Supplementary Information

Blackwattle Bay SSP Study

December 2022

Part II

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Infrastructure NSW received several requests from the Department of Planning and Environment following the issue of the Blackwattle Bay Response to Submissions in June 2022. This document compiles additional information provided in attachments, as set out below.

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Sunlight and Amenity

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Attachment 4: Amendments Improving Sunlight to Public Spaces and Neighbours dated 11 October 2022, FJMT & Tree species advice, Tree IQ

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NSW GOVERNMENT

fjmturban

Blackwattle Bay _ Amendments Improving Sunlight to Public Space and Neighbours
INSW — 11/10/22

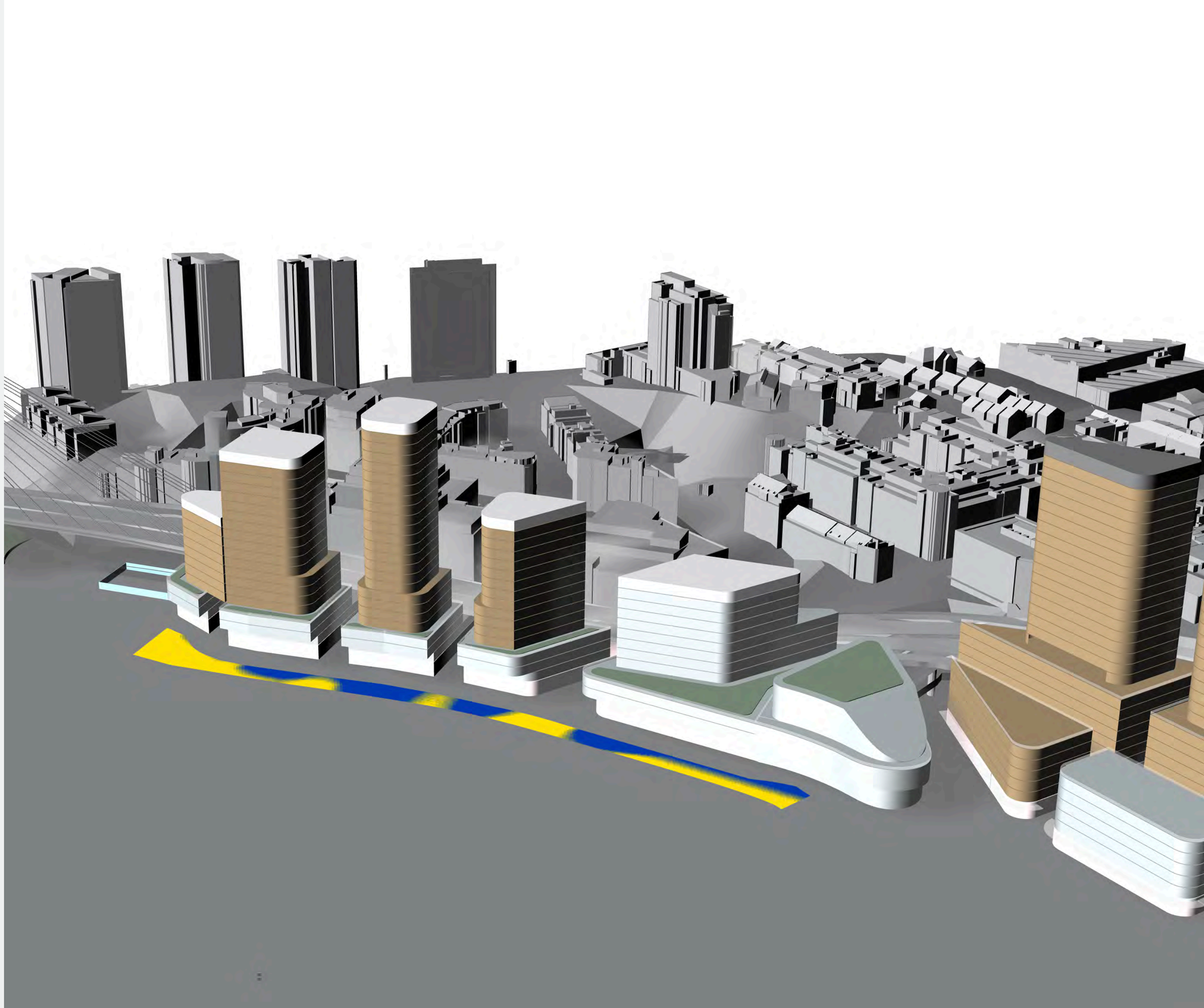
1 Sunlight To Promenade

Equinox _ 8am to 4pm

Solar analysis to the 10m wide promenade on land at Equinox between 8am and 4pm shows areas receiving above and below a 2hr threshold.

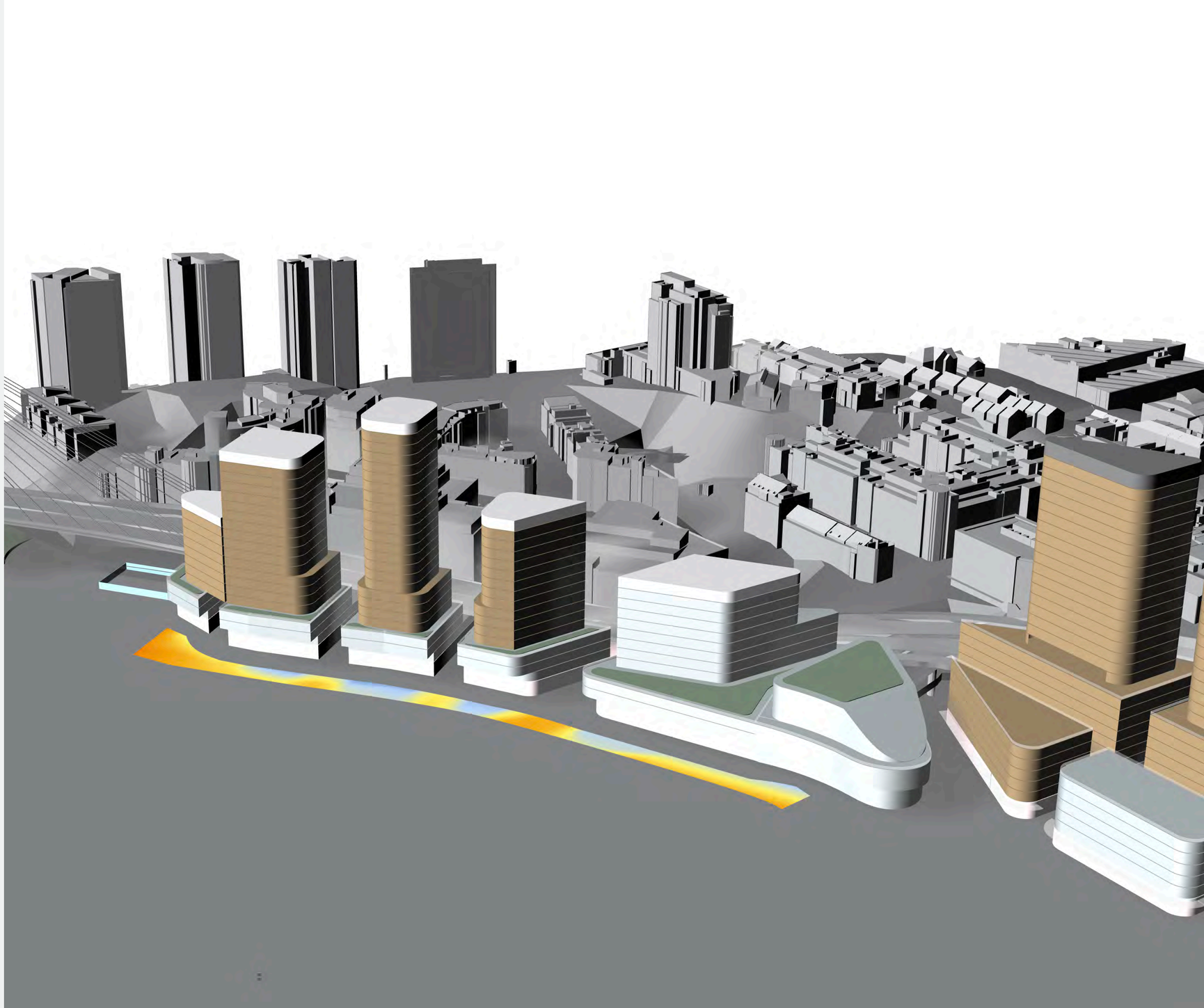
The analysis highlights the increased available sunlight hours at the mid point of the solar year.

9am-3pm for winter solstice represents sunlight from 2 hours after sunrise to 2 hours before sunset. For the equinox (6am-6pm) this equates to 8am-4pm.



Equinox _ 8am to 4pm

Solar heat map analysis to the 10m wide promenade on land at Equinox between 8am and 4pm shows the majority of the promenade to be close to or greater than 2hrs.



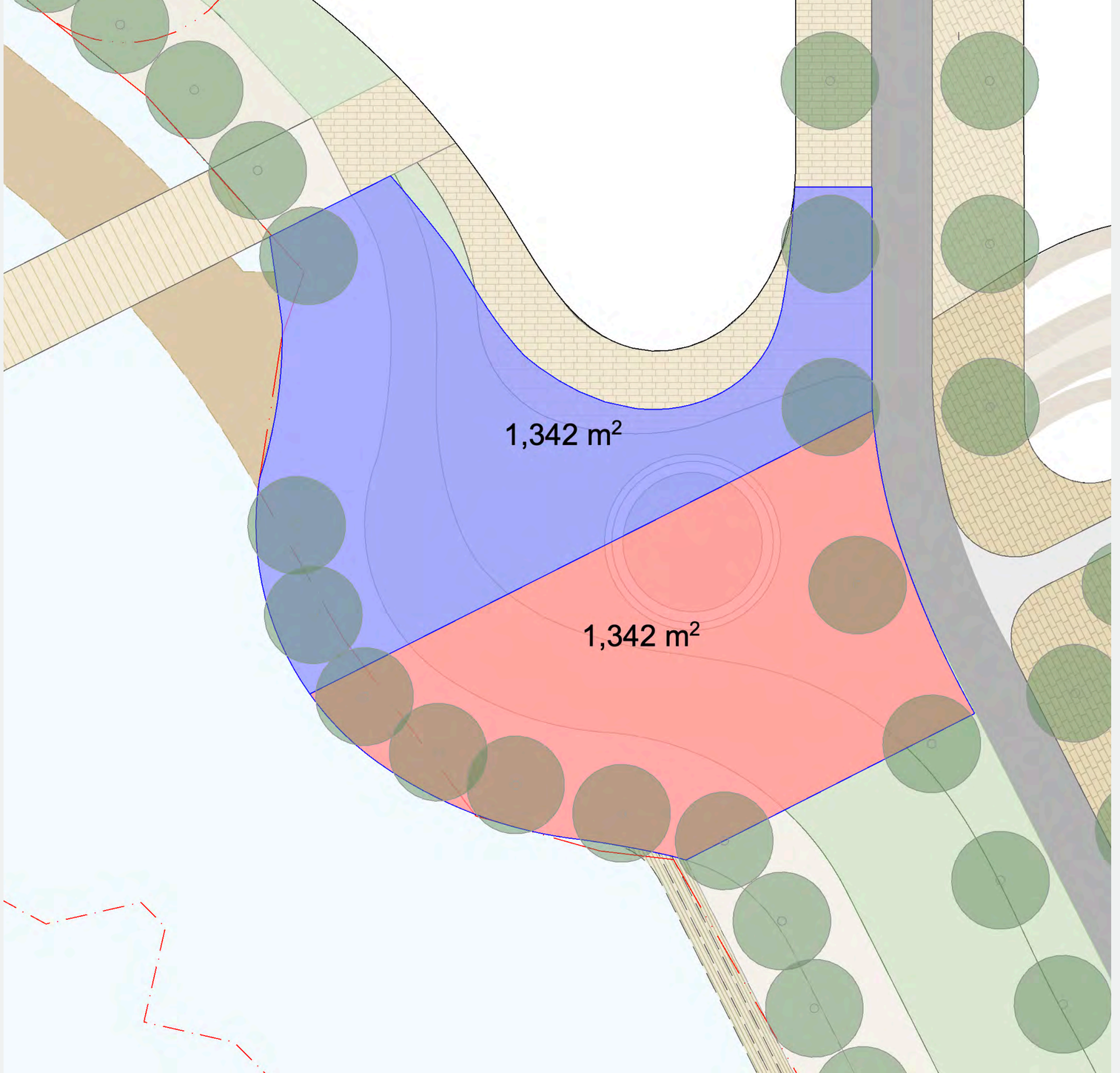
2 Sunlight to Promontory

RtS Massing

Response to Submissions massing showing potential theatre building adjacent the promontory.

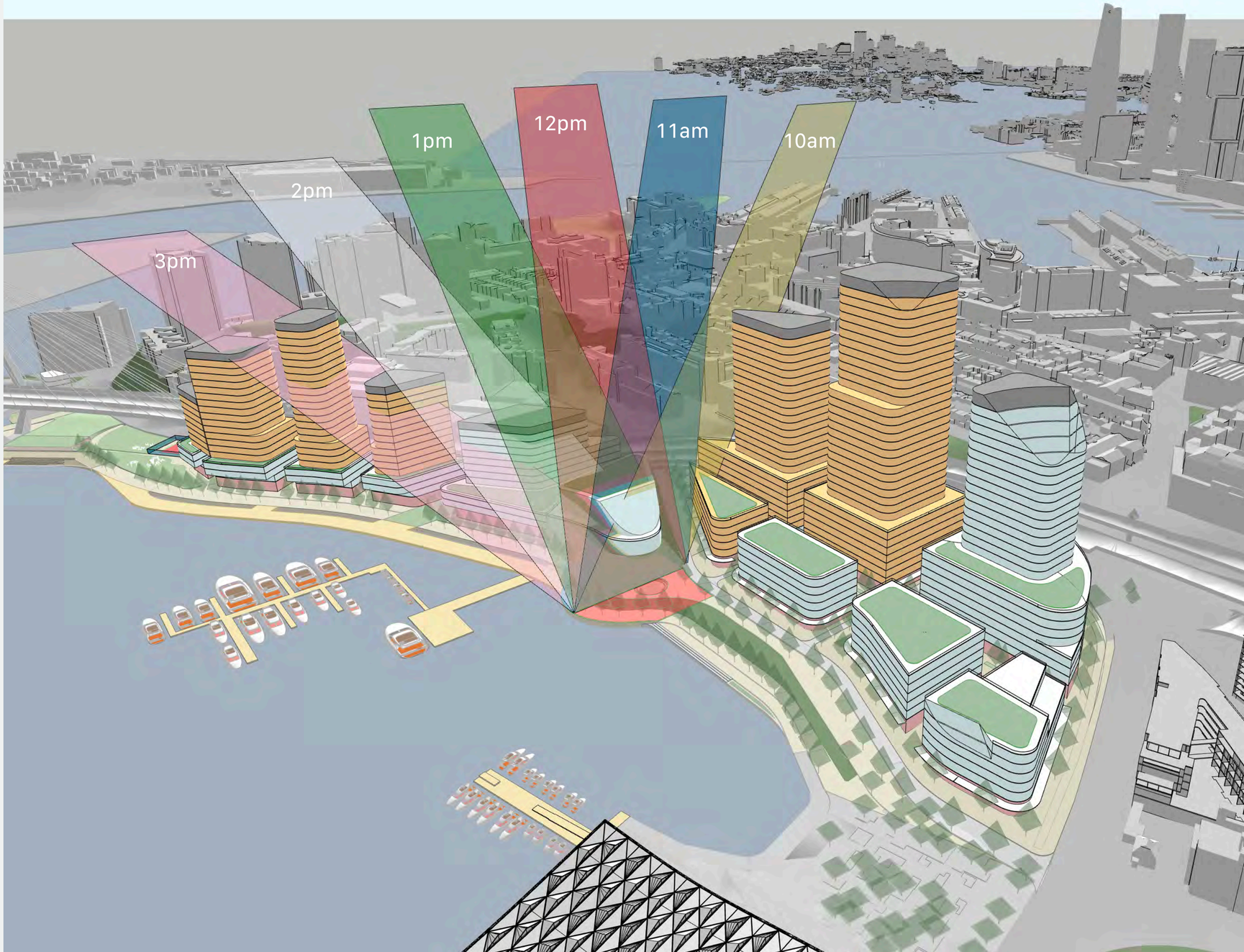
Promontory _ 50% 4hrs

The promontory area is divided indicatively into two zones in order to project sun planes that protect 50% of the promontory for 4 hours between 9am and 3pm on 21 June.



Promenade _ 50% 4hrs

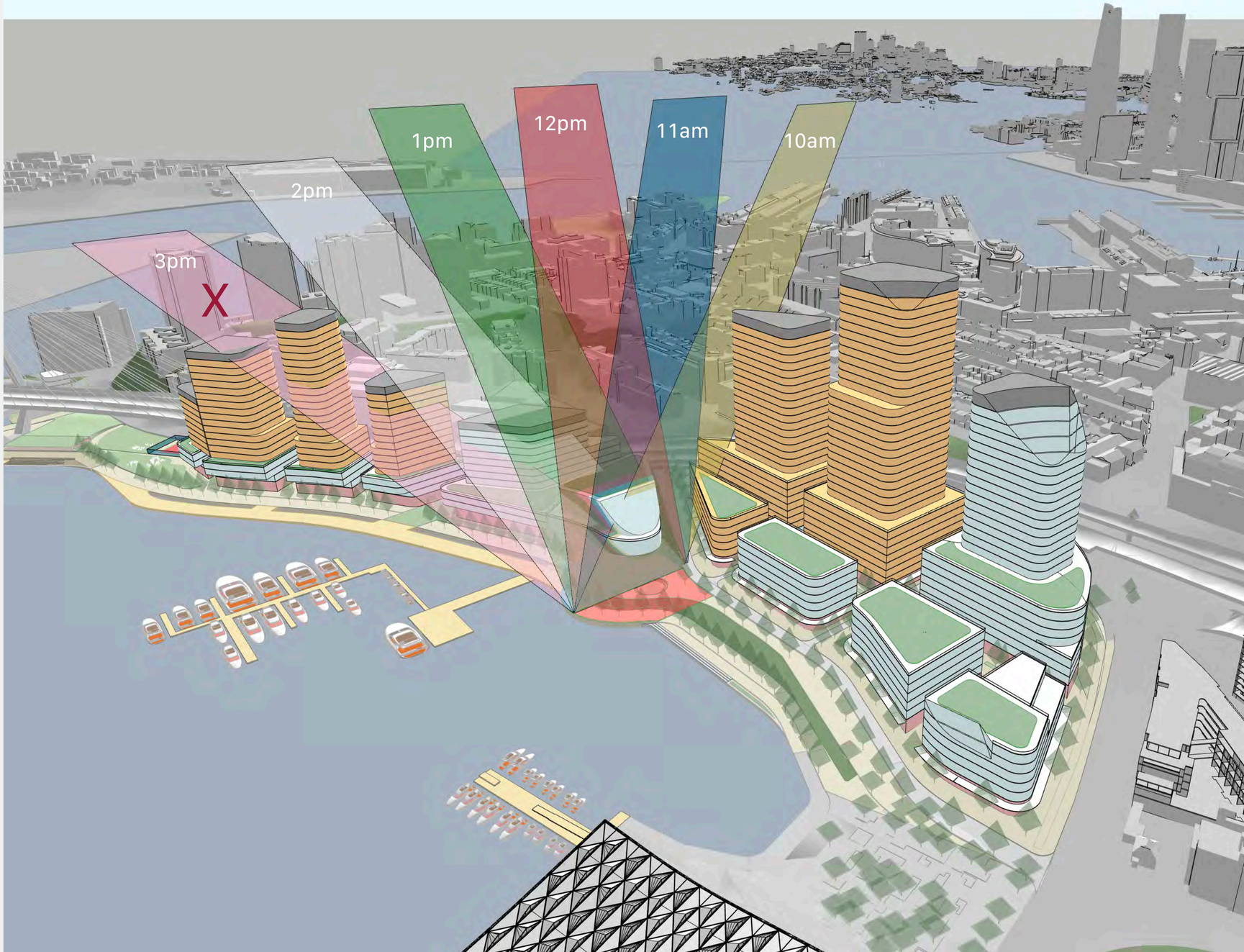
Relevant solar planes are 10am through to 3pm on 21 June. 9am is excluded as it would have a significant impact on the potential renewal envelope and is not required to achieve 4hours solar to the promontory.



Promenade _ 50% 4hrs

The 3pm sun plane would have a significant impact on the renewal opportunity for Private Land Owner sites and is therefore also excluded.

The 5 sun planes protect 4 hours solar to 50% of the promontory area on 21 June.



Resultant Massing

The resultant massing demonstrates that the RtS envelopes have been developed to deliver good solar amenity to the promenade and the promontory.

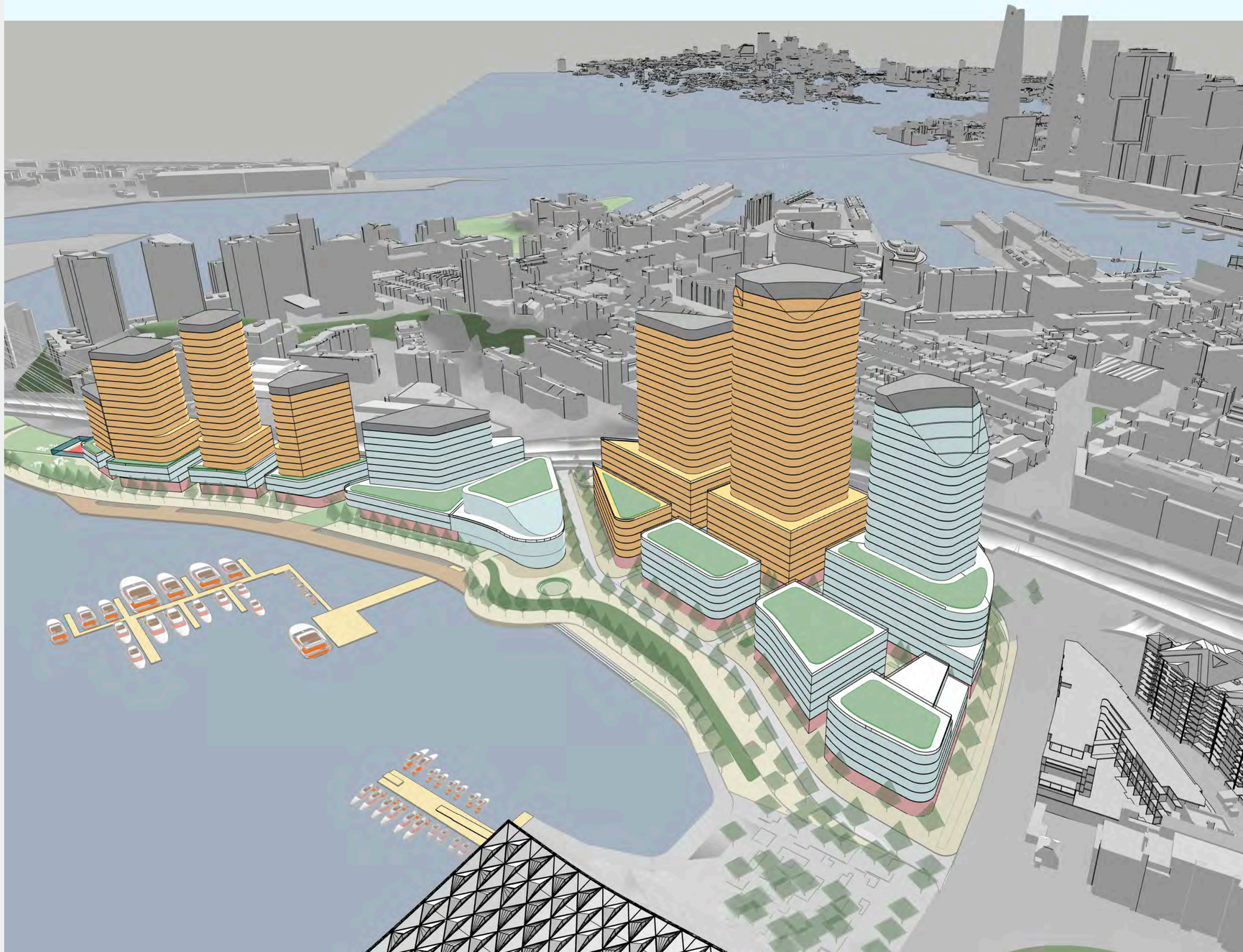
The envelope primarily impacted by the solar plane test is Building 01. This building is located in a central and visible position fronting the public spaces of Blackwattle Bay.

It is ideally suited to a public or community use including as a possible theatre. The promontory solar planes would reduce the size of a theatre or other facility to be accommodated in Building 01.

3 Solar to Neighbouring Residential

RtS Massing

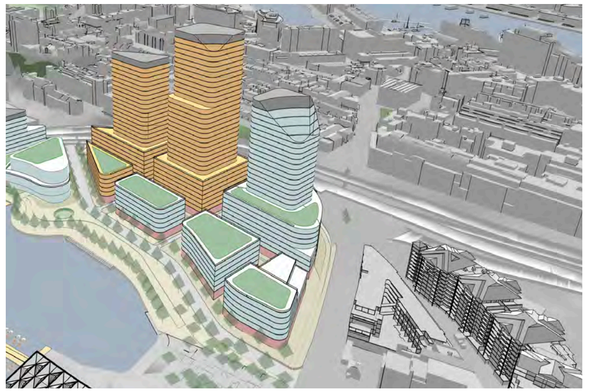
The Response to Submission massing has been analysed for solar impact to neighbouring properties as outlined in the Supporting Information - Solar to Neighbouring Properties document.

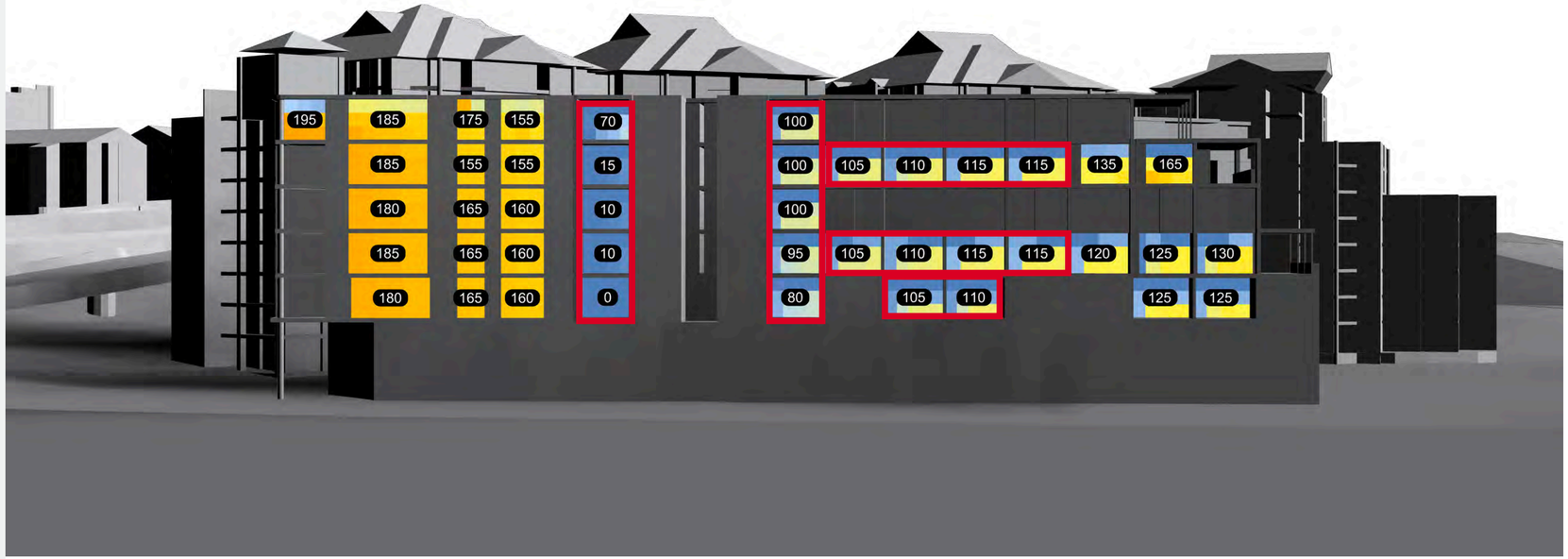


1 Wattle Crescent - Solar to Living Rooms

21 June _ 9am to 3pm

The analysis of the RtS massing recorded an impact to 20 apartment living rooms. Balconies and private open spaces were separately considered.

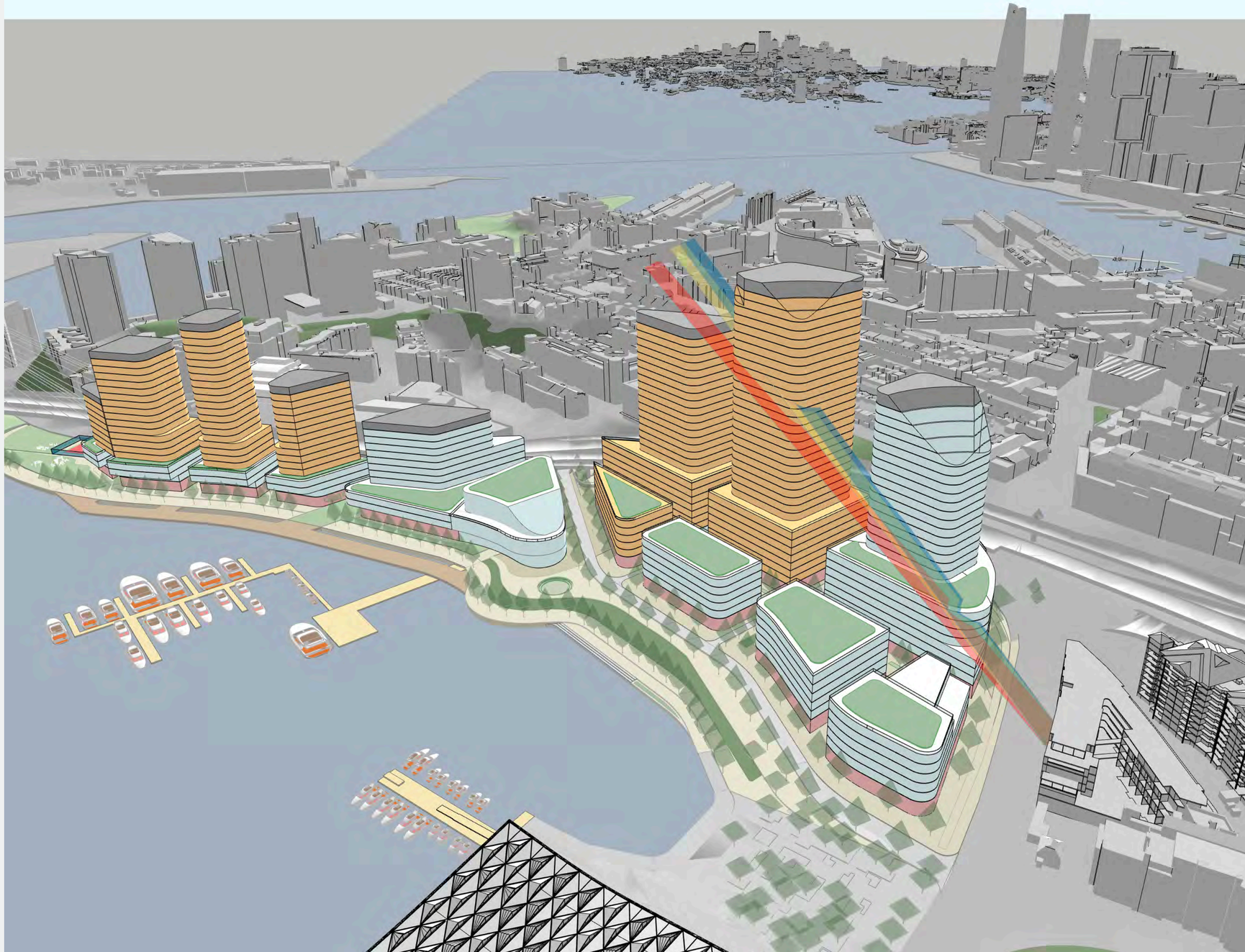




20 apartments record less than 120 minutes to living spaces between 9am and 3pm on 21 June.

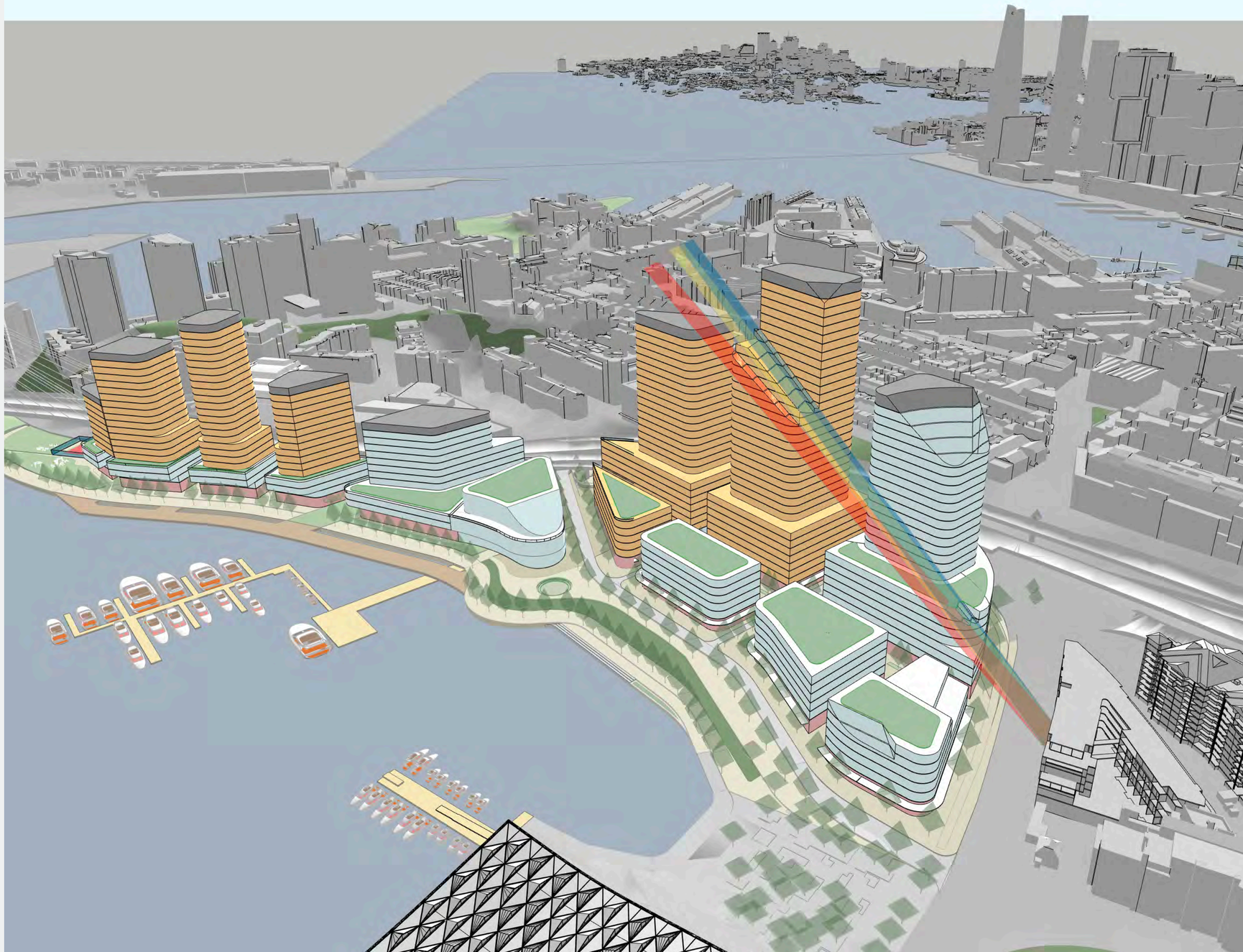
Solar Plane - 1:10,1:15 & 1:30pm

Additional sun planes between 1pm and 1:30pm have been applied to test a possible reduction in the number of apartments receiving less than 2hrs solar to living rooms.



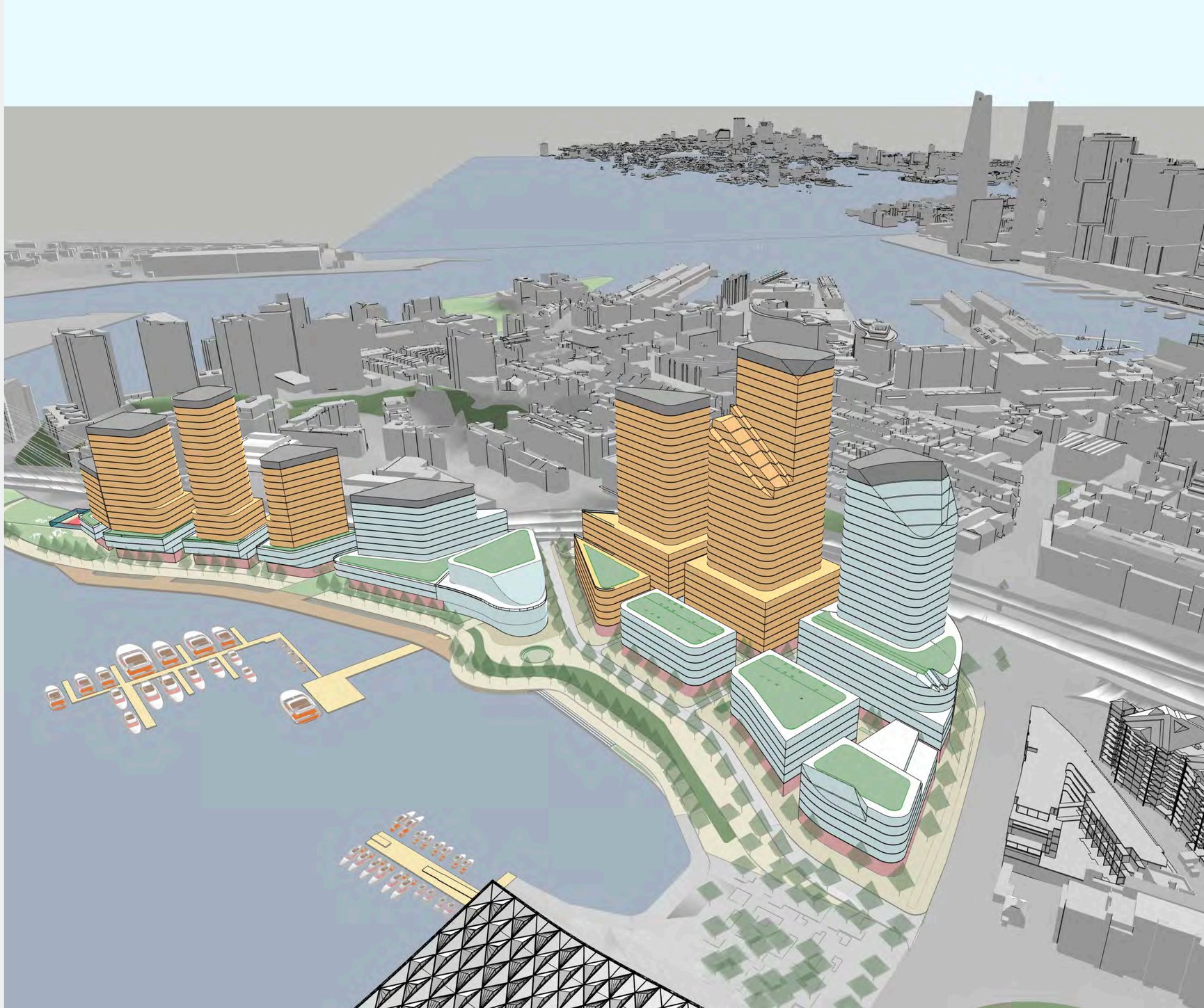
Solar Plane - 1:10,1:15 & 1:30pm

The solar planes primarily affect Building 03 with a minor deduction from the Building 04 podium.

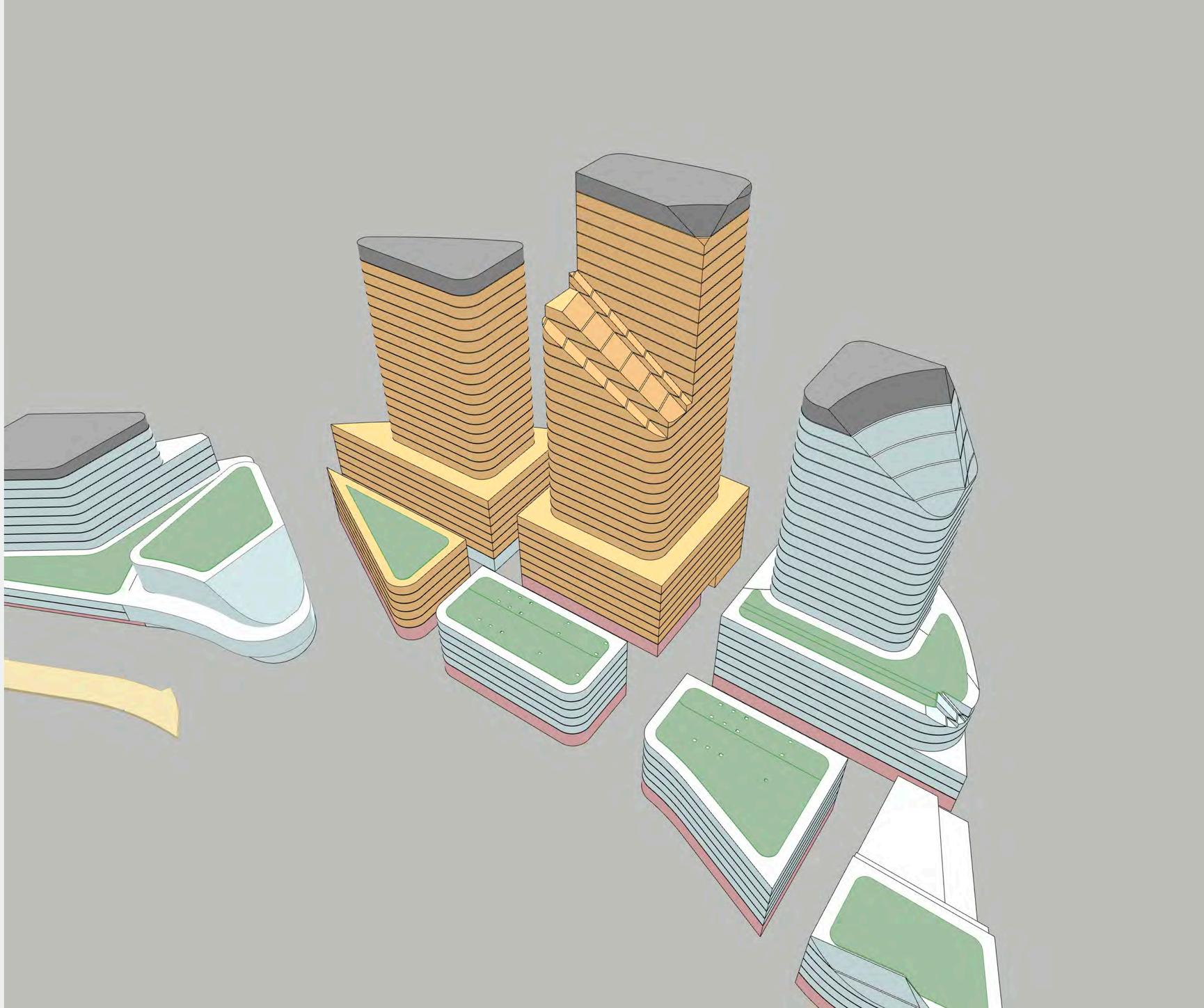


Resultant Massing

The adjusted massing shows the the result of the three sun planes at 1:10pm, 1:15pm and 1:30pm deducted from the RtS envelopes.

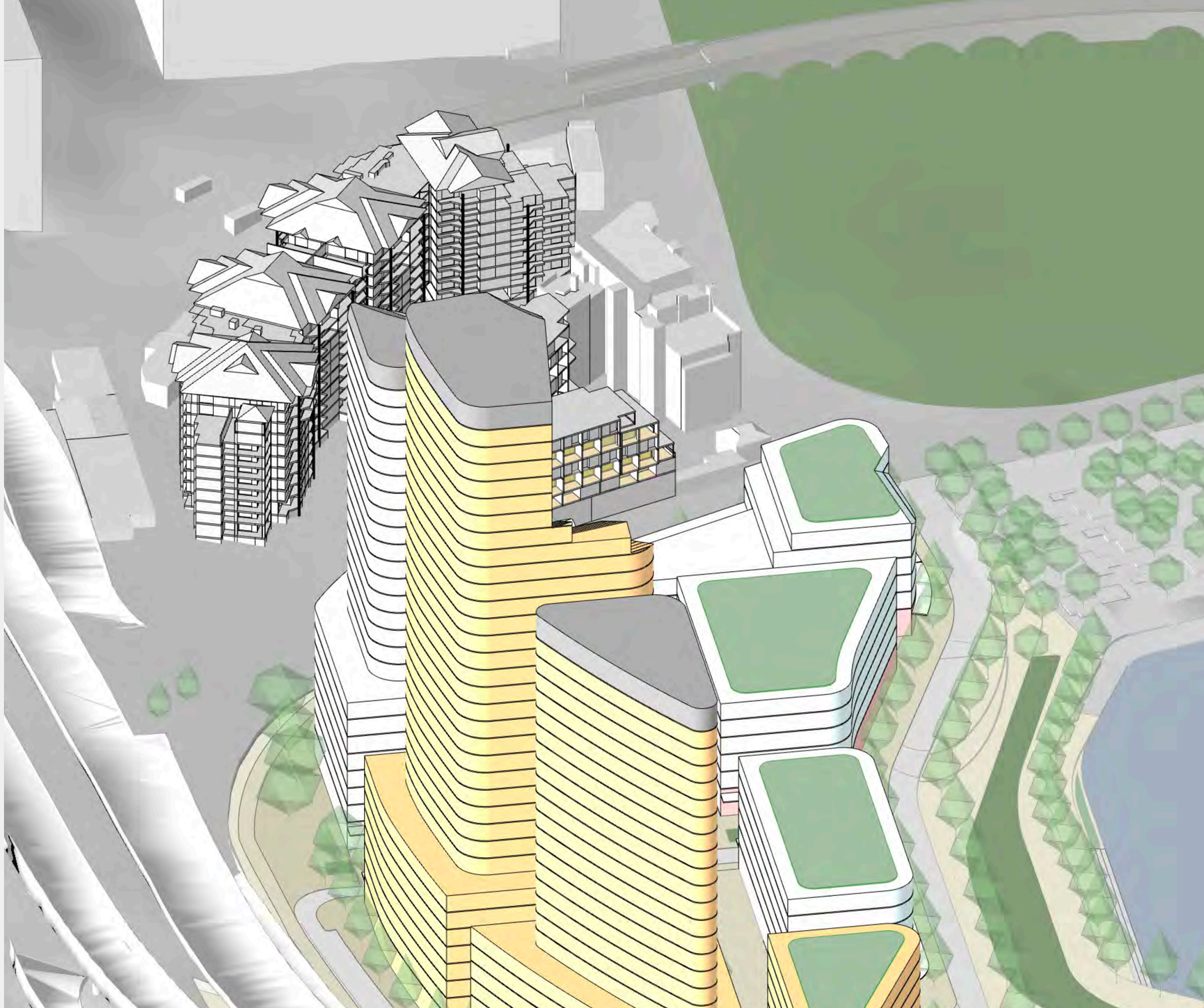


Resultant Massing



Sun Eye View _ 1:00pm

Sun eye views show the reduced Building 03 massing providing solar benefit to 1 Wattle Crescent at 1pm.



Sun Eye View _ 1:15pm

Sun eye views show the reduced Building 03 massing providing solar benefit to 1 Wattle Crescent at 1:15pm.

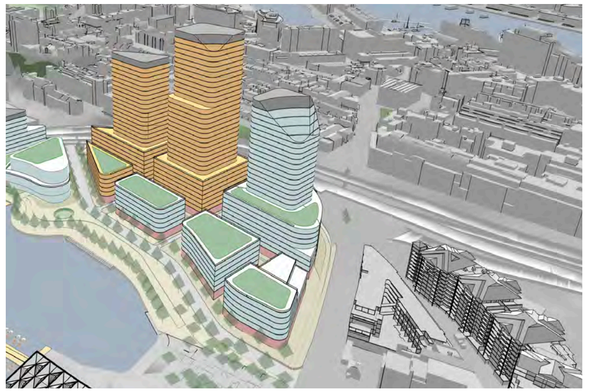
Sun Eye View _ 1:30pm

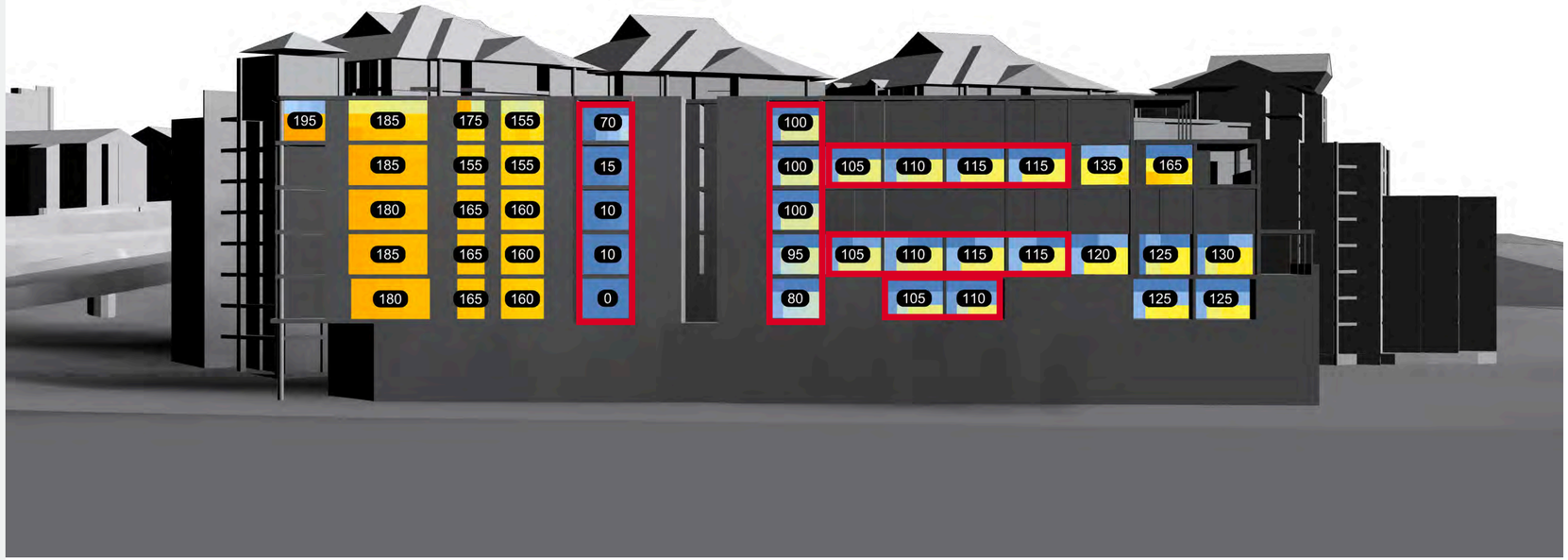
Sun eye views show the reduced Building 03 massing providing solar benefit to 1 Wattle Crescent at 1:30pm.

1 Wattle Crescent - Solar to Living Rooms

21 June _ 9am to 3pm

The Response to Submissions solar analysis is provided here for comparison.





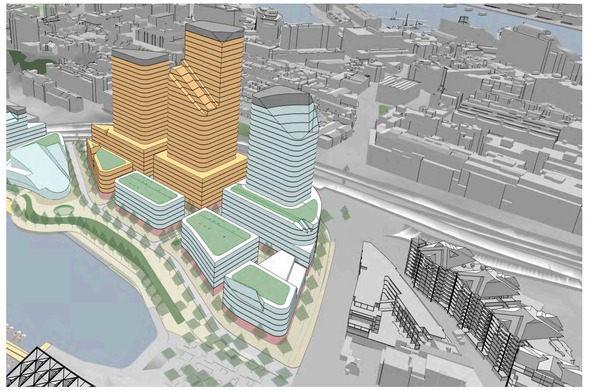
20 apartments record less than 120 minutes to living spaces between 9am and 3pm on 21 June.

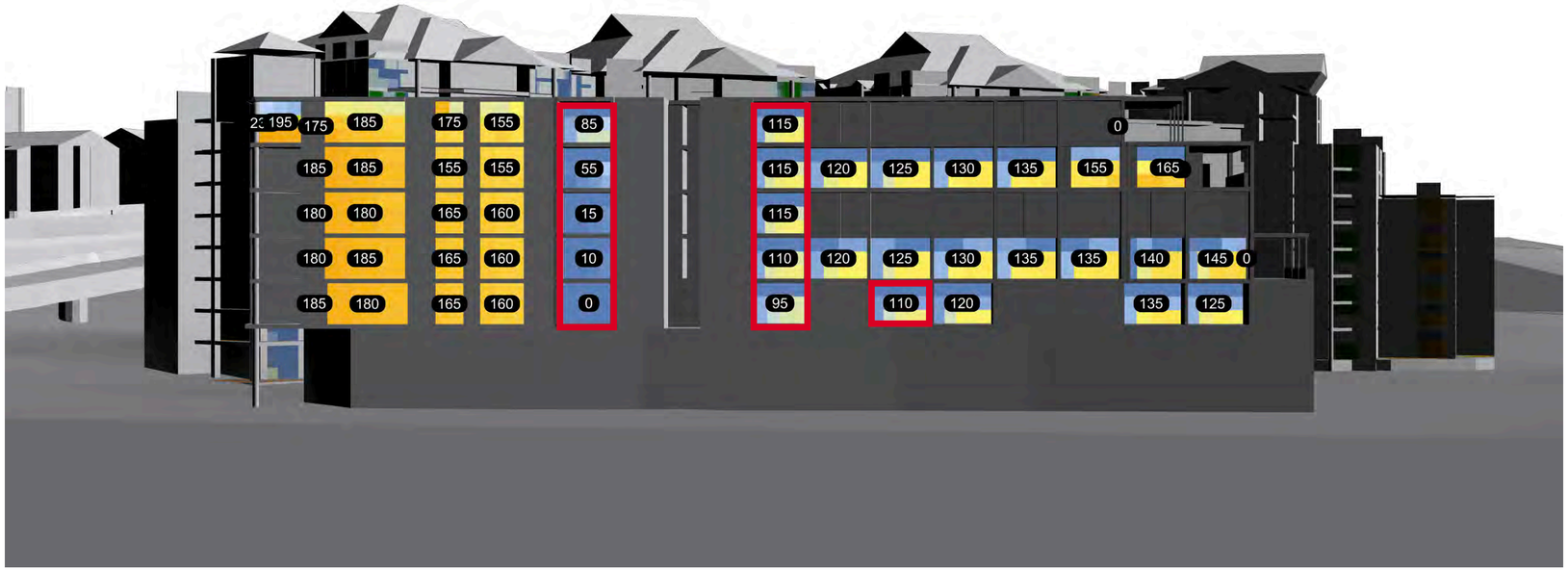
1 Wattle Crescent - Solar to Living Rooms

21 June _ 9am to 3pm

The adjusted massing shows improvement to 9 apartments. The number of apartments receiving less than 2hrs to living spaces is reduced to 11.

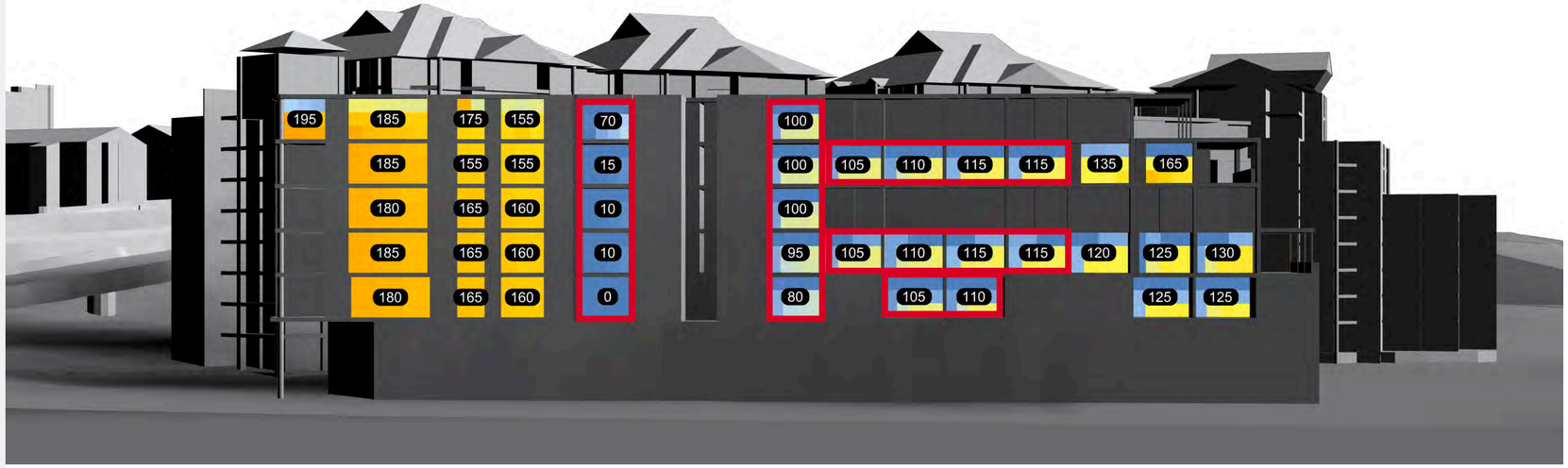
Impact to living spaces is limited to 20% of the 53 apartments currently receiving 2hrs+



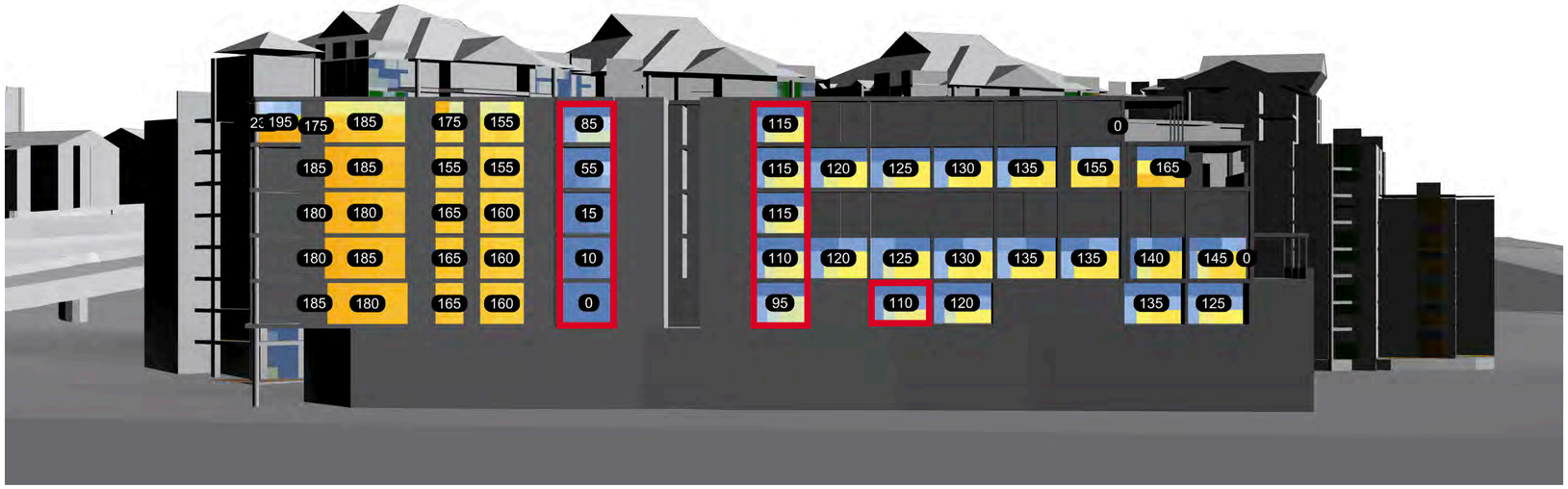


11 apartments record less than 120 minutes to living spaces between 9am and 3pm on 21 June.

1 Wattle Crescent Comparison



RtS Massing

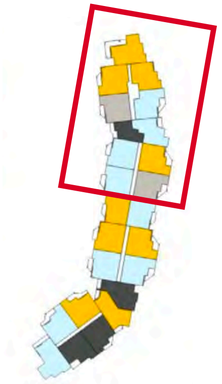


Adjusted Massing

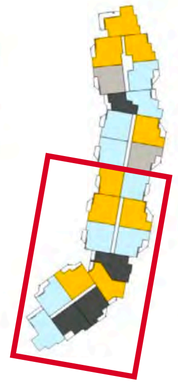
2-26 Wattle Crescent - Solar to Living Rooms _ RtS

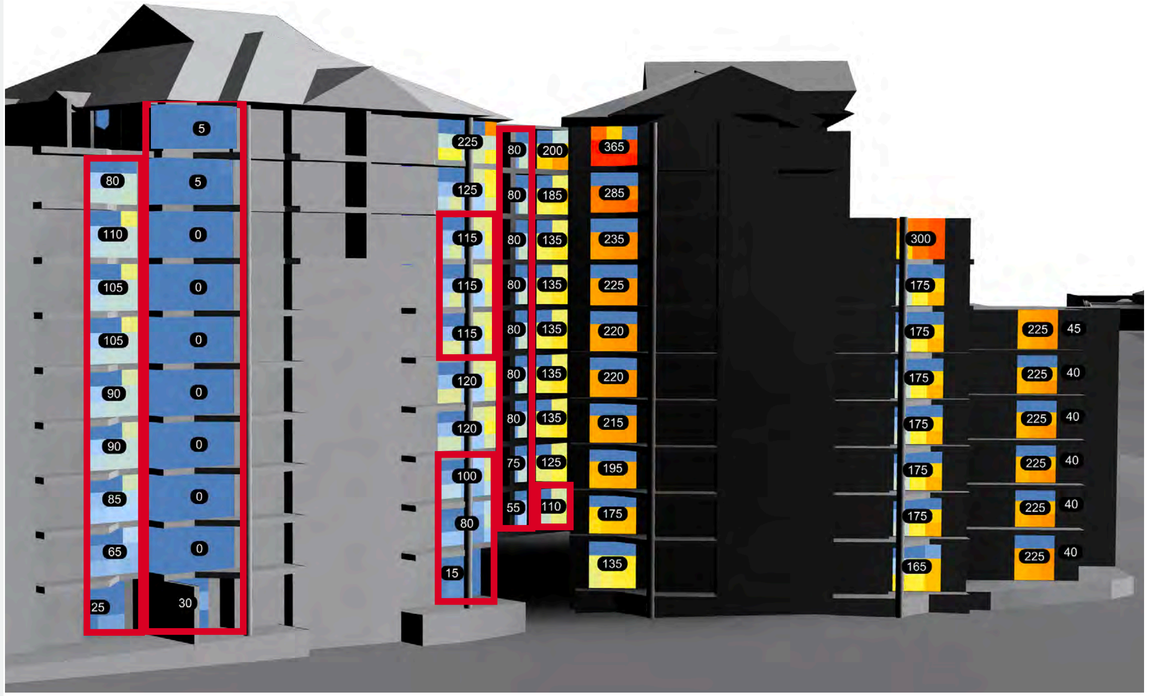
The Response to Submissions solar analysis is provided here for comparison.

__ 84 living rooms receive less than 2 hours between 9am and 3pm on 21 June



Analysis of Revised Precinct Plan Massing _ Part Elevation 1

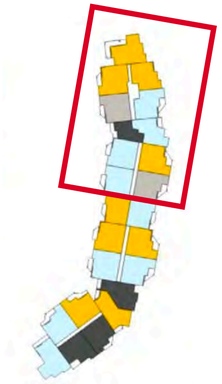




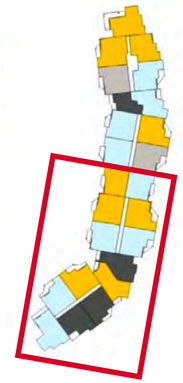
Analysis of Revised Precinct Plan Massing _ Part Elevation 2

2-26 Wattle Crescent - Solar to Living Rooms _ Solar Plane Updates

Additional solar planes outlined in the 1 Wattle Crescent analysis above yield incremental gains for 6 apartments in 2-26 Wattle Crescent.



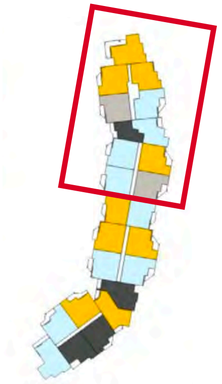
Analysis of Revised Precinct Plan Massing _ Part Elevation 1



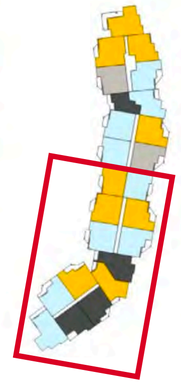
Analysis of Revised Precinct Plan Massing _ Part Elevation 2

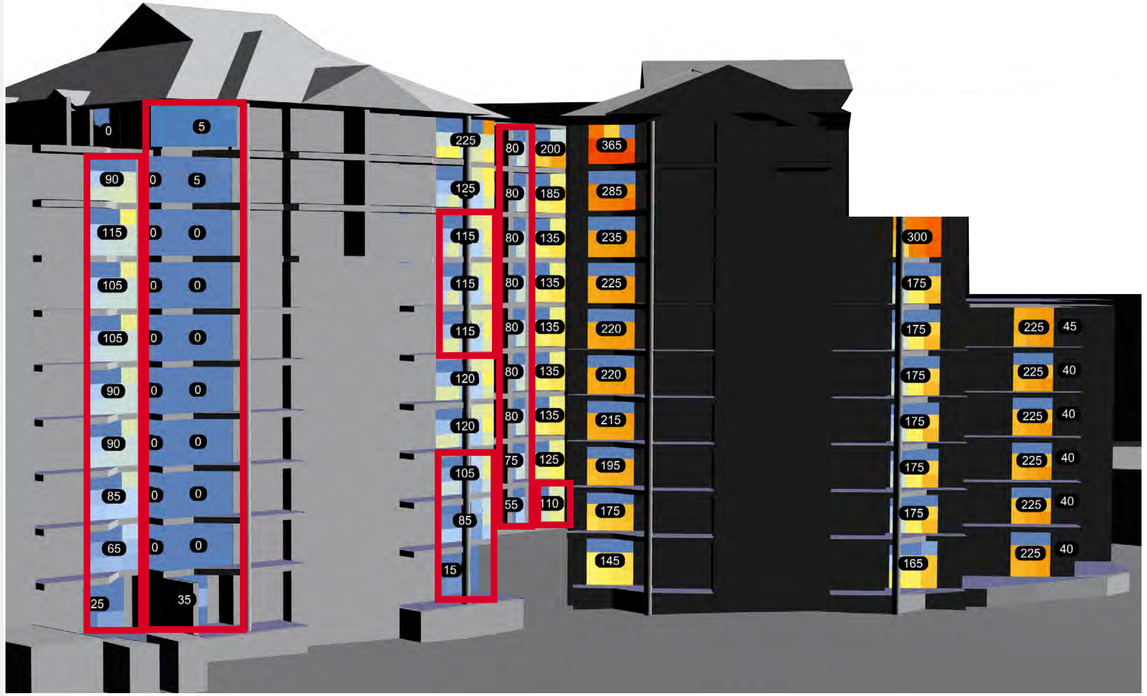
2-26 Wattle Crescent - Solar to Living Rooms _ Solar Plane Updates

The number of apartments receiving less than 2 hrs remains at 84 and the impact to living rooms for 2-26 Wattle Crescent remains less than 20% of the apartments currently receiving 2hrs or greater between 9am and 3pm on 21 June.



Analysis of Revised Precinct Plan Massing _ Part Elevation 1





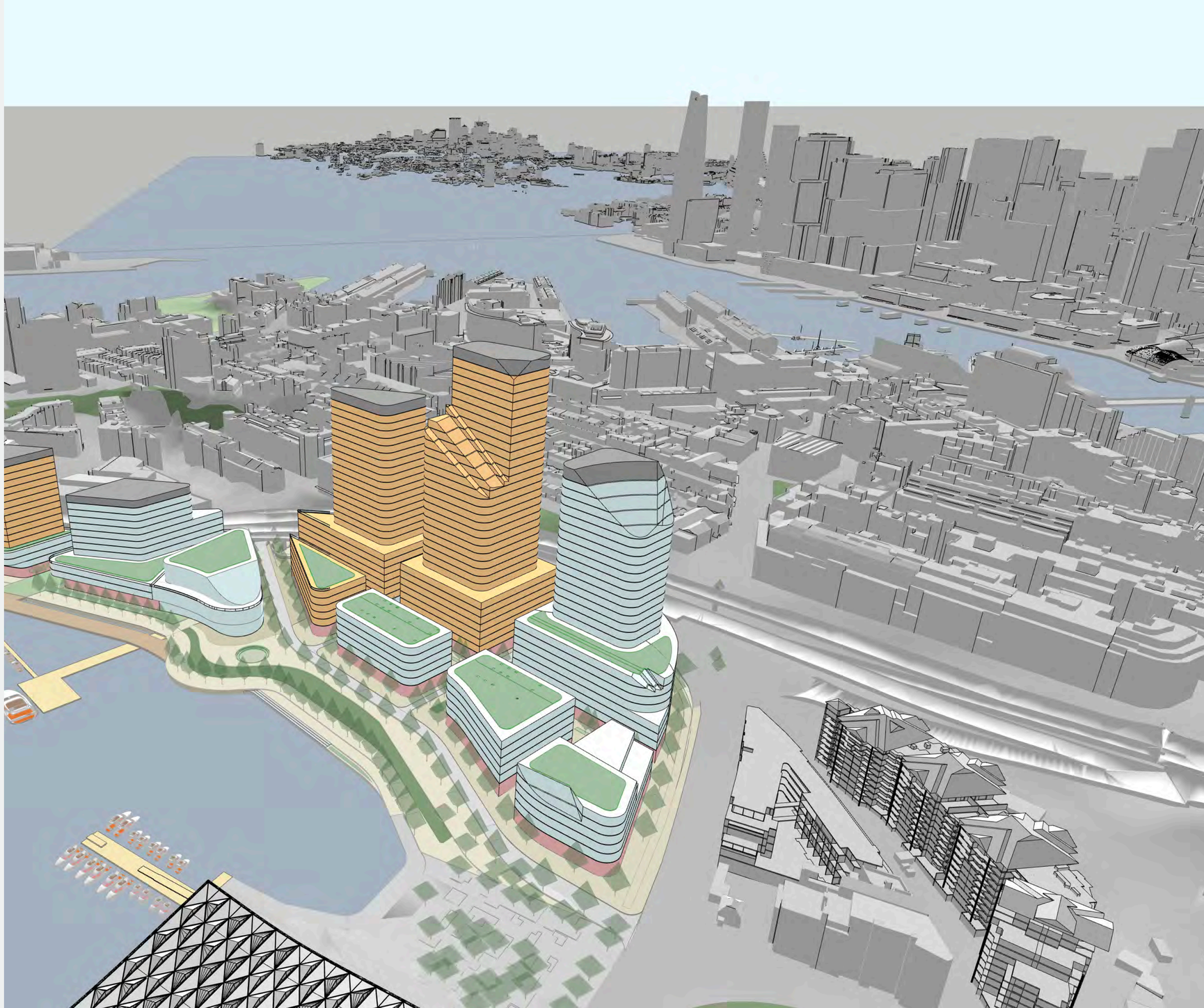
Analysis of Revised Precinct Plan Massing _ Part Elevation 2

2-26 Wattle Crescent Summary

Alternative massing were considered to further reduce the solar impact to 2-26 Wattle Crescent. However, due to the constrained orientation and plan of the existing apartment building, further incremental improvements would result in significant reductions to the Gross Floor Area able to delivered at Blackwattle Bay.

The impact to GFA required to maintain existing (or close to existing) solar conditions for 2-26 Wattle Crescent would be substantial and would result in unviable floor plates for upper storeys of Building 03 and 04.

The proposed massing reduces the solar change to 1 Wattle Crescent and brings the impact to both neighbouring properties to within the 20% guidance provided in the Apartment Design Guide.



4 Gross Floor Area

Gross Floor Area

The proposed LEP provisions for Blackwattle Bay define a maximum GFA for the existing Fish Market site and Floor Space Ratios for the Private Land Owner sites in the Precinct Plan.

The Design Code defines planning envelopes for the individual buildings in the Precinct Plan. The Design Code controls represent the Gross Building Envelope (GBE). The adjusted RtS massing is a refined envelope accommodated within the Design Code controls. This envelope is used for solar testing and represents the Gross Building Area (GBA).

The following efficiencies have been used to calculate the GFA from the adjusted RtS massing GBA;

- Residential 75%
- Commercial 80%
- Ground Floor Retail 50%
- Cultural Space 80%

Ground floor uses are arranged around non-GFA generating plant, driveway access, vertical circulation, storage and setbacks around site specific existing elements. An efficiency of 50% applied to ground level uses allows for the accommodation of such non-GFA elements.

The precinct plan assumes a common floor to floor height across commercial and residential uses. All above ground floors are given a typical floor to floor height to reflect the greater requirements of a commercial use (3.8m). This provided flexibility in testing use mix scenarios in response to feedback across the precinct plan.

Residential buildings can be delivered at residential floor heights (3.2m) within the Design Code envelope controls. This presents the opportunity for increased articulation to residential buildings as the maximum available GFA is distributed over suitable floor to floor heights and provides flexibility for the Apartment Design Guide response for individual buildings.

The built form will be further developed, analysed and refined in future development applications in response to factors including use mix, the Apartment Design Guide, solar to public domain and wind comfort.

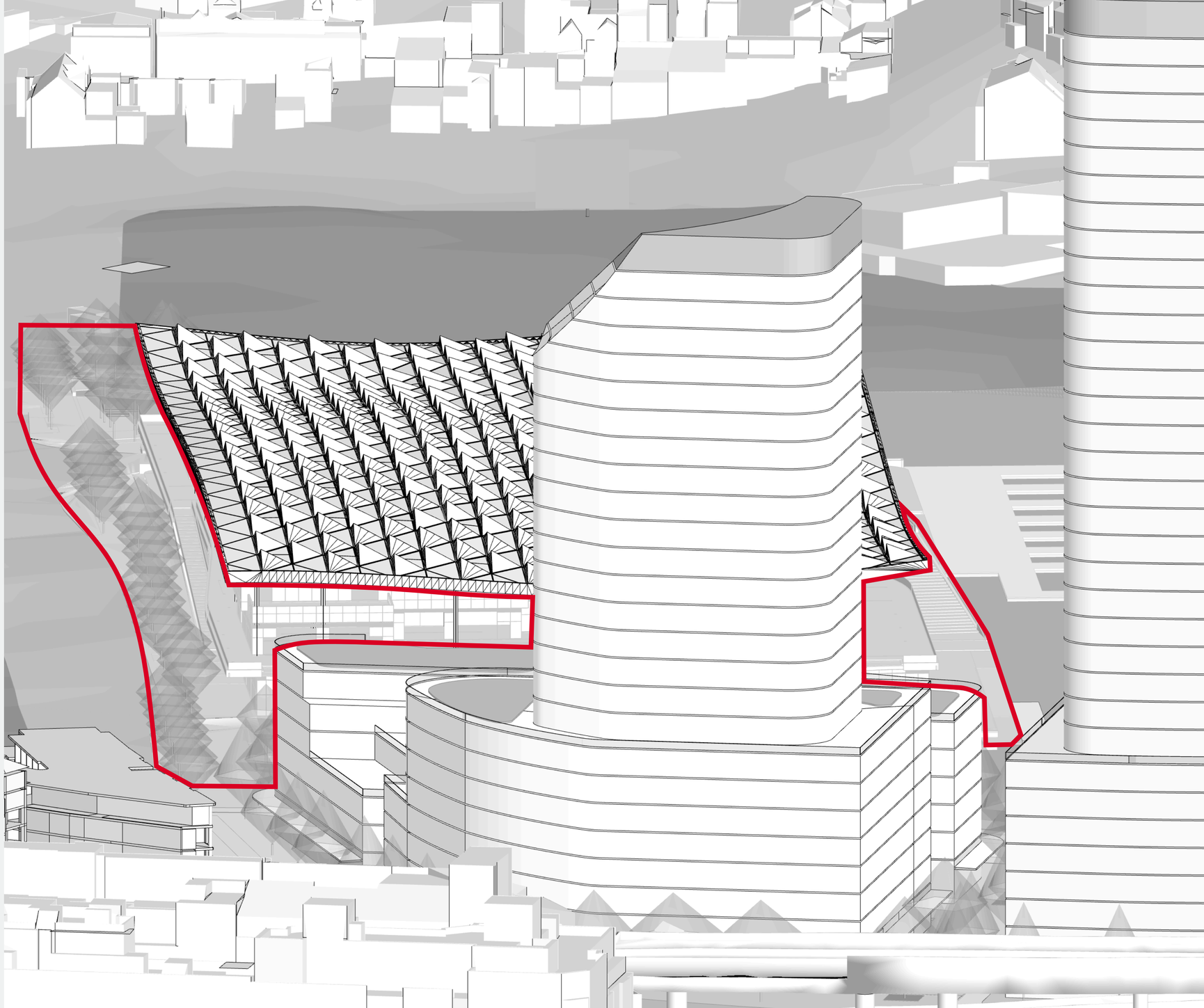
Additional flexibility is provided in the Design Code for Buildings 2B, 06, 5A and 5B to extend to 8 storeys in height (2 storeys higher than shown in the indicative massing) to allow for distribution of floor space that may be desired for optimised amenity outcomes.

Within the Design Code envelopes there is capacity to accommodate the total proposed Gross Floor Area proposed in the LEP provisions allowing for detailed design responses to amenity considerations.

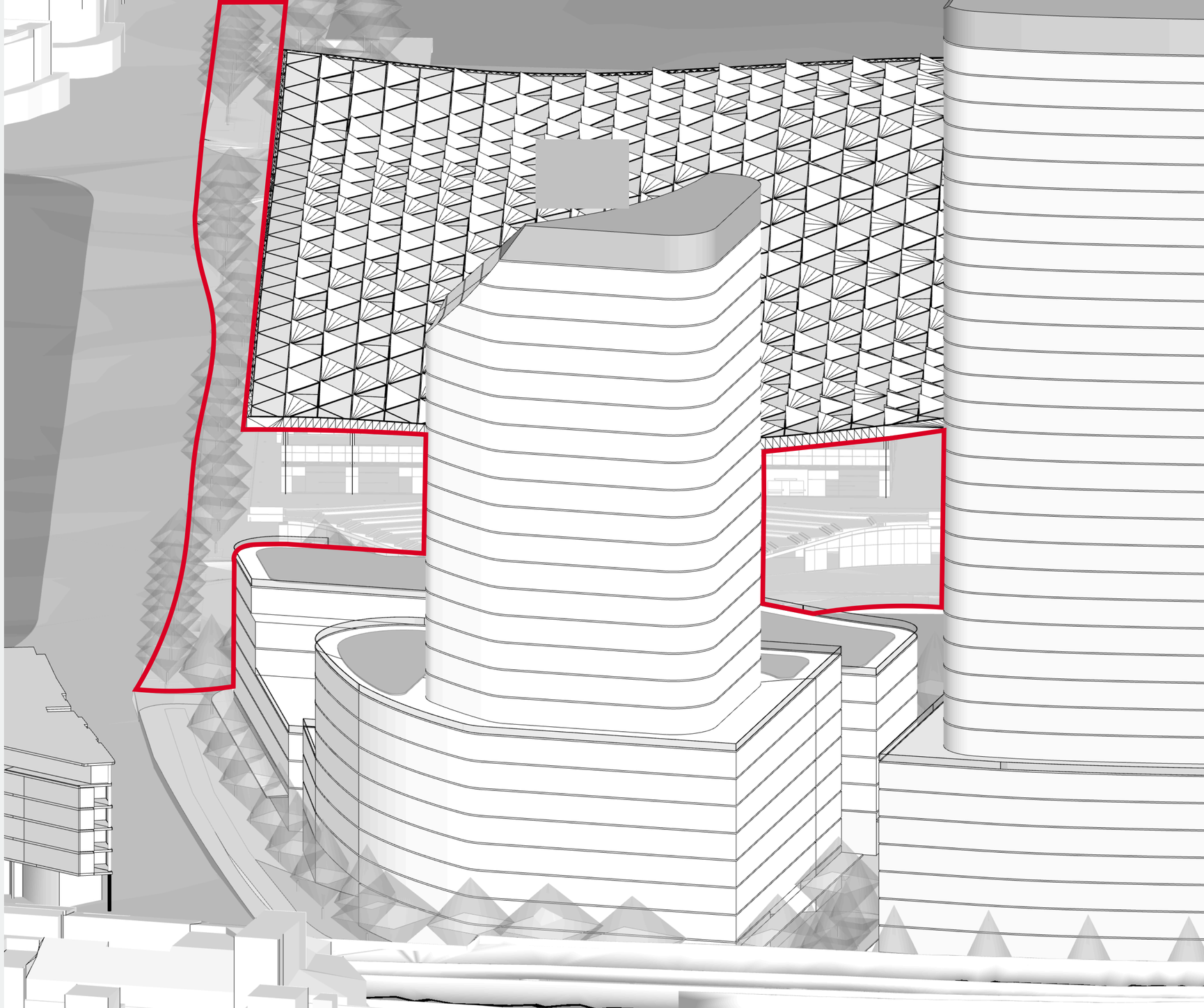
5 Solar to New Fish Market

Sun Eye View _ 8:00am

At 8am on 21 June, sunlight can be enjoyed along the Bridge Road frontage of the new Fish Market and to the northern promenade and terrace of the fish market.

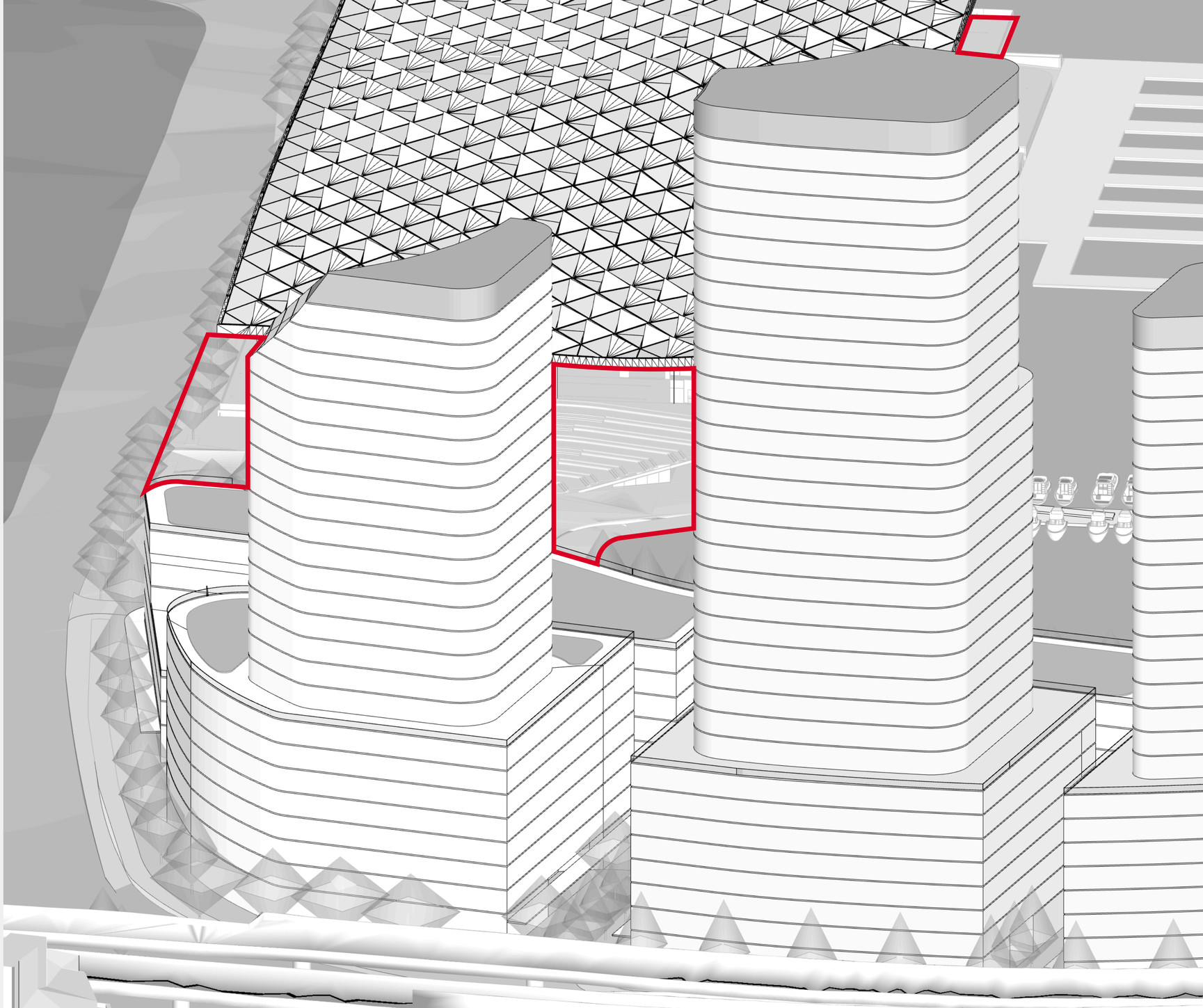


Sun Eye View _ 8:30am

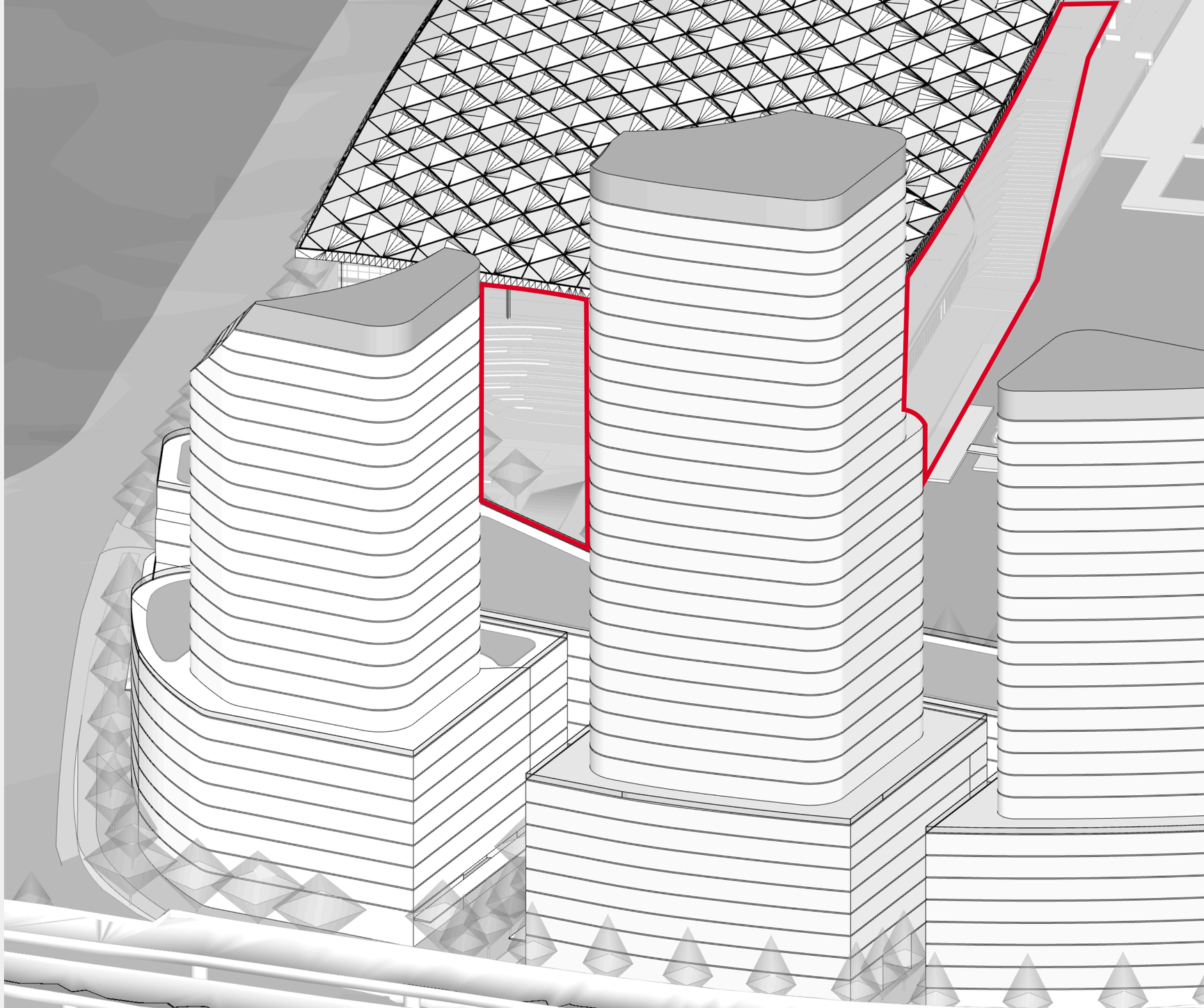


Sun Eye View _ 9:00am

At 9am on 21 June, sunlight can be enjoyed on the steps of the new Fish Market and along the edge of the Urban Park.

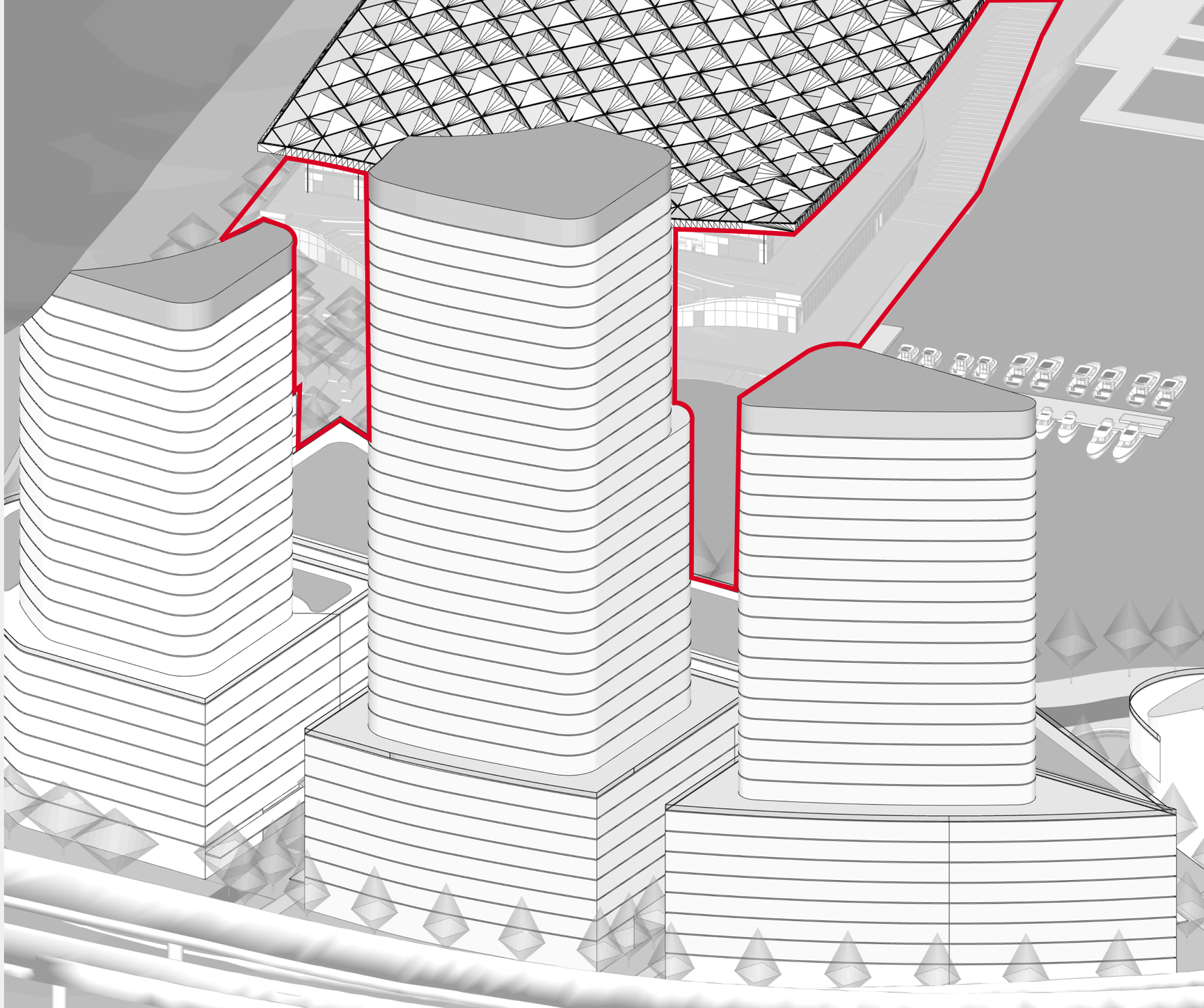


Sun Eye View _ 9:30am

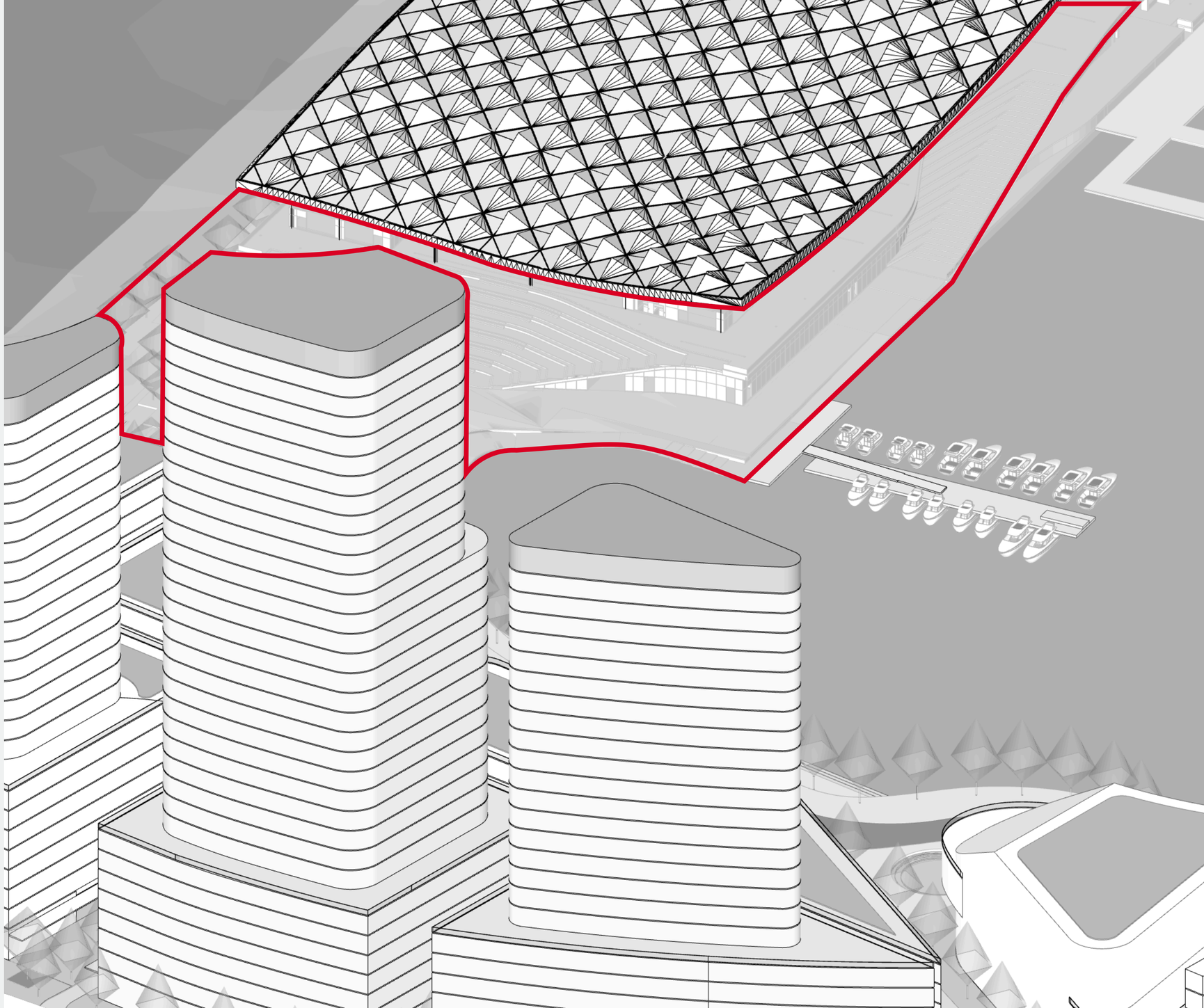


Sun Eye View _ 10:00am

At 10am on 21 June, sunlight is available along a broad frontage of the new Fish Market and to the centre of the Urban Park.

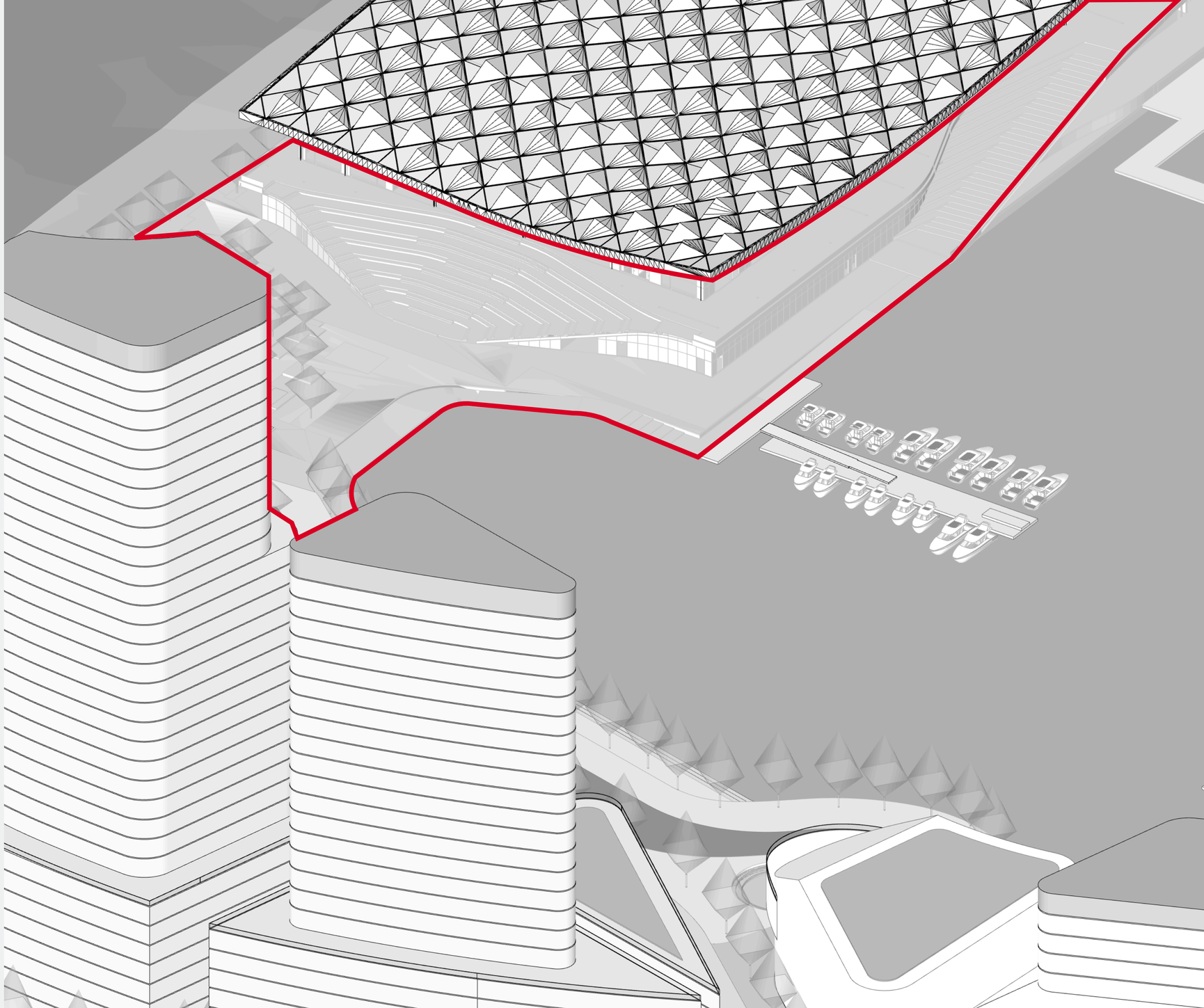


Sun Eye View _ 10:30am



Sun Eye View _ 11:00am

At 11am on 21 June, sunlight is available to the full Fish Market amphitheatre steps, promenade frontage and a large extent of the Urban Park.



30th September 2022

Infrastructure NSW
Attn: Geoff Gerring
Level 27, 201 Kent St
Sydney NSW 2000

RE: Tree Selection & Solar Access
Blackwattle Bay State Significant Precinct

This document has been prepared in response to comments raised at the Project Review Panel meeting for the Blackwattle Bay development. Specifically, concerns raised by DPE as to whether the trees to the front of the private landowner sites will receive adequate sunlight and will be able to 'flourish' in that location.

Shadow modelling (RtS Solar 8am - 4pm Equinox) indicates that 80.8% of the area fronting the private landowner sites will receive two or more hours of sunlight at the equinox. It is understood that further modelling is being undertaken to more accurately determine the amount of light which will be received in the remaining 19.2% of the area.

Based on the differing levels of solar access in the Promenade area, a number of tree species should be selected. *Livistona australis* (Cabbage Palm) is considered the most appropriate species for areas receiving less than 2 hours of sunlight at the equinox. This species is shade tolerant and having a small crown would not cast significant shade onto adjacent areas. *Elaeocarpus eumunidii* (Quandong) and *Stenocarpus sinuatus* (Firewheel Tree) would also be appropriate and are Australian rainforest species which are adapted to grow in shaded/partially shaded conditions. These species have an upright/columnar habit which also would reduce localised shading of adjacent areas.

An additional comment was raised regarding the suitability of deciduous tree species for planting in shaded areas. Deciduous have the advantage of providing additional solar access during the dormant season. However, in areas which receive less than 2 hours of sunlight (at equinox), these species would be more likely to develop an asymmetric crown form due to phototropism which would detract from their amenity value.

Within the areas identified as receiving 2 hours or more of sunlight (at equinox), there is a wider range of species which would be suitable for the site conditions. Section 4.6 of the Urban Forest Strategy (Rev D, dated 21.05.22) outlines a list of species which could be utilized in the Promenade area fronting the private landowner sites. This list includes deciduous species which would increase solar access to the Promenade during the dormant period.

In summary, a mix of these species strategically located to align with areas of 2 plus/minimum hours of sunlight (at equinox) is recommended. In addition, planting trees as far from the buildings as is practicable would also reduce phototropic influences on the development of all tree species (with the exception of *Livistona australis* Cabbage Palm) and promote a more aesthetically pleasing tree form.

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Please do not hesitate to contact me should you require any additional information.

Yours sincerely,

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Grad Cert. (Arboriculture)
Dip. Hort (Arboriculture)
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