
Department of Planning, Land Use, Strategy and Housing

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Macquarie Park Innovation Precinct Stage 1 Neighbourhoods – Design Guide

Rev. H2, 10 October 2023



Acknowledgement of Country

The NSW Department of Planning, Land Use, Strategy and Housing acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and we show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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1. Introduction

1.1. Citation

This document may be referred to as the Macquarie Park Innovation Precinct Stage 1 Neighbourhoods Design Guide ('Design Guide').

1.1. Commencement

This Design Guide commences on the day on which the State Environmental Planning Policy Amendment (Macquarie Park Stage 1 Neighbourhoods) 2023 is published on the NSW Legislation website.

1.2. Land to which this Guide Applies

This Design Guide applies to the land identified in **Figure 1. Land Application Map**.

This land is also referred to as the Macquarie Park Innovation Precinct ('MPIP' and/or 'the Precinct') Stage 1 Neighbourhoods ('Stage 1').

1.3. Purpose of the Design Guide

The purpose of the Design Guide is to supplement the provisions of the City of Ryde Local Environmental Plan 2014 (RLEP2014) as well as the City of Ryde Development Control Plan 2014 (RDCP2014) by providing detailed provisions to guide development in the MPIP Stage 1 Neighbourhoods.

1.4. Relationship to Ryde LEP 2014 and Ryde DCP 2014

This Design Guide sets out specific guidance to inform future development within the Macquarie Park Innovation Precinct Stage 1 Neighbourhoods. Development within the Precinct will need to have regard to the Guide as well as the relevant provisions in the RLEP2014 and other relevant environmental planning instruments, as well as the RDCP2014. In the event of an inconsistency between the Design Guide and the RDCP2014, the objectives and provisions in this Design Guide prevail to the extent of that inconsistency. Where the Design Guide refers to terms that are also used in RLEP2014, the definitions in RLEP2014 are adopted. All other terms used throughout the Design Guide are defined either in this document or in Part 10: Dictionary of the RDCP2014.

Land Application Map

KEY

- LAND APPLICATION
- NEIGHBOURHOODS:

1. NGALAWALA ('RECIPROCITY')
2. BUTBUT ('HEART')
3. WARAGAL BIRRUNG ('EVENING STAR')
4. GARI NAWI ('SALTWATER CANOE')
5. BURBIGAL ('MORNING')
6. GERUNGUL ('UNBREAKABLE')
7. NARRAMI BADU-GUMADA ('CONNECTING WATER SPIRIT')

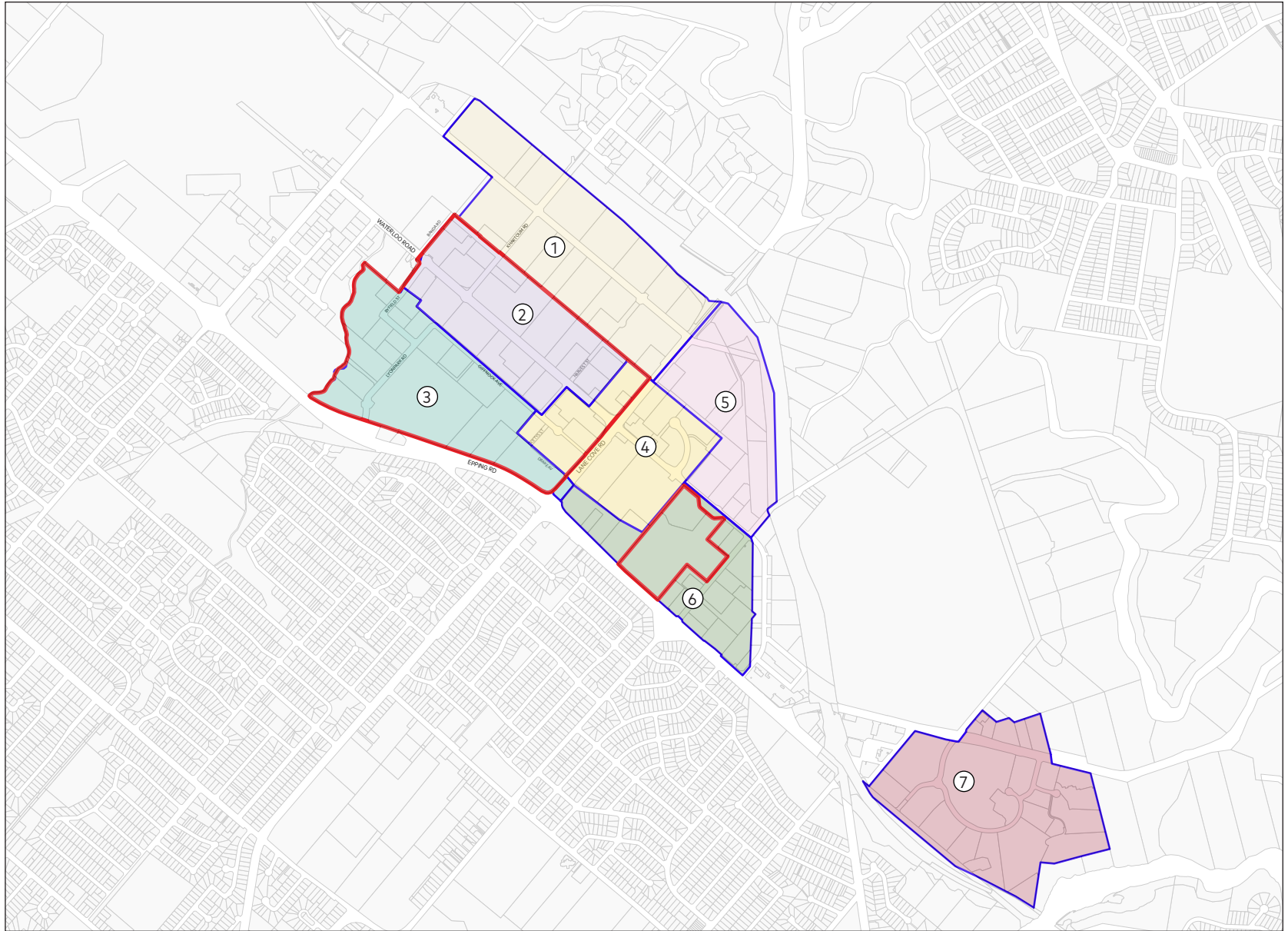


Figure 1. Land Application Map

2. Desired Future Character

2.1. Vision for the Precinct

The land on which Macquarie Park stands today is Wallamattagal Country. The Stage 1 Rezoning that is the subject of this Design Guide will define three new neighbourhoods in Macquarie Park through the introduction of new dividing streets and open space that foreground connections to Country while bringing greater day-to-day amenity to the Precinct.

The Wallamattagal Country of Macquarie Park was significantly obscured by a 20th century ‘science park’ development model that prioritised large buildings surrounded by wide expanses of surface parking across crudely benched sites. The vision for the Precinct is to progressively redefine the area as 7 distinct neighbourhoods, each using nomenclature from the Sydney language to foreground the traditional custodians of Country. As new streets and public open spaces are introduced they will re-establish a more natural topography, with the long forgotten, largely underground, lines of Shrimptons Creek, Industrial Creek and Porters Creek brought to the surface as natural creeks or interpretive landscapes and returned to public ownership. These and other new open spaces will expand the greenery in Macquarie Park, prioritising native planting, while improving wayfinding, walkability and pedestrian amenity throughout. Sustainability will be introduced to the precinct through the design of the public realm and future buildings, reprioritising the long-term health and vitality of Wallamattagal Country.

Ultimately, the Precinct will consist of seven interconnected but distinct neighbourhoods that are distinguished by a high-quality, well-designed, safe, and liveable urban environment that reveal Country and showcase Macquarie Park’s position as a leading centre for innovation in Australia.

2.2. Locality Statement

The Stage 1 Neighbourhoods of the Macquarie Park Innovation Precinct are Butbut, Waragal Birrung and Gari Nawi.

Gari Nawi, meaning ‘Saltwater Canoe’, is the Southern end of the Waterloo Road Corridor. It is characterised by high levels of metro connectivity and access to strategic bus routes. The neighbourhood will progressively develop into a denser and more integrated place to support economic vitality.

The precinct has the transit interchange activity at its core, celebrating the energy and density of movement as people emerge into Macquarie Park from the Metro Station below. The intersection of Waterloo Road and Lane Cove Road creates the opportunity for a noticeable gateway statement through tall buildings, welcoming public open spaces and public art. The public domain will be generally civic in nature, supporting the pedestrian, cyclist and public transport activity generated by this transport interchange space. Beyond these, open spaces at the edges of the neighbourhood will reflect the mix of urban and residential users, with more passive parks and streetscapes. A landscape buffer along Lane Cove Road will retain and extend a line of spectacular mature trees, retaining a level change to the busy road as well as providing alternative pedestrian pathways above. Within this buffer local vantage points provide views north along to Lane Cove National Park, acknowledged with formalised resting spaces. Woven Way lines are gently knitted into the north-east Metro Precinct open space and will connect to future neighbourhoods to the east. Selective Uses of hard and soft surfaces, colours, textures and vegetation will reveal the Woven Way as well as signpost the gateway into Macquarie Park. Above this, prominent commercial towers will face onto the four station plazas.

Separate to the interchange, a residential activity hub of Gari Nawi is positioned along the northwestern edge along the Industrial Creek woven way. Here the neighbourhood transitions from the commercial core into the more residential neighbourhood of Waragal Birrung.

Waragal Birrung, meaning ‘Evening Star’, is the neighbourhood that sits between two creeks: the northern boundary of Shrimptons Creek and the southern boundary of Industrial Creek. The neighbourhood is characterised by its landscaped edges, proximity to stations and distributed open spaces.

Shrimptons Creek is the signature element for this neighbourhood, with the opportunity to celebrate the physical water body through revitalisation, improved access and connections across. A new district-scale park will be created along the Creek, expanding and linking to Wilga Park to the west. The connection to nature shall inspire the neighbourhood character and materiality. The public domain will transition from civic materials of the north and east into a wilder, more natural landscape environment as it approaches Shrimptons Creek. The residential core of the Stage 1 Neighbourhoods will be positioned around the new park, with the tallest buildings of the rezoning positioned directly east. Smaller towers will be clustered around smaller open spaces to provide variety further into the neighbourhood as well as a transition into Gari Nawi. A northern commercial edge buffers the transition from Waragal Birrung into the commercial core of Butbut.

Butbut, meaning ‘Heart’, will remain the commercial centre of the Macquarie Park Innovation Precinct, as new commercial buildings continue to be developed alongside the integration of Build-to-Rent apartment towers. The Neighbourhood connects Herring Road to Macquarie Park Station, cutting across the ridges between Industrial Creek and Shrimptons Creek. The neighbourhood is divided by the Waterloo Road Corridor, which will form a new ‘green’ focus for Macquarie Park, a connecting link for the commercial core, and a welcoming space of arrival into Wallumattagal Country.

A line of commercial properties of increasing scale and density will be linked by the expanded corridor, with major public spaces on both sides. Waterloo Road will become the central green boulevard of the precinct, forming the key movement corridor for pedestrians, cyclists and public transport. This street will become an iconic green statement of a streetscape, with central median, and linear parks to either side of the corridor providing well vegetated public domain space. The nature of the public domain and open spaces will be civic and urban; highly active city spaces. With a diverse range of users, the civic public domain open spaces will support the activities generated by the commercial buildings around them.

A community facility located opposite Catherine Hamlin Park will provide large multi-purpose space appropriate for both indoor sports as well as corporate events like trade shows and poster sessions. This will expand a daytime business park environment into an 18-hour activity hub, with the core commercial hub of Macquarie Park becoming a hive of activity. The Industrial Creek Woven Way travels through Butbut and visually connects it to the other two Stage 1 neighbourhoods, as well as to the Stage 2 neighbourhoods to the north via Catherine Hamlin Park.

2.3. Design Principles

Objectives

- a) To ensure development is principles based, balancing landowner specific needs against the overall vision for the Precinct.

Provisions

1. Development is to demonstrate how it is consistent with and/or builds upon the principles listed in **Table 1. Macquarie Park Innovation Precinct Design Principles** below.

Table 1. Macquarie Park Innovation Precinct Design Principles

Category	Principle	
Design with Country	Principle 1:	Value Hierarchy: All Country is important, yet some hold more significance for Aboriginal people, the most important being River, Mountains and Swamp lands.
	Principle 2:	Share the Country: Preserve natural areas for public use, avoiding building near rivers or hills. These can be future parks and recreation spaces.
	Principle 3:	Orientation and High Points: The old folk knew where the prevailing winds would come and where the sun would go over the sky, and thus plan for this.
	Principle 4:	Promote Biodiversity: Aboriginal land had diverse plants and resources, designed and cultivated to ensure year-round availability.
	Principle 5:	Promote Culture: The way we design Country can enhance our sense of culture, of our diverse and rich differences, but also our commonalities.
	Principle 6:	Let Country Be: Let the low areas be wet, the high areas be forested, the plains be wide and open. High value areas can be planned from the central point out.
Green Macquarie Park	Principle 7:	Increase Open Space: Create additional open spaces to support future growth and fill in walkability catchments.
	Principle 8:	Strengthen Tree Canopy & Create Green Linkages: Use tree canopies and linear parks to link open spaces via streets and ameliorate effects of urban heat island.
	Principle 9:	Revitalise, Reveal & Interpret Creeks As Woven Ways: Open Shrimptons Creek to the public via walkways and new open spaces, reveal the Industrial Creek through open streetscape and pedestrian links, as well as acknowledge Porters Creek along surface opportunity and moments.

Category	Principle	
Connected Neighbourhoods	Principle 10:	Create Fine Grain Urban Grids: Prioritise pedestrians by introducing new streets and through-site links while increasing the number of crossing points and street connections.
	Principle 11:	Enhance Public & Active Transport: Improve and expand Macquarie Park's safe, legible and highly utilised active transport network.
	Principle 12:	Design Arrival Experience & Emphasise Gateway Moments: Acknowledge different scale and arrival experiences of diverse individuals and visitors, emphasising crossing neighbourhood boundaries and entering activity hubs.
Create Critical Mass	Principle 13:	Density: Maximise activity levels by introducing a mixture of land uses, supported by facilitating social infrastructure.
	Principle 14:	Diversity: Provide a range of building typologies, sizes, uses and price points to support a diversity of businesses and resident demographics.
	Principle 15:	Difference: Create point(s) of difference to help identify Macquarie Park as being distinct to other precincts.
	Principle 16:	Variety: Create environments that are visually interesting, stimulating, and offer a range of different experiences.
	Principle 17:	Cohesion: Allow for flow and unity between different areas, including surrounding neighbourhoods.
	Principle 18:	Accentuation: Locate density around the Precinct's gateways to provide moments of arrival and contribute to the image of the innovation precinct.
	Principle 19:	Flexibility: Support different tenant requirements and respond to changes in the social, economic, technological and environmental context to maximise their contribution to the innovation economy.
Grow Sustainably	Principle 20:	Climate Positive: Fosters climate positive outcomes in construction and operation; exceeding standard sustainability benchmarks to be reach world-leading resource efficiency.
	Principle 21:	Resilient: Thrive despite short term shocks from weather and acute events and can adapt to longer term stresses like climate change.
	Principle 22:	Biodiverse & Regenerative: Net positive impact on biodiversity, prioritise natural systems, and foster local ecology to create a biophilic environment.
	Principle 23:	Integrated Mobility: Facilitate the movement of people and goods in ways that are easy, healthy, efficient, and zero emission.
	Principle 24:	Vibrant & Healthy: Enrich quality of life for the community while welcoming all people regardless of their age, size, gender, cultural background, and abilities.

2.4. Structure Plan

General

The Structure Plan for the Stage 1 Neighbourhoods takes into account and builds upon the existing land uses and established functions within the Precinct by focusing the intensity of development of streets, public open spaces and buildings on lower-utilised parcels. It seeks to address the acute deficit of open space in the Precinct, and to break up the large business park style lots into smaller blocks more appropriate to a high-density urban area, improving opportunities for canopy coverage, connectivity and walkability.













Objectives

- a) Create distinct identities for the three separate 'neighbourhoods' – Butbut, Waragal Birrung and Gari Nawi – within Stage 1 through their streets, through-site links, public open spaces, wayfinding and street furniture, as well as the built form.
- b) Reveal and celebrate the creek lines running through and underneath the Stage 1 Neighbourhoods, by locating public open spaces, walkways and through-site links along them.
- c) Create a central green boulevard along Waterloo Road that provides the key movement corridor for pedestrians, cyclists and public transport as well as an iconic green statement of a streetscape.
- d) Continue to develop the commercial activity centre in Butbut around Catherine Hamlin Park, also introducing community uses to provide greater activation.
- e) Create a new activity hub in Gari Nawi, mixing residential and commercial uses around new public open spaces.
- f) Create a new residential activity hub located around a large new public park on Shrimptons Creek.
- g) Position tallest buildings and highest densities around the areas of highest amenity as well as at gateways into the Precinct, particularly above and around the Macquarie Park Metro station.
- h) Maintain a commercial core within the Butbut neighbourhood.
- i) Protect and enhance the existing economic value of the Precinct by supporting existing tenants via an improved urban and commercial environment.

Provisions

1. Development, including distribution of land uses, is to be in accordance with **Figure 2. Structure Plan**.
2. Public open spaces are to be provided in accordance with **Figure 2. Structure Plan**.
3. Public streets are to be provided in accordance with **Figure 2. Structure Plan**.
4. Separated bicycle lanes are to be provided in accordance with **Figure 2. Structure Plan**.

Structure Plan Map

- KEY**
-  COMMERCIAL CENTRE
 -  COMMUNITY CORE
 -  STATION PRECINCT
 -  WOVEN WAY
 -  SEPARATED BIKE LANES
 -  BIKE BRIDGE
 - ACTIVITY HUBS**
 -  1. RESIDENTIAL FOCUS
 -  2. COMMERCIAL & COMMUNITY FOCUS
 -  3. MIXED USE FOCUS
 -  PUBLIC OPEN SPACE
 -  STREETS
 -  SITE AREA

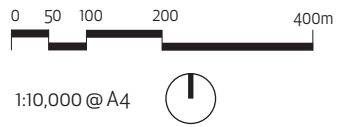
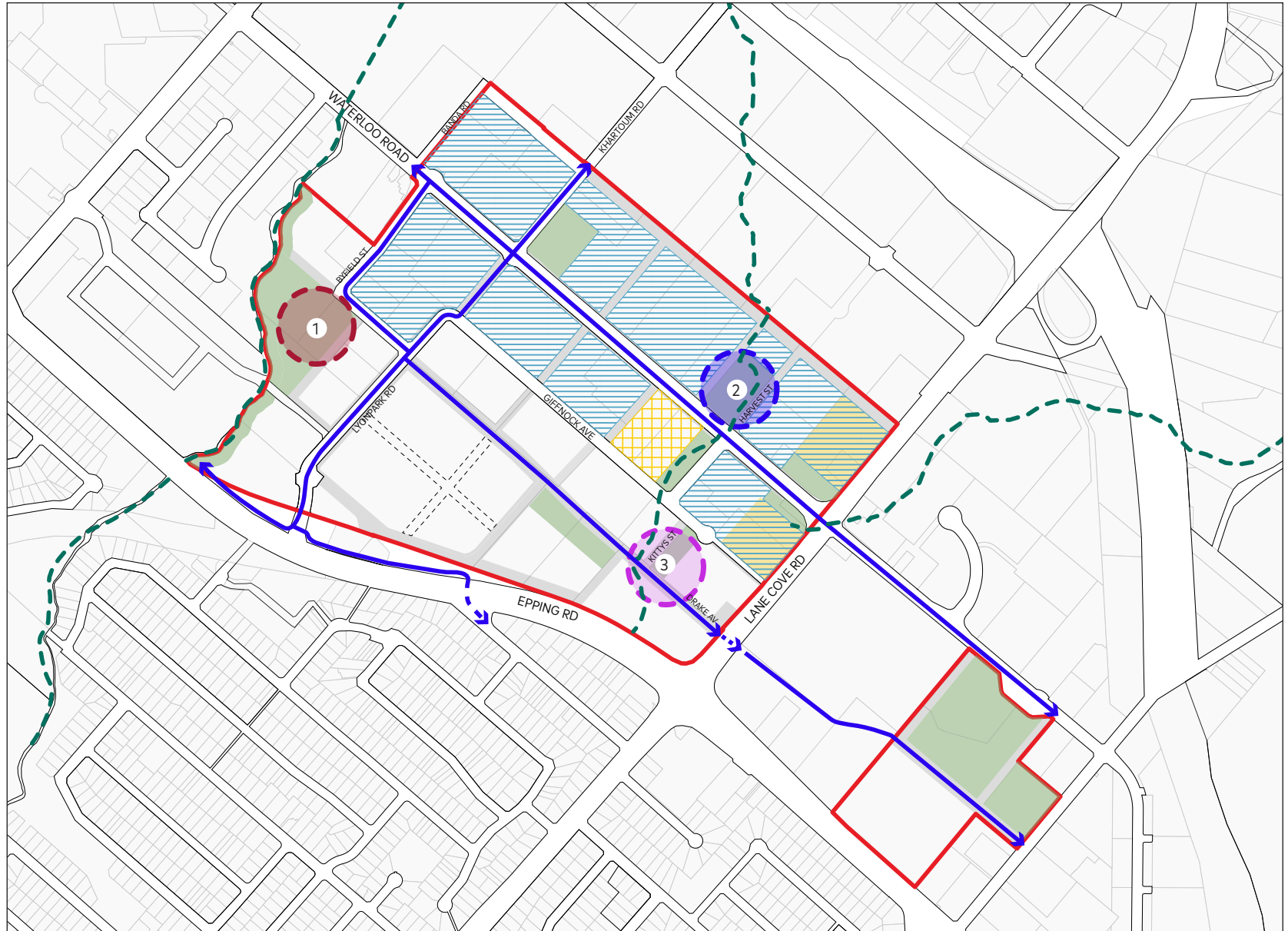


Figure 2. Structure Plan

3. Connecting with Country

“The Ryde area was known as the place where the clever men would meet. The clever men, or Koradgi in the Darug tongue were believed to have special powers and could visit the sky country - the abode of the ancestors and home of the sky father Biامي.”

– Chris Tobin (Darug artist) 2005, quoted in WSP Connecting with Country Framework.

General

Development projects in Macquarie Park Innovation should change the environment in significant, positive ways that acknowledge and celebrate the Aboriginal Country, culture and people that have largely been obscured by the Precinct’s history of 20th century business park style development. Through design elements and place-based landscape interventions (such as architecture, landscape architecture, infrastructure and public art), development projects can acknowledge Country and reveal their sites’ latent Aboriginal history.

This Design Guide describes certain Objectives and Provisions to assist development to engage with Aboriginal people and Country. However, ongoing consultation and permission must be sought from the authorised local elders and cultural knowledge holders. The identification of relevant individuals and groups with connections to Country should happen in the earliest stages of a project. The ideas set out in this Design Guide should be seen only as an introduction to the engagement process.

3.1. Designing with Country

Objectives

- a) Acknowledge, celebrate and improve Wattamagal Country.
- b) Embed and foreground Aboriginal knowledge in the built and natural environment.
- c) Reveal sites' latent Aboriginal histories.
- d) Support the health and wellbeing of Country by valuing, respecting, and being guided by Aboriginal cultural knowledge.

Provisions

1. Development is to demonstrate how it is consistent with and builds upon the Connecting with Country strategies identified in **Figure 3. Connecting with Country Map**.
2. Aboriginal people are to lead or co-lead all Indigenous design elements.
3. Use signage, surface treatments, walls and artwork to tell the Country and its peoples' story at Entry Statements and Meeting Places.
4. Use Aboriginal language or implement dual naming in the built environment, including streets, public places, community facilities and wayfinding signage.
5. Where appropriate, incorporate bold pavement design at thresholds/entrances that reference Aboriginal language, colour and patterns.
6. Incorporate storytelling elements into wayfinding devices, to both orientate people to Country today as well as inform them of the stories and history that came before.
7. Provide communal and public outdoor spaces with areas to celebrate culture such as a viewing, yarning or sitting place with references to local design.
8. Position buildings away from high points, protecting views and view corridors from high points.
9. Position buildings away from water lines, both above and below ground.
10. Include the use of locally indigenous vegetation to enhance public and private open spaces' relationships with and acknowledgements of Country.
11. Development applications are to include a Designing with Country statement that details how the applicant has responded to the provisions above, including a description of:
 - a. consultation activities and outcomes (if consultation has occurred), and how these have informed planning and design of the proposed development;
 - b. opportunities to enhance Aboriginal cultural values;
 - c. mitigation measures to reduce any impacts to areas of Aboriginal cultural value.

Connection with Country Map

KEY

-  WOVEN WAY
-  WOVEN WAY (OUTSIDE THE SITE AREA)
-  PHYSICAL WOVEN WAY CONNECTION
-  EPHEMERAL WOVEN WAY CONNECTION
-  ENTRY STATEMENT
-  MEETING PLACE
-  PATHWAY
-  PUBLIC OPEN SPACE
-  STREETS
-  SITE AREA



Figure 3. Connecting with Country Map

Table 2. Connecting with Country Design Concepts

Concept	Example Responses
Entry statement	Location of significant site markers and/or sculptures that reference local design.
Pathway	Use of patterns and coloured asphalt to signify connections between spaces.
Woven Way	Refer to Design Guide Section 3.2 Woven Ways.
Physical Woven Way Connection	Opportunity to renew and re-wild creek line / Woven Way.
Ephemeral Woven Way Connection	Opportunity to recall and foreground underground creek line / Woven Way through interpretive landscape, art and signage.
Meeting Place	A space to celebrate culture, such as a viewing, yarning or sitting place with references to local design.

3.2. Woven Ways

General

The 'Woven Ways' refer to the creek lines crossing Macquarie Park, as approximately located in **Figure 3. Connecting with Country Map**. In the Stage 1 Neighbourhoods these are Shrimptons Creek, Industrial Creek and Porters Creek. Within the Stage 1 Neighbourhoods, only Shrimptons Creek remains a natural creek; Industrial Creek and Porter Creek have been channelled underground. Shrimptons Creek has similarly been channelled underground outside of the Stage 1 Neighbourhoods area.

Objectives

- a) Restore or recall, and then foreground, obscured elements of the Wattamagal Country.
- b) Let underlying Country inform and direct development.

Provisions

1. A through-site link, public open space, privately owned publicly-accessible space (POPS) or other fully publicly accessible route shall be provided along the approximate line of each Woven Way as identified in **Figure 3. Connecting with Country Map**.
2. Where possible, restore and/or re-wild sections of the 'Woven Ways' into open air natural creeks with public access to and circulation through.
3. Public art may be used to express Woven Ways in open spaces, streets and built form.
4. Provide wayfinding and interpretive signage that identifies each space as a component of a larger Woven Way, and details how it links to the broader streets and open space network.

4. Streets & Landscape

4.1. Street Network

Objectives

- a) Progressively transition the Precinct from a large-lot business park into a high-density urban environment, with a legible street network creating smaller, walkable blocks.
- b) Complete missing links and improve existing connections.
- c) Encourage pedestrian movement and increase share of active and public transport movements within the neighbourhoods.
- d) Prioritise pedestrian amenity, pedestrian crossings, tree canopy coverage, and active transport routes over the supply of on-street car parking.
- e) Support minimum necessary vehicle movements through the Precinct.
- f) Respond to Woven Ways through street locations and design.

Provisions

1. Streets are to be provided and designed to be in accordance with **Table 3. Street Network Characteristics** and **Figure 4. Street Network Map**.
2. Provide for new streets that align with the Woven Ways, and use gateway points in the street network to celebrate Country.
3. Provide for bike and pedestrian bridges where identified in **Figure 4. Street Network Map**, working with Transport for NSW and providing for sufficient site area to be dedicated to that use.
4. Incorporate Water Sensitive Urban Design (WSUD) techniques and planting integrated into all streets to maximise stormwater capture, and further emphasise this in the streets that align with Woven Ways
5. Safe, accessible and convenient pedestrian and cycle crossing points must be provided at all intersections, key destinations, on desire lines and locations of high amenity.
6. Way-finding signage must be provided at logical and visible points along main streets and at key intersections.
7. Materials, furnishings, public art and landscaping within each road reserve must be of a high-quality and consistent palette and should seek to reflect the local character of each neighbourhood.

8. All publicly accessible areas must meet Disability Discrimination Act (DDA) standards of universal access.
9. CPTED principles must be achieved including encouraging passive surveillance, effective lighting, management of public areas and boundary demarcation.
10. Pedestrian scaled lighting must be included along all major pedestrian and cyclist routes and shared paths.
11. Meeting tree canopy coverage targets is to be prioritised over street parking, with a tree blisters provided between every two-to-three on-street parking spaces.
12. The design of streets are to provide appropriate soil volumes and subsoil drainage to support street tree planting, where provided.
13. Bicycle lanes shall be designed with:
 - a. Design speeds of 30 km;
 - b. Clearly demarcated with strong and consistent visual cues;
 - c. Bicycle priority demarcated at intersections with strong and consistent visual and physical clues and supportive directional and associated road signage;
 - d. Vehicle crossovers should be minimised where they intersect with cycle paths/shared paths;
 - e. Bicycle parking facilities and self-maintenance hubs must be provided at key destination points throughout the Precinct and be located in areas of weather protection, passive surveillance and lighting.

Table 3. Street Network Characteristics

#	Description	Design Reference
ST1	Waterloo Road Corridor	Figure 5. Street Type ST1, Indicative Plan & Section
ST2	Secondary Circulation Route	Figure 6. Street Type ST2, Indicative Plan & Section
ST3	Green Boulevard Reserve with Separate Cycleway	Figure 7. Street Type ST3, Indicative Plan & Section
ST4	Secondary Green Boulevard with Separate Cycleway	Figure 8. Street Type ST4, Indicative Plan & Section
ST5	Local Street with Separate Cycleway	Figure 9. Street Type ST5, Indicative Plan & Section
ST6	Secondary Circulation Route with Cycleway	Figure 10. Street Type ST6, Indicative Plan & Section
ST7	Local Street	Figure 11. Street Type ST7, Indicative Plan & Section

Street Network Map

KEY

- ST1- 30M WATERLOO ROAD GREEN CORRIDOR
- ST2- 20M SECONDARY CIRCULATION ROUTE
- ST3- 20M GREEN LINK
- ST4- 25M SECONDARY GREEN BOULEVARD
- ST5- 20M LOCAL STREET
- ST6- 20M SECONDARY CIRCULATION ROUTE
- ST7- 14.5M LOCAL STREET
- FUTURE ROADS IN CASE OF MAJOR DA/ REZONING
- PUBLIC OPEN SPACE
- SITE AREA



1:10,000 @ A4



Figure 4. Street Network Map

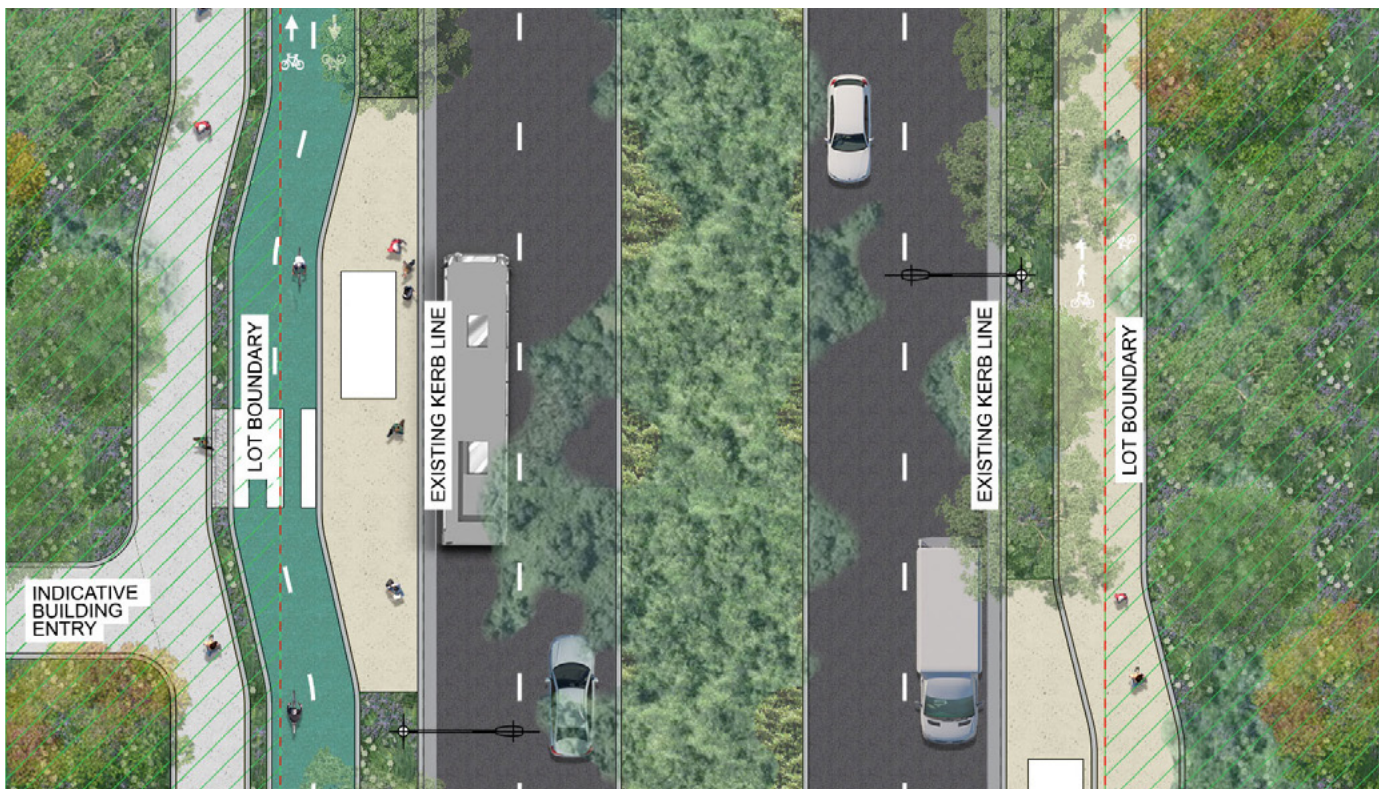
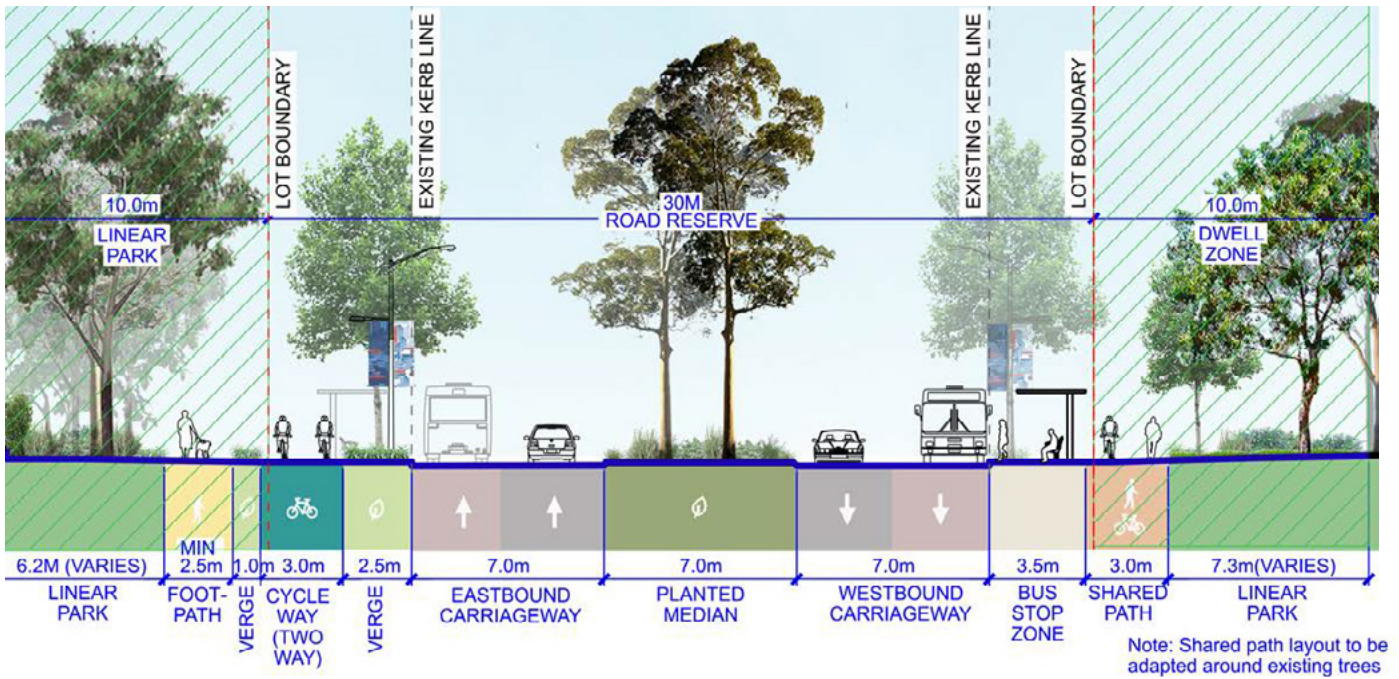


Figure 5. Street Type ST1, Indicative Plan & Section

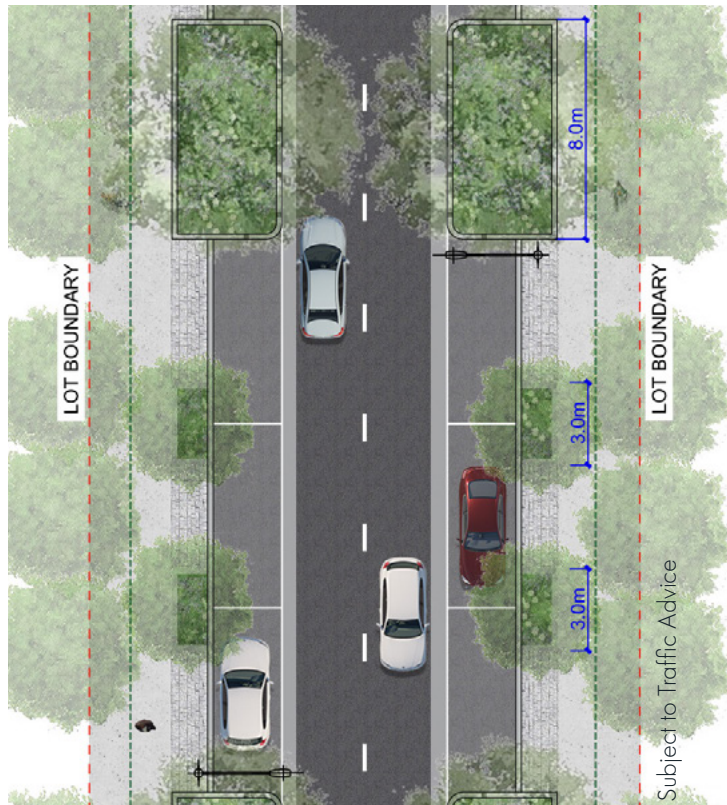
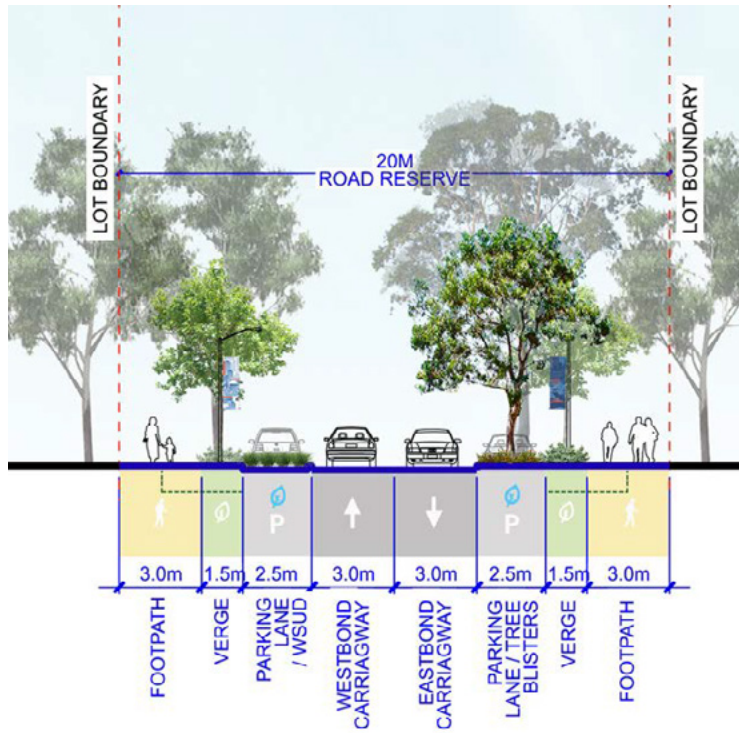


Figure 6. Street Type ST2, Indicative Plan & Section

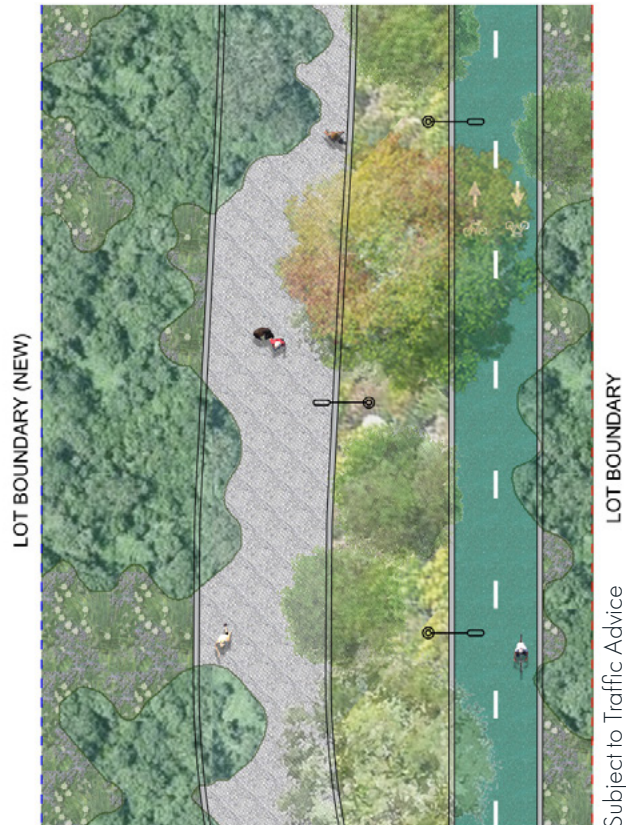
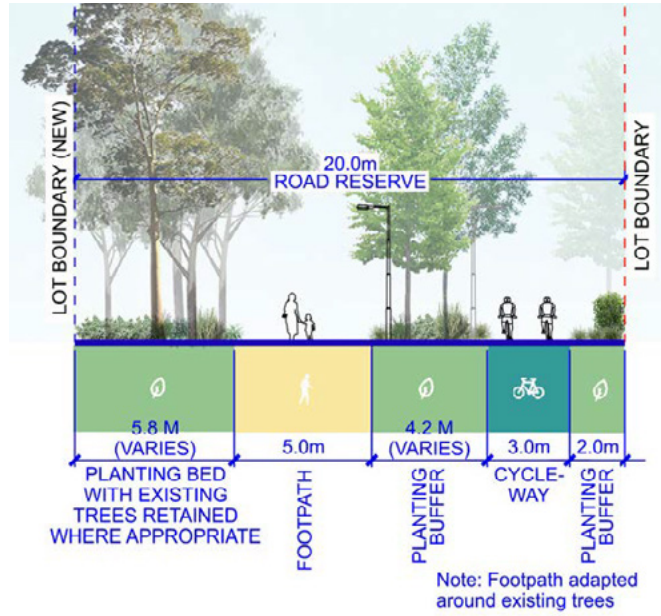


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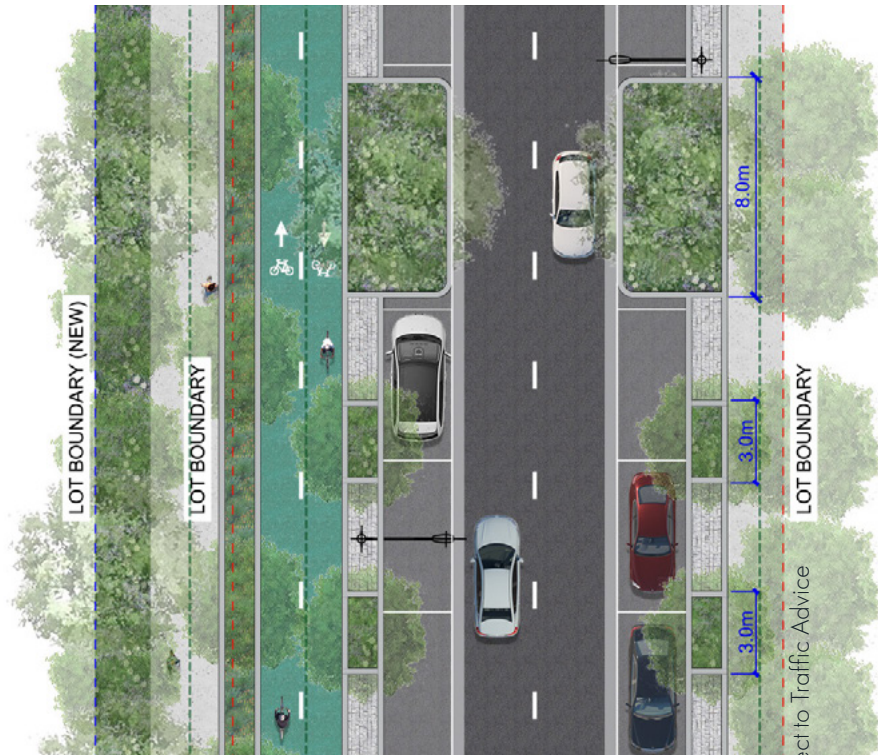
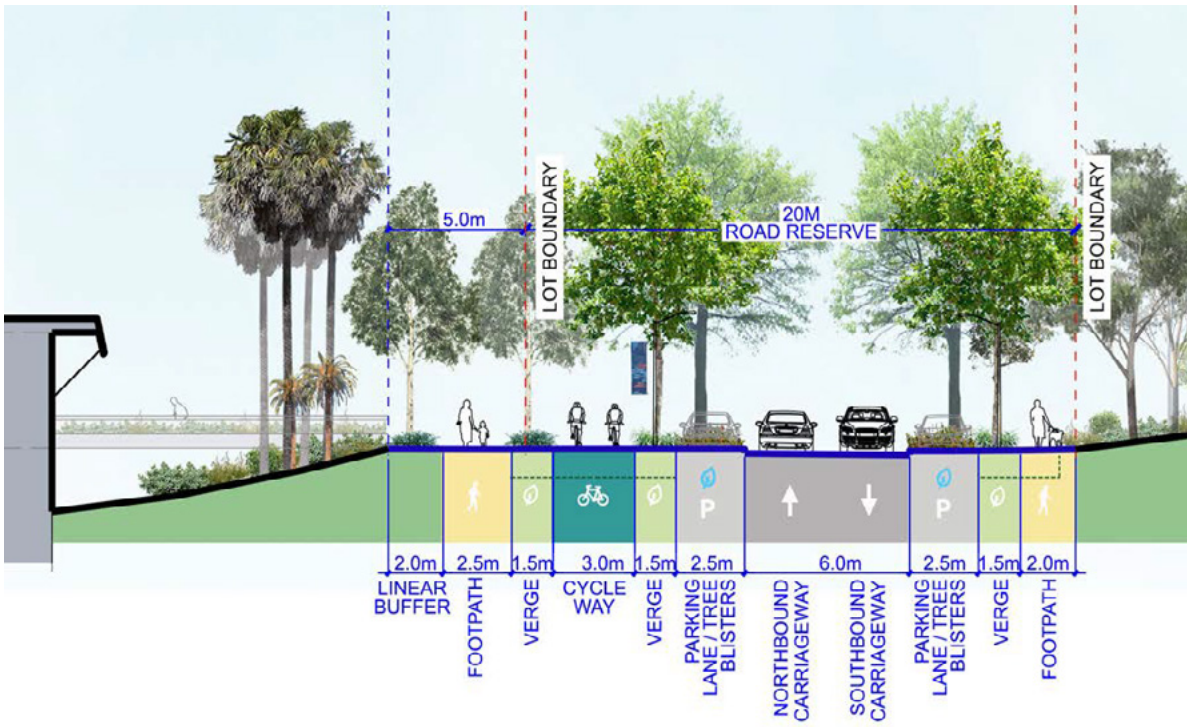


Figure 8. Street Type ST4, Indicative Plan & Section

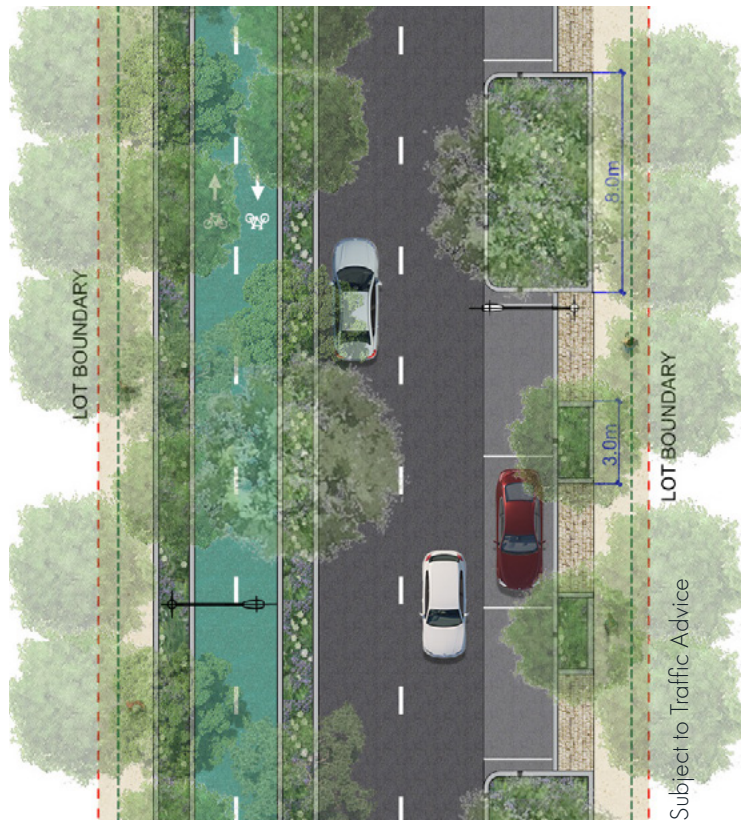
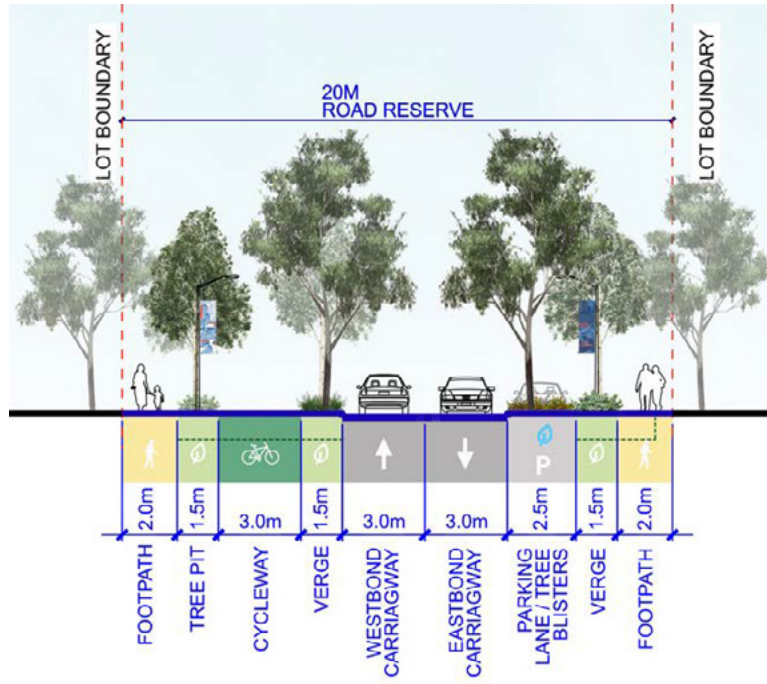


Figure 9. Street Type ST5, Indicative Plan & Section

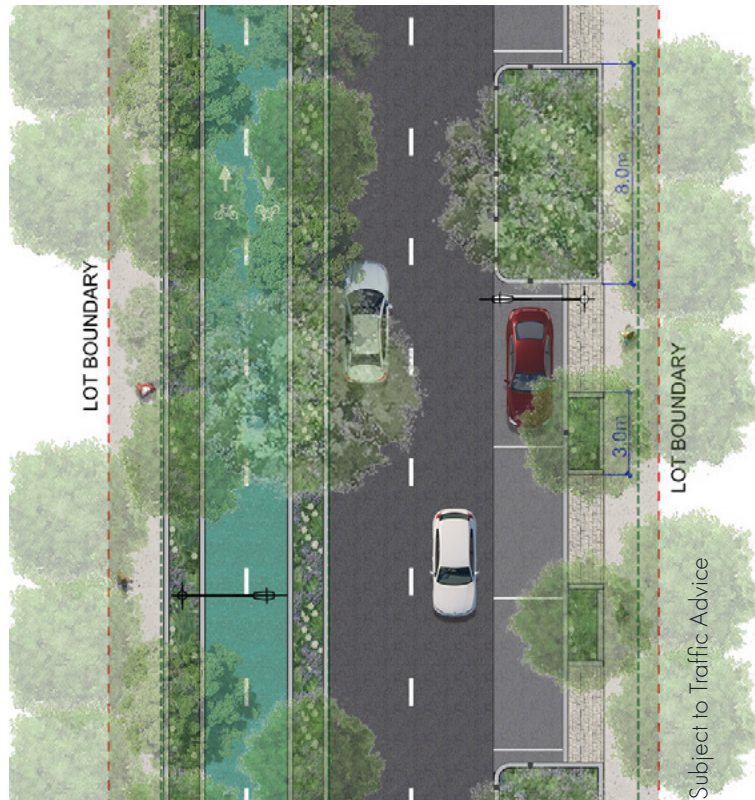
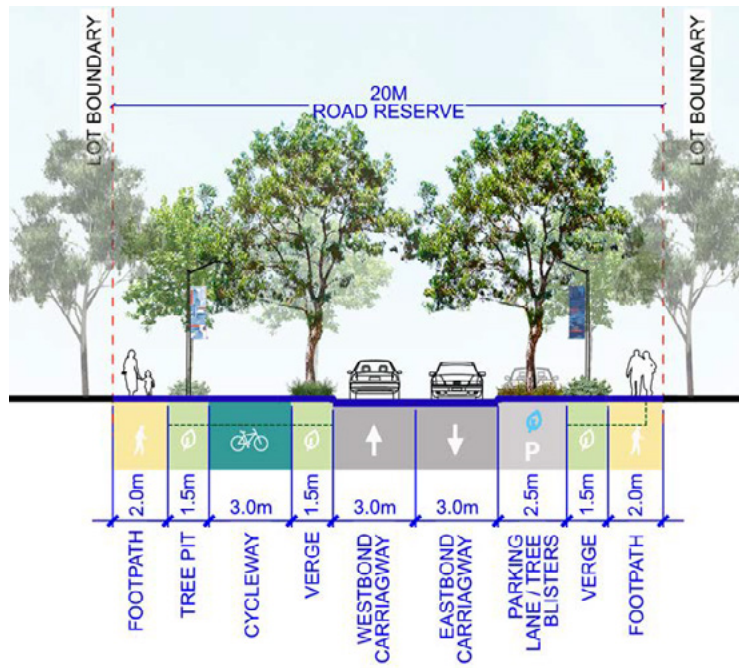
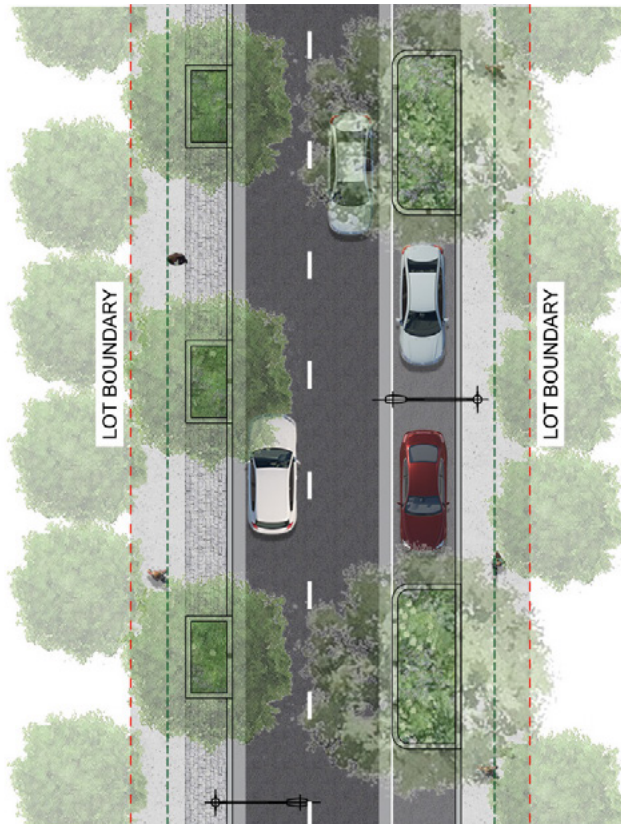
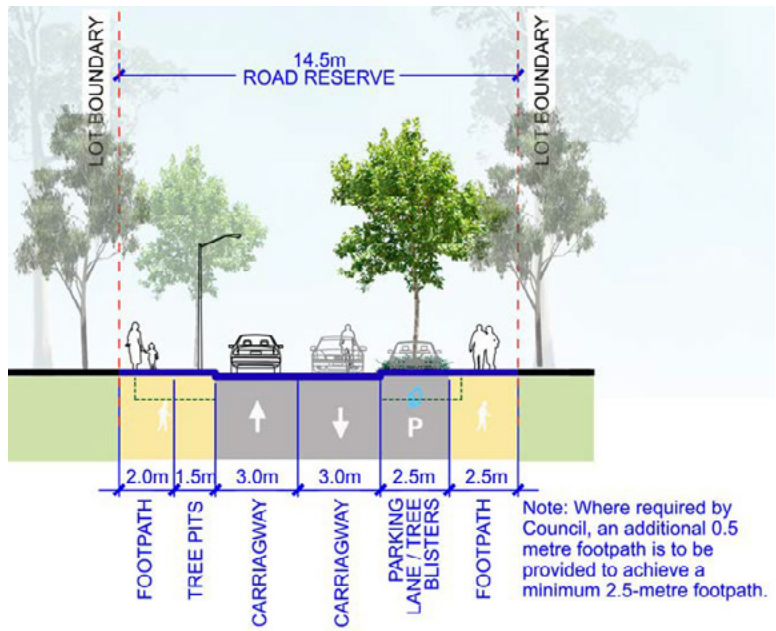


Figure 10. Street Type ST6, Indicative Plan & Section












Subject to Traffic Advice

Figure 11. Street Type ST7, Indicative Plan & Section

Active Transport Map

KEY

-  WATERLOO ROAD CORRIDOR
-  BIKE LANES
-  BIKE BRIDGE
-  WALKING TRAIL
-  PEDESTRIAN BRIDGE
-  METRO STATION
-  PUBLIC OPEN SPACE
-  STREETS
-  SITE AREA

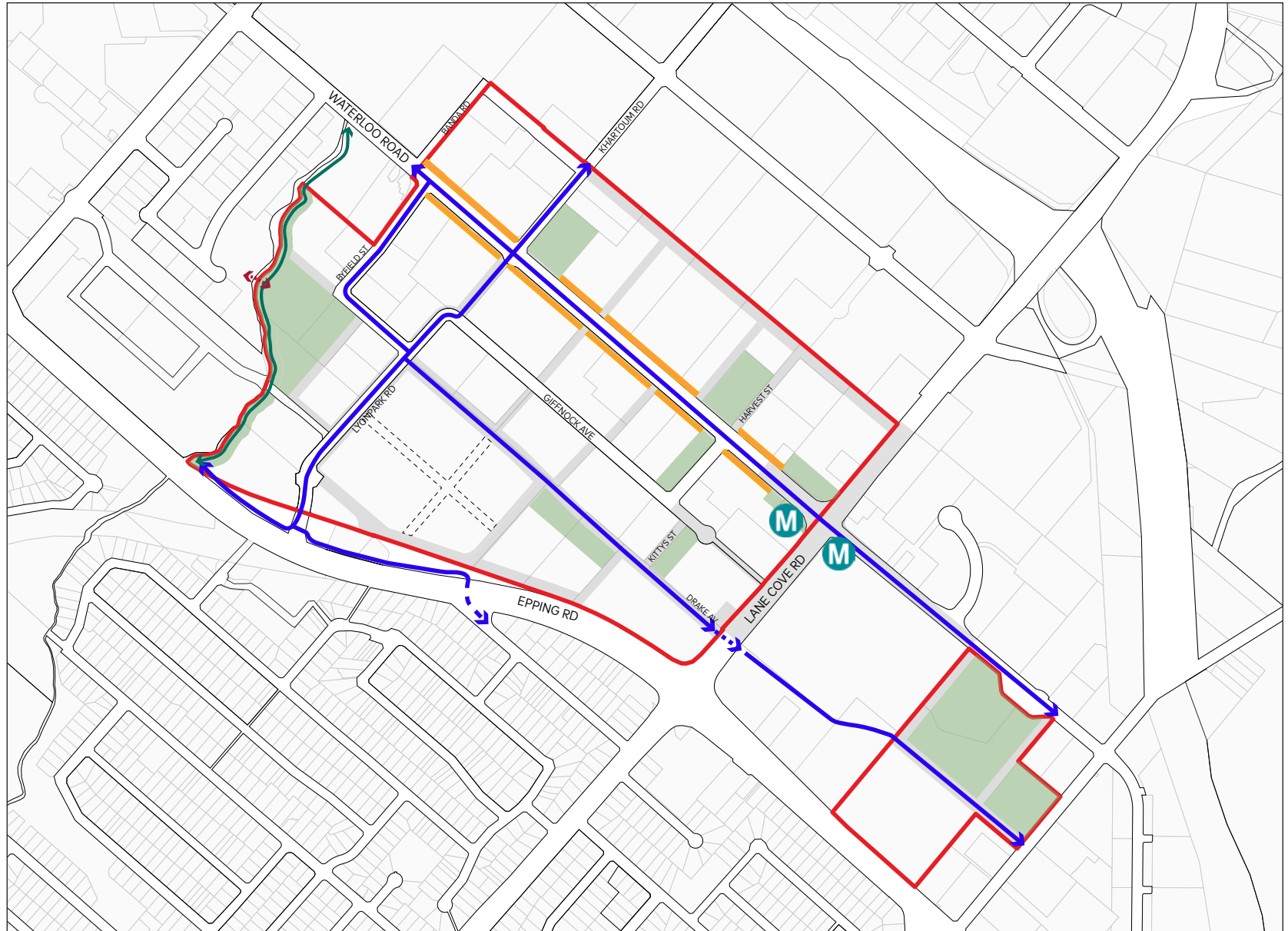


Figure 12. Active Transport Network Map

4.2. Through-site Links

Objectives

- a) To increase pedestrian permeability throughout the Precinct, including through private lots.
- b) To facilitate large floor-plate commercial buildings without impacting pedestrian permeability throughout the Precinct.
- c) To ensure through-site links are fully accessible, continuous, and safe at all times of day and night.
- d) To encourage active uses adjoining through-site links, contributing to the vitality and 18-hour economy of the Precinct.

Provisions

1. Through-site links are to be provided in the approximate locations shown in **Figure 13. Through-Site Links Map**, sufficient to ensure that any city block that extends in any direction for more than 130m between public streets and/or public open spaces shall be provided with a public right of way across the site.
2. Within 400m of the Metro stations, additional pedestrian connections should be provided when requested by the consent authority to manage high pedestrian volumes.
3. Where a development has the potential to complete a through-block connection by extending an existing or proposed connection on an adjoining site, the development should provide for the completion of the through-site connection.
4. Through-site links are to be provided with a continuous, 24/7 easement for public right of way.
5. Each through-site link is to be designed such that it is:
 - a. Designed in accordance with **Figure 14. Through-Site Link Indicative Plan & Section**.
 - b. A minimum of 12m wide for at least 75% of its total length;
 - c. A minimum of 6m wide at any one point;
 - d. A minimum 4m wide paved fully accessible continuous path of travel connecting from public street to public street, meeting relevant clauses of the Australian Standards – AS1428 suite as well as the Access provisions in the RDCP2014; Well-lit, well-signposted and easily identified as publicly accessible by passersby;
 - e. Designed with attractive and high quality exterior grade materials, finishes and furniture consistent with the adjoining public streets and open spaces;

- f. Provided with large canopy trees at maximum average spacing of 6m along entire length;
 - g. Designed with appropriate protection to prevent vehicle access;
 - h. Open to the sky.
6. Where city blocks are composed of multiple properties, through-site link width requirements can be split across lots. The applicant must show how the dimensional requirements can be met without requiring demolition of any existing property, which may result in an unequal split between properties.
7. Despite Provision 5.h. a through-site link may be overhung by built form if the through-site link:
- a. Maintains a minimum vertical clearance of 6m;
 - b. Is overhung by built form for a maximum continuous length of 12m at any one point; and
 - c. Remains open to the sky for a minimum of 50% of its total length.

Through-Site Links Map

KEY

- INDICATIVE THROUGH-SITE LINKS
- STREETS
- WATERLOO ROAD POPS
- PUBLIC OPEN SPACE
- SITE AREA
- APPLICABLE ONLY IN FUTURE MAJOR DA/REZONING



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Figure 13. Through-Site Links Map

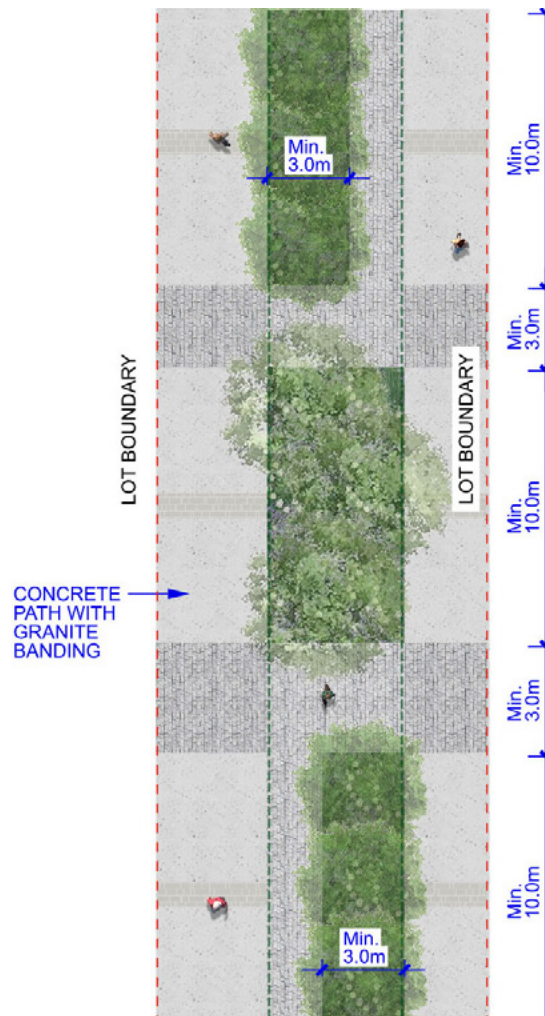
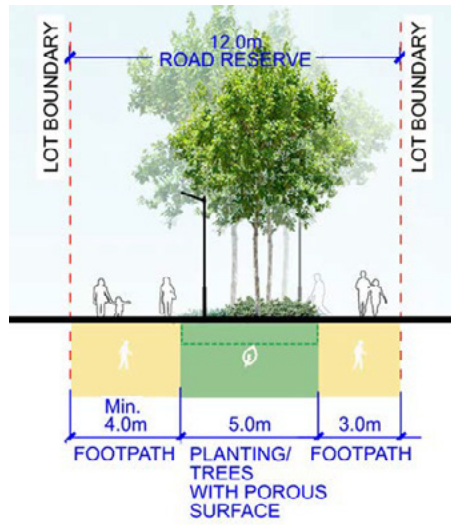


Figure 14. Through-Site Link Indicative Plan & Section

4.3. Open Space Network

Objectives

- a) Implement a Country-centred approach to open spaces, introducing a network of open spaces that reference the Designing with Country objectives in this Design Guide including the Woven Ways, Meeting Places and Entry Statements.
- b) Provide an appropriate quantum, character and variety of public open spaces to meet the active and passive recreation needs of residents, workers and visitors to the Macquarie Park Stage 1 Neighbourhoods.
- c) Improve the visual character of the Precinct, contributing to the extent and level of connection of canopy coverage and green coverage.
- d) Provide points of interest that contribute to the Precinct's identity and ease of wayfinding through it.
- e) Help define the varying character and hierarchy of the different activity hubs.
- f) Contribute to the walking, cycling and active transport network.
- g) Contribute to stormwater and ecological management.

Provisions

1. Public open spaces are to be provided and designed in accordance with **Figure 15. Open Space Network Map** and **Table 4. Publicly Accessible Open Space Characteristics**.
2. Parks are to be dedicated to the Council in accordance with **Figure 17. Land Dedication Map**, unless by agreement with Council where they may be provided as privately-owned public space (POPS). Ensure open space is inviting, accessible, diverse and comfortable, fostering opportunities for active lifestyles and social connections.
3. Ensure visual and physical connectivity between the open spaces, woven ways and through-site access to link them to each other and to the wider area.
4. Water Sensitive Urban Design (WSUD) to be incorporated into all new open space, with including where interfaces and aligns with existing creeks and historic lines (Woven Ways)
5. High-quality hardscape and furniture elements that reflect the character of the neighbourhood, referring to Public Domain Plan Material Palettes.

6. Each nominated public open space will have the solar protections generally in accordance with **Figure 16. Solar Protections Map**. Note that solar controls do not need to be met where overshadowing is occurring due to an existing concept approval that predates this Design Guide, unless that application is being significantly modified.
7. Ensure design mitigates adverse wind effects and satisfies the RDCP2013 Acceptable Criteria for Environmental Wind Conditions for communal outdoor spaces. Wind comfort should be selected for sitting, standing and walking, as is appropriate considering the intended use of each space.
8. All existing trees are to be retained in the design of new and enhanced public open spaces.

Open Space Network Map







- KEY
- SMALL PARK
 - SMALL PARK (WOVEN WAY)
 - LOCAL PARK
 - DISTRICT PARK
 - RIPARIAN CORRIDOR
 - STREETS
 - SITE AREA
 - FUTURE LOCAL PARK IN CASE OF MAJOR DA/ REZONING

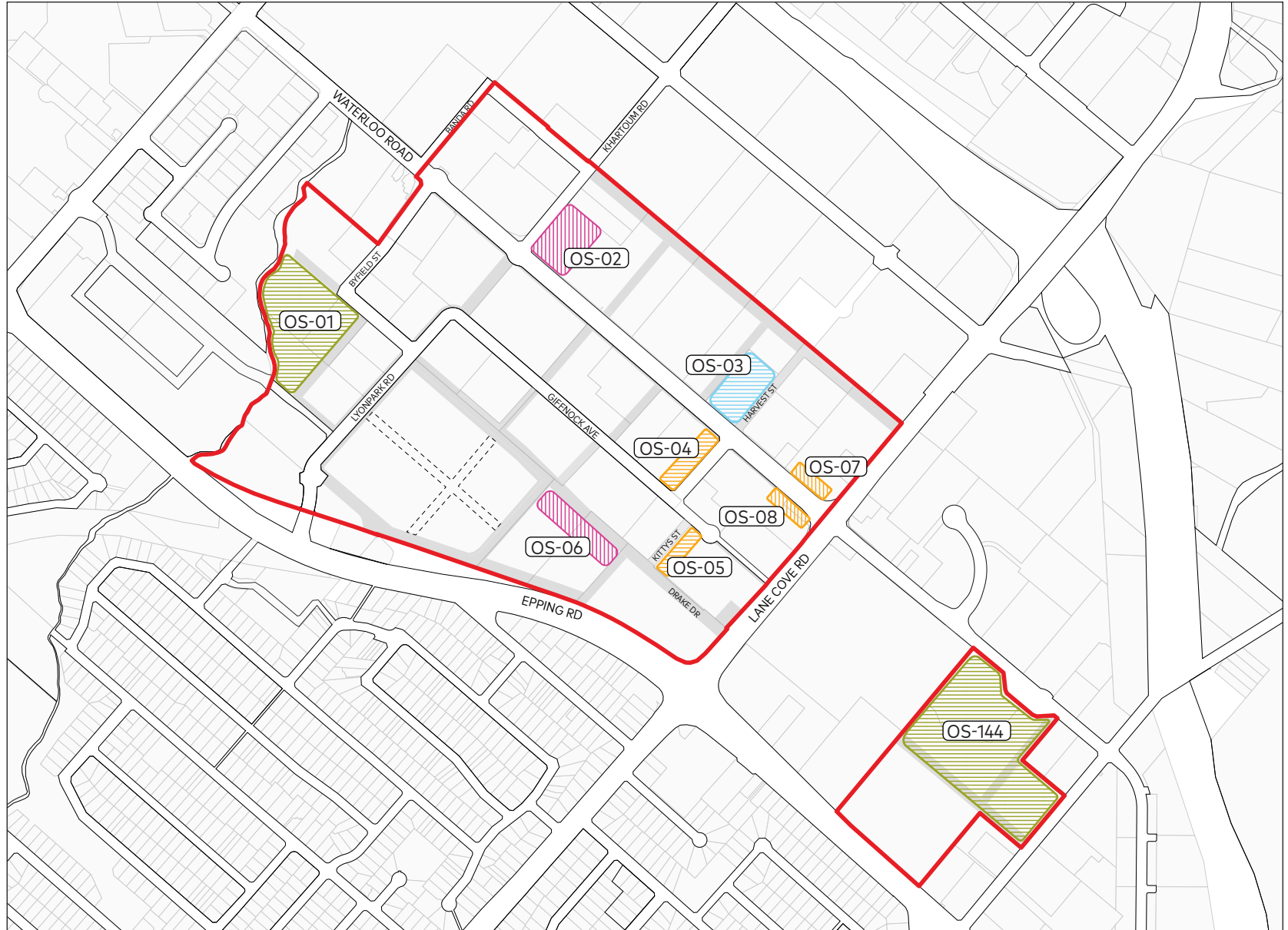


Figure 15. Open Space Network Map

Solar Protection Map

KEY

-  50% 9AM- 3PM
-  50% 10AM- 2PM
-  50% 11AM- 1PM
-  NO SPECIFIC SOLAR PROTECTION
-  SITE AREA
-  APPLICABLE ONLY IN FUTURE MAJOR DA/ REZONING






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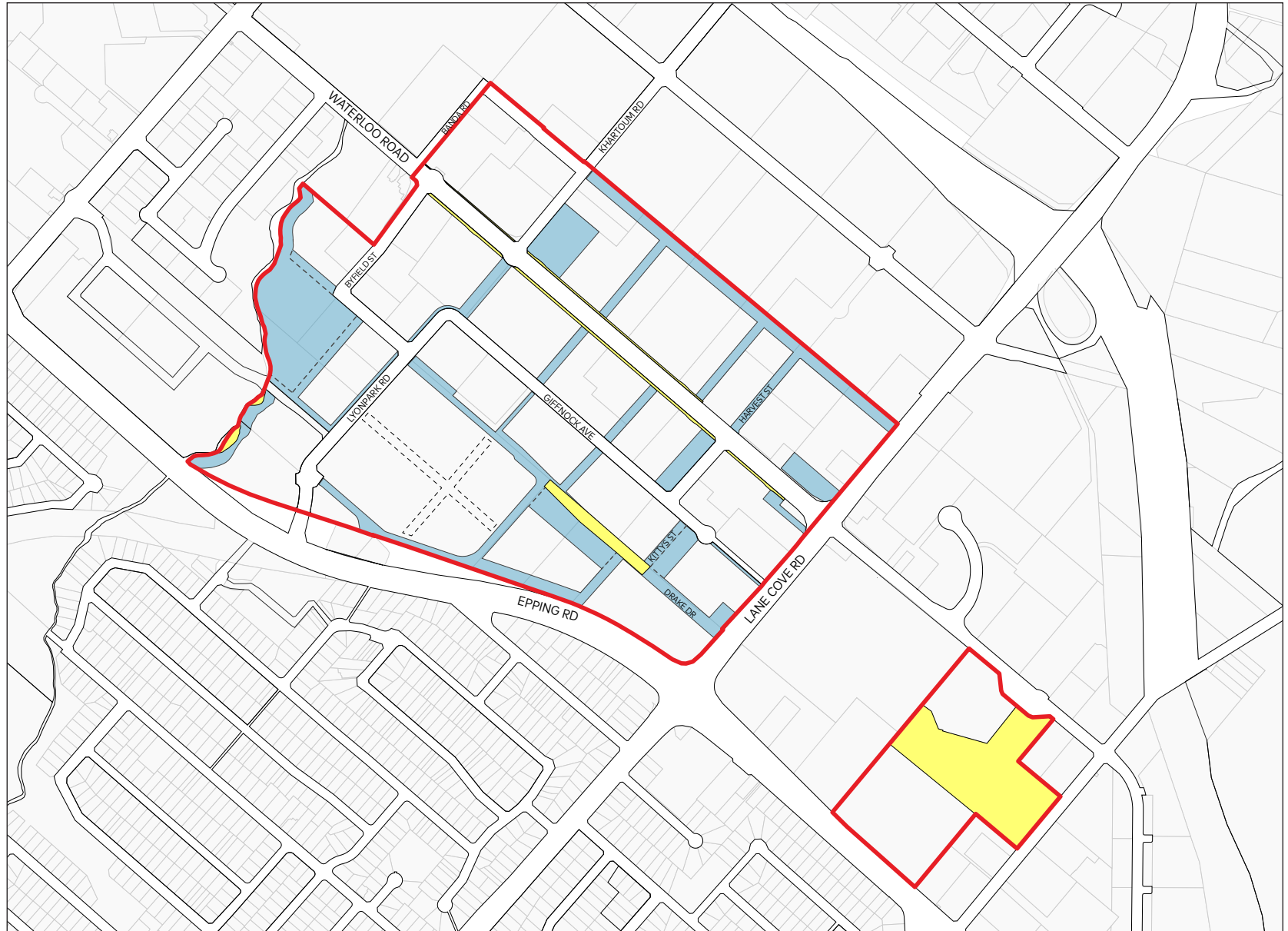


Figure 16. Solar Protections Map

Land Dedication Map

KEY

-  LAND DEDICATION
-  LAND ACQUISITION
-  SITE AREA



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Figure 17. Land Dedication Map

Table 4. Publicly Accessible Open Space Characteristics

Open Space	Spatial Requirements	Design Guidelines
<p>RZ-1A, RZ-1B, RZ-2A, RZ-2B</p>	<p>Minimum width of 20m, measured from edge of lot or from top of bank (whichever is greater).</p>	<ul style="list-style-type: none"> • Provide continuous share path and multiple informal gathering points ('Meeting Places') in association with Shrimptons Creek Parklands. • Riparian zones are to be designed a way that references the Woven Way concept as outlined in Design Guide Section 3.2 Woven Ways.
<p>OS-01 Shrimptons Parklands</p>	<p>Minimum area of 16,855m², plus a minimum additional area of 7,120 m² in adjoining components of the Riparian Corridor (RZ-1A and RZ-1B)</p>	<ul style="list-style-type: none"> • Refer to Figure 18. Key Place Plan 1 for indication of design intent. • Bound by public streets or waterways on all sides. • Work with Sydney Water to provide a water recycling facility. • Provide landscaping that responds to the natural topography of the park (such as terraced lawns/ seating). • Share path and 2 x informal gathering points with seating and shelter in association with outer 50% of Shrimptons Creek Core Riparian Zone RZ-1B, as well as cycle / pedestrian crossing points in association with improved connectivity via a bridge across Shrimptons Creek to the existing Wilga Park. • Facilitate through site access, pedestrian and cycle network in accordance with Figure 2. Structure Plan. • Table 1. Macquarie Park Innovation Precinct Design Principles is to be reflected in design and materials. • Riparian zone to be designed a way that references the Woven Way concept outlined in as outlined in Design Guide Section 3.2 Woven Ways. • Provide the following: <ul style="list-style-type: none"> ○ Multi sports space to accommodate size 2 x courts with protective fencing where necessary and courtside seating, minimum 8 benches. ○ Shaded play areas x 2, combination of formal equipment integrated with nature play; minimum 10 benches; shaded fitness station (4 dynamic/ 4 static units); 2 x BBQ terrace areas - 3 x BBQ units in each area, under shelter; and 10 x picnic tables (5 min under shelter) . ○ Generally elsewhere 20 park benches, parking for 20 bicycles. Provide secondary seating terraces and seating walls throughout.

Open Space	Spatial Requirements	Design Guidelines
<p>OS-02 Waterloo Road Park</p>	<p>Minimum area of 7,310m²</p>	<ul style="list-style-type: none"> • Refer to Figure 19. Key Place Plan 2 for indication of design intent. • Bound by public streets for its entire extent on at least two sides. • Facilitate through site access and links to public transport hubs. • Interface with Waterloo Road pedestrian access and public transport interchange. • Provide the following: 14 park benches, parking for 14 bicycles, 3 x shade shelters, 1 x kiosk facility. • Provide outdoor eating facilities to satisfy thriving and intensely activated space, which can be adapted to suit varied volumes of users. • Provide secondary seating terraces and seating walls throughout.
<p>OS-04 Industrial Creek Woven Way North</p>	<p>Minimum area of 3,470m² Minimum linear dimension of 30m</p>	<ul style="list-style-type: none"> • Refer to Figure 20. Key Place Plan 3 for indication of design intent. • Bound by public streets for its entire extent on at least two sides. • Woven Way references to be integrated and emphasised in this park space, as outlined in Design Guide Section 3.2 Woven Ways. • Provide landscape treatments that responds to existing trees and detention function (such as sunken terraced spaces). • All existing trees are to be retained. • Facilitate through site access, pedestrian and interface with cycle network in accordance MPIP Structure Plan. • 6 park benches, parking for 6 bicycles. Provide secondary seating terraces and seating walls throughout.
<p>OS-05 Industrial Creek Woven Way South</p>	<p>Minimum area of 2,685m² Minimum linear dimension of 30m</p>	<ul style="list-style-type: none"> • Refer to Figure 20. Key Place Plan 3 for indication of design intent. • Bound by public streets for its entire extent on at least two sides. • Woven Way references to be integrated and emphasised in this park space, as outlined in Design Guide Section 3.2 Woven Ways. • Provide landscape treatments that responds to existing trees and detention function (such as sunken terraced spaces). • All existing trees are to be retained • Facilitate through site access, pedestrian and interface with cycle network in accordance MPIP Structure Plan. • 6 park benches, parking for 6 bicycles. • Provide secondary seating terraces and seating walls throughout.

Open Space	Spatial Requirements	Design Guidelines
OS-06 Drake Ave Park	Minimum area of 5,805m ² Minimum linear dimension of 30m	<ul style="list-style-type: none"> • Refer to Figure 22. Key Place Plan 5 for indication of design intent. • Bound by public streets for its entire extent on at least two sides. • Park is to be designed as one cohesive space with an interface to Optus Drive extension streetscape. • Facilitate through site access, pedestrian and interface with cycle network in accordance MPIP PDMP Structure Plan. • All existing trees are to be retained. • Provide the following: 10 park benches, outdoor eating facilities for 18, parking for 10 bicycle, 2 x BBQ/ shelter facility with 2 BBQ units in each. • Provide secondary seating terraces and seating walls throughout.
OS-07 Metro Plaza Northwest	Minimum area of 3,435m ² Minimum linear dimension of 30m	<ul style="list-style-type: none"> • Refer to Figure 21. Key Place Plan 4 for indication of design intent. • Bound by public streets for its entire extent on at least two sides. • Facilitate through site access, pedestrian and interface with cycle network. • 10 park benches, sheltered parking for 10 bicycles.
OS-08 Metro Plaza Southwest	Minimum area of 1,390m ²	<ul style="list-style-type: none"> • Refer to Figure 21. Key Place Plan 4 for indication of design intent. • Bound by public streets for its entire extent on at least two sides. • Facilitate through site access, pedestrian and interface with cycle network. • 10 park benches, sheltered parking for 10 bicycles.
OS-144 Thomas Holt Park	Minimum area of 7,635m ²	<ul style="list-style-type: none"> • In the case of redevelopment, the existing POPS should expand into the area no longer required as road reserve. • Both the expansion and the existing POPS area shall be dedicated to Council as a public park.

Key Place Plan 1 - Waragal Birrung Parklands



Figure 18. Key Place Plan 1

Key Place Plan 2 - Waterloo Road Park

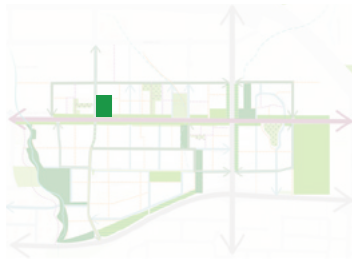


Figure 19. Key Place Plan 2

Key Place Plan 3 - Industrial Creek Woven Way North

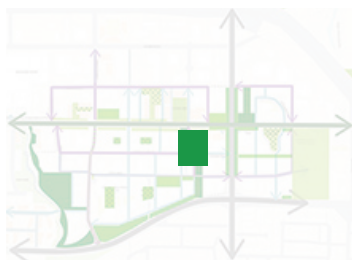


Figure 20. Key Place Plan 3

Key Place Plan 4 - Station Plazas East



Figure 21. Key Place Plan 4

Key Place Plan 5 - Drake Avenue Park



Figure 22. Key Place Plan 5

5. Buildings

5.1. Site Planning

Objectives

- a) Encourage a shift away from the car-oriented site planning associated with the Precinct's history as a drive-up business park typology, to the high-density, high-activity urban environment now defined for the Precinct.
- b) Ensure that development occurs within the framework of streets and open spaces proposed for the Precinct.
- c) Ensure buildings address existing and proposed streets.
- d) Ensure building and service placement promotes pedestrian-friendly streetscapes and enhance the overall urban aesthetic.

Provisions

1. Sites planning is to either deliver or ensure the future provision of new streets, open spaces and through-site links in accordance with **Figure 4. Street Network Map**, **Figure 13. Through-Site Links Map**, and **Figure 15. Open Space Network Map**.
2. Parking shall be exclusively accommodated within basement areas, ensuring optimal utilization of above-ground space and maintaining a visually unobtrusive environment.
3. Where parking, loading, or storage areas are positioned at ground level or above, they shall be fully contained within the building footprint as well as effectively screened through the integration of habitable uses, such as commercial spaces or apartments where permitted.
4. All loading and storage shall be confined within the building footprint to enhance the overall functionality and appearance of the development while minimizing visual and noise disturbances associated with external loading and storage.
5. Off-street surface parking is prohibited, except where provided as accessible parking and designed in accordance with Australian Standard – AS/NZS 2890.6.
6. Within any off street surface parking, including existing, one medium tree should be planted in every fifth car parking space provided. The tree is to be in a planted zone of 13 m² – the equivalent of a car parking bay area. Trees should be evenly distributed in a chequerboard fashion to increase shading.

5.2. Building Line Setbacks

Objectives













- a) Enhance the character of existing streets and create new streets which contribute to the character and identity of the Precinct.
- b) Retain and reinforce the existing character of green setbacks with mature planting.
- c) Ensure views to the sky and views between buildings from the public realm, including between buildings on adjoining lots.
- d) Ensure appropriate separation between buildings to protect residential amenity and privacy.
- e) Ensure appropriate amenity for the public domain including wind conditions, solar access and protection from weather.

Provisions

1. Minimum setbacks and build-to lines are to be provided in accordance with **Figure 23. Setbacks Map** and summarised as follows:
 - a. Zero setbacks / build-to lines to Primary Active Frontage;
 - b. 6m setback to all existing and all new streets unless otherwise specified;
 - c. Side and rear boundary setbacks of 9m;
 - d. Landscaped setback to Waterloo Road of whichever is the lesser of 10m from the property boundary or 25m from the centre-line of Waterloo Road. 10m landscaped setback to Epping Road;
 - e. 15m landscaped setback to Lane Cove Road.
2. Awnings, canopies, sun shading and screening elements may project into setback zones.
3. Basement car park structures should not encroach into the minimum required setbacks, unless the structure is designed to support mature trees and deep root planting and the overall development meets or exceeds the Tree Canopy Coverage requirements outlined in **Table 6. Canopy Cover Targets**.

Building Setbacks Map

KEY

-  3M PRIMARY SETBACK
-  6M PRIMARY SETBACK
-  10M PRIMARY SETBACK EPPING ROAD
-  25M PRIMARY SETBACK EPPING ROAD
-  15M PRIMARY SETBACK LANE COVE ROAD
-  20M PRIMARY SETBACK LANE COVE ROAD
-  10M WATERLOO ROAD SETBACK
-  LANDSCAPE SETBACK
-  PUBLIC OPEN SPACE
-  POPS
-  STREETS
-  SITE AREA



1:10,000 @ A4



Figure 23. Setbacks Map

5.3. Floor Plates, Upper Level Setbacks & Building Separation

Objectives

- a) Promote architecture that puts people first, including how they experience a building at street level and how public areas and buildings interface. Encourage innovative, creative and high-quality building design that positively contributes to the public domain and defines streets and public spaces. Produce building frontages that create human scale and are busy and active, addressing open space, pathways and woven ways to bring activity and connections and provide passive surveillance.
- b) Create a permeable and interesting skyline.
- c) Reduce the apparent bulk and scale of large-plate commercial buildings and tall residential towers.
- d) Maintain views to the sky.
- e) Ensure adequate separation between buildings to provide air, space, light and views between buildings, maximising direct solar access to adjoining properties.

Provisions

1. Floor plates within mixed-use and residential buildings at heights above either 8-storeys or a height of building of 32-metres above natural ground level (whichever is lesser) are not to exceed 750m² GFA.
2. Where possible, avoid large footprint, single-site buildings and aim for series of buildings around courtyards that allow through-site links.
3. Floor plates within industrial and commercial buildings at heights above either 8-storeys or 32-metres above natural ground level (whichever is lesser) are not to exceed 2,000m² GFA, unless it can be demonstrated that slender building forms are achieved through courtyards, atria, articulation or architectural devices. Design building massing, setbacks and articulation zones to enable the achievement of appropriate wind conditions. Use appropriate design features to minimise the impact of wind on the public domain, and ensure design mitigates adverse wind effects and satisfies the relevant wind criteria for the intended uses of the public domain.
4. Use changes in scale and built form to create architectural interest and diversity and enhance relationship with the public domain.
5. Tower building forms are to provide a minimum 3m upper-level setback at or before the 8th storey, the top storey, or a height of building of 32-metres above natural ground level (whichever is lesser), to reduce the visual bulk of mid-rise buildings as well as create podium and tower forms in taller buildings.

6. Minimum separation distances between residential buildings and building forms shall be provided in accordance with **Figure 24. Residential Building Separation Diagram** and summarised below. Note that height in storeys is measured from the lowest ground floor, regardless of use.
 - a. Provide minimum 6m between non-habitable uses, 9m between habitable and non-habitable uses, and/or 12m separation between habitable uses on the first 4-storeys.
 - b. Provide minimum 9m between non-habitable uses, 15m between habitable and non-habitable uses, and/or 18m separation between habitable uses on the 5th to the 8th storeys.
 - c. Provide minimum 12m between non-habitable uses, 18m between habitable and non-habitable uses and/or 24m separation between habitable uses on the 9th storey and above.
7. Minimum separation distance between commercial buildings and building forms shall be in accordance with **Figure 25. Commercial Separation Diagram** as summarised below.
 - a. Provide minimum 18 m separation between buildings parallel to each other within a site.
 - b. Provide minimum 12 m separation between buildings perpendicular to each other within a site. This reduced building separation control only applies where the width of each length of facing facades does not exceed 32m.
8. Buildings should be designed with a single upper-level setback to avoid numerous distinct tiers. This may result in greater-than-minimum setbacks being required on the levels below the setback.
9. Despite Provision 5.3.8, the uppermost level of any building can be provided with a further additional upper-level setback.

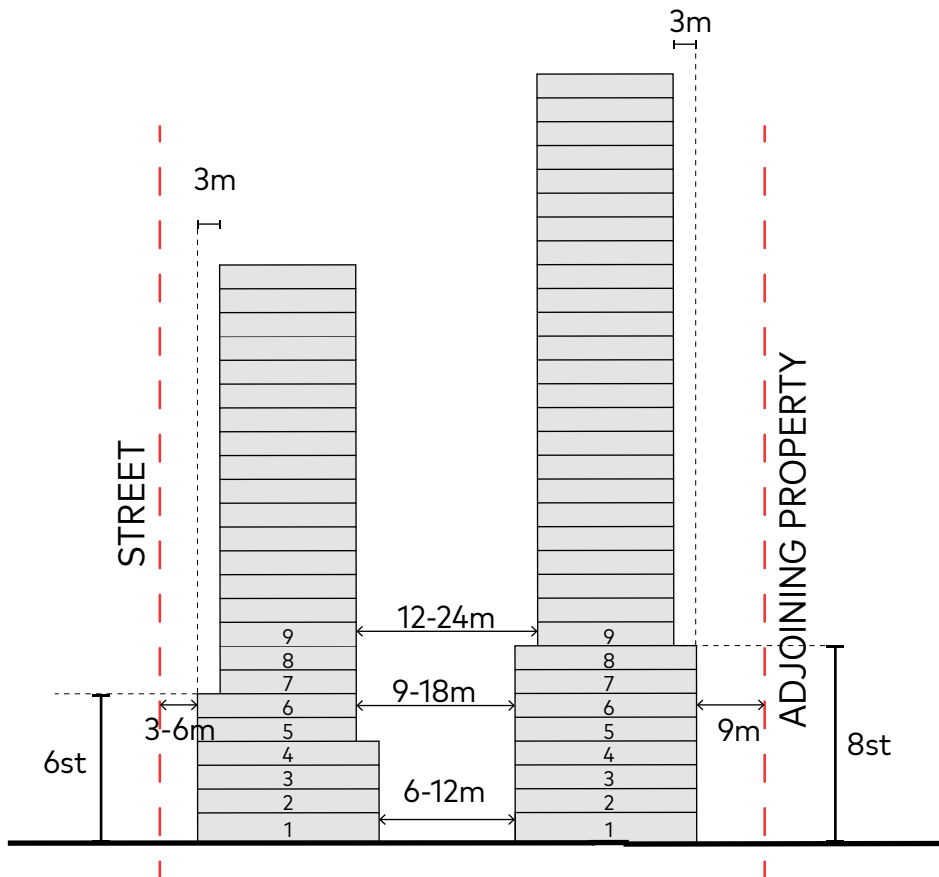


Figure 24. Residential Building Separation Diagram

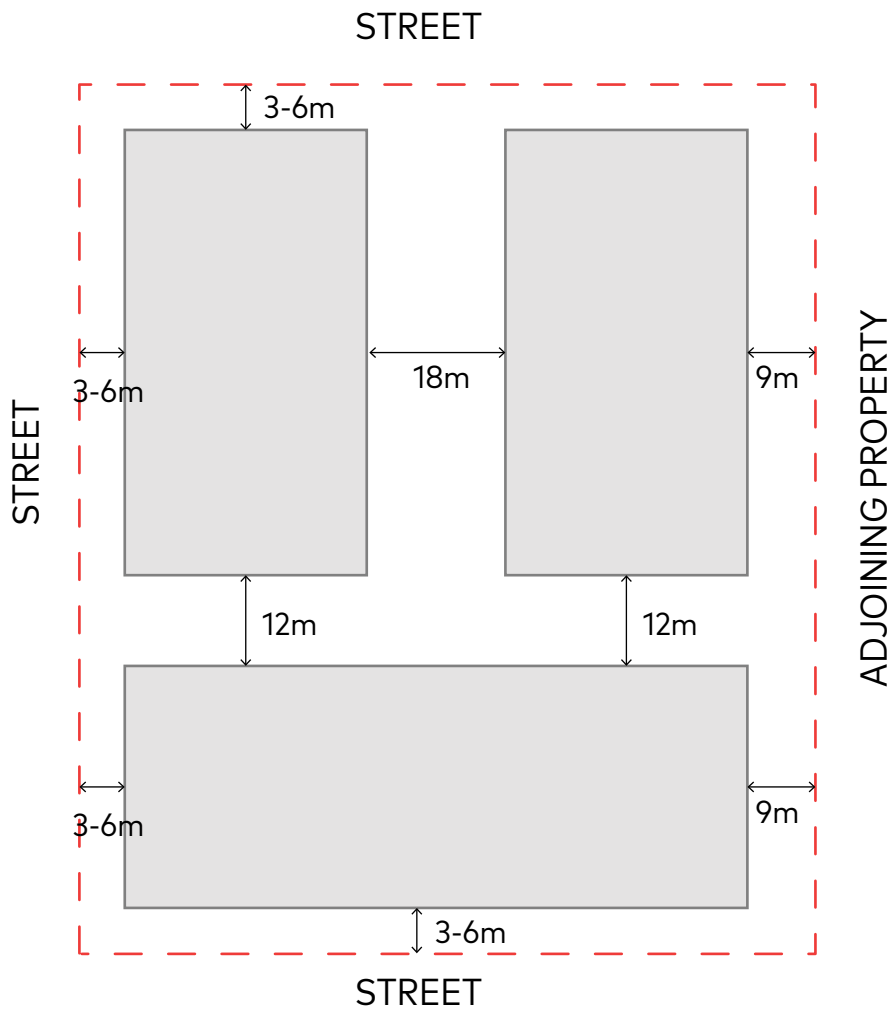


Figure 25. Commercial Separation Diagram

5.4. Building Frontages

Objectives

- a) Maximise street level activation in the Precinct while acknowledging the limit of total retail capacity in an area containing a super-regional retail centre.
- b) Contribute to pedestrian safety through passive surveillance of streets, through-site links and public open spaces.
- c) Ensure residential properties contribute to the overall commercial character of the precinct.

Provisions

1. Active frontages are to be provided in accordance with the RLEP2014 **Active Street Frontages Map**, including:
 - a. Retail active frontages are to be provided on prominent corners and to provide amenity to public open spaces;
 - b. Commercial active frontages are to be provided along all frontages facing public streets and public open spaces, except where retail active frontages are provided;
 - c. Residential dwellings are not permitted along ground floor frontages, except for the limited use of Small Office/Home Office (SOHO) frontages per Provision 5.4.3 below.
2. Active frontages are to:
 - a. Occupy the street frontage for a depth of at least 10m;
 - b. Provide accessible entries at the same level as the adjacent footpath. On sloping sites, the maximum level change between ground floor tenancies and the adjacent footpath is 600 mm;
 - c. Provide 90% clear glazing along the building frontage up to a height of 3m. The sill height for windows must be maximum 600mm above the footpath, including for sloping sites.
3. Small Office/Home Office (SOHO) typologies may be provided on the ground floor of residential / mixed-use developments provided:
 - a. All ground level floor space and facilities associated with the SOHO is to be in addition to what is required for the dwelling unit above, meaning all spatial guidelines in the ADG (minimum apartment size, living room dimensions, balcony dimensions, storage requirements, solar access, etc.) should be met by the upper level(s);
 - b. Ground level SOHO frontages are to be designed consistent with the guidelines for commercial active frontage listed above, including minimum glazing and the identification of signage zones.

6. Environmental Management & Sustainability

6.1. Climate Risk and Resilience

Objectives

- a) Embed design for a future climate in all design processes using Representative Concentration Pathway (RCP) 8.5 in 2090 climate scenarios.
- b) Identify mechanisms to manage heat, bushfire, smoke, flood & storm impacts during extreme events.
- c) Provide community facilities that support social resilience during major shock events.
- d) Effectively mitigate climate risk in alignment with the Taskforce for Climate-related Financial Disclosures (TCFD).
- e) Enable flexible, adaptive and regenerative systems with the capacity to be changed subject to uncertain future pressures.
- f) To promote sustainable use of water across the precinct and encourage water conservation and reuse.

Provisions

1. Development must deliver a climate positive precinct, including:
 - a. All electric built environment;
 - b. Zero fossil fuel use for regular building operations; and,
2. Design all residential buildings, including student accommodation, to achieve thermal safety outcomes aligned with Chartered Institution of Building Services Engineers (CIBSE) TM59 Design methodology for the assessment of overheating risk in homes (2017).
3. Development must manage overland flooding by requiring:
 - a. All critical equipment and services to be located above Probable Maximum Flood (PMF) levels;
 - b. All structures below PMF must be designed to survive flooding; Flood events are managed for peak flow to avoid damage to bio retention areas; and,
 - c. Water sensitive urban design elements are included.
4. Where possible, provide space for centralised precinct thermal and power utilities.
5. Include space within buildings for future energy storage (electrical and/or thermal batteries).

6. Community facilities are to be designed to serve as gathering places during emergencies and interruptions in services.
7. The development must identify mechanism to manage natural hazards: including but not limited to storms, flooding, heat, bushfire, smoke, dust and reduced air quality events.
8. Balance evapotranspiration through planting for local passive cooling and drought-tolerant plant species.

6.2. Greenhouse Gas Emissions and Energy

Objectives

- a) Deliver a Net-zero carbon precinct at time of delivery and throughout operational life.
- b) Ensure that the precinct does not use fossil fuels in regular precinct operations but ensures a reliable energy supply that also ensures energy affordability and minimises energy use.
- c) Deliver a precinct that is demand-responsive, and smart utility grid ready.
- d) Provide an objective governance framework to ensure that sustainability objectives are delivered in development.
- e) Provide an independent verification process to ensure that sustainability can be delivered and utilised by all.
- f) Ensure that sustainability measures in development are reviewed by an independent third party to provide consent authorities confidence in delivering objective sustainability outcomes.

Provisions

1. All normally operating building and precinct systems must be electrified.
2. Buildings and public realm design must achieve high levels of energy efficiency through passive design and efficient services.
3. Development must demonstrate how it has reduced embodied carbon in all construction by 30% relative to 'Business as Usual' with a stretch target of 40% using Green Star LCA methodology.
4. Development must ensure that rooftops used are for energy generation (through Photovoltaic panels) where not otherwise used for resident or visitor amenity, or vegetation-based habitat. Where photovoltaic panels are located, development must also explore the opportunity for vegetation to sit beneath the panels.
5. Development applications are to consider and outline where future batteries could be suitable within future development design. This could include potential adaptive reuse of former basement / parking areas.
6. Development is to consider how energy, water, or other utilities are shared between buildings or across the Precinct.
7. Development is to achieve the Performance Standards provided in **Table 5. Sustainability Rating Targets**.

Table 5. Sustainability Rating Targets

Development Type	Rating Tool	Rating Type	Target Rating
Public domain	Green Star	Communities	6 Star
All New and Refurbished Commercial Buildings	Green Star	Buildings	6 Star
	NABERS	Energy	6 Star
		Water	5 Star
	Waste	5.5 Star	
Shopping Centres	WELLS	Core & Shell	Silver
	Green Star	Buildings	5 Star
Hotel	NABERS	Energy	5 Star
		Water	4.5 Star
Multi-residential buildings	NABERS	Energy	4 Star
		Water	4 Star
Multi-residential buildings	Livable Housing Australia	Livable Housing Guidelines	Silver (60% of units)
			Gold (30% of units)
			Platinum (10% of units)

*Refurbishment means carrying out of works to an existing building where the works affect at least half the total volume of the building measured over its external roof and walls and where there is no increase in the gross floor area. In calculating the extent of the building’s volume that is being changed, the proposed works and all other building work completed or authorised within the previous three years is to be included.

The office and shopping centre performance standards are for base building only. This means only the energy used in central services and common areas such as heating and cooling systems, lifts and lobby lighting is considered. For hotel and multi-unit residential development, the performance standards cover the entire building, which includes the base building, the individual hotel rooms and apartments, and other amenities like bars, cafes and pools.

6.3. Circular Economy, Materials and Waste Management

Objectives

- a) Achieve circularity in the construction, operational, and end-of-life stages of all buildings and other constructions throughout the Precinct.
- b) Minimise new resource and new product use.
- c) Protect natural resources that would otherwise be damaged through resource extraction or deposition.
- d) Protect from waste products littering the public realm and damaging the natural ecosystems.
- e) Divert operational waste from landfill.
- f) Eliminate single-use plastics from the upstream supply chain in both construction and operations.
- g) Establish high levels of recyclability in the upstream supply chain in both construction and operations.

Provisions

1. Building forms must promote longevity by allowing easy adaptive reuse to accommodate alternative occupancies.
2. Provide spaces that facilitate sharing economy programs like car share services, bicycle share services, and community tool libraries.
3. Provide space in buildings and public realm to facilitate collection and storage of multiple waste streams.
4. Organic waste diversion or capture must be provided for all buildings and all use types.
5. Development applications are to be accompanied by a Construction Management Plan demonstrating how:
 - a. recycled content is to be used in all construction in accordance with Green Star methodology or equivalent;
 - b. the majority of construction waste will be diverted from landfill to beneficial re-use (provisionally 90%, in line with Green Star benchmarks or equivalent).
6. Development is to demonstrate how they can achieve a 60% quantity reduction (from business-as-usual) in operational waste to landfill, including thorough consideration of:
 - a. establishment of a Centralised Waste Management Network for storage and collection;
 - b. separation and recycling of recoverable waste by type.

6.4. Water Quality, Flooding and Stormwater

Objectives

- a) To be water positive through water efficiency, preservation of non-renewable water resources and reduction in consumption of mains potable water.
- b) To ensure evapotranspiration addresses water efficiency implications.
- c) To assist in the management of stormwater to minimise flooding and impacts to surrounding upstream and downstream areas.
- d) To reduce the effects of stormwater pollution on receiving waterways.
- e) Integrate sustainable water management practices promoting efficient water use, stormwater management and ecological resilience by integrating water sensitive urban design (WSUD) principles in all design decisions.

Provisions

1. Development shall provide for secure, recycled water supply for use in irrigating trees and vegetation. All new development is to provide an Integrated Water Management Strategy that illustrates how buildings will be designed to maximise water efficiency and meet the requirements of this section. The strategy is to:
 - a. include provision of dual plumbed water systems to enable utilisation of the recycled water network for permitted non-potable uses which may include flushing, irrigation, firefighting and certain industrial purposes;
 - b. identify how rainwater and / or stormwater will be harvested and reused on site to maximise sustainable water reuse;
 - c. consider how the development will be designed to enable future connection to the proposed recycled water scheme network; and,
 - d. identify opportunities for water sensitive urban design including green walls and roofs.
2. As part of the Integrated Water Management Strategy required by Provision 6.4.1, a Local Drainage Management Plan shall be prepared by a suitably qualified engineer that addresses:
 - a. the hydrology of the locality and its relationship to the drainage system;
 - b. the distribution of soil types and the scope for on-site infiltration;
 - c. any expected rise in ground water level due to development;
 - d. the role of the principal landscape components on the site for water conservation and on-site detention;
 - e. the scope for on-site stormwater detention and retention, including collection of water for re-use

- f. how any detrimental impacts on the existing hydrology and water quality are proposed to be minimised;
 - g. how pedestrian safety is to be ensured;
 - h. the integration of drainage management responses and open space areas; and,
 - i. how flood risk will be managed and mitigated.
3. Development is to consider inclusion of Water Sensitive Urban Design (WSUD) measures to slow stormwater runoff and improve stormwater quality flowing into waterways such as:
- a. gross pollutant traps;
 - b. passive irrigation;
 - c. bio-retention areas; and,
 - d. rainwater harvesting.

6.5. Canopy Coverage and Biodiversity

Objectives

- a) Recreate environmental values across the precinct consistent with Country, including native vegetation, water ways, water bodies and wetlands.
- b) Provide opportunities to increase biodiversity resilience to climate change and natural hazards.
- c) Deliver a renewal precinct that transforms the existing poor urban conditions on site to an ecologically diverse, sustainable, and dense planted urban canopy that connects learning environments and provides a level of habitat connectivity that is currently absent.
- d) Enable greater consultation in the future to align traditional knowledge and cultural views of biodiversity with those responsible for developing the future ecological opportunities for enhancement.
- e) Provide habitat connectivity for mobile species between key local and regional green and blue spaces.
- f) Establish a biophilic environment that provides a material connection to natural systems.
- g) Achieve a Net Positive Impact on biodiversity through support for off-site land projects that generate biodiversity offset credits aligned with negative emissions instruments (afforestation, reforestation and soil carbon sequestration).

Provisions

1. Avoid biodiversity impacts, particularly to native vegetation and habitat trees containing hollows, when introducing new streets and other infrastructure
2. Contribute to habitat enhancement in new buildings and infrastructure, such as through the inclusion of green roofs, green walls and artificial hollows.
3. Design of private and public domain must ensure that 100% surface water runoff is filtered through landscape treatment before discharging to waterways.
4. Protect existing and create new urban habitat for terrestrial and aquatic species at multiple scales, including ecological pockets.
5. Provide opportunities to share knowledge of Country and reflect communities that may have existed prior to clearing.
6. Use native species in landscaping to reflect communities that may have existed prior to clearing.
7. Where appropriate, development is to enable augmented fauna habitats.
8. Development applications are to undertake analysis of the habitats within their and surrounding sites, including a determination of whether there are any Threatened Ecological Communities.

9. Canopy coverage is to meet or exceed the targets established in the Macquarie Park Place Strategy and listed in **Table 6. Canopy Cover Targets** below.
10. Where sites already exceed **Table 6. Canopy Cover Targets**, total canopy cover must not be reduced.

Table 6. Canopy Cover Targets

Property Type	Canopy Cover
Mixed-use zoned land including streets	40%
Enterprise zoned land including streets	35%
Open space including streets	45%

6.6. Smart Places

Objectives

- a) Support the Precinct as a connected innovation hub for business, research, education, individuals and communities in line with the NSW Smart Places Strategy.
- b) Embrace innovative development by installing new and emerging technologies and utility provision.
- c) Support a resilient and sustainable region that uses technology to manage natural resources efficiently and is focused on environmental, air and water quality.
- d) Recognise that innovation opportunities available in the future have not yet been identified and to enable future development to take advantage of them.

Provisions

1. Implement multi-function poles (Smart Poles) where street poles are required that accommodate multiple functions.
 - a. Potential services which could be incorporated into multifunction poles include:
 - (1) Traffic signals and signage;
 - (2) Street lighting;
 - (3) Telecommunications (such as mobile cellular network providers);
 - (4) Council digital infrastructure requirements (e.g. CCTV, signage, lighting);
 - (5) Relevant sensing networks, with flexibility to enhance these in the future.
 - b. Meet the following design requirements:
 - (1) Placement is a minimum of 600mm from the face of kerb;
 - (2) Placement avoids impacts on existing and future mature street tree canopies;
 - (3) Co-locate with other street furniture; and
 - (4) Pit and pipe to each light pole is provided to enable the future upgrading to 'intelligent' lights and the installation of 'smart meters' to Council specification at each new lot.
2. Pit and pipe infrastructure are to support future requirements to service smart city infrastructure.

3. Buildings utilise smart technologies to promote performance, sustainability, resilience, and resource management throughout their operational lives.
 - a. Where new connections to the water and recycled network are proposed, include smart water meters and fittings to minimise water consumption.
 - b. Use smart technologies to monitor and self-regulate building environment and operations (e.g. lighting, heat, ventilation, and air conditioning).
 - c. Install smart energy solutions to increase self-sustainability and reduce reliance on the main energy grid.
 - d. Demonstrate alignment to relevant NSW policy, including but not limited to the NSW Internet of Things (IoT) policy, NSW Cyber Security Policy and NSW Smart Infrastructure Policy.
4. Embed smart technologies in the public domain to enhance experiences and create liveable public open spaces.
 - a. Install smart monitoring equipment, including for water quality, ambient temperature, tree canopy cover and soil moisture content, cycle, and car movements. Specific monitoring requirements for each development are provided by the consent authority.
 - b. The following smart solutions are to be installed in key locations such as open space and public domain areas:
 - (1) Dedicated internet/fibre connection points;
 - (2) Public Wi-Fi network that provides sufficient coverage to the whole public space;
 - (3) Smart lighting where key locations may be used at night-time for active uses, ensuring lighting is adequate for active and passive uses;
 - (4) Security cameras at key locations to ensure coverage within the public space;
 - (5) 'Smart bins' with capacity rubbish bin sensors;
 - (6) 'Smart park furniture' with USB-charging capacity and potentially Wi-Fi connectivity;
 - (7) Improve access to, and user experience of, social infrastructure (e.g. on-line booking systems; real-time usage data; etc).
 - (8) Wireless connectivity (e.g. Bluetooth) with free access, particularly within the community's parks, in proximity to social infrastructure and public recreation facilities.

7. Public Art and Culture

Public arts and culture in Macquarie Park shall reflect its Country and the creativity and innovation of its communities. This will strengthen enterprise, activate public places and foster distinctive neighbourhoods for its students, workers and residents.

Macquarie Park Public Arts and Cultural Vision Statement, Create NSW & City People

Objectives

- a) Build a strong community and place identity that is specific to Macquarie Park.
- b) Contribute to the identity and differentiation of the sub-neighbourhoods established for the Macquarie Park Innovation Precinct.
- c) Ensure Country and cultural narratives are embedded in public art.
- d) Promote the visibility of Australian Aboriginals through public art in areas of high visibility.
- e) Leverage heritage, community, arts and culture to create more interesting and vibrant places.
- f) Provide people with experiences that are imaginative, challenging, delightful or beautiful.
- g) Contribute positively to the cultural character of the city.

Provisions

1. New developments are to allocate a fixed percentage towards public art in alignment with Ryde Council's Public Art Strategy.
2. Development Applications are to include a public art and culture statement that details how the principles outlined in **Table 7. Macquarie Park Innovation Precinct Public Art & Culture Principles**, public art opportunities in **Figure 26. Major Public Art Opportunities Map**, and Designing with Country concepts in **Section 3.1 Designing with Country** have been addressed.

3. New developments occurring on sites identified in **Figure 26. Major Public Art Opportunities** Map as ‘Lots to Respond to Public Art Opportunities’ are to include provision for major public artworks of high calibre. These sites include:
 - a. Artworks in and around public open spaces within Activity Hubs, which should seek to differentiate the activity hub. Refer to **Figure 2. Structure Plan** for the distinction of each activity hub as having a residential, mixed-use or commercial character.
 - b. Precinct Entry Points shall help establish visitors’ perception of entering (or passing through) Macquarie Park Innovation Precinct including the. Precinct Entry Points in Stage 1 are nominated as:
 - i) Lyon Park Road / Epping Road intersection,
 - ii) Lane Cove Road / Epping Road intersection, and
 - iii) the Lane Cove Road / Waterloo Road intersection including the Macquarie Park Metro Station entrances.
4. On all sites, contribute to the differentiation of Place Strategy Neighbourhoods through the inclusion of distinct public art installations that reflect on the individual character of each neighbourhood and activity hub as they progressively develop.

Table 7. Macquarie Park Innovation Precinct Public Art & Culture Principles

Principle	Description
Open	Cultural infrastructure and public arts programs in Macquarie Park are visible and accessible, both day and night.
Inventive	Creativity fuels the knowledge capital of Macquarie Park. Innovation is on display and adds to the cultural and public life of the place.
Distinctive	Public arts and culture enhance the distinct identity of each Macquarie Park neighbourhood with reference to their physical character, community use and stories/memories.

Public Art Opportunities Map

KEY

-  LOTS TO RESPOND TO PUBLIC ART OPPORTUNITIES
-  ACTIVITY HUB
-  PRECINCT ENTRY POINTS
-  PUBLIC OPEN SPACE
-  STREETS
-  SITE AREA



Figure 26. Major Public Art Opportunities Map