

ANALYSIS AND OPINION

SOLAR ACCESS | BUILDING SEPARATION

472-494 PACIFIC HWY St Leonards
10 March 2016

1.0 PRELIMINARIES

1.1 I understand that the JRPP has requested information from the Applicant in relation to the impact on solar access compliance of apartments, of:

- Increasing separation between the two towers by 2m;
- A revised roof plan option where the blade elements have been reduced in height.

1.2 I carried out the original solar access analysis for the Development Application, using a full 3D digital model of the proposal in a modelled context. Subsequently I employed a more detailed 3D digital model to address issues of summer sun control. I employ the same model for the present analysis. I have also been supplied with a copy of that later model, modified to reduce the height of the roof architectural elements.

2.0 SUMMARY

2.1 Increased building separation.

The additional 2m separation would allow the sun to reach lower on the elevation of Tower 2 in the morning. This results in a slightly larger sunpatch on the glazing of one unit in the centre of the façade of Tower 2, and another living room window at the southern corner. ***Neither of the two apartments becomes complying for sun between 9am and 3pm, as the relevant east façade loses usable sun by 10:30 am.***

There is no other real impact on solar access for apartments in the subject development, for instance in the afternoons. See the explanatory views from the sun in Table 1.

2.2 Variation of roof architectural elements.

Tower 1 is not sensitive to afternoon shadow from the roof architectural elements on Tower 2. The only sensitivity is in the mornings, when the lower Tower 1 shades Tower 2.

The proposed reduction of the roof architectural elements represents approximately one floor reduction in height of each tower (after allowing for the roof top plant which would remain. It is therefore consistent that the same two apartments in Tower 2 would benefit by having morning sun, as do from the 2m additional separation. ***Again, neither apartment becomes complying for sun between 9am and 3pm, as the relevant east façade loses usable sun by 10:30 am.***

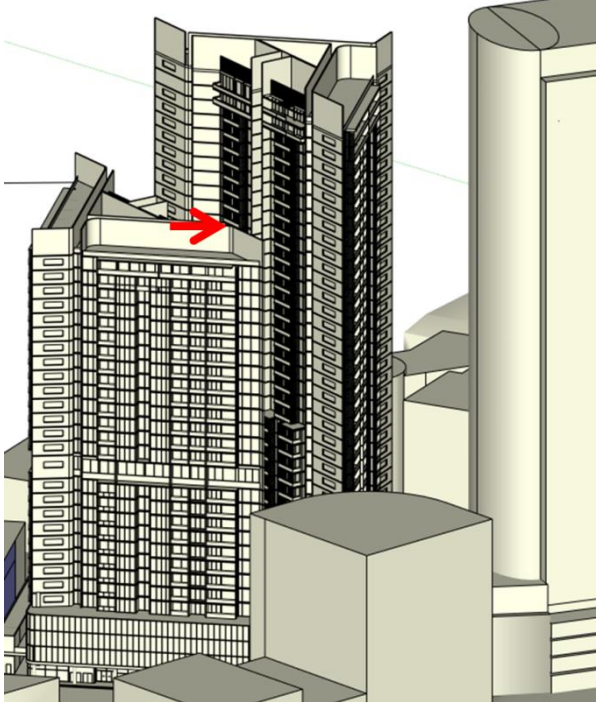
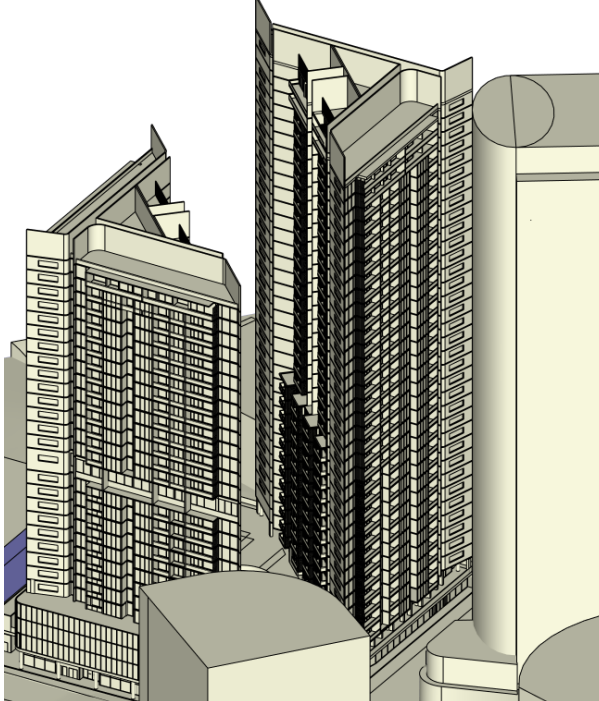
2.3 In summary, ***I find that increasing the building separation by two meters would not change the previously reported solar access compliance. For completeness, this has also been tested to be the case with proposed reduced roof elements.***

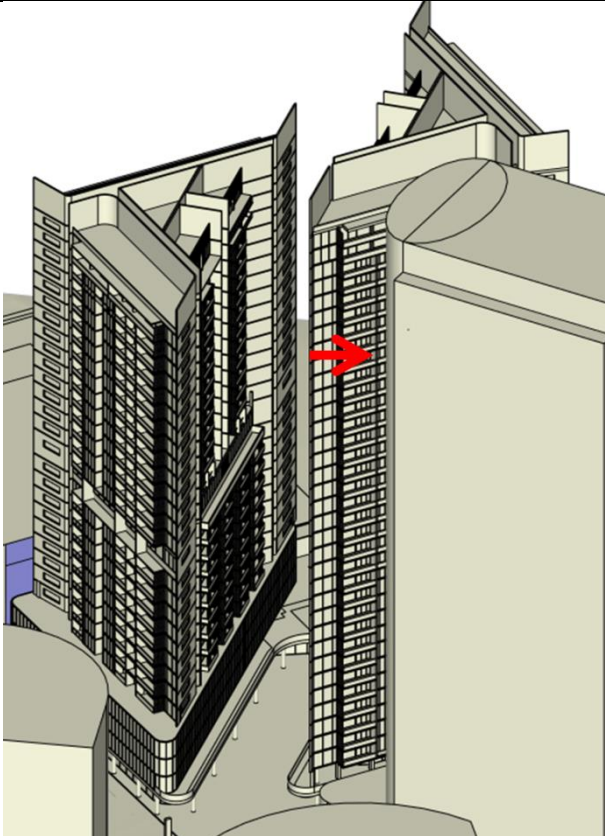
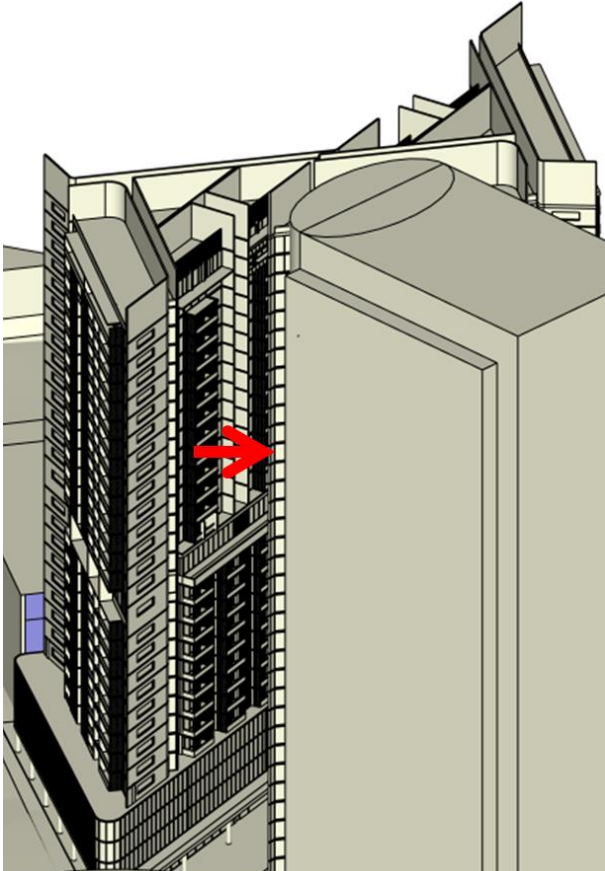
3.0 INCREASED BUILDING SEPARATION

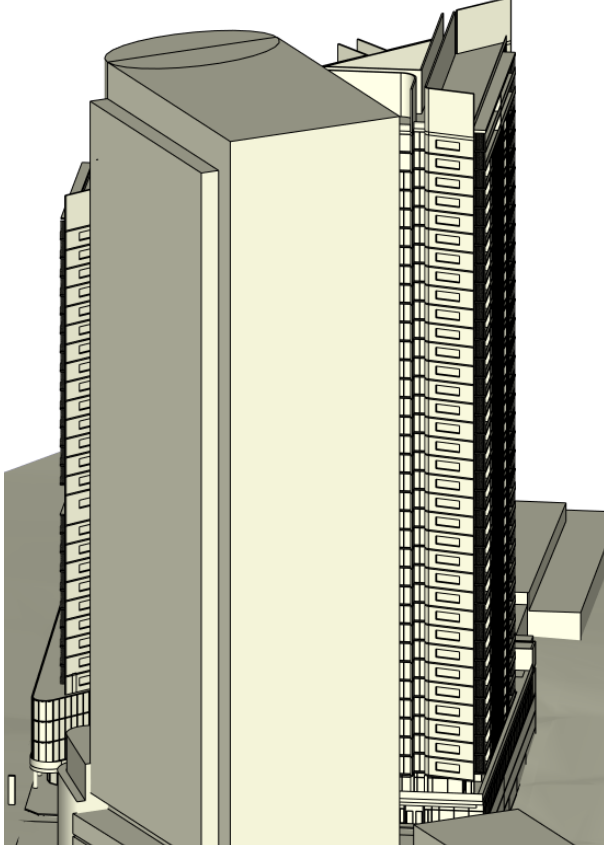
The likely effect of a relatively small increase in building separation may be easily inferred from the views from the sun. Table 1 below shows the key times. I annotate the table where necessary with abridged comments.

Table 1: Views from the sun of current proposal

The views are annotated to gauge impact of increased separation between towers

0900		At 9am, the additional 2m separation would allow the sun to reach lower on the elevation of Tower 2. By scaling to the elevation, at this time there would be a bigger sunpatch on the glazing of one unit in the centre of the façade (See arrow), and another living room window at the southern corner.
1030		By 10:30, increased separation makes no further difference, and sun on the two relevant apartment's glazing is on the verge of becoming an unacceptably acute angle to the glass surface. To put it simply, while two apartments would receive additional sun, it would not be for the required 2 hours to change their compliance status.

1230		At 12:30 there is not yet mutual overshadowing of the smaller east tower (Tower 1). Note: At the time the model was prepared, allowance was made for an assumed building on what is now called 'The Landmark' site. Though this is now superceded by a larger, wider floor plate, the effect of moving the taller Tower 2 on the subject site 1m to the west can be seen to be <i>unfavourable</i> to an entire 'stack' of Living area glazing in the north-west elevation of Tower 2, as it would push that glazing into the shadow of 'The Landmark'.
1330		At or about 1:30pm, with an increased gap, the northern corner of Tower 2 would expose an entire 'stack' of glazing on Tower 1. But the effect would last literally a few minutes, before being masked by overshadowing from 'The Landmark' building.

1500		For the rest of the afternoon, the taller Tower 2 completely shades Tower 1, with external overshadowing from the 'Landmark' added to the impact. An increase of two meters in the separation between towers makes no difference.
------	--	---

4.0 VARIATION OF ROOF ARCHITECTURAL ELEMENTS

The effect of lowering the roof elements on the two towers may be seen in Figure 1.

Note that Tower 1 is not sensitive to afternoon shadow from the roof feature on Tower 2, as can be inferred from the 1:30pm and 3pm views from the sun in Table 1. The only sensitivity is in the mornings, when the lower Tower 1 shades Tower 2 (See 9am view from the sun in Table 1, and comparison with and without roof feature in Figure 1).

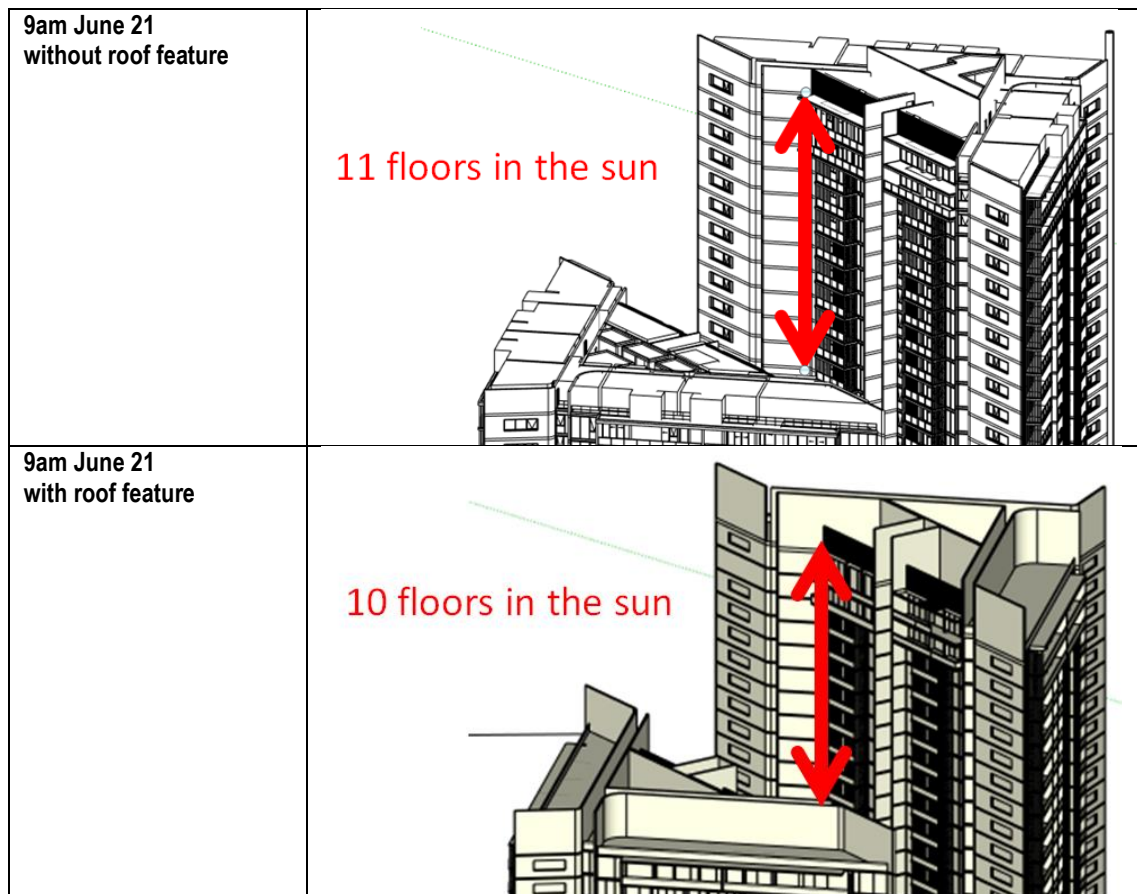


Figure 1: Comparison with and without roof feature

5.0 CONCLUSION

5.1 Increased building separation

Increasing the separation of the two towers by 2 meters makes a small difference to the mutual shading. Because of the particular orientation of the space, **the only non-trivial increase in winter sun exposure would be in the morning for two Apartments in Tower 2, but neither apartment would thereby comply for minimum 2 hours of sun between 9am and 3pm June 21.** Because of overshadowing by the proposed 'Landmark' development, there is no identifiable afternoon benefit.

In my view, the solar access impact of a possible 2m increase in separation of the towers is negligible.

5.2 Variation of roof architectural elements

In effect, ***the reduction in height of the roof elements on the towers produces the same almost negligible additional benefit, for the same two apartments.***

In summary, increasing the building separation by two meters would not change the previously reported solar access compliance. For completeness, this has also been tested to be the case with proposed reduced roof elements.