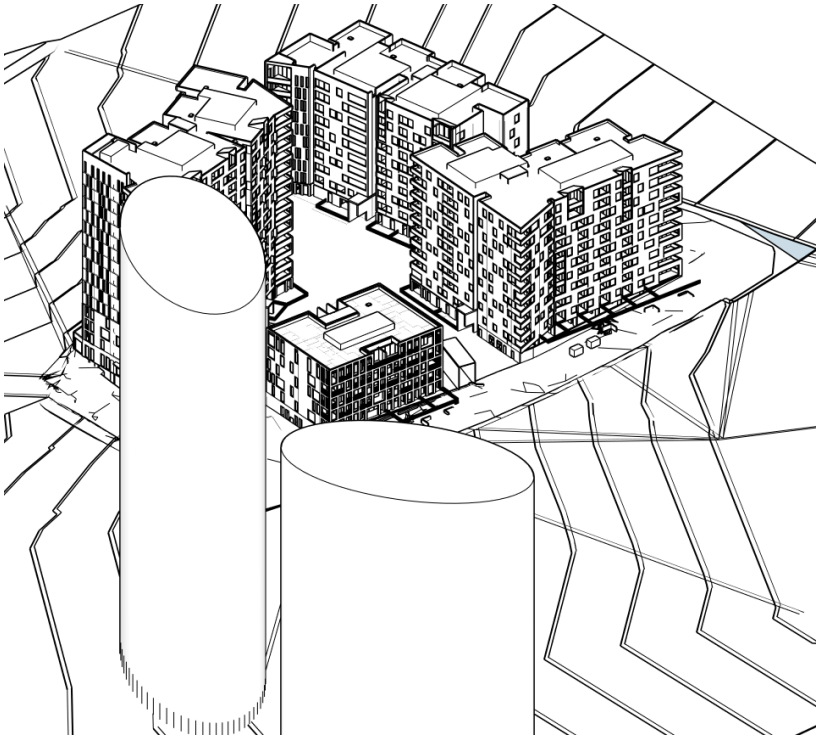
Expert Opinion
SEPP65 AMENITY
SOLAR ACCESS



MIRVAC: Figtree Drive Apartments
4 August 2015

Signed,

Steve King

S T E V E K I N G
C O N S U L T A N T
Appropriate design and alternative technologies for environmental control in buildings
1 1 C l o v e l l y R o a d R a n d w i c k N S W 2 0 3 1 A u s t r a l i a
P H O N E 0 4 1 4 3 8 5 4 8 5

TABLE OF CONTENTS

1.0		PRELIMINARIES AND SUMMARY	3
	1.5	Solar access	3
2.0		DOCUMENTS AND INFORMATION	3
3.0		GENERAL PLANNING AND MASSING	4
	3.1	Site	4
	3.2	Building response	5
4.0		SOLAR ACCESS	5
4.1		Relevant solar access standards	5
		4.1.1 Apartment Design Guide	5
		4.1.2 Local controls	6
	4.2	Predicted solar access: methodology	6
		4.2.1 3D digital model	6
		4.2.2 Views from the sun	7
	4.3	Characterisation of solar access compliance	7
		4.3.1 Sun patches on glazing	7
		4.3.2 Duration of sun access	7
		4.3.3 Timing of acceptable sun access	7
		4.3.4 Private open space	7
		4.3.5 Sun to bedrooms	8
	4.4	Predicted solar access	8
6.0		CONCLUSION	9
A.0		APPENDIX: DETAILED COMPLIANCE TABLE	10
B.0		APPENDIX: VIEWS FROM THE SUN	21
C.0		APPENDIX: CREDENTIALS	30

1.0 PRELIMINARIES AND SUMMARY

1.1 I provide this expert opinion report to verify the Applicant's analysis of solar access amenity compliance with the relevant local controls and with the Apartment Design Guide (as it gives effect to the Amenity provisions of SEPP65). The application relates to proposed mixed development within the master-planned site at 2 Figtree Drive Olympic Park.

1.2 My qualifications and experience are summarized in B.0 APPENDIX: CREDENTIALS.

1.3 The documents referred to in this report are detailed in 2.0 DOCUMENTS.

1.4 Solar access

The development achieves 291 apartments with greater than 2 hours of effective sun access to living area glazing between 9am and 3pm on June 21. Of these dwellings, 271 also have complying durations of sun to private open space.

The 3D model of surrounding buildings used for the solar access analysis demonstrates that earlier or later effective sun is also reliably available to an additional seven (7) units— if this solar access is taken into account, the overall number of apartments that may be deemed to comply with solar access to both glazing and POS is 278 out of 422 being 65.9%. On the same basis, solar access to glazing is available for over 2 hours to a total of 298 apartments out of 422, being 70.6%.

The ADG suggests 70%, but with considerable latitude for discretion related to site conditions or other limiting factors.

In relation to this interpretation of the ADG performance objectives, and to the appropriate exercise of discretion with respect to the relatively small shortfall from the recommendation of the ADG *Design criteria*, it is relevant to refer specifically to the judgment by Brown C. in the matter of *Botany Development Pty Ltd v Botany Council LEC 10360 of 2013*. In that matter, Commissioner Brown sets out in considerable detail his reasoning for how the guidelines in the former RFDC and the provisions in the DCP are to be regarded in relation to the minimum solar access required. The Commissioner notes:

- *The nominated 70% of apartments is not a development standard*, and
- Amongst other considerations, that the *9am to 3pm time span nominated in both the ADG and the DCP may be extended* where the analysis clearly demonstrates that sun before and after those times respectively is likely to be unobstructed.

2.0 DOCUMENTS AND INFORMATION

2.1 I base my report on documents by BVN:

- Architectural drawings issued on 26/06/2015 as Coordination Issue E:
    - DA-2104-GENERAL ARRANGEMENT PLAN LEVEL 01 - GROUND FLOOR_E.pdf
    - DA-2105-GENERAL ARRANGEMENT PLAN LEVEL 02_E.pdf
    - DA-2106-GENERAL ARRANGEMENT PLAN LEVEL 03_F.pdf
    - DA-2107-GENERAL ARRANGEMENT PLAN LEVEL 04_E.pdf
    - DA-2108-GENERAL ARRANGEMENT PLAN LEVEL 05_E.pdf
    - DA-2109-GENERAL ARRANGEMENT PLAN LEVEL 06_E.pdf
    - DA-2110-GENERAL ARRANGEMENT PLAN LEVEL 07_E.pdf
    - DA-2111-GENERAL ARRANGEMENT PLAN LEVEL 08_E.pdf
    - DA-2112-GENERAL ARRANGEMENT PLAN LEVEL 09_E.pdf
    - DA-2113-GENERAL ARRANGEMENT PLAN LEVEL 10_E.pdf
    - DA-2114-GENERAL ARRANGEMENT PLAN LEVEL 11_E.pdf
    - DA-2115-GENERAL ARRANGEMENT PLAN LEVEL 12_E.pdf
    - DA-2116-GENERAL ARRANGEMENT PLAN LEVEL 13_E.pdf
    - DA-2117-GENERAL ARRANGEMENT PLAN LEVEL 14_E.pdf
    - DA-2118-GENERAL ARRANGEMENT PLAN LEVEL 15_E.pdf
- Digital copy of a 3D model file in *Trimble SketchUp* format.

2.2 I have visited the site.

3.0 GENERAL PLANNING AND MASSING

3.1 Site

The site is an approximate trapezoid shape with Figtree Drive to the north and Australia Avenue to the east. The South boundary is defined by a railway reservation and slip road, while the west boundary is to a similar industrial site. Figure 1 illustrates the site location.

Figure 1: Site location

Figure 2 is an aerial photograph from the south, showing the built up context to the north and north-east of the site.

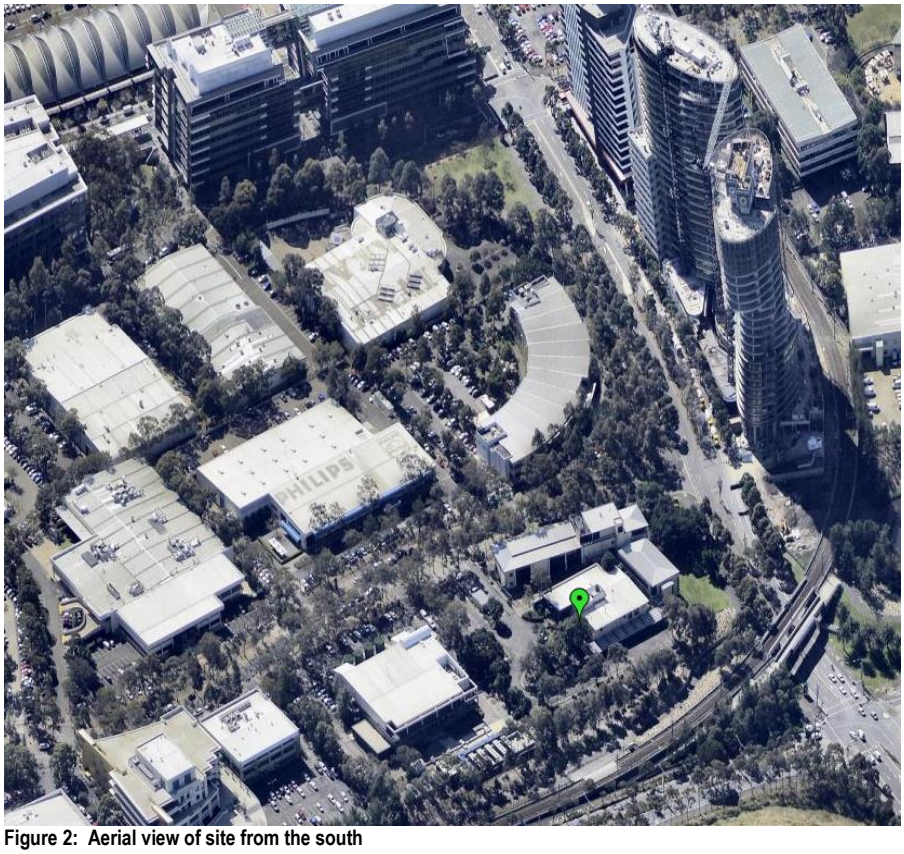


Figure 2: Aerial view of site from the south

The two 'lozenge shaped' buildings to the north-east are tall enough to cause appreciable morning shadows to the subject development. If the scale of the buildings closer to the railway station is repeated, the future overshadowing of the subject site from its immediate north should at worst impact on the lower stories of north facing units.

3.2 Building response

Figure 3 illustrates the general site massing.

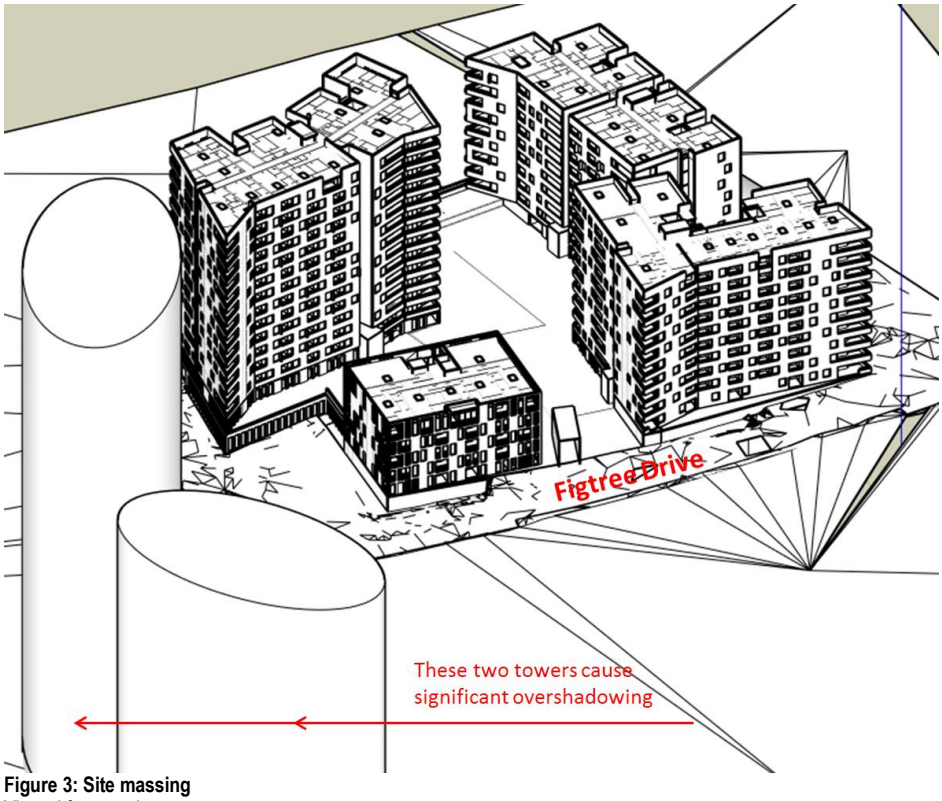


Figure 3: Site massing
Viewed from north

I understand that the proposed site layout in four buildings is also a direct response to a required view corridor through the site.

Note that the site massing responds to the solar access opportunity from the north by placing a smaller, lower building towards the north-east corner of the site and the tallest building behind it to the south-east. An L-shaped block nearest Figtree Drive presents the maximum face to the north and east, while a remaining building in the south-west corner of the site presents its longest elevation with a northerly bias, to the gap between the two other tall buildings.

I consider the general massing strategy to be a sound way of assuring good solar access on this site. ***But solar access opportunity is in my view sufficiently constrained by external factors – including significant overshadowing from the north-east – to raise the question whether 70% of apartments may reasonably be expected to achieve the minimum complying periods of direct sun in midwinter.***

4.0 SOLAR ACCESS

4.1 Relevant solar access standards

4.1.1 Apartment Design Guide

The *Apartment Design Guide (ADG)* gives effect to SEPP65 for assessing solar access and other amenity provisions and gives the following quantified recommendations:

Objective 4A-1
To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space

Design criteria	
1.	Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas
3.	A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid winter

4.1.2 Local controls

I note that under the amended SEPP65, requirements of a development control plan (DCP) will have no effect if they relate to certain objectives, design criteria and design guidance set out in the Apartment Design Guide. These are:

- visual privacy;
- ***solar and daylight access;***
- common circulation and spaces;
- apartment size and layout;
- ceiling heights;
- private open space and balconies;
- natural ventilation; and
- storage.

In quantifying the compliance for solar access for this application, I rely on the ADG.

4.2 Predicted solar access: methodology

4.2.1 3D digital model

For detailed analysis of overshadowing and solar access I employ a fully 3D digital model, using the heliodon routine of software package *Trimble SketchUp v.8*. The digital model was provided by the architects. The model shows such of the surrounding development, as may make a material impact on overshadowing of the subject site.

I have independently checked the digital model for sufficient accuracy by reference to figured RL's on the provided drawings and a copy of the survey. I also independently verified the geolocation and the direction of North by reference to the survey and to cadastral information.

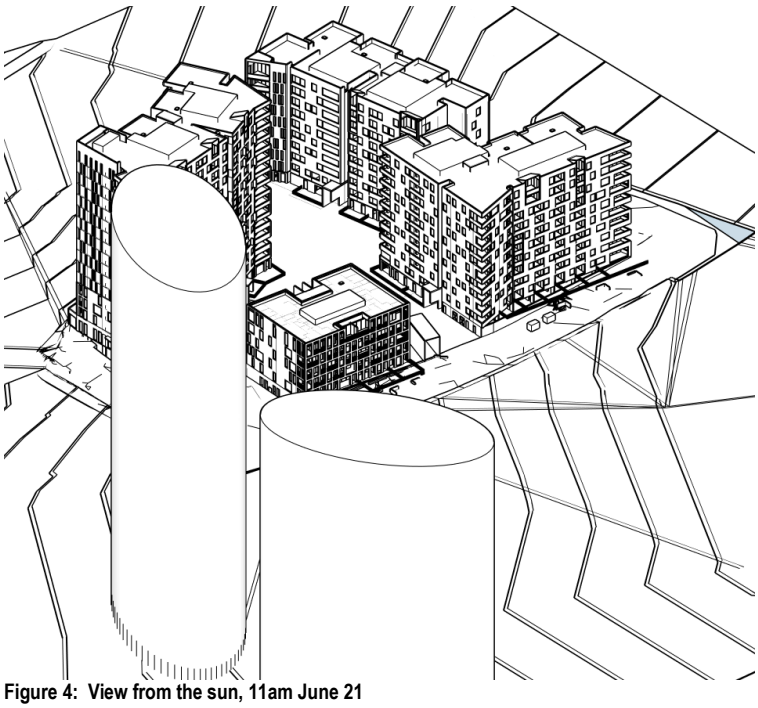


Figure 4: View from the sun, 11am June 21
Note that the model shows the overshadowing impact of buildings remote from the site

4.2.2 Views from the sun

Because of the complexity of determining and *demonstrating* in detail the quantification of solar access to glazing of various orientations — and taking into account the considerable self-shading and other potential obstructions — I prepare computer generated projections known as *'View from the Sun'*, taken at half hourly intervals.

A view from the sun shows all sunlit surfaces at a given time and date. It therefore allows a very precise count of sunlight hours on any glazing, with little or no requirement for secondary calculations or interpolation. Figure 4 illustrates the technique. *Note that a 'view from the sun' by definition does not show any shadows.*

Where the views from the sun on a half hourly basis do not sufficiently capture actual periods of complying solar access, I clarify the duration by suspecting the shadow on a minute by minute basis.

4.3 Characterisation of solar access compliance

4.3.1 Sun patches on glazing

For the purpose of calculating the compliance with the control, I examine sun patches on the relevant glazing line of each apartment. Because of its key importance in the determination of what is 'effective sunlight' for characterisation of compliance, for both glazing and private open space, I refer specifically to the relevant *L+EC Planning Principle (The Benevolent Society v Waverley Council [2010] NSWLEC 1082)* in that:

- I ignore very large angles of incidence to the glazing surface, and unusably small areas of sunlit glazing.
- I quantify as complying all sun patches of 'reasonable size', which I generally take to be a minimum of approximately $1m^2$.

4.3.2 Duration of sun access

The site density clearly corresponds to the RFDC assumption of a closely built up urban setting. I have characterised as complying when sun access is over two hours of partially and fully sunlit glazing between 9am and 3pm mid-winter. The ADG has now adopted this standard throughout the metropolitan area, without any further test for high density.

4.3.3 Timing of acceptable sun access

Due to some self-shading by privacy walls and significant shading by two very large developments to the north-east of the subject site, some otherwise favourably oriented apartments will receive less than two hours of winter sun to their living area glazing between 9am and 3pm on June 21.

However, by modelling a large enough context for the site, it can be demonstrated where such apartments will receive additional effective direct winter sun either earlier than 9am or later than 3pm respectively.

> *Explanation:*
> The 9am and 3pm limits are a legacy from early controls for single dwellings in Arcadian suburban settings where the desired mature tree canopied character was assumed to limit the likely ongoing availability of winter sun beyond those times. In my considered opinion, to apply those limits without reference to the availability of earlier and later sun is inappropriate, and this opinion has consistently had the support of the Land and Environment Court.
>
> **In relation to this interpretation of the RFDC performance objectives, I refer specifically to the recent judgment by Brown C. in the matter of *Botany Development Pty Ltd v Botany Council LEC 10360 of 2013*, at paras. 79 through 87.**

I have therefore quantified sun from 8am and until 4pm. I note that in general, for the relevant east and west glazing these earlier and later periods of winter sun are actually the most effective, because the sun penetrates more deeply into the apartment.

4.3.4 Private open space

I report for individual dwellings which have complying sun to glazing, whether the POS also complies with the minimum requirement for solar access. I note that for a threshold of POS solar access, I take guidance form the relevant *L+EC Planning Principle,* which makes clear that for small verandas and courtyards the plane on which the sun is to be examined may be, for instance, a table, and that any arbitrary proportion of area is also likely to be misleading. In brief, I take as my minimum threshold a sufficient area for an adult to enjoy sun seated outdoors.

Overall, private open spaces of individual dwellings in this development are as well or better exposed to winter sun compared to living area glazing. There are some exceptions, where preference has been placed on achieving

complying durations of direct sun to glazing. In my considered opinion, this is particularly appropriate given the height and wind exposure of a significant number of such dwellings. In my view, a certain proportion of dwellings can be considered to meet the amenity performance objectives on the basis of sun to glazing alone, without having complying sun to POS.

4.3.5 Sun to bedrooms

Where appropriate, extended periods of sun available to bedrooms contributes significantly to the amenity of any apartment that may have an otherwise unfavourably oriented or overshadowed living area. For completeness, the detailed table of solar access compliance of individual units is annotated to identify specific dwellings where this consideration is relevant.

Notwithstanding that this characterisation is consistent with the interpretation of *the BenSoc Principle (and its predecessor Parsonage Principle)* as previously accepted by the Land and Environment Court, and by various Councils, *the Applicant does not rely on sun to bedrooms for characterising deemed compliance.*

4.4 Predicted solar access

Table 3 in Appendix A reports in detail the schedule of achieved mid-winter (June 21) solar access for each apartment.

4.4.1 Table 1 summarises the projected solar access for the living area glazing of the residential dwelling units. I consider solar access achieved before 9am and after 3pm for reference. I rely on extended periods for the characterisation of complying solar access only where the relevant sun is both guaranteed to be unobstructed in the future, and 'effective sun' as intended by *The Benevolent Society v Waverley.* This characterisation has been previously accepted by Councils, and is always supported by the L+EC.

Total number of units	422	
Units which achieve 2 hours or more sunlight to glazing 9am - 3pm June 21	**291**	**69.0%**
Units which achieve 2 hours or more sunlight to both glazing and POS 9am - 3pm June 21	**271**	**64.2%**
Additional units which achieve 2 hours or more sunlight to both glazing and POS 8am - 4pm June 21	7	1.7%
Proportion deemed to comply on the basis of 2 hours sun to glazing	**298**	**70.6%**

Table 1: Summary of solar access

4.4.2 The ADG *Design criteria* recommend a minimum of minimum 70% of apartments should achieve complying periods of direct sun. To properly consider the inclusion of 7 apartments which rely for compliance on a short period of sun before 9am, one has to be mindful of:

- The interpretation by the Land and Environment Court where the controls are applied to a site with constraints on the achievable solar access;
- The reasonable expectation of compliance achieved for that proportion of apartments which have access to sun, after allowing for the overshadowing impact of existing surrounding developments.

The most applicable recent matter in which this issue was given due consideration is by Brown, C. in *Botany Development Pty Ltd v Council of the City of Botany Bay LEC 10360 of 2013*. The relevant parts of Commissioner Brown's determination read:

> 86 I do not accept that the RFDC should be read as a development standard or a requirement that must be complied with. In the second dot point, the Rules of Thumb contemplate variations to the requirements. Also, the definition in the RFDC for Rules of Thumb supports the application of a flexible approach where it states:
>
> > **rules of thumb** recommend minimum standards as a guide for local decision making. Minimum standards may vary depending on local context issues and/or if development applicants are able to demonstrate that they have addressed the better design practice guidelines and achieved the stated objectives.
>
> 87 In this case, I am satisfied that the minimum 70% standard can be varied given the relatively small variation (10 units out of 158 units excluding any benefit from the deletion of 4 units), the sunlight available between 8 am and 4 pm, the orientation of the site and the design that seeks to maximise solar access to the northern face of the building.

In brief, the detailed determination in *Botany Development Pty Ltd v Council of the City of Botany Bay* makes clear that:

- Due regard the taken of all the sunlight available;
- Allowance should be made for the difficulties imposed by external overshadowing of the site.

6.0 CONCLUSION

The development achieves 298 (70.6%) out of 422 apartments with minimum 2 hours of effective sun access to living area glazing, if demonstrably available direct sun before 9am and after 3pm is taken into account for seven units in the proposed development. A majority achieve that solar access between 9am and 3pm.

Of these dwellings, 20 units do not have a complying minimum sun to private open space. Eleven (11) of these dwellings are externally overshadowed, and nine (9) are south facing but have complying sun to living areas by way of skylights.

The ADG *Design criteria* recommend a minimum of 70%, but the ADG explicitly acknowledges that this compliance may be difficult to achieve on some sites.

In relation to this interpretation of the ADG performance objectives, and to the appropriate exercise of discretion with respect to the small shortfall from the recommendation of the ADG *Design criteria*, I refer specifically to the judgment by Brown C. in the matter of *Botany Development Pty Ltd v Botany Council LEC 10360 of 2013* at paras 79 through 87. In that matter, Commissioner Brown sets out in considerable detail his reasoning for how the guidelines in the former RFDC and the provisions in the DCP are to be regarded in relation to the minimum solar access required. The Commissioner notes:

- *The nominated 70% of apartments is not a development standard*, and
- Amongst other considerations, that the *9am to 3pm time span nominated in the ADG, the RFDC and the DCP may be extended* where the analysis clearly demonstrates that sun before and after those times respectively is likely to be unobstructed.

In my considered opinion, given the constraints of external overshadowing of the site, Council may safely exercise its discretion in relation to the achieved level of solar access.

A.0 APPENDIX: DETAILED COMPLIANCE TABLE

The following table sets out in detail the solar access and ventilation status of each apartment.

Table 2

		Solar access to glazing																	**Glazing solar compliance**				**POS also complies**		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	**Notes**
E1	E1.01									L	L	L	L	L	L	L			YES				YES		
	E1.02								B	B	B	L	L		B	L	L								
	E1.04					B		B	B	B	B														
	E1.05				L	L		L	L	L	L										YES		YES		
	E1.06				L	L			L	L	L	L	L						YES				YES		
	E1.07				L	L			L	L	L	L	L	L	L				YES				YES		
	E1.08	L	L	L	L	L	L			L	L	L	L	L	L				YES				YES		
	E1.09	L	L	L	L	L	L	L		L										YES			YES		
	E1.10																								
	E1.11																								
	E1.12	B																							
E2	E2.01									L	L	L	L	L	L	L			YES				YES		
	E2.02								B	B	B	L	L	L	L	L	L	L		YES			YES		
	E2.04					L		L	L	L	L	L	L	L					YES				YES		
	E2.05				L	L		L	L	L	L	L	L						YES				**NO**		
	E2.06				L	L			L	L	L	L	L						YES				YES		
	E2.07				L	L			L	L	L	L	L	L	L				YES				YES		
	E2.08	L	L	L	L	L	L			L	L	L	L	L	L	L			YES				YES		
	E2.09	L	L	L	L	L	L	L		L										YES			YES		
	E2.10																								
	E2.11																								
	E2.12	B																							
E3	E3.01									L	L	L	L	L	L	L			YES				YES		
	E3.02						L	L	L	L	L	L	L	L	L	L	L		YES				YES		
	E3.03						L	L	L	L	L	L	L	L	L				YES				YES		
	E3.04					B		B	B	B	B	L	L	L	L	L				YES			YES		
	E3.05				B	B		B	B	B	B	L	L	L	L										
	E3.06				B	B			B	B	B	L	L	L	L										
	E3.07				B	B			B	B	B	L	L	L	L	L*				YES			YES		*12:45 to 14:45
	E3.08	L	L	L	L	L	L			L	L	L	L	L	L	L			YES				YES		
	E3.09	L	L	L	L	L	L	L		L										YES			YES		
	E3.10																								
	E3.11																								
	E3.12	B																							
E4	E4.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E4.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E4.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		

		Solar access to glazing																	Glazing solar compliance				POS also complies		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	Notes
	E4.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E4.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E4.06				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E4.07				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E4.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E4.09	L	L	L	L	L	L	L		L										YES			YES		
	E4.10																								
	E4.11																								
	E4.12	B																							
E5	E5.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E5.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E5.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E5.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E5.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E5.06				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E5.07				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E5.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E5.09	L	L	L	L	L	L	L		L										YES			YES		
	E5.10																								
	E5.11																								
	E5.12	B																							
E6	E6.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E6.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E6.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E6.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E6.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E6.06				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E6.07				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E6.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E6.09	L	L	L	L	L	L	L		L										YES			YES		
	E6.10																								
	E6.11																								
	E6.12	B																							
E7	E7.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E7.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E7.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E7.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E7.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E7.06				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E7.07				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E7.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E7.09	L	L	L	L	L	L	L		L										YES			YES		
	E7.10																								
	E7.11																								
	E7.12	B																							

		Solar access to glazing																		Glazing solar compliance				POS also complies		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	Notes
E8	E8.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E8.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E8.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E8.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E8.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E8.06				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E8.07				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E8.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E8.09	L	L	L	L	L	L	L		L										YES			YES		
	E8.10																								
	E8.11																								
	E8.12	B																							
E9	E9.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E9.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E9.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E9.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E9.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E9.06				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E9.07				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E9.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E9.09	L	L	L	L	L	L	L		L										YES			YES		
	E9.10																								
	E9.11																								
	E9.12	B																							
E10	E10.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E10.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E10.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E10.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E10.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E10.06				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E10.07				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E10.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E10.09	L	L	L	L	L	L	L		L										YES			YES		
	E10.10																								
	E10.11																								
	E10.12	B																							
E11	E11.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E11.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E11.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E11.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E11.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E11.06				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E11.07				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E11.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E11.09	L	L	L	L	L	L	L		L										YES			YES		

		Solar access to glazing																	Glazing solar compliance				POS also complies		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	Notes
	E11.10																								
	E11.11																								
	E11.12	B																							
E12	E12.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E12.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E12.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E12.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E12.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E12.06				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E12.07				B	B			B	B	B	L	L	L	L	L	L	L		YES			YES		
	E12.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E12.09	L	L	L	L	L	L	L		L										YES			YES		
	E12.10																								
	E12.11																								
	E12.12	B																							
E13	E13.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E13.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E13.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E13.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E13.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E13.06					B			L	L	L	L	L	L	L	L	L	L	YES				YES		
	E13.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E13.09	L	L	L	L	L	L	L		L										YES			YES		
	E13.10																								
	E13.11																								
	E13.12	B																							
E14	E14.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E14.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E14.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E14.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E14.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E14.06					B			L	L	L	L	L	L	L	L	L	L	YES				YES		
	E14.08	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	YES				YES		
	E14.09	L	L	L	L	L	L	L	L	L									YES				YES		
	E14.10																								
	E14.11																								
	E14.12	B																							
E15	E15.01									L	L	L	L	L	L	L	L	L	YES				YES		
	E15.02						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E15.03						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E15.04					B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E15.05				B	B		B	B	B	B	L	L	L	L	L	L	L		YES			YES		
	E15.06					B	B	B	L	L	L	L	L	L	L	L	L	L	YES				YES		
	E15.08	L	L	L	L	L	L		L	L	L	L	L	L	L	L	L	L	YES				YES		
	E15.09	L	L	L	L	L	L	L	L	L									YES				YES		

		Solar access to glazing																	Glazing solar compliance				POS also complies		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	Notes
	E15.10						L	L	L	L	L	L	L						YES				YES		
	E15.11				L	L	L	L	L	L	L								YES				YES		
	E15.12	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				**NO**		SKYLIGHT COUNTED
S1	S1.02																L	L							
	S1.03																L	L							
	S1.04															B	L	L							
	S1.05	L	L	L																					
	S1.06	L	L	L			L	L														YES		YES	
	S1.07		L	L	L		L	L	L												YES		YES		
	S1.08							L	L	B															
S2	S2.01																								
	S2.02																B	B							
	S2.03																	L							
	S2.04																L	L							
	S2.05	L	L	L																					
	S2.06	L	L	L			L	L														YES		YES	
	S2.07		L	L	L		L	L	L												YES		YES		
	S2.08			L	L			L	L	L											YES		**NO**		
	S2.09							L	L	L	L														
	S2.10	B						L	L	L	L	L*									YES*		**NO**		*10:45 to 12:45
S3	S3.01																B	B							
	S3.02																B	B							
	S3.03																L	L							
	S3.04																L	L							
	S3.05	L	L	L																					
	S3.06	L	L	L			L	L														YES		YES	
	S3.07		L	L	L		L	L	L												YES		YES		
	S3.08			L	L		L	L	L	L											YES		YES		
	S3.09						L	L	L	L	L										YES		YES		
	S3.10	B						L	L	L	L	L									YES		YES		
S4	S4.01																B	B							
	S4.02																B	B							
	S4.03																L	L							
	S4.04																L	L							
	S4.05	L	L	L																					
	S4.06	L	L	L			L	L														YES		YES	
	S4.07		L	L	L		L	L	L												YES		YES		
	S4.08			L	L		L	L	L	L	L	L							YES				YES		
	S4.09						L	L	L	L	L	L	L						YES				YES		
	S4.10	B						L	L	L	L	L	L	L					YES				YES		
S5	S5.01																B	B							
	S5.02																B	B							
	S5.03																L	L							
	S5.04																L	L							
	S5.05	L	L	L																					

		Solar access to glazing																	Glazing solar compliance				POS also complies		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	Notes
	S5.06	L	L	L			L	L														YES		YES	
	S5.07		L	L	L		L	L	L												YES		YES		
	S5.08			L	L		L	L	L	L	L	L							YES				YES		
	S5.09						L	L	L	L	L	L									YES		YES		
	S5.10	B						L	L	L	L	L	L	L					YES				YES		
S6	S6.01																B	B							
	S6.02																B	B							
	S6.03																L	L							
	S6.04																L	L							
	S6.05	L	L	L																					
	S6.06	L	L	L			L	L														YES		YES	
	S6.07		L	L	L		L	L	L			L								YES			YES		
	S6.08			L	L		L	L	L	L	L	L	L						YES				YES		
	S6.09						L	L	L	L	L	L									YES		YES		
	S6.10	B						L	L	L	L	L	L	L					YES				YES		
S7	S7.01																B	B							
	S7.02																B	B							
	S7.03																B	B							
	S7.04																L	L							
	S7.05	L	L	L																					
	S7.06	L	L	L			L	L														YES		YES	
	S7.07		L	L	L		L	L	L	L	L	L							YES				YES		
	S7.08			L	L		L	L	L	L	L	L	L						YES				YES		
	S7.09						L	L	L	L	L	L									YES		YES		
	S7.10	B						L	L	L	L	L	L	L					YES				YES		
S8	S8.01																B	B							
	S8.02																B	B							
	S8.03																B	B							
	S8.04						B	B	B	B	B	B					L	L							
	S8.05	L	L	L																					
	S8.06	L	L	L			L	L	L	L	L	L							YES				YES		
	S8.07		L	L	L		L	L	L	L	L	L							YES				YES		
	S8.08			L	L		L	L	L	L	L	L	L						YES				YES		
	S8.09						L	L	L	L	L	L									YES		YES		
	S8.10	B						L	L	L	L	L	L	L					YES				YES		
S9	S9.01																B	B							
	S9.02																B	B							
	S9.03																L	L							
	S9.04						B	B	B	B	B	B	B	B	B	B	L	L							
	S9.05	L	L	L		B	B	B	B	B	B	L	L	L	L	L				YES				YES		
	S9.06	L	L	L		L	L	L	L	L	L	L							YES				YES		
	S9.07		L	L	L	L	L	L	L	L	L	L							YES				YES		
	S9.08			L	L	L	L	L	L	L	L	L	L						YES				YES		
	S9.09						L	L	L	L	L	L									YES		YES		
	S9.10	B						L	L	L	L	L	L	L					YES				YES		

		Solar access to glazing																	Glazing solar compliance				POS also complies		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	Notes
S10	S10.01		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				**NO**		SKYLIGHT COUNTED
	S10.02					L	L	L	L	L	L	L	L	L	L	L	L	L	YES				**NO**		SKYLIGHT COUNTED
	S10.03					L	L	L	L	L	L	L	L	L	L		B	B	YES				**NO**		SKYLIGHT COUNTED
	S10.04	L	L			L	L	L	L	L	L	L	L	L	L	L	L	L	YES				**NO**		SKYLIGHTS ASSUMED
	S10.05	L	L	L		L	L	L	L	L	L	L	L	L	L	L	L		YES				YES		
	S10.06	L	L	L	L	L	L	L	L	L	L	L							YES				YES		
	S10.07		L	L	L	L	L	L	L	L	L	L							YES				YES		
	S10.08			L	L	L	L	L	L	L	L	L	L						YES				YES		
	S10.09					L	L	L	L	L	L	L							YES				YES		
	S10.10	B	B				L	L	L	L	L	L	L						YES				YES		
W1	W1.09						L	L	L																
	W1.10						L	L	L	L															
	W1.11																								
W2	W2.01																B	B							
	W2.02				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W2.03				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W2.04				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W2.05				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W2.06				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W2.07						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W2.08				B	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W2.09					L	L	L	L	L	L									YES			YES		
	W2.10						L	L	L	L	L										YES		**NO**		
	W2.11																								
W3	W3.01																B	B							
	W3.02				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W3.03				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W3.04				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W3.05				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W3.06				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W3.07						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W3.08				B	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W3.09					L	L	L	L	L	L										YES		YES		
	W3.10						L	L	L	L	L										YES		**NO**		
	W3.11																								
	W3.12																								
W4	W4.01																B	B							
	W4.02				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W4.03				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W4.04				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W4.05				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W4.06				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W4.07						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W4.08				B	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W4.09		L			L	L	L	L	L	L									YES			YES		

		Solar access to glazing																	Glazing solar compliance				POS also complies		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	Notes
	W4.10	L	L	L			L	L	L	L	L									YES			**NO**		
	W4.11																								
	W4.12																								
W5	W5.01																B	B							
	W5.02				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W5.03				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W5.04				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W5.05				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W5.06				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W5.07						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W5.08	L	L		B	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W5.09	L	L			L	L	L	L	L	L									YES			YES		
	W5.10	L	L				L	L	L	L	L									YES			**NO**		
	W5.11																								
	W5.12																								
W6	W6.01																B	B							
	W6.02				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W6.03				B	B	B	B	B	L	L	L	L	L	L	L	L	L	YES				YES		
	W6.04				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W6.05				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W6.06				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W6.07						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W6.08	L	L		B	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W6.09	L	L			L	L	L	L	L	L									YES			YES		
	W6.10	L	L	L			L	L	L	L	L									YES			**NO**		
	W6.11																								
	W6.12																								
W7	W7.01																B	B							
	W7.02				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W7.03				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W7.04				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W7.05				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W7.06				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W7.07						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W7.08	L	L		B	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W7.09	L	L			L	L	L	L	L	L									YES			YES		
	W7.10	L	L				L	L	L	L	L									YES			**NO**		
	W7.11																								
	W7.12																								
W8	W8.01																B	B							
	W8.02				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W8.03				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W8.04				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W8.05				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W8.06				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		

		Solar access to glazing																	Glazing solar compliance				POS also complies		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	Notes
	W8.07						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W8.08	L	L		B	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W8.09	L	L			L	L	L	L	L	L									YES			YES		
	W8.10	L	L				L	L	L	L	L									YES			**NO**		
	W8.11																								
	W8.12																								
W9	W9.01																B	B							
	W9.02				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W9.03				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W9.04				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W9.05				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W9.06				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W9.07						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W9.08	L	L		B	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W9.09	L	L			L	L	L	L	L	L									YES			YES		
	W9.10	L	L	L			L	L	L	L	L									YES			**NO**		
	W9.11																								
	W9.12																								
W10	W10.01																B	B							
	W10.02				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W10.03				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W10.04				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W10.05				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W10.07				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W10.08	L	L		B	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W10.09	L	L			L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W10.10	L	L	L		B	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W10.11																								
	W10.12																								
W11	W11.01	L			L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				**NO**		SKYLIGHT COUNTED
	W11.02				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W11.03				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W11.04				B	B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	W11.05				L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W11.07						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W11.08	L	L		B	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W11.09	L	L			L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W11.10	L	L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	W11.11							L	L	L	L	L	L	L					YES				**NO**		SKYLIGHTASSUMED RELOCATED
	W11.12	L			L	L	L	L	L	L	L	L	L	L	L	L	L	L	YES				**NO**		SKYLIGHT COUNTED
N1	N1.01																								
	N1.02					B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	N1.03					L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N1.04						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N1.06	L	L				L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		

		Solar access to glazing																Glazing solar compliance				POS also complies		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	Notes
	N1.07	L	L	L	L		L	L	L	L										YES			YES		
N2	N2.01															B	B	B							
	N2.02					B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	N2.03					L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N2.04						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N2.06	L	L				L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N2.07	L	L	L	L		L	L	L	L										YES			YES		
N3	N3.01															B	B	B							
	N3.02					B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	N3.03					L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N3.04						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N3.06	L	L				L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N3.07	L	L	L	L		L	L	L	L										YES			YES		
N4	N4.01															B	B	B							
	N4.02					B	B	B	B	B	L	L	L	L	L	L	L	L		YES			YES		
	N4.03					L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N4.04						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N4.06	L	L				L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N4.07	L	L	L	L			L	L	L										YES			YES		
N5	N5.01		L				L	L	L	L	L	L	L	L	L	L	L	L	YES				**NO**		SKYLIGHT COUNTED
	N5.02					B	B	B	B	L	L	L	L	L	L	L	L	L	YES				YES		
	N5.03					L	L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N5.04						L	L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N5.06	L	L	L	L			L	L	L	L	L	L	L	L	L	L	L	YES				YES		
	N5.07	L	L	L	L			L	L	L										YES			YES		

422	**TOTALS**	155	114	22	7	**271**	7
		36.7%	27.0%	5.2%	1.7%	**64.2%**	1.7%
					298		**278**
			63.7%	**69.0%**	**70.6%**		**65.9%**

175	**BUILDING E**	70	56	3	0	**127**	
		40.0%	32.0%	1.7%	0.0%	**72.6%**	
					127		**127**
			72.0%	**73.7%**	**72.6%**		**72.6%**

97	**BUILDING S**	28	2	15	7	**39**	7
		28.9%	2.1%	15.5%	7.2%	**40.2%**	7.2%
					52		**46**
			30.9%	**46.4%**	**53.6%**		**47.4%**

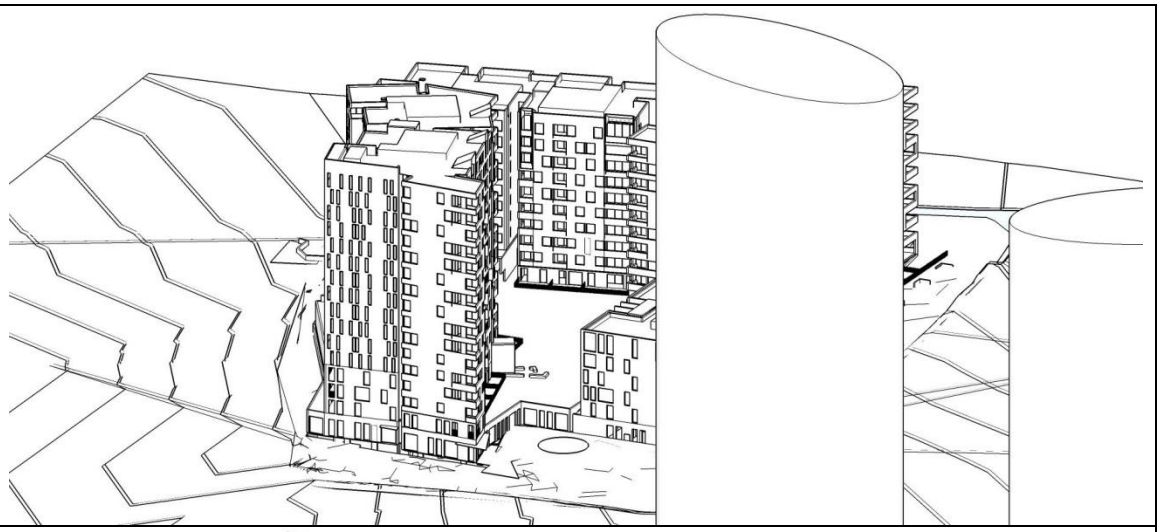
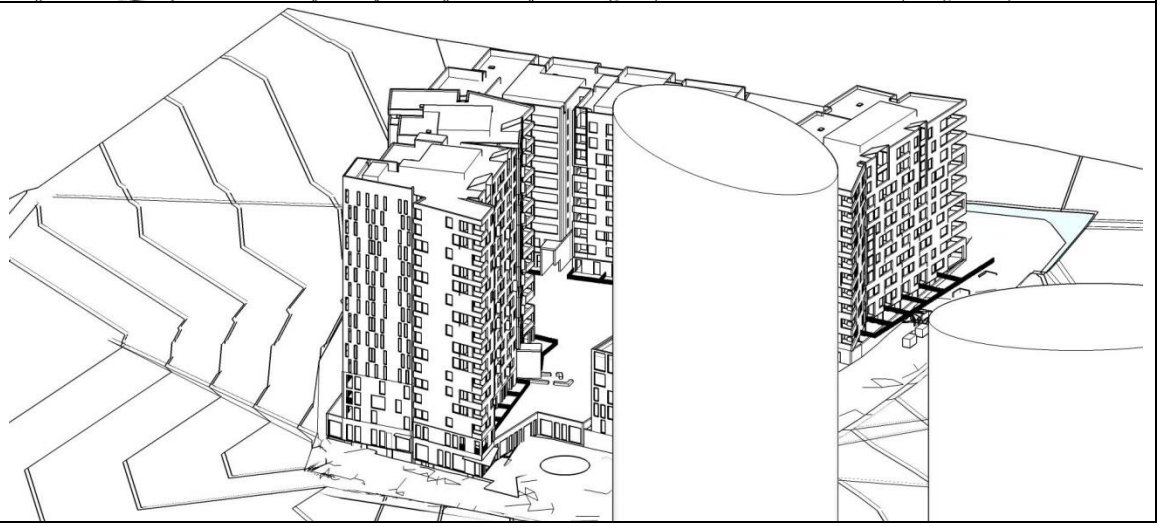
		Solar access to glazing																Glazing solar compliance				POS also complies		
Level	Unit	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-15	>2 hrs 9-15 (>3hrs 8-16)	>2 hrs 9-15	>2hrs 8-16	9-15	8-16	**Notes**
	120	**BUILDING W**																						
																		40	47	4	0	**80**		
																		33.3%	39.2%	3.3%	0.0%	**66.7%**		
																					91		80	
																			72.5%	**75.8%**	**75.8%**		66.7%	
	30	**BUILDING N**																						
																		17	9	0	0	**25**		
																		56.7%	30.0%	0.0%	0.0%	**83.3%**		
																					26		**25**	
																			86.7%	**86.7%**	**86.7%**		**83.3%**	

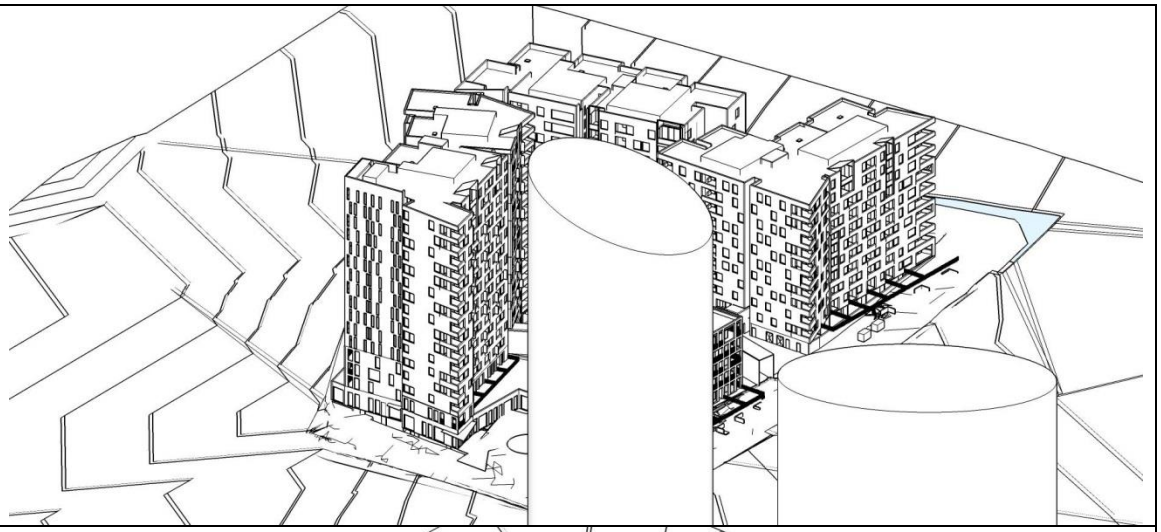
KEY	
L	Direct sun to Living
B	Direct sun to Bedroom(s) only

B.0 APPENDIX: VIEWS FROM THE SUN

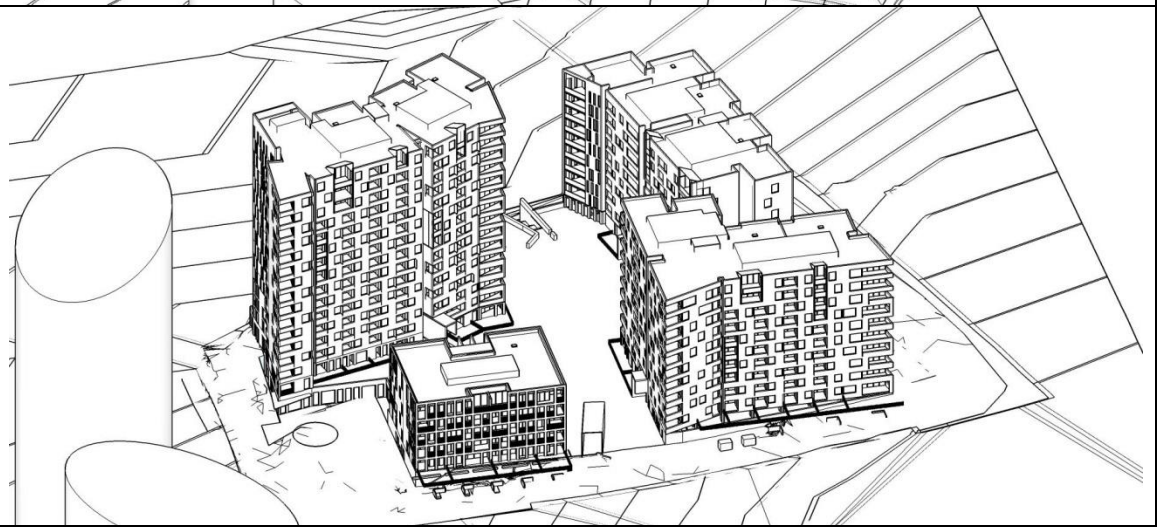
The Table below reproduces for reference the detailed ‘views from the sun’ on a half hourly basis.

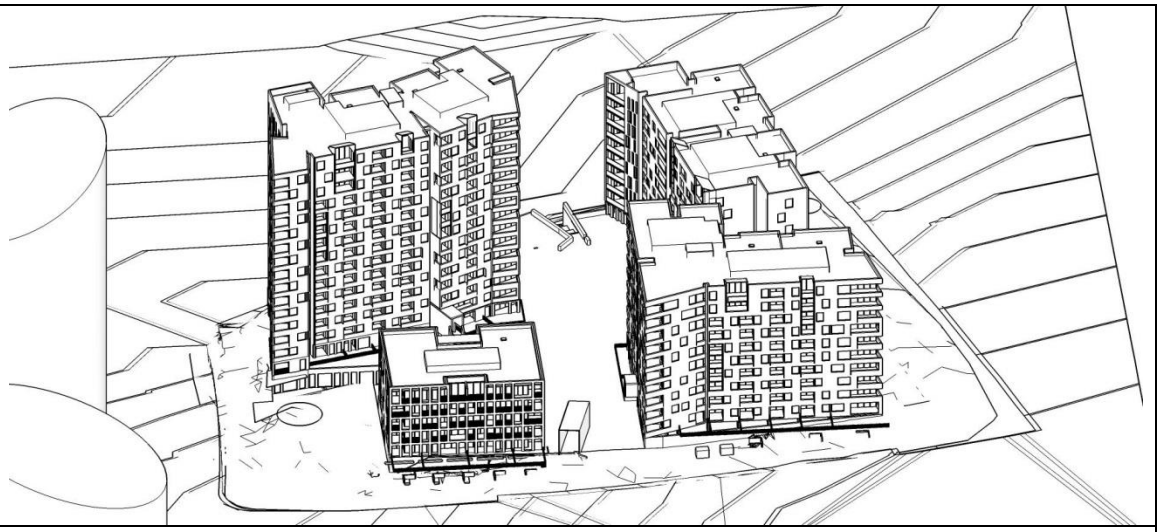
0800	
0830	

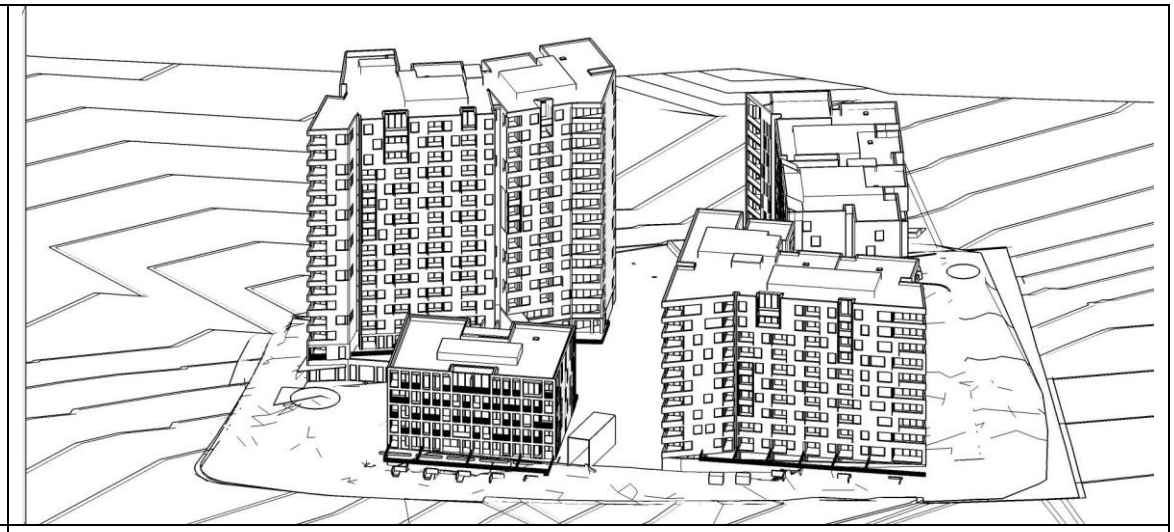
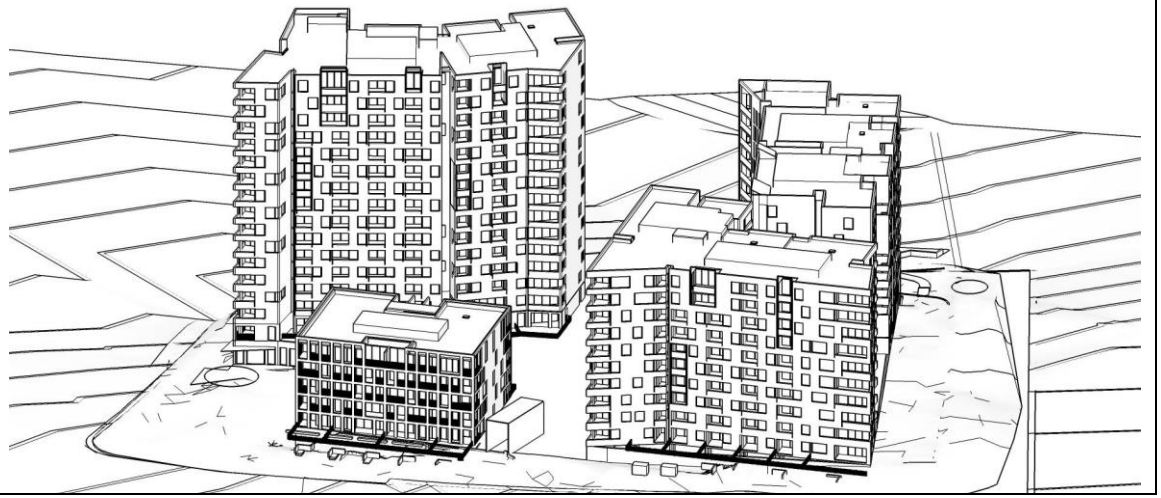
0900	
0930	

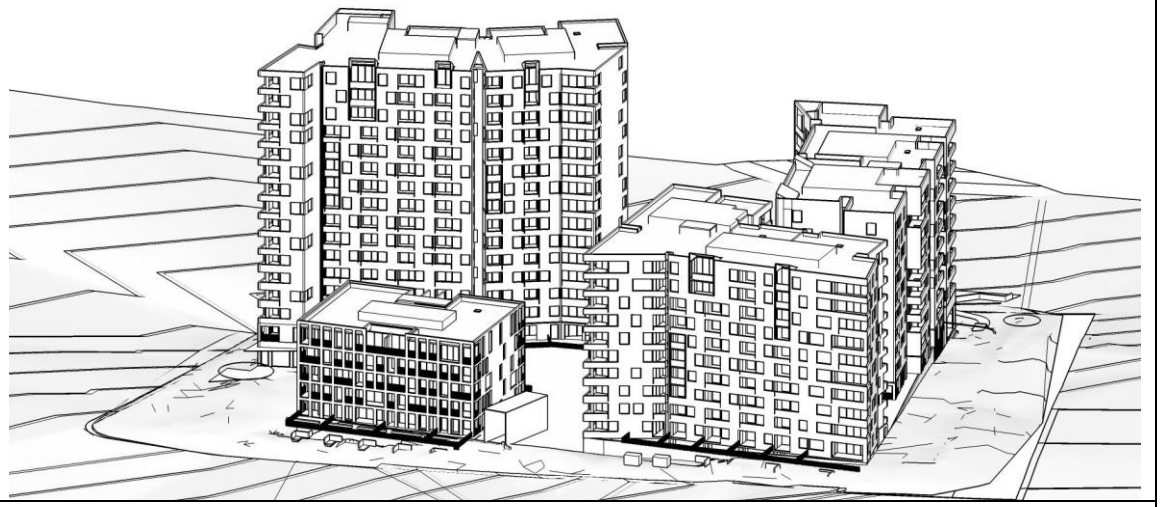
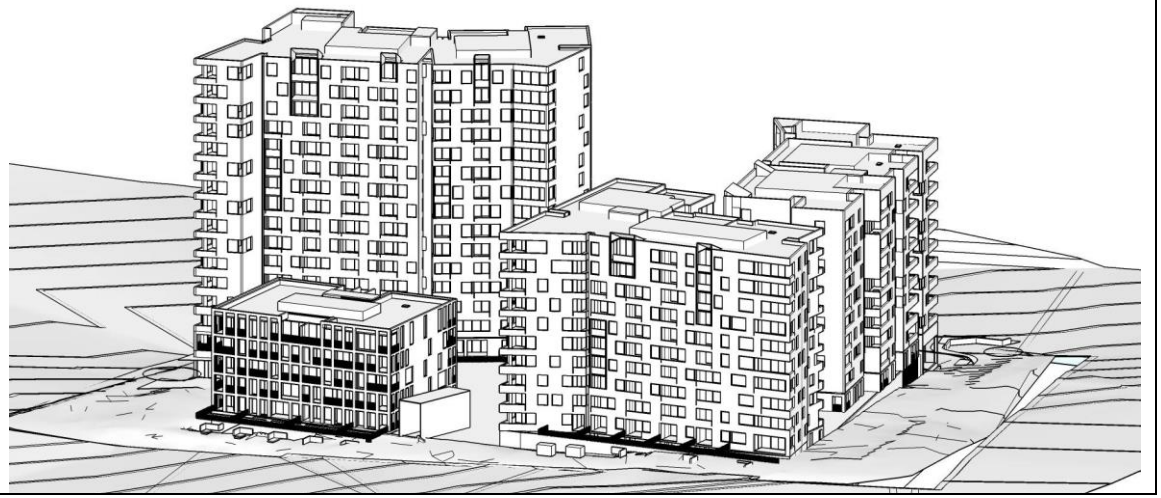
1000	
1030	

1100	
1130	

1200	
1230	

1300	
1330	

1400	
1430	

1500	
1530	

1600	

C.0 APPENDIX: CREDENTIALS

I have taught architectural design, thermal comfort and building services at the Universities of Sydney, Canberra and New South Wales since 1971. From 1992, I was a Research Project Leader in SOLARCH, the National Solar Architecture Research Unit at the University of NSW. Until its disestablishment in November 2006, I was the Associate Director, Centre for Sustainable Built Environments, UNSW.

My research and consultancy includes work in solar access, energy simulation and assessment for houses and multi-dwelling developments, building assessments under the NSW SEDA Energy Smart Buildings program, appropriate design and alternative technologies for museums and other cultural institutions, and asthma and domestic building design. I am the principal author of *SITE PLANNING IN AUSTRALIA: Strategies for energy efficient residential planning*, funded by the then Department of Primary Industry and Energy, and published by AGPS, and of the RAIA Environment Design Guides on the same topic. Through UNISEARCH, NEERG Seminars and Linarch P/L, I conduct training in solar access and overshadowing assessment for Local Councils. I have delivered professional development courses on topics relating to energy efficient design both in Australia and internationally.

SOLARCH/UNISEARCH were the contractors to SEDA NSW for the setting up and administration of the House Energy Rating Management Body (HMB), which accredits assessors under the Nationwide House Energy Rating Scheme (NatHERS), NSW. I was the technical supervisor of the HMB, with a broad overview of the dwelling thermal performance assessments carried out in NSW over five years. I have been a member of the NSW BRAC Energy Subcommittee, and also a member of the AGO Technical Advisory Committee on the implementation of AccuRate, the new mandated software tool under NatHERS. I undertook the Expert Review for the NSW Department of Planning, of the comparison of NatHERS and DIY methods of compliance for Thermal Comfort under BASIX, and was subsequently a member of a three person expert panel advising on the implementation of AccuRate in BASIX.

I have delivered the key papers in the general area of assessment of ventilation and solar access performance and compliance, for NEERG Seminars, cited by Commissioners of the LEC. Senior Commissioner Moore cited my assistance in reframing of the Planning Principle related to solar access (formerly known as the Parsonage Principle) in *The Benevolent Society v Waverley Council [2010] NSWLEC 1082.*

I practiced as a Registered Architect from 1971 to 2014, and maintain a specialist consultancy practice in Sydney and Canberra. I regularly assist the Land and Environment Court as an expert witness in related matters.

Steve King