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AJC for Cottonwood Development Pty Ltd

23 February 2026

# 88 Waterloo Road Development

## Urban Design Framework & Architectural Design Report

Macquarie Park is within Wallumattagal Country of the Dharug Nation. AJC's Chippendale office is in Turpentine-Ironbark Country within the traditional lands of the Gadigal people of the Eora Nation.

We acknowledge that by operating within this Country we have a responsibility to contribute to its care.

We pay our respects to Elders past, present and emerging; recognising their culture, wisdom and knowledge.

**Lisa-Jane Van Dyk**

*This artwork represents the Southern Cross in the night sky, which First Nations tribes used for travelling. Each dot represents a star in the constellation. For some tribes, the position of certain stars within the constellation indicated if it was nesting season for certain animals, and therefore eggs could be harvested.*

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| Date | Rev. | Status | By | Checked |
|---|---|---|---|---|
| 23/02/2026 | F | For Distribution | DQ/SC | DC/MG |

# Executive Summary

This Urban Design Report has been prepared by AJC Architects to accompany a State Significant Development Application (SSDA) and concurrent Rezoning Proposal – SSD-94006708 for a mixed use development identified at 15-21 Cottonwood Crescent, Macquarie Park (the site).

The proposal includes provision for the demolition of existing buildings and construction of a residential development comprising two residential flat buildings above a common basement car park / sleeved podium incorporating residential, car parking, and a retail component within the Waterloo Road frontage and provision of 10% affordable housing for the uplift proposed.

The legal description of the site is outlined in the table below:

*Table 1: Lot Description*

| Property Address | Title Description |
|---|---|
| 15 Cottonwood Crescent, Macquarie Park | SP8144 |
| 17 Cottonwood Crescent, Macquarie Park | SP7630 |
| 19 Cottonwood Crescent, Macquarie Park | SP7892 |
| 21 Cottonwood Crescent, Macquarie Park | SP7984 |

Note: for the purposes of reporting and branding of the proposal, we will also refer to the site as '**88 Waterloo Road, Macquarie Park**'.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-94006708).

This report concludes that the proposed development is suitable and warrants approval.

## PROJECT DESCRIPTION

The proposed SSDA seeks development consent for demolition of existing buildings and construction of a residential development comprising two residential flat buildings above a common basement car park / sleeved podium incorporating residential, car parking, and a retail component within the Waterloo Road frontage. Other key parameters include:

- Provision of up to 10% affordable housing of the uplift sought.
- 1 x 62-storey tower (211.5m above existing ground); and, 1 x 54-storey tower (182.6m above existing ground).
- Floor Space Ratio (FSR) of 16.8:1, which includes wintergardens (enclosed balconies).

The proposal includes provision to amend Clauses 4.3 and 4.4 of the Ryde Local Environmental Plan 2014 (RLEP2014) by virtue of the concurrent rezoning process.

This includes the following amendments:

- Clause 4.3 – Height of Buildings: Amend the current 65m maximum building height from existing natural ground to a maximum building RL control of 258.0 (214.1m above existing ground)
- Clause 4.4 – FSR: Amend the current FSR of 4.5:1 to 16.8:1

## REPORT STRUCTURE

1. **Planning Framework**
   Outlines statutory and strategic planning context, including zoning controls and constraints. Establishes the legislative basis for renewal under the Housing SEPP as well as the Ryde LEP and Ryde DCP.

2. **Site Analysis**
   Reviews the regional and local setting—topography, waterways, open spaces, road networks, accessibility and heritage.

3. **Urban Design Proposal**
   Reviews the proposal at a site and envelope level, to establish the building height and footprint.

4. **Facilitating Planning Framework**
   Defines the proposed planning framework changes to facilitate the proposed envelopes.

5. **Detailed Architectural Proposal**
   Describes the detailed architectural design that forms part of the current SSDA.

## PURPOSE OF THIS REPORT

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 8 October 2025 and issued for the SSDA (SSD-94006708). Specifically, this report has been prepared to respond to the SEARs requirement and government agency comments issued below.

*Table 2: Secretary's Environmental Assessment Requirements relevant to this Report - #1 Concurrent Rezoning Requirements for SEARS*

| Item# | SEARS Requirement | Relevant Section of Report |
|---|---|---|
| 3.0 Strategic and Site Specific Merit | • The proposals demonstrated alignment with the NSW strategic planning framework or current government priority. | Sections 1.1, 1.2 & 1.3 |
| | • A proposal's demonstrated environmental, social and economic impact on the site and surrounds and ability to be accommodated within the capacity of the current and/or future infrastructure and services. | Sections 2.2 & 2.3 |
| 4.0 Relevant Issues | The section shall cover off all relevant issues relating to the subject site and proposed changes. Including, but not limited to the following: | |
| | • Connecting with Country | Section 2.1 |
| | • Environmental: Flooding<br>• Environmental: Bushfire<br>• Environmental: Biodiversity<br>• Environmental: Heritage | Sections 2.2 & 2.3 |
| | • Social and Economic: Urban Design | Sections 3.1 - 3.10 |
| 6.0 Annexures | • Proposed statutory maps | Section 4.1 |

*Table 3: Secretary's Environmental Assessment Requirements relevant to this Report - #2 Industry Specific SEARS - Housing*

| Item# | SEARS Requirement | Relevant Section of Report |
|---|---|---|
| 5. Design Quality | • Demonstrate how the development will achieve:<br>  • Design excellence in accordance with any applicable EPI provisions. | Section 5.9 |
| | • Good design in accordance with the seven objectives for good design in Better Placed | Section 5.7 |
| | • Demonstrate that the development: where required by an EPI or concept approval, or where proposed, has been subject to a competitive design process, carried out in accordance with an endorsed brief and Design Excellence Strategy; or in all other instances, has been reviewed by the State Design Review Panel (SDRP) where required under the NSW SDRP: Guidelines for Project Teams.<br>• Recommendations of the jury and Design Integrity Panel (where a competitive design process has been held) or the SDRP are to be addressed prior to lodgement. | N/A |
| 6. Built Form and Urban Design | • Demonstrate how the proposed built form (layout, height, bulk, scale, separation, setbacks, interface and articulation) addresses and responds to the context, site characteristics, streetscape and existing and future character of the locality. Where relevant explain and illustrate the application of any bonuses under an EPI. | Sections 3 & 5 |
| | If relevant, provide an assessment of the development against: | |
| | • The design principles for seniors housing set out in Schedule 8 of State Environmental Planning Policy (Housing) 2021 (Housing SEPP) and the Seniors Housing Design Guide. | N/A |
| | • The design principles for residential apartment development set out in Schedule 9 of the Housing SEPP and the Apartment Design Guide (ADG). This should include a table which demonstrates how each dwelling (including affordable dwellings) performs against the ADG design criteria. | Sections 5.11 & 6 |
| | • If affordable housing is proposed, provide a floor plan outlining the gross floor area and dwellings that are provided as affordable housing. | Section 5.11.8 |
| 7. Environmental Amenity | • Assess amenity impacts on the surrounding locality, including solar access, visual privacy, view loss and view sharing, as well as wind, lighting and reflectivity impacts. A high level of environmental amenity for any surrounding residential or other sensitive land uses must be demonstrated. | Sections 3.4 & 6 |
| | • Provide a solar access analysis of the overshadowing impacts of the development within the site, on surrounding properties and public spaces (during winter solstice) at hourly intervals between 9am and 3pm, comparing the proposed development, existing situation and where applicable, a development with no bonuses applied. | Sections 3.4 & 6 |

# Site Location

The site, 88 Waterloo Road, is located at the north western end of Waterloo Road, at the corner of Cottonwood Crescent. The site is:

- Less than 200m of Macquarie University Metro Station;
- 500m to Macquarie University,
- Directly opposite the Macquarie Centre, a super-regional retail centre with retail, food & beverage, cinemas and an ice rink;
- Adjoining a 7000sqm local park, Elouera Reserve;
- Within the walking catchment of numerous other local parks, including future parks envisaged through the Macquarie Park corridor;
- A short drive or cycle to Lane Cove National Park;
- Beside the Macquarie Park Innovation Precinct, a nationally significant jobs centre;
- The site is zoned Mixed Use which is capable of providing for residential and commercial land use activities.

It is considered to be a site that can support a very high level of height and density significantly in excess of its existing planning controls, given its expansive social infrastructure support and location within a rapidly changing urban environment with buildings up to 59-storeys currently under construction nearby.

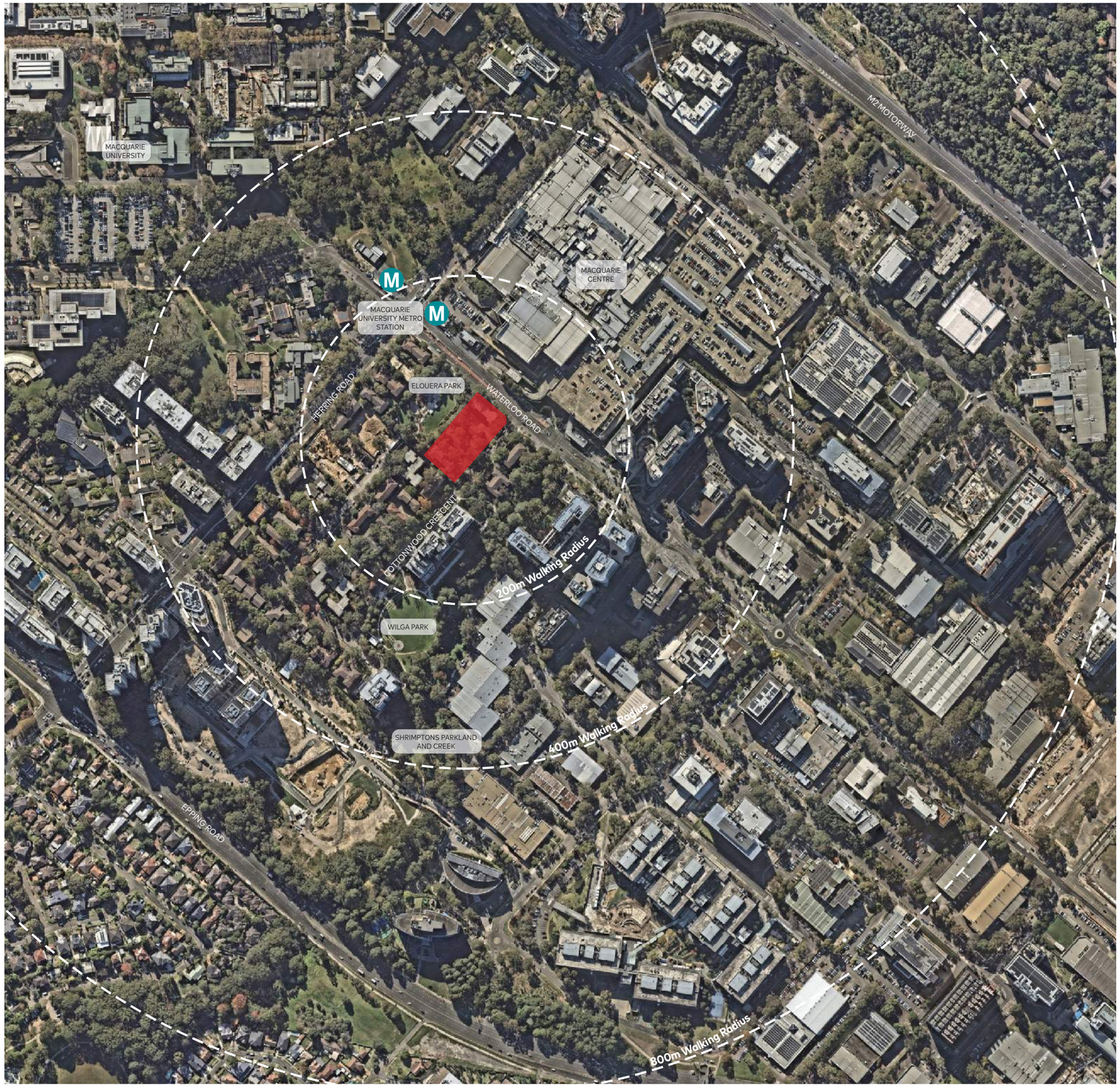



**Figure 1. Location Map**

## Design Proposal


Figure 2. Aerial Visualisation

# 1. Review of Existing Planning Framework

# 1.1. Strategic Planning Framework

## 1.1.1 The Draft Sydney Plan

The draft Sydney Plan, placed on public exhibition in December 2025, sets out how the NSW State Government will address growth through land use planning in the Sydney region over the next 20 years. Once finalised, It will replace the Greater Sydney Region Plan – A Metropolis of Three Cities (2018). It provides a whole-of-region framework for coordinating housing delivery, employment growth, transport investment, and infrastructure provision, with the aim of accommodating population growth while improving liveability, productivity and sustainability. The Plan establishes clear spatial priorities to ensure growth occurs in locations that are well connected and supported by services.

Housing delivery under the Sydney Plan is strongly focused on areas with high levels of public transport access, existing or planned infrastructure, and proximity to major employment centres. This approach is intended to maximise the efficient use of land and infrastructure, reduce car dependency, and support more walkable, well-serviced neighbourhoods.

The Plan positions Macquarie Park as a location where increased residential development can be integrated with jobs, services and public transport, supporting a more balanced jobs-and-housing outcome while reinforcing its importance as a metropolitan-scale centre.


Figure 3. Planned Housing Growth (Draft Sydney Plan)

## 1.1.2 Ryde LSPS

The Ryde Local Strategic Planning Statement (LSPS) sets an overarching 20 year vision with a clear direction for managing growth, infrastructure, and environmental sustainability while ensuring alignment with community needs and aspirations. It identifies several strategic areas of growth to accommodate future development, population growth, and economic opportunities.

Macquarie Park is one of the key areas identified for strategic growth. The LSPS designates it as a health and education precinct. Its development will be guided by a vision to transform the precinct into a *"high-quality, well-designed, safe and liveable environment"*. The vision statement indicates that *"Housing will be focused in the urban activation precincts (North Ryde station precinct and Macquarie University Station precinct) providing opportunities for people to live and work in the area with supporting services and events that will bring vibrancy to the area beyond office hours"*.

The subject site is located within the "Macquarie University Station [urban activation] precinct" and is already zoned for high density residential uses, making it a prime site to align Local and State planning frameworks for Macquarie Park.


Figure 4. Centres Structure Plan (Ryde LSPS)

## 1.1.3 Ryde LSPS Macquarie Park Structure Plan

The Council-authored LSPS supports the renewal of older building stock and key opportunity sites to help revitalise the area and accommodate future growth. It also aims to expand the overall supply of housing and increase the diversity of housing options available to residents. The LSPS also indicates significant public domain/open space improvements, environmental conservation, public transport/ infrastructure upgrades opportunities to support Macquarie Park to be envisaged as a "*high-quality, well-designed, safe and liveable environment*", which will support expanding the overall housing supply within Macquarie Park. These opportunities are summarised as the follows.

**Open Space and Public Domain**
A major focus is placed on enhancing access to open space and improving the quality of the public realm. This includes delivering a new 7,000m² park at 45–61 Waterloo Road, creating linear parks along both sides of Waterloo Road (which the subject site will contribute to), and investigating additional sites that could improve access to public or active recreation. The strategy also supports the development of the Christie Park Sports Precinct and seeks to identify further opportunities for new or expanded open spaces across the precinct.

**Active/Public Transport**
Transport initiatives aim to strengthen walking, cycling and public transport connections. Key actions include providing new pedestrian links within the commercial centre to create a finer-grained movement network, investigating the feasibility of a new road to support rapid bus services, and delivering additional active transport links that improve connectivity across the area.

**Environment Conservation**
Environmental priorities focus on conserving and enhancing the natural landscape. This includes protecting Sydney Turpentine–Ironbark forest along Epping Road, preserving significant vegetation along creek-lines, safeguarding notable existing trees, and expanding the Shrimptons Creek parklands as part of the Ivanhoe Estate redevelopment.

**Infrastructure Upgrades**
The strategy also outlines new and upgraded community infrastructure to support a growing population. Key projects include a new library and 250-seat performance centre at Macquarie Shopping Centre, an auditorium, co-working space and childcare centre at Lachlan's Line, and additional community facilities within the Ivanhoe Estate. These investments aim to ensure the precinct develops as a well-serviced and socially connected urban centre.

Figure 5. Macquarie Park Structure Plan (Ryde LSPS)

## 1.1.4 Herring Road Urban Activation Precinct

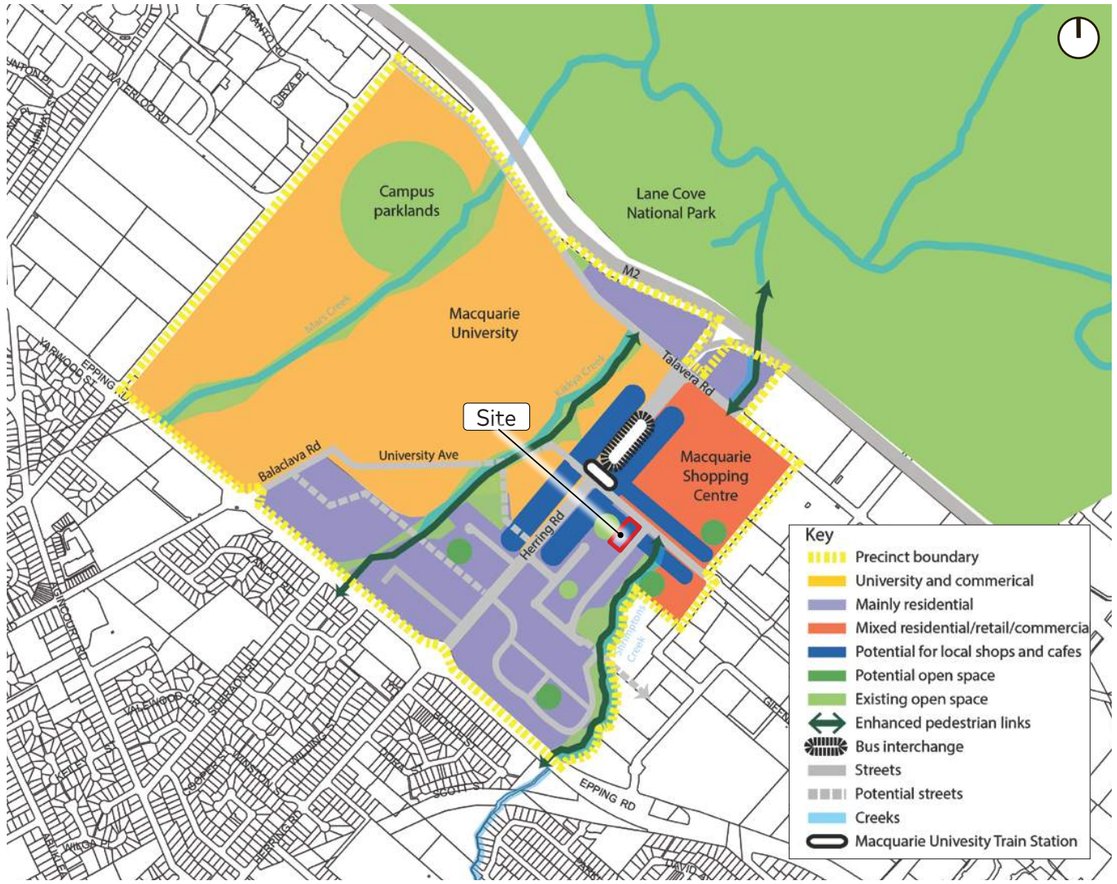


Figure 6. Herring Road Macquarie Park Indicative Structure Plan (Herring Road Finalisation Report Appendix B)

The Herring Road Priority Precinct was put forward by the City of Ryde in July 2012. It comprised of Macquarie University, Macquarie Shopping Centre, and the area to the east of Herring Road, bounded by Shrimptons Creek, Waterloo and Epping Roads. This precinct sits conveniently close to the major employment hub of Macquarie Park.

The report was finalised in May 2015. The key planning outcome are summarised as the follows:

- Increase the height and density controls to the areas within the walking catchment around Macquarie University Station, delivering up to 5,800 dwellings by 2031.
- The maximum building height limits were increased and strategically placed to focus the tallest development near public transport. The highest recommend height limits to Macquarie Centre and University are up to 120m (37 storeys), creating landmarks at public transport node.
- The maximum FSR controls were amended to vary significantly based on location, aiming to concentrate density close to the station and improve the feasibility of constrained sites.

This study informs the current LEP controls that apply to the subject site. While the principles remain relevant, much of the context it is based on has since changed, which is part of the basis for the current proposal.

### 1.1.5 Macquarie Park TOD Rezoning

The Transport Oriented Development (TOD) program aims to support additional housing around 39 key transport hubs. The program covers state-led rezonings within 1,200 metres of eight priority hubs.

The Macquarie Park is one of the 8 identified priority hubs also refereed to as an Accelerated Precinct under the TOD Program. This rezoning came into effect on 27 November 2024. Key planning outcomes include:

- *Capacity for 9,600 new homes*
- *Retaining 100,000 jobs across the precinct*
- *Affordable housing contributions of between 3% to 10% for all new residential development in the precinct*
- *Up to 14 ha of open space, with new or improved parks and sport fields*
- *More vibrant streets with new amenities, commercial, office and retail spaces*
- *Better walking and cycling connections to transport and public open spaces.*

The master plan framework behind this rezoning introduces a mix of residential and new non-residential uses facilitated by new social infrastructure including open spaces, a walkable street network and dedicated cycling routes.

Landmark buildings were positioned around open spaces with a project intention to create the level of critical mass necessary to support 18-hour vibrancy and vitality equivalent to a central business district.

The TOD rezoning informs the current proposal for 88 Waterloo: positioning height and density in the areas of highest amenity.


Figure 7. Macquarie Park TOD Rezoning Precinct Boundary (planning.nsw.gov.au)


Figure 8. Macquarie Park TOD Rezoning Stage 1 Neighbourhoods Tomorrow (Macquarie Park Urban Design Framework)

### 1.1.6 Waterloo Road Masterplan


Figure 9. Waterloo Road Vision (Waterloo Road Masterplan)

Council's Draft Waterloo Road Masterplan builds on the Draft Linear Park Strategy for Waterloo Road which was exhibited with the Ryde LSPS in 2019. The key move of the Waterloo Road Master Plan is the establishment of the Waterloo Road Linear Park to transform the car-dominated movement corridor into a vibrant street that functions as a publicly accessible open space and a green spine through the city centre.

The Linear Park's spatial structure is organised around three core elements.

First, enhanced east–west and north–south connections create a permeable corridor with shorter walking distances, improved crossings and new links aligned to existing and future streets.

Second, two complementary landscape characters—Forest and Urban—unify the 1.9-kilometre corridor through distinctive tree canopies, diverse planting and a mix of informal and formal spaces.

Third, key destinations such as Elouera Reserve, Shrimptons Creek, Catherine Hamlin Park and Macquarie Exchange anchor activity, supported by smaller dwell spaces, upgraded footpaths and clear thresholds that strengthen identity and connect to surrounding assets like Lane Cove National Park.

The subject site is located at the western end of the corridor. This segment of Waterloo Road is identified with a long stretch on the northern side of the road where the environment is "unlikely to change", making the southern side of Waterloo Road between Land Cove and Herring Roads critical to the master plan. The redevelopment of the subject site will positively contribute to the implementation of the Waterloo Road master plan vision as a arrival point for Elouera Reserve and the open space network associated with Shrimptons Creek.


Figure 10. Waterloo Road Likelihood of Redevelopment (Waterloo Road Masterplan)

### 1.1.7 Green Links Master Plan

The Ryde Council Green Links Master Plan 2022 (GLM) is a strategic initiative designed to create a connected network of green spaces, parks, and natural areas across the City of Ryde. The vision for the Green Links is broader and beyond the City of Ryde to create "environmental, cultural and green transport corridors" to link Lane Cove River and Parramatta River with the City of Ryde's town centres.

**Shrimptons Creek Green Links**

One of the Green Links, the Shrimptons Creek Green Link, is specifically planned to connect between Macquarie Park/West Ryde and Meadowbank and will more broadly link the Lane Cove River to Parramatta River with a continuous pedestrian and cycle network. It comprises the following key precincts from south to the north:

- Meadowbank/West Ryde Precinct
- Santa Rosa Precinct
- ELS Hall
- Macquarie Park Precinct

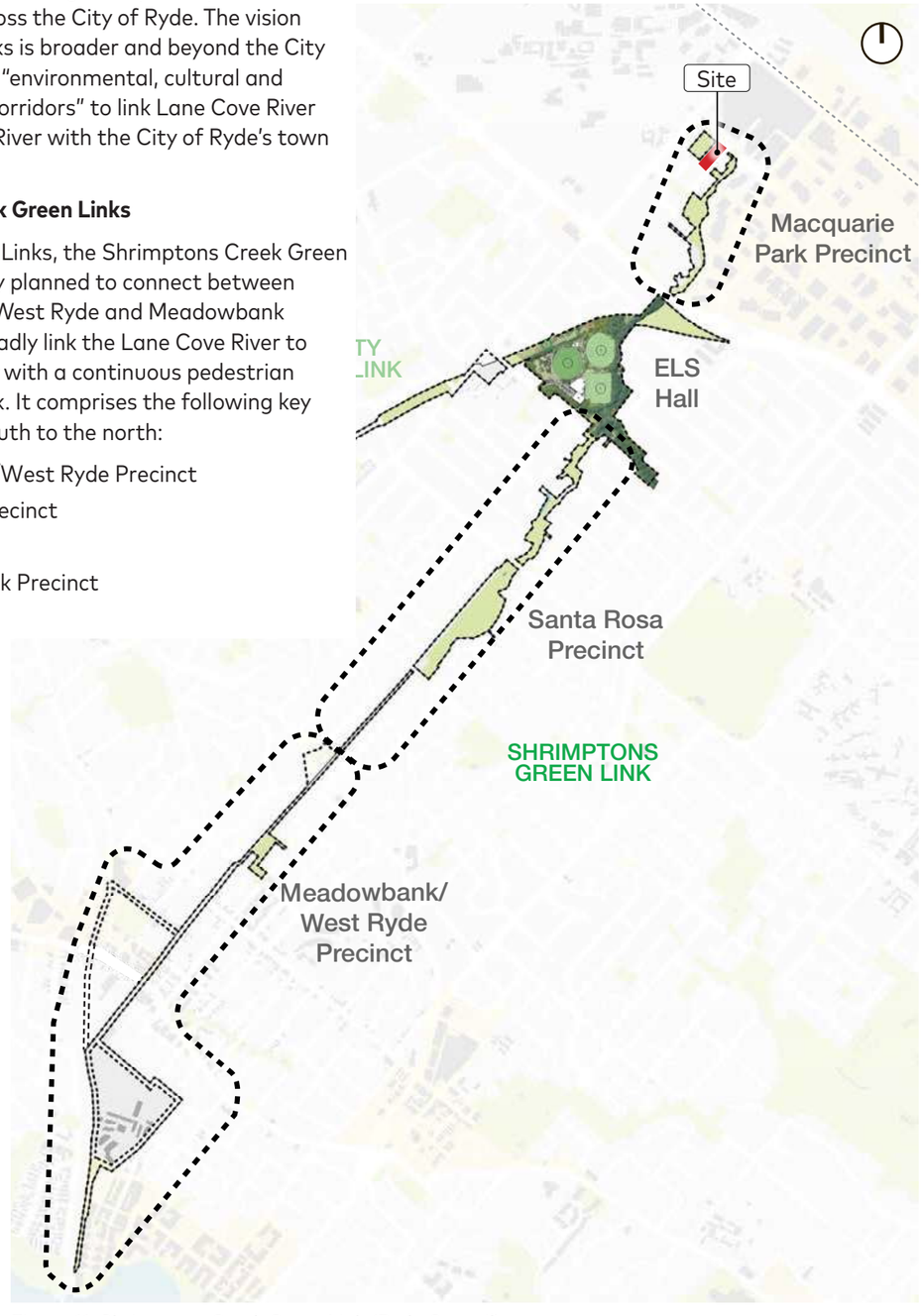



Figure 11. Shrimptons Creek Green Link (Ryde Council)

**Macquarie Park Precinct**

Shrimptons Creek is noted as having been historically been impacted by the urbanisation of Macquarie Park. The open creek line is visible up to Waterloo Road. Further north beyond the Macquarie Park Precinct, Shrimptons Creek travels beneath the Macquarie Centre shopping centre. Within the Macquarie Park Precinct, the open space network are comprised of:

- Elouera Reserve,
- Wilga Park,
- Cottonwood Reserve,
- Quandong Reserve, and
- Dispersed riparian areas along Shrimptons Creek

The Masterplan seeks to link the currently fragmented pathways, building on an existing shared path network to create a safe and continuous route for pedestrians and cyclists.

Key future links in this precinct include:

1. *Connection to the existing off-road shared user path on Waterloo Road*
2. *Connection to the existing off-road shared user path on both sides of the M2 Motorway linking to the Hills and North Ryde.*
3. *Potential track connection between Dunholm Reserve and Shrimptons Creek Track*
4. *Path lighting between ELS Hall Park / Greenwood Park to Waterloo Rd to facilitate safe use beyond daylight hours.*
5. *Opportunity for future investigation of feasibility for potential northern crossing points of Lane Cove River, pending consultation with relevant stakeholders and further investigations.*

The subject site is connected to the proposed Shrimptons Green link and the broader network envisaged via Cottonwood Reserve directly opposite.

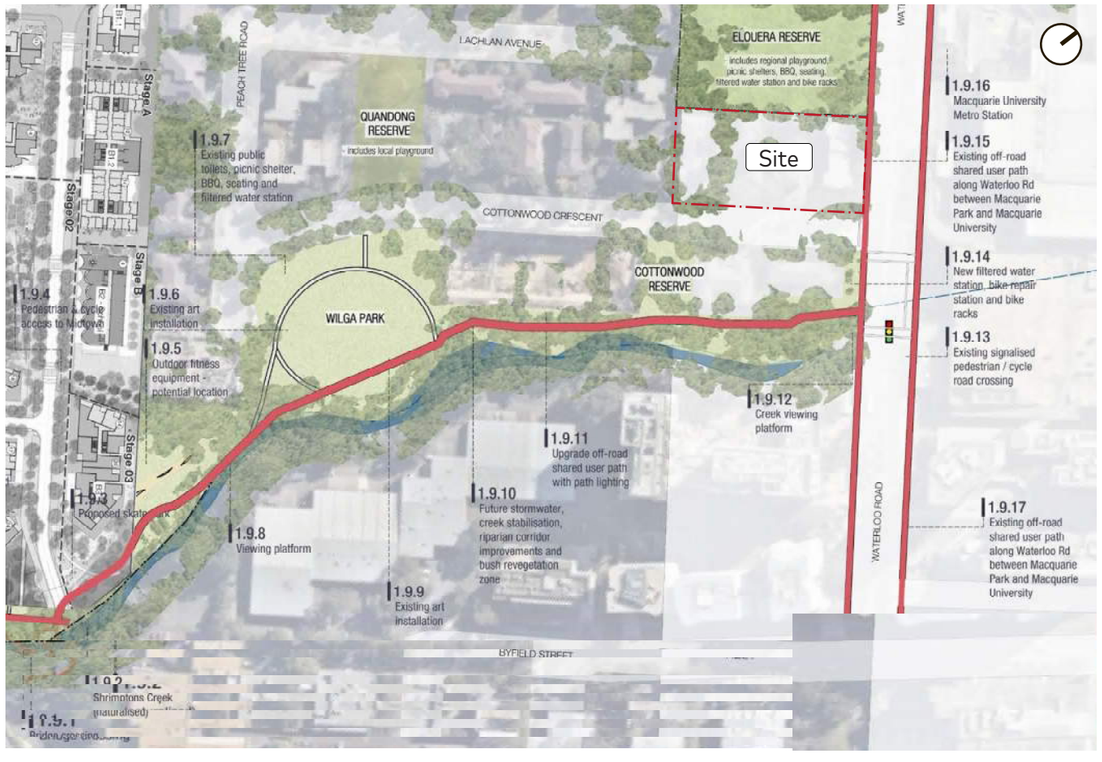



Figure 12. Macquarie Park Precinct (Ryde Council)

# 1.2. Statutory Planning Framework

## 1.2.1 Ryde LEP

**Ryde Local Environmental Plan 2014**

The Ryde Local Environmental Plan 2014 (LEP) is the primary statutory planning instrument applicable to the site.

**Land Zoning**

The subject site is zoned MU1 Mixed Use. Residential flat buildings and commercial premises are permitted with consent within this zone. Elouera Reserve adjoining the northwestern boundary of the site is zoned as RE1 Public Recreation.

**Heritage**

The subject site is not a heritage item and is not located within a heritage conservation area. There are two seemingly large heritage zones nearby, however these are driven by the site of the lots they are within: a listing for ruins on the western side of Macquarie University applies to the whole campus, and an ice rink within the Macquarie Centre applies to the entire super regional retail centre's superlot. Neither of these heritage items are considered as a site constraint on the current development, given their distance from the site.

**Floor Space Ratio (FSR)**

A maximum FSR of 4.5:1 applies over the subject site.

**Height of Buildings (HOB)**

The maximum HOB is 65m.


Figure 13. Land Zoning Map (Ryde LEP 2014)

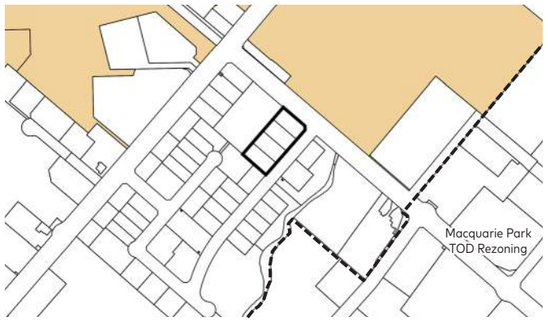



Figure 14. Heritage Map (Ryde LEP 2014)


Figure 15. Height of Buildings Map (Ryde LEP 2014)


Figure 16. Floor Space Ratio Map (Ryde LEP 2014)

**LEGEND**

SITE

MACQUARIE PARK TOD REZONING BOUNDARY

## 1.2.2 Ryde Development Control Plan (DCP) 2014

The Ryde DCP 2014 Part 4.5 Macquarie Park Corridor is applicable to the site. It pre-dates the State-led rezoning which rewrote many controls across the majority of Macquarie Park, however still retains relevance relevant to the subject site.

The DCP provides detailed built from controls and other clauses to achieve Council's visions for open space, street network, activity centre and urban structure. It is noted that some objectives conflict with the State-authored Macquarie Park Design Guide.

**Front Setback**

The subject site has two frontage facing Waterloo Road and Cottonwood Crescent. It is located within an area that the Ryde DCP nominates as the Macquarie University Station Activity Centre. Built forms within this area are envisaged to built on the Waterloo Road boundaries to create a civic character. This vision is understood to be amended by the draft Waterloo Road Masterplan and Macquarie Park TOD rezoning urban design framework. Instead of zero front setback, a 10m Waterloo Road front setback is required for all development along Waterloo Road to create the envisaged public accessible linear park/ green spine.

**Street Setbacks**

5m setbacks to all existing and new streets unless specified.

**Setback to Elouera Reserve**

*"5m built form setback to all parks (existing and proposed – subject to providing a Riparian Corridor in accordance with the NSW Office of Water's Guidelines for Riparian Corridors on Waterfront Land)."*

**Side Setbacks**

The subject site adjoins two strata lots to the south west. They are known as:

- 9/13 Cottonwood Crescent, and
- 7/12-14 Lachlan Avenue

The common boundary with these two lots are considered as a side boundary. The DCP guidance is that buildings are set back 5m from a side boundary.

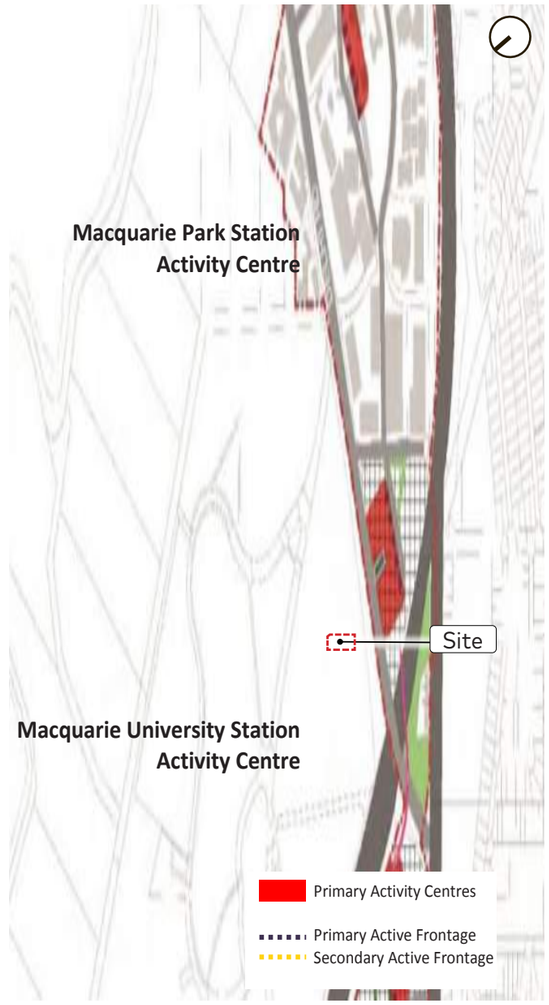



Figure 17. Active Frontage and Setbacks (Ryde DCP 2014)

# 1.3. Surrounding Developments

## 1.3.1 Trilogy Meriton

'Trilogy Meriton' is a mixed-use development under construction located at 100-108 Talavera Road in Macquarie Park. This development consists of three (3) buildings being 37, 44 and 58 level towers above a podium base, with each tower having its own pool and gym. The total development will comprise 1038 residential apartments, recreation facilities as well as a childcare centre, retail, and restaurant tenancies.

The development was facilitated through a proponent-led planning proposal that established an RL height constraint equal to the proponent's understanding of the PAN-OPS height at the time.

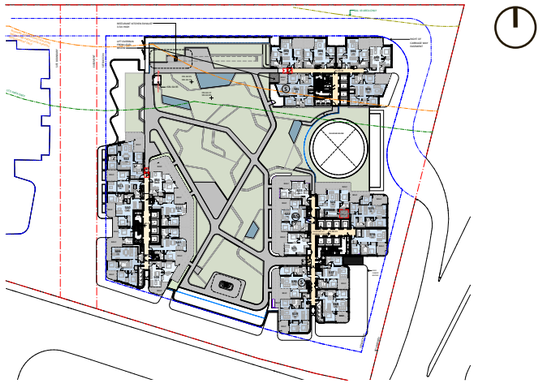


Figure 18. Meriton Trilogy_ Approved DA_ Typical Floor Plan

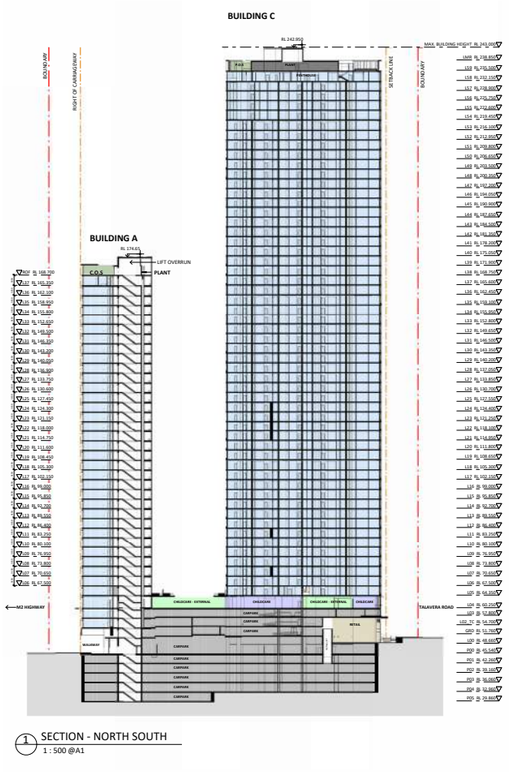



Figure 19. Meriton Trilogy Approved DA_ Sections


Figure 20. Meriton Trilogy_ Artist Impression

## 1.3.2 Macquarie Centre

Macquarie Centre, located at 197-223 Herring Road in Macquarie Park, has been planning a significant redevelopment to evolve into a contemporary mixed-use precinct that aligns with the broader urban vision for the area. Key proposals included in a Stage 1 DA in 2018 (LDA2018/0498) were:

- Partial demolition of the shopping centre to develop a four-storey podium for retail and two additional parking levels on Talavera Road.
- Creation of Station Plaza at the corner of Herring Road and Waterloo Road, next to Macquarie University Station.
- Addition of 21,258m² of gross floor area (GFA) and 481 new parking spaces.
- Landscaping and public domain improvements.

A Stage 2 Detailed Development Application for the retail centre only was significantly advanced, but withdrawn after community and Council opposition to the removal of the heritage listed ice rink.

The majority landowner (AMP) subsequently divested the asset, and the application is understood to be on pause.

Figure 21. Macquarie Centre _Stage 1 Approval

Figure 22. Macquarie Centre _Stage 2 Concept

## 1.3.3 Macquarie University's Campus Master Plan, 2014

Macquarie University has introduced a comprehensive master plan in 2014 to upgrade existing facilities and add new infrastructure where needed to accommodate future growth and increasing student numbers. The plan focuses on enhancing campus amenities to support a modern learning environment.

*"Developing a vibrant and sustainable campus, clearly at the centre of a rapidly changing neighbourhood in the international, cosmopolitan city of Sydney."*

The master plan illustrates completed, current and future developments.

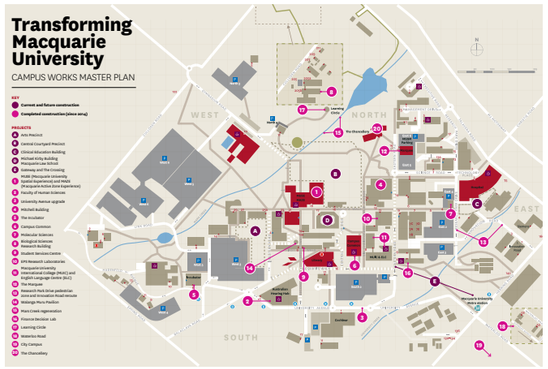



Figure 23. Macquarie University Campus Master Plan

Current projects include:

- The 17,000m² Faculty of Arts precinct featuring two refurbished buildings and a new structure with event spaces
- The Central Courtyard Precinct, a 68,000m² redevelopment including four buildings, a graduation hall, bar, student housing (341 beds), and retail spaces which completed in 2022.
- The 3,400m² Medicine and Health Sciences facility near Macquarie University Hospital with Case Method lecture theatres and study spaces, which opened in 2020.
- Purpose-built Law School at 17 Wally's Walk, which opened in 2024.

Figure 25. Central Courtyard Precinct

Future projects include:

- A pedestrian bridge connection between Macquarie University Metro Station, Macquarie Centre, and the bus interchange.
- Student Accommodation: the University has a commitment to deliver 3000 new student beds on campus.

Figure 24. Student Accommodation

*Source: Macquarie University Property Update, 2019*

## 1.3.4 Previous Approval

There is a current development consent for the subject site (LDA2024/0158). The approval includes two towers (of 19/20 and 20/21 storeys respectively), above a shared podium (4 storeys high along Waterloo Road and 3 storeys high along Cottonwood Crescent) with a total of 24,323 m² GFA. The proposal includes:

- Up to 70m building height
- 24,131.5m² residential gross floor area
- 191.5m² retail gross floor area
- Floor space ratio of 4.7:1
- 255 apartments
- 285 car parking spaces

Figure 27. The Approved DA Proposal, Looking from Waterloo Road

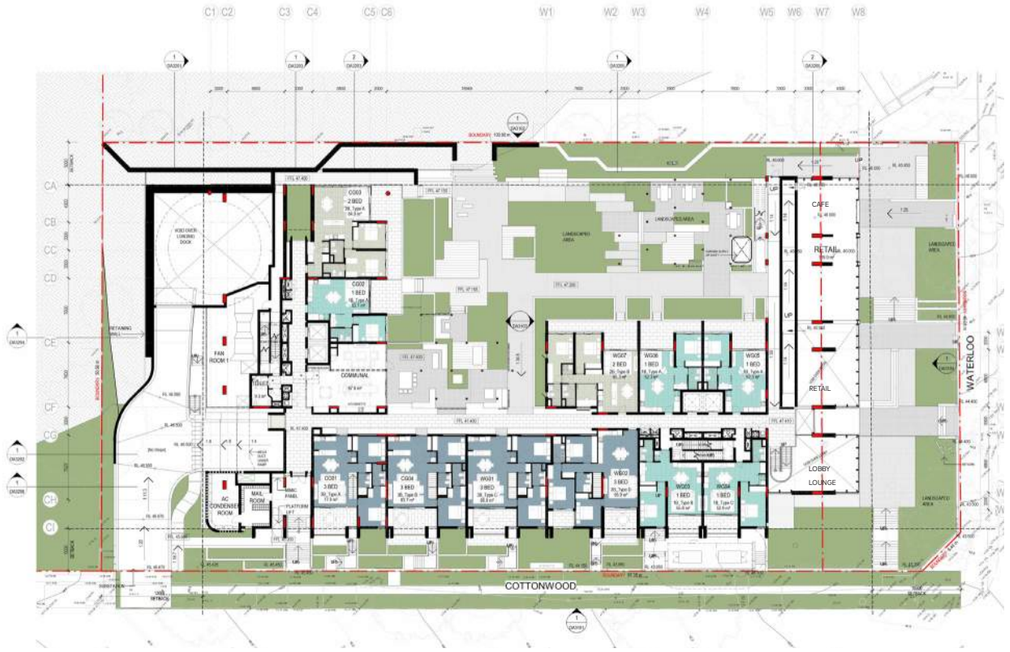



Figure 26. Ground Floor Plan

# 2. Site Analysis

# 2.1. Country

## 2.1.1 Overview

The Macquarie Park precinct is located on Wallumedegal Country, within the broader Darug cultural landscape of the Sydney Basin. A Designing and Connecting with Country process has been undertaken for this project, led by WSP Indigenous Design Unit.

Wallumedegal Country extends along the northern shore of Port Jackson and west along the Parramatta River, with strong cultural and ecological connections to the Lane Cove River system. The area is defined by the interaction of salt-water, freshwater and estuarine ("bitter water") environments, which historically supported sustained Aboriginal occupation, movement and ceremony over thousands of years.

Macquarie Park forms part of a wider cultural landscape that functioned as a place of gathering and connection, intersected by established travel routes linking multiple clan groups. Cultural knowledge identifies the area as associated with Koradgi (clever men) and strong spiritual relationships to Sky Country, situating the site within an integrated system connecting land, water, sky, people and non-human kin.

The physical character of Country is shaped by Ashfield Shale, Mittagong Formation and Hawkesbury Sandstone geology, which historically supported endemic vegetation communities including Sydney Turpentine–Ironbark Forest and sandstone forest systems associated with waterways. While much of this vegetation has been cleared since colonisation, remnant vegetation and watercourses continue to express the underlying structure of Country and provide opportunities for ecological and cultural reconnection.

Wallumedegal cultural life was closely tied to this landscape through fishing, shellfish gathering, plant harvesting and trade. Cultural features once widespread across the area included camp-sites, middens, scarred and carved trees, rock engravings, ceremonial grounds and burial places. Many of these features have been damaged or removed through colonial settlement and urban development, resulting in reduced cultural visibility within the contemporary landscape.


Figure 28. Artist impression of clan groups within the eastern Sydney Basin, Michael Hromek
(Source: Connecting to country aboriginal design principles by WSP for 88 Waterloo Road, Macquarie Park)

## 2.1.2 Walk on Country

To inform the project, the design team had a Walk on Country with the Wallumedegal elders which included a smoking ceremony to clean the team members and welcome them to Country.

The elders spoke about what was important for the design team to consider in the project and the stories of Country, their culture, and past events that connect them to this place.

Part of the conversation the design team presented some of the early ideas for the project.

WSP led the consultation and captured these stories through sketches, some of which are included here. Refer to the Connecting with Country report for further information.

Walk on Country - Design workshop with elders

Car park colours and levels to follow 6 Dhaurg seasons


6 Darug Seasons & the Emu in the sky (Sky Country)


Cultural mapping

# 2.2. Site Analysis

## 2.2.1 Social Infrastructure

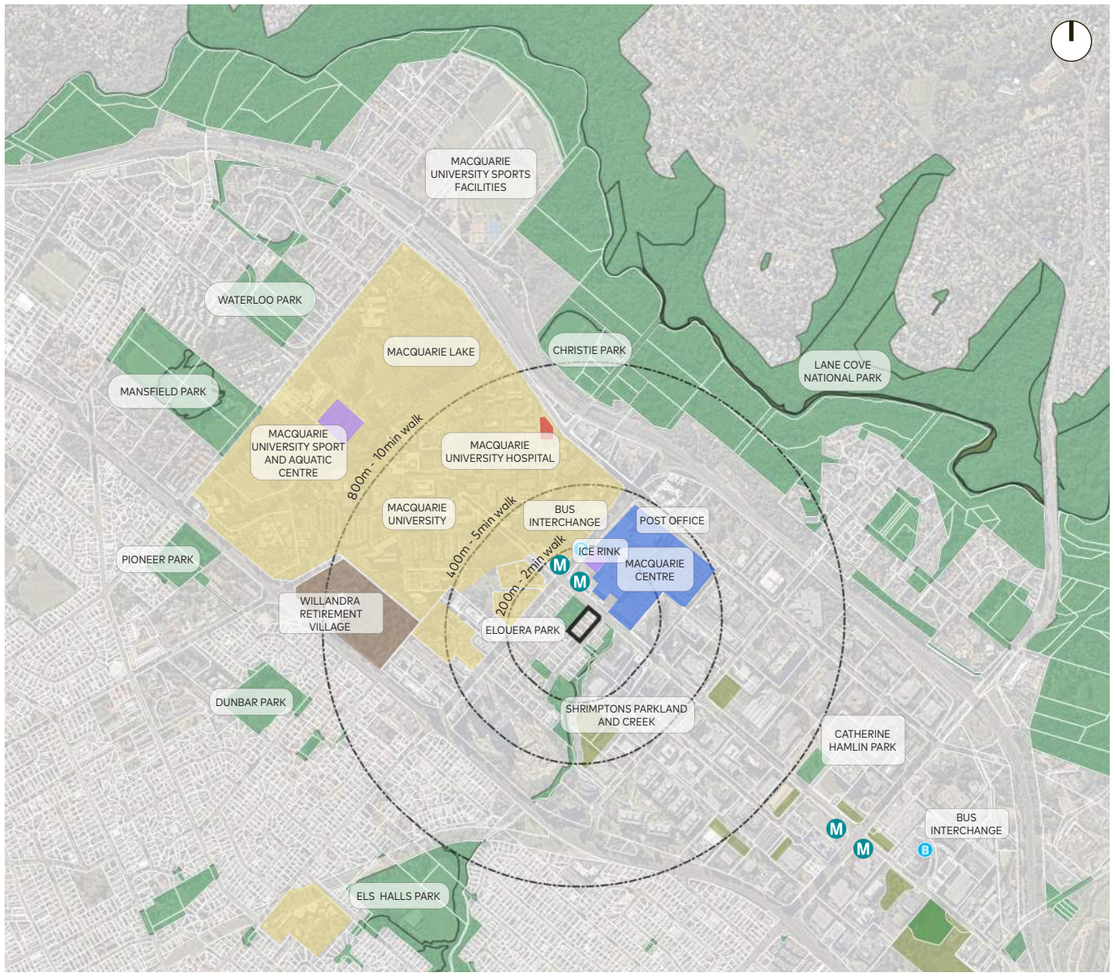



Figure 29. District Context

The site benefits from a wide range of nearby social infrastructure. Within a 10-minute walk are several parks and recreational spaces, including the adjoining Elouera Reserve and the broader Shrimptons Creek open space network. Public transport is accessible, with the Macquarie Park bus interchange and Macquarie University Metro Station located just 150 metres to the south-east. Directly north across Waterloo Road, Macquarie Centre provides extensive retail, dining, sporting and entertainment facilities. Macquarie University and Macquarie University Hospital are also within a comfortable 5–10-minute walk.

**LEGEND**

- SITE
- EXISTING OPEN SPACES
- PUBLICLY ACCESSIBLE OPEN SPACES*
- SPORT FACILITIES/ GROUNDS
- MACQUARIE CENTRE
- RETIREMENT VILLAGE
- HOSPITAL
- EDUCATION

* Source: Macquarie Park TOD Rezoning Urban Design Framework

0 200 400 1000M
1:20,000 @ A4

## 2.2.2 Public Transport

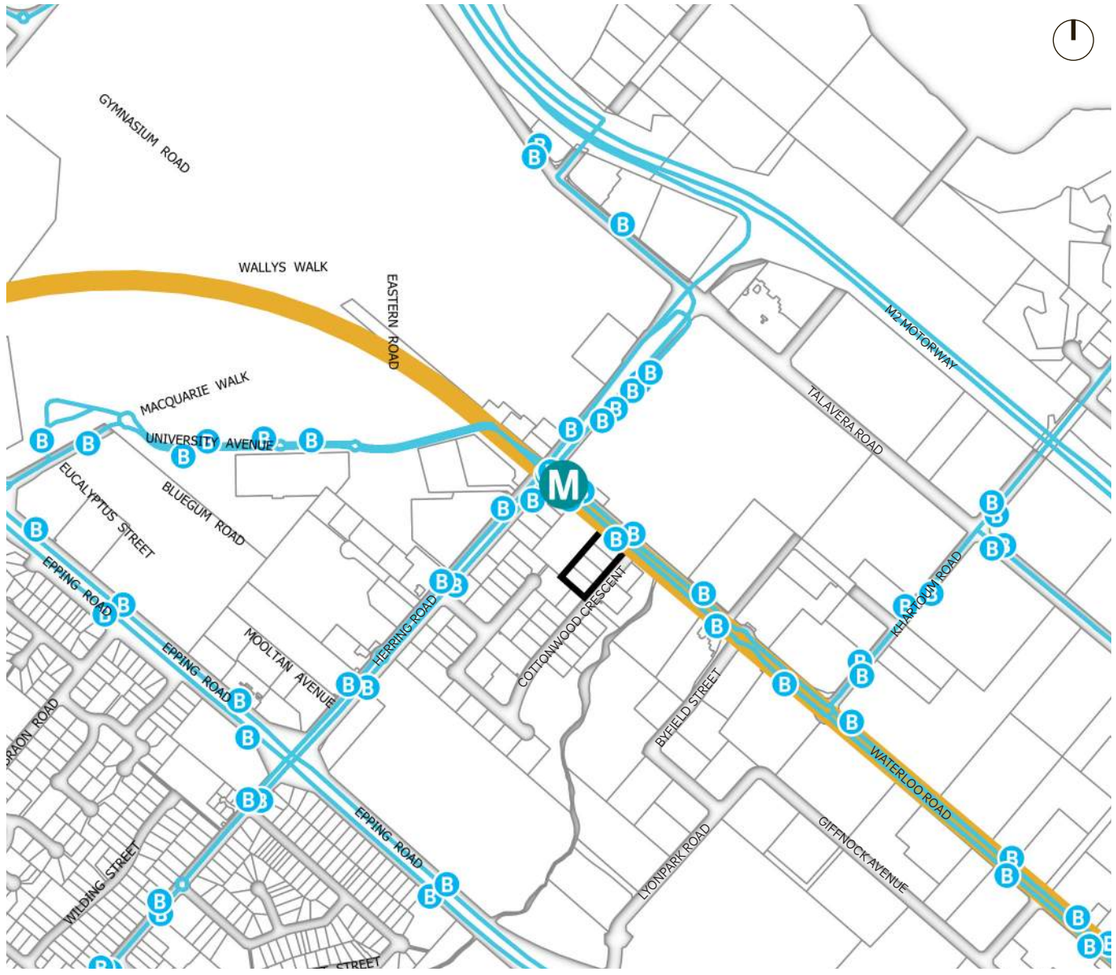



Figure 30. Public Transport Map

The site is well served by both bus and metro public transport services. The Macquarie University metro station is only 150m from the subject site on the other side of Waterloo Road, offering rapid connections to Sydney CBD and other key destinations. There is also a bus interchange next to the Macquarie University metro station off Herring Road, providing connections to Parramatta, Chatswood, Hornsby, Mona Vale, and Sydney City, etc. There is an active State Government project to upgrade the interchange including a significant public domain improvement component, making it easier for people to move safely into and around Macquarie Park.

**LEGEND**

- SITE
- BUS ROUTES
- SYDNEY METRO TUNNEL
- BUS STOP
- SYDNEY METRO STATION

0 100 200 500M
1:10,000 @ A4

## 2.2.3 Road Network

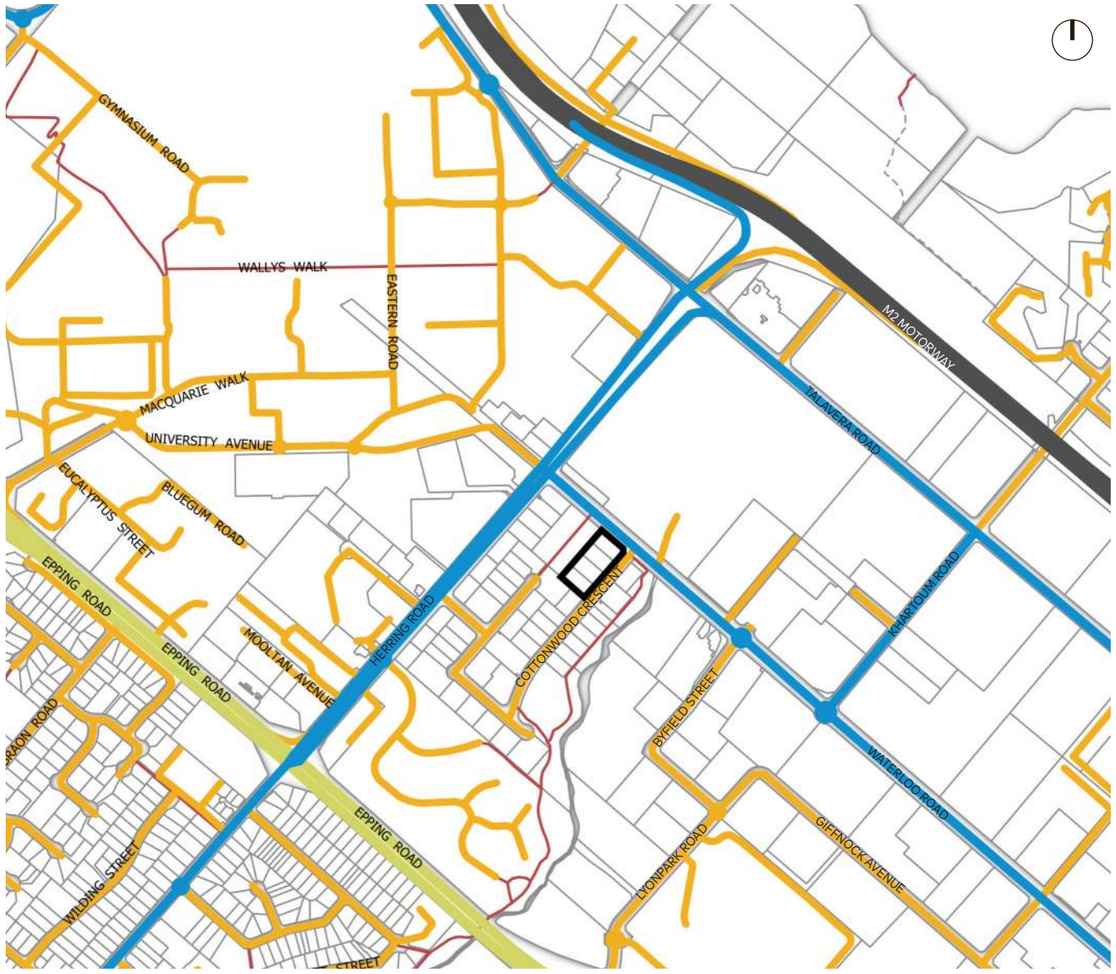



Figure 31. Road Network Map

The subject site is off Waterloo Road and has direct access to Epping Road and M2 Motorway via Herring Road.

M2 Motorway is a regional motorway connecting to major centres including North Sydney, Sydney City and the Sydney Airport via M1. Entry to and from the M2 motorway is via the slip lanes at the northern end of Herring Road. Epping Road is an arterial road that begins in Epping, runs along the southern edge of Macquarie Park, and connects to Lane Cove Tunnel as well as destinations further south such as North Sydney and Sydney CBD. Access to and from Epping Road is provided at the signalised intersection with Herring Road.

Vehicular access to the subject site is proposed from Cottonwood Crescent, which intersects Waterloo Road at an non-signalised, left-turn-only T junction.

**LEGEND**

- SITE
- MOTORWAY
- ARTERIAL ROAD
- DISTRIBUTOR ROAD
- LOCAL ROAD
- PEDESTRIAN PATH

0 100 200 500M
1:10,000 @ A4

## 2.2.4 Cycling Network


Figure 32. Cycleway Map (City of Ryde Bike Map & Macquarie Park TOD Rezoning Urban Design Framework)

The subject site benefits from a developing cycling network, with direct access to a mix of existing shared off-road bike paths and future regional connections held within Local and State planning frameworks.

**LEGEND**

- SITE
- SHARED OFF-ROAD BIKE PATH
- INFORMAL ON-ROAD BIKE ROUTE
- FUTURE BIKE LANES*

* Source: Macquarie Park TOD Rezoning Urban Design Framework

0 100 200 500M
1:10,000 @ A4

## 2.2.5 Topography

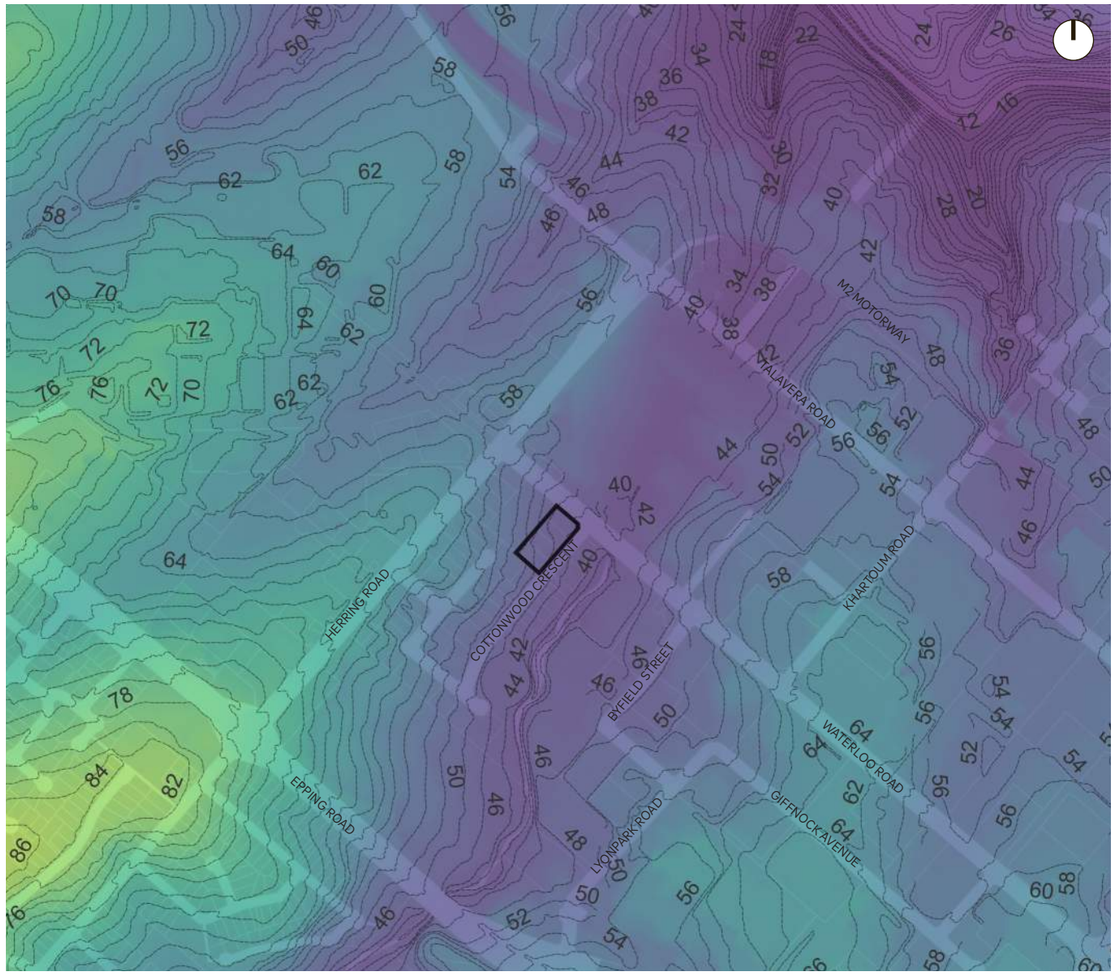



Figure 33. Topography Map

The topography of the larger area is characterised by undulating terrain with several small creeks and drainage lines creating repeated depressions in the terrain. The land generally slopes downwards towards Lane Cove River & National Park.

The site is in close proximity to Shrimptons Creek to the east. The topography includes steep sections, with a noticeable fall in elevation from RL 50 in the southwest to RL 44 in the northeast.

**LEGEND**

- SITE
- RL 10
- RL 90
- 2M CONTOUR

0 100 200 500M

1:10,000 @ A4

## 2.2.6 Flood Risk

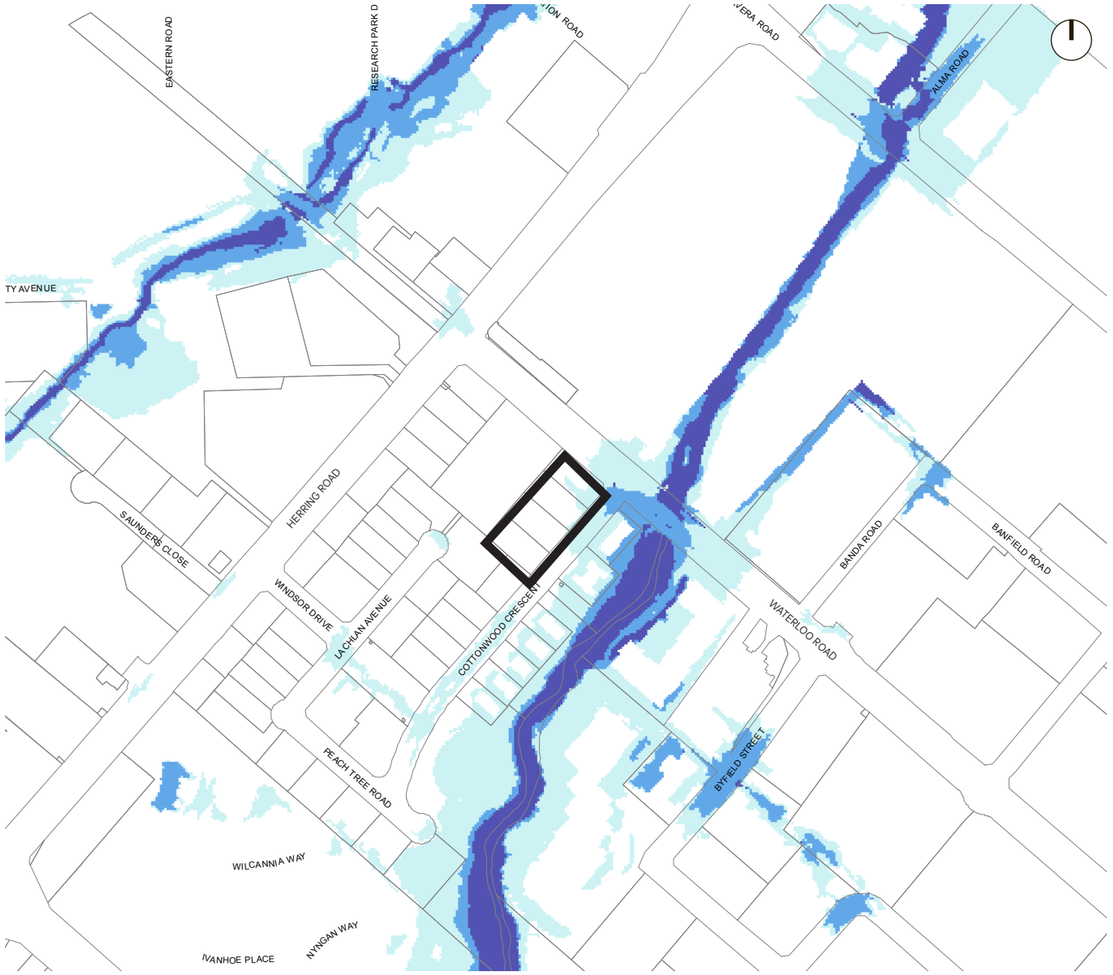



Figure 34. Floodplain Risk Assessment Map (Ryde Flood Harmonisation Study)

The City of Ryde commissioned WMA to undertake a Flood Harmonisation Study across all 14 catchments in the LGA. The flood risk precincts map shows that the northeast corner of the site falls into the "Low Risk Flood" category. The report indicates that the risk of flood damage in these low risk flood areas is "*low and most land uses would be permitted*." A detailed flood study has also been developed for the current application.

**LEGEND**

- SITE
- LOWER FLOOD RISK PRECINCT
- MEDIUM FLOOD RISK PRECINCT
- HIGH FLOOD RISK PRECINCT

0 50 100 250M

1:5,000 @ A4

## 2.2.7 Public Open Space

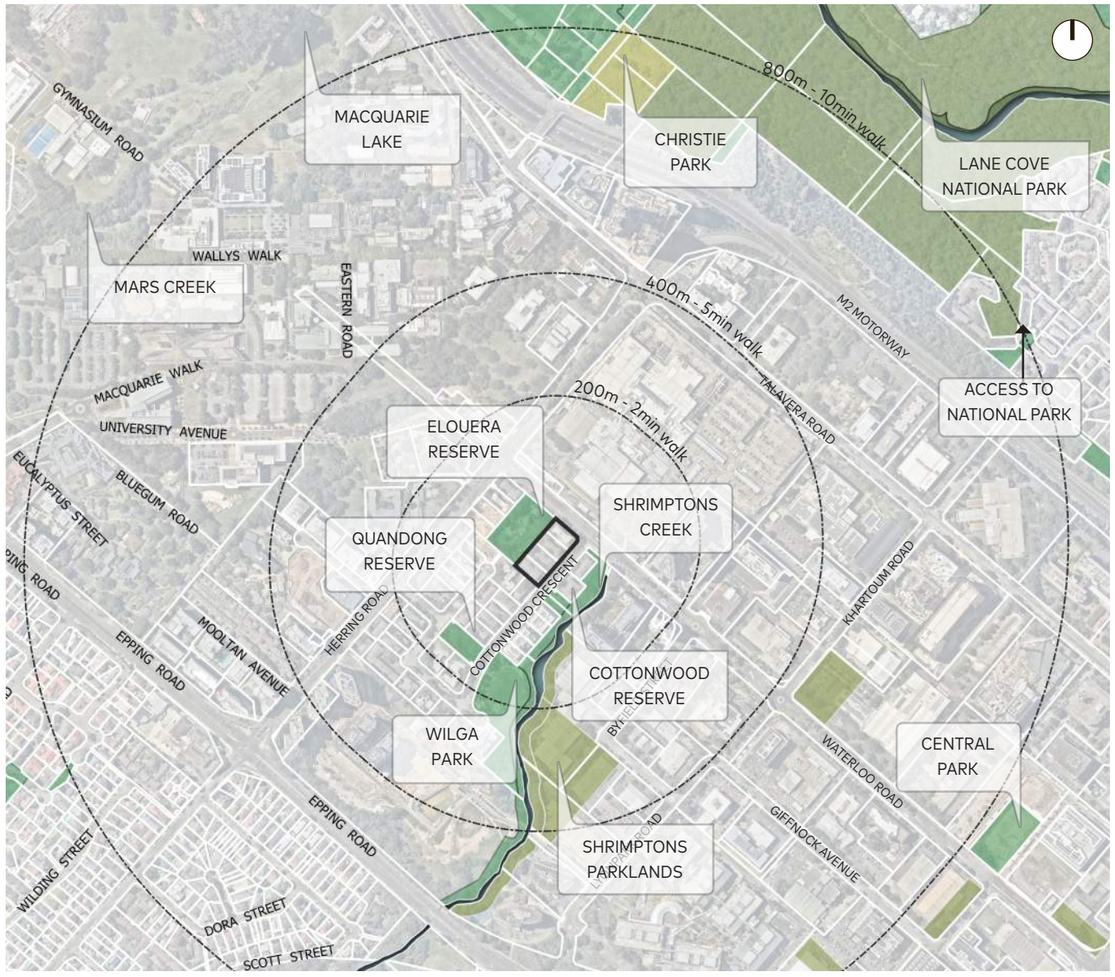



Figure 35. Public Open Space Map

The Draft Greener Places Design Guide (DGPD) sets out performance-based criteria for the planning and implementing of open space for recreation. The existing and planned open space network adjacent to the subject site meet all of these guiding criteria established by DGPD.

A number of open space are accessible from the subject site within a 5-10-minute walk. Elouera Reserve, adjoining the site's northwestern boundary, is a local park of 6,500m$^2$ with play equipment, a BBQ as well as other facilities. Wilga Park is a further local park at a short walking distance, which is planned to be extended by the future Shrimptons Parklands to create a continuous space of >3ha in area. This will serve as a district level open space for the subject site. Lane Cove National Park serves as a regional open space, applicable to all future high density development within Macquarie Park.

88 Waterloo Road is surrounded by a network of open spaces and parks, offering varied recreational opportunities within walking and cycling distance

The site directly adjoins Elouera Reserve, a large local park. It is also opposite Cottonwood Reserve, a pocket park with a transitional character that provides a pathway to Shrimptons Creek. The site is also approximately 140 metres from Quandong Reserve, a predominantly passive space with a small playground, and 150 metres from Wilga Park.

Both Quandong and Cottonwood Reserves feature dense tree canopies and low levels of activation, while Elouera Reserve and Wilga Park support a range of active and passive recreational activities.

Within a 5-minute walk, the site will benefit from the proposed Shrimptons Parklands and Shrimptons Creek Riparian Corridor, which will deliver upgraded amenities, new community spaces, recreational facilities, and a bridge connection from Wilga Park. The site is also a 10-minute cycle from Lane Cove National Park, a protected reserve offering bushland, scenic trails, diverse wildlife, picnic areas, and river activities.


Figure 36. Location Map

1. ELOUERA RESERVE
2. WILGA PARK
3. QUANDONG RESERVE
4. COTTONWOOD RESERVE
5. SHRIMPTONS PARKLANDS
6. SHRIMPTONS CREEK RIPARIAN ZONE
7. LANE COVE NATIONAL PARK


Figure 37. Aerial of Elouera Reserve

Figure 38. Street View of Elouera Reserve

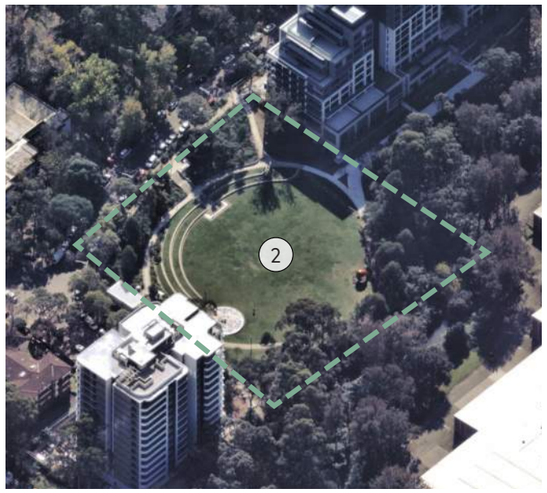



Figure 39. Aerial of Wilga park

Figure 40. Street View of  Wilga Park


Figure 45. Aerial of Shrimptons Parklands

Figure 46. Shrimptons Parklands Artist's Impression


Figure 41. Aerial of Quandong Reserve

Figure 42. Street View of Quandong Reserve

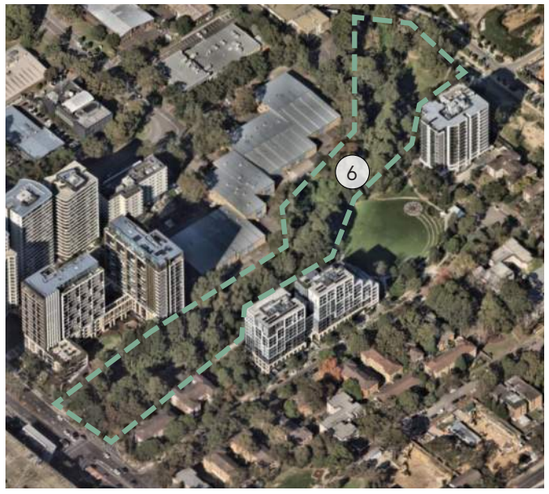



Figure 47. Aerial of Shrimptons Creek Riparian Zone

Figure 48. Street View of  Shrimptons Creek Riparian Zone

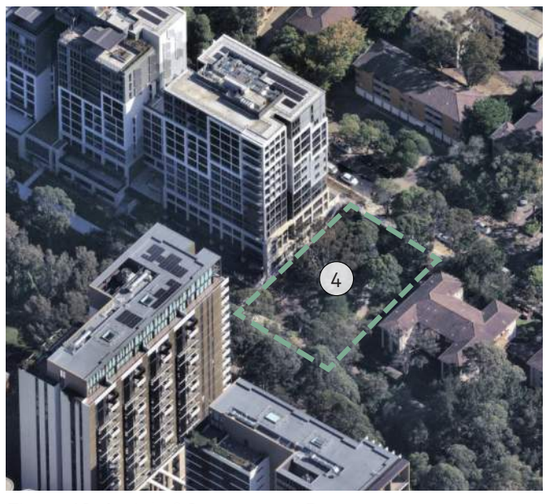



Figure 43. Aerial of Cottonwood Reserve

Figure 44. Street View of Cottonwood Reserve

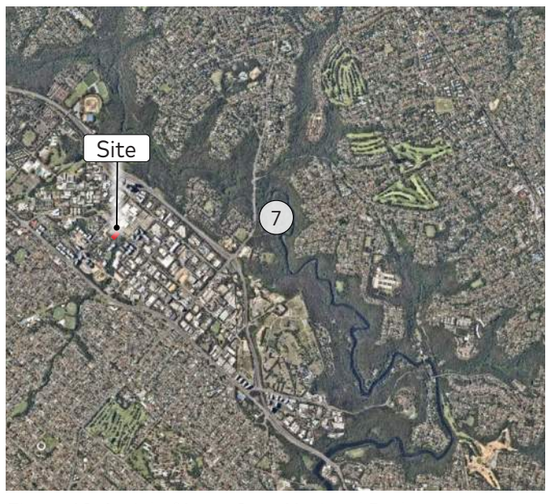



Figure 49. Aerial of Lane Cove National Park


Figure 50. Street View of Lane Cove National Park

## 2.2.8 Procedures for air navigation services – aircraft operations (PANS- OPS)

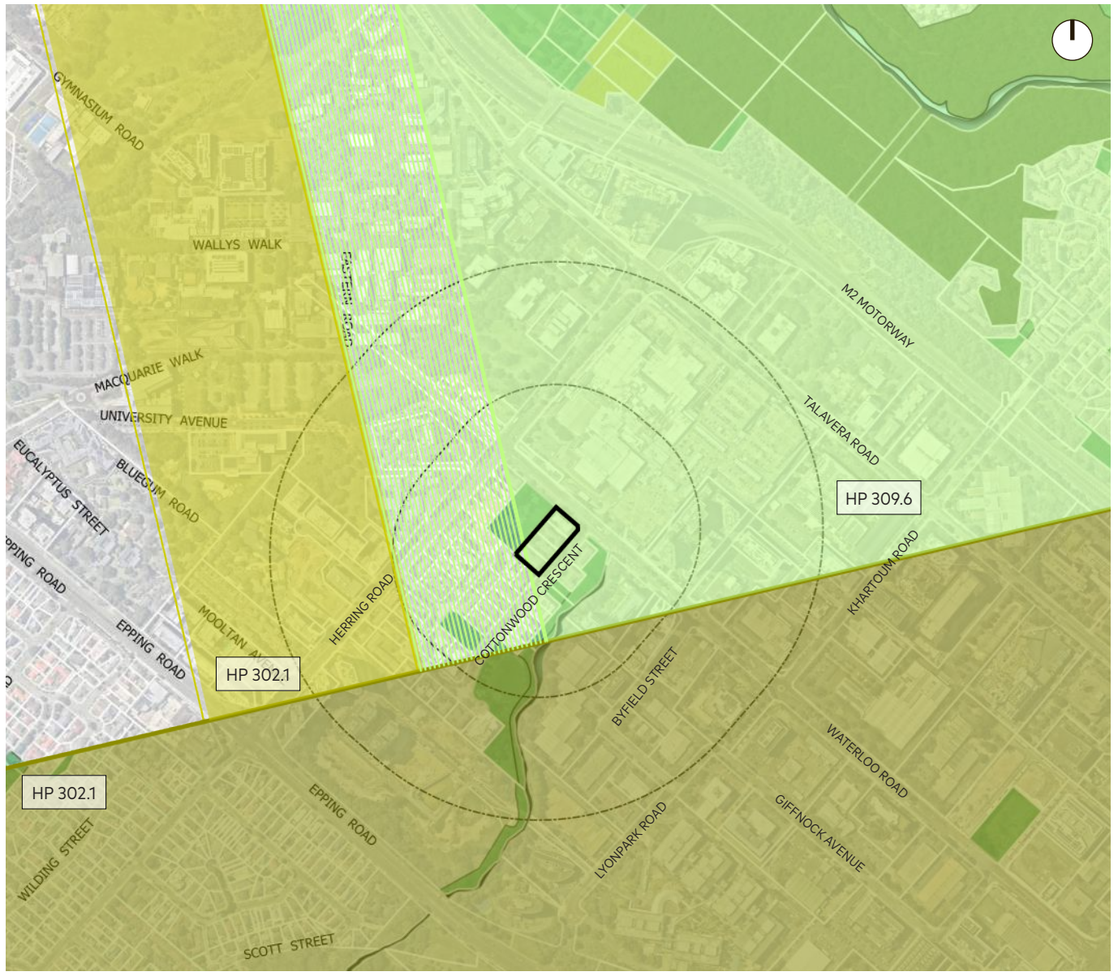



Figure 51. Neighbourhood Context

The subject site falls within a PANS-OPS area with a height datum restriction of 309.6 meters through which no permanent structures may penetrate.

The site is not affected by any airport's OLS.

**LEGEND**

- SITE
- PAN-OPS - HP302.1
- PAN-OPS - HP309.6

0 100 200 500M
1:10,000 @ A4

## 2.2.9 Local Context

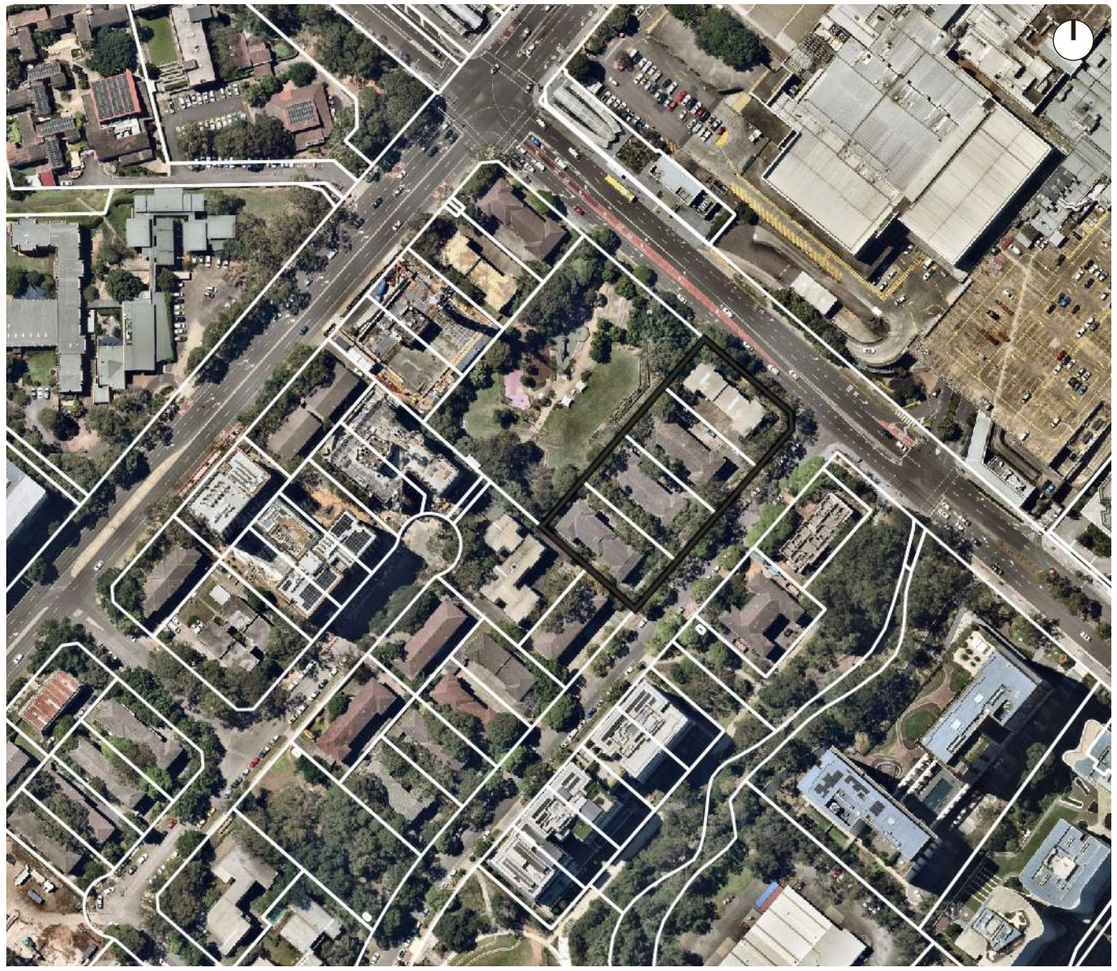


Figure 52. Local Context

The subject site is located in a mixed-use area with allowable building heights of up to 45-65m. Existing building stocks of this area is a mix of 3-4-storey walk-ups and recently constructed shoptop housing which reflect the exiting height control came into effect in Oct 2015.

Further from the site, much larger developments are beginning to be delivered; particularly the 58-storey 100-108 Talavera Road (known as Trilogy by Meriton). This height is expected to be repeated across Macquarie Park, after the Macquarie Park TOD rezoning increased allowable heights across a large area.

**LEGEND**

- SITE

0 25 50 125M
1:2,500 @ A4

## 2.2.10 Local Context Photos

Figure 53. Eastern drone view of the subject site.

Figure 54. Existing walk-up on Cottonwood Crescent.

Figure 55. The western interface of the existing buildings within the site, looking from Elouera Reserve.

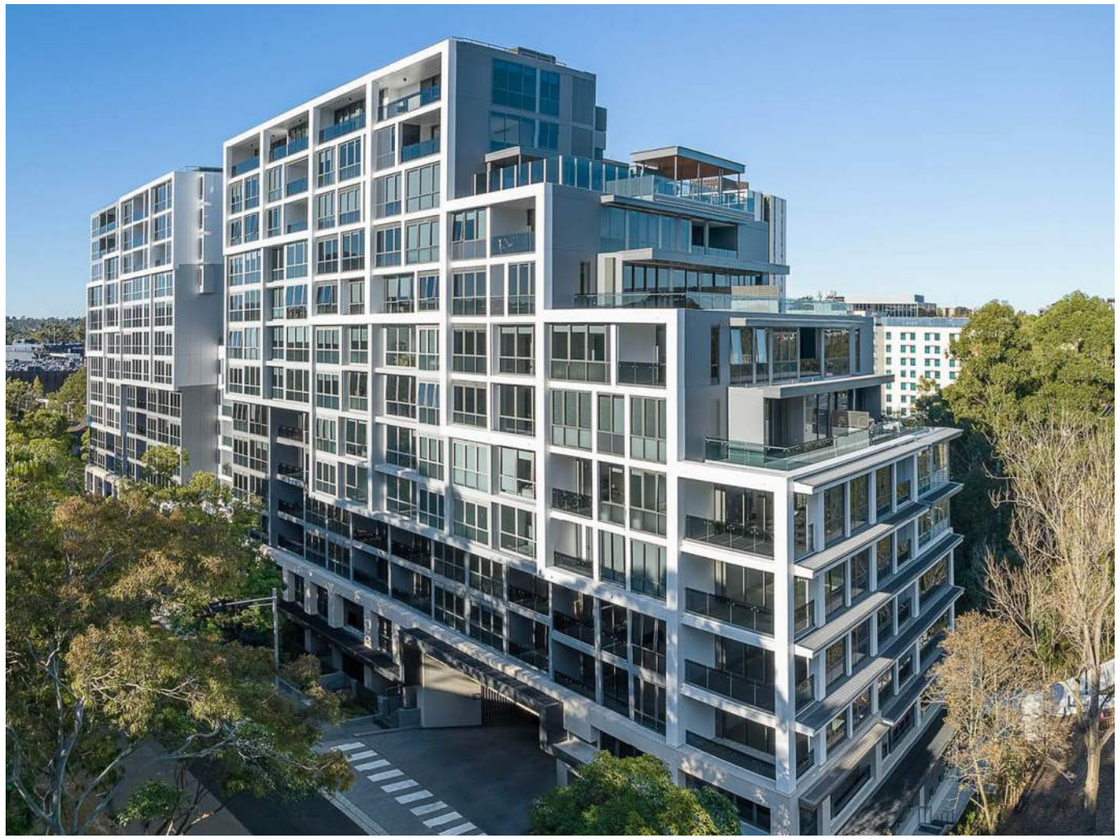


Figure 56. Existing development at 2-10 Cottonwood Crescent.

Figure 57. Co-living development at 169–171 Herring Road under construction

# 2.3. Opportunities & Constraints

## 2.3.1 Constraints

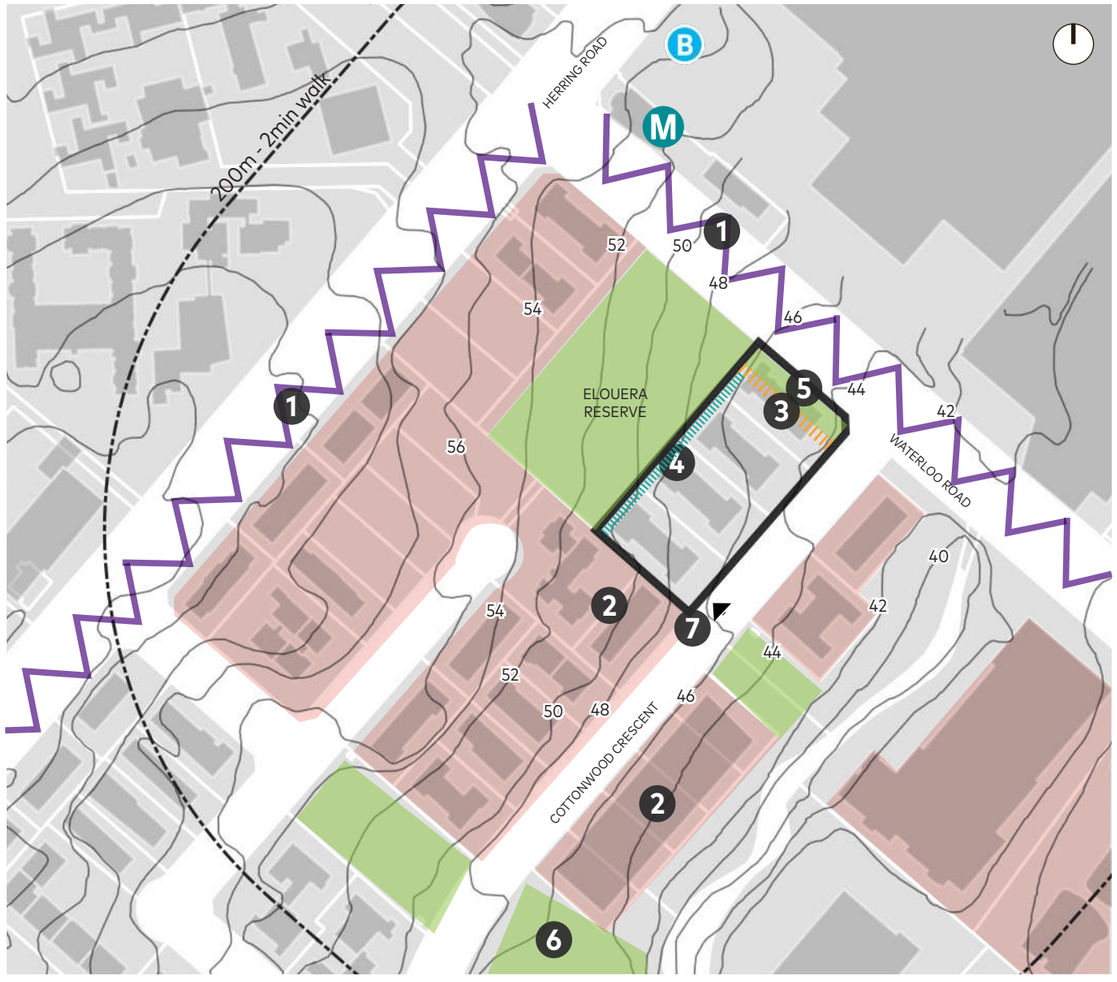



Figure 58. Constraints

1. Herring and Waterloo Roads are noise generators near to the subject site.
2. Existing walk-ups and recent shoptop housing development to the south/south western of the site require consideration of relevant solar and privacy controls.
3. Active frontage is required facing Waterloo Road.
4. Elouera Reserve frontage will require a sensitive boundary condition.
5. Provision of 10 metre setback to Waterloo Road required and potential acquisition along the Waterloo Road frontage as per the titling arrangements.
6. Provision of compliant solar access for existing Wilga Park and the future Shrimptons Parklands will need to be considered.
7. The site has a single appropriate frontage for basement entries.

**LEGEND**

- SITE
- NOISE GENERATOR
- OPEN SPACE
- EXISTING RESIDENTIAL DEVELOPMENTS
- ACTIVE FRONTAGE
- METRO/BUS INTERCHANGE
- POTENTIAL BASEMENT ENTRY

0 25 50 125M
1:2,500 @ A4

## 2.3.2 Opportunities

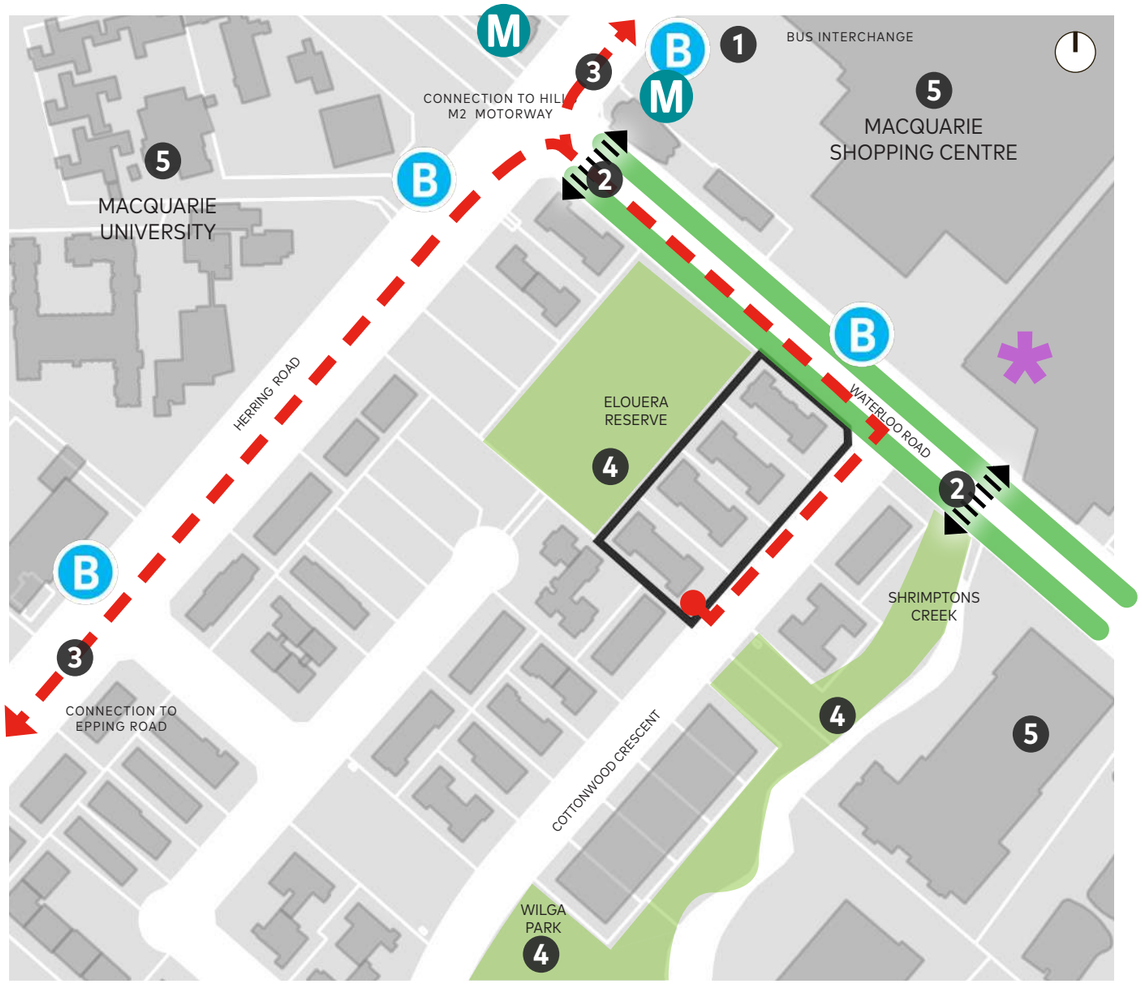



Figure 59. Opportunities

1. Immediate proximity to both bus and metro public transport services.
2. Existing safe pedestrian crossings for future residents of the proposed development.
3. Direct vehicular connections to/from Epping Road and the M2 Motorway.
4. Walking distance to numerous public open spaces.
5. Walking distance to a range of social infrastructure available in Macquarie University/ Hospital and Macquarie Shopping Centre.

**LEGEND**

- SITE
- ROAD NETWORK CONNECTIONS
- MACQUARIE PARK LINEAR CORRIDOR
- PEDESTRIAN CROSSING
- METRO/BUS STOP
- PEDESTRIAN ENTRANCE TO MACQUARIE CENTRE

0 25 50 125M
1:2,500 @ A4

# 3. Urban Design

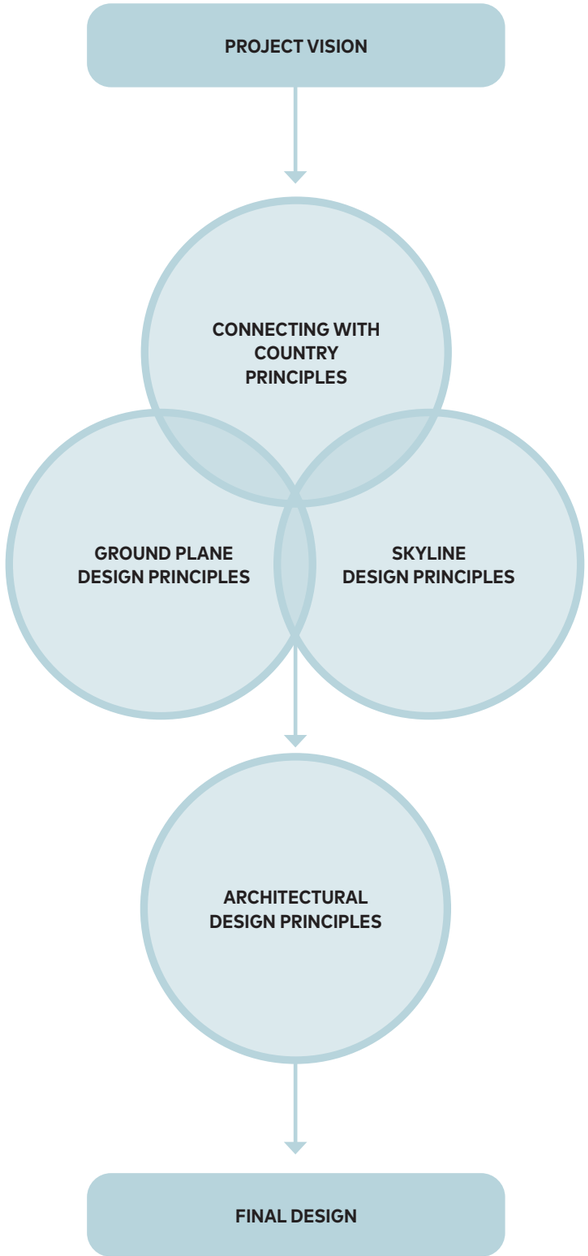
# 3.1. Design Principles

## 3.1.1 Overview

Design principles provide the framework through which the project vision is translated into coherent built form outcomes, guiding decision-making from the scale of place and public realm through to architectural resolution.

In this project at 88 Waterloo Road, the initial urban design framework has been informed by three complementary sets of principles: **Designing with Country** design principles, which ground the proposal in an understanding of place, culture, landscape and long-term stewardship; **Ground Plane Design** principles, which shape the quality, activation and legibility of the public domain and pedestrian experience; and **Skyline Design** principles, which address built form composition, height, massing and the project's contribution to the broader urban silhouette.

Building on this foundation, a further, integrated set of **Architectural Design** principles was then established to guide the detailed design of the building, synthesising and giving architectural expression to the Country, Ground Plane and Skyline principles to ensure a cohesive, legible and high-quality outcome across all scales of the project.



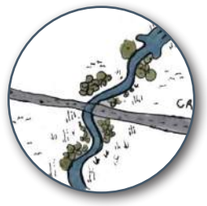

## 3.1.2 Designing with Country Design Principles

WSP's Indigenous Design Unit prepared a Connecting with Country Framework for this project, which included the authorship of the definition of key Designing with Country principles:

**1. Acknowledge Country**
Establish clear and respectful recognition of Country through entry statements, significant site markers, artworks or sculptural elements that reference the cultural identity and stories of the land.

**2. Building Identity**
Express Country through the architectural envelope by integrating patterns, motifs and forms that are informed by Aboriginal cultural narratives and place-specific themes.

**3. Gathering Spaces**
Provide places for rest, reflection and social interaction that enable people to enjoy and connect with Country, incorporating local vegetation, seating, landscape art and interpretive elements.



**4. Care for Water**
Incorporate water-sensitive urban design measures to manage stormwater responsibly, reduce runoff, and support soil recharge, reinforcing the cultural and ecological importance of water.

**5. Landscape**
Prioritise the use of local endemic plant species to reinforce the identity of Country, enhance biodiversity, create habitat for kin, and strengthen the connection between landscape and place.

**6. Wayfinding and Ground Plane**
Use colour, pattern, surface treatments and signage informed by Country to support intuitive wayfinding and embed cultural meaning within the public realm and pedestrian experience.


**7. Material Use**
Select materials that minimise impacts on Country and its resources, with a preference for recycled, re-purposed and locally sourced materials that reflect the character and geology of place.

**8. Language**
Identify opportunities to incorporate Aboriginal language within the project—such as naming of spaces, signage or interpretive elements—to share stories, strengthen cultural presence and support language continuity.

## 3.1.4 Ground Plane Design Principles

Ground Plane Design Principles refer to the potential interactions between the building proposal and the experience of a pedestrian on the street.

**1. Active and Permeable Street Edges**
Ground level frontages should prioritise active uses, including retail and residential entries, to support pedestrian activity, passive surveillance and a lively public realm along streets and park edges.

**2. Positive Park Interface**
Buildings addressing the park should provide habitable frontages, frequent openings and landscaped thresholds to reinforce safety, amenity and a strong visual and social relationship between dwellings and open space.

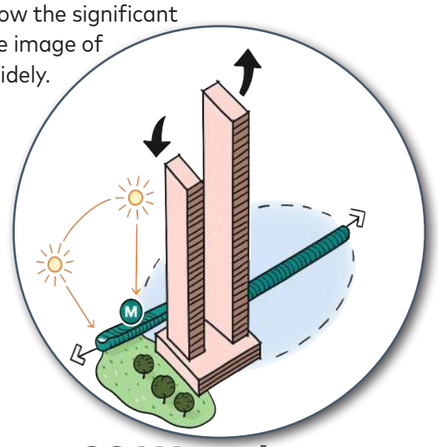
**3. Screening of Non-Habitable**
Parking and service functions at ground level should be sleeved, screened or wrapped with active uses, landscaping or architectural treatments to prevent blank edges and maintain a high-quality park and street interface.

**4. Human-Scaled Podium**
The podium should be clearly articulated through materiality, façade rhythm and setbacks to reinforce a pedestrian-scaled streetscape and reduce the perceived bulk of the development at ground level.

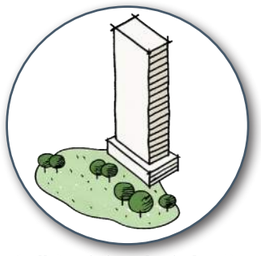
**5. Podium–Tower Legibility**
A visible differentiation between parts of the podium and tower should be expressed through changes in form, material and articulation, allowing the podium to anchor the building within the street while visually softening the presence of towers above.

## 3.1.3 Skyline Design Principles

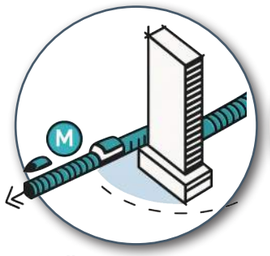
Skyline Design Principles refer to the envelope attributes visible from a distance; how the significant height of the proposal influences the image of Macquarie Park and Sydney more widely.



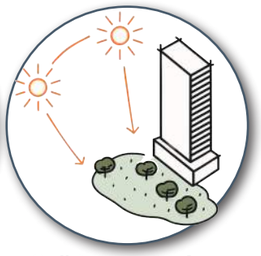

**88 Waterloo**



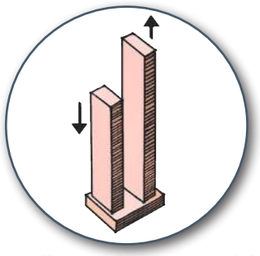
**1. "Position height & density at areas of high amenity."**




**2. "Accentuate gateways into the Innovation Precinct."**



**3. "Protect solar amenity of key open spaces."**



**4. "Provide perceptible changes in building height, including within individual developments."**

For this component, the key principles selected are consistent with the skyline strategy established in the recent State-led Macquarie Park Rezoning.

These were:

1. "Position height and density at areas of high amenity."
2. "Accentuate gateways into the Innovation Precinct."
3. "Protect solar amenity of key open spaces."
4. "Provide perceptible changes in building height, including within individual developments."

It is considered that 88 Waterloo is unusual in that it can satisfy all four of the skyline strategy principles: concentrating height and density at a high-amenity location to maximise residents receiving its benefits, while reinforcing the site's role as a key gateway into the Macquarie Park strategic centre. A height equivalent to the tallest buildings in Macquarie Park is therefore considered appropriate at this site.

A landmark tower form will establish a clear urban legibility at the Metro arrival point, balanced through slender massing and positioning to protect the usability of adjacent public open spaces. Perceptible variation in tower heights will avoid a monotonous skyline, reduce perceived bulk, and support a dynamic urban profile that maintains a human-scaled podium and high-quality street-level experience.

# 3.2. Design Options Explored

## 3.2.1 Overview

To deliver the Design Principles described, three concept envelope options were explored.

The first option shows a complying development under existing controls, based on an active approval for the site. It results in a 'contextual' building consistent with recent developments in the previously rezoned Herring Road Precinct.

As outlined previously, a tall tower height is considered appropriate, as the site meets the Skyline Strategy guidance used to identify locations for height in the State-led Rezoning: "position height & density at areas of high amenity", "accentuate gateways into the Innovation Precinct", "protect solar amenity of key open spaces", and "provide perceptible changes in building height".

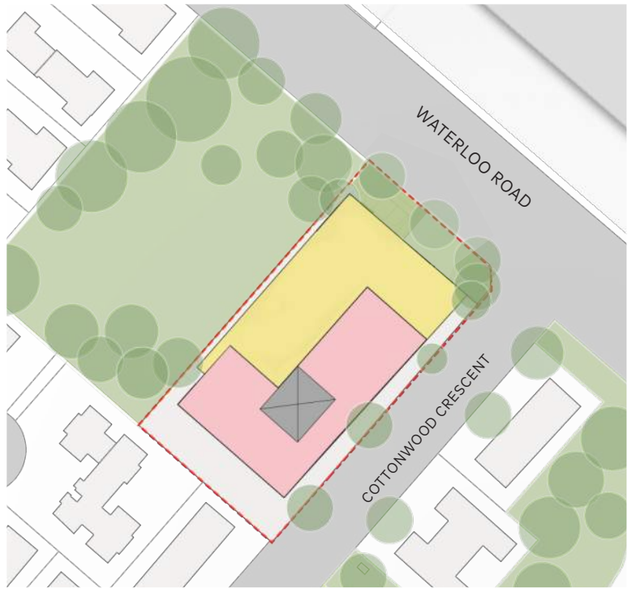
Consequently, the remaining two options propose towers of a height and scale similar to the tallest buildings enabled by the recent Trilogy planning proposal (under construction) and the Macquarie Park Innovation Precinct State-led Rezoning (finalised in late 2024).

Options 2 and 3 differ in their treatment of the tall tower. Option 2 proposes a single large tower, achieving perceptible change in building height through a substantial upper-level setback at mid-height. Option 3 explores a two-tower scheme to reduce solar impact and introduce greater skyline variety.

As will be described, Option 3 was ultimately selected as the preferred outcome, as it better leverages the site's location than a complying DA, accentuates the Metro and gateway to the Innovation Precinct, and, through the use of two towers, further breaks up the skyline while improving solar amenity to neighbours and public open spaces.

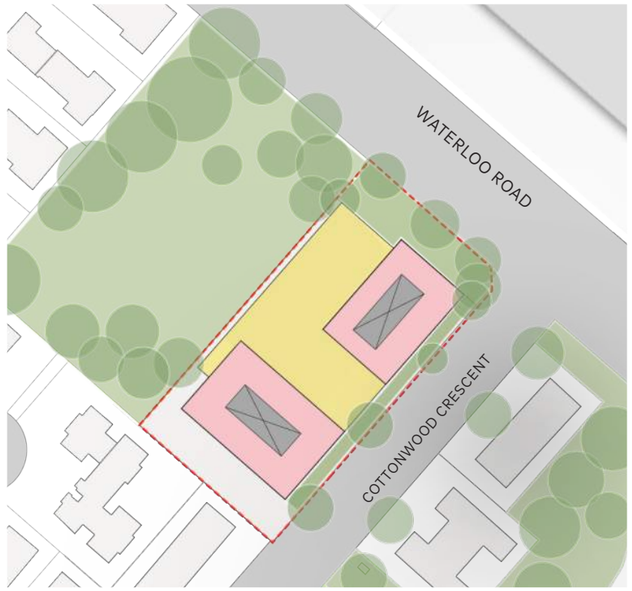

**Option 1: Complying**

As a reference option for what is the likely outcome under existing planning framework, a complying DA massing has been prepared. This matches a recent Development Approval for the site.




**Option 2: Single Tower**

Consistent with the argument made in this report, Option 2 explores this impact of a super-tall tower accentuating the Metro and entrance into the Innovation Precinct. Height variability is achieved through a significant upper level setback.




**Option 3: Two Towers**

Option 3 tests the alternative impact on the skyline and podium design if the single large tower from Option 2 were instead split into two slender towers.

### 3.2.2 Skyline Contribution

The main difference in the three options is in their impact to the skyline.

In the case of Option 1, the site 'disappears' into a cluster of lower high-rise buildings currently emerging in the Herring Road Urban Activation Precinct (including 'Midtown', the former Ivanhoe Estate). The points of the skyline that draw attention are instead Meriton's Trilogy and the tall towers proposed in the State-led Rezoning around the future Shrimptons Parklands.

Options 2 and 3 instead add a tower of equivalent scale to the taller towers mentioned, positioned at the cross-roads of the Macquarie Park University Metro Station, the University itself, the super-regional Macquarie Centre and Elouera Reserve. As described, this effect of creating a 'feature' in the skyline is consistent with the Skyline Strategy for Macquarie Park established in the State-led rezoning.

Comparing Option 2 and Option 3, it can be seen that the two tower scheme provides greater variety in the skyline, with the distance between the towers in Option 3 creating two distinct volumes vs. the single consolidated mass in Option 2.

Note that these views are indicative studies for the purposes of analysis only. A full visual impact study with properly aligned imagery has been separately submitted with this application, and selected detailed views are provided in Section 5 of this report.

Figure 60. Skyline Diagram - Option 1

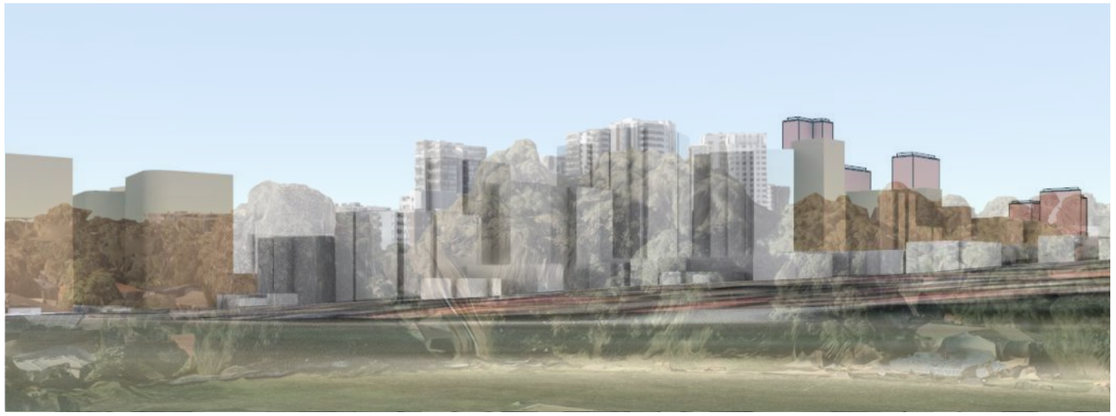


Figure 61. Indicative View from Dunbar Park - Option 1

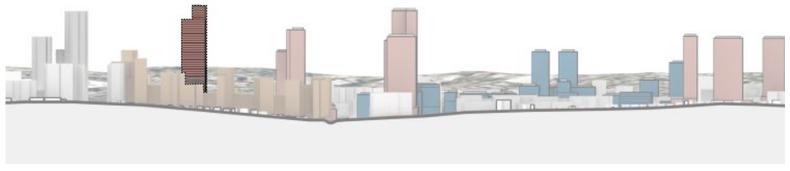


Figure 62. Skyline Diagram - Option 2

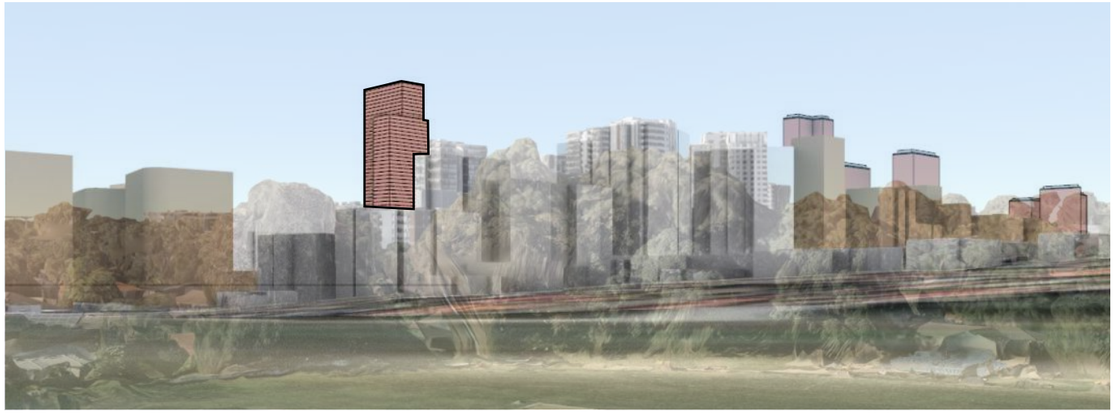


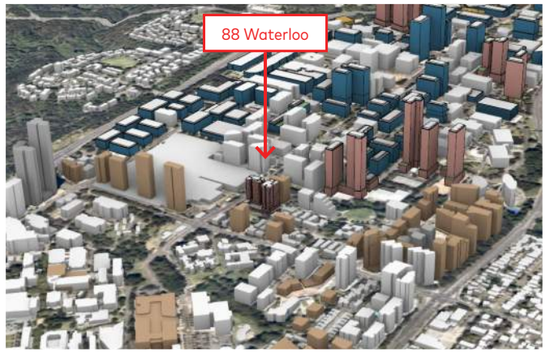
Figure 63. Indicative View from Dunbar Park - Option 2

Figure 64. Skyline Diagram - Option 3

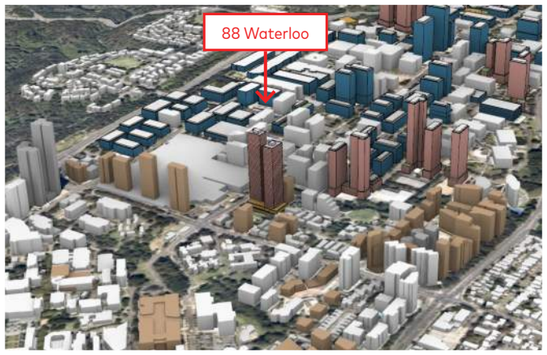
Figure 65. Indicative View from Dunbar Park - Option 3

### 3.2.3 Options Comparison

To conclude the Options phase, a comparative matrix of each scheme against the project's ground plane and skyline design principles was undertaken. As can be seen here, the outcome of the analysis was to progress the two tower approach (Option 3).








| Ground Plane Design Principles | Option 1 - Complying | | Option 2 - Single Tower | | Option 3 - Two Towers | |
|---|---|---|---|---|---|---|
| **Active and Permeable Street Edges** | ✔ ✔ ✔ | Cafe and retail facing Waterloo Road linear park. | ✔ ✔ ✔ | Cafe and retail facing Waterloo Road linear park. | ✔ ✔ ✔ | Cafe and retail facing Waterloo Road linear park. |
| **Positive Park Interfaces** | ✔ ✔ ✔ | Ground level residential communal open space facing onto park. | ✔ ✔ | Podium provides potential for habitable frontages facing onto park. | ✔ ✔ | Podium provides potential for habitable frontages facing onto park. |
| **Screening of Non-Habitable Uses** | - | Able to be accommodated in future design detail. | - | Able to be accommodated in future design detail. | - | Able to be accommodated in future design detail. |
| **Human-Scaled Podium** | ✔ | Lack of defined podium. | ✔ ✔ | Clearly defined podium extends 5-storeys above ground. | ✔ ✔ | Clearly defined podium extends 5-storeys above ground. |
| **Podium-Tower Legibility** | ✔ | Lack of defined podium. | ✔ ✔ | Clear podium-and-tower typology. | ✔ ✔ ✔ | Clear podium-and-tower typology, accentuated by the second tower. |
| **Skyline Design Principles** | | | | | | |
| **Position height & density at areas of high amenity** | ✔ | Complies with LEP and DCP provisions but not responding to future context MPIP | ✔ ✔ ✔ | Increased density adjacent to open space and public amenities. | ✔ ✔ ✔ | Increased density adjacent to open space and public amenities. |
| **Accentuate gateways into the Innovation Precinct** | ✔ | Follows existing form and scale without highlighting entry point to MPIP | ✔ ✔ ✔ | Opportunity for a landmark building at an entrance into the Innovation precinct. | ✔ ✔ ✔ | Opportunity for a landmark building at an entrance into the Innovation precinct. |
| **Protect solar amenity of key open spaces.** | ✔ ✔ ✔ | Low building height causes little to no additional overshadowing beyond what is created by other sites. | ✔ ✔ | Key open spaces are affected by single bulky shadow. | ✔ ✔ | Key open spaces are affected, but overall impact reduced by split towers. |
| **Provide perceptible changes in building height, including within individual developments** | ✔ | Two towers at different orientations provide some envelope variation. | ✔ ✔ | Significant upper level setback provides some height variation. | ✔ ✔ ✔ | Two slender towers with meaningful height difference provides distinct variation in built form. |

## 3.3. Final Structure Plan

The structure plan here shows the developed outcome of the envelopes study, which selected the two-tower option to be continued through to the State Significant Development Application.

The scheme responds to the existing and desired future character established by recent surrounding development and the State-led TOD rezoning study, while also protecting solar amenity for adjacent open space and nearby residential development.

Two towers are proposed to be located at the Waterloo Road corner and at the southern end of the site. Communal open space is positioned between the towers and toward the north-western corner of the site above the podium to maximise access to direct sunlight. A 10m setback is provided along the Waterloo Road frontage to accommodate the future linear park, as well as address the relevant active frontage requirements along the DCP consistent with other established and planned development.

The towers are built to the podium building line to reinforce the Waterloo Road corner and respond to the urban character established by 2–10 Cottonwood Crescent, which is defined by a strong and consistent building line with zero tower setbacks.


Figure 66. Structure Plan

# 3.4. Proposed Envelope

## 3.4.1 Proposed Setbacks

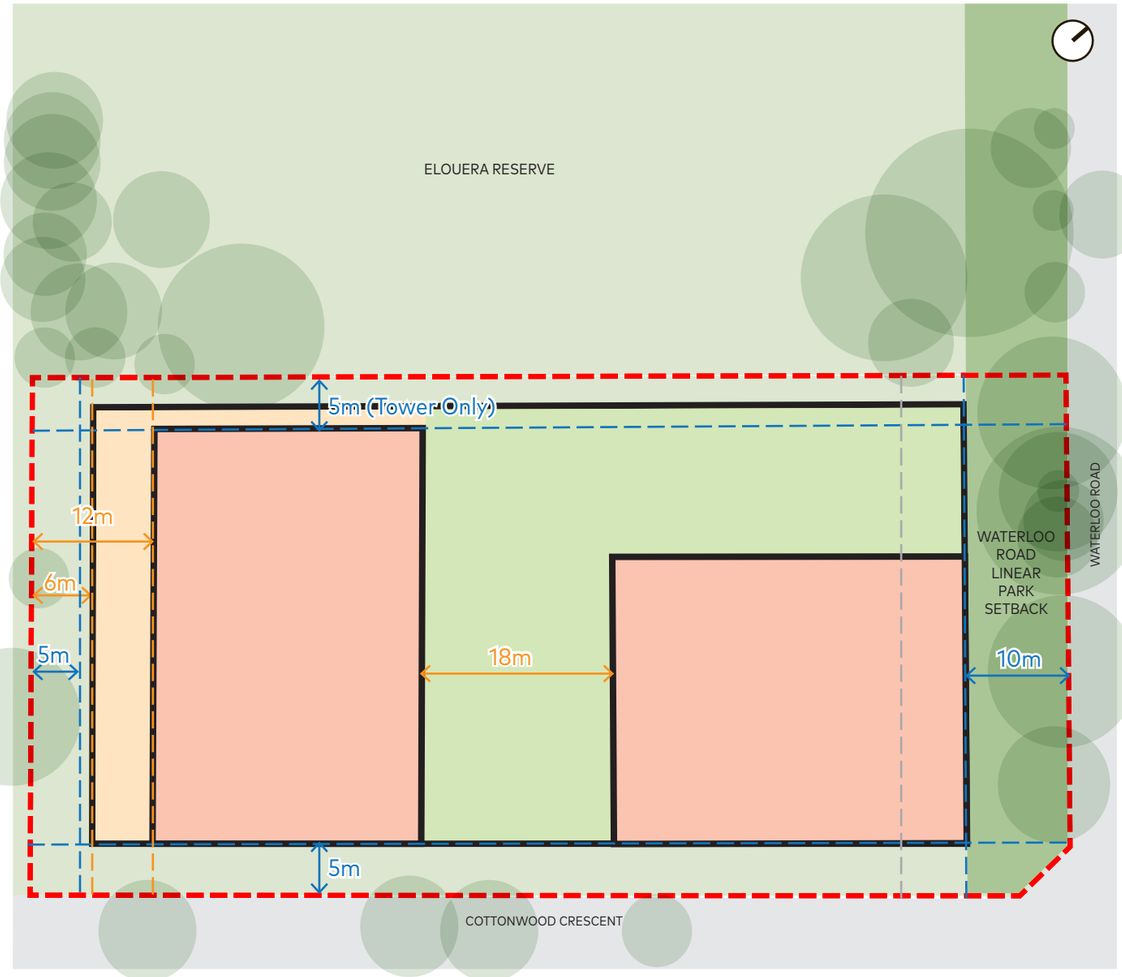



**Figure 67. Indicative Site Plan**

Proposed envelopes are driven by setbacks that respond to the existing DCP and Macquarie Park Design Guide, as well as considerations related to increased density on this site.

DCP-compliant setbacks are provided along the Cottonwood Crescent and Waterloo Road frontages, including the 10m landscaped corridor on Waterloo (a Council initiative described earlier in this report).

Along the western boundary facing Elouera Reserve, a merit based setback is proposed to allow for a wide podium on a narrow site  Towers are to be set back 5m to match the current DCP control..

Southern side setbacks of 6-12m are driven by ADG requirements, based on the assumption that the adjoining southern lots may be redeveloped as high density residential.

## 3.4.2 Resultant Envelope

Figure 68. Southern Envelope View

Figure 69. Northern Envelope View

The proposed envelope comprises of two towers above a podium, responding to the existing and desired future character of the locality as a high-rise environment located close to key amenities. The two towers are slender in proportion and will contribute positively to the evolving Macquarie Park skyline.

The podium is four to five storeys above ground and provides a human-scaled base to the overall built form. Communal open space is located on the podium roof and will be visible from street level, providing visual connection to and from the adjacent public domain.

The taller of the two towers is positioned on the podium building line, accentuating the Waterloo Road corner and reinforcing the Macquarie University Metro Station as a key gateway within Macquarie Park. The second tower, located toward the southern portion of the site, is also built to the podium along Cottonwood Crescent, aligning with the built form character established by the approved development at 14–16 Cottonwood Crescent and the recent development at 2–10 Cottonwood Crescent.

## 3.4.3 Skyline Analysis

The skyline of Macquarie Park is undergoing transformation. Previous rezonings and the recent State-led TOD rezoning have introduced very tall residential towers in all directions beyond the commercial core. At present, the tallest development is the Trilogy project by Meriton at the M2 entry to Macquarie Park, which is visible in all directions from a significant distance.

The proposed towers will join Trilogy in acting as a landmark, reinforcing the Macquarie University Metro Station as a key public transport gateway into Macquarie Park as a developing CBD-like environment.

As shown on this page, the building heights proposed satisfy key components of the Macquarie Park Skyline Strategy. The towers signpost Elouera Reserve in the skyline, "positioning height & density at areas of high amenity", they "accentuate gateways into the Innovation Precinct" through their positioning on Waterloo Road, and the difference in the two towers "provide[s] perceptible changes in building height".


Figure 70. Location Map

**LEGEND**

- SUBJECT SITE
- EXISTING BUILDINGS
- RESIDENTIAL
- COMMERCIAL
- APPROVED DA


Figure 71. The proposal with future context envisaged in Macquarie Park TOD Rezoning

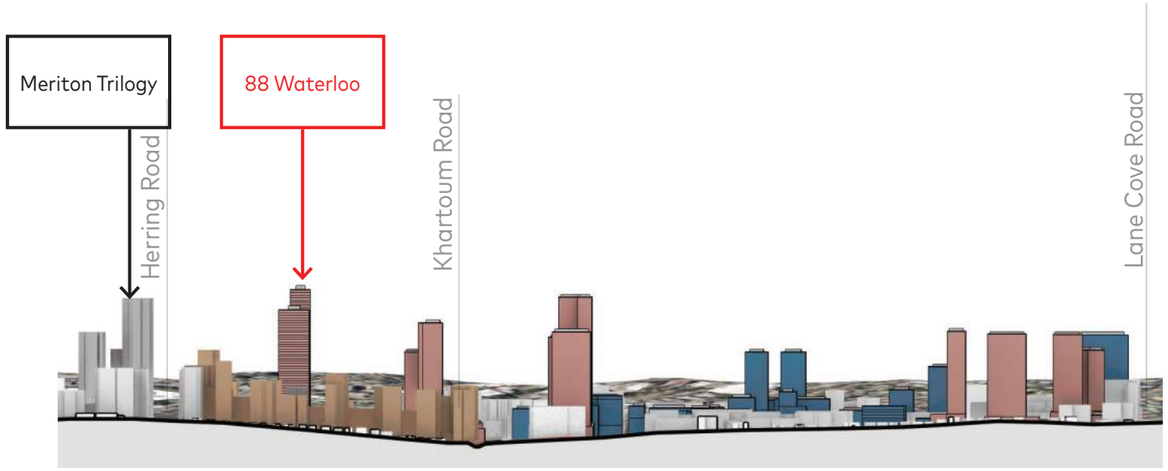



Figure 72. Section A (Epping Road View)

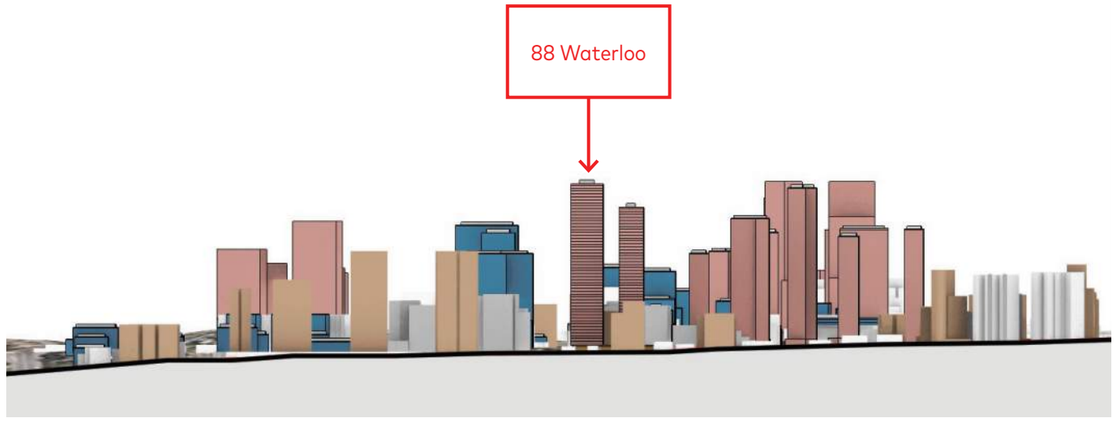



Figure 74. Section B (Herring Road View)

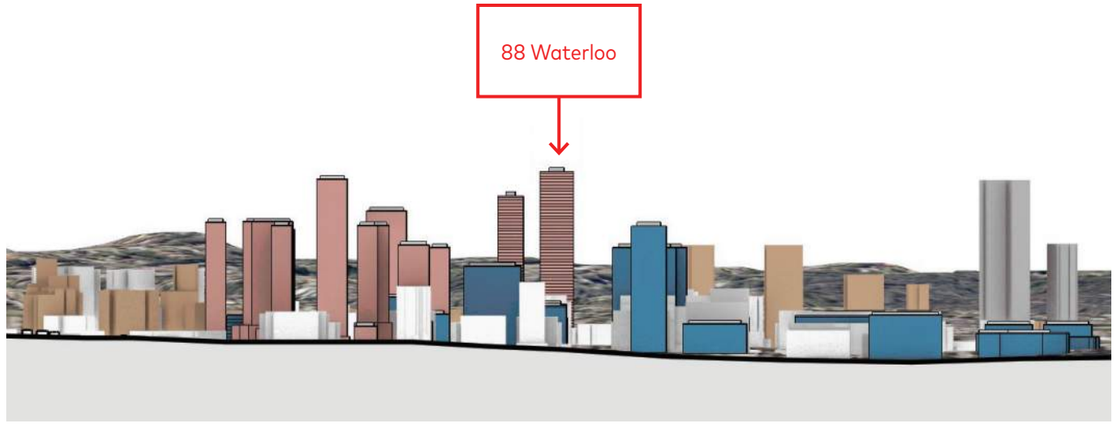



Figure 75. Section C (Lane Cove Road View)

### 3.4.4 Impact on Public Open Spaces

The final component of the Macquarie Park Skyline Strategy is to "protect solar amenity of key open spaces".

The overshadowing analysis here demonstrates that shadows cast by the envelope heights proposed are fast-moving, with differing impacts to public open spaces throughout the day.

The envelopes affect four existing parks, each of which does not have any specific solar protections in the planning framework. The largest of these is Wilga Park, a local park with a positive character. This will be most affected by the development at 11am, when the envelopes overshadow approximately 66% of the park area. However the impact is quick, dropping to a 12-13% contribution at 10am and 12pm.

The envelopes also affects one future park - the Shrimptons Parklands - which does not yet exist but is envisaged in the planning framework. The Macquarie Park Design Guide identifies that the future Shrimptons Parklands should be no more than 50% be overshadowed between 9.00 am and 3.00 pm at mid-winter.

The envelopes proposed for 88 Waterloo will overshadow approximately 24% of the future Shrimptons Parklands at 11am. Again, this overshadowing is short; it falls to 0% at 11am and 5% at 1pm. When combined with potential future building envelopes (based on approvals and the illustrative design shown in the MPIP Rezoning), the cumulative overshadowing may exceed 50%, however at all times of day there are large areas of either or both  Wilga Park and the future Shrimptons Parklands in sunlight.

Given the Macquarie Park Design GUide only covers the area of the State-led rezoning, it is proposed to modify this control to and extend it to cover the adjoining Wilga Park and [future] Shrimptons Parklands (see Chapter 4: Facilitating Planinng Framework).

Further overshadowing analysis of the final architectural design proposal is provided in Chapter 5.

**LEGEND**

- Subject Site
- Overshadowing from Existing Buildings, DA Approvals & Indicative Envelopes In The State-Led Rezoning Area
- Overshadowing by the Proposed Envelopes of 88 Waterloo
- Wilga Park & Shrimptons Parklands
- Other Open Spaces


9.00am

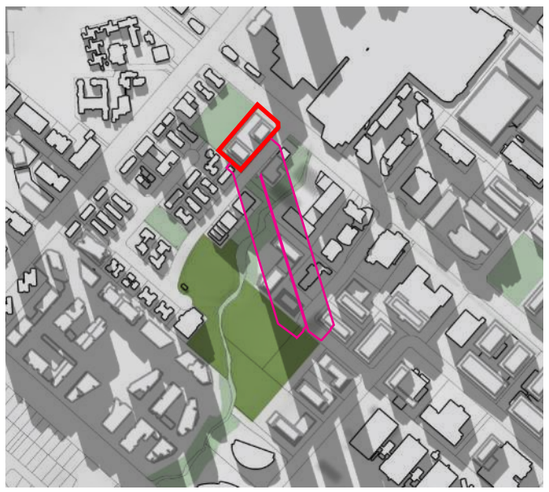
10.00am

11.00am

| | WILGA | SHRIMPTONS | COMBINED |
|---|---|---|---|
| 9AM | 0 | 0 | 0 |
| 10AM | 12 | 0 | 5 |
| 11AM | 66 | 0 | 27 |
| 12 NOON | 13 | 24 | 19 |
| 1PM | 0 | 5 | 3 |
| 2PM | 0 | 0 | 0 |
| 3PM | 0 | 0 | 0 |

Figure 76. Percentage of park/s areas overshadowed by 88 Waterloo Road.

12.00pm

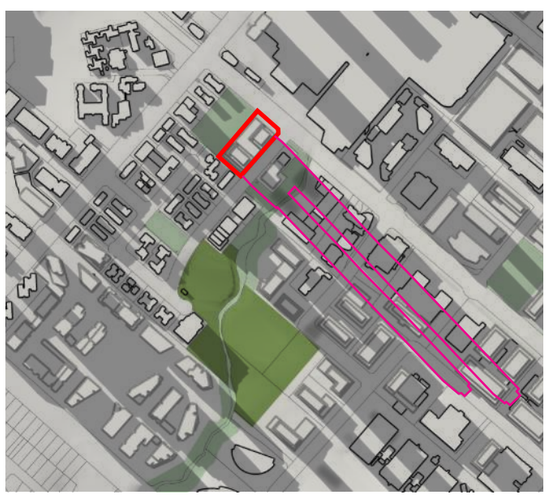


1.00pm

| | WILGA | SHRIMPTONS | COMBINED |
|---|---|---|---|
| 9AM | 48 | 45 | 46 |
| 10AM | 33 | 42 | 38 |
| 11AM | 66 | 47 | 54 |
| 12 NOON | 22 | 60 | 45 |
| 1PM | 18 | 25 | 22 |
| 2PM | 23 | 11 | 16 |
| 3PM | 28 | 8 | 16 |

Figure 77. Percentage of park/s areas overshadowed by all development including existing buildings, DA approvals, the State-Led rezoning building envelopes and the proposed envelope of 88 Waterloo Road. Figures are approximate and may not capture the complete or most up to date development proposals on surrounding sites.

2.00pm



3.00pm

# 4. Facilitating Planning Framework

# 4.1. Proposed LEP Maps

## 4.1.1 Floor Space Ratio Map

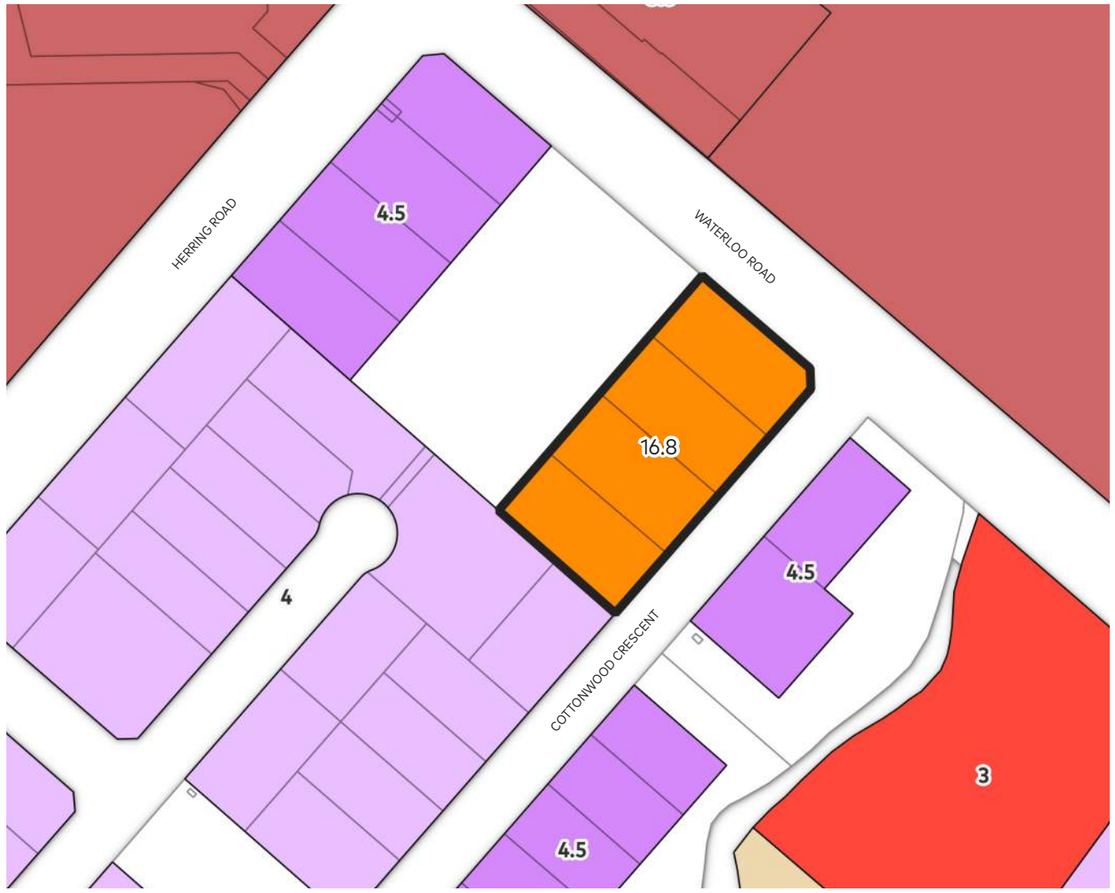



Figure 78. Proposed FSR Map

To match the density proposed, the FSR map in the Ryde LEP is proposed to be increased from 4.5 (existing) to 168 (proposed).

An affordable housing percentage of 10% of uplift is proposed to be included within the GFA this facilitates.


Figure 79. Current FSR Map

## 4.1.2 Height of Building Map


Figure 80. Proposed HOB Map

In order to facilitate the design as submitted, the HOB map in the Ryde LEP is proposed to be modified from a metres-from-ground control of 65m (existing) to a datum control of RL258m AHD.

The proposed control is based on a detailed architectural design for the site, which lists an RL of 255.4 at its uppermost point. The additional 2.6m is to allow flexibility for future design development (such as increased floor to floors or additional rooftop plant) without being sufficient to fit a full habitable floor.


Figure 81. Current HOB Map

## 4.2. Proposed Site-Specific Development Controls

**Streetscape**

The development is designed to enhance the existing streetscape and align with the desired future local character.

- All street and podium-level interfaces facing the Waterloo Road linear park should be active or contributory to the public domain.
- The corner of the development at Waterloo Road and Cottonwood Crescent should be accentuated to address this prominent intersection..
- Along Cottonwood Crescent, the lobbies to both towers should be strategically located to balance basement car park and service entries, and to avoid continuous inactive frontage exceeding 50% length of the interface.
- The edge of the subject site adjoining Elouera Reserve naturally slopes from north to south. A merit based assessment shall be made of the interaction with the park.
- Any above-ground parking should be either sleeved or screened to minimise inactive interfaces facing the public domain.

**Setbacks**

The purpose of the setback controls is to ensure delivery of the future Waterloo Road linear park within the subject site, while maintaining appropriate amenity to adjoining existing buildings and their redevelopment potential.

- Provide a minimum of 10m setback from Waterloo Road.
- Provide a minimum of 5m setback to Cottonwood Crescent.
- Setbacks to the southern boundary must comply with the minimum ADG separation distances.
- A minimum 5m tower (upper level) setback is to be provided to the levels above podium along the western boundary adjoining Elouera Reserve.

**Bulk and Scale**

The bulk and scale of the proposed development must deliver a human-scale podium while responding to the existing and desired future character of the locality.

- A distinct podium shall be provided, at a human scale of 5-8 storeys.
- Upper levels shall be split into two distinct tower forms, to provide variety in the skyline and minimise building bulk.
- Height transition is to be provided, with lower building heights toward the southern portion of the subject site where it is further from the Macquarie University Metro Station. That height variety shall be a minimum of 4-storeys to be visible in the skyline.

**Open Space Solar Access Protection**

It is proposed to revise the controls listed in the Macquarie Park Design Guide and the DCP, in order to cover both Wilga Park and Shrimptons Parklands - a difference from the current condition where the DCP sets one control and the State-led Design Guide sets another. Given the control would cover both parks, and analysis shows that at least one park should receive significant solar at any hour of the day, it is proposed that the control be the following:

- Overshadowing from existing, proposed and an estimate of potential future built form must be demonstrated to not exceed more than 50% of Shrimptons Parklands and Wilga Park for more then 3 hours of the day between 9-3 on the winter solstice.

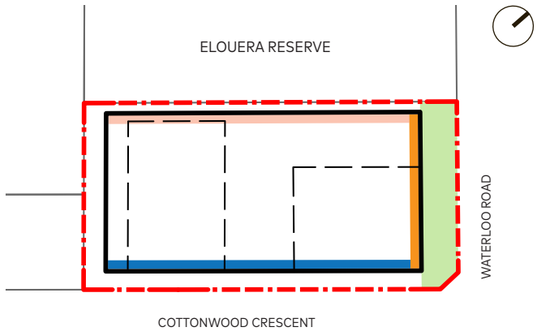



Figure 82. Public Interface

**LEGEND**

- SITE
- ACTIVE OR CONTRIBUTORY INTERFACE
- AVOID CONTINUOUS INACTIVE FRONTAGE EXCEEDING 50%
- MERIT BASED

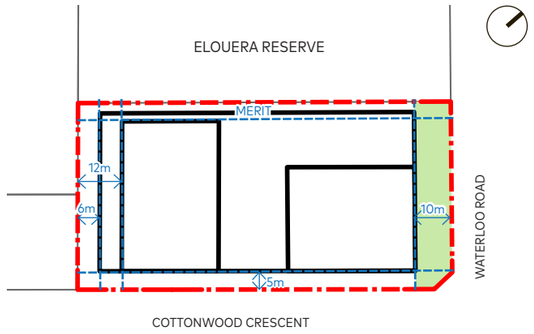



Figure 83. Setbacks

**LEGEND**

- SITE
- SETBACKS

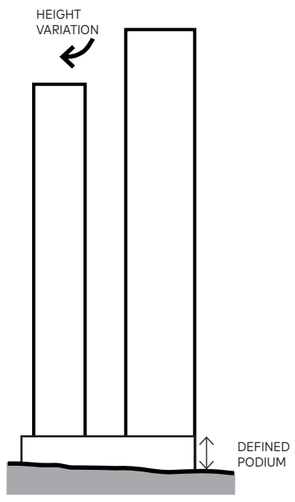



Figure 84. Podium Height And Built Form Transition


Figure 85. Wilga Park and Shrimptons Parklands

# 5. Detailed Architectural Design Proposal

## 5.1. Architectural Design Principles

Based on our analysis of the local context
4 key design principles were defined
during the discovery phase of the design.

### Connecting with Country

The team worked with the Wallumedegal and Darug people to respect, connect and promote aboriginal culture throughout the design. To create a seamless dialogue between culture, built form and landscape.

### Civic Presence

The building is conceived as a landmark within the precinct and skyline. The sites unique aspect of three frontages, with Elouera Reserve and the Linear Park, its presence on the street and place making has been carefully considered.

### Urban Backyard

The communal open spaces is conceived as an 'urban backyard'. A place for active and passive uses, with natural elements for play.

### Living Benchmark

Setting new standards for sustainable urban living and passive design. Refer to section 5.12.6.

# 5.2. Designing with Country - Architecture

## 5.2.1 Overview

In addition to the broader Connecting with Country principles described earlier in this report, the consulting DwC consultant WSP provided some themes for direct integration into the architectural design. These included:

### Black Snapper & Cockatoo

The WALLUMAI (Black Snapper) is the Wallumedegal  totem animal and traverses the local water ways between the fresh and salt water of the harbour. The GIRRAWI (yellow crested cockatoo) was also another important animal and where present on the site during the Walk on Country.

### Geological landscape

Connecting to Earth Country through horizontal forms, colours and texture.

### Landscaping to reinforce pre settlement

The site is located between 2 ecosystems and how can this project  help reconnect those ecosystems.

### Bushtucker & medicinal species

The elders spoke a lot about how different species can be used in everyday life, for cooking, for health, for mosquito repellent, to understand the seasons.

### Natural materials, colours, textures

Connecting to Country through the use of natural materials, colours and textures found in nature and on the site.

### Use of language

The use of Wallumedegal and Darug language through the development to continue to pass down the language to future generations.

### Story Telling

Using the design of building entries, communal areas and landscaping to allow opportunities for story telling.

## 5.2.2 Designing with Country - Architectural Responses

### Conceptual Response

The following indicates how the Connecting with Country ideas are represented in the proposed design of the built form and landscape.

### Totem

Each building will tell the story of the WALLUMAI (Black Snapper) and GIRRAWI (Yellow Crested Cockatoo). The colours of the animals inform the colours of the tower forms.

### Water Country

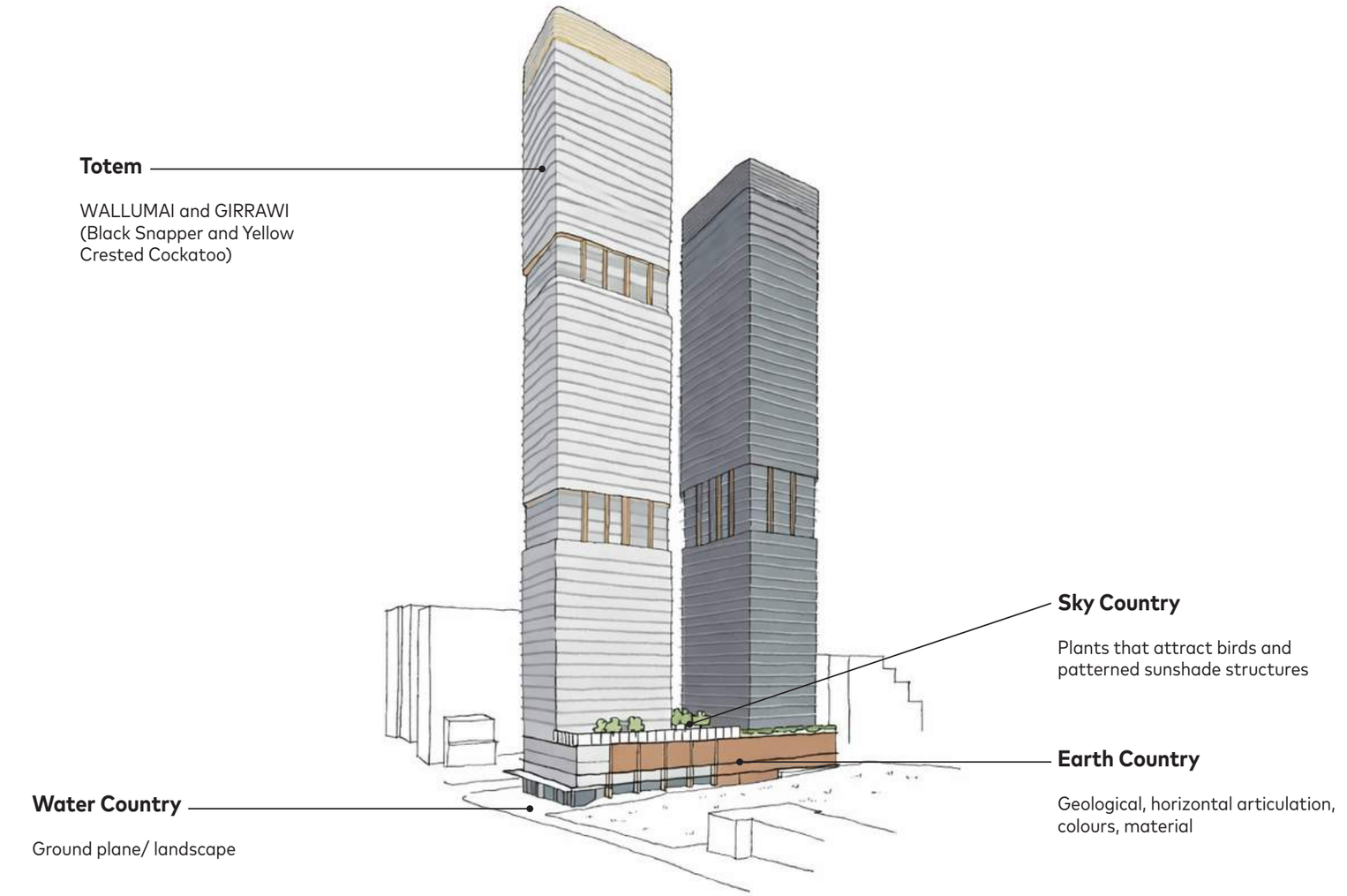
The ground plane and landscape design will connect to Water Country and use species that reinforce the original landscape.

### Earth Country

Connecting to Earth Country and the 'living zone' informs the podium design that connects people and the streetscape to Country.

### Sky Country

Through the use of certain species that will help attract birds and insects to the communal open space on the podium rooftop, along with sunshade structures that are inspired by the Emu in the sky.



## 5.3. Civic Presence

The site is uniquely positioned. Opposite the Macquarie Centre, the train station and located at the northern end of Waterloo Road the site is perceived as a landmark/ gateway opportunity to the precinct.

The site is also unique within the public domain. The site has three frontages, two of these to public spaces - Elouera Reserve and the Linear Park along Waterloo Road.

The proposed design carefully considers these unique aspects of the site, its civic presence within the scale of the street and the skyline.

Connecting with Country is deeply embedded into the architecture and design of the built form of the building.

The four storey street wall provides a human scale to the street and becomes the 'living zone' for plants, animals and species to inhabit.  The horizontal expression reflects the geology of the landscape, with cantilevering slab edges, expressed battens, glass and perforated metal panels are a mix of earthy tone colours that provide a textural character to the street.

The towers are not identical. They vary in height and their super structure, which is expressed within a recessive, combined with curved corners to reduce their bulk makes them read as two slender articulated forms within the skyline.

## 5.4. Urban Backyard

The Urban Backyard is a concept we have been developing in our projects. To create communal open space that allows for both active and passive uses in a landscape setting that integrates nature play for children.

The podium rooftop provides an ideal space for this concept. One large communal open space connected with internal communal functions, located all on the same level, to provide an holistic approach and connection between indoor and outdoor communal uses.

The design of the communal area includes:

- A lap pool and childrens splash area
- BBQ and outdoor eating area
- Passive lawns and gathering spaces
- Bushtucker, edible and medicinal species
- Work from home spaces both internal and external
- Nature play
- Yoga/ wellness spaces
- Sauna and cold plunge
- Dining/ Kitchen room
- Multi purpose room
- Games room

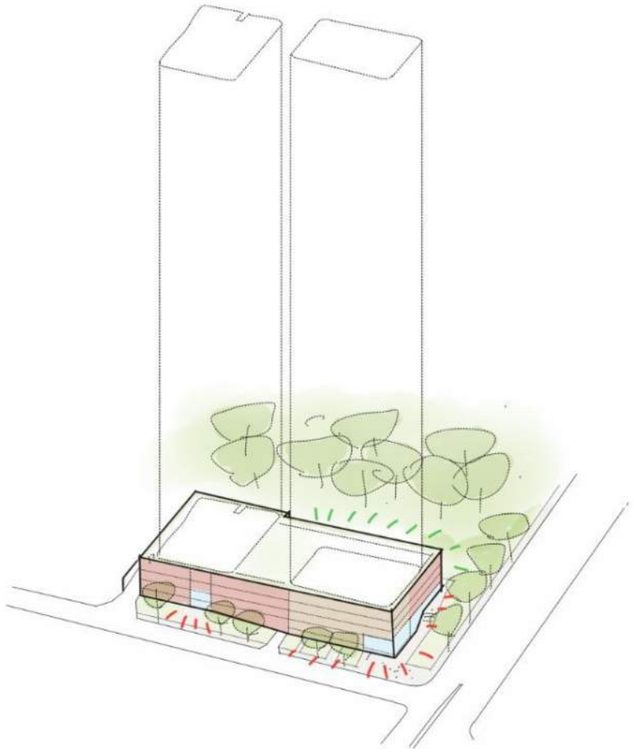






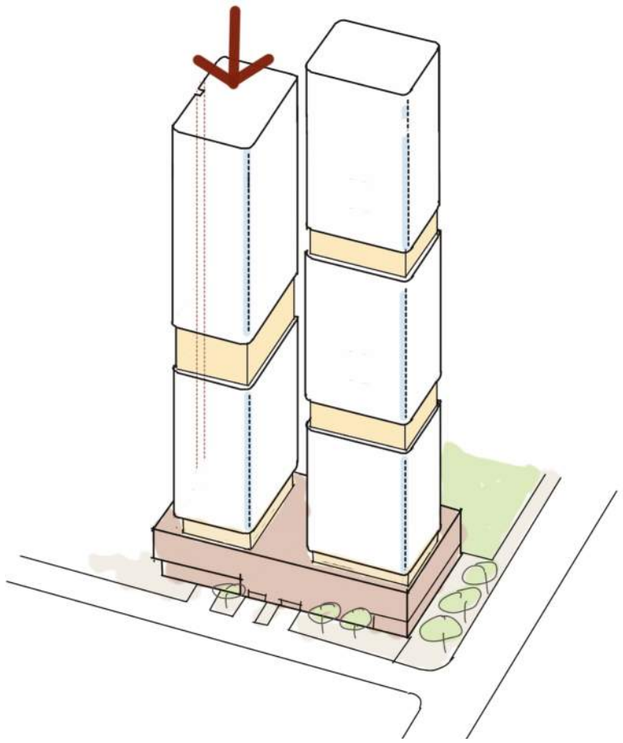


## 5.5. Key Design Moves



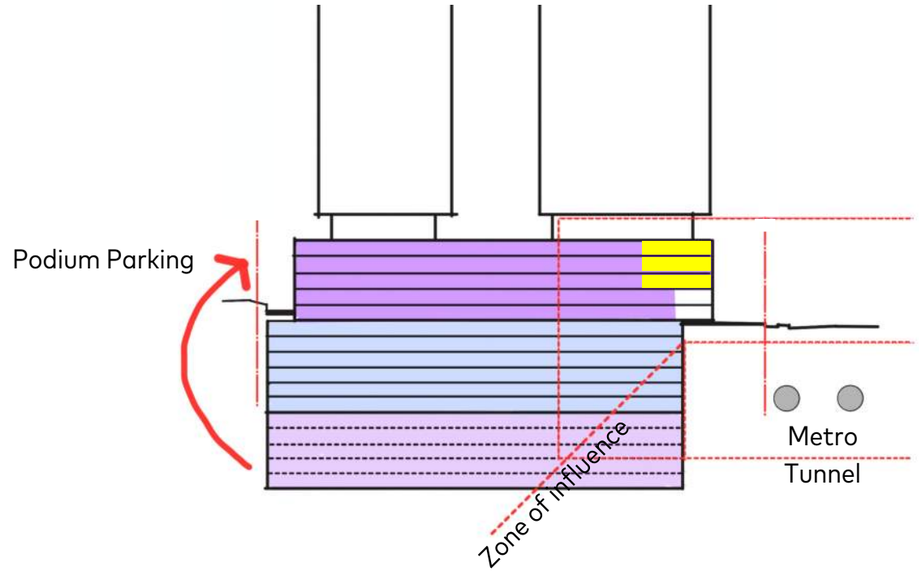
### Active Frontages

The streetscape is defined by a 4 storey podium built form integrated with landscape setbacks that provides a human scale to the street. The ground plane is activated through grand entry lobbies, retail use and townhouses.



### Tower Articulation

The tower is seen as a carefully crafted element in the skyline. With varied building heights, expressed super structure, rounded corners and a setback 'waist' to appear floating off the podium.




### Podium Parking

The metro tunnel is located directly adjacent the Waterloo Road boundary. A deep basement structure would impact the tunnels zone of influence. As such car parking is located in the podium. The character of the podium is designed to seamlessly disguise between apartments and car parking.

## 5.6. Perspective Views

# 5.7. Design Overview

## 5.6.1 Lower & Upper Ground

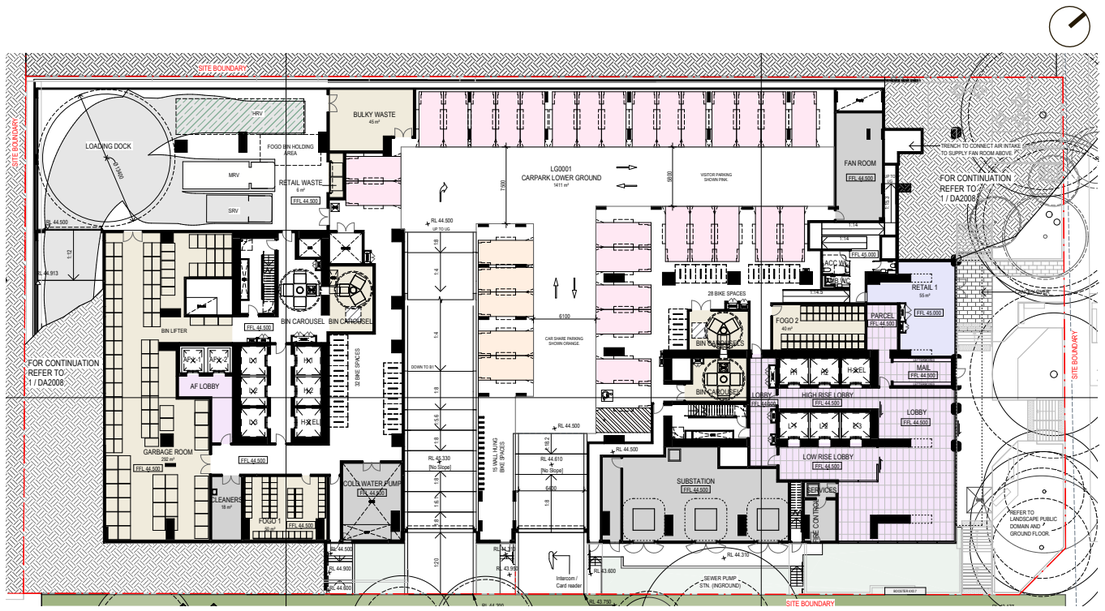



Figure 1. Lower Ground

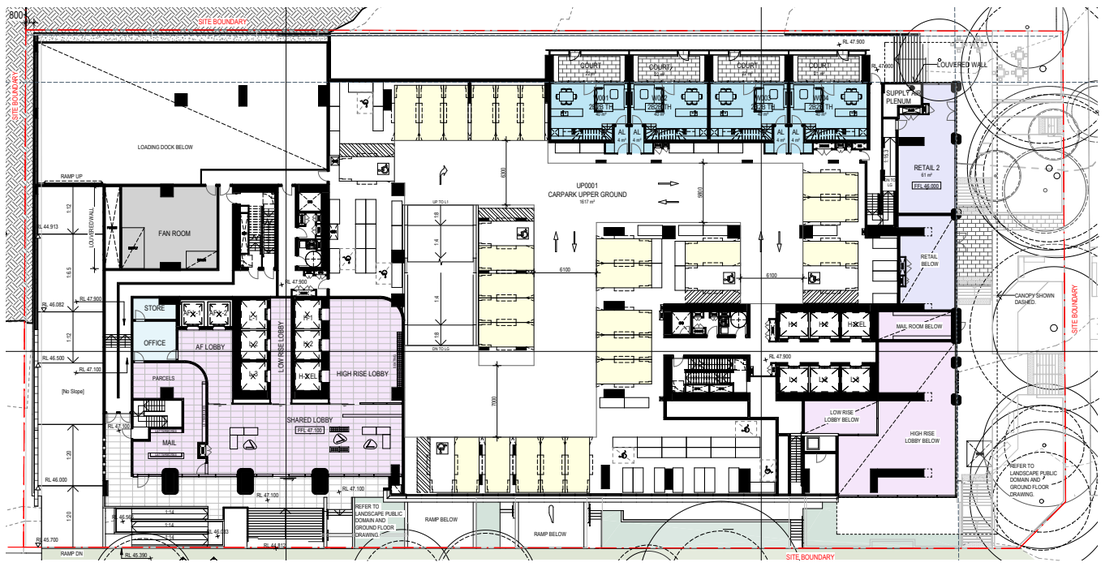



Figure 2. Upper Ground

## 5.7.1 Tower Typical Plans

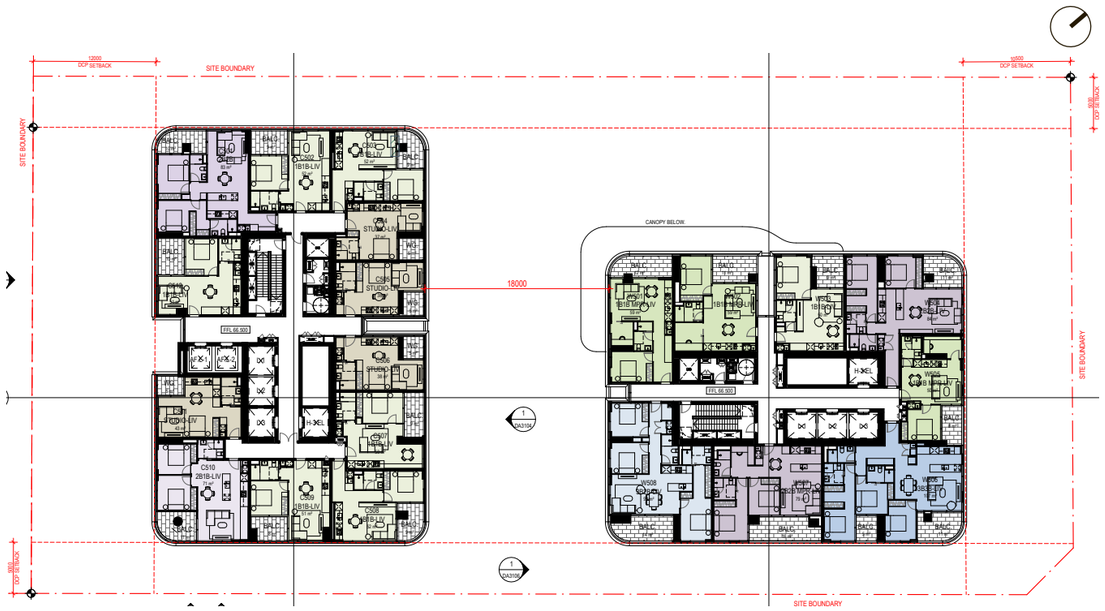



Figure 3. Levels 5-9

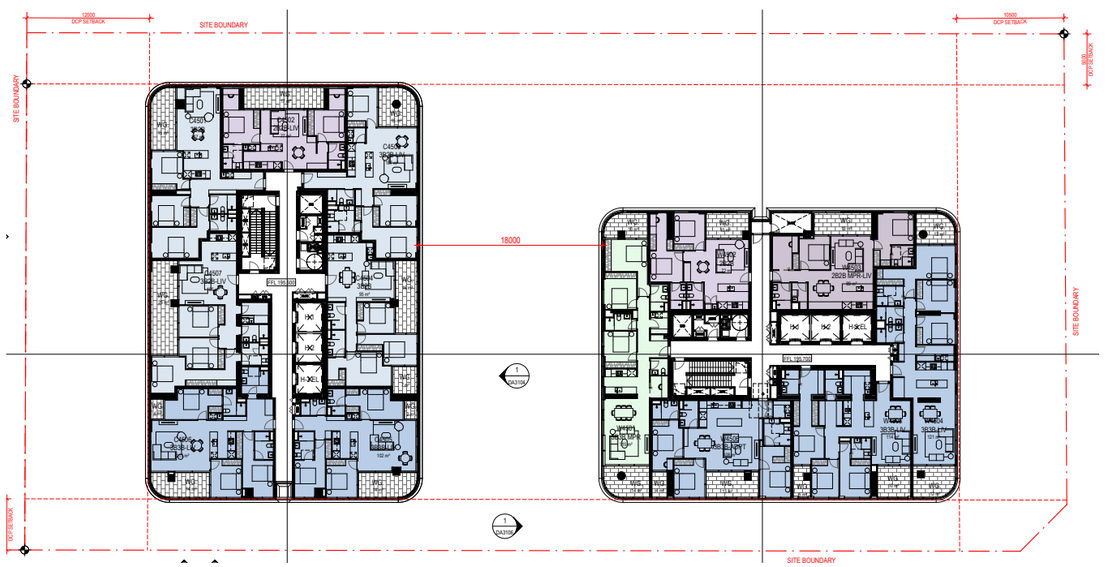



Figure 4. Levels 45-50

# 5.8. Sections

## 5.8.1 Section 1

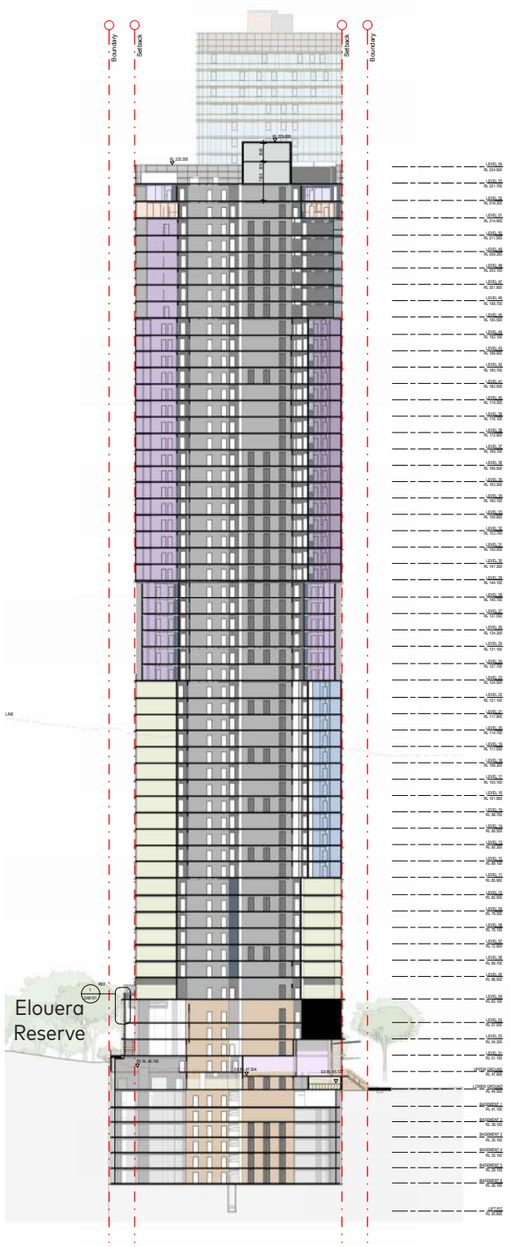



Figure 5. Southern Tower East-West Section (DA3201)

## 5.8.2 Section 2

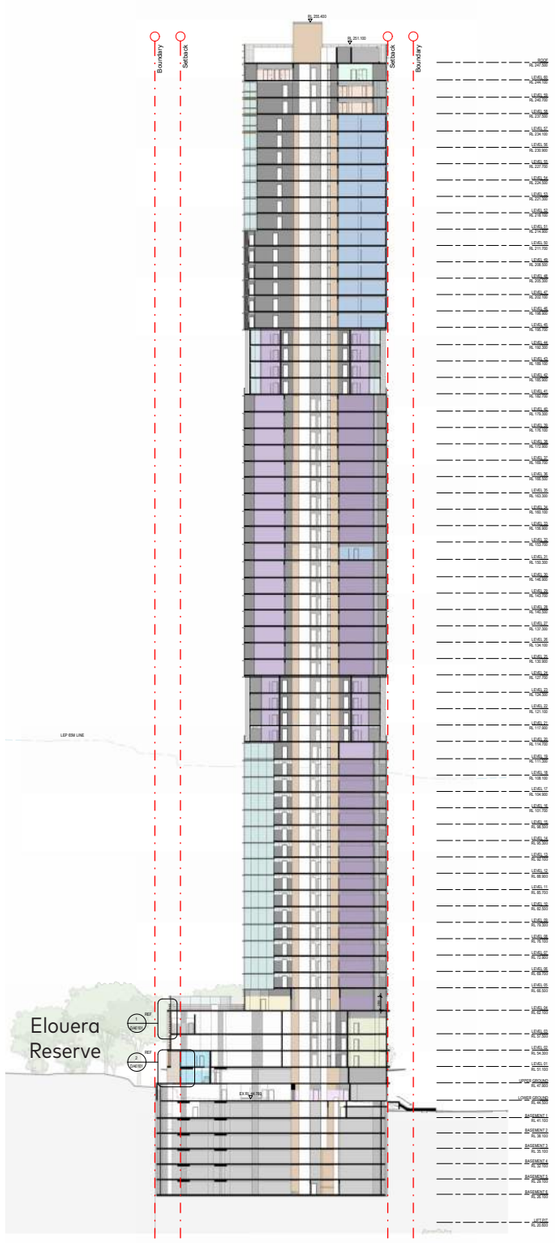



Figure 6. North Tower East-West Section (DA3202)

## 5.8.3 Section 3

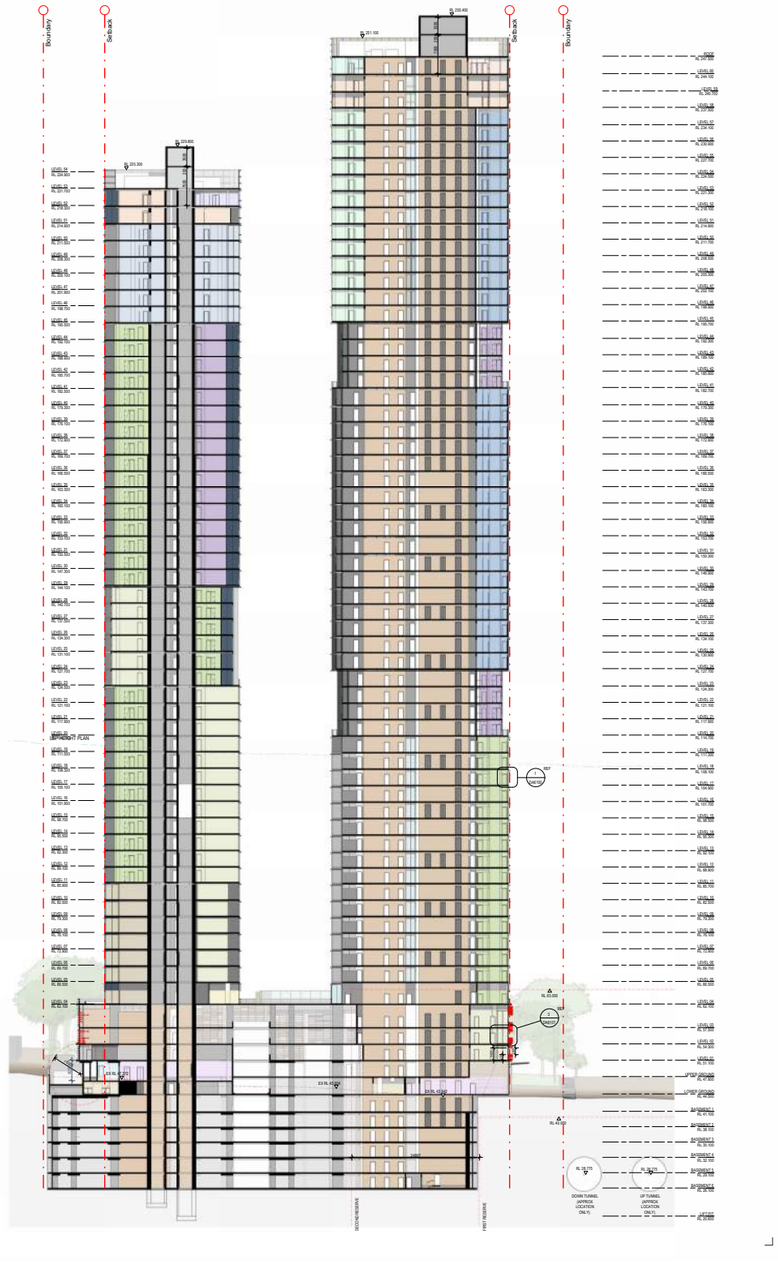
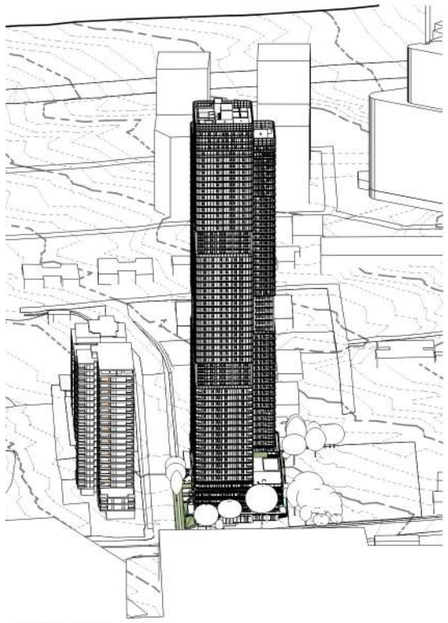



Figure 7. North-South Cross Section (DA3203)

## 5.9. Sun Eye Diagrams

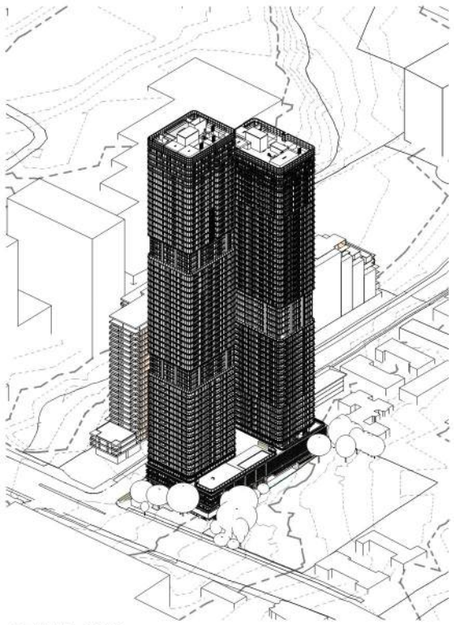
### 5.9.1 Sun Eye View with Existing Context



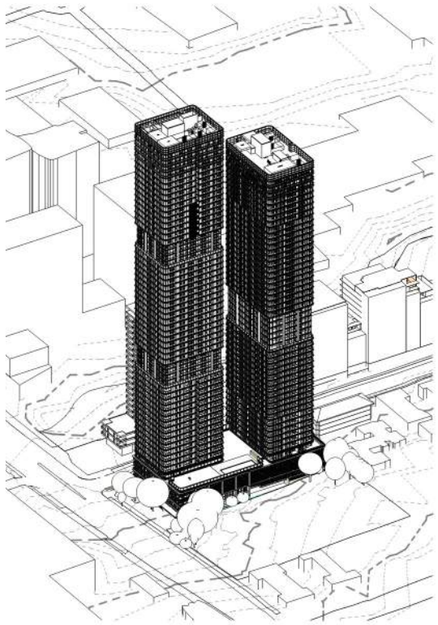
1 21 JUNE - 9 00AM

2 21 JUNE - 10 00AM

3 21 JUNE - 11 00AM

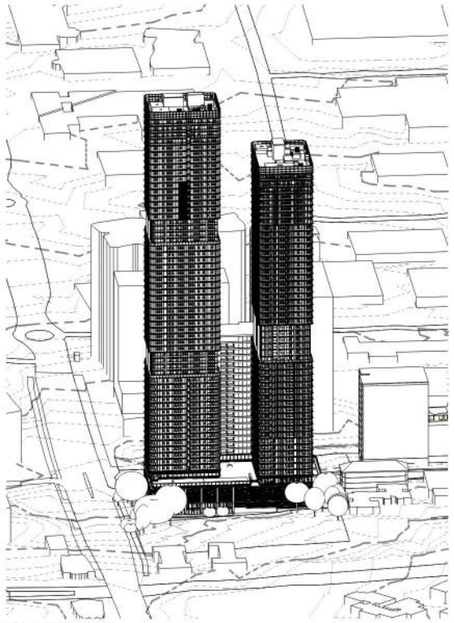


4 21 JUNE - 12 00PM



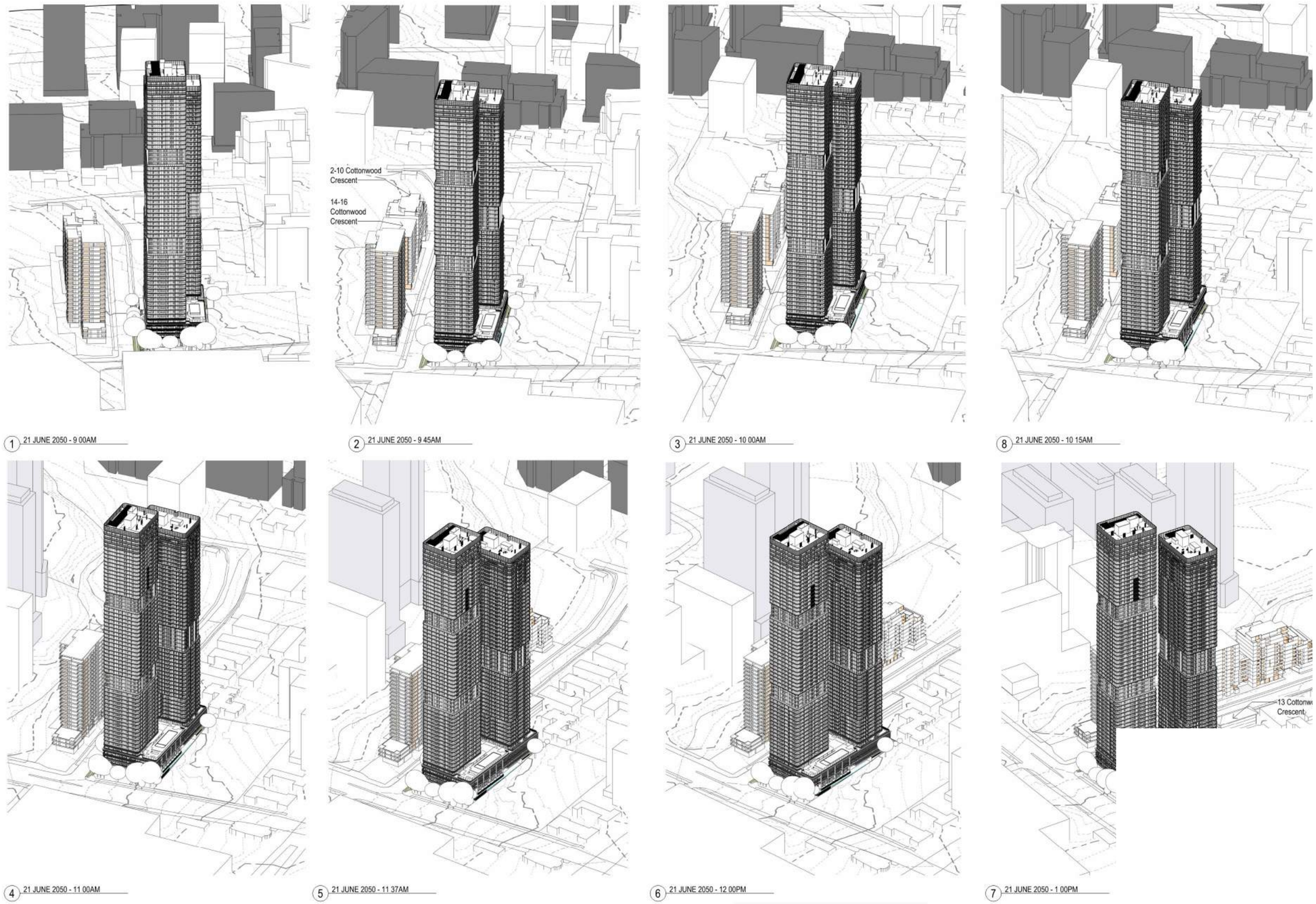
5 21 JUNE - 1 00PM

6 21 JUNE - 2 00PM



7 21 JUNE - 3 00PM

## 5.9.2 Sun Eye View with Future Context



# 5.10. Alignment with Better Placed

The Better Placed policy establishes guidelines to achieve good design within the built environment in New South Wales.

Good Design creates buildings that are efficient, user friendly, enjoyable and provide additional value to the community and local context.

The Government Architect New South Wales (GANSW) defines a well designed built environment as being: healthy, responsive, integrated, equitable and resilient.

The Better Placed policy defines seven objectives for good design:

1. Better Fit: Contextual, local and of its place

2. Better Performance: Sustainable, adaptable and durable

3. Better for Community: inclusive, connected and diverse

4. Better for people: safe, comfortable and liveable

5. Better working: Functional, efficient and fit for purpose

6. Better Value: creating and adding value

7. Better look and feel: engaging, inviting and attractive

### Better Fit

**Contextual, local and of its place**

The proposal responds to its unique context at Macquarie Park. A built form that defines the street edge with an integrated landscape setback that connects Water Country to the Shrimptons Creek parkland. The towers are articulated forms that sit in the skyline as a gateway to Macquarie Par and consistent with the future built form of the precinct.

The design embeds connections to Country and acknowledges Aboriginal heritage, ensuring the development is designed to reflect its landscape, history, and cultural setting.

### Better Performance

**Sustainable, adaptable and durable**

The plan embeds a strong sustainability framework, with commitments to renewable energy, water-sensitive urban design, waste reduction, and biodiversity-sensitive planting. Greening podium rooftops offsets canopy loss, while stormwater systems mimic natural flows and support ecological health, ensuring resilience to environmental risks.

### Better for Community

**Inclusive, connected and diverse**

The plan establishes a community heart on the podium rooftop, designed for health, recreation, and social connection. A range of dwelling types - townhouse, studios, 1,  2, 3 and 4 bedroom units are provided in addition to affordable housing, 10% adaptable housing and over 70% silver livable housing ensuring a socially diverse and inclusive community that encourages interaction and cultural exchange. The new development will provide a diverse range of housing options, enabling couples, individuals and families to be catered for.

### Better for People

**Safe, comfortable and liveable**

The development delivers a safer, more accessible environment through clear paths of travel to lobbies, apartments and communal areas. The external communal areas are on grade with internal areas. A diverse range of communal facilities are provided for individuals as well as larger gatherings. Bicycle parking is provided directly off the lower ground level. Communal areas and the ground plane are significantly landscaped, including seating, shading structures and water features improving daily comfort for residents of all abilities.

### Better Working

**Functional, efficient and fit for purpose**

All aspects of the proposal have been designed to be highly functional, efficient and fit for purpose. These principles are embedded at both the site level (movement, access, servicing) through to the planning of internal spaces as well as the design of building services and ESD initiatives.

Building forms accommodate contemporary models of apartment design. While the podium level car parking have been designed with higher floor to floor heights to accommodate future adaptability to residential uses.

### Better Value

**Creating and adding value**

By consolidating density around high-quality infrastructure - close to transport, education, recreation and community services - along with providing affordable housing, a linear park and Connecting with Country principles adds long-term social, cultural, and financial value to both residents and the broader community.

### Better Look and Feel

**Engaging, inviting and attractive**

The design prioritises placemaking, a linear park along Waterloo Road and rooftop communal areas have high-quality landscapes creating inviting public spaces. Wayfinding and commemoration will be embedded into the physical environment through materials, planting palettes, and non-figurative memorials, ensuring the development is both legible and visually engaging for residents and visitors.

# 5.11. Alignment with SEPP65

## 5.11.1 Principle 1: Context and Neighbourhood Character

**Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions.**

**Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood. Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change.**

The State has identified the Macquarie Park Innovation Precinct (MPIP) as an area of change and has led a rezoning that aims to increase density, residential use and building heights within this high amenity area.

88 Waterloo is adjacent the MPIP, 100m to the Macquarie Centre, 150m to the Metro station, 300m to Macquarie University, 100m to the Shrimptons Creek recreation corridor that leads to Wilga Park and the future Shrimptons Parklands open space, and is within 800m of the Lane Cove National Park.

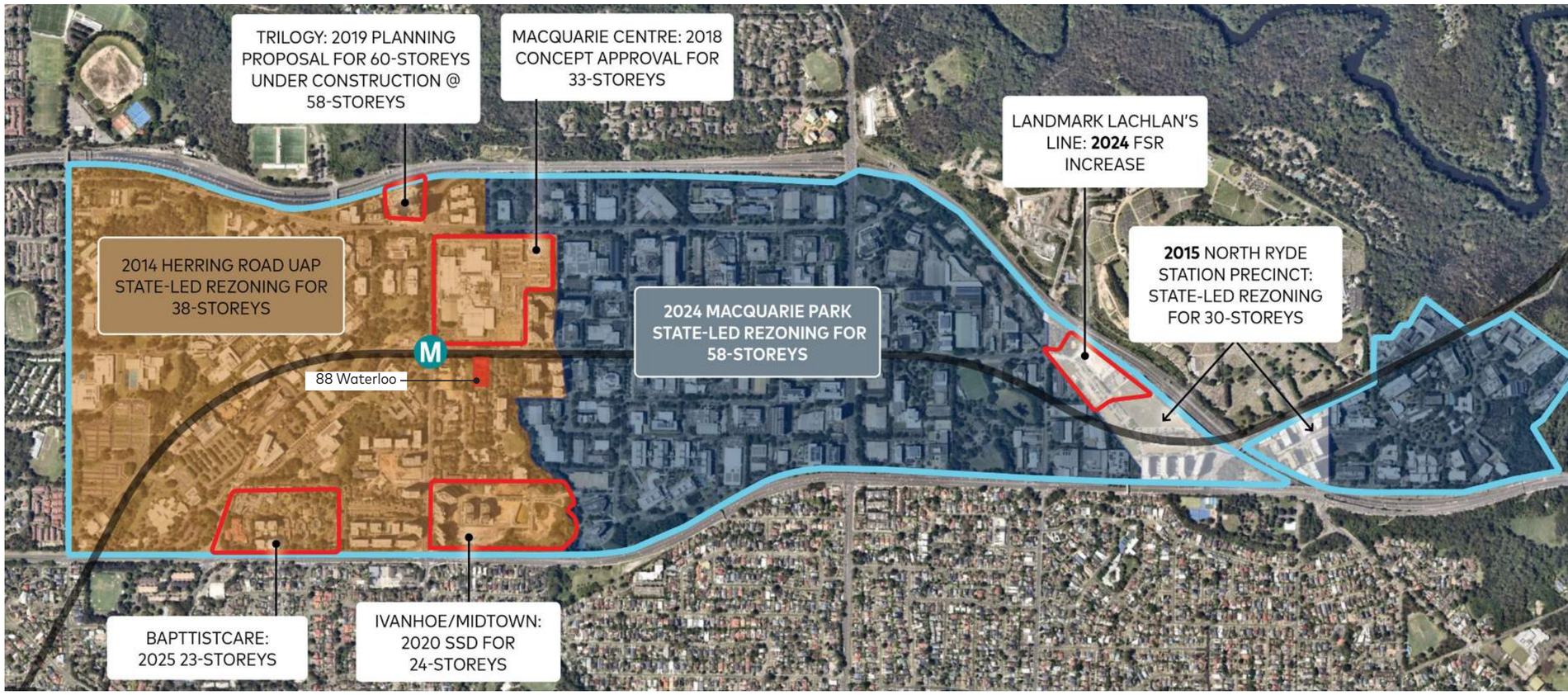
Macquarie Park is an area of high amenity, close to business and education uses, it is currently undergoing urban renewal with the increase in high density residential dwellings. This will provide much needed housing close employment and education for a growing society and urban densification.

The MPIP Masterplan establishes the desired future vision of the precinct, including public domain improvements, an urban structure and connectivity within the Macquarie Park Corridor, and to create a place of high quality urban design, a mixed-use precinct which is vibrant, modern and sustainable.

The development application is consistent with the vision specifically through the following key moves:

- Designing with Country has been integrated throughout the building and landscape design, with collaboration from the Wallumedegal and Darug elders.
- Proposed building height, scale and form that is consistent with the future context.
- A four storey podium is created to the streetscape, creating a human scale to the street.
- The towers are articulated from the podium through a recessive 'waist'. The towers vary in height, and express their super structure to create crafted building forms in the skyline.
- The podium rooftop forms a large communal space that opens to the north for improved solar access and creates a significant and unique landscaped space for the residents - an 'Urban Backyard'.
- The Waterloo Road retail frontage and landscaped setback forms a linear park consistent with the MPIP Masterplan.

This proposal aims to be an exemplar development within the new future character of Macquarie Park. A socially conscious, well designed development in turn creates healthy and happy communities, which establishes a strong, human centred approach to the wider precinct.



## 5.11.2 Principle 2: Built Form & Scale

**Good design achieves a scale, bulk and height appropriate to the existing or desired future character of the street and surrounding buildings.**

**Good design also achieves an appropriate built form for a site and the building's purpose in terms of building alignments, proportions, building type, articulation and the manipulation of building elements.**

**Appropriate built form defines the public domain, contributes to the character of streetscapes and parks, including their views and vistas, and provides internal amenity and outlook.**

The proposed built form and scale carefully considers and responds to the future built form of the MPIP masterplan.

The proposed building height, scale and form responds to the scale of the street while also forming a landmark/ gateway building to the precinct.

The proposed street wall is 4 storeys in height and the towers articulated above the podium with a 'waist'. The towers are curved at the corners to reduce their bulk, they vary in height to create interest in the skyline, and the towers super structure is expressed within a recessive band to become two slender articulated forms within the skyline.

The tower forms are carefully positioned on the site to maximise views and solar access to the development and minimise overshadowing to the surrounding precinct.

The ground and first floors along Waterloo Road and Cottonwood Crescent uses sandstone to columns and feature walls, informed by connecting with Country, and provides a more human scale to the street.

Connecting with Country is embedded in the design of the built form. The podium takes on a horizontal expression reflecting the geology of the landscape. Cantilevering painted slab edges, expressed battens, glass and perforated metal panels are a mix of earthy tone colours that provide a textural human scale and character to the street.

The entry to the buildings are via large double height lobbies that are carved out of the built form to allow the sandstone to continue into the building. The building is setback off the street within a landscape setting that is integrated into the entry experience.

The resulting built form and scale is one that responds to the desired future precinct character and site constraints while providing amenity and character at pedestrian level.

### 5.11.3 Principle 2: Built Form & Scale


View from Waterloo Road

### 5.11.4 Principle 2: Built Form & Scale


View from corner of  Waterloo Road and Cottonwood Crescent

## 5.11.5 Principle 3: Density

**Good design achieves a high level of amenity for residents and each apartment, resulting in a density appropriate to the site and its context.**

**Appropriate densities are consistent with the area's existing or projected population. Appropriate densities can be sustained by existing or proposed infrastructure, public transport, access to jobs, community facilities and the environment.**

The proposal achieves an appropriate density that is consistent with the Macquarie Park Innovation Precinct Masterplan.

The development will contribute positively to the broader context, by delivering a mix of unit types, affordable housing and contribute to achieving the State Government's housing targets.

A high level of amenity is achieved for each apartment. With good access to daylight, natural ventilation, outlook, deep soil zones and extensive communal open space, while responding to the future built context.

The development is supported by close proximity to public transport, parks and the services and amenities of the Macquarie Park town centre.

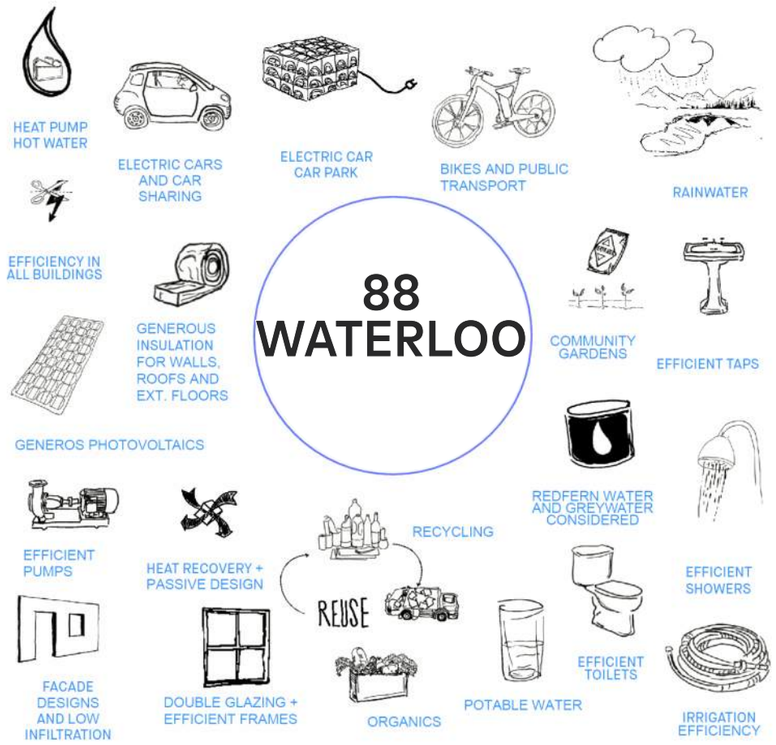

Macquarie Park Innovation Precinct showing existing, approved and indicative future built form

## 5.11.6 Principle 4: Sustainability

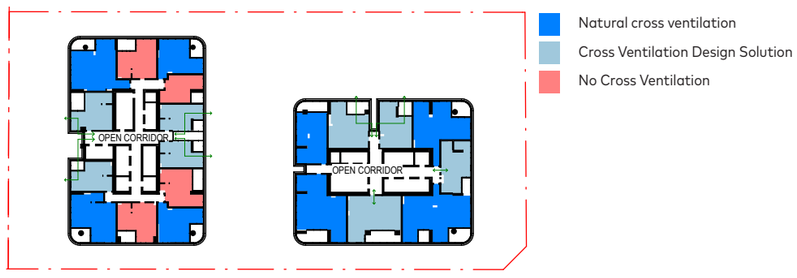
**Good design combines positive environmental, social and economic outcomes. Good sustainable design includes use of natural cross ventilation and sunlight for the amenity and liveability of residents and passive thermal design for ventilation, heating and cooling reducing reliance on technology and operation costs. Other elements include recycling and reuse of materials and waste, use of sustainable materials, and deep soil zones for groundwater recharge and vegetation.**

Careful consideration has been given to enabling the highest amenity possible to individual apartments. The proposal incorporates a number of principles of sustainability:

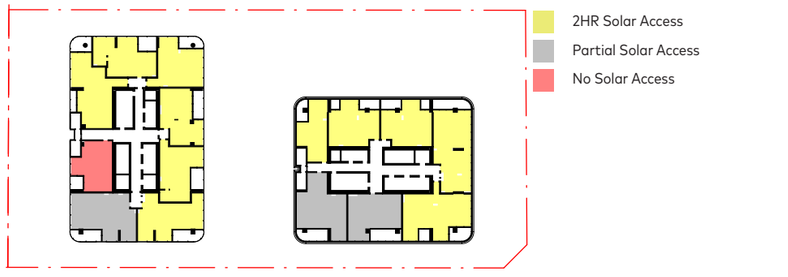
- Natural cross ventilation to the majority of apartments (65% of apartments are cross-ventilated)
- Maximising direct sun to apartments while utilising overhangs and shading devices to control solar heat gain (70% of apartments receive a minimum of 2 hours direct sunlight in mid-winter)
- Minimising noise impacts from the Waterloo Road
- All electric building
- All corridor and lobby spaces are naturally lit and ventilated
- Double glazed high performing building facade incorporating sun shading
- Predominantly constructed from locally produced, sustainable materials chosen favouring longevity and minimising maintenance
- Communal open space is orientated and located to ensure its use all year round
- Extensive landscaping to roofs and over structure, minimising stormwater run-off and reducing heat island effects
- Proximity to public transport and local shops
- Provision of bike facilities for residents and visitors
- On-site photovoltaics system
- Energy-efficient lighting and appliances
- Water-efficient fixtures
- Ceiling fans to reduce reliance on A/C
- Visitor parking will be provided with car-share and electric vehicle charging stations
- Will meet or exceeds the target set out in BASIX



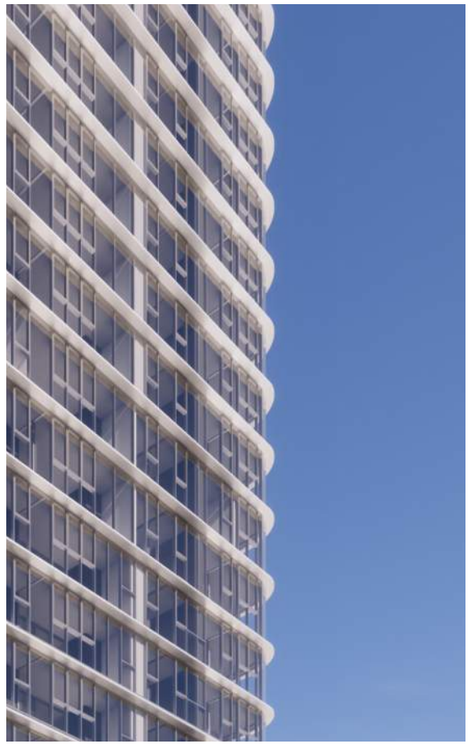
Sustainability initiatives



Typical Level - Cross Ventilation



Typical Level - Solar Access


Tower Sun Shading


Podium Sun Shading

## 5.11.7 Principle 5: Landscape

**Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in attractive developments with good amenity. A positive image and contextual fit of well designed developments is achieved by contributing to the landscape character of the streetscape and neighbourhood.**

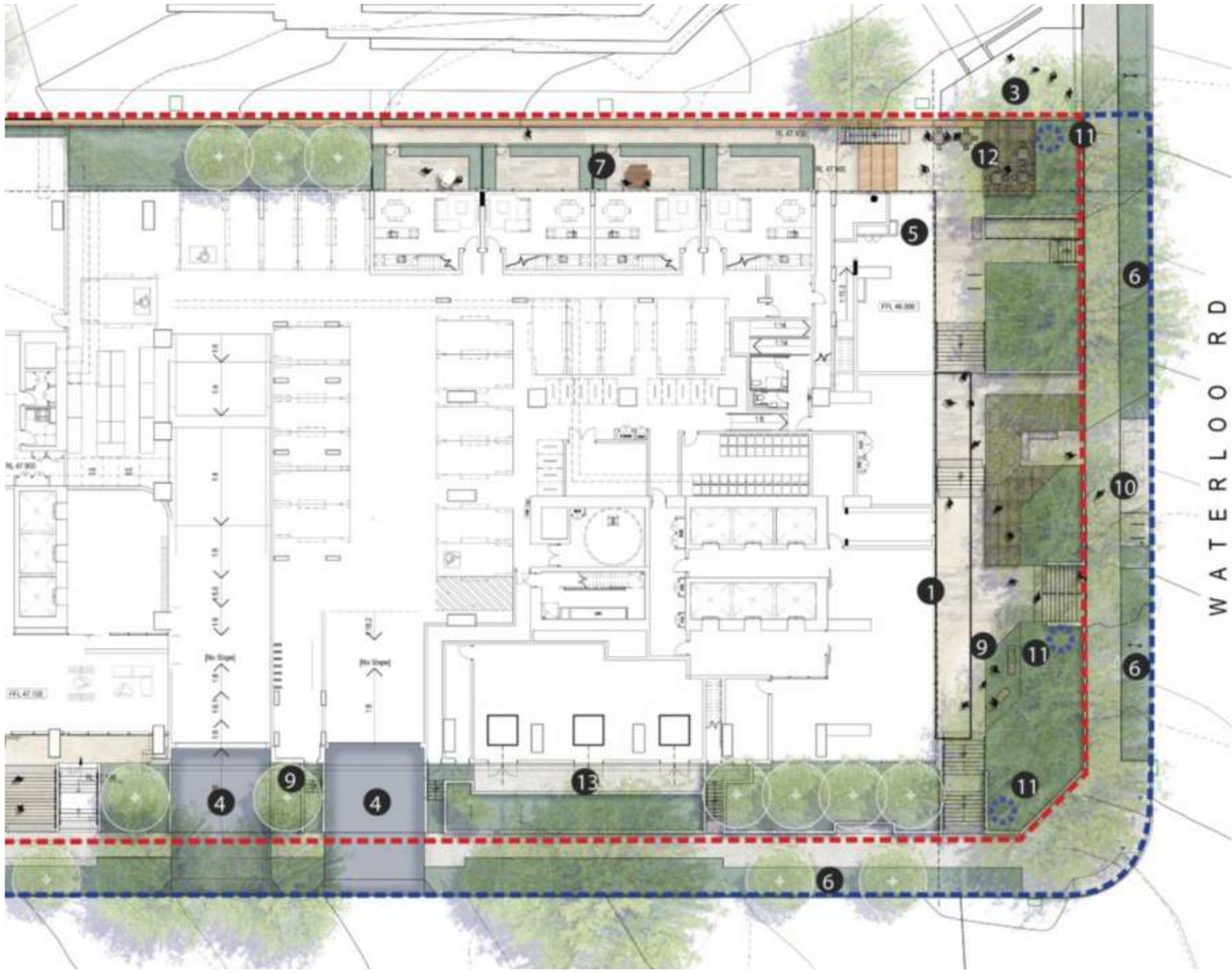
**Good landscape design enhances the development's environmental performance by retaining positive natural features which contribute to the local context, co-ordinating water and soil management, solar access, micro-climate, tree canopy, habitat values, and preserving green networks. Good landscape design optimises usability, privacy and opportunities for social interaction, equitable access, respect for neighbours' amenity, provides for practical establishment and long term management.**

The landscape design aims to compliment and echo the built architectural form. Landscape and the built form will appear seamless and cohesive across the development site, mediate the scale of the built form and provide visual amenity, through the following:

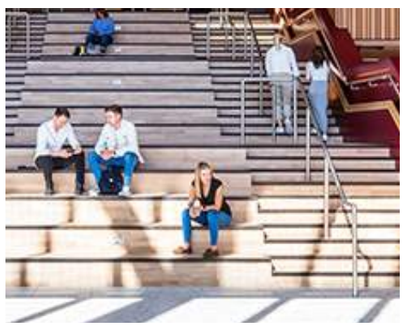
- Retention of existing street trees and mature trees along Waterloo Road, Cottonwood Crescent and Elouera Reserve
- Creation of a 10m wide linear park along the Waterloo Road frontage
- Extensive north facing communal open space on the podium rooftop
- The setbacks at ground allow deep soil zones that allows the opportunity for substantial perimeter landscaping, and retention of the existing trees along the street boundaries
- Landscaping is incorporated in the building entries of all buildings
- Encouraging equality of access and diversity of functional and comfortable spaces for all users.

The podium rooftop provides a generous amount of communal areas with a variety of active and passive spaces which are accessible from the building cores. This area will consist of:

- Pool and active open uses
- Passive lawns and gathering spaces
- Barbecue facilities
- Nature play
- Direct connection to internal communal facilities




Part Lower Ground Floor Plan



Integrated seating to stairs to Elouera Reserve

Terraced planting along Cottonwood Crescent

Breakout passive spaces to the Linear Park

## 5.11.8 Principle 6: Amenity

**Good design positively influences internal and external amenity for residents and neighbours. Achieving good amenity contributes to positive living environments and resident well being.**

**Good amenity combines appropriate room dimensions and shapes, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas, and ease of access for all age groups and degrees of mobility.**

The development provides the following apartment mix and sizes:

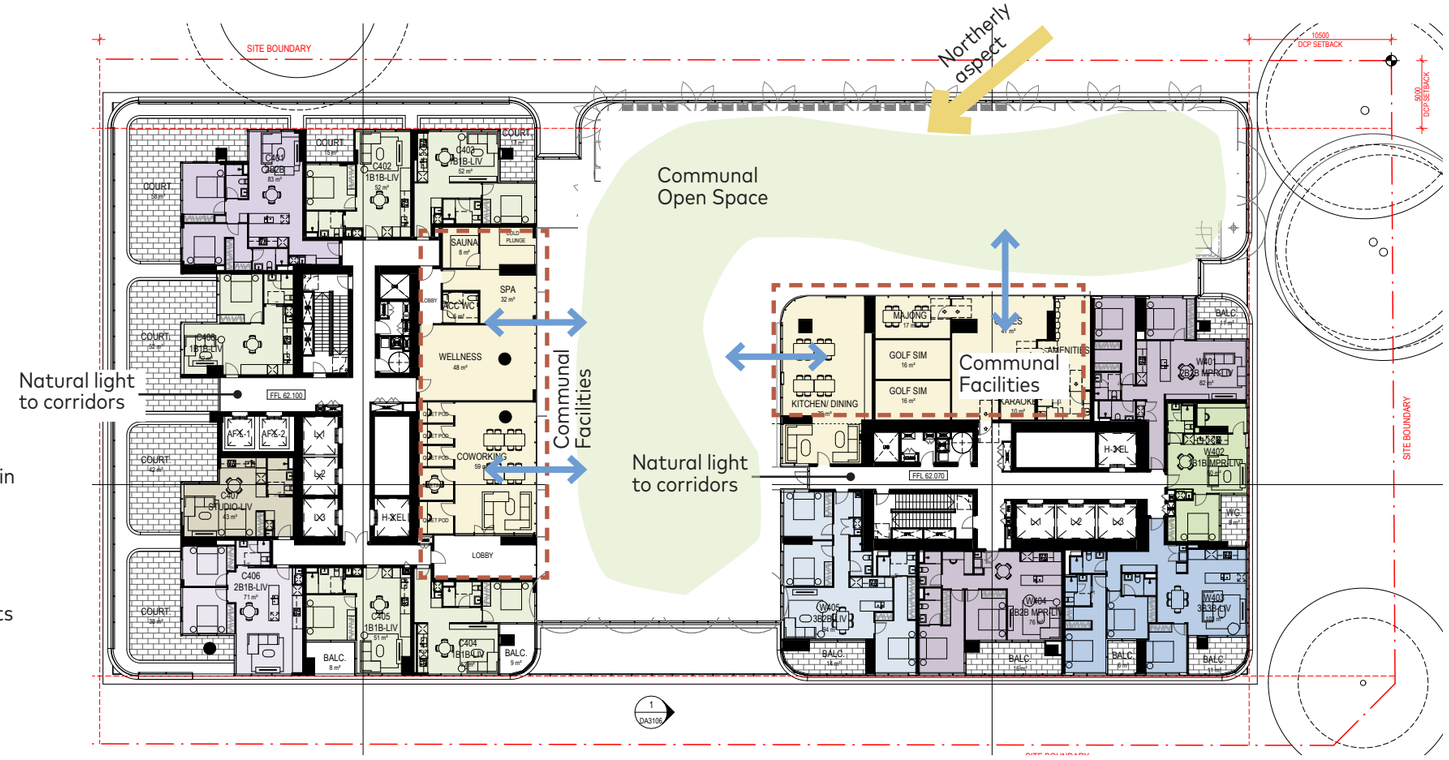
- 10.3% Studio apartments (36-42m$^2$)
- 27.2% One bedroom apartments (50-59m$^2$)
- 35.5% Two bedroom apartments (75-88m$^2$)
- 24.% Three bedroom apartments (95-115m$^2$),
- 2.1% Four bedroom apartments (129-183m$^2$),
- 0.5% Townhouses (80m$^2$), with
- Over 70% meeting Silver Level Liveable Housing standards
- 10% meeting adaptable standards
- 7% offered as affordable Housing

Individual apartment design provides good levels of amenity through the following:

- Provision of functional, efficient and flexible internal layouts that deliver appropriate room sizes and proportions.
- Apartments are orientated to maximise exposure to natural light with a minimal number of south facing dwellings
- Apartments are configured to maximise cross and natural ventilation
- Private open space meet or exceed minimum ADG requirements, are directly accessible from living areas and have a functional area and configuration conducive to recreational use.
- Provision of adequate storage within the apartment with additional basement storage including bicycle parking
- Alternate natural ventilation is provided to north facing apartments on Waterloo Tower due to noise impacts from Waterloo Road

Common areas of the development provide good levels of amenity through the following:

- Significant communal landscaped spaces have been provided for the residents for both passive and active uses
- Corridor and lobby spaces enjoy access to views and are naturally lit and ventilated
- At ground floor level through the activation of frontages via lobby spaces, apartment and retail entries, street planting and balcony orientations
- Internal and external communal spaces are provided on the rooftop podium level
- Wi-fi connectivity will be provided through the internal and external communal spaces
- FOGO waste rooms are provided in the basement of each tower




Level 4 - Podium Rooftop


BIGW

## 5.11.8.1 Access & Servicing

### Pedestrian Access

Residential lobbies are located off Waterloo Road and Cottonwood Crescent. The lobbies are grand double height spaces, with clear lines of sight, accessible paths and awnings to the streetscape.

The townhouses facing Elouera Reserve have access from the carpark as well as direct access from Waterloo Road.

Retail is accessed off the Waterloo Road Linear Park, that provides activation to the street and Elouera Reserve.

Bicycle access is via the carpark entry off Cottonwood Crescent with the bike parking located directly off the street level.

### Vehicle Access

Vehicle access is via Cottonwood Crescent. Service vehicle and residential car entries have been split to minimise cross over. Service vehicles enter on the south eastern corner of the site to a loading dock on lower ground.

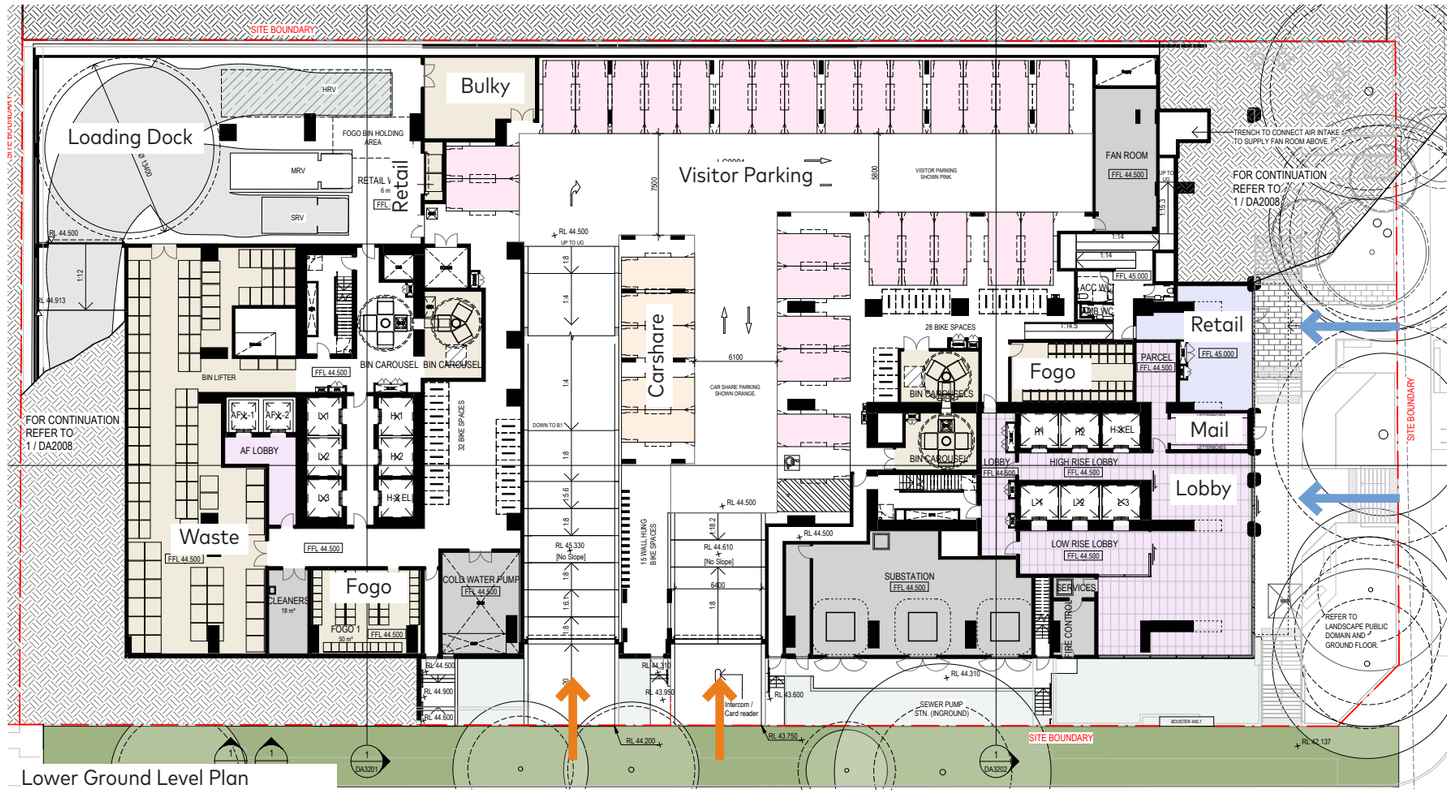
Due to the volume of traffic two carpark entries have been provided for the residents, one going up to the podium parking levels and a separate entry for cars accessing the basement. Visitor parking is located on the street level.

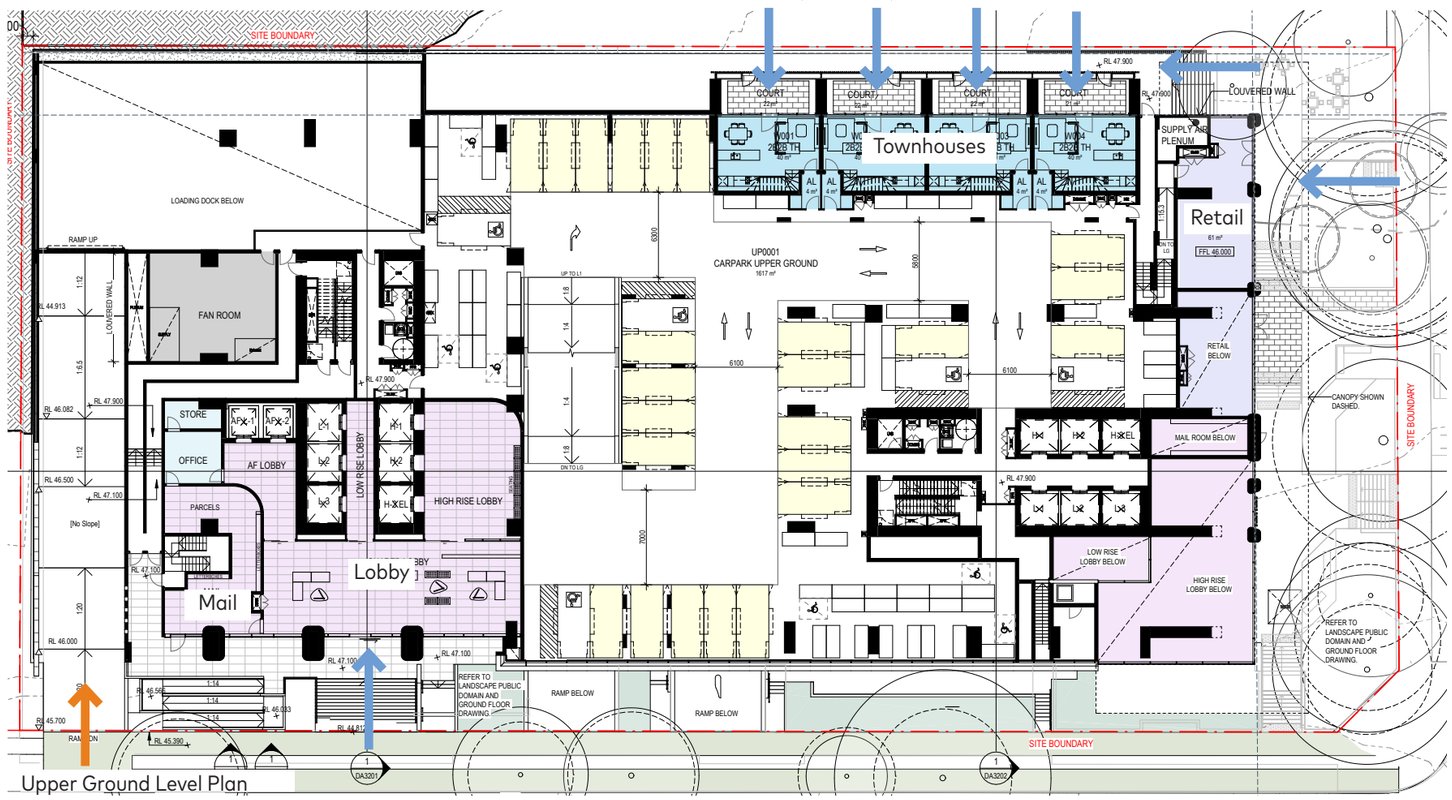
### Servicing

The loading dock is located in the basement that provides access to both residential towers.

The residential and retail bin rooms are located directly off the loading bay for easy access.

FOGO bin rooms are located in the basement area of each tower for easy access to compost recycling for the residents.



### 5.11.8.2 Access & Servicing

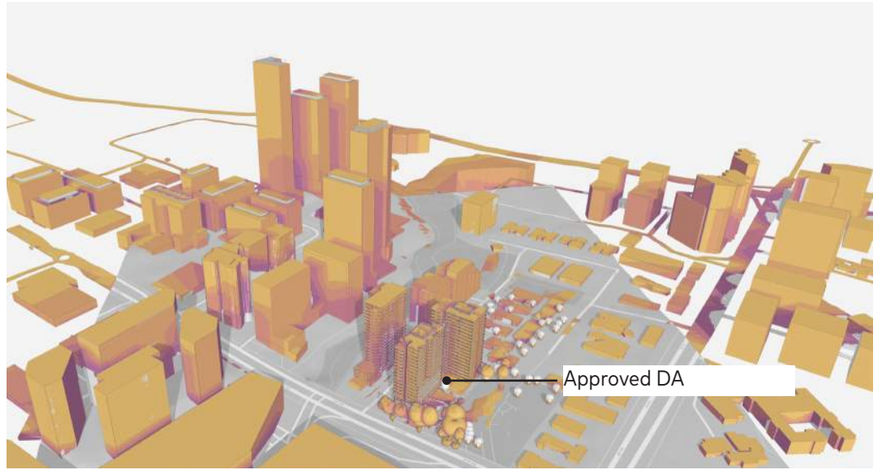
View of Cottonwood Tower Entry

## 5.11.8.3 Overshadowing

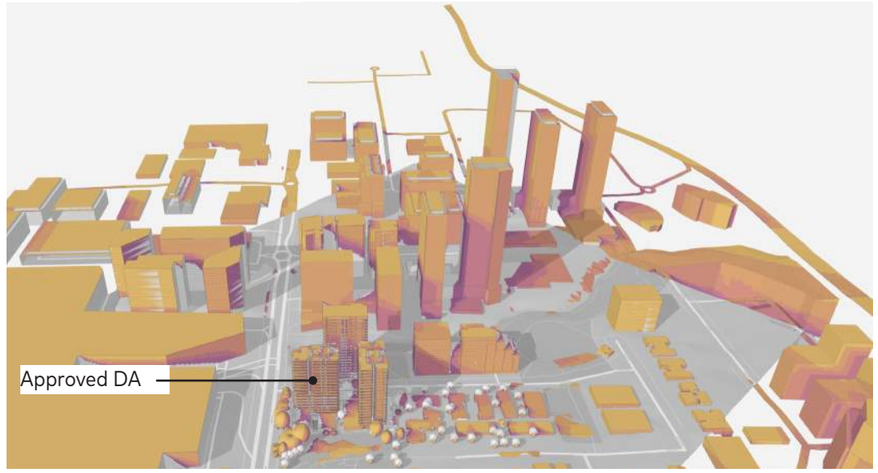
### Precinct Analysis

A solar heat map study of the precinct with existing, approved DA's and possible future built form was completed to review overshadowing impacts to the surrounding context. The heat maps show no significant overshadowing. That the majority of the buildings will maintain 2 hours of solar access to their north east and north west facades (the south western facades don't receive solar access due to the orientation to the sun).

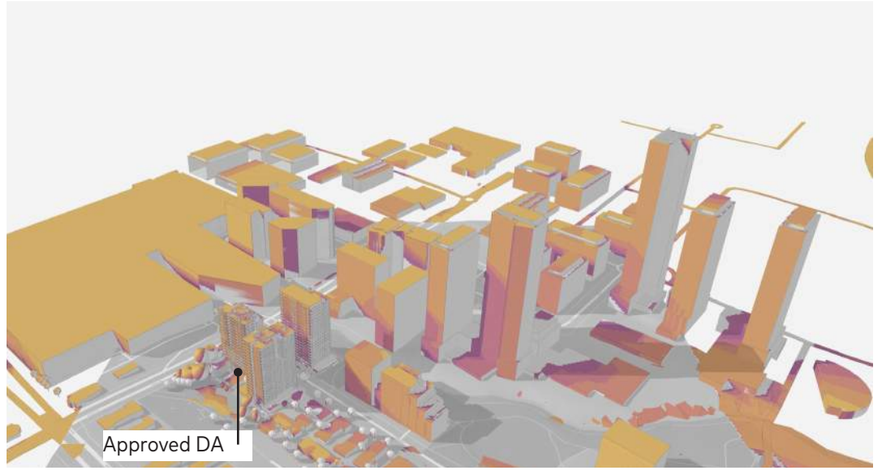
Heat map study of future context with Approved DA.




View from the north

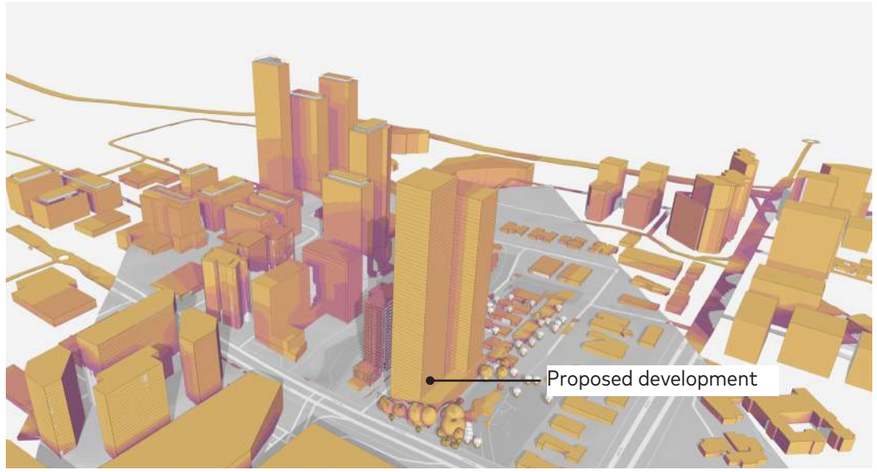



View from the north west

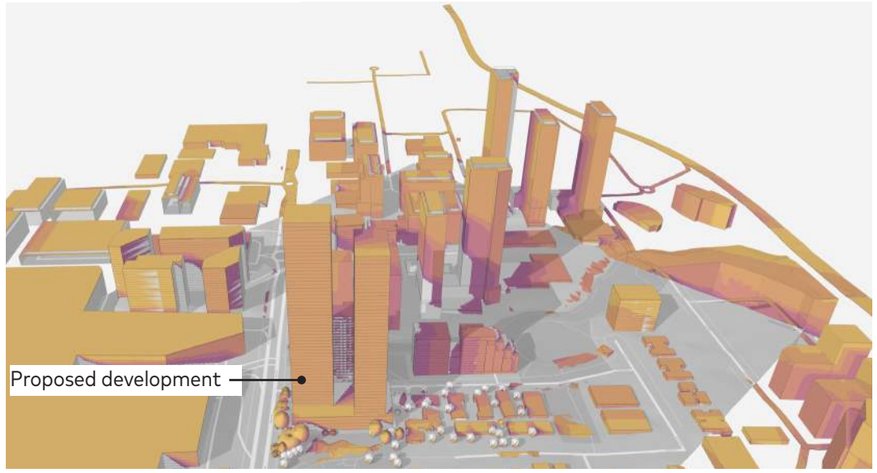



View from the south west

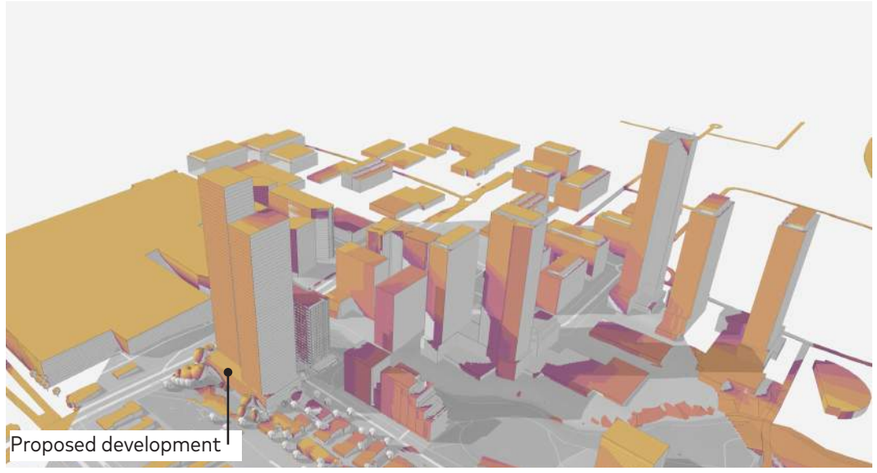
Heat map study of future context with proposed development




View from the north

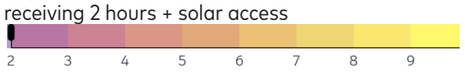



View from the north west




View from the south west

Legend - Colours indicated facades receiving 2 hours + solar access

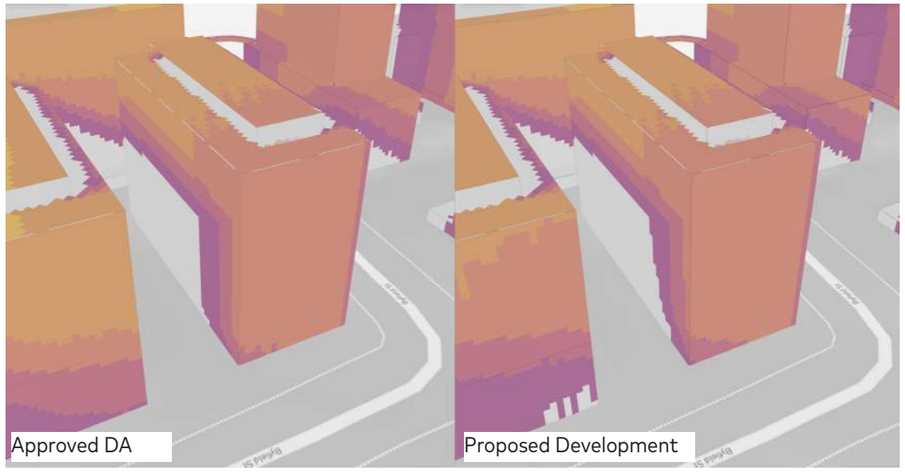


## Schedule of Neighbouring Buildings

| Item # | Address | Recieves 70%+ Solar Access | | Comments |
|---|---|---|---|---|
| | | East Facade | North Facade | |
| 1 | 12 LACHLAN AVENUE, MACQUARIE PARK | ✓ | ✓ | |
| 2 | 10 LACHLAN AVENUE, MACQUARIE PARK | ✓ | ✓ | |
| 3 | 6 LACHLAN AVENUE, MACQUARIE PARK | ✓ | ✓ | |
| 4 | 2-4 LACHLAN AVENUE, MACQUARIE PARK | ✓ | ✓ | |
| 5 | 13 COTTONWOOD CRESCENT, MACQUARIE PARK | ✗ | ✓ | Refer Section 5.11.8.5. No additional impact. |
| 6 | 11 COTTONWOOD CRESCENT, MACQUARIE PARK | ✓ | ✓ | |
| 7 | 9 COTTONWOOD CRESCENT, MACQUARIE PARK | ✓ | ✓ | |
| 8 | 7 COTTONWOOD CRESCENT, MACQUARIE PARK | ✓ | ✓ | |
| 9 | 5 COTTONWOOD CRESCENT, MACQUARIE PARK | ✓ | ✓ | |
| 10 | 1-3 COTTONWOOD CRESCENT, MACQUARIE PARK | ✓ | ✓ | |
| 11 | 121-129 MAHOGANY AVENUE, MACQUARIE PARK | ✓ | ✓ | |
| 12 | 2 MAHOGANY AVENUE, MACQUARIE PARK | ✓ | ✓ | |
| 13 | 1 MAHOGANY AVENUE, MACQUARIE PARK | ✓ | ✓ | |
| 14 | 1 PEACH TREE ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 15 | 3 PEACH TREE ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 16 | 5 PEACH TREE ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 17 | 7 PEACH TREE ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 18 | 9 PEACH TREE ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 19 | 14-16 COTTONWOOD CRESCENT, MACQUARIE PARK | ✓ | ✓ | |
| 20 | 2-10 COTTONWOOD CRESCENT, MACQUARIE PARK | ✗ | ✓ | Refer Section 5.11.8.5. |
| 21 | 82-84 WATERLOO ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 22 | 80 WATERLOO ROAD, MACQUARIE PARK | ✗ | ✓ | Achieves 65.4% to eastern & 93.3% to northern facade. Refer page 64. |
| 23 | 78 WATERLOO ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 24 | 68 WATERLOO ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 25 | 66 WATERLOO ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 26 | 60 WATERLOO ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 27 | 3 BYFIELD STREET, MACQUARIE PARK | ✗ | ✓ | Achieves 69% to eastern facade. Refer page 64. |
| 28 | 5 BYFIELD STREET, MACQUARIE PARK | ✓ | ✓ | |
| 29 | 6-8 BYFIELD STREET, MACQUARIE PARK | ✓ | ✓ | |
| 30 | 31 BYFIELD STREET, MACQUARIE PARK | ✗ | ✗ | Does not achieve solar access due to being located directly south of 6-8 Byfield St. Refer page 64. |
| 31 | 12 LYON PARK ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 32 | 13-15 LYON PARK ROAD, MACQUARIE PARK | ✓ | ✓ | |
| 33 | 16-20 GIFFNOCK AVENUE, MACQUARIE PARK | ✓ | ✓ | |

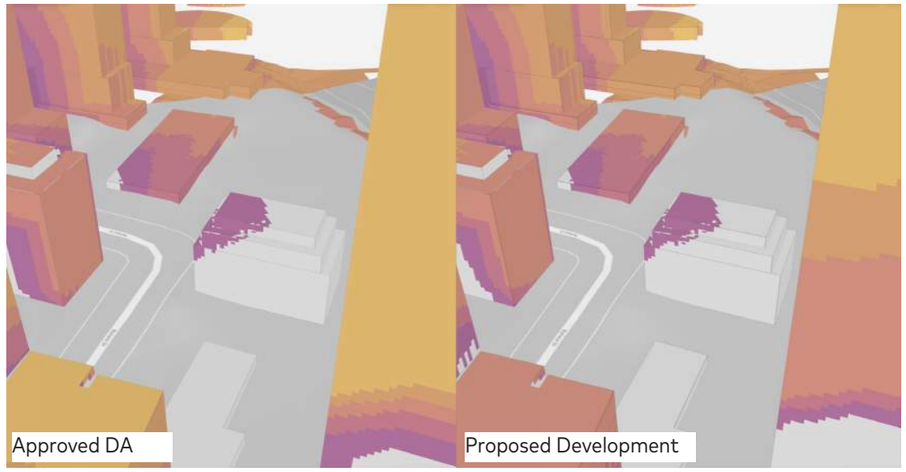

Location Plan

## Detailed Solar Anaylsis of Neighbouring Buildings




Item 27 3 BYFIELD STREET, MACQUARIE PARK

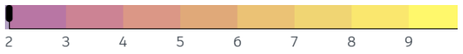
The eastern facade achieves 71.8% solar access under the Approved DA scheme, this is reduced to 69% with the Proposed Development. The northern facade is unaffected and achieves 100% solar access. Based on the cumulative impacts shown above, the future development potential of 3 Byfield Street could still be achieved.

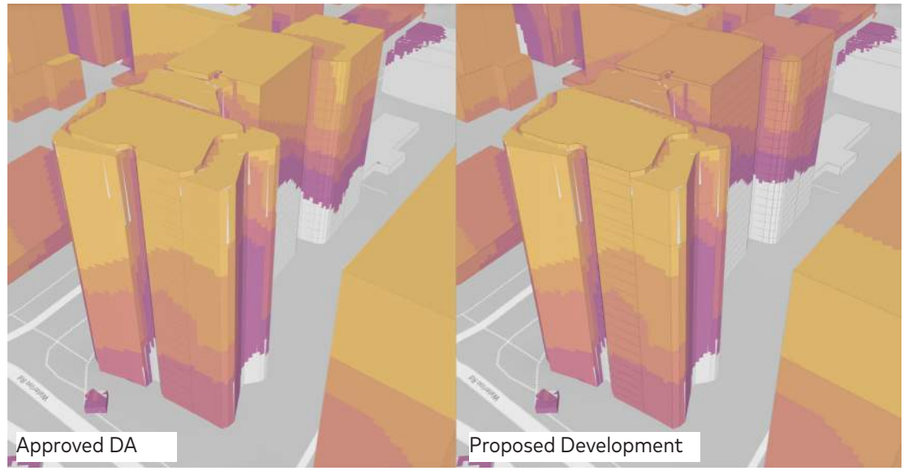



Item 30 31 BYFIELD STREET, MACQUARIE PARK

The eastern and northern facades do not receive any solar access in mid winter in either the Approved DA scheme or the Proposed Development due to its proximity to the 2 adjacent tall towers on 6-8 Byfeild Street. Due to this the subject site would not suitable for residential development.

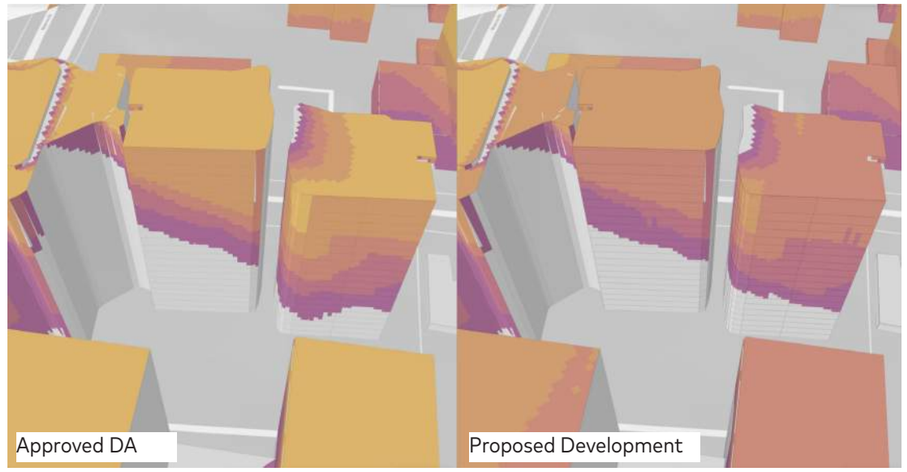
Legend - Colours indicated facades receiving 2 hours + solar access




Item 22 80 WATERLOO ROAD, MACQUARIE PARK

The eastern facade achieves 94.2% solar access under the Approved DA scheme, this is reduced to 93.3% with the Proposed Development.




Item 22 80 WATERLOO ROAD, MACQUARIE PARK

The northern facade achieves 67.6% solar access under the Approved DA scheme, this is reduced to 65.4% with the Proposed Development. Based on the cumulative impacts to the eastern and northern facades the existing development will still achieve an average of 80.9% solar access to these facades.

## 5.11.8.4 Overshadowing

### Public Open Space

The proposed design of two slender tower forms that are stepped in height contribute to reducing the overshadowing impacts to the nearby public open spaces.

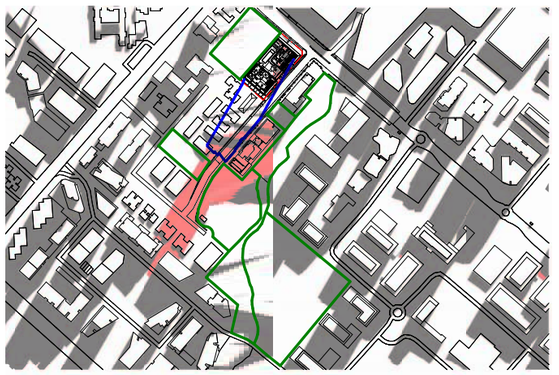
The overshadowing studies show the future Shrimptons Creek Parklands receives more than 50% solar access between 9am-3pm in mid winter, except at 12pm where it will receive 44%. This is reduced from 57% from the previous approved Development Application on the subject site).

The future Shrimptons Creek Parklands recieves on average 67% solar access between the hours of 9am-3pm in mid winter, and as the Parklands is connected to Shrimptons Creek and Wilga Park people have the choice of using these adjoining public open spaces at 12pm for additional solar access.

Cottonwood Reserve is impacted the most in mid winter and will only receive 9% solar access on average, due to being located directly to the south of the site. Cottonwood Reserve is not used as a recreational space, but rather a transitional space. It is mostly landscaped with a pathway to access the Shrimptons Creek corridor. As such no usable recreational space is impacted.

View of Cottonwood Reservce

9am

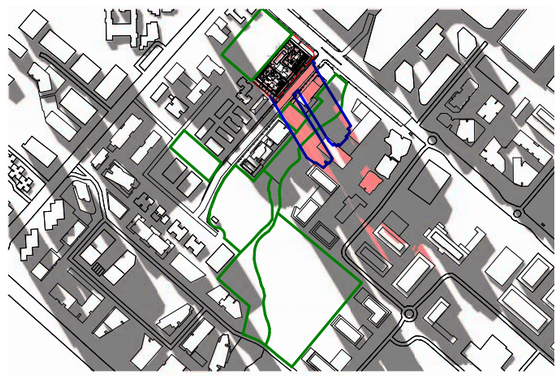


10am

11am

12pm

1pm



2pm

3pm

EXISTING SHADOWS
INCREASED SOLAR ACCESS FROM EXISTING
DECREASED SOLAR ACCESS FROM PROPOSAL
APPROVED DA BUILDING SHADOW OUTLINE

**PUBLIC SPACE SOLAR ACCESS IN FUTURE CONTEXT** (Approved DA)

| RESERVE | 9am | 10am | 11am | 12pm | 1pm | 2pm | 3pm | AVERAGE |
|---|---|---|---|---|---|---|---|---|
| Elouera Reserve | 100% | 100% | 100% | 98% | 90% | 72% | 56% | 88% |
| Quandong Reserve | 49% | 91% | 83% | 92% | 99% | 100% | 85% | 86% |
| Wilga Park | 58% | 77% | 79% | 81% | 84% | 89% | 82% | 79% |
| Cottonwood Reserve | 25% | 23% | 5% | 0% | 7% | 4% | 6% | 10% |
| Shrimptons Creek | 65% | 74% | 73% | 70% | 53% | 33% | 21% | 56% |
| Shrimptons Parklands (future open space) | 54% | 60% | 58% | 57% | 74% | 90% | 91% | 69% |

**PUBLIC SPACE SOLAR ACCESS IN FUTURE CONTEXT** (Proposed Development)

| RESERVE | 9am | 10am | 11am | 12pm | 1pm | 2pm | 3pm | AVERAGE |
|---|---|---|---|---|---|---|---|---|
| Elouera Reserve | 100% | 100% | 100% | 98% | 90% | 72% | 56% | 88% |
| Quandong Reserve | 48% | 73% | 83% | 92% | 99% | 100% | 85% | 82% |
| Wilga Park | 58% | 67% | 19% | 70% | 84% | 89% | 82% | 67% |
| Cottonwood Reserve | 25% | 23% | 0% | 0% | 7% | 5% | 6% | 9% |
| Shrimptons Creek | 65% | 74% | 66% | 59% | 53% | 33% | 21% | 53% |
| Shrimptons Parklands (future open space) | 54% | 60% | 58% | 44% | 74% | 90% | 91% | 67% |

## 5.11.8.5 Overshadowing

### Neighbouring Buildings

View from sun diagrams indicate the living rooms and balconies of the neighbouring buildings that recieve more than 2 hours of solar access in mid winter, shown in yellow.

**2-10 Cottonwood Crescent**

Units that recieve solar access.

Existing: 146 of 207 (70%)

Approved DA: 135 of 207 (65%)

Proposed : 120 of 207 (58%)

The proposed development reduces solar access from the Approved DA of 65% to 58% of apartments, an impact of 15 additional apartments.

The proposed development still maintains the solar access objective of the ADG to 2-10 Cottonwood Crescent as follows:

*Objective 4A-1*

*To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space.*

The proposed development is designed as 2 slender tower forms to maximise solar access to neighbouring properties. The 15 apartments impacted by the proposed development still receive over 90minutes of solar access to their habitable rooms in mid winter.

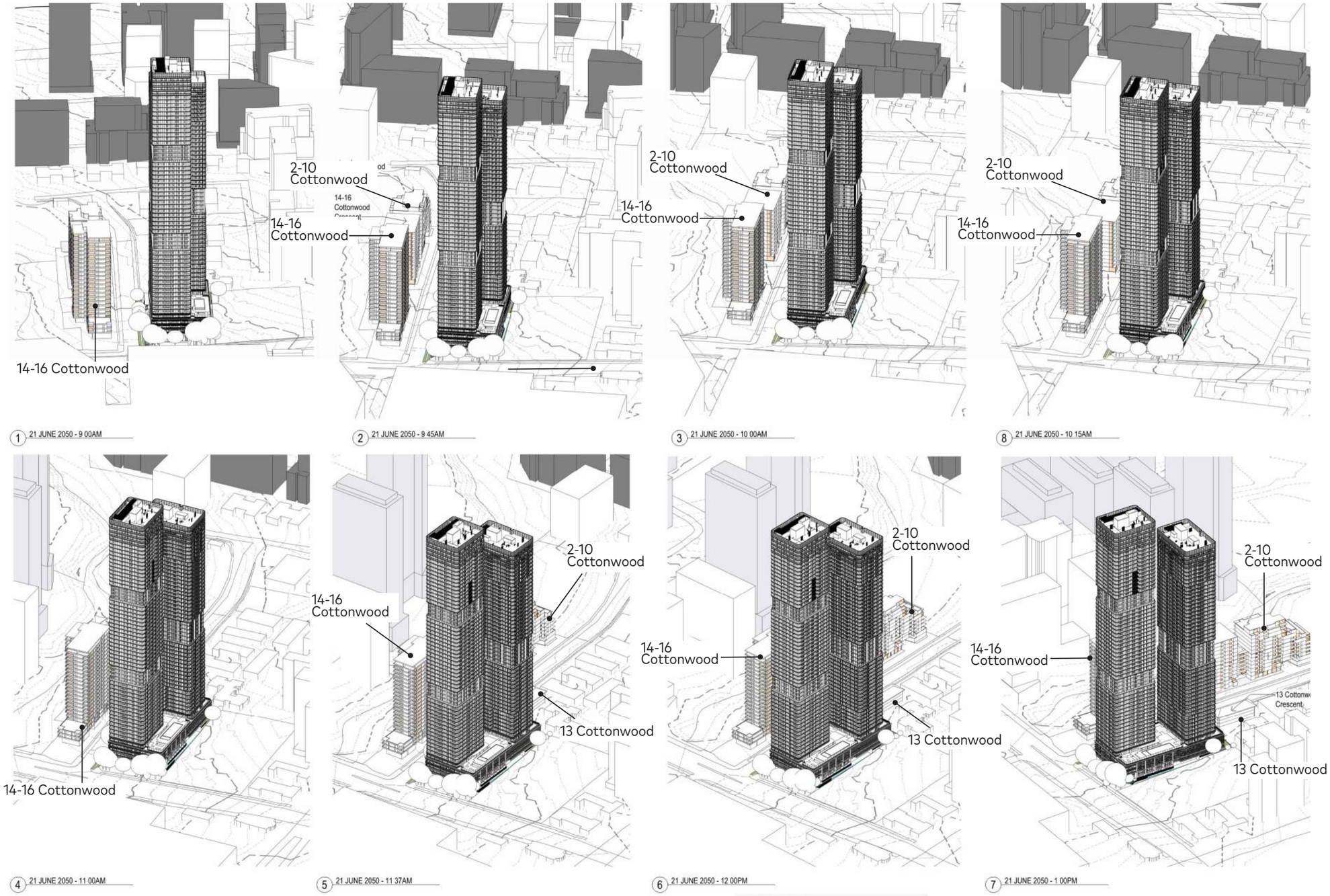
**14-16 Cottonwood Crescent (scheme under DA Assessment)**

Units that recieve solar access.

Existing: 103 of 120 (85.8%)

Proposed : 84 of 120 (70%)

The proposed development maintains 70% of apartments with solar access.



## 5.11.8.6 Overshadowing

### Neighbouring Buildings

**13 Cottonwood Crescent**

Units that recieve solar access.

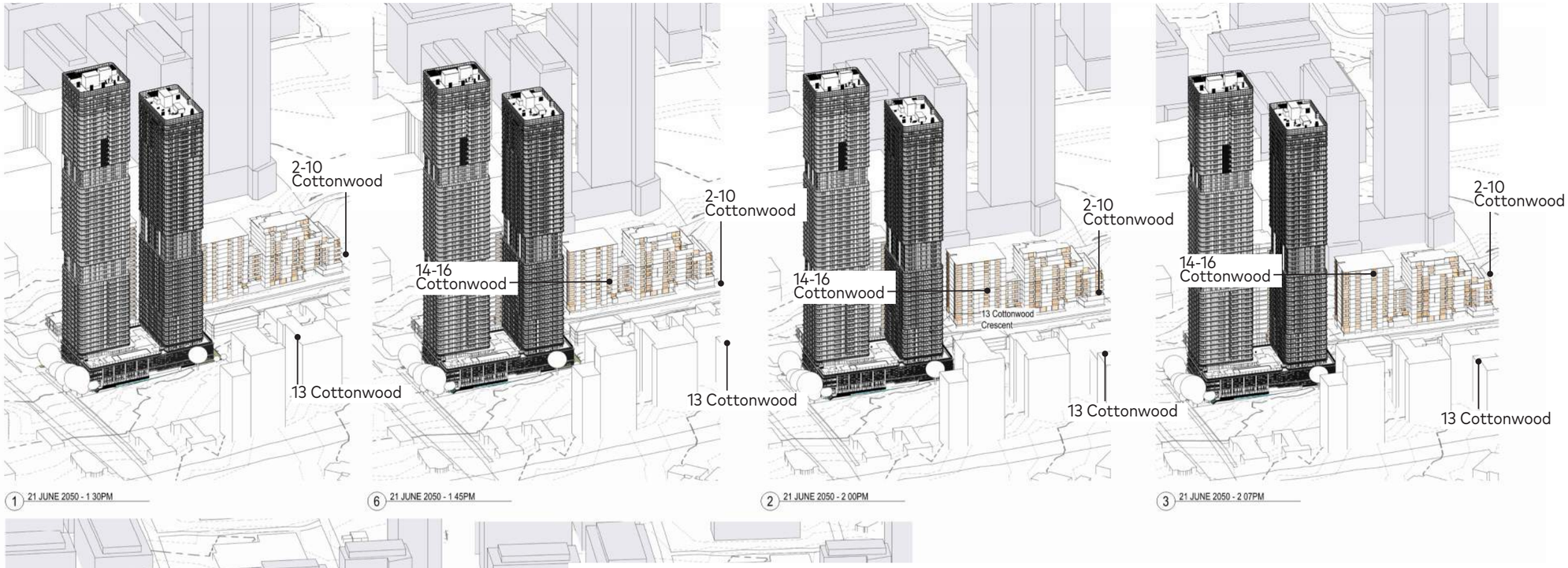
Existing: 0 of 12 (0%)

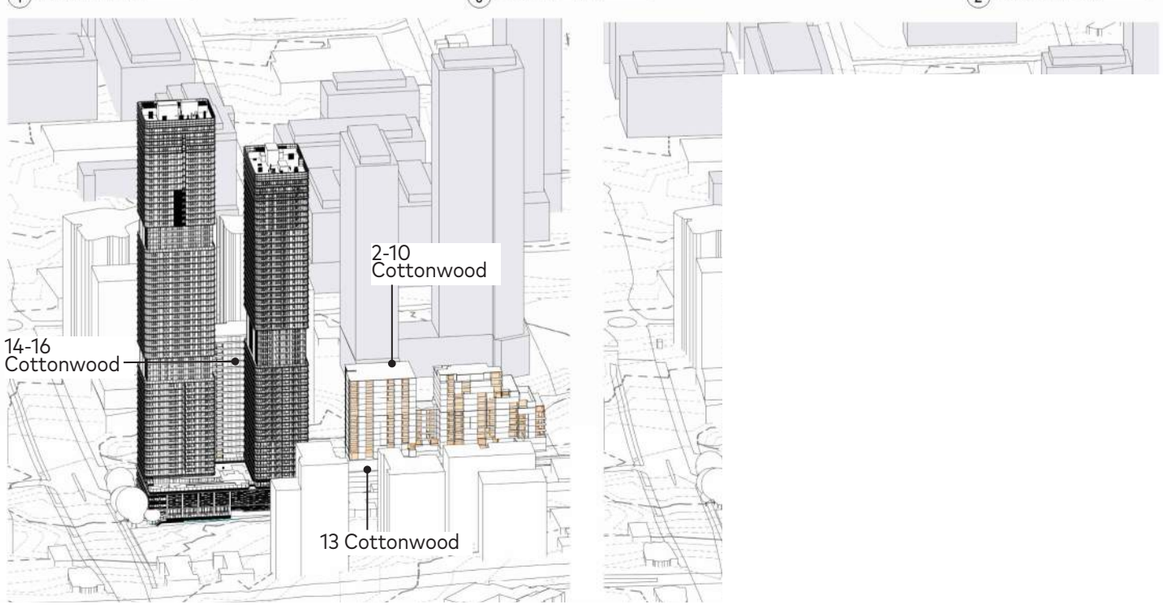
Proposed : 0 of 12 (0%)

No additional impact as currently no apartments receive solar access.

The proposed development provides an additional 603 apartments compared with the Approved DA, including 60 affordable housing apartments.

The proposed development although creates some minor additional overshadowing to 2-10 Cottonwood Crescent, the impacted apartments still receive over 90minutes of solar access in mid winter, and is consistent with the ADG Objective 4A-1 to optimise the number of apartments receiving sunlight to habitable rooms.



## 5.11.8.7 View Impacts

A thorough view analysis study has been undertaken by Urbis. The adjacent images are from that report.

The proposed development sits in the skyline of Macquarie Park as a landmark to the precinct. The stepped tower forms responds to the principles of the MPIP masterplan, and the height difference is perceivable from around the precinct.

The building height and scale is similar to Meriton's Trilogy development seen in the image below from Christie Park, and when viewed within the future built context of Macquarie Park will not appear out of character in the area.


View from Waterloo Road looking north west


View from Christie Park looking south east

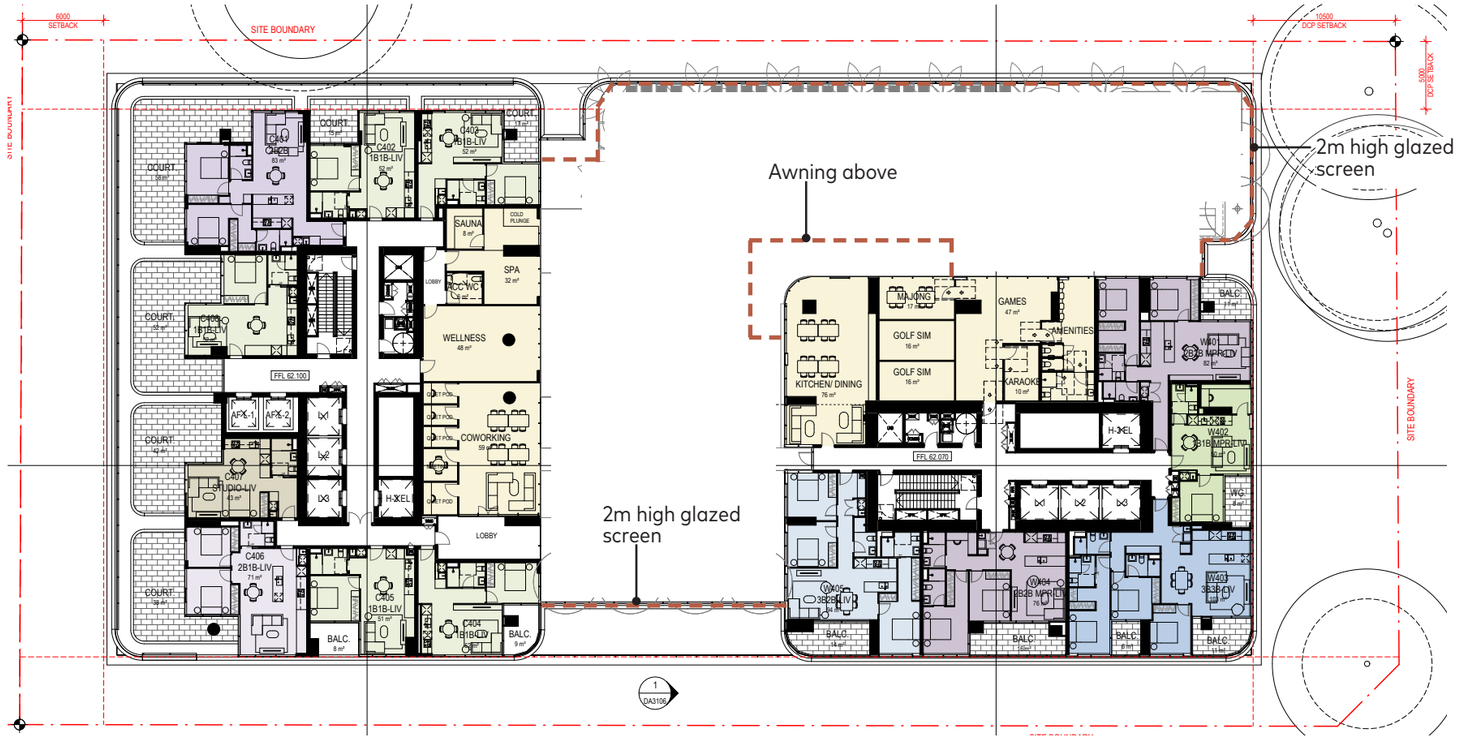

View from Macquarie University looking south

## 5.11.8.8 Wind Mitigation

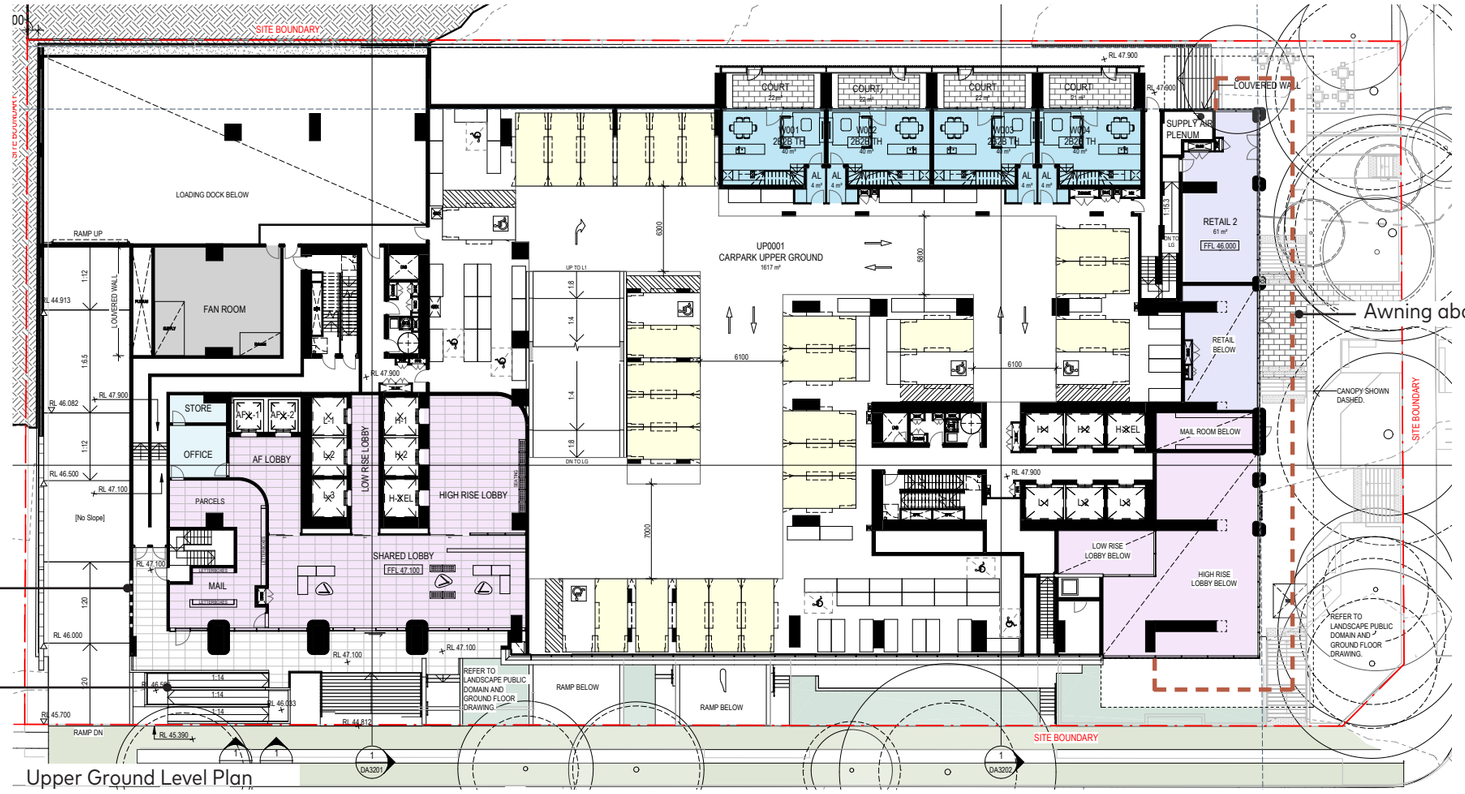
The wind model conducted by RWDI indicated areas around the ground floor lobbies and rooftop podium that require wind mitigation.

The wind mitigation measures that have been incorporated into the design are indicated on the drawings below.

Additional measures will be integrated into the landscape design. Refer to Landscape drawings.




Level 4 - Podium Rooftop




Upper Ground Level Plan

## 5.11.9 Principle 7: Safety

**Good design optimises safety and security, within the development and the public domain. It provides for quality public and private spaces that are clearly defined and fit for the intended purpose. Opportunities to maximise passive surveillance of public and communal areas promote safety.**

**A positive relationship between public and private spaces is achieved through clearly defined secure access points and well lit and visible areas that are easily maintained and appropriate to the location and purpose.**

The proposal has been designed to minimise the opportunities for anti-social behaviour in accordance of CPTED principles of surveillance, access control, territorial reinforcement and space management. This approach includes:

- Principal building entrances are clearly defined and highlighted through the use of building form and the articulation of materials.
- Private open space and living areas are located along street frontages and communal open space to provide activated spaces that allow good surveillance of surrounds.
- Private open space and living areas are located along street frontages and communal open space to provide activated spaces that allow good surveillance of surrounds.
- Ground floor townhouse are generally elevated above Elouera Reserve that will provide good passive surveillance. A pathway from Waterloo Road provides access to the townhouses, with a low height sandstone wall on the park side to divert overland flow and a planter box with a palisade fence will provide some level of screening to the townhouses.
- A secure entry system linked to the apartments allows access through the external entry points upon confirmation from inside.
- Basement carpark layouts are designed to minimise opportunities for alcoves. Columns and walls do not obstruct sight lines and the car parking spaces are generally open.
- Increased pedestrian traffic will be a result of this development, increasing the feeling of safety for residents and pedestrians.


Upper & Lower Ground Floor Plans Combined

## 5.11.10 Principle 8: Housing Diversity and Social Interaction

**Good design achieves a mix of apartment sizes, providing housing choice for different demographics, living needs and household budgets.**

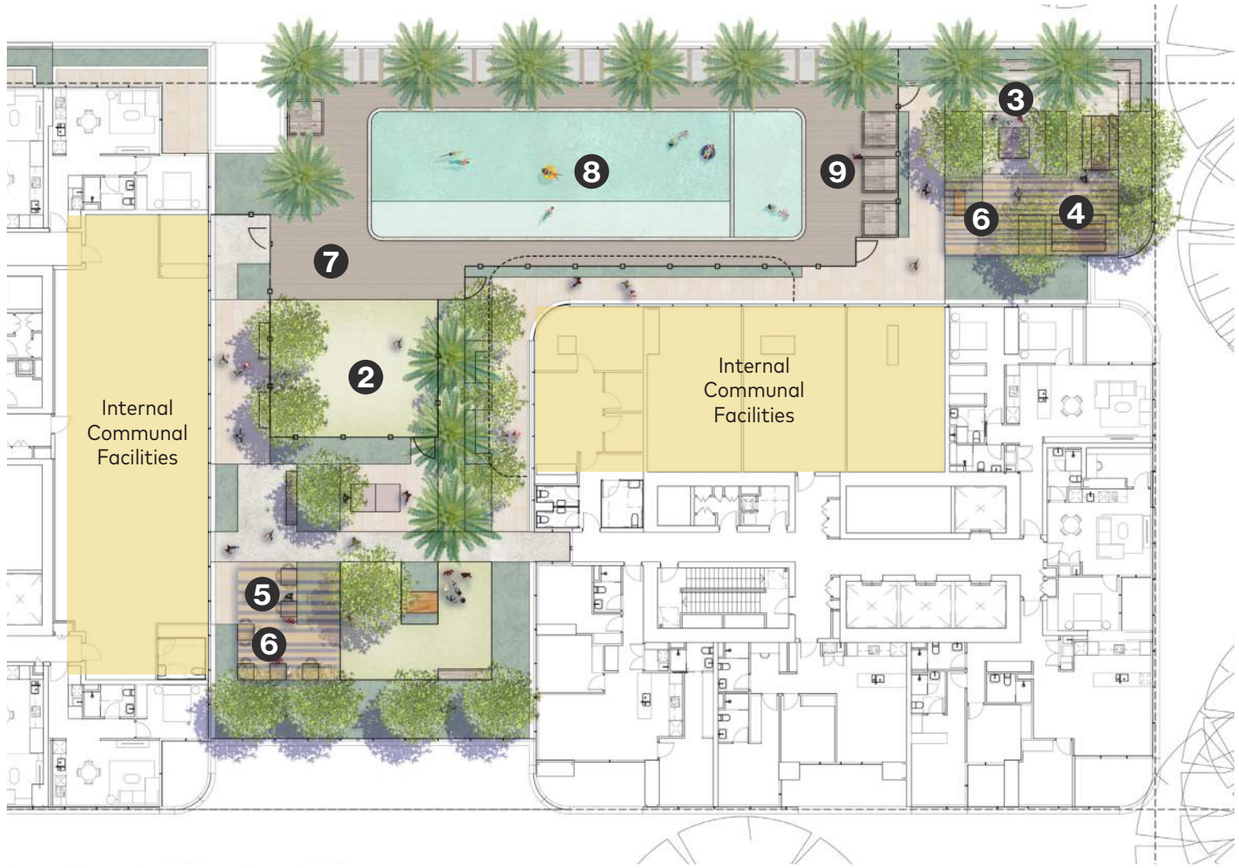
**Well designed apartment developments respond to social context by providing housing and facilities to suit the existing and future social mix. Good design involves practical and flexible features, including different types of communal spaces for a broad range of people, providing opportunities for social interaction amongst residents.**

The proposed development provides diverse housing choices. A mix of townhouses, 1 bedroom, 1 bedroom + study, 2 bedroom, 2 bedroom + study, 3 and 4 bedroom apartments have been designed with a range of internal areas. 10 % of units are adaptable for the needs of people with disabilities, whilst facilitating inter-generational changes and evolving lifestyles. Over 70% of units meet silver livable housing standards, and are immediately more accessible to the ageing population without compromising amenity. 7% of the apartments will be provided as Affordable Housing. Variety in height above ground, aspect and outlook within apartment types will result in market price differentiation.

The large central rooftop podium will become an 'urban backyard' allowing a variety of external spaces for passive and active uses that will encourage social interaction amongst residents, multi generational amenity supporting the communal life of the building and establishing a distinct sense of communal place beyond the development itself.

Internal communal areas are also located on the podium rooftop allowing a seamless connection between the indoor and outdoor communal uses.

These will include a variety of health, work and recreational uses that can cater for individuals as well as larger gatherings.




Level 4 Plan - Communal Open Space

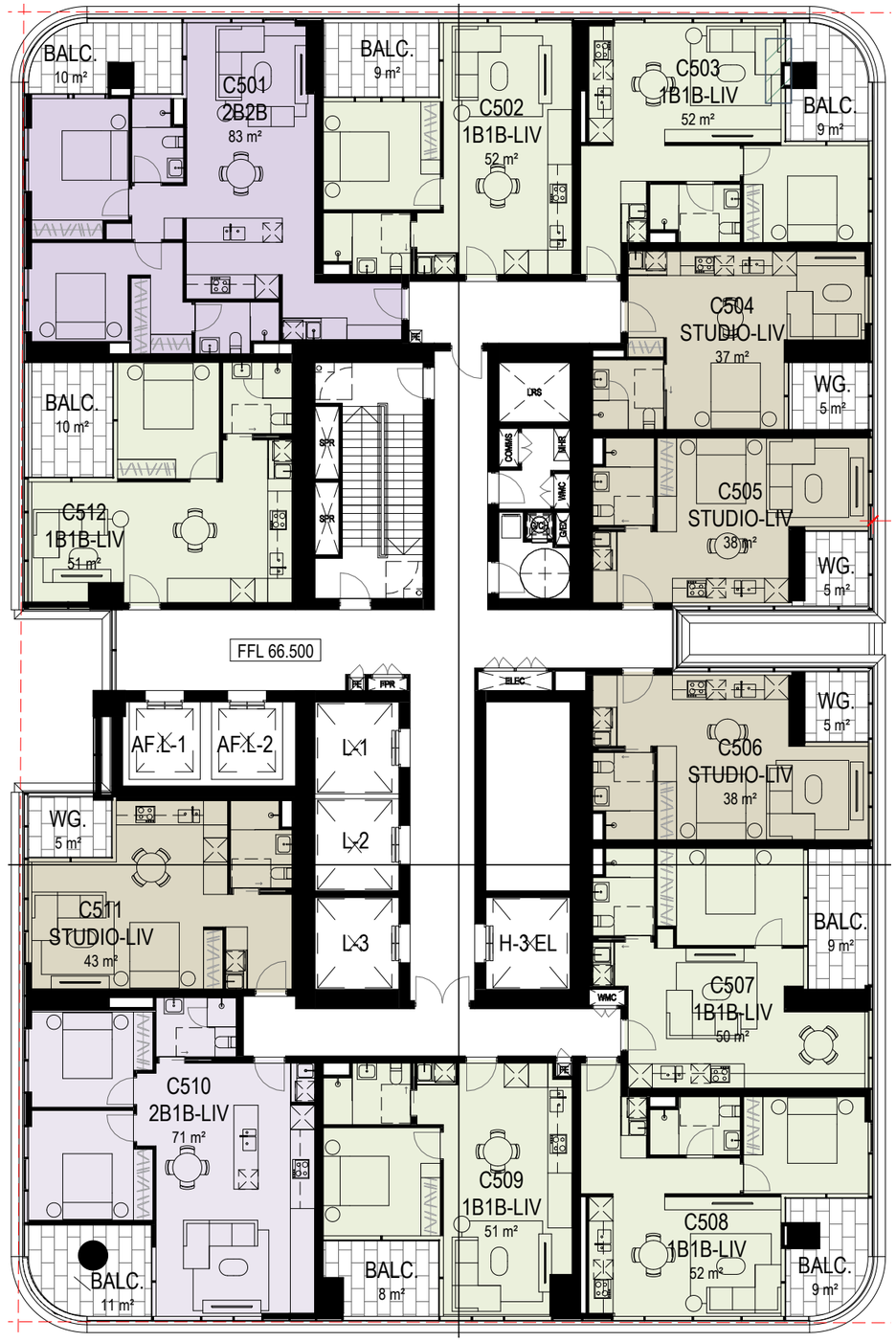
**LEGEND**

- Site Boundary
- 1 Private Gardens
- 2 Multi-purpose Lawn Area
- 3 Bar and Communal Function Zone
- 4 Outdoor Dinning Space
- 5 Outdoor Co-Working Space
- 6 Shade Structures
- 7 Swimming Pool Deck Area
- 8 Swimming Pool
- 9 Cabanas

## Affordable Housing - Cottonwood Tower

| Level | GFA | Studio | I Bed | 2 Bed 1 Bath | 2 Bed 2 Bath | Total |
|---|---|---|---|---|---|---|
| 5 | 754m ² | 4 | 6 | 1 | 1 | 12 |
| 6 | 754m ² | 4 | 6 | 1 | 1 | 12 |
| 7 | 754m ² | 4 | 6 | 1 | 1 | 12 |
| 8 | 754m ² | 4 | 6 | 1 | 1 | 12 |
| 9 | 754m ² | 4 | 6 | 1 | 1 | 12 |
| **Total** | **3,770m ²** | **20** | **30** | **5** | **5** | **60** |

Note: Apartments with "LIV" suffix comply with Livable Housing Design Standards.




Level 5-9 Plan

## 5.11.11 Principle 9: Aesthetics

**Good design achieves a built form that has good proportions and a balanced composition of elements, reflecting the internal layout and structure. Good design uses a variety of materials, colours and textures.**

**The visual appearance of well-designed apartment development responds to the existing or future local context, particularly desirable elements and repetitions of the streetscape.**

The proposal aims to present an appealing and cohesive identity to the proposed development. Attention has been made to Connect with Country and intentionally differentiate the architectural character between the varied building masses.

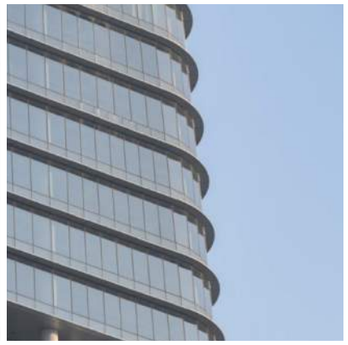
All buildings engage with similar material types, however express them in varying architectural forms. The idea of the built form seen as a podium and tower element is reflected in the material palette. The facades are modern in language and reflect contemporary building methods and include various techniques to create visual and textural interest including:

- The lower levels of the development will provide a durable textural base from which openings, entrances and opportunities for planting will be carved. Through the use of stone cladding, metal screens and battens.
- Careful consideration was given to articulate and differentiate separate characters for all 3 building forms. The podium form reads as a textured horizontal expression in order to establish a strong street presence and human scale to the street.
- The tower forms are simple articulated glazed forms. With expressed sunshade hoods, rounded corners to reduce their bulk, an articulated 'waist' where they meet the podium, their super structure breaks down the tower forms, and the crown of the buildings expressed with a denser layer of sunshade hoods.
- The sunshade hoods, metal-pan glazing panels, and contrasting colour of the super structure create interesting shadow effects and increase appearance of depth and allow for improved solar shading and framing of the views
- The two towers have a subtle hue variation in their glass façade, referencing their Connection to Country - the Black Snapper and Yellow Crested Cockatoo, creating a play of light in the expression at each tower.
- The landscape and connecting with nature will play an important role in improving people's well-being. Your experience starts from the entry lobbies with the landscape weaving though the ground plane and cascading over the podium edge. A communal podium rooftop provides a series of garden spaces with various active and passive uses.
- The selection of planting is informed by Connecting with Country. With endemic species providing habitats for birds, insects and organisms.

The combination of these approaches is considered compatible with the future desired architectural character of the precinct.

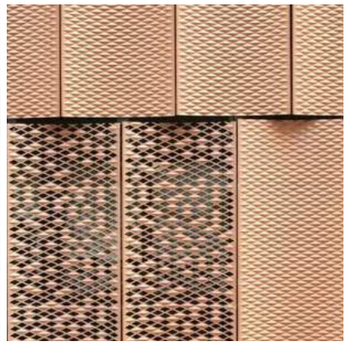
Material selection includes components which are long lasting and weather naturally, have a finer grain and texture to achieve a more appropriate human scale within the urban environment. Proposed colours utilised are those which are found naturally. This is to establish a more subtle visual dialogue with the surrounding context and landscaping.











### 5.11.12 Principle 9: Aesthetics

Podium & Tower Close Up

# 5.12. Architectural Design Excellence Statement

We believe making buildings is a big responsibility, and architecture is the built expression of the values and ambitions of a society affecting the lives of those who inhabit them.

The proposal achieves design excellence through the following:

- Create a world class residential community with the highest living space standards,
- Biophilic design and connecting to nature,
- Acknowledge Country and the people in the building and landscape design,
- A civic presence to the building design that reflects the human scale to the street and interface with the public domain,
- Tower heights that vary to create an articulated skyline,
- Use high quality, beautiful and durable materials to ensure the development retains its quality and appearance over time,
- Provide beautiful communal spaces in entry lobbies, podium rooftop, and internal spaces that directly connect to the podium rooftop,
- Comply with the planning controls and the Apartment Design Guide,
- Provide substantial consolidated podium rooftop communal open space with high solar amenity,
- Pedestrian entries with grand double height spaces that incorporate public art and landscaping,
- Application of passive design principles, energy and water efficient technologies and using high performance facades that complies with Basix and achieves a 7 star NatHERS sating.

# 6. SEPP65 Compliance Schedule

# 6.1. Design Verification Statement

Department of Planning, Housing and Infrastructure

4 Parramatta Square
12 Darcy Street
PARRAMATTA NSW 2150

RE: 88 WATERLOO STATE SIGNIFICANT DEVELOPMENT APPLICATION

Pursuant to Clause 50 (1A) of the Environmental Planning and Assessment Regulation 2000, I, Mark Gazy Architect (NSW) 7289, hereby declare that I am a qualified designer, which means a person registered as an architect in accordance with the Architects Act 2003 as defined by Clause 3 of the Environmental Planning and Assessment Regulation 2000.

I directed the design of the apartment development stated above and I confirm that the design achieves the design quality principles set out in Schedule1 Design quality principles of the State Environmental Planning Policy No 65 – Design Quality of Residential Apartment Development.

Mark Gazy, Studio Director

Architect 7289 (NSW)

AJC

# 6.2. Schedule: Alignment with ADG

| Ref | Item Description | Design Criteria | Design Guidance | Notes | Objective Achieved ✓ / ✕ |
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| **PART 3** | **SITING THE DEVELOPMENT** | | | | |
| **3A** | **SITE ANALYSIS** | | | | |
| **Objective 3A-1** | Site analysis illustrates that design decisions have been based on opportunities and constraints of the site conditions and their relationship to the surrounding context | | | | |
| **3A-1.1** | Each element in the Site Analysis Checklist should be addressed (see Appendix 1 in ADG) | | ● | Complies – refer to:<br>DA1001 – SITE ANALYSIS PLAN | ✓ |
| **3B** | **ORIENTATION** | | | | |
| **Objective 3B-1** | Building types and layouts respond to the streetscape and site while optimising solar access within the development | | | | |
| **3B-1.1** | Buildings along the street frontage define the street, by facing it and incorporating direct access from the street (see figure 3B.1 in ADG) | | ● | Sited on corner of Cottonwood Cr and Waterloo Rd- The podium design grounds the two towers within a sloping site, and visually complements the existing and proposed neighbouring buildings and greenspace. Landscaped area and built form define the entry experience. Refer landscape plans and visualisations | ✓ |
| **3B-1.2** | Where the street frontage is to the east or west, rear buildings are orientated to the north | | ● | Complies | ✓ |
| **3B-1.3** | Where the street frontage is to the north or south, overshadowing to the south should be minimised and buildings behind the street frontage should be orientated to the east and west (see figure 3B.2 in ADG) | | ● | Complies | ✓ |
| **Objective 3B-2** | **Overshadowing of neighbouring properties is minimised during mid-winter** | | | | |
| **3B-2.1** | Living areas, private open space and communal open space should receive solar access in accordance with sections 3D Communal and public open space and 4A Solar and daylight access | | ● | Complies. Refer Solar Access and View From Sun diagrams – DA2910 | ✓ |
| **3B-2.2** | Solar access to living rooms, balconies and private open spaces of neighbours should be considered | | ● | Solar access to neighbours is maximised.<br>**2-10 Cottonwood Crescent**<br>Existing 70% - Approved DA 65% - Proposed 58% - Refer Section 5.11.8.5<br>**14-16 Cottonwood Crescent**<br>Existing 85% - Proposed 70%<br>**13 Cottonwood Crescent**<br>Existing 0% - Proposed 0%<br>Refer DA2605 & DA2606. | ✓ |
| **3B-2.3** | Where an adjoining property does not currently receive the required hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20% | | ● | Complies – Refer 3B-2.2 | ✓ |
| **3B-2.4** | If the proposal will reduce the solar access of neighbours, building separation should be increased beyond minimums contained in section 3F Visual privacy | | ● | | N/A |
| **3B-2.5** | Overshadowing is minimised to the south or downhill by increased upper level setbacks | | ● | Complies with setbacks of the ADG & DCP | ✓ |
| **3B-2.6** | It is optimal to orientate buildings at 90 degrees to the boundary with neighbouring properties to minimise overshadowing and privacy impacts, particularly where minimum setbacks are used and where buildings are higher than the adjoining development | | ● | | ✓ |
| **3B-2.7** | A minimum of 4 hours of solar access should be retained to solar collectors on neighbouring buildings | | ● | | N/A |
| **3C** | **PUBLIC DOMAIN INTERFACE** | | | | |
| **Objective 3C-1** | Transition between private and public domain is achieved without compromising safety and security | | | | |
| **3C-1.1** | Terraces, balconies and courtyard apartments should have direct street entry, where appropriate | | ● | Complies – Townhouses have street access off Waterloo Road | ✓ |
| **3C-1.2** | Changes in level between private terraces, front gardens and dwelling entries above the street level provide surveillance and improve visual privacy for ground level dwellings (see figure 3C.1 in ADG) | | ● | Complies | ✓ |
| **3C-1.3** | Upper level balconies and windows should overlook the public domain | | ● | Complies | ✓ |
| **3C-1.4** | Front fences and walls along street frontages should use visually permeable materials and treatments. The height of solid fences or walls is limited to 1m | | ● | Complies | ✓ |
| **3C-1.5** | Length of solid walls should be limited along street frontages | | ● | Complies | ✓ |
| **3C-1.6** | Opportunities should be provided for casual interaction between residents & the public domain. Design solutions may include seating at building entries, near letter boxes and in private courtyards adjacent to streets. | | ● | Seating is incorporated into the lobbies of all buildings and through the landscape 'Linear Park' along Waterloo Road. | ✓ |
| **3C-1.7** | In developments with multiple buildings and/or entries, pedestrian entries and spaces associated with individual buildings/entries should be differentiated to improve legibility for residents, using a number of the following design solutions:<br>• Architectural detailing<br>• Changes in materials<br>• Plant species<br>• Colours | | ● | Entries to all buildings are articulated through the use of grand double height lobby spaces, clearly identified through the use of awnings, materials and signage. | ✓ |

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| **3C-1.8** | Opportunities for people to be concealed should be minimised | | ● | Complies | ✓ |
| **Objective 3C-2** | Amenity of the public domain is retained and enhanced | | | | |
| **3C-2.1** | Planting softens the edges of any raised terraces to the street, for example above sub-basement car parking | | ● | Complies – Refer to Landscape drawings | ✓ |
| **3C-2.2** | Mail boxes are located in lobbies, perpendicular to the street alignment or integrated into front fences where individual street entries are provided | | ● | Complies | ✓ |
| **3C-2.3** | The visual prominence of underground car park vents should be minimised and located at a low level where possible | | ● | Complies – incorporated into the façade design and character of the building | ✓ |
| **3C-2.4** | Substations, pump rooms, garbage storage areas and other service requirements should be located in basement car parks or out of view | | ● | All service areas are concealed in the basement with the exception of the substation and hydrant booster which are both integrated into the landscaping of the lower ground floor. | ✓ |
| **3C-2.5** | Ramping for accessibility should be minimised by building entry location and setting ground floor levels in relation to footpath levels | | ● | Complies | ✓ |
| **3C-2.6** | Durable, graffiti resistant and easily cleanable materials should be used | | ● | Durable, robust materials are proposed to the ground floor/public areas. | ✓ |
| **3C-2.7** | Where development adjoins public parks, open space or bushland, the design positively addresses this interface and uses a number of the following design solutions:<br>• street access, pedestrian paths and building entries which are clearly defined<br>• paths, low fences and planting that clearly delineate between communal/private open space and the adjoining public open space<br>• minimal use of blank walls, fences and ground level parking | | ● | Complies | ✓ |
| **3C-2.8** | On sloping sites protrusion of car parking above ground level should be minimised by using split levels to step underground car parking | | ● | Above ground carparking is proposed due to the proximity of the Metro tunnel adjacent the site. The screening of the carpark is integrated into the design of the podium façade and provides a high quality architecture to the public domain. | ✓ |
| **3D** | **COMMUNAL AND PUBLIC OPEN SPACE** | | | | |
| **Objective 3D-1** | An adequate area of communal open space is provided to enhance residential amenity and to provide opportunities for landscaping | | | | |
| **3D-1.1** | Communal open space has a minimum area equal to 25% of the site (see figure 3D.3 in ADG) | ● | | Complies<br>External – 1,252m2<br>Internal - 438 m2<br>Proposed – 1,690m2 – 32.9% | ✓ |
| **3D-1.2** | Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9am and 3pm on 21 June (mid-winter) | ● | | Complies | ✓ |

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| **3D-1.3** | Communal open space should be consolidated into a well-designed, easily identified and usable area | | ● | Complies | ✓ |
| **3D-1.4** | Communal open space should have a minimum dimension of 3m, and larger developments should consider greater dimensions | | ● | Complies – refer to Landscape drawings | ✓ |
| **3D-1.5** | Communal open space should be co-located with deep soil areas | | ● | Due to the size of the site the communal open spaces are located on the podium rooftop. Deep soil planter beds are incorporated into the design to provide planting of significant tall trees. | ✓ |
| **3D-1.6** | Direct, equitable access should be provided to communal open space areas from common circulation areas, entries and lobbies | | ● | Complies – Internal and external areas are directly accessed from lift lobbies | ✓ |
| **3D-1.7** | Where communal open space cannot be provided at ground level, it should be provided on a podium or roof | | ● | Complies | ✓ |
| **3D-1.8** | Where developments are unable to achieve the design criteria, such as on small lots, sites within business zones, or in a dense urban area, they should:<br>• provide communal spaces elsewhere such as a landscaped roof top terrace or a common room<br>• provide larger balconies or increased private open space for apartments<br>• demonstrate good proximity to public open space and facilities and/or provide contributions to public open space | | ● | | N/A |
| **Objective 3D-2** | Communal open space is designed to allow for a range of activities, respond to site conditions and be attractive and inviting | | | | |
| **3D-2.1** | Facilities are provided within communal open spaces and common spaces for a range of age groups (see also 4F Common circulation and spaces), incorporating some of the following elements:<br>• seating for individuals or groups<br>• barbecue areas<br>• play equipment or play areas<br>• swimming pools, gyms, tennis courts or common rooms | | ● | Complies – Various external and internal areas are provided for active and passive uses for both individual and larger groups. These are collocated on the podium rooftop to create a seamless indoor/ outdoor connection between the communal uses. | ✓ |
| **3D-2.2** | The location of facilities responds to microclimate and site conditions with access to sun in winter, shade in summer and shelter from strong winds and down drafts | | ● | Complies | ✓ |
| **3D-2.3** | Visual impacts of services should be minimised, including location of ventilation duct outlets from basement car parks, electrical substations and detention tank | | ● | Complies – refer 3C-2.4 | ✓ |

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| **Objective 3D-3** | Communal open space is designed to maximise safety | | | | |
| **3D-3.1** | Communal open space and the public domain should be readily visible from habitable rooms and private open space areas while maintaining visual privacy. Design solutions may include:<br>• bay windows<br>• corner windows<br>• balconies | | ● | Complies | ✓ |
| **3D-3.2** | Communal open space should be well lit | | ● | Complies | ✓ |
| **3D-3.3** | Where communal open space/facilities are provided for children and young people they are safe and contained | | ● | The communal open space facilities balance a sense of containment with varying degrees of openness to the podium level for surveillance & activation purposes | ✓ |
| **Objective 3D-4** | Public open space, where provided, is responsive to the existing pattern and uses of the neighbourhood | | | | |
| **3D-4.1** | The public open space should be well connected with public streets along at least one edge | | ● | A new Linear Park is located along the Waterloo Road frontage consistent the MPIP Masterplan that is activated by retail spaces and residential lobby. | N/A |
| **3D-4.2** | The public open space should be connected with nearby parks and other landscape elements | | ● | The Linear Park forms part of the MPIP Masterplan and connects to the Shrimptons Creek Parklands spaces. | N/A |
| **3D-4.3** | Public open space should be linked through view lines, pedestrian desire paths, termination points and the wider street grid | | ● | Complies - refer 3D-4.2 above. | ✓ |
| **3D-4.4** | Solar access should be provided year round along with protection from strong winds | | ● | Complies – awnings have been proposed along the Waterloo Road frontage to mitigate from wind impacts. Wind modelling shows no adverse impacts to Elouera Reserve from the proposed development. | ✓ |
| **3D-4.5** | Opportunities for a range of recreational activities should be provided for people of all ages | | ● | Complies - refer 3D-4.2 above. | ✓ |
| **3D-4.6** | A positive address and active frontages should be provided adjacent to public open space | | ● | Complies - refer 3D-4.1 above. | ✓ |
| **3D-4.7** | Boundaries should be clearly defined between public open space and private areas | | ● | Complies | ✓ |

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| **3E** | **DEEP SOIL ZONES** | | | | |
| **Objective 3E-1** | Deep soil zones provide areas on the site that allow for and support healthy plant and tree growth. They improve residential amenity and promote management of water and air quality | | | | |
| **3E-1.1** | Deep soil zones are to meet the following minimum requirements:<br><br>**Site area** / **Minimum dimensions** / **Deep soil zone (% of site area)**<br>< 650m² / - / 7%<br>650m²-1,500m² / 3m<br>> 1,500m² / 6m<br>> 1,500m² with significant existing tree cover / 6m | | ● | Complies – Deep Soil<br>7% of Site Area 359.1m²<br>Proposed 421m² / 8.2% | ✓ |
| **3E-1.2** | On some sites it may be possible to provide larger deep soil zones, depending on the site area and context:<br>• 10% of the site as deep soil on sites with an area of 650m²-1,500m²<br>• 15% of the site as deep soil on sites greater than 1,500m2 | | ● | Refer 3E-1.1 | ✓ |
| **3E-1.3** | Deep soil zones should be located to retain existing significant trees and to allow for the development of healthy root systems, providing anchorage and stability for mature trees. Design solutions may include:<br>• basement and sub-basement car park design that is consolidated beneath building footprints<br>• use of increased front and side setbacks<br>• adequate clearance around trees to ensure long term health<br>• co-location with other deep soil areas on adjacent sites to create larger contiguous areas of deep soil | | ● | Significant effort has been made to retain as many of the existing trees along the boundaries. Deep soil planting has been integrated with the retention of the trees. Refer to the Arborist & Landscape Reports. | ✓ |
| **3E-1.4** | Achieving the design criteria may not be possible on some sites including where:<br>• the location and building typology have limited or no space for deep soil at ground level (e.g. central business district, constrained sites, high density areas, or in centres)<br>• there is 100% site coverage or non-residential uses at ground floor level<br>Where a proposal does not achieve deep soil requirements, acceptable stormwater management should be achieved and alternative forms of planting provided such as on structure | | ● | | N/A |

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| **3F** | **VISUAL PRIVACY** | | | | |
| **Objective 3F-1** | Adequate building separation distances are shared equitably between neighbouring sites, to achieve reasonable levels of external and internal visual privacy | | | | |
| **3F-1.1** | Separation between windows and balconies is provided to ensure visual privacy is achieved. Minimum required separation distances from buildings to the side and rear boundaries are as follows:<br>Building height / Habitable rooms and balconies / Non-habitable rooms<br>Up to 12m (4 storeys) / 6m / 3m<br>Up to 25m (5-8 storeys) / 9m / 4.5m<br>Over 25m (9+ storeys) / 12m / 6m<br>Note: Separation distances between buildings on the same site should combine required building separations depending on the type of room (see figure 3F.2 in ADG)<br><br>Gallery access circulation should be treated as habitable space when measuring privacy separation distances between neighbouring properties | | ● | Generally Complies – Separation between habitable rooms in towers is 18m. Refer ADG separation diagram | ✓ |
| **3F-1.2** | Generally one step in the built form as the height increases due to building separations is desirable. Additional steps should be careful not to cause a 'ziggurat' appearance | | ● | Complies – The built form consists of a podium and setback tower forms. | ✓ |
| **3F-1.3** | For residential buildings next to commercial buildings, separation distances should be measured as follows:<br>• for retail, office spaces and commercial balconies use the habitable room distances<br>• for service and plant areas use the non-habitable room distances | | ● | | N/A |
| **3F-1.4** | New development should be located and oriented to maximise visual privacy between buildings on site and for neighbouring buildings. Design solutions include:<br>• site layout and building orientation to minimise privacy impacts (see also section 3B Orientation)<br>• on sloping sites, apartments on different levels have appropriate visual separation distances (see figure 3F.4 in ADG) | | ● | Complies | ✓ |
| **3F-1.5** | Apartment buildings should have an increased separation distance of 3m (in addition to the requirements set out in design criteria 1) when adjacent to a different zone that permits lower density residential development to provide for a transition in scale and increased landscaping (figure 3F.5 in ADG) | | ● | | N/A |
| **3F-1.6** | Direct lines of sight should be avoided for windows and balconies across corners | | ● | Complies | ✓ |
| **3F-1.7** | No separation is required between blank walls | | ● | | N/A |

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| **Objective 3F-2** | Site and building design elements increase privacy without compromising access to light and air and balance outlook and views from habitable rooms and private open space | | | | |
| **3F-2.1** | Communal open space, common areas and access paths should be separated from private open space and windows to apartments, particularly habitable room windows. Design solutions may include:<br>• setbacks<br>• solid or partially solid balustrades to balconies at lower levels<br>• fencing and/or trees and vegetation to separate spaces<br>• screening devices<br>• bay windows or pop out windows to provide privacy in one direction and outlook in another<br>• raising apartments/private open space above the public domain or communal open space<br>• planter boxes incorporated into walls and balustrades to increase visual separation<br>• pergolas or shading devices to limit overlooking of lower apartments or private open space<br>• on constrained sites where it can be demonstrated that building layout opportunities are limited, fixed louvres or screen panels to windows and/or balconies | | ● | Complies – Refer Landscape Drawings | ✓ |
| **3F-2.2** | Bedrooms, living spaces and other habitable rooms should be separated from gallery access and other open circulation space by the apartment's service areas | | ● | Complies | ✓ |
| **3F-2.3** | Balconies and private terraces should be located in front of living rooms to increase internal privacy | | ● | Complies | ✓ |
| **3F-2.4** | Windows should be offset from the windows of adjacent buildings | | ● | Complies | ✓ |
| **3F-2.5** | Recessed balconies and/or vertical fins should be used between adjacent balconies | | ● | Complies | ✓ |
| **3G** | **PEDESTRIAN ACCESS AND ENTRIES** | | | | |
| **Objective 3G-1** | Building entries and pedestrian access connects to and addresses the public domain | | | | |
| **3G-1.1** | Multiple entries (including communal building entries and individual ground floor entries) should be provided to activate the street edge | | ● | Complies | ✓ |
| **3G-1.2** | Entry locations relate to the street and subdivision pattern and the existing pedestrian network | | ● | Complies | ✓ |
| **3G-1.3** | Building entries should be clearly identifiable and communal entries should be clearly distinguishable from private entries | | ● | Complies | ✓ |
| **3G-1.4** | Where street frontage is limited and multiple buildings are located on the site, a primary street address should be provided with clear sight lines and pathways to secondary building entries | | ● | Complies | ✓ |

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| **Objective 3G-2** | Access, entries and pathways are accessible and easy to identify | | | | |
| **3G-2.1** | Building access areas including lift lobbies, stairwells and hallways should be clearly visible from the public domain and communal spaces | | ● | Complies – all hallways for residential have daylighting and visual access to outside | ✓ |
| **3G-2.2** | The design of ground floors and underground car parks minimise level changes along pathways and entries | | ● | Complies | ✓ |
| **3G-2.3** | Steps and ramps should be integrated into the overall building and landscape design | | ● | Complies | ✓ |
| **3G-2.4** | For large developments 'way finding' maps should be provided to assist visitors and residents (see figure 4T.3 in ADG) | | ● | Complies | ✓ |
| **3G-2.5** | For large developments electronic access and audio/video intercom should be provided to manage access | | ● | Complies | ✓ |
| **Objective 3G-3** | Large sites provide pedestrian links for access to streets and connection to destinations | | | | |
| **3G-3.1** | Pedestrian links through sites facilitate direct connections to open space, main streets, centres and public transport | | ● | | N/A |
| **3G-3.2** | Pedestrian links should be direct, have clear sight lines, be overlooked by habitable rooms or private open spaces of dwellings, be well lit and contain active uses, where appropriate | | ● | | N/A |
| **3H** | **VEHICLE ACCESS** | | | | |
| **Objective 3H-1** | Vehicle access points are designed and located to achieve safety, minimise conflicts between pedestrians and vehicles and create high quality streetscapes | | | | |
| **3H-1.1** | Car park access should be integrated with the building's overall facade. Design solutions may include:<br>• the materials and colour palette to minimise visibility from the street<br>• security doors or gates at entries that minimise voids in the façade<br>• where doors are not provided, the visible interior reflects the facade design and the building services, pipes and ducts are concealed | | ● | Complies – Carpark entries have roller doors incorporated into the detailing of the building character. The loading dock entry is below street level and not visible from the public domain. | ✓ |
| **3H-1.2** | Car park entries should be located behind the building line | | ● | Complies – Entries are offset from building line by 1.2m | ✓ |
| **3H-1.3** | Vehicle entries should be located at the lowest point of the site minimising ramp lengths, excavation and impacts on the building form and layout | | ● | Complies | ✓ |
| **3H-1.4** | Car park entry and access should be located on secondary streets or lanes where available | | ● | Complies | ✓ |
| **3H-1.5** | Vehicle standing areas that increase driveway width and encroach into setbacks should be avoided | | ● | Complies | ✓ |
| **3H-1.6** | Access point locations should avoid headlight glare to habitable rooms | | ● | Complies | ✓ |
| **3H-1.7** | Adequate separation distances should be provided between vehicle entries and street intersections | | ● | Complies | ✓ |
| **3H-1.8** | The width and number of vehicle access points should be limited to the minimum | | ● | Complies | ✓ |
| **3H-1.9** | Visual impact of long driveways should be minimised through changing alignments and screen planting | | ● | | N/A |
| **3H-1.10** | The need for large vehicles to enter or turn around within the site should be avoided | | ● | City of Ryde Council has requested service vehicles entering and leaving in a forward direction. This is achieved through a turntable located in the loading dock. | X |
| **3H-1.11** | Garbage collection, loading and servicing areas are screened | | ● | Complies – in basement | ✓ |
| **3H-1.12** | Clear sight lines should be provided at pedestrian and vehicle crossings | | ● | Complies | ✓ |
| **3H-1.13** | Traffic calming devices such as changes in paving material or textures should be used where appropriate | | ● | Complies | ✓ |
| **3H-1.14** | Pedestrian and vehicle access should be separated and distinguishable. Design solutions may include:<br>• changes in surface materials<br>• level changes<br>• the use of landscaping for separation | | ● | Complies | ✓ |
| **3J** | **BICYCLE AND CAR PARKING** | | | | |
| **Objective 3J-1** | Car parking is provided based on proximity to public transport in metropolitan Sydney and centres in regional areas | | | | |
| **3J-1.1** | For development in the following locations:<br>• on sites that are within 800 metres of a railway station or light rail stop in the Sydney Metropolitan Area; or<br>• on land zoned, and sites within 400 metres of land zoned, B3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre<br><br>The minimum car parking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less<br>The car parking needs for a development must be provided off street | ● | | Complies – Refer to Traffic Report | ✓ |
| **3J-1.2** | Where a car share scheme operates locally, provide car share parking spaces within the development. Car share spaces, when provided, should be on site | | ● | Complies | ✓ |
| **3J-1.3** | Where less car parking is provided in a development, council should not provide on street resident parking permits | | ● | | N/A |

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| **Objective 3J-2** | Parking and facilities are provided for other modes of transport | | | | |
| **3J-2.1** | Conveniently located and sufficient numbers of parking spaces should be provided for motorbikes and scooters. | | ● | City of Ryde does not require provisions for motorbikes | X |
| **3J-2.2** | Secure undercover bicycle parking should be provided that is easily accessible from both the public domain and common areas | | ● | Complies – accessed directly from ground level | ✓ |
| **3J-2.3** | Conveniently located charging stations are provided for electric vehicles, where desirable | | ● | Complies | ✓ |
| **Objective 3J-3** | Car park design and access is safe and secure | | | | |
| **3J-3.1** | Supporting facilities within car parks, including garbage, plant and switch rooms, storage areas and car wash bays can be accessed without crossing car parking spaces | | ● | Complies | ✓ |
| **3J-3.2** | Direct, clearly visible and well lit access should be provided into common circulation areas | | ● | Complies | ✓ |
| **3J-3.3** | A clearly defined and visible lobby or waiting area should be provided to lifts and stairs | | ● | Complies | ✓ |
| **3J-3.4** | For larger car parks, safe pedestrian access should be clearly defined and circulation areas have good lighting, colour, line marking and/or bollards | | ● | Complies | ✓ |
| **Objective 3J-4** | Visual and environmental impacts of underground car parking are minimised | | | | |
| **3J-4.1** | Excavation should be minimised through efficient car park layouts and ramp design | | ● | Complies | ✓ |
| **3J-4.2** | Car parking layout should be well organised, using a logical, efficient structural grid and double loaded aisles | | ● | Complies | ✓ |
| **3J-4.3** | Protrusion of car parks should not exceed 1m above ground level. Design solutions may include stepping car park levels or using split levels on sloping sites | | ● | Above ground carparking is proposed due to the proximity of the Metro tunnel adjacent the site. The screening of the carpark is integrated into the design of the podium façade and provides a high quality architecture to the public domain. | ✓ |
| **3J-4.4** | Natural ventilation should be provided to basement and sub-basement car parking areas | | ● | Due to the number of carpark basements mechanical ventilation will be required. Natural ventilation will be proposed to carparking above ground. | ✓ |
| **3J-4.5** | Ventilation grills or screening devices for car parking openings should be integrated into the facade and landscape design | | ● | Complies | ✓ |
| **Objective 3J-5** | Visual and environmental impacts of on-grade car parking are minimised | | | | |
| **3J-5.1** | On-grade car parking should be avoided | | ● | Complies – all carparking contained within building | ✓ |
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| Ref | Item Description | Design Criteria | Design Guidance | Notes | Objective Achieved ✓ / ✕ |
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| **3J-5.2** | Where on-grade car parking is unavoidable, the following design solutions are used:<br>• parking is located on the side or rear of the lot away from the primary street frontage<br>• cars are screened from view of streets, buildings, communal and private open space areas<br>• safe and direct access to building entry points is provided<br>• parking is incorporated into the landscape design of the site, by extending planting and materials into the car park space<br>• stormwater run-off is managed appropriately from car parking surfaces<br>• bio-swales, rain gardens or on site detention tanks are provided, where appropriate<br>• light coloured paving materials or permeable paving systems are used and shade trees are planted between every 4-5 parking spaces to reduce increased surface temperatures from large areas of paving | | ● | | N/A |
| **Objective 3J-6** | Visual and environmental impacts of above ground enclosed car parking are minimised | | | | |
| **3J-6.1** | Exposed parking should not be located along primary street frontages | | ● | Complies | ✓ |
| **3J-6.2** | Screening, landscaping and other design elements including public art should be used to integrate the above ground car parking with the facade. Design solutions may include:<br>• car parking that is concealed behind the facade, with windows integrated into the overall facade design (approach should be limited to developments where a larger floor plate podium is suitable at lower levels)<br>• car parking that is 'wrapped' with other uses, such as retail, commercial or two storey Small Office/Home Office (SOHO) units along the street frontage (see figure 3J.9 in ADG) | | ● | Complies – The character of the above ground carpark screening is integrated into the design of the podium façade and provides a high quality architecture to the public domain. The design has been informed by the Connecting with Country process. | ✓ |
| **3J-6.3** | Positive street address and active frontages should be provided at ground level | | ● | Complies | ✓ |
| **PART 4** | **DESIGNING THE BUILDING** | | | | |
| **4A** | **SOLAR AND DAYLIGHT ACCESS** | | | | |
| **Objective 4A-1** | To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space | | | | |
| **4A-1.1** | Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid-winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas | ● | | Generally Complies<br>Waterloo Tower – 67.1%<br>Cottonwood Tower – 69.2%<br>Total 68.15%<br>Waterloo Tower has 15 apartments (1.8%) on the upper levels that face south towards the significant city and harbour bridge views. | ✓ |

| Ref | Item Description | Design Criteria | Design Guidance | Notes | Objective Achieved ✓ / × |
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| **4A-1.2** | In all other areas, living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 3 hours direct sunlight between 9 am and 3 pm at mid-winter | ● | | | N/A |
| **4A-1.3** | A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid-winter | ● | | Max. 15% of apartments receive no solar:<br>Cottonwood Tower achieves 16.9%<br>Waterloo Tower achieves 2.1%<br>Complies on average | ✓ |
| **4A-1.4** | The design maximises north aspect and the number of single aspect south facing apartments is minimised | | ● | Generally Complies – upper levels have prominent city views to the south | ✓ |
| **4A-1.5** | Single aspect, single storey apartments should have a northerly or easterly aspect | | ● | Complies – where orientation permits | ✓ |
| **4A-1.6** | Living areas are best located to the north and service areas to the south and west of apartments | | ● | Complies – where orientation permits | ✓ |
| **4A-1.7** | To optimise the direct sunlight to habitable rooms and balconies a number of the following design features are used:<br>• dual aspect apartments<br>• shallow apartment layouts<br>• two storey and mezzanine level apartments<br>• bay windows | | ● | Complies - the number of corner apartments with dual aspect is maximised | ✓ |
| **4A-1.8** | To maximise the benefit to residents of direct sunlight within living rooms and private open spaces, a minimum of 1m$^2$ of direct sunlight, measured at 1m above floor level, is achieved for at least 15 minutes | | ● | Complies | ✓ |
| **4A-1.9** | Achieving the design criteria may not be possible on some sites. This includes:<br>• where greater residential amenity can be achieved along a busy road or rail line by orientating the living rooms away from the noise source<br>• on south facing sloping sites<br>• where significant views are oriented away from the desired aspect for direct sunlight<br><br>Design drawings need to demonstrate how site constraints and orientation preclude meeting the design criteria and how the development meets the objective | | ● | Generally Complies – upper levels have prominent city views to the south | ✓ |
| **Objective 4A-2** | Daylight access is maximised where sunlight is limited | | | | |
| **4A-2.1** | Courtyards, skylights and high level windows (with sills of 1,500mm or greater) are used only as a secondary light source in habitable rooms | | ● | | N/A |
| **4A-2.2** | Where courtyards are used:<br>• use is restricted to kitchens, bathrooms and service areas<br>• building services are concealed with appropriate detailing and materials to visible walls<br>• courtyards are fully open to the sky<br>• access is provided to the light well from a communal area for cleaning and maintenance<br>• acoustic privacy, fire safety and minimum privacy separation distances (see section 3F Visual privacy) are achieved | | ● | | N/A |
| **4A-2.3** | Opportunities for reflected light into apartments are optimised through:<br>• reflective exterior surfaces on buildings opposite south facing windows<br>• positioning windows to face other buildings or surfaces (on neighbouring sites or within the site) that will reflect light<br>• integrating light shelves into the design<br>• light coloured internal finishes | | ● | Complies | ✓ |
| **Objective 4A-3** | Design incorporates shading and glare control, particularly for warmer months | | | | |
| **4A-3.1** | A number of the following design features are used:<br>• balconies or sun shading that extend far enough to shade summer sun, but allow winter sun to penetrate living areas<br>• shading devices such as eaves, awnings, balconies, pergolas, external louvres and planting<br>• horizontal shading to north facing windows<br>• vertical shading to east and particularly west facing windows<br>• operable shading to allow adjustment and choice<br>• high performance glass that minimises external glare off windows, with consideration given to reduced tint glass or glass with a reflectance level below 20% (reflective films are avoided) | | ● | | |
| **4B** | **NATURAL VENTILATION** | | | | |
| **Objective 4B-1** | All habitable rooms are naturally ventilated | | | | |
| **4B-1.1** | The building's orientation maximises capture and use of prevailing breezes for natural ventilation in habitable rooms | | ● | | |
| **4B-1.2** | Depths of habitable rooms support natural ventilation. | | ● | | |
| **4B-1.3** | The area of unobstructed window openings should be equal to at least 5% of the floor area served | | ● | | |
| **4B-1.4** | Light wells are not the primary air source for habitable rooms | | ● | | |

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| **4B-1.5** | Doors and openable windows maximise natural ventilation opportunities by using the following design solutions:<br>• adjustable windows with large effective openable areas<br>• a variety of window types that provide safety and flexibility such as awnings and louvres<br>• windows which the occupants can reconfigure to funnel breezes into the apartment such as vertical louvres, casement windows and externally opening doors | | ● | Complies | ✓ |
| **Objective 4B-2** | The layout and design of single aspect apartments maximises natural ventilation | | | | |
| **4B-2.1** | Apartment depths are limited to maximise ventilation and airflow (see also figure 4D.3 in ADG) | | ● | Complies | ✓ |
| **4B-2.2** | Natural ventilation to single aspect apartments is achieved with the following design solutions:<br>• primary windows are augmented with plenums and light wells (generally not suitable for cross ventilation)<br>• stack effect ventilation / solar chimneys or similar to naturally ventilate internal building areas or rooms such as bathrooms and laundries<br>• courtyards or building indentations have a width to depth ratio of 2:1 or 3:1 to ensure effective air circulation and avoid trapped smells | | ● | The number of corner apartments with dual aspect is maximised to achieve ADG compliance | ✓ |
| **Objective 4B-3** | The number of apartments with natural cross ventilation is maximised to create a comfortable indoor environment for residents | | | | |
| **4B-3.1** | At least 60% of apartments are naturally cross ventilated in the first nine storeys of the building. Apartments at ten storeys or greater are deemed to be cross ventilated only if any enclosure of the balconies at these levels allows adequate natural ventilation and cannot be fully enclosed | ● | | Complies<br>Cottonwood Tower 64.0%<br>Waterloo Tower 66.1% | ✓ |
| **4B-3.2** | Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line | ● | | | N/A |
| **4B-3.3** | The building should include dual aspect apartments, cross through apartments and corner apartments and limit apartment depths | | ● | Complies | ✓ |
| **4B-3.4** | In cross-through apartments external window and door opening sizes/areas on one side of an apartment (inlet side) are approximately equal to the external window and door opening sizes/areas on the other side of the apartment (outlet side) (see figure 4B.4 in ADG). | | ● | | N/A |
| **4B-3.5** | Apartments are designed to minimise the number of corners, doors and rooms that might obstruct airflow | | ● | Complies | ✓ |
| **4B-3.6** | Apartment depths, combined with appropriate ceiling heights, maximise cross ventilation and airflow | | ● | Complies | ✓ |

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| **4C** | **CEILING HEIGHTS** | | | | |
| **Objective 4C-1** | Ceiling height achieves sufficient natural ventilation and daylight access | | | | |
| **4C-1.1** | Measured from finished floor level to finished ceiling level, minimum ceiling heights are:<br><br>Min. ceiling heights for apartment and mixed use buildings<br>Habitable rooms: 2.7m<br>Non-habitable: 2.4m<br>2 storey apartments: 2.7 for main living area floor; 2.4 for second floor, where its area does not exceed 50% of the apartment area<br>Attic spaces: 1.8m at edge of room with a 30 degree minimum slope<br>If located in mixed use areas: 3.3m for ground and first floor to promote future flexibility of use<br><br>These minimums do not preclude higher ceilings if desired | ● | | Complies | ✓ |
| **4C-1.2** | Ceiling height can accommodate use of ceiling fans for cooling and heat distribution | | ● | Complies | ✓ |
| **Objective 4C-2** | Ceiling height increases the sense of space in apartments and provides for well-proportioned rooms | | | | |
| **4C-2.1** | A number of the following design solutions can be used:<br>• the hierarchy of rooms in an apartment is defined using changes in ceiling heights and alternatives such as raked or curved ceilings, or double height spaces<br>• well-proportioned rooms are provided, for example, smaller rooms feel larger and more spacious with higher ceilings<br>• ceiling heights are maximised in habitable rooms by ensuring that bulkheads do not intrude. The stacking of service rooms from floor to floor and coordination of bulkhead location above non-habitable areas, such as robes or storage, can assist | | ● | Complies | ✓ |
| **Objective 4C-3** | | | | | |
| **4C-3.1** | Ceiling heights of lower level apartments in centres should be greater than the minimum required by the design criteria allowing flexibility and conversion to non-residential uses (see figure 4C.1 in ADG) | | ● | Complies – the site will be rezoned high density residential | ✓ |

| 4D | APARTMENT SIZE AND LAYOUT | | | | |
|---|---|---|---|---|---|
| **Objective 4D-1** | The layout of rooms within an apartment is functional, well organised and provides a high standard of amenity | | | | |
| **4D-1.1** | Apartments are required to have the following minimum internal areas:<br><br>Apartment type / Min. internal area<br>Studio / 35m²<br>1 bedroom / 50m²<br>2 bedroom / 70m²<br>3 bedroom / 90m²<br><br>The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5m² each<br><br>A fourth bedroom and further additional bedrooms increase the minimum internal area by 12m² each | ● | | Complies | ✓ |
| **4D-1.2** | Every habitable room must have a window in an external wall with a total minimum glass area of not less than 10% of the floor area of the room. Daylight and air may not be borrowed from other rooms | ● | | Complies | ✓ |
| **4D-1.3** | Kitchens should not be located as part of the main circulation space in larger apartments (such as hallway or entry space) | | ● | Complies | ✓ |
| **4D-1.4** | A window should be visible from any point in a habitable room | | ● | Complies | ✓ |
| **4D-1.5** | Where minimum areas or room dimensions are not met apartments need to demonstrate that they are well designed and demonstrate the usability and functionality of the space with realistically scaled furniture layouts and circulation areas. These circumstances would be assessed on their merits | | ● | Complies | ✓ |
| **Objective 4D-2** | | | | | |
| **4D-2.1** | Habitable room depths are limited to a maximum of 2.5 x the ceiling height | ● | | Complies | ✓ |
| **4D-2.2** | In open plan layouts (where the living, dining and kitchen are combined) the maximum habitable room depth is 8m from a window | ● | | Generally Complies when counted to the front face of the back wall of the kitchen. | ✓ |
| **4D-2.3** | Greater than minimum ceiling heights can allow for proportional increases in room depth up to the permitted maximum depths | | ● | | N/A |
| **4D-2.4** | All living areas and bedrooms should be located on the external face of the building | | ● | Complies | ✓ |
| **4D-2.5** | Where possible:<br>• bathrooms and laundries should have an external openable window<br>• main living spaces should be oriented toward the primary outlook and aspect and away from noise sources | | ● | Generally complies - Main living areas are orientated away from noise sources wherever possible | ✓ |
| **Objective 4D-3** | Apartment layouts are designed to accommodate a variety of household activities and needs | | | | |
| **4D-3.1** | Master bedrooms have a minimum area of 10m2 and other bedrooms 9m2 (excluding wardrobe space) | ● | | Complies | ✓ |
| **4D-3.2** | Bedrooms have a minimum dimension of 3m (excluding wardrobe space) | ● | | Complies | ✓ |
| **4D-3.3** | Living rooms or combined living/dining rooms have a minimum width of:<br>• 3.6m for studio and 1 bedroom apartments<br>• 4m for 2 and 3 bedroom apartments | ● | | Complies | ✓ |
| **4D-3.4** | The width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts | ● | | | N/A |
| **4D-3.5** | Access to bedrooms, bathrooms and laundries is separated from living areas minimising direct openings between living and service areas | | ● | Generally complies | ✓ |
| **4D-3.6** | All bedrooms allow a minimum length of 1.5m for robes | | ● | Complies | ✓ |
| **4D-3.7** | The main bedroom of an apartment or a studio apartment should be provided with a wardrobe of a minimum 1.8m long, 0.6m deep and 2.1m high | | ● | Complies | ✓ |
| **4D-3.8** | Apartment layouts allow flexibility over time, design solutions may include:<br>• dimensions that facilitate a variety of furniture arrangements and removal<br>• spaces for a range of activities and privacy levels between different spaces within the apartment<br>• dual master apartments<br>• dual key apartments *Note: dual key apartments which are separate but on the same title are regarded as two sole occupancy units for the purposes of the Building Code of Australia and for calculating the mix of apartments*<br>• room sizes and proportions or open plans (rectangular spaces (2:3) are more easily furnished than square spaces (1:1))<br>• efficient planning of circulation by stairs, corridors and through rooms to maximise the amount of usable floor space in rooms | | ● | Complies | ✓ |

| 4E | PRIVATE OPEN SPACE AND BALCONIES | | | | |
|---|---|---|---|---|---|
| **Objective 4E-1** | Apartments provide appropriately sized private open space and balconies to enhance residential amenity | | | | |
| **4E-1.1** | All apartments are required to have primary balconies as follows:<br><br>Dwelling type / Minimum area / Minimum depth<br>Studio apartments: 4m² / -<br>1 bedroom apartments: 8m² / 2m<br>2 bedroom apartments: 10m² / 2m<br>3+ bedroom apartments: 12m² / 2.4m<br><br>The minimum balcony depth to be counted as contributing to the balcony area is 1m | ● | | Generally Complies<br>Waterloo Tower Balcony Area<br>W108, W204, W304 - 3 bed 10.2m²<br>W402 – 1 Bed 7.2 m² | ✓ |
| **4E-1.2** | For apartments at ground level or on a podium or similar structure, a private open space is provided instead of a balcony. It must have a minimum area of 15m² and a minimum depth of 3m | ● | | Complies | ✓ |
| **4E-1.3** | Increased communal open space should be provided where the number or size of balconies are reduced | | ● | Complies | ✓ |
| **4E-1.4** | Storage areas on balconies is additional to the minimum balcony size | | ● | | N/A |
| **4E-1.5** | Balcony use may be limited in some proposals by:<br>• consistently high wind speeds at 10 storeys and above<br>• close proximity to road, rail or other noise sources<br>• exposure to significant levels of aircraft noise<br>• heritage and adaptive reuse of existing buildings<br><br>In these situations, juliette balconies, operable walls, enclosed wintergardens or bay windows may be appropriate, and other amenity benefits for occupants should also be provided in the apartments or in the development or both. Natural ventilation also needs to be demonstrated | | ● | Complies – Wintergardens are proposed from level 20 and above to improve usability of balcony areas, these all have operable windows for natural ventilation. | ✓ |
| **Objective 4E-2** | Primary private open space and balconies are appropriately located to enhance liveability for residents | | | | |
| **4E-2.1** | Primary open space and balconies should be located adjacent to the living room, dining room or kitchen to extend the living space | | ● | Complies | ✓ |
| **4E-2.2** | Private open spaces and balconies predominantly face north, east or west | | ● | Complies | ✓ |
| **4E-2.3** | Primary open space and balconies should be orientated with the longer side facing outwards or be open to the sky to optimise daylight access into adjacent rooms | | ● | Complies | ✓ |

| **Objective 4E-3** | Private open space and balcony design is integrated into and contributes to the overall architectural form and detail of the building | | | | |
|---|---|---|---|---|---|
| **4E-3.1** | Solid, partially solid or transparent fences and balustrades are selected to respond to the location. They are designed to allow views and passive surveillance of the street while maintaining visual privacy and allowing for a range of uses on the balcony. Solid and partially solid balustrades are preferred | | ● | Complies – solid balustrades are proposed to the apartments located in the podium. | ✓ |
| **4E-3.2** | Full width, full height glass balustrades alone are generally not desirable | | ● | Complies | ✓ |
| **4E-3.3** | Projecting balconies should be integrated into the building design and the design of soffits considered | | ● | | N/A |
| **4E-3.4** | Operable screens, shutters, hoods and pergolas are used to control sunlight and wind | | ● | Complies | ✓ |
| **4E-3.5** | Balustrades are set back from the building or balcony edge where overlooking or safety is an issue | | ● | Complies | ✓ |
| **4E-3.6** | Downpipes and balcony drainage are integrated with the overall facade and building design | | ● | Complies | ✓ |
| **4E-3.7** | Air-conditioning units should be located on roofs, in basements, or fully integrated into the building design | | ● | Complies | ✓ |
| **4E-3.8** | Where clothes drying, storage or air conditioning units are located on balconies, they should be screened and integrated in the building design | | ● | Building 1 condensers are set back from the building edge and screened by solid balustrades such that they are not visible from the public domain | ✓ |
| **4E-3.9** | Ceilings of apartments below terraces should be insulated to avoid heat loss | | ● | Complies | ✓ |
| **4E-3.10** | Water and gas outlets should be provided for primary balconies and private open space | | ● | Can Comply | ✓ |
| **Objective 4E-4** | Private open space and balcony design maximises safety | | | | |
| **4E-4.1** | Changes in ground levels or landscaping are minimised | | ● | Complies | ✓ |
| **4E-4.2** | Design and detailing of balconies avoids opportunities for climbing and falls | | ● | Complies | ✓ |
| **4F** | **PRIVATE OPEN SPACE AND BALCONIES** | | | | |
| **Objective 4F-1** | Common circulation spaces achieve good amenity and properly service the number of apartments | | | | |
| **4F-1.1** | The maximum number of apartments off a circulation core on a single level is eight | ● | | Generally complies – 10 and 12 apartments are accessed off a single core to the low rise levels of the Cottonwood tower. These consist mostly of studio and 1 bedroom apartments, and associated with Affordable Housing. | ✓ |
| **4F-1.2** | For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40 | ● | | Complies – refer to Lift Consultants report | ✓ |

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| **4F-1.3** | Greater than minimum requirements for corridor widths and/ or ceiling heights allow comfortable movement and access particularly in entry lobbies, outside lifts and at apartment entry doors | | ● | Generally complies:<br>Minimum 2m in front of lifts<br>1.6m elsewhere | ✓ |
| **4F-1.4** | Daylight and natural ventilation should be provided to all common circulation spaces that are above ground | | ● | Complies | ✓ |
| **4F-1.5** | Windows should be provided in common circulation spaces and should be adjacent to the stair or lift core or at the ends of corridors | | ● | Complies | ✓ |
| **4F-1.6** | Longer corridors greater than 12m in length from the lift core should be articulated. Design solutions may include:<br>• a series of foyer areas with windows and spaces for seating<br>• wider areas at apartment entry doors and varied ceiling heights | | ● | Generally complies – All corridors have full height glazing for daylight & natural ventilation | ✓ |
| **4F-1.7** | Design common circulation spaces to maximise opportunities for dual aspect apartments, including multiple core apartment buildings and cross over apartments | | ● | Complies | ✓ |
| **4F-1.8** | Achieving the design criteria for the number of apartments off a circulation core may not be possible. Where a development is unable to achieve the design criteria, a high level of amenity for common lobbies, corridors and apartments should be demonstrated, including:<br>• sunlight and natural cross ventilation in apartments<br>• access to ample daylight and natural ventilation in common circulation spaces<br>• common areas for seating and gathering<br>• generous corridors with greater than minimum ceiling heights<br>• other innovative design solutions that provide high levels of amenity | | ● | Complies – refer 4F-1.6 | ✓ |
| **4F-1.9** | Where design criteria 1 is not achieved, no more than 12 apartments should be provided off a circulation core on a single level | | ● | Generally complies – refer 4F-1.1 | ✓ |
| **4F-1.10** | Primary living room or bedroom windows should not open directly onto common circulation spaces, whether open or enclosed. Visual and acoustic privacy from common circulation spaces to any other rooms should be carefully controlled | | ● | Complies | ✓ |
| **Objective 4F-2** | Common circulation spaces promote safety and provide for social interaction between residents | | | | |
| **4F-2.1** | Direct and legible access should be provided between vertical circulation points and apartment entries by minimising corridor or gallery length to give short, straight, clear sight lines | | ● | Complies | ✓ |
| **4F-2.2** | Tight corners and spaces are avoided | | ● | Complies | ✓ |
| **4F-2.3** | Circulation spaces should be well lit at night | | ● | Can comply | ✓ |
| **4F-2.4** | Legible signage should be provided for apartment numbers, common areas and general way finding | | ● | Can comply | ✓ |
| **4F-2.5** | Incidental spaces, for example space for seating in a corridor, at a stair landing, or near a window are provided | | ● | No incidental spaces proposed | × |
| **4F-2.6** | In larger developments, community rooms for activities such as owners corporation meetings or resident use should be provided and are ideally co-located with communal open space | | ● | Multi-purpose communal rooms of various sizes are provided on the rooftop podium level | ✓ |
| **4F-2.7** | Where external galleries are provided, they are more open than closed above the balustrade along their length | | ● | | **N/A** |
| **4G** | **STORAGE** | | | | |
| **Objective 4G-1** | Adequate, well designed storage is provided in each apartment | | | | |
| **4G-1.1** | In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided:<br>Dwelling type / Storage size volume<br>Studio apartments: 4m³<br>1 bedroom apartments: 6m³<br>2 bedroom apartments: 8m³<br>3+ bedroom apartments: 10m³<br>At least 50% of the required storage is to be located within the apartment | | ● | Complies | ✓ |
| **4G-1.2** | Storage is accessible from either circulation or living areas | | ● | Complies | ✓ |
| **4G-1.3** | Storage provided on balconies (in addition to the minimum balcony size) is integrated into the balcony design, weather proof and screened from view from the street | | ● | | **N/A** |
| **4G-1.4** | Left over space such as under stairs is used for storage | | ● | | **N/A** |
| **Objective 4G-2** | Additional storage is conveniently located, accessible and nominated for individual apartments | | | | |
| **4G-2.1** | Storage not located in apartments is secure and clearly allocated to specific apartments | | ● | Complies | ✓ |
| **4G-2.2** | Storage is provided for larger and less frequently accessed items | | ● | Complies - basement storage cages | ✓ |
| **4G-2.3** | Storage space in internal or basement car parks is provided at the rear or side of car spaces or in cages so that allocated car parking remains accessible | | ● | Complies | ✓ |
| **4G-2.4** | If communal storage rooms are provided they should be accessible from common circulation areas of the building | | ● | | **N/A** |

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| **4G-2.5** | Storage not located in an apartment is integrated into the overall building design and is not visible from the public domain | | ● | Complies – additional storage located in basement | ✓ |
| **4H** | **ACOUSTIC PRIVACY** | | | | |
| **Objective 4H-1** | Noise transfer is minimised through the siting of buildings and building layout | | | | |
| **4H-1.1** | Adequate building separation is provided within the development and from neighbouring buildings/adjacent uses (see also section 2F Building separation and section 3F Visual privacy) | | ● | Complies | ✓ |
| **4H-1.2** | Window and door openings are generally orientated away from noise sources | | ● | Generally complies – Apartments fronting Waterloo Road will have an attenuated natural ventilation system to allow window and doors to be closed. | ✓ |
| **4H-1.3** | Noisy areas within buildings including building entries and corridors should be located next to or above each other and quieter areas next to or above quieter areas | | ● | Complies | ✓ |
| **4H-1.4** | Storage, circulation areas and non-habitable rooms should be located to buffer noise from external sources | | ● | Generally complies | ✓ |
| **4H-1.5** | The number of party walls (walls shared with other apartments) are limited and are appropriately insulated | | ● | Complies | ✓ |
| **4H-1.6** | Noise sources such as garage doors, driveways, service areas, plant rooms, building services, mechanical equipment, active communal open spaces and circulation areas should be located at least 3m away from bedrooms | | ● | Complies | ✓ |
| **Objective 4H-2** | Noise impacts are mitigated within apartments through layout and acoustic treatments | | | | |
| **4H-2.1** | Internal apartment layout separates noisy spaces from quiet spaces, using a number of the following design solutions:<br>• rooms with similar noise requirements are grouped together<br>• doors separate different use zones<br>• wardrobes in bedrooms are co-located to act as sound buffers | | ● | Complies | ✓ |
| **4H-2.2** | Where physical separation cannot be achieved noise conflicts are resolved using the following design solutions:<br>• double or acoustic glazing<br>• acoustic seals<br>• use of materials with low noise penetration properties<br>• continuous walls to ground level courtyards where they do not conflict with streetscape or other amenity requirements | | ● | Complies | ✓ |

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| **4J** | **NOISE AND POLLUTION** | | | | |
| **Objective 4J-1** | In noisy or hostile environments the impacts of external noise and pollution are minimised through the careful siting and layout of buildings | | | | |
| **4J-1.1** | To minimise impacts the following design solutions may be used:<br>• physical separation between buildings and the noise or pollution source<br>• residential uses are located perpendicular to the noise source and where possible buffered by other uses<br>• non-residential buildings are sited to be parallel with the noise source to provide a continuous building that shields residential uses and communal open spaces<br>• non-residential uses are located at lower levels vertically separating the residential component from the noise or pollution source. Setbacks to the underside of residential floor levels should increase relative to traffic volumes and other noise sources<br>• buildings should respond to both solar access and noise. Where solar access is away from the noise source, non-habitable rooms can provide a buffer<br>• where solar access is in the same direction as the noise source, dual aspect apartments with shallow building depths are preferable (see figure 4J.4 in ADG)<br>• landscape design reduces the perception of noise and acts as a filter for air pollution generated by traffic and industry | | ● | Complies – Waterloo tower is orientated perpendicular to Waterloo Road, these apartments will have an attenuated natural ventilation system to allow window and doors to be closed. | ✓ |
| **4J-1.2** | Achieving the design criteria in this Apartment Design Guide may not be possible in some situations due to noise and pollution. Where developments are unable to achieve the design criteria, alternatives may be considered in the following areas:<br>• solar and daylight access<br>• private open space and balconies<br>• natural cross ventilation | | ● | | N/A |
| **Objective 4J-2** | Appropriate noise shielding or attenuation techniques for the building design, construction and choice of materials are used to mitigate noise transmission | | | | |
| **4J-2.1** | Design solutions to mitigate noise include:<br>• limiting the number and size of openings facing noise sources<br>• providing seals to prevent noise transfer through gaps<br>• using double or acoustic glazing, acoustic louvres or enclosed balconies (wintergardens)<br>• using materials with mass and/or sound insulation or absorption properties e.g. solid balcony balustrades, external screens & soffits | | ● | Complies | ✓ |
| **4K** | **APARTMENT MIX** | | | | |
| **Objective 4K-1** | A range of apartment types and sizes is provided to cater for different household types now and into the future | | | | |
| **4K-1.1** | A variety of apartment types is provided | | ● | Complies | ✓ |

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| **4K-1.2** | The apartment mix is appropriate, taking into consideration:<br>• the distance to public transport, employment and education centres<br>• the current market demands and projected future demographic trends<br>• the demand for social and affordable housing<br>• different cultural and socioeconomic groups | | ● | Complies | ✓ |
| **4K-1.3** | Flexible apartment configurations are provided to support diverse household types and stages of life including single person households, families, multi-generational families and group households | | ● | Complies | ✓ |
| **Objective 4K-2** | The apartment mix is distributed to suitable locations within the building | | | | |
| **4K-2.1** | Different apartment types are located to achieve successful facade composition and to optimise solar access (see figure 4K.3 in ADG) | | ● | Complies | ✓ |
| **4K-2.2** | Larger apartment types are located on the ground or roof level where there is potential for more open space and on corners where more building frontage is available | | ● | Complies | ✓ |
| **4L** | **GROUND FLOOR APARTMENTS** | | | | |
| **Objective 4L-1** | Street frontage activity is maximised where ground floor apartments are located | | | | |
| **4L-1.1** | Direct street access should be provided to ground floor apartments | | ● | Complies. Refer to 3B-1.1 | ✓ |
| **4L-1.2** | Activity is achieved through front gardens, terraces and the facade of the building. Design solutions may include:<br>• both street, foyer and other common internal circulation entrances to ground floor apartments<br>• private open space is next to the street<br>• doors and windows face the street | | ● | Complies | ✓ |
| **4L-1.3** | Retail or home office spaces should be located along street frontages | | ● | Complies | ✓ |
| **4L-1.4** | Ground floor apartment layouts support small office home office (SOHO) use to provide future opportunities for conversion into commercial or retail areas. In these cases provide higher floor to ceiling heights and ground floor amenities for easy conversion | | ● | Complies – Ground floor apartments are located off Elouera Reserve and are not conducive to SOHO type apartments. | ✓ |
| **Objective 4L-2** | Design of ground floor apartments delivers amenity and safety for residents | | | | |
| **4L-2.1** | Privacy and safety should be provided without obstructing casual surveillance. Design solutions may include:<br>• elevation of private gardens and terraces above the street level by 1-1.5m (see figure 4L.4 in ADG)<br>• landscaping and private courtyards<br>• window sill heights that minimise sight lines into apartments<br>• integrating balustrades, safety bars or screens with the exterior design | | ● | Complies; generally ground floor apartments are elevated off the street with elevated sill heights and solid balustrades. Where private terraced gardens are used, these are separated from the street but a combination of permeable fencing solutions and landscaping enables balance between surveillance and privacy | ✓ |
| **4L-2.2** | Solar access should be maximised through:<br>• high ceilings and tall windows<br>• trees and shrubs that allow solar access in winter and shade in summer | | ● | Complies | ✓ |
| **4M** | **FACADES** | | | | |
| **Objective 4M-1** | Building facades provide visual interest along the street while respecting the character of the local area | | | | |
| **4M-1.1** | Design solutions for front building facades may include:<br>• a composition of varied building elements<br>• a defined base, middle and top of buildings<br>• revealing and concealing certain elements<br>• changes in texture, material, detail and colour to modify the prominence of elements | | ● | Complies – The podiums have a horizontal character with a mixture of batten screening, masonry cladding, glazing and earthy tones<br><br>The towers by contrast are highly crafted and articulated glazed forms, comprising of elegant sunshade hoods, expressed superstructure, and of varying heights to form a composition of towers in the skyline. | ✓ |
| **4M-1.2** | Building services should be integrated within the overall facade | | ● | Complies | ✓ |
| **4M-1.3** | Building facades should be well resolved with an appropriate scale and proportion to the streetscape and human scale. Design solutions may include:<br>• well composed horizontal and vertical elements<br>• variation in floor heights to enhance the human scale<br>• elements that are proportional and arranged in patterns<br>• public artwork or treatments to exterior blank walls<br>• grouping of floors or elements such as balconies and windows on taller buildings | | ● | Complies - The facades have been designed to respond to the streetscape and human scale & to balance privacy with amenity, solar & ventilation access & views. Public art is proposed to the main entries of the buildings. | ✓ |
| **4M-1.4** | Building facades relate to key datum lines of adjacent buildings through upper level setbacks, parapets, cornices, awnings or colonnade heights | | ● | Complies – A 4 storey podium is proposed that provides a human scale and relationship to the streetscape. | ✓ |
| **4M-1.5** | Shadow is created on the facade throughout the day with building articulation, balconies and deeper window reveals | | ● | Complies | ✓ |
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| **Objective 4M-2** | Building functions are expressed by the facade | | | | |
| **4M-2.1** | Building entries should be clearly defined | | ● | Complies | ✓ |
| **4M-2.2** | Important corners are given visual prominence through a change in articulation, materials or colour, roof expression or changes in height | | ● | Complies – The corner of Waterloo Road & Cottonwood Cresent incorporates a double height lobby entry expressed as a glass pavilion. The corner of Waterloo Road and Elouera Reserve has a retail frontage that wraps around and provides a direct connection and activation to the park. Landscaping is integrated into both areas. | ✓ |
| **4M-2.3** | The apartment layout should be expressed externally through facade features such as party walls and floor slabs | | ● | Complies | ✓ |

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| **4N** | **ROOF DESIGN** | | | | |
| **Objective 4N-1** | Roof treatments are integrated into the building design and positively respond to the street | | | | |
| **4N-1.1** | Roof design relates to the street. Design solutions may include:<br>• special roof features and strong corners<br>• use of skillion or very low pitch hipped roofs<br>• breaking down the massing of the roof by using smaller elements to avoid bulk<br>• using materials or a pitched form complementary to adjacent buildings | | ● | Complies | ✓ |
| **4N-1.2** | Roof treatments should be integrated with the building design. Design solutions may include:<br>• roof design proportionate to the overall building size, scale and form<br>• roof materials complement the building<br>• service elements are integrated | | ● | Complies - Consideration has been given to the integration of lift overruns and plant concealed within the roof or façade design | ✓ |
| **Objective 4N-2** | Opportunities to use roof space for residential accommodation and open space are maximised | | | | |
| **4N-2.1** | Habitable roof space should be provided with good levels of amenity. Design solutions may include:<br>• penthouse apartments<br>• dormer or clerestory windows<br>• openable skylights | | ● | Complies – Penthouse apartments include rooftop terraces and skylights | ✓ |
| **4N-2.2** | Open space is provided on roof tops subject to acceptable visual and acoustic privacy, comfort levels, safety and security considerations | | ● | Complies | ✓ |
| **Objective 4N-3** | Roof design incorporates sustainability features | | | | |
| **4N-3.1** | Roof design maximises solar access to apartments during winter and provides shade during summer. Design solutions may include:<br>• the roof lifts to the north<br>• eaves and overhangs shade walls and windows from summer sun | | ● | Complies | ✓ |
| **4N-3.2** | Skylights and ventilation systems should be integrated into the roof design | | ● | Complies | ✓ |
| **4O** | **LANDSCAPE DESIGN** | | | | |
| **Objective 4O-1** | Landscape design is viable and sustainable | | | | |
| **4O-1.1** | Landscape design should be environmentally sustainable and can enhance environmental performance by incorporating:<br>• diverse and appropriate planting<br>• bio-filtration gardens<br>• appropriately planted shading trees<br>• areas for residents to plant vegetables and herbs<br>• composting<br>• green roofs or walls | | ● | Complies. Refer landscape plan | ✓ |
| **4O-1.2** | Ongoing maintenance plans should be prepared | | ● | Can comply | ✓ |
| **4O-1.3** | Microclimate is enhanced by:<br>• appropriately scaled trees near the eastern and western elevations for shade<br>• a balance of evergreen and deciduous trees to provide shading in summer and sunlight access in winter<br>• shade structures such as pergolas for balconies and courtyards | | ● | Complies. Refer landscape architect's indicative plant schedule | ✓ |
| **4O-1.4** | Tree and shrub selection considers size at maturity and the potential for roots to compete (see Table 4 in ADG) | | ● | Complies. Refer landscape architect's indicative plant schedule | ✓ |
| **Objective 4O-2** | Landscape design contributes to the streetscape and amenity | | | | |
| **4O-2.1** | Landscape design responds to the existing site conditions including:<br>• changes of levels<br>• views<br>• significant landscape features including trees and rock outcrops | | ● | Complies | ✓ |
| **4O-2.2** | Significant landscape features should be protected by:<br>• tree protection zones (see figure 4O.5 in ADG)<br>• appropriate signage and fencing during construction | | ● | Complies | ✓ |
| **4O-2.3** | Plants selected should be endemic to the region and reflect the local ecology | | ● | Complies. Refer landscape architect's indicative plant schedule | ✓ |
| **4P** | **PLANTING ON STRUCTURES** | | | | |
| **Objective 4P-1** | Appropriate soil profiles are provided | | | | |
| **4P-1.1** | Structures are reinforced for additional saturated soil weight | | ● | Complies | ✓ |
| **4P-1.2** | Soil volume is appropriate for plant growth, considerations include:<br>• modifying depths and widths according to the planting mix and irrigation frequency<br>• free draining and long soil life span<br>• tree anchorage | | ● | Complies. Refer landscape plan | ✓ |
| **4P-1.3** | Minimum soil standards for plant sizes should be provided in accordance with Table 5 (in ADG) | | ● | Complies. Refer landscape plan | ✓ |
| **Objective 4P-2** | Plant growth is optimised with appropriate selection and maintenance | | | | |
| **4P-2.1** | Plants are suited to site conditions, considerations include:<br>• drought and wind tolerance<br>• seasonal changes in solar access<br>• modified substrate depths for a diverse range of plants<br>• plant longevity | | ● | Complies. Refer landscape architect's indicative plant schedule | ✓ |
| **4P-2.2** | A landscape maintenance plan is prepared | | ● | Can comply | ✓ |
| **4P-2.3** | Irrigation and drainage systems respond to:<br>• changing site conditions<br>• soil profile and the planting regime<br>• whether rainwater, stormwater or recycled grey water is used | | ● | Can comply | ✓ |

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| **Objective 4P-3** | Planting on structures contributes to the quality and amenity of communal and public open spaces | | | | |
| **4P-3.1** | Building design incorporates opportunities for planting on structures. Design solutions may include:<br>• green walls with specialised lighting for indoor green walls<br>• wall design that incorporates planting<br>• green roofs, particularly where roofs are visible from the public domain<br>• planter boxes<br>Note: structures designed to accommodate green walls should be integrated into the building facade and consider the ability of the facade to change over time | | ● | Complies – planting is incorporated into building entries, courtyards, and on top of the rooftop podium slab is of sufficient depth to accommodate proposed planting. | ✓ |
| **4Q** | **UNIVERSAL DESIGN** | | | | |
| **Objective 4Q-1** | Universal design features are included in apartment design to promote flexible housing for all community members | | | | |
| **4Q-1.1** | Developments achieve a benchmark of 20% of the total apartments incorporating the Liveable Housing Guideline's silver level universal design features | | ● | Complies – Over 70% achieved | ✓ |
| **Objective 4Q-2** | A variety of apartments with adaptable designs are provided | | | | |
| **4Q-2.1** | Adaptable housing should be provided in accordance with the relevant council policy | | ● | Complies – 10% of apartments | ✓ |
| **4Q-2.2** | Design solutions for adaptable apartments include:<br>• convenient access to communal and public areas<br>• high level of solar access<br>• minimal structural change and residential amenity loss when adapted<br>• larger car parking spaces for accessibility<br>• parking titled separately from apartments or shared car parking arrangements | | ● | Complies | ✓ |
| **Objective 4Q-3** | Apartment layouts are flexible and accommodate a range of lifestyle needs | | | | |
| **4Q-3.1** | Apartment design incorporates flexible design solutions which may include:<br>• rooms with multiple functions<br>• dual master bedroom apartments with separate bathrooms<br>• larger apartments with various living space options<br>• open plan 'loft' style apartments with only a fixed kitchen, laundry and bathroom | | ● | Complies. Open plan living/dining/kitchen and generous bedrooms | ✓ |
| **4R** | **ADAPTIVE REUSE** | | | | |
| **Objective 4R-1** | New additions to existing buildings are contemporary and complementary and enhance an area's identity and sense of place | | | | |
| **4R-1.1** | Design solutions may include:<br>• new elements to align with the existing building<br>• additions that complement the existing character, siting, scale, proportion, pattern, form and detailing<br>• use of contemporary and complementary materials, finishes, textures and colours | | ● | | N/A |
| **4R-1.2** | Additions to heritage items should be clearly identifiable from the original building | | ● | | N/A |
| **4R-1.3** | New additions allow for the interpretation and future evolution of the building | | ● | | N/A |
| **Objective 4R-2** | Adapted buildings provide residential amenity while not precluding future adaptive reuse | | | | |
| **4R-2.1** | Design features should be incorporated sensitively into adapted buildings to make up for any physical limitations, to ensure residential amenity is achieved. Design solutions may include:<br>• generously sized voids in deeper buildings<br>• alternative apartment types when orientation is poor<br>• using additions to expand the existing building envelope | | ● | | N/A |
| **4R-2.2** | Some proposals that adapt existing buildings may not be able to achieve all of the design criteria in this Apartment Design Guide. Where developments are unable to achieve the design criteria, alternatives could be considered in the following areas:<br>• where there are existing higher ceilings, depths of habitable rooms could increase subject to demonstrating access to natural ventilation, cross ventilation (when applicable) and solar and daylight access (see also sections 4A Solar and daylight access and 4B Natural ventilation)<br>• alternatives to providing deep soil where less than the minimum requirement is currently available on the site<br>• building and visual separation – subject to demonstrating alternative design approaches to achieving privacy<br>• common circulation<br>• car parking<br>• alternative approaches to private open space and balconies | | ● | | N/A |
| **4S** | **MIXED USE** | | | | |
| **Objective 4S-1** | Mixed use developments are provided in appropriate locations and provide active street frontages that encourage pedestrian movement | | | | |
| **4S-1.1** | Mixed use development should be concentrated around public transport and centres | | ● | Complies | ✓ |
| **4S-1.2** | Mixed use developments positively contribute to the public domain. Design solutions may include:<br>• development addresses the street<br>• active frontages are provided<br>• diverse activities and uses<br>• avoiding blank walls at the ground level<br>• live/work apartments on the ground floor level, rather than commercial | | ● | Complies | ✓ |
| **Objective 4S-2** | Residential levels of the building are integrated within the development, and safety and amenity is maximised for residents | | | | |

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| **4S-2.1** | Residential circulation areas should be clearly defined. Design solutions may include:<br>• residential entries are separated from commercial entries and directly accessible from the street<br>• commercial service areas are separated from residential components<br>• residential car parking and communal facilities are separated or secured<br>• security at entries and safe pedestrian routes are provided<br>• concealment opportunities are avoided | | ● | Complies | ✓ |
| **4S-2.2** | Landscaped communal open space should be provided at podium or roof levels | | ● | Complies | ✓ |
| **4T** | **AWNINGS AND SIGNAGE** | | | | |
| **Objective 4T-1** | Awnings are well located and complement and integrate with the building design | | | | |
| **4T-1.1** | Awnings should be located along streets with high pedestrian activity and active frontages | | ● | Complies | ✓ |
| **4T-1.2** | A number of the following design solutions are used:<br>• continuous awnings are maintained and provided in areas with an existing pattern<br>• height, depth, material and form complements the existing street character<br>• protection from the sun and rain is provided<br>• awnings are wrapped around the secondary frontages of corner sites<br>• awnings are retractable in areas without an established pattern | | ● | Complies | ✓ |
| **4T-1.3** | Awnings should be located over building entries for building address and public domain amenity | | ● | Can comply | ✓ |
| **4T-1.4** | Awnings relate to residential windows, balconies, street tree planting, power poles and street infrastructure | | ● | Can comply | ✓ |
| **4T-1.5** | Gutters and down pipes should be integrated and concealed | | ● | Complies | ✓ |
| **4T-1.6** | Lighting under awnings should be provided for pedestrian safety | | ● | Can comply | ✓ |
| **Objective 4T-2** | Signage responds to the context and desired streetscape character | | | | |
| **4T-2.1** | Signage should be integrated into the building design and respond to the scale, proportion and detailing of the development | | ● | Can comply | ✓ |
| **4T-2.2** | Legible and discrete way finding should be provided for larger developments | | ● | Can comply | ✓ |
| **4T-2.3** | Signage is limited to being on and below awnings and a single facade sign on the primary street frontage | | ● | Can comply | ✓ |
| **4U** | **ENERGY EFFICIENCY** | | | | |
| **Objective 4U-1** | Development incorporates passive environmental design | | | | |
| **4U-1.1** | Adequate natural light is provided to habitable rooms (see 4A Solar and daylight access) | | ● | Complies | ✓ |
| **4U-1.2** | Well located, screened outdoor areas should be provided for clothes drying | | ● | Apartments incorporate laundries with dryers | × |
| **Objective 4U-2** | Development incorporates passive solar design to optimise heat storage in winter and reduce heat transfer in summer | | | | |
| **4U-2.1** | A number of the following design solutions are used:<br>• the use of smart glass or other technologies on north and west elevations<br>• thermal mass in the floors and walls of north facing rooms is maximised<br>• polished concrete floors, tiles or timber rather than carpet<br>• insulated roofs, walls and floors and seals on window and door openings<br>• overhangs and shading devices such as awnings, blinds and screens | | ● | Complies. A combination of solutions is used including insulation, glass performance and shading devices | ✓ |
| **4U-2.2** | Provision of consolidated heating and cooling infrastructure should be located in a centralised location (e.g. the basement) | | ● | Complies – floor by floor plantrooms are incorporated into the façade design to reduce looking onto large plant areas on rooftops. | ✓ |
| **Objective 4U-3** | Adequate natural ventilation minimises the need for mechanical ventilation | | | | |
| **4U-3.1** | A number of the following design solutions are used:<br>• rooms with similar usage are grouped together<br>• natural cross ventilation for apartments is optimised<br>• natural ventilation is provided to all habitable rooms and as many non-habitable rooms, common areas & circulation spaces as possible | | ● | Generally complies - natural ventilation solutions have been sought wherever possible, mechanical ventilation will be incorporated into internalised spaces | ✓ |
| **4V** | **WATER MANAGEMENT AND CONSERVATION** | | | | |
| **Objective 4V-1** | Potable water use is minimised | | | | |
| **4V-1.1** | Water efficient fittings, appliances & wastewater reuse should be incorporated | | ● | Complies | ✓ |
| **4V-1.2** | Apartments should be individually metered | | ● | Complies | ✓ |
| **4V-1.3** | Rainwater should be collected, stored and reused on site | | ● | Complies | ✓ |
| **4V-1.4** | Drought tolerant, low water use plants should be used within landscaped areas | | ● | Complies. Refer landscape architect's indicative plant schedule | ✓ |
| **Objective 4V-2** | Urban stormwater is treated on site before being discharged to receiving waters | | | | |
| **4V-2.1** | Water sensitive urban design systems are designed by a suitably qualified professional | | ● | Complies. Refer landscape architect's drawings. | ✓ |
| **4V-2.2** | A number of the following design solutions are used:<br>• runoff is collected from roofs and balconies in water tanks and plumbed into toilets, laundry and irrigation<br>• porous and open paving materials is maximised<br>• on site stormwater and infiltration, including bio-retention systems such as rain gardens or street tree pits | | ● | Complies - a combination of raingarden & greater than minimum deep soil zones proposed | ✓ |

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| **Objective 4V-3** | Flood management systems are integrated into site design | | | | |
| **4V-3.1** | Detention tanks should be located under paved areas, driveways or in basement car parks | | ● | | N/A |
| **4V-3.2** | On large sites parks or open spaces are designed to provide temporary on site detention basins | | ● | | N/A |
| **4W** | **WASTE MANAGEMENT** | | | | |
| **Objective 4W-1** | Waste storage facilities are designed to minimise impacts on the streetscape, building entry and amenity of residents | | | | |
| **4W-1.1** | Adequately sized storage areas for rubbish bins should be located discreetly away from the front of the development or in the basement car park | | ● | Complies | ✓ |
| **4W-1.2** | Waste and recycling storage areas should be well ventilated | | ● | Complies | ✓ |
| **4W-1.3** | Circulation design allows bins to be easily manoeuvred between storage and collection points | | ● | Complies | ✓ |
| **4W-1.4** | Temporary storage should be provided for large bulk items such as mattresses | | ● | Complies | ✓ |
| **4W-1.5** | A waste management plan should be prepared | | ● | Complies | ✓ |
| **Objective 4W-2** | Domestic waste is minimised by providing safe and convenient source separation and recycling | | | | |
| **4W-2.1** | All dwellings should have a waste and recycling cupboard or temporary storage area of sufficient size to hold two days' worth of waste and recycling | | ● | Complies | ✓ |
| **4W-2.2** | Communal waste and recycling rooms are in convenient and accessible locations related to each vertical core | | ● | Complies | ✓ |
| **4W-2.3** | For mixed use developments, residential waste and recycling storage areas and access should be separate and secure from other uses | | ● | Complies | ✓ |
| **4W-2.4** | Alternative waste disposal methods such as composting should be provided | | ● | Complies | ✓ |
| **4X** | **BUILDING MAINTENANCE** | | | | |
| **Objective 4X-1** | Building design detail provides protection from weathering | | | | |
| **4X-1.1** | A number of the following design solutions are used:<br>• roof overhangs to protect walls<br>• hoods over windows and doors to protect openings<br>• detailing horizontal edges with drip lines to avoid staining of surfaces<br>• methods to eliminate or reduce planter box leaching<br>• appropriate design and material selection for hostile locations | | ● | Can comply | ✓ |

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| **Objective 4X-2** | Systems and access enable ease of maintenance | | | | |
| **4X-2.1** | Window design enables cleaning from the inside of the building | | ● | This requirement is difficult to achieve due to limited opening window requirement in bedrooms & poses general safety issues | × |
| **4X-2.2** | Building maintenance systems should be incorporated and integrated into the design of the building form, roof and facade | | ● | Can comply | ✓ |
| **4X-2.3** | Design solutions do not require external scaffolding for maintenance access | | ● | Can comply | ✓ |
| **4X-2.4** | Manually operated systems such as blinds, sunshades and curtains are used in preference to mechanical systems | | ● | | N/A |
| **4X-2.5** | Centralised maintenance, services and storage should be provided for communal open space areas within the building | | ● | Complies | ✓ |
| **Objective 4X-3** | Material selection reduces ongoing maintenance costs | | | | |
| **4X-3.1** | A number of the following design solutions are used:<br>• sensors to control artificial lighting in common circulation and spaces<br>• natural materials that weather well and improve with time such as face brickwork<br>• easily cleaned surfaces that are graffiti resistant<br>• robust and durable materials and finishes are used in locations which receive heavy wear and tear, such as common circulation areas and lift interiors | | ● | Can comply with:<br>- sensors to control artificial lighting in common circulation spaces<br>- easily cleaned surfaces that are graffiti resistant<br>- robust materials and finishes are used in locations which receive heavy wear and tear, such as common circulation areas and lift interiors | ✓ |

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