



# Northern Beaches Public Space Vision & Design Guidelines

Prepared by ASPECT Studios for the Northern Beaches Council.



northern  
beaches  
council

**ASPECT Studios**

## ACKNOWLEDGMENT OF COUNTRY

ASPECT Studios acknowledges the Traditional Custodians of the Northern Beaches and their Country on which we gather today. By these words we would also like to show our respect to all Aboriginal people.

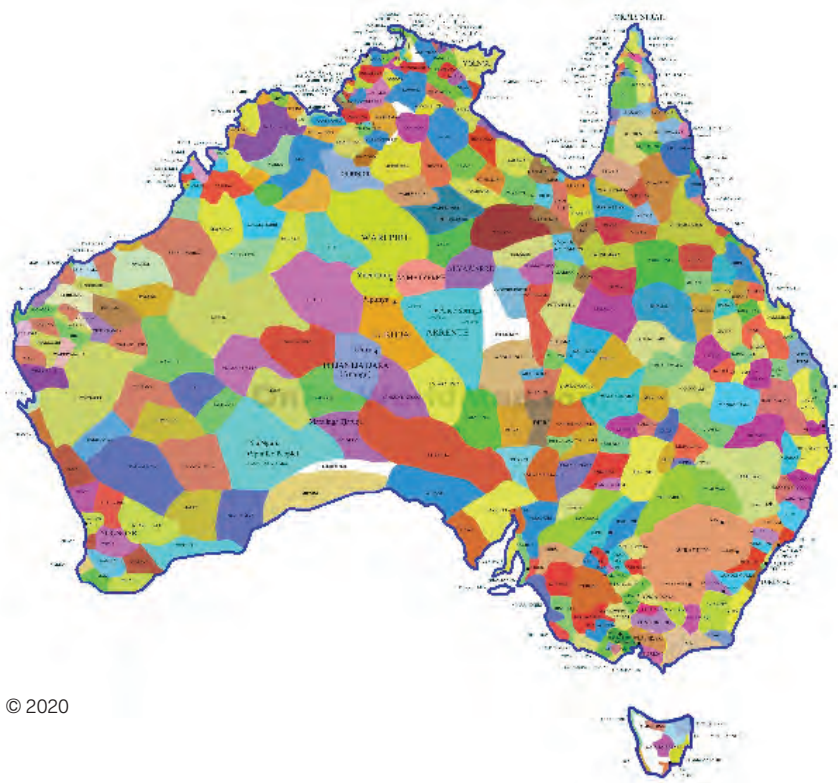
We Acknowledge the Elders in the past and in the present and Acknowledge the culture, heritage, spirits and ancestors of the Clans that lived in this area.

The Northern Beaches local government area (LGA) encompasses the areas of Manly, Allambie and Seaforth to the south, being lands occupied by the Gayamaygal people and the Barrenjoey areas occupied by the Garigal people to the north and is recognised historically and contemporaneously as being a meeting place for people from different clans. These may have been kinship connections. The clans of Sydney spoke the same language and although never named it is now called the Sydney Language.

We recognise the Aboriginal Peoples continued connection to Country seen today in stories of place and cultural practices; art, song, dance, and caring for Heritage and Country.

## TEAM

Northern Beaches Public Space Vision & Design Guidelines were prepared by ASPECT Studios for the Northern Beaches Council.



### DOCUMENT CONTROL

V	DATE	DESCRIPTION	BY	REVIEW
1	13.03.2020	Draft Submission	OM/GH	NB
2	10.08.2020	Draft- Consolidated Feedback	GH	NB
3	17.08.2020	Draft- For Review	GH	NB
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5	17.12.2020	Final Submission	OM	NB
6	10.05.2021	Amended for Council Adoption	LL	AP



## HOW DO YOU USE THESE GUIDELINES

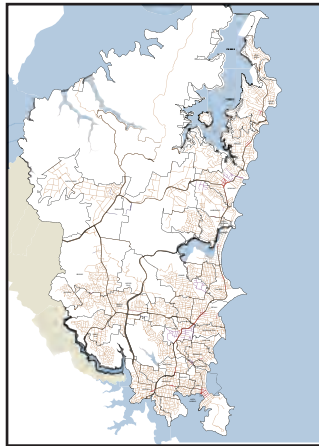
WHAT IS THE  
ADDRESS



FIND IT ON THE  
MAP



**NORTHERN BEACHES STREET  
HIERARCHY MAPS**

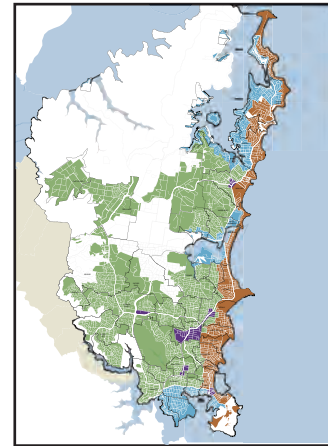


1. What kind of street is it?
2. What is the extent of associated paving?

CHOOSE  
MATERIALS



**CHARACTER AREAS MATERIAL  
PALETTES**



1. What is the character area of the street?
2. Selection of material combining street type with street character.

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# NORTHERN BEACHES STREETScape HIERARCHY MAP



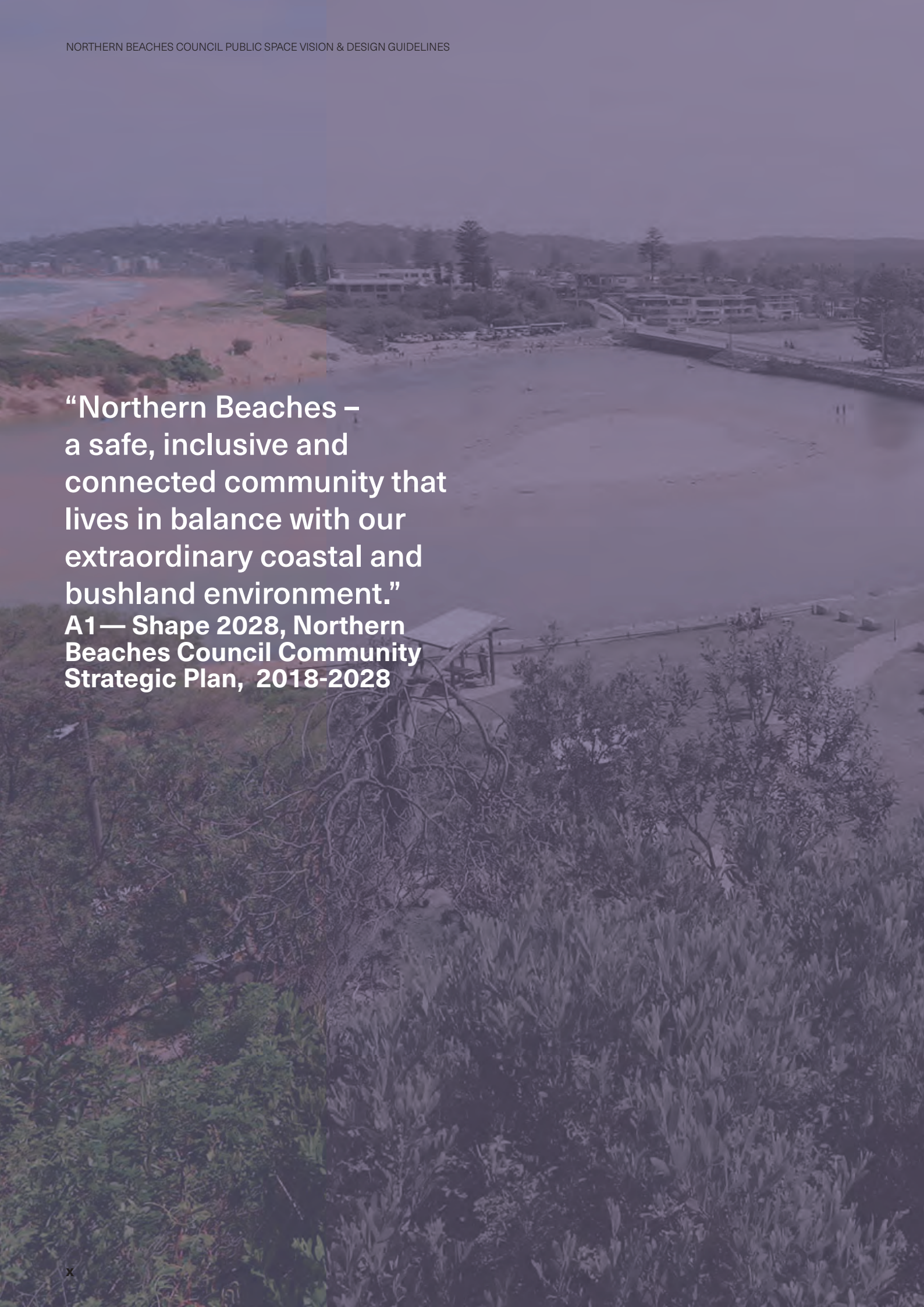






# Using the Guidelines





**“Northern Beaches –  
a safe, inclusive and  
connected community that  
lives in balance with our  
extraordinary coastal and  
bushland environment.”  
A1— Shape 2028, Northern  
Beaches Council Community  
Strategic Plan, 2018-2028**

## A2 PURPOSE

The Northern Beaches Public Space Vision & Design Guidelines (PSV & DG) set out to unify and consolidate public domain policy documents from three former council areas in order to ensure consistency and standardisation for projects of all scales across the entire Northern Beaches.

The guidelines are to be used as a guide for the evaluation, planning and design of streets and open spaces and public / private interfaces.

The Northern Beaches PSV & DG seek to retain and enhance it's unique landscape character whilst providing additional environmental, social and health outcomes within its centres and neighbourhoods through the introduction of best practice street design and appropriate material selection. Six key objectives form the foundation of the guidelines which are derived from state government public domain targets and previous community consultations.

A key addition to the PSV & DG is the inclusion of a street types chapter. Streets are the backbone of public space, often accounting for a quarter or more of the total land area in our cities and neighbourhoods. Streets typically make up around 30 percent of all public space in an urban area, with parks and squares comprising less than a fifth of our shared spaces.

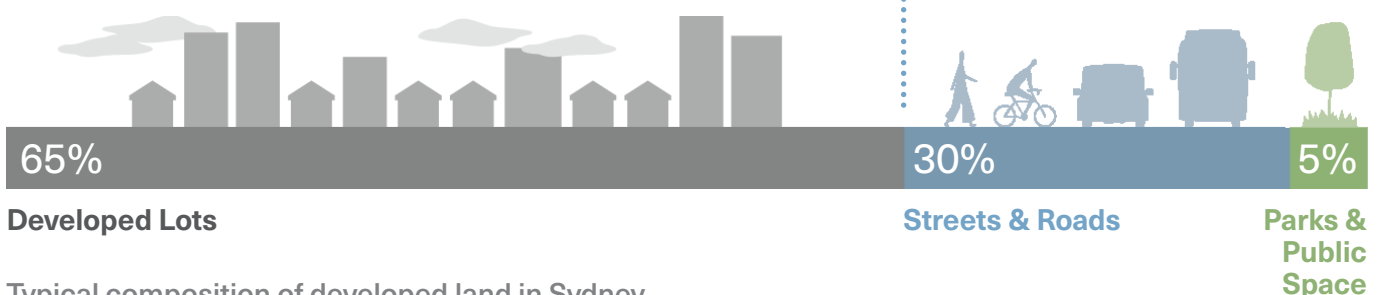
## A3 BACKGROUND

With the formation of the Northern Beaches Council the policies of the three former Councils governing public domain design have been reviewed and consolidated to ensure uniform standards are applied throughout the whole LGA.

Following the amalgamation of the former three Councils, the newly formed Northern Beaches Council has undertaken a comprehensive review and consolidation of the former Councils' various public domain guidelines. This has included the consolidation of various material schedules, palettes and associated public domain policy documents, in collaboration with stakeholders and document users.

During the process of consolidating the three Public Domain Design Guidelines documents into the Interim Public Domain Design Guidelines 2019, it became apparent there were several areas/sections within the document requiring further investigation. These areas include a street types chapter (Chapter C) identifying streets as a vital component to any urban design and open space policy document. Other areas include an introduction of four key material palettes "Coastal, Urban, Waterways and Bush" which are responsive to their unique environmental conditions whilst still providing an overall cohesiveness of public spaces across the LGA.

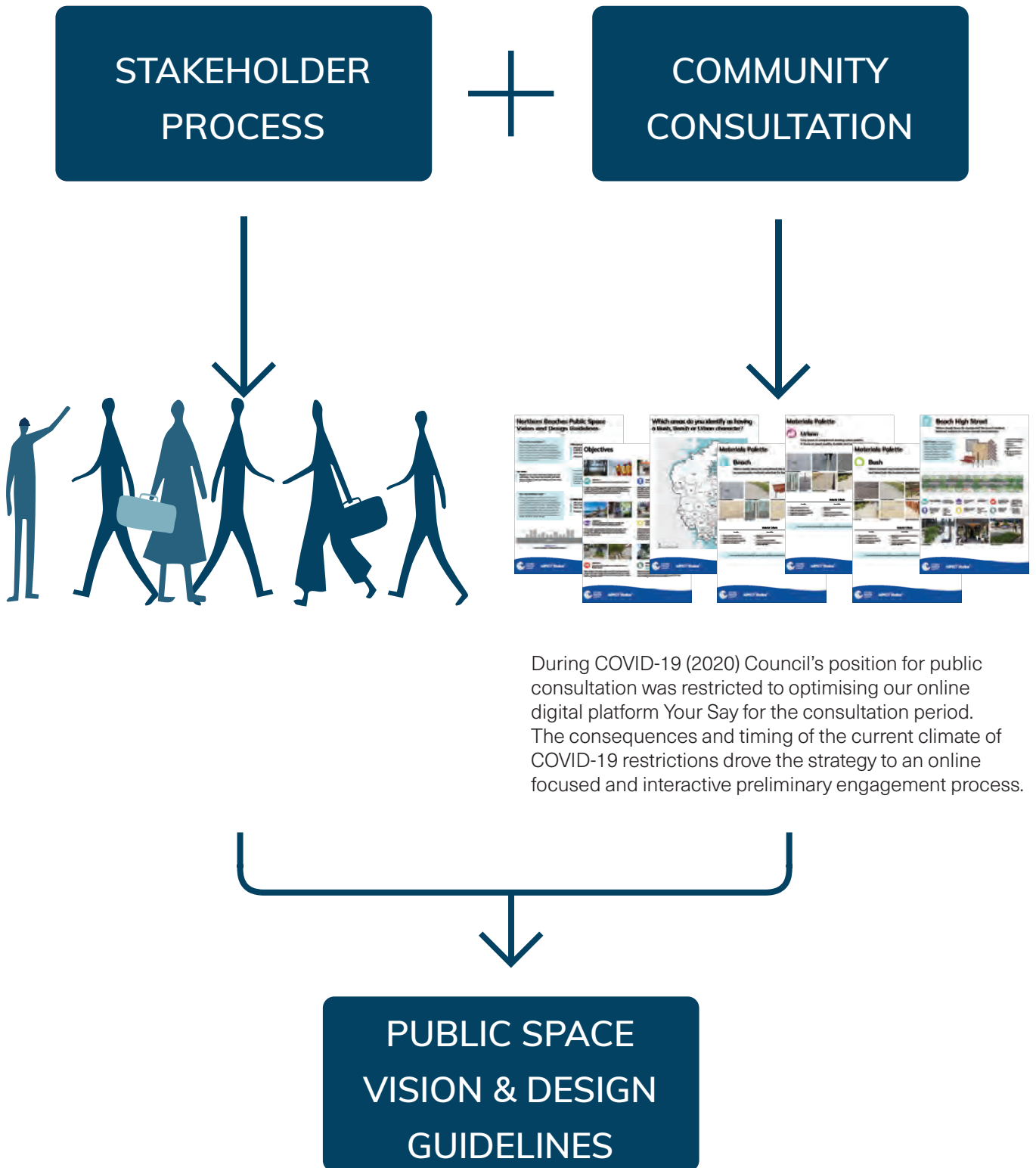
Approximately 30% of Sydney's urban areas are streets and roads



Typical composition of developed land in Sydney, Greening Sydney Plan, City of Sydney 2012



## A4 PROCESS



During COVID-19 (2020) Council's position for public consultation was restricted to optimising our online digital platform Your Say for the consultation period. The consequences and timing of the current climate of COVID-19 restrictions drove the strategy to an online focused and interactive preliminary engagement process.

## A5 THE CASE FOR CHANGE

### Greener and cleaner streets

Northern Beaches is growing quickly and future street design should anticipate changed environmental factors as well as provide the best possible outcomes for centres and neighbourhoods.

The improved retention and use of water in streetscapes is critical to establishing tree growth and healthy canopy, whilst reducing run-off pollution to local wetlands, creeks and rivers. A major factor in the livability of every neighbourhood in the region will be the ability of surfaces in new developments to avoid retaining and re-radiating heat. This needs to be mitigated through new design and landscape measures.

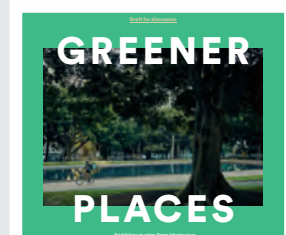
#### More Trees, Cooler Cities

There is overwhelming evidence good tree canopy reduces ambient temperatures and mitigates the urban heat island effect through shade and evapotranspiration. Ambitious targets to increase street trees and green space will help create liveable streets and communities in a part of Sydney that already has a high number of days with significant heat.

#### A Better Environment

Tree canopy extends animal habitat and increases the biodiversity of cities, serving as a home for animals and birds. Air quality is improved by removing fine particles from the air. Trees also mitigate the impact of climate change by acting as a storehouse for carbon dioxide. Permeable ground surfaces, rain gardens and swales help to reduce nitrogen and phosphorous pollution in our creeks and rivers.

This priority is part of a long term commitment to planting five million trees in Sydney by 2030 and managing environmental pressures including water quality and supply.



### Designing safer streets

The NSW Government has a long-term ambition to reduce road fatalities to zero by 2056. A State Priority Target was established to reduce fatalities by at least 30% from 2008–2010 levels by 2021.

In NSW 70% of all fatalities occur on country roads, and rates of fatality are five times higher by population in rural areas — but around two-thirds of serious injuries occur in urban metropolitan areas.

Designing safer roads and reducing speeds in urban areas whilst also improving separation between various road users (including drivers, riders, cyclists and pedestrians) will not only assist to reduce death and injury but also greatly improve urban amenity.

#### Towards Zero

The Towards Zero program is designed to increase safety for all users of the street by adopting the Safe Systems approach, recognising that roads need to be designed for the separation of vulnerable road users and with safe speeds. This includes self-reinforcing road designs, pedestrian crossings, refuges and traffic calming devices.

This guide will help to deliver safer streets in The Northern Beaches through traffic calming interventions



SHARED STREET IN SYDNEY// ASPECT STUDIOS

## Making better public spaces

Streets are the most common type of public space in urban areas. Streets provide a great opportunity to contribute to the identity and amenity of every neighbourhood.

Better Placed by the NSW Government Architect establishes the value of good design. The document identifies key concepts, good process, and objectives for good design outcomes.

Good design in the built environment is informed by and derived from its location, context and social setting. It is place-based and relevant to and resonant with local character, and communal aspirations. It also contributes to the evolving local character and setting.

### Better look and feel

The built environment should be welcoming and aesthetically pleasing, encouraging communities to use and enjoy local places.

The feel of a place, and how we use and relate to our environments and each other is dependent upon the aesthetic quality of our places, spaces and buildings. The visual environment should contribute to its surroundings and promote positive engagement.

### Good design everywhere

Good design creates user friendly, enjoyable and attractive spaces, which provide value to people, the place and the natural environment as well as a high level of functionality. Good design brings benefits socially, environmentally and economically, and builds on these benefits over time — continually adding value. Good design is flexible and accommodates changing needs.

Streets can be much more than places for cars and trucks. They should be beautiful and well designed to encourage inhabitation and connection to community.



## Improving health and wellbeing

It is acknowledged that current rates of walking and cycling in the Northern Beaches are well below desired levels.

High vehicle dependence, longer travel distances, unfavourable climate and a reduced emphasis on the provision of high-quality walking and cycling environments have contributed to very low take-up rates of active transport.

Most people in Sydney make at least two walking trips per day and around 15% walk all the way to work when they live in proximity to major centres and employment hubs. But on average each Sydney sider only walks for about 11 minutes each day leading to poor health outcomes.

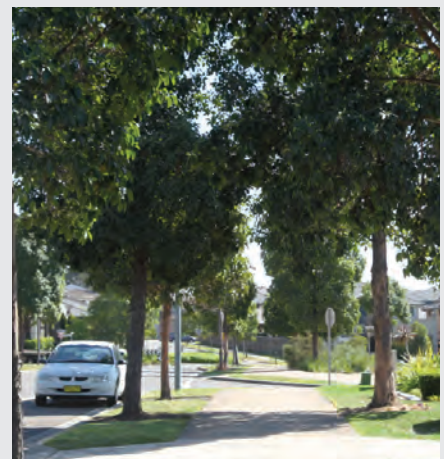
### Walking to school

More than 50% of children live less than 2 km from school. However, the number of children walking to school has dropped significantly over the last four decades. Improved crossing design and better footpath environments will help to reverse this decline.

### Making space now

To encourage a new generation of pedestrians and cyclists, safe and protected facilities should be included wherever possible. Implementing cycleways and shared paths that provide safe unhindered access for all ages and abilities is a priority to increase active lifestyles and reduce reliance on vehicles for local trips.

The Northern Beaches Public Space Vision & Design Guidelines places an increased emphasis on the need to construct well designed footpaths, shared paths and cycleways that promote behavior change and set new standards of comfort and safety.



MOOREBANK NORTH, LIVERPOOL  
//ASPECT STUDIOS



## Future-proofing streets

Technology and community needs change over time, and streets should be flexible enough to accommodate new requirements for the delivery of services, utilities and transport modes.

The NSW Government is seeking to improve infrastructure investment by embedding smart technology in new and upgraded infrastructure, adopting interoperability protocols and cybersecurity standards.

### Changing transport

The recent rise in on-demand bus and ride share services aided by mobile phone applications is a good example of behavior change delivered through technology. Connecting people to services, real time tracking and digital contactless fare systems such as Opal are changing the transport options and the way streets are used. A shift to

electric vehicles will also have an impact on streets with reduced emissions.

### Technology and utilities

The roll out of 5G mobile services will deliver transfer speeds projected to be about 10 times higher than 4G. This speed will mean reduced data latency that can support significant advances in driverless vehicles and 'smart' components. The connection of a wide network of sensors and data points through these networks can have a significant impact on traffic, pollution and other environmental measures.

Crime prevention within the Public Domain will also be facilitated through continuous upgrades in CCTV camera and street light technology

### Electric Vehicle Charging Infrastructure

The increase of use of electrical vehicles places a direct demand on Electrical Vehicle (EV) infrastructure onto the public domain. Council's

EV policy outlines conditions for both the installation and ongoing maintenance of charging stations in order to continuously support EV use and integrate it effectively within the transport network. The policy outlines 6 main principles to ensure equitable use for the current demands and support for future growth.

**Smarter cities and neighbourhoods will always need to integrate new and changing technologies, that help shape places and change human behavior.**



## Movement and Place

### Towards 2040 – Local Strategic Planning Statement (LSPS)

Priority 21- Road space and facilities to match changing community needs

Road space and facilities change to match community needs. Re-thinking our traditional streetscape arrangements to be more efficient and responsive to the way we currently use our streets, more people, goods and services can be accommodated, and a safer and more attractive space can be achieved.

### Future Transport 2056, the Greater Sydney Region Plan and the North District Plan

These documents identify a movement and place framework that considers how best to use road space to improve the livability and safety of places.

The framework acknowledges that the needs and expectations of the community change for different street environments.

Local streets need to be safe for people to walk, whilst main transport corridors must be designed to effectively and safely move people and goods.

**The hierarchy and function of various roads shape opportunities for movement and place.**

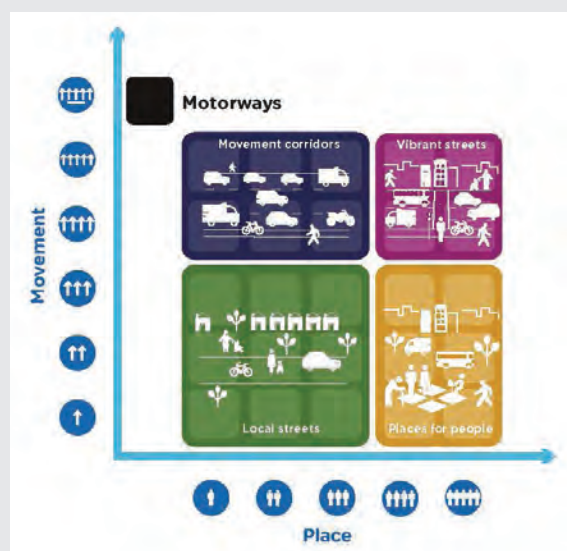


DIAGRAM // FUTURE TRANSPORT STRATEGY, 2056

## A6 RELATED COUNCIL STRATEGIES & POLICIES

The PSV & DG should be read in conjunction with a collection of policies and guidelines which form a holistic vision for the Northern Beaches:

[northernbeaches.nsw.gov.au/council/publications/policies-and-codes](http://northernbeaches.nsw.gov.au/council/publications/policies-and-codes)



## Our Greater Sydney, North District Plan, 2056, Greater Sydney Commission

A Metropolis of Three Cities the region plan for Greater Sydney is built on a vision of three cities where most residents live within 30 minutes of their jobs, education and health facilities, services and great places. This vision seeks to re-balance the economic and social opportunities and deliver a more equal and equitable Greater Sydney.

The North District forms a large part of the Eastern Harbour City and its economy leans to the Harbour CBD, which is the North District's metropolitan centre.

### Planning priorities and indicators

- Infrastructure and collaboration
- Livability
- Productivity
- Sustainability

### Livability and Accessibility

Focus on accessibility, inclusion and safety when designing and building neighbourhoods and public transport will encourage a greater cross-section of people to lead physically active and socially connected lives.

### Sustainability

Increasing urban tree canopy and expanding on the Sydney Green Grid. Using resources wisely by the reduction of transport and associated greenhouse emissions. A resilient city adapting to a changing world, the impacts of urban and natural hazards and climate change.

Improving livability is about creating and renewing great places, neighbourhoods and centres. This requires place-based planning and design excellence that builds on local strengths and focuses on public places and open spaces.



## Local Strategic Planning Statement 'Towards 2040' (LSPS)

Towards 2040 builds on the 10-year vision outlined in the Community Strategic Plan, Shape 2028, and will inform Council's new Local Environmental Plan (LEP) and Development Control Plans (DCP) and broader framework of Council policies and strategies.

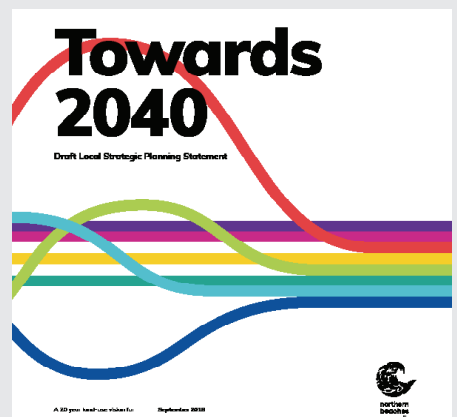
### Towards 2040 includes:

#### A 20-year vision

- Planning priorities that guide local land use planning
- Principles that underpin planning priorities and actions
- Actions that Council will take to help achieve the priorities

- Measures of success and an implementation program
- Identified Priorities relevant to the Guidelines
- Priority 1 – Healthy and valued coast and waterways
- Priority 2 – Protected and enhanced bushland and biodiversity
- Priority 5 – Greener urban environments
- Priority 6 – High quality open space for recreation
- Priority 7 – A low-carbon community, with high energy, water and waste efficiency
- Priority 8 – Greater community resilience to natural hazards and climate change
- Priority 17 – Centres and neighbourhoods designed to reflect local character and lifestyle
- Priority 20 – Sustainable local transport networks
- Priority 21 – Road space and facilities to match changing community needs

Towards 2040 is our road map for sustainably managing how we evolve and grow. Change is inevitable. Towards 2040 allows us to influence how it happens and plan for it responsibly.





## Move – Northern Beaches Transport Strategy 2038

This strategy is Council's vision for a safe, sustainable and smart transport network. It outlines the key Future Directions on transport infrastructure, reducing congestion and changing travel behavior.

The themes and key directions relevant to this document are:

### Accessible and Livable Places

Create and enhance “Places for People” that are integrated with public transport, creating vibrant, connected places with wide footpaths, safe cycling options and reduction of reliance on vehicles as main mode of transport moving to the public transport modes of travel.

### Active Travel

Prioritises smart, active travel network improvements (through technology, end of trip facilities and way-finding signage).

Expand footpath and shared path networks to improve connectivity and safety, making walking and cycling attractive alternatives to motor vehicle use.

Our Transport Vision is to “enable freedom of movement to, from and within the Northern Beaches using a safe, smart, efficient, integrated and sustainable transport network”.



Move  
Northern Beaches Transport Strategy 2038



## Shape 2028 Community Strategic Plan, 2018–2028

SHAPE 2028: Northern Beaches Draft Community Strategic Plan 2018–2028 addresses key outcomes of the community consultation process through the development of the key principles and supporting strategies that assist to guide and direct works in the public realm.

Of the identified eight outcome areas, the following have particular relevance to the PSV&DG:

### Protection for the environment

Protection of the natural and built environment from the impact of climate change and population pressures.

### Environmental sustainability

To be a leader in environmental sustainability, investing in cleaner technologies, actively promote sustainability, and lead by example.

### Places for People

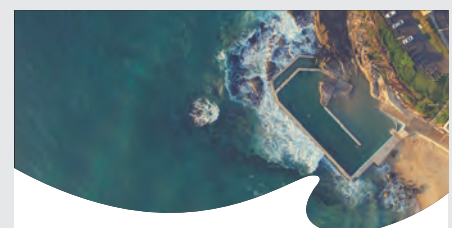
With a population of near 280,000 expected by 2028, the challenge is toward designing green developments that are good for people, encourage social interaction and align with local character.

### Transport, Infrastructure and Connectivity

Dual challenge of meeting the needs for better road infrastructure whilst reducing the need for car-based travel. Transport is a fundamental issue strongly related to all outcome areas-affecting the economy, environment and social wellbeing.

This Community Strategic Plan (CSP) is our road map for the future of the Northern Beaches.

It defines our community’s vision and sets a direction for everything we must do over the next decade to make the vision a reality.



Shape 2028  
Northern Beaches  
Community Strategic Plan 2018 - 2028



## A5.1 SUSTAINABILITY, ENVIRONMENT AND CLIMATE CHANGE

### Sustainability

The Northern Beaches Council Environment and Climate Change Strategy 2040 is built around three major directions: Protect, Create, Live.

Create sets the direction that

“The places, parks, structures, district urban landscapes, homes, neighbourhoods and the connections between them will be built sustainably to protect our environment”

Sustainability is also identified as one of the four themes of the LSPS, with the LGA’s environmental and recreational attributes identified as ‘perhaps the most critical element of the Northern beaches lifestyle’.

#### Climate Change

- protection of the LGA’s natural Blue Grid, maintaining water quality and aquatic ecosystems by avoiding clearing of vegetation and stormwater management to reduce nutrient and sediment loads
- improving water quality discharged to beaches and waterways by integrating water sensitive urban design measures into the built form
- protecting and enhancing bushland and biodiversity, protecting core areas of high environmental value, and planting native species
- providing adequate public open spaces and recreational opportunities to alleviate pressures on National Parks
- reducing the heat Island effect by promoting urban tree canopy
- incorporation of other forms of green cover where space for trees in limited
- consideration toward life cycle costs, management and maintenance requirements when designing open spaces and selecting materials
- supporting increased building setbacks, conversion of road space and roof gardens to increase urban greening

#### Built and Natural Shade and UV Radiation

- correctly positioned shade, from both natural vegetation and built structures, can reduce exposure to ultra-violet (UV) radiation from the sun by up to 75 per cent
- UV radiation causes at least 95 per cent of melanoma skin cancer and 99 per cent of non-melanoma skin cancers
- shade also has many other benefits, including improving the amenity and comfort within our streetscapes and open spaces
- include trees with canopies that are dense and close to the ground
- built shade can be stand-alone, portable or add-on structures

- ensure the position provides shade during the middle of the day when UV is highest, or to provide shade when the area is in highest use
- assistance can be found in Guidelines to Shade - A practical guide for shade development in New South Wales, 2013 and other relevant technical documents

#### Material Selection

- care should also be taken in the choice of colour of light coloured paving, softfall and other manufactured ground surfaces
- although light colours do not store heat as much as dark colours, they increase the reflectivity of ultra-violet radiation (UVR)
- a balance needs to be found between reducing dark surfaces/colours (which store heat but which do not reflect UVR) and light surfaces (which reflect UVR but which do not get as hot)
- recent research has found that rubber soft fall playground surfacing absorbs heat. Design consideration should be given to ensuring appropriate shade over rubber softfall areas and equipment that may retain heat (such as metal slides), or substitution with alternative materials such as organic mulch softfall
- material selection should take into account a circular economy/reusability approach where appropriate.



Protect. Create. Live  
Draft Northern Beaches Environment  
and Climate Change Strategy 2040



## A5.2 WALKING PLAN

The Northern Beaches Council Walking Plan prioritises safety and accessibility for pedestrians. As one of the most important modes of transport used on the Northern Beaches, walking supports community connectivity, promotes healthy lifestyles and activates our streetscapes. Aligned with the Northern Beaches Disability Inclusion Action Plan and the Northern Beaches Transport Strategy a connected and safe walking network is viewed as an asset to the community.

**The Walking Plan has five strategic directions. They are as follows:**

1. Connecting the network
2. Delivering the network
3. Making walking safe
4. Creating walking neighbourhoods
5. Encourage walking

Refer to the Northern Beaches Council Walking Plan and contact Council for further information.



SHARED PATH//ASPECT STUDIOS

## A5.3 BIKE PLAN

The Northern Beaches Council Bike Plan sets out the directions and actions required to help the community choose cycling as a transport option and create a safer cycling environment. Initiatives include expanding and improving cycling networks, providing end-of-trip facilities and promoting cycling as a transport option.

To cater for different types of cycling the Bike Plan proposes two separate cycling networks for the Northern Beaches.

The Safe Cycling Network provides a safe and connected cycling environment that is largely separated from motor vehicle traffic. This network is designed to encourage cycling for transport with a focus on short trips to destinations. The proposed network includes a three-tier route hierarchy that consists of regional and district routes and local connections. Each of the hierarchy levels have different requirements that Council will aim to

achieve when delivering infrastructure.

The Road Cycling Network identifies roads that are frequently used by recreational and commuter cyclists. Consideration should be given to upgrading cycling safety when improvements and maintenance activities are undertaken on these roads.

**The Bike Plan includes 4 directions. They are as follows:**

1. Expand, improve and maintain the Safe Cycling Network
2. Improve and maintain the Road Cycling Network
3. Provide and maintain end-of-trip facilities
4. Promote and encourage cycling

Refer to the Northern Beaches Bike Plan and contact Council for further information.



THE NORTHERN BEACHES BIKE PLAN //PHILIP GRAY



## A5.4 TREE CANOPY PLAN

Northern Beaches Council is promoting canopy trees in the built environment, to establish green spaces that connect our community to the natural landscape by managing and enhancing trees along streets, within parks and open spaces, and within the urban centres.

The Draft Northern Beaches Urban Tree Canopy Plan, promotes the protection of trees to provide habitat, shade, wind protection and pleasing aesthetics, providing economic, environmental, social and health benefits, and encourages the enhancement of tree canopy planting within the urban environments.

Pulse of Greater Sydney, Greater Sydney Commission states a target of 40% urban tree canopy cover for metropolitan Sydney by 2036. The current average for Sydney is at 21%. Whilst the Northern Beaches fairs better in terms of canopy cover, it is noted that proposed future development and aging of urban trees across the LGA will have an impact in the future.

With increased urban density, and the consequence of climate change on urban forests, Council endeavors to promote a sustainable outcome for tree canopy on public land to provide enjoyable and comfortable public spaces.

Tree planting in public spaces provides environmental quality, mitigates the potential for urban heat island effects, provides habitat, shade and wind protection, enhances visual continuity and unity, and reinforces local identity and character.

Tree canopy is valued by the residents of the Northern Beaches, and the management and enhancement of the tree canopy historically indicates that the outcome is measurable in terms of providing economic, environmental, social and health benefits.

Economic benefits include reducing energy and health costs, and providing a sense of place and demand for a place.

Environmental benefits include storing and sequestration of carbon, and reduction of sun exposure.

Social and health benefits include the creation of comfortable outdoor places, encouragement of outdoor use, social interaction, and improving mental wellbeing. Social and health benefits include minimising over-exposure to UV radiation from the sun.

### Tree Species Selection

Appropriate tree selection, location and installation treatment will ensure the healthy growth and long term benefits for the streetscape as well as assisting the mitigation of the urban heat island effect in urban areas.

Whilst there is a strong preference for the use of endemic tree species in the Northern Beaches to enhance remnant forests and native fauna species, other criteria should be considered including:

- existing planting
- frangibility
- RMS requirements and driver sight distances
- conflicts with above and below ground services
- soil conditions
- measures to manage or reduce root damage of paving such as root control barriers
- tree species selection and the proximity of tree planting to carriageways to be mindful of access by maintenance and service vehicles
- all street tree pits require connection to the stormwater network



FRENCHES FOREST//ASPECT STUDIOS

### A5.5 SAFER BY DESIGN

Crime prevention through environmental design (CPTED) principles promote and support positive and desirable use of open space and should be applied holistically throughout the Northern Beaches.

CPTED will be considered through 4 key principles;

- natural surveillance
- access Control
- territorial reinforcement
- space maintenance/management

Risks to the community can be reduced through considered and sensible design solutions, lighting and landscaping. Active planning that incorporates safety can lead to reducing opportunities for criminal behavior and improving perceptions of safety in the community.



SOUTH EVELEIGH//ASPECT STUDIOS

### A5.6 INCLUSIVE ACCESS

Inclusive access applications are required to comply with the relevant legislation, the Australian Standards, and the Northern Beaches Pedestrian Access and Mobility Action Plan, 2011.

The development of Council’s public domain ensures accessibility for all members of the community where practicable. For example, this may include:

- The provision of luminance contrast at stairs
- The provision of bollards and safety railings
- The provision of tactile ground surface indicators and paving treatments
- The provision for pram ramps
- The alignment of path of travel and pram ramps, where possible.

Refer Northern Beaches Pedestrian Access and Mobility Action Plan, 2011.



INCLUSIVE ACCESS//ASPECT STUDIOS



## A5.7 PUBLIC ART

Public art most often defines a space and identifies a community, expressing cultural identities, civic pride and community ownership, it contributes to the uniqueness of place.

Public art is an important aspect of major public space design projects. On a large scale, public art has the ability to unify a district with a theme or identify a neighborhood gateway. At a pedestrian scale it can assist in way finding and provide visual interest for those passing by.

Public art can imbue beauty and symbolic meaning as both independent /temporary installations, performative based works and functional objects such as seats, grates, lighting, railings; to create a sense of place and identity.

### Public art can be broadly separated into 3 types:

1. that which is created by professional artists

2. that which is made by community groups and individuals, facilitated by artists or creative workers

3. that which is commercially made.

Each 'type' of art has its place within the Northern Beaches public domain. The Northern Beaches Council recognises best practice processes to include creative professionals in planning and development of the public domain and facilities in early design stages for meaningful integration.

Key considerations for public art include site responsiveness, artistic quality and local meaning. Public art proposals will be subject to Northern Beaches Council approval process.

Refer to the Northern Beaches Public Art Policy and Guidelines, May 2019, Northern Beaches Arts and Creativity 2029, Coast Walk Public Art Strategy.



PUBLIC ART// NORTHERN BEACHES COUNCIL

## A5.8 CHARACTER AND PLACE IDENTITY

### Character and Place Identity within the Northern Beaches Place Planning framework

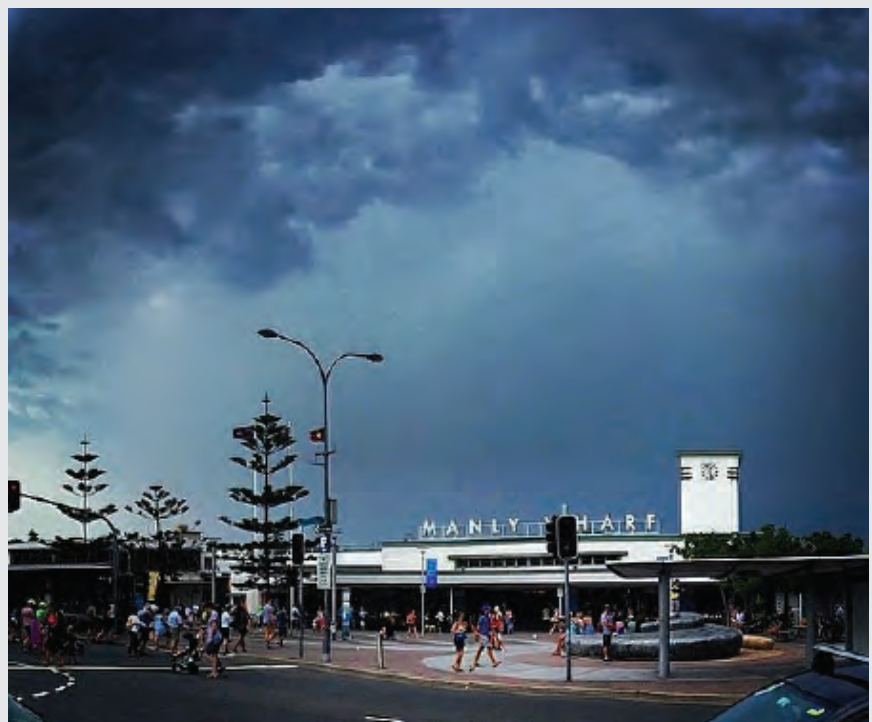
Character refers to many elements of design but is best described as a particular place or area with its own identity which can be both distinct and memorable.

Character and place should reflect its community and its history, providing richness and beauty. Character cannot be created and requires more thought and a better understanding of how to design in a contextually responsive and culturally sensitive way.

This can be achieved through enrichment of existing structures and realms, or through the development of something new to begin to better understand the complex narratives of a city or place and its specific places and spaces better.

This will be achieved through the Place

Planning processes currently underway across the Northern Beaches LGA.



MANLY WHARF PRECINCT//NORTHERN BEACHES COUNCIL









# Northern Beaches Vision



## B1 VISION FOR THE NORTHERN BEACHES

The Northern Beaches Public Space Vision & Design Guidelines have been established through the synthesis of community feedback, Council and stakeholder input and to align with Council policies and priorities.

The unique local bush, beach and waterway character intrinsic to the Northern Beaches will be embedded in the fabric of the public realm.

Going forward, we will design streets for people, as much as they are for cars.

Adequate space for trees and water-sensitive urban design initiatives will be at the centre of designs for the public realm; this will help green and blue grids succeed, and build resilience to climate change.

People will feel safe and comfortable using streets, with generous space for cyclists and neighbours to socialise under shady trees.



## B2 GUIDING OBJECTIVES



### OBJECTIVE 1

**Enhance and protect the Bush, Beach & Water character.**

#### Why?

Streets and open spaces account for over 30 percent of land within the LGA. These public spaces are critical to the liveability of their urban contexts and need to represent the character and environmental conditions that is unique to the Northern Beaches.

Materials and elements have a strong focus toward sustainability and climate resilience, mitigation of heat island effects and water sensitive urban design to protect the significant coastal, bush and lake landscapes.

#### Potential barriers to implementation

- harsh environmental conditions limit opportunity for some materials in certain areas
- a vast LGA means managing material costs is a significant consideration
- consideration toward the existing materials across the LGA, and selecting future materials that will seamlessly integrate as new open spaces are delivered incrementally over time



### OBJECTIVE 2

**Encourage social activation through street design.**

#### Why?

Streets account for approximately 70 percent of all public open space, with parks and plazas accounting for only 30 percent overall. The primary function of streets is to transport pedestrians, bicycles and vehicles. They are the places we gather and connect with our community.

Balancing the various demands of communities; function, climate, amenity and movement, is key to achieving liveable streets and in turn, functioning neighbourhoods. It is vital that we cater for social interaction, creative and cultural pursuits, and activity in public places.

#### Potential barriers to implementation

- achieving generous footpath and comfortable streetscape environments for people mean that often parking or carriageway widths need to reduce
- limitation to implementing bike lanes due to lack of available street width



**OBJECTIVE 3**  
**Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**

**Why?**

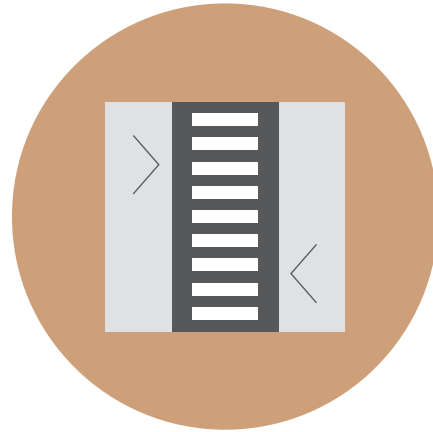
The Northern Beaches community is an active community. Over 40% of residents stating they rode a bicycle last year (Northern Beaches Bike Plan), and with 26% cycling for transport purposes.

Walking and cycling have been proven to improve physical and mental health, offer the social benefits of face to face contact with other people, and a better awareness of the local neighborhood.

By choosing to walk or ride over driving also has significant environmental benefits of reducing greenhouse gas emissions and improved air quality.

**Potential barriers to implementation**

- working with existing street arrangements means that space previously allocated to parking and driving needs to be reallocated to footpaths and cycle lanes to achieve safe, connected, well designed networks



**OBJECTIVE 4**  
**Implement traffic calming interventions creating safe environments.**

**Why?**

Traffic calming interventions, such as raised thresholds, KERB extensions and blisters narrow the carriageway which helps to slow vehicles, improves sight lines for drivers and pedestrians, and reduces the distance for pedestrians crossing the street.

Implementation of traffic calming measures may reduce parking numbers on a street. Traffic calming measures should be considered at the very least at intersections and crossing points where high levels of pedestrians are present, and parking is not permitted (3-20m varies depending on location and type).

Traffic calming interventions for cycleways and shared ways are also be implemented

**Potential barriers to implementation**

- reduction in parking numbers to implement traffic calming measures needs to be considered in local context
- consideration of change of kerb lines on street drainage and stormwater networks
- trees and mass planting within blisters impeding sight lines



## OBJECTIVE 5

**Integrate water sensitive urban design into streets and open spaces.**

### Why?

As future development occurs, Northern Beaches stormwater system will see increased demand. Harnessing and treating water where it falls is the best way to alleviate these pressures and reduce stormwater run-off, treat pollutants and protect our waterways

### Potential barriers to implementation

- ongoing maintenance costs can vary, and be prohibitively high if not properly considered
- design of WSUD measure to be site specific response, addressed at design and approval stage of works
- challenges of implementation of WSUD into existing streetscape with potential conflicts with existing services



## OBJECTIVE 6

**Increase tree canopy, green cover and landscaping on streets.**

### Why?

The Northern Beaches currently performs well compared to many other LGA's in terms of canopy cover.

A significant portion of this number though is attributed to trees on private land, which with increased development and urbanisation is likely to reduce.

The urban tree canopy and increase of green coverage contributes to environmental benefits of reduced heat island effects, environmental cooling, and increased biodiversity; makes places comfortable to use, provides protection from UV radiation and promotes healthy lifestyles; trees also improve the aesthetics of a place. Trees take a long time to grow, so protecting existing trees, as well as supplementing with new trees is critical.

For those areas constrained by infrastructure (such as arterial roads and industrial areas), other measures will be encouraged to address urban heat, including green verges, green roofs and green walls, water sensitive urban design and improved building design.

### Potential barriers to implementation

- consideration needs to be given to certain areas including Bushfire Prone Land
- consideration needs to be given to the width of the verge and the ability for trees to grow to mature sizes.
- potential conflicts with services and awnings
- private land owners not replacing trees that have been removed
- residents not wanting a tree planted outside their property
- off-road cycle paths at 2 to 3 m wide limits treeplanting and Street Gardens









# Street Design

# C1 STREET DESIGN OVERVIEW

## C1.1 STREET TYPES

The PSV & DG seeks to balance a variety of conditions within a succinct and hierarchical set of street types;

### Local streets

Located within local areas, these account for the majority of streets across the LGA

### Local Collectors

Located within local areas, these provide key connections between neighborhoods and to centres

### High Streets

Are the main streets in Strategic and Local Centres, and interface to retail and commercial uses.

### Laneways

In centres and industrial areas provide servicing functions to commercial/ industrial tenancies. In Centres laneways also provide important pedestrian mid block connections.

### Industrial Streets

Are located within industrial and employment lands, and small agricultural areas, typified by wide carriageways and deep setbacks to cater for high heavy vehicle use.

These street types, their design priorities and typical arrangement and details are presented here and illustrated in the following pages.

These streets are in accordance with existing Street Design guidelines, including *Landcom's Street Design Guidelines* and *Austrroads' Guide to Road Design*.

### Measures for success

Street types within this section are illustrated with the typical current condition, and proposed adaptations with and without cycleways.

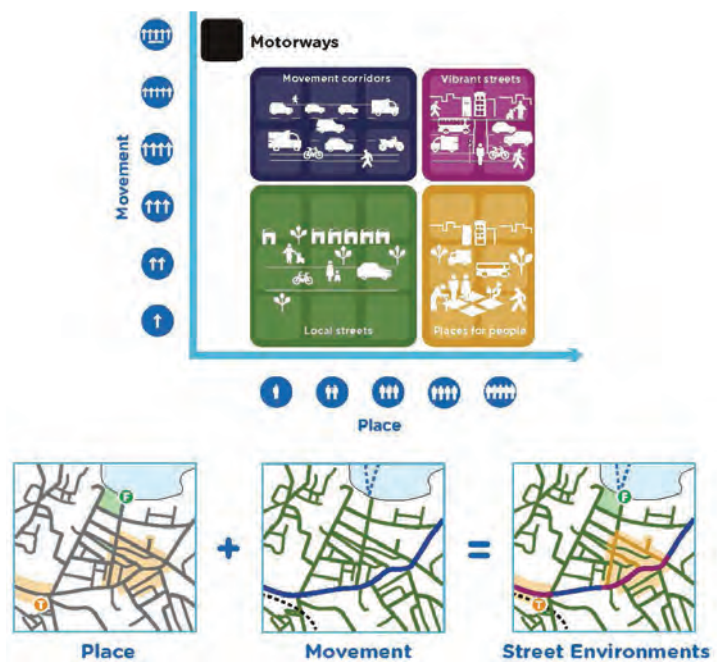
Each scenario illustrates how the inclusion of street trees addresses the NSW Government Architects targets for canopy cover as:

- Business District >15%
- Urban >25%
- Suburban >40%
- Non-urban >50%

(Greener Paces, Urban tree Canopy Guide, GANSW)

Incorporating good street design principles will capture sustainability interventions and climate resilience. Also measured is the potential for increase in permeable surfaces to address water sensitive urban design initiatives and stormwater management.

The street design provide typical scenarios only for a range of conditions. There are a wide variety of different conditions (existing street width, deviations and parking alignment, existing street trees, etc) that need to be incorporated into specific street design. Upgrades to streets should adhere to the objectives as closely as possible.



DIAGRAM//MOVEMENT DIAGRAM  
p18, Future Transport Strategy 2056,  
Transport for NSW



## C1.2 THE IMPORTANCE OF STREETS

Successful streets consider urban amenity and enhancement of place, environmental quality, economic performance, societal health and well-being, and overall quality of life for those living, working, and socialising on the Northern Beaches.

Streets are about more than just the movement of cars and the provision of utilities. Accounting for more than 30% of all public open space in urban areas, they are critical to the liveability of their urban contexts for the local population. Streets have the ability to make significant sustainability and climate resilience impact through the intergration of street elements if addressed in early stages of design.

Streets should be designed with regard to CPTED Principles to minimise the opportunity for and incidence of crime. Design principles include:

- maintaining open views throughout the public domain making sure no visual barriers are present
- retaining and installing additional lighting throughout the public domain to ensure facial recognition from a distance and to enhance feeling of safety
- legible and generous pedestrian circulation network that is well connected

Streets are not only places to move through, but also to dwell within—to sit, relax, ponder, and play. They need to be designed for all users of the street.

The Northern Beaches landscape will be measured through performance, including the impact on heat island effect, water quality and biodiversity. The shift away from a car-centric approach that prioritises traffic flow and motorist safety necessitates a holistic approach to street design.

Streets consist of zones that serve a particular use. Consistency across the arrangement of these zones within a certain street type is key in achieving clarity, ease

of movement and reduce potential conflicts within the streetscape network.

All street types should consider appropriately placed rubbish bins that are readily identified by users without impacting on visual amenity such as major junctions and crossover/congregation points and away from al fresco eating areas.

### Pedestrian Zone

The portion of the street given to pedestrian movement, free from obstructions.

### Cycle Zone

Zones of the streetscape that give priority to cycle movement

### Planting Zone

The area in the street for street trees/ turf/ mass planting.

### Outdoor Dining Zone

Zone adjacent to retail that is appropriate for outdoor dining, with potential canopy cover/ tree planting, tables and chairs, with no conflict to the pedestrian zone.

### Flexible Zone

The zone within the streetscape that is adaptable to cater for varying needs and opportunities; on-street parking/ additional street tree planting/ WSUD rain gardens and swales/ permeable pavements. The flexible zone on many streets serves for freight delivery and movement or transport corridors, and in this instance, interventions other than for transport is limited. But opportunities to utilise this area of the streetscape within other streets for uses other than traffic lane and parking is encouraged. Uses considered can include 'pop-up' parks or community events and activities to promote socialisation and community interaction.



DIAGRAM//IMPORTANCE OF STREETS  
ASPECT Studios

Street design that puts people and environment first transforms average streets into great urban places.



As our population and environmental pressures increase, streets need to maximise positive outcomes for the communities they serve and landscapes they sit within.



## C2 LOCAL STREET

### OVERVIEW

Local streets serve neighbourhood communities and are typified by low density residential streets and local centres containing small retail stores, cafes and local businesses. These form the vast majority of street types within the Northern Beaches LGA and offer critical opportunity for supporting climate resilient responses in neighbourhood settings.

Local streets shall be easily identified as an area for public use, are designed to be safe for the public, and are consistent in arrangement of elements across the LGA.

Local Streets identify the neighbourhood character, urban and residential fabric and the landscape setting of an area.

Local streets to utilise the material palette subject to the selected urban area; Urban/ Bush/ Beach/ Waterway (refer plans in Section C of this document). The use of this material palette is to maintain consistency and define local character, and any deviation of this palette is subject to Council approval.

Local streets in difficult/steep terrain may only be able to

accommodate landscaping on the road verge.

#### A Local Street includes

- a highly permeable streetscape environment to reduce loads on stormwater system, and provide passive irrigation to street trees
- a continuous avenue of street trees, maximum 10m regular spacing, in mass planted tree pits/ turf planted behind the kerb
- additional trees in tree pits within parking lane are highly supported to provide a double row canopy
- use of simple, durable, cost effective and easily maintained materials and elements
- installation of predominantly endemic trees and vegetation to re-affirm a sense of place
- arrangement of elements and street designs that are safe for pedestrians, cyclists and drivers
- a minimum 1.5m wide footpath, unobstructed by planting, furniture or other elements
- footpath widening areas for shared bike paths
- WSUD initiatives within parking bays/ carriageways
- cycling is usually on road, with stencil markings (refer



**SMITH STREET, MANLY// ASPECT STUDIOS**  
Permeable paving and trees within carriageway.



**PENNYROYAL BOULEVARD, DENHAM COURT// ASPECT STUDIOS**  
The Flex Zone allows for a significant increase in tree and understorey planting.

STREET PRIORITIES FOR LOCAL STREETS

DESIGN OBJECTIVES

WHAT DOES THIS MEAN FOR STREETS?



**Enhance and protect the Bush, Beach & Water character.**

- Materials respond to character palettes and suitable to street type



**Encourage social activation through street design.**

- Continuous tree planting frames the streetscape and makes a comfortable place for residents to use



**Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**

- There is at least one footpath on the street
- Safe on road cycling



**Implement traffic calming interventions creating safe environments.**

- Planted blisters
- Trees in verge and carriageway between parking bays



**Integrate water sensitive urban design into streets and open spaces.**

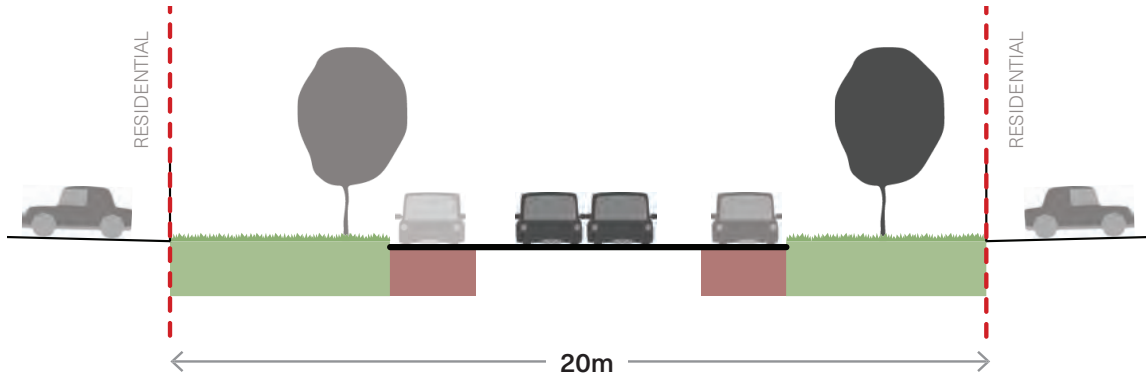
- Tree pits with slotted kerbs for low-flow runoff passive irrigation to street trees and planting
- High area of permeable surfaces (turf and mass planting)



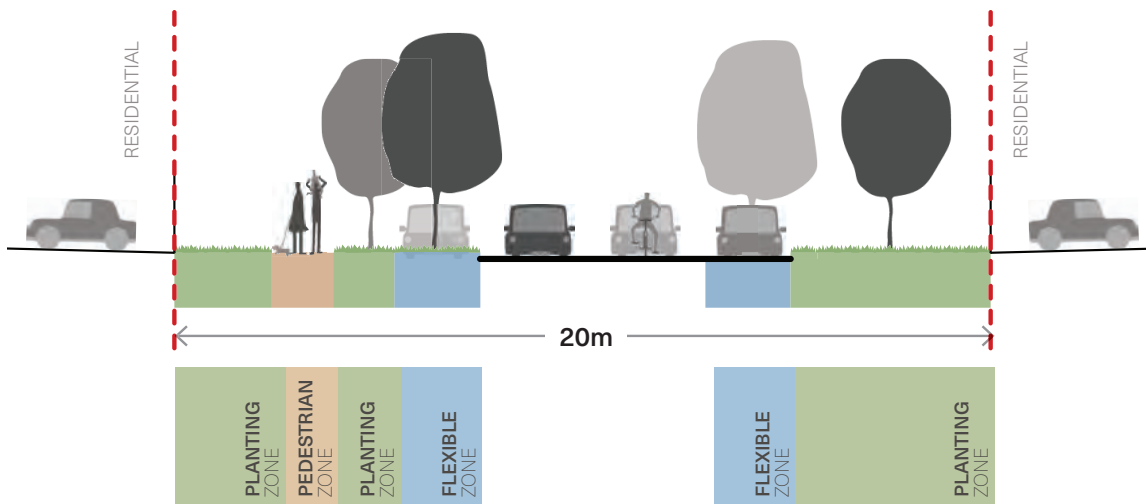
**Increase tree canopy cover on streets.**

- Trees positioned at 10m centres to provide shade to pedestrian path and to reduce heat from road surface

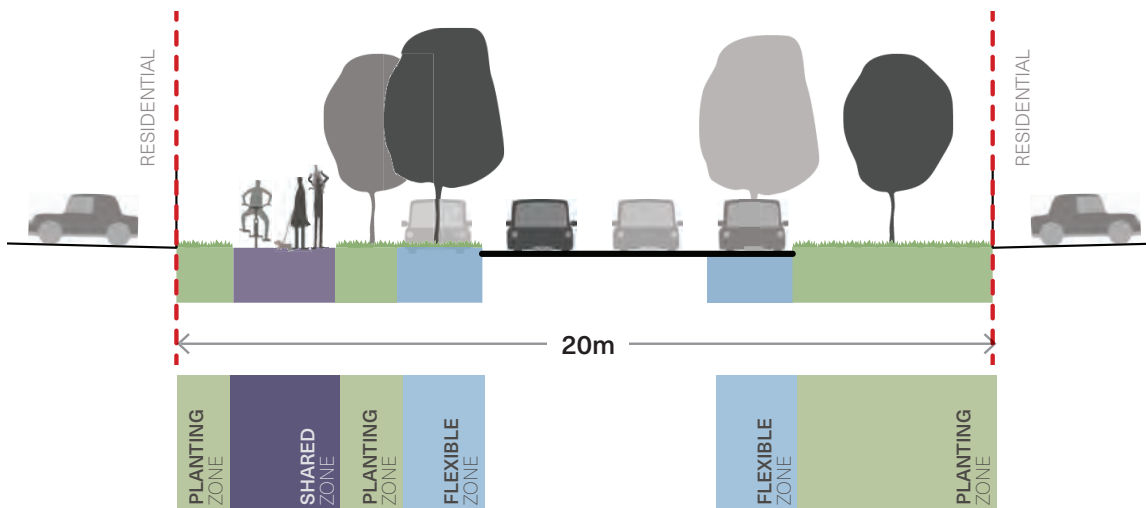
### TYPICAL LOCAL STREET



EXISTING	
Canopy	15%
Permeable	50%



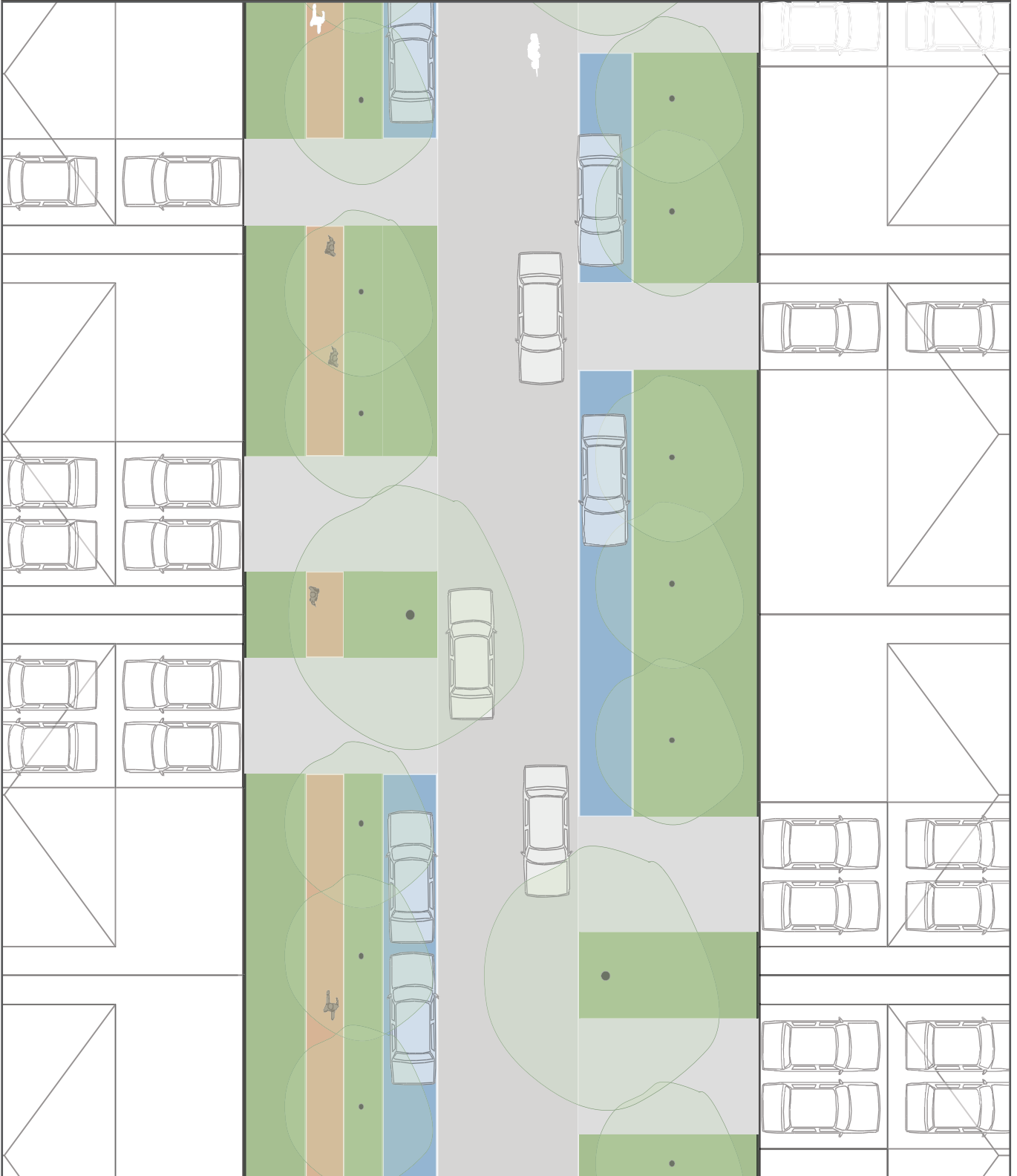
PROPOSED	
Canopy	40%
NSW GA Target	>40%
Permeable	60%



PROPOSED WITH CYCLE	
Canopy	40%
NSW GA Target	>40%
Permeable	65%



PROPOSED



0m SCALE 5m

## C3 COLLECTOR STREET

### OVERVIEW

Typical Collector streets form the primary thoroughfare route into and through residential neighbourhoods, providing important connections within and between neighbourhoods to key local destinations.

Collector Streets often support local bus routes and local and regional cycle networks. As the most actively utilised and hardworking framework of the LGA, Collector streets provide increased opportunities for sustainable responses to future infrastructure assisting in the creation of climate resilient neighbourhoods.

Vehicular calming measures, such as raised crossing, kerb extensions and planted blisters are highly supported within Collector streets to slow traffic, improve pedestrian sightlines, and minimise the distance for pedestrian crossings.

Public furniture, including bike racks and seating should be considered at key intersections and public transport.

Collector Streets are designed to be consistent in material and planting with the Local Street character of a locality.

#### A Collector Street includes

- a minimum 1.5m wide footpath, unobstructed by planting, furniture or other elements, on both sides of the street
- footpath widening areas for shared bike paths
- a continuous avenue of street trees, maximum 10m regular spacing, in mass planted tree pits/ WSUD tree pits/ tree grates planted behind the kerb
- additional trees in tree pits within parking lane are highly supported to provide a double row canopy
- WSUD initiates within parking bays/ carriageways
- planted blister extensions and raised pedestrian crossing thresholds to slow vehicular traffic
- dedicated on/off road cycleways in accordance with Council's Bike Plan



**BOURKE STREET, SURRY HILLS// ASPECT STUDIOS**

Raised pedestrian crossings, WSUD, canopy coverage and separate two-way bike path contribute to street life.

## STREET PRIORITIES FOR COLLECTOR STREETS

## DESIGN OBJECTIVES

## WHAT DOES THIS MEAN FOR STREETS?



**Enhance and protect the Bush, Beach & Water character.**

- Materials respond to character palettes and suitable to street type



**Encourage social activation through street design.**

- Regular spaced public furniture (bike racks, seats)



**Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**

- There is at least one footpath on the street
- Separated on/ off road cycling



**Implement traffic calming interventions creating safe environments.**

- Kerb extension and planted blisters to slow vehicles, improve site lines and reduce the distance for pedestrians crossing the road
- Trees in verge and carriageway between parking bays



**Integrate water sensitive urban design into streets and open spaces.**

- Tree pits with slotted kerbs for low-flow runoff passive irrigation to street trees and planting
- WSUD raingardens and swales incorporated into trees pits, blisters and verges
- Permeable surfaces used in parking bays

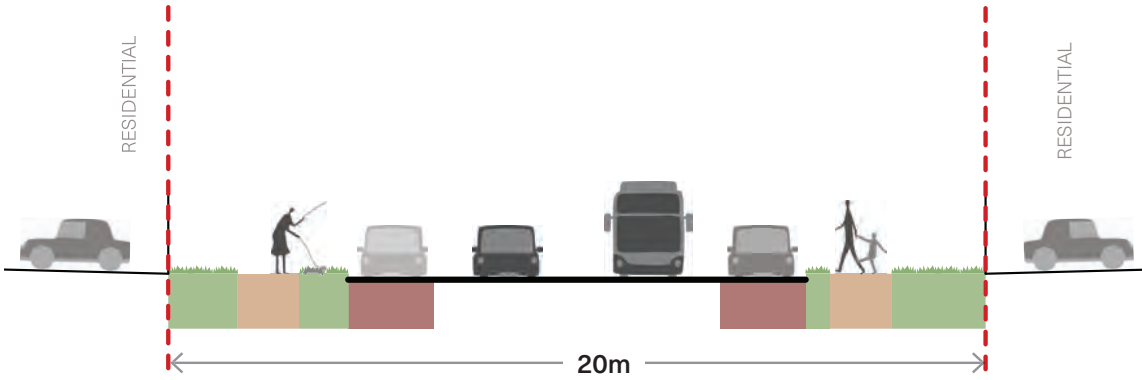


**Increase tree canopy cover on streets.**

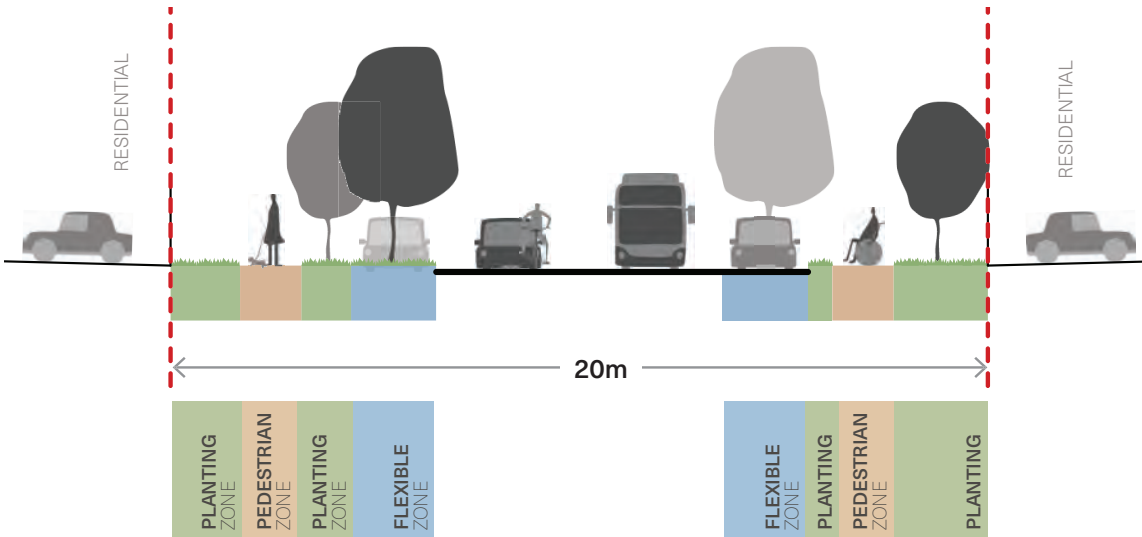
- Trees positioned at 10m centres to provide shade to pedestrian path and to reduce heat from road surface



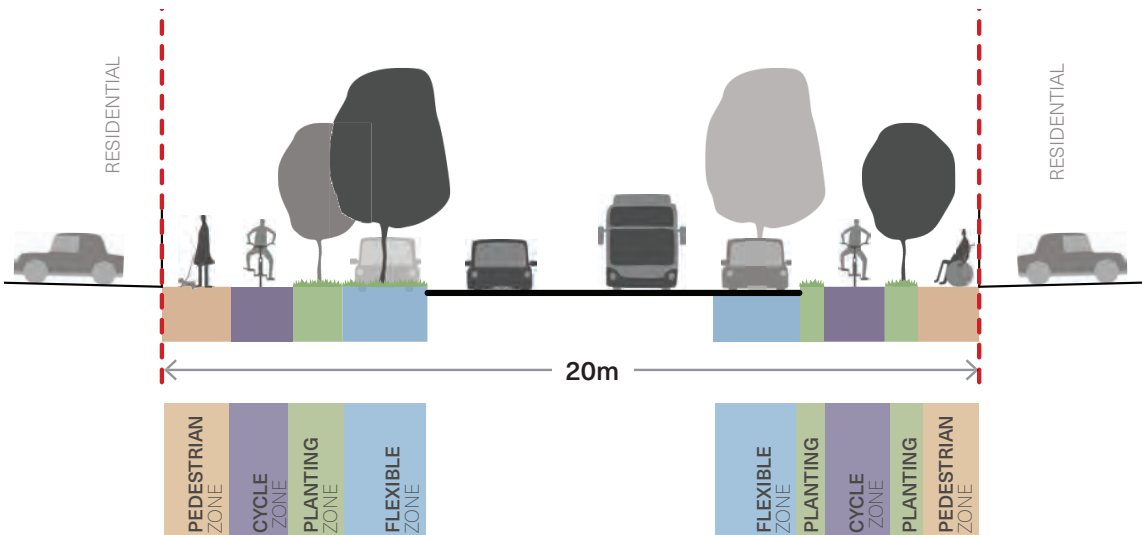
## TYPICAL COLLECTOR STREET



EXISTING	
Canopy	0%
Permeable	15%

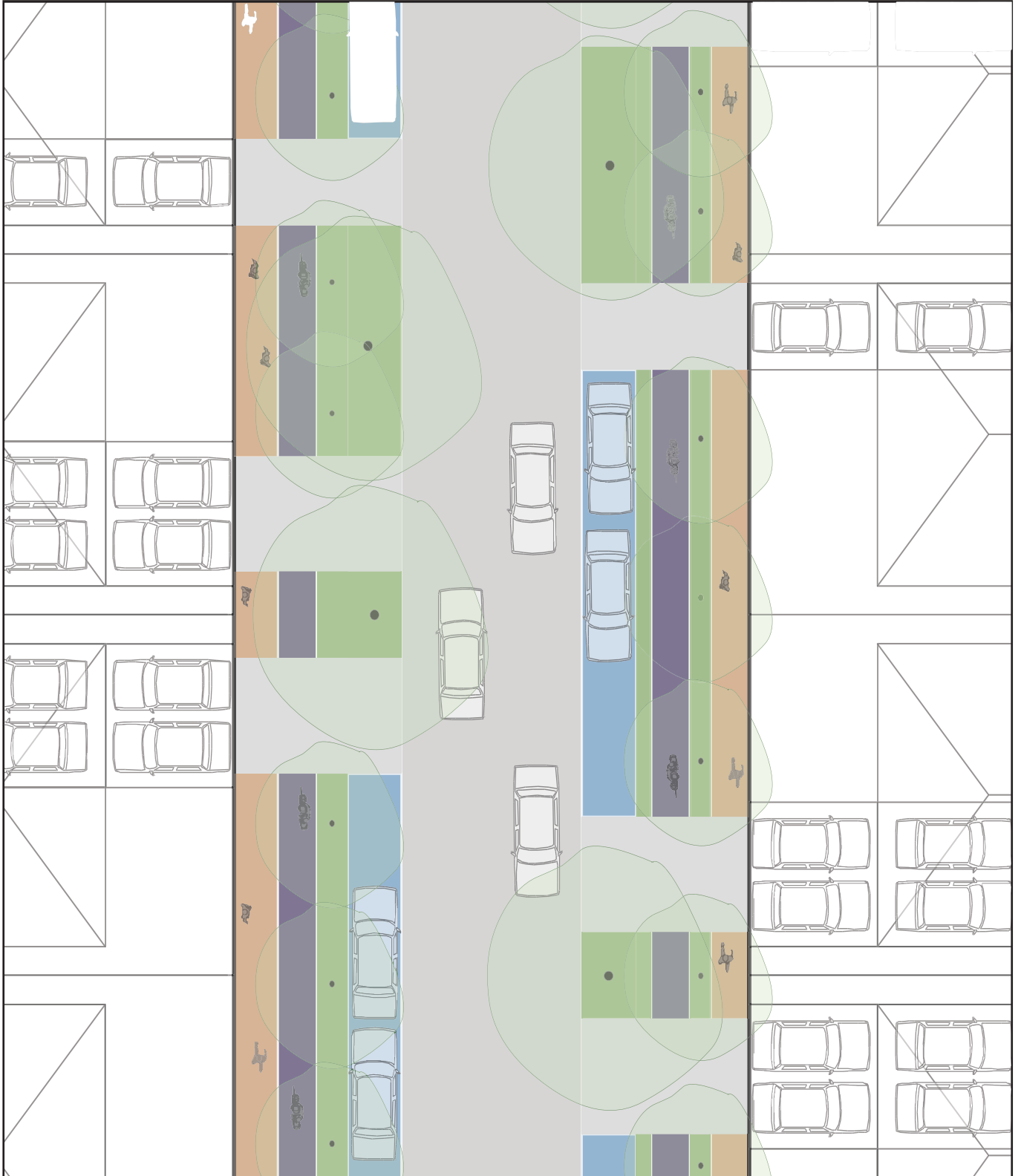


PROPOSED	
Canopy	40%
NSW GA Target	>40%
Permeable	50%



PROPOSED WITH CYCLE	
Canopy	40%
NSW GA Target	>40%
Permeable	35%

PROPOSED WITH CYCLE



0m SCALE 5m

## C4 HIGH STREET

### OVERVIEW

High Streets are within Strategic and Local centres, and provide access to services, employment, retail, and entertainment.

High Streets shall create a high quality urban environment that brings social and economic vitality, that are attractive, sociable, connected, user safe, sustainable, and easily maintained.

High streets present opportunities to actively engage the community in how we are addressing sustainability and climate resilience in our built environment. As places of high activity and engagement with the public realm, an increased emphasis on the provision of green infrastructure through sustainability targets provides a transparent and educational platform for decision that will affect us into the future.

High Streets accommodate a mix of commercial and retail with wider paved footpaths catering for outdoor dining and higher levels of pedestrian activity.

### A typical High Street includes

- minimum 2.5m wide footpath, unobstructed by planting, furniture or other elements
- high quality unit pavement extending from the building line to the kerb
- footpath widening areas for additional street planting/ wider footpath zones or outdoor dining
- a continuous avenue of street trees, maximum 10m regular spacing, in mass planted tree pits/ WSUD tree pits/ tree grates planted behind the kerb
- additional trees in tree pits within parking lane are highly supported to provide a double row canopy. A Minimum size /height range at planting should be specified to ensure consistency and immediate effect under a pre-order contract
- WSUD infrastructure, planted tree pits/ verge and permeable materials are highly supported
- a high-quality material and furniture palette that responds to high pedestrian use and amenity, clustered adjacent the kerb and outside the path of travel



**COOGEE BAY ROAD, COOGEE// ASPECT STUDIOS**  
Street furniture enhances the streetscape.



**OUTDOOR DINING// ASPECT STUDIOS**  
Outdoor dining activates the street day and night.



## STREET PRIORITIES FOR HIGH STREETS

## DESIGN OBJECTIVES

## WHAT DOES THIS MEAN FOR STREETS?


**Enhance and protect the Bush, Beach & Water character.**

- materials suitable to the location and respond to context and character


**Encourage social activation through street design.**

- Awnings
- Street Furniture
- Outdoor dining
- Lighting
- High quality paving


**Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**

- Connected neighbourhood wide cycle network
- Generous footpaths on both sides of the street


**Implement traffic calming interventions creating safe environments.**

- Kerb extension, raised crossing, and planted blisters to slow vehicles, improve site lines and reduce the distance for pedestrians crossing the road
- Trees in carriageway between parking bays

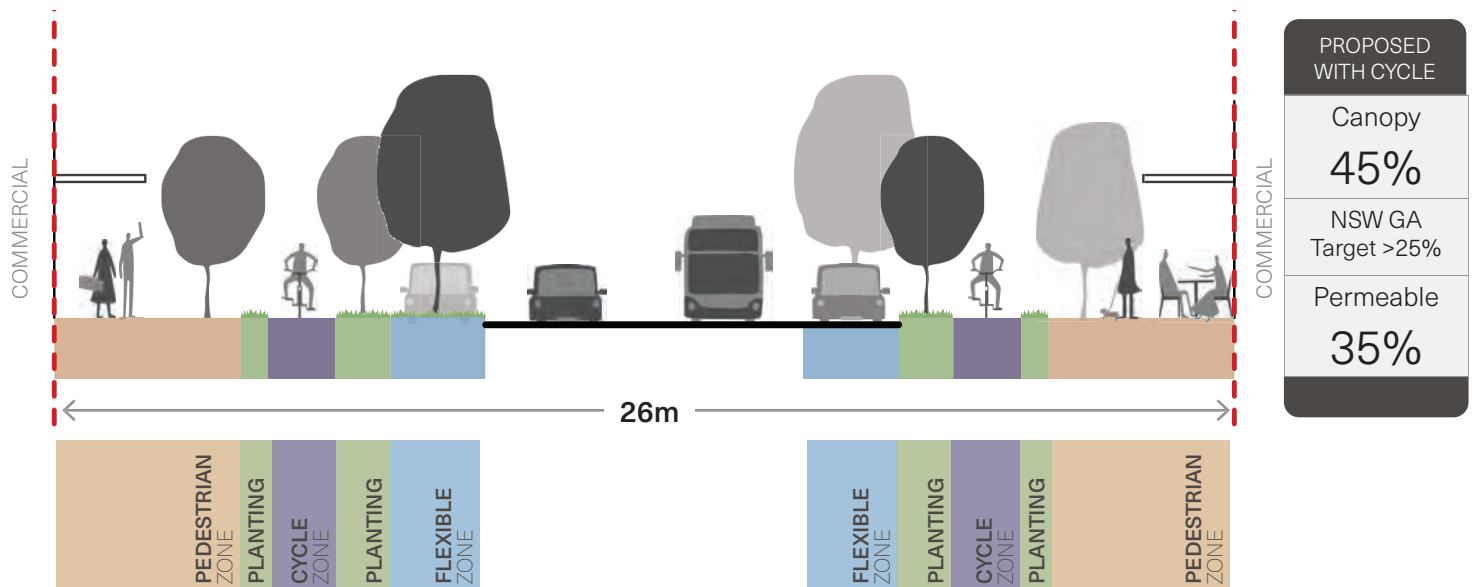
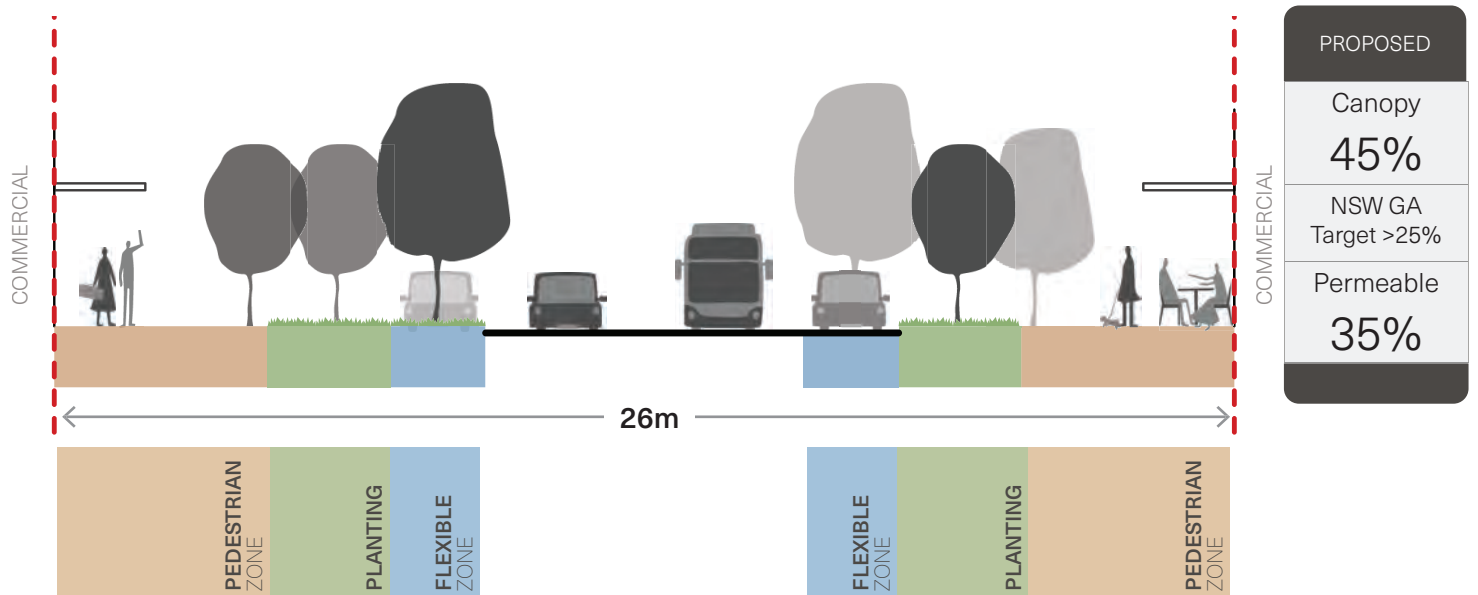
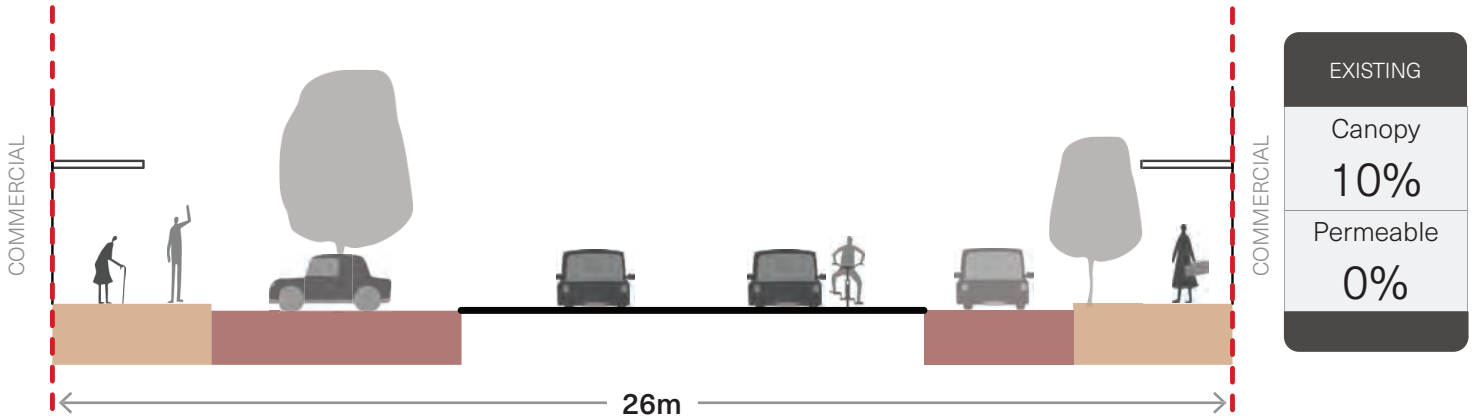

**Integrate water sensitive urban design into streets and open spaces.**

- Tree pits with slotted kerbs for low-flow runoff
- passive irrigation to street trees and planting
- WSUD measures such as raingardens and swales incorporated into trees pits, blisters and verges
- Permeable surfaces used in parking bays

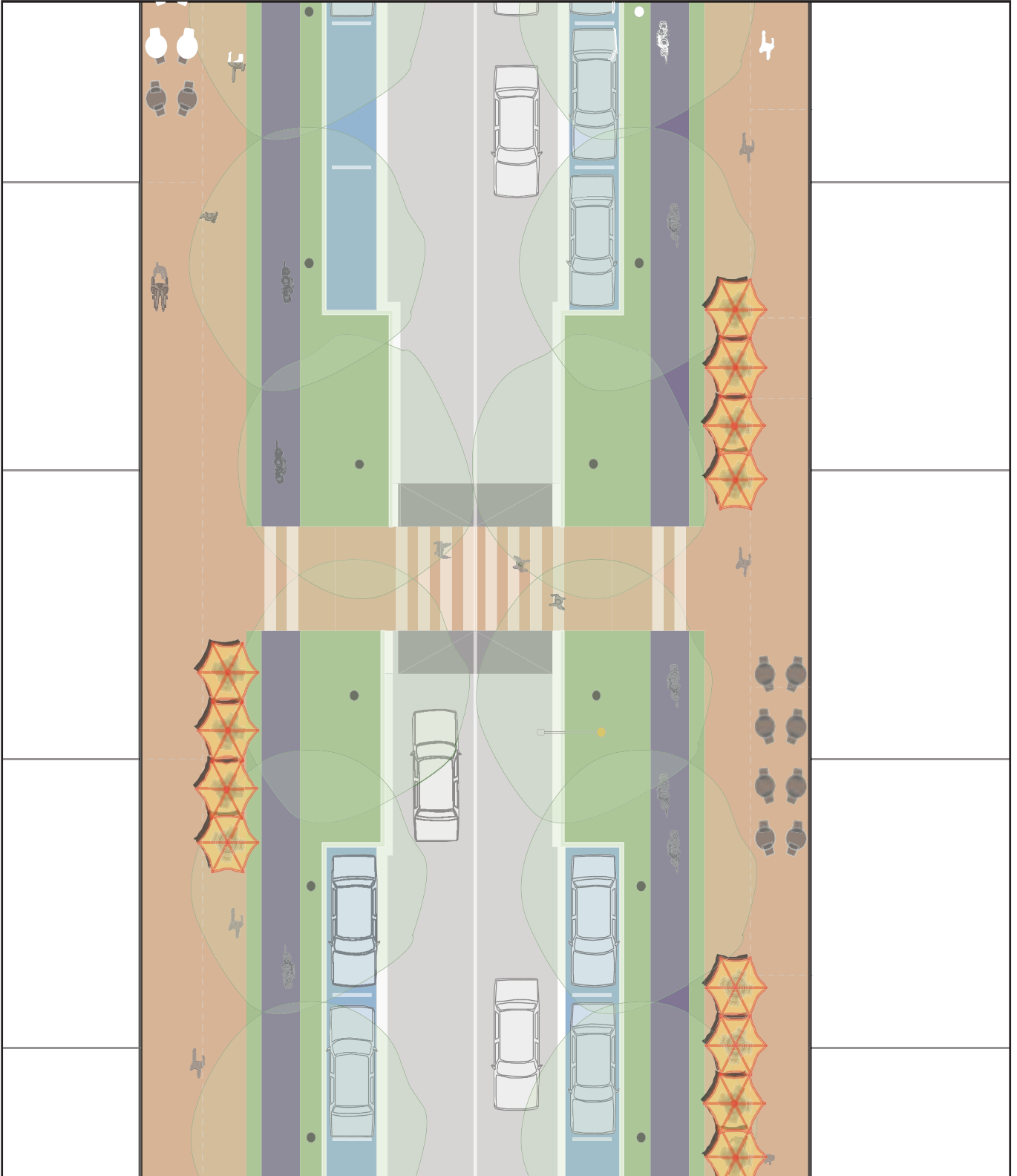

**Increase tree canopy cover on streets.**

- Trees positioned at 10m centres to provide shade to pedestrian path and to reduce heat from road surface
- Additional row of trees within parking bays where possible
- Trees positioned to minimise conflict between light poles and shop awnings

## TYPICAL HIGH STREET



PROPOSED



0m SCALE 5m



## C5 INDUSTRIAL STREET

### OVERVIEW

Industrial Streets serve commercial and industrial precincts, with a mix of general traffic, buses, and heavy commercial and industrial vehicles with particular design requirements.

Industrial street typically have generous carriageways and pavement materials to cater for large heavy vehicle traffic.

Industrial streets provide a perfect starting point to consider sustainability targets that address climate resilience through building and streetscape with green infrastructure solutions. With these strategies we have the opportunity to address finer grain solutions such as increased tree canopy to help mitigate urban heat island effects and build climate resilience into the future.

Deep setbacks to the road are provided to support large trees to improve the streetscape amenity, be appropriate scale to adjacent built form, and mitigate heat island impacts from large areas of pavement.

### A typical Industrial Street includes

- a minimum 1.5m wide footpath, unobstructed by planting, furniture or other elements
- footpath widening areas for shared bike paths
- a continuous avenue of street trees, maximum 10m regular spacing, in mass planted tree pits/ WSUD tree pits/ turf as appropriate
- WSUD planting within parking bays/ verges or deep setback areas
- planted blister extensions and raised pedestrian crossing thresholds to slow vehicular traffic and provide safe pedestrian crossing environments at key intersections
- use of porous and permeable materials, such as porous asphalt, to reduce stormwater run-off is supported



**BOURKE ROAD, ALEXANDRIA// ASPECT STUDIOS**  
Separate cycle path creates a safe, active mode of Transport.



**MITCHELL ROAD, BROOKVALE///ASPECT STUDIOS**  
Trees play an important role in cooling the urban environment.

## STREET PRIORITIES FOR INDUSTRIAL STREETS

## DESIGN OBJECTIVES

## WHAT DOES THIS MEAN FOR STREETS?


**Enhance and protect the Bush, Beach & Water character.**

- Materials suitable to the location and respond to context and character
- Wide landscape setbacks


**Encourage social activation through street design.**

- Continuous tree planting frames the streetscape and makes a comfortable place for people
- Utilise building design and structures to provide shade and protection from UV radiation


**Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**

- Connected neighbourhood wide cycle network
- Generous footpaths on one or both sides of the street


**Implement traffic calming interventions creating safe environments.**

- Kerb extension, raised crossing, and planted blisters to slow vehicles, improve site lines and reduce the length for pedestrians crossing the road
- Trees in carriageway between parking bays

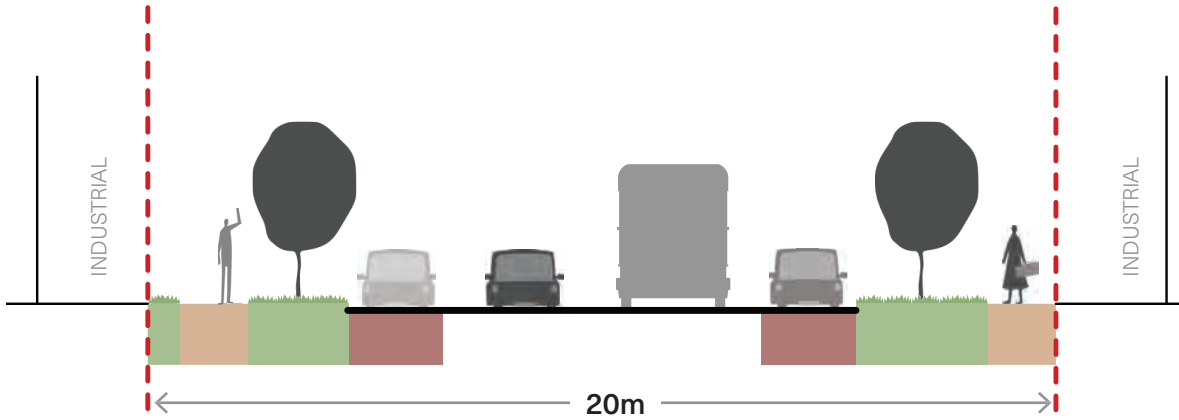

**Integrate water sensitive urban design into streets and open spaces.**

- Tree pits with slotted kerbs for low-flow runoff
- passive irrigation to street trees and planting
- WSUD raingardens and swales incorporated into trees pits, blisters and verges
- Permeable surfaces used in parking bays

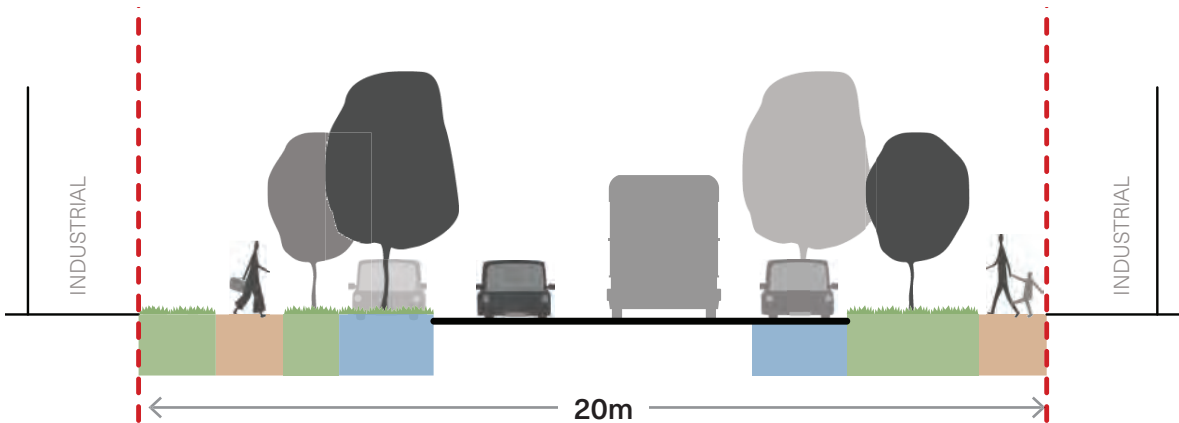

**Increase tree canopy cover on streets.**

- Trees positioned at 10m centres to provide shade to pedestrian path and to reduce heat from road surface
- Additional row of trees within parking bays where possible
- Trees positioned to minimise conflict between light poles
- Where trees can't be supported, provide landscaping with hedges, grass footpaths and garden beds, green roofs and walls

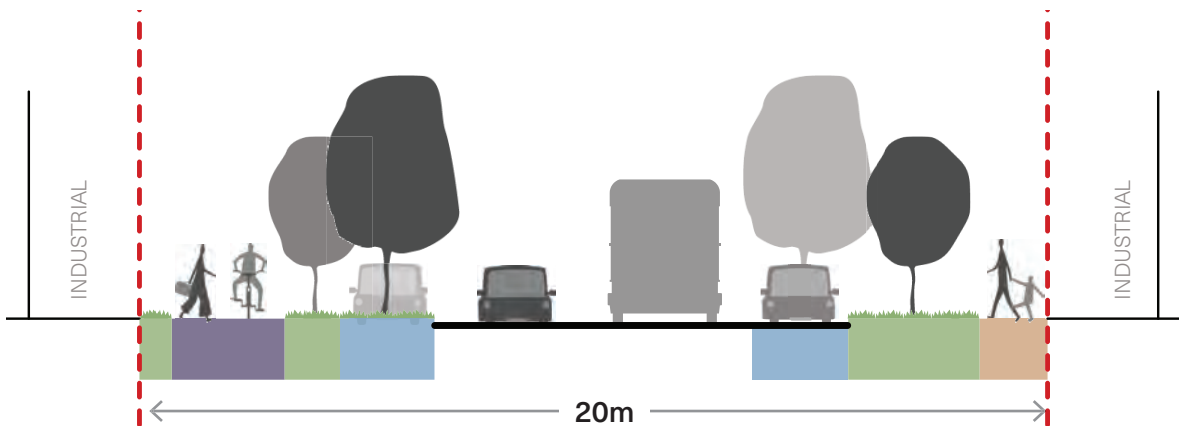
### TYPICAL INDUSTRIAL STREET



EXISTING	
Canopy	15%
Permeable	30%



PROPOSED	
Canopy	50%
NSW GA Target	>50%
Permeable	50%

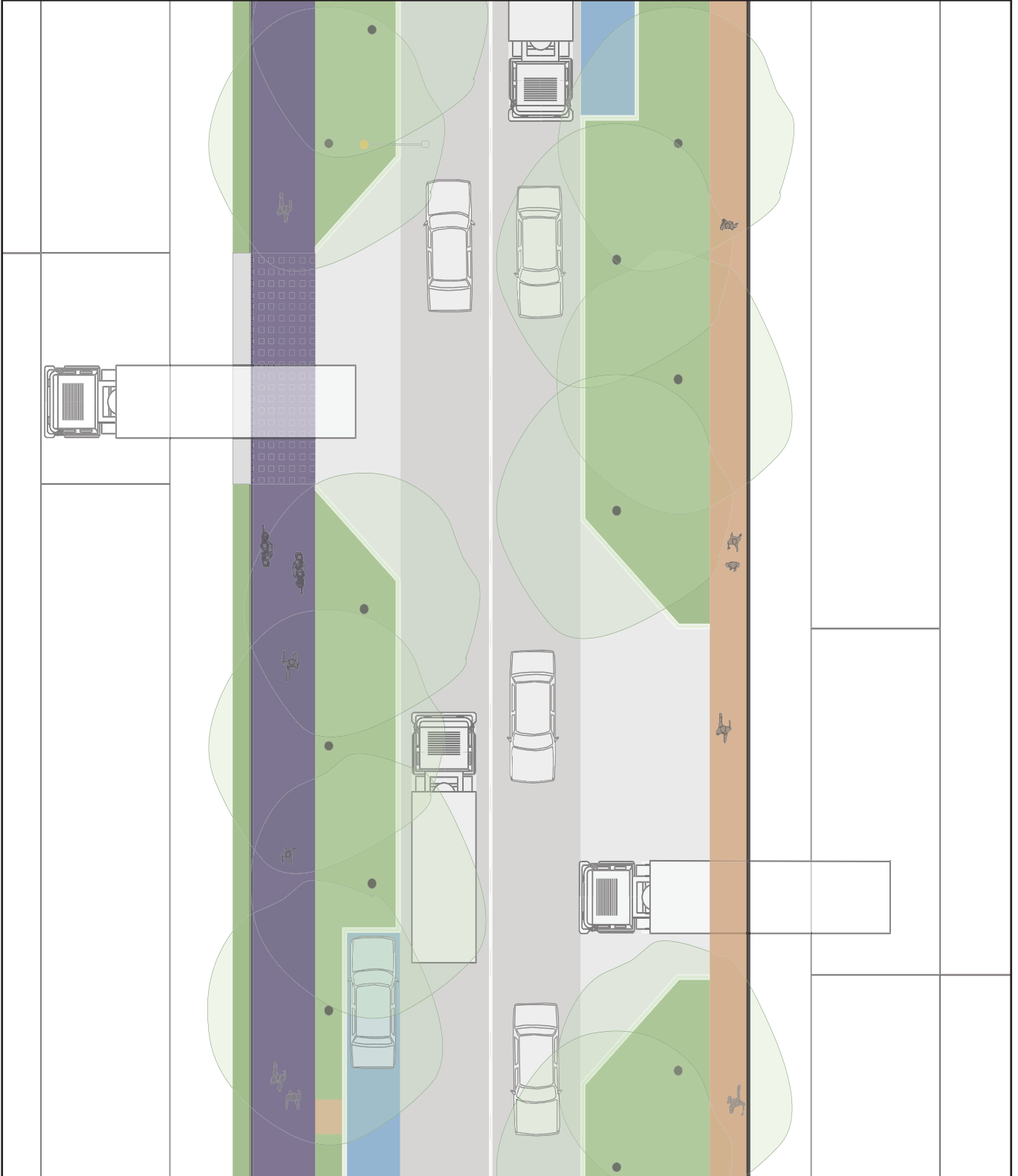


PROPOSED WITH CYCLE	
Canopy	50%
NSW GA Target	>50%
Permeable	45%





PROPOSED



0m SCALE 5m

## C6 LANEWAY

### OVERVIEW

Laneways in Strategic and Town Centres are small scale connections that carry low numbers of vehicles as well as supporting pedestrian connections.

Pedestrian mid-block connections encourage pedestrian permeability throughout public spaces and should be designed with adequate lighting, passive surveillance and low landscaping considerations to create safe and usable links

Opportunities for activation through outdoor dining, weekend markets etc should be considered in the design of laneways.

Laneway's offers a great opportunity for community participation to small scale green infrastructure to help address sustainability and mitigate climate change through small scale interventions and pop up calendar events.

### A typical Laneway (in Town Centre) includes

- continuation of the streetscape footpath material on road closures and mid-block connections
- pedestrian priority shared zone environments with raised thresholds and continuation of the footpath material across the full width of the laneway
- planted buffer and regular street tree planting where possible. Use of trees in tree pit are supported for highly pedestrianised areas
- species selection is crucial in such locations to support solar access in winter and shade in summer



ACTIVE LANEWAY// KAREN WATSON

Laneways can be inviting and safe places for pedestrians and cyclists.

STREET PRIORITIES FOR LANEWAYS

DESIGN OBJECTIVES

WHAT DOES THIS MEAN FOR STREETS?



**Enhance and protect the Bush, Beach & Water character.**

- Materials suitable to the location and respond to context and character



**Encourage social activation through street design.**

- Outdoor dining
- Regularly spaced public furniture
- High quality pavements extend as shared way across laneway



**Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**

- Shared way that prioritises pedestrians
- Makes important mid block connections to expand the pedestrian network



**Implement traffic calming interventions creating safe environments.**

- Shared way with continuous pavement treatment across entire laneway to prioritise pedestrians
- Raised thresholds at intersections



**Integrate water sensitive urban design into streets and open spaces.**

- Tree pits with slotted kerbs for low-flow runoff
- passive irrigation to street trees and planting
- WSUD raingardens and swales incorporated into trees pits, blisters and verges
- Permeable surfaces used in parking bays

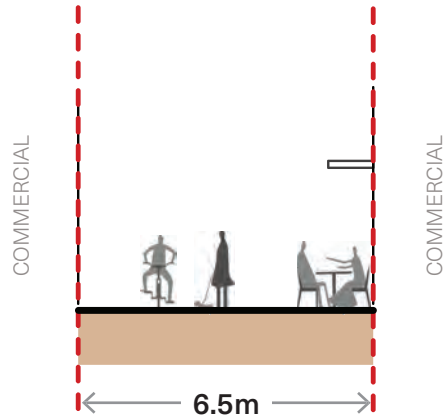


**Increase tree canopy cover on streets.**

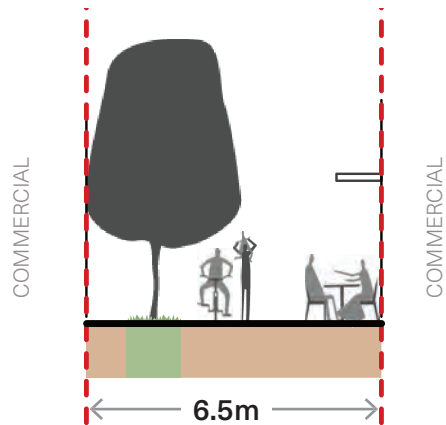
- Trees positioned at 10m centres on at least one side of the laneway
- Where trees can't be supported, provide landscaping with hedges, grass footpaths and garden beds, green roofs and walls



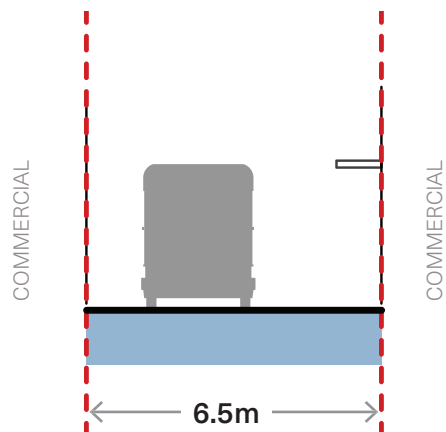
## TYPICAL LANEWAY



EXISTING	
Canopy	0%
Permeable	0%



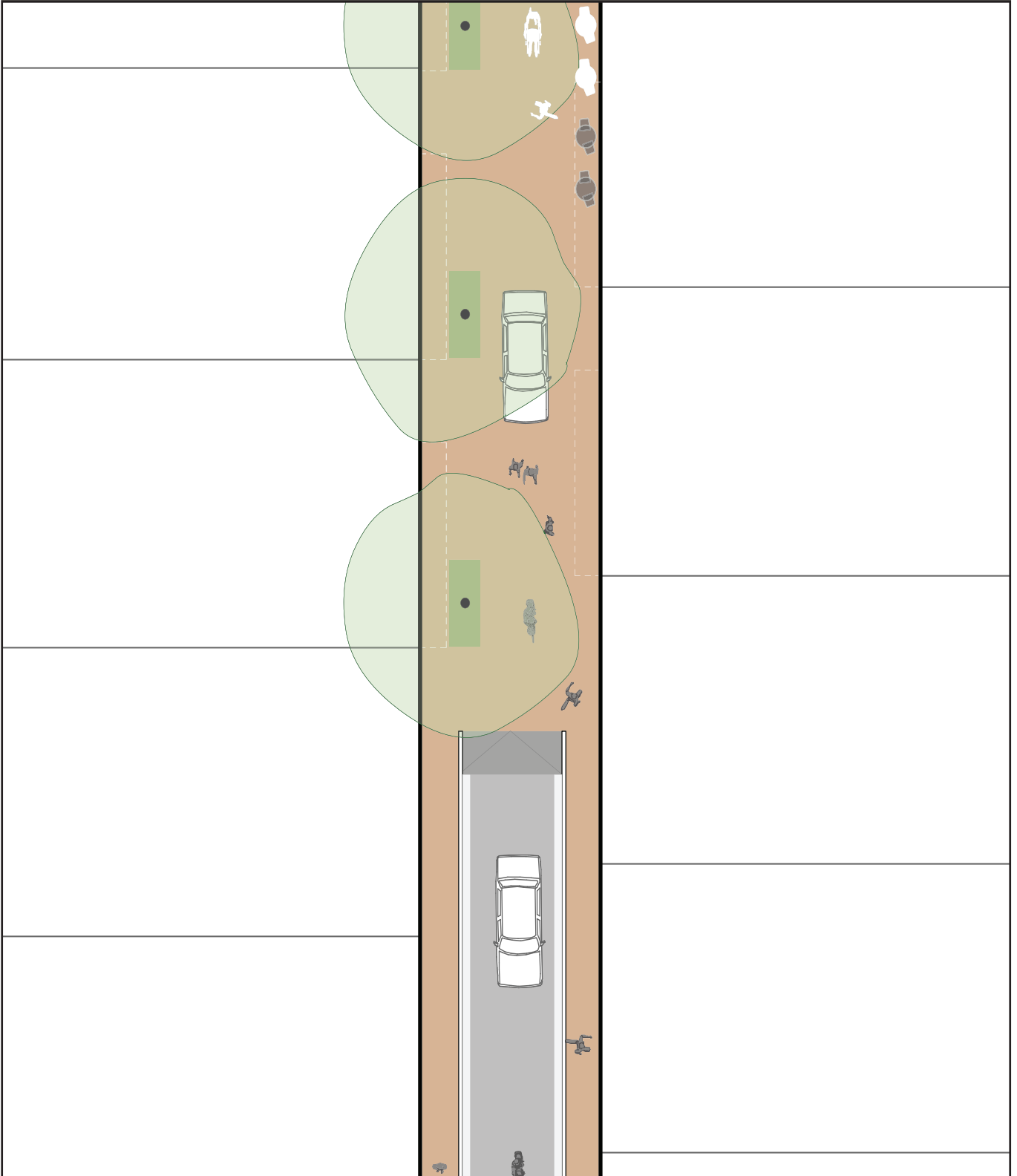
PROPOSED	
Canopy	45%
NSW GA Target	>25%
Permeable	20%



PROPOSED INDUSTRIAL	
Canopy	0%
NSW GA Target	>25%
Permeable	100%

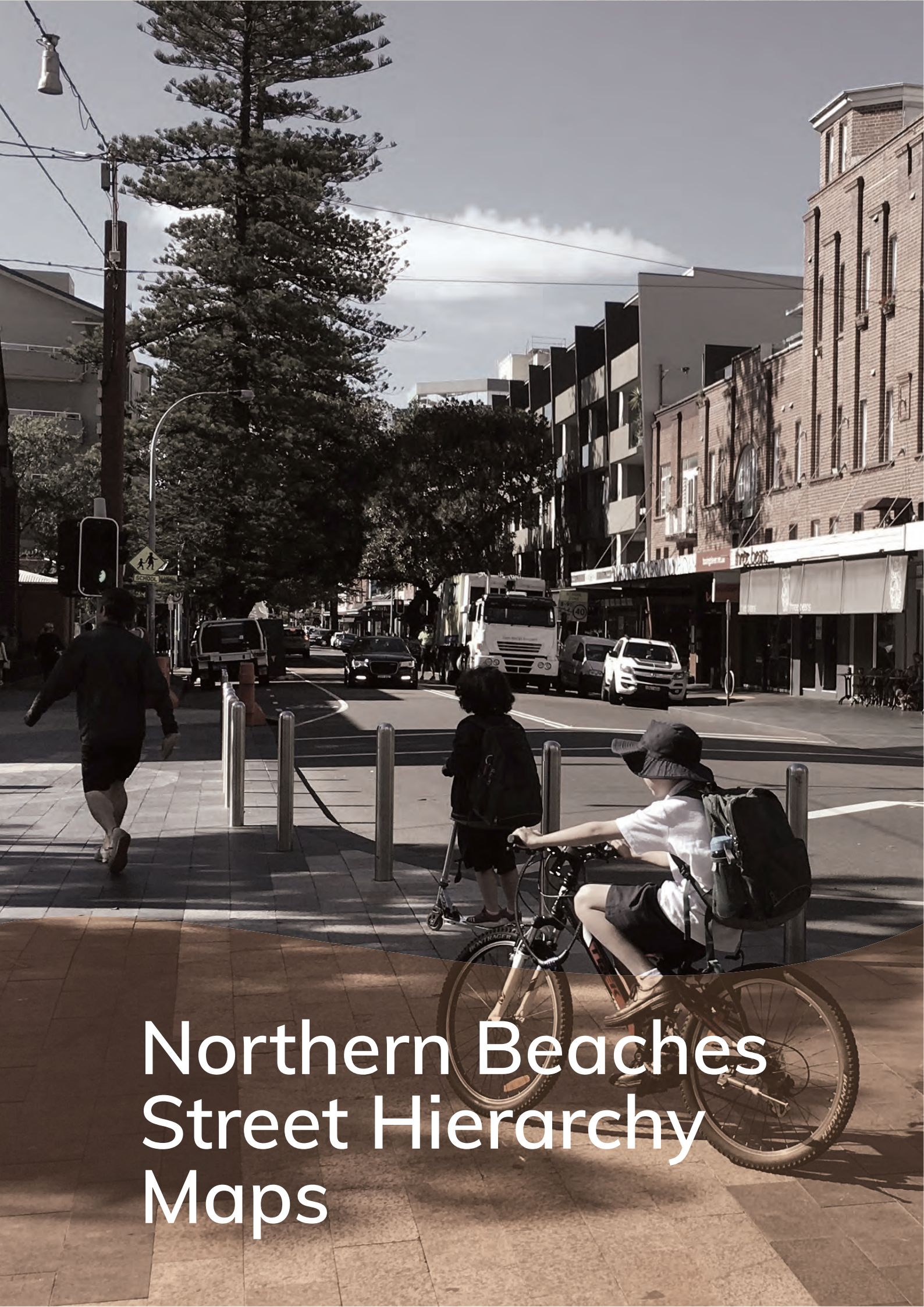


PROPOSED



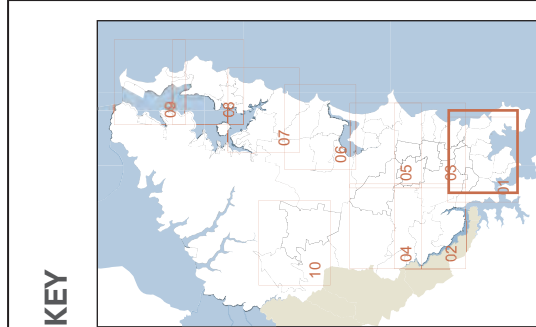
0m SCALE 5m









# Northern Beaches Street Hierarchy Maps





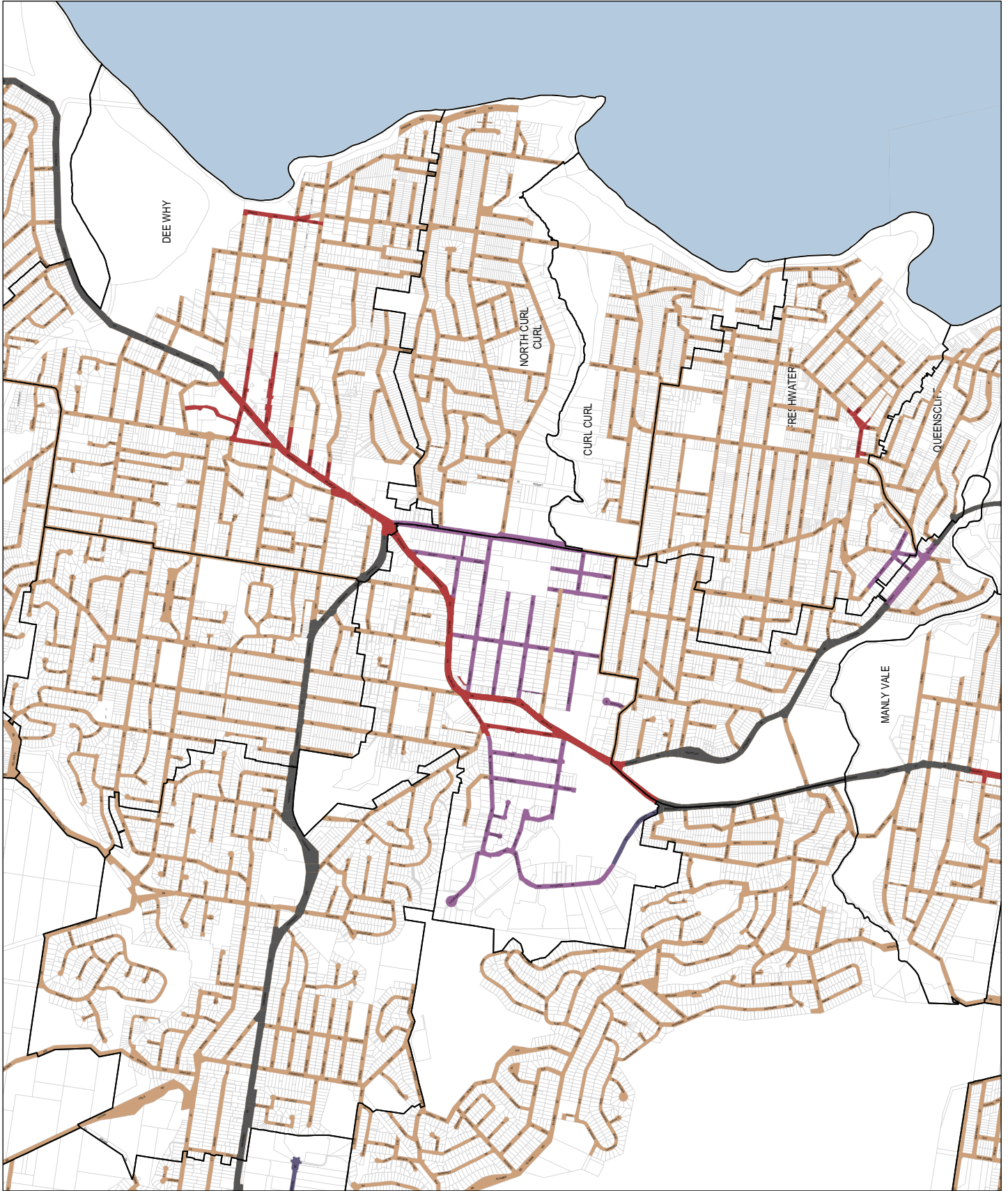
**LEGEND**

-  Local Street & Collector Street
-  High Street
-  Industrial Street
-  RMS Road



Scale: 1:25 000 @ A4





**KEY**

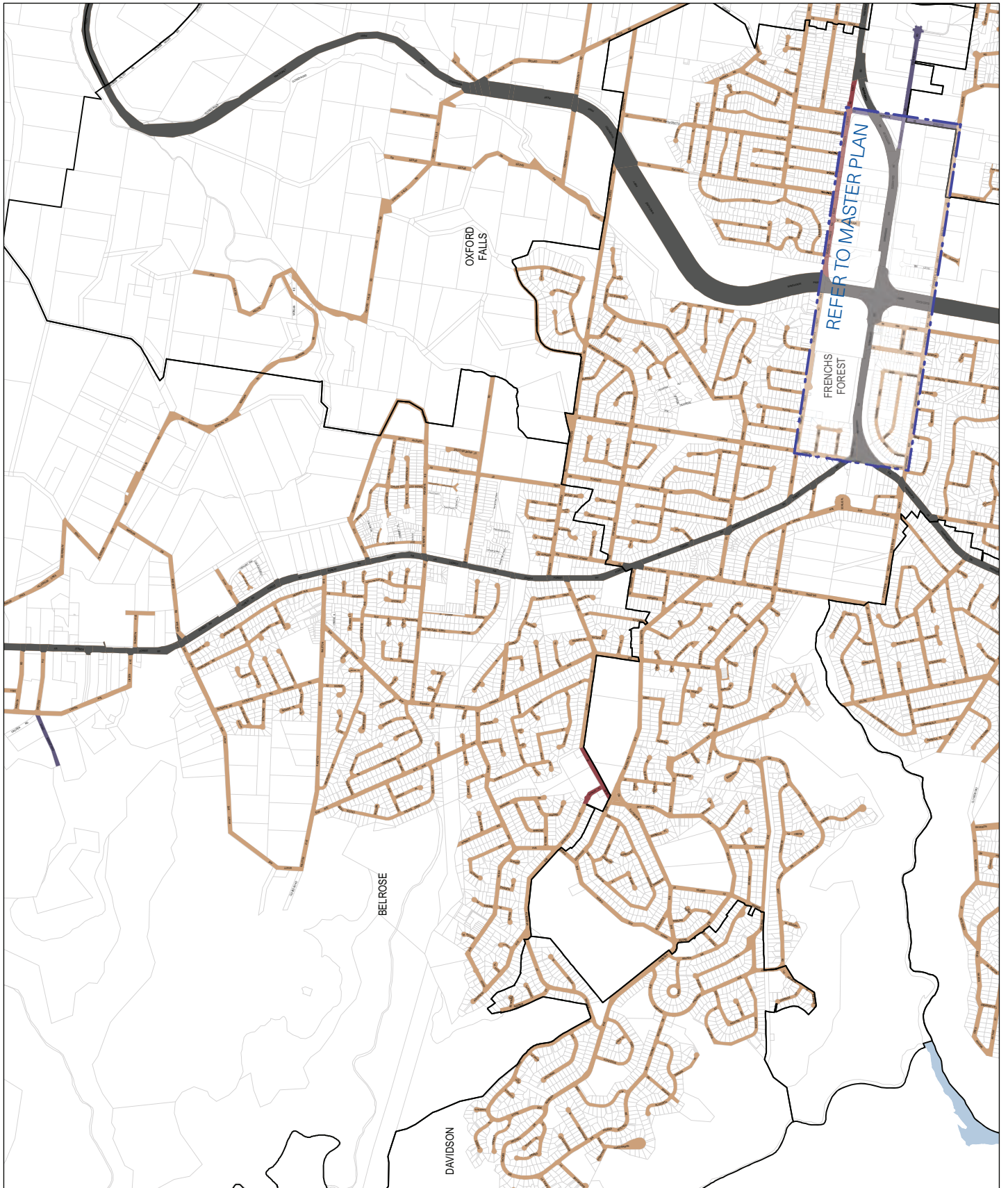
**LEGEND**

- Local Street & Collector Street
- High Street
- Industrial Street
- RMS Road

N

0 100 500 1000m

Scale: 1:25 000 @ A4



**KEY**

**LEGEND**

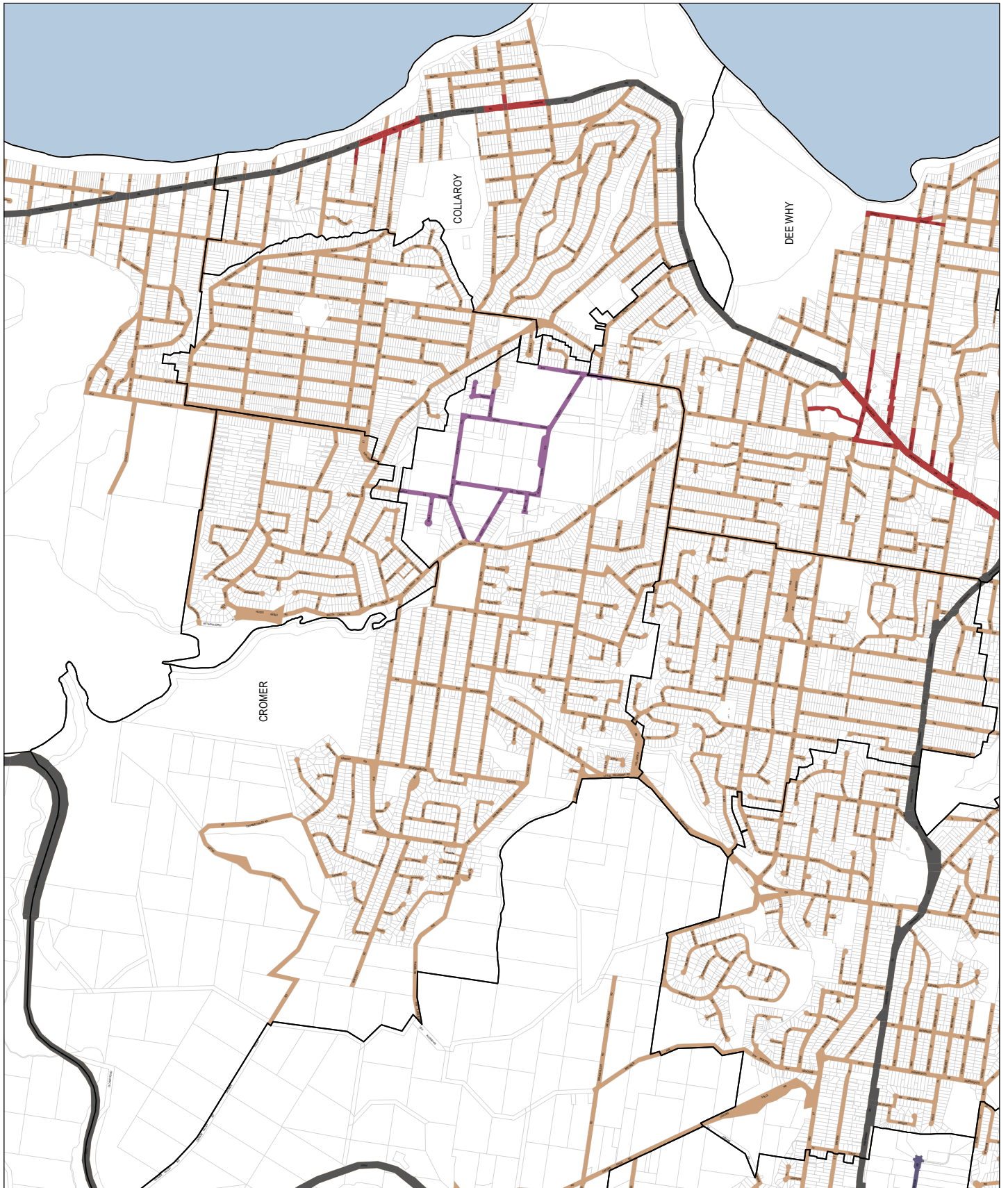
- Local Street & Collector Street
- High Street
- Industrial Street
- RMS Road

N

0 100 500 1000m

Scale: 1:25 000 @ A4





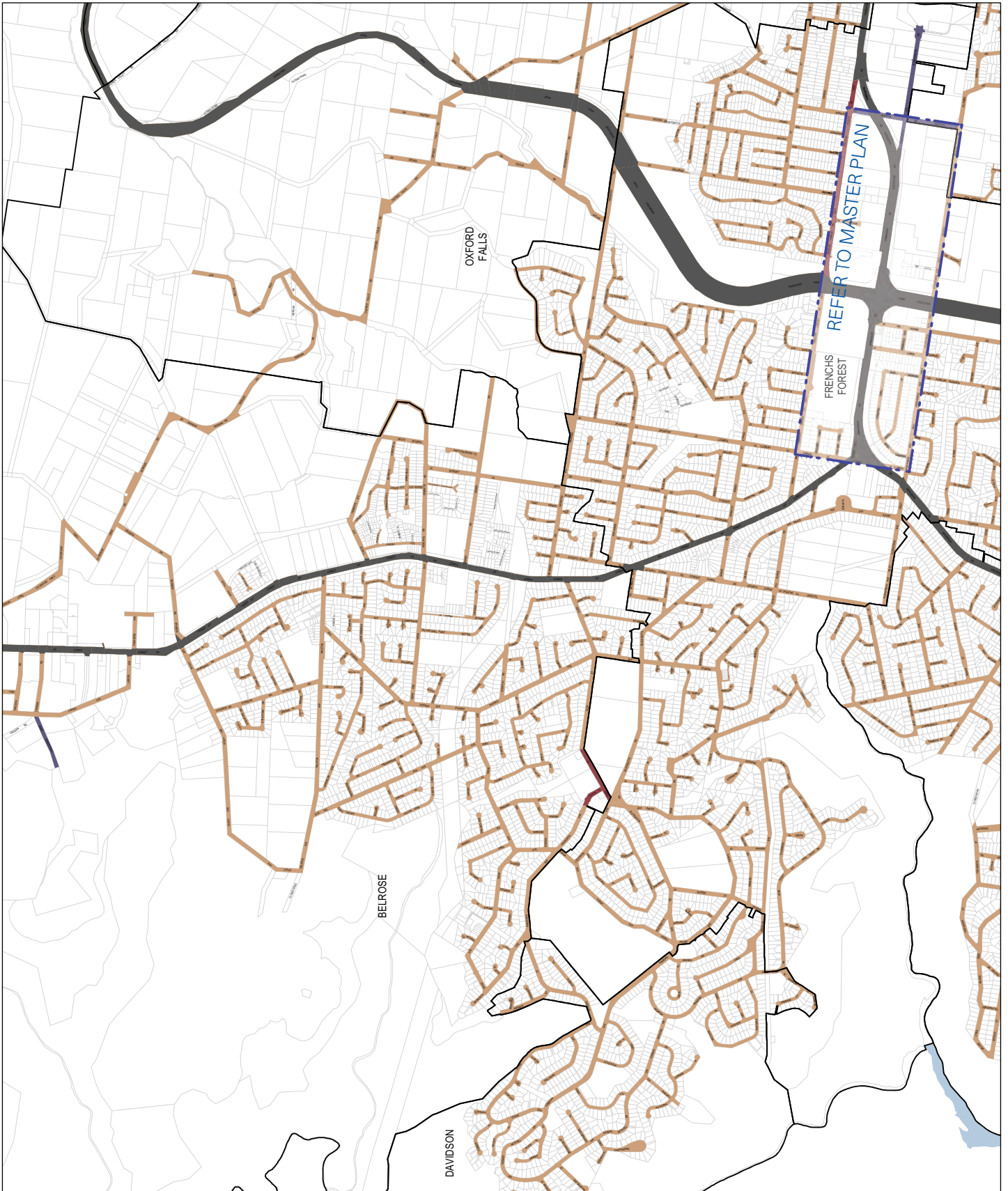
**KEY**

**LEGEND**

- Local Street & Collector Street
- High Street
- Industrial Street
- RMS Road

N

Scale: 1:25 000 @ A4



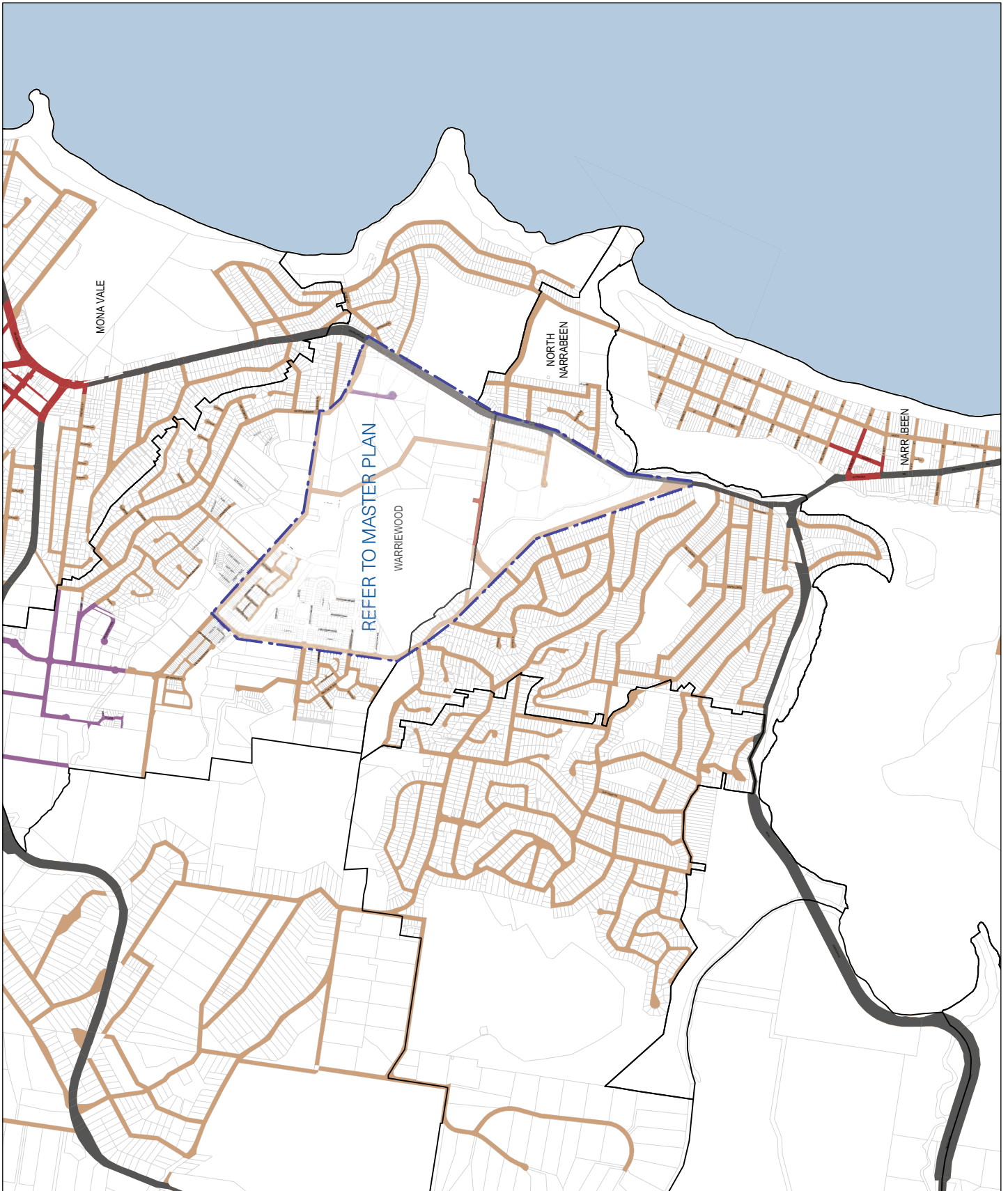
**KEY**

**LEGEND**

- Local Street & Collector Street
- High Street
- Industrial Street
- RMS Road

Scale: 1:25 000 @ A4





**KEY**

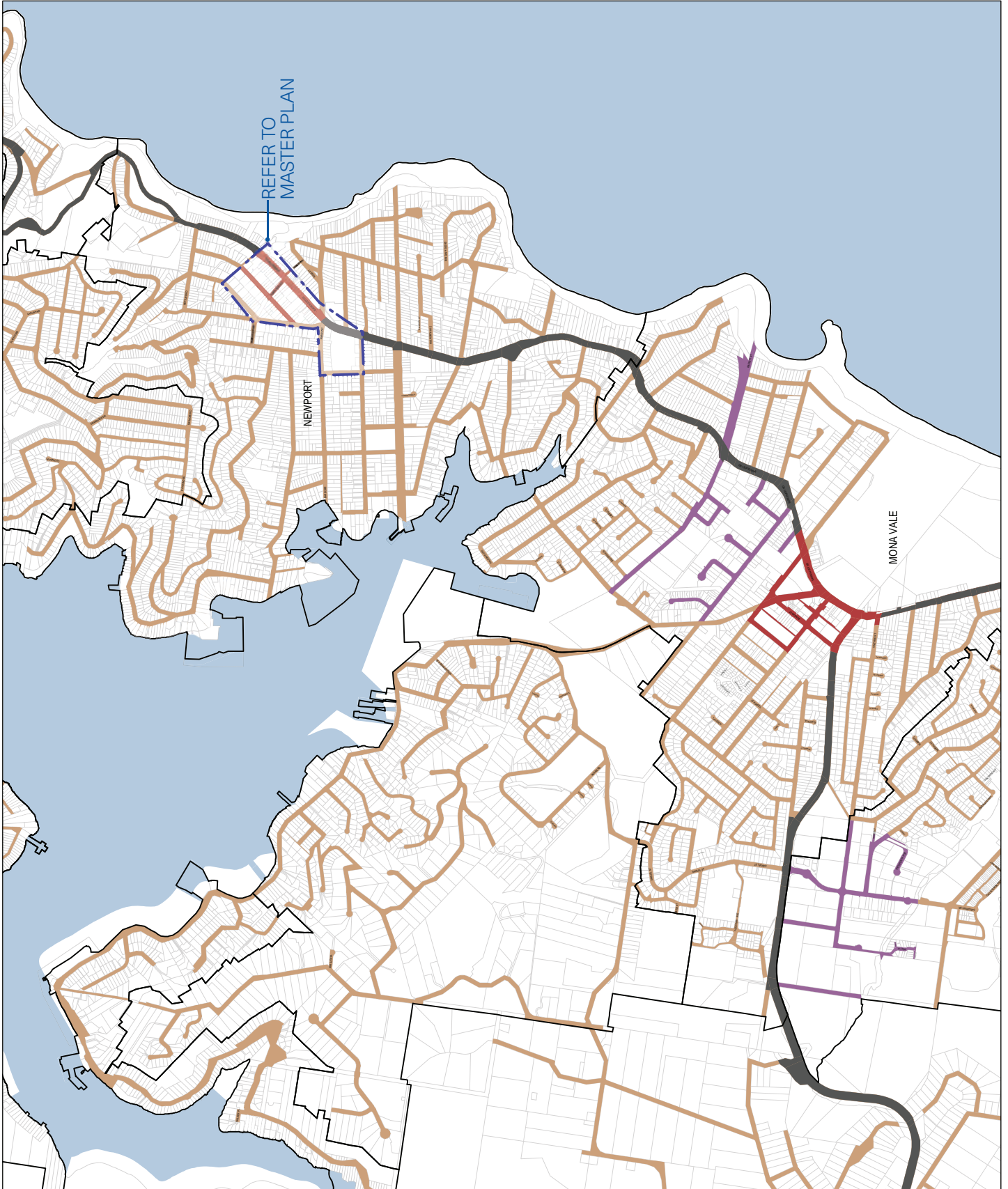
**LEGEND**

- Local Street & Collector Street
- High Street
- Industrial Street
- RMS Road

N

Scale: 1:25 000 @ A4





**KEY**

**LEGEND**

- Local Street & Collector Street
- High Street
- Industrial Street
- RMS Road

N

0 100 500 1000m

Scale: 1:25 000 @ A4



**KEY**

**LEGEND**

- Local Street & Collector Street
- High Street
- Industrial Street
- RMS Road

N



Scale: 1:25 000 @ A4



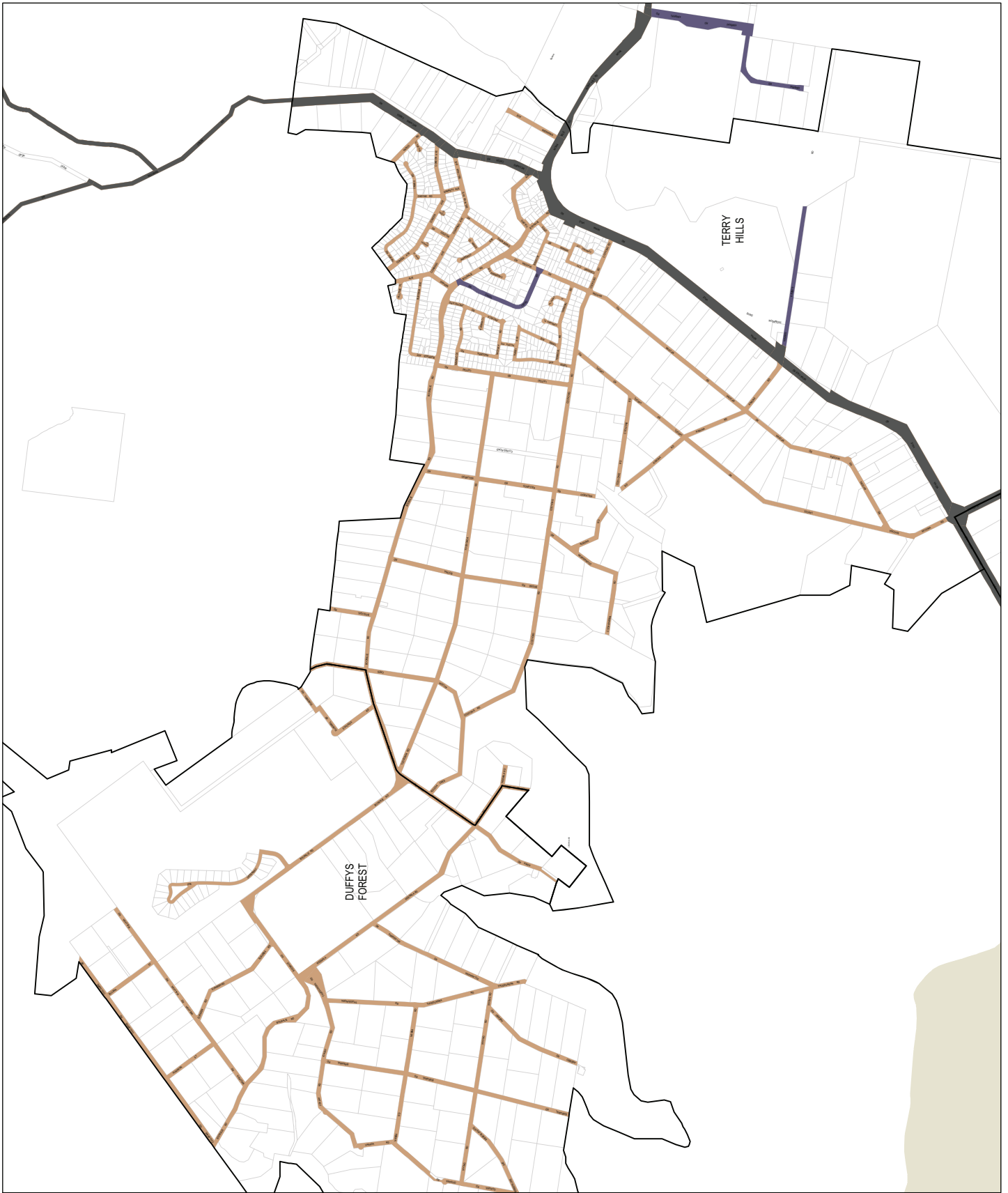
**KEY**

**LEGEND**

- Local Street & Collector Street
- High Street
- Industrial Street
- RMS Road

  
  
 Scale: 1:25 000 @ A4





**KEY**

**LEGEND**

- Local Street & Collector Street
- High Street
- Industrial Street
- RMS Road

N

Scale: 1:25 000 @ A4



# Street and Open Space Components

## D1 INTRODUCTION

Part D of the PSV & DG covers the various public domain components that require careful consideration and coordination throughout the planning, design, and implementation of streets and open spaces.

**A high quality public domain and considered arrangement of elements will need to;**

- provide a unified public domain style that also considers the unique and individual characteristics of local areas across the LGA
- provide parameters to achieve a seamless integration of fixtures, elements, ground plane, planting and edges
- coordinate the components to avoid potential clashes
- provide guidelines to achieving a safe and legible environment for all users
- outline the design parameters and provide design standards that ensure the Design Objectives of the Guidelines are achieved





## D2 TRAFFIC CALMING

### D2.1 CARRIAGEWAY AND LANE WIDTHS

#### Overview

Traffic calming measures include the physical design measures such as narrower carriageway widths, tighter kerb radii, or kerb extensions.

These measures reduce the available area for vehicles to encourage slower moving traffic, and a safer, more generous environment for all people using the street including motorists, pedestrians and cyclists.

#### Purpose

Well designed streets allow for vehicular access and thoroughfare whilst providing a safe pedestrian and cycle environment.

Existing research demonstrates that narrower lane widths provide effective speed management and increase safety for all users of the street.

Narrower travel lanes decrease crossing distances and time within the carriageway for pedestrians.

Strategically placed planting and WSUD device interventions within carriageways compliment and support sustainability and climate resilient street framework for the future.

#### Guiding Principles

- lane widths should be appropriate for the street context and uses
- lane widths should be narrowed where possible whilst still maintaining access for large vehicles, such as garbage trucks or buses
- wide vehicular traffic lanes should be avoided in urban areas where space is constrained and may be better utilised to improve the pedestrian, cycle or environmental infrastructure (such as water sensitive urban design or urban tree planting) within a street.
- narrow lane widths provide a narrower overall carriageway and shorter distance for pedestrians to cross the street
- safer and more desirable pedestrian and cycle environments can be achieved through separation to the carriageway through kerbs, street trees or planting, and public domain furniture
- coordinate land use and transport to improve amenity and support the safe and efficient movement of people, goods and services
- prioritise pedestrians over cars in centres to create places where people want to spend time.
- provide for the efficient movement of freight and deliveries and protect freight corridors
- ensure safe and efficient loading and unloading facilities in new developments

#### Design Standards

- lane widths less than or equal to 3m are generally appropriate in residential areas
- lanes greater than 3.5 metres should be avoided as they enable unintended speeding and double parking, and consume valuable space at the expense of other modes and uses
- in commercial and industrial areas, or on bus routes, 3.5m lane widths may be required for the movement of large truck and buses



SOUTH EVELEIGH// ASPECT STUDIOS

## D2.2 KERB RADII

### Purpose

Well designed intersections are crucial to create safe, efficient intersections.

Reduced kerb radii assists with traffic calming at intersections and establishes priority for pedestrians.

Incorporating climate resilient solutions such as greening of hard surfaces through mass planting and turf will help mitigate urban heat island effects resulting in reduced temperatures in our urban environments and assist in building a climate resilient future for the northern beaches LGA.

### Guiding Principles

- tighter kerb radii is used at street intersections to slow turning vehicular traffic, visually narrow the roadway, and shorten pedestrian crossing distances
- reduced kerb radii improves the visibility for both the driver and pedestrian
- narrowing carriageway widths at intersections reduces turning speed, expands the pedestrian area, and creates a safer environment for all users
- limitations that need careful consideration include the turning paths of buses and other heavy vehicles

### Design Standards

- intersection geometry must be in accordance with the Australian Standards for Access as defined in AS 1428.1—1428.4 for pedestrian access on footpaths
- adopt the smallest possible corner radii – subject to design vehicle and check vehicle requirements
- use kerb extensions to assist in minimising corner radii, maximising pedestrian sight lines and reducing pedestrian crossing distances



GEORGE STREET, REDFERN// ASPECT STUDIOS

## D2.3 KERB EXTENSIONS

### Purpose

Kerb extensions are expansions of the footpath and kerb line into the road lane adjacent. Generous kerb extensions allow opportunities for landscaping, seating, outdoor dining, bicycle parking and storm water management.

Kerb extensions enhance pedestrian safety by increasing pedestrian visibility, shortening crossing distances, slowing turning vehicles, and visually narrowing the roadway.

### Guiding Principles

- kerb extensions should be included on both sides of the street, at all corners and in mid-block locations to assist with pedestrian crossing safety and traffic calming
- kerb extensions should be considered in streets where awnings extend to the kerb to allow for street tree planting
- ground materials should form a seamless whole, matching existing features and materials of the footpath environment
- the design of the kerb extensions needs to be considered in relation to storm water infrastructure, cleaning, vehicle access and traffic management options during road works
- consider inclusion of mass planting buffer if outdoor dining is intended

### Design Standards

- provide kerb extensions at all corners
- provide kerb extensions at mid-block locations and pedestrian crossings to assist with pedestrian safety and traffic calming
- kerb returns should be perpendicular to the kerb
- kerb extensions to use ground materials that integrate with the adjoining footpath materials
- avoid the inclusion of additional elements within kerb extensions that compromise pedestrian circulation, such as railings, bollards and barriers



KERB EXTENSION FOR OUTDOOR DINING, PENRITH// ASPECT STUDIOS



## D3 ON STREET PARKING

### Overview

On-street parking in residential and commercial areas is typically provided as parallel parking along streets.

On street parking is often one of the most contentious elements of street design, mainly due to the fact that parking demand at peak times usually exceeds supply in commercial areas.

Introducing WSUD strategies such as planted raingardens placed strategically throughout hard surface parking areas assists to reduce heat island effects and supports a climate resilience approach to our streets without impinging on the street function.

### Purpose

On-street parking in commercial streets allows visitors and workers to access local centres by car.

On-street parking in residential areas provides for resident and visitor parking. Kerbside space is also typically utilised by residents for storage of additional items such as trailers and boats.

### Guiding Principles

- the space that on-street parking occupies needs to be considered against other street design objectives, such as outdoor dining, planting or water sensitive urban design
- on street parking locations on freight corridors will need to be considered to ensure the efficient

### Design Standards

- minimise the width of parking bays to maximise street space for alternate uses
- a width of 2.5m should be adopted as a starting point and adjusted for vans/ delivery trucks where appropriate, in accordance with *AS 2890.5-2020 Parking Facilities - On-street parking*
- provide car sharing parking spaces to encourage the use of car sharing to help discourage car ownership



## D4 PAVING AND GROUND MATERIALS

### Purpose

To ensure that the paving and ground surface materials form a consistent palette that creates a clear, coherent public domain structure, and provides a unified recognisable character to reinforce open space and streetscape hierarchies.

Materials defined as sustainable encompass low embodied energy mass, are considered within a 'whole life' lifespan, are appropriate to its environmental context and are durable. All factors contribute to a holistic sustainability approach and support a climate resilient response to future infrastructural upgrades across our centres

### Guiding Principles

- the palette of paving materials across the Northern Beaches LGA will reinforce a clear street and open space hierarchy
- materials are high quality, robust, durable and easy to maintain
- materials should also reflect public space context and existing pavement types, and reflect the PSV & DG streetscape and open space hierarchies
- within the Northern Beaches LGA custom finishes may be considered for areas of special significance. Any suite of finishes shall still reflect council principles of durability and appropriateness and should be selected in consultation with Council
- the use of permeable materials such as crushed stabilised sandstone, porous asphalt, porous paving should be considered in appropriate areas to reduce storm water run-off and allow water to permeate the ground surface
- reduce paving area where possible to reduce storm water run-off and mitigate heat island effects
- care should also be taken in the choice of colour of light coloured paving, softfall and other manufactured ground surfaces. Although light colours do not store heat as much as dark colours, they increase the reflectivity of UV radiation. A balance needs to be found between reducing dark surfaces/colours (as they store heat yet do not reflect UVR) and light surfaces (which reflect UVR but do not get as hot)

### Design Standards

- pavements to be supplied according to the schedules and specification details in Section F: Palettes
- any alternative use of materials to be reviewed and approved by Council prior to installation
- surfaces to adhere to AS 4586-2013 for slip ratings.
- opportunities for use of permeable surface materials should be considered in appropriate areas such as parking bays, roadways, footpaths and parkland paths
- permeable surface treatments are appropriate for areas where grades do not exceed 1:40
- permeable surfaces should be considered within the tree planting zone on streets and in parks to increase passive irrigation to trees. Authentic proven permeable solutions should be considered within the tree planting zone, with short term establishment access points. (ensuring initial establishment watering is permitted by this medium)
- infill pit lids with pavement to match surrounding surface material to be installed where possible



MANLY CORSO// ASPECT STUDIOS



## D5 FOOTPATH ELEMENTS

### D5.1 FOOTPATH TYPES

#### Purpose

The pedestrian area of the street is for pedestrian activity, and in some instances, shared use for cyclists.

Footpaths that are safe, accessible, and well-maintained enable connectivity and promote walking. They activate streets from a social and economic perspective, and are the meeting places for the community in residential areas and commercial centres alike.

Material selections for all footpath types address key sustainability principles including assessing 'whole of life' of material, durability and urban heat island effects. Appropriate material selection reflect a sustainable choice that will work to support a climate resilient future.

Ancillary uses such as eating, sitting and socialising can be accommodated in appropriate locations if space and safety issues allow. A unified palette of paving and kerb materials creates a consistent streetscape structure and accentuates the visual continuity of the street.

#### Guiding Principles

##### Local Streets

- local streets typically have less pedestrian activity than high streets
- footpaths on Local streets are vital in providing residents viable connections to essential services and destinations (such as schools) for walking pets or fitness, and to connect to public transport
- the Pedestrian Zone typically consists of a footpath to allow for continuous access along the street and connections to parks and open spaces
- amenity and comfort is provided by street trees and planting
- regular spaced furniture, such as seats, and street lighting contributes to making the pedestrian environment more comfortable, desirable and accessible to all

##### High Street Footpaths

- footpaths on high streets should feature a wider Pedestrian Zone to accommodate high volumes of pedestrian traffic while avoiding conflicts with a variety of other footpath uses
- street tree planting on High Streets is typically located in tree pits to maximise usable footpath space
- public domain furniture, way finding signage and

street lighting should be located outside of the main path of travel

- kerb extension and blisters in High Streets can be utilised for outdoor dining, mass planting or additional public seating

#### Shared Paths

- shared paths allow both cyclists and pedestrians to use the path
- cycling is generally preferable on dedicated cycling lane. Where the existing street cross section does not allow sufficient width, a shared path can be considered
- the design of shared paths—including minimum dimensions, preferred horizontal and vertical geometry, and safety clearance requirements—are to conform with the Austroads Guide to Road Design Part 6A, Paths for Walking and Cycling





## D5.2 FOOTPATH JUNCTIONS

### Purpose

Footpath junctions at street corners and intersections where two different materials meet will emphasise and/or prioritise the streetscape hierarchy.

### Guiding Principles

- pavement material of the priority street (main street) should continue around the corner of a block to strengthen the connection across the roadway
- a logical termination of paving types can be the radius transition point or building property line

### Design Standards

- where 2 different pavement materials meet at a corner, the pavement material of the higher priority street will be continued around the corner



### D5.3 DRIVEWAY CROSSOVERS

#### Purpose

Driveway crossings provide vehicle access to private property from the road carriageway across the footway. Driveways from the property to the road are the responsibility of the property owner for construction, maintenance and replacement. Slight-lines must be maintained.

Driveways to large commercial developments or loading docks shall be construct it in reinforce plain concrete in lieu of segmental paving.

#### Guiding Principles

- driveway widths should be minimised to increase the provision of landscape planting and street trees within the street
- ensure private vehicle access across the pedestrian path of travel does not compromise the quality of the street experience, including pedestrian movement, comfort and safety
- reinforce pedestrian priority on a street over driveway crossovers. Driveways should not interrupt the pathway of pedestrian movement, while footpath pavement material should be continuous across the driveway to emphasise pedestrian priority
- the pavement material for the driveway crossover is to be appropriate for vehicular loads, and of colour and finish to match the adjacent footpath paver.
- promote shared driveway access and encourage rear access to properties

#### Design Standards

- minimise the width of driveways on all streets:
- 3m for single car garages
- 4m for double car garages
- paving materials and colours used are consistent with the footpath to identify pedestrian priority and not interrupt the footpath
- footpath levels and cross falls are maintained through the driveway crossover
- driveway crossovers are to match the footpath



WOLLONGONG UNIVERSITY// ASPECT STUDIOS

## D6 INTERSECTIONS

### D6.1 KERB RAMPS

#### Purpose

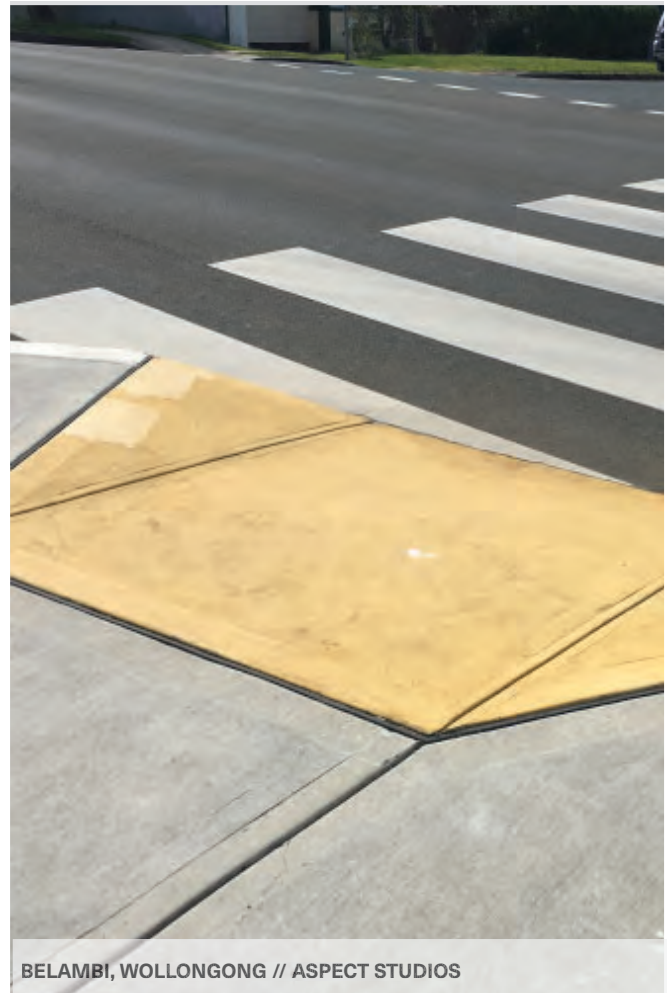
Kerb ramps provide universal access through urban environments.

#### Guiding Principles

- pedestrian ramps must be installed at all intersections and mid block locations where pedestrian crossings exist
- orientation of ramps must meet accessibility standards to ensure safe passage of persons with visual or physical impairments across the street
- preference is for the kerb ramp material to match the adjoining footpath material, and use of tactile indicators (to achieve luminance contrast requirements as per AS1428 standards) to aid visually impaired people

#### Design Standards

- kerb ramps on high streets and in town and village centres are to be paved to match adjoining footpath material, and installed with tactile indicators in accordance with the Northern Beaches Pedestrian Mobility and Access Plans (PAMP) and AS1428
- pedestrian ramps on local streets are either coloured dark terracotta concrete, in contrasting colour to adjacent paving (to meet luminance contrast), or installed with tactile indicators in accordance with the PAMP
- installation of tactile ground surface indicators and ramp alignment to meet AS1428 standards
- kerb ramps should be oriented in the direct line of travel at all intersections and pedestrian crossings



BELAMBI, WOLLONGONG // ASPECT STUDIOS



## D6.2 RAISED PEDESTRIAN CROSSINGS

### Purpose

Raised pedestrian crossings define where pedestrians are prioritised in the roadway, and can safely cross the street.

### Guiding Principles

- raised pedestrian crossings may be used on two lane, two way streets in strategic locations to assist in enforcing speed limits (eg. 40kph high pedestrian activity zones)
- raised pedestrian crossings must be differentiated by lighting
- maximise the opportunity to install raised crossings in combination with kerb extensions to reduce the crossing width, and to calm traffic
- maximise opportunities to adopt kerb extensions at pedestrian crossings to reduce the crossing width and calm traffic
- use raised pedestrian crossings to emphasise crossing points, particularly at unsignalised mid-block crossing locations
- use a change in paving unit or colour to enhance the contrast between the carriageway and crossing

### Design Standards

- a marked foot crossing requires the approval of Council’s Traffic Committee
- sight lines are to be maintained at crossing points to avoid conflicts and allow adequate space for people to use the crossing safely
- use kerb extensions, lighting, street trees and landscaping at raised crossing locations to assist with visually narrowing and compressing the street.
- for crossings at intersections, minimise corner radii to assist with creating appropriate vehicle speeds, reducing crossing distances, and minimising potential conflicts between street users
- for mid-block crossings, provide raised pedestrian crossings where possible, and ensure accessible paths-of-travel and interfaces with adjoining footpaths



CROWN STREET SURRY HILLS// ASPECT STUDIOS

## D7 UTILITIES

### Purpose

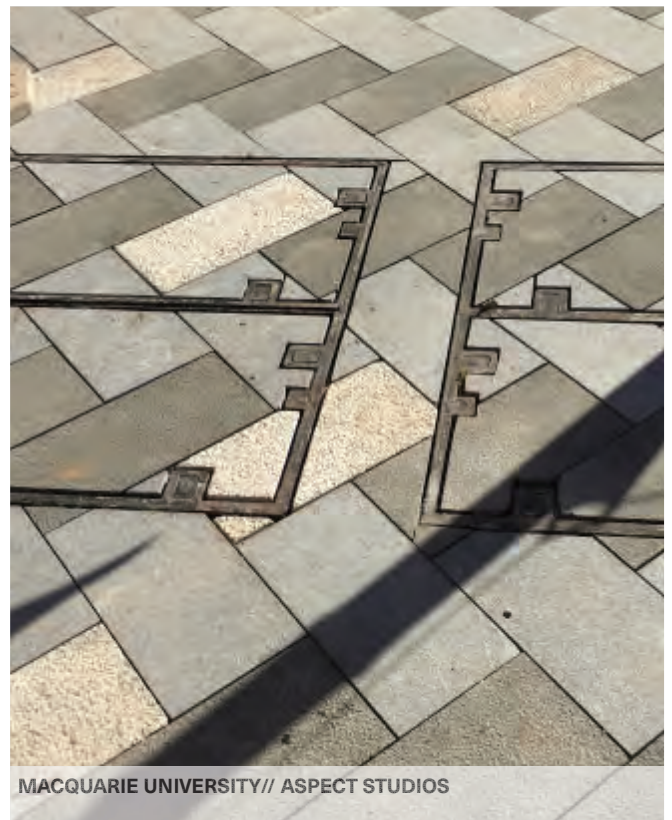
Utilities in the public domain consist of utility poles, overhead wires, surface pits, and electricity kiosks. Streets and open spaces need to be designed to accommodate the requirements for access and installation for all utilities.

### Guiding Principles

- utilities should be efficiently located to minimise impacts on other existing or potential streetscape elements, maintain standard access and maintenance requirements
- consideration should be given to the under grounding of overhead services, where feasible, to main streets to reduce visual intrusion and provide optimum conditions for achieving urban tree canopy targets
- prioritise under-grounding within bushfire prone land. Investigate advantages and disadvantages of Aerial Bundled Cables before adopting this method within bushfire prone land
- aerial Bundled Cable (ABC) is also appropriate for other streets to reduce impacts on the local tree canopy
- where practical, pit lids should consist of infill pit lids with paving inserts consistent with the paved footpath finish
- consider adopting energy saving and efficient utilities and green infrastructure such as bioswales, impervious strips and porous pavements, reclaimed water systems, district cooling and heating, and automated waste collection systems.
- ensure upgrades to infrastructure address impacts from climate change, including urban heat, UV radiation exposure, sea-level rise and increased incidence of bush fire, flooding and storm surges
- incorporate public art projects into infrastructure upgrades

### Design Standards

- streets are required to provide enough space for utility spacing and depth of cover in accordance with municipality and utility requirements
- services should be parallel or perpendicular to adjoining property boundaries
- locate mains within verge
- avoid planting tree species with invasive roots in proximity to mains
- explore opportunities to divert low-flow rain water to adjacent landscape and street trees
- utilities shall be located in accordance with the corridors identified in the street openings conference specifications
- infill pit lids shall only be used where segmental paving is installed in commercial centres. They are not to be used for plain concrete due to cost
- purpose doesn't mention anything about underground services associated with water sewer gas electricity telecommunications
- utilities shall be located in accordance with the corridors identified in the street openings conference specifications





## D8 PUBLIC DOMAIN FURNITURE

### Purpose

Furniture elements form an integral part of the public domain identity, reinforcing the character of the Northern Beaches. They provide important amenities for pedestrians and add functionality and vitality to the public realm.

### Guiding Principles

- public domain elements are designed as a suite of elements, and establishes a clear hierarchy and coherent character for the LGA
- allowance for unique and bespoke furniture elements to be introduced into character areas where relevant and practical, and subject to Council approval
- furniture needs to be consistent in colour, form and detailing. Refer to Section F for details
- location of furniture of elements needs to allow for access for maintenance vehicles
- street elements should be co-located as often as possible in a way that contributes to street amenity and function. For example, seating should be located under street trees, or rubbish bins located near traffic signals at pedestrian crossings
- furniture selection prioritises ergonomic design to enhance performance and accessible function
- furniture constructed with 'whole of life' and durability for material selection incorporating climate resilience principles
- rubbish bins should be situated to be readily identified by users without impacting on visual amenity

### Design Standards

- street furniture must be sited within the Furniture Zone or within kerb extensions
- street furniture is to be clear of pedestrian paths of travel and not inhibit desire lines
- all street furniture, including street lighting, should typically be located 600mm from the face of adjacent kerb, except for seating for which it is preferable to locate 1m from the face of kerb
- space seats at regular intervals along footpaths to allow for less able bodied people the opportunity to rest. Seats should have back and arm rests and conform to AS1428 standards. The interval distance between seats may need to be decreased if the footpath is particularly steep, or where there are large populations of elderly or less able bodied people nearby (eg adjacent nursing homes or hospitals)
- provide opportunities for furniture to be multi-function, especially in parks; encourage play/climbing for children, exercise or integrated art
- bins located away from key view points
- in shopping strips, design and place rubbish bins in strategic locations to avoid overuse by privately owned shops which generate significant waste volumes
- avoid rubbish bins being placed in locations which would enable the bin to be used as a recreational structure; skate ramps



SCULPTURAL BIKE RACK //PINTEREST



## D9 LIGHTING

### Purpose

Lighting within public spaces helps to define a positive urban character and supports night time activity and safety.

### Guiding Principles

- ensure lighting does not have an adverse effect on adjoining residences
- Street lighting, including roadway, pedestrian and cycleway lighting, used in conjunction with street trees as an organising element establishes the rhythm of the streetscapes
- lighting to urban plazas and spaces adjacent to retail and outdoor dining assists in creating opportunities to encourage night activity and promotes safe urban spaces
- consideration should be given to dimmable fittings to provide lower lighting levels during dining hours and increasing to provide a well-lit pedestrian zone after-hours
- energy efficient lighting should be used in all lighting scenarios. Lighting should reference energy efficient options, appropriate colour temperature of the lights for the location and measures including the use of sensor lights were feasible. i.e. where lighting is not required for CPTED purposes
- within the Northern Beaches LGA custom lighting including seasonal lighting may be considered for areas of special significance. Any suite of lighting shall still reflect council principles of durability and appropriateness and should be decided in consultation with Council
- investigate opportunities for smart poles that provide multifunction facilities e.g. Street banners, signs and electric vehicle charging

### Design Standards

- street lighting is to be in accordance with Ausgrid and relevant Australian Standards
- lighting to parks and reserves is to comply with Australian Standards and focused on primary pedestrian paths through the space
- options for energy efficient lighting should be investigated where possible
- lighting to comply with Councils Lighting guide



SYDNEY ROAD PLAZA BESPOKE LIGHTING//KAREN WATSON

## D10 SMALL BUILDINGS AND SHADE STRUCTURES

### Purpose

Small buildings and structures include park amenities and storage facilities, shade structures and umbrellas.

Well designed and correctly positioned structures play an important role in providing amenity, shade and gathering spaces within in the public domain.

Additionally the role of end of trip facilities is important to address changes in patterns of commuting and human movement across the Northern Beaches LGA.

Consideration for access for all abilities, surveillance and safety, and shade should be given within the design of the structure and its position within the public domain.

Small buildings and structures could consider green walls/decorative planter boxes/community herb gardens to promote green cover, sustainable messaging and sense of community.

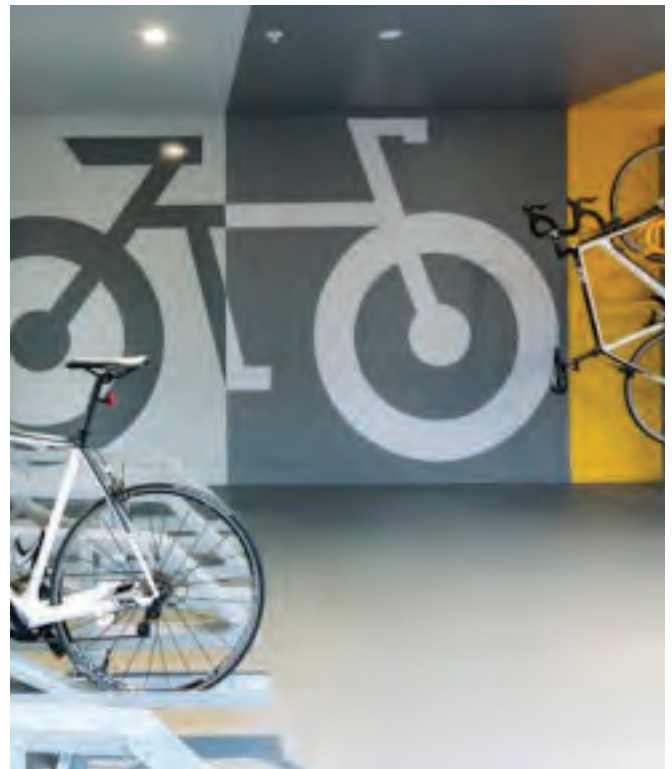
Consideration should be given toward the role of the structure in providing opportunities for shade, and designing it appropriately. Guidelines to Shade - A practical guide for shade development in New South Wales, 2013, provides further information.

### Design Standards

- ensure Building Code of Australia / National Construction Code (BCA/NCC) compliance is achieved
- prioritise rainwater collection for water re-use
- ensure natural ventilation is achieved
- improve energy, water and waste efficiencies such as the use of solar panels and other sustainable initiatives are encouraged
- provide amenities that respond directly to demand, both now and in the future
- provide opportunities for adaptability and multi-use
- ensure safety and surveillance in accordance with crime prevention through environmental design (CPTED) principles
- provide equal access, and logical connections from other facilities (such as amenities building, car park or kerb)
- ensure that the structure is aesthetically pleasing, incorporates the use of a variety of materials and finishes where appropriate and ensure design and finishes are of high architectural merit
- ensure the building coexists with any other existing structures in the vicinity and appropriately addresses the character and context of the locality



**NARRABEEN LAGOON SHADE STRUCTURE**// NORTHERN BEACHES COUNCIL



**END OF TRIP FACILITIES**// EVC COMMERCIAL PROJECT MANAGEMENT

## D11 BUS SHELTERS

### Purpose

Bus shelters within the streetscape provide important environmental protection and seating opportunities for public transport commuters.

### Guiding Principles

- the location of bus shelters should be outside the main path of pedestrian travel and should minimise clutter on streets and within public spaces
- bus shelters located at high volume bus stops along key arterial roads should reflect the needs of commuters including visual permeability and safety
- bus shelters should be designed to maximise shade opportunities, especially at times of the day and year when the shelters experience their highest use
- bus shelters can be used for art, community information or advertising

### Design Standards

- bus shelters shall be designed and allocated to ensure compliance with standards for accessible public transport (DSAPT) and Australian Standards
- Contact Northern Beaches Council for further information on Bus Shelters and suppliers contract
- provide amenities such as furniture with the opportunity to integrate wifi and charging stations



DEE WHY BUS SHELTER// ASPECT STUDIOS



## D12 BUILDING AND STREETScape INTERFACES

### D12.1 OUTDOOR DINING

#### Purpose

Outdoor dining is a key component of delivering lively and engaging urban areas, and assisting with activation of public spaces both during day time and night time hours.

#### Guiding Principles

- it is recognised that not all public spaces are suitable for outdoor dining and each location shall be treated on its merits to ensure safety of restaurant patrons and access for pedestrians
- within the Northern Beaches LGA outdoor dining opportunities should support inclusive access and design quality
- locate outdoor dining areas so as to not have a negative impact on adjoining footpath areas or cause roadside hazards for passing cyclists and motorists
- maximise street tree planting to provide amenity for outdoor dining areas

#### Design Standards

- provide a clear, unobstructed footpath zone so pedestrian through movement is maintained
- for further information refer to Northern Beaches Council's 'Outdoor Eating Area Policy,' or contact Council



MANLY LANEWAY// KAREN WATSON

## D12.2 STREET AWNINGS

### Purpose

Awnings form an integral part of the streetscape elements, defining character and providing shade and weather protection for active streetscape areas.

### Guiding Principles

- awnings must form an integral part of the architecture of the building and be designed as continuous for the building frontage of the development including corners and above vehicle entry points
- awnings should be designed to maximise shade and shelter, especially at times of the day and year when the street experiences its highest use and at times of high UV radiation
- awnings are to be located between the ground and first floors to maximise weather protection, and located at a height that ensures continuity in appearance with adjacent awnings
- awnings should have a relationship to any distinctive features of the building awnings should ensure any lighting fixtures are recessed into the awning and all wiring and conduits are concealed

### Design Standards

- awnings are to be setback to provide minimum 1.5 metre from the face of the kerb to accommodate utility poles, street trees and greening, and vehicles in the kerbside lane
- where street trees are limited by awnings, opportunity for planting within the parking lane is encouraged
- be cantilevered and non-trafficable
- slope away from the kerb to conceal gutters and downpipes
- be integrated within the building street address facade
- where solar access is limited consideration to the use of glazed awnings will be assessed on merit
- cut out segments in awnings are not acceptable, unless integral to the structural design and intent of the building it is attached to



MANLY// KAREN WATSON



## D13 SIGNAGE AND WAYFINDING AND INTERPRETATION

### Purpose

A co-ordinated suite of signage is an important component in achieving legible and quality public open spaces.

### Guiding Principles

- where appropriate, signage elements, both wayfinding and interpretative, should be integrated in the public domain and existing site features to minimise clutter in the public domain. (Applications can include paving inlay, signage attached to buildings, attachment to existing poles or fence rails).
- suburb identification signage to be allocated within a vegetated setting where possible, and to be easily legible from a passing car
- incorporate public art projects into infrastructure upgrades
- include electronic signage in some places for real time and just in time messaging

### Design Standards

- signage to comply with Council's Style Guide
- signs should be constructed from a durable material that is easy to clean and graffiti resistant, and meets Council's longevity requirements
- all signs to be designed and located in accordance with Australian Standards
- all signage is to be located so as not to obstruct the path of pedestrian or cycle travel
- all signage should be made of sustainably sourced or recycled materials





## D14 TREES AND UNDERSTORY PLANTING

### D14.1 TREE SPECIES SELECTION

#### Purpose

Urban trees are essential to the health of our urban villages and are valued for their contribution to improving the quality of life in urban environments through social, environmental, and economic benefits.

Tree planting in public spaces improves environmental quality, reduces the impacts of urban heat island effects, enhances visual continuity, shade and unity, and reinforces local identity and character.

Critical to the creation of a climate resilient community is the need for increased tree canopy and understorey planting across the entire LGA.

#### Guiding Principles

- urban trees provide temporary relief and comfort in public spaces and reduces urban heat impact
- the density and spread of the tree canopy should be considered when selecting trees that will provide shade. *Guidelines to Shade - A practical guide for shade development in New South Wales, 2013*, provides further information
- street trees improve the visual quality of the streetscape to create an attractive urban setting.
- street trees improve air quality, absorb carbon and collect rainfall
- select trees that are appropriate for the site environmental conditions with regard to soil, wind, solar
- select appropriate trees according to the location and installation treatment to ensure the healthy growth and long term benefits
- selection of tree species should consider adjacencies to existing planting, in particular remnant and endemic stands of vegetation
- tree planting location, and species selection should consider potential conflicts with above and below ground services
- street tree selection is historically dominated by single species. Whilst this results in an attractive urban setting, this does increase the susceptibility of failure due to pests and diseases and failure due to changes to the urban climate. Urban street trees of a diverse range of species improves tree canopy resilience

#### Design Standards

- refer Section G this document for a range of appropriate street and park trees recommended by Council
- street trees to be planted at 6m to 12m centres, located to avoid utilities
- planting within hardpave areas should utilise structural load bearing modules, such as Stratavault system, to maximise available soil volume for root spread
- select street trees of a diverse range of species to improve tree canopy resilience and biodiversity.
- select tree species endemic to the Northern Beaches to enhance remnant forests and native fauna species where possible
- consider frangibility of trees within streetscapes
- adhere to RMS requirements and driver sight distances
- palms such as Cabbage Tree Palms (indigenous to the northern beaches) shall not be planted in pavements due to palm frond drop and, if considered, must be planted into large garden beds
- port Jackson Fig (indigenous to the northern beaches) shall not be planted in pavements due to root spread and, if considered, must be planted into large garden beds
- tree species selection and the proximity of tree planting to carriageways to not impede access by maintenance and service vehicles
- assess whether measures to manage or reduce root damage of paving such as root control barriers are required
- tree species for streets within bushfire asset protection zones will need careful selection for fire retardant properties. Refer to Council or RFS as required



ASPECT STUDIOS IMAGE

## D14.1 TREE SPECIES SELECTION

### Indicative Tree Species

The tree list provided below is indicative only, and subject to Northern Beaches Council approval.

This tree list is subject to accordance with the local vegetation associations existing within the locality.

The adopted manly council street tree masterplan remains applicable and is to be read in conjunction with this document.

### High streets and RMS roads

#### Large trees:

- *Livistona australis* - Cabbage Tree Palm
- *Lophostemon confertus* - Brushbox
- *Waterhousia floribunda* - Weeping Lillypilly

#### Small to medium trees:

- *Buckinghamiana celsissima* - Ivory Curl
- *Elaeocarpus eumundi* - Smoothed Leafed Quandong
- *Lagerstroemia indica* - Crepe Myrtle
- *Syzygium leuhmannii* - Riberry
- *Tristaniopsis laurina* - Water Gum
- *Xanthostemon chrysanthus* - Golden Penda

Where suitable unobstructed ground area and soil volume is available:

- *Acmena smithii* - Lilly Pilly
- *Ficus rubiginosa* - Port Jackson Fig

### Residential Streets

#### Large Trees:

- *Livistona Australis* - Cabbage Tree Palm
- *Lophostemon Confertus* - Brushbox
- *Waterhousia Floribunda* - Weeping Lillypilly

#### Small To Medium Trees:

- *Buckinghamiana Celsissima* - Ivory Curl
- *Callistemon Viminalis* – Bottlebrush
- *Elaeocarpus Eumundi* - Smoothed Leafed Quandong
- *Elaeocarpus Reticulatus* - Blueberry Ash
- *Hibiscus Tiliaceus* - Native Hibiscus
- *Lagerstroemia Indica* - Crepe Myrtle
- *Syzygium Leuhmannii* - Riberry
- *Stenocarpus Sinuatus* - Firewheel Tree
- *Tristaniopsis Laurina* - Water Gum
- *Xanthostemon Chrysanthus* - Golden Penda





## Parks And Open Spaces

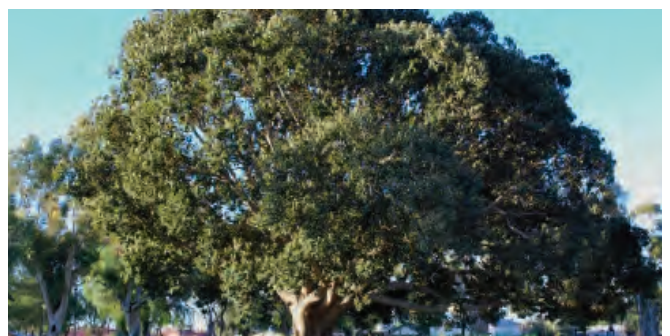
### Large Trees:

- *Acmena Smithii* - Lilly Pilly
- *Angophora Costata* - Sydney Red Gum
- *Angophora Floribunda* - Rough Barked Apple
- *Banksia Integrifolia* - Coastal Banksia
- *Corymbia Maculata* - Spotted Gum
- *Corymbia Gummifera* - Bloodwood
- *Eucalyptus Botryoides* - Bangalay
- *Eucalyptus Haemastoma* - Scribbly Gum
- *Eucalyptus Pilularis* - Blackbutt
- *Eucalyptus Punctata* - Grey Gum
- *Eucalyptus Paniculata* - Grey Ironbark
- *Eucalyptus Robusta* - Swamp Mahogany
- *Eucalyptus Sieberi* - Silver Top Ash
- *Ficus Macrophylla* - Moreton Bay Fig
- *Glochidion Ferdinandi* - Cheese Tree
- *Livistona Australis* - Cabbage Tree Palm
- *Melaleuca Quinquenervia* - Paperbark
- *Syncarpia Glommulifera* - Turpentine



### Small To Medium Trees:

- *Allocasuarina* - She-Oak
- *Angophora Hispida* - Dwarf Apple
- *Banksia Serrata* - Old Man Banksia
- *Backhousia Myrtifolia* - Grey Myrtle
- *Ceratopetalum Apetalum* - Coachwood
- *Ceratopetalum Gummiifera* - NSW Christmas Bush
- *Elaeocarpus Reticulatus* - Blueberry Ash
- *Eucalyptus Haemastoma* - Scribbly Gum
- *Ficus Rubiginosa* - Port Jackson Fig
- *Hymenosporum Flavum* - Native Frangipani
- *Melaleuca Armillaris* - Bracelet Honey Myrtle
- *Melaleuca Linariifolia* - Snow In Summer
- *Syzygium Paniculatum* - Magenta Cherry





## D14.2 TREES ON PLANTED/ TURF VERGES

### Purpose

Planted or turf verge treatments are promoted to reduce the extent of paved surfaces and provide separation between the footpath and the roadway.

Where footpaths exist or are being constructed, there should be a vegetated separation (verge) to reduce storm water runoff, capture pollutants and reduce the Urban Heat Island effect.

Trees on verges provide continuous canopy cover over the road corridor, including carriageway and verge areas, in addition to providing shade, amenity and comfort for footpaths and cycleways. Trees are located within turf or mass planting, and located behind the kerb, on both sides of the street.

Opportunities exist on low traffic roads to provide planted medians within the road carriageway. These can assist in softening hardstand where wide carriageways exist and can contribute to improving pedestrian safety by deterring informal crossing.

Mass planting in verges could include planting of low grasses and shrubs, including herbs. Species selection should be mindful of height of plants, ensuring that plant selection does not obscure view lines within the road reserve.

Verge and median treatments should avoid planting of flowering shrubs that may potentially increase likelihood of bird strike along high speed roads, local streets or blister planting.

### Design Standards

- provide a continuous row of street trees, spaced minimum 6m to maximum 10m, on both sides of the street, where space allows
- locate street trees as near as possible to the rear of the kerb to a minimum of 600mm from face of kerb.
- species selection should support endemic vegetation communities
- consideration toward species selection to be given in ensuring pedestrian safety and sightlines are maintained
- verge planting should not impede access for pedestrians entering or leaving vehicles in the curbside lane
- the location of planted verges needs consideration to ensure access to parked cars and utilities is maintained



WOLLONGONG UNIVERSITY//ASPECT STUDIOS

### D14.3 STREET TREES IN THE CARRIAGEWAY AND KERB EXTENSIONS

#### Purpose

Tree planting in roadways provides the opportunity to supplement verge side tree planting, increase the tree canopy cover on a street, and calm traffic by narrowing the carriageway.

Tree planting in roadways should also be provided in situations where awnings or overhead wires constrain the establishment of medium to tall trees on the verge.

#### Design Standards

- maximise the use of trees in kerb extensions as traffic calming measures
- incorporate passive irrigation and water sensitive urban design measures wherever possible for trees in kerb extensions
- for these applications, Northern Beaches Council approval is required for tree surrounds that incorporate WSUD to determine feasibility/ applicability for use
- avoid trees in kerb extensions where conflicts with buses are likely to preclude the provision of local bus routes
- tree Guards should be considered as protection measures for trees in roadways or where vehicular movements have the potential to damage the roots



PIRRAMA PARK// ASPECT STUDIOS

### D14.4 STREET TREES IN TREE PITS

#### Purpose

Street trees planted in tree pits are in areas where paving extends to the base of the tree, and where soil volumes are provided under adjoining paved surfaces.

Tree pits are trafficable by pedestrians, and are provided in areas where pedestrian traffic is high, areas of outdoor dining, or available paved area for foot traffic is constrained.

#### Design Standards

- tree pits to be considered for high streets and laneways where space under and around trees can be used for alternate uses
- ensure minimum subsurface soil volumes are provided; refer Street Tree Soil Volume
- maximise use of permeable pavements in paved areas around tree pits to provide water infiltration to subsurface soil
- structural load bearing modules, such as Stratavault system, to be installed to maximise available soil volume for root spread
- incorporating short term access point for initial watering for establishment



STRATAVAULT SYSTEM// CITYGREEN

## D14.6 SOIL VOLUMES

### Purpose

Tree roots typically growth within the top 500–600mm of soil depth, and may occasionally grow to a greater depth. Soil below a depth of 1000mm should not be included within soil volume calculations.

The alignment of service trenches, the space they occupy, and their possible restriction of natural root spread and development shall be considered in the calculation of available soil volumes.

Tree root barriers shall be installed adjacent utilities as far from street trees as possible, noting that in some isolated cases, they may require a closer proximity because of limited space.

Structural load bearing modules, such as Stratavault system, to be installed to maximise available soil volume for root spread.

### Design Standards

Minimum soil volume requirements for street trees are as follows.

TREE SIZE	TYPICAL HEIGHT	RECOMMENDED MINIMUM SOIL VOLUME	
		PER TREE IN INDIVIDUAL TREE PIT	PER TREE IN SHARED TRENCH (TYPICALLY UP TO 3 TREES)
<b>Small</b>	To 4m high	8.65 m <sup>3</sup>	5.80 m <sup>3</sup>
<b>Small/medium</b>	4–9m high	13.80 m <sup>3</sup>	9.20 m <sup>3</sup>
<b>Medium</b>	7–10m	21.40 m <sup>3</sup>	14.25 m <sup>3</sup>
<b>Tall</b>	9–12	32.65 m <sup>3</sup>	21.80 m <sup>3</sup>
<b>Tall &amp; wide</b>	8m+ canopy 14m+ wide	43.70 m <sup>3</sup>	29.15 m <sup>3</sup>



STRATAVAULT SYSTEM// CITYGREEN



## D15 WSUD

Utilising water sensitive urban design (WSUD) initiatives reduces storm water run-off, treats pollutants and protects our waterways.

WSUD reduces the extent of hard surfaces, assists in the treatment of storm water runoff and can contribute to irrigation of landscape areas, whilst assisting the management and protection of the catchments within the Northern Beaches LGA.

WSUD treatments in the roadway should be implemented wherever it is deemed appropriate to enhance place making, livability, aesthetics, urban heat island mitigation, natural corridors, in addition to improving ecosystem services.

A range of typical WSUD treatments which could be considered within public spaces include swales, raingardens, passive irrigation and permeable paving.

Use of WSUD devices will be assessed by Northern Beaches Council on a case-by-case basis to ensure appropriateness and fit for purpose. In addition to the storm water management role, all of these systems should be designed to be integral, aesthetic parts of the streetscape.

### D15.1 PASSIVE IRRIGATION

#### Purpose

Passive Irrigation refers to the directing of rainwater runoff from sealed or paved surfaces to landscape areas and tree pits. All impervious surfaces within the street should drain to planting areas and tree pits to maximise passive irrigation of landscape elements.

#### Design Standards

- design slotted kerbs/ flush kerbs into tree pit surrounds to allow run-off to passively enter the tree pit
- divert high flows to larger drainage infrastructure to avoid damage and maintenance issues for WSUD systems



ZETLAND// ASPECT STUDIOS

## D15.2 SWALES AND RAINGARDENS

### Purpose

Swales and Raingardens allow rainwater and surface runoff to infiltrate and be filtered by growing media before entering subsurface drainage systems.

They are used to replace or supplement traditional storm water pits and pipes

Swales carry water and are designed as shallow, open, planted channels to convey runoff and remove pollutants. Swales slow water flow and trap sediments to improve the water quality.

Raingardens have a special soil filter media that can remove pollutants from road runoff.

Swales and raingardens have capacity to collect water from storms and slowly release them to the downstream environment, thus reducing the impacts of highly erosive flows on waterways.

### Design Standards

- swales and raingardens should be provided as an alternative to a piped drainage system where space and grade is available
- ensure subsurface drainage systems can be easily maintained
- ensure inlet zones can accommodate first flush flows and pollutant loads and can be daily maintained
- use endemic native species and introduce habitat and food production plants where possible



WOLLONGONG UNIVERSITY// ASPECT STUDIOS

## D15.3 PERMEABLE PAVING

### Purpose

Permeable paving enables hard surfaces to perform a water quality improvement, quantity reduction and cooling function.

Subsurface soil structure systems, such as structural vaults or cells, are encouraged for the footpath pavements for tree planting zones, that are conducive to root growth under pavements, and are engineered to structurally support pavements.

Selection should be mindful of maintenance regimes, longevity and aesthetics.

### Design Standards

- use permeable paving in lieu of traditional impervious surfaces, such as in kerb extensions, parking bays, cycle lanes, laneways, or driveways
- maximise use of permeable paving adjacent street tree planting to encourage the spread and growth of tree roots
- design permeable pavements to take account of local underlying geology and soil conditions
- locate areas of permeable paving to maximise passive irrigation of tree root zones for street trees in paving, and use subsurface structural soils to support pavements



PERMEABLE PAVEMENT AT SMITH STREET MANLY// ASPECT STUDIOS



PERMEABLE PAVEMENT// ASPECT STUDIOS







# Open Space, Parks & Reserves

## E1 OVERVIEW

A significant portion of the Northern Beaches LGA is made up of open space.

Consisting of natural bushland, parks, coastal beaches and headlands, harbours, lagoons and waterways, it is an important resource for biodiversity and flora and fauna habitat, as well as for recreation and enabling residents and visitors to connect with nature and each other.

Parks and reserves in urban areas support local recreation, play and sporting needs. With increased population and development, the demands on use of these open spaces will increase. These spaces are critical to the livability of neighborhoods and to the health and wellbeing of the community.

Contingent to this is the protection of the unique environmental conditions across the Northern Beaches and the need to build future resilience to climate change into our infrastructure through sustainability and the effective protection, creation and enhancement of parks and open space.

The design of all open spaces in the Northern Beaches will be guided by the following guidelines.

Refer to the Character Areas Material palette for specific material selection based on type and location.



We aspire to protect the natural and built environment from the risk and impacts of global and local pressures

We aspire to be leaders in managing our resources sustainably and for the long term ensuring that development is balanced with our lifestyle and environment

— Shape 2028 Northern Beaches Community Strategic Plan



## E2 NATURAL AREAS PARKS AND RESERVES

Natural Area Parks and Reserves are those adjacent to National Parks and waterways, including areas of significant remnant bushland.

### These consist of

- Coastal headlands and Escarpments;
- Lagoons and Wetlands; and,
- Bushland

These areas generally cater for sustainable recreational use, and allow user interaction with the natural environment.

Included within bushland parks and reserves are playgrounds, barbecue areas, walking trails and boardwalks.

### Design Considerations

- development and designs will ensure the protection of flora and fauna
- the palette of materials is durable to potential wet or saline conditions
- consists of a palette of materials that complements the natural bushland character, such as sandstone paving and walling, timber, crushed stabilised sandstone pathways
- provision of ample well designed and appropriately located built and natural shade, to provide comfort and assist in mitigating over-exposure to UV radiation from the sun
- consideration should be given toward the inclusion of wetlands, rain-gardens and other WSUD measures to manage flows and water quality discharging to waterways
- equal access opportunities that allow all users to experience natural areas should be implemented where appropriate and where grades and landform permit. This includes provision for DDA (Disability Discrimination Act) compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided
- inclusion of endemic plant species
- opportunities to include signage and interpretation to share specific qualities of the site, indigenous knowledge and history and integrated art overlays are encouraged



WARRIEWOOD VALLEY// NBC



NARRABEEN LAGOON// SIMON WOOD



RYDE RIVERWALK//ASPECT STUDIOS



RYDE RIVERWALK //ASPECT STUDIOS

## E3 OCEAN BEACH PARKS AND RESERVES

### Ocean Beach Parks and Reserves consist of

- Ocean beach Parks;
- Headland Parks;
- Waterways;
- Tidal Pools and Rock Pools; and,
- Boardwalks (including the Coast Walk)

They include facilities such as playgrounds, picnic and barbecue areas, walking trails and beach access points.

They are places that have a high level of visitation by both residents and tourists, provide recreational opportunities of seasonal variation, as well as including areas of significant natural environment.

### Coast Walk

Trail improvements along our breathtaking coastline provide for a unique and memorable walking experience like no other, all the way from Manly to Palm Beach. Alongside the new building work being done to connect sections of existing walkway, we are also identifying opportunities to explore our beach culture, history, the spectacular natural environment and local Aboriginal heritage through public art and interpretive storytelling.

### Design Considerations

- provision of high quality palette of materials that is able to withstand highly exposed coastal conditions (wind, salt spray, high sun exposure, and potential inundation)
- well-designed and correctly positioned shade is a priority for outdoor recreation destinations and foreshore parks, particularly in areas such as beach fronts where UV radiation is at its highest at particular times of the year, and where visitors are likely to be wearing less clothing that protects them from UV radiation
- equal access opportunities that allow all users to experience ocean parks and reserves should be implemented where appropriate and where grades and landform permit. This includes provision for DDA compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided
- inclusion of endemic plant species
- opportunities to include signage and interpretation to share specific qualities of the site, and integrated art overlays are encouraged





## E4 FORESHORE PARKS AND RESERVES

### Foreshore Parks and Reserves include;

- Harbour Foreshores
- Pittwater waterways
- Lagoons

Open spaces parks and reserves along harbours and waterways consist of parklands, playgrounds, jettys and recreational facilities. They provide public access to the water's edge, and important recreational opportunities such as sailing, pabddleboarding, walking and cycling.

They have a high level of visitation for residents and tourists, particularly on weekends, and provide space for exercise, walking, cycling, recreation, gathering and access to the natural environment.

### Design Considerations

- provision of a high quality, low maintenance and robust material palette that is also able to withstand highly exposed conditions to wet or saline conditions, or potential temporary inundation
- provision for shared paths, generous footpaths and off road cycleways to connect to neighborhoods
- consists of a palette of materials that complements the natural foreshore character
- provision of ample well designed and appropriately located built and natural shade, to provide comfort and assist in mitigating over-exposure to UV radiation from the sun
- consideration should be given toward the inclusion of wetlands, rain gardens and other WSUD measures to manage flows and water quality discharging to waterways
- equal access opportunities that allow all users to experience natural areas should be implemented where appropriate and where grades and landform permit. This includes provision for DDA compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided
- inclusion of endemic plant species
- opportunities to include signage and interpretation to share specific qualities of the site, and integrated art overlays are encouraged



TIMBER DECKING// NORTHERN BEACHES COUNCIL



FORESHORE//KAREN WATSON



ASPECT STUDIOS



PYRMONT// ASPECT STUDIOS



WESTON STREET// ASPECT STUDIOS

## E5 PUBLIC PARKS AND RESERVES

### Public Parks and Reserves Includes:

- Regional/ Developed Parks and Village Greens
- Neighborhood and Local Parks
- Sport grounds

Public Parks and Reserves include a wide variety of public park types, including sporting fields, local and regional scaled parks, road reserves and playgrounds.

They are mostly located within close proximity to populated areas, and provide a wide range of recreational activities, both passive and active.

Sporting fields in the Northern Beaches LGA are generally located within urban areas, close to residential communities and other public facilities such as schools. Sporting fields and facilities should be designed in accordance with Council's Sports ground Strategy (2017).

Playgrounds are important places for child health and well-being and bring family and friends together. They encourage active and healthy lifestyles and should be designed to ensure inclusive, safe, and challenging play environments are created.

### Design Considerations

- provision of a unified palette to that of the streetscape surrounds.
- ensuring a highly durable palette to cater for high demand of use
- care should also be taken in the choice of colour of light coloured paving, softfall and other manufactured ground surfaces. Although light colours do not store heat as much as dark colours, they increase the reflectivity of UV radiation. A balance needs to be found between reducing dark surfaces/colours (which store heat but which do not reflect UVR) and light surfaces (which reflect UVR but which do not get as hot)
- well-designed and correctly positioned shade is a priority for outdoor recreation destinations, particularly where there is high community use, over playgrounds and picnic areas where people gather for long periods of time
- equal access opportunities that allow all users to experience parks and reserves should be implemented. This includes provision for DDA compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided.
- inclusion of endemic plant species, and broad canopy trees
- opportunities to include signage and interpretation to share specific qualities of the site, and integrated art overlays are encouraged





## E6 DISTINCTIVE AND HIGH PROFILE SPACES

Within the streetscape and public open space arrangements of the Northern Beaches, distinctive areas and areas of high profile and use provide opportunities to create spaces of unique character, with variation from standard materials and fixtures.

Utilised for small events, major community and high-profile events, these spaces create an identity for the Northern Beaches and assist in attracting people locally, as well as from further abroad, into the region.

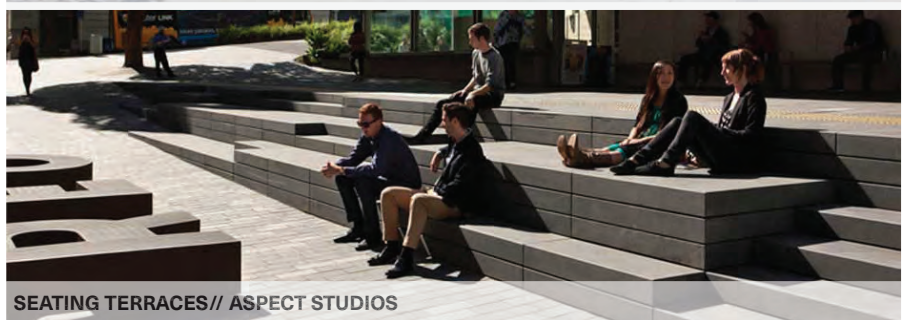
The development of a custom furniture, lighting and paving palette assists in denoting the spaces as iconic. Fixtures and finishes in these zones should reflect the high-use and occupation of these places, as well as maintenance regimes. It is imperative, however, that continuity of some base materials should be maintained to enhance legibility in the public realm.

Examples include: Manly Beach, Corso and Foreshore, Manly Wharf, Shelley Beach, Dee Why and Freshwater.

Within the Northern Beaches LGA custom finishes may be considered for Distinctive Areas and High Profile Spaces. Any suite of finishes shall still reflect council principles of durability and appropriateness and should be decided in consultation with Council.

### Design Considerations

- providing a palette of high-quality materials, furniture and fixtures with custom elements that cater for the high level of usage and prominence within the region
- allowance for public art opportunities that respond specifically to the locality, where applicable
- a range of seating edges, low walls, raised decks and turf areas to provide areas for different sized groups to gather
- equal access opportunities that allow all users to experience the site should be implemented. This includes provision for DDA compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided.
- interpretive and directional signage, where required, located adjacent to main path of travel
- incorporation of three-phase power supplies into the space to support community activities
- consideration for heavy vehicle access to set up stages, access points for utility services, vehicles and waste
- appropriate placement and access for waste and servicing during and after events
- design considerations given to visitor traffic and event signage, including promotional banners and wayfinding
- access to appropriate site controlled lighting
- ample well designed and appropriately located built and natural shade, to provide comfort and assist in mitigating over-exposure to UV radiation from the sun





## E7 HERITAGE AREAS AND PLACES OF CULTURAL SIGNIFICANCE

Heritage Areas and Areas of Cultural Significance are areas that consist of a strong heritage or cultural context through which built form and landscape character should be expressed with an appropriate design response.

Areas with Heritage or Cultural significance may vary from the standard palette materials and finishes, either to retain and enhance existing materials, or to draw attention to the unique qualities of the site.

Northern Beaches Council will assess the proposed open space selection of heritage context areas on a case by case basis.

Examples of Heritage Areas and Places of Cultural Significance include: North head Quarantine Station, Scotland Island, North Head, Ivanhoe Park and Manly Dam State Park.

### Design Considerations

- opportunity for retention of heritage features within the new design. Retention of Heritage Features in streetscapes and open spaces reinforce a sense of place and local identity. These can include stone kerbs and gutters, heritage stone setts or blocks, cast iron service pit lids, stone walling
- heritage elements identified for retention need to be identified and assessed for incorporation as part of the new works
- selection of high quality materials and fixtures that respond to site. For example, Bega Pole top luminaire 77 910 K3 has been used in some areas within Northern beaches Council to date, and may be applicable to other heritage areas
- opportunity for interpretation and public art within the design to tell the unique story of site is encouraged.
- exploring opportunities to protect and enhance the natural beauty and ecological value of our significant cultural areas
- expressly recognising and celebrating first nations relationship to site, both past, present and future
- ample well designed and appropriately located built and natural shade, to provide comfort and assist in mitigating over-exposure to UV radiation from the sun
- equal access opportunities that allow all users to experience the site should be implemented. This includes provision for DDA compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided



CHINATOWN// SIMON WOOD



ANGEL PLACE// ASPECT STUDIOS



DARLING SQUARE// BRETT BOARDMAN



PIRRAMA PARK// FLORIAN GROEHN







# Character Areas Material Palettes



## F1 OVERVIEW

This section provides principles and objectives for the range of elements and materials used within public spaces.

Through consultation with the Community and Stakeholders, separate palettes of materials were selected for each character area; Bush, Beach, Urban and Waterfront.

The palettes aim to promote a cohesive identity while still recognising the unique character of individual areas throughout the public domain of the Northern Beaches LGA, reflecting the streetscape and open space hierarchies. All four palettes have a hierarchy of materials that are to be implemented according to streetscape hierarchy. The intent is for a similar quality of material across the LGA.




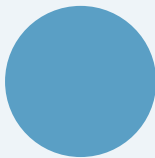
Design that is sustainable and reduces management and environmental costs shall be delivered through the selection of long lasting materials that are renewable and through the selection of design elements that reduce the impact to the natural environment. The acknowledgement of the need to build resilience to future climate change is embedded in the process and

determination leading to the selection of materials that constitute the palettes.

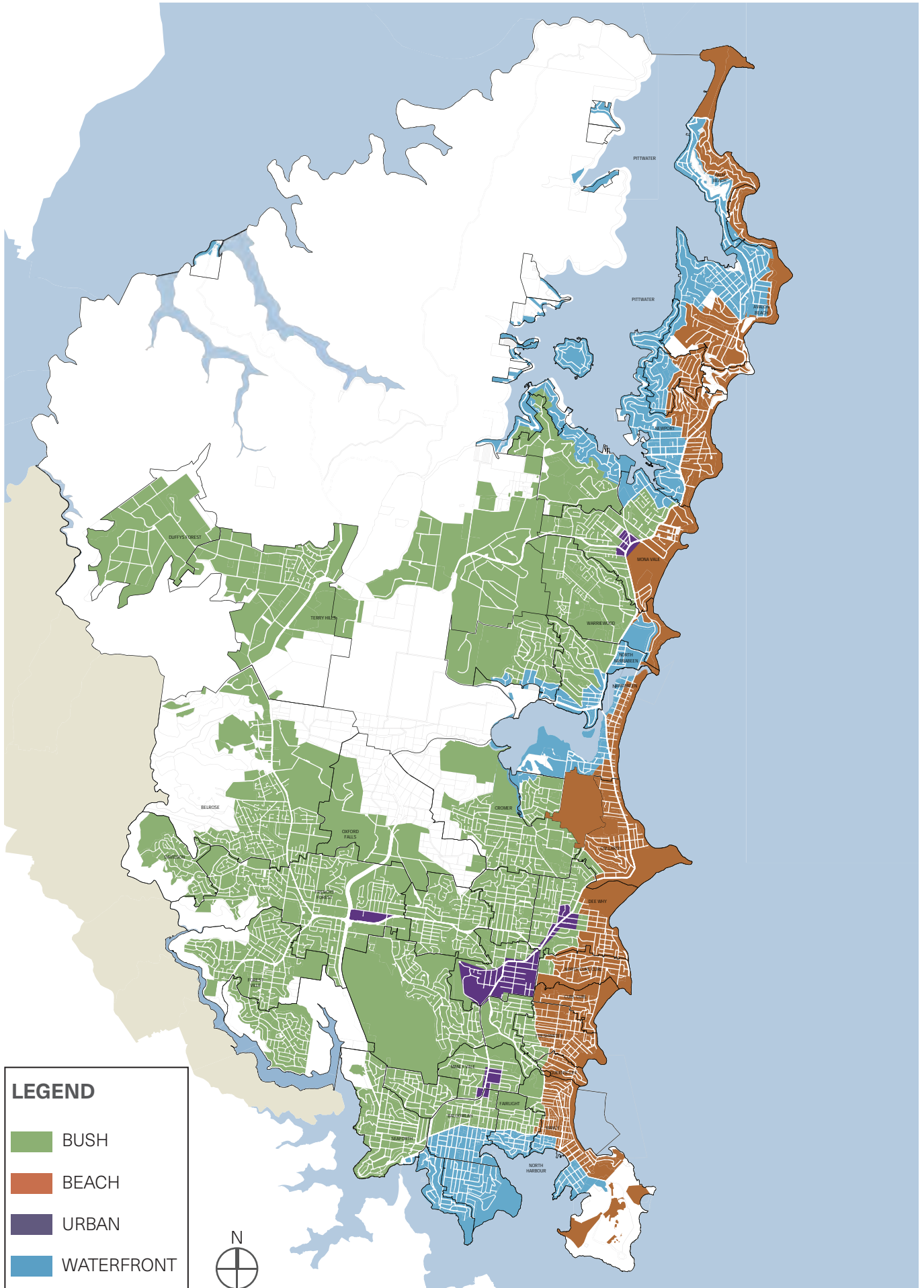
The material palettes give broad guidelines to the use of ground surfaces and furniture elements whilst providing opportunity for design variation as a response to community desire for local character acknowledgment and specific sites.

### Character Area Design Objectives:

- to unify like-spaces throughout the LGA through a consistent materials and elements palette
- to provide a clear hierarchy of quality to reflect popularity of use and maintenance regimes
- to consider sustainability objectives in materials and elements selection, including embodied energy, life cycle costing and provenance
- to use the palette to unify street and open spaces whilst allowing for variations in elements
- to celebrate and reflect unique localities within Northern Beaches.
- to select materials that build on the existing materials used in the LGA to deal with incremental change over time.

CHARACTER AREAS			
			
<b>BEACH</b>	<b>URBAN</b>	<b>BUSH</b>	<b>WATERFRONT</b>
<p>Warm sandy tones to paving complement the coastal context.</p> <p>Appropriate material selection for harsh exposed coastal environments</p> <p>High quality materials in prominent areas with high visitation</p> <p>Street trees and planting that are hardy to coastal environments and reinforce the local coastal character</p>	<p>Grey tones to complement existing urban palette</p> <p>Durable and sustainable materials for these high pedestrian use urban areas.</p> <p>High quality materials appropriate for main employment and retail zones</p> <p>Street trees and planting that are appropriate in scale and hardiness for installation within constrained urban conditions (paved footpath areas/adjacent awnings etc)</p>	<p>Warm browns and natural textures to complement the bushland environment</p> <p>Durable and low maintenance material selection for bushland locations</p> <p>High quality materials for town and retail centres with high visitation</p> <p>Street trees and planting that are predominantly endemic species, reinforce local bush character and expand biodiversity.</p>	<p>Warm sandy tones to paving complement the coastal context.</p> <p>Appropriate material selection for harsh exposed coastal environments</p> <p>High quality materials in prominent areas with high visitation</p> <p>Street trees and planting that are hardy to coastal environments and reinforce the local coastal character</p>

# NORTHERN BEACHES CHARACTER AREAS MAP











# Urban Palette







## URBAN – HARDSCAPE

ELEMENT	SPECIFICATION	LOCATION
<b>STREETS</b>		
	<p>GRANITE PAVERS                      SESAME GREY AND GREEN                      FINISH: EXFOLIATED                      SIZE: 600 X 300 X 40MM                      PATTERN: STRETCHERBOND                      BASE: CONCRETE SLAB</p>	<p>HIGH STREETS                      PLAZAS</p>
	<p>GRANITE COBBLES- SESAME GREY                      FINISH: EXFOLIATED                      SIZE: 90 X 90 X 70MM                      PATTERN: STRETCHER BOND                      BASE: CONCRETE SLAB</p>	<p>PEDESTRIAN LANES/ SHARED WAYS (VEHICULAR GRADE)                      RAISED THRESHOLDS (VEHICULAR GRADE)                      ALTERNATIVE FOR PLAZAS                      ALTERNATIVE FOR OUTDOOR DINING AREAS ON STREETS</p>
	<p>CONCRETE UNIT PAVING                      URBANSTONE GOLDEN GUNMETAL*                      FINISH: HONED, LIGHT SHOTBLAST                      SIZE: 400 X 400 X 40/50MM                      PATTERN: STACKBOND PARALLEL TO KERB/                      BUILDING ALIGNMENT</p>	<p>HIGH STREETS- DEE WHY ONLY                      PLAZAS- DEE WHY ONLY</p>
	<p>GRANITE PAVERS                      RAVEN BLACK</p>	<p>HIGH STREETS                      PLAZAS-</p>
	<p>GRANITE COBBLES- SESAME GREY                      FINISH: EXFOLIATED                      SIZE: 90 X 90 X 70MM                      PATTERN: STRETCHER BOND                      BASE: CONCRETE SLAB</p>	<p>PEDESTRIAN LANES/ SHARED WAYS (VEHICULAR GRADE)                      RAISED THRESHOLDS (VEHICULAR GRADE)</p>
	<p>INSITU CONCRETE                      OFF-WHITE CEMENT                      BROOM FINISH</p>	<p>LOCAL STREET FOOTPATH/ SHAREWAYS                      LOCAL COLLECTOR FOOTPATH/ SHAREWAYS</p>
	<p>POROUS ASPHALT</p>	<p>CYCLE LANE ON STREETS AND OPEN SPACES                      STREET PARKING LANE- WHERE POSSIBLE                      PUBLIC PARKING AREAS</p>
	<p>KERB RAMPS                      SURFACE TO MATCH ADJOINING FOOTPATH MATERIAL</p>	<p>HIGH STREETS AND PLAZAS, HIGH PEDESTRIAN AREAS</p>
	<p>KERB RAMPS                      CCS HONEYCOMB COLOURED CONCRETE</p>	<p>ALL OTHER APPLICATIONS</p>



## URBAN – HARDSCAPE

ELEMENT	SPECIFICATION	LOCATION
<b>PARKS AND RESERVES</b>		
	INSITU CONCRETE- EXPOSED AGGREGATE METROMIX PADDINGTON MIX (OR EQUIV)*	OPEN SPACE FOOTPATHS
	CRUSHED STABILISED SANDSTONE 100MM DEPTH TOP LAYER STABILISED WITH 10% OFF-WHITE CEMENT, <20MM DIA, ROLLED AND COMPACTED 150MM COMPACTED DGB20 BASE INSTALL WITH EDGING NOTE: MUST NOT BE ABLE TO MOBILISE TO WATERWAYS	OPEN SPACE PATHWAYS AND TRACKS

\*ALL NOMINATED SUPPLIERS SHOULD BE CONFIRMED WITH COUNCIL'S ASSETS AND ENGINEERING TEAM FOR CLARIFICATION OF EXISTING SUPPLIER CONTRACTS AND WHERE IMAGES USED ARE REPRESENTATIVE OF THE PREFERRED MATERIAL PALETTE USE OF COUNCIL, SHOULD ALTERNATIVES BE PROPOSED, THEY WILL NEED TO MEET THE REQUIRED TECHNICAL SPECIFICATIONS, PROPERTIES AND COLOURS AS THOSE NOMINATED IN THE MATERIAL PALETTES AND REQUIRED TO BE APPROVED BY COUNCIL ON A CASE BY CASE BASIS.










## URBAN – FURNITURE

NOTE: FOR URBAN PALETTE, ALL METALWORK FOR FURNITURE ITEMS TO BE POWDERCOATED IN BRONZE PEARL UNLESS OTHERWISE STATED

ELEMENT	SPECIFICATION	LOCATION
	SEAT- CLASSIC PLAZA DDA SEAT CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (BRONZE PEARL) SUBSURFACE FIXED	HIGH STREETS TOWN PLAZAS TOWN PARKS
	PICNIC SETTING- CLASSIC PLAZA SETTING CMP6 + CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (BRONZE PEARL) SUBSURFACED FIXED	TOWN PARKS AND PLAZAS
	BOLLARD- SLIM B5-F FLAT HEAD/ WIDE- B8 FLAT HEAD, NO COLLAR* STREET FURNITURE AUSTRALIA SS316, ANTI-GRAFFITI SURFACE SURFACE FIXED	ALL LOCATIONS-AS REQUIRED BY VEHICULAR LOADS
	DRINKING FOUNTAIN BOTTON & GARDINER* PROSPECT- 316SS.DB.BT WITH DOG BOWL AND BOTTLE TAP SUBSURFACE FIXED	ALL LOCATIONS
	WATER REFILL PLINTH* AQUAFILL STAINLESS STEEL	ALL LOCATIONS
	ESCOLA BIN ENCLOSURE STREET FURNITURE AUSTRALIA * SS316, BRONZE POWDERCOAT	ALL LOCATIONS
	BIKE RACK- BST03* STREET FURNITURE AUSTRALIA SSS316 SURFACE FIXED	ALL LOCATIONS
	TACTILE INDICATORS DTAC STAINLESS STEEL CLASSIC PVD BLACK* (TO ADHERE TO AUS STANDARDS)	KERB RAMPS, PEDESTRIAN CROSSINGS/ RAISED THRESHOLDS WITH BRICK PAVING
	HANDRAIL SS316 HANDRAIL POSTS, POWDERCOATED BRONZE PEARL	STAIRS/ RAMPS WALKWAYS WHERE REQUIRED









## URBAN – FURNITURE

ELEMENT	SPECIFICATION	LOCATION
	BBQ- ACCESSIBLE STAINLESS STEEL TOP TBC WITH COUNCIL	PARKS AND RESERVES
	FENCE/ BALUSTRADE HARDWOOD TIMBER/ POWDERCOATED GALVANISED STEEL (BRONZE PEARL) STAINLESS STEEL WHERE REQUIRED	STREETS AND PLAZAS
	EDGES AND WALLS SANDSTONE BLOCK/ HARDWOOD TIMBER/ INSITU CONCRETE	PARKS AND RESERVES
	LIGHTPOLE FITTING WEEF: DARK BRONZE* POLE: DULUX FERREKO NO.3 IN DARK BRONZE POWDERCOAT*	PARKS AND OPEN SPACES
	LIGHTPOLE FITTING BEGA 84402: GOOSENECK &360 & DIRECTIONAL (OR SIMILAR- TBC WITH COUNCIL) * POLE AND FITTING: DULUX FERREKO NO.3 IN DARK BRONZE POWDERCOAT*	PARKS AND OPEN SPACES

\*ALL NOMINATED SUPPLIERS SHOULD BE CONFIRMED WITH COUNCIL'S ASSETS AND ENGINEERING TEAM FOR CLARIFICATION OF EXISTING SUPPLIER CONTRACTS AND WHERE IMAGES USED ARE REPRESENTATIVE OF THE PREFERRED MATERIAL PALETTE USE OF COUNCIL, SHOULD ALTERNATIVES BE PROPOSED, THEY WILL NEED TO MEET THE REQUIRED TECHNICAL SPECIFICATIONS, PROPERTIES AND COLOURS AS THOSE NOMINATED IN THE MATERIAL PALETTES AND REQUIRED TO BE APPROVED BY COUNCIL ON A CASE BY CASE BASIS.



## URBAN – SOFTWORKS

ELEMENT	SPECIFICATION	LOCATION
	<p>STREET TREE PIT PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM</p>	<p>ALL STREETS BEHIND THE FOOTPATH KERB AND BETWEEN PARKING BAYS</p>
	<p>BLISTER/ KERB EXTENSION PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM</p>	<p>HIGH STREETS, LOCAL COLLECTORS STREET CORNERS, JUNCTIONS, CROSSINGS.</p>
	<p>STREET TREES IN PAVING STEEL GRATE</p>	<p>IN AREAS WITH HIGH PEDESTRIAN TRAFFIC - PLAZAS - HIGH STREETS FOOTPATHS - IN ROAD PLANTINGS</p>
	<p>TREE PLANTING IN TURF VERGE</p>	<p>LOCAL COLLECTORS LOCAL STREETS</p>
	<p>TREE PLANTING WITHIN MASS PLANTED VERGE</p>	<p>HIGH STREETS LOCAL COLLECTORS LOCAL STREETS</p>
	<p>VEGETATED SWALE</p>	<p>IN OPEN SPACES PARTICULARLY ADJACENT TO WATER WAYS</p>







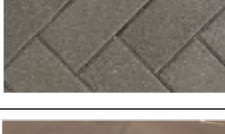
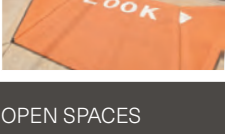






# Bush Palette











## BUSH – HARDSCAPE

ELEMENT	SPECIFICATION	STREET TYPE
<b>STREETS</b>		
	BRICK PAVING- AUSTRAL BRAHMAN BOWRAL* FINISH: DRY PRESSED SIZE: 230 X 115 X65MM PATTERN: STRETCHER-BOND HEADER: BRAHMAN SINGLE ROW PERPENDICULAR TO KERB	HIGH STREETS PLAZAS
	PORPHYRY COBBLES- SESAME GREY FINISH: EXFOLIATED SIZE: 90 X 90 X 70MM PATTERN: STRETCHER BOND BASE: CONCRETE SLAB	AVALON, NEWPORT, COLLAROY, WARRIEWOOD, NARRABEEN, FRESHWATER, MANLY VALE, SEAFORTH SHARED WAYS RAISED THRESHOLDS
	INSITU CONCRETE OFF-WHITE CEMENT BROOM FINISH TBC WITH COUNCIL	LOCAL STREETS
	POROUS ASPHALT	CYCLE LANE ON STREETS AND OPEN SPACES STREET PARKING LANE- WHERE POSSIBLE PUBLIC PARKING AREAS
	KERB RAMPS SURFACE TO MATCH ADJOINING FOOTPATH MATERIAL	HIGH STREETS AND PLAZAS, HIGH PEDESTRIAN AREAS
	KERB RAMPS CCS HONEYCOMB COLOURED CONCRETE*	ALL OTHER APPLICATIONS
<b>OPEN SPACES</b>		
	INSITU CONCRETE- EXPOSED AGGREGATE METROMIX PADDINGTON MIX (OR EQUIV)	OPEN SPACE FOOTPATHS
	CRUSHED STABILISED SANDSTONE 100MM DEPTH TOP LAYER STABILISED WITH 10% OFF-WHITE CEMENT, <20MM DIA, ROLLED AND COMPACTED 150MM COMPACTED DGB20 BASE INSTALL WITH EDGING	OPEN SPACE PATHWAYS AND TRACKS
	BOARDWALK- TIMBER BATTENS DECKING AND SUBSTRUCTURE SUBJECT TO LOCATION	ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND BUSHLAND AREAS
	BOARDWALK FRP (FIBRE REINFORCED PLASTIC) MESH CHARCOAL COLOUR	ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND BUSHLAND AREAS



## BUSH – FURNITURE

NOTE: FOR BUSH PALETTE, ALL METALWORK FOR FURNITURE ITEMS TO BE POWDERCOATED IN BRONZE PEARL UNLESS OTHERWISE STATED

ELEMENT	SPECIFICATION	STREET TYPE
	SEAT- CLASSIC PLAZA DDA SEAT CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (BRONZE PEARL) SUBSURFACE FIXED	HIGH STREETS TOWN PLAZAS TOWN PARKS
	PICNIC SETTING- CLASSIC PLAZA SETTING CMP6 + CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (BRONZE PEARL) SUBSURFACED FIXED	TOWN PARKS AND PLAZAS
	TIMBER BENCH STREET FURNITURE AUSTRALIA CLASSIC PLAZA SEAT WITH ARMREST AND BACKREST* MODWOOD BATTENS* POWDERCOAT STEEL (BRONZE PEARL)	LOCAL STREETS LOCAL PARKS
	TIMBER BENCH STREET FURNITURE AUSTRALIA CLASSIC PLAZA SEAT PICNIC SETTING* MODWOOD BATTENS * POWDERCOAT STEEL (BRONZE PEARL)	LOCAL PARKS
	BOLLARD- TIMBER CLAD STEEL BOLLARD	ALL LOCATIONS
	BOLLARD- SLIM B5-F FLAT HEAD/ WIDE- B8 FLAT HEAD, NO COLLAR* STREET FURNITURE AUSTRALIA SS316, ANTI-GRAFFITI SURFACE SURFACE FIXED	ALL LOCATIONS-AS REQUIRED BY VEHICULAR LOADS
	DRINKING FOUNTAIN BOTTON & GARDINER* PROSPECT- 316SS.DB.BT WITH DOG BOWL AND BOTTLE TAP SUBSURFACE FIXED	ALL LOCATIONS
	WATER REFILL PLINTH* AQUAFILL STAINLESS STEEL	ALL LOCATIONS
	ESCOLA BIN ENCLOSURE* STREET FURNITURE AUSTRALIA SS316, BRONZE POWDERCOAT	ALL LOCATIONS

\*ALL NOMINATED SUPPLIERS SHOULD BE CONFIRMED WITH COUNCIL'S ASSETS AND ENGINEERING TEAM FOR CLARIFICATION OF EXISTING SUPPLIER CONTRACTS AND WHERE IMAGES USED ARE REPRESENTATIVE OF THE PREFERRED MATERIAL PALETTE USE OF COUNCIL, SHOULD ALTERNATIVES BE PROPOSED, THEY WILL NEED TO MEET THE REQUIRED TECHNICAL SPECIFICATIONS, PROPERTIES AND COLOURS AS THOSE NOMINATED IN THE MATERIAL PALETTES AND REQUIRED TO BE APPROVED BY COUNCIL ON A CASE BY CASE BASIS.











## BUSH – FURNITURE

ELEMENT	SPECIFICATION	STREET TYPE
	BIKE RACK- BST03* STREET FURNITURE AUSTRALIA SSS316 SURFACE FIXED	ALL LOCATIONS
	TACTILE INDICATORS DTAC STAINLESS STEEL CLASSIC PVD* BLACK (TO ADHERE TO AUS STANDARDS)	KERB RAMPS PEDESTRIAN CROSSINGS/ RAISED THRESHOLDS
	BBQ STAINLESS STEEL TOP TBC WITH COUNCIL	
	HANDRAIL SS316 HANDRAIL + POSTS, POWDERCOATED BRONZE PEARL	STAIRS/ RAMPS WALKWAYS WHERE REQUIRED
	FENCE/ BALUSTRADE HARDWOOD TIMBER/ POWDERCOATED GALVANISED STEEL (BRONZE PEARL)	STREETS AND PLAZAS
	FENCE/ BALUSTRADE MARINE GRADE STAINLESS STEEL IN EXPOSED ENVIRONMENTS	PARKS AND RESERVES
	EDGES AND WALLS SANDSTONE BLOCK/ HARDWOOD TIMBER/ KOPPERS LOG	PARKS AND RESERVES
	LIGHTPOLE FITTING WEEF: DARK BRONZE* POLE: DULUX FERREKO NO.3 IN BRONZE PEARL POWDERCOAT	PARKS AND OPEN SPACES
	LIGHTPOLE FITTING BEGA 84402: GOOSENECK & 360 & DIRECTIONAL* (OR SIMILAR- TBC WITH COUNCIL) POLE AND FITTING: DULUX FERREKO NO.3 IN BRONZE PEARL POWDERCOAT	PARKS AND OPEN SPACES



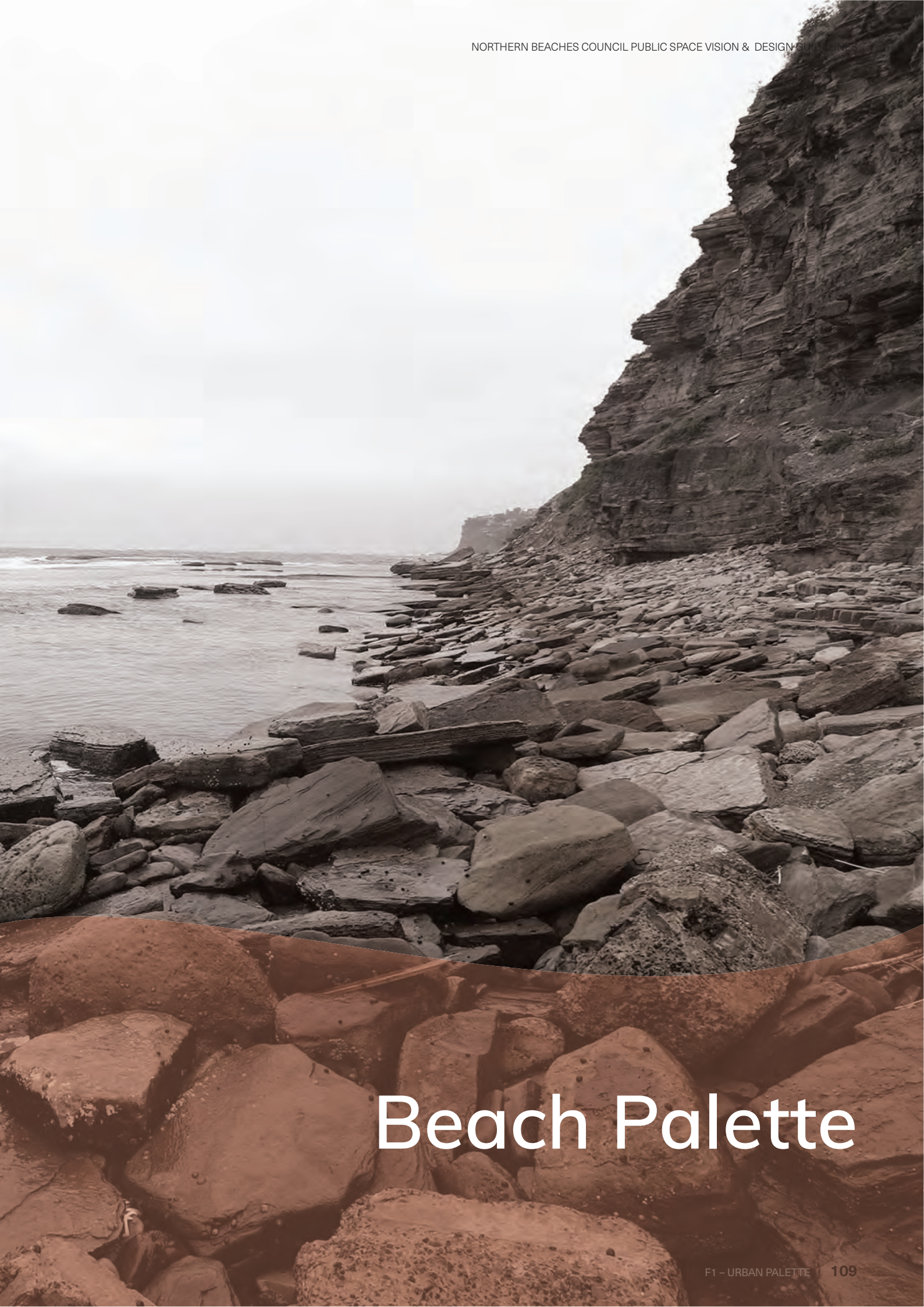
## BUSH – SOFTWORKS

ELEMENT	SPECIFICATION	STREET TYPE
	STREET TREE PIT PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	ALL STREETS BEHIND THE FOOTPATH KERB AND BETWEEN PARKING BAYS
	BLISTER/ KERB EXTENSION PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	HIGH STREETS, LOCAL COLLECTORS STREET CORNERS, JUNCTIONS, CROSSINGS.
	STREET TREES IN PAVING PERMEABLE BOUND GRAVEL ( TO ALLOW WATER PENETRATION) COLOUR-GLANDSANDA (STONESET)* INCLUDING PERFORATED GRATE FOR PERMEABLE BOUND GRAVEL BASE	IN AREAS WITH HIGH PEDESTRIAN TRAFFIC - PLAZAS - HIGH STREETS FOOTPATHS - IN ROAD PLANTINGS
	TREE PLANTING IN TURF VERGE	LOCAL COLLECTORS LOCAL STREETS
	TREE PLANTING WITHIN MASS PLANTED VERGE	HIGH STREETS LOCAL COLLECTORS LOCAL STREETS
	VEGETATED SWALE	IN OPEN SPACES PARTICULARLY ADJACENT TO WATER WAYS

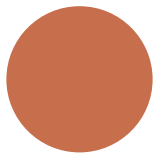
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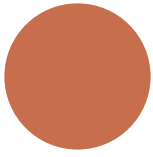
# Beach Palette



## BEACH – HARDSCAPE

ELEMENT	SPECIFICATION	STREET TYPE
<b>STREETS</b>		
	BRICK PAVING AUSTRAL BRICKS- SEPIA * STRETCHER BOND	HIGH STREETS PEDESTRIAN LANES
	PORPHYRY COBBLES- SESAME GREY FINISH: EXFOLIATED SIZE: 90 X 90 X 70MM PATTERN: STRETCHER BOND BASE: CONCRETE SLAB	SHARED WAYS RAISED THRESHOLDS
	INSITU CONCRETE OFF-WHITE CEMENT BROOM FINISH TBC WITH COUNCIL	LOCAL STREETS
	POROUS ASPHALT	CYCLE LANE ON STREETS AND OPEN SPACES STREET PARKING LANE- WHERE POSSIBLE PUBLIC PARKING AREAS
	KERB RAMPS SURFACE TO MATCH ADJOINING FOOTPATH MATERIAL	HIGH STREETS AND PLAZAS, HIGH PEDESTRIAN AREAS
	KERB RAMPS CCS HONEYCOMB COLOURED CONCRETE	ALL OTHER APPLICATIONS
<b>MANLY CORSO AND CBD PAVING SPECIFICATION</b>		
	GRANITE PAVING TIGERSKIN, BLENDED (2 TO 1 RATIO)	OPEN SPACE FOOTPATHS IN MANLY CORSO AND CBD ONLY
	GRANITE PAVING SESAME GREY TACTILE PAVERS	USED AT INTERFACES BETWEEN EXISTING AND NEW WORKS AS REQUIRED TO BLEND WITH CURRENT FINISHES



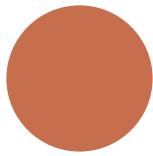


## BEACH – HARDSCAPE

ELEMENT	SPECIFICATION	STREET TYPE
	<p>BOARDWALK- TIMBER BATTENS DECKING AND SUBSTRUCTURE SUBJECT TO LOCATION</p>	<p>ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND FORESHORE AREAS</p>
	<p>BOARDWALK FRP (FIBRE REINFORCED PLASTIC) MESH CHARCOAL COLOUR</p>	<p>ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND FORESHORE AREAS</p>
	<p>SEAT- CLASSIC PLAZA DDA SEAT CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS STAINLESS STEEL LEGS AND ARMREST SUBSURFACE FIXED</p>	<p>HIGH STREETS TOWN PLAZAS TOWN PARKS</p>
	<p>PICNIC SETTING- CLASSIC PLAZA SETTING CMP6 + CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS STAINLESS STEEL LEGS AND ARMREST SUBSURFACED FIXED</p>	<p>TOWN PARKS AND PLAZAS</p>
	<p>BOLLARD- SLIM B5-F FLAT HEAD/ WIDE- B8 FLAT HEAD, NO COLLAR* STREET FURNITURE AUSTRALIA SS316, ANTI-GRAFFITI SURFACE SURFACE FIXED</p>	<p>ALL LOCATIONS-AS REQUIRED BY VEHICULAR LOADS</p>










\*ALL NOMINATED SUPPLIERS SHOULD BE CONFIRMED WITH COUNCIL'S ASSETS AND ENGINEERING TEAM FOR CLARIFICATION OF EXISTING SUPPLIER CONTRACTS AND WHERE IMAGES USED ARE REPRESENTATIVE OF THE PREFERRED MATERIAL PALETTE USE OF COUNCIL, SHOULD ALTERNATIVES BE PROPOSED, THEY WILL NEED TO MEET THE REQUIRED TECHNICAL SPECIFICATIONS, PROPERTIES AND COLOURS AS THOSE NOMINATED IN THE MATERIAL PALETTES AND REQUIRED TO BE APPROVED BY COUNCIL ON A CASE BY CASE BASIS.

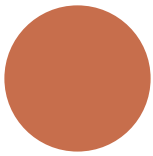











## BEACH – FURNITURE

NOTE: FOR BEACH PALETTE, ALL METALWORK FOR FURNITURE ITEMS TO BE STAINLESS STEEL UNLESS OTHERWISE STATED

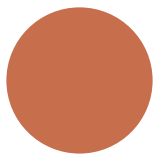
ELEMENT	SPECIFICATION	STREET TYPE
	BOLLARD- TIMBER CLAD STEEL BOLLARD	OPEN SPACES
	DRINKING FOUNTAIN BOTTON & GARDINER* PROSPECT- 316SS.DB.BT WITH DOG BOWL AND BOTTLE TAP SUBSURFACE FIXED	ALL LOCATIONS
	WATER REFILL PLINTH* AQUAFILL STAINLESS STEEL-TBC ACCESSIBLE WITH DOGBOWL OPTION	ALL LOCATIONS
	ESCOLA BIN ENCLOSURE* STREET FURNITURE AUSTRALIA SS316	ALL LOCATIONS
	BIKE RACK- BST03 STREET FURNITURE AUSTRALIA SSS316* SURFACE FIXED	ALL LOCATIONS
	TACTILE INDICATORS DTAC STAINLESS STEEL CLASSIC PVD BLACK* (TO ADHERE TO AUS STANDARDS)	KERB RAMPS, PEDESTRIAN CROSSINGS/ RAISED THRESHOLDS
	HANDRAIL STAINLESS STEEL MARINE GRADE	STAIRS/ RAMPS WALKWAYS WHERE REQUIRED
	BBQ- ACCESSIBLE STAINLESS STEEL TOP TBC WITH COUNCIL	PARKS AND RESERVES
	FENCE/ BALUSTRADE MARINE GRADE STAINLESS STEEL IN EXPOSED ENVIRONMENTS	STREETS AND PLAZAS



## BEACH – FURNITURE

ELEMENT	SPECIFICATION	STREET TYPE
	FENCE/ BALUSTRADE HARDWOOD TIMBER	PARKS AND RESERVES
	EDGES AND WALLS SANDSTONE BLOCK/ HARDWOOD TIMBER/ INSITU/ PRECAST CONCRETE	PARKS AND RESERVES
	LIGHTPOLE FITTING WEEF: DARK BRONZE* POLE: DULUX FERREKO NO.3 IN NATURAL GREY POWDERCOAT	PARKS AND OPEN SPACES
	LIGHTPOLE FITTING BEGA 84402: GOOSENECK & 360 & DIRECTIONAL (OR SIMILAR- TBC WITH COUNCIL) * POLE AND FITTING: DULUX FERREKO NO.3 IN NATURAL GREY POWDERCOAT	PARKS AND OPEN SPACES
	STREET TREE PIT PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	ALL STREETS BEHIND THE FOOTPATH KERB AND BETWEEN PARKING BAYS
	BLISTER/ KERB EXTENSION PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	HIGH STREETS, LOCAL COLLECTORS STREET CORNERS, JUNCTIONS, CROSSINGS.
	STREET TREES IN PAVING PERMEABLE BOUND GRAVEL ( TO ALLOW WATER PENETRATION) COLOUR-CUDGEE BEACH (STONESET)* NOTE: MUST NOT BE ABLE TO MOBILISE TO WATERWAYS	IN AREAS WITH HIGH PEDESTRIAN TRAFFIC - PLAZAS - HIGH STREETS FOOTPATHS - IN ROAD PLANTINGS

\*ALL NOMINATED SUPPLIERS SHOULD BE CONFIRMED WITH COUNCIL'S ASSETS AND ENGINEERING TEAM FOR CLARIFICATION OF EXISTING SUPPLIER CONTRACTS AND WHERE IMAGES USED ARE REPRESENTATIVE OF THE PREFERRED MATERIAL PALETTE USE OF COUNCIL, SHOULD ALTERNATIVES BE PROPOSED, THEY WILL NEED TO MEET THE REQUIRED TECHNICAL SPECIFICATIONS, PROPERTIES AND COLOURS AS THOSE NOMINATED IN THE MATERIAL PALETTES AND REQUIRED TO BE APPROVED BY COUNCIL ON A CASE BY CASE BASIS.



## BEACH – SOFTWORKS

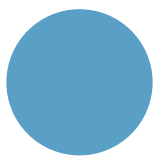
ELEMENT	SPECIFICATION	STREET TYPE
	<p>STREET TREES IN PAVING PERMEABLE BOUND GRAVEL, COLOUR-CHARCOAL STRATAVAULT AND PERFORATED GRATE TO SUPPORT GRAVEL INCLUDED</p>	<p>MANLY ONLY IN AREAS WITH HIGH PEDESTRIAN TRAFFIC - PLAZAS - HIGH STREETS FOOTPATHS</p>
	<p>TREE PLANTING IN TURF VERGE</p>	<p>LOCAL COLLECTORS LOCAL STREETS</p>
	<p>TREE PLANTING WITHIN MASS PLANTED VERGE</p>	<p>HIGH STREETS LOCAL COLLECTORS LOCAL STREETS</p>
	<p>VEGETATED SWALE</p>	<p>IN OPEN SPACES PARTICULARLY ADJACENT TO WATER WAYS</p>



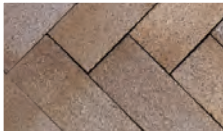







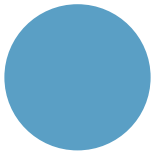
# Waterfront Palette









## WATERFRONT – HARDSCAPE

ELEMENT	SPECIFICATION	STREET TYPE
<b>STREETS</b>		
	BRICK PAVING AUSTRAL BRICKS- SEPIA * STRETCHER BOND	HIGH STREETS PEDESTRIAN LANES
	PORPHYRY COBBLES- SESAME GREY FINISH: EXFOLIATED SIZE: 90 X 90 X 70MM PATTERN: STRETCHER BOND BASE: CONCRETE SLAB	SHARED WAYS RAISED THRESHOLDS
	INSITU CONCRETE OFF-WHITE CEMENT BROOM FINISH TBC WITH COUNCIL	LOCAL STREETS
	POROUS ASPHALT	CYCLE LANE ON STREETS AND OPEN SPACES STREET PARKING LANE- WHERE POSSIBLE PUBLIC PARKING AREAS
	KERB RAMPS SURFACE TO MATCH ADJOINING FOOTPATH MATERIAL	HIGH STREETS AND PLAZAS, HIGH PEDESTRIAN AREAS
	KERB RAMPS CCS HONEYCOMB COLOURED CONCRETE*	ALL OTHER APPLICATIONS

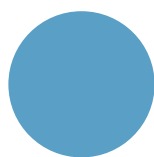


## WATERFRONT – HARDSCAPE

ELEMENT	SPECIFICATION	STREET TYPE
<b>PARKS AND RESERVES</b>		
	INSITU CONCRETE COLOURED 'CANVAS'	OPEN SPACE FOOTPATHS
	CRUSHED STABILISED SANDSTONE 100MM DEPTH TOP LAYER STABILISED WITH 10% OFF-WHITE CEMENT, <20MM DIA, ROLLED AND COMPACTED 150MM COMPACTED DGB20 BASE INSTALL WITH EDGING NOTE: MUST NOT BE ABLE TO MOBILISE TO WATERWAYS	OPEN SPACE PATHWAYS AND TRACKS
	BOARDWALK AND DECKED AREAS- TIMBER BATTENS DECKING AND SUBSTRUCTURE SUBJECT TO LOCATION	ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND FORESHORE AREAS FOR MATURE TREE PROTECTION
	BOARDWALK FRP (FIBRE REINFORCED PLASTIC) MESH CHARCOAL COLOUR	ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND FORESHORE AREAS








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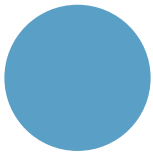




## WATERFRONT – FURNITURE

NOTE: FOR WATERFRONT PALETTE, ALL METALWORK FOR FURNITURE ITEMS TO BE CHARCOAL POWDERCOAT UNLESS OTHERWISE STATED

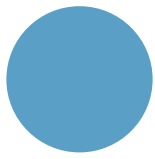
ELEMENT	SPECIFICATION	STREET TYPE
	SEAT- CLASSIC PLAZA DDA SEAT CMP5 STREET FURNITURE AUSTRALIA* JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (CHARCOAL) SUBSURFACE FIXED	HIGH STREETS TOWN PLAZAS TOWN PARKS
	PICNIC SETTING- CLASSIC PLAZA SETTING CMP6 + CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (CHARCOAL) SUBSURFACED FIXED	TOWN PARKS AND PLAZAS
	BOLLARD- SLIM B5-F FLAT HEAD/ WIDE- B8 FLAT HEAD, NO COLLAR* STREET FURNITURE AUSTRALIA SS316, ANTI-GRAFFITI SURFACE SURFACE FIXED	ALL LOCATIONS-AS REQUIRED BY VEHICULAR LOADS
	BOLLARD- TIMBER CLAD STEEL BOLLARD	OPEN SPACES
	DRINKING FOUNTAIN BOTTON & GARDINER* PROSPECT- 316SS.DB.BT WITH DOG BOWL AND BOTTLE TAP SUBSURFACE FIXED	ALL LOCATIONS
	WATER REFILL PLINTH* AQUAFILL STAINLESS STEEL-TBC ACCESSIBLE WITH DOGBOWL OPTION	ALL LOCATIONS
	ESCOLA BIN ENCLOSURE* STREET FURNITURE AUSTRALIA SS316, CHARCOAL POWDERCOAT	ALL LOCATIONS









## WATERFRONT – FURNITURE

ELEMENT	SPECIFICATION	STREET TYPE
	BIKE RACK- BST03 STREET FURNITURE AUSTRALIA* SSS316 SURFACE FIXED	ALL LOCATIONS
	TACTILE INDICATORS DTAC STAINLESS STEEL CLASSIC PVD BLACK* (TO ADHERE TO AUS STANDARDS)	KERB RAMPS, PEDESTRIAN CROSSINGS/ RAISED THRESHOLDS
	BBQ- ACCESSIBLE STAINLESS STEEL TOP WITH SANDSTONE BLOCK SURROUND	PARKS AND RESERVES
	HANDRAIL STAINLESS STEEL MARINE GRADE  POSTS POWDERCOATED CHARCOAL	PARKS AND RESERVES
	FENCE/ BALUSTRADE HARDWOOD TIMBER/ POWDERCOATED GALVANISED STEEL (CHARCOAL)	PARKS AND RESERVES
	FENCE/ BALUSTRADE MARINE GRADE STAINLESS STEEL HANDRAIL POSTS POWDERCOATED CHARCOAL	PARKS AND RESERVES
	EDGES AND WALLS SANDSTONE BLOCK/ HARDWOOD TIMBER/ KOPPERS LOG	PARKS AND RESERVES
	LIGHTPOLE FITTING WEEF: DARK BRONZE* POLE: DULUX FERREKO NO.3 IN CHARCOAL GREY POWDERCOAT	PARKS AND OPEN SPACES
	LIGHTPOLE FITTING BEGA 84402: GOOSENECK & 360 & DIRECTIONAL (OR SIMILAR- TBC WITH COUNCIL) * POLE AND FITTING: DULUX FERREKO NO.3 IN CHARCOAL GREY POWDERCOAT	PARKS AND OPEN SPACES

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## WATERFRONT – SOFTWORKS

ELEMENT	SPECIFICATION	STREET TYPE
	STREET TREE PIT PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	ALL STREETS BEHIND THE FOOTPATH KERB AND BETWEEN PARKING BAYS
	BLISTER/ KERB EXTENSION PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	HIGH STREETS, LOCAL COLLECTORS STREET CORNERS, JUNCTIONS, CROSSINGS.
	STREET TREES IN PAVING PERMEABLE BOUND GRAVEL ( TO ALLOW WATER PENETRATION) COLOUR-CUDGEE BEACH (STONESET)* NOTE: MUST NOT BE ABLE TO MOBILISE TO WATERWAYS	IN AREAS WITH HIGH PEDESTRIAN TRAFFIC - PLAZAS - HIGH STREETS FOOTPATHS - IN ROAD PLANTINGS
	TREE PLANTING IN TURF VERGE	LOCAL COLLECTORS LOCAL STREETS
	TREE PLANTING WITHIN MASS PLANTED VERGE	HIGH STREETS LOCAL COLLECTORS LOCAL STREETS
	VEGETATED SWALE	IN OPEN SPACES PARTICULARLY ADJACENT TO WATERWAYS

\*ALL NOMINATED SUPPLIERS SHOULD BE CONFIRMED WITH COUNCIL'S ASSETS AND ENGINEERING TEAM FOR CLARIFICATION OF EXISTING SUPPLIER CONTRACTS AND WHERE IMAGES USED ARE REPRESENTATIVE OF THE PREFERRED MATERIAL PALETTE USE OF COUNCIL, SHOULD ALTERNATIVES BE PROPOSED, THEY WILL NEED TO MEET THE REQUIRED TECHNICAL SPECIFICATIONS, PROPERTIES AND COLOURS AS THOSE NOMINATED IN THE MATERIAL PALETTES AND REQUIRED TO BE APPROVED BY COUNCIL ON A CASE BY CASE BASIS.





# Appendix

## G1 INDEX OF ENGINEER DRAWINGS

SERIES	DRAWING DETAILS	HYPERLINK
0200	Concrete Kerb details and notes Concrete and brick edge details Concrete integral kerb details Concrete edge strip and thickened edge details	<Hyperlink>
0300	ELSHOLZ kerb details and notes Wheel stop details Integrated kerb and gutter for rigid pavement details Concrete dish drain, pram ramp details & notes	<Hyperlink>
0400	Rigid pavement joint details Weakened plane joint notes Standard joint notes	<Hyperlink>
0500	Slab replacement for medium to high traffic volumes Slab replacement for low traffic volumes Heavy duty concrete slab replacement jointing details General slab replacement and construction notes	<Hyperlink>
0600	Concrete footpath joining plans and elevations Jointing system for footpaths near trees plan and detail Standard concrete footpath notes and schedule Transverse displacement joint notes	<Hyperlink>
0700	Shared pedestrian path in concrete detail Shared pedestrian path in asphalt detail Preferred kerb ramp (pram ramp) locations	<Hyperlink>
0800	Concrete steps with landing typical detail Concrete steps with bicycle ramp – typical detail Handrails installed on concrete steps – typical detail Concrete steps reinforcement detail	<Hyperlink>
1000	Blockwork retaining wall – Type 1 footing Blockwork retaining wall – Type 2 footing Blockwork wall footing configurations Vertical control joint details	<Hyperlink>

<b>SERIES</b>	<b>DRAWING DETAILS</b>	<b>HYPERLINK</b>
1100	Brick retaining wall detail Concrete retaining wall detail Rock wall retaining wall detail Design charts and notes	<Hyperlink>
1200	Timber log retaining wall detail Concrete high edge (retaining) wall detail Concrete thickened edge beam detail Notes	<Hyperlink>
1300	Tree pit details Plan and sections	<Hyperlink>
1400	Driveway profile – normal Driveway profile – normal high Driveway profile – extra high Driveway profile – maximum high	<Hyperlink>
1500	Driveway profile – normal low Driveway profile – extra low Driveway profile – maximum low Driveway notes	<Hyperlink>
1600	Driveway profile – maximum high level skew (MHLS) Driveway profile – maximum low level skew (MLLS) Driveway plan and elevation 1500 Driveway notes	<Hyperlink>
1700	Installation of bus stop shelter signs Installation of bus stop seating details Bus stop slab and tactile paver details Standard notes	<Hyperlink>
1800	Steel bollard in road pavement detail Steel bollard in flexible pavement detail Asphalt compaction around power poles detail Sign post fixture details Raised pedestrian crossing	<Hyperlink>



SERIES	DRAWING DETAILS	HYPERLINK
1900	Raised threshold constructed in concrete Sections and details	<Hyperlink>
2000	Road speed hump constructed in flexible pavement Car park speed hump constructed in flexible pavement Pedestrian refuge island standard details Modified pedestrian refuge island details	<Hyperlink>
2100	Raised pedestrian crossing Plan and sections For 10m to 11m wide road carriageway with no central island	<Hyperlink>
2200	Raised pedestrian crossing plan and sections for 12m to 13m wide carriageway with central island	<Hyperlink>
2300	0 Level pedestrian crossing plan and sections for 11m to 12m wide carriageway with central road	<Hyperlink>
2400	Level pedestrian crossing plan and sections for 12m to 13m wide carriageway with central island	<Hyperlink>
2500	Raised pedestrian crossing special crossing details Sign posting and linemarking standard signs	<Hyperlink>
2600	Stormwater drainage Bulkhead details Trench details Notes	<Hyperlink>
2700	Stormwater damage Pit types 1 and 2 Kerb inlet pit on grade for pipe sizes up to 600-DIA Kerb inlet pit on grade sizes 675-DIA to 1200-DIA	<Hyperlink>

SERIES	DRAWING DETAILS	HYPERLINK
2800	Stormwater drainage Pit type 3 Kerb inlet pit in a sac for pipe sizes up to 600 – DIA Kerb inlet pit in a sac for pipe sizes 675-DIA to 1200-DIA	<Hyperlink>
2900	Stormwater drainage Pit types 4 and 5 Grated inlet/junction pit for pipe sizes up to 600-DIA Letter box type pit in landscaped areas	<Hyperlink>
3000	Stormwater drainage Pit type 6 Grated inlet pit in dish drain for pipe sizes up to 1200-DIA Concrete headwall details for single pipe outlet	<Hyperlink>
3100	Stormwater drainage Pipe connection details Step iron details Private pipe outlet to kerb and miscellaneous details	<Hyperlink>
3200	Drawing standards legend Commonly used scales	<Hyperlink>