

STEVE KING
CONSULTANT ARCHITECT

appropriate design and alternative technologies for environmental control in buildings

6 July 2018

Annie So

Senior Architect

Mirvac Design

Level 28, 200 George Street Sydney NSW 2000 Australia

Dear Annie,

Re: Site 53 Figtree Drive – Section 4.55
Modification to SSD 7662
Amended solar access compliance

I confirm that I have carried out a further reanalysis of projected solar access compliance, based on the proposed Section 4.55 modifications for the above development. My credentials are set out in Attachment D.

Documents

The drawings on which I have relied are the architectural plans scheduled in Attachment A.

Summary schedule of amendments

I have previously prepared a solar access analysis with respect to an approved DA scheme, last reported in my letter of 14 August 2017.

I have been advised of the relevant changes to that approved scheme. Those changes are set out in Attachment B.

Methodology

As in my previous analyses, I have relied on a full 3D digital model supplied by the architects, which I have independently geo-located and oriented.

My analysis is carried out primarily by use of views from the sun at half hourly intervals on June 21. Where screens are movable or adjustable, they are removed from the model as a proxy for being adjusted by the occupant. The views from the sun for the present Section 4.55 scheme are appended as Attachment C.

I have updated the detailed compliance table prepared for the previously approved scheme, and attached to my letter of 14 August 2017.

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Achieved solar access for Section 4.55 scheme

The relative change in the number and proportion of apartments complying is summarized in Table 1, presented in the same format as my previous report.

Approved scheme								
TOTAL	705	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	>2hrs 8-4 with Bed	>0hrs 8-4 with Bed	No sun 8-4
		310	124	29	26	24	146	46
		44.0%	17.6%	4.1%	3.7%	3.4%		6.5%
			434	463	489	513		
			61.6%	65.7%	69.4%	72.8%		

s.4.55 scheme								
TOTAL	698	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	>2hrs 8-4 with Bed	>0hrs 8-4 with Bed	No sun 8-4
		308	124	29	26	24	146	41
		44.1%	17.8%	4.2%	3.7%	3.4%		5.9%
			42	461	487	511		
			61.9%	65.0%	69.8%	73.2%		

Table 1: Comparison of achieved solar access

I note that the number of apartments in the overall scheme has been slightly reduced by amalgamating some adversely oriented apartments, and the number of complying apartments very slightly increased.

Conclusions

The proposed amendments result in a marginal improvement in the overall level of solar access compliance, and in my considered opinion therefore are appropriate for a Section 4.55 modification.

Yours sincerely,



Steve King

ATTACHMENT A: Architectural drawings on which I rely for the preparation of this summary opinion.

NO.	SHEET NAME	REV.	DATE	FOR	NO.	SHEET NAME	REV.	DATE	FOR
A - INTRODUCTORY					DA-2134	GENERAL ARRANGEMENT PLAN - LEVEL 29	K	01-05-18	Modification to SSD 7662
DA-0000	COVER SHEET	I	01-05-18	Modification to SSD 7662	DA-2135	GENERAL ARRANGEMENT PLAN - LEVEL 30	K	01-05-18	Modification to SSD 7662
DA-0001	SITE ANALYSIS	H	14-06-17	DA Issue	DA-2136	GENERAL ARRANGEMENT PLAN - LEVEL 31	N	01-05-18	Modification to SSD 7662
DA-0002	SITE PLAN	H	14-06-17	DA Issue	DA-2137	GENERAL ARRANGEMENT PLAN - LEVEL 32	G	01-05-18	Modification to SSD 7662
B - FLOOR & ROOF PLANS					DA-2138	GENERAL ARRANGEMENT PLAN - LEVEL 33	E	01-05-18	Modification to SSD 7662
DA-2102	GENERAL ARRANGEMENT PLAN - LEVEL B04	N	01-05-18	Modification to SSD 7662	DA-2139	GENERAL ARRANGEMENT PLAN - LEVEL 34	E	01-05-18	Modification to SSD 7662
DA-2103	GENERAL ARRANGEMENT PLAN - LEVEL B03	N	01-05-18	Modification to SSD 7662	DA-2140	GENERAL ARRANGEMENT PLAN - LEVEL 35	E	01-05-18	Modification to SSD 7662
DA-2104	GENERAL ARRANGEMENT PLAN - LEVEL B02	O	01-05-18	Modification to SSD 7662	DA-2141	GENERAL ARRANGEMENT PLAN - LEVEL 36	E	01-05-18	Modification to SSD 7662
DA-2105	GENERAL ARRANGEMENT PLAN - LEVEL B01	O	01-05-18	Modification to SSD 7662	DA-2200	ADAPTABLE APARTMENTS	J	14-06-17	DA Issue
DA-2106	GENERAL ARRANGEMENT PLAN - LEVEL 01	O	01-05-18	Modification to SSD 7662	DA-2201	ADAPTABLE APARTMENTS 2	J	14-06-17	DA Issue
DA-2107	GENERAL ARRANGEMENT PLAN - LEVEL 02	O	01-05-18	Modification to SSD 7662	DA-2202	ADAPTABLE APARTMENTS 3	I	14-06-17	DA Issue
DA-2108	GENERAL ARRANGEMENT PLAN - LEVEL 03	N	01-05-18	Modification to SSD 7662	DA-2210	LIVEABLE & ADAPTABLE APARTMENTS	K	14-06-17	DA Issue
DA-2109	GENERAL ARRANGEMENT PLAN - LEVEL 04	N	01-05-18	Modification to SSD 7662	DA-2211	ADAPTABLE APARTMENTS	H	14-06-17	DA Issue
DA-2110	GENERAL ARRANGEMENT PLAN - LEVEL 05	J	01-05-18	Modification to SSD 7662	C - ELEVATIONS EXTERNAL				
DA-2111	GENERAL ARRANGEMENT PLAN - LEVEL 06	M	01-05-18	Modification to SSD 7662	DA-3000	NORTH ELEVATION - FIGTREE DRIVE	K	01-05-18	Modification to SSD 7662
DA-2112	GENERAL ARRANGEMENT PLAN - LEVEL 07	K	01-05-18	Modification to SSD 7662	DA-3001	EAST ELEVATION - AUSTRALIA AVENUE	K	01-05-18	Modification to SSD 7662
DA-2113	GENERAL ARRANGEMENT PLAN - LEVEL 08	K	01-05-18	Modification to SSD 7662	DA-3002	WEST ELEVATION - NEW STREET	K	01-05-18	Modification to SSD 7662
DA-2114	GENERAL ARRANGEMENT PLAN - LEVEL 09	N	01-05-18	Modification to SSD 7662	DA-3003	SOUTH ELEVATION - LINEAR PARK	K	01-05-18	Modification to SSD 7662
DA-2115	GENERAL ARRANGEMENT PLAN - LEVEL 10	N	01-05-18	Modification to SSD 7662	D - SECTIONS				
DA-2116	GENERAL ARRANGEMENT PLAN - LEVEL 11	N	01-05-18	Modification to SSD 7662	DA-4000	GENERAL ARRANGEMENT SECTION 1	L	01-05-18	Modification to SSD 7662
DA-2117	GENERAL ARRANGEMENT PLAN - LEVEL 12	N	01-05-18	Modification to SSD 7662	DA-4001	GENERAL ARRANGEMENT SECTION 2	L	01-05-18	Modification to SSD 7662
DA-2118	GENERAL ARRANGEMENT PLAN - LEVEL 13	N	01-05-18	Modification to SSD 7662	R - APARTMENT UNIT MATRIX				
DA-2119	GENERAL ARRANGEMENT PLAN - LEVEL 14	K	01-05-18	Modification to SSD 7662	DA-8000	APARTMENT UNIT MATRIX	C	01-05-18	Modification to SSD 7662
DA-2120	GENERAL ARRANGEMENT PLAN - LEVEL 15	K	01-05-18	Modification to SSD 7662	DA-8001	APARTMENT UNIT MATRIX	C	01-05-18	Modification to SSD 7662
DA-2121	GENERAL ARRANGEMENT PLAN - LEVEL 16	K	01-05-18	Modification to SSD 7662	DA-8002	APARTMENT UNIT MATRIX	C	01-05-18	Modification to SSD 7662
DA-2122	GENERAL ARRANGEMENT PLAN - LEVEL 17	N	01-05-18	Modification to SSD 7662	DA-8003	APARTMENT UNIT MATRIX	C	01-05-18	Modification to SSD 7662
DA-2123	GENERAL ARRANGEMENT PLAN - LEVEL 18	K	01-05-18	Modification to SSD 7662	DA-8004	APARTMENT UNIT MATRIX	C	01-05-18	Modification to SSD 7662
DA-2124	GENERAL ARRANGEMENT PLAN - LEVEL 19	N	01-05-18	Modification to SSD 7662	R - GFA				
DA-2125	GENERAL ARRANGEMENT PLAN - LEVEL 20	K	01-05-18	Modification to SSD 7662	DA-2300	GFA - SHEET 1	H	01-05-18	Modification to SSD 7662
DA-2126	GENERAL ARRANGEMENT PLAN - LEVEL 21	K	01-05-18	Modification to SSD 7662	DA-2301	GFA - SHEET 2	H	01-05-18	Modification to SSD 7662
DA-2127	GENERAL ARRANGEMENT PLAN - LEVEL 22	K	01-05-18	Modification to SSD 7662	DA-2302	GFA - SHEET 3	H	01-05-18	Modification to SSD 7662
DA-2128	GENERAL ARRANGEMENT PLAN - LEVEL 23	N	01-05-18	Modification to SSD 7662	R - SHADOW STUDY				
DA-2129	GENERAL ARRANGEMENT PLAN - LEVEL 24	N	01-05-18	Modification to SSD 7662	DA-5000	SHADOW STUDY	H	01-05-18	Modification to SSD 7662
DA-2130	GENERAL ARRANGEMENT PLAN - LEVEL 25	L	01-05-18	Modification to SSD 7662					
DA-2131	GENERAL ARRANGEMENT PLAN - LEVEL 26	M	01-05-18	Modification to SSD 7662					
DA-2132	GENERAL ARRANGEMENT PLAN - LEVEL 27	M	01-05-18	Modification to SSD 7662					
DA-2133	GENERAL ARRANGEMENT PLAN - LEVEL 28	K	01-05-18	Modification to SSD 7662					

ATTACHMENT B: Summary schedule of amendments

Section 4.55 Amendments as 09 May 2018

Building 1		
Level	Apt	Changes
3	10301	Privacy screen on western façade removed
3	10302	Privacy screen on western façade removed
4	10401	Privacy screen on western façade removed
4	10402	Privacy screen on western façade removed
5	10501	Privacy screen on western façade removed
5	10502	Privacy screen on western façade removed
6	10601	Privacy screen on western façade removed
6	10602	Privacy screen on western façade removed
7	10701	Privacy screen on western façade removed
7	10702	Privacy screen on western façade removed
8	10801	Privacy screen on western façade removed
8	10802	Privacy screen on western façade removed

Building 2		
Level	Apt	Changes
25	22501	Glazing added to roof parapet in front of the apartment window
28	22801	Amalgamated apartment
29	22901	Amalgamated apartment
30	23001	Amalgamated apartment
31	23101	Amalgamated apartment
32	23201	Amalgamated apartment
35	23505	Windows location updated on eastern façade

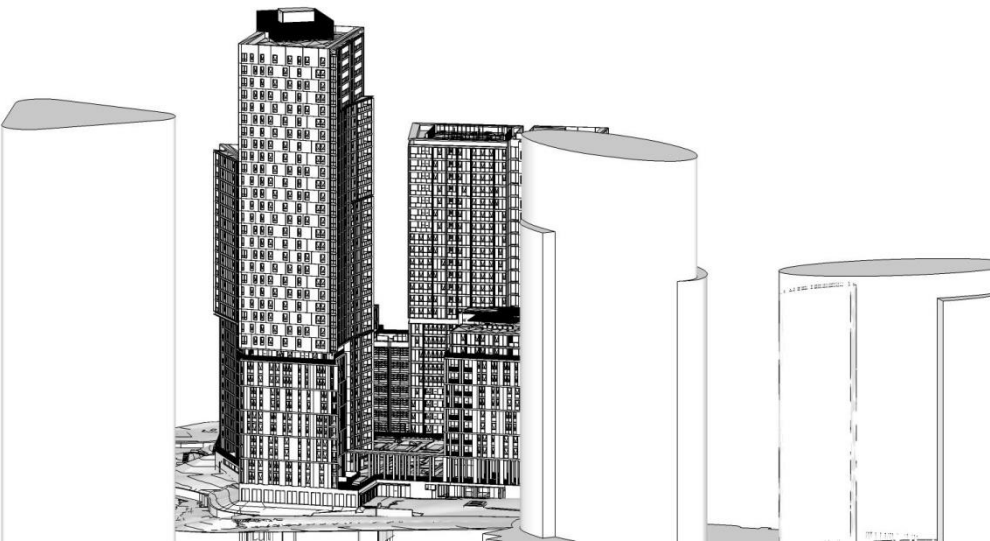
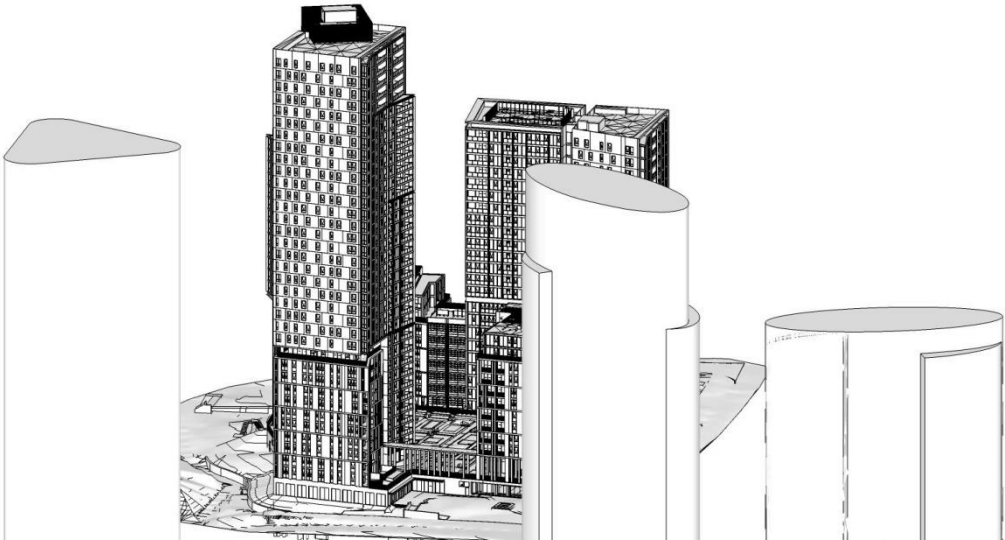
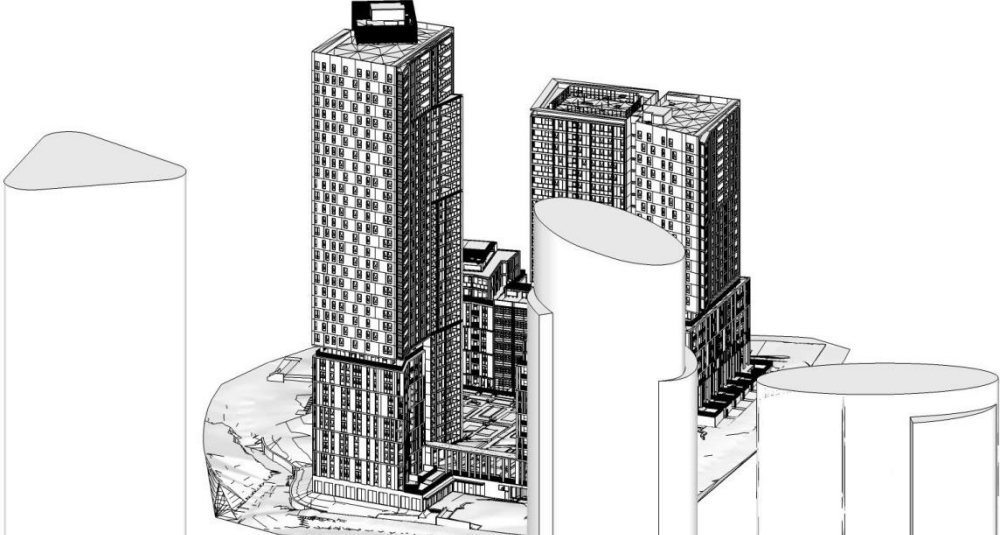
Building 3		
Level	Apt	Changes
1	30101	Extended balcony
1	30102	Courtyard added
8	30802	Extended balcony

Building 5		
Level	Apt	Changes
1	50101	Conversion of 2Bed into 1Bed
1	50105	Courtyard added
4	50408	Privacy screen on eastern façade added
4	50409	Privacy screen on eastern façade added
5	50508	Privacy screen on eastern façade added
5	50509	Privacy screen on eastern façade added
6	50608	Privacy screen on eastern façade added
6	50609	Privacy screen on eastern façade added

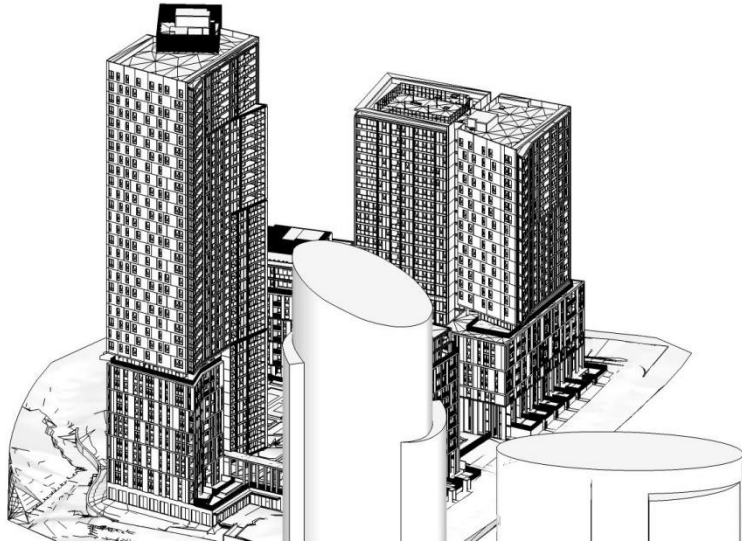
7	50708	Privacy screen on eastern façade added
7	50709	Privacy screen on eastern façade added
8	50808	Privacy screen on eastern façade added
8	50809	Privacy screen on eastern façade added
9	50901	Apt converted into communal area & leasing office
9	50902	Apt converted into communal area & leasing office

ATTACHMENT C: Views from the sun

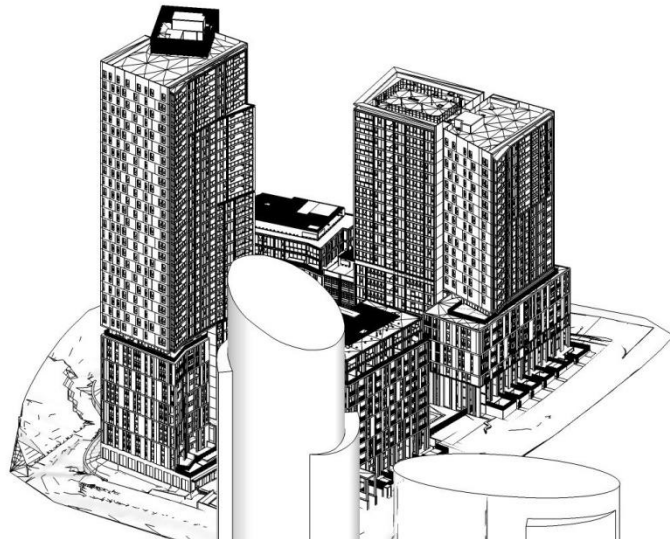
The table shows half- hourly views of solar access projections for June 21.

8.00	
8.30	
9.00	

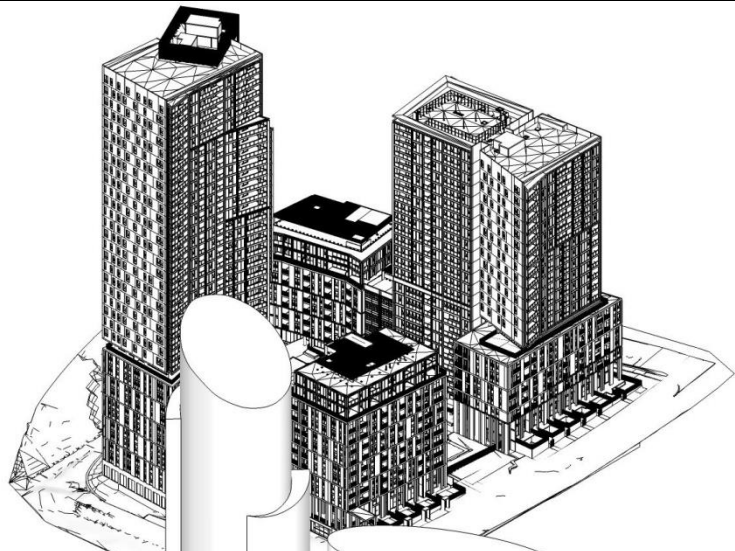
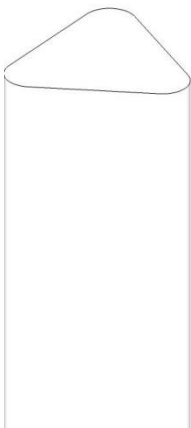
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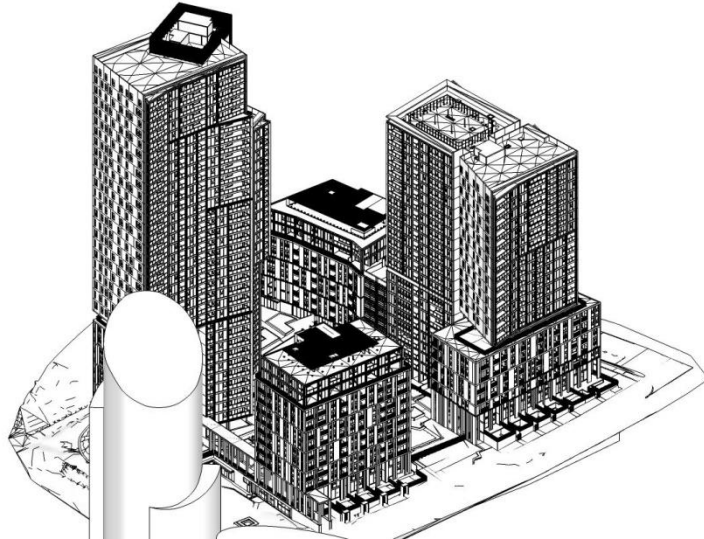
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10.30



11.00



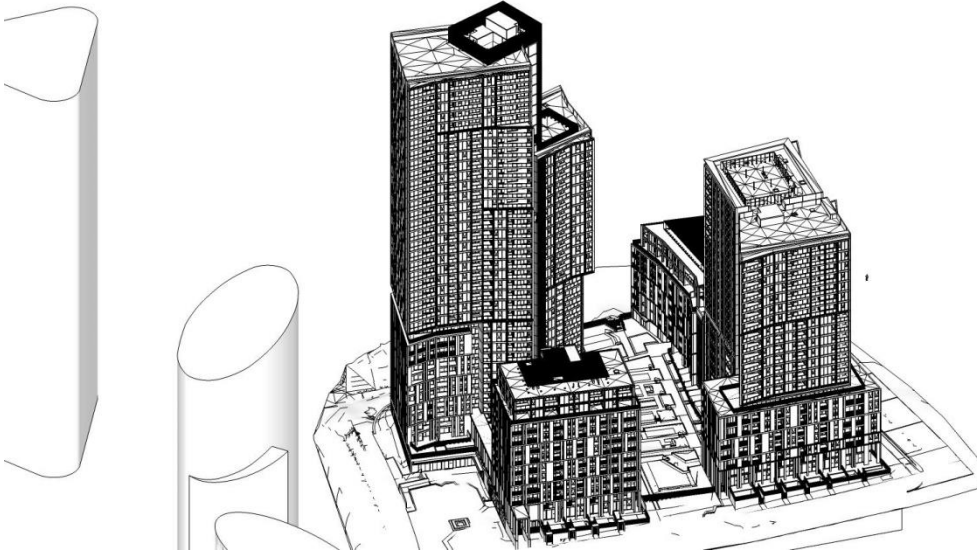
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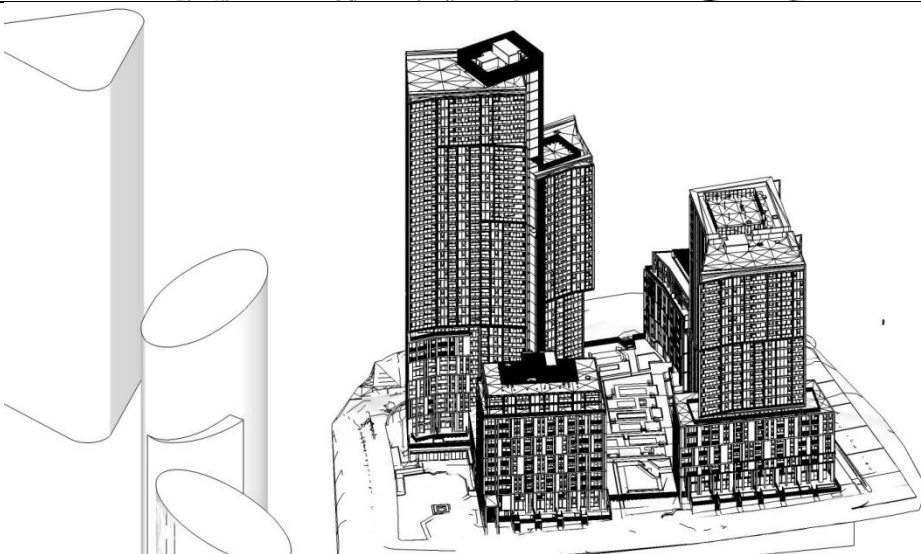
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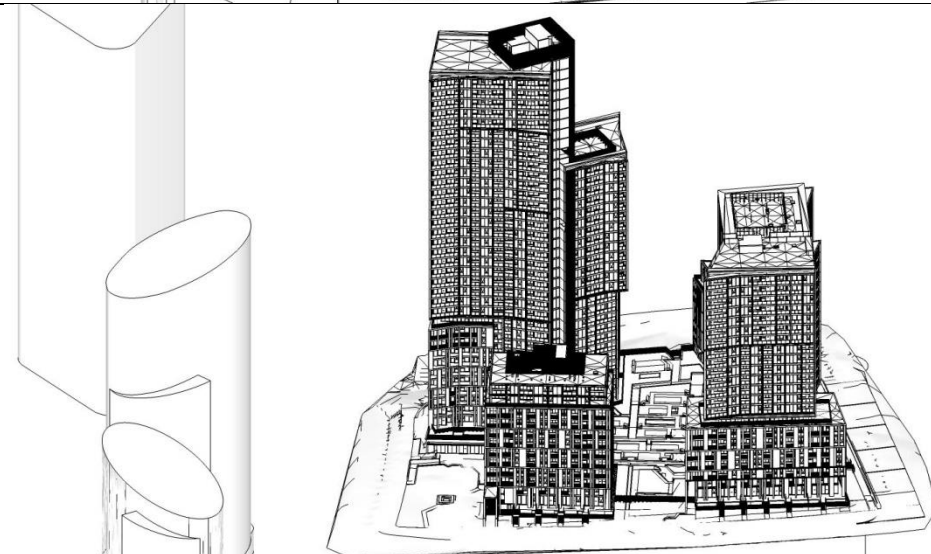
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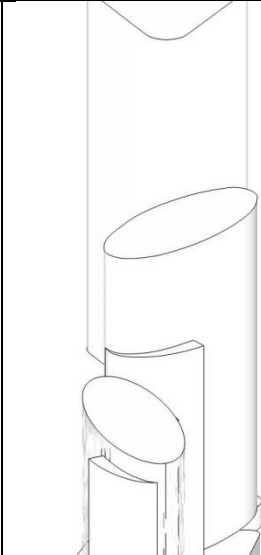
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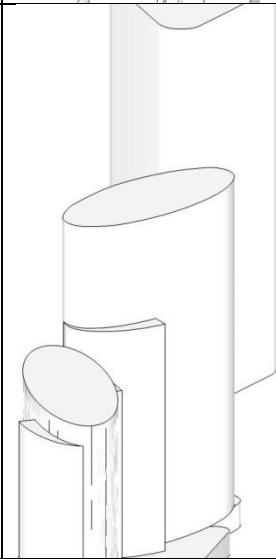
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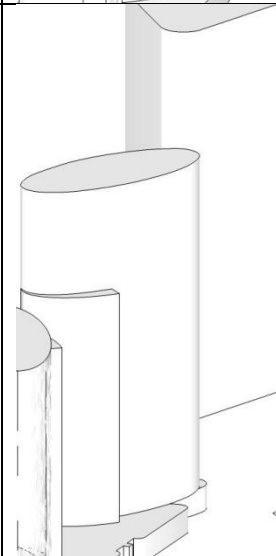
2.00



2.30



3.00



3.30



4.00



ATTACHMENT D: Credentials

I 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, and until its disestablishment in November 2006, I was the Associate Director, Centre for Sustainable Built Environments (SOLARCH), 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.

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.

Through UNISEARCH, NEERG Seminars and Linarch Design, 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, including 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 1971-2014, and now maintain a specialist consultancy practice advising on passive environmental performance and sustainability in buildings. I regularly assist the Land and Environment Court as an expert witness in related matters.