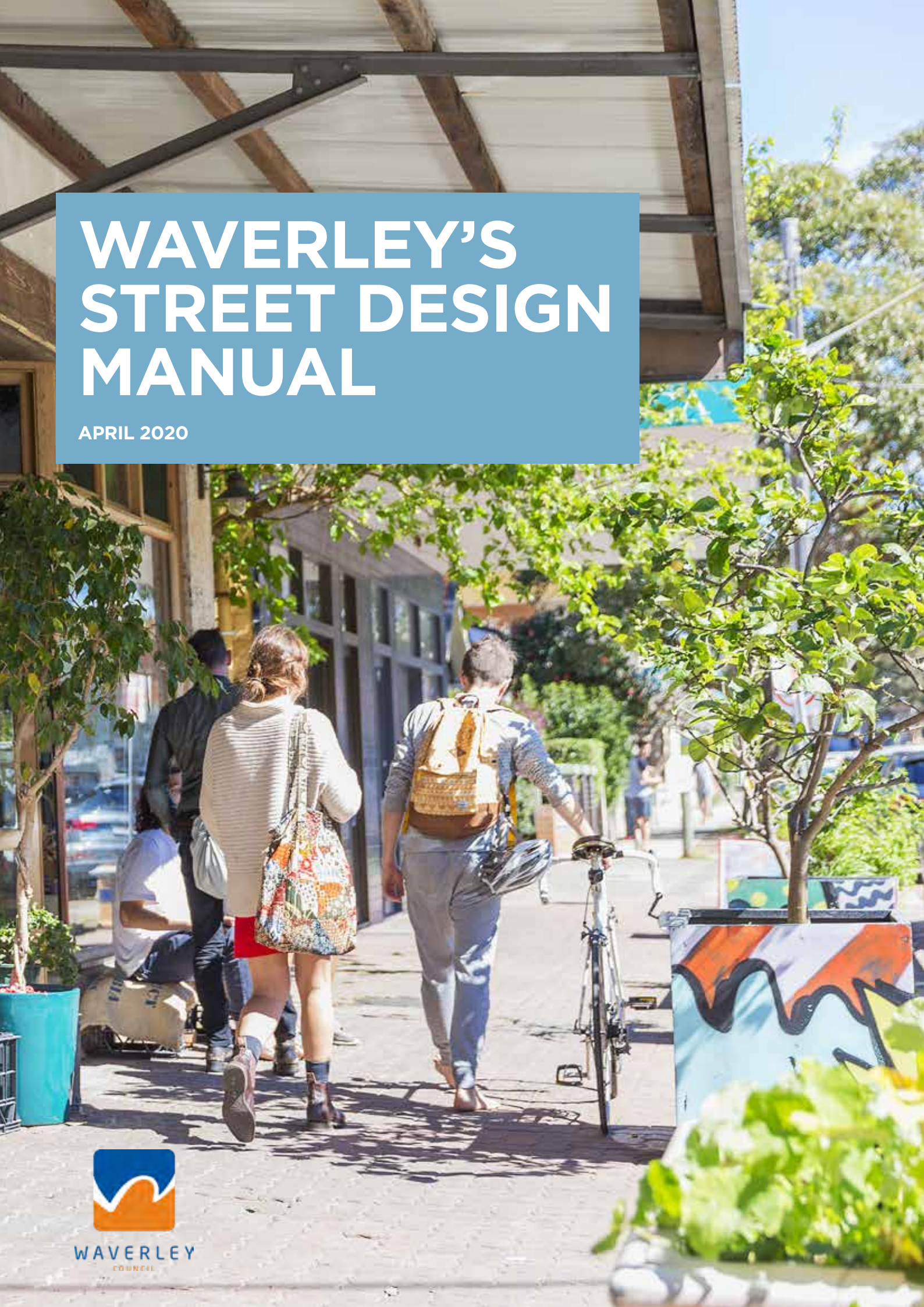

WAVERLEY'S STREET DESIGN MANUAL

APRIL 2020

WAVERLEY
COUNCIL

GLOSSARY

AS	Australian Standard
CPAT	Clear Path of Accessible Travel
CPTED	Crime Prevention Through Environmental Design
CS	Complete Streets
DA	Development Application
DCP	Development Control Plan
DDA	Disability Discrimination Act
DIAP	Disability Inclusion Action Plan
EAP	Environmental Action Plan
EP+A	Environment Planning + Assessment
EVCS	Electric Vehicle Charging Station
GANSW	Government Architects NSW
GSC	Greater Sydney Commission
LATM	Local Area Traffic Management
LEP	Local Environment Plan
LGA	Local Government Area
LSPS	Local Strategic Planning Statement
LTFP	Long Term Financial Plan
PDIP	Public Domain Improvement Plan
PDTM	Public Domain Technical Manual
PMP	People Movement Places
RMS	Roads and Maritime Services (now part of TfNSW)
SAMP	Strategic Asset Management Plan
SWS	Smart Waverley Strategy
TD	Technical Direction
TfNSW	Transport for NSW
VPA	Voluntary Planning Agreement
WBP	Waverley Bike Plan
WEDS	Waverley Economic Development Strategy
WFP	Workforce Plan
WSUD	Water Sensitive Urban Design

Date	Revision	Issue	Author	Checked	Approved
18/12/18	A	Draft - PCG feedback	HJ	FM	GB
15/07/19	B	Draft - PCG feedback	HJ	FM	TS
03/04/20	C	Final Draft - SPDC Council Meeting	HJ	FM	GB

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CONTENTS


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1. INTRODUCTION

PURPOSE OF THIS STRATEGY

The purpose of the Strategy is to provide comprehensive design principles, guidance and considerations to ensure high-quality upgrades to village centres and streetscapes for the Local Government Area (LGA) of Waverley Council. The accompanying Public Domain Technical Manual (PDTM) provides a coordinated, standard palette of materials, finishes and furniture to guide the street works and maintenance of village centres, parks, open spaces and streets throughout the LGA in accordance with the guidelines set out in this strategy.

WHY UPDATE THIS DOCUMENT

The document is an update on the Village Centres Public Domain Improvement Plan (PDIP). The original plan provided sound public domain principles and concept designs for the numerous village centres of Waverley. Since the inception of the PDIP, a large majority of these projects have been completed or are in the process of design and construction. In addition, recent strategies and policies developed by Waverley Council and others have transformed the role of streets and the desired vision for the public domain in the LGA.

Waverley Council's People Movement Places establishes a transport hierarchy that rebalances the focus of transport planning, placing the pedestrian at the forefront of decisions, followed by people riding bicycles, public transport, service vehicles, shared mobility and private motor vehicles. Overall, the policy provides a transport plan to help us tackle our current transport problems, and best meet the changing demands of the future.

Other Council strategies such as Bondi Junction Complete Streets and the Campbell Parade Concept Design focus on the revitalisation of streets to create people-friendly places that enhance local economies, foster vibrant community life and improve environmental performance.

Originally, the PDIP was accompanied by the Local Villages Centres Public Domain Technical Manual (2006). Since then, this document has been superseded by the current PDTM and thus much of the information and many of the references in the PDIP are outdated and incorrect.

In addition, contemporary best practice for street design has developed significantly over the past decade with several organisations and other council's developing codes, manuals and toolkits to guide the renewal and upgrade of the public domain.

RELATIONSHIP TO OTHER DOCUMENTS

Federal

- Australian Standards
- Disability Discrimination Act
- Austroads

State

- Environment Planning and Assessment Act
- Eastern District Plan - Greater Sydney Comission
- Future Transport Strategy 2056 - Transport for NSW
- Road Planning Framework - Roads and Maritime Services
- Better Placed + Greener Places - Government Architect NSW

Community Strategic Plan

- Long Term Financial Plan
- Strategic Asset Management Plan
- Environmental Action Plan
- Workforce Plan

Specifications and Regulations

- Local Strategic Planning Statement
- Local Environment Plan 2012
- Development Control Plan 2012
- Public Domain Technical Manual

Strategies and Plans

- Bondi Junction Evening, Entertainment and Culture Strategy
- Complete Streets
- Creative Lighting Strategy
- Disability Inclusion Action Plan
- Economic Development Strategy
- Green Links
- People Movement Places
- Public Domain Technical Manual
- Park Plans of Management
- Smart Waverley Strategy
- Street Garden Guidelines
- Stree Tree Masterplan
- Tree Management Policy
- Urban Intervention Framework
- Village Centres Strategy
- Waverley Bike Plan
- Water Management Technical Manual

Design and Implementation

- Development Applications
- Complete Streets Upgrades
- Campbell Parade Streetscape Upgrades
- Village Centre Upgrades
- Streetscape Upgrades
- Asset Upgrades

SCOPE

The document applies to all streetscapes and public domain including Council managed Local Roads as well as RMS State and Regional Roads.

STRUCTURE

2. Principles and Outcomes	Establishes the principles that underpin the desired outcomes for the public domain in the future.
3. Village Centres	Establishes the hierarchy of the centres, their function and the future desired character.
4. Street Types	Outlines the different types of street across the LGA with an overview, aims, key objectives and examples.
5. Street Design	Sets out the principles and considerations for the structure, layout and design of the streetscape.
6. Street Elements	Sets out the principles and considerations for street elements and their use and placement in the public domain.

USER

The strategy is intended for use by;

- Council staff when preparing detailed designs for streets and centres as part of public domain improvements, streetscape upgrades and asset replacement (including coordination between departments);
- The community and Councillors to provide an understanding of the values, priorities and design principles that guide our approach to the public domain;
- Developers, designers, and consultants when preparing proposals that affect the public domain and its components when undertaking works in kind in accordance with conditions of consent; and
- Consent authorities when assessing and approving the proposed developments when undertaking works in kind.

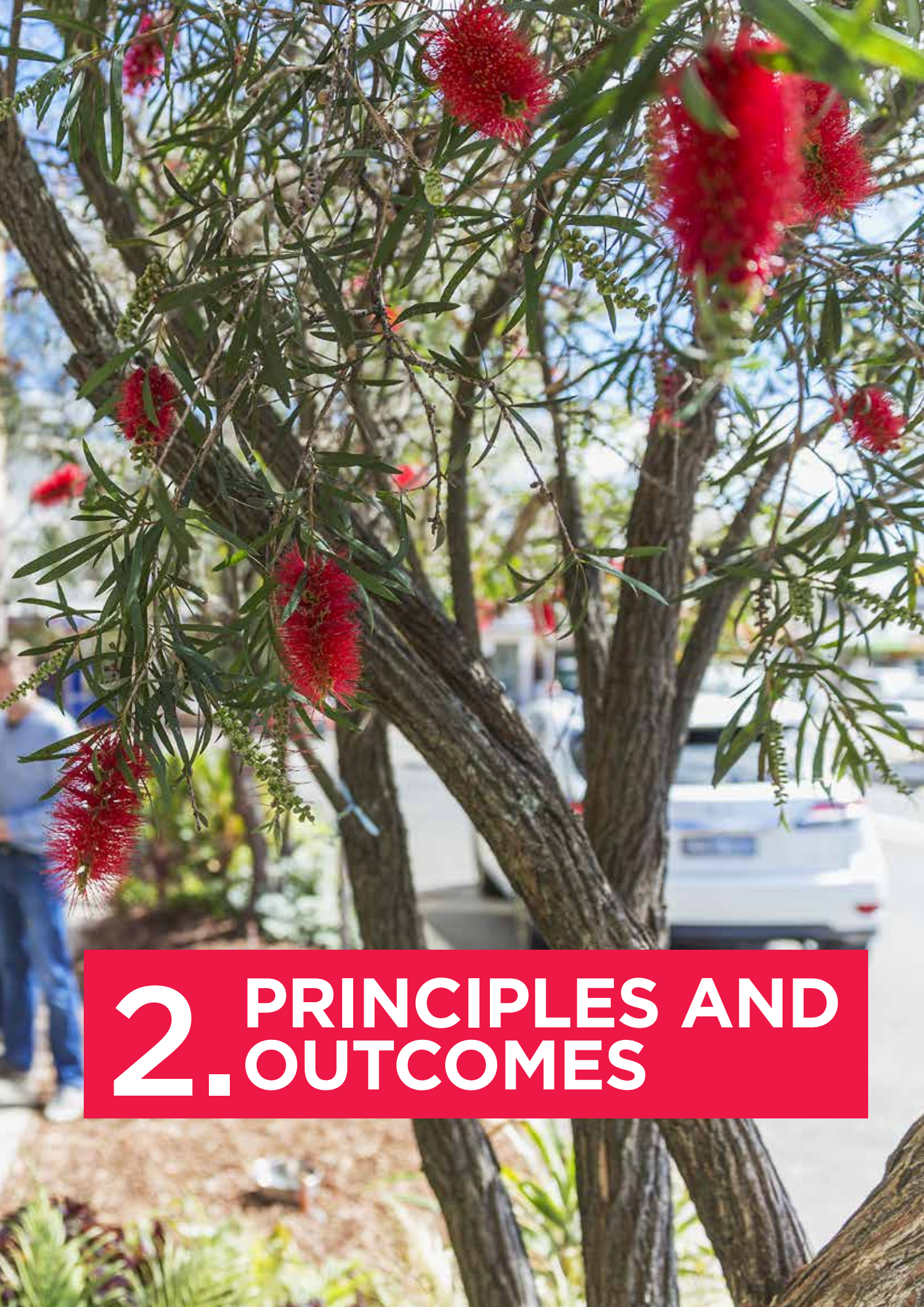
USER GUIDE

The strategy should be used across all stages of the project in varying degrees.

The level of use of this document is dependent on the scale of the project; the greater the scale of the scope of works, the greater the impact on the public domain. Irrespective of the scale or type of upgrades, the document should be consulted and referenced to inform and guide the design process. The strategy should be read in conjunction with Council's planning controls, supplementary policies and relevant strategies (as outlined on Page 7).

Phase	Deliverable	How the Street Design Manual assists this phase	Relevant Section
Project Start Up	Establish project objectives, vision for project and desired future character for centre.*	Provides guidance for the future desired character for centre upgrades* Illustrates expected outcomes from the project Outlines design principles for the project	Section 2 Section 3
Site Analysis	Review of existing council documents Review of preliminary concept designs (if available) Detailed analysis of existing site conditions	Provides reference to supporting council policies and strategies Illustrates components that should be considered when conducting site analysis; • Desired Centre character* • Street Design • Street Elements • Movement patterns + hierarchy	Section 1 Section 2 Section 3 Section 5 Section 6
Concept Design	Preliminary Sketch Design package Draft Concept Design package	Illustrates the initial vision for centre* Provides design guidance for the concept design Provides reference for supporting council policies and strategies Assess and demonstrates how the concept design meets the vision, desired outcomes and principles established in Project Start Up	Section 2 Section 3 Section 4 Section 5 Section 6
Community Consultation and Feedback	Stakeholder Workshops Final Consultation Report	Provides a reference to communicate the design principles and convey the desired outcomes of the project	Section 2
Final Design	Final Design package	Provides design guidance for the final design Assess final design against principles and outcomes	Section 2 Section 4 Section 5
Post Occupancy	User Survey Report	Assess end product against the vision, desired outcomes and principles Update Street Design Manual based on post occupancy feedback (if necessary)	Section 2

*Desired centre character will not be applicable for upgrades in residential streets



2. PRINCIPLES AND OUTCOMES

THE IMPORTANCE OF STREETS

Streets are our largest community asset. When they are well-designed, streets enable easy access to places and spaces as well as the free movement of goods, resources and information. Streets are important places for people and civic life; people gather, socialise, shop, work, eat, walk and catch transport. It's where social and economic activity is focussed and local character is both expressed and is influenced. Streets also serve a basic yet vital function of providing routes for utility services and drainage systems – elements that are essential for modern life that are taken for granted.

Our vision is to ensure that every neighbourhood has a thriving and attractive centre founded on best practice design. To encourage the vitality of these centres it is envisaged that the surrounding street networks provide safe, accessible and inviting streets that encourage walkable communities with links to public transport, parks and reserves, schools, social infrastructure and the various centres.

PRINCIPLES

The following design principles will guide the future upgrades to the public domain throughout the LGA of Waverley. These principles build upon the previous principles outlined in the PDIP by reflecting established Council policies and strategies as well as incorporating contemporary best practice from local and international examples. The principles have been grouped into three broader categories that form a holistic approach to street design. References to supporting strategies and policies is made in the corresponding column.

ACCESSIBILITY	Reference
Equitable - Streets that balance the needs and abilities of all users, creating an accessible and equitable environment for all especially those of limited mobility.	CSP 6.1 PMP CS PDTM
Connectivity - Streets that link people to places by a variety of means with a priority on active transport. This emphasis is to encourage the shift from private vehicle use to walking, cycling and public transport for the numerous health, social, environmental and economic benefits.	CSP 6.1 PMP CS PDTM EAP DIAP WBP
Safety - Streets that feel safe and welcoming for all users at all times of the day and night.	CSP 6.3 PMP CS PMP DIAP WBP SWS

SENSE OF PLACE	Reference
High Quality - Streets that are of a high quality, generate civic pride and promote collective ownership.	CSP 5.3, 7.1+7.2 CS PDTM EAP
Social - Streets that foster social engagement and a sense of community.	CSP 2.1+2.3 CS PDTM
Unique - Streets that reflect the indigenous vegetation, eclectic characters, unique places and diverse cultures of Waverley.	CSP 1.2 CS PDTM
Supportive - Streets that promote local businesses and encourage the economy of Waverley.	CSP 4.2 CS WEDS
Historical - Streets that acknowledge and respect the Indigenous and European stories that have shaped Waverley.	CSP 2.3+5.2 CS

SUSTAINABILITY	Reference
Ecosystem - Streets are considered as an ecosystem that greatly influence the health and sustainability of the community.	CSP 6.1 EAP
Green - Streets that mitigate the effects of climate change, stormwater runoff quality and local air pollution through trees, planting and Water Sensitive Urban Design (WSUD).	CSP 8.2+8.3 CS PDTM EAP
Comfortable - Streets that are inviting and familiar which positively impact the micro-climate and provide places for people to stop, rest and linger.	CSP 8.3 CS EAP
Functional – Streets that accommodate the functional requirements of current infrastructure whilst anticipating future developments and technologies.	CSP 7.2 CS SWS

DESIRED OUTCOMES

The anticipated outcomes relate to Council's strategic documents and range from broader social and economic benefits to more tangible benefits relating to environmental enhancement and improved governance. They have been grouped in these categories below.

ECONOMIC

Support local shopping districts and small businesses	CSP 4.2 WEDS CS
Provide a high quality backdrop for the unique and vibrant businesses of Waverley	CSP 6.2 WEDS CS

SOCIAL

Create more liveable environments and enhance the quality of life for Waverley's residents	CSP 3.1 DIAP CS
Improve public health with walkable centres that encourage greater physical activity and social connection	CSP 2.2 DIAP CS WBP
Improve community cohesion by providing places for incidental interaction as well as meeting places	CSP 2.3 + 3.1
Strengthen the role of Centres as community places that embody the diversity, character and cultures of the neighbourhoods	CSP 2.3

ENVIRONMENTAL

Help to mitigate congestion, climate change and local air pollution with increased use of sustainable transport	CSP 6.1 EAP CS PMP WBP
Help to improve stormwater systems and urban run-off quality with reduced impervious surfaces and the use of Water Sensitive Urban Design (WSUD)	CSP 8.2 EAP CS
Provide more attractive and greener streets and spaces for the community	CSP 6.2 EAP CS

GOVERNANCE

Coordinate and integrate decisions on urban design, transport, development and landscaping	CSP 7.1 CS
Provide high quality walking, bike riding and road facilities for residents and visitors	CSP 6.1 DIAP CS PMP WBP
Create safer environments for pedestrians and bike riders in the roadway	CSP 6.3 DIAP CS

HOW WE PLAN TO ACHIEVE THIS

Existing Strategies , Programs + Plans

Waverley Council has a broad range of strategies and plans already underway

	Community Strategic Plan	Relevant Strategy
Local Area Traffic Management (LATM) of Traffic Calming Devices (TCDs) Council aims to implement 40km/h speed limits across the Waverley LGA. The intent is to increase pedestrian safety and encourage cars to travel slower in their neighbourhoods. This will be achieved through a broad range of measures. Work is already underway for the design of the LATM and installation of TCDs for the southern half of the LGA. Future LATM should consider the inclusion of low-level vegetation, high quality threshold treatments, continuous raised footpath treatments at intersections, blisters/kerb extensions at intersections, provisions for cyclists, and raised pedestrian/wombat crossings.	5.1 6.2 6.3	PMP Signature Project 1 Better Streetscapes PMP Action 04 + 10 DIAP Action 3.1.1 + 3.1.2
Village Centre Upgrades Council will continue to upgrade the various Village Centres as part of the Capital Works program. It is important that the transport hierarchy informs the improvements to the public domain. Consideration of specific transport strategies outlined in People, Movement and Places should be integrated into future upgrades.	5.1 6.1 6.2 6.3 7.1 7.2	PMP Action 26, 62-65, 80 + 82 DIAP Action 3.1.1 + 3.1.2
Street Tree Planting Council will develop an Urban Canopy/Forestry Strategy. As part of this, the Street Tree Masterplan and Tree Management Policy should be reviewed. Council will plant trees as part of the 5 Million Trees grant. After the first round, Council will continue to apply for grant funding for street tree planting. Council will continue to plant and maintain trees in verges and medians.	5.1 6.2 6.3 8.3	EAP Urban Ecology Action Street Tree Masterplan
Waverley Bike Plan Continue to implement Waverley Bike Plan Identify + audit priority cycling routes; prepare new Bike Plan	6.1 6.2	PMP Signature Poject 02 Cycling Strategy PMP Action 12 + 13

Potential Future Strategies + Programs

In addition to these programs it is recommended that additional strategies, investigations and programs are implemented to increase pedestrian safety, improve accessibility and street functionality.

	Community Strategic Plan	Relevant Strategy
Laneway Strategy Council will review existing laneway network to develop a strategy to improve use and walkability of the various types of laneways across the LGA.	5.1 6.2 6.3	PMP Action 32 Complete Streets Action DIAP Action 3.1.1
Wayfinding Audit/Strategy Council will conduct an audit of the existing wayfinding across the LGA to understand the quantity and quality of the existing assets. This will then help inform a decision on whether the current design is adequate and what improvements can be made.	2.3 5.1 7.2	PMP Action 34, 40 DIAP Action 4.1.4 Complete Streets Action
Walkability and Accessibility Assessment Council will undertake a walkability and accessibility assessment. This will form the background study to help inform the Walking Strategy. The assessment should consider concentrations of activity based on environmental, social, economic and transport factors. This information/ database can help identify improvements to the public domain in a strategic manner.	5.1 6.2 6.3 8.3	PMP Signature Project 05 Walking Strategy PMP Action 34, 40 DIAP Action 3.1.1 + 3.1.2
Intersection and Roundabout Safety Audit Council will undertake an audit of intersections across the LGA to ensure they comply with state and federal standards. This will include analysis of lighting levels, location + gradient of kerb ramps, position of crossing points and size of refuge islands. Improvements to the layout should be proposed to improve safety and functionality.	5.1 6.2 6.3	PMP Signature Project 01 Better Streetscapes PMP Action 06, 08, 09 + 37 DIAP Action 3.1.1 + 3.1.2

Upgrades to the Public Domain as part of certain Development Applications (DAs)

In addition to these programs and strategies outlined, Council will encourage certain developments to undertake upgrades to the public domain as part of development applications or works in kind as part of conditions of consent. Upgrades should be in line with the principles, outcomes and design considerations outlined in this document and the technical requirements of the PDTM. The amount of works is dependent on the size and frontage of the development and should be considered on a case-by-case scenario. In most scenarios, the footpath, kerb and gutter will require upgrades as per this document and the PDTM. Consultation with and approval from Council is required before the issuing of a Construction Certificate. The criteria to trigger these works includes;

- Type – medium to high density residential, mixed use developments, commercial buildings
- Land zoning – developments in B1, B3, B4, R3, R4, and SP2 zones
- Planning proposal – changes to the LEP

Upgrades to the Public Domain from Development Contributions

Council collects two types of development contributions under Section 7.4 and Section 7.12 of the EP&A Act 1979;

Section 7.4 Voluntary Planning Agreements (VPAs)

A planning agreement is a voluntary agreement between Council and a developer under which the developer agrees to make a contribution towards a public purpose, either monetary or works in kind. Council determines what public purpose the VPA contribution is allocated and is generally in the vicinity of the development. Council will endeavour to make improvements to the public domain where possible in line with this manual and the VPA policy. A similar approach was taken for the funding of the Complete Streets Program in Bondi Junction.

Section 7.12 Development Contributions

Section 7.12 contributions are applied to all development applications with a development cost greater than $100,000. The payment is calculated a fixed levy based on a percentage of estimated development cost. This is revenue source is factored into the Long Term Financial Plan which allocates where the money is spent.

Refer to Waverley Development Contributions Plan 2006 and Waverley Planning Agreement Policy 2014 for further information

Concept perspective, Seven Ways Streetscape Upgrade (under consideration), Bondi Beach. These upgrades were the result of a VPA as part of the redevelopment of 87-89 Glenayr Avenue.

PLACE MAKING

Place making is the process of creating quality places that people want to live, work, play and learn in. Waverley Council has produced a range of strategies that attempt to foster and grow the quality of place across the LGA and specifically in Bondi Junction. This process began with the Complete Streets project for Bondi Junction. The project sought to integrate transport, urban design, landscape and place making to realise positive improvements to the public domain. Much of the thinking behind Complete Streets (safety and efficiency; social, economic and health benefits; walkability) has come to inform this manual.

In addition to providing concept designs for the streets of Bondi Junction, Complete Streets instigated other Council strategies such as the Creative Lighting Strategy and the Bondi Junction Evening, Culture and Entertainment Strategy. These strategies attempt to address the lack of safe, diverse and inclusive evening activities that occur throughout Bondi Junction. Both strategies seek to coordinate events and cultural programs, economic development actions, urban design initiatives and lighting installations to help Bondi Junction evolve into an active, engaging and safe place for families, youth and the elderly to meet and enjoy into the evening.

Complete Streets was also the starting point for the initial pop-ups and urban interventions in Bondi Junction. Since then Waverley Council has undertaken a program of urban interventions and pop-ups. The projects completed to date have had an overwhelmingly positive response from the community. These have resulted in permanent and tangible outcomes that provide economic, social and environmental benefits by providing a low impact and cost effective method of testing initiatives and gauging feedback prior to substantial investment of resources.

Across all of these initiatives and strategies is the reoccurring theme of the importance of place making and place management in creating streets and public spaces for residents, visitors and the broader community. It is important to actively engage and empower the community to participate from the beginning of projects to help inform and guide the process of revitalisation.

Waverley Council's Parklet installed in Hall Street, Bondi Beach

Ping Pong and Large Chess Set in Norman Lee Place, Bondi Junction


Balusu's
SOUTH INDIAN
CUISINE
9365 4126
CHOCOLATES
TATTOO
NOW OR NEVER
NEWHOUSE POWER
333

3. CENTRE TYPES

HIERARCHY

A hierarchy of centres is used to distinguish the various types of centres that characterise the Waverley LGA. This hierarchy is informed by the importance of the centres as outlined in the Eastern District Plan developed by the Greater Sydney Commission. This categorisation also relates to hierarchy of centres outlined in the Village Centre Strategy, Public Domain Technical Manual and the Waverley Economic Development Strategy. The three types of centres are defined as strategic, local and neighbourhood.

The type of centre is determined by its proximity to public transport and transport interchanges as well as access to employment opportunities, social or community infrastructure, educational facilities and day-to-day goods and services. A walking catchment for each centre relates to the ability to cater to the varied needs and requirements of residents depending on the circumstance; the greater the number of transport options, services, facilities and opportunities, the larger the walking catchment of the centre. The centre types and their catchments are outlined below. Actual walking times depend on the prevailing topography, street layout and local conditions of the surrounding context.

Centre Type	Walking Catchment (radius)	Walking Time
Strategic Centre	800m	10 minutes
Local Centre	400m	5 minutes
Neighbourhood Centre	200m	2.5 minutes

These centres and their respective catchments, coupled with the existing public transport network, bicycle routes, green links and popular walking trails form an interconnected network that links residents and visitors to local businesses, beaches, parks, community facilities and schools. The walking catchments seek to establish areas where improvements to accessibility, amenity and safety should be made to promote active transport and enhance this network.

Aerial view of Bondi Junction and Waverley


Strategic Centre (800m Catchment)
Local Centre (400m Catchment)
Neighbourhood Centre (200m Catchment)
Beach
Open Space
Future Bicycle Network (Tier 1/Tier 2)
Green Link
Bus Route
Primary School
Secondary School

STRATEGIC CENTRE

Strategic centres are characterised by the co-location of a wide mix of uses and activities with high amenity, walkable and bicycle friendly streets. Strategic centres usually include a major transport gateway/interchange and play a major role in supporting the broader economic activity of the Eastern City.

Bondi Junction is located between the Metropolitan centre of the Sydney CBD and Bondi Beach – two of Australia's most prominent icons. Bondi Junction Interchange is a major transport hub for the Eastern Suburbs. Westfield and Eastgate Shopping Centre, along with the Interchange, form anchors of activity in the centre, attracting a large and varied population both day and night. Secondary to these major attractors are a range of retail, commercial and local services that cater for the neighbouring residential suburbs in the broader walking catchment. The combination of these distinct features results in Bondi Junction being considered a strategic centre in the Greater Sydney Commission's Eastern District Plan.

The future character for the public domain of Bondi Junction is outlined in Complete Streets. The principle vision is to transform Bondi Junction from a car dominated thoroughfare with a fragmented town centre into a place focussed and connected destination. This is achieved by redirecting through-traffic to the periphery arterial roads and creating place-focused main streets at the commercial core. The streets in the commercial core will be designed as slow, low-volume streets that support high pedestrian activity. They should be considered as urban spaces primarily, and transport corridors secondary. This is complemented by the creation of primary bicycle routes to and through the centre.

Oxford Street, Bondi Junction


Strategic Centre (800m Catchment)
Beach
Open Space
Future Bicycle Network (Tier 1/Tier 2)
Green Link
Bus Route
Primary School
Secondary School
S1

LOCAL CENTRE

The local centres of Waverley are characterised by vibrant main streets featuring a fine grain subdivision offering local services and employment opportunities, cafés, restaurants and a range of shopping experiences. They provide the basic necessities of day-to-day life for local residents as well as visitors. The historic evolution of Waverley has meant that the majority of local centres are located along the ridge lines of the LGA creating in distinct high streets. In addition, a number of bus routes service these local centres providing convenient access to surrounding residential areas, beaches and open spaces, Bondi Junction and the CBD. Although they are comprised of similar features, the character and identity of each local centre is unique and is celebrated and cherished by the local residents.

Future upgrades should enhance the unique character of each local centre of Waverley. In line with the transport hierarchy, the pedestrian experience should be at the core of design decisions. This will lead to improvements to pedestrian safety and streetscape amenity resulting in a place focussed environment. The creation of focal points or additional public space is desired to encourage people to stay and socialise in the local centre. Outdoor dining is encouraged in these areas, where space permits, to create a sense of activity on the street and contribute to the vibrant nature of the street.

Overall, the design of the local centres' public domain should be of a very high design quality. The integration of appropriate bicycle infrastructure is required to encourage travel to and from local centres by bicycle riders. Due to the high use of public transport to and from local centres, the location, layout and integration of bus stops should be considered when designing the public domain to create a functional, accessible and seamless experience. Special consideration should be made for future public transport solutions along the corridors to improve access and amenity.

In addition, the surrounding public domain within the walking and cycling catchments of these local centres should facilitate ease of access and active transport to public transport and the local centre to promote a healthy lifestyle.

Local centres include:

L1 - Bondi Road

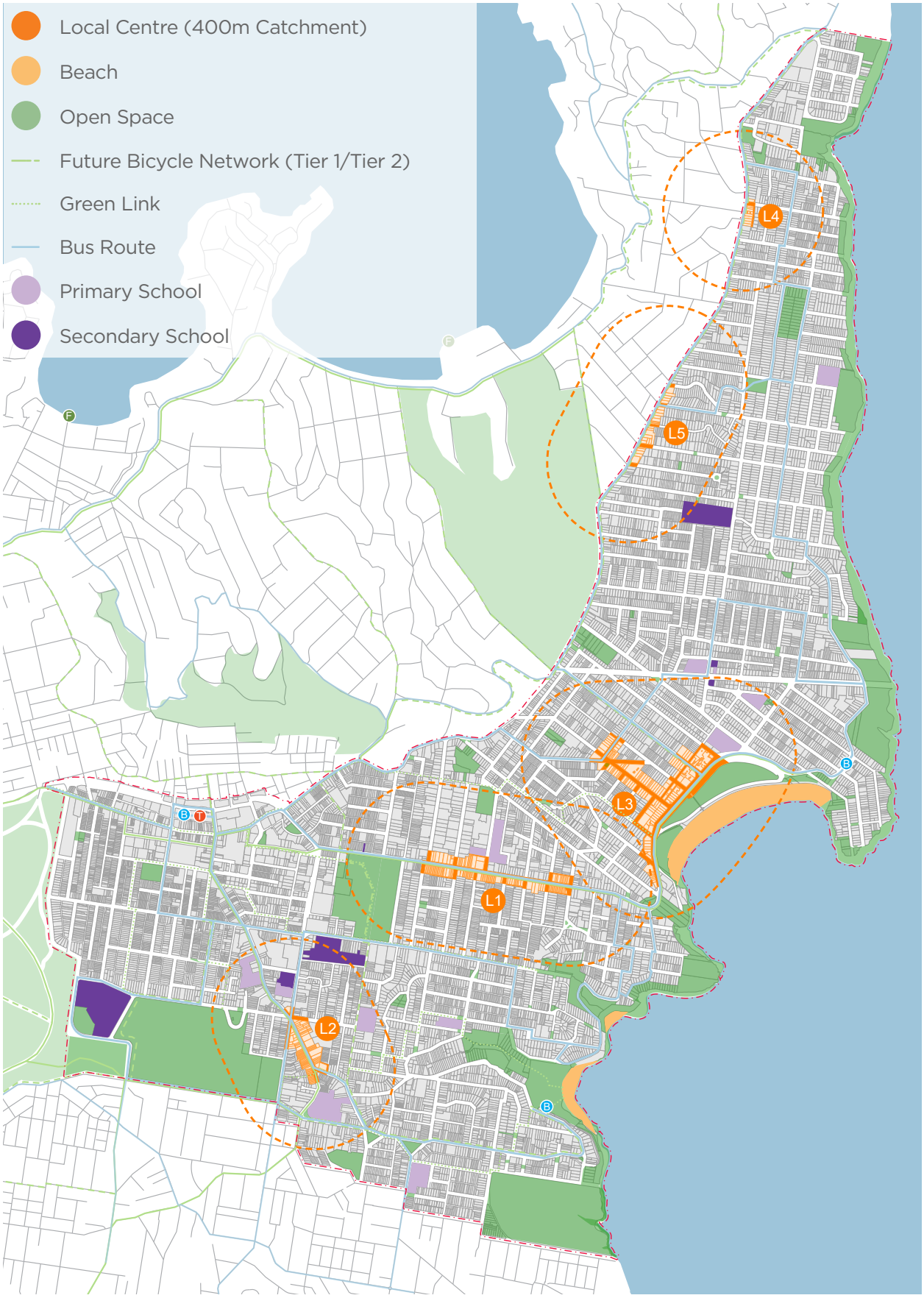
L2 - Charing Cross

L3 - Hall Street + Glenayr Avenue

L4+5 - Rose Bay (North + South)

Bondi Road, Bondi

Hall Street, Bondi Beach


Local Centre (400m Catchment)
Beach
Open Space
Future Bicycle Network (Tier 1/Tier 2)
Green Link
Bus Route
Primary School
Secondary School
L1
L2
L3
L4
L5

NEIGHBOURHOOD CENTRE

Neighbourhood centres are smaller in scale, typically comprising only a few commercial premises or a cluster of shops along a block or on a corner. They service a smaller walking catchment area and create a small node of activity in predominately residential areas whilst providing a meeting place for the local community.

Future upgrades should enhance the unique character of the numerous neighbourhood centres of Waverley. In line with the transport hierarchy, the pedestrian experience should inform design decisions by improving pedestrian safety and streetscape amenity to create a place focussed environment.

Overall, the design of the neighbourhood centres' public domain should be of a high design quality. Seating and outdoor dining are encouraged to create places for local residents to congregate and socialise whilst supporting local businesses. The location, layout and integration of bus stops should be considered when designing the public domain to create a functional, accessible and seamless experience.

In addition, the surrounding public domain within the walking and cycling catchments of these neighbourhood centres should facilitate ease of access to public transport and active transport to the neighbourhood centre to promote a healthy lifestyle.

Neighbourhood centres include:

N1 - Blake Street

N2 - Bronte Beach

N3 - Curlewis Street

N4 - Fletcher Street

N5 - Flood Street

N6 - Glenayr Avenue (Seven Ways)

N7+8 - Macpherson Street (East + West)

N9 - Murray Street

N10+11 - Murriverie Road (East + West)

N12 - North Bondi

N13 - O'Brien Street

N14 - Vaucluse

N15 - Wairoa Avenue

North Bondi

Macpherson Street East, Bronte

Macpherson Street West, Bronte


Neighbourhood Centre (200m Catchment)
Beach
Open Space
Future Bicycle Network (Tier 1/Tier 2)
Green Link
Bus Route
Primary School
Secondary School
N1
N2
N3
N4
N5
N6
N7
N8
N9
N10
N11
N12
N13
N14
N15

4. STREET TYPES

GENERAL STREET TYPES

Main Streets

Main Streets typify all the centres and are characterised by a strong sense of place with high amenable walking environments that complement the active frontages of retail and commercial tenancies whilst maintaining provisions for bike riding, public transport and private vehicular traffic. Main Streets provide wide footpaths, continuous awning cover and opportunities for outdoor dining. They also have a high quality of street paving and furniture, resulting in a high level of amenity that creates an inviting and engaging public domain.

Aim

Main Streets should facilitate the creation of desirable and walkable places that promote the local businesses of all centres whilst balancing the functional requirements of pedestrians, bike riders, public transport and private vehicular movement.

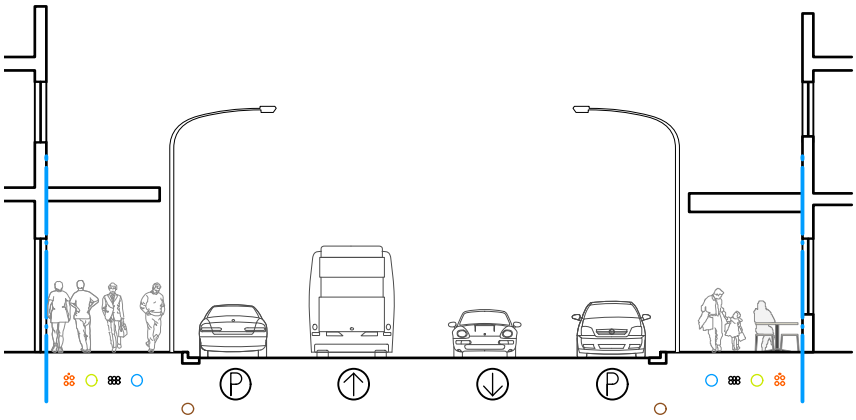
Design Objectives	Principle
Create a high quality public domain that is safe, inclusive and inviting for the large volumes of pedestrians	Sense of Place Accessibility
Incorporate street trees and WSUD where feasible to create a distinct visual identity for the centre	Sustainability
Improve and enhance the existing character of the unique centres to create a strong sense of place	Sense of Place
Balance the functional requirements of all users to achieve an equitable outcome.	Sustainability

Examples

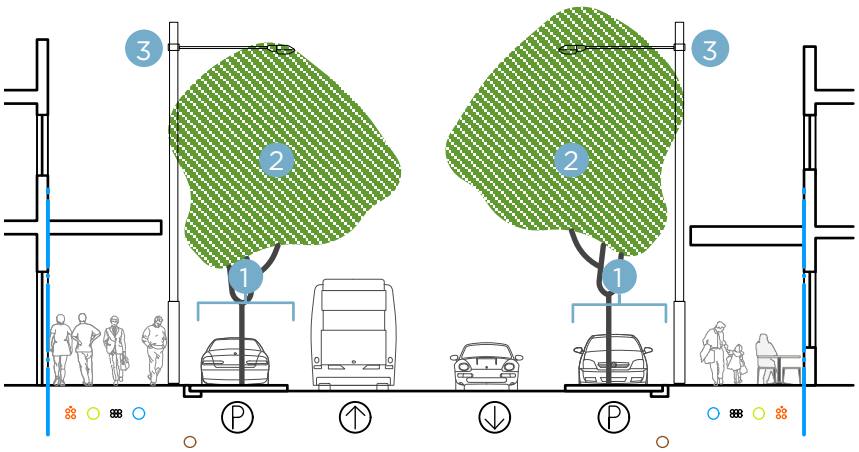
Bondi Road, Hall Street, Macpherson Street, Old South Head Road (towards Rose Bay), Bronte Road (Charing Cross).

Bondi Road, Bondi

Macpherson Street East, Bronte



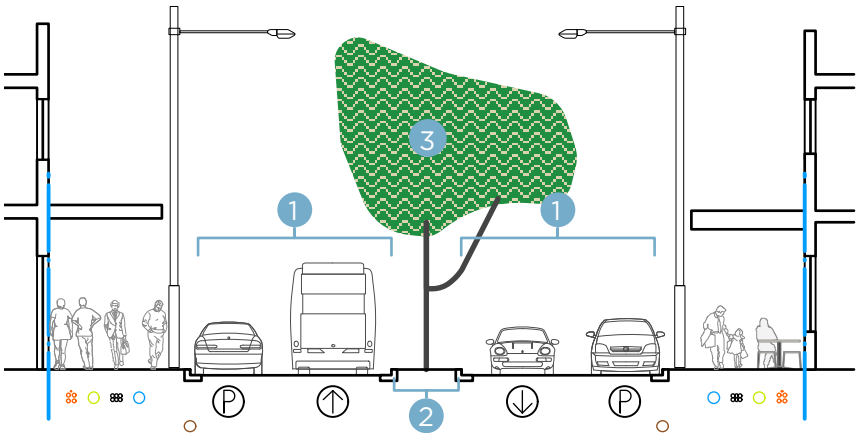
Existing scenario



Potential Modifications

1. Parking bay removed, tree pit introduced
2. Street trees
3. Multi-function poles installed

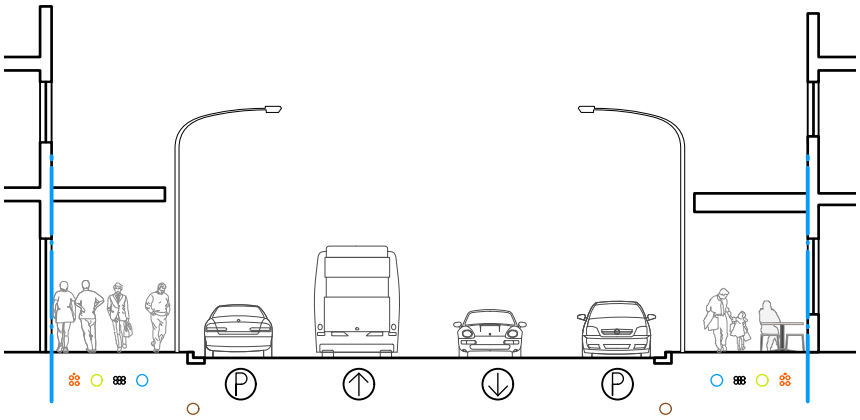
Indicative scenario 1; street trees introduced into parking lane



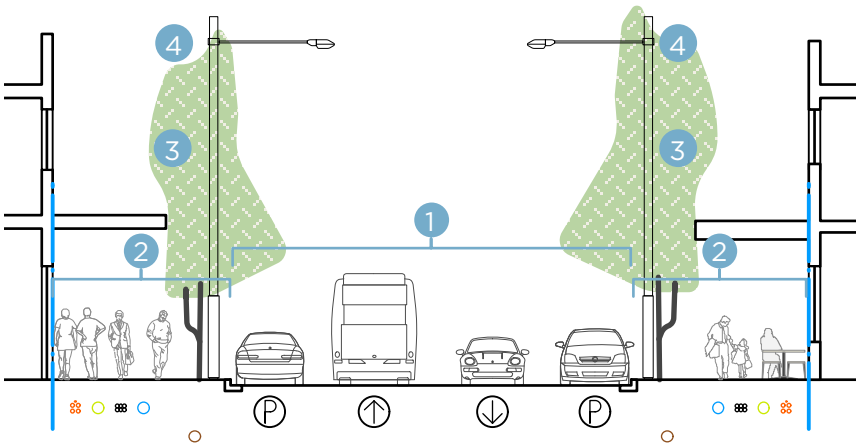
Potential Modifications

1. Traffic lanes narrowed
2. Median introduced
3. Street trees
4. Multi-function poles installed

Indicative scenario 2; central median with street trees and planting introduced



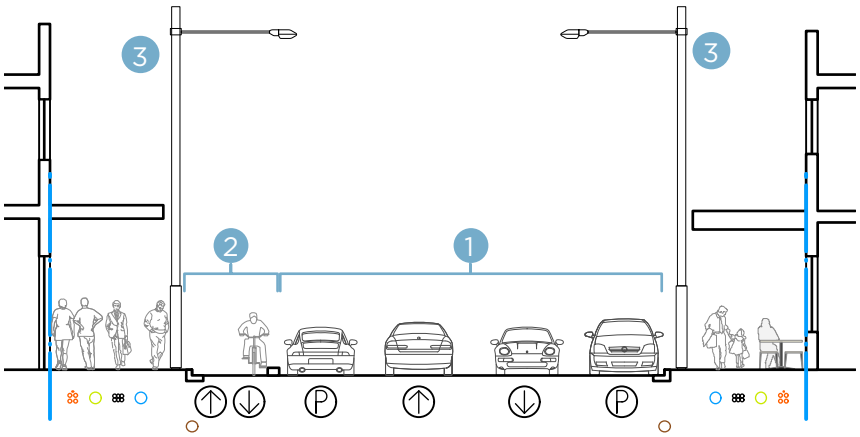
Existing scenario



Potential Modifications

1. Traffic lanes narrowed
2. Footpath width increased
3. Street trees
4. Multi-function poles installed

Indicative scenario 3; kerbs extended and street trees introduced



Potential Modifications

1. Traffic lanes narrowed
2. Separated two way bike lane introduced
3. Multi-function poles installed

Indicative scenario 4; bicycle lane introduced

Main Street example - Crown Street, Surry Hills

Main Street example - Abercrombie Street, Darlington

Arterial Roads

Arterial Roads are the key movement corridors through the LGA that cater for higher volumes of vehicular traffic. Arterial Roads are classified as State Owned (managed and financed by RMS) and Sub-Arterial Roads are classified as Regional Roads (managed and financed by Waverley Council with additional financing from RMS). Arterial Roads range from one to three lanes in each direction and may have no on-street parking.

Arterial Roads traverse a range of uses; through centres and residential areas, past open spaces, cultural facilities, educational institutions or large format commercial uses with posted speeds limites being 50km/h or higher.

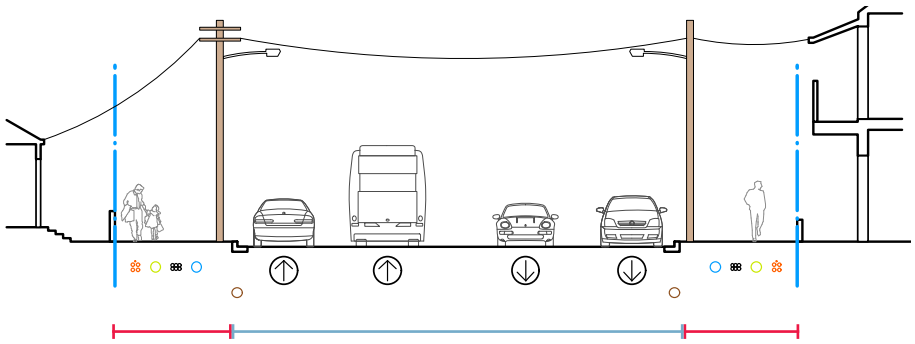
Historically Arterial Roads have been designed primarily for vehicles and tend to have a lower level of amenity. Design of Arterial Roads should be co-ordinated with RMS and TfNSW to improve the level of service for pedestrians, bike riders, public transport and vehicular traffic.

Aim

While their primary role as movement corridors should be maintained, Arterial Roads should balance the needs of all users and consider wider footpaths, bike lanes, bus lanes, street trees, verge planting and lighting upgrades to improve amenity and safety.

Council's Design Objectives	Principle
Create a safe and inclusive environment for pedestrians and cyclists day and night	Accessibility
Provide large street trees with adequate soil volumes to increase tree canopy cover and improve the micro-climate of the street	Sustainability
Provide WSUD/verge planting to create an amenable environment for pedestrians. Prioritise WSUD over verge planting where possible. Consider existing street character and tree canopy	Sustainability
Improve the existing character of the arterial roads	Sense of Place
Accommodate the functional requirements of public transport and private vehicular traffic	Sustainability

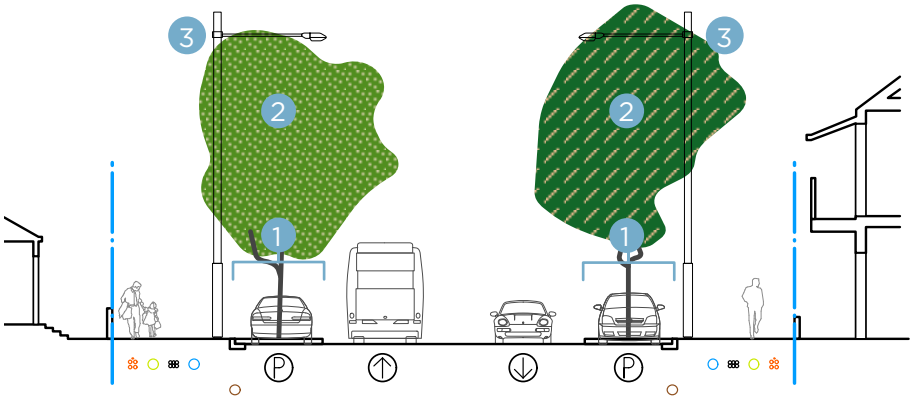
Sub-Arterial Roads	Arterial Roads
Arden Street	Bondi Road
Birrell Street	Carrington Road
Bronte Road	Council Street
Curlewis Street	Old South Head Road
Darley Road	Syd Enfield Drive
Leichhardt Street	
Macpherson Street	
Murray Street	
York Road	



Maintained by Council

Maintained by RMS/ TfNSW with input from Council

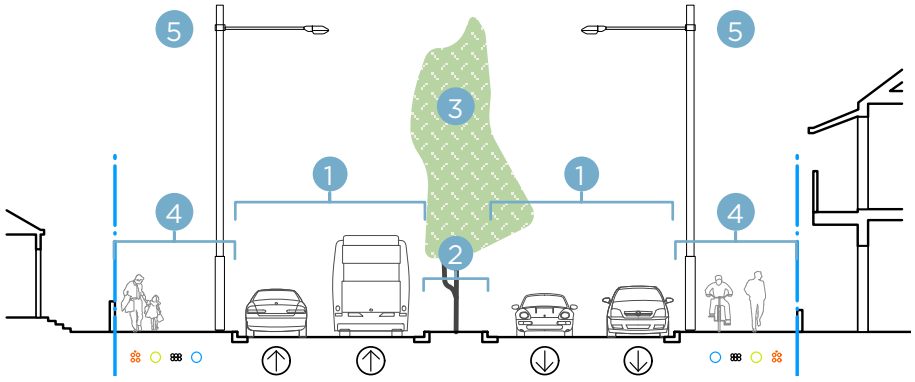
Typical existing scenario



Potential Modifications

1. Parking bay removed, tree pit introduced
2. Street trees
3. Multi-function poles installed

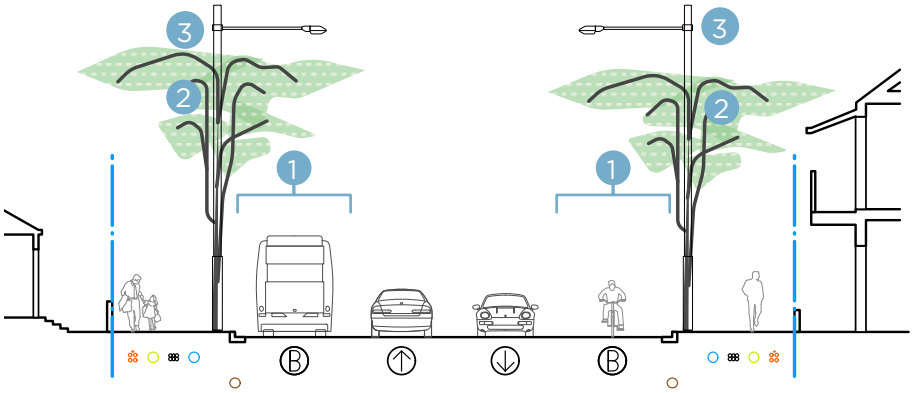
Indicative scenario 1: street trees introduced into parking lane



Potential Modifications

1. Traffic lanes narrowed
2. Median introduced
3. Street trees
4. Shared path
5. Multi-function poles installed

Indicative scenario 2; central median with street trees and planting introduced



Potential Modifications

1. Bus + bike lane introduced
2. Street trees
3. Multi-function poles installed

Indicative scenario 3; dedicated bus + bike lane introduced with street trees introduced in verge

Arterial Road example - Cleveland Street, Surry Hills

Arterial Road example - Moore Park Road, Moore Park

Residential Streets

Residential Streets are the predominant street type in the LGA. There are two types of streets in Waverley;

- High Activity Residential Streets - These streets are in close proximity to all types of centres and are sometimes serviced by public transport. Due to this proximity and the medium-high population density in these areas there is a greater level of pedestrian and vehicular movement through these streets requiring adequate provisions for all users.
- Low Activity Residential Streets - These are more residential in nature and are characterised by less pedestrian activity and vehicular movement. This is due to the reduced levels of through traffic, lack of public transport options, extended distances from nearby centres and a lower residential population density. As a result, the environment is pleasant and amenable for locals. The streets are characterised by wide footpaths with large grassed verges and reduced lane widths for vehicles.

In both respects, Residential Streets should provide a safe and pleasant environment with easy connection to the neighbouring centres, services, open spaces or public transport options. This is achieved by providing sufficient footpath widths, consistent concrete finishes, safe crossing points, verge planting and informal street tree planting.

Aim

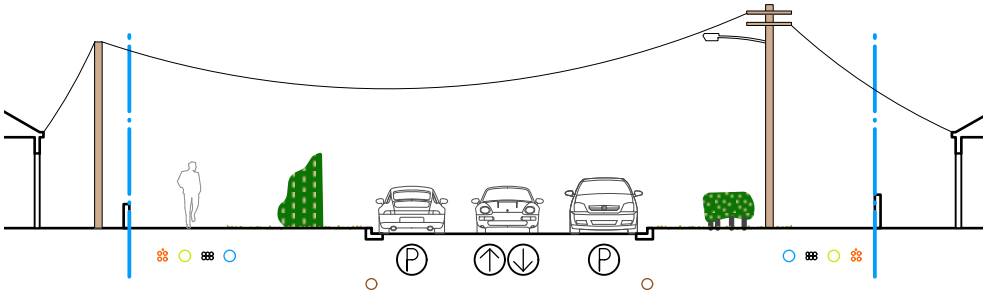
Residential Streets should create a safe and amenable environment that promotes active transport whilst accommodating private and public vehicular traffic.

Design Objectives	Principle
Create a safe and inclusive environment for pedestrians with easy access to nearby centres, services, open space and public transport options	Accessibility
Provide large street trees with adequate soil volumes to increase tree canopy cover and improve the micro-climate of the street	Sustainability
Respect and enhance the existing local character of the residential street	Sense of Place
In Low Activity Residential Streets, provide WSUD/verge planting to create an amenable environment. Prioritise WSUD over verge planting where possible. Consider existing street character and tree canopy	Sustainability
In Low Activity Residential Streets, provide appropriate traffic-calming measures to reduce traffic speed and flow whilst respecting the existing street character	Accessibility Sense of Place
In High Activity Residential Streets, balance the functional requirements of all users to achieve an equitable outcome	Sustainability

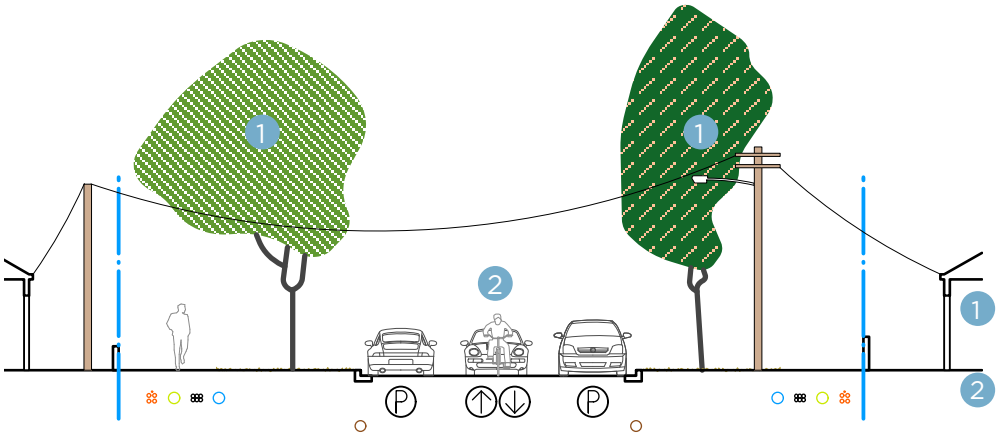
Examples

High Activity Residential Streets - Flood Street, Fletcher Street, Blair Street.

Low Activity Residential Streets - Francis Street, Cuthbert Street, Murriverie Road.



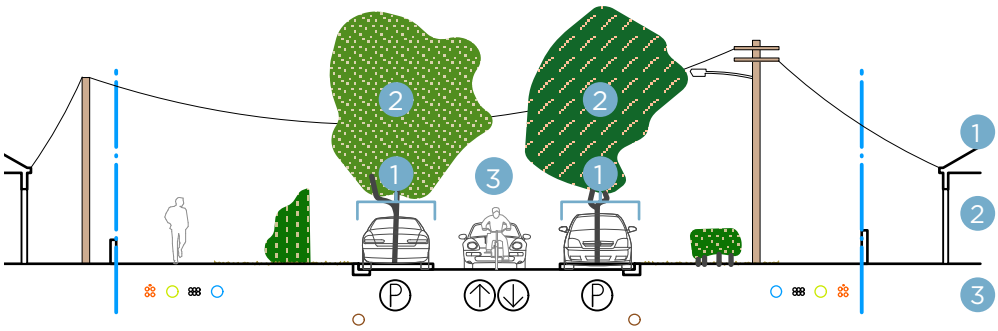
Typical existing scenario



Potential Modifications

1. Street trees
2. Traffic speed reduced to 40km/hr

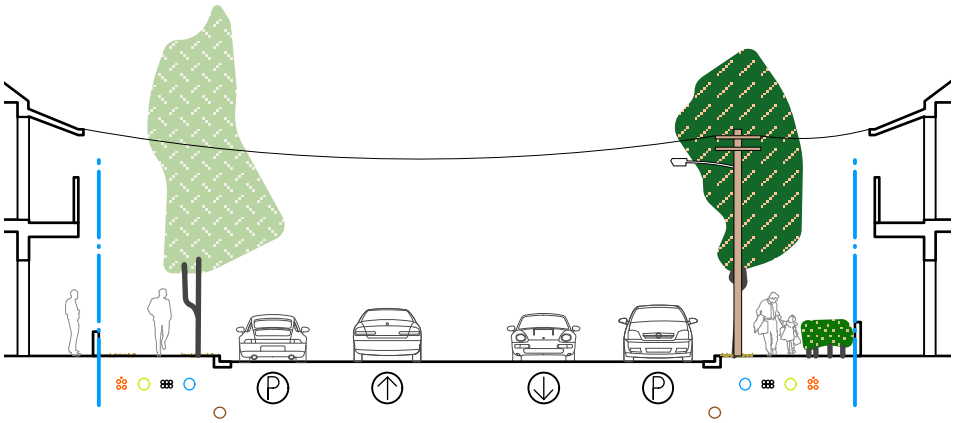
Indicative scenario 1; street trees introduced to verge and reduced traffic speed



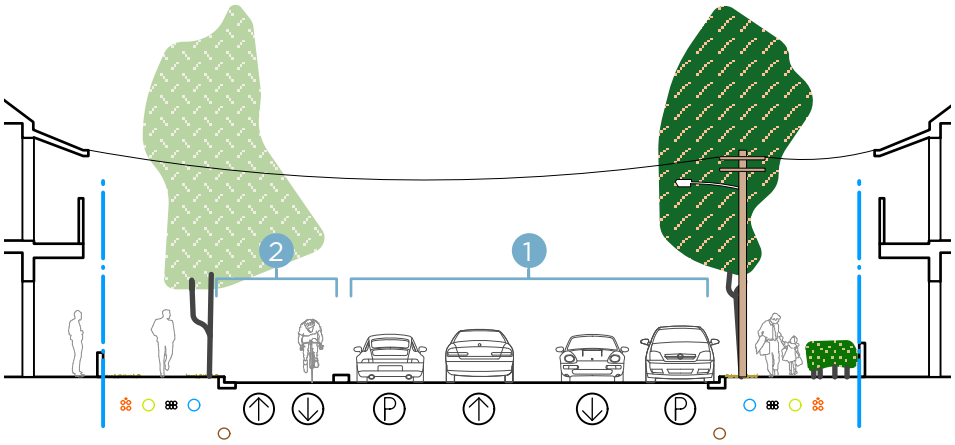
Potential Modifications

1. Parking bay removed, tree pit introduced
2. Street trees
3. Traffic speed reduced to 40km/hr

Indicative scenario 2; street trees introduced to parking lane and reduced traffic speed



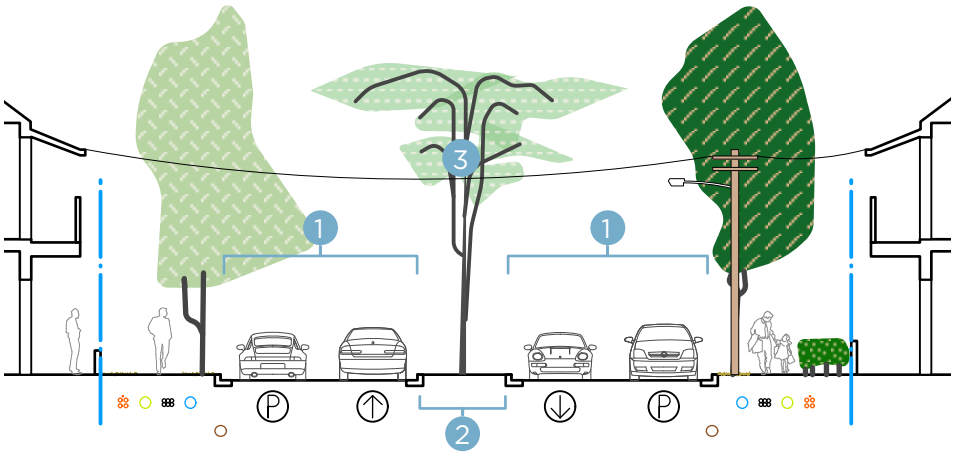
Typical existing scenario



Potential Modifications

1. Traffic lanes narrowed and speed reduced to 40km/hr
2. Separated two way bike lane introduced

Indicative scenario 1; bicycle lane introduced



Potential Modifications

1. Traffic lanes narrowed and speed reduced to 40km/hr
2. Median introduced
3. Street tree

Indicative scenario 2; central median with street trees and planting introduced

Residential Street example - Bourke Street, Surry Hills

Residential Street example - Warners Avenue, Bondi Beach

OTHER STREET TYPES

Laneways

Laneways are a versatile street typology that offer access, storage, articulation and adaptability. Laneways are located in both commercial and residential areas and provide access to low numbers of traffic for rear lane access and the delivery of goods. Laneways generally have narrow footpaths on one or both sides for pedestrians. If there is inadequate space for pedestrians, consider transforming the laneway into a shared zone. Laneways can also be transformed into attractive public spaces through the inclusion of street furniture, temporary uses, verge planting, public art and adequate lighting.

Aim

Laneways should create a safe and amenable environment that promotes active transport, ground floor activation or alternative uses whilst accommodating the low numbers of private vehicular traffic for deliveries and rear lane access.

Design Objectives	Principle
Create a safe, inviting and inclusive environment for pedestrians	Accessibility
Balance the functional requirements of all users to achieve an equitable outcome	Accessibility
Anticipate future change and adaption by designing a level of flexibility in laneways	Sustainability

Examples

Hegarty Lane, Judge Lane, Adams Lane.

Birds Lane, Bondi Junction

Pedestrian Malls

Pedestrian malls are dedicated for pedestrians and are generally located in high activity commercial areas. This can include through site links and pedestrian plazas. They feature a continuous paved surface from building to building with a unique design featuring high level detailing, seating, landscape treatments or WSUD, pedestrian scale lighting and drainage solutions with no kerbs. Removable traffic barriers or bollards are utilised to prevent unauthorised vehicle access and should be designed to be integrated into the street furniture or public art. As Pedestrian malls are unique places, they require a special treatment - the unique character of each Pedestrian mall should be expressed by bespoke designs with the highest quality materials, finishes and furniture.

Aim

Pedestrian malls should provide a highly desirable and well-designed space with a high level of amenity to encourage people to walk, socialise, rest, shop, eat, and play. They should also promote the adjoining active retail and commercial frontages.

Design Objectives	Principle
Create a high quality public domain that is unique, inclusive and inviting for the large volume of pedestrians	Accessibility Sense of Place
Provide large trees with adequate soil volumes to increase tree canopy cover and improve the micro-climate of the Pedestrian mall	Sustainability
Provide WSUD/planting to create an amenable environment for pedestrians. Prioritise WSUD over verge planting where possible.	Sustainability
Improve and enhance the existing character of the unique pedestrian streets to create a strong sense of place.	Sense of Place

Examples

Roscoe Mall, Waverley Street Mall, Oxford Street Mall.

Roscoe Mall, Bondi Beach

Oxford Street Mall, Bondi Junction

Shared Zone

Shared zones are streets that are shared by vehicles and pedestrians with a speed limit of 10km/hr. Shared zones provide a space shared safely be vehicles and pedestrians where pedestrian priority and quality of life takes precedence over ease of vehicle movement. A pedestrian design focus is used to remind drivers that they should proceed cautiously and slowly, including paved surface, flush or no kerbs and landscape treatments. Vehicular access may be limited to restricted hours for loading and servicing. **Shared Zones should be designed with reference to RMS Technical Direction TTD 2016/001.**

Design Objectives	Principle
Create a safe and inclusive environment for pedestrians	Accessibility
Balance the functional requirements of all users to achieve an equitable outcome	Accessibility

Examples

Queen Elizabeth Drive, Notts Avenue (under consideration), Lynch Avenue

Concept perspective, Notts Avenue shared zone (under consideration), Bondi Beach

Campbell Parade

Campbell Parade is the gateway and urban edge to the iconic Bondi Beach. It connects the Bondi Beach local centre to Bondi Beach. It attracts some of the highest pedestrian volumes in the LGA and the street is an important part of the beach experience for both residents and visitors. Campbell Parade is framed by several Inter-War buildings and newer developments providing a significant commercial strip offering retail, food and beverage and assorted unique services. Campbell Parade also opens out onto the open landscape of Bondi Park and the gently curved waterline of Bondi Beach.

It is for these above reasons that Campbell Parade is a distinctive place. A separate urban design review of the street and concept plans were developed in 2016. The concept design of Campbell Parade is currently underway and incorporates this review with the recommendations from Waverley's People Movement and Places.

Concept perspective, Campbell Parade Streetscape Review


Main Street
Arterial Road (State Road)
Sub-Arterial Road (Regional Road)
High Activity Residential Street
Low Activity Residential Street
Laneway
Pedestrian Mall
Shared Zone
Campbell Parade
Beach
Open Space
Public School
Private School

5. STREET DESIGN

STREET STRUCTURE

The streetscape is composed of three main components;

Footpath: provides clear unobstructed path of movement for pedestrians and accommodates street elements such as street trees, outdoor dining, seating, street poles and other street furniture. The footpath also provides necessary space for above and underground utilities and basic street infrastructure.

Carriageway: provides access for bike riders, public transport, service trucks and private vehicles with the potential for additional elements such as street trees, WSUD and place making opportunities. The carriageway also provides necessary space for underground utilities.

Building Interface: frames the street corridor and transitions between the public domain and private property. It can include elements such outdoor dining, awnings, building entrances, building setbacks and private gardens. This condition varies greatly across the LGA and helps inform the general character of the street. A large majority of these considerations pertain to the private domain and are covered in the Waverley Development Control Plan.

These zones are flexible and need to be designed holistically to meet the needs of the intended users and the desired streetscape character. The design principles and considerations of these zones are discussed in subsequent sections.

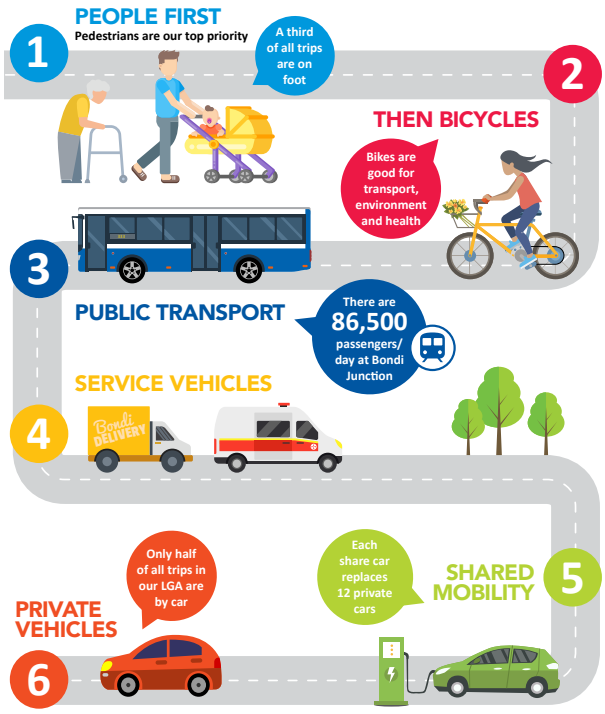
Bronte Road, Charing Cross

STREET LAYOUT

The appropriate layout and design of streets is vital to realise the desired economic, social and environmental outcomes as outlined in Section 2. The unique functional requirements for streets are often conflicting and contradictory in nature. The allocation of space requires a balanced response that aligns with the principles outlined in Section 2, the aims and design objectives of the street types outlined in Section 4 whilst upholding the Transport Hierarchy outlined in Waverley's People, Movement and Places. Design decisions should be made in the following order:

1. Pedestrians – All users are eventually pedestrians. Safety and convenience should come first with attention to desire lines, surface treatment, footpath width, crossings and ramps, and intersection design.
2. Bike riders – There should be safe and convenient bike routes to the centres, schools, parks, beaches and community facilities with well-located bike racks to support this healthy, affordable and enjoyable way to get around.
3. Public transport – All bus stops should include seating, weather protection and lighting to improve the quality and convenience of the journey. Consideration of existing context should inform the furniture required
4. Service vehicles – Provision needs to be made for deliveries to enable businesses to operate efficiently.
5. Taxi/ride-hailing services and car-share - These forms of transport are increasing in use and have the benefit of reducing overall parking requirements for the community.
6. Private vehicles - While other modes are encouraged for their health and sustainability benefits, private vehicle access needs to be maintained albeit with low travel speeds and modest parking to maintain compatibility with other uses.

The following sections provide guidance on space allocation and design considerations for the layout of footpaths, cycleways and carriageways during major upgrades to streets throughout the LGA.



Transport Hierarchy taken from Waverley Council's People, Movement and Places, 2018.

Footpath Arrangement

Footpaths are the domain of pedestrians. The primary function of the footpath is to provide circulation space and access to buildings, open space or community facilities. Supplementary to this footpaths provide the backdrop to everyday life, offering vital public space where locals and visitors can gather, watch, shop, talk, eat and relax. For this reason footpaths are composed of two zones that relate to these functions; the pedestrian zone and the furniture/verge zone.

The pedestrian zone refers to the main circulation space of the footpath and includes the minimum amount of space for movement known as the Continuous Accessible Path of Travel (CAPT). Maintaining a clear, consistent and adequate CAPT against the 'shoreline' or property boundary is required to provide equitable access for people of limited mobility. Obstacles and intrusions should be cleared from the CAPT to ensure a predictable, legible and navigable footpath. Where it is not possible to locate elements in the furniture zone, the element should be a vertical shape rising from the footpath and be placed on a 100mm raised platform with tactile markings on the ground.

The following table outlines the objectives of the pedestrian zone for each street type. This is accompanied by minimum provision. These should be used as a guide and, where possible, should be used to increase the amount of footpath whilst balancing the objectives of furniture/verge zone.

Street Type	Pedestrian Zone Objectives	Minimum Provisions (CAPT)	Reference
Main Streets	Provide ample space for large volumes of pedestrians	2.4m	Austroads Guide to Road Design Part 6A
Arterial Roads High Activity Residential	Provide sufficient space to accommodate two wheelchairs side by side	1.8m	AS 1428.1:2009
Low Activity Residential	Provide sufficient space to accommodate two pedestrians side by side	1.5m*	Austroads Guide to Road Design Part 6A
Laneway	Provide the minimum requirements for pedestrian movement. If there is insufficient footpath, consider a shared zone	1.2m*	Austroads Guide to Road Design Part 6A
Pedestrian Malls	Provide ample space for large volumes of pedestrians walking and stopping	3.5m	Austroads Guide to Road Design Part 6A

*where a path is < 1500 mm wide, the path should be widened at regular intervals to provide opportunities for wheelchair users to pass as per AS 1428.1:2009

The furniture or verge zone refers to ancillary space of the footpath that can facilitate a range of activities and functions. The function of the furniture/verge zone varies depending on the street type and character. The following table outlines the objectives for each street type and minimum provisions to achieve these objectives. These objectives should be balanced with the pedestrian zone objectives to achieve a reasonable and equitable outcome.

Street Type	Furniture/Verge Zone Objectives	Minimum Provisions	Reference
Main Streets	Provide space for street tree planting where feasible Provide space for street furniture	1.5m	PDTM Street Tree section
Arterial Roads	Provide space for street furniture Provide ample space for verge planting, WSUD and street tree planting	1.2m	PDTM Verge Planting + Street Tree section
High Activity Residential	Provide locations for pedestrians to rest and pass Provide ample space for street tree planting	1.5m	Verge Planting + Street Tree section PDTM
Low Activity Residential	Provide ample space for verge planting, WSUD and street tree planting	1.8m	Verge Planting + Street Tree section
Pedestrian Malls	Provide space for street furniture Provide ample space for street tree planting	3m	Austroads Guide to Road Design Part 6A

Main Street featuring planter boxes and outdoor dining on Macpherson Street, Bronte

Low Activity Residential Street featuring verge planting, street trees and additional planting against property boundary in Queens Park.

Bicycle Riding

Bike riding is second on the People Movement Places hierarchy providing a new found importance and impetuous on providing safe and convenient bike riding facilities in Waverley. The average trip distance in Waverley is 2.2 km, which is an easy distance to ride. Nearly three times as many people cycle for transport in Waverley than in Greater Sydney. In addition, bicycles take up much less space than cars and create almost no pollutants. Therefore, cycling for transport is an ideal solution to our traffic congestion issues.

Every street is considered a bike riding street regardless of its designation and should provide safe, convenient and comfortable access to centres, parks, beaches, homes, public transport and community facilities.

Bikeway Provisions

Along routes of high traffic volumes and speeds, the preferred option is a separated one-way bikeway on both sides of the carriageway. The second most preferred option is a separated two-way bikeway on one side of the carriageway. Bicycle lanes consist of on-road, one-way facilities which designate road space exclusively for cycling, running adjacent to parked cars with the provision of a buffer zone to reduce the hazard when drivers open their car doors. The default scenario for bikeway design is mixed traffic with marking and traffic speeds reduced to 40km/h to create a safe, low-speed environment to encourage bike riding for all ages and skill levels. This treatment is suitable for roads with low traffic volumes such as residential streets.

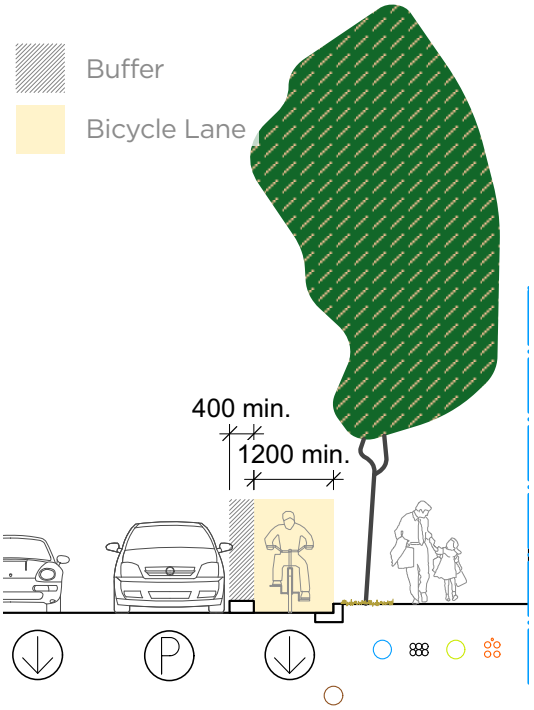
The extra-ordinary scenario is a shared path. This should be used in situations where there is insufficient space to provide a separated facility and mixed traffic poses too much of a risk to bike rider safety. This is appropriate along arterial roads with sufficient footpath widths to accommodate both cyclists and pedestrians. The selection of the appropriate design is dependent on a variety of parameters and should consider the broader bicycle network.

Refer to Waverley's People, Movement and Places 2017 for the strategic vision and future projects for bike riding in Waverley.

Refer to Waverley Bike Plan 2013 for the existing network and priority bike riding routes.

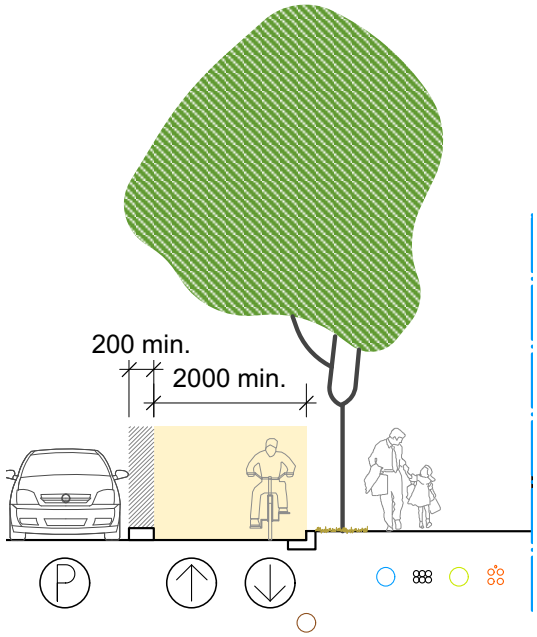
Bikeway Options	Bicyle Lane Width min.	Buffer Width min.	Overall Provision min.	Reference
Separated one-way	1.2m	0.4m	1.6m*	Austroads Guide to Road Design Part 6A
Separated two-way	2.0m	0.2m	2.2m	Austroads Guide to Road Design Part 6A
Bicycle Lane	1.2m	0.4m	1.6m*	Cycling Aspects of Austroads Guides
Shared Path	2.0m (min. 1.2m at pinch points)	none	2.0m	Austroads Guide to Road Design Part 6A

*The overall provision is for one side of the road only



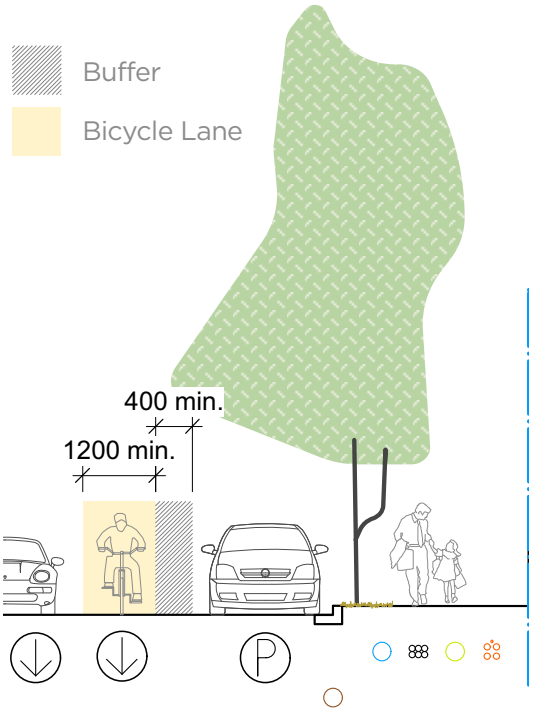
Separated one-way option

Campbell Street, Surry Hills



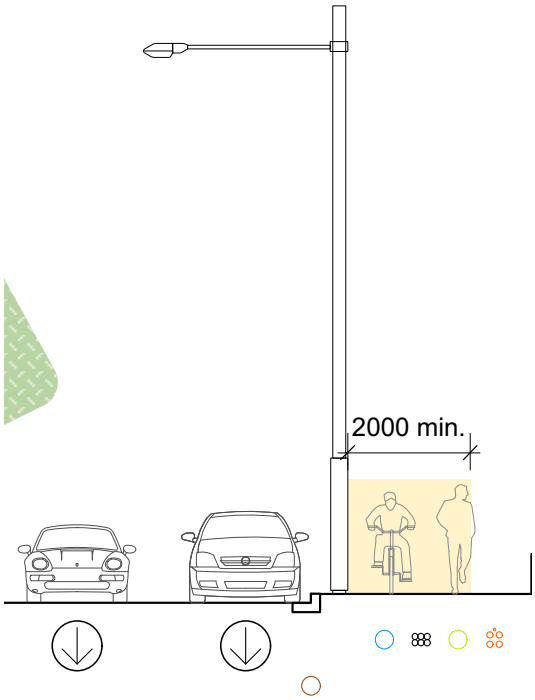
Separated two-way option

Bourke Street, Surry Hills



Bicycle lane option

Redfern Street, Waterloo



Shared path option

Redfern Street, Redfern

Additional Considerations

At signalised intersections in local and strategic centres painted bike lanes and on-street cycle routes should have a painted 'bike box' at signals to provide a safe place for bike riders to queue and also help avoid bike riders being hit by turning vehicles. Refer to RMS TDT 2009/06

Centres should provide a sufficient quantity of bike racks in easily visible and accessible locations. In strategic and local centres bike racks should be provided in multiple locations and should also include bike racks with weather protection.

Bike Box, Glenayr Avenue, Bondi Beach

Bike Parking, Oxford Street Mall, Bondi Junction

Bike Hub, Bronte Road, Bondi Junction

Public Transport

Nearly half of journeys to work in Bondi Junction are made by bus or train. This is one of the highest uses of public transport anywhere in Australia. The Waverley LGA has a wide variety of bus routes that connect to local destinations such as Bondi Beach, Bondi Road, Charing Cross and Bronte. Buses also connect to key destinations across the region including Randwick Prince of Wales Hospital and University of NSW campuses, Coogee, Sydney Airport, and Burwood. Due to this, buses play a crucial role in how residents and visitors travel to, from and around the suburb. Consideration should be given to providing sufficient space for buses when arranging the carriageway. The table below outlines widths for buses utilising traffic and parking lanes.

Lane Type	Width	Reference
Travel Lane	3.0m	NSW STA Bus Infrastructure Guidelines
Kerb Side Travel Lane	3.2m	
Parking Lane	3.0m	

Bus Stops

Bus stops should provide a safe and convenient location to alight from, wait for or board public transport. For passengers waiting for buses, ensure there is consistent and reliable layout offering weather protection, sufficient seating, adequate lighting and co-location of signage to reduce clutter. For passengers alighting and boarding the bus, ensure the bus stop area is clear of obstacles and street furniture to allow easy access to and from the bus doors. In addition to these requirements, it is important to provide a sufficient clear path of travel for pedestrians using the parallel footpath.

Refer to *Austroads Guide to Road Design Part 3* Chapter 4.12.2 Urban Bus Stops for spatial layout of clearances, and pole, TGSIs and shelter locations as well as *AS1428.4.1 Design for Access and Mobility* Appendix D Typical Examples of TGSIs for Bust Stops

In some special situations in centres it may be feasible to extend the kerb to provide an in-lane bus stop. This should be investigated where feasible as it provides more room for pedestrian movement and passenger waiting, alighting and boarding.

Refer to *NSW State Transit Bus Infrastructure Guide* Chapter 3.6 Bus Stop Configurations for more information.

Carriageway Arrangement

The carriageway is the domain of cyclists, public vehicles, service vehicles and private vehicles. In this respect, all the needs of all these users should be considered. When redesigning the carriageway a process of 'road dieting' should be undertaken. This involves using minimum lane widths to adjust the layout of travel and parking lanes. The objective of this process is to reduce vehicle speed by increasing driver perception. The residual space should be maximised to provide additional facilities such as bikeways, medians with tree planting, wider footpaths, etc. Refer to the previous sections on Public Transport and Bike Riding for spatial requirements for these facilities.

The table below outlines widths for traffic and parking lanes for the different street types. The figures below should be used as guidelines only for major upgrades and retrofitting. The existing and future bus and bike riding network should be considered when determining lane widths.

Street Type	Traffic Lanes		Parking Lane	Reference	Speed
	Primary Lane	Additional Lane			
Arterial Roads	Subject to RMS requirements				
Main Streets	2.8-3.0m^	2.9m	2.1-2.3m	AS2890.2 AS2890.5	40km/h
Residential Streets	2.8-3.0m^	-	2.1m		40km/h
Residential Streets (Bi-directional)	3.2-3.5m*	-	2.1m*		40km/h
Laneways	3.0m	-	2.1m		40km/h
Shared Zone	Refer to RMS TTD 2016-001 for RMS Shared Zone Guidelines				

^ Refer to NSW STA Bus Infrastructure Guidelines for travel lane widths for buses

* Passing bays required in parking zone

Parking Lane Options

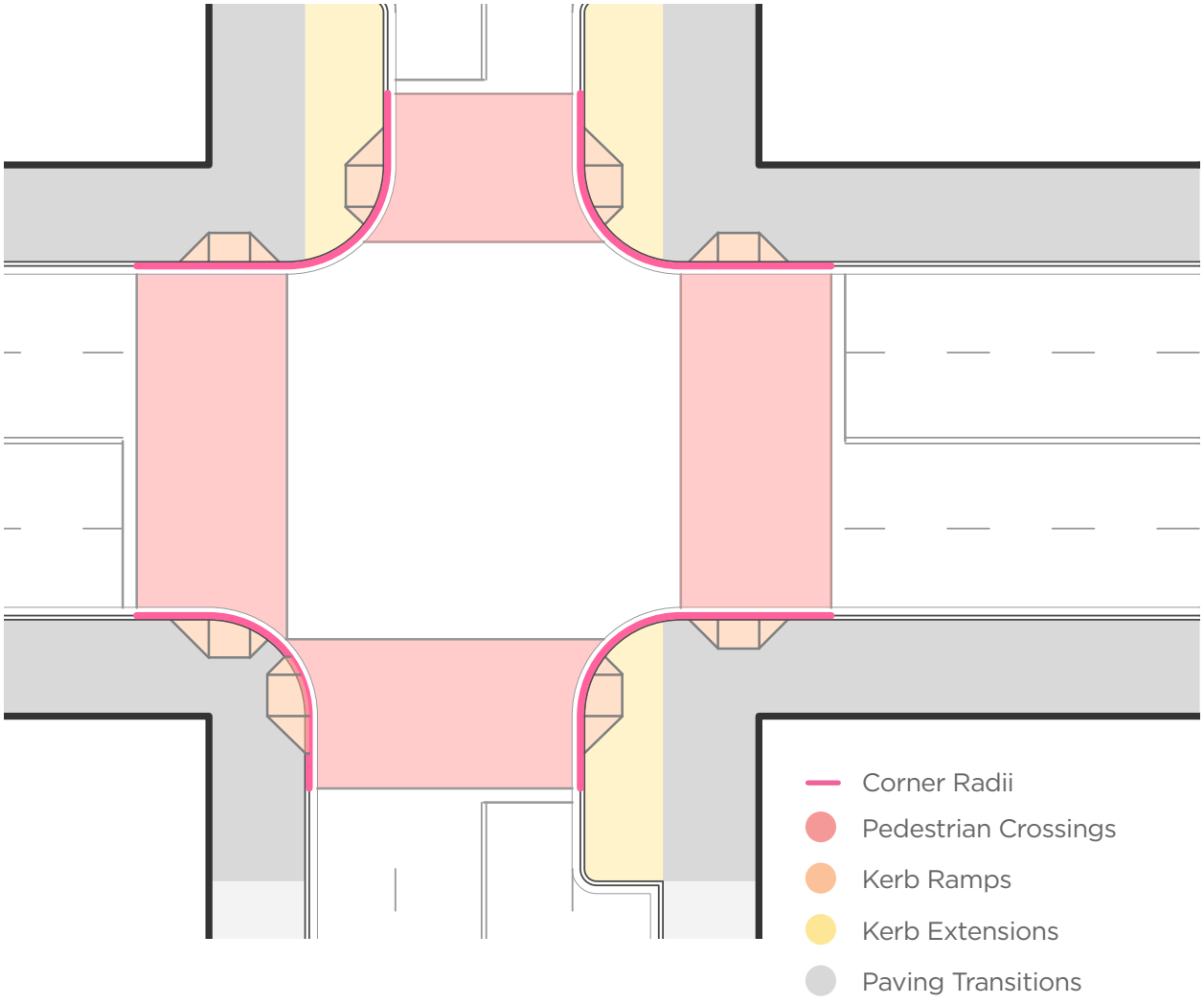
The parking lane provides a vital and versatile space in the layout of streets. The use of this space varies depending on the street type. In Main Streets, the parking space provides for quick turn-over on-street parking as well as space for taxi services, disabled bays, loading zones and bus zones. In Residential Streets, the parking zone primarily serves the purpose of providing on-street car-parking for visitors and residents. In any case, the presence of on-street parking has the effect of creating friction and slowing traffic as well as providing a buffer between moving traffic and the footpath/verge zone. When designing parking lane layouts, refer to AS 2890.5 for more information.

In line with Council's strategic transport goals for increasing the modal share of walking, cycling and public transport, it is important that residential street and centre upgrades do not create a net increase in parking. Where car parking loss occurs (due to kerb extensions or street tree planting) alternative arrangements for car parking should be investigated to retain the overall number of parking spaces.

Alternative uses of the parking lane can potentially boost business activity, improve the environmental performance of the street and may be temporary (e.g. temporary pop-ups or 'parking days', Pick Up Drop Off (PUDO) bays), regular (e.g. daily clearways), or permanent. Consideration should be given to alternatives that increase amenity, promote sustainable transport or foster community engagement. In Main Streets, alternative uses include kerb extensions for improved pedestrian connectivity and safety as well as outdoor dining, bike parking, bus stops, public seating, street trees/WSUD or parklets. In Residential Streets alternative uses include street trees/WSUD or local area traffic measures.

INTERSECTION CONSIDERATIONS

In all streets and centres, intersections are defining features; they provide places to make decisions, often demark the arrival into centres and typically attract the greatest level of street activity. Due to this, they are also a major point of conflict for all users, creating the most complex and challenging component of street design. When designed carefully, intersections can increase safety whilst creating nodes of activity with more public space with low verge planting. Safety, accessibility and legibility can be increased for all users through the consideration and design of corner radii, pedestrian crossings, kerb extensions and paving treatments.



Corner Radii

The corner kerb radii at intersections has a significant impact on the overall safety and accessibility for all users. The reduction of kerb radii increases visibility for both pedestrians and vehicles whilst increasing waiting space and reducing crossing distances for pedestrians at intersections. In addition, tighter corner radii ensures that vehicles reduce speed when navigating the corner. Design at intersections is to be based on three vehicle types:

1. An 8.8 metre medium rigid vehicle

2. A 9.887 metre Council waste vehicle

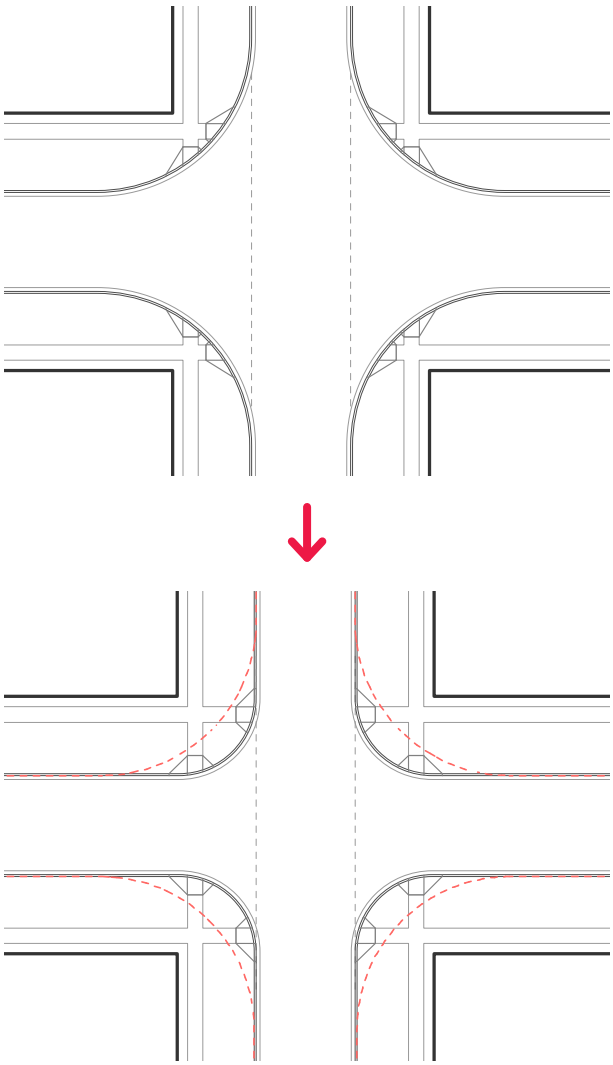
3. A 12.5 metre bus

There are two vehicle types to assess:

1. **The design vehicle** – can make a turn at an intersection without crossing the centreline

2. **The checking vehicle** - can make a turn at an intersection but needs to cross the centreline

Designing to the checking vehicle is not always poosible. This is due to the network being developed over a period time 12.5 metre vehicles generally did not exist. Retrofitting for such vehicles is not appropriate or feasible in cases. Nevertheless, the turning path of the 12.5 metre vehicle should be accommodated along a bus route. This may involve some encroachment across the centreline if safe to do so. **The intersection should dictate which types of vehicles are able to turn. Not the otherway round.**



Kerb corner radii reduced to slow down traffic, reduce pedestrian crossing distances and improve pedestrian visibility

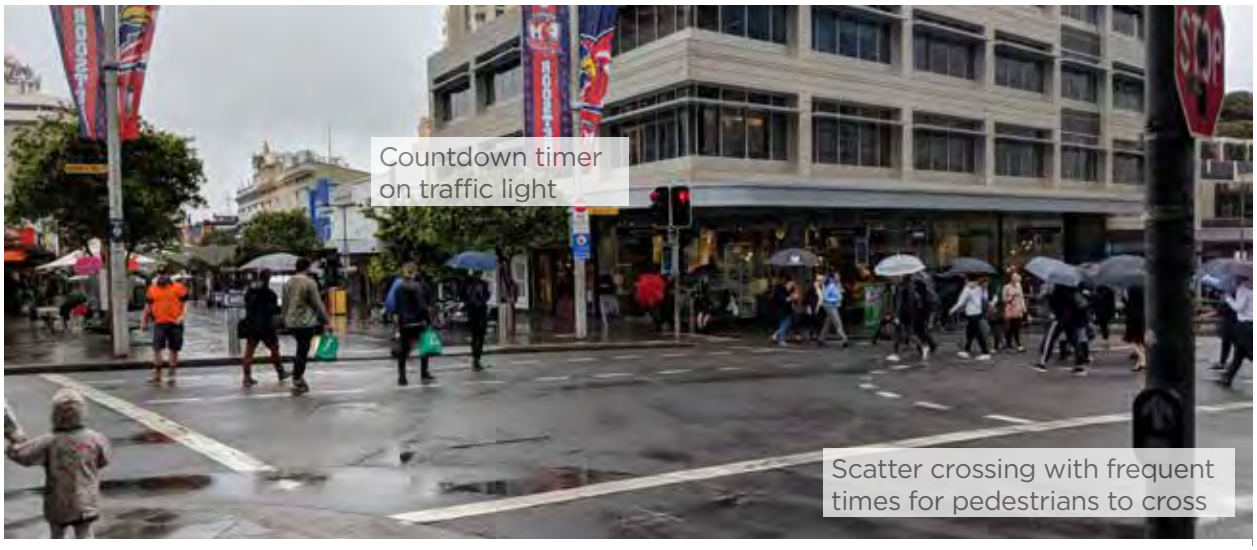
Ebley Street, Bondi Junction

Pedestrian Crossings

Pedestrian crossings at intersections provide a designated point for pedestrians to safely and conveniently cross. Pedestrian crossings come in 4 main categories and should be used depending on existing conditions, pedestrian and vehicle numbers to achieve a safe and equitable outcome for all users.

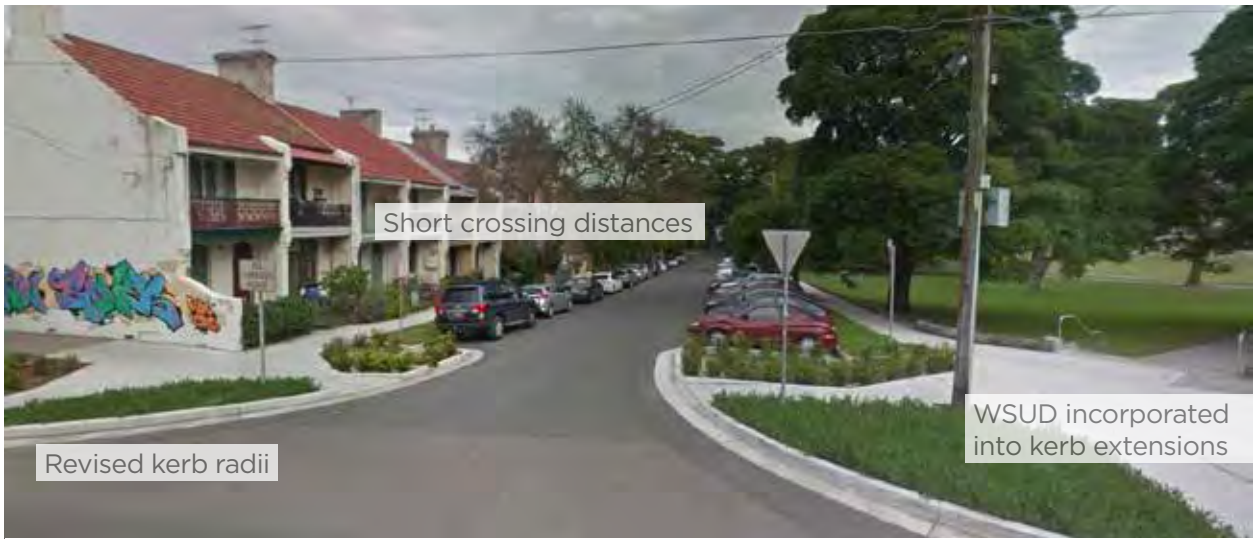
Crossing Type	Where	Considerations	Reference
Signalised Crossings	At all signalised traffic intersections.*	Potential to incorporate a scatter crossing signal. Potential to raise signalised intersections as a gateway treatment for local centres.	RMS Traffic Signal Design
Raised Pedestrian/ Zebra Crossings	At intersections of high pedestrian activity.*	Raised platform are required to provide greater visual prominence and safety. Consider incorporating kerb extensions to reduce crossing distance and increase pedestrian visibility. Provide adequate lighting to the intersection as per AS/NZS 1158	RMS TDT 2011-01a RMS TDT 2002-12c AS/NZS 1158 Part 4
Unmarked Pedestrian Crossing	At intersections of lower pedestrian activity	Incorporate kerb ramps to all sides of the intersection. Consider incorporating kerb extensions to reduce crossing distance and increase pedestrian visibility. Consider including refuge island to provide a safe stopping point for pedestrians.	RMS TDT 2011/01a
Continuous Raised Footpath Treatment	At intersections where a laneway/ residential street meets a main street	The intersection zone should be treated as a shared zone. The footpath paving should be changed to delineate the change in street environment.	RMS TTD 2016/001 RMS TDT 2013/05

*Refer to the RMS numerical warrants of pedestrian and vehicle flow numbers required for Signalised/Pedestrian Crossings



Signalised Crossing, Oxford Street, Bondi Junction

Pedestrian/Zebra Crossing, Hall Street, Bondi Beach

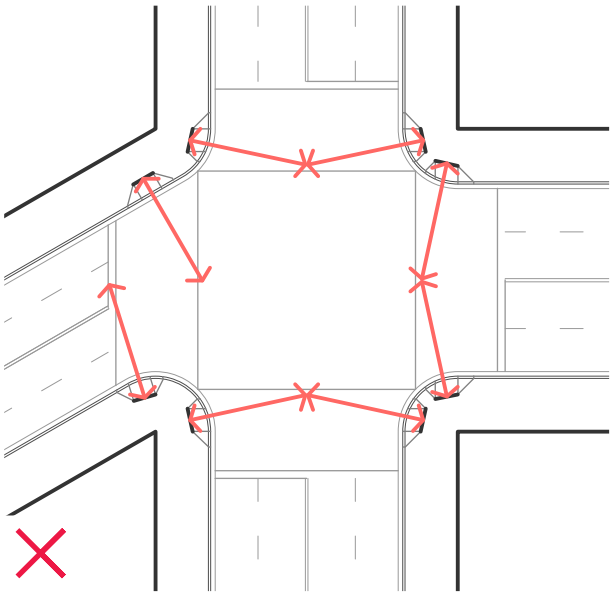


Unmarked Pedestrian Crossing, Fowler Street, Camperdown

Continuous Raised Footpath Treatment, Bourke Street, Surry Hills

Kerb Ramps

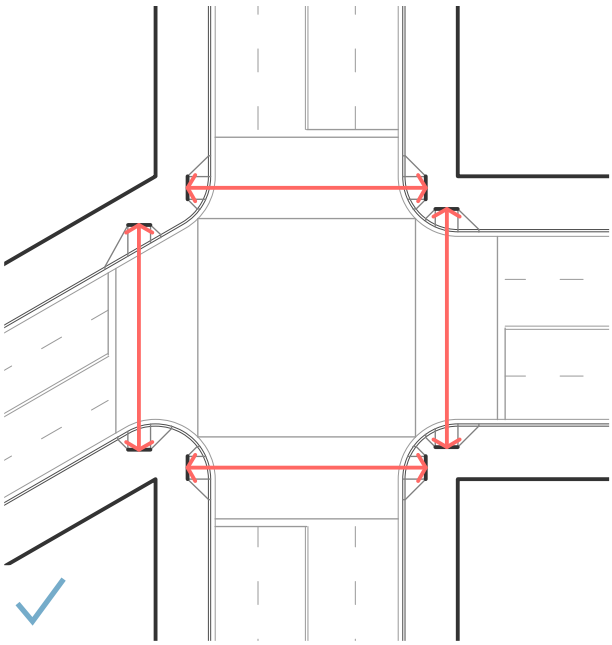
Kerb ramps are important components of intersections that increase equitable access to the public domain. The design and construction of kerb ramps should be in line with AS1428.1 and AS1428.4.1 to achieve safe, functional, legible and equitable crossing points for all abilities and ages. There are two main considerations for the orientation of kerb ramps; the predominant line of travel and the alignment of corresponding kerb ramps on opposite sides of the road. In constrained situations, priority should be given to the alignment of kerb ramps to achieve a perpendicular path of travel. Co-ordination with the predominant line of travel, in these situations, is of secondary importance.



Rear of kerb ramp parallel to the kerb line

This has the tendency to send users with vision impairment or in a wheel chair in the wrong direction when crossing.

There is also instability for wheelchair and walking frame users as they arrive at the ramp



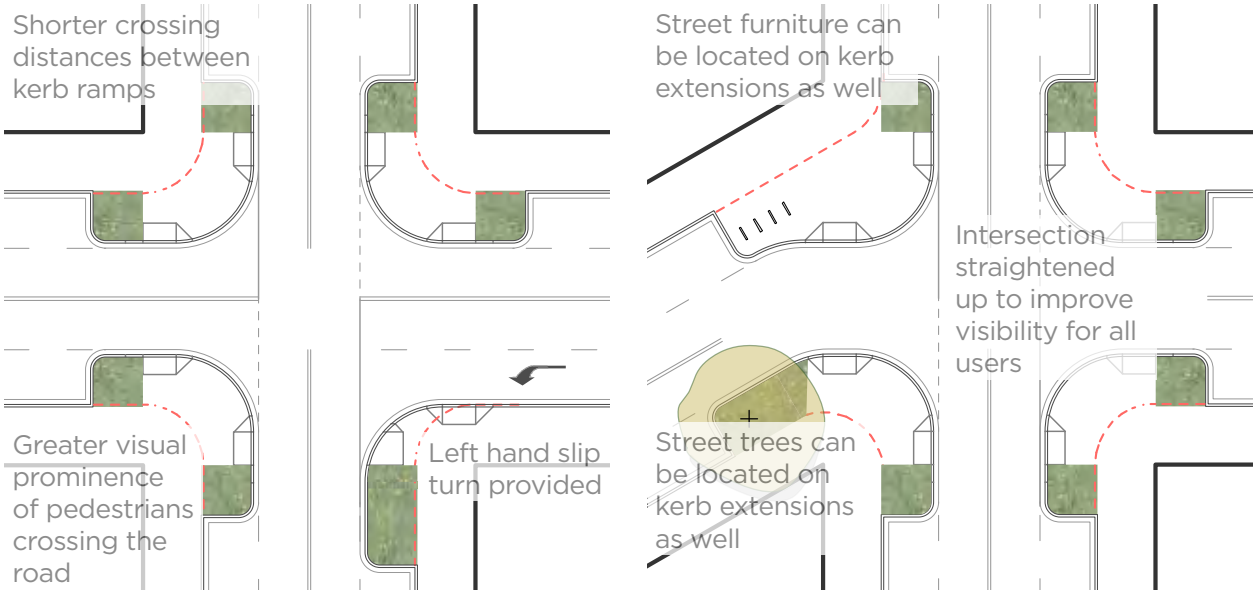
Orientation of kerb ramp is perpendicular to predominant line of travel

Kerb ramps aligned with opposite corresponding kerb ramp

This provides a safe and accessible path for all users

Kerb Extensions

In some situations it may be possible to adjust the kerb line to increase the footpath area at intersections by widening the footpath into the parking zone and intersection due to the requirements of No Stopping and No Parking signs (Refer to RMS TDT 2002/12c). The introduction of kerb extensions are encouraged as they do not compromise existing car parking provisions and improve the pedestrian experience by minimising crossing distances, providing additional space for waiting pedestrians, increasing pedestrian visibility and reduce vehicular turning speeds. It may be possible to incorporate planting beds or WSUD into the increased footpath area. Prioritise WSUD over planting beds where possible. Ideally, kerb extensions should be a continuous surface and not be built as detached blisters as this creates obstacles and does not maximise useable space. If a continuous treatment is not possible due to drainage, intersection geometry or any other factors, consider utilising a bridging element.

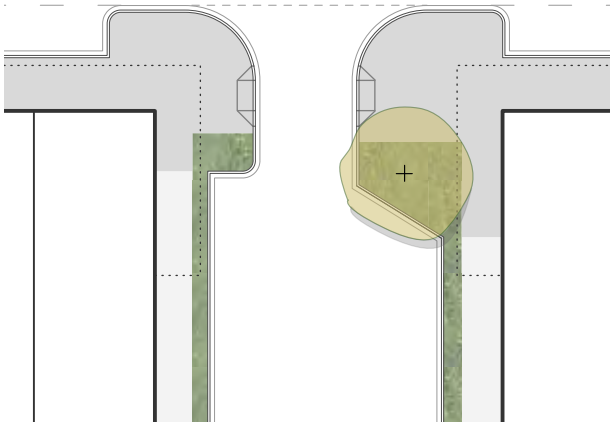


Hayes Street, Rosebery

Paving Transitions

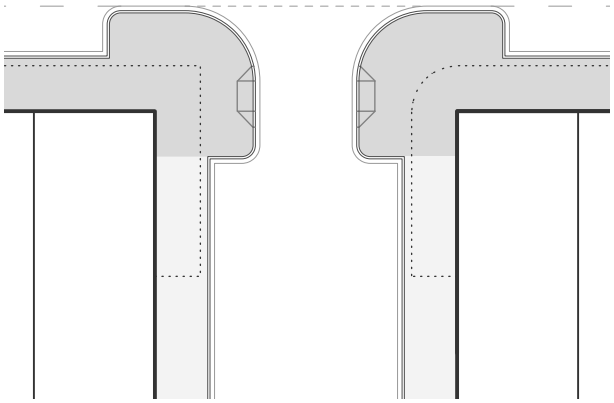
The high quality pavement that characterises footpaths of main streets is required to transition into concrete that characterises footpaths of residential streets, laneways and arterial roads. Intersections provide the convenient opportunity to distinguish this transition of material. Below are five strategies that resolve this issue. The choice of transition depends on the specific circumstances of the project/upgrade.

Strategy	Implementation
Planting	High quality paving to continue around the corner and terminate at the end of planting
Kerb Extension	High quality paving to continue around the corner and terminate at end of the kerb extension
Property Boundary	High quality paving to continue around the corner and terminate in line with end of the property boundary
Driveway	High quality paving to continue around the corner and terminate at the commencement of the driveway
Building Line	High quality paving is informed by the predominate building line along the Main Street. Only to be used when no other strategy is applicable



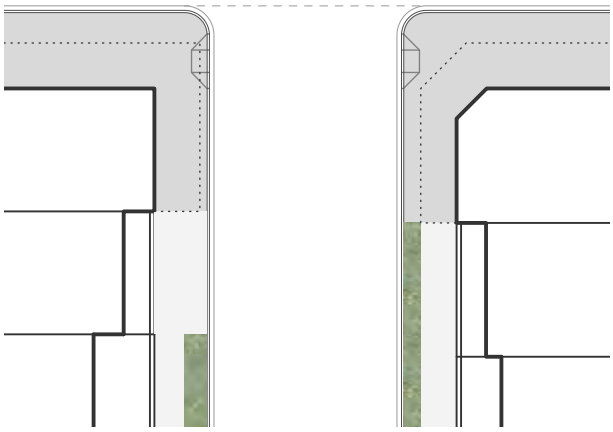
Paving transition at planting

Pitt Street, Redfern



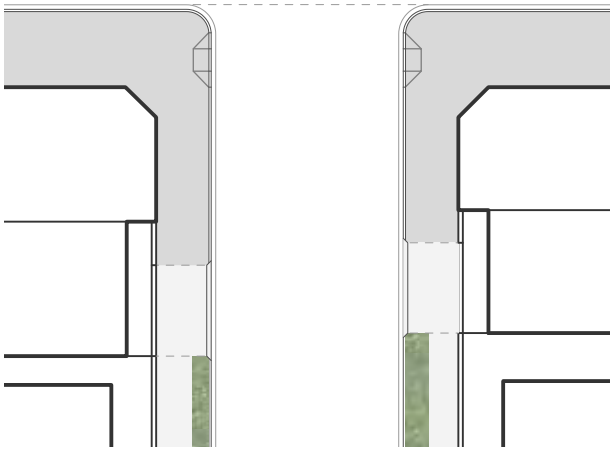
Paving transition at kerb extension

Pitt Street, Redfern



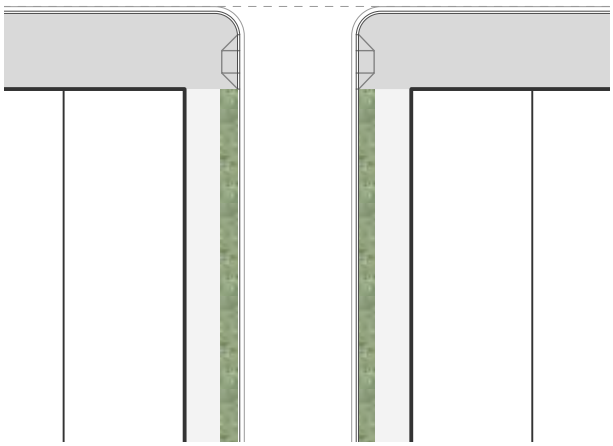
Paving transition at property boundary

Warners Avenue, Bondi Beach



Paving transition at driveway

Blake Street, Dover Heights



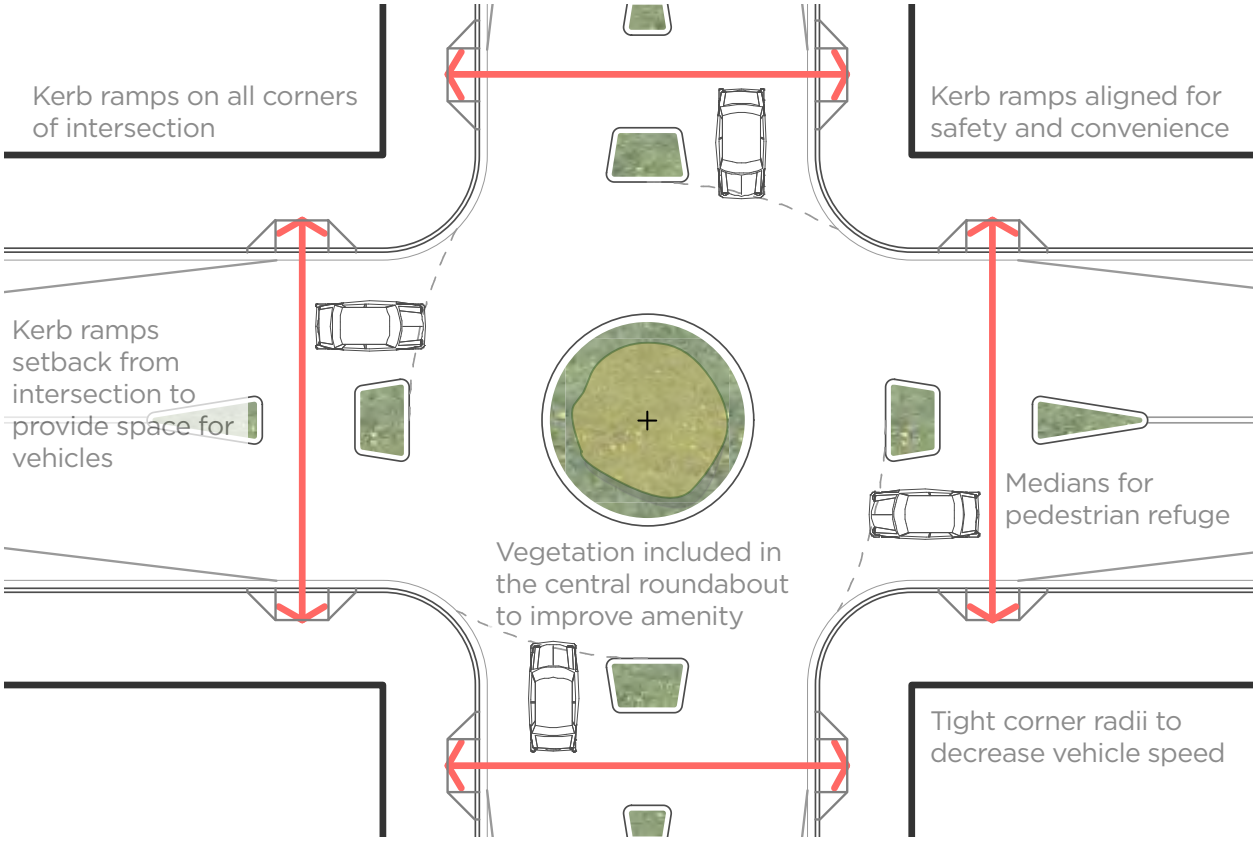
Paving transition at building line

Bondi Road, Bondi

Roundabouts

Roundabouts provide an ideal treatment for unsignalised intersections in residential streets for vehicles. However, roundabouts can result in unsafe environments for pedestrians and bike riders due to the priority of vehicles over pedestrians and bike riders. It is for this reason that roundabouts should be designed to provide a safe environment for all users. Considerations to increase safety include; increasing pedestrian and bike rider visibility, reducing entering/circulating speeds, and minimising conflict points for all users. Crossing points at roundabouts should be provided one to two lengths in advance of the holding line so there is ample space for both pedestrians and vehicles. Specific attention should be paid to landscape at roundabouts to ensure it increases safety for all users. Landscape in the central island should designed to accommodate the required sight lines and triangles.

Overall this produces a safe and equitable outcome for pedestrians, bike riders and vehicles. Refer to Austroads Guide to Road Design Part 4B and Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings for further information.



LOCAL AREA TRAFFIC MEASURES

Overview

Local Area Traffic Management (LATM) or traffic calming measures are a broad set of measures that seek to reduce traffic volumes and speeds in local areas by changing driver behaviour. LATM should align with the guiding principles and the desired outcomes outlined in Chapter 2 of this document. The creation of LATM should be implemented as a broad, cohesive strategy and consider the implications on the greater street network. In addition, the implementation of LATM should be considered from all users perspectives whilst upholding the PMP transport hierarchy.

A well-considered LATM will provide a range of measures which are selected on effectiveness and appropriateness to their specific location with the intention to address the observed problems in the network. These measures can range from simple psychological tactics to larger scale physical interventions.

A full list of the types of devices as outlined in the Austroads Guide to Traffic Management Part 8: Local Traffic Management is listed below. The measures in bold are the preferred treatments and are expanded below with additional recommendations that should be considered when selecting, designing and implementing these as part of LATM.

Type	Measure	
Vertical Delfection Devices	**Flat-top road humps**	Road humps
	Wombat crossings	Road cushion
	Raised pavements	
Horizontal Deflection Devices	**Lane narrowing**	Centre blister islands
	Kerb extensions	Driveway links
	Slow points	Roundabouts
	Median treatments	
Diversion Devices	**Full road closures**	Diagonal road closure
	Half road closures	Modified T-intersection
	Left-in/left-out islands	
Signs, Linemarking and Other Treatments	Traffic signs	**Threshold treatments**
	Shared zones	Bicycle facilities
	School zones	Bus facilities

Flat-Top Road Humps

Flat-top road humps vary from regular road humps in their gradient, height profile and length. Due to these factors, the reduction of speed is not as serve as road bumps.

Design Considerations

Incorporate WSUD/low level vegetation to increase streetscape amenity and deter pedestrians from crossing at road hump. Prioritise WSUD over low level vegetation where possible.

Reorientate car parking on an angle to accommodate lost car parking and increase driver awareness.

Flat-top road hump, Bourke Street, Surry Hills

Flat-top road hump, Flood Street, Bondi

Wombat Crossings

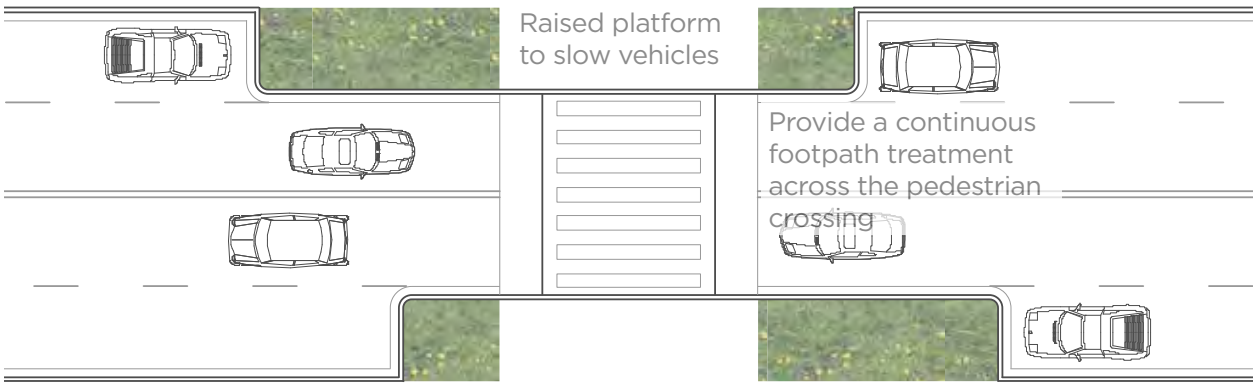
Wombat crossings increase safety and provide a convenient point for pedestrians to cross the street between regular pedestrian crossings at intersections. Mid-block pedestrian crossings should be provided near schools, parks, beaches, religious institutions and community facilities where pedestrian and vehicle flow volumes warrant the need in accordance with RMS requirements.

Design Considerations

Incorporate kerb extensions, median islands, low level vegetation and/or street furniture in the space made available for the required No Stopping area. This increases pedestrian safety and streetscape amenity.

Ensure there is a clear field of view.

Refer to RMS TDT 2002/12c and RMS TDT 2011/01a



Kerb extensions create shorter crossing distances and increase pedestrian visibility

A minimum 'No Stopping' is required on the approach side to a pedestrian crossing

Mid-block pedestrian crossing, Blair Street, Bondi Beach

Lane Narrowing

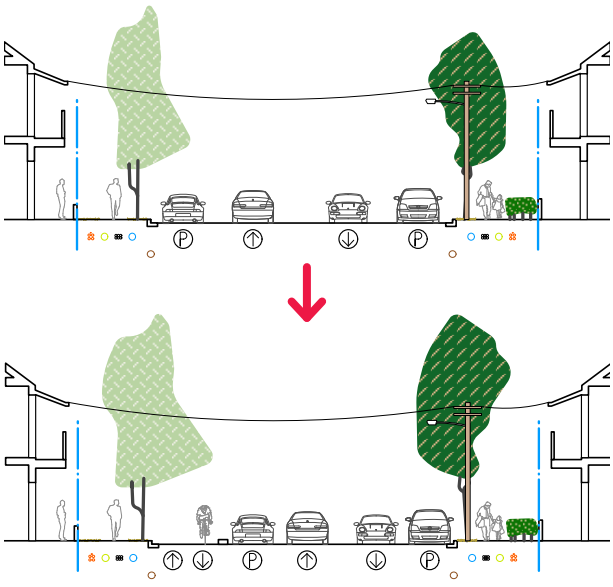
Lane narrowing reduces traffic speed, reduces pedestrian crossing distances and promotes more cautious driving.

Design Considerations

Utilise residual space to improve pedestrian safety, streetscape amenity or tree canopy.

Provide improved bike riding provisions with additional space created by reduced lane widths. Refer to Bike Riding section for more information.

Bourke Street, Surry Hills



Lane narrowing to provide a two way seperated bicycle lane

Kerb Extensions

As previously mentioned in the Intersection Considerations section, kerb extensions, like lane narrowing, reduce traffic speed, minimise pedestrian crossing distances and promotes more cautious driving.

Design Considerations

Incorporate low level vegetation, WSUD or street furniture in kerb extensions to increase streetscape amenity. Prioritise WSUD over low level vegetation where possible.

Ensure there is a clear field of view.

Street Trees, Oxford Street, Bondi Junction

Fowler Street, Camperdown - After

Slow Points

Slow points consist of a series of kerb extensions that narrow and/or angle the traffic lanes. This is intended to cause a change in direction and reduce vehicular speeds. They also restrict a driver's field of vision and increase immediate awareness.

Design Considerations

Incorporate low level vegetation, WSUD or street trees in kerb extensions to increase streetscape amenity. Prioritise WSUD over low level vegetation where possible. Ensure there is a clear field of view.

Ensure there is a clear field of view.

Median Treatments

Median treatments creates a point of refuge for pedestrians when crossing the road whilst reducing the lane widths. Overall this results in a decrease in vehicular speed and increase in driver perception.

Design Considerations

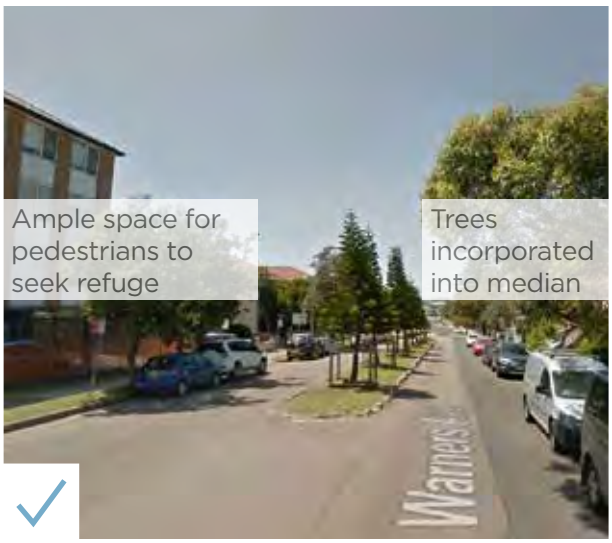
Incorporate low level vegetation and street trees in raised medians to increase streetscape amenity. Ensure there is a clear field of view.

Provide at least one metre width for pedestrians to seek refuge.

Traffic Chicane, Lamrock Avenue, Bondi Beach

Median, Campbell Parade, Bondi Beach

Blister Chicane, Aston Street, Bondi Junction



Median, Warners Avenue, Bondi Beach

Full and Half Road Closures

Full and half road closures are intended to stop through traffic, thus stopping incidental traffic along the street. Full and half road closures can occur either mid-block or at intersections.

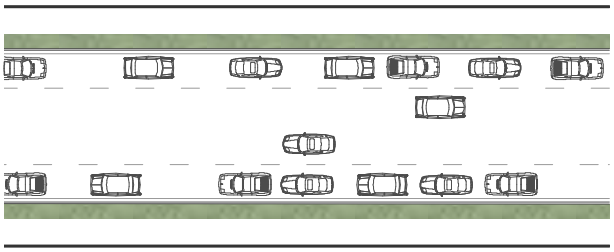
Design Considerations

Incorporate low level vegetation, street furniture, public art and street trees in full road closures to increase streetscape amenity.

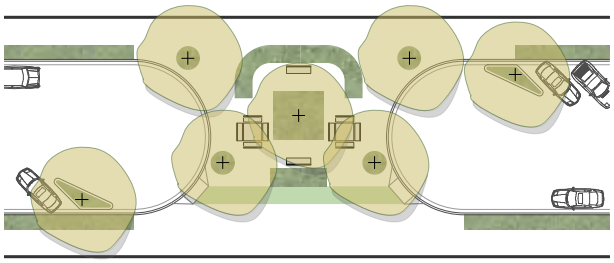
Encourage place-making opportunities with local residents.

Provide adequate provisions for bike riding to ensure bikes can safely and easily navigate the road closure.

Ensure there is sufficient manoeuvring space for Council's waste vehicles to turn around.



Existing scenario



Future potential scenario

O'Donnell Street Reserve, North Bondi

Great Buckingham Street Reserve, Redfern

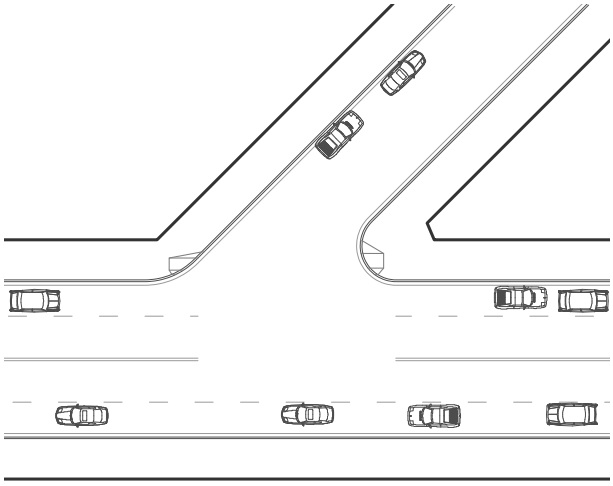
Left-in/Left-out Islands

Left-in/left-out islands are a raised triangular median that restricts right hand turns and subsequent through traffic, thus reducing incidental traffic into a street.

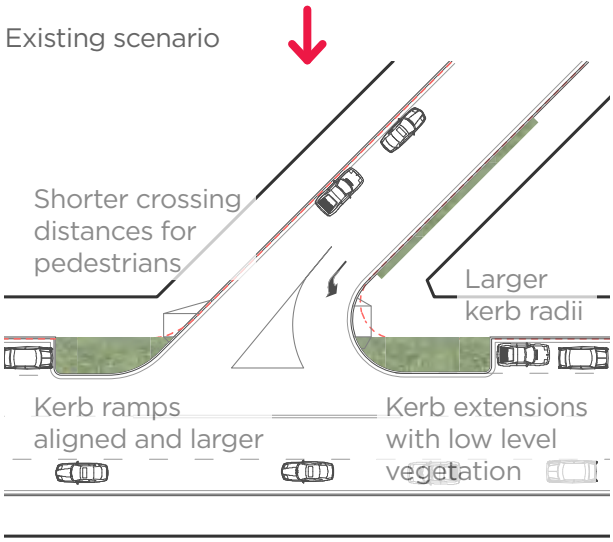
Design Considerations

Provide at least one metre width for pedestrians to seek refuge.

Provide adequate provisions for bike riding to ensure bikes can safely and easily navigate the modified traffic condition.



Existing scenario



Future potential scenario

Threshold Faciliites

Threshold treatments provide a contrasting visual and/or tactile treatment that distinguishes an area of unusual conditions that requires greater attention. Threshold treatments can occur either mid-block or at intersections.

Design Considerations

Utilise a treatment that creates a visual and tactile treatment during the day and the night.

Threshold treatment, Hall Street, Bondi Beach

Cobblestone threshold treatment, Erskineville Road, Erskineville

6. STREET ELEMENTS

STREET FURNITURE

General Layout

Overview

Street furniture provides a wide range of services to the public in an attempt to make the public domain more clean, convenient and comfortable. By enhancing the experience of the public domain these facilities enable people to enjoy the public domain, for longer periods of time.

Design Considerations

Street furniture should be;

- Located in the furniture zone and free from the clear path of travel
- Setback 0.8m setback from the face of kerb unless otherwise stated in the PDTM
- Located so as to not impede sight distance requirements at intersection and mid-block in accordance with Austroads Guide to Road Design Part 3 + Part 4A
- Co-located with other street furniture and street infrastructure for convenience and reduction of clutter
- Located in high pedestrian volume areas such as popular tourist destinations, public buildings, parks, beaches or areas of high amenity
- Located in these centre/street types;

Centre/Street Type	Public Seating	Bins	Drinking Fountains	Planter Boxes	Bike Parking	Street Lighting
Strategic Centre	✓	✓	✓	✗	✓	✓
Local Centre	✓	✓	✓	✗	✓	✓
Neighbourhood Centre	✓	✓	✗	✓	✓	✓
Arterial Road	✓	✓	✗	✗	✓	✓
Residential Street	✓	✗	✗	✗	✓	✗
Laneway	✗	✗	✗	✗	✗	✗
Pedestrian Malls	✓	✓	✓	✓	✓	✓

Public Seating

Design Considerations

Public Seating should be;

- In close proximity to shade and shelter, like that provided by street trees, to create an amenable setting all year round
- Placed perpendicular to direction of traffic if space permits
- Located in these general areas;

Centre/Street Type	Bus Stops	Taxi Ranks	Kerb Extensions	Public Buildings	Community Facilities	Frequency*
Strategic Centre	✓	✓	✓	✓	✓	40m
Local Centre	✓	✓	✓	✓	✓	60m
Neighbourhood Centre	✓	✓	✓	✓	✓	60m
Arterial Road	✓	✓	✗	✓	✓	100-200m or 1 per block
Residential Streets	✓	✗	✗	✗	✗	dependent on bus stop location
Pedestrian Malls	✗	✗	✗	✓	✓	40m

*Frequency is dependent on existing locations of public seating and site constraints

Reference

Public seating product and installation should be consistent with the Waverley PDTM.

Public seating, Oxford Street Mall

Public seating, Blake Street, Dover Heights

Bins

Design Considerations

Public Bins should be;

- Positioned to provide simple and easy access for waste recovery and maintenance
- Located 1.2m from signalised corners to avoid congestion and pinch points
- Maximum of three bins per block
- Considerate of context and shouldn't detract from the surrounding area
- Located near litter sources such as tourist destinations, community facilities, public transport stops, food outlets and along main streets
- More frequent in areas of higher pedestrian activity

Reference

Bin enclosure product and installation should be consistent with the Waverley PDTM. Refer to Waverley's Sustainable Waste Strategy 2015-2020 for more information about future waste strategies.

Solar comapcting bins, Bondi Beach

Regular bins, Bondi Beach

Drinking Fountains

Design Considerations

Drinking Fountains should be;

- Located where a council owned metered water connection
- Located in areas of high use and sufficient space such as pedestrian malls or kerb extensions
- Positioned to ensure equitable access for mobility challenged users
- Limited to one per location

Reference

Drinking Fountain product and installation should be consistent with the Waverley PDTM.

Drinking fountain, Bond Road, Bondi

Planter Boxes

Design Considerations

Planter boxes should;

- Be of a sufficient size to provide effective soil volumes for plants and vegetation
- Be located in the furniture zone and set back 800mm from the face of the kerb
- Incorporate wicking beds to reduce the amount of water needed to maintain and sustain the vegetation
- Be mobile so they can be moved easily when required
- Only be located in Neighbourhood Centres

Reference

Council does not own or maintain planter boxes in centres or along streets. Businesses and residents are encouraged to provide and maintain planter boxes. Those wishing to provide planter boxes require special consideration. This should be undertaken in accordance with Waverley's Street Garden Guidelines (2013).

Planter Boxes, Macpherson Street, Bronte

Bike Parking

Design Considerations

Bike parking should be;

- Located at key destinations such as major transport hubs, key intersections, community facilities, parks, beaches, schools as well as throughout strategic, local and neighbourhood centres
- Placed perpendicular to the footpath when space permits
- Easily accessible with ample space permitting access from footpath, bike path and parking lane
- Determined by the space available, location and centre type. In general, more bike parking is required at strategic and local centres than neighbourhood centres

Reference

Bike Parking product and installation should be consistent with the Waverley PDTM

Commuter Bike Parking, Oxford Street Mall, Bondi Junction

Street Lighting

Overview

Street lighting is important in creating a memorable public domain that integrates social gathering, public health and safety, sustainability and economic vitality for pedestrians, bike riders and vehicles. The *Waverley Creative Lighting Masterplan 2017-2027* establishes a three tier approach to lighting that seeks to create a holistic, sustainable and legible night-time environment that is vibrant and inviting after dark. The three tier approach begins with 'base lighting' as the base level of light for functional movement for streets, pedestrian pathways and bike paths. The second tier, amenity lighting, builds on the initial tier, providing enhanced lighting in the centres. Lighting interventions are the third tier and create the opportunity to create site specific installation to celebrate unique places, activate a space or assist in wayfinding.

Design Considerations

- In centres, multi-function poles (MFP) should be used to reduce visual street scape clutter by integrating services and provide a consistent aesthetic.
- Given the urbanised and highly constrained nature of Waverley LGA the suggested location of the roadside face of the pole from the kerb face is between 250-500mm.
- Poles and lighting columns should be evenly distributed along the street scape with tree planting between where possible.

Reference

Refer to the *Waverley Creative Lighting Masterplan 2017-2027* for further details on the three tier approach, strategic framework and detailed specification.

AS/NZS 1158 Lighting for roads and public spaces

NS167 Positioning of Poles and Lighting Columns

Multi Function Pole (MFP), Oxford Street Mall, Bondi Junction

'Parabolic Lovecloud' Temporary Creative Lighting Installation, Oxford Street Mall, Bondi Junction

Bollards

Design Considerations

Bollards should be;

- Used to separate pedestrians and vehicles
- Used only when necessary. Look for opportunities to combine with other elements to create effective vehicular barriers such as other furniture, trees and garden beds.

Reference

Bollard product and installation should be consistent with the Waverley PDTM

Bollards, Oxford Street Mall, Bondi Junction

BASIC STREET INFRASTRUCTURE

Overview

Basic street infrastructure refers to street elements that are determined by State agencies or service providers. These are informed by additional standards and guidelines.

Element	Design Considerations	Reference
Traffic Signals	In centres, traffic signals should be integrated into multi-function poles (MFP) to reduce visual street scape clutter and provide a consistent aesthetic.	RMS Traffic Signal Design Appendix C: Location and Function of Lanterns RMS Traffic Signal Design Appendix D: Location and Dimensions of Components
Substations	Minimise visual presence on streets where possible	NS141 Site Selection and Site Preparation Standards for Kiosk Type Substations
Street signage	Street signage should be minimised, rationalised and co-located where possible to reduce visual clutter. In centres, signage should be located on multi-function poles (MFP) to reduce visual clutter.	AS1742.2-2009 Appendix D
Electrical Service Pillars	Electrical service pillars can disrupt the shoreline when placed along building line. Where it is not possible to locate elements in the furniture zone, the element should be a vertical shape rising from the footpath and be placed on a 100mm raised platform with tactile markings on the ground.	Accessibility Design Guide: Universal design principles for Australia's aid program

ELECTRIC VEHICLE CHARGING STATIONS

Electric Vehicle Charging Stations (EVCS) should be installed with consideration to the following factors;

Location

- EVCSs should not be located along Arterial Roads.
- EVCSs should be located in off-street carparks or angled parking where possible.
- Minimise works to existing kerbs and footpath to reduce cost of installation.

Prominence

- Strike a balance between a location that is prominent (highly visible, close to amenities and services), yet not premium (scarce parking, heavily pedestrianised)

Physical

- Locate EVCSs in the furniture zone to ensure EVCSs do not impact the existing clear path of travel and access to and from the roadway.
- Provide enough space for mid to large Electric Vehicle types, including additional space on the side for plug which protrude from the vehicle.
- Provide ample space to move around the EVCS and the Electric Vehicle.
- Investigate the potential to integrate EV chargers with smart poles.

Amenity

- Ensure there are facilities such as restrooms, shops and recreational areas near the EVCS.
- Integrate required signage into EVCSs or surrounding poles to reduce visual clutter.

Safety

- Install bollards and wheel stops where necessary to protect EVCSs. Ensure bollards do not impede clear path of travel or access to and from the roadway.
- Consider Crime Prevention Through Environmental Design (CPTED) to reduce threat of vandalism.

Electric Vehicle Charging Station, Spring Street, Bondi Junction

FOOTPATH SEATING

Overview

Footpath seating contributes a level of activity and vibrancy to the overall street character. In addition, footpath seating helps promote local business and their unique identity. However, footpath seating may not be appropriate in all locations due to safety and amenity issues.

Design Considerations

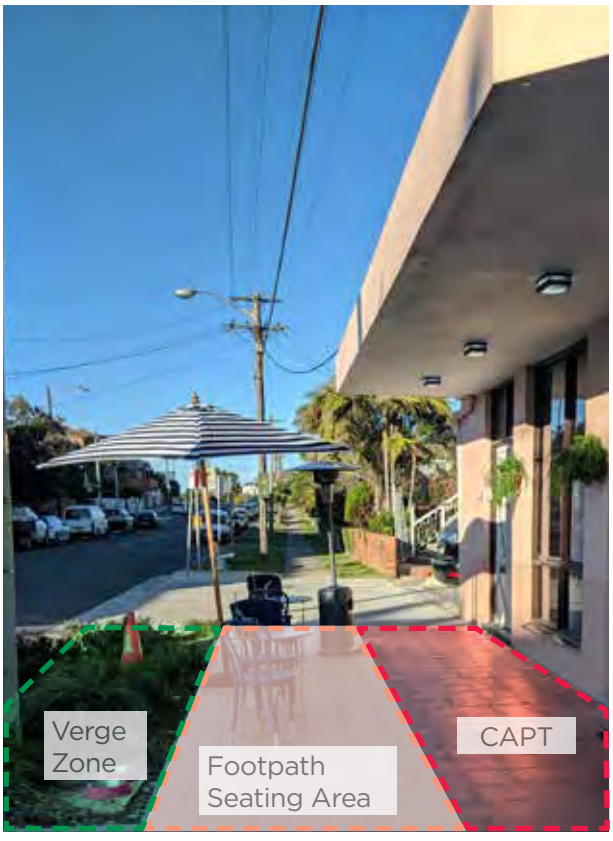
Outdoor dining should be;

- Be free from the clear accessible path of travel (CAPT) and not impede pedestrian movement
- Contribute to the streetscape and character of the centre or street
- Be a consistent treatment along the length of the street to avoid a zig-zagging effect
- Be clear of intersections, bus stops, building entrances including fire exits to avoid congestion and blockages

Reference

Refer to Part D2 of the Waverley DCP for further detailed information regarding outdoor dining. Refer to Footpath Seating Info Sheet for further information regarding the application requirements and conditions.

Footpath Seating, Macpherson Street, Bronte



Footpath Seating, Military Road, Dover Heights

STREET TREES

Overview

In recent years, an increasing breadth and depth of research has revealed the numerous economic, social and environmental benefits of street trees. This research has revealed that street trees are a vital and necessary component of street design providing generous shade and decreasing radiant temperatures whilst contributing to a sense of place and a memorable experience. When combined with other green infrastructure elements (such as WSUD and verge planting), they contribute to the creation a robust ecosystem that can mitigate the effects of climate change, reduce the amount of storm water flows, improve water quality and contribute to the biodiversity corridors and overall ecology of Waverley.

Objectives

- Increase canopy cover across the LGA;
- Create green corridors of continuous street trees to create an amenable environment and promote active transport; and
- Where possible, introduce street trees into centres in an ordered and symmetrical manner

Design Considerations

Sighting, Utilities + Infrastructure

The NSW State Government Green Infrastructure policy equates green infrastructure with other crucial infrastructure such as transport, cultural and communications, placing a new found onus on street trees. Council is committed to increasing our canopy cover to achieve the targets outlined in this policy and in our own Community Strategic Plan. However, planting new street trees is a challenging, complex and expensive exercise. The relationship of street trees to other elements within the public domain is very important. New street trees should consider the surrounding infrastructure elements, sight lines, verge widths and topography. The placement of trees should take into consideration the proximity of intersections, street poles, traffic signals and overhead infrastructure, underground utilities, bus stops, driveways and awnings. In addition, provisions should be made to protect underground utilities if a tree is to be located in close proximity. Due to these numerous factors, new tree placement should be informed by detailed site investigations and considered on a cases by case basis.

Spacing

The spacing of trees is dependent on the species, mature canopy size and proximity to other elements (outlined above) with special consideration given to the amount of space available in the verge or carriageway. The below table is to be used as a guide only.

Tree Size	Crown Spread	Spacing	Verge / Planting Bed Width
Small Tree	3-5m	7-10m	1-1.5m
Medium Tree	6-10m	10-15m	1.5-2.5m
Large Tree	10-16m	15-20m	>2.5m

Reference

Refer to Waverley's *Street Tree Masterplan* (2008) for planting zones, species and further information. Refer to Waverley's PDTM for tree pit design. Location and type of street trees to be refined in detailed design.

Median street tree planting with WSUD, Wolseley Grove, Victoria Park

Street tree in parking bay, Oxford Street, Bondi Junction

Camphor laurels creating a distinctive sense of place, Flood Street, Bondi

VERGE PLANTING

Overview

Verge planting is any form of vegetation (grasses and hedges, rain gardens (WSUD) or community gardens) that occurs in the furnishing/verge zone or parking lane. The inclusion of vegetation in the furnishing zone is more appropriate on arterial roads and on low activity residential streets as there is less pedestrian movement, smaller footpath requirements, less street furniture and, in the case of residential streets, a greater sense of neighbourhood stewardship. In high activity residential streets, it may be more beneficial to pave the verge area due to restrained conditions and greater pedestrian and vehicular movement. Along main streets and pedestrians malls there are high pedestrian volumes and the furniture/verge zone is designated to street furniture and wider footpaths, limiting the potential for verge planting.

Verge planting has several environmental benefits including increased urban biodiversity, reduced air pollution (specifically car exhaust fumes), and increased pervious surface areas. Community gardens also offer several social benefits including increased positive social interaction, community development and environmental education.

Design Considerations

When selecting a treatment for the verge, specific consideration should be given to orientation, street tree type and canopy in close proximity, vehicular access, building entrances, street furniture and existing soil conditions. Refer to the PDTM for planting species suitable for verge planting.

Verge planting for grasses and hedges should be of a minimum 600mm width x 900mm length to provide sufficient space and soil volume for planting and enough clearance for maintenance.

Council encourages verge planting and maintenance by residents and should be undertaken in accordance with Waverley's Street Garden Guidelines (2013).

Verge planting should be drought tolerant and require minimal maintenance and watering where possible as watering is primarily restricted to Council's centres and some arterial roads.

Community verge planting, Macpherson Street, Bronte

Hedge planting along an arterial road, Cleveland Street, Surry Hills

Business verge planting, Bronte Road, Charing Cross

7. REFERERENCES

FEDERAL GOVERNMENT REFERENCES

Austroads

- Guide to Road Design
- Guide to Traffic Management
- Cycling Aspects of Austroads Guides

Australian Standards

- AS 1158.4-2009 Lighting for roads and public spaces
- AS 1742.2-2009 Manual of uniform traffic control
- AS 1428.1 Design for access and mobility
- AS 1428.4.1 Australian Tactile Indicator Standards
- AS 2890.2 Parking facilities Off-street parking
- AS 2890.5 Parking facilities On-street parking

Ausgrid

- NS167 Positioning of Poles and Lighting Columns

STATE GOVERNMENT REFERENCES

TfNSW/RMS

- TfNSW Future Transport Strategy 2056
- STA Bus Infrastructure Guide
- RMS Schedule of Classified Roads and Unclassified Regional Roads
- RTA NSW bicycle guidelines

RTA/RMS Technical Directions

- TDT 2002/12c Stopping and Parking Restrictions at Intersections and Crossings
- TDT 2009/06 Bicycle Storage Areas + Advanced Bicycle Stop Lines
- TDT 2011/01a Pedestrian Refuges
- TDT 2013/05 Continuous footpath treatments
- TTD 2016/001 Design and implementation of shared zones including provision for parking

RMS Traffic Signal Design

- Appendix C: Location and Function of Lanterns
- Appendix D: Location and Dimensions of Components

Government Architects NSW

- Better Placed
- Greener Places
- Aligning Movement and Place

LOCAL GOVERNMENT REFERENCES

Waverley Council

Operational Plans

- Community Strategic Plan
- Strategic Asset Management Plan
- Long Term Financial Plan
- Environmental Action Plan

Planning Documents

- Local Strategic Planning Statement
- Local Environment Plan
- Development Control Plan

Strategic Documents

- Bondi Junction Evening, Entertainment and Culture Strategy
- Complete Streets
- Creative Lighting Strategy
- Disability Inclusion Action Plan
- Economic Development Strategy
- Green Links
- People Movement Places
- Public Domain Technical Manual
- Park Plans of Management
- Smart Waverley Strategy
- Street Garden Guidelines
- Stree Tree Masterplan
- Tree Management Policy
- Urban Intervention Framework
- Village Centres Strategy
- Waverley Bike Plan
- Water Management Technical Manual

City of Sydney Council

- Sydney Streets Code
- Liveable Green Network Strategy

City of Parramatta Council

- Public Domain Guidelines
- Parramatta Ways Strategy

Adelaide City Council

- Adelaide Design Manual

INTERNATIONAL REFERENCES

New York City

- Shaping the Sidewalk Experience
- Making Safer Streets

National Association of City Transportation Officials

- Urban Street Design Guide
- Global Street Design Guide


EARTHLINGS! LET'S REPLANT, LET'S