

WATERLOO METRO QUARTER OVER STATION DEVELOPMENT

**Environmental Impact Statement
Appendix J – Overshadowing Analysis**

**SSD-79307746 Central Precinct
SSD-79307758 Northern Precinct**

Detailed State Significant Development
Development Application

Prepared for **WL Developer Pty Ltd**

September 2025



DOCUMENT CONTROL

Version	Status	Date	Prepared By	Reviewed By
1	Draft	9 September 2025	TYT / YCY	GEL
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EXECUTIVE SUMMARY

This Overshadowing Analysis Report has been prepared by RWDI Australia Pty Ltd (RWDI) to accompany a State Significant Development Application (SSDA) for Waterloo Metro Quarter (WMQ) located at 150 Cope Street, Waterloo ("the Project"). This report pertains to the detailed Central Precinct SSD (SSD-79307746) and Northern Precinct SSD (SSD-79307758).

The results and conclusions of the study are summarised as follows:

Alexandria Park

- The simulations predicted that the Project will not create new shadowing on Alexandria Park between 10:00 am and 3:00 pm on 21 June.
- The overshadowing impact was predicted to be at a maximum at 9:00 am, amounting to 29.9% of the park area and reducing rapidly.
- This indicates that both Design Criteria are met for the Project's impact on Alexandria Park.

Cope Street Plaza

- The simulations predict that 61.1% of Cope Street Plaza can receive at least 2 hours of direct sunlight between 9:00 am and 3:00 pm on June 21, thereby complying with the requirement in the Waterloo Metro Quarter Design and Amenity Guidelines.

Neighbouring Developments and Waterloo Heritage Precinct

- The simulations have demonstrated that the Proposed Scheme will impact a total additional 6.4 m² of private open space of four properties which would achieve slightly less than 2 hours of solar access. Impacts to living area spaces are not predicted. As such, Objective 2 of Section 3M to minimise overshadowing of the wider public domain, and the intent of Design Criteria 3 and 4 is expected to be met.

Future Waterloo Estate Park

- The Project would have minimal impact on solar access to the park, and the entire area was predicted to receive at least 2 hours of direct sunlight between 9:00 am and 3:00 pm on June 21, thereby complying with the requirement in the Waterloo Metro Quarter Design and Amenity Guidelines.



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1 INTRODUCTION

This report has been prepared by RWDI Australia Pty Ltd (RWDI) on behalf of WL Developer Pty Ltd (the applicant) to accompany a State Significant Development Application (SSDA) for the detailed Central Precinct SSD (SSD-79307746) and Northern Precinct SSD (SSD-79307758), located within the Waterloo Metro Quarter (WMQ) at 150 Cope Street, Waterloo. This SSD will replace the previous detailed approval applying to the Central and Northern precincts.

This report has been prepared to respond to Item 6 of the Planning Secretary's Environmental Assessment Requirements (SEARs) issued by Department of Planning, Infrastructure and Housing (DPHI) on 13 February 2025, the relevant advice by the City of Sydney (CoS) on 3 February 2025, and the relevant advice raised by the State Design Review Panel (SDRP) on 10th July 2025.

The figure below indicates the land to which this DA applies in relation to the overall WMQ site (shaded in Green and Purple).

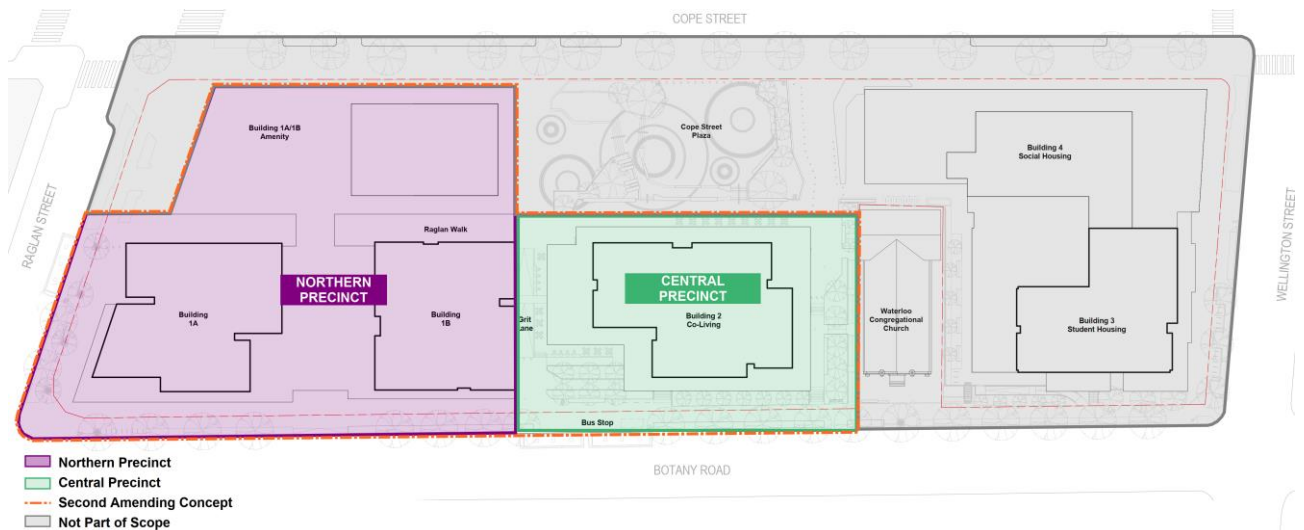


Figure 1: Land to which this Report Applies

Central Precinct

This application seeks consent for the design, construction and operation of a 26 storey (including plant level) mixed use building within the Central Precinct (the site) of the WMQ estate. The proposal comprises a Co-living housing tower above a three storey podium containing retail and community facility in the form of a childcare centre. Specifically, the proposal comprises:

- Ground level retail tenancies, community facility, and childcare, co-living and shared basement access lobbies
- Community centre in the form of a childcare centre at Level 1 and Level 2
- A Co-living housing tower from Levels 3 to 24 comprising:
 - o Self-contained co-living accommodation rooms across 20 levels, with capacity for around 500 rooms
 - o Indoor and outdoor communal amenity at Levels 3 and 24



- Communal space also provided on each accommodation level;
- Ground level vehicular access from Church Square shared zone to the shared basement, delivery of a pedestrian thoroughfare through the site, landscaping and public domain works.
- Indicative building signage zones

Northern Precinct

This application seeks consent for the design, construction and operation of a mixed use development within the Northern Precinct (the site) of the WMQ site.

The proposal comprises a 4 storey retail and commercial podium, with two residential towers above. The two buildings have a total height of 29 storeys and 26 storeys (including plant).

Specifically, the proposal comprises:

- A podium containing:
 - Vehicle entrance and loading dock facilities accessed off Botany Road;
 - Ground level retail tenancies, commercial and residential lobbies,
 - Three levels of commercial office floorspace, totalling around 5,100sqm
- Two residential apartment towers with a total of 314 units, including 39 affordable housing units and 275 market units,
 - Building 1A: 24 residential storeys (top of plant approx. RL116.9)
 - Building 1B: 21 residential storeys (top of plant approx. RL 107.5)
 - Communal open space located on the roof of the Metro box connected to Northern Precinct via a bridge link over Raglan Walk
- Delivery of a pedestrian thoroughfare through the site, landscaping and public domain works.
- Indicative building signage zones

The Central Precinct SSDA and Northern Precinct SSDA have been submitted concurrently with an SSDA to amend the Waterloo Metro Over Station Development (OSD) Concept DA (SSD 9393) (the Concept DA) - referred to as the Second Amending Concept SSDA. The Second Amending Concept DA seeks consent to modify the existing concept approval as it relates to the Northern and Central Precincts, by amending the building envelopes to redistribute floor space to suit a new mix of land uses.

Separately, a Section 4.55 Modification Application to modify the approved detailed Basement SSDA (SSD-10438), will be concurrently submitted with this application.

Table 1: SEARs Compliance Table

SEARs Request	Response / Location in Report
<p>Item 6 - Environmental Amenity</p> <ul style="list-style-type: none"> Address how good internal and external environmental amenity is achieved, including access to natural daylight and ventilation, pedestrian movement throughout the site, access to landscape and outdoor spaces. Assess amenity impacts on the surrounding locality, including lighting impacts, reflectivity, solar access, visual privacy, view loss and view sharing, overshadowing and wind impacts. A high level of environmental amenity for any surrounding residential or other sensitive land uses must be demonstrated. Provide a solar access analysis of the overshadowing impacts of the development within the site, on surrounding properties and public spaces (during summer and winter solstice and spring and autumn equinox) at hourly intervals between 9am and 3pm, when compared to the existing situation and a compliant development (if relevant). For applicable developments, provide an assessment of the development against the Housing SEPP and the Apartment Design Guide. 	Section 3

Prior to the granting of the SEARs, the City of Sydney offered its advice on Request for SEARs, advice for both the Northern and Central Precinct SSDs being provided in letters dated 3 February 2025. The advice relevant to overshadowing is as follows:

Table 2: City of Sydney’s Design Advice

CoS Design Advice	Response / Location in Report
<p>Overshadowing of Parkland</p> <ul style="list-style-type: none"> The City will not support any change to the planning controls that will cast additional shadows on parkland on any days of the year compared to what has been approved. This shading profile must be fully documented in any application and is elaborated on below. The following advice is based on this proviso. <p>Public Realm - Alexandria Park</p> <ul style="list-style-type: none"> Refer to the City’s submission to the amending concept application. Accordingly, the detailed application must demonstrate that the amended building envelopes will not cause any additional overshadowing to the nearby Alexandria Park. 	Section 3.1
<p>Overshadowing to neighbouring development</p> <ul style="list-style-type: none"> The City’s Draft Minimising overshadowing of neighbouring apartments is to be addressed to ensure that any additional overshadowing caused by the proposed development meets the objectives of the ADG. The accompanying spreadsheet should also be utilised to quantify the potential impacts. 	Section 3.3



The State Review Design Panel (SDRP) also offered its advice for both the Northern and Central Precinct SSDs, as provided in a letter dated 10th July 2025. The advice relevant to overshadowing is as follows:

Table 3: State Design Review Panel's Design Advice

SDRP Design Advice	Response / Location in Report
Public Realm - Alexandria Park <ul style="list-style-type: none">• Provide a comprehensive shadow analysis that demonstrates the percentage of overshadowing to Alexandria Park from 9am onwards in mid-winter.	Section 3.1 and Appendix B

2 BACKGROUND

2.1 Methodology

An assessment has been undertaken to determine the effect of the Project on the contribution of additional shadowing to the nearby parks, specifically Alexandria Park, as well as neighbours, including the Waterloo Heritage Precinct, and a proposed public pedestrian plaza fronting Cope Street. The analysis was based on computational 3D modelling of the proposed development and its surrounding context, combined with meteorological data for Sydney.

The screening analysis was conducted using RWDI's in-house proprietary *Eclipse* simulation engine, as per the steps outlined below:

- The assessment began with the development of a 3D model of the area of interest (as shown in Figure 2). This includes LIDAR data for the area to account for topographic changes, with calibration to survey plans for the area. The park spaces and the ground were then subdivided into many triangular patches approximately 0.11m² in area (Figure 3).
- At fifteen-minute increments from 9:00 am to 3:00 pm on June 21, the expected solar position was determined, and “virtual rays” were drawn from the sun to each triangular patch of the park surfaces. Any rays which were not obstructed by a building are considered exposed to direct sunlight.
- This analysis is conducted with and without the proposed buildings and the results subtracted to compute the total minutes of net-new shadowing caused by the Project (i.e. not including existing shadows) on the park during this period.
- Point-in-time shadow diagrams at 15-minute increments for the 21st of June (Winter Solstice) were generated for the parks, and sun view diagrams were also generated for a large area around the site.

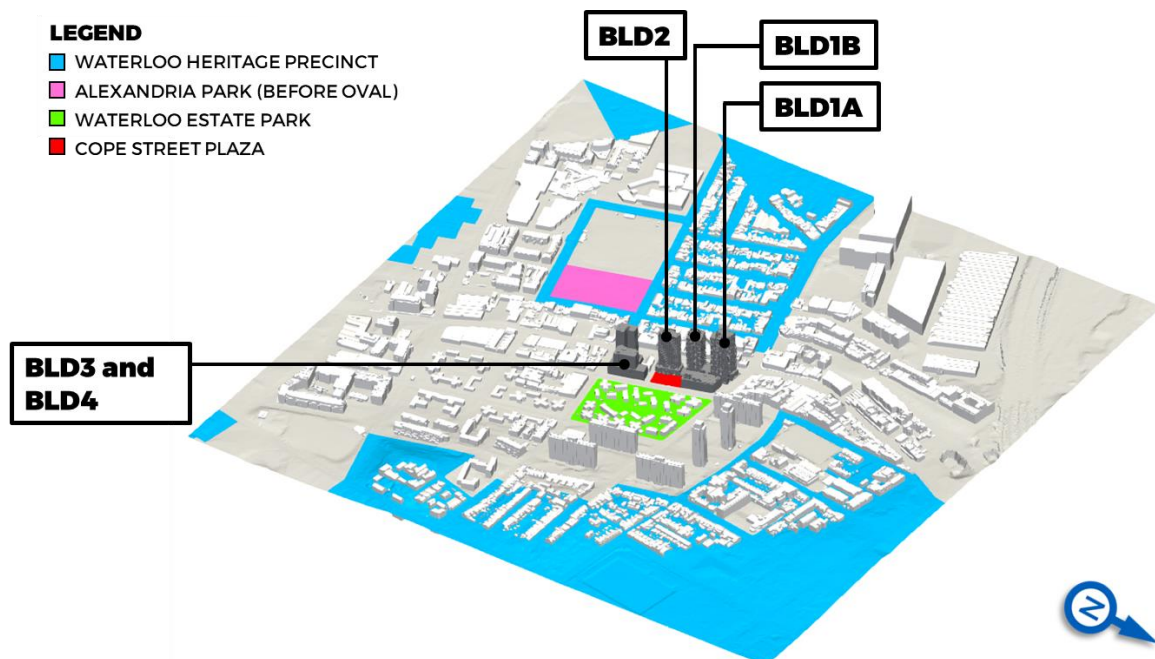


Figure 2: 3D Computer Model of the Project and Surrounding Context

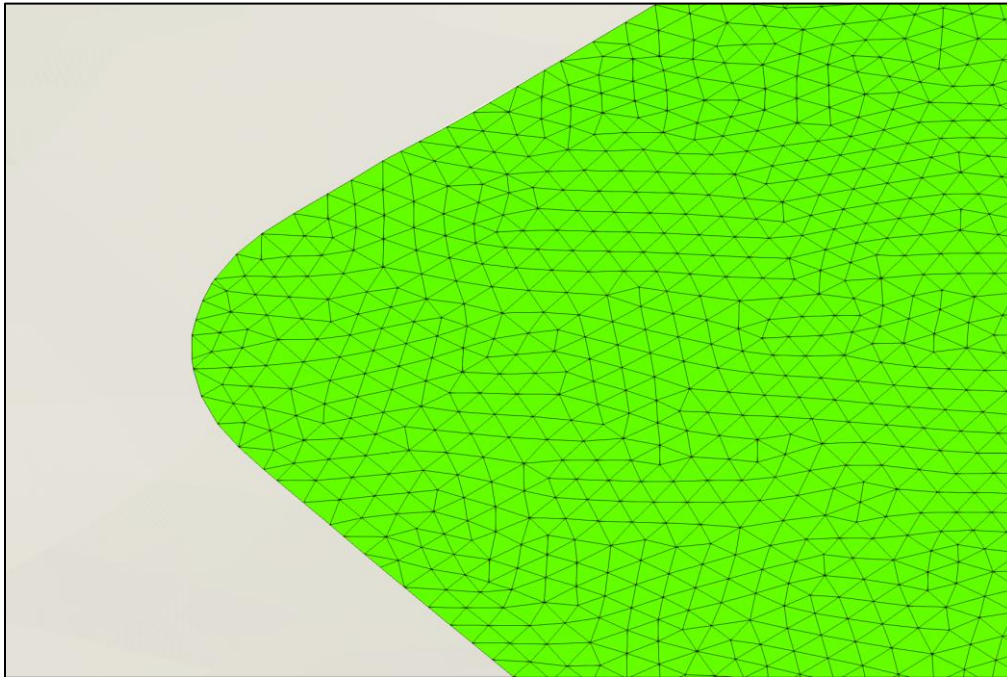


Figure 3: Close-up of a Park Surface, showing Surface Subdivision

2.2 Assumptions and Limitations

2.2.1 Meteorological Data

This model has been geolocated to a reference latitude and longitude of (-33.89794, 151.200156).

2.2.2 Study and Surrounds Models

The analysis was conducted based on 3D models of the Project provided to RWDI on the following dates. This scheme is referred to as the 'Proposed Scheme' in this report:

- **Building 1A and 1B:** Woods Bagot to RWDI on August 11, 2025;
- **Building 2:** Bates Smart to RWDI on August 15, 2025;
- **Building 3 and 4:** Bates Smart to RWDI on August 18, 2025.
 - Note: these buildings already approved (SSD-10437) and not included in the scope of the Central or Northern Precinct SSDs, however the massing is important to the overall shadow cast by the precinct.

The SSDA Revision 01 architectural plans for Buildings 1A, 1B, and 2 produced by Woods Bagot and Bates Smart respectively were subsequently reviewed and the results presented herein are applicable to the lodged design.

The surrounding model was generated based on publicly available data and previous RWDI projects in the area. This analysis included the existing surrounding context and buildings currently under construction (anticipated to be completed at the time of completion of subject development) and excluded proposed developments that are currently under assessment or approved (i.e., not yet under construction), as this would be conservative with respect to shadows falling on the public realm. All data sources were cross-checked against LiDAR data published by the NSW Department of Finance, Services, and Innovation. This dataset was also used to generate the ground surface and has a stated vertical and horizontal accuracy of 0.3m and 0.8m, respectively (both at a 95% confidence interval).

For the purposes of this analysis, all elements of the proposed building have been treated as fully opaque to light and any shading provided by vegetation (i.e. trees) was neglected.

The results presented in this report are highly dependent on both the form and materiality of the Project. Should there be any changes to the design, it is recommended that RWDI be contacted and requested to review their potential effects on the findings of this report.

2.3 Overshadowing Criteria

The Waterloo Metro Quarter Design and Amenity Guidelines provide guidance on the acceptable level of shadow impact by the Project. The following Objectives and Criteria are stipulated:

Section 3M Solar access and amenity

- **Objectives**
 - **Objective 1** – Ensure solar access to the public domain on the site, including Cope St Plaza and Raglan St Plaza
 - **Objective 2** – Minimise overshadowing on Alexandria Park and the wider public domain
- **Design Criteria**
 - **Design Criteria 1** – The development does not result in any additional overshadowing of Alexandria Park after 10 am on 21 June
 - **Design Criteria 2** – No more than 30% of Alexandria Park, excluding the oval, is overshadowed by the development as measured at any time after 9 am on 21 June
 - **Design Criteria 3** – Proposed apartments in a development and neighbouring developments, including the Waterloo Heritage Precinct, must achieve a minimum of 2 hours direct sunlight between 9 am and 3 pm on 21 June onto at least 1m² of living room windows and a minimum 50% of the required minimum area of private open space. Note: This applies to at least 70% of the apartments in a development in accordance with the NSW Apartment Design Guide
 - **Design Criteria 4** – The new development does not create any additional overshadowing onto a neighbouring dwelling where that dwelling currently receives less than 2 hours direct sunlight to habitable rooms and 50% of the private open space between 9 am and 3 pm on 21 June

Design Criteria for Cope Street Plaza states:

- **Section 3C Public Domain**
 - **Design Criteria 4** – At least 50% of the area of the Cope Street Plaza receives at least two hours of sunlight between 9 am and 3 pm on 21 June

The results of the analysis regarding these requirements are presented for each space (Alexandria Park, Cope Street Plaza, Waterloo Heritage Precinct and other neighbouring buildings) in the following sections.

3 RESULTS

This section shows the overshadowing impacts predicted on 21 June for the previously approved DA scheme (“DA Approved”, SSD-10441) and the Proposed Scheme on Alexandria Park, Cope Street Plaza, the future Waterloo Estate Park, and the neighbouring developments and the Waterloo Heritage Precinct.

3.1 Alexandria Park

The simulations indicated that no more than 30% (Table 4) of Alexandria Park is overshadowed by the Proposed scheme after 9:00 am AEST (Figure 4), and no additional overshadowing of Alexandria Park was predicted after 10:00 am AEST (Figure 5). The overshadowing caused by the Proposed scheme is similar to that caused by the Approved DA scheme. The point-in-time shadow plots for Alexandria Park on June 21 can be found in Appendix B.

Table 4: New Shadow Area and Percentage of Alexandria Park

Time (AEST)	DA Approved Scheme		Proposed Scheme	
	New Shadow Area (m ²)	Percentage of Alexandria Park	New Shadow Area (m ²)	Percentage of Alexandria Park
9:00 am	4,368.8	29.94%	4,362.2	29.90%
10:00 am	0.0	0.00%	0.0	0.00%

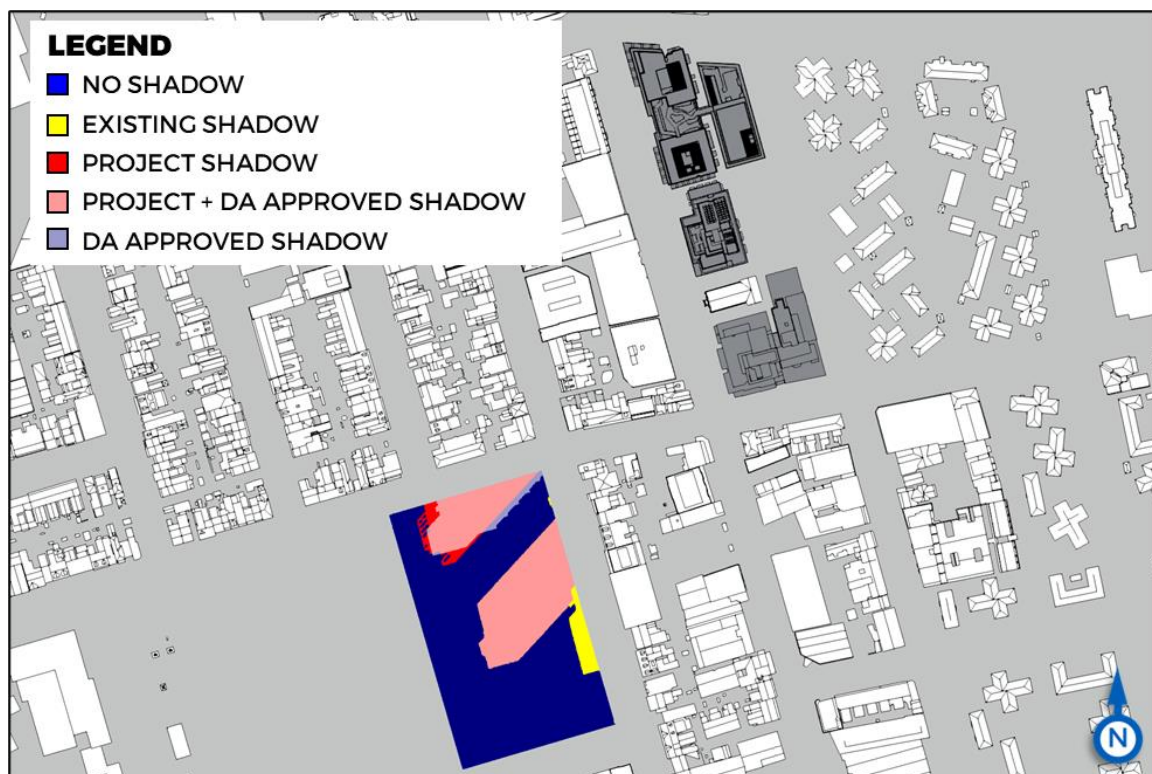


Figure 4: Comparison of Overshadowing on Alexandria Park Between the Approved DA Scheme and the Proposed Scheme on 21 June, 9:00 AM AEST

It is noted that the scheme that was previously approved overshadowed 29.94% of Alexandria Park at 9 AM on 21 June. The proposed scheme accordingly reduces the overshadowing impact by approximately 7 m² at this time.

As such, the Proposed Scheme complies with Design Criteria 1 and 2 of Section 3M (Solar access and amenity), and increases solar access to Alexandria Park which satisfies the City of Sydney's desire to not increase overshadow.

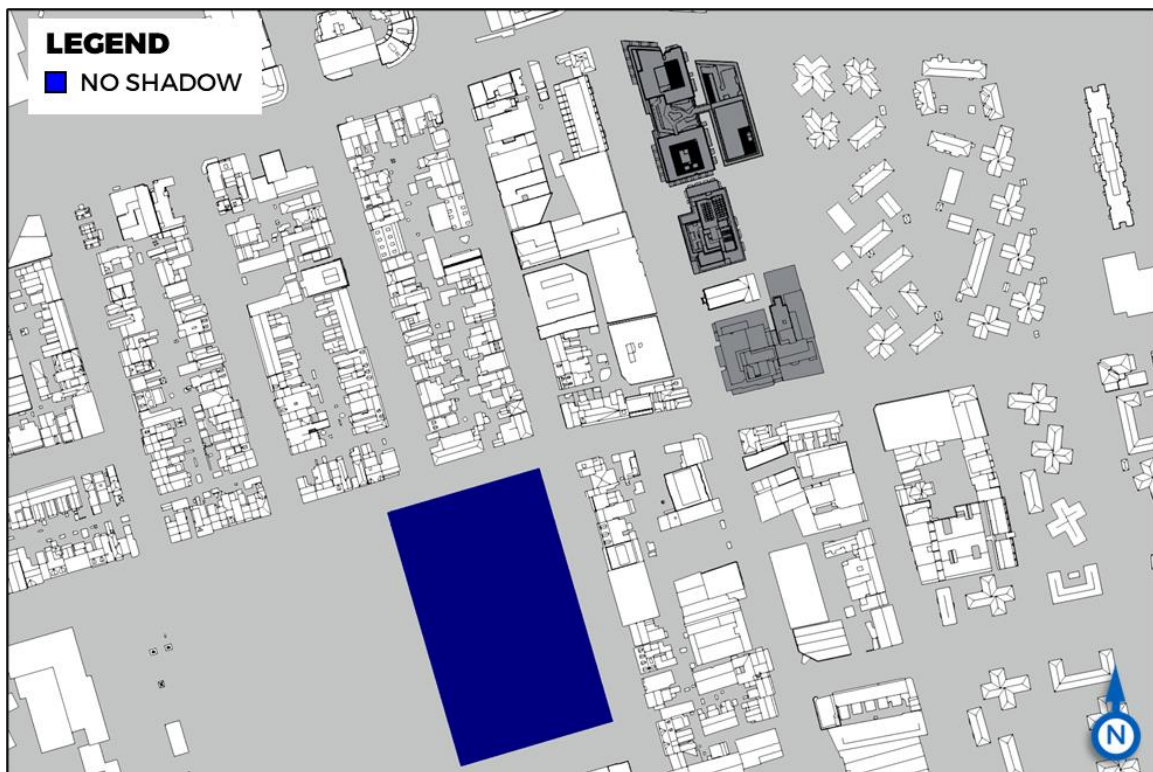


Figure 5: No Additional Overshadowing on Alexandria Park on 21 June, 10:00 AM AEST

3.2 Cope Street Plaza

Solar simulations were conducted for 21 June at 1-minute intervals between 9:00 am and 3:00 pm AEST to understand the total potential minutes of direct solar exposure on the plaza. The simulations confirmed that the criterion is met for Cope Street Plaza (Table 5). Figure 6 shows the area in Cope Street Plaza which was predicted to receive at least two hours of sunlight between 9:00 am and 3:00 pm AEST. This amounts to **61.1%** of the total area, satisfying Design Criterion 4 of Section 3C (Public Domain). The point-in-time shadow with 15-minute intervals between 9:00 am and 3:00 pm AEST can be found in Appendix C.

Table 5: Percentage of Area in Cope Street Plaza where Direct Solar Access is More Than 2 Hours

Time (AEST)	DA Approved Scheme	Proposed Scheme
9:00 am to 3:00 pm	57.3%	61.1%

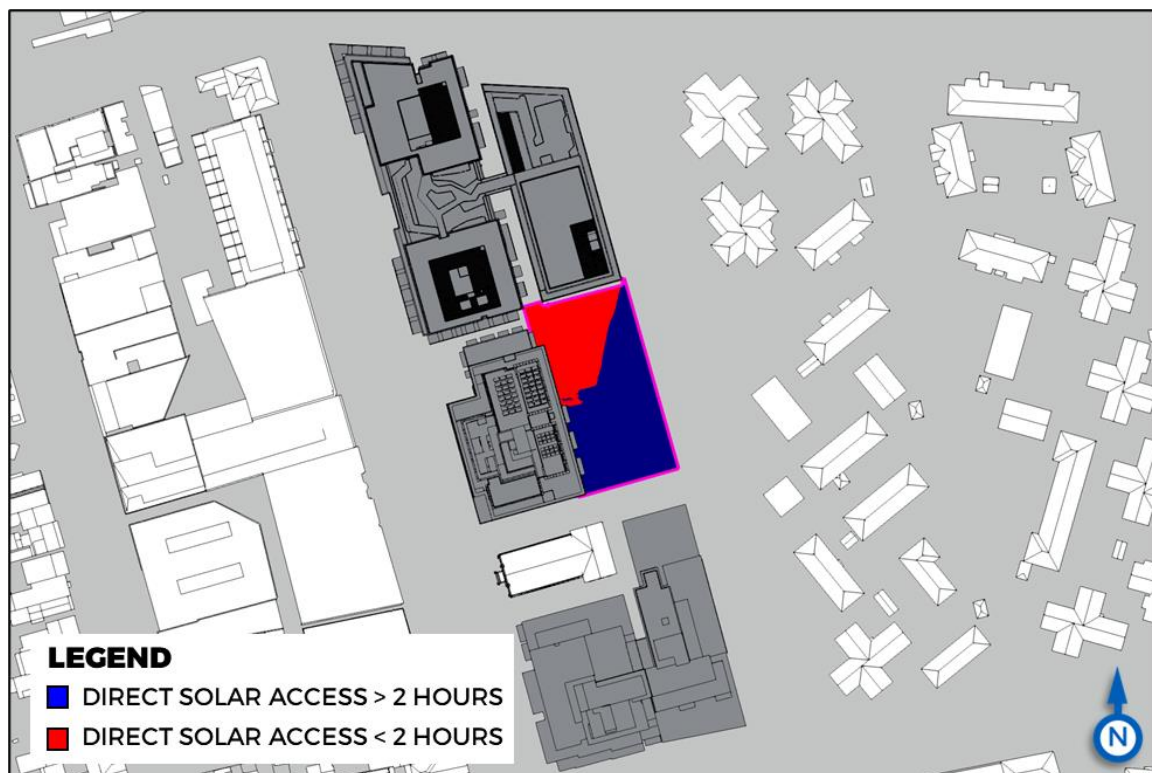


Figure 6: Area in Cope Street Plaza Where Direct Solar Access Was Predicted More Than 2 Hours on 21 June, Between 9:00 AM and 3:00 PM AEST

It is noted that in the previously approved scheme, 57.3% of Cope Street Plaza received at least two hours of sunlight between 9:00 am and 3:00 PM on 21 June. The proposed scheme accordingly allows an additional 3.8% of Cope Street Plaza to receive at least two hours of solar access.

3.3 Neighbouring Developments and Waterloo Heritage Precinct

Solar simulations were conducted at 1-minute intervals on 21 June to understand the total potential minutes of direct solar exposure at grade with and without the Proposed scheme in place, consistent with the approach taken for the DA Approved scheme (SSD-10441). Figure 7 and Figure 8 illustrate (in red) areas at grade which received 2 hours of sun under the existing conditions, but do not with the Proposed scheme and DA Approved scheme in place, respectively. The simulations indicated that the areas with less than 2 hours of direct solar access were primarily localised to the areas immediately south of the Project, where overshadowing impact can occur.

Waterloo Heritage Precinct

This precinct is located to the west of the proposed development (area bounded in magenta in Figure 7 and Figure 8), and is the main residential area which can be overshadowed by the buildings of the Central and Northern precinct (see sun-view diagrams in Appendix E).

- **Design Criterion 3 of Section 3M (Solar access and amenity)**

Based on the grade level results (Figure 7), RWDI would expect the Proposed scheme to have no impact on the residences within the Waterloo Heritage Precinct with regards to Design Criterion 3. The majority of the residences within the Heritage Precinct are primarily single-family dwellings with living windows located on the eastern and western aspects. As the simulations did not identify other areas where solar access diminished below 2 hours on 21 June, it is expected that the overall precinct will continue to have sufficient access to sunlight to the living room windows throughout the year. For the private open spaces of the dwellings, the simulations predicted overshadowing impacts to affect the existing landscape, and hence have no bearing on the results, satisfying Design Criterion 3.

- **Design Criterion 4 of Section 3M (Solar access and amenity)**

With regards to Design Criterion 4, the private outdoor spaces of the residences at 11, 13, 15 and 19 Buckland Street, under the Proposed scheme, receive solar access for less than 2 hours on 50% of the area between 9:00 am and 3:00 pm on 21 June. Compared to the DA Approved scheme, the additional overshadowing impact of the Proposed scheme was predicted to be limited to approximately a total area of 6.4 m², which is also currently limited by existing fences, sunshades, landscaping, and other nearby buildings. The frontage of these properties faces south, and as such, the living area windows are likely on this aspect and hence not exposed to sunlight. However, as shown in the sun-view diagrams, the northern aspect of these properties is exposed to sunlight from 11:00 am on 21 June. As such, RWDI expect that the proposed development would have a minor impact on the residences that received less than 2 hours of direct sunlight under the existing conditions, and meet the intention of Design Criterion 4.

Other Areas

A slight reduction in solar access is anticipated along Botany Road, noted to be on the commercial/warehouse buildings (Figure 7). The impacts are generally similar to those of the DA Approved Scheme (Figure 8). Overshadowing to locations south of Buckland Street is primarily due to the approved Buildings 3 and 4 of the Southern precinct, which have been constructed, with the Proposed Scheme of the Central and Northern precincts not changing the overall impacts in this area compared to the DA Approved Scheme.

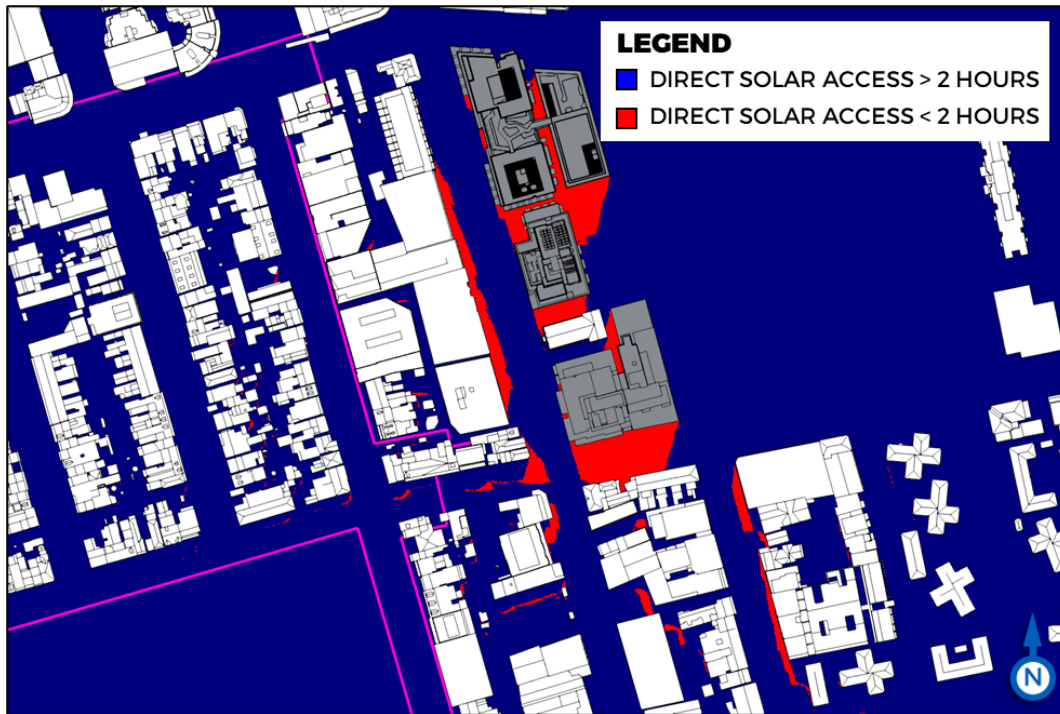


Figure 7: Grade Level Areas Where Direct Solar Access is Reduced from At or Above 2 Hours to Less Than 2 Hours on 21 June, Between 9:00 AM and 3:00 PM AEST, Due to the Proposed Scheme

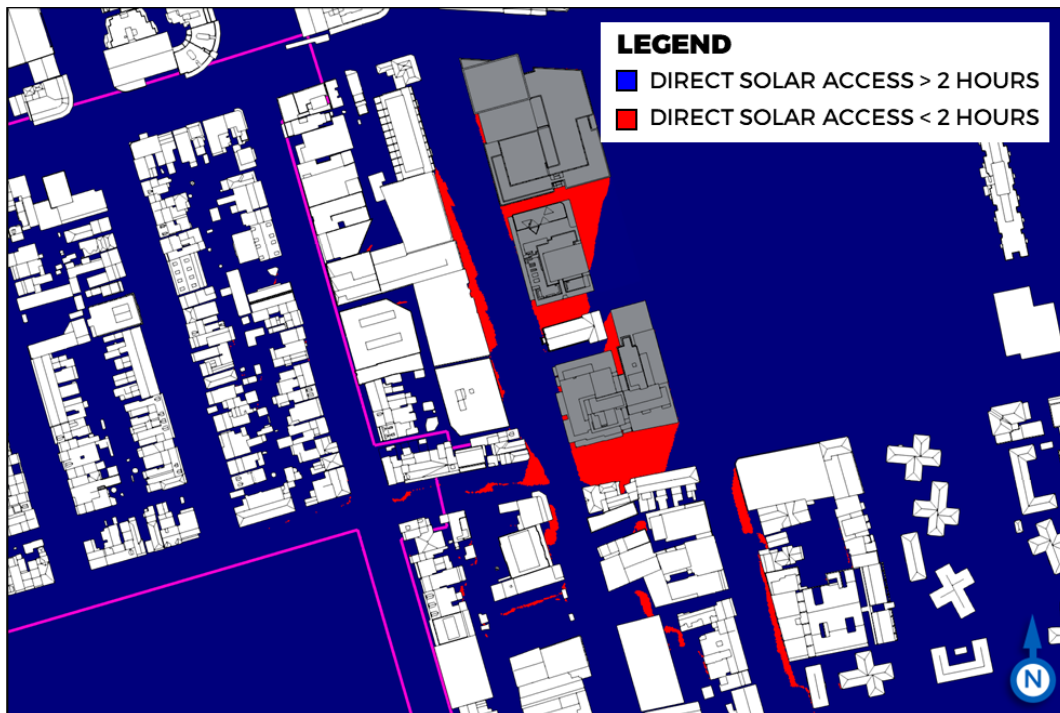


Figure 8: Grade Level Areas Where Direct Solar Access is Reduced from At or Above 2 Hours to Less Than 2 Hours on 21 June, Between 9:00 AM and 3:00 PM AEST, Due to the DA Approved Scheme



Summary of Impacts to Neighbouring Residences

The simulation results demonstrated that the Proposed Scheme is not expected to reduce the solar access of the residential neighbouring developments, including the Waterloo Heritage Precinct, to less than 2 hours between 9:00 am and 3:00 pm on 21 June, for the areas that received more than 2 hours under the existing conditions. This is deemed to satisfy the requirements of Design Criterion 3.

An additional overshadowing impact of the Proposed Scheme was predicted on a limited area of the private open spaces within neighbouring residences of the Heritage Precinct. However, this is not anticipated to result in a significant reduction in solar access than the existing condition (less than 2 hours). As such, Objective 2 of Section 3M to minimise overshadowing of the wider public domain, and the intent of Design Criterion 4 is expected to be met.

4 CUMULATIVE IMPACT ASSESSMENT (CIA)

As outlined in the Department of Planning, Housing and Infrastructure's "Cumulative Impact Assessment Guidelines for State Significant Projects" project level cumulative impact assessment (CIA) is considered for the impacts of the proposed Waterloo Metro Quarter development in combination with other reasonably foreseeable and wind significant future projects within the vicinity (See Figure 9). This CIA is also proportionate to the scale and significance of the Proposed Development and the considered future projects.

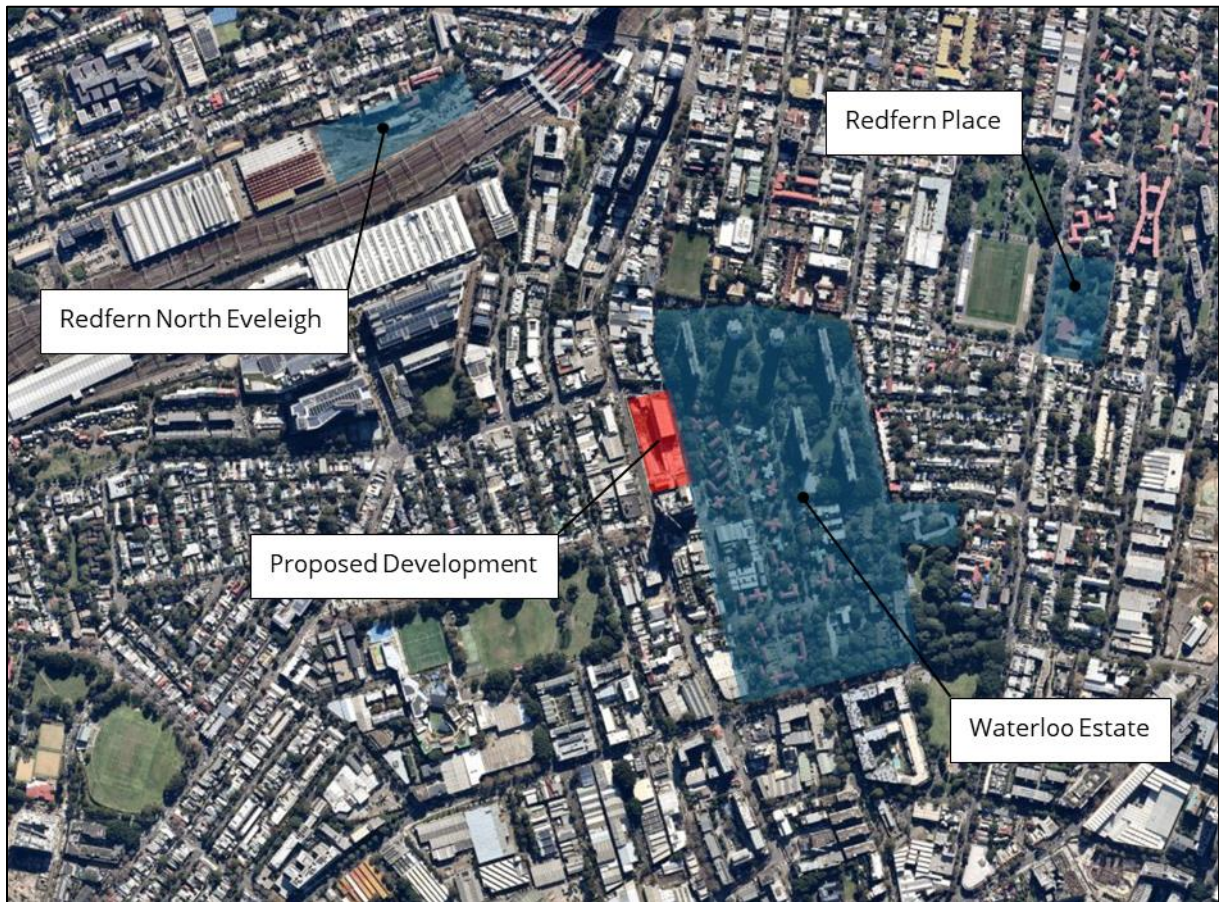


Figure 9: Nearby Future Developments

The development of Redfern North Eveleigh, and Redfern Place is located over 500 m away from the proposed development and will not be overshadowed by the proposed development.

The adjacent re-development of the Waterloo Estate is separated into multiple precincts (See Figure 10). The southern precinct adjacent to the proposed development will be a park (See Figure 11). Impacts are discussed in Section 4.1.

The Project will not cast any shadow on the buildings of the southern precinct of the Waterloo Estate until after 2:00 PM AEST, as shown in the sun-view diagrams in Appendix E. The impacts are expected to be very similar to those of the approved scheme of the Project, owing only to slight changes to the Building 2 envelope. As such, the impact on future solar access to the Waterloo Estate redevelopment is likely to be negligible.

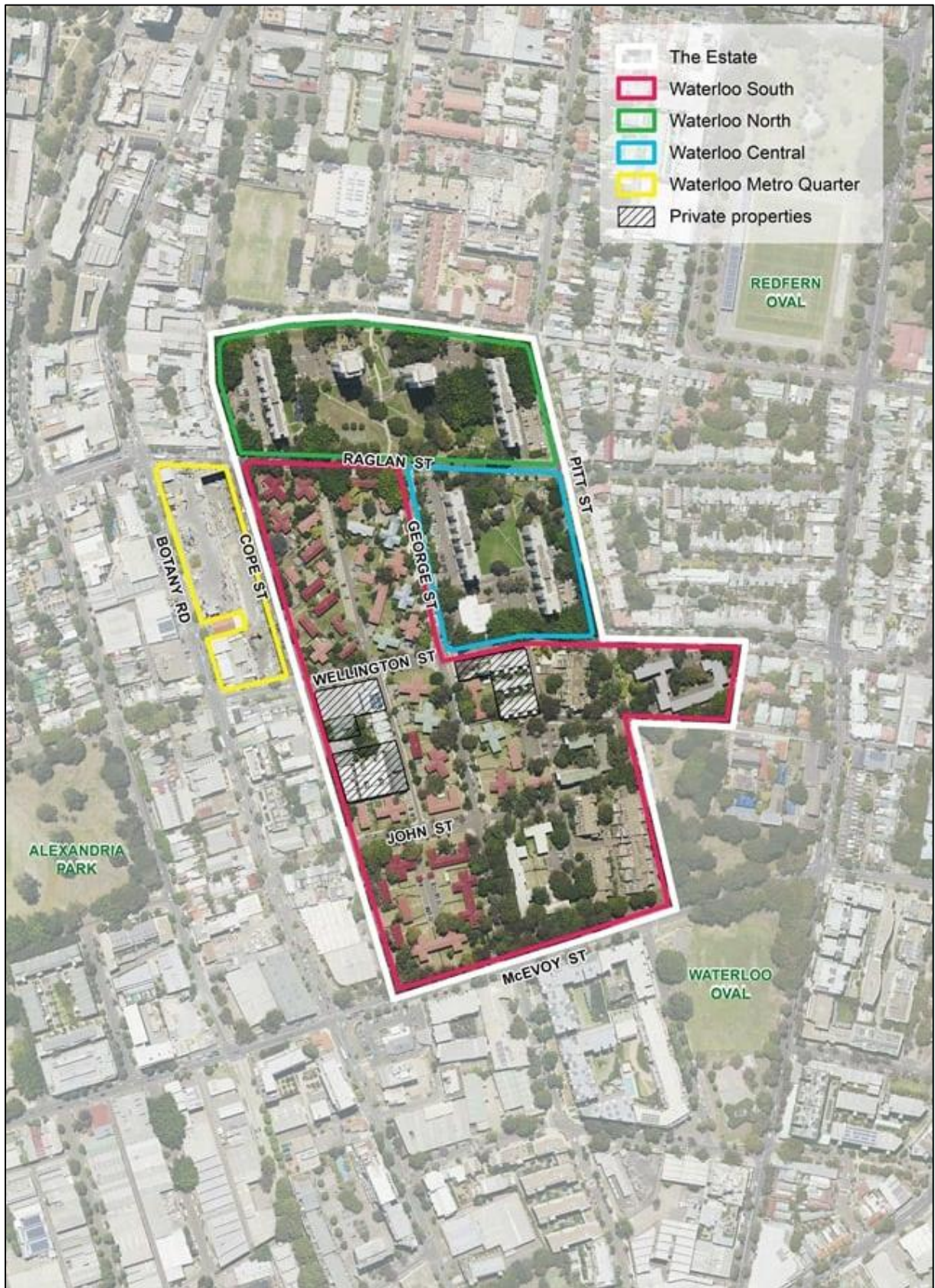


Figure 10: Waterloo Renewal Project Development Areas (Extract from CoS planning proposal webpage)



Figure 11: Waterloo South building heights map (Extract from Planning NSW Waterloo South webpage)



4.1 Future Waterloo Park

As undertaken for the Cope Street Plaza and Waterloo Heritage Precinct, solar simulations at 1-minute intervals were also conducted on the future Waterloo Estate Park to understand the total potential of direct solar exposure on the park. The simulations confirm that the criterion is met for the future Waterloo Estate Park (Table 6). Figure 12 shows that the entire area in Waterloo Estate Park was predicted to receive at least two hours of sunlight between 9:00 am and 3:00 pm AEST. The point-in-time shadow with 15-minute intervals between 9:00 am and 4:00 pm AEST can be found in Appendix D. The shadow plots generally show that the Project demonstrates improved solar access (i.e., less overshadowing impact) to the future Waterloo Estate Park after 3:00 pm AEST compared to the Approved DA scheme. The improvement in the new overshadowed area is shown in Table 7.

Table 6: Percentage of Area in the Future Waterloo Estate Park where Direct Solar Access is More Than 2 Hours

Time (AEST)	DA Approved	Proposed Scheme
9:00 am to 3:00 pm	100%	100%

Table 7: New Overshadowed Area of Future Waterloo Park

Time (AEST)	Overshadow Area (m ²)	
	DA Approved	Proposed Scheme
9:00 am to 1:00 pm	0	0
2:00 pm	928	361
3:00 pm	7,201	5,331
4:00 pm	13,273	11,828

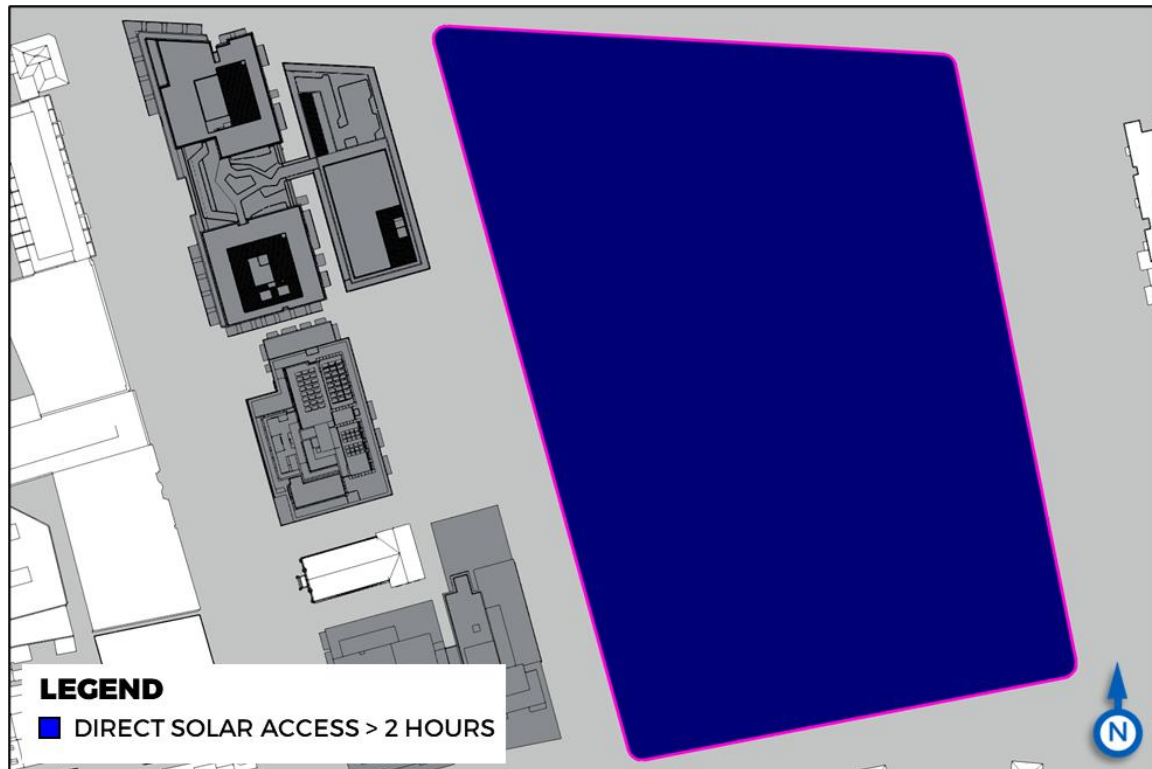


Figure 12: Area in the Future Waterloo Estate Park Where Direct Solar Access Was Predicted More Than 2 Hours on 21 June, Between 9:00 AM and 3:00 PM AEST



5 CONCLUSION

The overshadowing caused by the Project was found to comply with the Waterloo Metro Quarter Design and Amenity Guidelines. The simulations predict that the Project will not create new shadowing on Alexandria Park between 10:00 am and 3:00 pm on 21 June. The overshadowing impact at 9:00 am was predicted to be less than 30% (29.9%) of the park area. This indicates that both criteria are met for the Project's impact on Alexandria Park.

The 1-minute intervals simulation predicted that more than 50% (61.1%) of Cope Street Plaza can receive at least 2 hours of direct sunlight between 9:00 am and 3:00 pm on June 21, thereby complying with the requirement in the Waterloo Metro Quarter Design and Amenity Guidelines.

A similar assessment was also conducted of the grade level conditions in the surrounding neighbourhood, and Waterloo Heritage Precinct indicated that the Project would have a minimal impact on solar access to the residences within the Waterloo Heritage Precinct. A total of 6.4 m² of private open space from four properties which currently receive 2 hours of direct sunlight are predicted to experience a reduction to slightly less than 2 hours compared to the DA Approved Scheme. Impacts to living area spaces are not predicted. As such, Objective 2 of Section 3M to minimise overshadowing of the wider public domain, and the intent of Design Criteria 3 and 4 is expected to be met.

In addition to the above, an assessment was also carried out to study the overshadowing impact of the Project on the future Waterloo Estate Park located immediately east of the Project site, and the entire area was predicted to receive at least 2 hours of direct sunlight between 9:00 am and 3:00 pm on June 21, thereby complying with the requirement in the Waterloo Metro Quarter Design and Amenity Guidelines.



6 GENERAL STATEMENT OF LIMITATIONS

This report entitled *Waterloo Metro Quarter – SSDA Overshadowing Analysis*, was prepared by RWDI Australia Pty Ltd (“RWDI”) for WL Developer Ptd Ltd (“Client”). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein (“Project”). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared.

Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilise the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

The background features a large, light beige circular shape on the right side, partially overlapping a solid blue triangular shape on the left. A thin white curved line separates the two shapes.

APPENDIX A

ALEXANDRIA PARK SURVEY

APPENDIX B

POINT-IN-TIME SHADOW DIAGRAMS - ALEXANDRIA PARK - 21 JUNE

POINT-IN-TIME SHADOW DIAGRAMS – ALEXANDRIA PARK



LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

Jun 21

9:00 am AEST



9:15 am AEST



9:30 am AEST



9:45 am AEST



10:00 am AEST



10:15 am AEST



POINT-IN-TIME SHADOW DIAGRAMS – ALEXANDRIA PARK

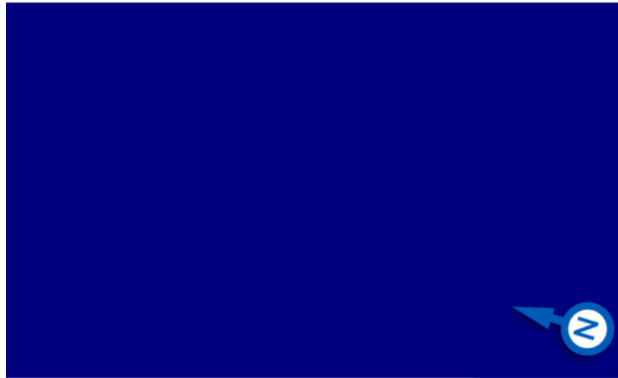


LEGEND

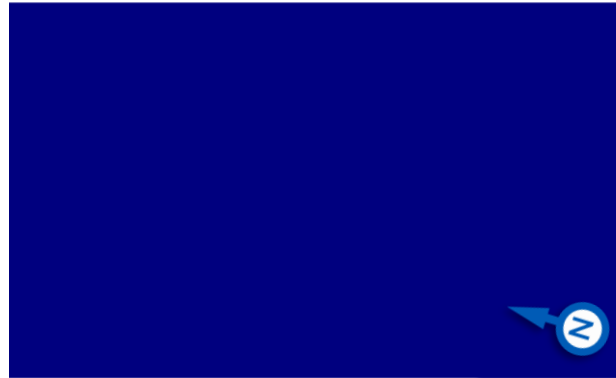
- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

Jun 21

10:30 am AEST



10:45 am AEST



11:00 am AEST



11:15 am AEST



11:30 am AEST



11:45 am AEST



POINT-IN-TIME SHADOW DIAGRAMS – ALEXANDRIA PARK

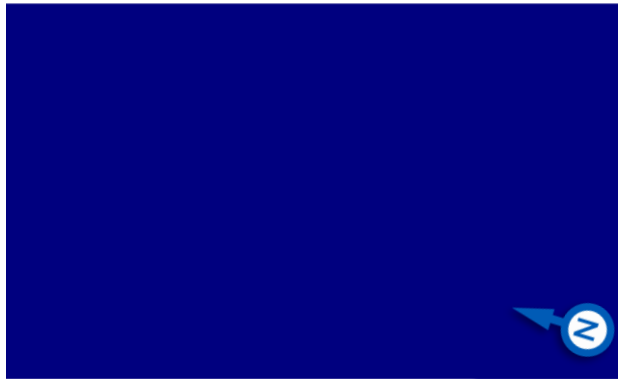


LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

Jun 21

12:00 pm AEST



12:15 pm AEST



12:30 pm AEST



12:45 pm AEST



1:00 pm AEST



1:15 pm AEST



POINT-IN-TIME SHADOW DIAGRAMS – ALEXANDRIA PARK



LEGEND

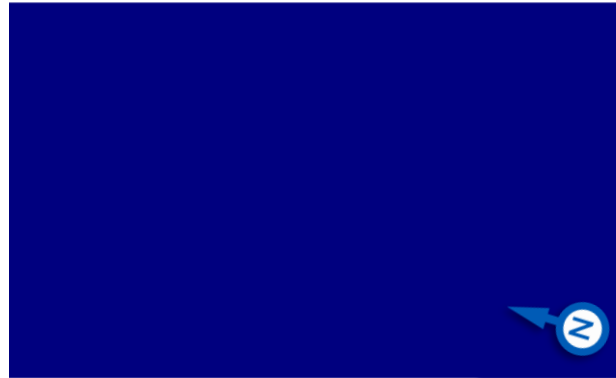
- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

Jun 21

1:30 pm AEST



1:45 pm AEST



2:00 pm AEST



2:15 pm AEST



2:30 pm AEST



2:45 pm AEST



POINT-IN-TIME SHADOW DIAGRAMS – ALEXANDRIA PARK



Jun 21

LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

3:00 pm AEST



APPENDIX C

POINT-IN-TIME SHADOW DIAGRAMS - COPE STREET PLAZA - 21 JUNE

POINT-IN-TIME SHADOW DIAGRAMS – COPE ST PLAZA



LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

Jun 21

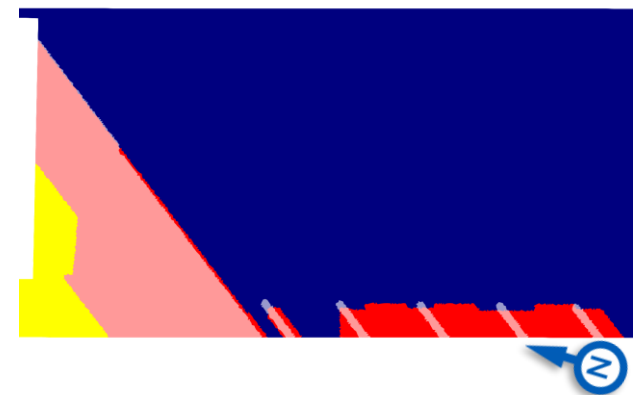
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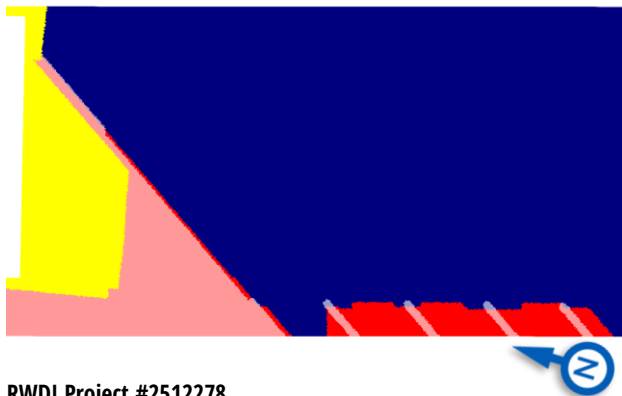
9:15 am AEST



9:30 am AEST



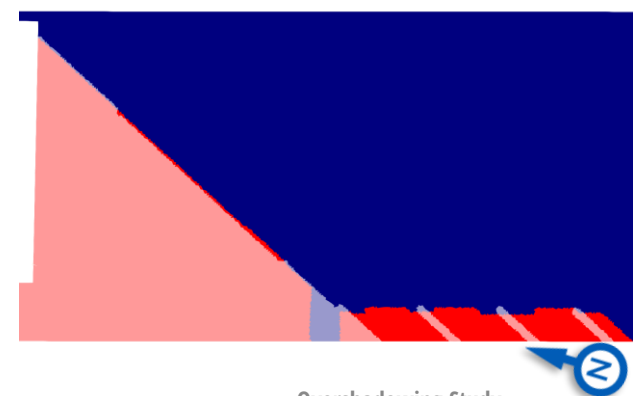
9:45 am AEST



10:00 am AEST



10:15 am AEST



POINT-IN-TIME SHADOW DIAGRAMS – COPE ST PLAZA

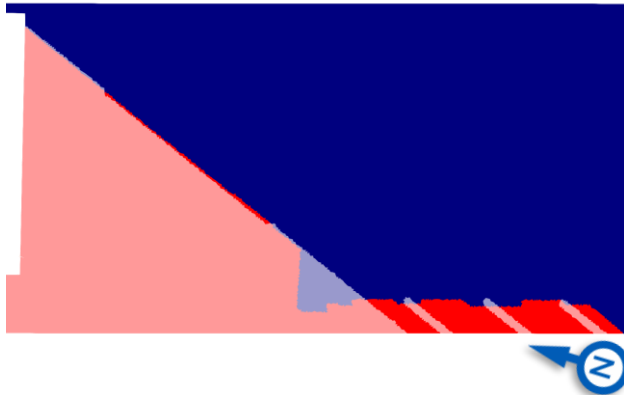


LEGEND

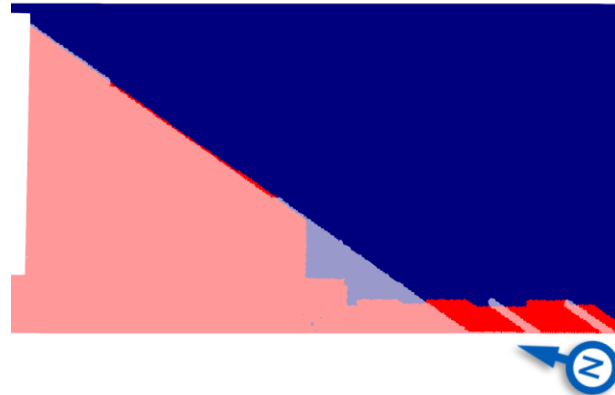
- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

Jun 21

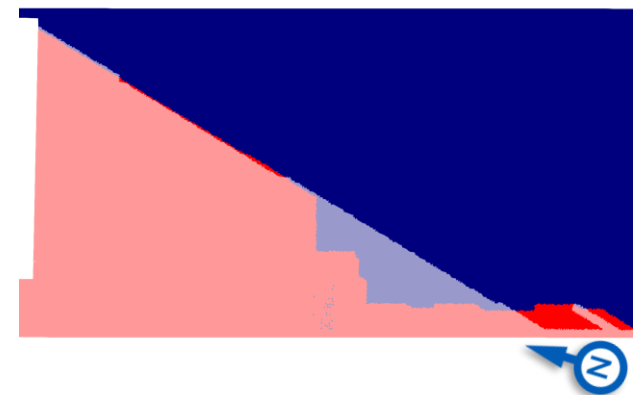
10:30 am AEST



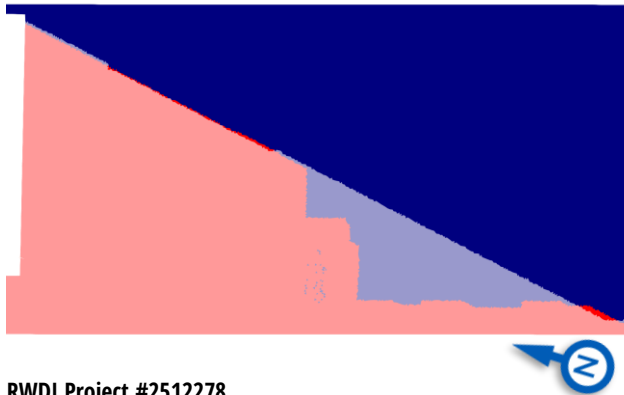
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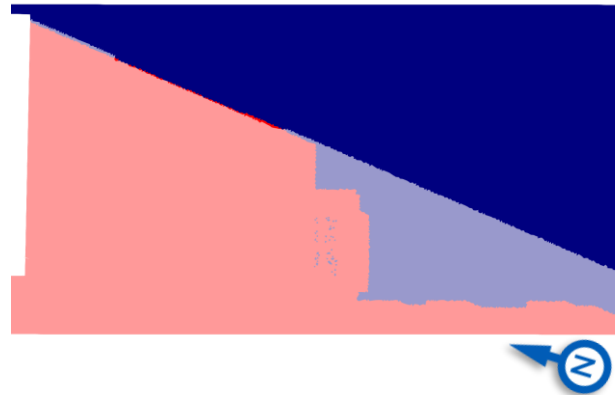
11:00 am AEST



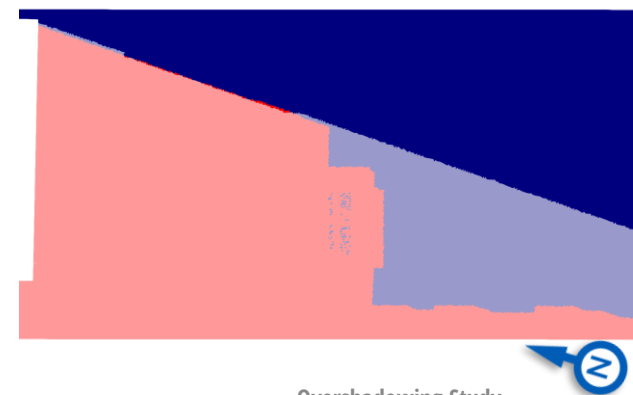
11:15 am AEST



11:30 am AEST



11:45 am AEST



POINT-IN-TIME SHADOW DIAGRAMS – COPE ST PLAZA

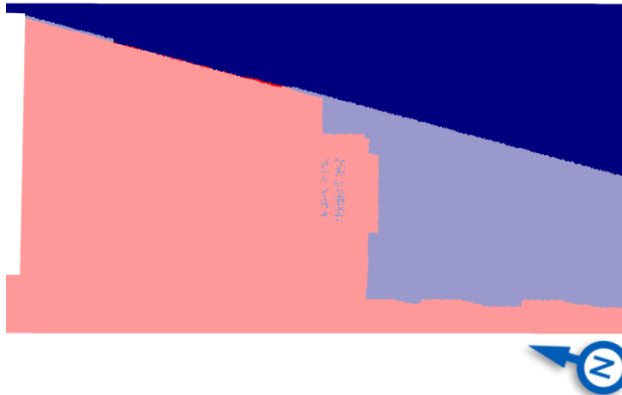


LEGEND

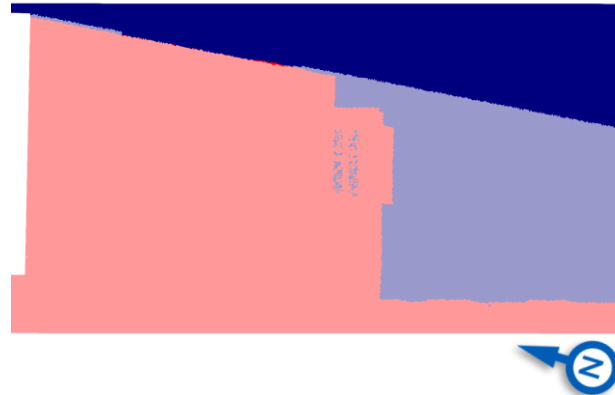
- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

Jun 21

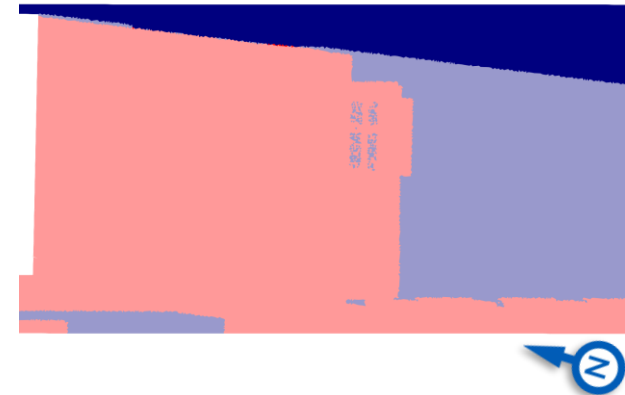
12:00 pm AEST



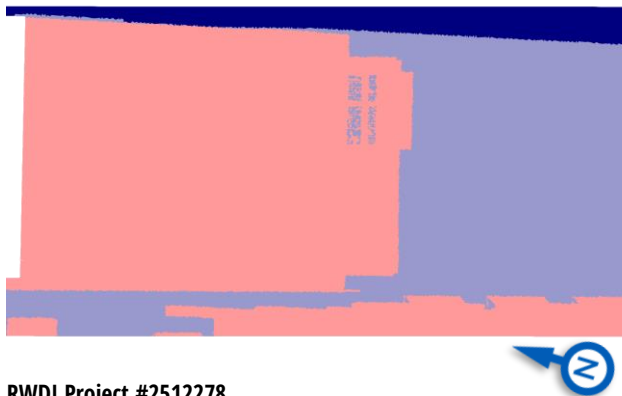
12:15 pm AEST



12:30 pm AEST



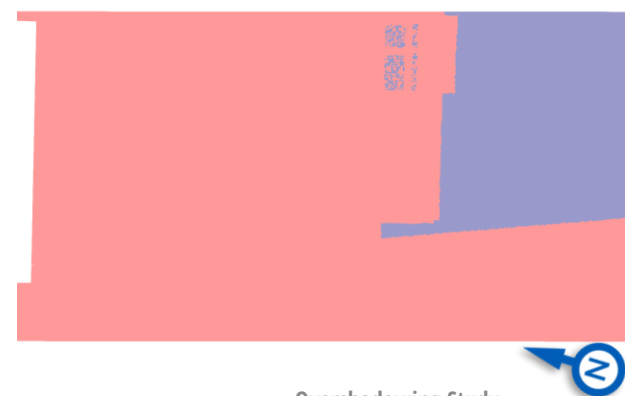
12:45 pm AEST



1:00 pm AEST



1:15 pm AEST



POINT-IN-TIME SHADOW DIAGRAMS – COPE ST PLAZA



LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

Jun 21

1:30 pm AEST



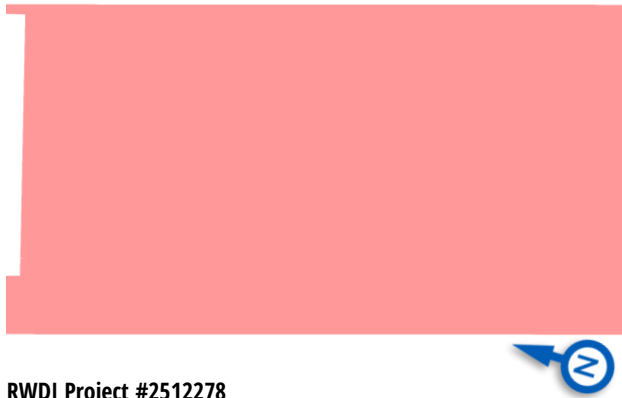
1:45 pm AEST



2:00 pm AEST



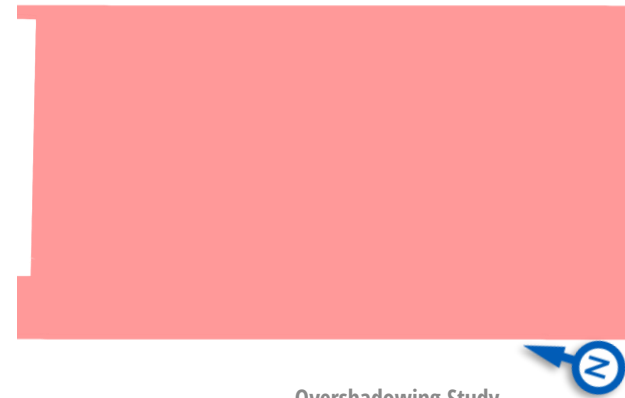
2:15 pm AEST



2:30 pm AEST



2:45 pm AEST



POINT-IN-TIME SHADOW DIAGRAMS – COPE ST PLAZA



LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

Jun 21

3:00 pm AEST



APPENDIX D

POINT-IN-TIME SHADOW DIAGRAMS - FUTURE WATERLOO ESTATE PARK - 21 JUNE

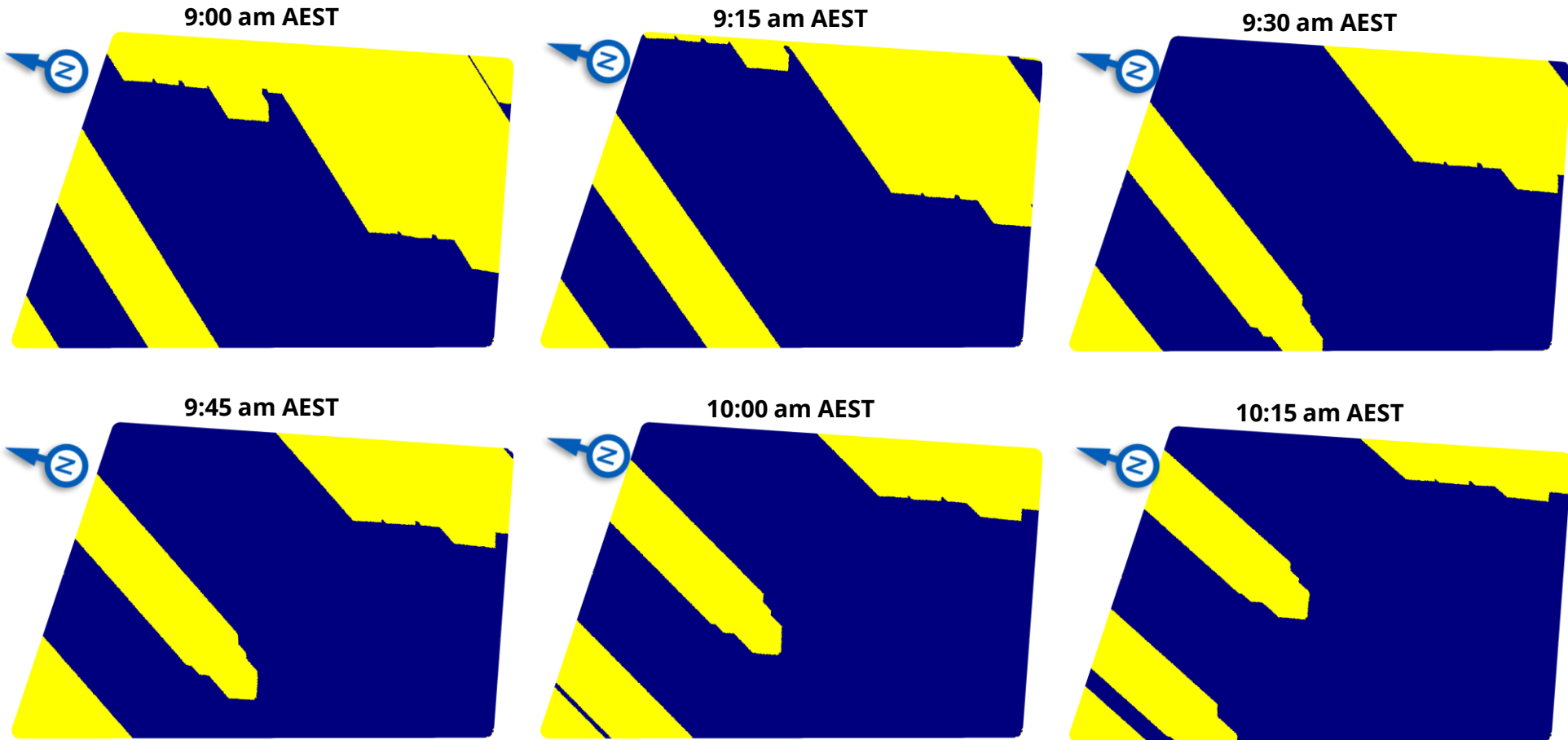
POINT-IN-TIME SHADOW DIAGRAMS – FUTURE WATERLOO ESTATE PARK



Jun 21

LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW



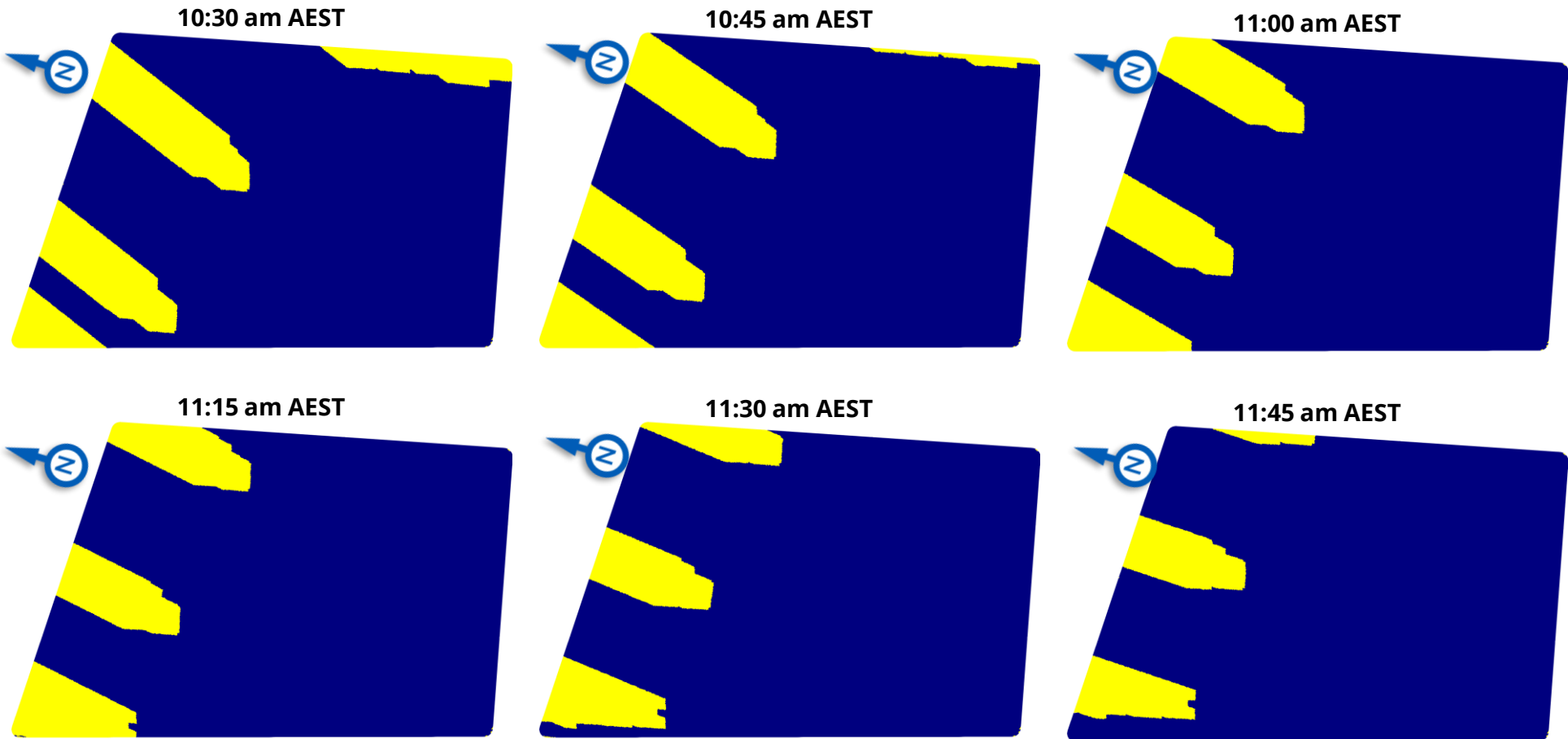
POINT-IN-TIME SHADOW DIAGRAMS – FUTURE WATERLOO ESTATE PARK



Jun 21

LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW



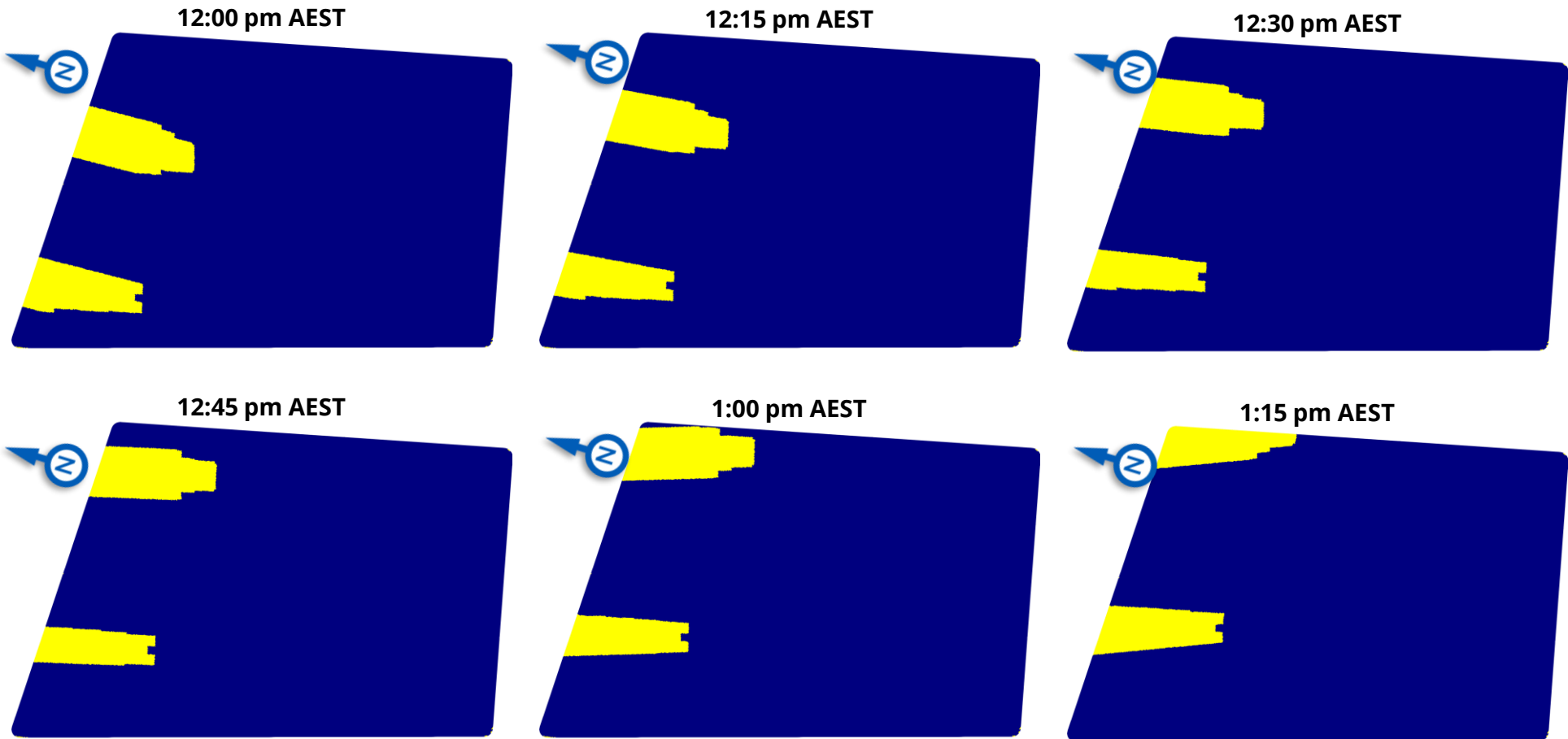
POINT-IN-TIME SHADOW DIAGRAMS – FUTURE WATERLOO ESTATE PARK



Jun 21

LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW



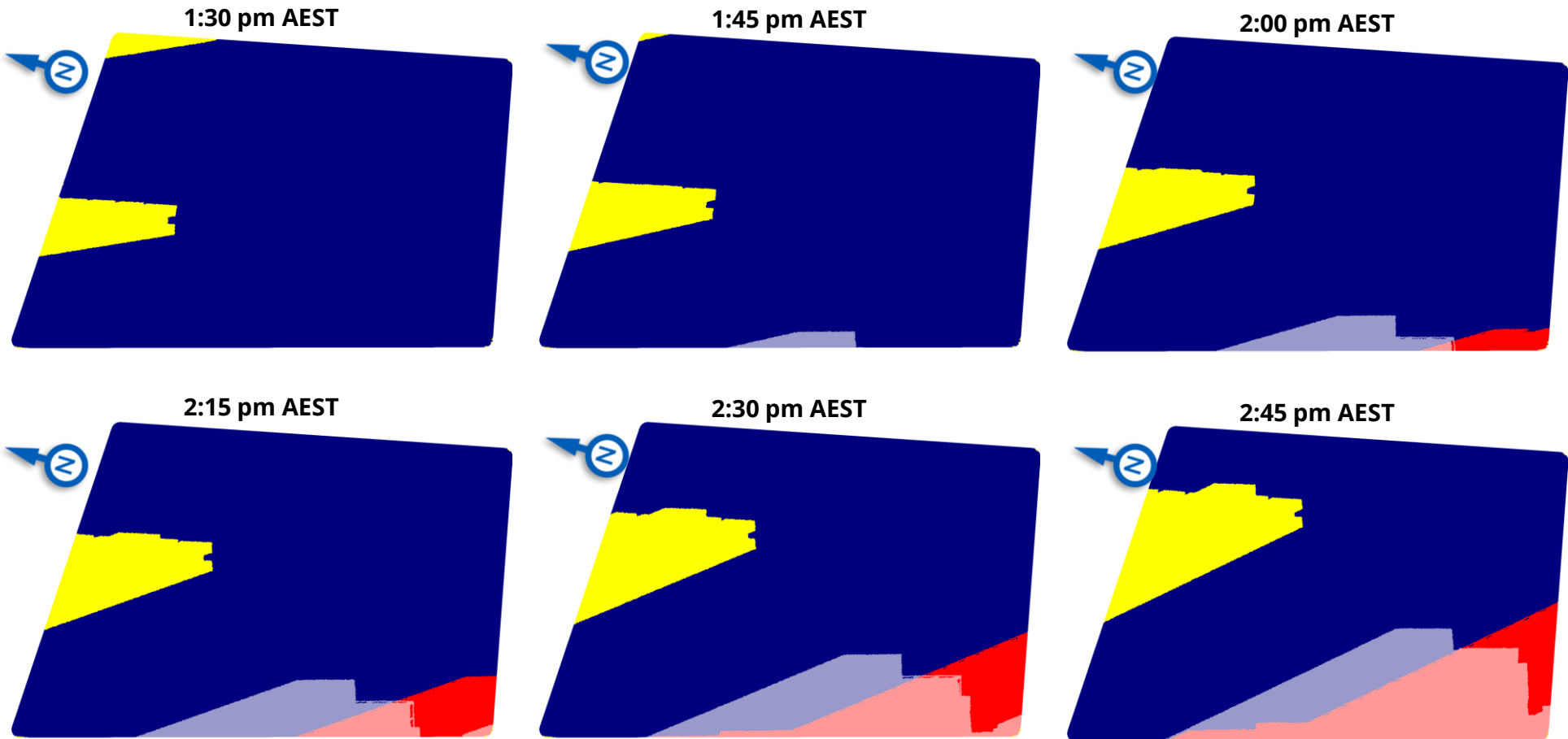
POINT-IN-TIME SHADOW DIAGRAMS – FUTURE WATERLOO ESTATE PARK



Jun 21

LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW



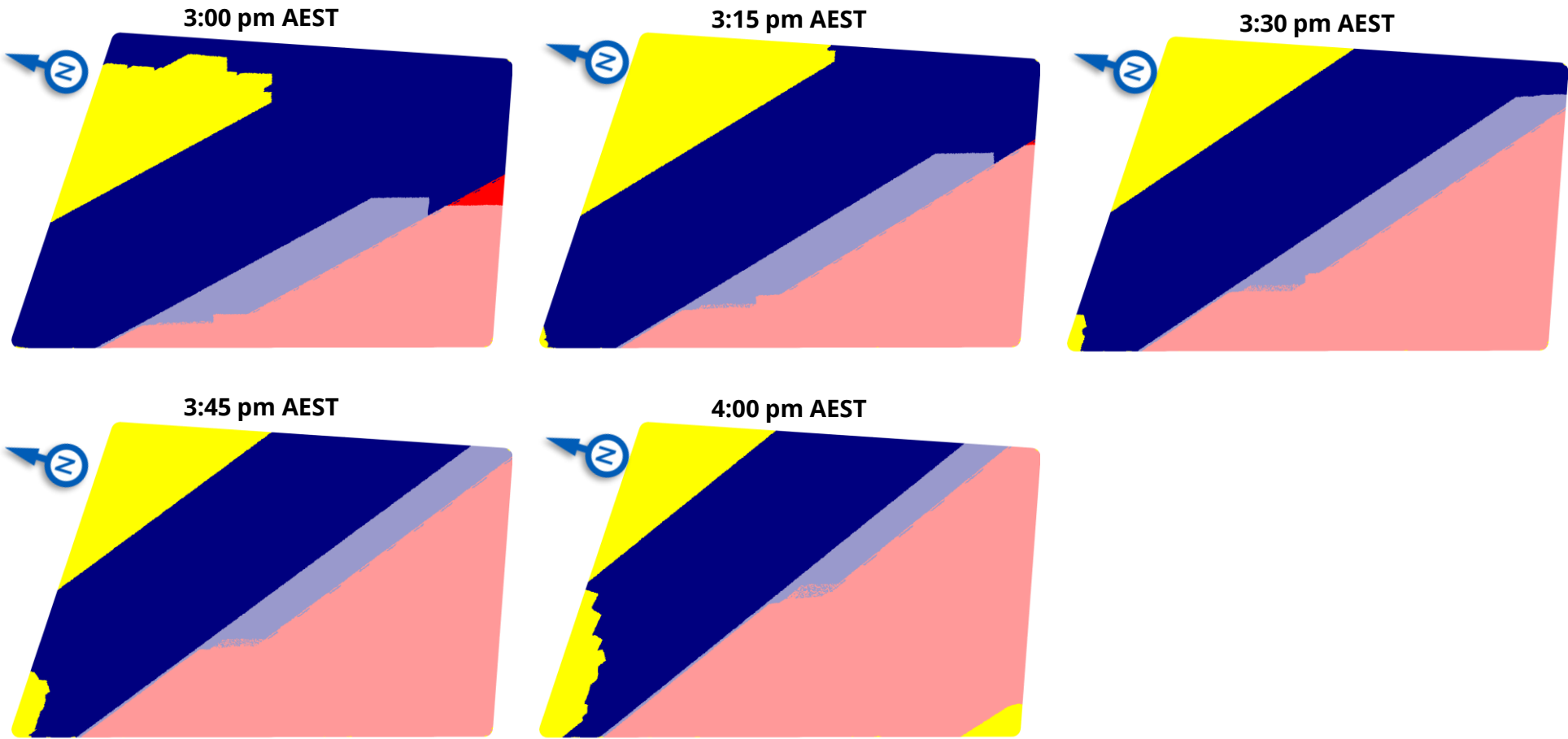
POINT-IN-TIME SHADOW DIAGRAMS – FUTURE WATERLOO ESTATE PARK



LEGEND

- NO SHADOW
- EXISTING SHADOW
- PROJECT SHADOW
- PROJECT + DA APPROVED SHADOW
- DA APPROVED SHADOW

Jun 21



APPENDIX E

SUN VIEW DIAGRAMS

SUN VIEW DIAGRAM

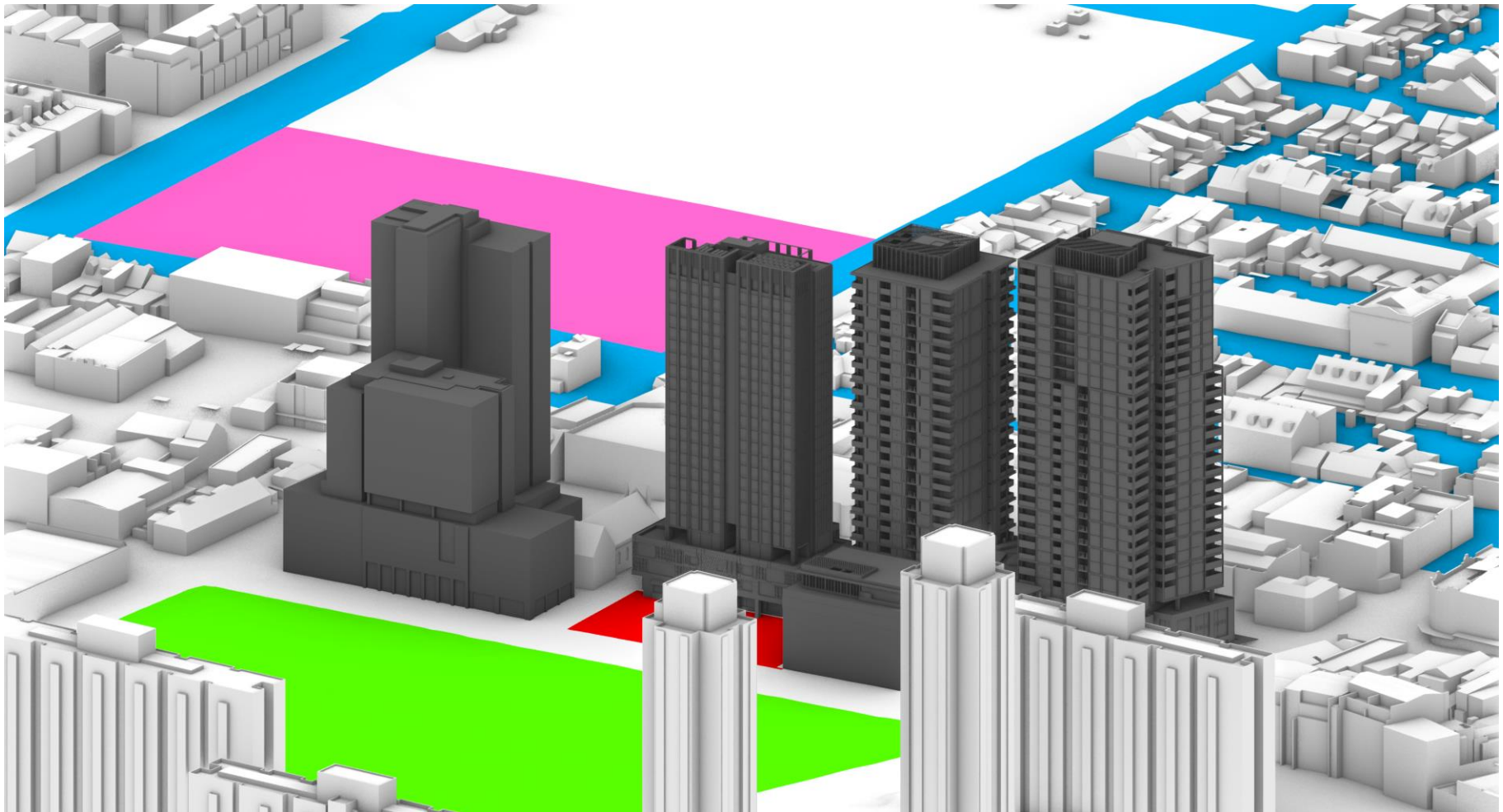


Jun 21 - 09:00 AEST

LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA



SUN VIEW DIAGRAM

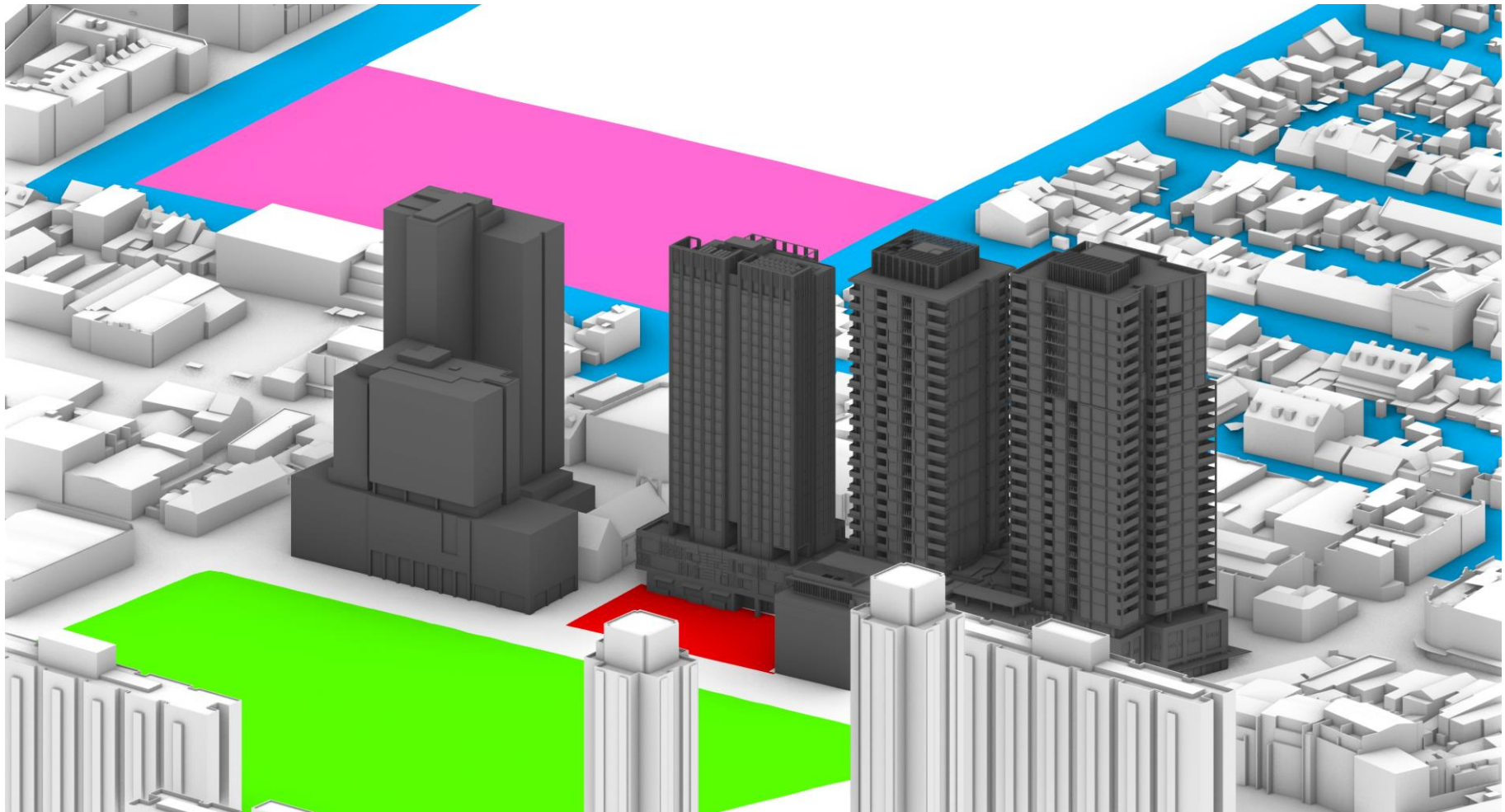


Jun 21 - 09:15 AEST

LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA



SUN VIEW DIAGRAM

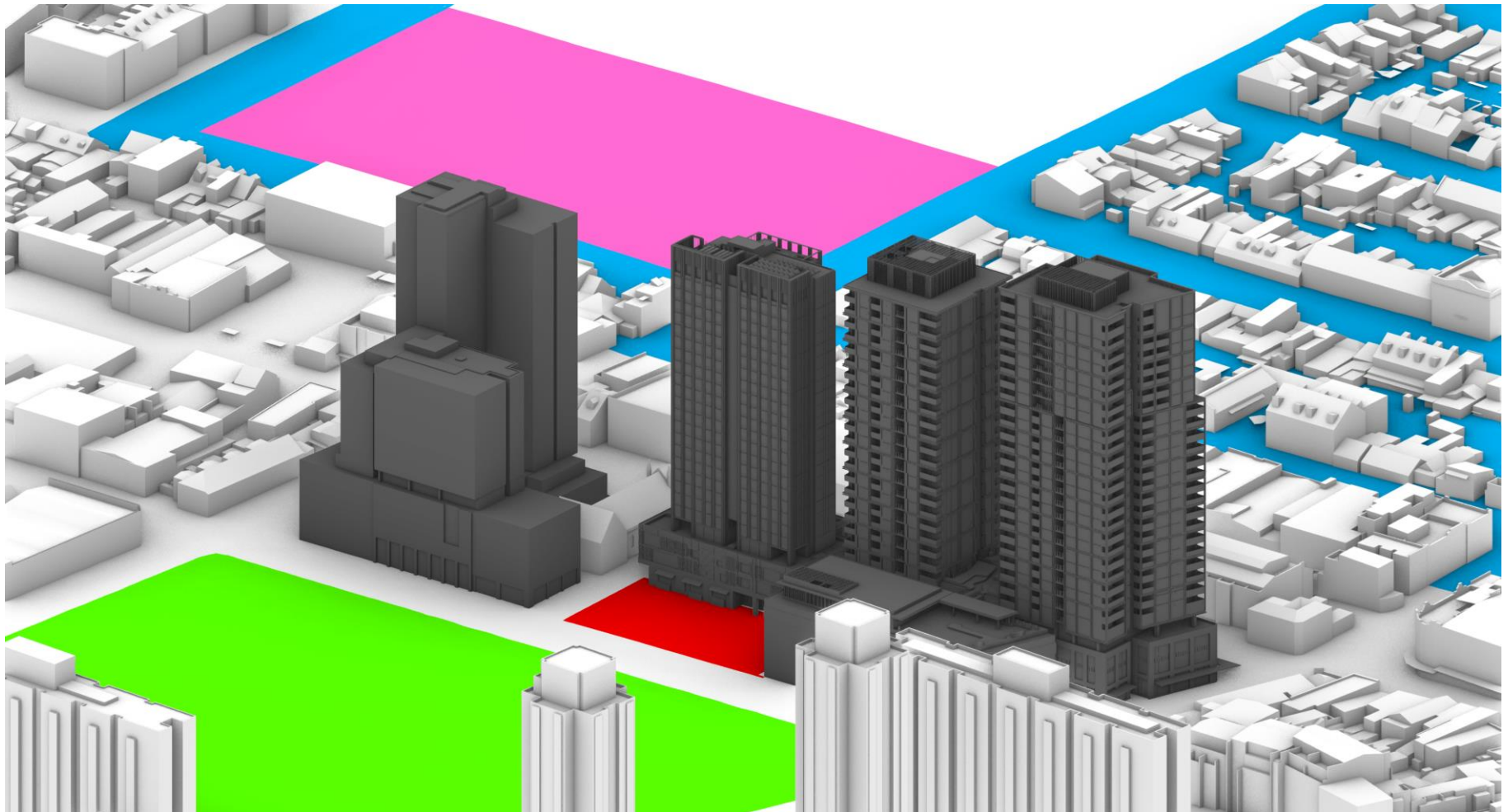


Jun 21 - 09:30 AEST

LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA



SUN VIEW DIAGRAM

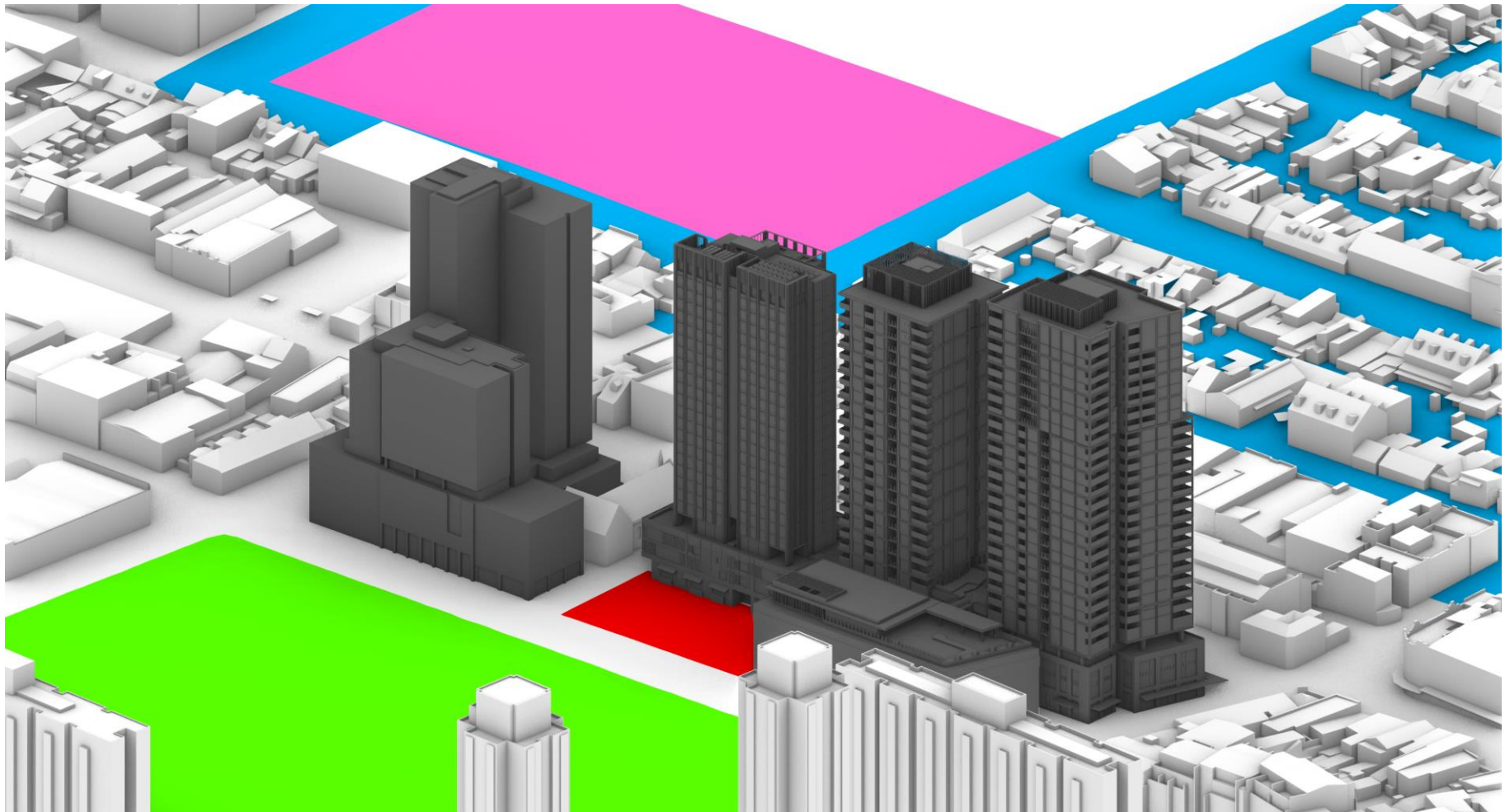


Jun 21 - 09:45 AEST

LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA



SUN VIEW DIAGRAM

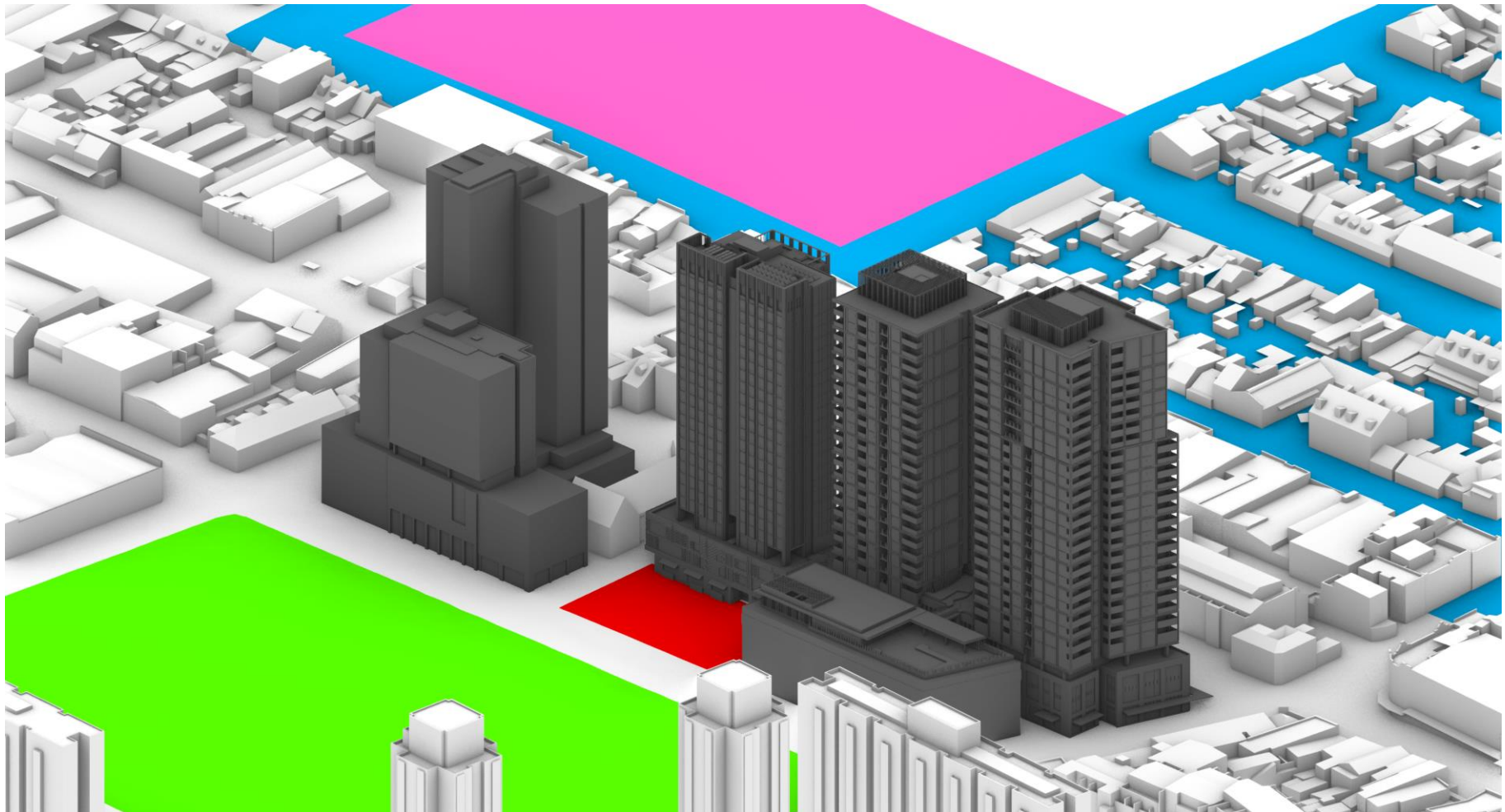


Jun 21 - 10:00 AEST

LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA



SUN VIEW DIAGRAM



LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 10:15 AEST



SUN VIEW DIAGRAM



LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 10:30 AEST



SUN VIEW DIAGRAM



LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 10:45 AEST



SUN VIEW DIAGRAM



Jun 21 - 11:00 AEST

LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA



SUN VIEW DIAGRAM

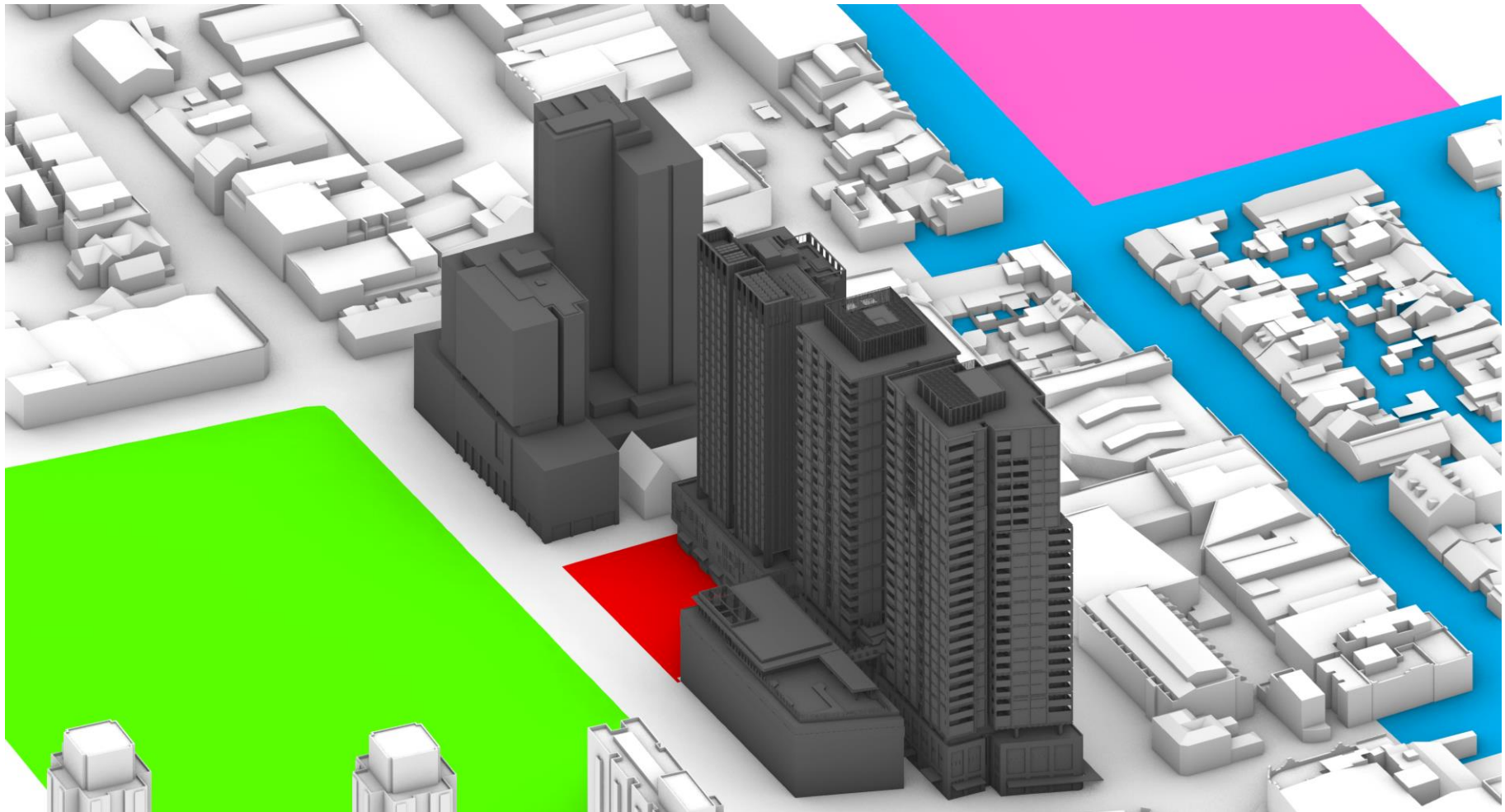


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 11:15 AEST



SUN VIEW DIAGRAM

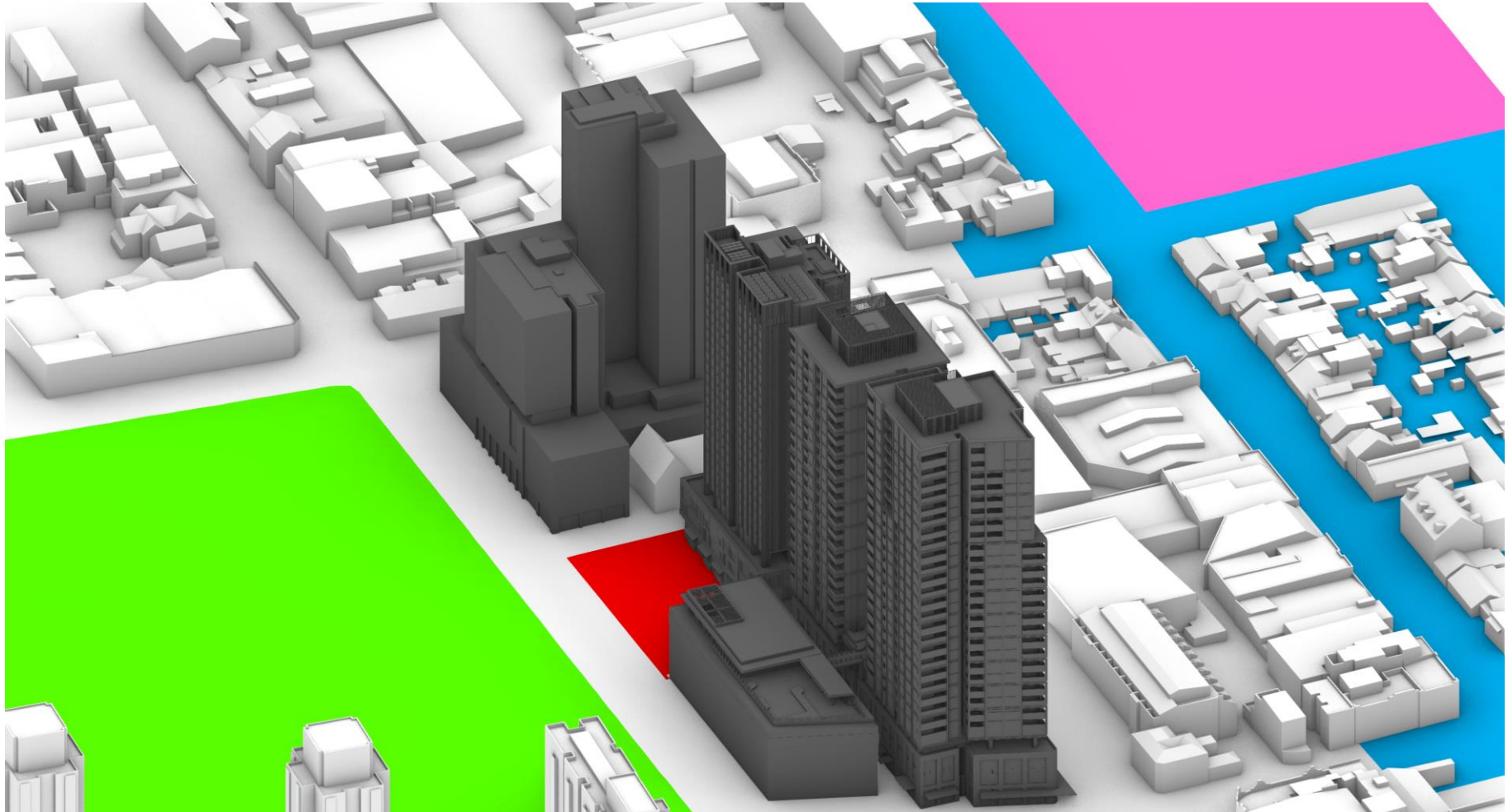


Jun 21 - 11:30 AEST

LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA



SUN VIEW DIAGRAM

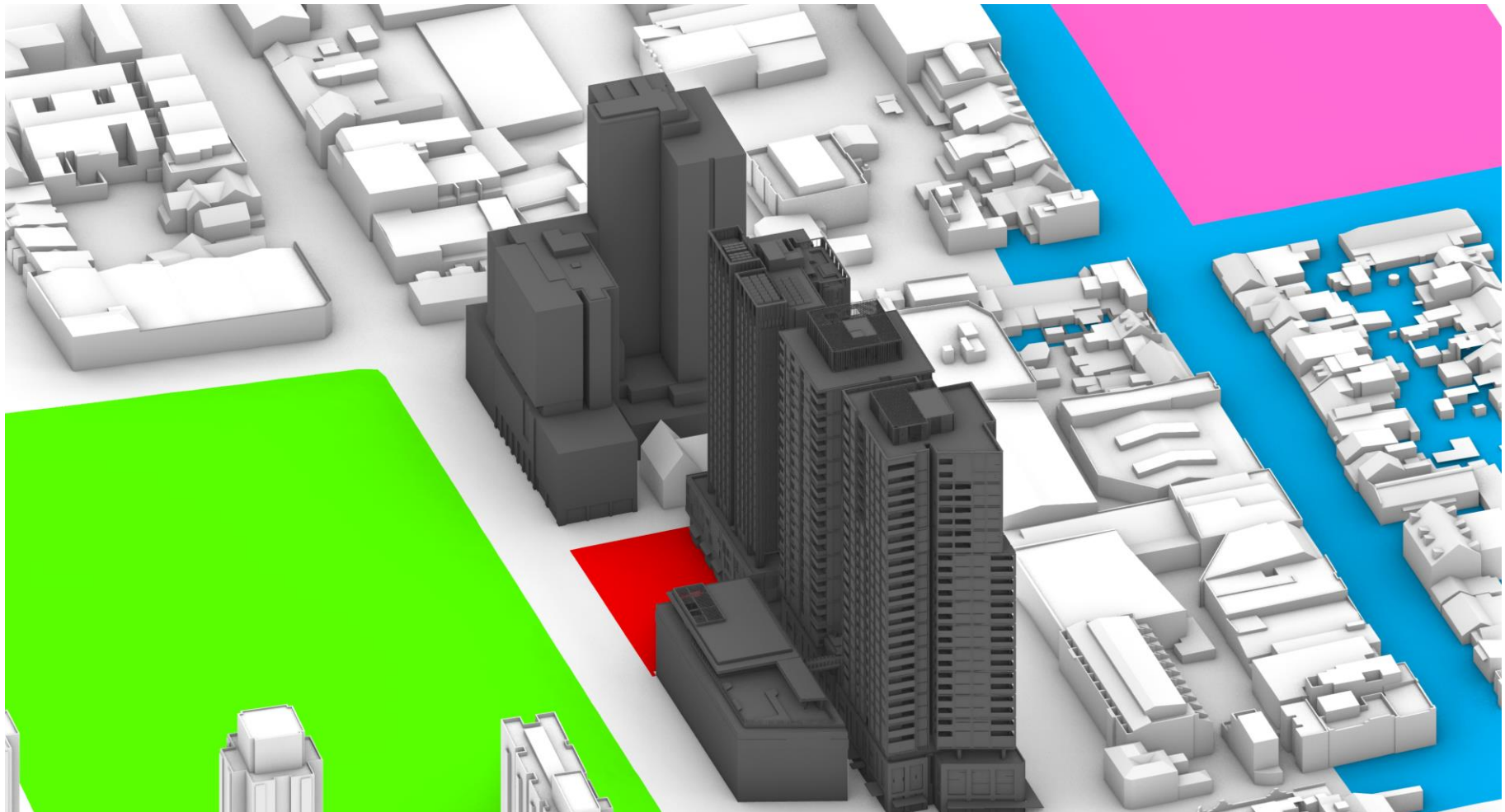


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 11:45 AEST



SUN VIEW DIAGRAM

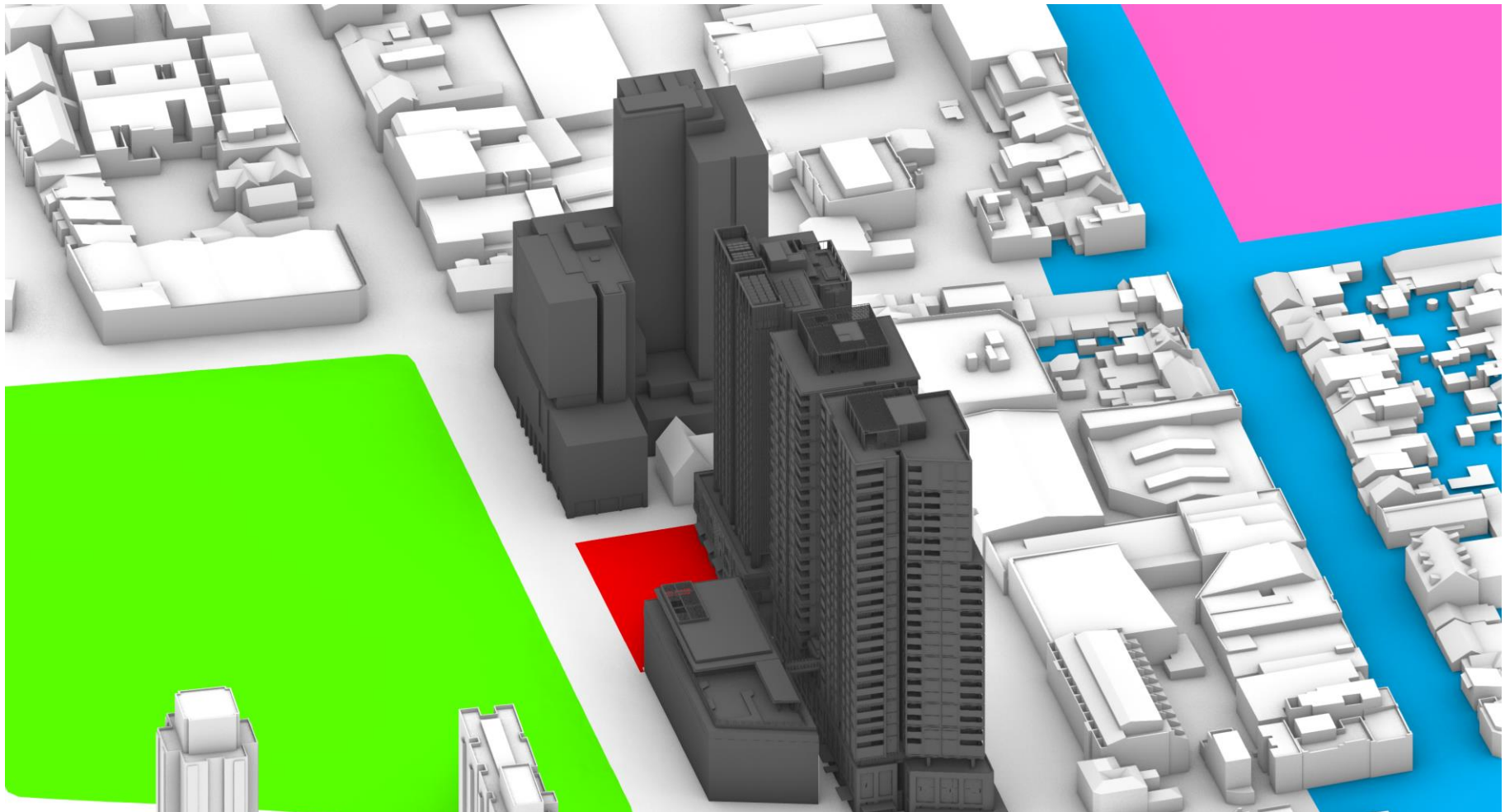


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 12:00 AEST



SUN VIEW DIAGRAM

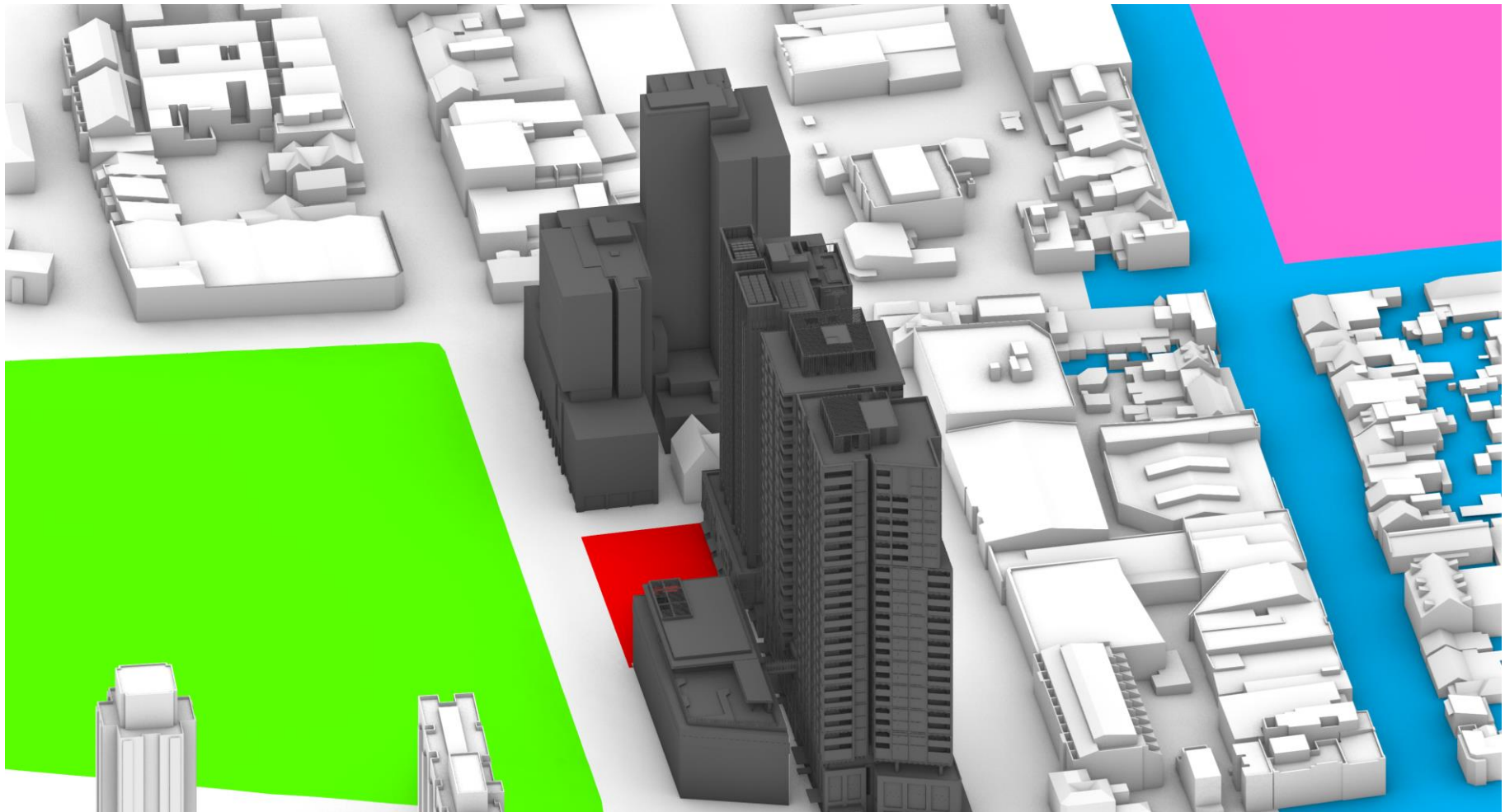


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 12:15 AEST



SUN VIEW DIAGRAM

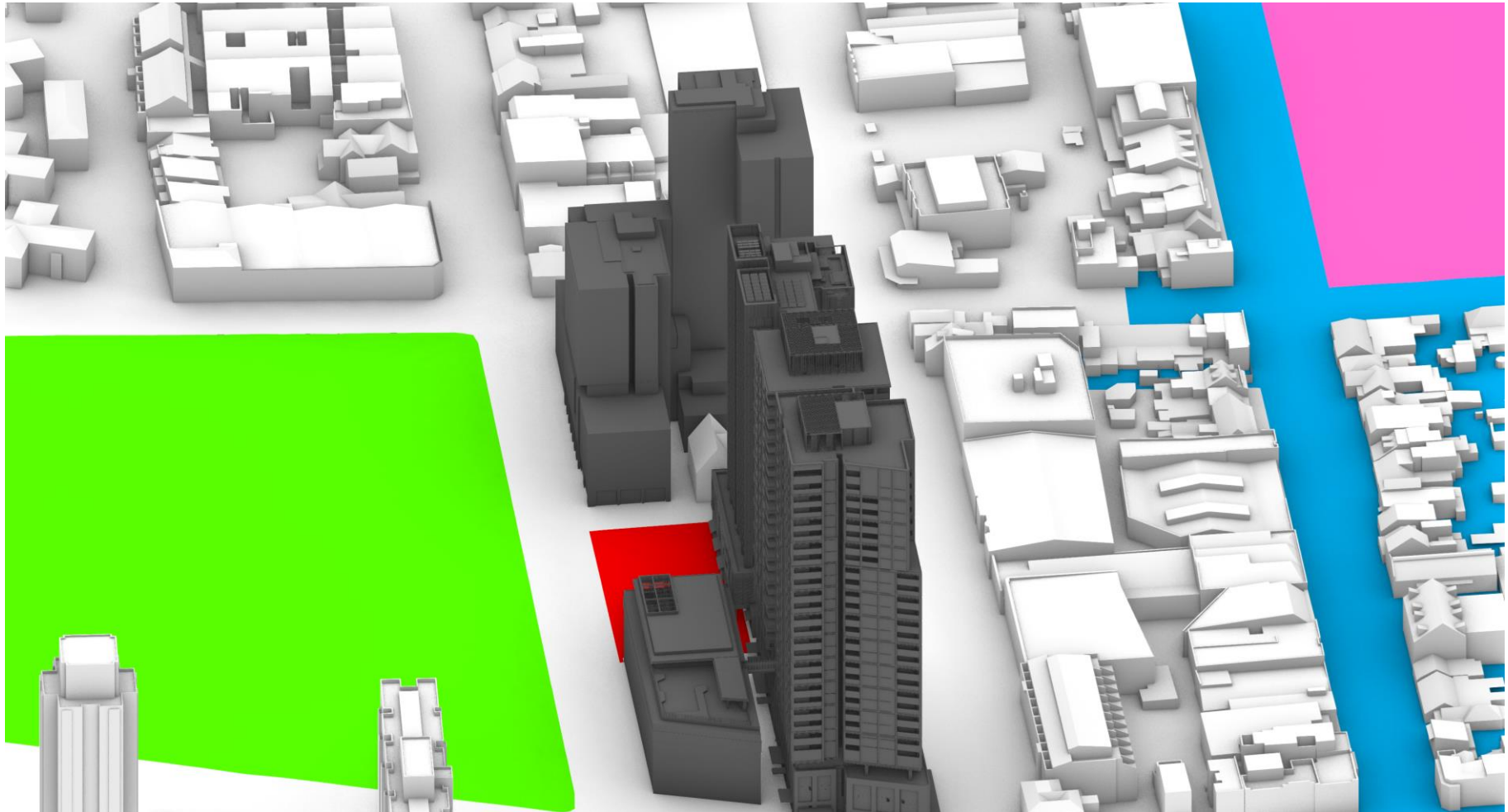


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 12:30 AEST



SUN VIEW DIAGRAM

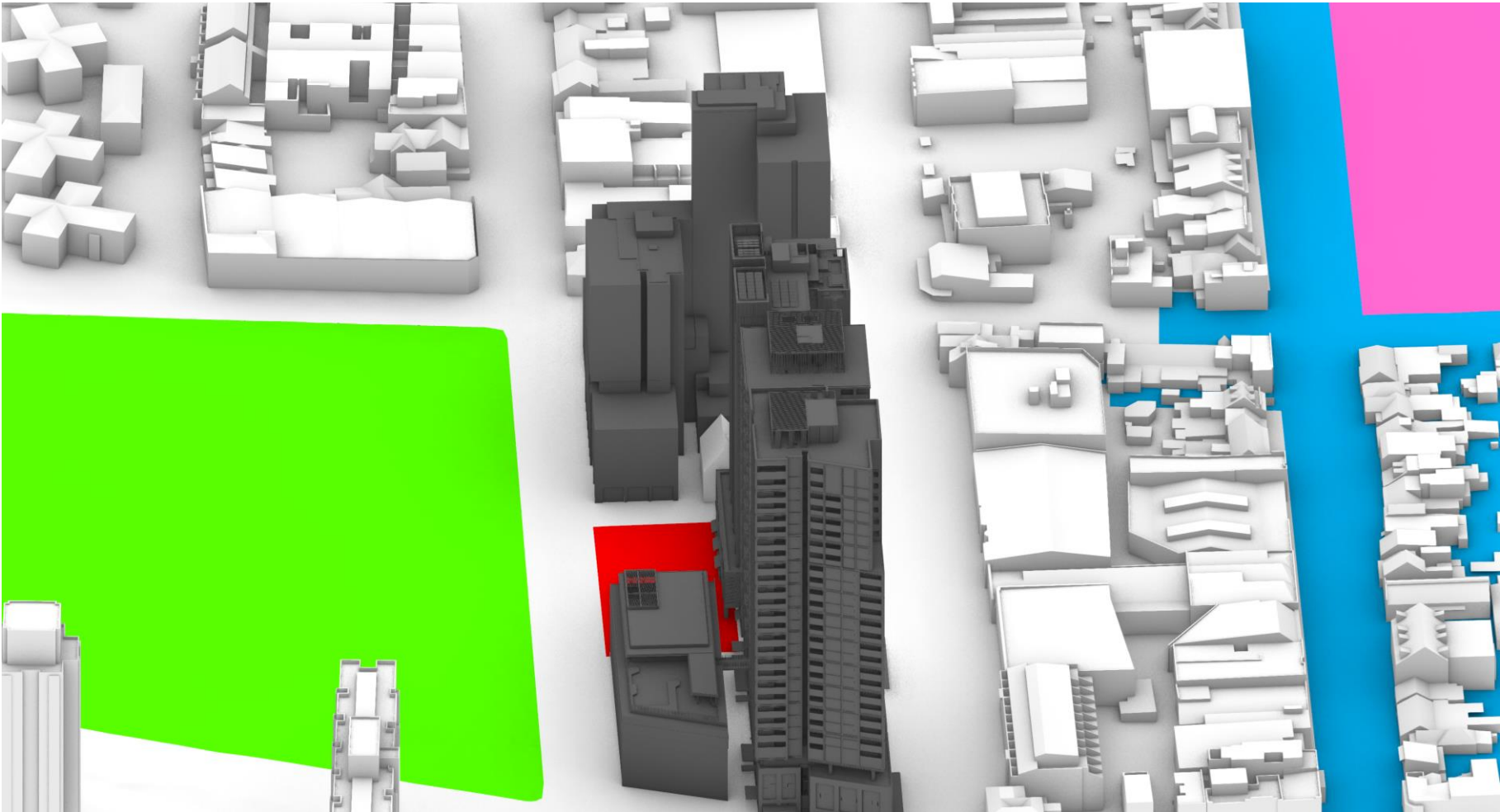


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 12:45 AEST



SUN VIEW DIAGRAM

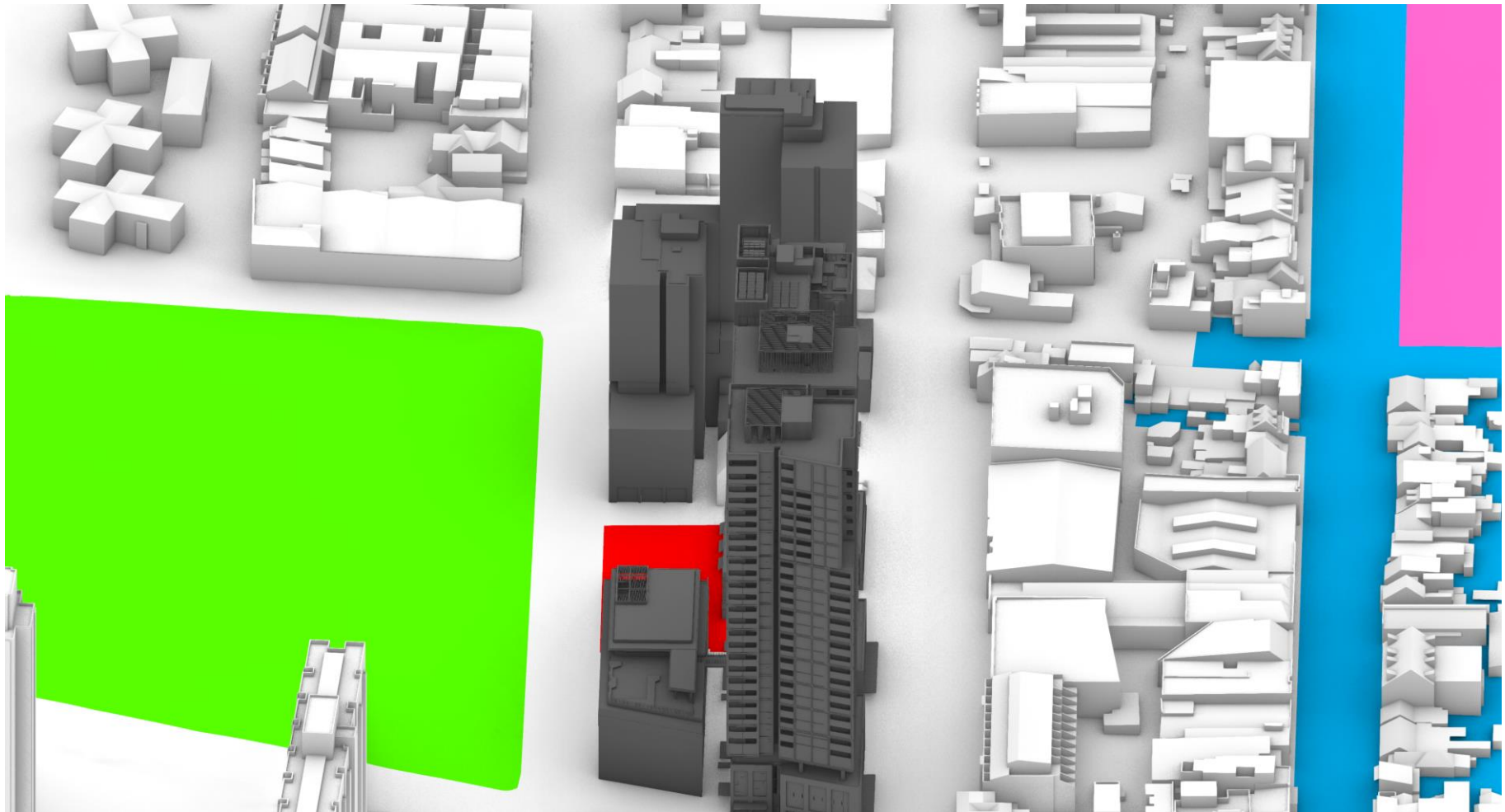


Jun 21 - 13:00 AEST

LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA



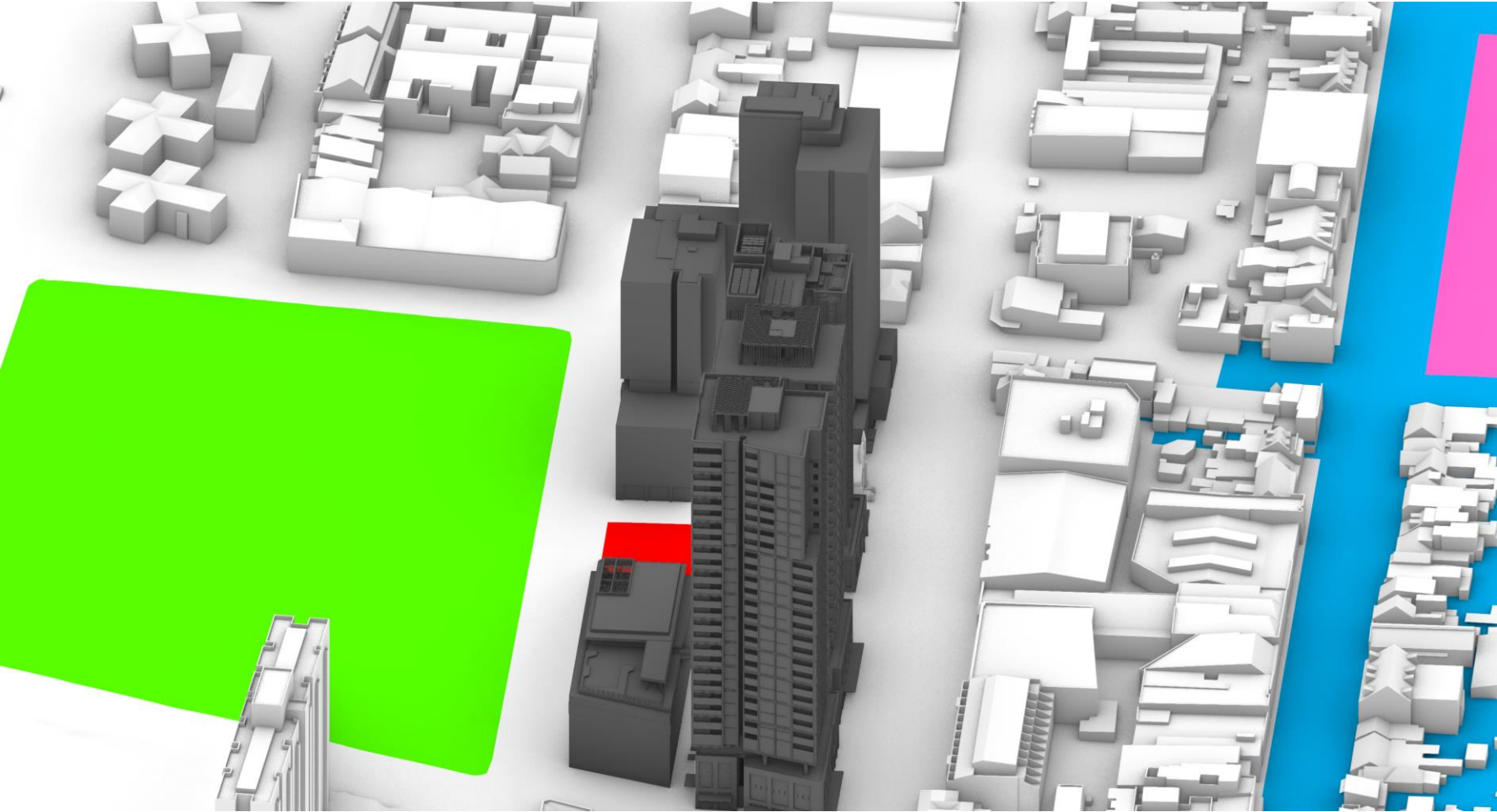
SUN VIEW DIAGRAM



Jun 21 - 13:15 AEST

- LEGEND**
- PROJECT
 - SURROUNDINGS
 - WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA



SUN VIEW DIAGRAM

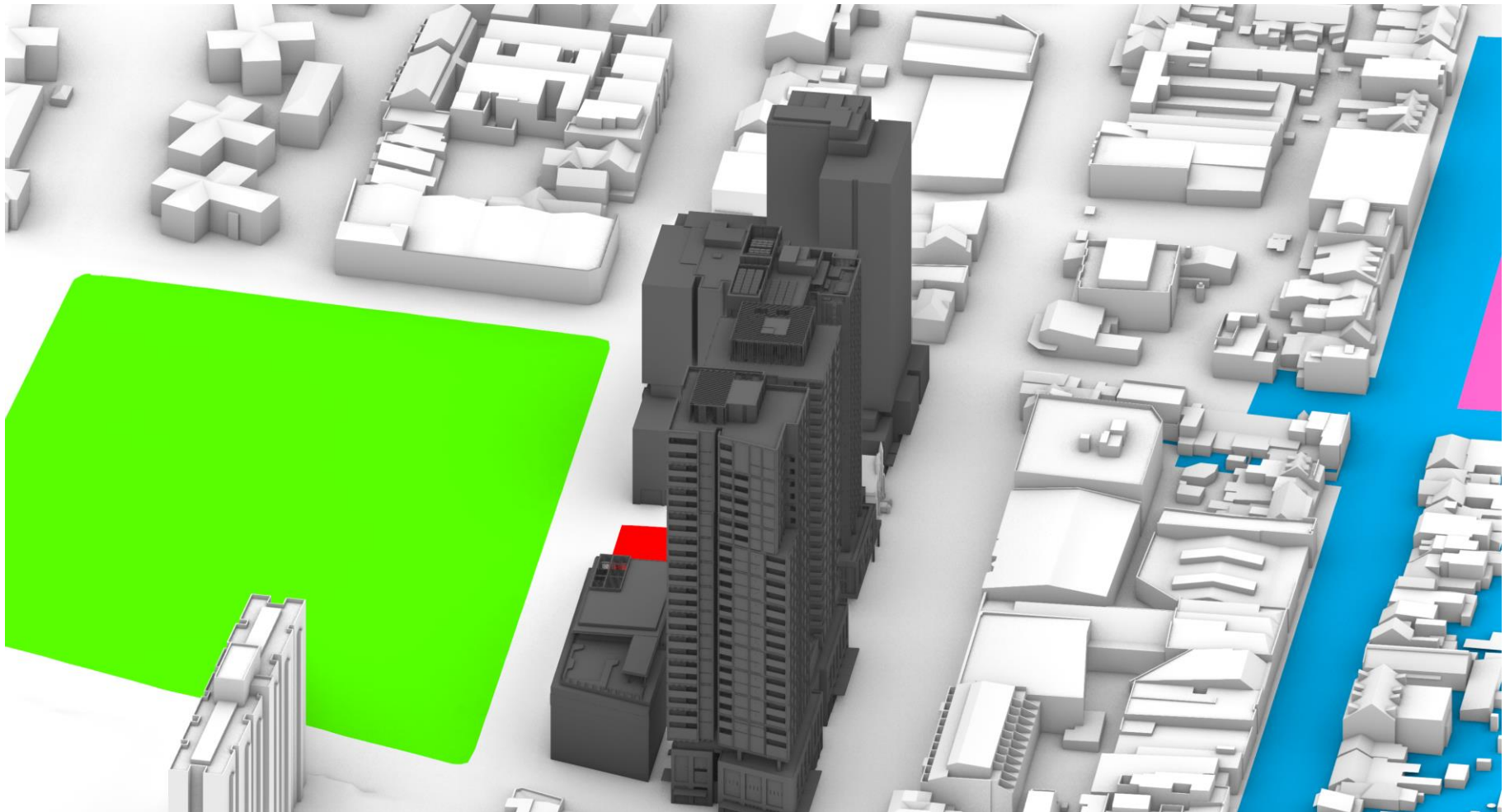


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 13:30 AEST



SUN VIEW DIAGRAM

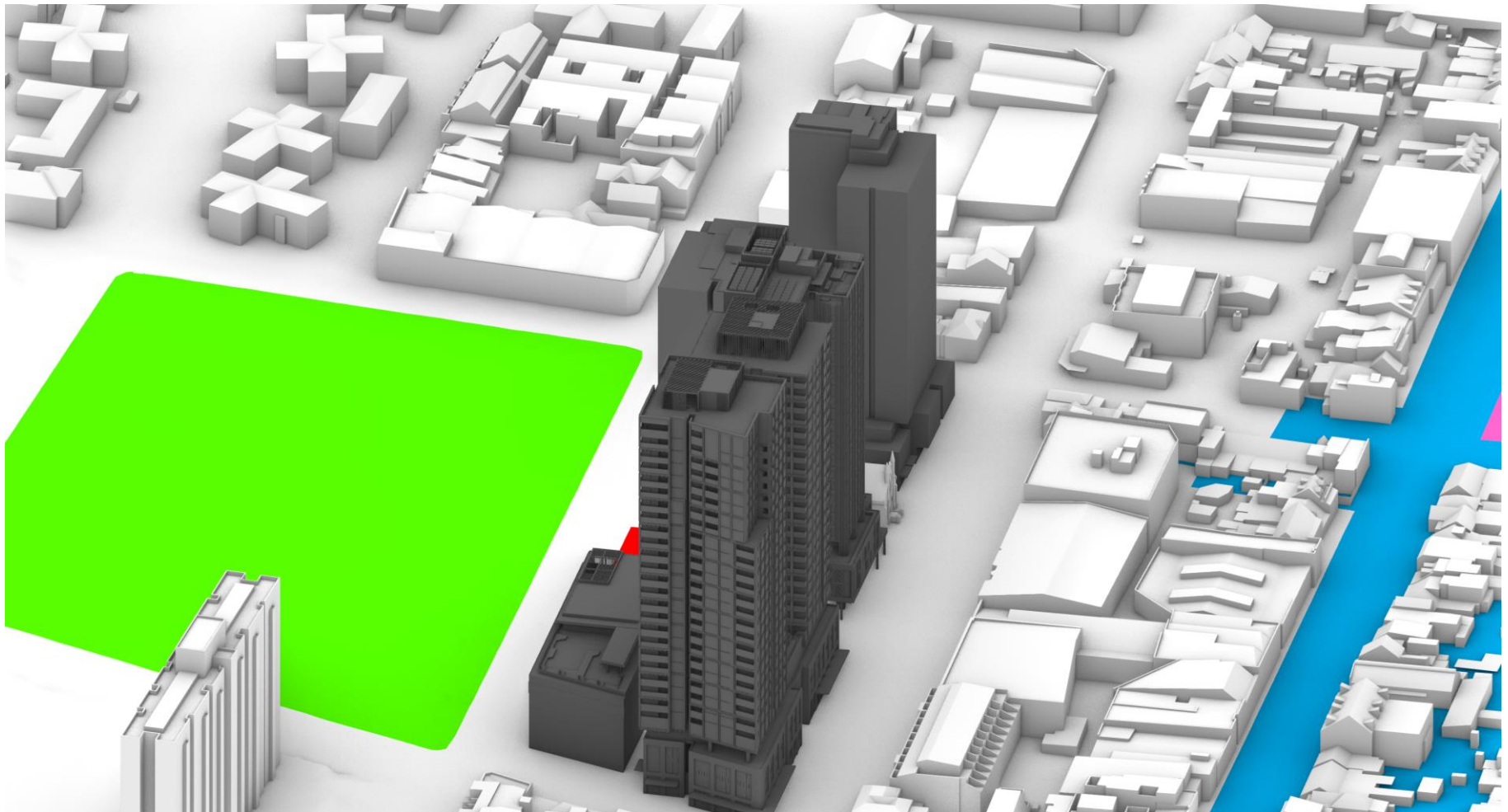


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 13:45 AEST



SUN VIEW DIAGRAM

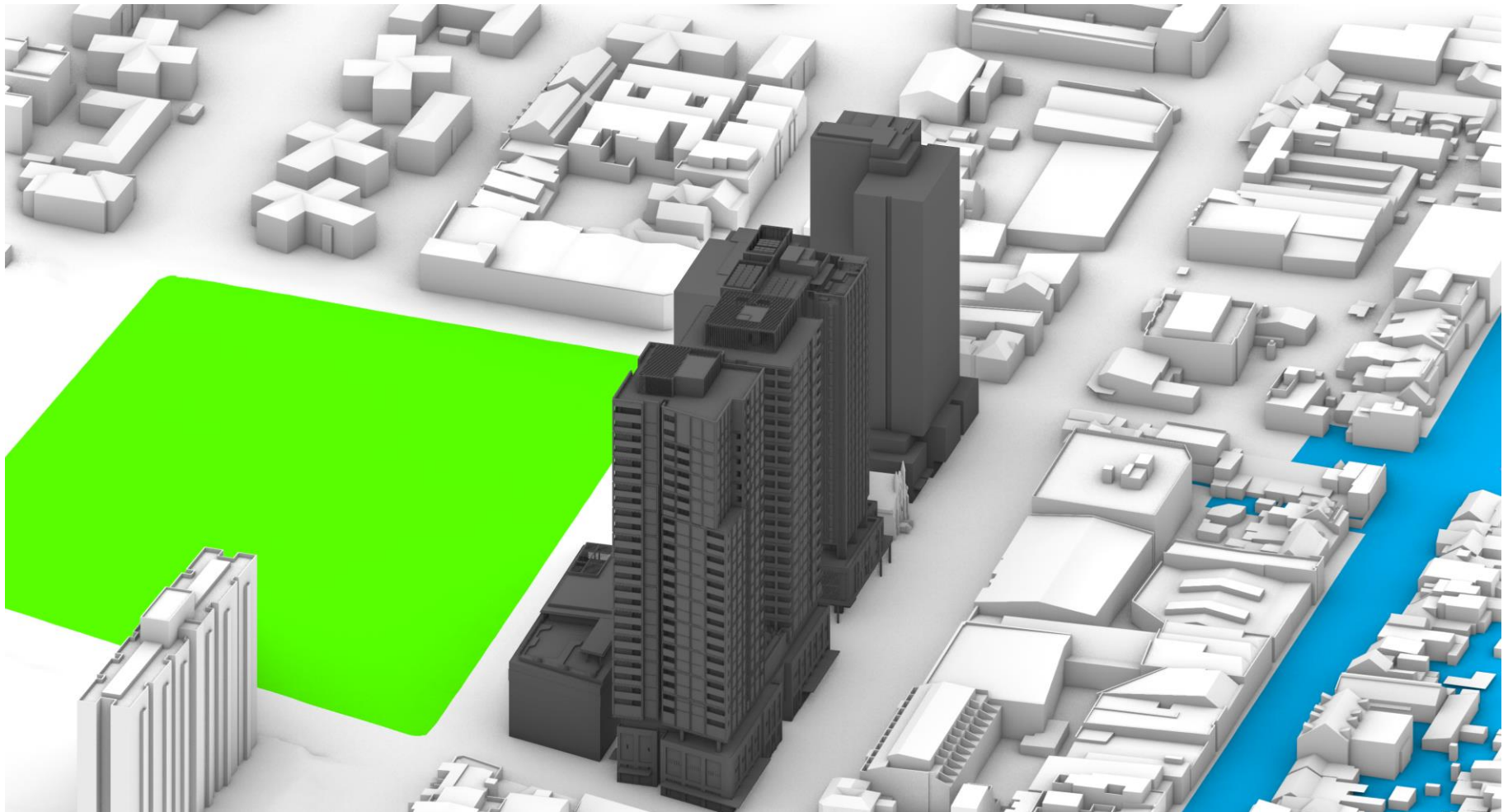


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 14:00 AEST



SUN VIEW DIAGRAM

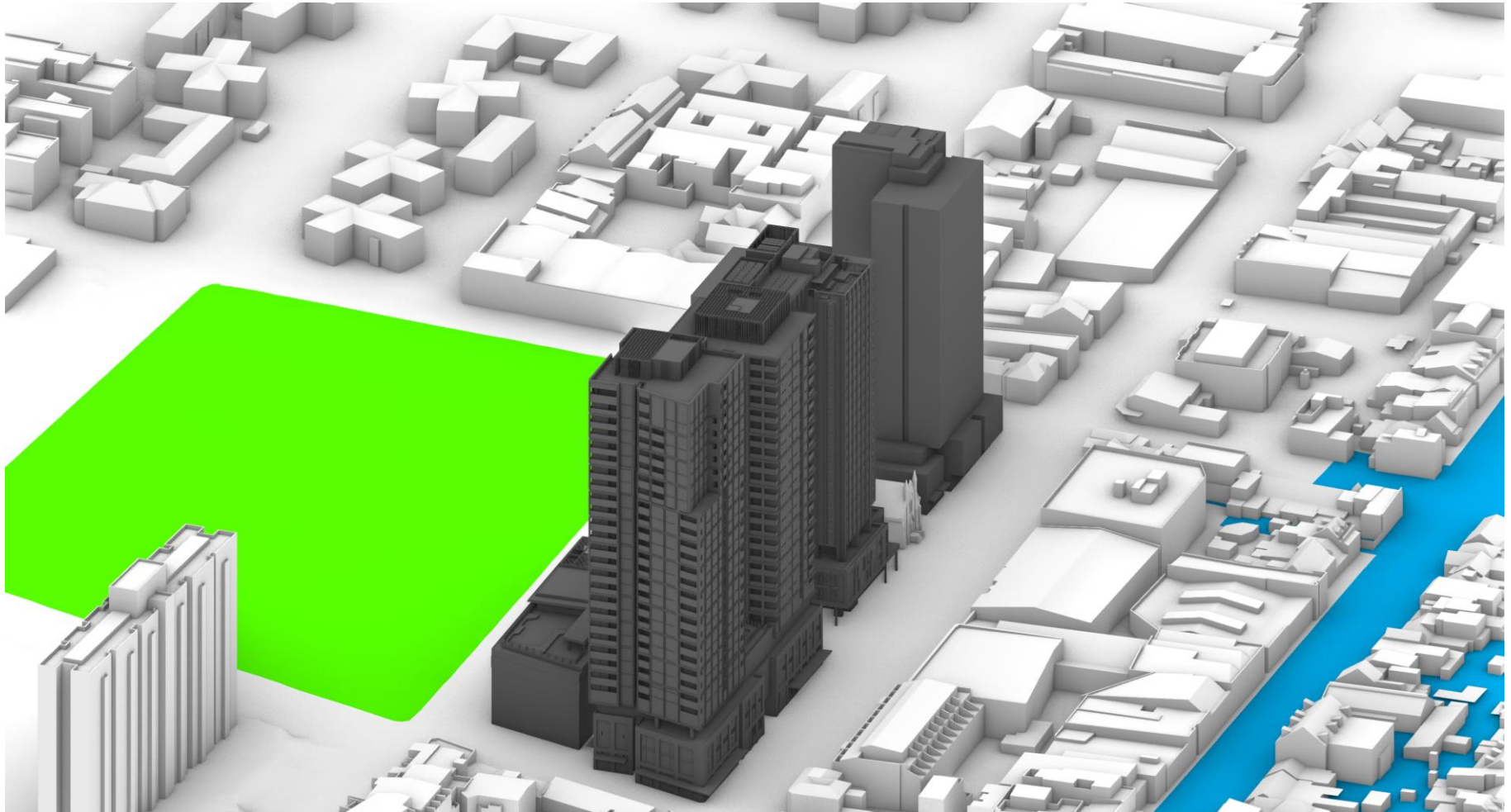


Jun 21 - 14:15 AEST

LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA



SUN VIEW DIAGRAM

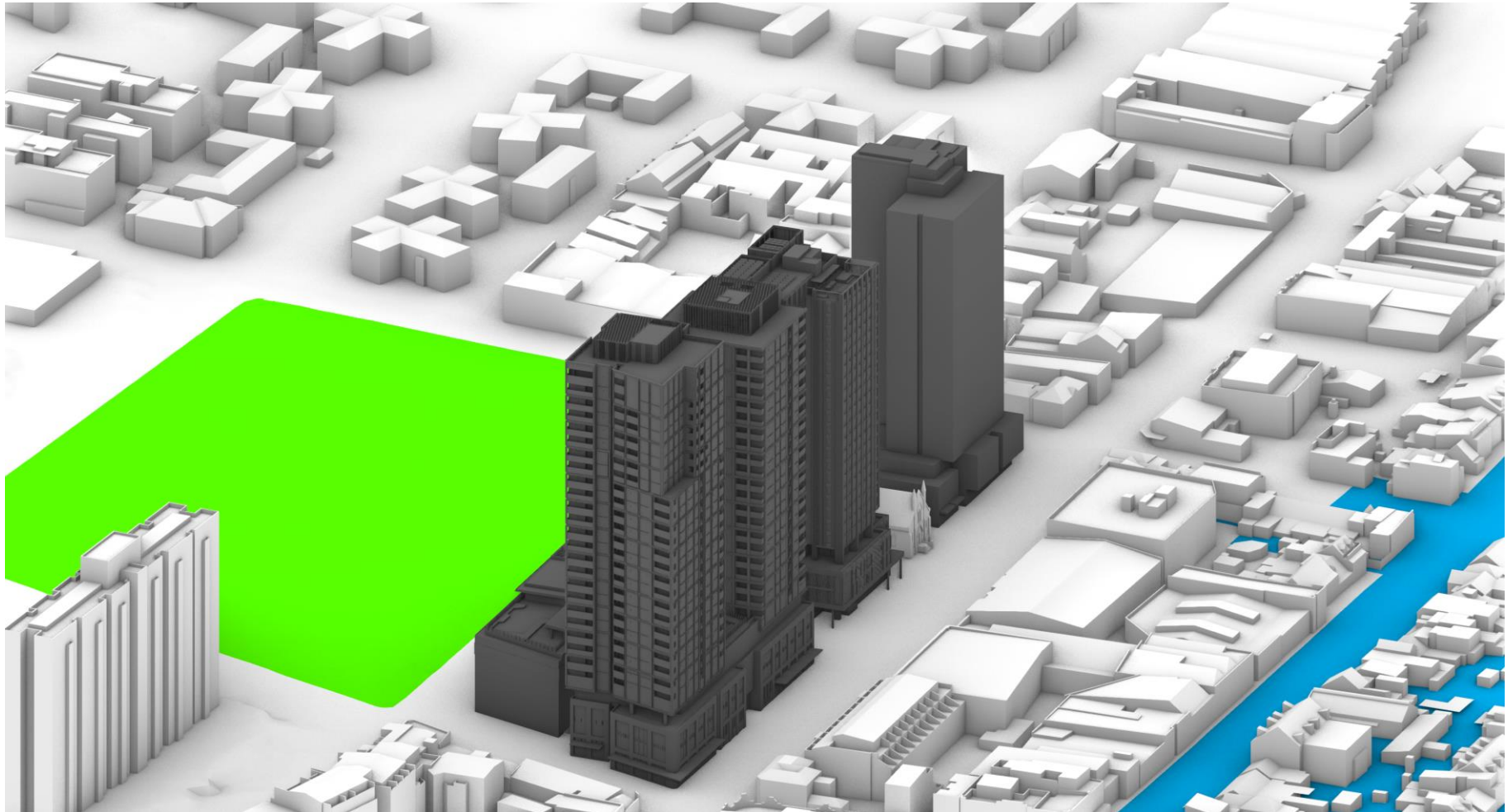


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 14:30 AEST



SUN VIEW DIAGRAM

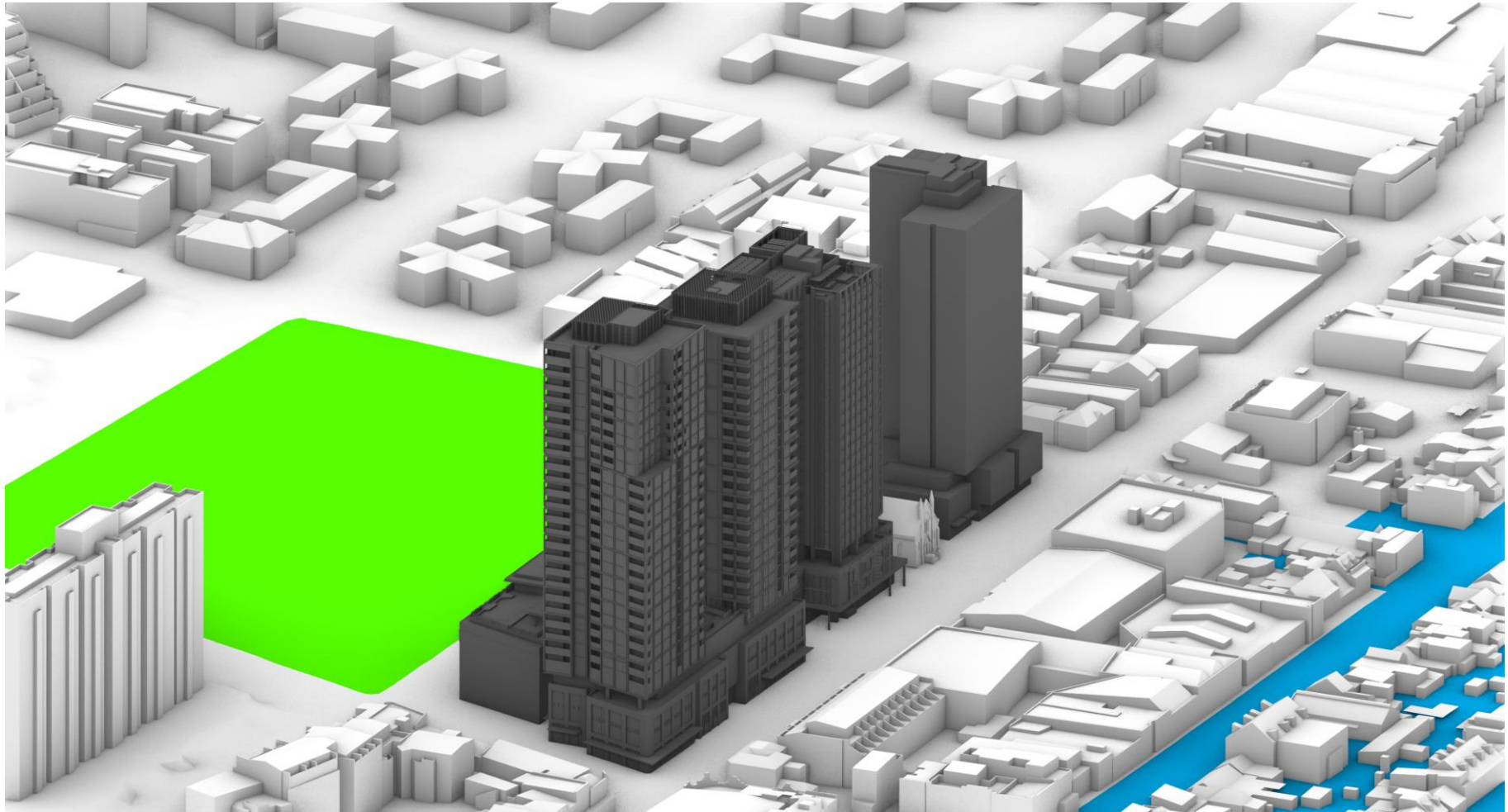


LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 14:45 AEST



SUN VIEW DIAGRAM



LEGEND

- PROJECT
- SURROUNDINGS
- WATERLOO HERITAGE PRECINCT

- ALEXANDRIA PARK (BEFORE OVAL)
- WATERLOO ESTATE PARK
- COPE STREET PLAZA

Jun 21 - 15:00 AEST

