EXPERT OPINION

SEPP 65 AMENITY SOLAR ACCESS AND NATURAL VENTILATION AND OVERSHADOWING

PLANNING PROPOSAL
MIXED USE DEVELOPMENT
52 Alfred Street Milsons Point

Revised 6 August 2018

Signed,

.....

Steve King

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1.0 PRELIMINARIES/SUMMARY

1.1 I provide this report as an expert opinion, relating to:

- **Solar access and cross ventilation** compliance with relevant local controls, being the Apartment Design Guide (ADG) as it gives effect to the Amenity provisions of SEPP65;
- **Overshadowing** impacts on neighbouring residential dwellings.

The report applies to a mixed use **residential flat building at 52 Alfred Street Milsons Point**.

The application is for Council support for a Planning Proposal. The design I examine is a detailed 'proof-of-concept'. This proposed envelope and illustrative apartment layout is based on urban design and building design considerations, as well as the amenity parameters that are the subject of this report. Where relevant, I comment on those additional considerations.

1.2 My qualifications and experience are included at *2.0 Credentials*.

1.3 The documentation on which I rely is set out in *3.0 Documents*.

1.4 **Solar access**. Analysis by use of a full 3D digital model has taken account of the adverse overshadowing from buildings adjacent to and remote from the site.

The relevant ADG Design criterion suggests a minimum 70% of apartments should achieve more than 2 hours of direct sun to glazing and private open space between 9am and 3pm on June 21, but explicitly acknowledges that this may not be possible for sites with particular external constraints.

The subject site clearly falls into this category:

- The modelling confirms that the full length of the potential north façade is overshadowed throughout the day by the adjacent buildings at 37 Glen Street and 68 Albert Street.
- The adversely oriented south façade has competing very high amenity of unique harbour views.

My analysis shows that the number of apartments projected to fully comply is 131 units from a total of 183 (70.4%). In my view, this is a remarkably high level of compliance**.**

1.5 **Natural ventilation**

The proposed proof-of-concept building design assures that the proportion of apartments which are simply cross ventilated is 60 units out of a total 97 in the lower 9 storeys, or 61.9%.

The planning proposal design therefore fully complies with the relevant ADG* Design criterion *for simple cross ventilation, which requires minimum 60%.

1.6 **Overshadowing**. I have undertaken an independent analysis of overshadowing impacts on surrounding buildings:

- *37 Glen Street*
  22 storey residential flat building. All dwellings in this building are to the north of the planning proposal site; therefore at midwinter no apartment can be impacted by overshadowing from the subject building.

- *68 Alfred St*
  13 storey commercial building. Fully to the north of the subject building and therefore not impacted by overshadowing – but in any case, does not enjoy protection of solar access by any control.

- *Port Jackson Tower 38 Alfred St*
  23 storey residential flat building. Some of north east facing glazing and private open space is potentially impacted by additional overshadowing, but all such apartments are shown to retain full compliance with the

recommended minimum 2 hours on June 21.

- *The Pinnacle 2 Dind St.*
  25 storey residential flat building, wholly or partly used as serviced apartments. That aside, the building appears to have very poor overall solar access compliance. Concentrating on the complying north facing apartments, a very conservative application of the relevant ADG Design guidance suggests no more than 6.7% reduction.

- *48 to 50 Albert Street*
  21 storey residential flat building. A number of apartments will be impacted by additional or complete overshadowing attributable to the planning proposal.

  A detailed comparison of existing and projected solar access of all apartments in this building shows that the present nominal compliance would be reduced by 11.0%. This is considerably under the 20% suggested as the limit by the relevant design guidance of the ADG.

  The 2 storey commercial building and Camden House heritage building do not enjoy the protection of a control for overshadowing.

2.0 CREDENTIALS

I taught architectural design, thermal comfort and building services at the Universities of Sydney, Canberra and New South Wales from 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 provided the acknowledged premier 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.*

Of particular relevance, I have taught the wind and ventilation components of environmental control in the undergraduate and postgraduate courses in architecture at UNSW, and am the author of internationally referenced, web accessed coursework materials on the subject. I have supervised PhD research specifically on the problem of single sided ventilation of multi-storey apartments.

I practiced as a Registered Architect from 1971 to 2014, and now maintain a specialist consultancy practice advising on sustainability and amenity compliance in buildings. I regularly assist the Land and Environment Court as an expert witness in related matters.

3.0 DOCUMENTS

3.1 I base my report on

- For consultants review' documents issued to me digitally by Koichi Takada Architects, dated 13/07/2018.
- For 'proof of concept' individual apartment layouts relevant to the assessment of solar access and cross ventilation, I have referred to more detailed plans in the earlier issue of 22/09/2017.
- Digital 3D model in .skp file format.

3.2 I have visited the site.

4.0 SOLAR ACCESS ANALYSIS

4.1 Methodology

4.1.1 Quantification of solar access for compliance with the requirements of the ADG and the local controls has been carried out by use of a 3D digital model in the *Trimble SketchUp* software package.

4.1.2 The model was prepared by the architects. The existing and proposed building models are inserted into a context of surrounding buildings derived from approved plans obtained from the Council, and survey data supplemented by plans from marketing material.

I have undertaken a summary check of the topographical and building dimensions of the 3D digital model by reference to figured dimensions from the plans and sections. I cannot independently warrant other model dimensions, but I feel confident to rely on the general accuracy of the modelling.

4.1.3 I have independently geolocated the model, and verified the direction of True North by reference to the cadastral grid north.

4.1.4 The SketchUp software prepares the shadow projections by reference to accurate solar geometry. The model has been used to examine the projected solar access for the glazing for each individual notional apartment, including the overshadowing impacts of self-shading and adjacent properties.

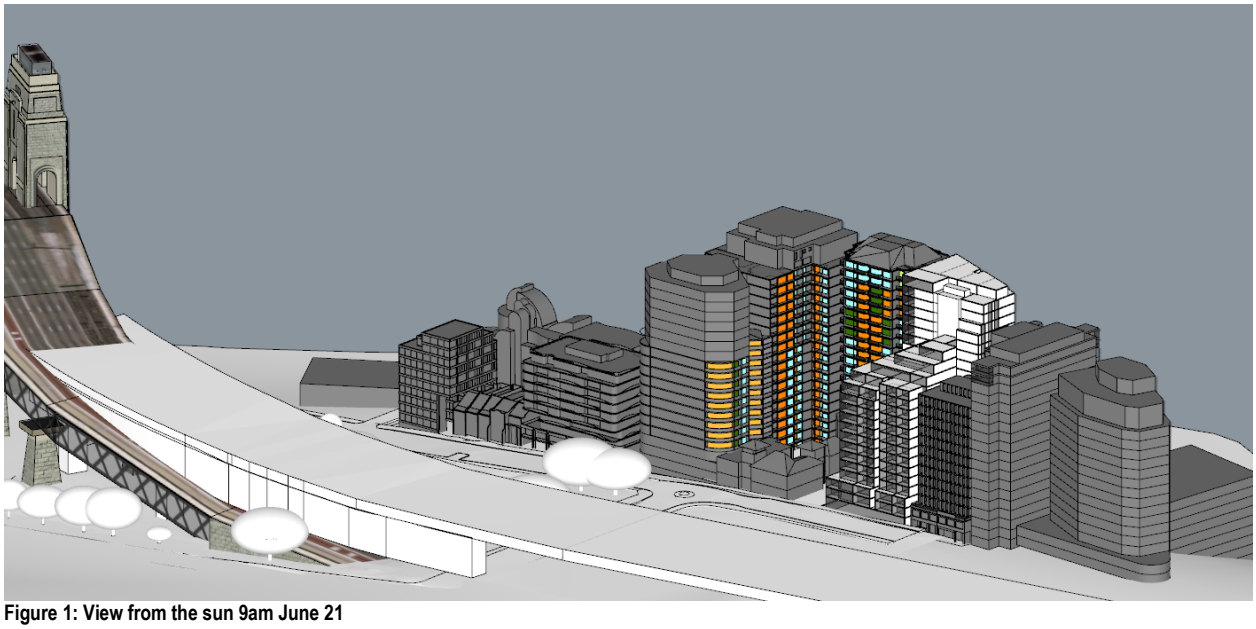


Figure 1: View from the sun 9am June 21
Note that the model incorporates surrounding developments. Colour coding shows glazing to different functional areas of individual apartments.

I carry out my detailed analysis relying primarily on projections known as *'View from the Sun'*. A view from the sun is an aerial perspective from a very large distance, that shows all sunlit surfaces at a given time and date. It therefore

allows a very precise count of sunlight hours on any glazing or horizontal surface, with little or no requirement for secondary calculations or interpolation. The technique is illustrated in Figure 1.

Note that the views from the sun do not show any shadows. Shadows are those areas exactly coinciding with objects in the foreground.

In Appendix B, I provide a table of half-hourly views from the sun on June 21. The table compares the existing building on the site, with that of the planning proposal scheme. An appropriate selection from the same views is annotated for overshadowing impact, discussed in *6.0 OVERSHADOWING COMPLIANCE*.

4.2 Characterisation of solar access compliance

4.2.1 For the purpose of calculating the compliance with the control, I have examined sun patches on the relevant glazing line of each apartment.

4.2.2 Because of its key importance in the determination of what is 'effective sunlight' for characterisation of compliance, I refer specifically to the relevant *LEC Planning Principle (The Benevolent Society v Waverley Council [2010] NSWLEC 1082):*

- 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'.

There is no generally accepted standard for the absolute limit of acceptable area of the sunpatch on partly shaded glazing. In accordance with the Court's *Planning Principle*, I regard an area of sunlit glazing to be of 'reasonable size' to be approximately $1m^2$ – on the basis that it exceeds 50% of the area of a standard window 1500 x 1200 high, which would normally be accepted as complying.

4.3 Relevant solar access standards

4.3.1 Apartment Design Guide

The Apartment Design Guide 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
2. In all other areas, living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 3 hours direct sunlight between 9 am and 3 pm at mid winter
3. A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid winter

But the ADG explicitly acknowledges that this may not be possible for sites with particular external constraints. Under the same objective, I find *inter alia*:

Design guidance
Achieving the design criteria may not be possible on some sites. This includes: • where greater residential amenity can be achieved along a busy

road or rail line by orientating the living rooms away from the noise source • on south facing sloping sites • where significant views are oriented away from the desired aspect for direct sunlight Design drawings need to demonstrate how site constraints and orientation preclude meeting the design criteria and how the development meets the objective

4.3.2 Local controls

For solar access to apartments, compliance with the ADG is taken to comply with the local controls.

4.4 Projected solar access

I have independently generated my own quantification and compliance table. Table 1 summarises the projected levels of compliance for the individual dwellings. Appendix A lists the individual apartments with their solar access status.

Table 1: Summary of solar access compliance Planning Proposal scheme

Number of units	186	
Units with 2 hours or more sunlight to Living (and POS) 9am – 3pm	**131**	**70.4%**
Units with 'no sun' to apartment 9am – 3pm June 21	39	21.0%

The subject site clearly falls into the category where full compliance would not be expected, as envisaged by the *Design guidance*:

- As confirmed by the modelling, the full length of the potential north façade is overshadowed throughout the day by the adjacent buildings at 37 Glen Street and 68 Albert Street.
- The adversely oriented south façade has competing very high amenity of unique harbour views.

The relevant ADG Design criterion suggests a minimum 70% of apartments should achieve more than 2 hours of direct sun to glazing and private open space between 9am and 3pm on June 21, and apartments with no sun between 9 AM and 3 PM should not exceed 20%. Notwithstanding the reasonable expectation of some shortfall, my analysis shows that the number of apartments projected to comply four minimum two hours of sun is 131/186 units (70.4%), with no sun category limited to 21%. In my view, given the constraints, this is a remarkably high level of compliance**.**

5.0 NATURAL VENTILATION

5.1 Performance Objectives

SEPP65 itself does not refer to prescribed quantitative standards. The Apartment Design Guide gives the following *Design criteria*:

Objective 4B-3
The number of apartments with natural cross ventilation is maximised to create a comfortable indoor environment for residents
Design criteria
1. At least 60% of apartments are naturally cross ventilated in the first nine storeys of the building. Apartments at ten storeys or greater are deemed to be cross ventilated only if any enclosure of the balconies at these levels allows adequate natural ventilation and cannot be fully enclosed
2. Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line

5.2 Cross ventilation

I characterise as cross ventilated for amenity all corner and 'through' apartments with openings in two principal facades.

The subject site has a significant difference in level between the two street façades. This requires a calculation that takes into account the deemed cross ventilation of a number of apartments within the lowest nine storeys as counted from the Alfred Street façade, but which have increased exposure due to their greater height above Glen Street.

In Appendix A I report the cross ventilation status of each apartment. Table 2 summarises the calculation of overall cross ventilation compliance.

5.3 Achieved natural ventilation compliance

Table 2: Calculation of cross ventilation compliance

Glen St	Alfred St			
Level (9 storeys)	Level (9 stories)	Simple Cross CV	Deemed CV (height above Glen St)	Total Units
B4				0
B3				0
B2				0
B1		2		7
G	G	0		0
1	1	6		12
2	2	6		12
3	3	7		11
4	4	7		11
	5	6	2	11
	6	6	2	11
	7	6	2	11
	8	6	2	11
		52	8	**97**
		53.6%	8.2%	
			61.9%	

Out of the total 186 apartments, 97 are maximum nine storeys above the higher ground of Alfred Street. Of those, 52 are simply cross ventilated, and another eight deemed in accordance with the ADG *Design criterion* cross ventilated by virtue of their height above Glen Street. Overall, a total of 60 (61.9%) of the 97 apartments within the lowest nine storeys are cross ventilated. The proportion required by the relevant *Design criterion* in the ADG is a minimum of 60%. Therefore, compliance with the ADG is fully satisfied.

I note that detailed design and a less conservative treatment of an additional four south facing apartments on Levels 5-8 would further improve the this proportion of complying apartments.

6.0 OVERSHADOWING IMPACT COMPLIANCE: RESIDENTIAL

6.1 Potentially affected properties

My understanding is that commercial occupancies do not enjoy the protection of any control for overshadowing. The relevant overshadowing impacts, if any, are those to residential properties on surrounding sites.

The views from the sun readily identify buildings which are potentially impacted by June 21 shadows attributable to the planning proposal:

- 37 GLEN STREET
  22 storey residential flat building. Analysis is unnecessary; all dwellings in this building are to the north of the

planning proposal; therefore at midwinter no apartment can be impacted by overshadowing from the subject building.

- PORT JACKSON TOWER 38 ALFRED ST
  23 storey residential flat building. Views from the sun at 9am and 11am on June 21 confirm that those dwellings retain solar access for a minimum of 2 hours. *See 6.3.2.*
- THE PINNACLE 2 DIND ST.
  25 storey residential flat building, wholly or partly used as serviced apartments. Inspection of the views from the sun suggests that analysis may be sufficient if applied to a limited number of apartments, rather than the whole building. *See 6.3.3.*
- 48 TO 50 ALBERT STREET
  21 storey residential flat building. Most affected, with some apartments losing the minimum direct sun considered complying. Needs to be subject to full numerical analysis as set out in 6.2 below.

6.2 Characterisation of overshadowing impact and compliance

6.2.1 Given the relevant impacted properties are RFBs, not single dwellings, I consider the most pertinent control to be SEPP65, and therefore any relevant ADG *Design criterion* or *Design guidance*. Accordingly, I am guided by:

Objective 3B-2
Overshadowing of neighbouring properties is minimised during mid winter
Design guidance
• Living areas, private open space and communal open space should receive solar access in accordance with sections 3D Communal and public open space and 4A Solar and daylight access • Solar access to living rooms, balconies and private open spaces of neighbours should be considered • **Where an adjoining property does not currently receive the required hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20%** • If the proposal will significantly reduce the solar access of neighbours, building separation should be increased beyond minimums contained in section 3F Visual privacy • **Overshadowing should be minimised to the south or downhill by increased upper level setbacks**

I interpret the control as implicitly assuring equity between the treatment of the proposed new and existing 'properties', by applying to the affected RFB in each case as a whole. To implement the *Design guidance* in relation to some impacted buildings, it is necessary to re-analyze the building as a whole, to determine the overall existing notional compliance with the ADG, and compare it to the projected notional compliance.

Views from the sun from the same digital model as previously used for solar access analysis of the subject building, also identified on a half hourly basis the likely notional:

- Present durations of direct sun for individual apartments in impacted developments;
- Projected future durations of direct sun for individual apartments.

6.3 Predicted overshadowing impact

6.3.1 37 Glen Street

As noted previously, analysis is unnecessary. No winter overshadowing attributable to the Planning Proposal.

6.3.2 Port Jackson Tower 38 Alfred Street

The 9am views from the sun in Figure 2 identify the potentially impacted apartments. They are the apartments shown circled on the north-east corner of the building.

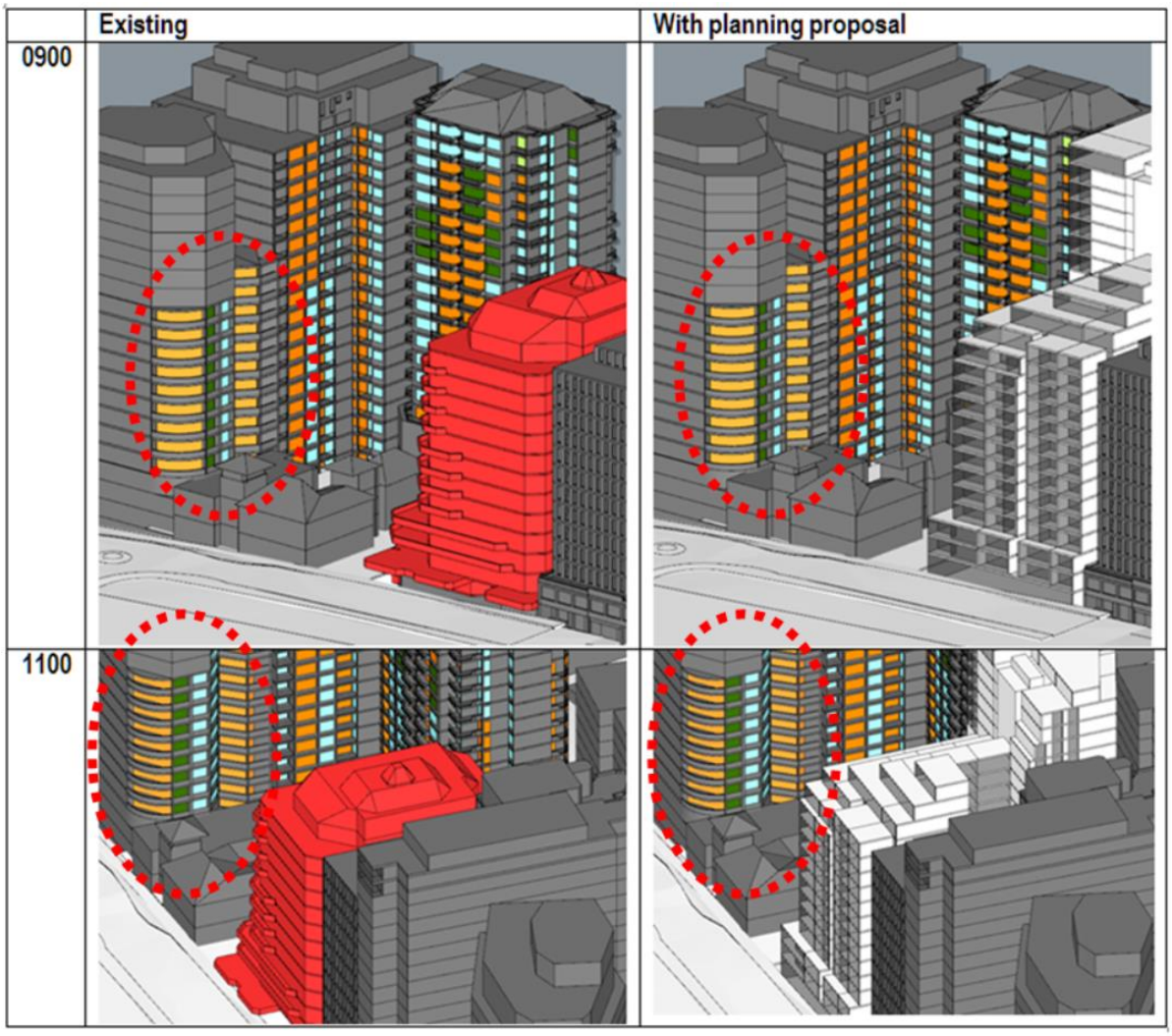


Figure 2: Solar access to 38 Alfred St apartments

I then turn to the 11am views from the sun. It can be summarily observed that while the total duration of direct sun for some of those apartments is reduced, all those apartments still retain direct sun for over 2 hours between 9am and 3pm, and therefore sufficient to qualify as complying.

6.3.3 The Pinnacle 2 Dind Street

I do not express an opinion whether the protection of winter sun access applies to serviced apartments. For the purpose of this analysis, I take the conservative position that those apartments may at any time in the future be occupied in a manner similar to conventional residential flats.

The only apartments potentially impacted by overshadowing attributable to the planning proposal, are *what I take to be* 36 apartments on 18 floors. These 'candidate' apartments are identified in the 9am views from the sun in Figure 3, as receiving full sun to living room glazing and private open space at that time on June 21, both now and in the future.

The existing building on the subject site then overshadows the six lowest of those apartments by 11am, reducing the number at present complying to 30 over the upper 15 floors. I take these to be the 'base' number to which I will compare the reduction attributable to the Planning Proposal.

The Planning Proposal would further shade an additional two lower floors at the 11am, reducing the number of complying apartments in that part of the floor plan to 28.

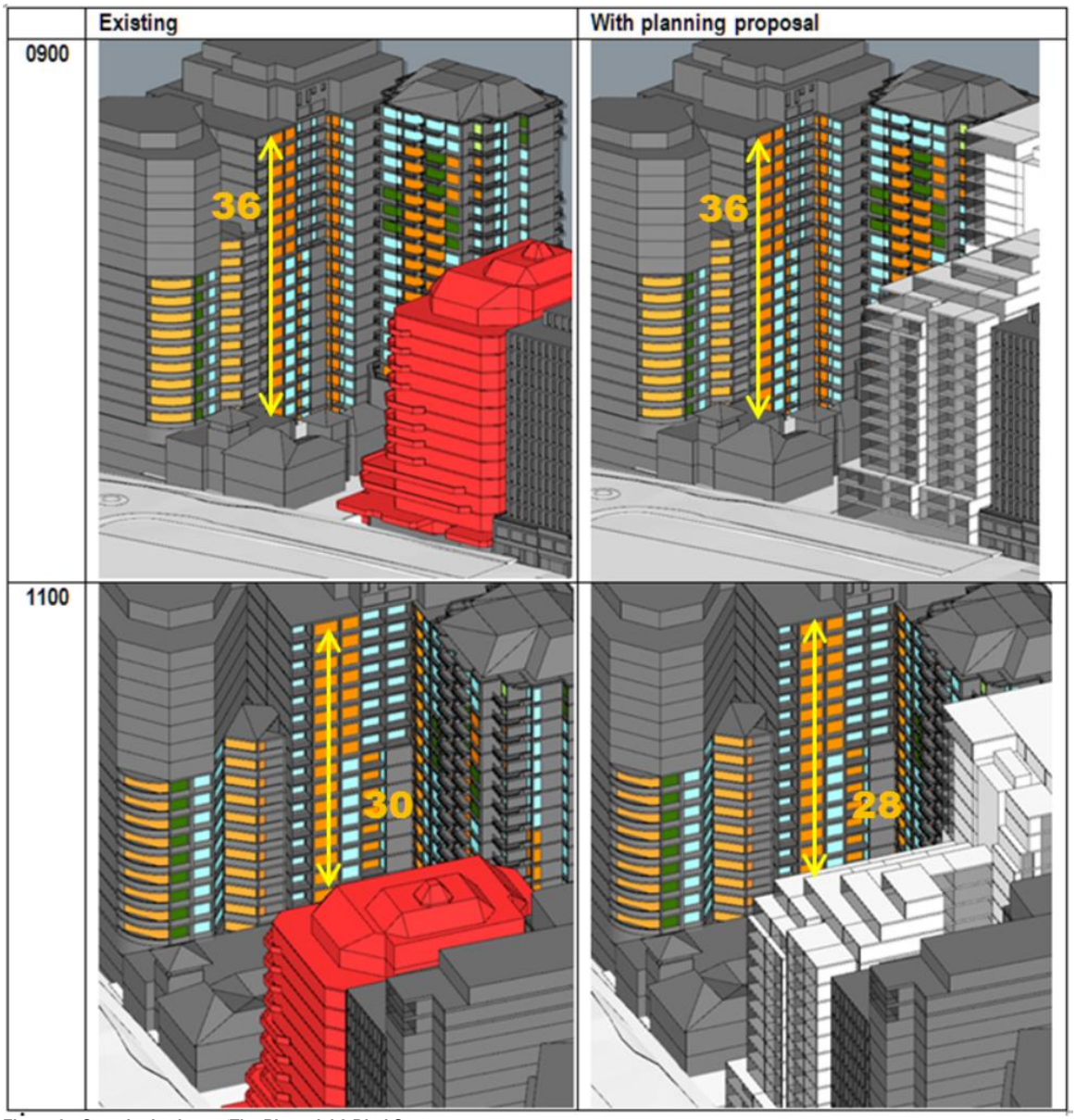


Figure 3: Overshadowing at 'The Pinnacle' 2 Dind Street

The overall views from the sun make clear that other apartments on each of those floors are oriented so that they cannot receive complying solar access in midwinter. In my view therefore, there is little or no point in calculating the hypothetical overall compliance of the building. Instead, I express the number of apartments which lose complying sun as a percentage of those 30 apartments that are shown by the modelling that they do comply now. Clearly, this is an extremely conservative implementation of the ADG *Design guidance* calculation.

Total of 'candidate' apartments (Sun at 9am June 21)	36
Total at present complying for minimum 2 hours of sun (Sun retained at 11am)	30
Existing complying apartments still complying with Planning Proposal	28
Reduction in apartments complying	**2**
Calculated % reduction (Base 30)	**6.7%**

Table 3: Calculated reduction in complying solar access 2 Dind Street

6.3.4 48-50 Alfred Street

This building is situated to the south-west of the planning proposal site, and can be expected to be most impacted by any additional shadows.

In order to make an accurate assessment of the overshadowing impact, a full analysis was carried out to record the present nominal solar access compliance of the whole building, and to identify those apartments which were likely to lose their complying status. The change in percentage of dwellings complying for solar access was then computed.

Table 4 summarises the present and projected solar access status for 48-50 Alfred Street. The reduction in solar access compliance due to the overshadowing impact of the Planning Proposal is calculated as a proportion of the total number of apartments.

Table 4: Summary of solar access compliance for 48-50 Alfred St

	>2 hrs 9-3	No sun
Existing	44	**21**
	40.4%	19.3%
Planning Proposal for No. 52	32	**32**
	29.4%	29.4%
Total Units 109		
Calculated reduction in complying	**12**	**11**
	11.0%	

Appendix C reports the full table of direct sun access for all individual apartments, and the periods of loss due to the overshadowing.

7.0 OVERSHADOWING IMPACT COMPLIANCE: BRADFIELD PARK

7.1 The issue

An issue related to increase of overshadowing of Bradfield Park is described by letter of Council of 27 February 2018 (including minutes of the Design Excellence Panel meeting held 13 February 2018), and by a further Council email of 4 July 2018 from Neal McCarry, Team Leader – Policy. I quote:

> The proposal (as amended) continues to result in increased overshadowing of Bradfield Park. It is noted that there is a net reduction in overshadowing between 1:30-2:00pm and a net increase in overshadowing of Bradfield Park after 2pm.This is contrary to Council's adopted policy position (No overshadowing between 12-3pm) and the advice of Council's Design Excellence Panel. The arguments presented regarding the '*shadows*' cast by the existing fig trees are not accepted and obfuscate the issue at hand.

The applicant has amended the 3D digital model supplied to me, to include a number of large evergreen trees based on additional surveyed information.

Including these trees when assessing the additional overshadowing refers to the Land and Environment Court *Planning Principle* in ***The Benevolent Society v Waverley Council [2010] NSWLEC 1082 at 133-144.*** The relevant paragraph reads:

> Overshadowing by vegetation should be ignored, except that vegetation may be taken into account in a qualitative way, in particular dense hedges that appear like a solid fence.

The *Planning Principle* clearly does not envisage completely ignoring overshadowing by vegetation. Setting aside the explicit reference to fences, the underlying consideration appears to be on the one hand the potentially ephemeral status of vegetation, and on the other hand the density of overshadowing.

In my considered opinion, the specific mature trees in question in Bradfield Park cannot be considered ephemeral in the normal sense, given their age and likely continuing significance. The shadows under the evergreen trees are dense, unlike the filtered light under eucalypts all deciduous vegetation. To my mind, there should be regard to the extent to which overshadowing of Bradfield Park by the said trees masks the actual extent of shadows by buildings nearby.

7.2 Extent of additional shadow

Appendix D compares existing and proposed development shadows in plan on Bradfield Park, on a half hourly basis from 1:30 PM – when any shadows from the existing development first reached the park. At that time, there is no discernible additional overshadowing from the planning proposal proof of concept building.

When the comparison is rendered without trees, at 2:30 PM there is a small discernible difference between the shadows of the existing massing, and the proposed.

When the trees are allowed for, the difference in the shadows becomes very difficult to identify, and given the rate at which they move across the park, could be characterised as negligible.

8.0 CONCLUSIONS

8.1 Solar access

Analysis was undertaken by use of a full 3D digital model, which has taken account of the adverse overshadowing from buildings adjacent to and remote from the site.

The relevant ADG Design criteria suggests a minimum 70% of apartments should receive a minimum of two hours direct sun to living and private open space, and units with no sun limited to less than 20%. But the design guidance under the same objective acknowledges that this may not be possible for sites with particular external constraints. The subject site clearly falls into this category:

- As the modelling confirms, the full length of the potential north façade is overshadowed throughout the day by the adjacent buildings at 37 Glen Street and 68 Albert Street.
- The adversely oriented south façade has competing very high amenity of unique harbour views.

Notwithstanding the reasonable expectation of some shortfall, my analysis shows that the number of apartments projected to comply four minimum two hours of sun is 131/186 units (70.4%), with no sun category limited to 21%. In my view, given the constraints, this is a remarkably high level of compliance.

8.2 Natural Ventilation

The proposed proof-of-concept building design assures that the proportion of apartments which can be characterised as cross ventilated is 60 units out of a total 97 in the lower 9 storeys, or 61.9%.

Detailed design and a less conservative treatment of an additional four south facing apartments on Levels 5-8 would further improve this proportion of complying apartments.

The planning proposal design therefore fully complies with the relevant ADG* Design criterion *for cross ventilation, which requires minimum 60%.

8.3 Overshadowing impact: neighbouring apartments

I have examined the likely overshadowing impact of the Planning Proposal on all the immediately surrounding residential buildings identified from the detailed 3-D digital model.

Because of its specific relevance to residential flat buildings, I rely on *Design guidance* from Objective 3B – 2 of the ADG.

I find there are three buildings that fall into the category 'Where an adjoining property does not currently receive the required hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20%'.

Taking them in turn:

Port Jackson Tower 38 Alfred Street
All apartments impacted by some additional shadow retain full compliance for 2 hours of direct sun in the prescribed period on June 21.

The Pinnacle 2 Dind Street

Setting aside whether the guidance applies to serviced apartments, a simplified analysis demonstrates that even a most conservative implementation of the design guidance can be interpreted as a maximum of 6.7% reduction of apartments with solar access.

48 - 50 Alfred Street
This building is the most impacted by additional overshadowing. I undertook a detailed comparison of current nominal compliance for solar access under the ADG, with nominal compliance taking into account overshadowing by the Planning Proposal. The reduction of complying units was calculated to be 11% of the total apartments.

I observe that the concept design of the planning proposal building responds directly to the *Design guidance*, specifically:

- If the proposal will significantly reduce the solar access of neighbours, building separation should be increased beyond minimums contained in section 3F Visual privacy
- Overshadowing should be minimised to the south or downhill by increased upper level setbacks

In my considered opinion, the proposal achieves a complying and relatively small overshadowing impact in a closely built-up environment.

8.4 Overshadowing impact: Bradfield Park

There is a small quantum of additional overshadowing on Bradfield Park as a consequence of the massing of the proposed proof of concept building. That difference is first identifiable at 2:30 PM, but on the when comparison to the existing shadows is rendered hypothetically without trees in the park. I observe that, the additional shadow is actually hard to identify.

When the actual permanent shadow of the trees is allowed for, the difference in the shadows becomes even more difficult to recognize – and given the rate at which they move across the park, could be characterised as negligible.

A.0 APPENDIX A: DETAILED COMPLIANCE TABLE - PROOF OF CONCEPT BUILDING

Table 5: Solar access and cross ventilation for individual dwellings

		Solar access																	Solar compliance								
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4	Cross vent	Comment
52 ALFRED STREET																											
B 1	B1.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1		.	.	.		YES		YES	
	B1.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1		.	.	.		YES			
	B1.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1		.	.	.		YES			
	B1.04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1		.	.	YES		YES			
	B1.05	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1		.	.	YES		YES			
	B1.06	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1		.	.	YES		YES			
	B1.07	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		YES				YES		YES	
LEVEL 1	L1.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L1.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L1.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L1.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L1.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L1.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L1.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L1.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L1.09	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L1.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L1.11	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L1.12	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		YES				YES		YES	
LEVEL 2	L2.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L2.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L2.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L2.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L2.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L2.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L2.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L2.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L2.09	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L2.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L2.11	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L2.12	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		YES				YES		YES	
LEVEL 3	L3.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L3.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L3.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L3.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L3.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L3.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L3.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L3.08	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L3.09	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L3.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			

		Solar access																	Solar compliance								
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4	Cross vent	Comment
	L3.11	0	0	0	0	0	0	0	0	0	0	**1**	1	1	1	1	1	1		YES				YES		YES	
LEVEL 4	L4.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L4.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L4.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L4.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L4.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L4.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L4.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L4.08	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L4.09	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L4.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L4.11	0	0	0	0	0	0	0	0	0	0	**1**	1	1	1	1	1	1		YES				YES		YES	
LEVEL 5	L5.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L5.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L5.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L5.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L5.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L5.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L5.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L5.08	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L5.09	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES		YES	Deemed (height)
	L5.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES		YES	Deemed (height)
	L5.11	0	0	0	0	0	0	0	0	0	0	**1**	1	1	1	1	1	1		YES				YES		YES	
LEVEL 6	L6.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L6.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L6.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L6.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L6.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L6.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L6.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L6.08	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L6.09	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES		YES	Deemed (height)
	L6.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES		YES	Deemed (height)
	L6.11	0	0	0	0	0	0	0	0	0	0	**1**	1	1	1	1	1	1		YES				YES		YES	
LEVEL 7	L7.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L7.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L7.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L7.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L7.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L7.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L7.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L7.08	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L7.09	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES		YES	Deemed (height)
	L7.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES		YES	Deemed (height)
	L7.11	0	0	0	0	0	0	0	0	0	0	**1**	1	1	1	1	1	1		YES				YES		YES	
LEVEL 8	L8.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	

		Solar access																	Solar compliance								
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4	Cross vent	Comment
	L8.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L8.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L8.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L8.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L8.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L8.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L8.08	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L8.09	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES		YES	Deemed (height)
	L8.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES		YES	Deemed (height)
	L8.11	0	0	0	0	0	0	0	0	0	0	**1**	1	1	1	1	1	1		YES				YES		YES	
LEVEL 9	L9.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L9.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L9.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L9.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L9.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L9.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L9.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L9.08	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L9.09	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L9.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L9.11	0	0	0	0	0	0	0	0	0	0	**1**	1	1	1	1	1	1		YES				YES		YES	
LEVEL 10	L10.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L10.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L10.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L10.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L10.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L10.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L10.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L10.08	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L10.09	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L10.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L10.11	0	0	0	0	0	0	0	0	0	0	**1**	1	1	1	1	1	1		YES				YES		YES	
LEVEL 11	L11.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L11.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L11.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L11.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L11.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L11.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L11.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L11.08	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L11.09	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L11.10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES			
	L11.11	0	0	0	0	0	0	0	0	0	0	**1**	1	1	1	1	1	1		YES				YES		YES	
LEVEL 12	L12.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L12.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L12.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			

		Solar access																	Solar compliance								
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4	Cross vent	Comment
	L12.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L12.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L12.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES			YES	
	L12.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L12.08	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L12.09	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L12.10	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L12.11	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		YES				YES		YES	
LEVEL 13	L13.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L13.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L13.03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES			
	L13.04	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L13.05	0	0	0	0	0	0	B	B	B	B	0	0	0	0	0	0	0		.	.	.				YES	
	L13.06	0	0	0	0	0	B	B	B	B	0	0	0	0	0	0	0	0		.	.	.				YES	
	L13.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		.	.	.	YES				
	L13.08	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L13.09	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L13.10	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L13.11	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES		YES	
LEVEL 14	L14.01	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	TRIPLE STOREY
	L14.02	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES		YES	
	L14.03	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	YES					YES		YES	DOUBLE STOREY
	L14.04	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	YES					YES		YES	DOUBLE STOREY
	L14.05	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L14.06	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L14.07	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L14.08	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L14.09	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
LEVEL 15	L15.04	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L15.05	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L15.06	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L15.07	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L15.08	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
LEVEL 16	L16.02	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L16.03	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L16.04	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L16.05	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L16.06	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
LEVEL 17	L17.01	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L17.02	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L17.03	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L17.04	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L17.05	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
LEVEL 18	L18.01	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES			
	L18.02	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES		YES	
	L18.03	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1									

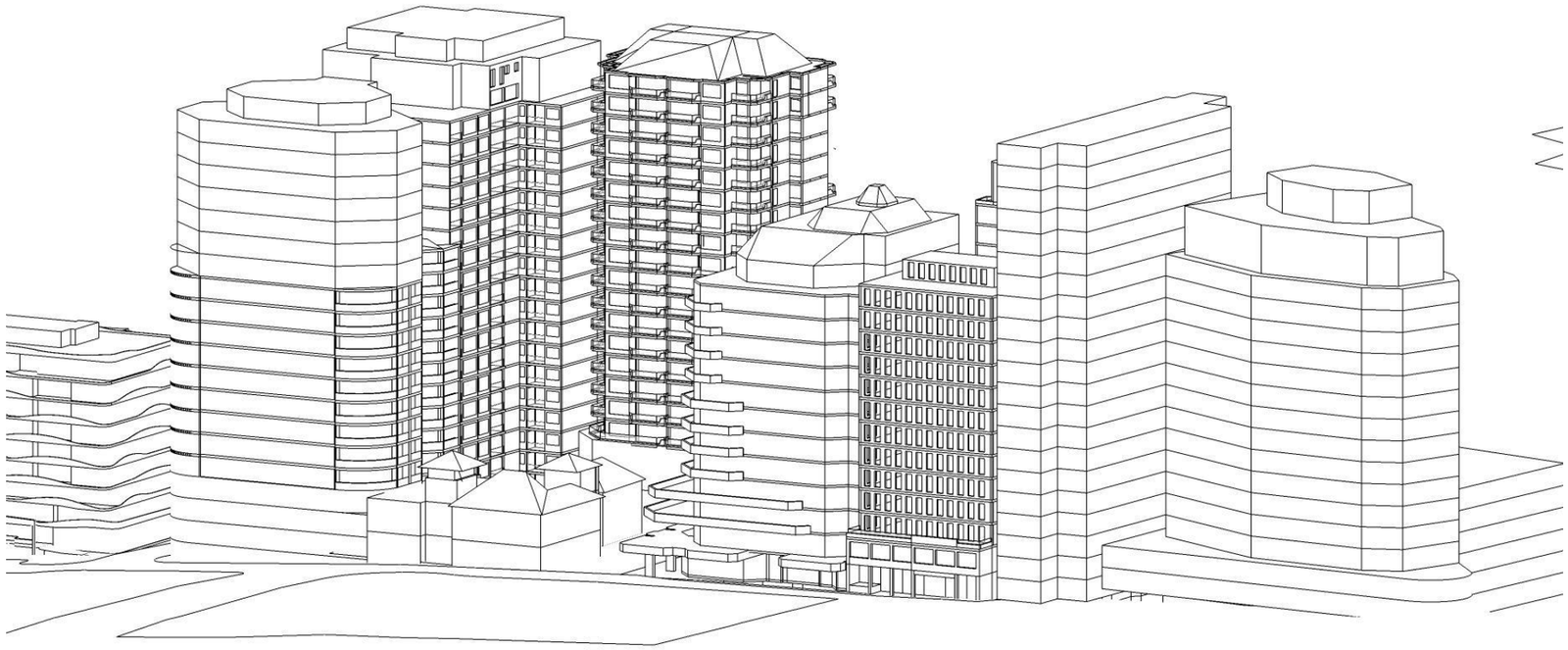
		Solar access																Solar compliance								
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4	Cross vent	Comment
	L18.04	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1									
	L18.05	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1								YES	
LEVEL 19	L19.01	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1								YES	DOUBLE STOREY
	L19.02	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1								YES	DOUBLE STOREY
	L19.03	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1								YES	DOUBLE STOREY
	L19.04	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1								YES	DOUBLE STOREY
	L19.05	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1								YES	DOUBLE STOREY
TOTAL	186																		98	33	0	3	39	137	0		
																			52.7%	17.7%	0.0%	1.6%	21.0%	73.7%	0.0%		
																				70.4%	**70.4%**	**72.0%**			**73.7%**		

B.0 APPENDIX B: VIEWS FROM THE SUN

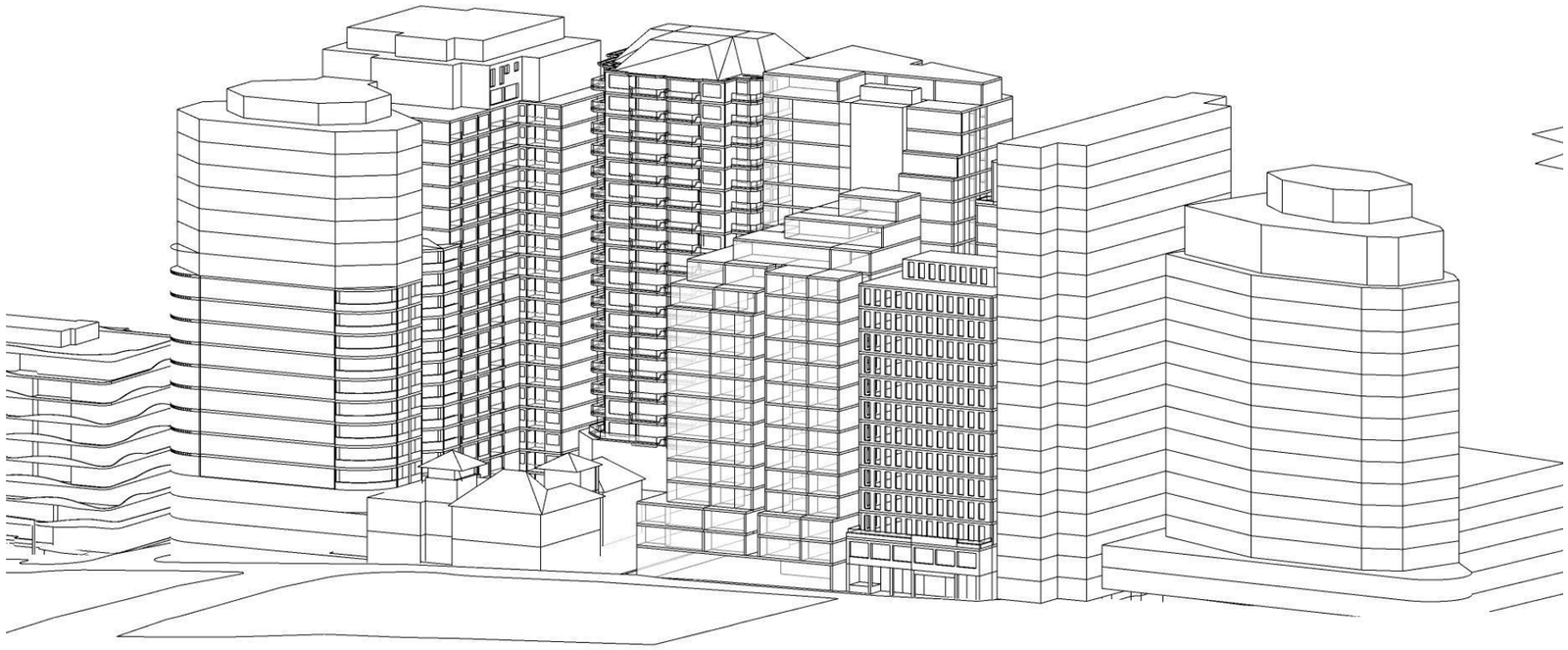
The Table below reproduces for reference the detailed 'views from the sun' on a half hourly basis.

0800

Existing

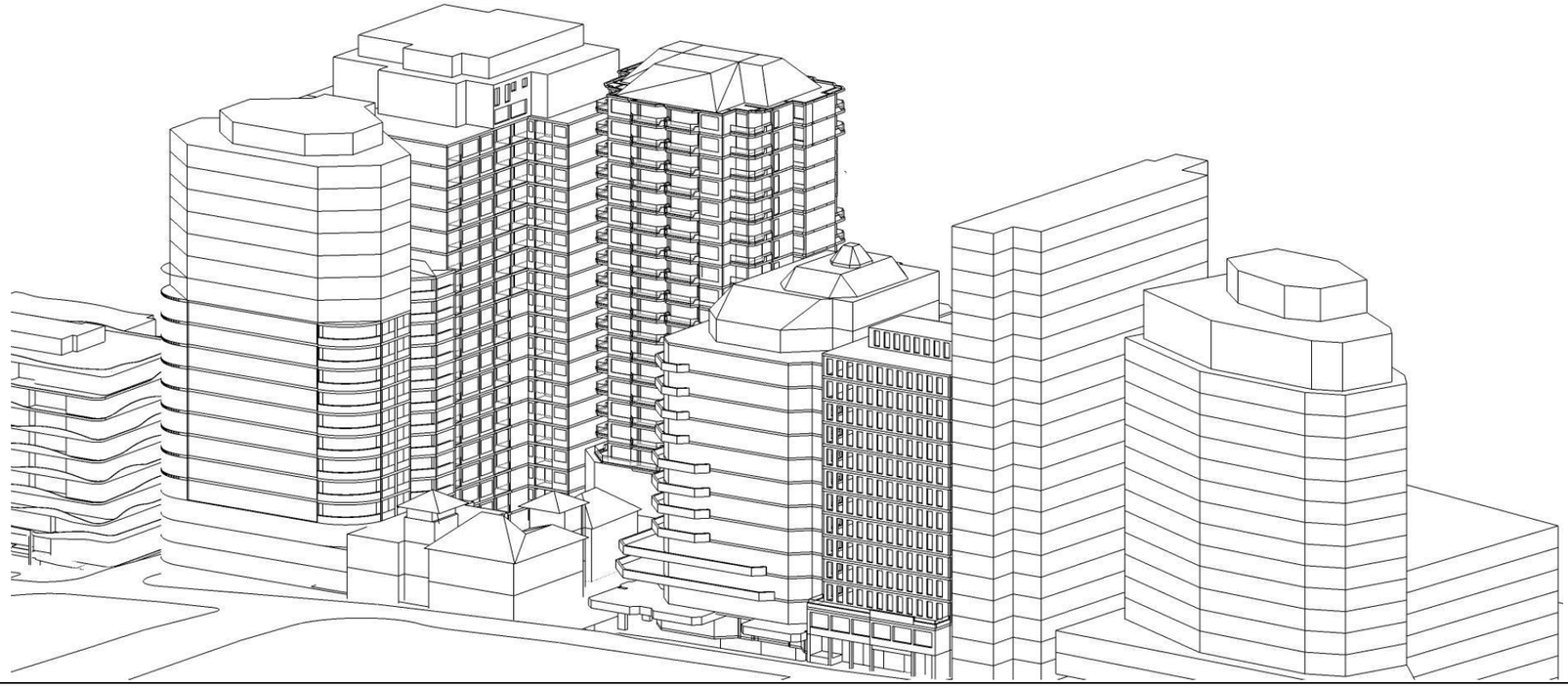


Proposed

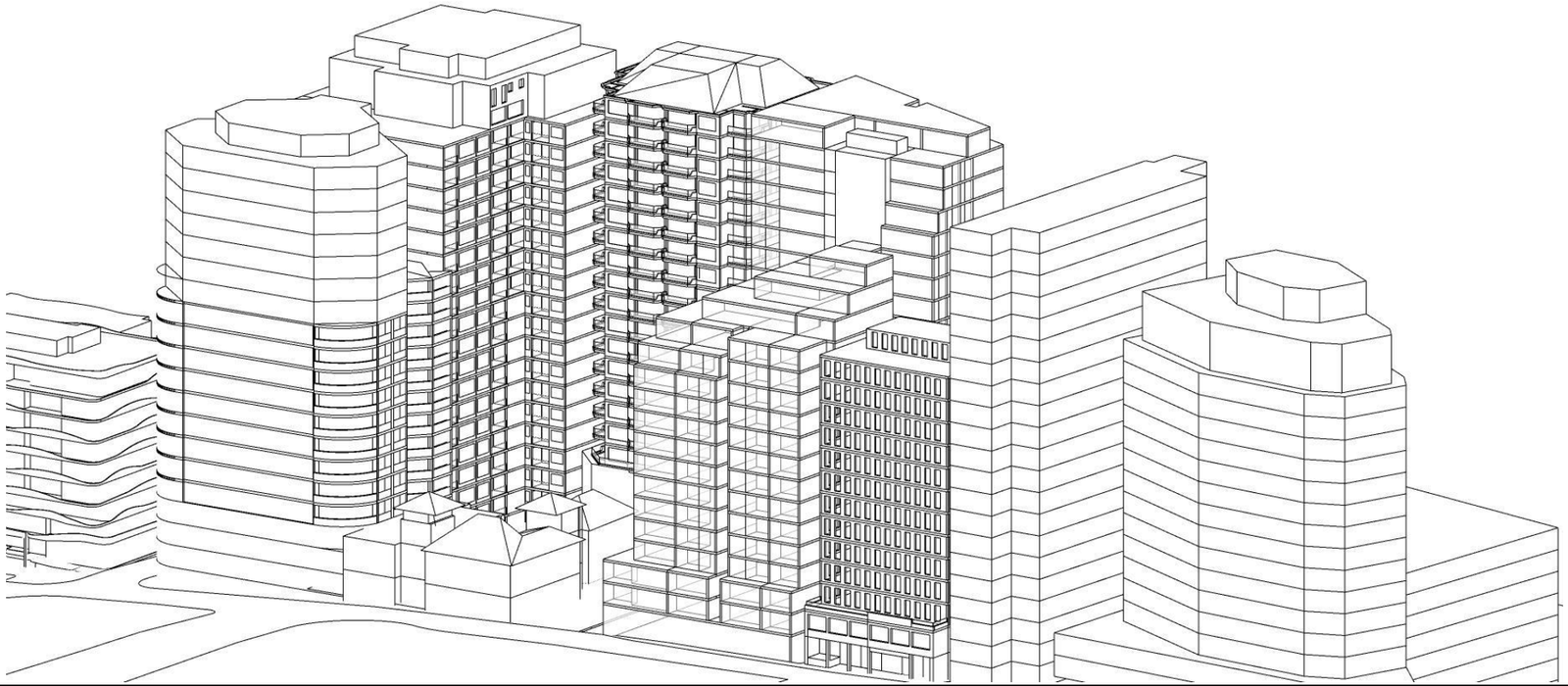


0830

Existing

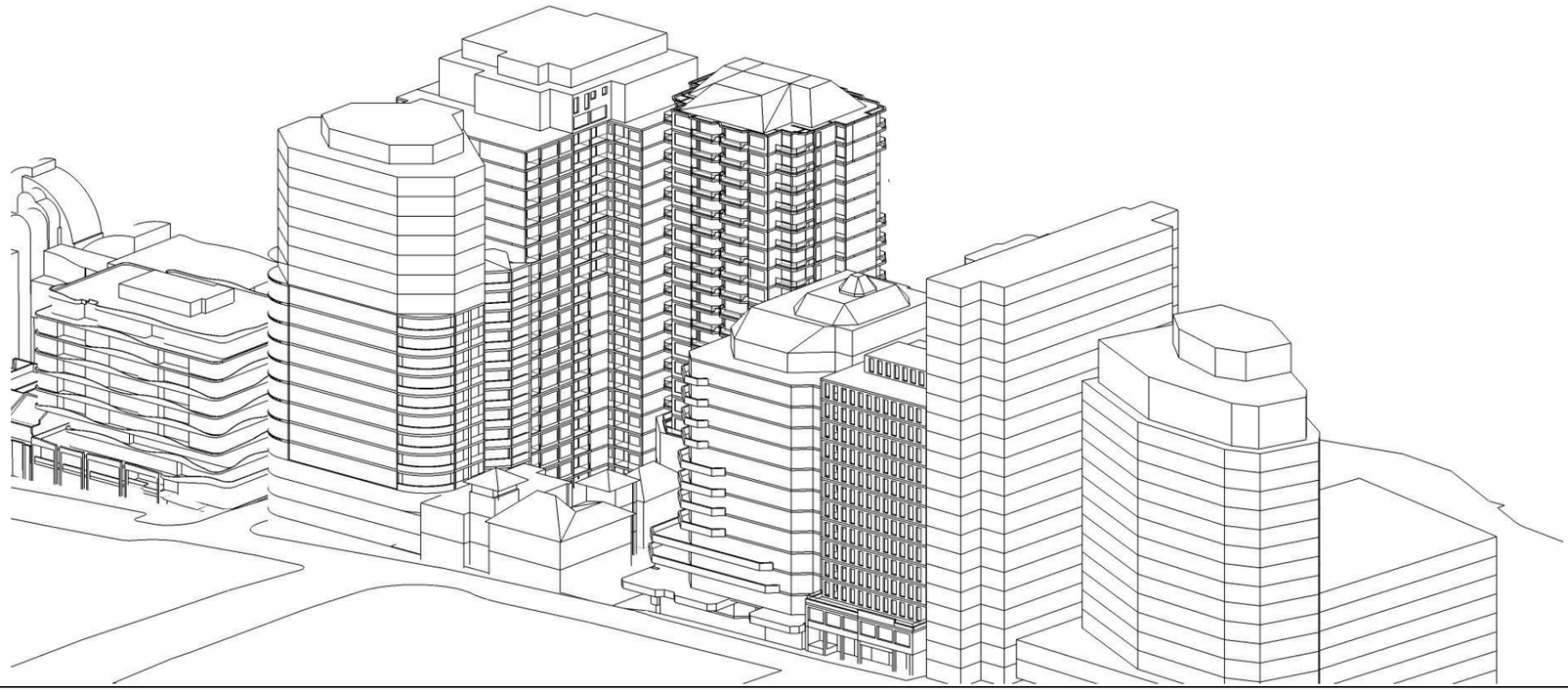


Proposed

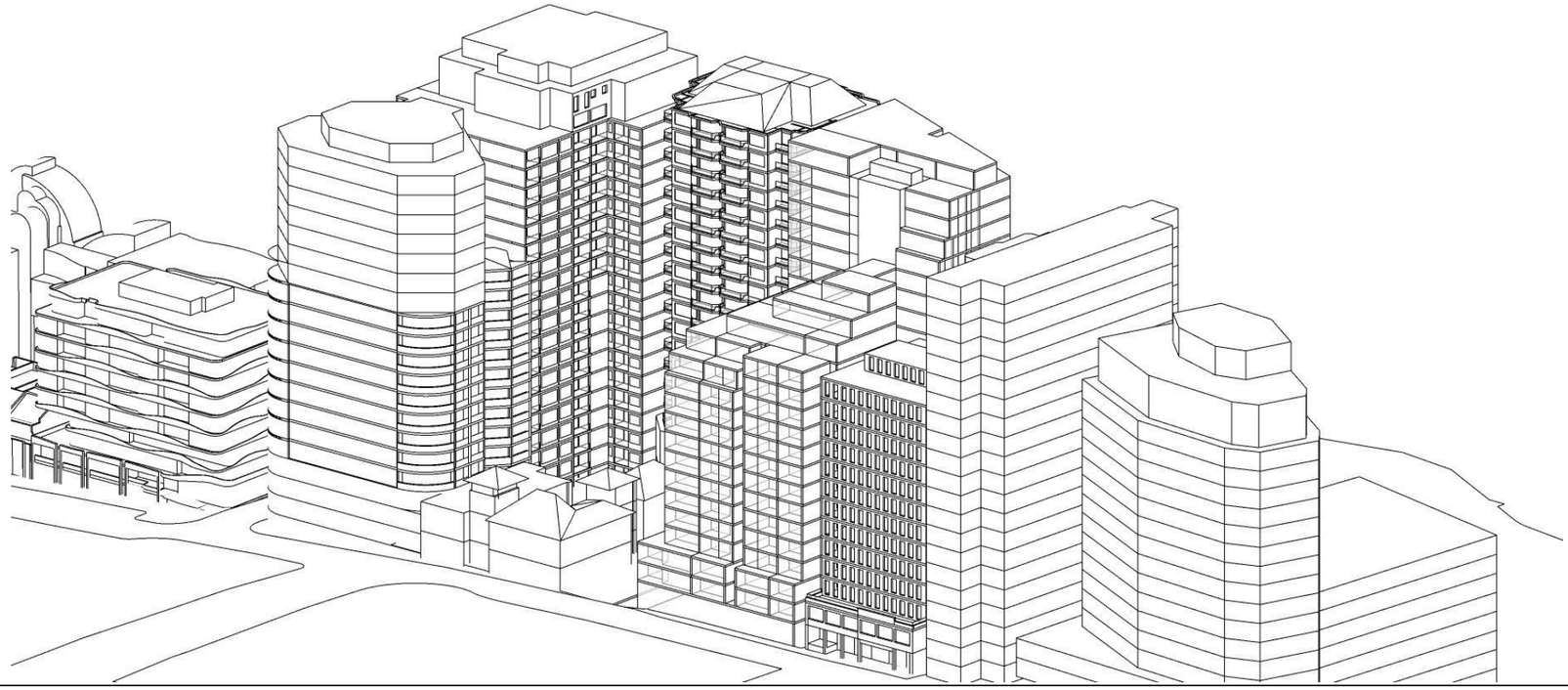


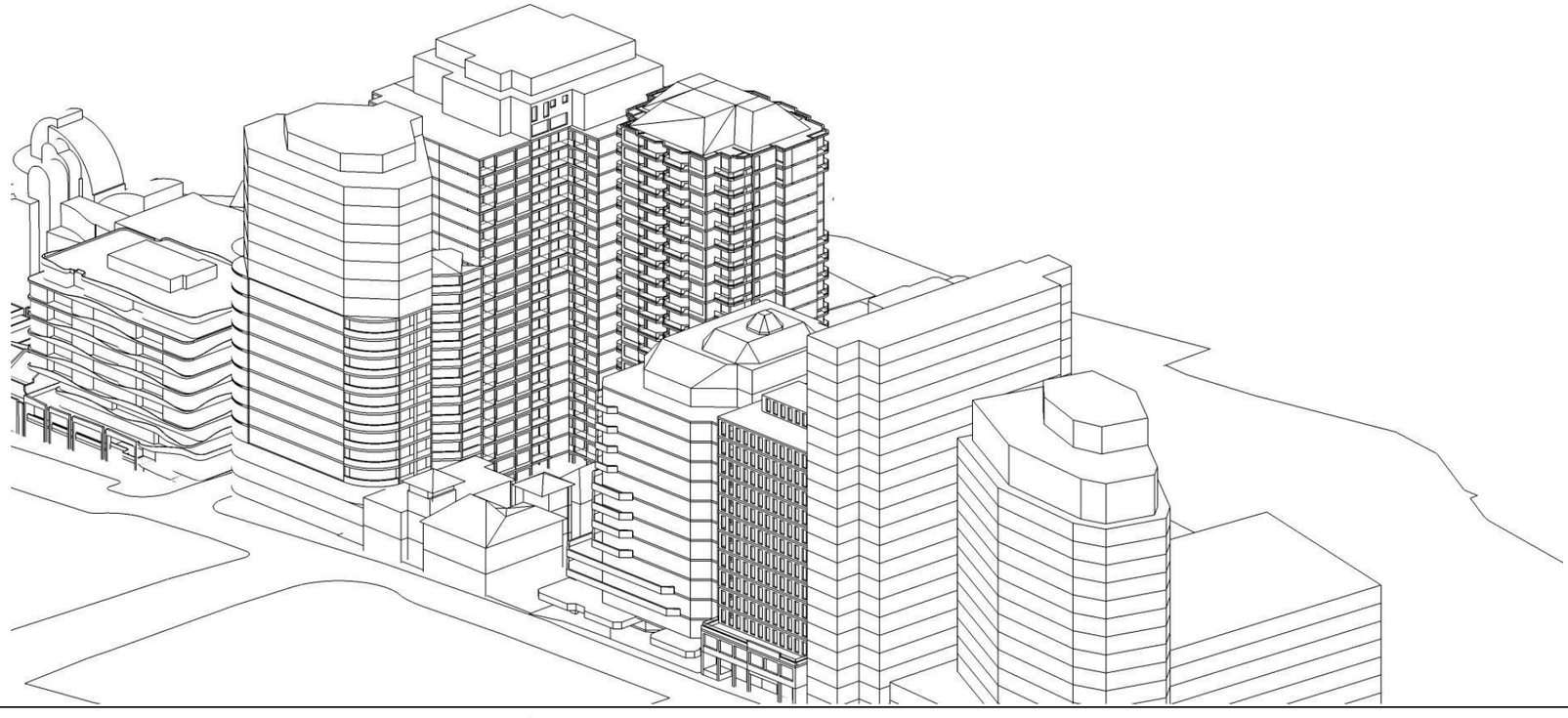
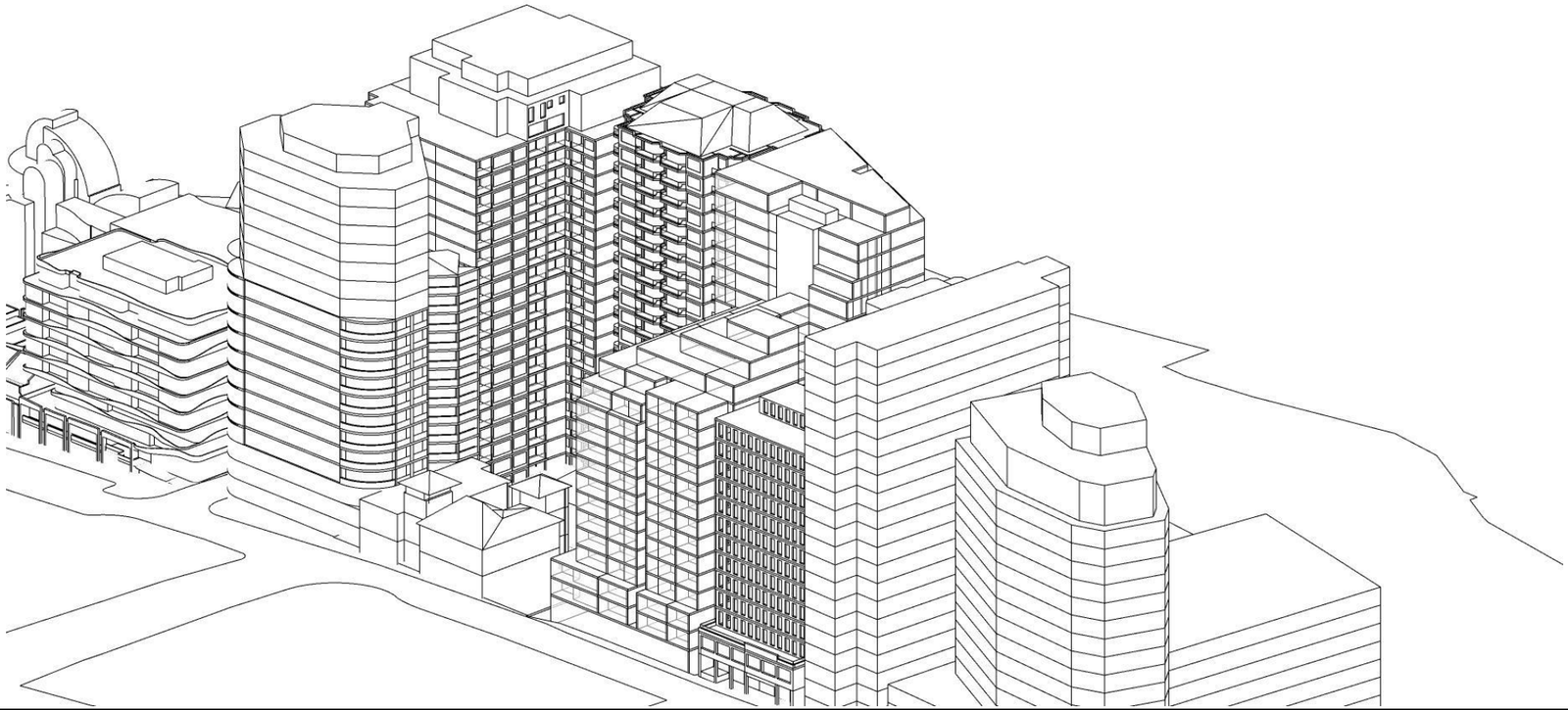
0900

Existing



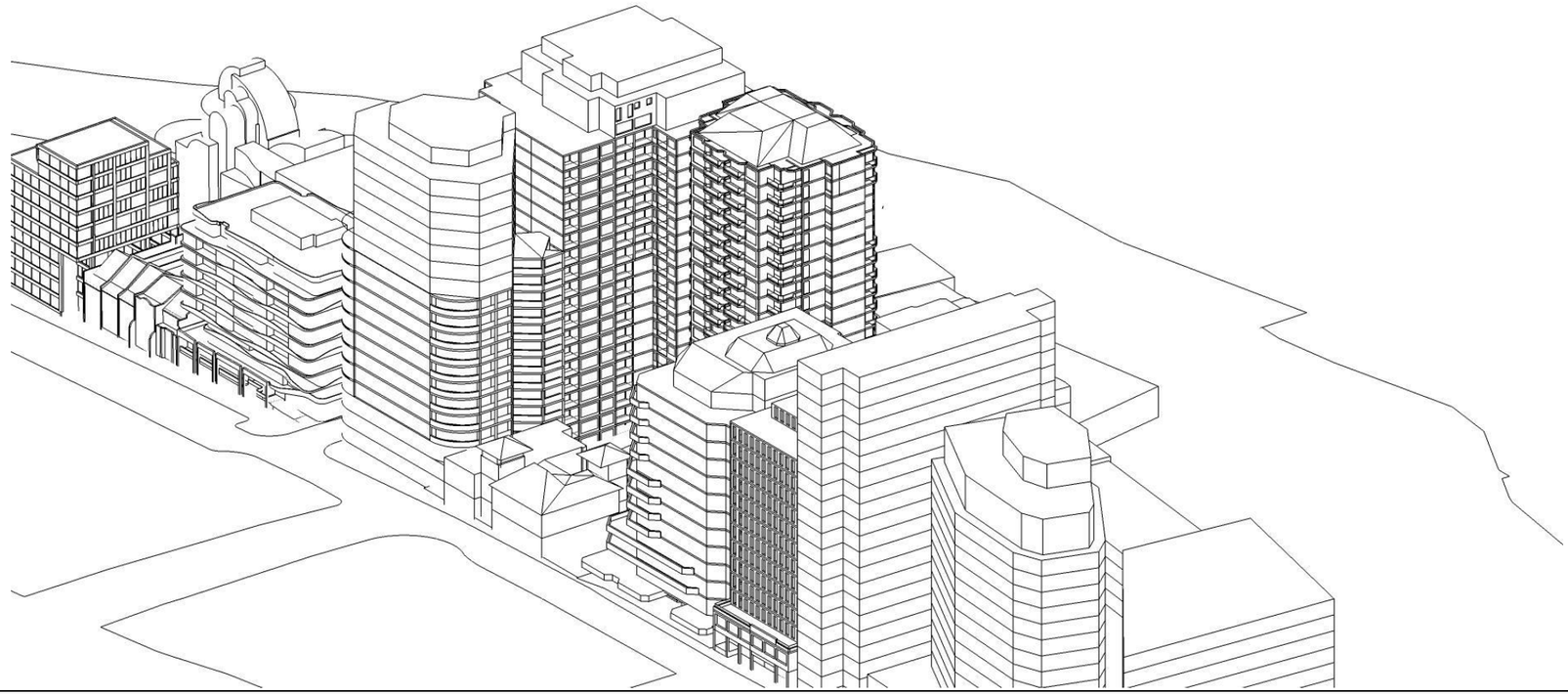
Proposed



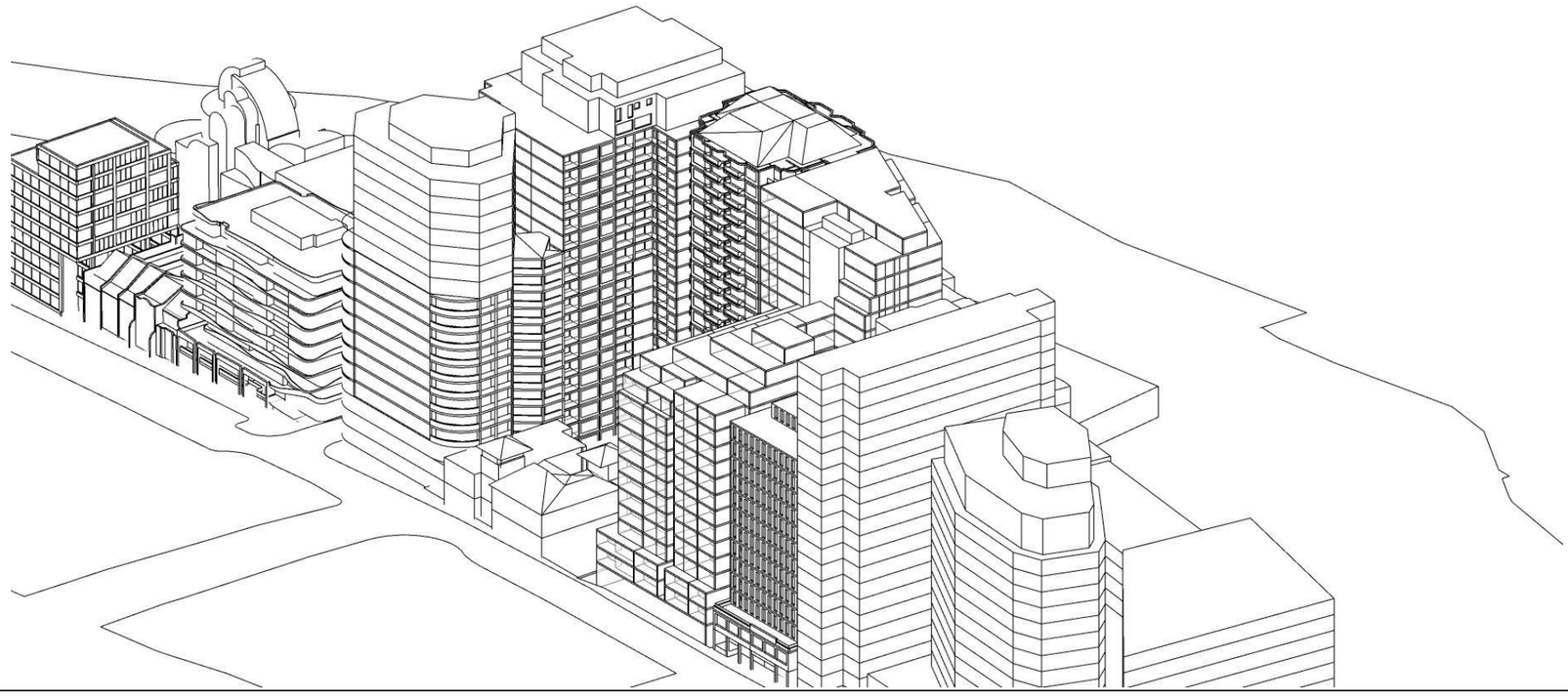
0930 Existing	
Proposed	

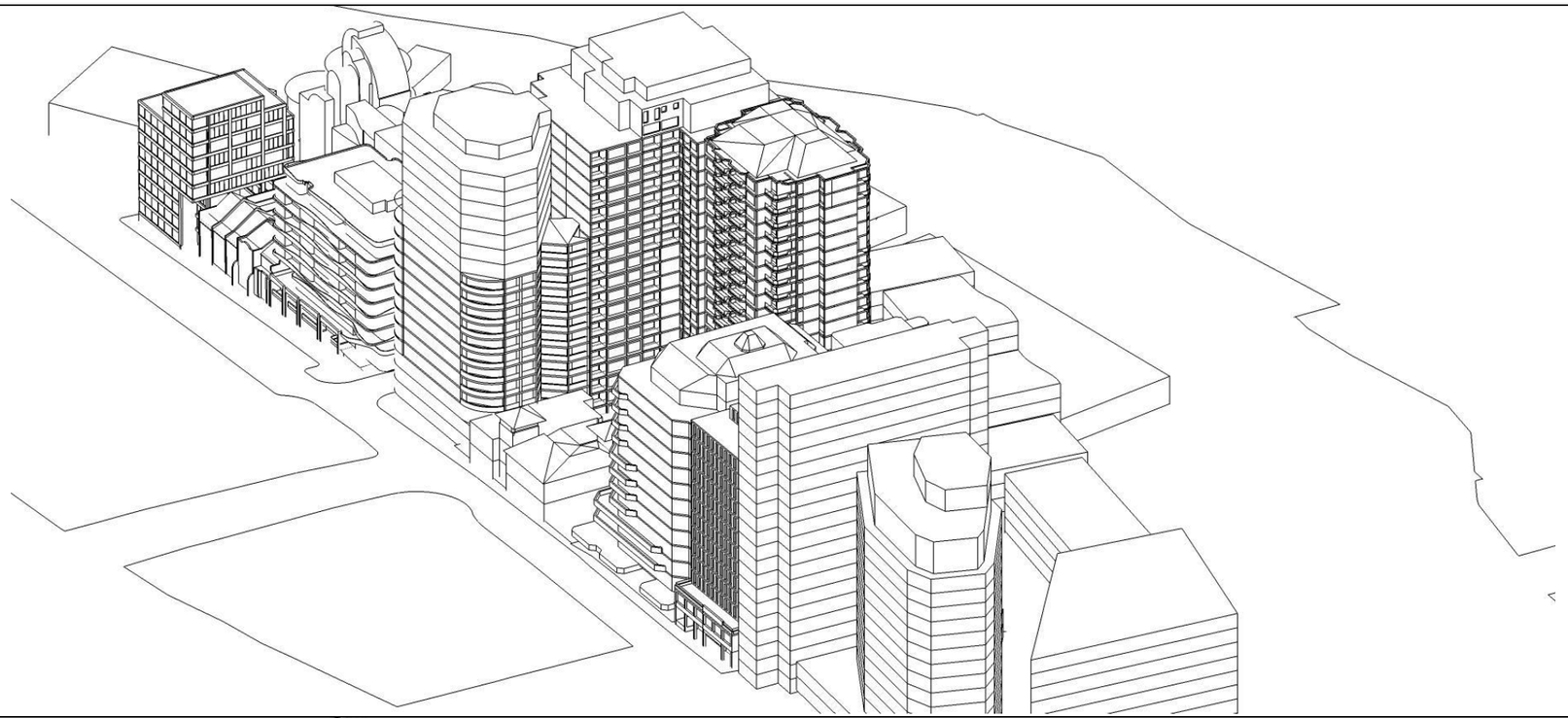
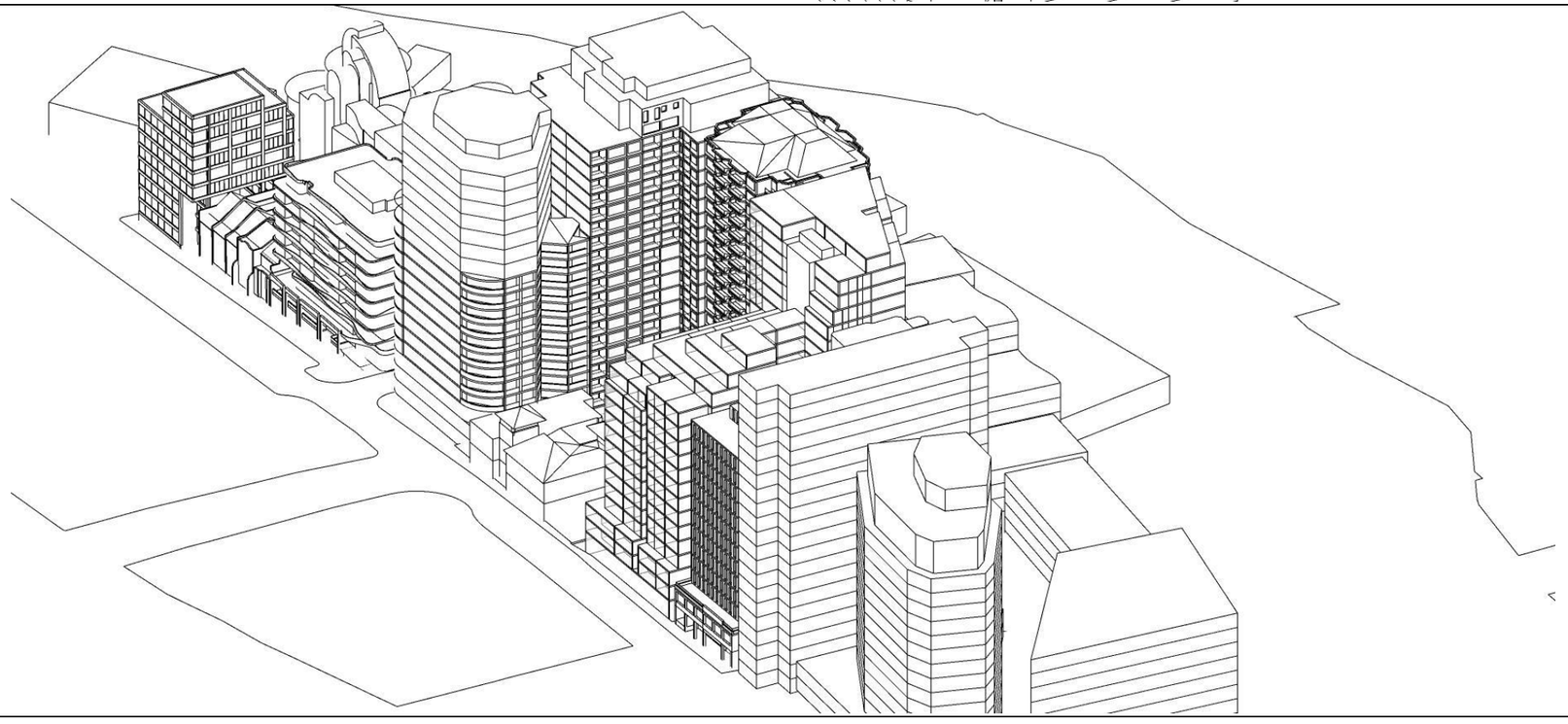
1000

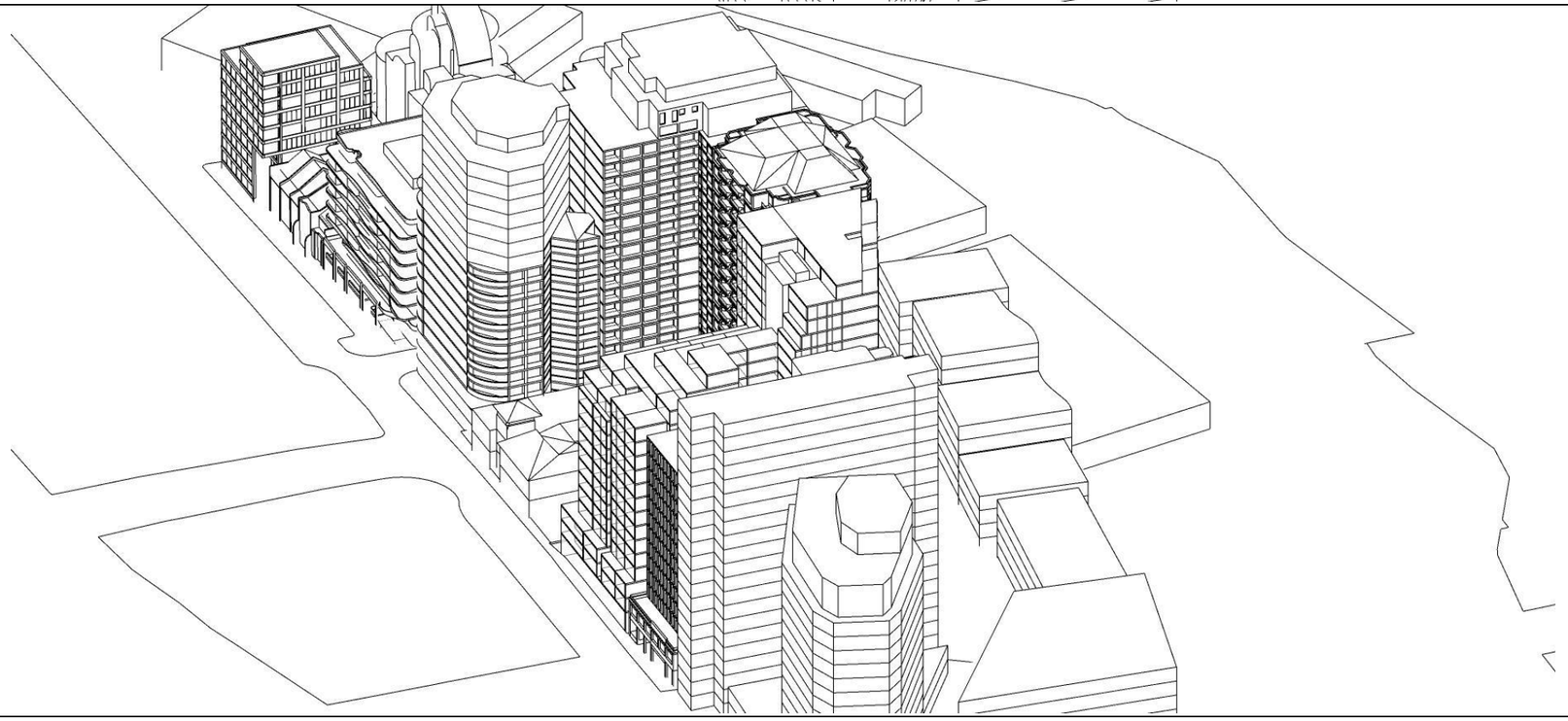
Existing

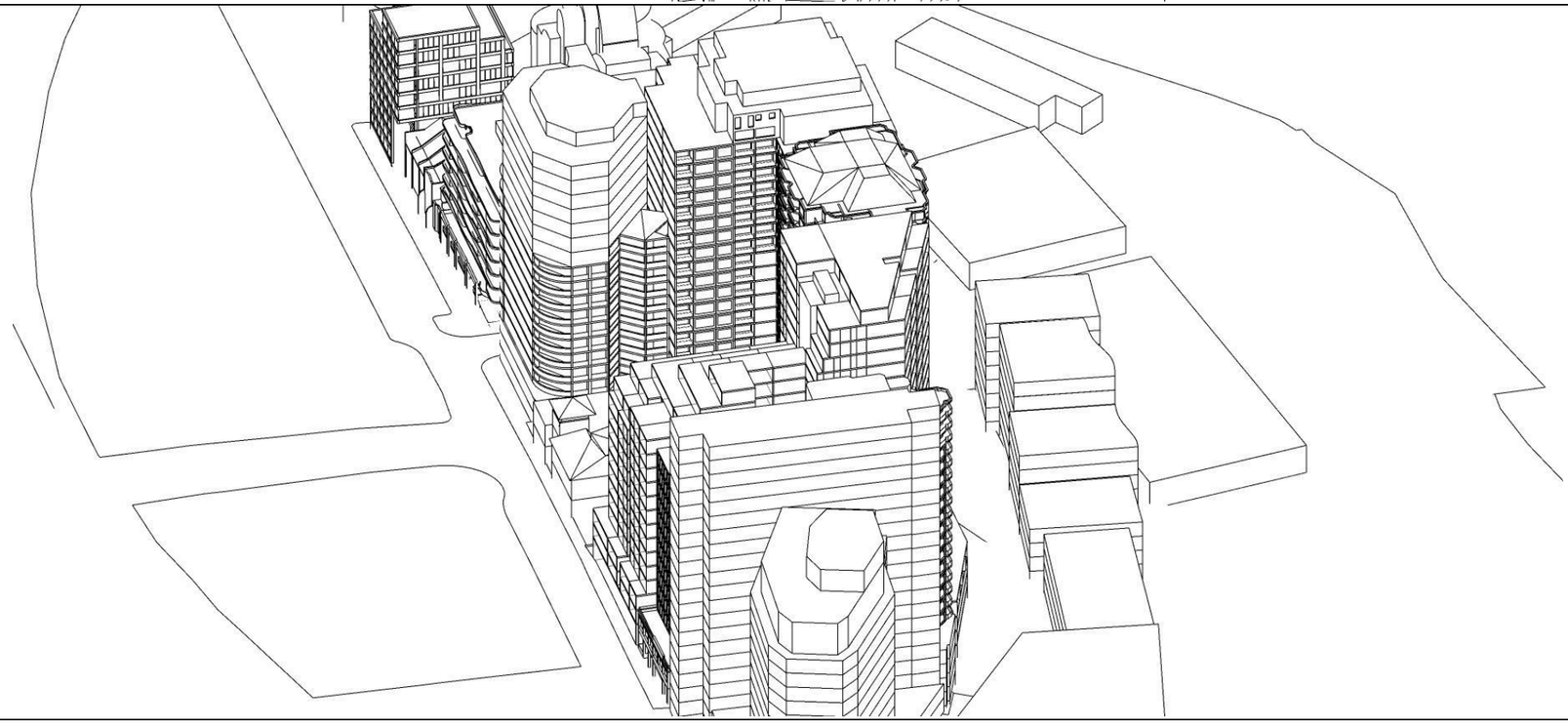


Proposed



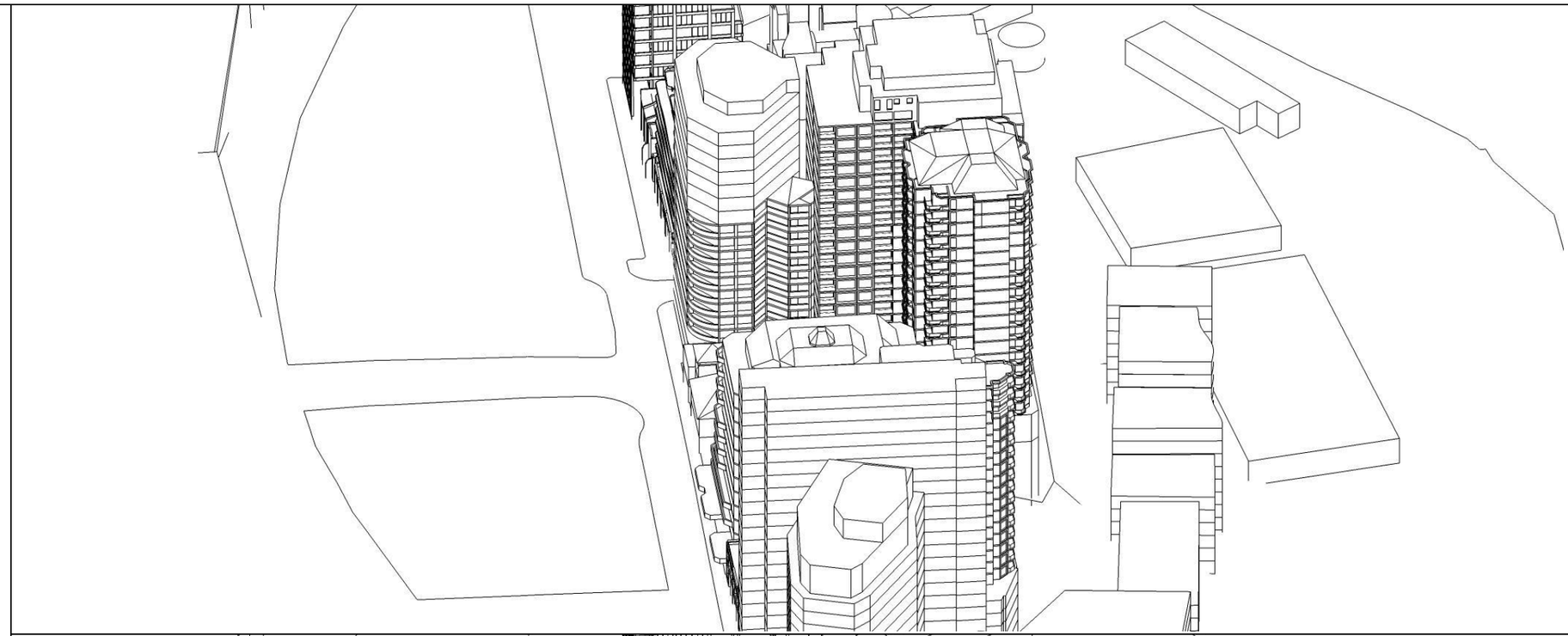
1030 Existing	
Proposed	

1100 Existing	
Proposed	

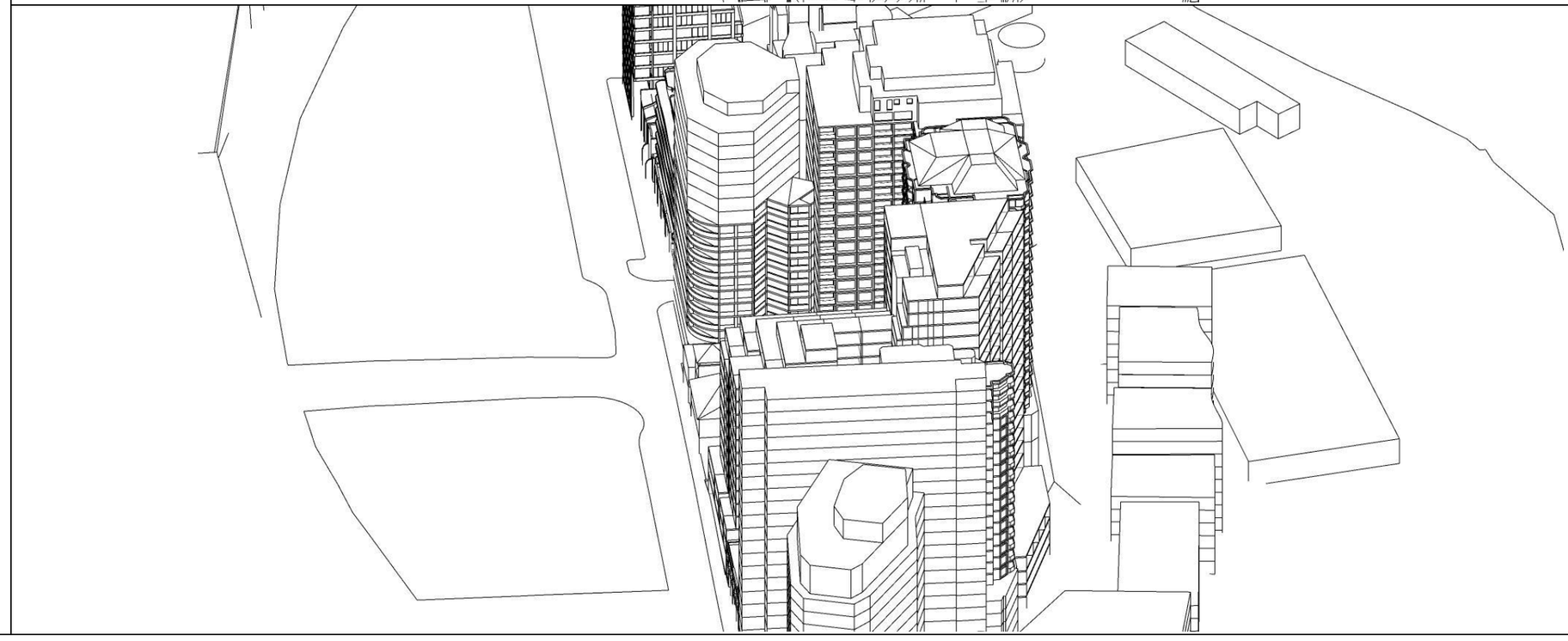
1130 Existing	
Proposed	

1200

Existing

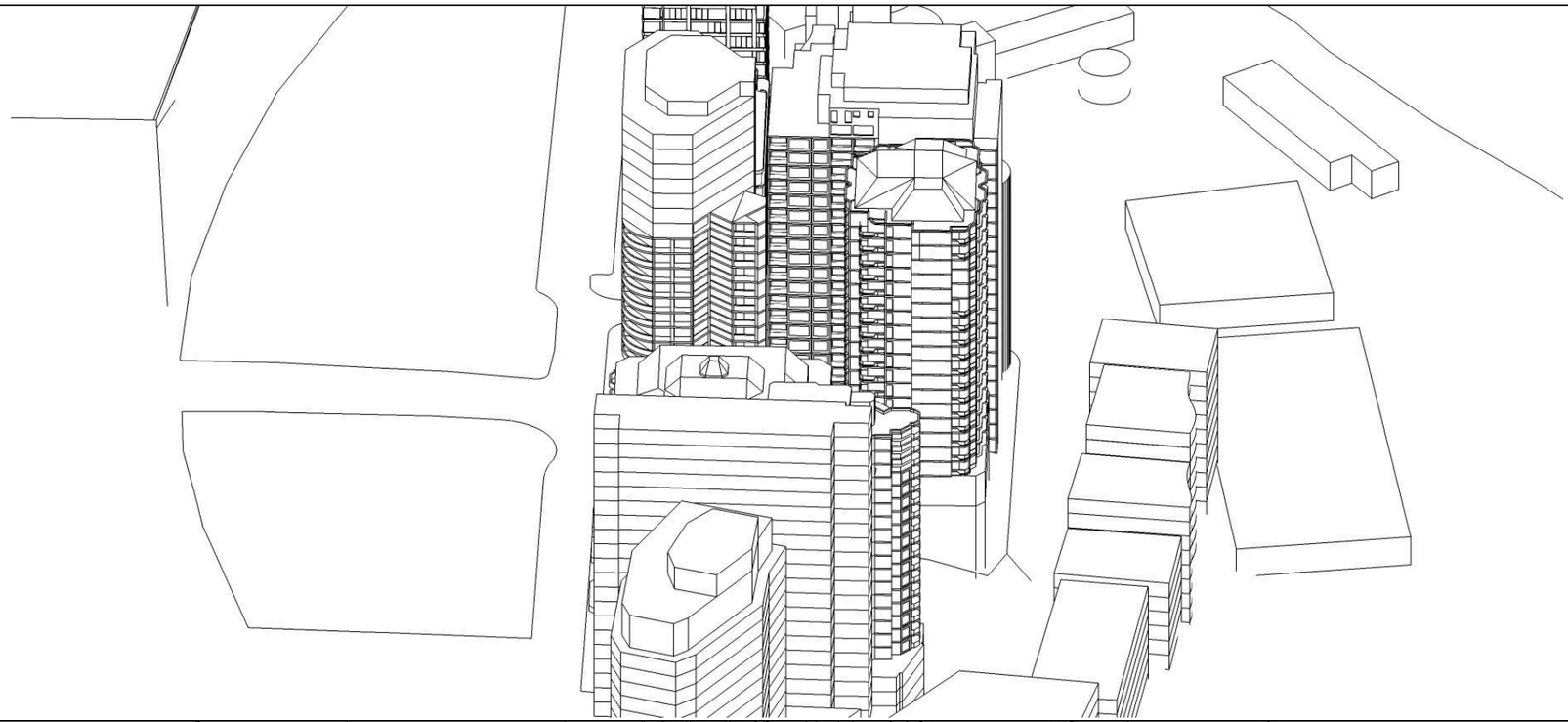


Proposed

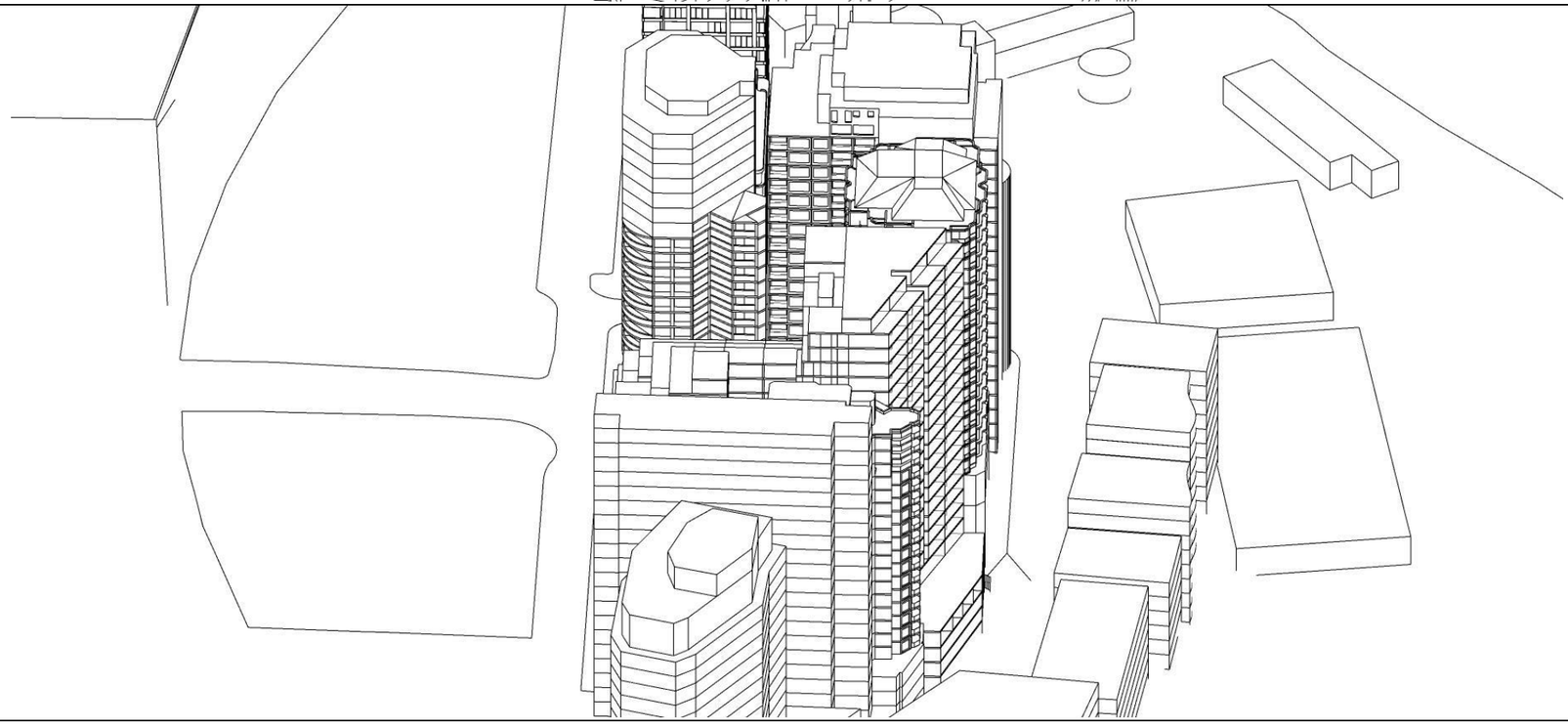


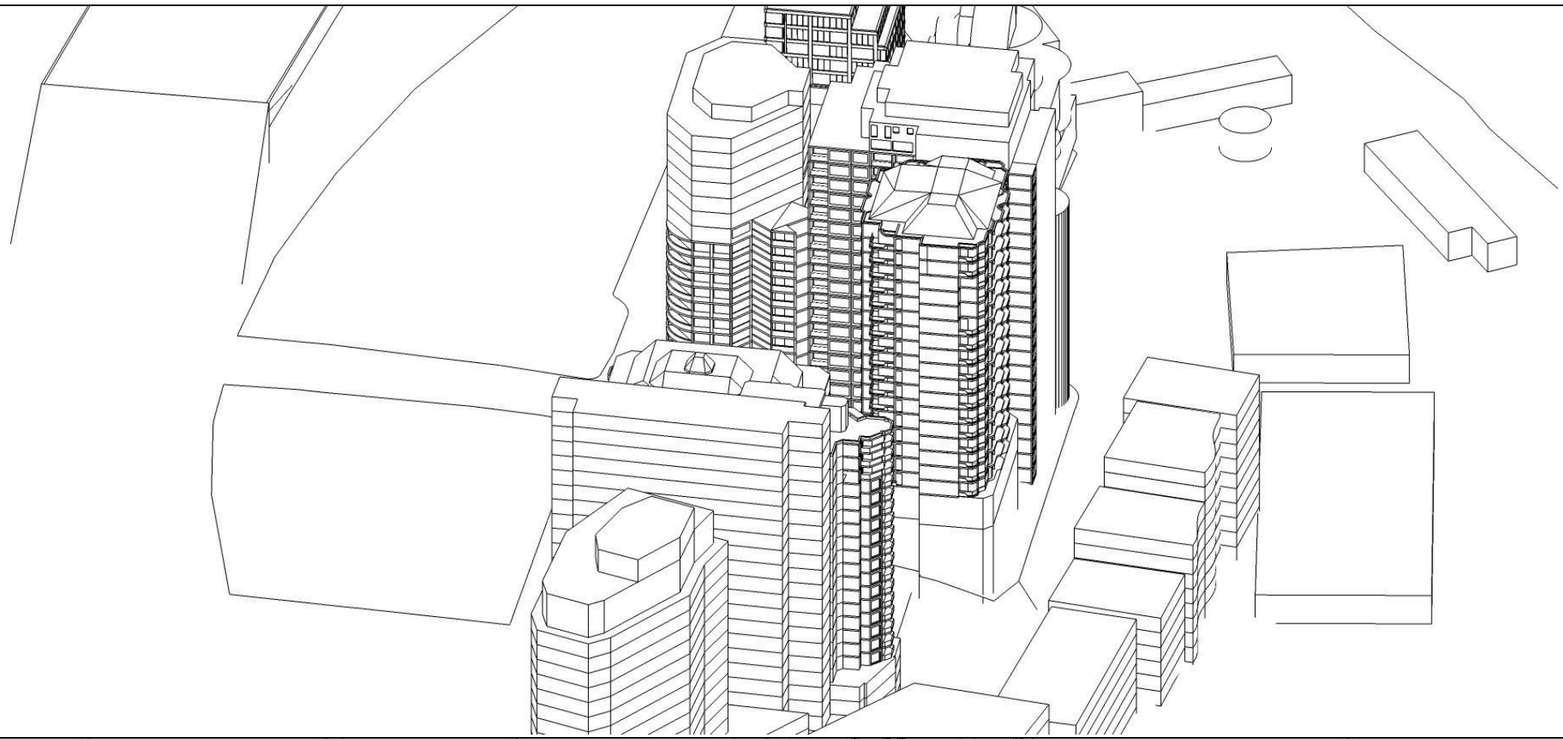
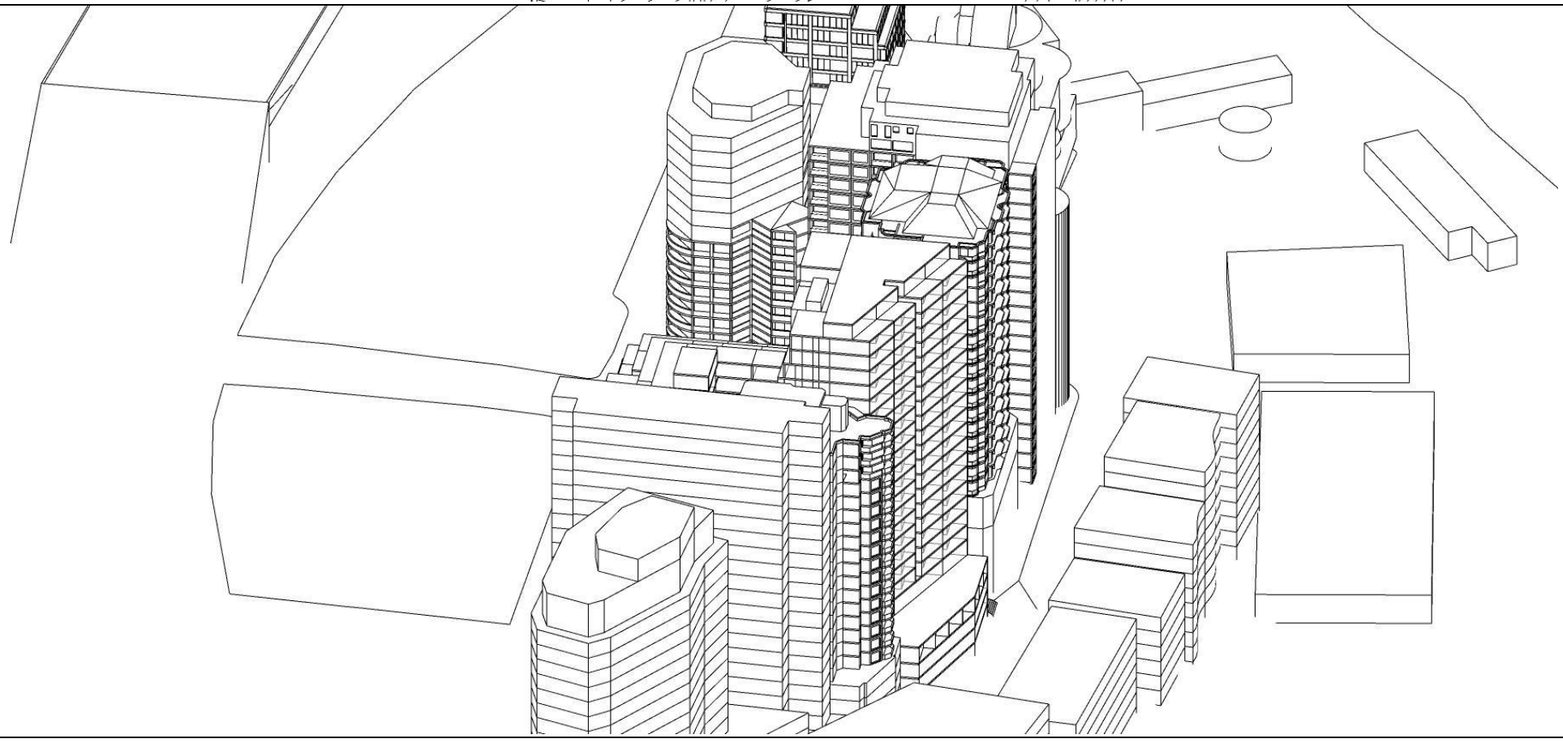
1230

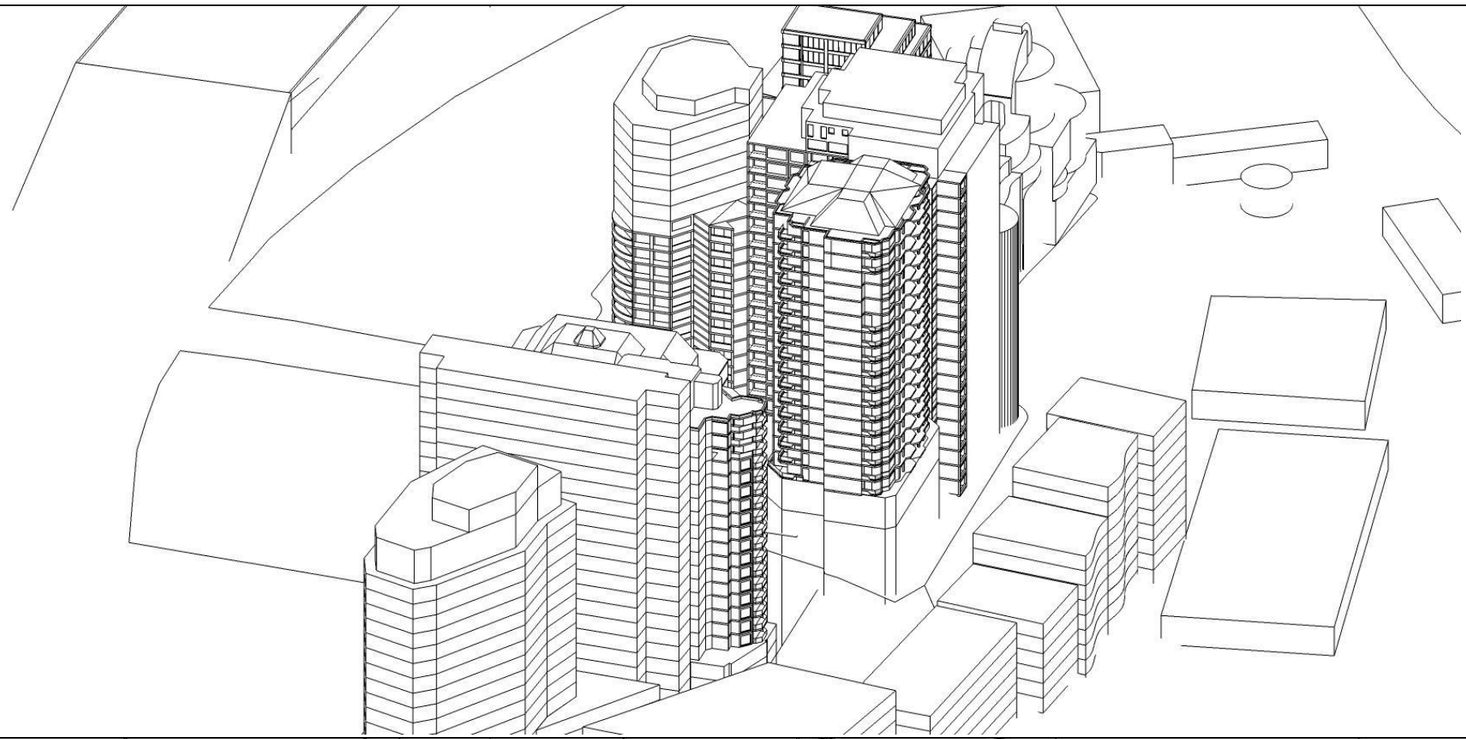
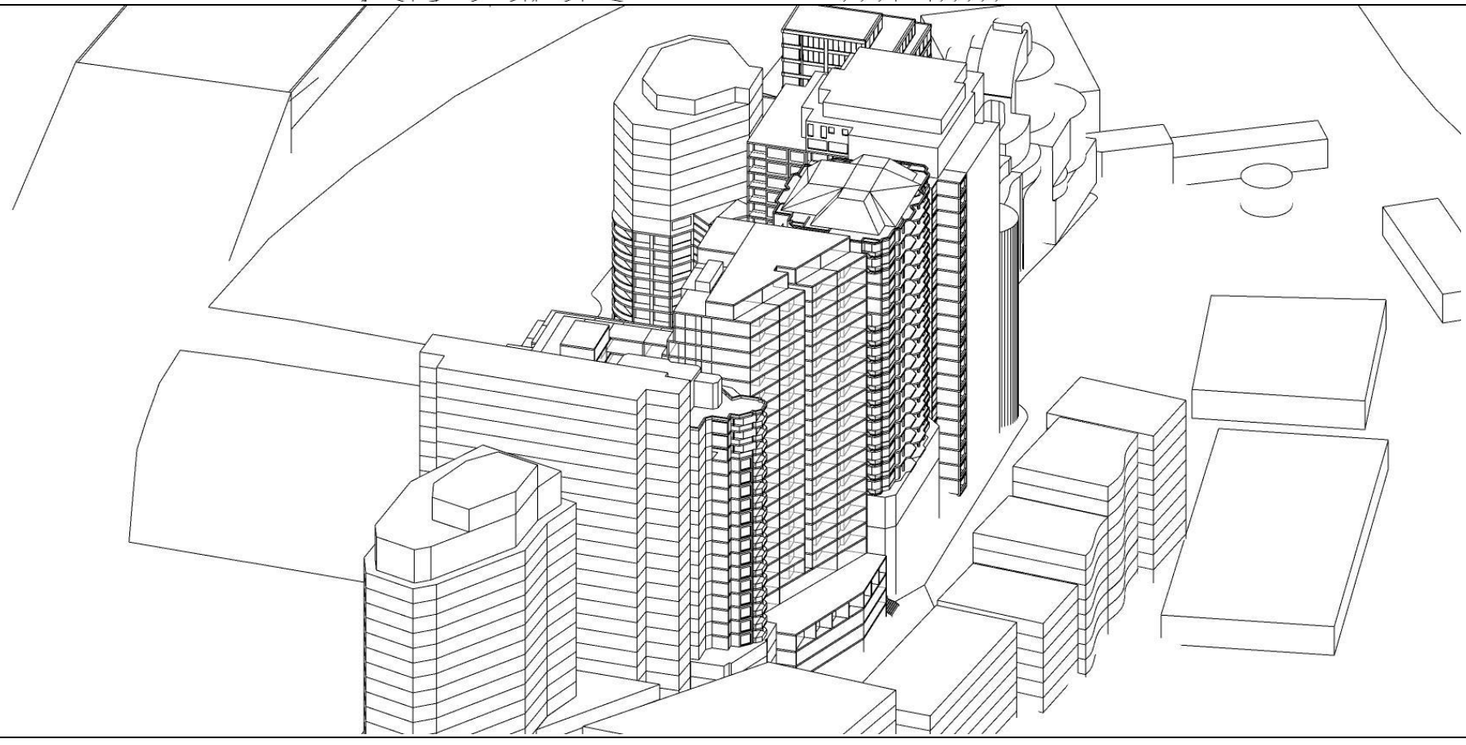
Existing



Proposed

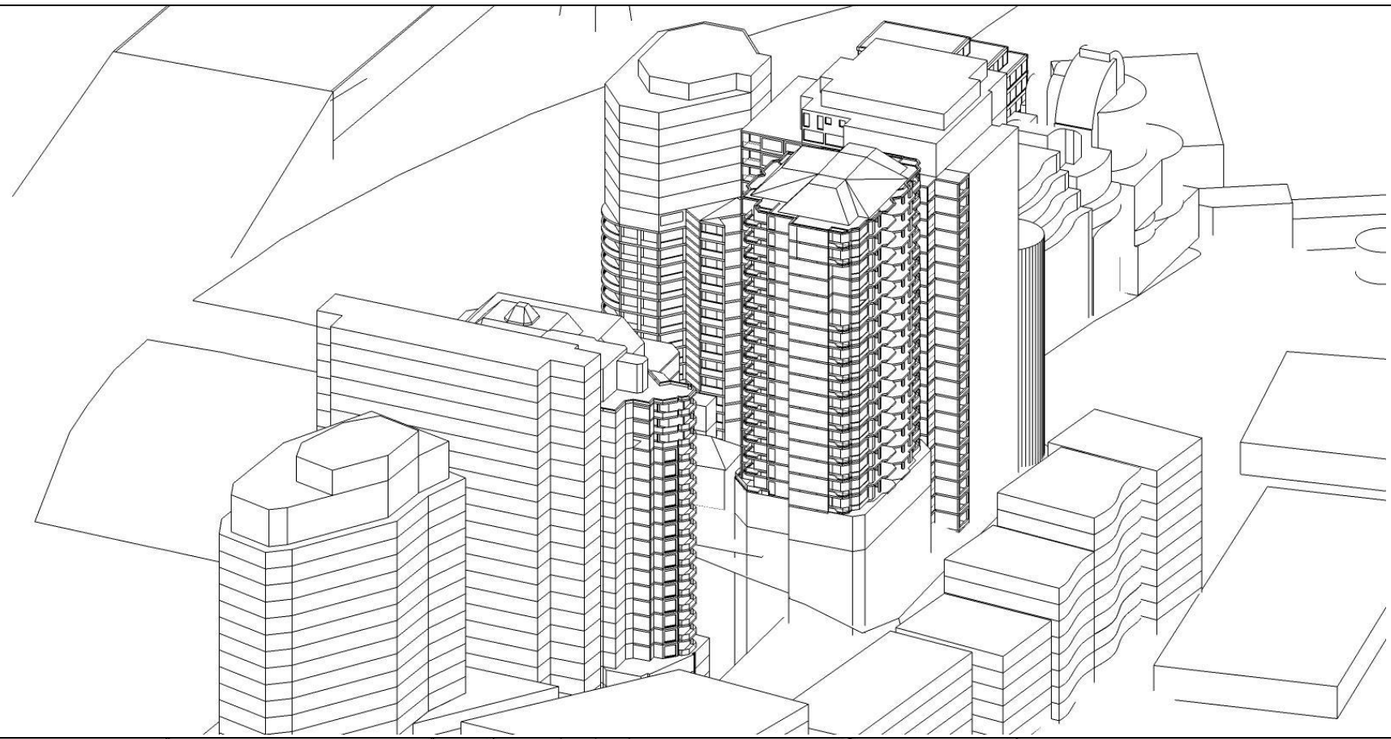


1300 Existing	
Proposed	

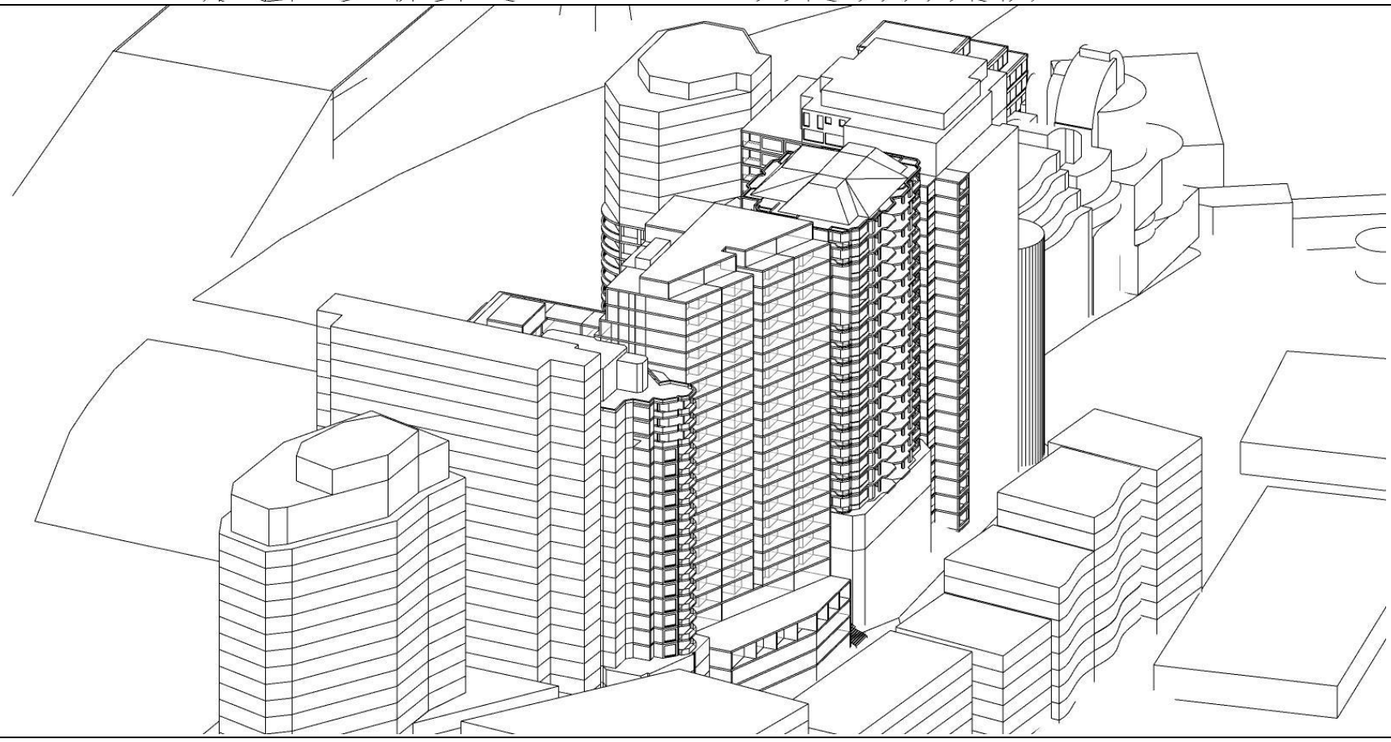
1330 Existing	
Proposed	

1400

Existing

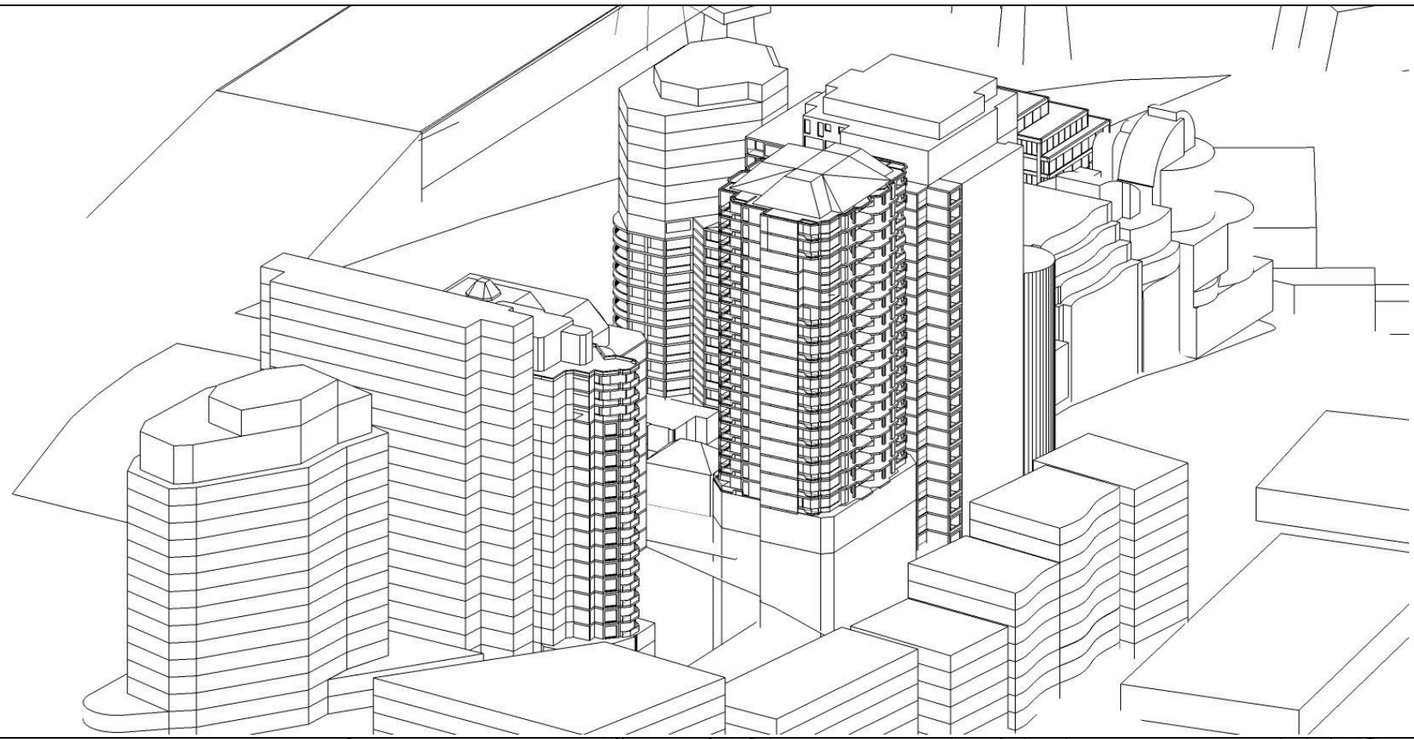


Proposed

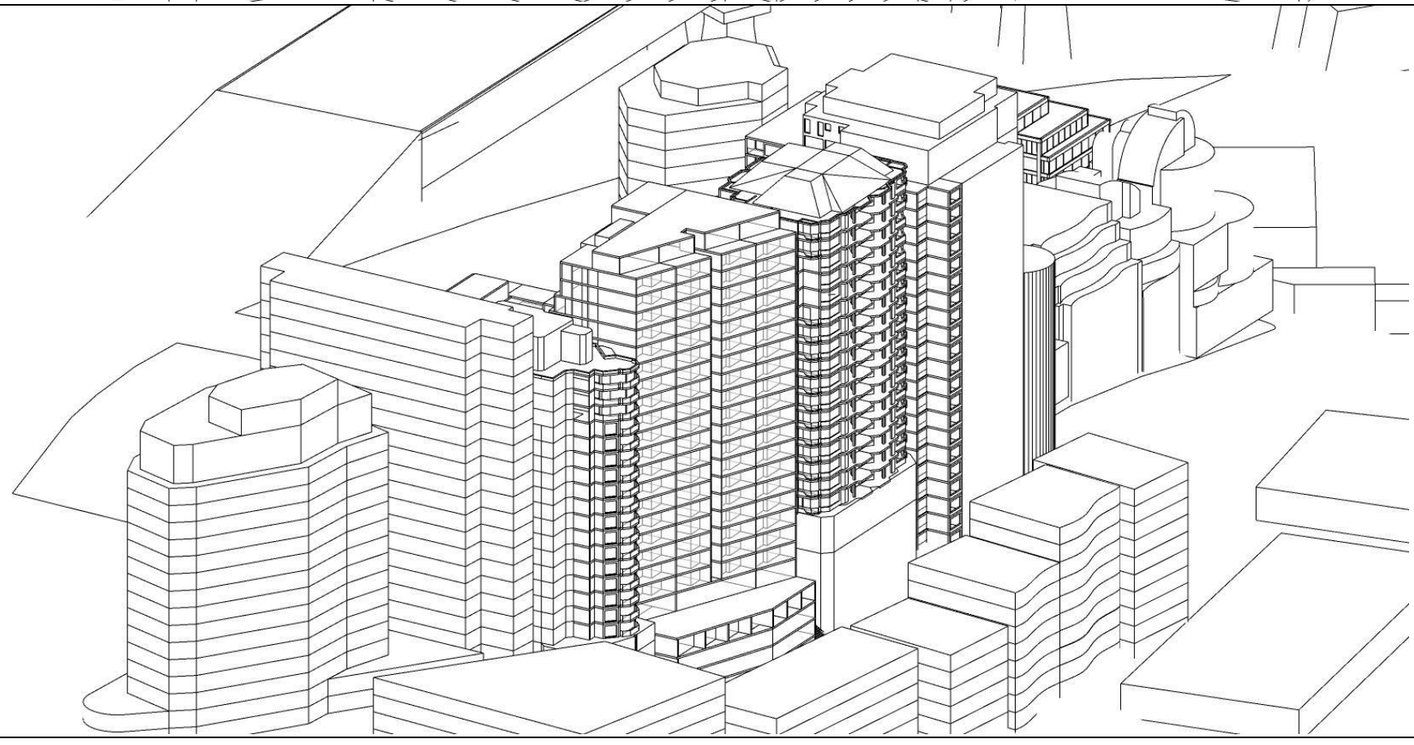


1430

Existing

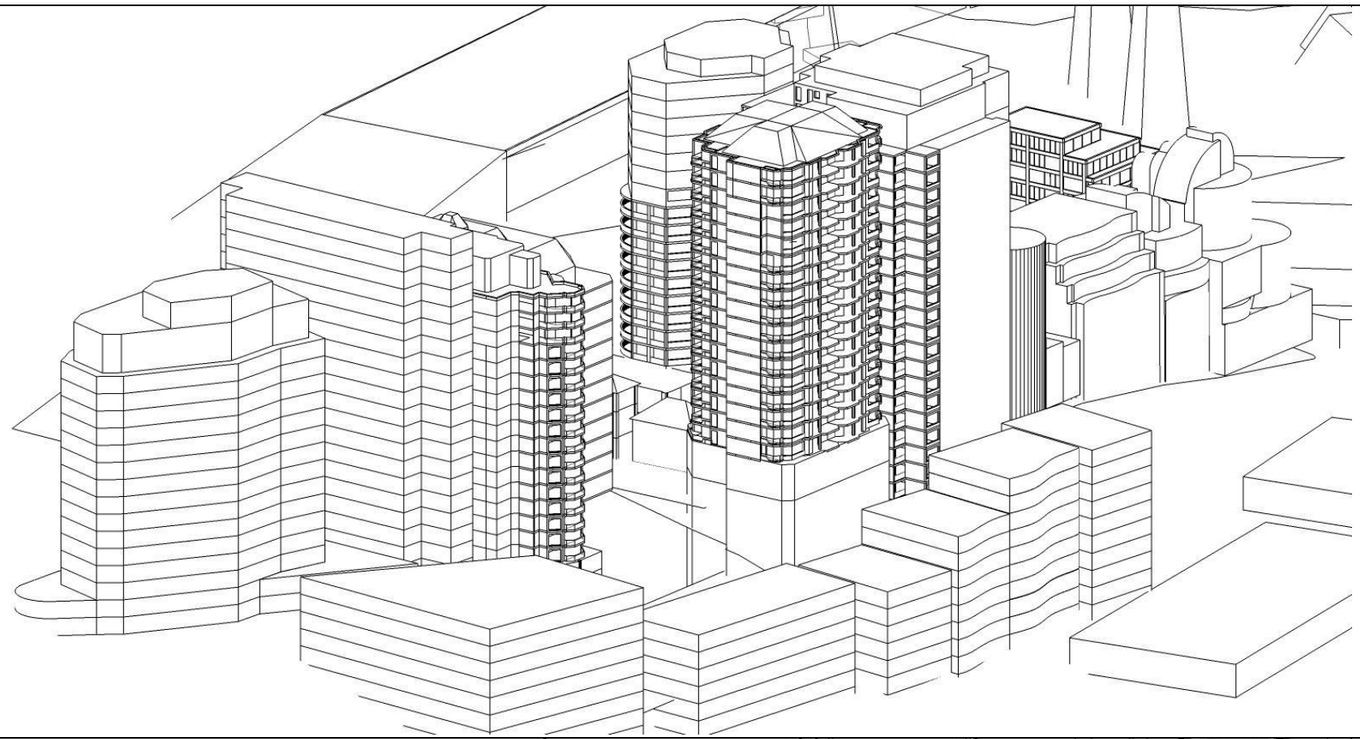


Proposed

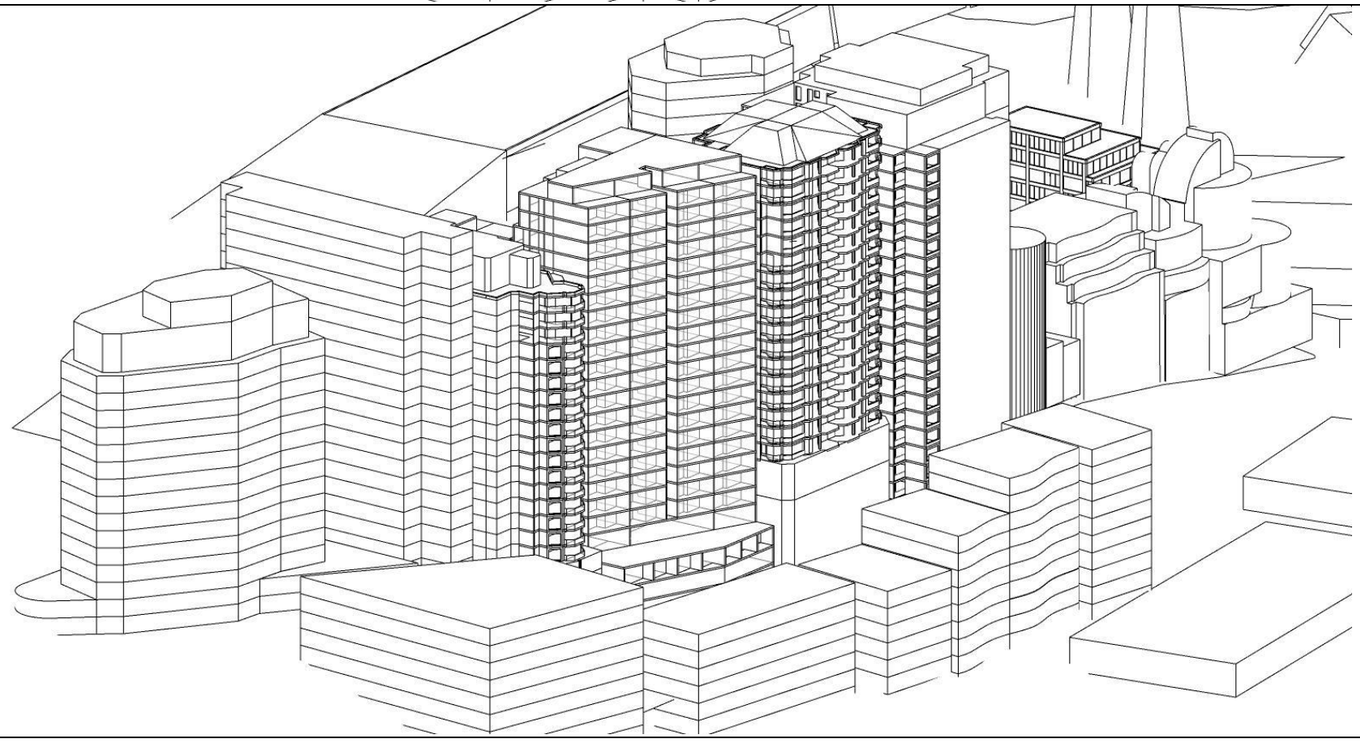


1500

Existing



Proposed



C.0 APPENDIX C: DETAILED TABLE OVERSHADOWING 48-50 ALFRED STREET

Table 6: Solar access for individual dwellings, with overshadowing impact of Planning Proposal

		Solar access																Solar compliance						
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4
48-50 ALFRED STREET - EXISTING 52 ALFRED STREET																									
LEVEL 3	L3-01	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L3-02	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1				YES			YES
	L3-03	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L3-04	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES	
	L3-05	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		YES				YES	
	L3-06	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		YES				YES	
	L3-07	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-08	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-09	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
	L3-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-12	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L3-13	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L3-14	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
LEVEL 4	L4-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L4-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L4-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L4-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L4-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L4-06	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L4-07	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L4-08	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		YES				YES	
LEVEL 5	L5-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L5-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L5-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L5-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L5-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L5-06	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L5-07	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L5-08	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		YES				YES	
LEVEL 6	L6-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L6-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L6-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L6-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L6-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L6-06	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L6-07	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L6-08	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		YES				YES	
LEVEL 7	L7-01	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L7-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L7-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L7-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES

		Solar access																	Solar compliance						
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4
	L7-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L7-06	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L7-07	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L7-08	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1		YES				YES	
LEVEL 8	L8-01	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L8-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L8-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L8-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L8-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L8-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L8-07	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L8-08	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
LEVEL 9	L9-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L9-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L9-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L9-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L9-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L9-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L9-07	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L9-08	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
LEVEL 10	L10-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L10-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L10-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L10-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L10-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L10-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L10-07	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L10-08	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
LEVEL 11	L11-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L11-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L11-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L11-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L11-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L11-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L11-07	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L11-08	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
LEVEL 12	L12-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L12-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L12-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L12-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L12-05	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L12-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 13	L13-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L13-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L13-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L13-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES

		Solar access																	Solar compliance						
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4
	L13-05	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L13-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 14	L14-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L14-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L14-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L14-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L14-05	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L14-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 15	L15-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L15-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
EAST	L15-03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES	
LEVEL 16	L16-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L16-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
EAST	L16-03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES	
LEVEL 17	L17-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L17-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
EAST	L17-03	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	YES					YES	
LEVEL 18	L18-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L18-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
LEVEL 19	L19-01	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L19-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
total	109																		24	20	0	19	21	44	19
																			22.0%	18.3%	0.0%	17.4%	19.3%	40.4%	17.4%
																				40.4%	**40.4%**	**57.8%**			**57.8%**

48-50 ALFRED STREET - PROPOSED DEVELOPMENT 52 ALFRED STREET																									
LEVEL 3	L3-01	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L3-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L3-03	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L3-04	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		YES				YES	
	L3-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-07	p	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-08	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-09	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-12	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L3-13	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L3-14	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
LEVEL 4	L4-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L4-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES

		Solar access																	Solar compliance						
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4
	L4-03	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L4-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L4-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L4-06	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L4-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L4-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
LEVEL 5	L5-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L5-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L5-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L5-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L5-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L5-06	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L5-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L5-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
LEVEL 6	L6-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L6-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L6-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L6-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L6-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L6-06	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L6-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L6-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
LEVEL 7	L7-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L7-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L7-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L7-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L7-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L7-06	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L7-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L7-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
LEVEL 8	L8-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L8-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L8-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L8-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L8-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L8-06	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0							
	L8-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L8-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
LEVEL 9	L9-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L9-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L9-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L9-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L9-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L9-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L9-07	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0							
	L9-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		

		Solar access																	Solar compliance						
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4
LEVEL 10	L10-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L10-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L10-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L10-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L10-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L10-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L10-07	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L10-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
LEVEL 11	L11-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L11-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L11-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L11-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L11-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L11-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L11-07	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L11-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
LEVEL 12	L12-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L12-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L12-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L12-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L12-05	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L12-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 13	L13-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L13-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L13-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L13-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L13-05	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L13-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 14	L14-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L14-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L14-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L14-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L14-05	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L14-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 15	L15-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L15-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
EAST	L15-03	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 16	L16-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L16-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
EAST	L16-03	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 17	L17-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L17-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
EAST	L17-03	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 18	L18-01	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L18-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
LEVEL 19	L19-01	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	YES					YES	

		Solar access																	Solar compliance						
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4
	L19-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
TOTAL	109																		17	15	0	21	32	32	21
																			15.6%	13.8%	0.0%	19.3%	29.4%	29.4%	19.3%
																				29.4%					**48.6%**
																					29.4%	**48.6%**			

48-50 ALFRED STREET - COMPARISON TABLE																									
LEVEL 3	L3-01	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L3-02	0	0	0	0	0	0	0	0	0	0	0	P	1	1	1	1	1				YES			YES
	L3-03	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L3-04	0	0	0	0	0	0	0	0	0	P	1	1	1	1	1	1	1		YES				YES	
	L3-05	0	0	0	0	0	0	0	0	0	0	P	P	P	P	P	P	P					YES		
	L3-06	0	0	0	0	0	0	0	0	0	0	P	P	P	P	P	P	P					YES		
	L3-07	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-08	1	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-09	1	1	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
	L3-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L3-12	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L3-13	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L3-14	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
LEVEL 4	L4-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L4-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L4-03	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L4-04	0	0	0	0	0	0	0	0	0	0	0	P	1	1	1	1	1				YES			YES
	L4-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L4-06	1	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L4-07	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L4-08	0	0	0	0	0	0	0	0	0	0	P	P	P	P	P	P	P					YES		
LEVEL 5	L5-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L5-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L5-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L5-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L5-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L5-06	1	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L5-07	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L5-08	0	0	0	0	0	0	0	0	0	0	P	P	P	P	P	P	P					YES		
LEVEL 6	L6-01	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	YES					YES	
	L6-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L6-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L6-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L6-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L6-06	1	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L6-07	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		

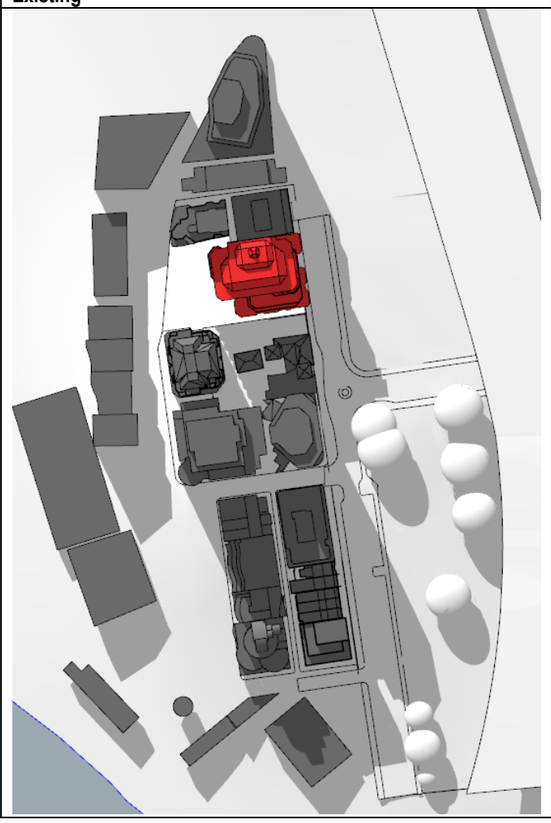
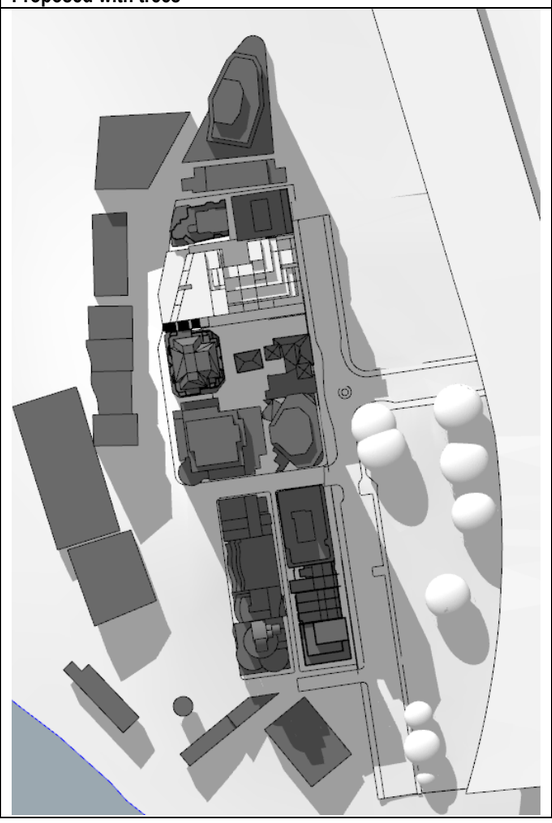
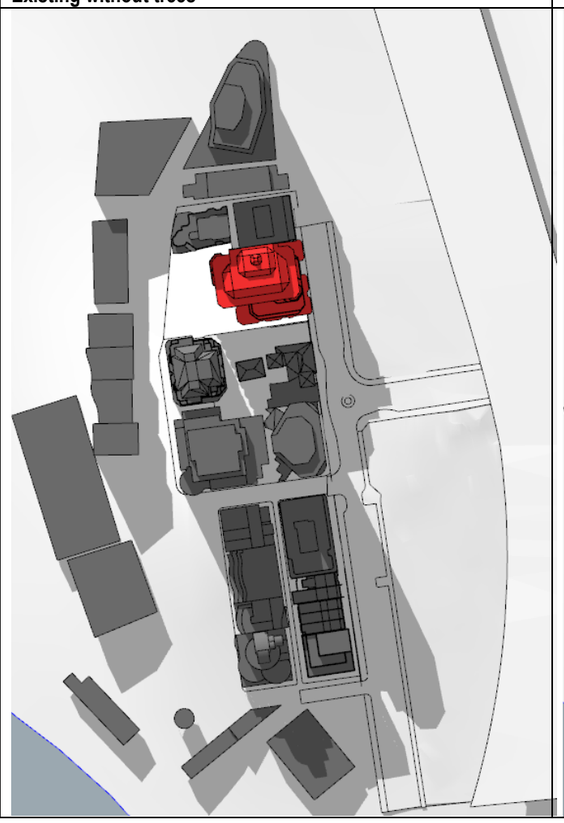
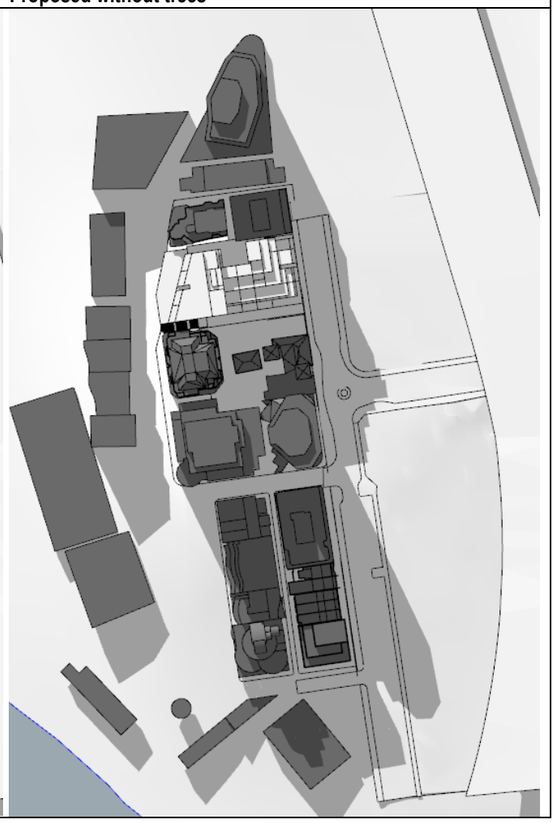
		Solar access																	Solar compliance						
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4
	L6-08	0	0	0	0	0	0	0	0	0	0	P	P	P	P	P	P	P					YES		
LEVEL 7	L7-01	0	0	0	0	0	0	0	P	1	1	1	1	1	1	1	1	1	YES					YES	
	L7-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L7-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L7-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L7-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L7-06	1	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L7-07	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L7-08	0	0	0	0	0	0	0	0	P	P	P	P	P	P	P	P	P					YES		
LEVEL 8	L8-01	0	0	0	0	0	0	P	P	1	1	1	1	1	1	1	1	1	YES					YES	
	L8-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L8-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L8-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L8-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L8-06	1	P	P	P	1	1	1	0	0	0	0	0	0	0	0	0	0					YES		
	L8-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L8-08	0	0	0	0	1	1	1	P	P	P	P	P	P	P	P	P	P					YES		
LEVEL 9	L9-01	0	0	0	0	0	P	P	P	1	1	1	1	1	1	1	1	1	YES					YES	
	L9-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L9-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L9-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L9-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L9-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES			YES	YES	
	L9-07	P	P	P	P	P	1	1	0	0	0	0	0	0	0	0	0	0					YES		
	L9-08	0	0	0	0	0	P	P	P	P	P	P	P	P	P	P	P	P					YES		
LEVEL 10	L10-01	0	0	0	0	0	P	P	P	1	1	1	1	1	1	1	1	1	YES				YES	YES	
	L10-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L10-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L10-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L10-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L10-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L10-07	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES			YES	YES	
	L10-08	0	0	0	P	P	P	P	P	P	P	P	P	P	P	P	P	P					YES		
LEVEL 11	L11-01	0	0	0	0	0	P	P	P	1	1	1	1	1	1	1	1	1	YES					YES	
	L11-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L11-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L11-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L11-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					YES		
	L11-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L11-07	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L11-08	0	0	0	P	P	P	P	P	P	P	P	P	P	P	P	P	P					YES		
LEVEL 12	L12-01	0	0	0	0	0	P	P	P	1	1	1	1	1	1	1	1	1	YES					YES	
	L12-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L12-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L12-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L12-05	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	

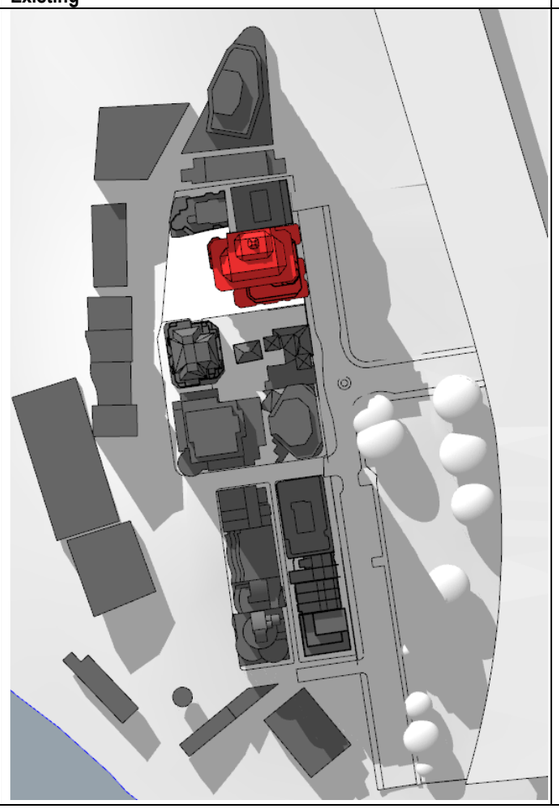
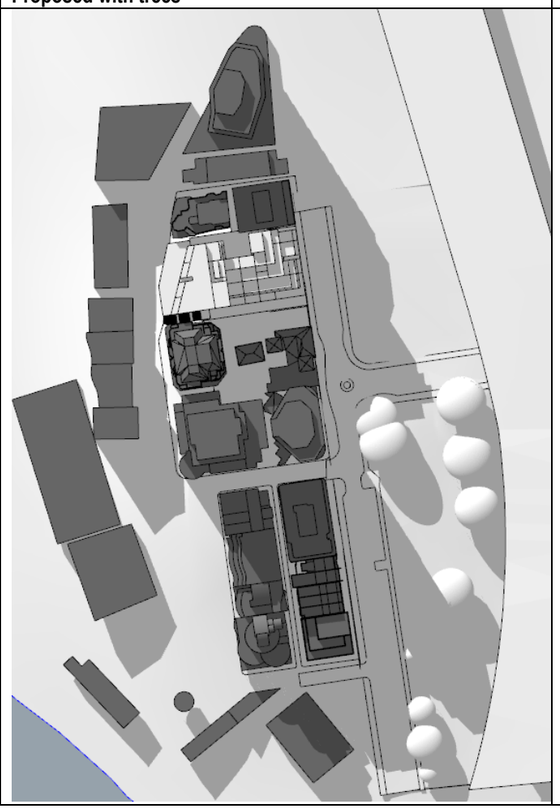
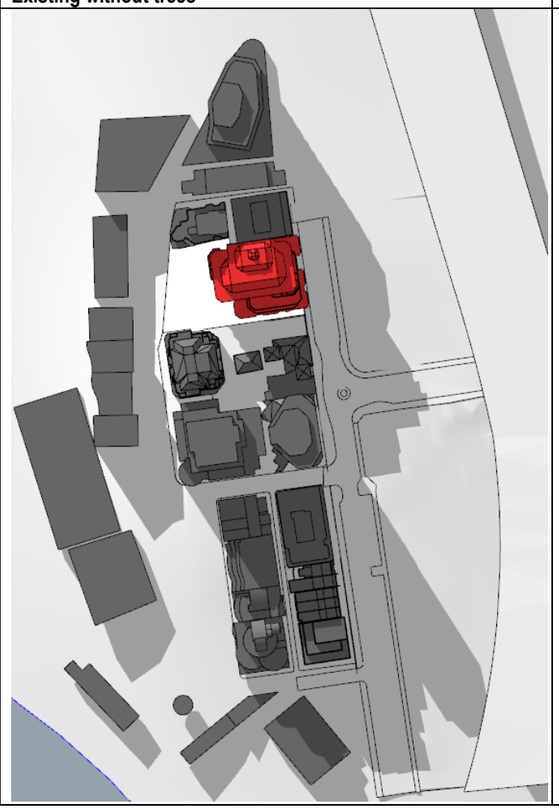
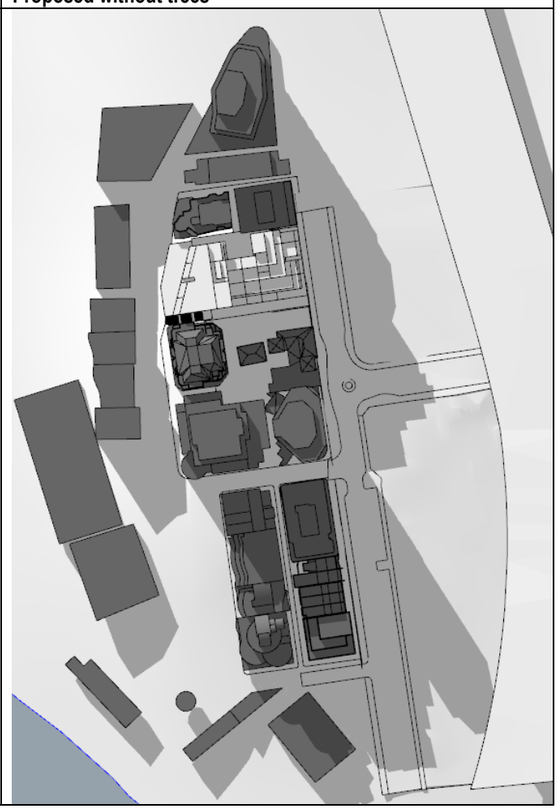
		Solar access																Solar compliance						
Level	UNIT	8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4
	L12-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 13	L13-01	0	0	0	0	0	P	P	P	1	1	1	1	1	1	1	1	1	YES					YES	
	L13-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L13-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L13-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L13-05	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L13-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 14	L14-01	0	0	0	0	0	P	P	P	1	1	1	1	1	1	1	1	1	YES					YES	
	L14-02	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L14-03	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1							
	L14-04	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
	L14-05	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
	L14-06	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 15	L15-01	0	0	0	0	0	P	P	P	1	1	1	1	1	1	1	1	1	YES					YES	
	L15-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
EAST	L15-03	1	1	1	1	1	1	1	P	P	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 16	L16-01	0	0	0	0	0	P	P	P	1	1	1	1	1	1	1	1	1	YES					YES	
	L16-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
EAST	L16-03	1	1	1	1	1	1	1	P	P	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 17	L17-01	0	0	0	0	0	P	P	P	1	1	1	1	1	1	1	1	1	YES					YES	
	L17-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
EAST	L17-03	1	1	1	1	1	1	1	P	P	0	0	0	0	0	0	0	0		YES				YES	
LEVEL 18	L18-01	0	0	0	0	0	P	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L18-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
LEVEL 19	L19-01	0	0	0	0	0	P	1	1	1	1	1	1	1	1	1	1	1	YES					YES	
	L19-02	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				YES			YES
total	109																		17	15	0	21	36	32	21
																			15.6%	13.8%	0.0%	19.3%	33.0%	29.4%	19.3%
																				29.4%	**29.4%**	**48.6%**			**48.6%**

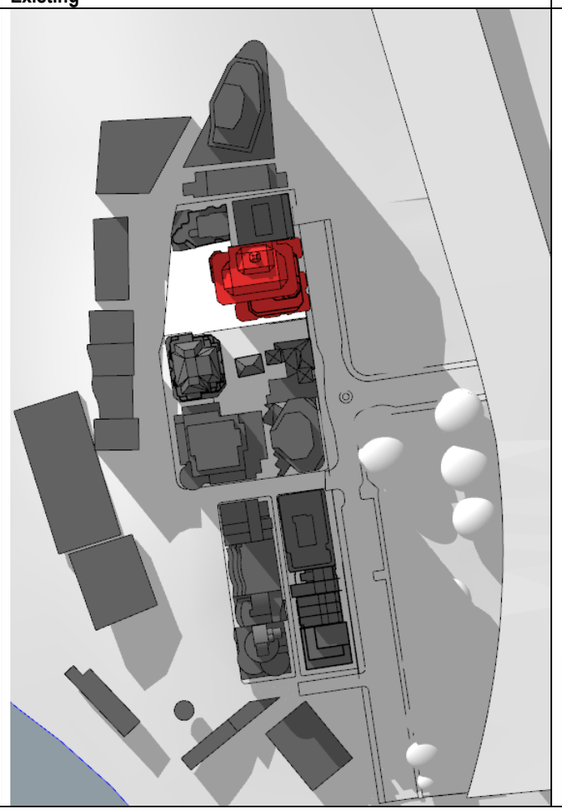
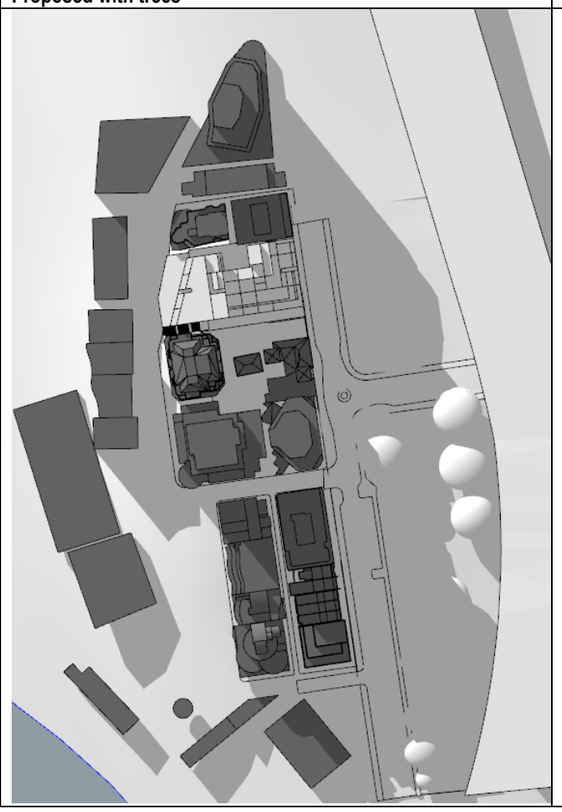
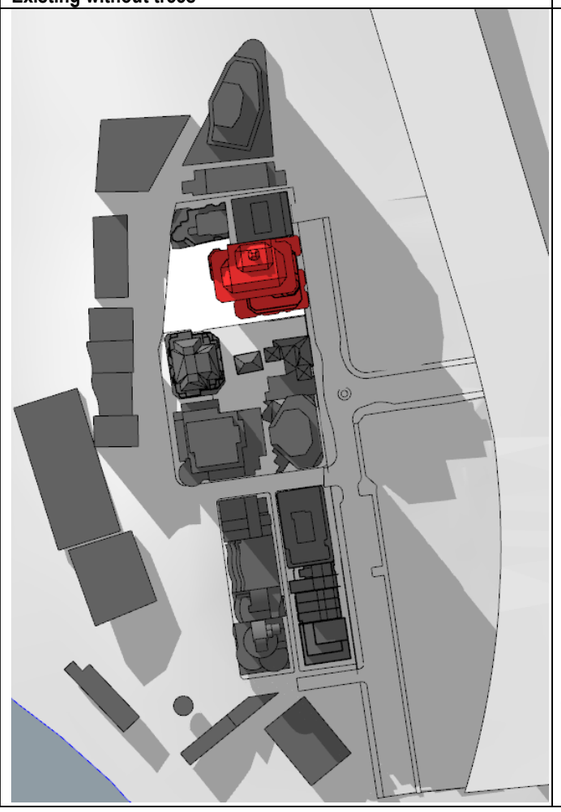
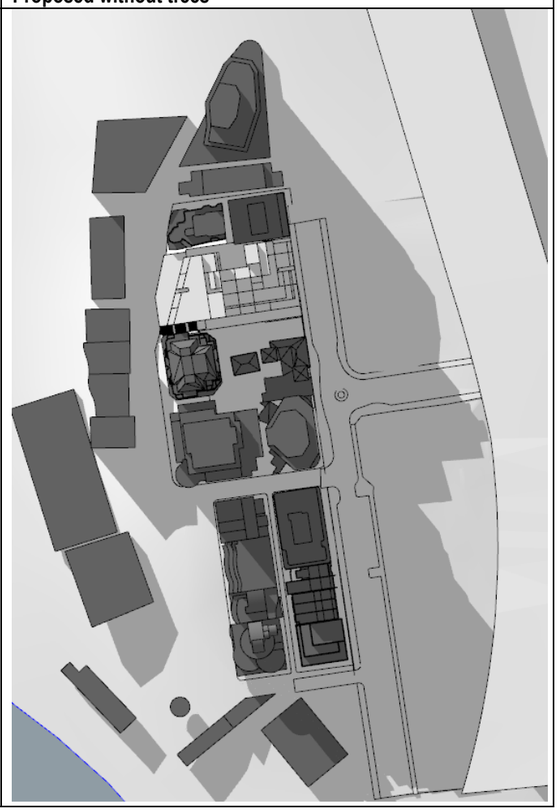
		8	830	9	930	10	1030	11	1130	12	1230	13	1330	14	1430	15	1530	16	>3 hrs 9-3	>2 hrs 9-3 (>3hrs 8-4)	>2 hrs 9-3	>2hrs 8-4	No sun	POS 9-3	POS 8-4
OVERSHADOWING TOTALS																									
total	**109**																		7	5	0	-2	-11	12	-2
																			6.4%	4.6%	0.0%	-1.8%	-10.1%	11.0%	-1.8%
																				11.0%	**11.0%**	**9.2%**			**9.2%**

D.0 APPENDIX D: PLAN SHADOWS ON BRADFIELD PARK

The park is not affected by any shadows from the existing or proposed development until after 1 PM.

	Existing	Proposed with trees	Existing without trees	Proposed without trees
1330				

	Existing	Proposed with trees	Existing without trees	Proposed without trees
1400				

	Existing	Proposed with trees	Existing without trees	Proposed without trees
1430				

	Existing	Proposed with trees	Existing without trees	Proposed without trees
1500