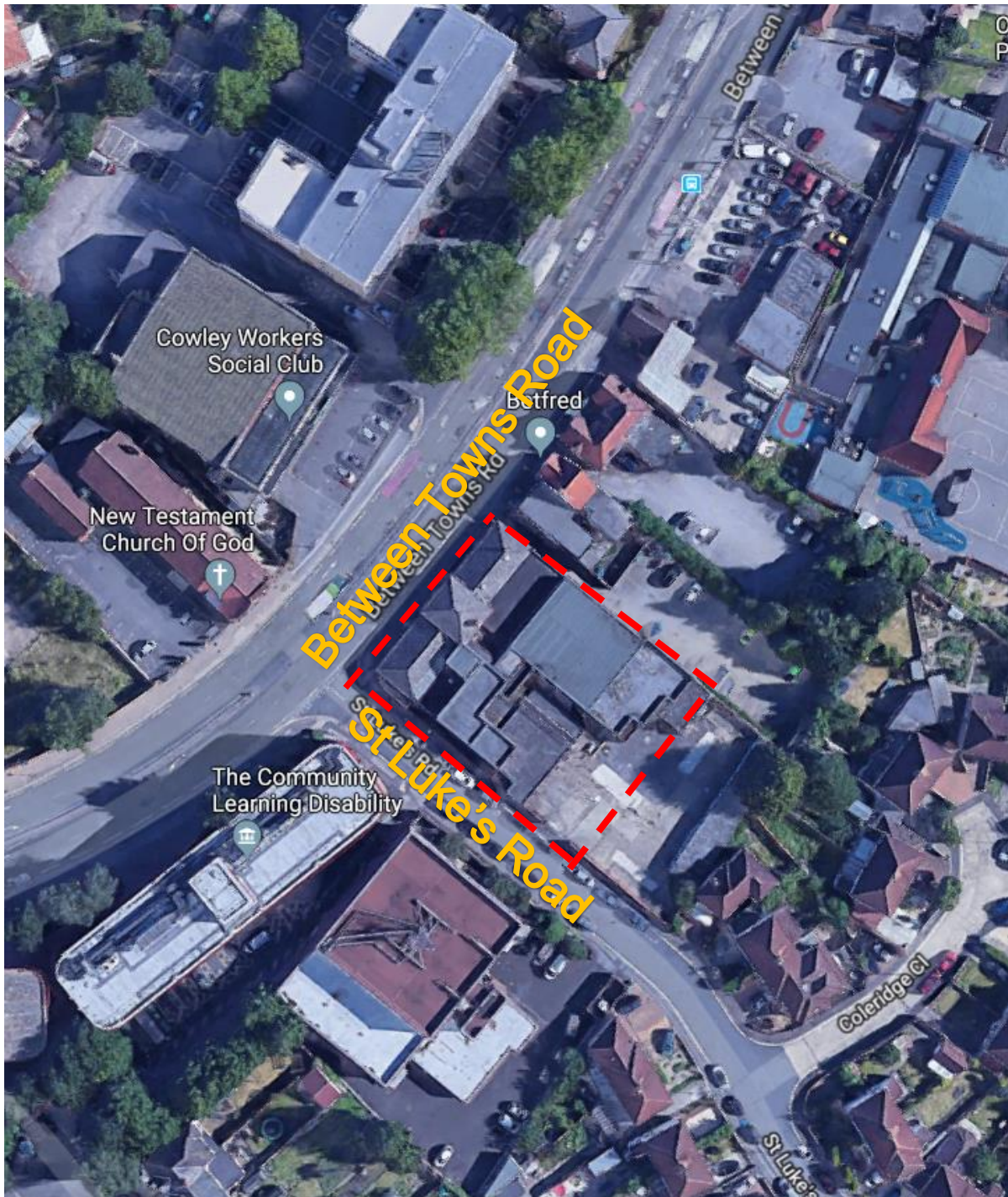


Figure 3: Site Location



### DOCUMENTS CONSIDERED

The model has been constructed based on the architectural drawings provided, a list of the drawing references are listed in Table 1 below. Please note that the architectural drawings of the neighbouring buildings were obtained from the Oxford city council’s planning applications.

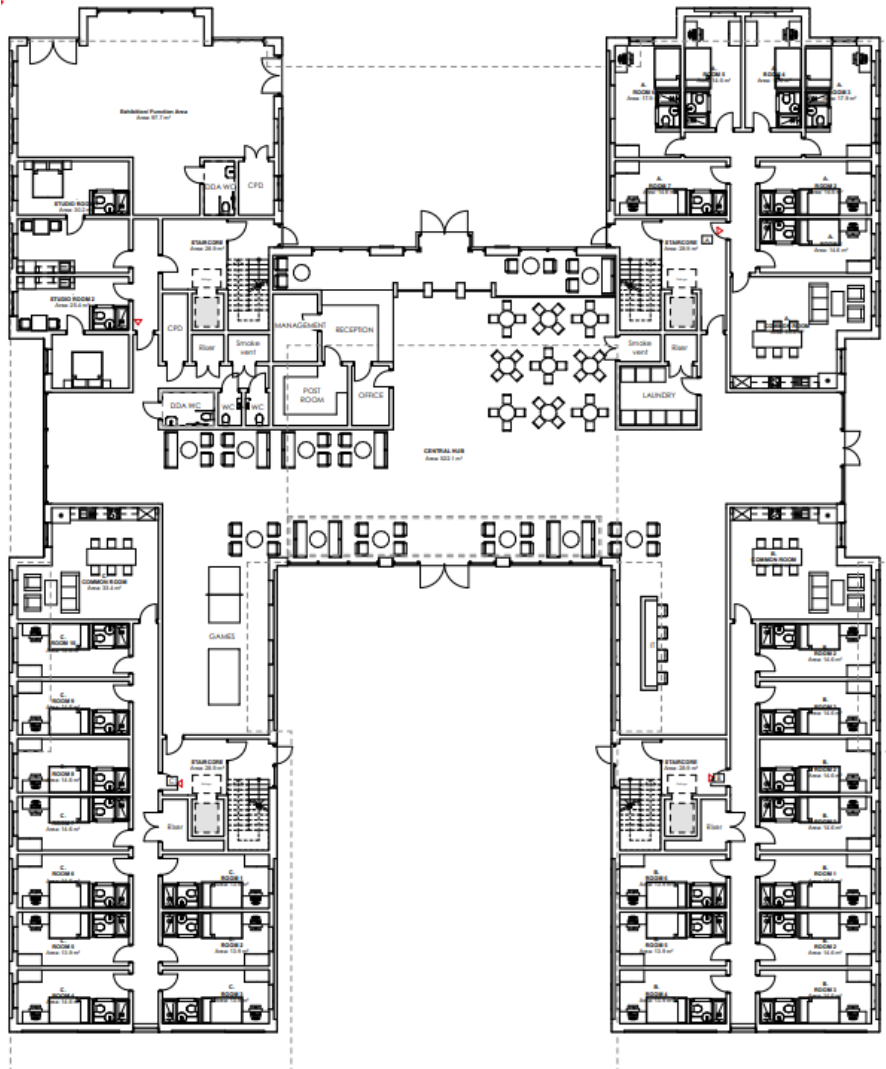


Figure 4: Proposed Ground Floor Plan

Table 1: Drawings reference

Description	Drawing Reference
<b>Existing Site Plan</b>	2513 - Conservative Club 2019-07-26 P&E
<b>Sections</b>	2513 - Conservative Club 2019-07-26 P&E, 17, 17B & 19 Between Towns Road, Cowley - PDFs
<b>Elevations</b>	2513 - Conservative Club 2019-07-26 P&E, 17, 17B & 19 Between Towns Road, Cowley - PDFs
<b>Floor Plans</b>	2513 - Conservative Club 2019-07-26 P&E, 17, 17B & 19 Between Towns Road, Cowley - PDFs



Figure 4: View from Between Towns Road (Existing)



Figure 5: View from Between Towns Road (Proposed)



## SECTION 2 DAYLIGHT AND SUNLIGHT TESTS & RESULTS

### TESTED ELEVATIONS

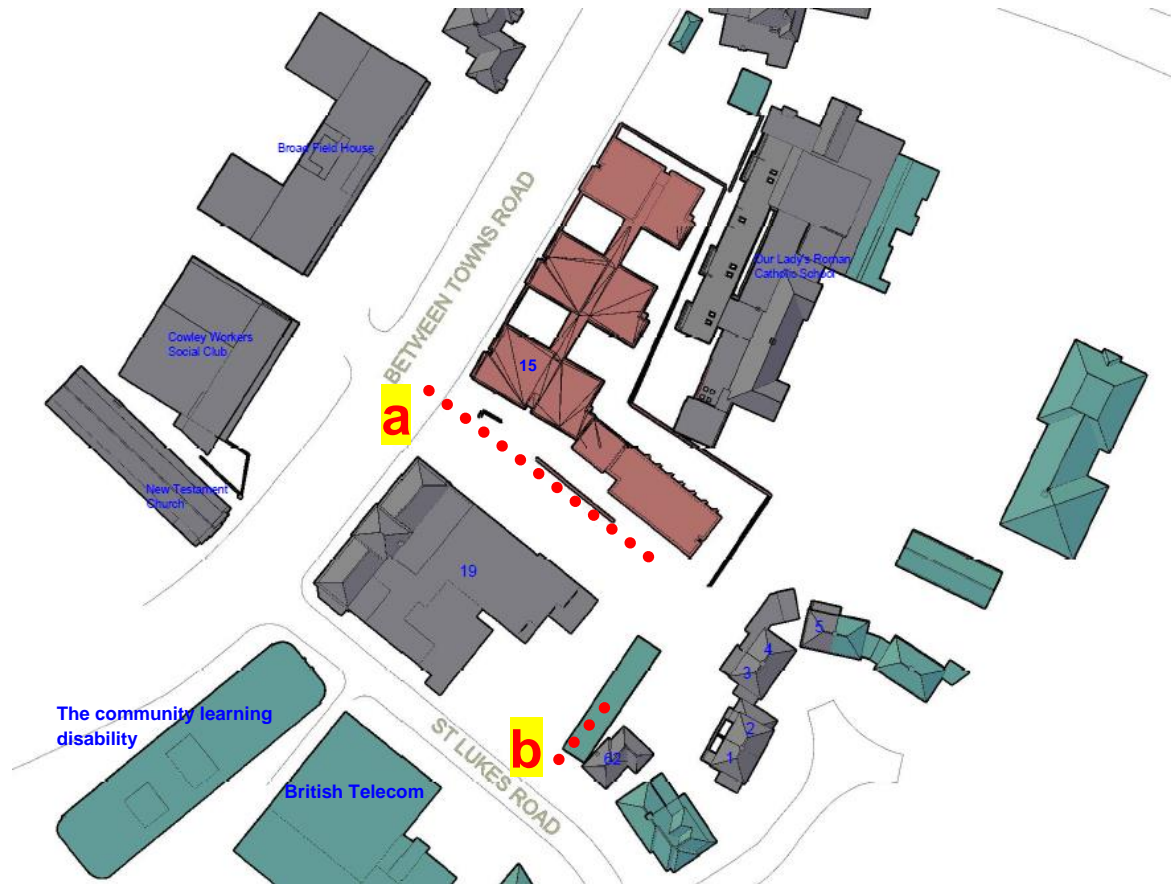


Figure 6: Site Plan indicating the elevations of windows tested

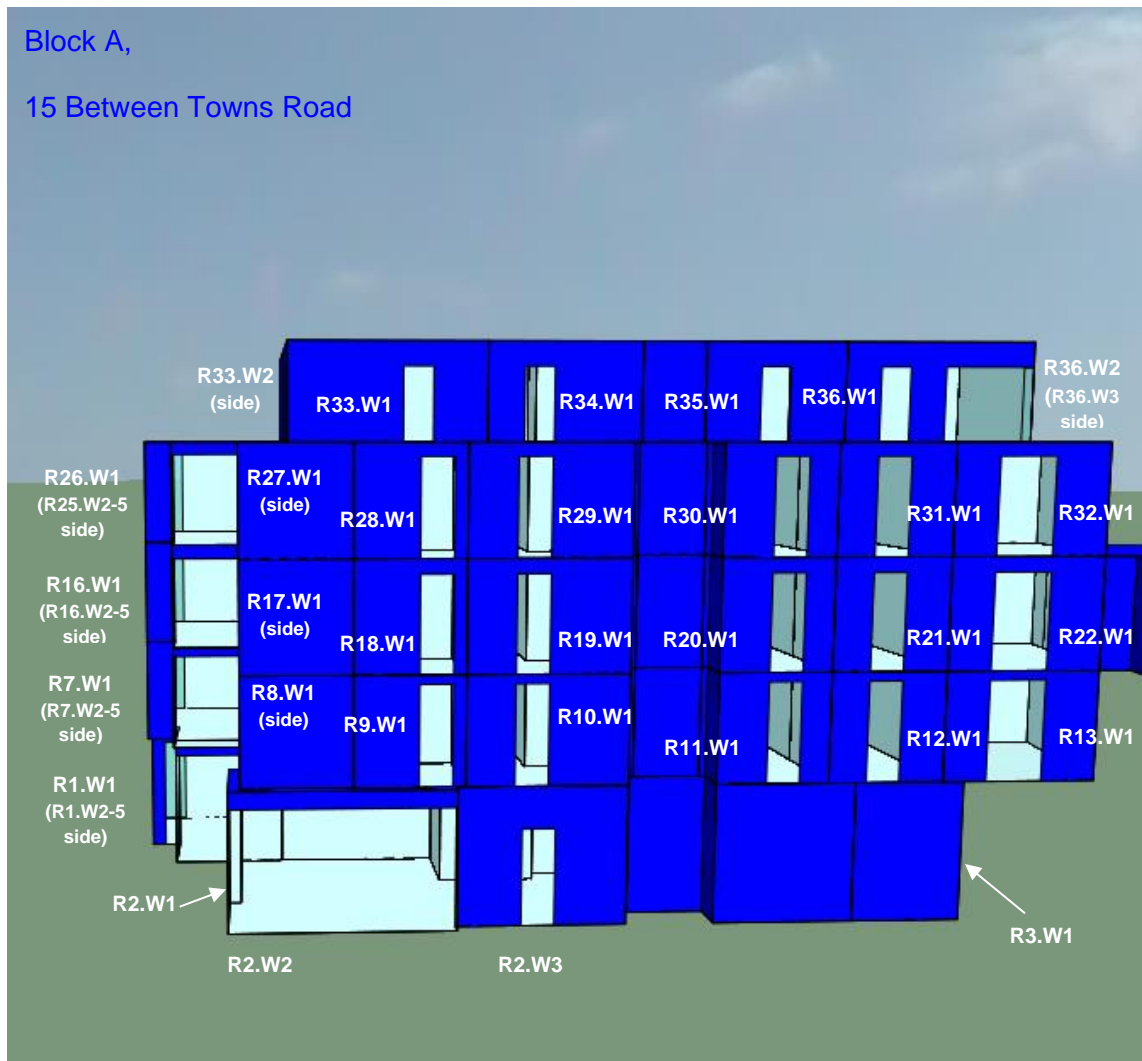


Figure 8: **Elevation (a)** – Block A, 15 Between Towns Road windows tested

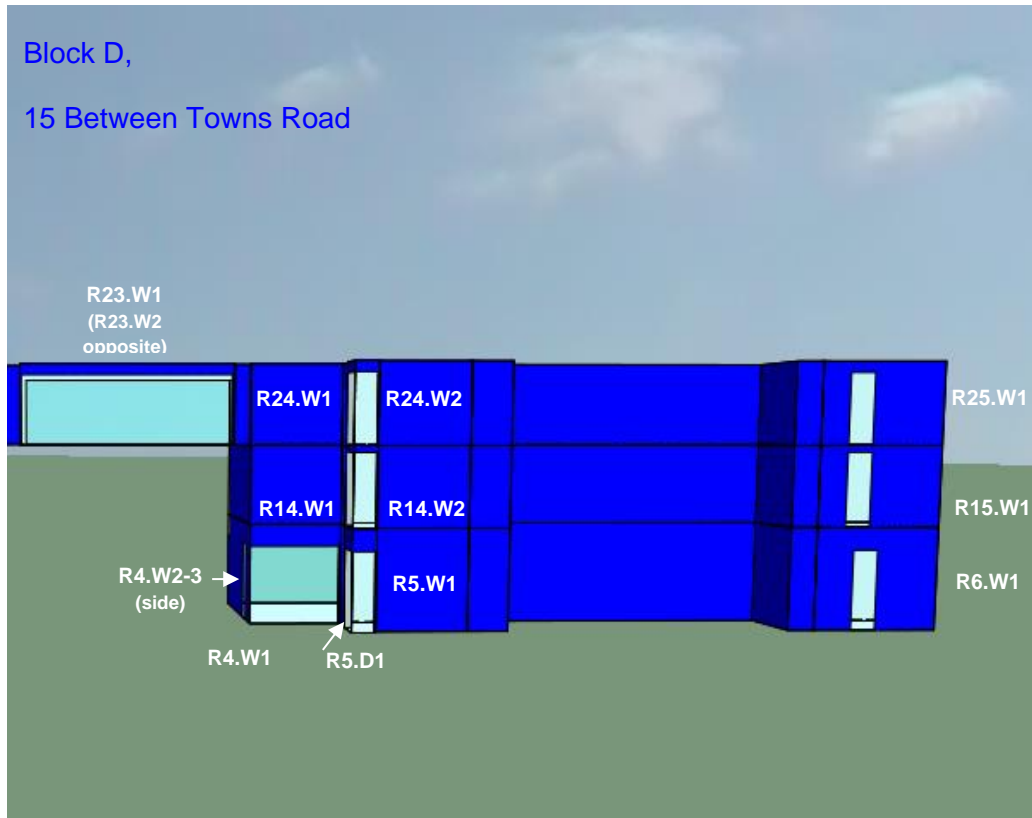


Figure 9: **Elevation (a)** – Block D, 15 Between Towns Road windows tested

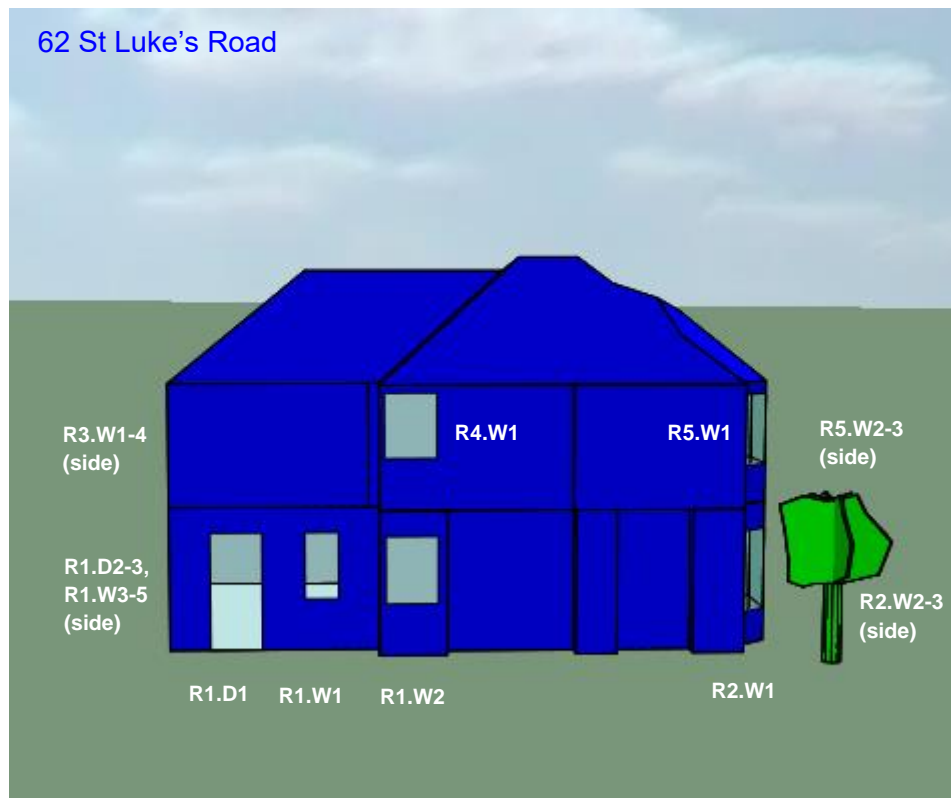


Figure 10: **Elevation (b)** – 62 St Luke's Road windows tested

The internal layouts of the 15 Between Towns Road and 62 Luke's Road were acquired from the Oxford City Council's planning portal. Table 2 includes the use of each of the tested rooms.

Table 2: Tested rooms and their use

Room	62 St Luke's Road
R1	Dining/ Kitchen
R2	Lounge
R3	Bedroom
R4	Bedroom
R5	Bedroom
Room	15 Between Towns Road
R1	Dining/ Kitchen
R2	Dining/ Kitchen
R3	Dining/ Kitchen
R4	Bedroom
R5	Bedroom
R6	Bedroom
R7	Dining/ Kitchen
R8	Bedroom
R9	Bedroom
R10	Bedroom
R11	Bedroom
R12	Bedroom
R13	Dining/ Kitchen
R14	Bedroom
R15	Bedroom
R16	Dining/ Kitchen
R17	Bedroom
R18	Bedroom
R19	Bedroom
R20	Bedroom
R21	Bedroom
R22	Dining/ Kitchen
R23	Dining/ Kitchen
R24	Bedroom
R25	Bedroom
R26	Dining/ Kitchen
R27	Bedroom
R28	Bedroom
R29	Bedroom
R30	Bedroom
R31	Bedroom
R32	Dining/ Kitchen
R33	Dining/ Kitchen
R34	Bedroom

<b>R35</b>	Bedroom
<b>R36</b>	Dining/ Kitchen

In regards to the British Telecom property, all the rooms facing the proposed development of 19 Between Towns Road are unoccupied telephone exchange rooms. Therefore, detailed daylight analysis is not required for those rooms.

The Community Learning Disability property’s layout is obtained from the Council’s website. All of the windows facing the proposed development of the 19 Between Towns Road correspond to circulation areas. Therefore, they do not require further analysis.

If any part of a new building or extension measured in a vertical section perpendicular to a main window wall of an existing building, from the center of the lowest window, subtends an angle of more than 25 degree to the horizontal, then a more detailed assessment of the potential loss of skylight to that building may be required.

The New Testament Church, the Cowley Workers Social Club and the Broadfield House fulfill the aforementioned 25 degree criterion as shown in Figures 11-13 and, as such, they do not require detailed daylight analysis.

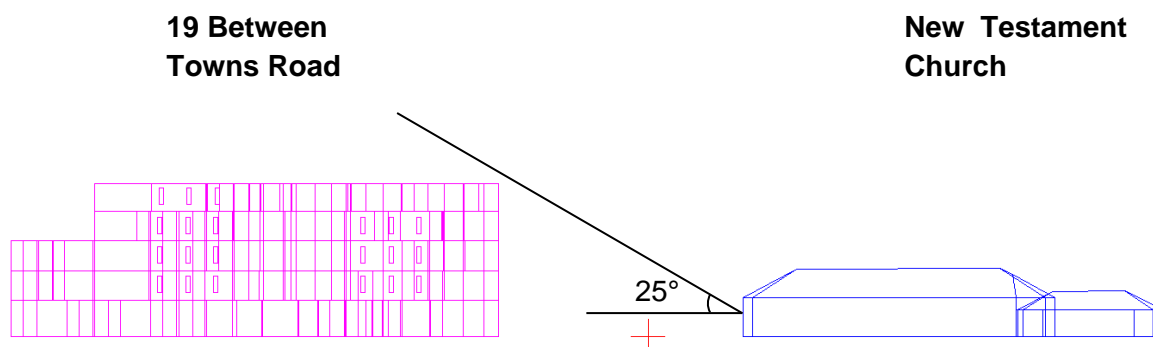


Figure 11: 25 degree criterion- New Testament Church

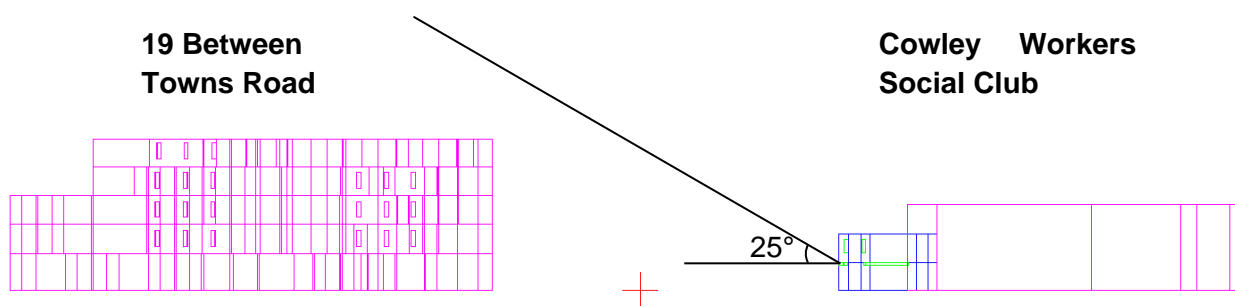


Figure 12: 25 degree criterion- Cowley Workers Social Club

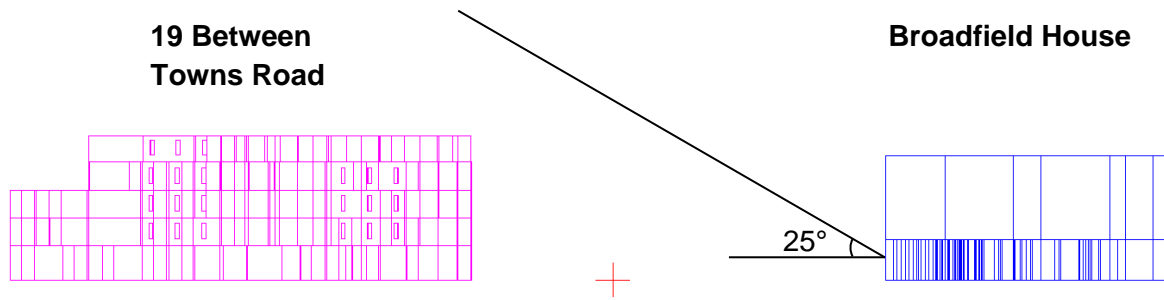


Figure 13: 25 degree criterion- Broadfield House

### VERTICAL SKY COMPONENT (VSC)

The BRE document definition of the (VSC) is: Ratio of the part of illuminance, at a point on a given vertical plane, that is received directly from a CIE standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. Usually the ‘given vertical plane’ is the outside of a window wall. The VSC does not include reflected light, either from the ground or from other buildings.

The VSC is usually expressed as a percentage and the maximum value for a completely unobstructed window is slightly less than 40%. The recommendations set down in the BRE report, ‘Site layout for daylight and sunlight, a guide to good practice’, would indicate, for residential properties, that a VSC value of greater than 27% is acceptable.

The BRE guide explains that diffuse daylight may be adversely affected if, after a development, the VSC is both less than 27% and less than 0.8 times its former value.

It should be noted that the Guide itself, within the introduction, states that the advice given was not mandatory and the Guide should not be seen as an instrument of planning policy, its aim being to help rather constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly.

The RADIANCE lighting simulation package in IES-VE 2019 v3.1.0, has been used to perform the daylight simulations.

The results of the VSC for the windows and glazed doors are shown in Table 4. According to the calculations, the majority of the neighboring windows are maintaining 0.8 or more of the original VSC value. Only 10% of the tested windows have been affected.

Table 3: Magnitude of change for Vertical Sky Component (VSC) Results

VSC Values	Ratio of Impact	Magnitude of change
VSC ≥ 27%	≥ 0.8	Negligible
VSC ≥ 27%	< 0.8	Negligible
VSC < 27%	> 0.8	Negligible
VSC < 27%	0.7 – 0.8	Low
VSC < 27%	0.6 – 0.7	Medium
VSC < 27%	< 0.6	High



Table 4: VSC Results

Reference	Room	Window	Elevation	Existing VSC (%)	Proposed VSC (%)	Proposed/ Existing	Magnitude of Change
<b>15 Between Towns Rd</b>	R1	W1	SW	18.02	17.50	0.97	Negligible
		W2	NW	29.68	29.39	0.99	Negligible
		W3	SW	19.78	19.50	0.99	Negligible
		W4	NW	35.22	35.14	1.00	Negligible
		W5	N	38.98	38.95	1.00	Negligible
	R2	W1	NW	34.68	34.78	1.00	Negligible
		W2	SW	17.90	17.85	1.00	Negligible
		W3	S	21.56	17.11	0.79	Low
	R3	W1	SE	15.98	11.77	0.74	Low
	R4	W1	NW	25.87	10.12	0.39	<b>High</b>
		W2	SW	17.16	12.64	0.74	Low
		W3	NE	38.94	38.90	1.00	Negligible
	R5	W1	SW	34.14	10.93	0.32	<b>High</b>
		D1	NW	21.66	13.54	0.63	Medium
	R6	W1	SW	37.41	23.83	0.64	Negligible
	R7	W1	SW	22.31	21.38	0.96	Negligible
		W2	NW	32.38	31.90	0.99	Negligible
		W3	NW	36.88	36.80	1.00	Negligible
		W4	NW	36.82	36.86	1.00	Negligible
		W5	N	39.35	39.19	1.00	Negligible
	R8	W1	NW	35.65	35.26	0.99	Negligible
	R9	W1	SW	32.28	22.85	0.71	Medium
R10	W1	SW	34.12	20.22	0.59	<b>High</b>	
R11	W1	SW	36.22	18.41	0.51	<b>High</b>	
R12	W1	SW	36.78	20.20	0.55	<b>High</b>	
R13	W1	S	35.24	18.83	0.53	<b>High</b>	
R14	W1	NW	25.90	18.84	0.73	Low	
	W2	SW	38.15	16.41	0.43	<b>High</b>	
R15	W1	SW	39.12	29.91	0.76	Negligible	
R16	W1	SW	24.17	23.05	0.95	Negligible	
	W2	NW	33.25	32.96	0.99	Negligible	
	W3	NW	38.16	38.20	1.00	Negligible	
	W4	NW	38.20	38.09	1.00	Negligible	
	W5	N	39.57	39.64	1.00	Negligible	
R17	W1	NW	36.85	36.62	0.99	Negligible	
R18	W1	SW	38.17	26.98	0.71	Low	
R19	W1	SW	38.39	25.48	0.66	Medium	
R20	W1	SW	38.98	25.01	0.64	Medium	
R21	W1	SW	38.99	25.02	0.64	Medium	
R22	W1	S	37.90	24.26	0.64	Medium	

	R23	W1	SW	39.25	23.83	0.61	Medium
		W2	NE	36.37	36.39	1.00	Negligible
	R24	W1	NW	31.52	25.89	0.82	Negligible
		W2	SW	39.44	22.03	0.56	<b>High</b>
	R25	W1	SW	39.70	34.75	0.88	Negligible
	R26	W1	SW	28.22	27.64	0.98	Negligible
		W2	SW	34.54	34.56	1.00	Negligible
		W3	NW	39.18	39.12	1.00	Negligible
		W4	NW	39.16	39.07	1.00	Negligible
		W5	N	39.78	39.85	1.00	Negligible
	R27	W1	NW	38.52	38.35	1.00	Negligible
	R28	W1	SW	39.33	31.71	0.81	Negligible
	R29	W1	SW	39.45	30.90	0.78	Negligible
	R30	W1	SW	39.39	30.72	0.78	Negligible
	R31	W1	SW	39.43	30.60	0.78	Negligible
	R32	W1	S	39.51	31.29	0.79	Negligible
	R33	W1	NW	39.31	36.52	0.93	Negligible
		W2	SW	39.41	39.32	1.00	Negligible
	R34	W1	SW	39.30	36.28	0.92	Negligible
	R35	W1	SW	39.45	36.08	0.91	Negligible
	R36	W1	S	39.28	35.97	0.92	Negligible
		W2	S	39.44	36.08	0.91	Negligible
		W3	SE	39.47	38.94	0.99	Negligible
<b>62 St Luke's Road</b>	R1	D1	NW	31.02	27.26	0.88	Negligible
		D2	NE	38.46	37.41	0.97	Negligible
		D3	SW	24.53	24.39	0.99	Negligible
		W1	NW	32.43	25.73	0.79	Negligible
		W2	NW	33.03	27.10	0.82	Negligible
		W3	NE	38.63	36.01	0.93	Negligible
		W4	NE	38.42	37.21	0.97	Negligible
		W5	NE	37.92	37.41	0.99	Negligible
	R2	W1	W	29.84	24.35	0.82	Negligible
		W2	SW	37.66	37.45	0.99	Negligible
		W3	SE	35.78	35.03	0.98	Negligible
	R3	W1	NE	38.83	37.32	0.96	Negligible
		W2	NE	38.76	37.83	0.98	Negligible
		W3	NE	38.58	38.29	0.99	Negligible
		W4	SW	34.50	34.44	1.00	Negligible
	R4	W1	NW	37.19	31.08	0.84	Negligible
R5	W1	W	36.38	34.05	0.94	Negligible	
	W2	SW	39.15	38.94	0.99	Negligible	
	W3	SE	36.88	36.89	1.00	Negligible	

## AVERAGE DAYLIGHT FACTOR (ADF)

The BRE document defines ADL as: The ratio of total daylight flux incident on the working plane to the area of the working plane, expressed as a percentage of the outdoor illuminance on a horizontal plane due to an unobstructed CIE standard overcast sky.

In housing BS 8206-2 gives minimum values of ADF of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.

The results of the ADF for the tested rooms are shown in Table 5 below, indicating that the ADF reduction to the majority of the tested rooms is negligible. More specifically, only 7% of the tested rooms fail to meet the ADF criteria.

Table 5: ADF Results

Reference	Room	Window/orientation	Existing ADF	Proposed ADF	Proposed/Existing	Pass /Fail
15 Between Towns Rd	R1	W1/SW - W2/NW - W3/ SW-W4/NW- W5/N	8.30	8.30	1.00	Pass
	R2	W1/NW -W2/SW - W3/S	4.30	4.30	1.00	Pass
	R3	W1/SE	0.80	0.60	0.75	<b>Fail</b>
	R4	W1/NW -W2/SW- W3/NE	7.50	5.50	0.73	Pass
	R5	W1/SW -D1/NW	4.40	2.30	0.52	Pass
	R6	W1/SW	3.10	2.40	0.77	Pass
	R7	W1/SW -W2/NW - W3/NW-W4/NW - W5/N	5.70	5.60	0.98	Pass
	R8	W1/NW	2.10	2.10	1.00	Pass
	R9	W1/SW	2.10	1.20	0.57	Pass
	R10	W1/SW	2.30	1.40	0.61	Pass
	R11	W1/SW	2.80	1.60	0.57	Pass
	R12	W1/SW	2.80	1.50	0.54	Pass
	R13	W1/S	2.50	1.30	0.52	<b>Fail</b>
	R14	W1/NW -W2/SW	4.40	2.70	0.61	Pass
	R15	W1/SW	2.60	2.30	0.88	Pass
	R16	W1/SW -W2/NW - W3/NW-W4/NW - W5/N	5.40	5.40	1.00	Pass
	R17	W1/NW	2.10	2.10	1.00	Pass
	R18	W1/SW	2.10	1.40	0.67	Pass
	R19	W1/SW	2.40	1.60	0.67	Pass
	R20	W1/SW	2.70	2.00	0.74	Pass
	R21	W1/SW	2.70	1.90	0.70	Pass
	R22	W1/S	2.40	1.50	0.63	<b>Fail</b>
	R23	W1/SW -W2/NE	9.30	7.30	0.78	Pass
	R24	W1/ NW-W2/SW	4.50	3.30	0.73	Pass

R25	W1/SW	2.50	2.40	0.96	Pass
R26	W1/SW -W2/NW - W3/NW-W4/NW - W5/N	5.70	5.60	0.98	Pass
R27	W1/NW	2.20	2.10	0.95	Pass
R28	W1/SW	2.10	1.80	0.86	Pass
R29	W1/SW	2.40	2.00	0.83	Pass
R30	W1/SW	2.70	2.40	0.89	Pass
R31	W1/SW	2.70	2.30	0.85	Pass
R32	W1/S	2.40	2.00	0.83	Pass
R33	W1/NW -W2/SW	1.40	1.40	1.00	Pass
R34	W1/SW	2.10	2.00	0.95	Pass
R35	W1/SW	1.90	1.80	0.95	Pass
R36	W1/S -W2/SE	3.00	3.00	1.00	Pass
<b>62 St Luke's Road</b>					
R1	D1/NW -D2/NE - D3/SW- W1/NW - W2/NW -W3/NE- W4/N3- W5/NE	4.80	4.30	0.90	Pass
R2	W1/W -W2/SW - W3/SE	6.10	5.80	0.95	Pass
R3	W1/NE -W2/NE - W3/NE -W4/SW	4.60	4.40	0.96	Pass
R4	W1/NW	2.50	2.20	0.88	Pass
R5	W1/W -W2/SW - W3/SE	5.50	5.30	0.96	Pass

## ANNUAL PROBABLE SUNLIGHT HOURS (APSH)

APSH is the total number of hours in the year that the sun is expected to shine on the centre of each window, allowing for average levels of cloudiness for the location in question. This test is usually used to test façade within 90 degrees of due south.

The BRE Handbook notes that:

*"...a south facing window will, in general, receive most sunlight, while a north facing one will receive it only on a handful of occasions. East and west facing windows will receive sunlight only at certain times of day".*

For existing residential buildings, the BRE Handbook suggests that: *"all main living rooms of dwellings... should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun".*

The BRE guide explains that sunlight availability may be adversely affected if the centre of the window:

- Receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21<sup>st</sup> of September and 21<sup>st</sup> March and;
- Receives less than 0.8 times its former sunlight hours during either period and;

- Has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.

The results of the APSH (Table 7) are showing that the new development has a negligible effect on the neighbouring windows. Only 4 windows are affected (5% of the total tested rooms) by the proposed development. Two of them located at Block D - 15 Between Towns Road, one of them located at Block A - 15 Between Towns Road and the remaining window is located at 62 St Luke's Road.

Table 6: APSH

APSH Values	Ratio of Impact	Absolute reduction in APSH	Magnitude of change
APSH $\geq$ 25%	> 0.8	$\leq$ 4%	Negligible
APSH $\geq$ 25%	> 0.8	> 4%	Negligible
APSH $\geq$ 25%	< 0.8	> 4%	Negligible
APSH <25%	> 0.8	$\leq$ 4%	Negligible
APSH <25%	> 0.7	> 4%	Low
APSH <25%	0.6-0.7	> 4%	Medium
APSH <25%	< 0.6	> 4%	High

Table 7: APSH Results

Reference	Room	Opening/ Orientation	Existing Average Probable Sunlight Hours			Proposed Average Probable Sunlight Hours			Reduction	Magnitude of Change
			Summer	Winter	Average	Summer	Winter	Average		
15 Between Towns Rd	R1	W1/SW-	18.42	3.84	22.26	18.19	4.12	22.25	1.00	Negligible
		W2/NW-	17.90	4.30	22.20	17.90	4.57	22.20	1.00	Negligible
		W3/SW-	17.08	4.52	21.59	17.03	4.50	21.53	1.00	Negligible
		W4/NW-	18.36	4.79	23.16	18.36	4.79	23.16	1.00	Negligible
		W5/N	22.60	6.85	29.45	22.60	6.85	29.44	1.00	Negligible
	R2	W1/NW-	16.57	1.67	18.25	15.26	3.68	18.24	1.00	Negligible
		W2/SW-	21.68	9.64	31.32	27.78	8.32	31.31	1.00	Negligible
		W3/SW	22.18	11.21	33.38	22.13	5.96	28.09	0.84	Negligible
	R3	W1/SE	18.09	12.59	30.68	16.16	7.23	23.39	0.76	Low
	R4	W1/SW-	16.08	5.42	21.50	3.04	0.07	3.11	0.14	High
		W3/NE	23.97	8.52	32.49	23.97	8.52	32.49	1.00	Negligible
	R5	W1/SW	31.30	17.75	49.06	11.49	5.07	16.55	0.34	High
	R6	W1/SW	30.05	14.81	44.85	18.89	12.91	31.81	0.71	Negligible
	R7	W1/SW-	22.21	6.06	28.27	22.21	5.23	27.44	0.97	Negligible
W2/NW-		19.85	5.45	25.30	19.11	5.45	24.56	0.97	Negligible	
W3/NW-		20.45	5.22	25.67	20.45	5.22	25.67	1.00	Negligible	
W4/NW-		19.26	5.02	24.28	19.26	5.02	24.28	1.00	Negligible	
W5/N		22.60	6.85	29.45	22.60	6.84	29.44	1.00	Negligible	
R8	W1/NW	19.77	3.44	23.21	19.77	4.14	23.20	1.00	Negligible	
R9	W1/SW	30.42	22.86	53.28	31.08	9.26	40.34	0.76	Negligible	
R10	W1/SW	30.60	24.09	54.69	28.40	8.89	37.29	0.68	Negligible	
R11	W1/SW	31.70	24.18	55.89	23.61	8.65	32.26	0.58	Negligible	
R12	W1/SW	32.80	23.17	55.96	22.16	7.31	29.47	0.53	Negligible	
R13	W1/S	29.27	20.42	49.69	18.41	5.01	23.43	0.47	High	
R14	W2/SW	35.04	25.79	60.83	15.78	11.23	27.02	0.44	Negligible	

R15	W1/SW	34.13	23.15	57.28	23.40	20.36	43.75	0.76	Negligible	
	W1/SW-	25.12	9.05	34.18	25.12	6.47	31.59	0.92	Negligible	
	W2/NW-	21.71	6.39	28.10	20.42	6.16	26.59	0.95	Negligible	
R16	W3/NW-	21.78	6.46	28.24	21.78	6.46	28.23	1.00	Negligible	
	W4/NW-	20.49	6.54	27.03	20.49	6.54	27.03	1.00	Negligible	
	W5/N	22.60	6.16	28.77	22.60	6.84	29.44	1.00	Negligible	
R17	W1/NW	21.59	6.37	27.96	21.55	5.58	27.12	0.97	Negligible	
R18	W1/SW	37.36	28.28	65.64	35.74	13.69	49.43	0.75	Negligible	
R19	W1/SW	36.70	29.34	66.04	34.31	13.27	47.57	0.72	Negligible	
R20	W1/SW	37.19	30.06	67.25	30.01	12.89	42.90	0.64	Negligible	
R21	W1/SW	37.18	28.29	65.47	29.97	12.60	42.58	0.65	Negligible	
R22	W1/S	36.93	24.33	61.27	28.72	8.95	37.66	0.61	Negligible	
	W1/SW-	35.80	26.33	62.13	23.92	11.54	35.46	0.57	Negligible	
R23	W2/NE	21.03	4.85	25.88	21.03	4.85	25.88	1.00	Negligible	
R24	W2/SW	36.93	29.28	66.22	19.44	15.11	34.55	0.52	Negligible	
R25	W1/SW	36.49	28.74	65.23	26.93	25.65	52.58	0.81	Negligible	
	W1/SW-	29.99	11.94	41.93	29.99	9.56	39.55	0.94	Negligible	
	W2/NW-	21.92	7.53	29.45	20.09	6.58	26.66	0.91	Negligible	
R26	W3/NW-	21.92	7.53	29.45	21.92	7.53	29.45	1.00	Negligible	
	W4/NW	20.57	7.53	28.11	20.57	7.53	28.11	1.00	Negligible	
	W5/N	22.60	5.57	28.17	22.60	5.59	28.16	1.00	Negligible	
R27	W1/NW	21.92	7.53	29.45	21.92	6.85	28.76	0.98	Negligible	
R28	W1/SW	38.36	32.07	70.43	38.24	19.68	57.92	0.82	Negligible	
R29	W1/SW	38.36	32.08	70.44	37.39	18.75	56.14	0.80	Negligible	
R30	W1/SW	38.36	32.11	70.46	35.50	19.02	54.52	0.77	Negligible	
R31	W1/SW	38.36	32.11	70.47	34.83	19.50	54.33	0.77	Negligible	
R32	W1/S	38.36	32.19	70.55	38.36	27.09	65.45	0.93	Negligible	
	W1/NW-	38.36	32.19	70.55	38.36	28.25	66.61	0.94	Negligible	
R33	W2/SW	21.92	7.53	29.45	21.92	6.92	28.83	0.98	Negligible	
R34	W1/SW	38.36	32.19	70.55	38.36	27.13	65.48	0.93	Negligible	
R35	W1/SW	38.36	32.19	70.55	38.20	25.91	64.10	0.91	Negligible	
	W1/S-	38.36	32.19	70.55	37.40	26.11	63.51	0.90	Negligible	
R36	W2/S	38.36	32.19	70.55	36.41	25.73	62.14	0.88	Negligible	
	W3/SE	39.04	31.51	70.55	38.69	30.07	68.77	0.97	Negligible	
<b>62 St Luke's Road</b>	D1/NW-	23.97	10.27	34.25	7.61	0.34	7.95	0.23	<b>High</b>	
	D2/NE-	23.97	10.27	34.25	23.97	10.27	34.24	1.00	Negligible	
	D3/SW-	9.12	0.34	9.46	9.11	0.35	9.46	1.00	Negligible	
	R1	W2/NW-	13.35	1.68	15.03	12.65	1.37	14.02	0.93	Negligible
		W3/NE-	23.97	10.27	34.25	23.97	10.27	34.24	1.00	Negligible
		W4/NE-	23.97	10.27	34.25	23.97	10.27	34.24	1.00	Negligible
		W5/NE	20.05	26.33	46.39	23.97	10.27	34.24	0.74	Negligible
		W1/W-	23.03	14.53	37.56	21.37	14.53	35.90	0.96	Negligible
	R2	W2/SW-	32.23	27.54	59.77	31.77	27.54	59.32	0.99	Negligible
		W3/SE	31.41	29.26	60.67	31.41	29.26	60.67	1.00	Negligible
	W1/NE-	23.97	10.27	34.25	23.97	10.27	34.24	1.00	Negligible	
	W2/NE-	23.97	10.27	34.25	23.97	10.27	34.24	1.00	Negligible	
R3	W3/NE-	23.97	10.27	34.25	23.97	10.27	34.24	1.00	Negligible	
	W4/SW	27.20	27.22	54.43	24.65	26.90	51.55	0.95	Negligible	
R4	W1/NW	17.36	2.74	20.10	14.32	2.74	17.06	0.85	Negligible	



R5	W1/W-	25.64	15.07	40.70	25.64	15.07	40.70	1.00	Negligible
	W2/SW-	33.24	28.08	61.33	33.24	28.08	61.33	1.00	Negligible
	W3/SE	34.95	30.24	65.19	34.95	30.24	65.19	1.00	Negligible

## No SKY LINE

The No sky line is the outline on the working plane of the area from which no sky can be seen. This is to determine the light distribution in a room. The IES-VE calculation method is to define the sky view factor, which is the factor from the surface to the sky, this is *the ratio of the diffuse sky radiation received by the surface to that which would be received by the same surface if it were completely exposed to the sky* (The theory assumes that the diffuse sky radiation is isotropic).

The percentage area of no sky view is shown for each room in Table 8 below. That is based on the IES results.

The results indicate that the majority of the tested rooms (73% of the tested rooms) have high sky view percentage and will maintain it on the working plane level. Additionally, most of the rooms that fail to meet the requirements have an average figure of 70 which can provide sufficient sky view to the occupants.

Table 8: Sky View Area Results

Reference	Room	Window/orientation	Sky view area (working plane)	Pass/Fail
15 Between Towns Rd	R1	W1/SW- W2/NW-W3/SW-W4/NW-W5/N	100	Pass
	R2	W1/NW-W2/SW-W3/S	100	Pass
	R3	W1/SE	50	Fail
	R4	W1/NW-W2/SW-W3/NE	100	Pass
	R5	W1/SW-D1/NW	96	Pass
	R6	W1/SW	96	Pass
	R7	W1/SW-W2/NW-W3/NW-W4/NW-W5/N	100	Pass
	R8	W1/NW	82	Pass
	R9	W1/SW	67	Fail
	R10	W1/SW	70	Fail
	R11	W1/SW	68	Fail
	R12	W1/SW	63	Fail
	R13	W1/S	48	Fail
	R14	W1/NW-W2/SW	100	Pass
	R15	W1/SW	100	Pass
	R16	W1/SW-W2/NW-W3/NW-W4/NW-W5/N	100	Pass
	R17	W1/NW	82	Pass

R18	W1/SW	71	Fail
R19	W1/SW	77	Fail
R20	W1/SW	77	Fail
R21	W1/SW	71	Fail
R22	W1/S	62	Fail
R23	W1/SW-W2/NE	100	Pass
R24	W1/ NW-W2/SW	100	Pass
R25	W1/SW	100	Pass
R26	W1/SW-W2/NW- W3/NW-W4/NW- W5/N	100	Pass
R27	W1/NW	82	Pass
R28	W1/SW	95	Pass
R29	W1/SW	93	Pass
R30	W1/SW	100	Pass
R31	W1/SW	100	Pass
R32	W1/S	100	Pass
R33	W1/NW-W2/SW	100	Pass
R34	W1/SW	100	Pass
R35	W1/SW	100	Pass
R36	W1/S-W2/SE	100	Pass
<b>62 St Luke's Road</b>			
R1	D1/NW-D2/NE-D3/NE- W1/NW-W2/NW- W3/NE	100	Pass
R2	W1/W-W2/SW-W3/SE	100	Pass
R3	W1/NE-W2/NE- W3/NE-W4/SW	100	Pass
R4	W1/NW	100	Pass
R5	W1/W-W2/SW-W3/SE	100	Pass

## CONCLUSION

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This report is presenting the results of the detailed daylight and sunlight analysis on the potential changes to light amenity to the neighboring properties of the 19 Between Towns Road proposed project.

Based on the site layout and the proposed drawings, it is shown that most of the examined buildings surrounding the site will retain access to daylight and sunlight.

Changes to the vertical sky component were considered negligible in virtually all the tested rooms. Daylight factor results are showing that the tested rooms will maintain their previous daylight factor, except for 3 kitchens located at 15 Between Towns Road. Moreover, the Sky View is 80%-100% for the majority of the tested rooms for existing and proposed conditions. While the Sky View of 11 rooms of the 15 Between Towns Road were slightly affected, the Daylight Factors of those rooms indicate that they still achieve good daylight availability.

In terms of the Average Probable Sunlight Hours (APSH), the simulations showed negligible reductions on the majority of the tested rooms. 4 rooms of the 15 Between Towns Road may be slightly affected, but the ADF of most of them are sufficient to provide enough daylight. More specifically, 3 of them have an Average Daylight Factor which fulfills the required ADF value by a high margin. The existence of more than one window in those rooms result in good daylight conditions.

Results indicate that the proposed development of 19 Between Towns Road building will not suffer from any reduction of daylight.