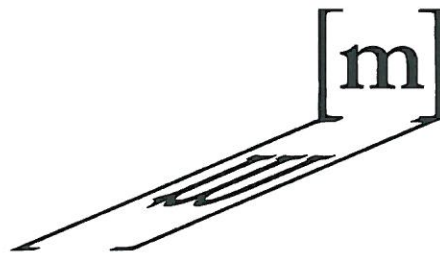


# ***SOLAR IMPACT REPORT***

36-40A CULWORTH AVENUE, KILLARA



Ref: 4184\_CULWORTH

*This report has been prepared by PSN Matter on behalf of the client. No responsibility towards any third party is implied and neither should any third party place reliance upon any information contained within this report.*

April 2011

# ***SOLAR IMPACT REPORT***

Client: Dugald Mackenzie and Associates

Site Address:

36, 38 ,40 and 40A CULWORTH AVENUE  
KILLARA  
NSW

Reference: 4184

REVISED DESIGN APRIL 2011

## **Overview**

This report has been prepared in accordance with instructions received from Dugald Mackenzie to assess solar impact of a potential development at the above address

The analysis is carried out with the purpose of determining if the building developed from plans received from Mackenzie Architects provides for sufficient sunlight to at least seventy percent of the proposed units.

The analysis is carried out using three dimensional information extracted from the architectural plans received and noted herein.

The accompanying notes should be referred to for specifics related to this study .





# SEPP 65 Solar Compliance Analysis

## PSN Matter Measurement Mapping & Surveying

Date: 5/04/2011  
File Ref: 4184

Project: 36 - 40 Culworth Avenue  
Project No: 4184

Note: This analysis is based upon received drawings for redesign of 36 - 40 Culworth Avenue received by email 30/3/11  
Survey information and adjoining information as received above

### BUILDING CONFIGURATION

Level	Use		Total Apartments	3 Hours Sun	% Complying	Sun Between				Complies Y/N)
	(Private OS)			Living and Private						
	(Living Area)			Open Space						
BUILDING										
Ground Floor			11	4	36%					
1	POS									N
	LA									N
2	POS									N
	LA									N
3	POS									N
	LA									N
4	POS									N
	LA									N
6	POS									N
	LA									N
7	POS									N
	LA									N
9	POS					900	1200			Y
	LA					900	1200			Y
10	POS					900	1200			Y
	LA					900	1200			Y
11	POS					900	1200			Y
	LA					900	1200			Y
12	POS					900	1200			Y
	LA					900	1130			N
13	POS									N
	LA									N
First Floor			15	11	73%					
14	POS									N
	LA									N
15	POS									N
	LA									N
16	POS					900	1130	1430	1500	Y
	LA					900	1130	1430	1500	Y
17	POS					930	1230			Y
	LA					930	1230			Y
18	POS					930	1230			Y
	LA					930	1230			Y
19	POS					900	1230			Y
	LA					930	1230			Y
20	POS					930	1230			Y
	LA					1000	1300			Y
8	POS					1000	1300			Y
	LA					1030	1330			Y
21	POS					1030	1330			Y
	LA					1030	1330			Y
22	POS					900	1200			Y
	LA					900	1200			Y
23	POS					900	1200			Y
	LA					900	1200			Y
26	POS					900	1200			Y
	LA					900	1200			Y
25	POS					900	1200			Y
	LA					900	1200			Y
24	POS					900	1200			Y
	LA					900	1130			N



<b>Second Floor</b>			<b>11</b>	<b>8</b>	<b>73%</b>				
28	POS								N
	LA								N
27	POS								N
	LA								N
29	POS					900	1300		Y
	LA					900	1300		Y
30	POS					900	1300		Y
	LA					900	1300		Y
32	POS					900	1300		Y
	LA					930	1300		Y
33	POS					900	1300		Y
	LA					930	1300		Y
35	POS					900	1200		Y
	LA					900	1200		Y
36	POS					900	1200		Y
	LA					900	1200		Y
39	POS					900	1200		Y
	LA					900	1200		Y
38	POS					900	1200		Y
	LA					900	1200		Y
37	POS					900	1200		Y
	LA					900	1130		N
<b>Third Floor</b>			<b>14</b>	<b>11</b>	<b>79%</b>				
41	POS								N
	LA								N
42	POS					900	1400		Y
	LA					900	1400		Y
40	POS					1000	1400		Y
	LA					1000	1400		Y
31	POS					1000	1400		Y
	LA					1000	1400		Y
43	POS					1000	1400		Y
	LA					1000	1400		Y
44	POS					930	1500		Y
	LA					930	1430		Y
45	POS					930	1500		Y
	LA					930	1430		Y
34	POS					1000	1500		Y
	LA					1000	1430		Y
46	POS					1100	1500		Y
	LA					1100	1430		Y
47	POS					900	1230		Y
	LA					900	1230		Y
49	POS					900	1200		Y
	LA					900	1230		Y
50	POS					900	1200		Y
	LA					900	1200		Y
57	POS					900	1200		Y
	LA					900	1200		Y
48	POS					900	1200		Y
	LA					900	1130		N
<b>Penthouse Level</b>			<b>6</b>	<b>6</b>	<b>100%</b>				
51	POS					900	1500		Y
	LA					900	1500		Y
52	POS					900	1500		Y
	LA					900	1500		Y
53	POS					900	1500		Y
	LA					900	1500		Y
54	POS					900	1500		Y
	LA					900	1500		Y
55	POS					900	1500		Y
	LA					900	1500		Y
56	POS					900	1500		Y
	LA					900	1200		Y
<b>TOTALS</b>			<b>57</b>	<b>40</b>	<b>70%</b>				



## SEPP 65 Solar Compliance Analysis

Date: 5/04/2011  
File Ref: 4184

Project: 36 - 40 Culworth Avenue  
Project N: 4184

Note: This analysis is based upon received drawings for redesign of 36 - 40 Culworth Avenue received by email 30/3/11  
Survey information and adjoining information as received above

BUILDING		9	10	11	12	1	2	3
Ground Floor								
1	POS							
	LA							
2	POS							
	LA							
3	POS							
	LA							
4	POS							
	LA							
6	POS							
	LA							
7	POS							
	LA							
9	POS							
	LA							
10	POS							
	LA							
11	POS							
	LA							
12	POS							
	LA							
13	POS							
	LA							
First Floor								
14	POS							
	LA							
15	POS							
	LA							
16	POS							
	LA							
17	POS							
	LA							
18	POS							
	LA							
19	POS							
	LA							
20	POS							
	LA							
8	POS							
	LA							
21	POS							
	LA							
22	POS							
	LA							
23	POS							
	LA							
26	POS							
	LA							
25	POS							
	LA							
24	POS							
	LA							



Second Floor		9	10	11	12	1	2	3
12	POS							
	LA							
13	POS							
	LA							
14	POS							
	LA							
15	POS							
	LA							
16	POS							
	LA							
17	POS							
	LA							
17	POS							
	LA							
17	POS							
	LA							
17	POS							
	LA							
17	POS							
	LA							
17	POS							
	LA							
Second Floor		9	10	11	12	1	2	3
41	POS							
	LA							
42	POS							
	LA							
40	POS							
	LA							
31	POS							
	LA							
43	POS							
	LA							
44	POS							
	LA							
45	POS							
	LA							
34	POS							
	LA							
46	POS							
	LA							
47	POS							
	LA							
49	POS							
	LA							
50	POS							
	LA							
57	POS							
	LA							
48	POS							
	LA							
Penthouse Level		9	10	11	12	1	2	3
51	POS							
	LA							
52	POS							
	LA							
53	POS							
	LA							
54	POS							
	LA							
55	POS							
	LA							
56	POS							
	LA							



# Conclusion

With regards to plans received via email from Mackenzie and Associates received march 30th, 2011 we confirm that the report is based upon three dimensional computer modelling which incorporates floor layout as per the plans received.

The modelling is based upon AHD levels as provided by Mackenzie Architects and the proposed building is linked to the site information alongwith the building being oriented to True North. A solar access compliance table is enclosed.

This study has been carried out to analyse the level of solar access provided by the proposed development at the abovementioned address.

The assessment criteria used to test the development are as stipulated in SEPP65 with regards to solar access in relation to the proposed units.

## SEPP 65 Compliance

Of the 57 units proposed, 40 would meet the minimum requirements providing 70% of the units with suitable solar access thus meeting the required 70% under SEPP 65.

Of the 57 units 17 do not meet the minimum SEPP 65 requirements for solar access. Of these 17 4 units receive sufficient sun to the private open space but only receive 2.6 hours of sunlight to the living areas, only 4 receive no sun at all being south facing. Five face west and receive moderate to good afternoon sun but later in the afternoon. The remaining 4 are north facing ground floor units which receive insufficient sunlight to the private open space and insufficient amounts of sun to the living areas.

Of the units meeting the minimum solar requirements the majority meet these requirements comfortably.

## Notes

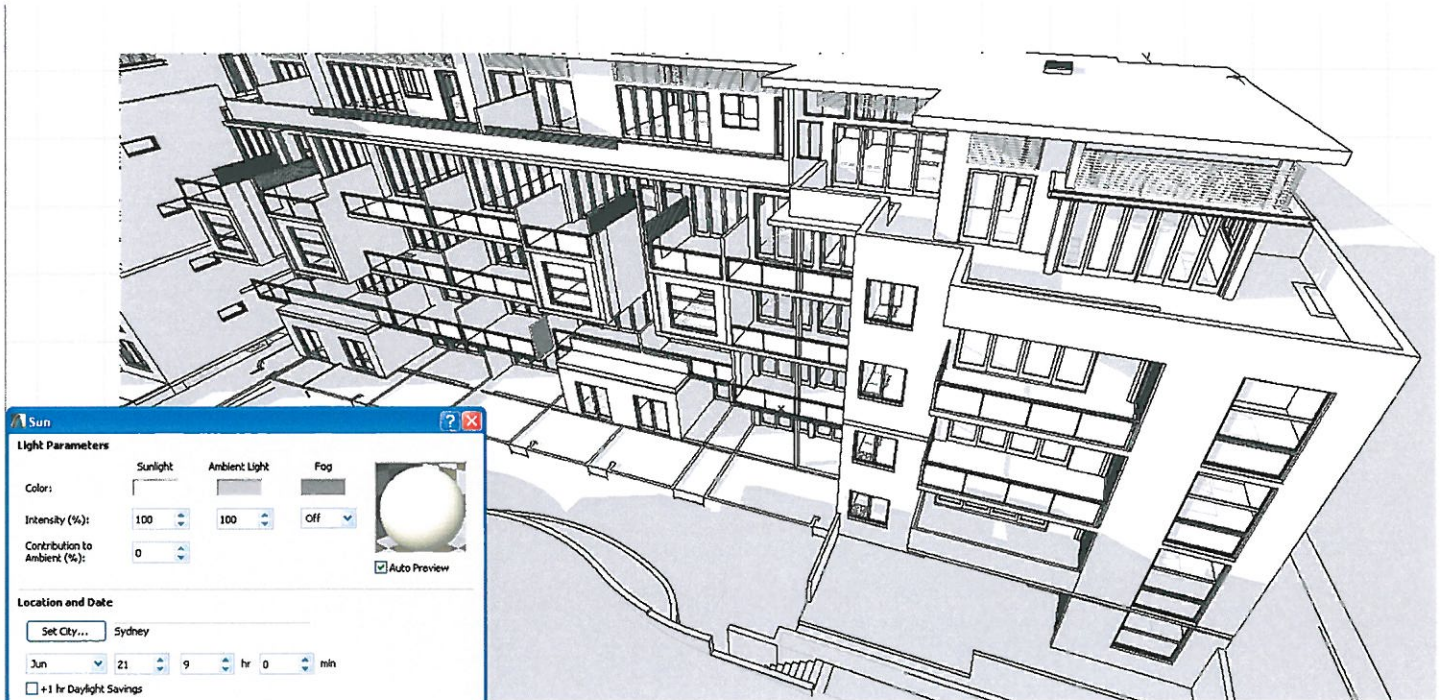
The solar analysis has been carried out using the following conditions and constraints:

1. Testing for solar effect was based upon a three dimensional computer model of existing and proposed buildings using the information provided. The three dimensional model has been constructed in artificial three dimensional space using levels extracted from plans provided by Mackenzie Architects. Model orientation to true north was determined from plans supplied by Mackenzie Architects. Building heights, wall dimensions, window and balustrading information was determined from plans provided by Mackenzie Architects.
2. Survey information including information pertinent to the definition of true north was as received from Mackenzie Architects with true north being taken from Land NSW SIX viewer.
3. Computer modelling has been done to the highest possible accuracy available using the information received.
4. Accuracy of solar angles is based upon information provided by unvalidated third party sources. Investigations have shown that there is notable variation between predicted solar angles provided by several suppliers which leads to some unreliability with respect to solar impact analysis. Solar Angles used for this analysis have been sourced from US Department of Commerce National Oceanic and Atmospheric Administration (NOAA) Observatory tables and United States Naval Observatory (USNO) which are generally congruent with most international agencies. Using different solar angles may show variations in predicted shadow position proportionately increasing in variance with increased building height.

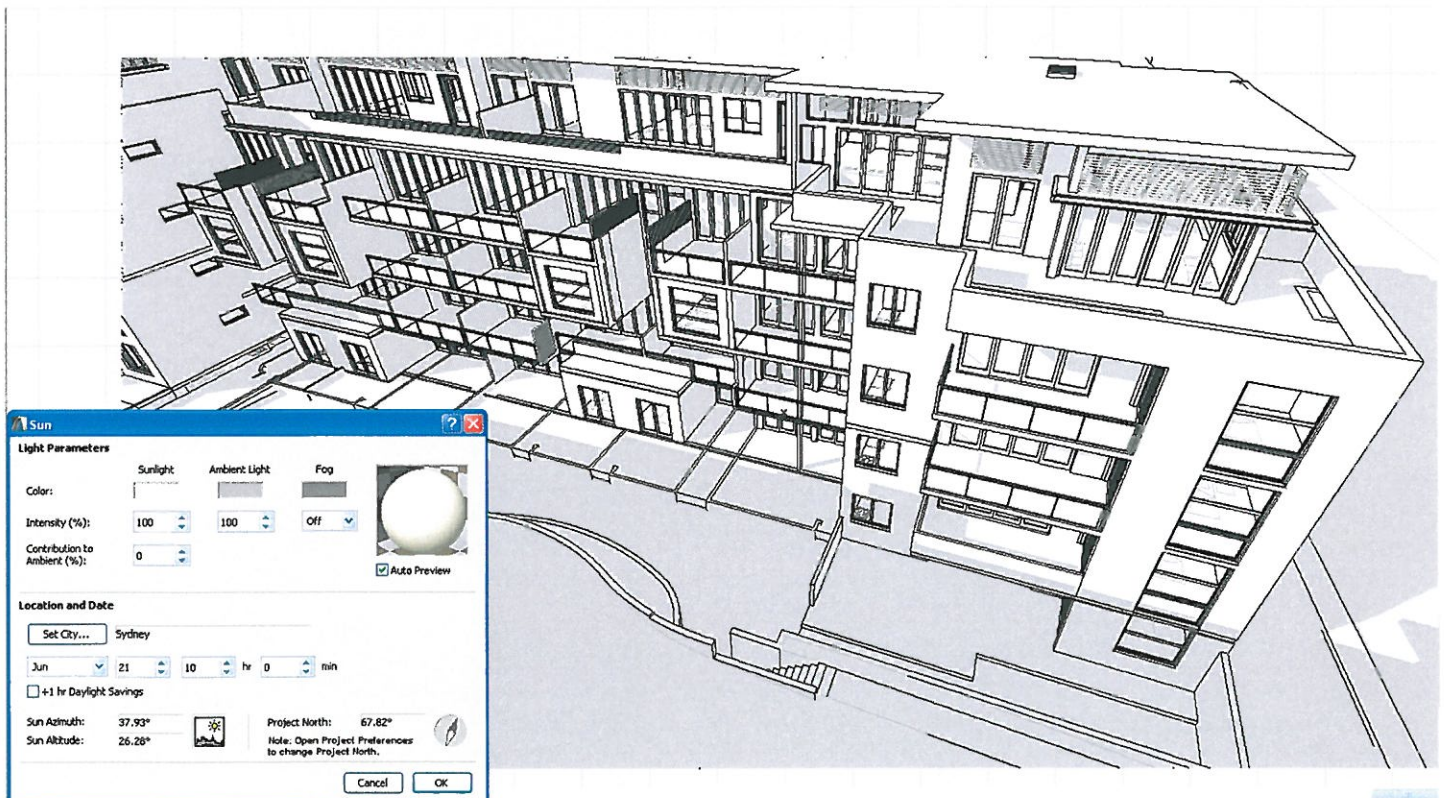


CALCULATED SOLAR IMPACT  
**PSN Matter**  
Measurement Mapping & Surveying

38 - 40 CULWORTH AVENUE, KILLARA



NORTHWESTERN VIEW 09AM JUNE 21

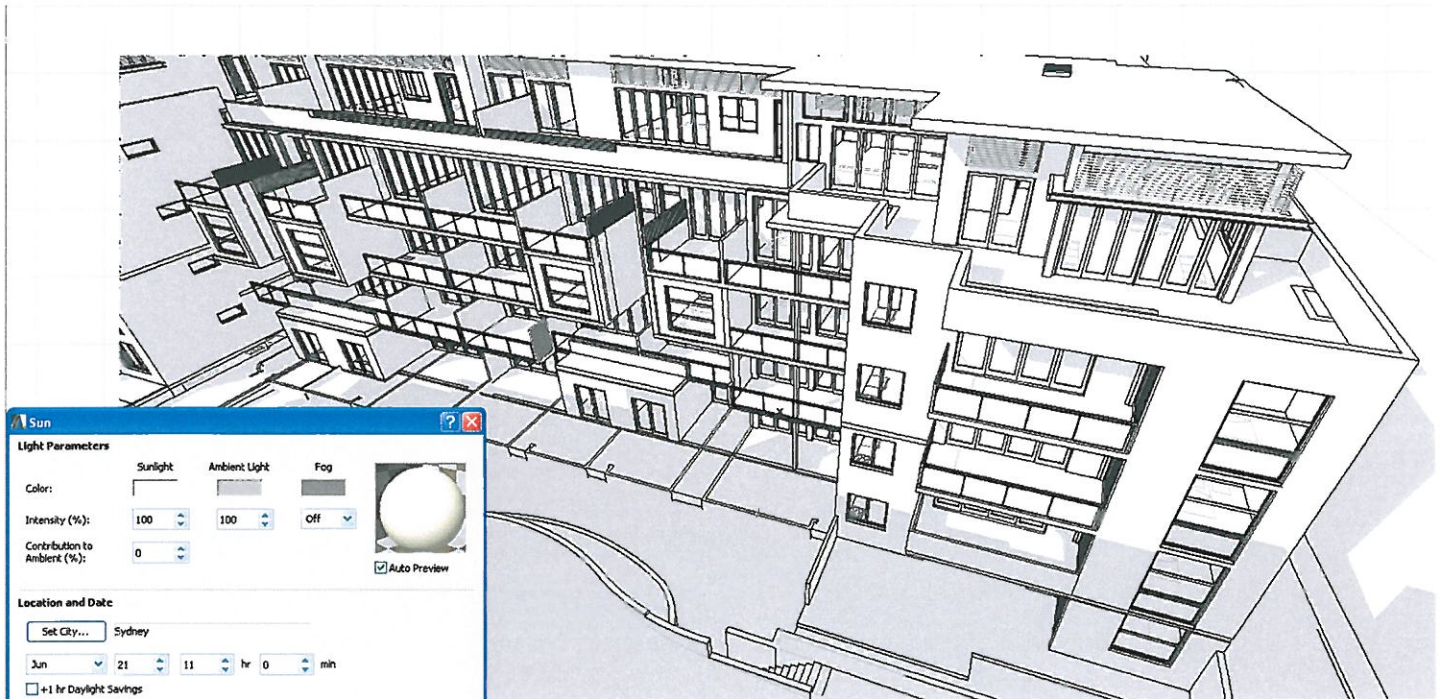


NORTH WESTERN VIEW 10AM JUNE 21

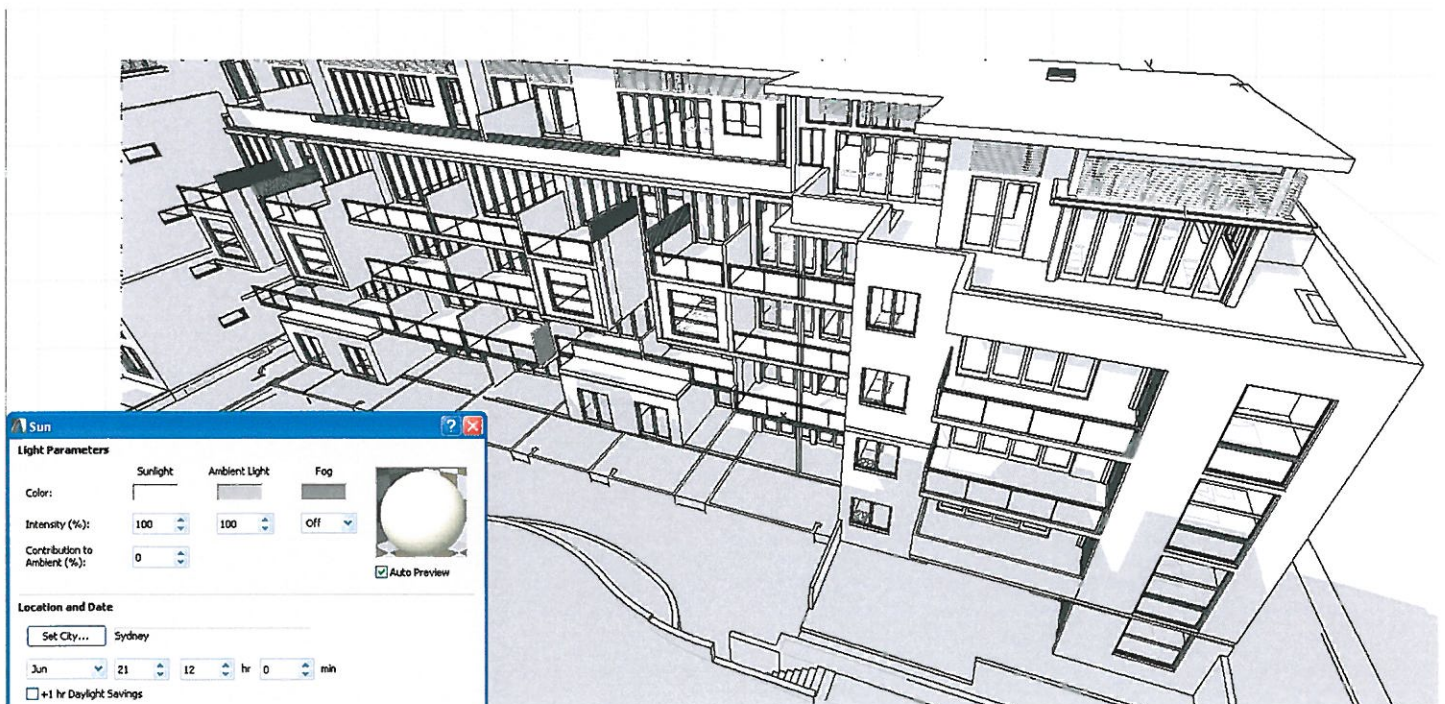


CALCULATED SOLAR IMPACT  
**PSN Matter**  
Measurement Mapping & Surveying

38 - 40 CULWORTH AVENUE, KILLARA



NORTHWESTERN VIEW 11AM JUNE 21

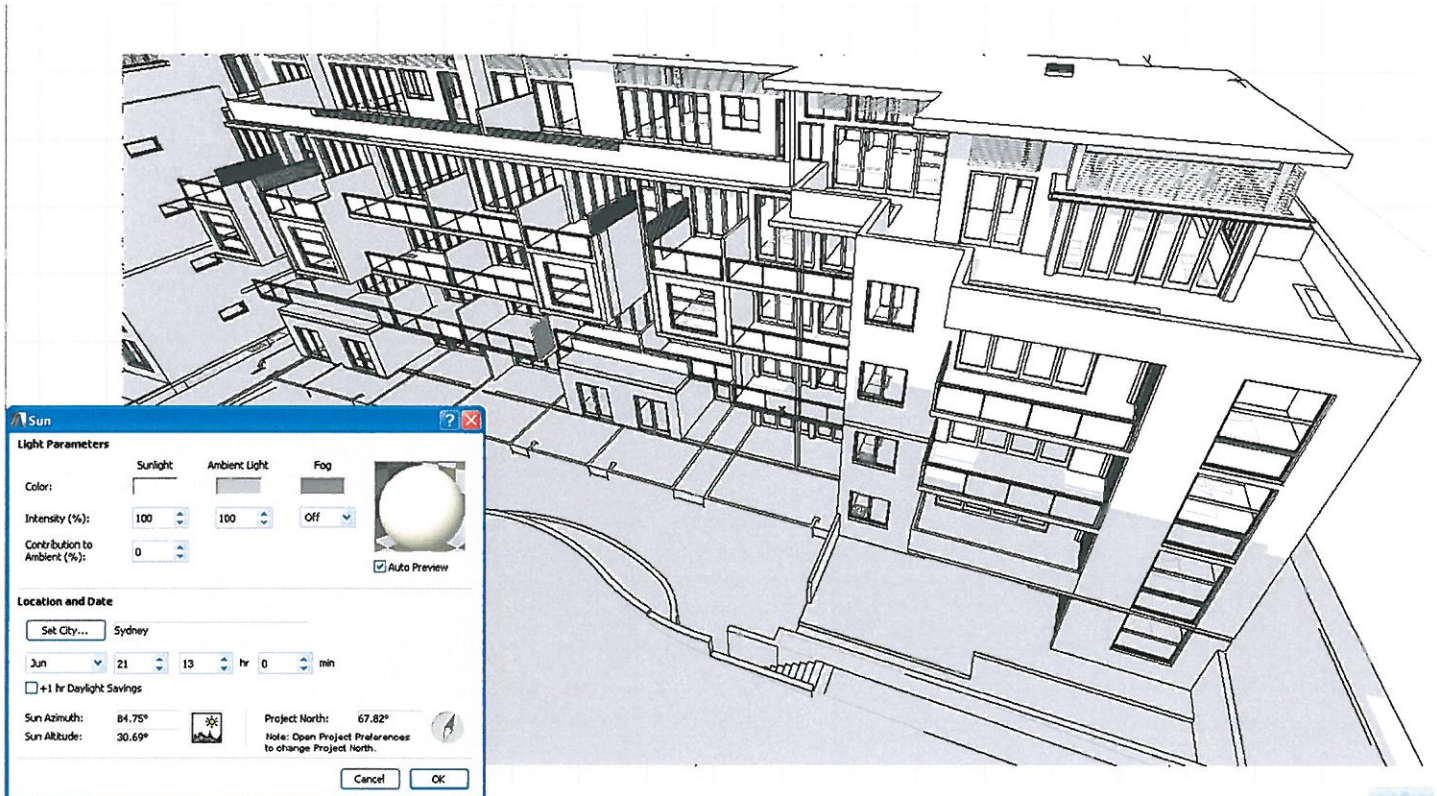


NORTH WESTERN VIEW 12PM JUNE 21

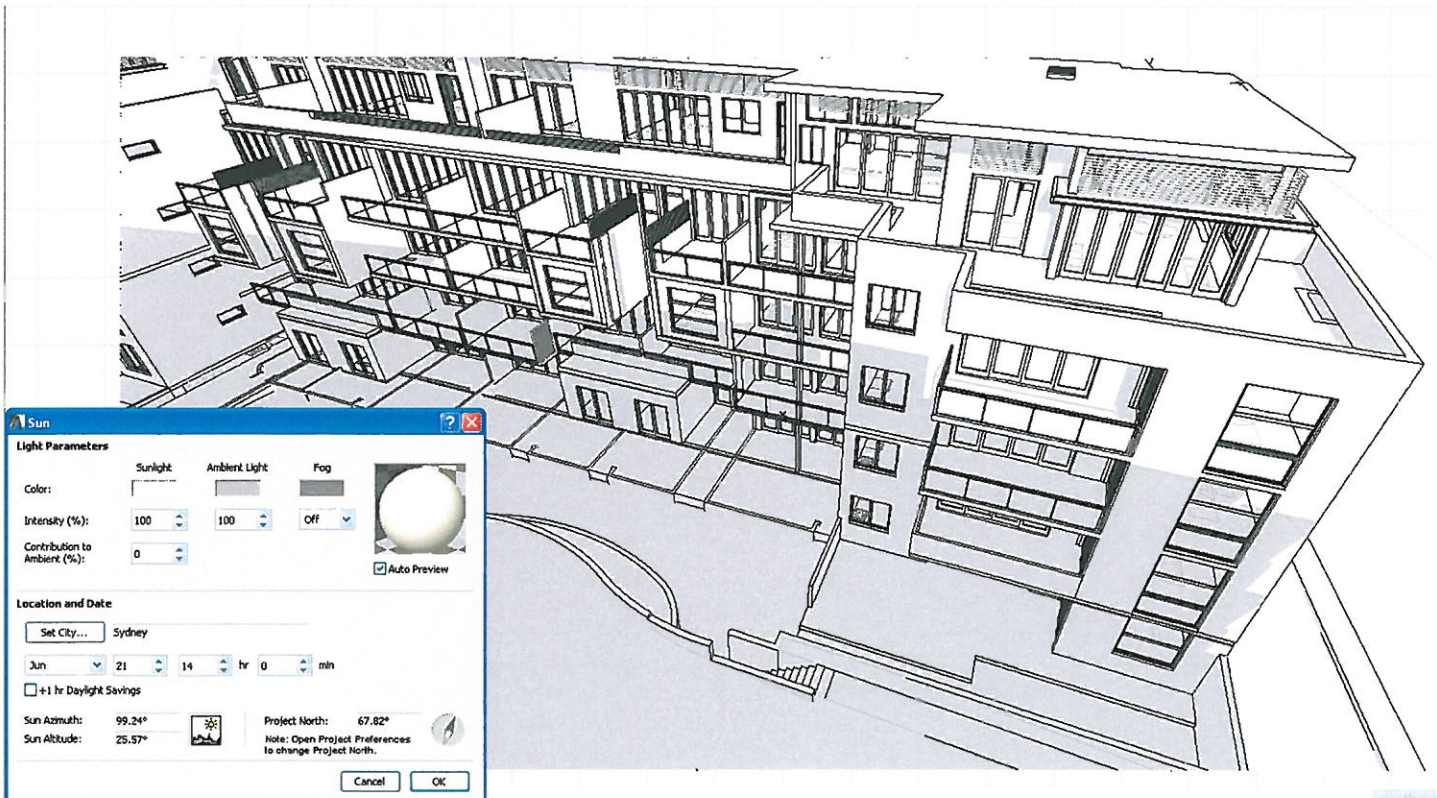


CALCULATED SOLAR IMPACT  
**PSN Matter**  
Measurement Mapping & Surveying

38 - 40 CULWORTH AVENUE, KILLARA



NORTHWESTERN VIEW 01PM JUNE 21

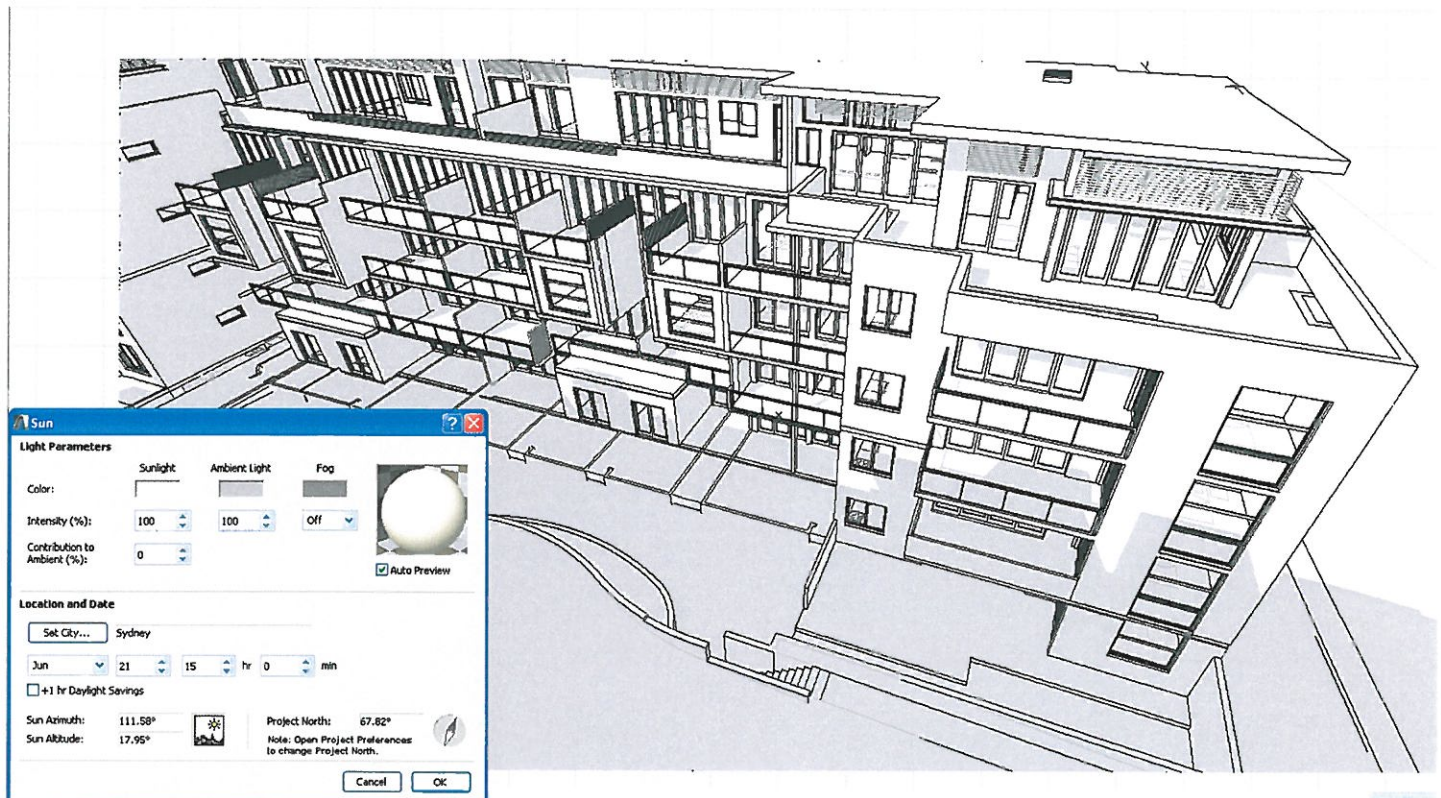


NORTH WESTERN VIEW 02PM JUNE 21

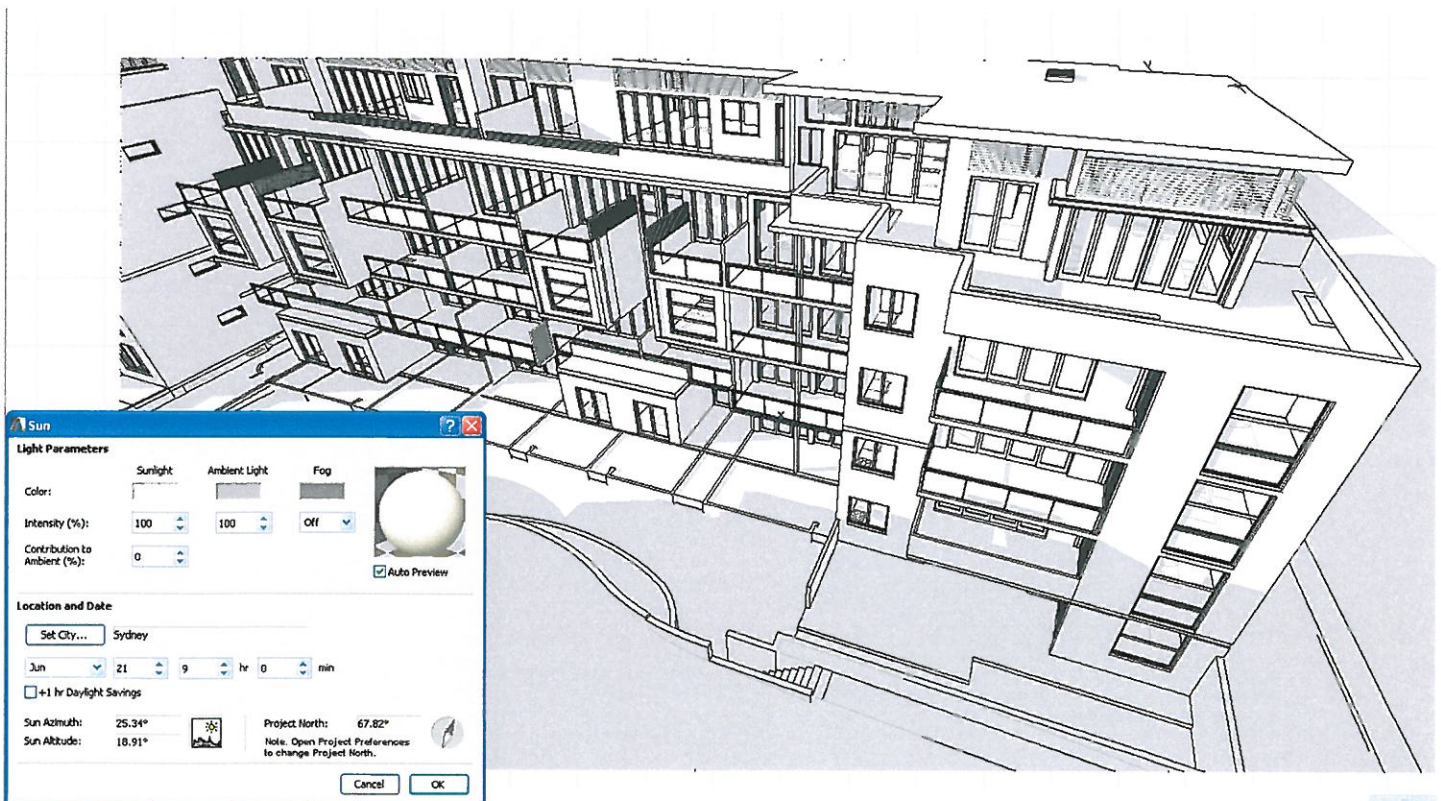


CALCULATED SOLAR IMPACT  
**PSN Matter**  
Measurement Mapping & Surveying

38 - 40 CULWORTH AVENUE, KILLARA



NORTHWESTERN VIEW 01PM JUNE 21

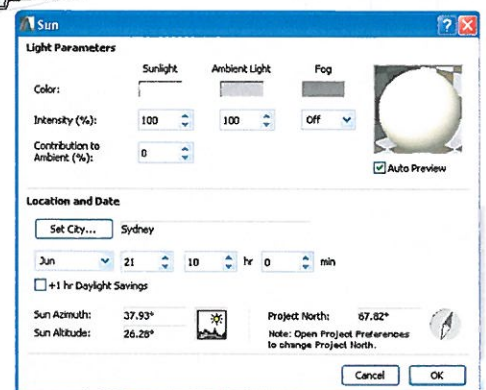


EASTERN VIEW 09AM JUNE 21

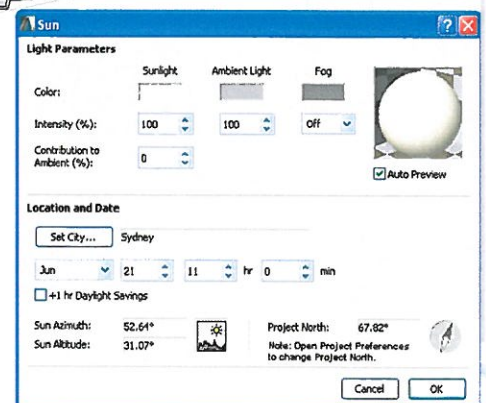


CALCULATED SOLAR IMPACT  
**PSN Matter**  
Measurement Mapping & Surveying

38 - 40 CULWORTH AVENUE, KILLARA



EASTERN VIEW 10AM JUNE 21



EASTERN VIEW 11AM JUNE 21



CALCULATED SOLAR IMPACT  
**PSN Matter**  
Measurement Mapping & Surveying

38 - 40 CULWORTH AVENUE, KILLARA



**Sun**

**Light Parameters**

Color: Sunlight Ambient Light Fog

Intensity (%): 100 100 Off

Contribution to Ambient (%): 0

☒ Auto Preview

**Location and Date**

Set City... Sydney

Jun 21 12 hr 0 min

☐ +1 hr Daylight Savings

Sun Azimuth: 68.74° Sun Altitude: 32.63° Project North: 67.82°

Note: Open Project Preferences to change Project North.

Cancel OK

EASTERN VIEW 12PM JUNE 21



**Sun**

**Light Parameters**

Color: Sunlight Ambient Light Fog

Intensity (%): 100 100 Off

Contribution to Ambient (%): 0

☒ Auto Preview

**Location and Date**

Set City... Sydney

Jun 21 13 hr 0 min

☐ +1 hr Daylight Savings

Sun Azimuth: 84.75° Sun Altitude: 30.69° Project North: 67.82°

Note: Open Project Preferences to change Project North.

Cancel OK

EASTERN VIEW 01PM JUNE 21



CALCULATED SOLAR IMPACT  
**PSN Matter**  
Measurement Mapping & Surveying

38 - 40 CULWORTH AVENUE, KILLARA



**Sun**

**Light Parameters**

Color: Sunlight Ambient Light Fog

Intensity (%): 100 100 Off

Contribution to Ambient (%): 0

☒ Auto Preview

**Location and Date**

Set City... Sydney

Jun 21 14 hr 0 min

☐ +1 hr Daylight Savings

Sun Azimuth: 99.24° Sun Altitude: 25.57° Project North: 67.82°

Note: Open Project Preferences to change Project North.

Cancel OK

EASTERN VIEW 02PM JUNE 21