

Solar Access Analysis

for the proposed development located at
7 Railway Street, Chatswood

November 15, 2010

Report Reference No. W400-37F01(rev2)- SA Report

Document Control

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1.0 Introduction

This study has been undertaken to assess the level of solar access into the Living Areas and Private Open Spaces of the proposed development located at 7 Railway Street, Chatswood. The proposed development consists of a mixed-use building with a total of 295 residential units across the 37 residential floors within the proposed development.

The analysis of the solar access is carried out based on the shadow diagram analysis of the proposed development and its adjacent surroundings in a 3D CAD environment. Visual representations of the direct solar access onto the proposed development are attached in the Appendix of this report.

The results for the number of hours of direct solar access for each residential dwelling are accurate to within 15 minutes.

The analysis presented in this report is based on architectural drawings prepared by Mirvac Design, received November 2010. All living areas are identified by level and unit number (eg: Level 5, Unit 4 is labeled as 504) in accordance with the aforementioned drawings.

2.0 Solar Access Criteria

The number of hours of solar access for each of the residential units of the proposed development is compared to criteria from the State Environmental Planning Policy No. 65 and Residential Flat Design Code guidelines and the Willoughby City Council Development Control Plan requirements for Multi-Unit Housing and Mixed Use Commercial/ Residential Developments.

The State Environmental Planning Policy No. 65 (SEPP65) for the design of quality residential flat development requires that a residential development should be designed in such a way as to optimise the amount of available solar access. The Residential Flat Design Code has the following guidelines, listed as "Rules of Thumb":

"Living rooms and private open spaces for at least 70 percent of apartments in a development should receive a minimum of three hours direct sunlight between 9am and 3pm in mid-winter. In dense urban areas a minimum of two hours may be acceptable.

Limit the number of single-aspect apartments with a southerly aspect (SW-SE) to a maximum of 10 percent of the total units proposed. Developments which seek to vary from the minimum standards must demonstrate how site constraints and orientation prohibit the achievement of these standards and how energy efficiency is addressed."

Section 6.2 of the Willoughby City Council Development Control Plan 32 Railway Street Site states the following:

"All new dwellings are to receive adequate daylight and sunlight access to private open space and habitable rooms"

3.0 Methodology

The overall solar access to the living areas pertaining to all living spaces within the proposed development has been assessed. The assessment is based on drawings prepared by Mirvac Design, received November 2010.

The analysis includes the solar access to **Living Areas** and **Private Open Spaces** between the hours **09:00 to 15:00** on **June 22** (winter solstice) relating to the guidelines outlined by **SEPP65** and in the **Willoughby City Council DCP 32 Section 6.2**. The Willoughby City Council DCP has a broad statement regarding the amount of solar access received by the private open spaces and living areas and will refer back to the criteria as set out by the SEPP65 guidelines. SEPP65 states the requirement for three hours of solar access between the specified times of day apply, however in dense urban areas; a minimum of **two hours** of direct solar access may be acceptable.

For the living areas solar access is defined as direct solar access to any portion of glass of a window or door of the living areas. A similar approach is taken for the private open spaces, where solar access is defined as direct solar access to any portion of the floor of the private open space. The analysis was carried out based on the shadow diagram analysis of the proposed development and its adjacent surroundings in a 3D CAD environment. In addition, checks were made for each dwelling using graphical techniques, performed manually.

The report presents the results based on the minimum requirements of two hours as outlined by SEPP65 for dense urban areas.

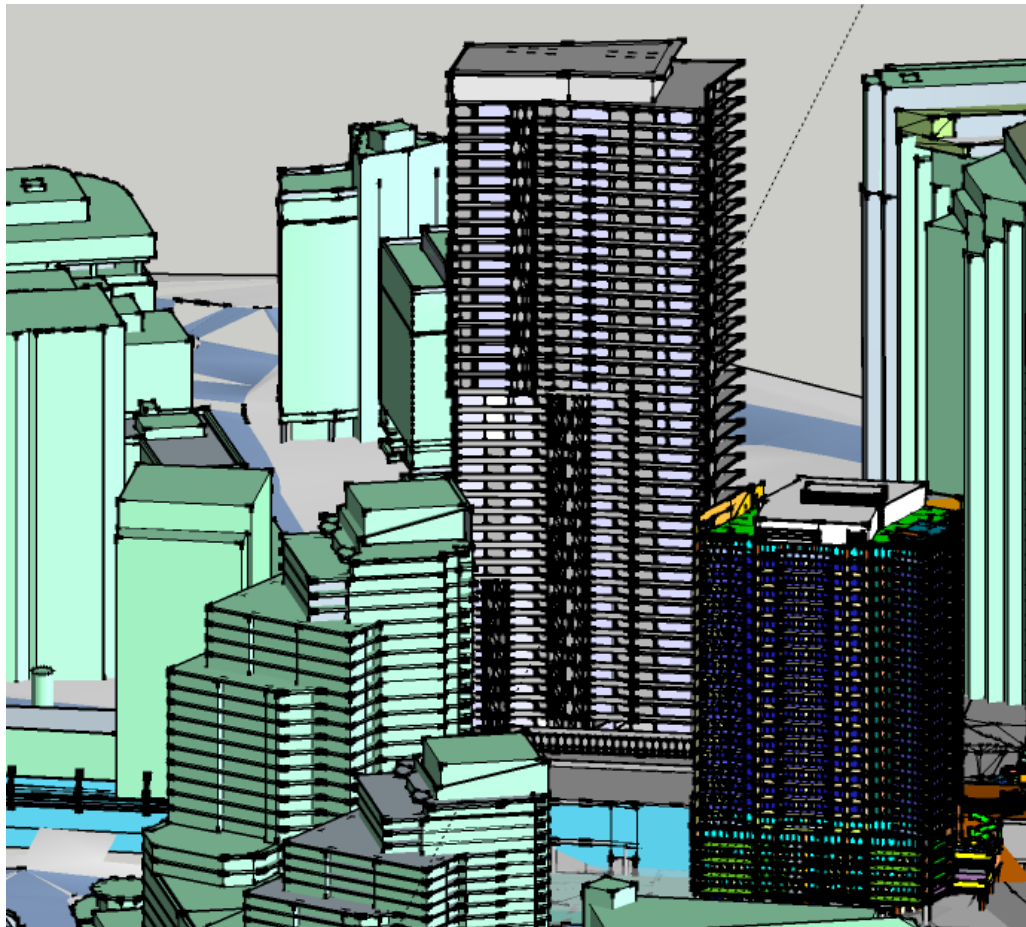


Figure 1: 3D CAD model used for the Solar Access Study

4.0 Results

The amount of direct solar access, in hours, to the various Living Areas and private open spaces of the proposed development for the various criteria described in Section 2 of this report is presented in Table 1. The report will present the results based on the applicable minimum requirement of two hours as outlined by SEPP65.

Table 1 outlines the amount and time of direct solar access to these residential dwellings on the winter solstice (June 22), between the hours of 9am and 3pm. Visual representations of the solar access onto the proposed development are attached in the Appendix of this report.

Note that the unit number indicated in Table 1 reflects the level and the number of the unit (e.g.: Level 5, Unit 4 is labeled as 504).

Table 1: Solar Access for Each Residential Unit

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
601	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
602	0	N/A	1.25	13.00-14.15
603	1.75	12.15-14.00	2	12.15-14.15
604	0.75	13.00-13.45	1.25	12.30-13.45
605	0	N/A	1	12.30-13.30
606	0	N/A	0	N/A
607	0	N/A	1	9.00-9.15, 11.15-12.00
608	0.5	11.15-11.45	0.75	11.15-12.00
609	0.75	11.00-11.45	0.75	11.00-11.45
610	3.5	10.15-11.45, 13.00-15.00	3.75	10.15-12.00, 13.00-15.00
701	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
702	0	N/A	1.25	13.00-14.15
703	1.75	12.15-14.00	2	12.15-14.15
704	0.75	13.00-13.45	1.25	12.30-13.45
705	0	N/A	1	12.30-13.30
706	0	N/A	0	N/A
707	0	N/A	1	9.00-9.15, 11.15-12.00

Table 1: Solar Access for Each Residential Unit (cont..)

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
708	0.5	11.15-11.45	0.75	11.15-12.00
709	0.75	11.00-11.45	0.75	11.00-11.45
710	3.5	10.15-11.45, 13.00-15.00	3.75	10.15-12.00, 13.00-15.00
801	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
802	0	N/A	1.25	13.00-14.15
803	1.75	12.15-14.00	2	12.15-14.15
804	0.75	13.00-13.45	1.25	12.30-13.45
805	0	N/A	1	12.30-13.30
806	0	N/A	0	N/A
807	0	N/A	1	9.00-9.15, 11.15-12.00
808	0.5	11.15-11.45	0.75	11.15-12.00
809	0.75	11.00-11.45	0.75	11.00-11.45
810	3.5	10.15-11.45, 13.00-15.00	3.75	10.15-12.00, 13.00-15.00
901	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
902	0	N/A	1.25	13.00-14.15
903	1.75	12.15-14.00	2	12.15-14.15
904	0.75	13.00-13.45	1.25	12.30-13.45
905	0	N/A	1	12.30-13.30
906	0	N/A	0	N/A
907	0	N/A	1	9.00-9.15, 11.15-12.00
908	0.5	11.15-11.45	0.75	11.15-12.00
909	0.75	11.00-11.45	0.75	11.00-11.45
910	3.5	10.15-11.45, 13.00-15.00	3.75	10.15-12.00, 13.00-15.00
1001	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
1002	0	N/A	1.25	13.00-14.15

Table 1: Solar Access for Each Residential Unit (cont..)

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
1003	1.75	12.15-14.00	2	12.15-14.15
1004	0.75	13.00-13.45	1.25	12.30-13.45
1005	0	N/A	1	12.30-13.30
1006	0	N/A	0	N/A
1007	0	N/A	1	9.00-9.15, 11.15-12.00
1008	0.5	11.15-11.45	0.75	11.15-12.00
1009	0.75	11.00-11.45	0.75	11.00-11.45
1010	3.5	10.15-11.45, 13.00-15.00	3.75	10.15-12.00, 13.00-15.00
1101	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
1102	0	N/A	1.25	13.00-14.15
1103	1.75	12.15-14.00	2	12.15-14.15
1104	0.75	13.00-13.45	1.25	12.30-13.45
1105	0	N/A	1	12.30-13.30
1106	0	N/A	0	N/A
1107	0	N/A	1	9.00-9.15, 11.15-12.00
1108	0.5	11.15-11.45	0.75	11.15-12.00
1109	0.75	11.00-11.45	0.75	11.00-11.45
1110	3.5	10.15-11.45, 13.00-15.00	3.75	10.15-12.00, 13.00-15.00
1201	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
1202	0	N/A	1.25	13.00-14.15
1203	1.75	12.15-14.00	2	12.15-14.15
1204	0.75	13.00-13.45	1.25	12.30-13.45
1205	0	N/A	1	12.30-13.30
1206	0	N/A	0	N/A
1207	0	N/A	1	9.00-9.15, 11.15-12.00
1208	0.5	11.15-11.45	0.75	11.15-12.00

Table 1: Solar Access for Each Residential Unit (cont..)

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
1209	0.75	11.00-11.45	0.75	11.00-11.45
1210	3.5	10.15-11.45, 13.00-15.00	3.75	10.15-12.00, 13.00-15.00
1301	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
1302	0	N/A	1.25	13.00-14.15
1303	1.75	12.15-14.00	2	12.15-14.15
1304	0.75	13.00-13.45	1.25	12.30-13.45
1305	0	N/A	1	12.30-13.30
1306	0	N/A	0	N/A
1307	0	N/A	1	9.00-9.15, 11.15-12.00
1308	0.5	11.15-11.45	0.75	11.15-12.00
1309	0.75	11.00-11.45	0.75	11.00-11.45
1310	3.5	10.15-11.45, 13.00-15.00	3.75	10.15-12.00, 13.00-15.00
1401	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
1402	0	N/A	1.25	13.00-14.15
1403	1.75	12.15-14.00	2	12.15-14.15
1404	0.75	13.00-13.45	1.25	12.30-13.45
1405	0	N/A	1	12.30-13.30
1406	0	N/A	0	N/A
1407	0	N/A	1	9.00-9.15, 11.15-12.00
1408	0.5	11.15-11.45	0.75	11.15-12.00
1409	1	10.45-11.45	1	10.45-11.45
1410	3.5	10.15-11.45, 13.00-15.00	3.75	10.15-12.00, 13.00-15.00
1501	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
1502	1.5	12.30-14.00	1.5	12.30-14.00
1503	1.5	12.30-14.00	1.5	12.30-14.00

Table 1: Solar Access for Each Residential Unit (cont..)

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
1504	1.25	12.30-13.45	1.5	12.15-13.45
1505	2	9.45-11.45	2	10.00-12.00
1506	1.25	10.45-12.00	1.25	10.45-12.00
1507	1	10.45-11.45	1	10.45-11.45
1508	3.5	10.15-11.45, 13.00-15.00	4	10.00-12.00, 13.00-15.00
1601	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
1602	1.5	12.30-14.00	1.5	12.30-14.00
1603	1.5	12.30-14.00	1.5	12.30-14.00
1604	1.25	12.30-13.45	1.75	12.15-14.00
1605	2.25	9.30-11.45	2	10.00-12.00
1606	2	9.45-11.45	2	10.00-12.00
1607	1.25	10.30-11.45	1.25	10.30-11.45
1608	3.5	10.15-11.45, 13.00-15.00	4	10.00-12.00, 13.00-15.00
1701	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
1702	1.5	12.30-14.00	1.5	12.30-14.00
1703	1.5	12.30-14.00	1.5	12.30-14.00
1704	2	12.15-14.15	2.25	12.15-14.30
1705	2.75	9.00-11.45	2.5	9.30-12.00
1706	2.25	9.30-11.45	2.25	9.45-12.00
1707	1.5	10.15-11.45	1.25	10.30-11.45
1708	3.75	10.00-11.45, 13.00-15.00	4	10.00-12.00, 13.00-15.00
1801	4	9.15-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
1802	1.5	12.30-14.00	1.5	12.30-14.00
1803	1.5	12.30-14.00	1.5	12.30-14.00
1804	2.25	12.15-14.30	2.25	12.15-14.30
1805	2.75	9.00-11.45	3	9.00-12.00
1806	2.5	9.15-11.45	2.75	9.15-12.00

Table 1: Solar Access for Each Residential Unit (cont..)

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
1807	2	9.45-11.45	2	9.45-11.45
1808	4	9.45-11.45, 13.00-15.00	4.25	9.45-12.00, 13.00-15.00
1901	4.25	9.00-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
1902	1.5	12.30-14.00	1.5	12.30-14.00
1903	1.5	12.30-14.00	1.5	12.30-14.00
1904	2.25	12.15-14.30	2.25	12.15-14.30
1905	2.75	9.00-11.45	3	9.00-12.00
1906	2.75	9.00-11.45	3	9.00-12.00
1907	2.25	9.30-11.45	2.25	9.30-11.45
1908	4.25	9.30-11.45, 13.00-15.00	4.5	9.30-12.00, 13.00-15.00
2001	4.25	9.00-11.00, 12.30-14.45	4.5	9.00-11.00, 12.30-15.00
2002	1.75	12.30-14.15	1.75	12.30-14.15
2003	2	12.50-14.50	2	12.50-14.50
2004	2.25	12.15-14.30	2.25	12.15-14.30
2005	2.75	9.00-11.45	3	9.00-12.00
2006	2.75	9.00-11.45	3	9.00-12.00
2007	2.75	9.00-11.45	2.5	9.15-11.45
2008	4.75	9.30-11.45, 12.30-15.00	5	9.30-12.00, 12.30-15.00
2101	5.75	9.00-14.45	6	9.00-15.00
2102	2	12.50-14.50	2	12.50-14.50
2103	2	12.30-14.30	2	12.30-14.30
2104	2.15	12.15-14.30	2.25	12.15-14.30
2105	2.75	9.00-11.45	3	9.00-12.00
2106	2.75	9.00-11.45	3	9.00-12.00
2107	2.75	9.00-11.45	2.75	9.00-11.45
2108	6	9.00-15.00	6	9.00-15.00
2201	5.75	9.00-14.45	6	9.00-15.00

Table 1: Solar Access for Each Residential Unit (cont..)

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
2202	2	12.30-14.30	2	12.30-14.30
2203	2	12.30-14.30	2	12.30-14.30
2204	2	12.30-14.30	2.5	12.15-14.45
2205	2.75	9.00-11.45	3	9.00-12.00
2206	2.75	9.00-11.45	3	9.00-12.00
2207	2.75	9.00-11.45	2.75	9.00-11.45
2208	6	9.00-15.00	6	9.00-15.00
2301	5.75	9.00-14.45	6	9.00-15.00
2302	2.25	12.30-14.45	2.25	12.30-14.45
2303	2.25	12.30-14.45	2.25	12.30-14.45
2304	2.5	12.30-15.00	2.75	12.15-15.00
2305	2.75	9.00-11.45	3	9.00-12.00
2306	2.75	9.00-11.45	3	9.00-12.00
2307	2.75	9.00-11.45	2.75	9.00-11.45
2308	6	9.00-15.00	6	9.00-15.00
2401	5.75	9.00-14.45	6	9.00-15.00
2402	2.5	12.30-15.00	2.5	12.30-15.00
2403	2.5	12.30-15.00	2.5	12.30-15.00
2404	2.5	12.30-15.00	2.75	12.15-15.00
2405	2.75	9.00-11.45	3	9.00-12.00
2406	2.75	9.00-11.45	3	9.00-12.00
2407	2.75	9.00-11.45	2.75	9.00-11.45
2408	6	9.00-15.00	6	9.00-15.00
2501	5.75	9.00-14.45	6	9.00-15.00
2502	2.5	12.30-15.00	2.5	12.30-15.00
2505	2.75	9.00-11.45	3	9.00-12.00
2506	2.75	9.00-11.45	3	9.00-12.00
2507	2.75	9.00-11.45	2.75	9.00-11.45
2508	6	9.00-15.00	6	9.00-15.00
2601	6	9.00-15.00	6	9.00-15.00
2602	2	13.00-15.00	2	13.00-15.00

Table 1: Solar Access for Each Residential Unit (cont..)

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
2603	2	13.00-15.00	2.5	12.30-15.00
2604	2	13.00-15.00	2.5	12.30-15.00
2605	2	9.00-11.00	3	9.00-12.00
2606	2	9.00-11.00	2.75	9.00-11.45
2607	6	9.00-15.00	6	9.00-15.00
2701	6	9.00-15.00	6	9.00-15.00
2702	2	13.00-15.00	2	13.00-15.00
2703	2	13.00-15.00	2.5	12.30-15.00
2704	2	13.00-15.00	2.5	12.30-15.00
2705	2	9.00-11.00	3	9.00-12.00
2706	2	9.00-11.00	2.75	9.00-11.45
2707	6	9.00-15.00	6	9.00-15.00
2801	6	9.00-15.00	6	9.00-15.00
2802	2	13.00-15.00	2	13.00-15.00
2803	2	13.00-15.00	2.5	12.30-15.00
2804	2	13.00-15.00	2.5	12.30-15.00
2805	2	9.00-11.00	3	9.00-12.00
2806	2	9.00-11.00	2.75	9.00-11.45
2807	6	9.00-15.00	6	9.00-15.00
2901	6	9.00-15.00	6	9.00-15.00
2902	2	13.00-15.00	2	13.00-15.00
2903	2	13.00-15.00	2.5	12.30-15.00
2904	2	13.00-15.00	2.5	12.30-15.00
2905	2	9.00-11.00	3	9.00-12.00
2906	2	9.00-11.00	2.75	9.00-11.45
2907	6	9.00-15.00	6	9.00-15.00
3001	6	9.00-15.00	6	9.00-15.00
3002	2	13.00-15.00	2	13.00-15.00
3003	2	13.00-15.00	2.5	12.30-15.00
3004	2	13.00-15.00	2.5	12.30-15.00
3005	2	9.00-11.00	3	9.00-12.00

Table 1: Solar Access for Each Residential Unit (cont..)

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
3006	2	9.00-11.00	2.75	9.00-11.45
3007	6	9.00-15.00	6	9.00-15.00
3101	6	9.00-15.00	6	9.00-15.00
3102	2	13.00-15.00	2	13.00-15.00
3103	2	13.00-15.00	2.5	12.30-15.00
3104	2	13.00-15.00	2.5	12.30-15.00
3105	2	9.00-11.00	3	9.00-12.00
3106	2	9.00-11.00	2.75	9.00-11.45
3107	6	9.00-15.00	6	9.00-15.00
3201	6	9.00-15.00	6	9.00-15.00
3202	2	13.00-15.00	2	13.00-15.00
3203	2	13.00-15.00	2.5	12.30-15.00
3204	2	13.00-15.00	2.5	12.30-15.00
3205	2	9.00-11.00	3	9.00-12.00
3206	2	9.00-11.00	2.75	9.00-11.45
3207	6	9.00-15.00	6	9.00-15.00
3301	6	9.00-15.00	6	9.00-15.00
3302	2	13.00-15.00	2	13.00-15.00
3303	2	13.00-15.00	2.5	12.30-15.00
3304	2	13.00-15.00	2.5	12.30-15.00
3305	2	9.00-11.00	3	9.00-12.00
3306	2	9.00-11.00	2.75	9.00-11.45
3307	6	9.00-15.00	6	9.00-15.00
3401	6	9.00-15.00	6	9.00-15.00
3402	2	13.00-15.00	2	13.00-15.00
3403	2	13.00-15.00	2.5	12.30-15.00
3404	2	13.00-15.00	2.5	12.30-15.00
3405	2	9.00-11.00	3	9.00-12.00
3406	2	9.00-11.00	2.75	9.00-11.45
3407	6	9.00-15.00	6	9.00-15.00
3501	6	9.00-15.00	6	9.00-15.00

Table 1: Solar Access for Each Residential Unit (cont..)

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
3502	2	13.00-15.00	2	13.00-15.00
3503	2	13.00-15.00	2.5	12.30-15.00
3504	2	13.00-15.00	2.5	12.30-15.00
3505	2	9.00-11.00	3	9.00-12.00
3506	2	9.00-11.00	2.75	9.00-11.45
3507	6	9.00-15.00	6	9.00-15.00
3601	6	9.00-15.00	6	9.00-15.00
3602	2	13.00-15.00	2	13.00-15.00
3603	2	13.00-15.00	2.5	12.30-15.00
3604	2	13.00-15.00	2.5	12.30-15.00
3605	2	9.00-11.00	3	9.00-12.00
3606	2	9.00-11.00	2.75	9.00-11.45
3607	6	9.00-15.00	6	9.00-15.00
3701	6	9.00-15.00	6	9.00-15.00
3702	2	13.00-15.00	2	13.00-15.00
3703	2	13.00-15.00	2.5	12.30-15.00
3704	2	13.00-15.00	2.5	12.30-15.00
3705	2	9.00-11.00	3	9.00-12.00
3706	2	9.00-11.00	2.75	9.00-11.45
3707	6	9.00-15.00	6	9.00-15.00
3801	6	9.00-15.00	6	9.00-15.00
3802	2	13.00-15.00	2	13.00-15.00
3803	2	13.00-15.00	2.5	12.30-15.00
3804	2	13.00-15.00	2.5	12.30-15.00
3805	2	9.00-11.00	3	9.00-12.00
3806	2	9.00-11.00	2.75	9.00-11.45
3807	6	9.00-15.00	6	9.00-15.00
3901	6	9.00-15.00	6	9.00-15.00
3902	2	13.00-15.00	2	13.00-15.00
3903	2	13.00-15.00	2.5	12.30-15.00
3904	2	13.00-15.00	2.5	12.30-15.00

Table 1: Solar Access for Each Residential Unit (cont..)

Unit Number	Living Areas		Private Open Spaces	
	Number of Hours	Times of Occurrence	Number of Hours	Times of Occurrence
3905	2	9.00-11.00	3	9.00-12.00
3906	2	9.00-11.00	2.75	9.00-11.45
3907	6	9.00-15.00	6	9.00-15.00
4001	6	9.00-15.00	6	9.00-15.00
4002	2	13.00-15.00	2	13.00-15.00
4003	2	13.00-15.00	2.5	12.30-15.00
4004	2	13.00-15.00	2.5	12.30-15.00
4005	2	9.00-11.00	3	9.00-12.00
4006	2	9.00-11.00	2.75	9.00-11.45
4007	6	9.00-15.00	6	9.00-15.00
4101	6	9.00-15.00	6	9.00-15.00
4102	2	13.00-15.00	2	13.00-15.00
4103	2	13.00-15.00	2.5	12.30-15.00
4104	2	13.00-15.00	2.5	12.30-15.00
4105	2	9.00-11.00	3	9.00-12.00
4106	2	9.00-11.00	2.75	9.00-11.45
4107	6	9.00-15.00	6	9.00-15.00
4201	6	9.00-15.00	6	9.00-15.00
4202	2	13.00-15.00	2	13.00-15.00
4203	2	13.00-15.00	2.5	12.30-15.00
4204	2	13.00-15.00	2.5	12.30-15.00
4205	2	9.00-11.00	3	9.00-12.00
4206	2	9.00-11.00	2.75	9.00-11.45
4207	6	9.00-15.00	6	9.00-15.00

The results of the analysis are summarized below for solar access compliance with the SEPP65 criterion of two hours of solar access between 9am and 3pm on June 22.

- The results for **Living Areas** concluded that **206** out of **295** Living Areas had solar access for **2 or more hours**. This equates **70%** of all Living Areas comply with 2 hours of direct solar access between 09:00-15:00 on June 22.
- The results for **Private Open Spaces** concluded that **215** out of **295** Living Areas had solar access for **2 or more hours**. This equates **73%** of all Private Open Spaces comply with 2 hours of direct solar access between 09:00-15:00 on June 22.

The number of south facing single-aspect units within the development is required to be below 10% of the total number of proposed dwellings. For this development, it is found that **9** of the residential units will have south facing single-aspects. This equates to 3% of the residential units have south facing single-aspects.

5.0 Conclusion

A solar access analysis for the Living Areas and Private Open Spaces of the proposed development located at 7 Railway Street, Chatswood was undertaken. The proposed development consists of a mixed-use building with a total of 295 residential units across the 37 residential floors within the proposed development.

The analysis of the solar access is carried out based on the shadow diagram analysis of the proposed development and its adjacent surroundings in a 3D CAD environment. Visual representations of the direct solar access onto the proposed development are attached in the Appendix of this report.

The results of the study provide the number of hours of direct solar access for each residential dwelling, and are accurate to within 15 minutes.

The requirement for the SEPP65 design code and Willoughby DCP states the living rooms and private open spaces in the development should receive a minimum of three hours direct sunlight between 9am and 3pm in mid-winter. In dense urban areas a minimum of two hours may be acceptable.

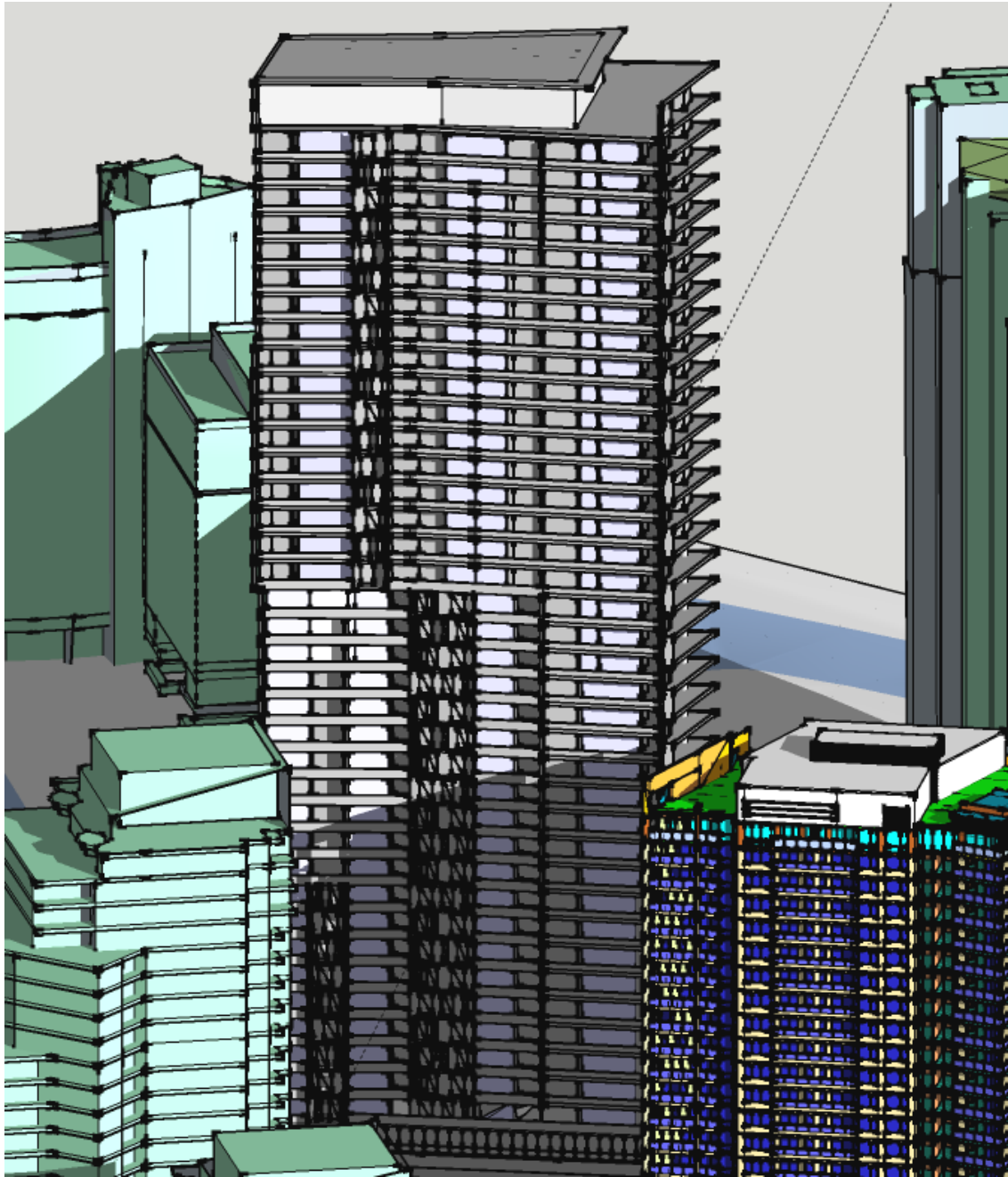
The results of the solar access analysis are summarised as follows:

- 3% apartments were found to have single-aspect south facing units.
- A total of 70% of all Living Areas comply with 2 hours or more of direct solar access between 09:00-15:00 on June 22.
- A total of 73% of all Private Open Spaces comply with 2 hours or more of direct solar access between 09:00-15:00 on June 22.

Based on the above results, the proposed development will satisfy the SEPP65 requirements to the living areas and private open spaces.

Appendix

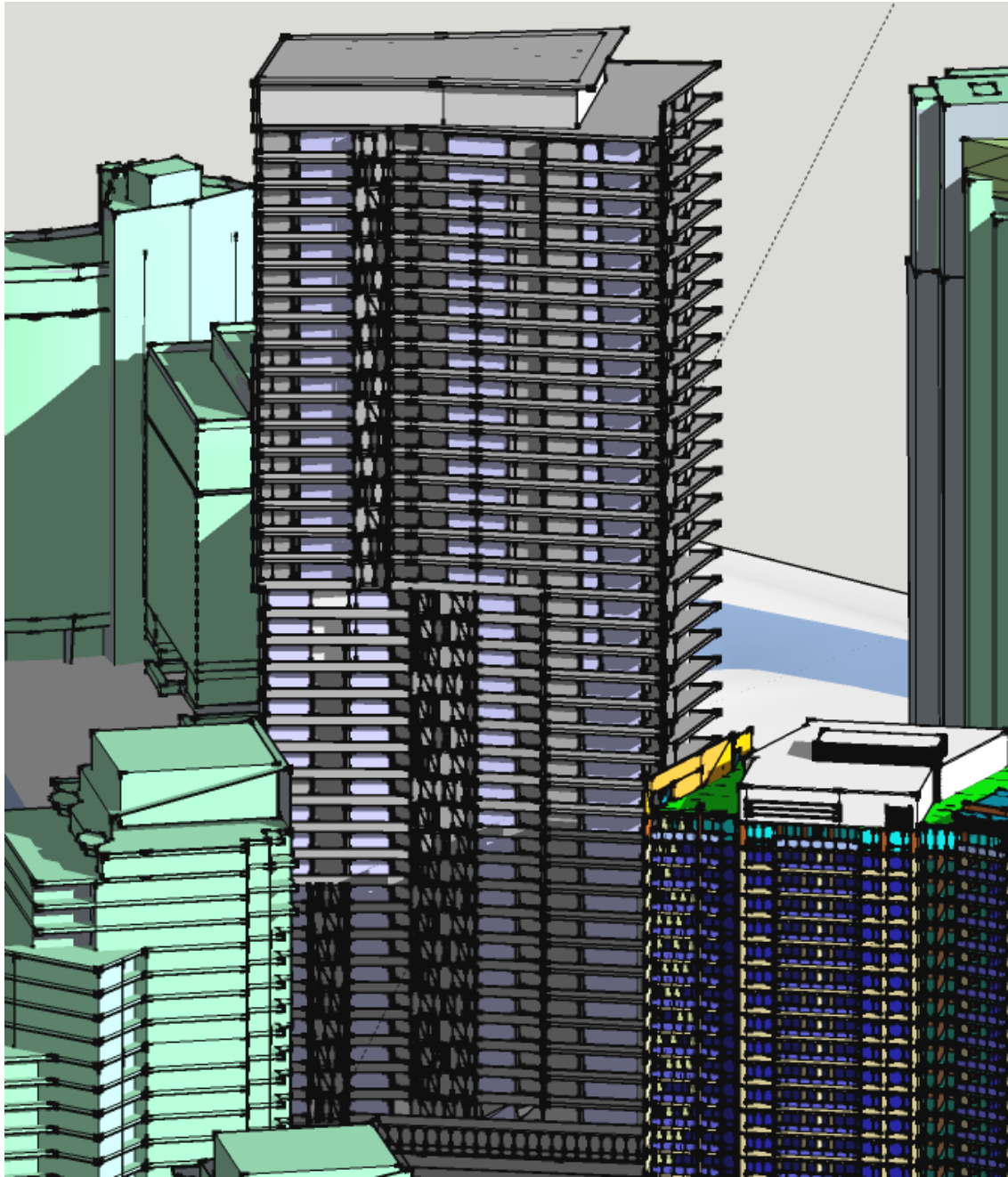
Solar Access to the Eastern and Western Aspect of the Proposed Development



Living Area Windows



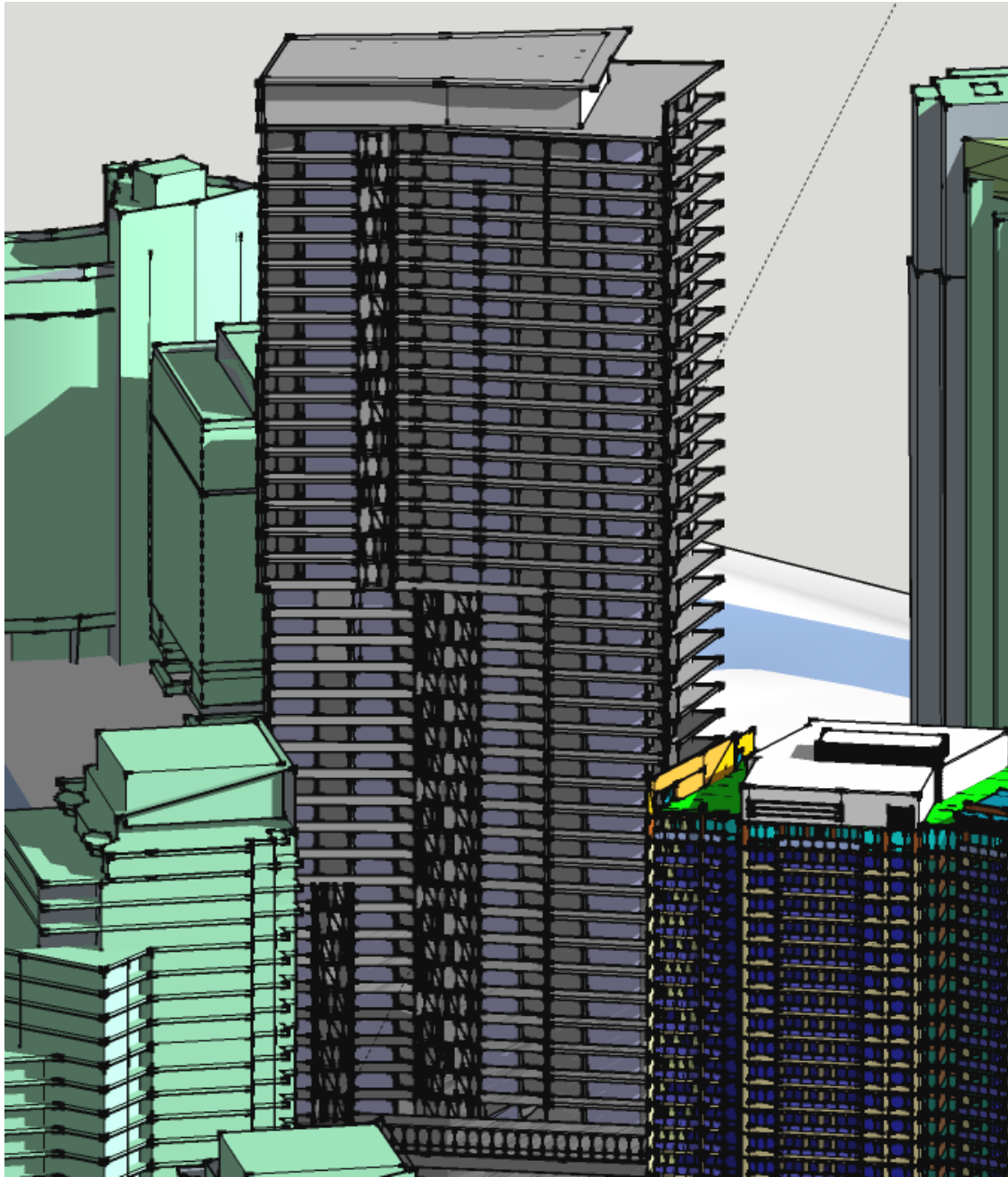
Figure A1: Eastern Aspect – 9:00am



Living Area Windows



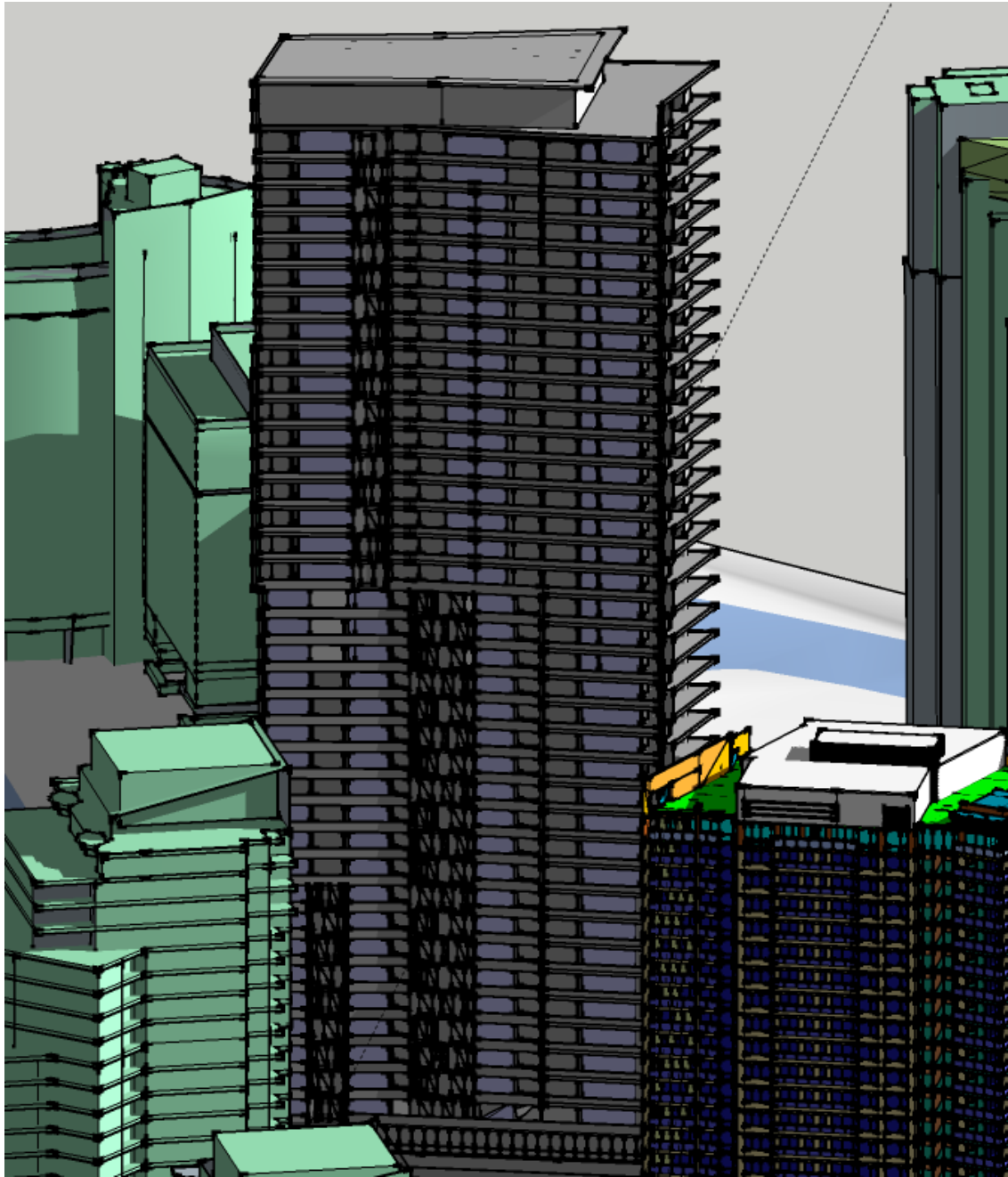
Figure A2: Eastern Aspect – 10:00am



Living Area Windows



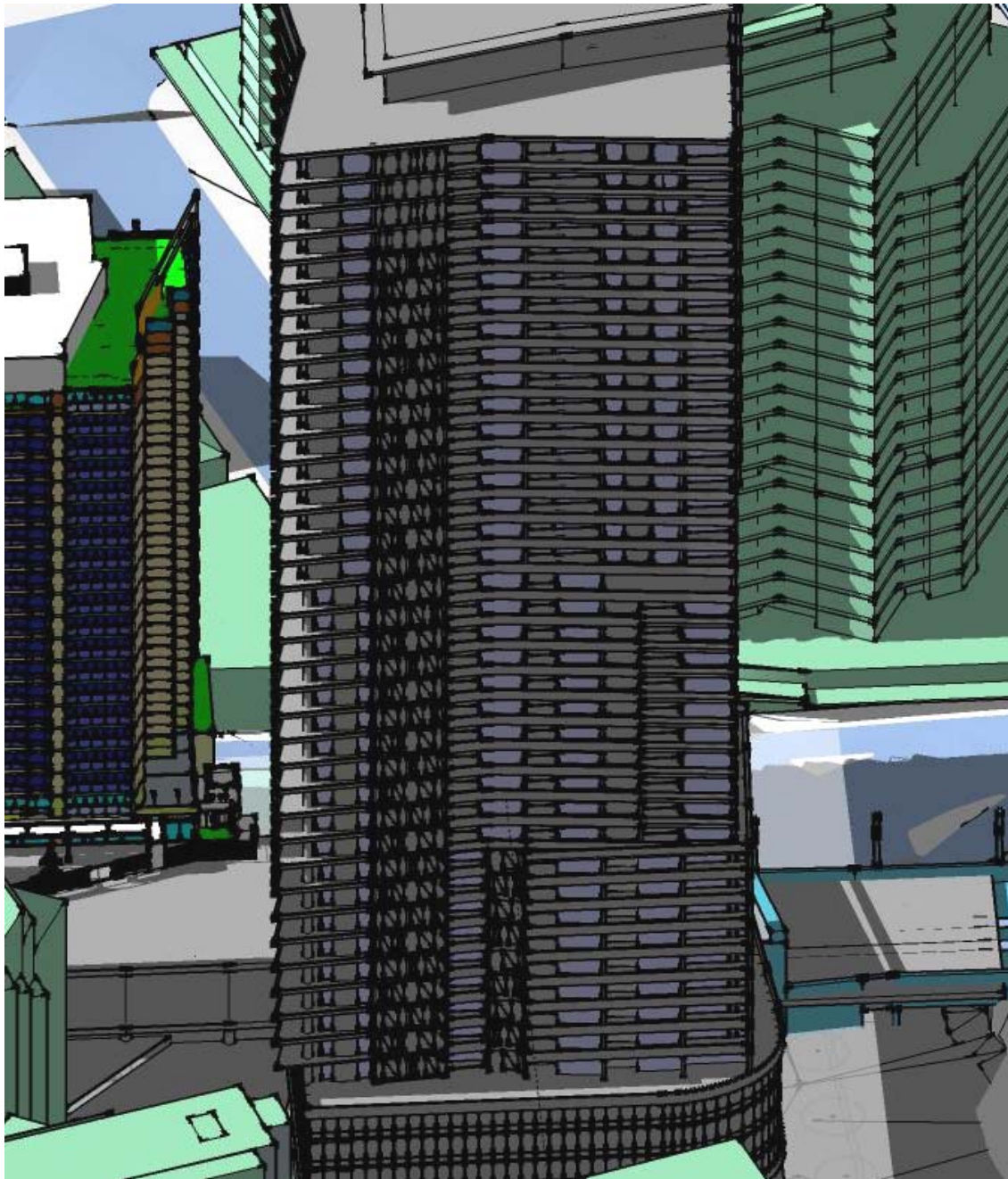
Figure A3: Eastern Aspect – 11:00am



Living Area Windows



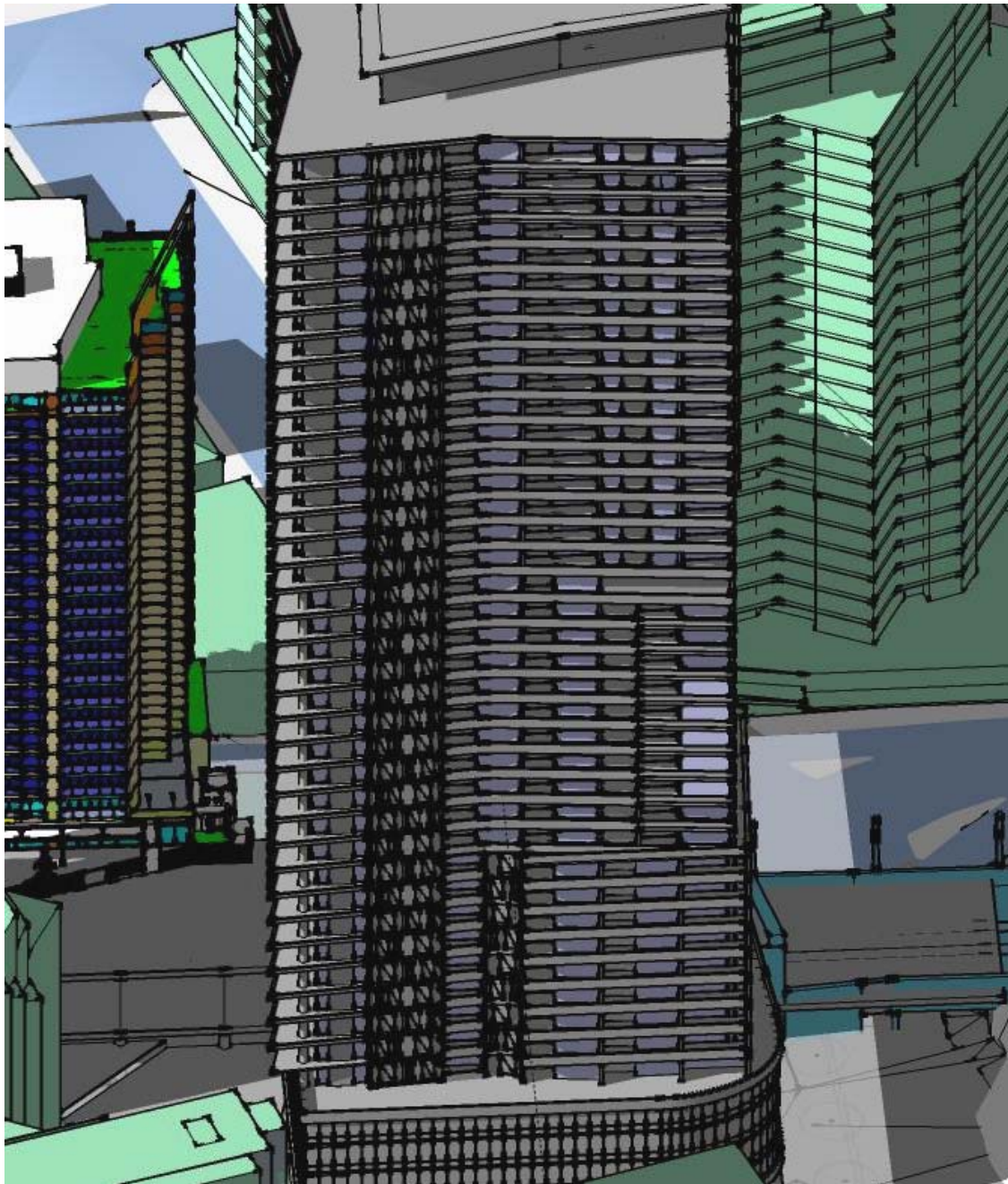
Figure A4: Eastern Aspect – 12:00pm



Living Area Windows



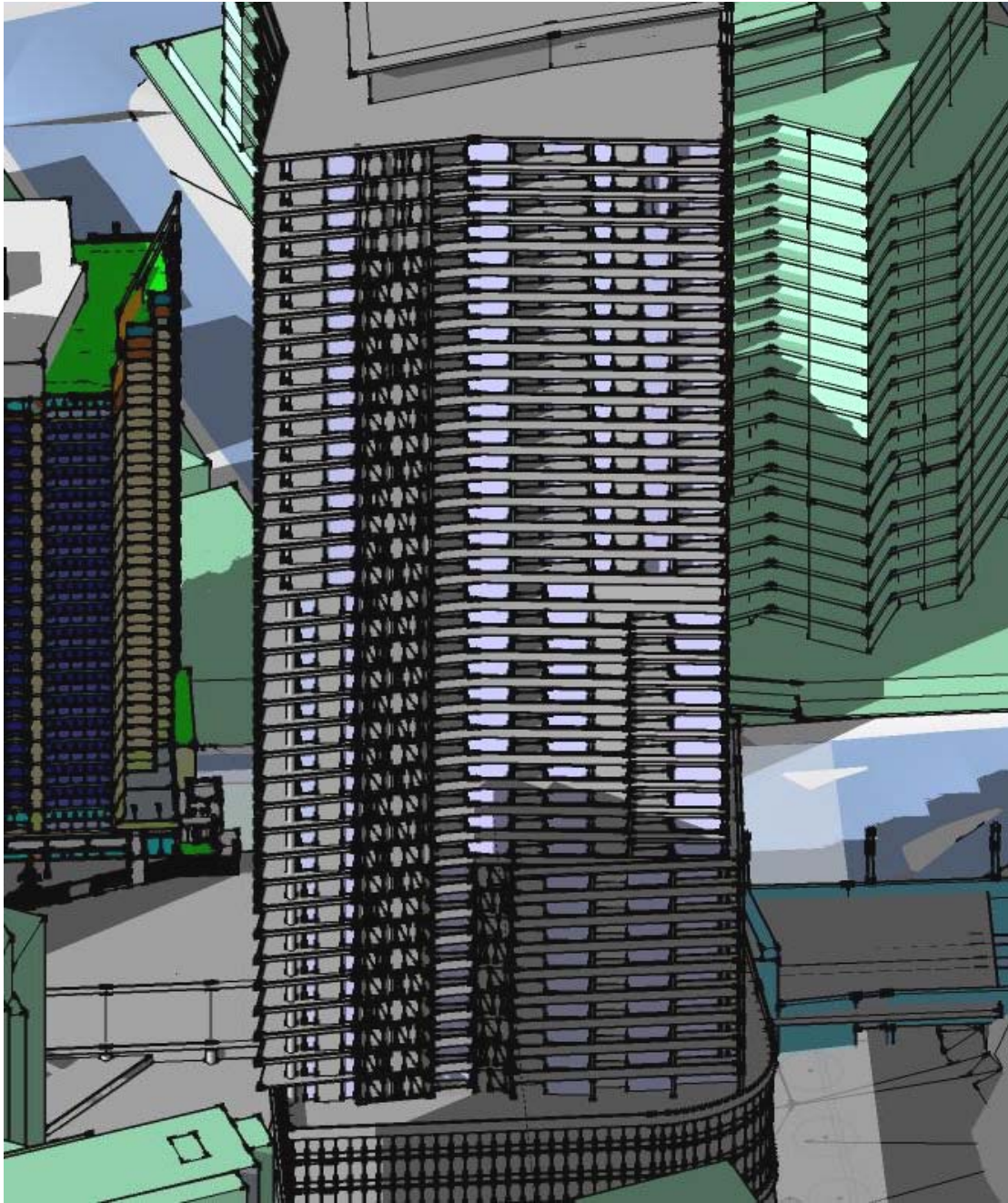
Figure A5: Western Aspect – 12:00pm



Living Area Windows



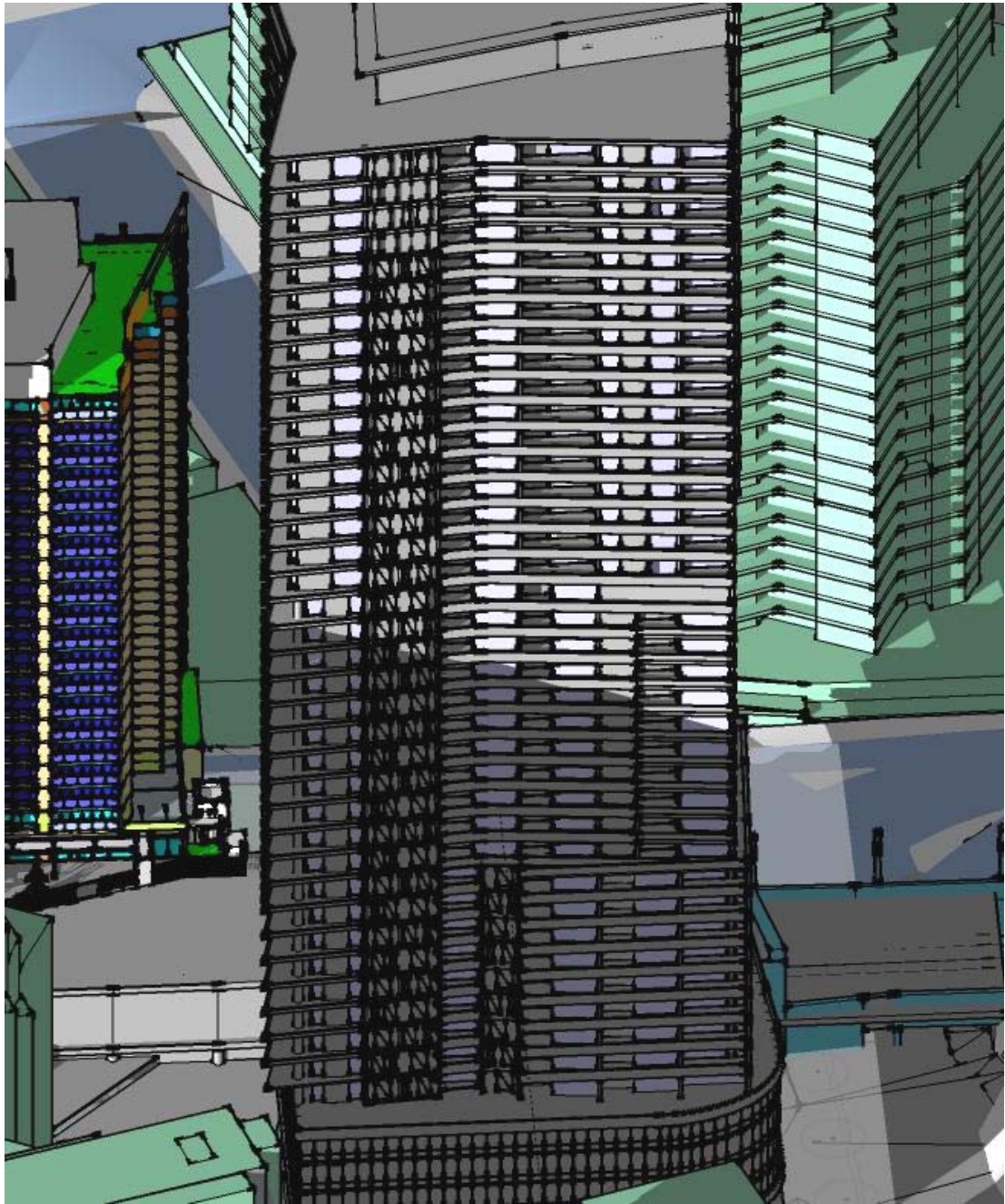
Figure A6: Western Aspect – 1:00pm



Living Area Windows



Figure A7: Western Aspect – 2:00pm



Living Area Windows



Figure A8: Western Aspect – 3:00pm