Background Paper

Planning for Our Environment

PREPARED FOR
NORTHERN BEACHES COUNCIL
SEPTEMBER 2019

Meridian Urban

Cover image: Local Banksia Flower
Image (Right): Looking across Dee Why Lagoon mouth to Curl Curl
Image next page: Scribble Gum

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Introduction

The purpose of this document is to provide background to the intrinsic environmental values of the Northern Beaches across six identified environmental priorities. These priorities are guided by the North District Plan and form the basis of the environmental considerations going forward as Council prepares to draft a new planning framework for the region.

The Northern Beaches has unique character and diverse natural and cultural values. Developing a new planning framework presents an outstanding opportunity to strengthen the link between the natural and built environments and community values for the Northern Beaches.

The desire to live in a unique environment, and the degree of connection between people and place, is perhaps more pronounced on the Northern Beaches than other locations.

This quality advances the need for clear policy directions which contribute to 'shaping' growth and prosperity into the future through the community's meaning of these place-oriented environmental values. In fact, a conversation on growth simply cannot be had in isolation of the environment. They are intrinsically linked.

'Northern Beaches 2040: Planning Our Sustainable Future' outlined the process for establishing a new land use planning framework across the region. The new planning framework will have a primary goal of protecting the environment of the Northern Beaches. Technical studies are being undertaken to develop the new planning framework including:

- demographic analysis, employment and housing strategy;
- social infrastructure study; and
- community engagement analysis.

Long Reef Point
Source: Northern Beaches Council

This background paper complements the body of knowledge to help shape and balance future growth through the new planning framework.

To deliver a new planning framework, a hierarchy of strategic documents is followed which is referred to as the 'line of sight'. Strategic visions and priorities from higher-order documents such as those developed by the Greater Sydney Commission are given

meaning at a local level, before deciding how they will be delivered through local planning instruments.

This background paper will inform the development of an Environment Study which will contribute to changes and direction in the drafting of the new planning framework documents. The framework includes the **Local Strategic Planning Statement** for the Northern Beaches; a single **Local Environmental Plan** and a single **Development Control Plan.** Together, they are the local response to the district and regional planning activities and a fresh way forward to 2040 for the Northern Beaches.

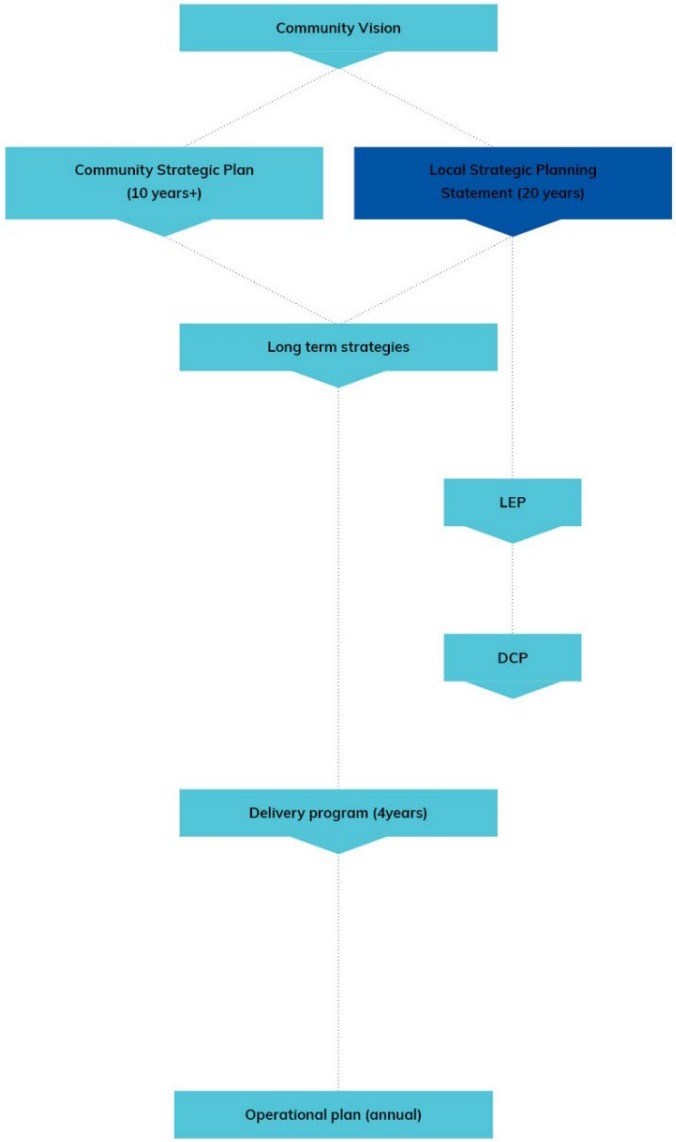
The documents directly influencing local planning is the North District Plan. It defines eight 'Directions for Sustainability', including:

1. Healthy coasts and waterways
2. Bushland and biodiversity
3. Scenic and cultural landscapes
4. Rural character areas
5. Greener urban environments
6. High quality open space
7. Efficiency; and
8. Resilience

This background paper addresses six of these eight priorities.

The Northern Beaches document structure is shown at right indicating the role of land use planning within the broader Council strategic vision.

These sections are supplemented by a series of maps, highlighting the potential spatial context of the various environmental opportunities inherent across the Northern Beaches. These maps also underpin Council's Draft Local Strategic Planning Statement.



Northern Beaches Council Document Framework

Our Intrinsic Environmental Values

Our Intrinsic Environmental Values

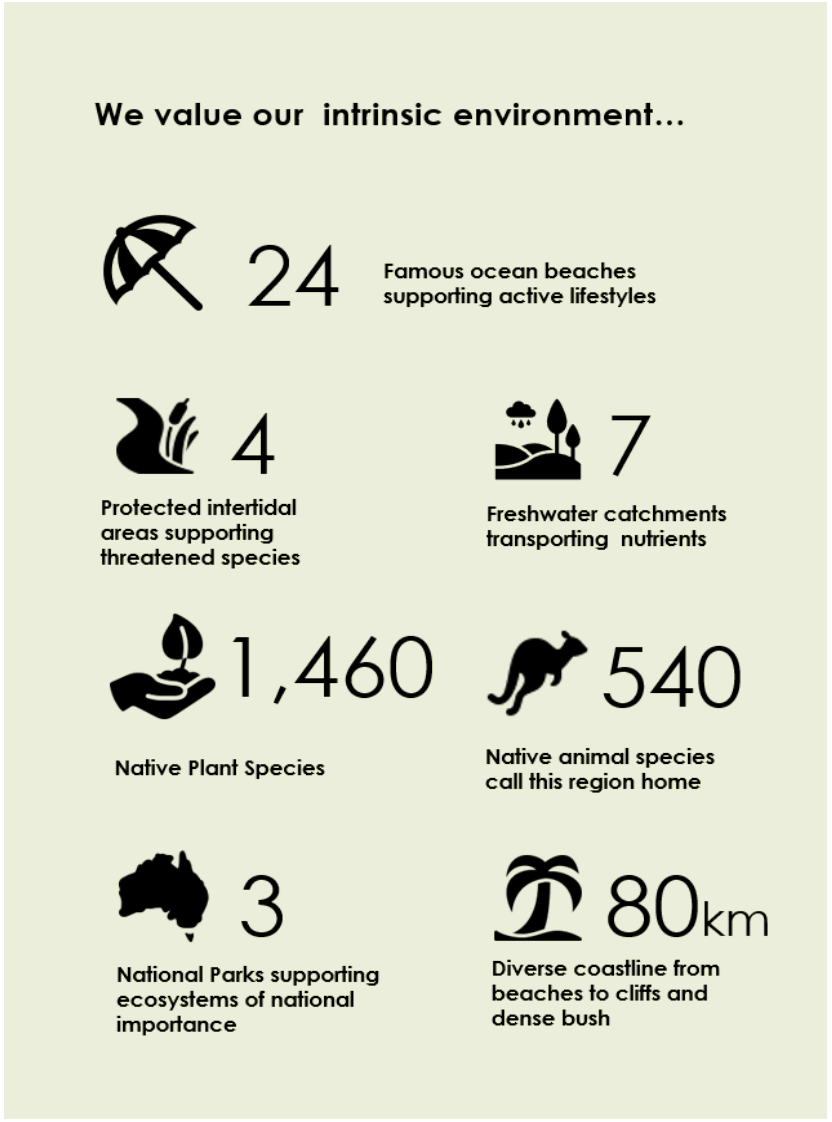
The Northern Beaches is unique, comprising a vast number of environmental values which set it apart from other areas of the State, Australia and even other areas of the world. The unique landscape and natural environments of the Northern Beaches are the basis for a strong connection between places and their people – resulting in a unique lifestyle and amenity.

The Northern Beaches includes the Ku-ring-gai Chase, the Garigal and the Sydney Harbour National Parks. The Ku-ring-gai Chase National Park is the second oldest national park in Australia. It is heritage listed with 40 mapped vegetation communities including the taller Pittwater Spotted Gum Ironbark Forest and the low-lying Coastal Headland Heaths.

There are abundant watercourses which provide sanctuaries for wildlife and vegetation. These creeks wind and flow through natural and man-made environments into the lagoons and ocean. Pittwater is a major waterbody of the Hawkesbury River. Waterways perform valuable environmental and ecosystem services cleaning and conveying nutrients, providing refuge, food sources and habitats.

The coastal floodplains of the Northern Beaches include some significant freshwater and estuarine wetlands. The Warriewood wetland is the largest remaining sand plain wetland in the northern Sydney area, at 26ha. It is a popular bird watching area recording over 80 bird species, including the threatened Regent Honeyeater and Black Bittern. Careel Bay in Avalon is an estuarine wetland providing a combination of natural features and habitat for marine life and bird species. The Dee Why lagoon is significant for its salt marshes.

A total of 116 bird species have been recorded in the immediate catchment. The Northern Beaches is identified as having the only mainland breeding colony for Little Penguins.



The natural landscapes support diversity in flora and fauna. The sandstone heathlands and woodlands in the Narrabeen Lagoon catchment at Ingleside, Belrose and Oxford Falls are habitat for the vulnerable Eastern Pygmy-possum and endangered Southern Brown Bandicoot. Important Grey-headed flying fox camps occur at Balgowlah, Warriewood and Avalon.

The Manly Dam catchment includes the only known locations of the critically endangered plant: Seaforth Mintbush. The critically endangered *Grevillia caleyi* is also found in an 8km^2 area surrounding Terrey Hills. Threatened ecological communities include Pittwater Spotted Gum Ironbark Forest, Coastal Upland Swamp, Swamp Oak Floodplain Forest, Duffys Forest, Coastal Saltmarsh, Themeda grasslands, Eastern Suburbs Banksia Scrub, Littoral Rainforest and Swamp Sclerophyll Forest.

The coastline landscape, characterised by dramatic escarpments and sandstone plateaus, is deeply incised with heavily vegetated river valleys which form sanctuaries for wildlife among the 13 headlands. The headlands were formed during the Triassic period, approximately 199-251 million years ago. The geological characteristics of these headlands are predominately formed from a sequence of sedimentary rocks including claystone formations, interbedded sandstones and siltstones, while the mainland is characterised by an extensive terrain of Hawkesbury sandstone plateaus. There are also a number of rock platforms that are the most accessible marine habitats.

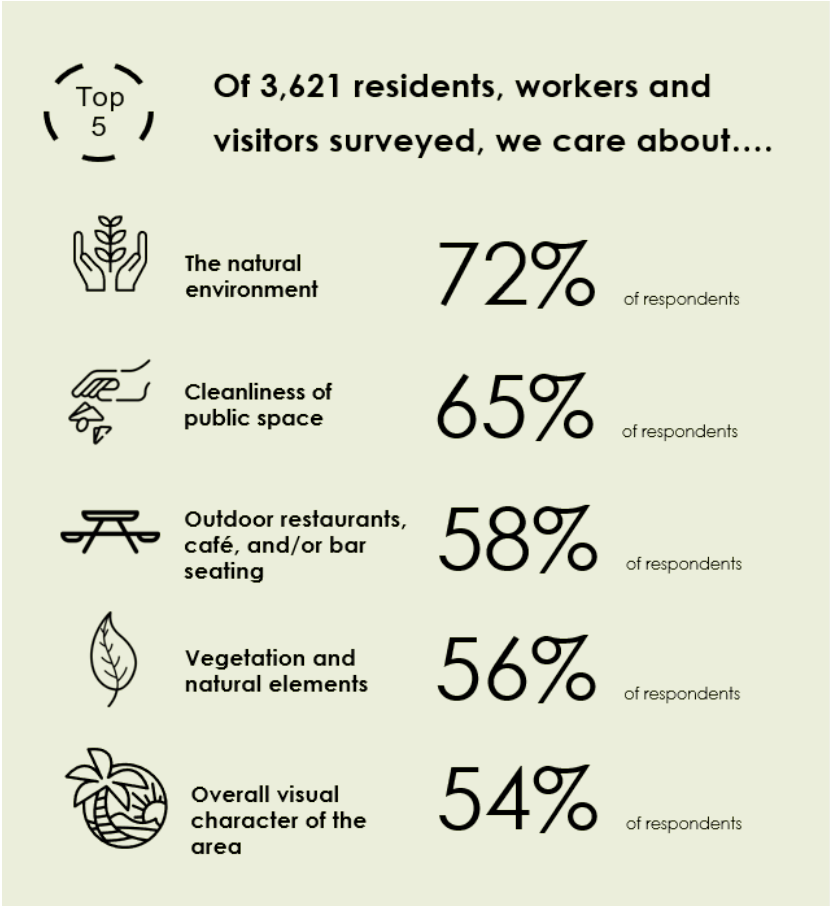
The rocks are home to variety of plants, animals and invertebrates such as starfish, crabs, shellfish and intertidal invertebrates. Rock platforms at Bungan Head, Mona Vale, Dee Why and Shelley Beach Headlands have been designated as intertidal protected areas. The larger rock platforms at Cabbage Tree Bay, North Harbour, Barrenjoey, Long Reef and Narrabeen Headlands are Aquatic Reserves.

Endemic and threatened Grevillia caleyi
Source: Northern Beaches Council

Part of the region's intrinsic value is the range of landforms, proximity to Sydney, views to the elevated bushland, Pittwater, the Hawkesbury and endlessly to the Pacific Ocean. The vantage points and view lines are integral to the many ways locals derive meaning, appreciate and use the Northern Beaches natural environment.

The community has previously provided extensive feedback on the environmental values of the Northern Beaches' town centres. Below is snapshot of feedback via a 2018 community survey conducted by Placescore.

This background paper is responsive to the comments from the community which reflect the value placed on the bushland and natural setting of their community. The community has expressed through the place score activity the conditions for the future of the Northern Beaches to progress in harmony with the natural environment.



Results of 2018 Care Factor Community Survey
Source: Placescore, 2018

The six environmental priorities from the North District Plan's 'Directions for Sustainability' are highlighted by the diagram to the right. Each priority is discussed in the context of the Northern Beaches and responds to the opportunities and challenges land use planning faces in achieving these priorities of:

- **Healthy Coast and Waterways**
- **Bushland and Biodiversity**
- **Scenic landscapes**
- **Greener Urban Environments**
- **Efficiency; and**
- **Resilience**

The six priorities are discussed in this background report identifying some of the local challenges and opportunities while celebrating the strong sense of place and identity. The intent is to embed these local values and environmental features in the future of the Northern Beaches.

The character and identity of the Northern Beaches is shaped by its waterways. Coastline, beaches, aquatic reserves, lagoons and creeks are integral to the landscape. Every part of the region transports water to a lagoon; directly onto the beaches; into Middle Harbour, the Hawkesbury River or Pittwater. All waterways support aquatic life and provide a healthy natural environment which is valued so highly.

The waterways perform environmental services, distributing and filtering nutrients, enable groundwater dependent ecosystems to thrive, provide habitat for aquatic and riparian species, cool urban areas and provide scenic enjoyment.

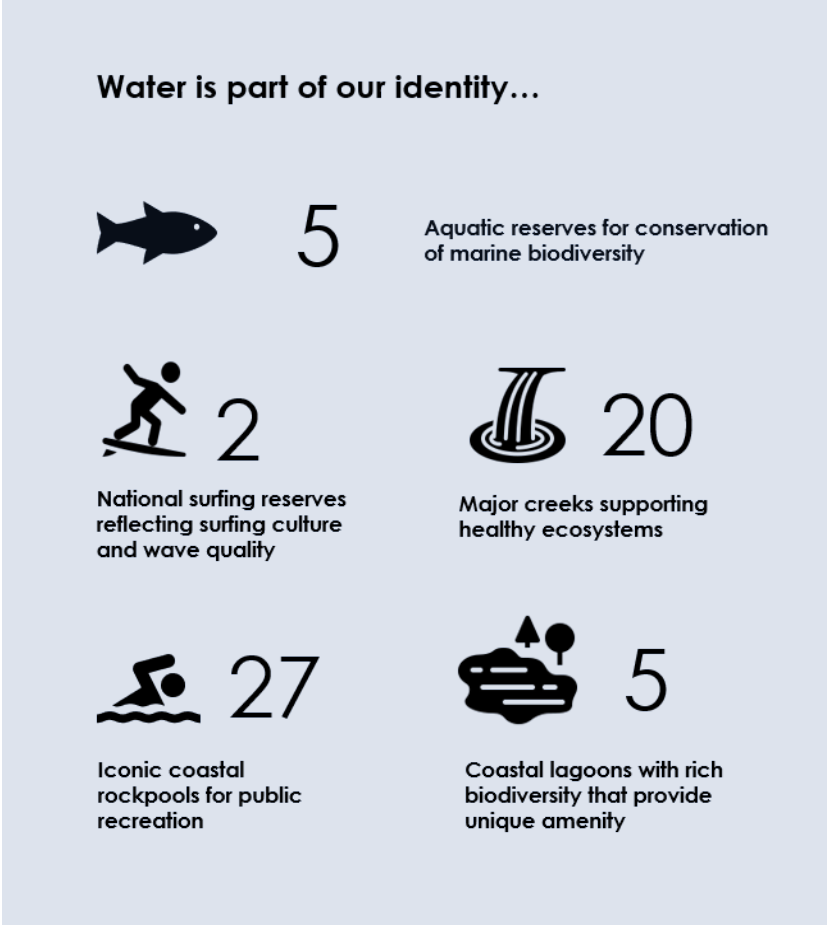
The coastline and waterways are an intrinsic part of the Northern Beaches lifestyle as habitats to explore, scenic views and support a vast array of recreational opportunities. The five coastal lagoons are intrinsically 'local'. Five aquatic reserves protect fish, aquatic animals and marine vegetation at Barrenjoey Head, Narrabeen Head, Long Reef, Cabbage Tree Bay and North Harbour. Our famous beaches, such as Manly and Palm Beach, attract visitors, support an active lifestyle for residents and are important locally, regionally and nationally.

Our Challenges

The Northern Beaches community advocates for healthy and resilient catchments, waterways and beaches. The Pittwater Waterway Strategy 2038 identifies the single biggest challenge facing the Pittwater is the health of the natural environment.

Waterways, coastal lagoons and beaches are susceptible to pressures from a changing climate, changes to development patterns and stormwater drainage from urban land uses. The intrinsic natural values of aquatic ecosystems require protection to continue to provide vital services to the people and the environment.

Sustainable recreational use and enjoyment of water-based environments of the Northern Beaches is desirable for residents and visitors. The visual and environmental quality of the coastline supports tourism, while continued community access to and scenic views of the beaches and waterways is paramount to maintaining lifestyle and place attachment.



Balancing protection of the natural environment with continued and increasing access to the waterways for recreational purposes is a significant challenge.

"We aspire to protect the natural and built environment from the risks and impacts of global and local pressures."

Source: Shape 2028

Our Opportunities

There is an opportunity to consider waterways as an infrastructure asset – a 'blue asset' to be integrated into decision making to protect environmentally sensitive waterways and address the cumulative impact of land management decisions. The network of waterways, drainage paths and the coast should be viewed as a connected and dependent network which contributes to community liveability.

Through development controls, storm water runoff can be controlled and treated before entering the local waterway, protecting it from increased flow and excess nutrient and sediment load. There is an opportunity to ensure that new developments do not have a negative impact on the quality of water environments. Improving water quality and flow characteristics along the system ensures enhancement of waterway health. This can be achieved through introducing stormwater controls which are tailored to the receiving waters.

Maintaining coastal vegetation on dunes and coastal headlands through planned bush regeneration activities provides habitat for flora and fauna as well as building the resilience of these systems to coastal processes.

Palm Beach Jetty
Source: Northern Beaches Council

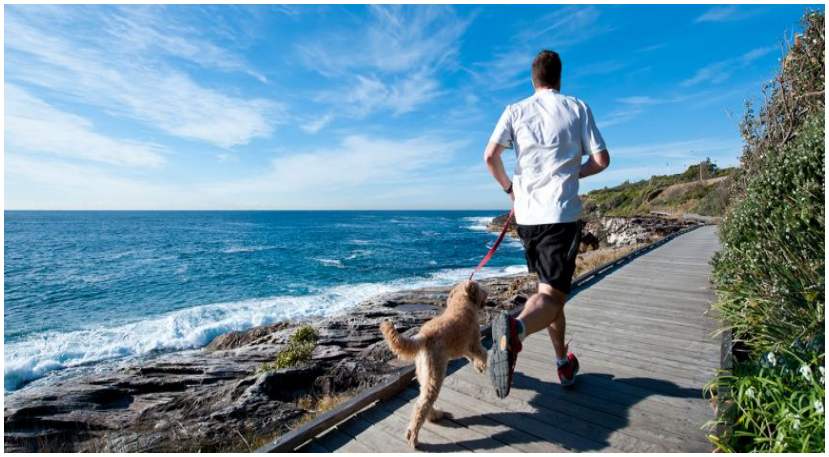
Priorities in Practice

Northern Beaches Council will consider land use planning tools to protect and improve waterway health and ensure sustainable recreational access to waterways in the following ways:

- ensuring opportunities for waterway protection such as setbacks and buffers are contained in planning instruments;
- implementing integrated water cycle management incorporating development controls into relevant policies and planning instruments;
- ensuring opportunities for enhanced access and connectivity are in planning instruments;

- ensuring recreation is sustainable and prioritizes protection of the coast and waterways;
- ensuring any planning controls encourage the use of beaches and foreshores as places for people, events and celebration;
- continuing place-based master planning of foreshores and beaches and consider adopted plans in local planning instruments;
- continuing monitoring waterway condition to understand the impact of development;
- ensuring local zoning and development controls protects the local environment and maintains valued areas for public use;
- identifying places of significant value and balance outcomes between protection for conservation and recreation;

Middle Harbour
Source: Northern Beaches Council

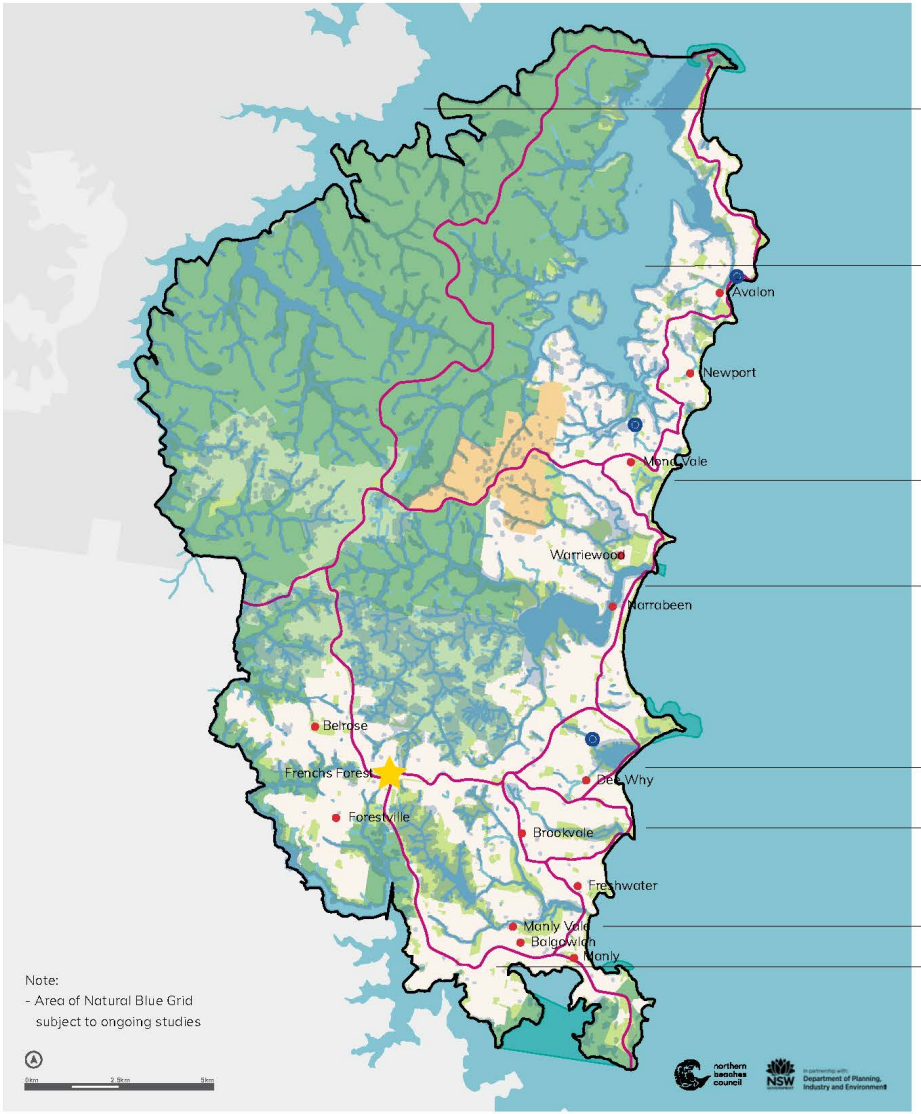


Coast Walk
Source: Northern Beaches Council

- celebrate and leverage views and vistas across waterways, for the benefit of access opportunities to foreshores and reserves; and
- ensure planning activity is completely integrated with a lens across all opportunities for connection including green and blue grids.

The coast and waterways map over leaf highlights Northern Beaches Natural Blue Grid, and associated community environmental values and uses (Source: jointly prepared by Northern Beaches Council and the Environment, Energy and Science Group of DPIE, supported by the NSW Government as part of the Marine Estate Management Strategy (2018-2028) water quality initiative).

Northern Beaches Natural Blue Grid, and associated community environmental values and uses[5]



Legend

- Urban area (Urb)
- Ingleside Growth Area (Ing)
- National park (NP)
- Major public parkland/bushland Pub)
- Metropolitan Rural Area (MRA)
- Strategic and local centres
- Waterways
- Natural Blue Grid - waterways and water dependent ecosystems with high ecological value
- Aquatic reserves
- Water sensitive city
- Watercourse restoration
- Catchment boundary

Hawkesbury River Catchment	
Estuaries-Hawkesbury River and Cowan Creek	✓ ✓ ✓ ✓ ✓
Waterways - Urb, MRA	◎ ◎ ◎
Waterways - NP, Pub	✓ ✓ ✓
Pittwater Catchment	
Estuaries - Pittwater	✓ ✓ ✓ ✓ ✓
Waterways - Urb, MRA, Ing	◎ ✓ ◎
Waterways - NP, Pub	✓ ✓ ✓
Coastal Catchments	
Ocean Beaches	✓ ✓ ✓ ✓ ✓
Waterways - Urb	◎ ✓
Waterways - NP, Pub	✓ ✓ ✓
Narrabeen Catchment	
5,240Ha 28% Modified	
Lagoon	✓ ✓ ✓ ✓ ✓
Waterways - Urb, MRA, Ing	◎ ✓ ◎
Waterways - NP, Pub	✓ ✓ ✓
Dee Why Catchment	
426 Ha 97% Modified	
Lagoon	✓ ✓ ◎
Waterways	◎ ◎ ◎
Curl Curl Catchment	
465 Ha 99.8% Modified	
Lagoon	⛳ ◎ ⛳
Waterways	⛳ ◎ ⛳
Manly Catchment	
1,724 Ha 74% Modified	
Lagoon	◎ ✓ ◎ ⛳
Dam	✓ ✓ ✓ ✓ ✓
Waterways - Urb	✓ ✓ ◎
Waterways - NP, MRA, Pub	✓ ✓ ✓
Sydney Harbour Catchment	
Estuaries	✓ ✓ ✓ ✓ ✓
Waterways	✓ ✓ ✓

Community environmental values and uses

- Aquatic ecosystems
- Visual amenity
- Secondary contact recreation
- Primary contact recreation
- Aquatic foods (to be cooked before eating)
- ✓ Maintain or improve existing condition
- ◎ For achievement in 5 - 10 yrs
- ⛳ For achievement in 10 yrs or more

River flow objectives

All waterways and estuaries

- Protect pools in dry times
- Protect natural low flows
- Mimic natural drying in temporary waterways
- Manage groundwater for ecosystems

All Estuaries

- Maintain or rehabilitate estuarine processes and habitats

The bushland across the Northern Beaches is integrated with existing urban areas, providing natural corridors across the region. Core areas of bushland include, larger Council reserves located at Manly Dam, Allenby Park and Ingleside Chase Reserve and the state managed national parks. Importantly, a valuable network of local wildlife corridors link these core areas.

The national parks contribute largely to the core bushland of the region, however the extent of bushland outside of these areas, on council managed lands and on private land is considerably less.

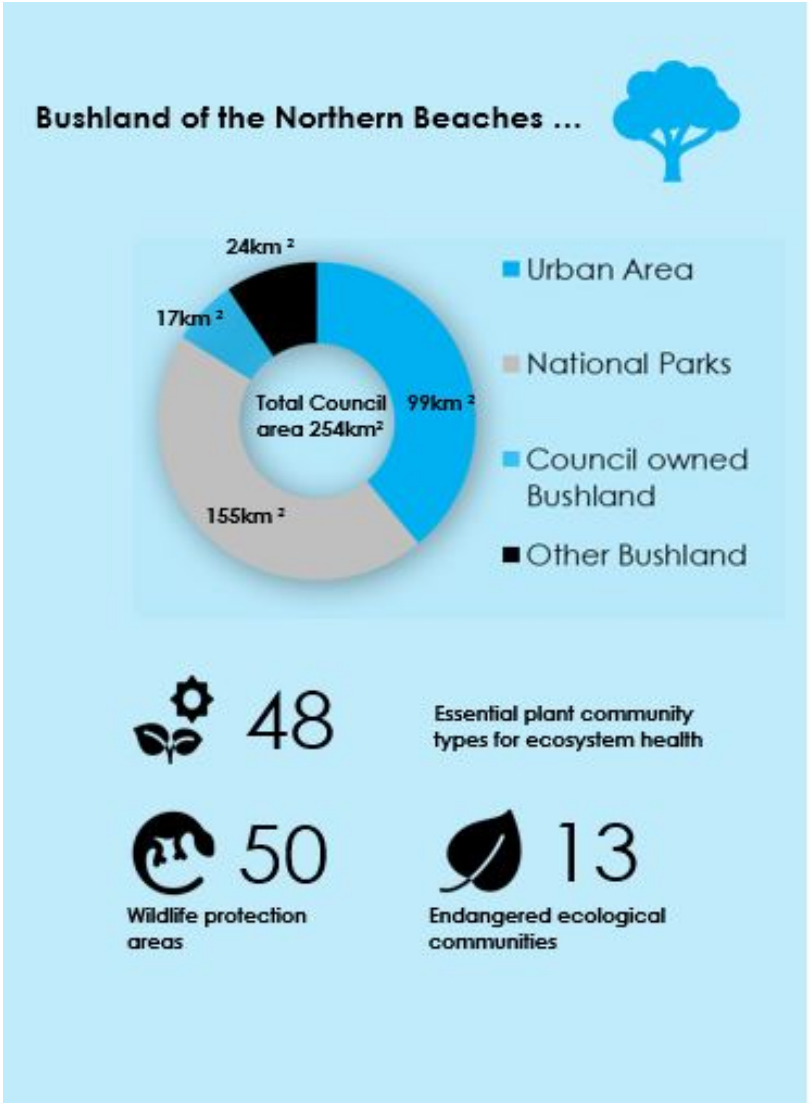
Bushland on Council managed lands is 17km^2 of the area. The remainder of the bushland is found in state government owned land, schools, and in private ownership. It is these areas that offer the opportunity for future protection under our new planning framework.

The bushland contains representations that are essential to the conservation of local ecosystems and biodiversity generally. Healthy bushland and biodiversity in the Northern Beaches contributes to community health and wellbeing, visual and recreational amenity and economic diversity, including increased revenue for tourism, fisheries and other related industries. Well protected and accessible natural environments deliver social, environmental and economic benefits.

Our Challenges

The largest tracts of bushland outside of national parks are in the larger Council managed reserves such as Manly Dam, Allenby Park and Ingleside Chase Reserve. A substantial proportion of Northern Beaches bushland is in private land holdings which form a considerable contribution to the overall bushland identity of the Northern Beaches.

The challenge is to protect the natural environment while providing sustainable access for recreation and enjoyment along with

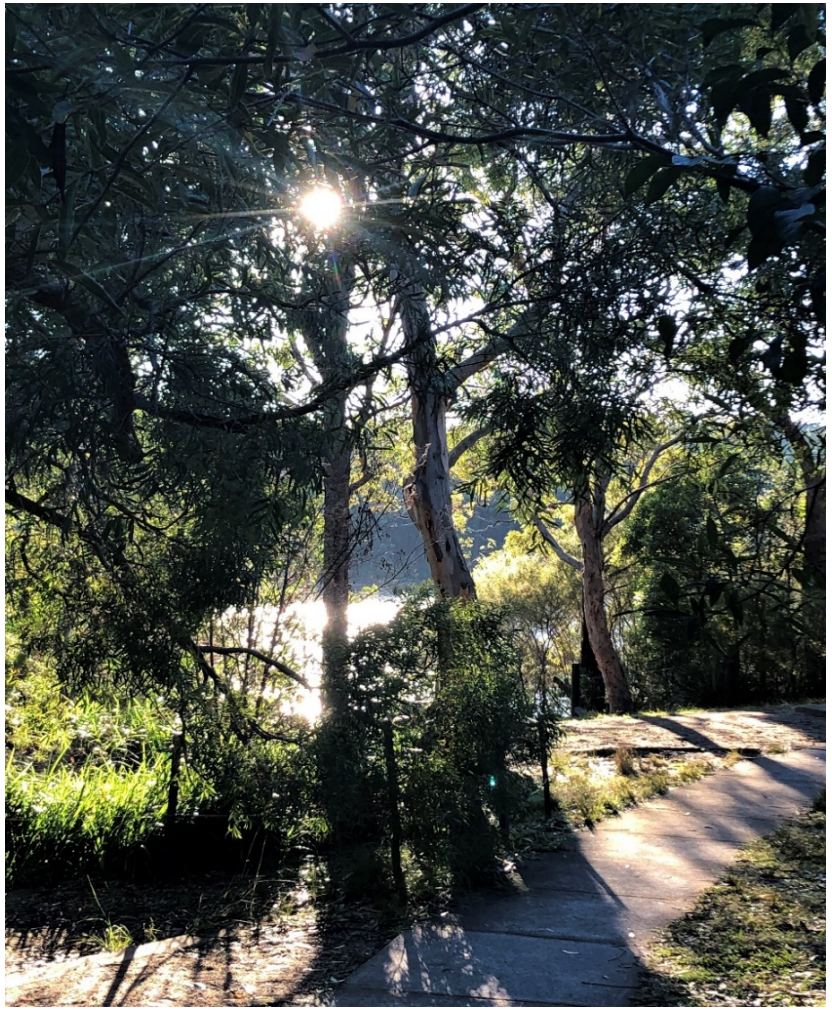


protection and conservation. Quality, quantity and access to passive and active open space is a determining factor in levels of community satisfaction, towards which access to the natural bushland and biodiversity is a primary factor. Finding the right balance between conservation of natural areas and access for recreational purposes is often problematic in areas valued highly for various reasons

The metropolitan rural areas support a diverse habitat and biodiversity, contributing to the wider green grid and environmental attributes of the Northern Beaches. In some cases, they provide important buffer areas between core bushland and urban areas. In other areas, such as Oxford Falls Valley, they provide essential core habitat and linkages to surrounding bushland and national parks forming essential corridors for the movement of flora and fauna.

Smaller areas of bushland are in public and private land holdings spread across the Northern Beaches forming a valuable network of local wildlife corridors. Corridors and connectivity between bushland areas is vitally important to maintain safe wildlife passage; buffers between natural bushland and urban areas; and help protect against the encroachment of invasive species,

The challenge is to protect these important areas for the benefit of the broader community and the conservation of local biodiversity, through sustainable planning approaches. Bushland and the biodiversity it supports, faces threats from development, and the pursuit of private views and the fragmentation of corridors and buffers.



Early Morning at Manly Dam
Source: Meridian Urban

Our Opportunities

Bushland is part of the green infrastructure network and is a community natural asset. In the future, thinking of the natural environment as an asset must be considered in activities which impact natural bushland and the biodiversity it supports.

Natural open space is land that is primarily protected for conservation but also serves as parks, gardens, linear corridors, and nature reserves. These areas are made available for recreation, play, swim and unstructured physical activity. They include coastal walkways, beaches and reserves, cycle and walking trails or paths, seating, lookouts and viewing platforms and opportunity to enjoy the outdoors without team participation.

An array of ecosystems including threatened ecological communities such as the Pittwater Spotted Gum Ironbark Forest and threatened species such as *Grevillia caleyi* and can be, in part, protected by the land use planning framework.

Land use planning allocates land for development, determines setbacks, decides densities and proximities and sets conditions for environmental management for new projects. It must also ensure that people are safe and have adequate access to services and open space.

Land use planning can help ensure new developments are designed to avoid and minimise impacts upon bushland and biodiversity in the first instance. The NSW biodiversity offset scheme can provide for permanent protection and ongoing management of bushland however offsets are often retired out of the local area and there are opportunities to increase the availability of local offsets. Planning can also protect existing public reserves; ensure they remain available for public use or for environmental purposes and recreation.

Priorities in Practice

The following priorities in practice will be considered to ensure bushland and biodiversity values are reflected in the new land use planning framework. These include:

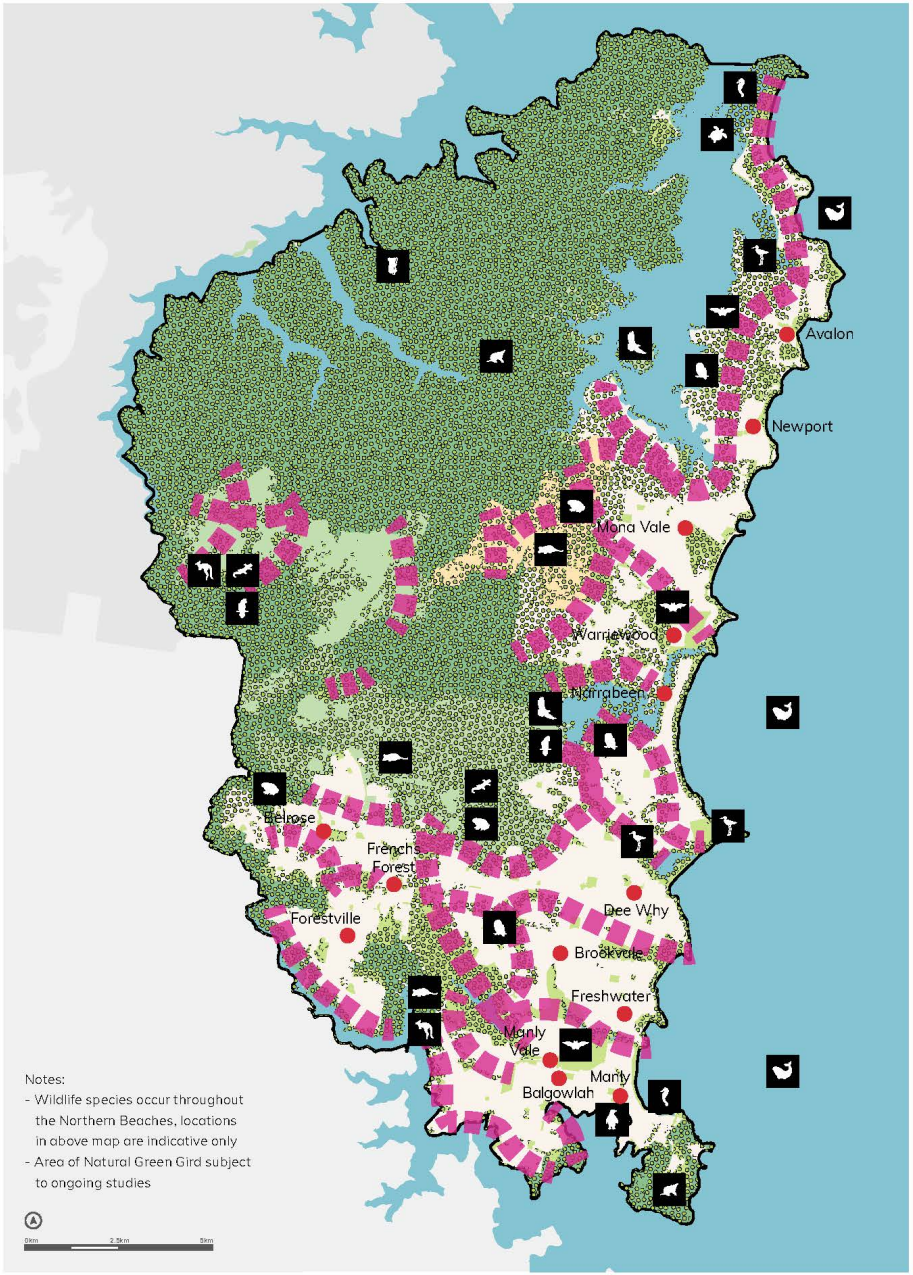
- protecting intrinsic natural assets and value, maintaining ecological and biodiversity function and value;
- containing urban development within the existing urban area;
- ensuring local zoning and development controls protect the natural environment including its links, corridors and essential habitats;
- finalizing the documentation and mapping of vegetation, ecosystems, species, habitats and wildlife corridors to ensure protection and opportunities for conservation are created in the areas most suitable;
- ensuring land use planning controls protect bushland and biodiversity from unnecessary land clearing or fragmentation;
- ensuring land use planning is aligned with the Plans of Management for reserves;
- considering purchase of strategic land parcels with significant biodiversity value;
- increasing the availability of local offsets by providing incentives and/or assistance to property owners to conserve bushland;
- ensuring any new projects adjoining bushland areas have appropriate separation and clear buffers from hazardous fuel loads, wildlife habitats and other considerations;

Banksia in Flower
Source: Meridian Urban

- creating opportunities for the retention and protection of bushland and biodiversity habitat through avoidance and minimisation of impacts before the use of local offsets and by seeking to maintain habitat-connectivity for wildlife (e.g. wildlife corridors);
- creating opportunities for sustainable recreation activities (e.g. bushwalking), environmental education (e.g. educational displays and signage) and scientific research (e.g. citizen science projects and wildlife monitoring/observation);
- continuing to monitor and report on of the extent of bushland throughout the Northern Beaches area;
- encouraging new development to 'protect with pride' and raising the importance of their role in maintaining valued places and attributes;
- ensuring sustainable access approaches are considered in environmentally sensitive areas;
- identifying places of significant value and balance outcomes between protection for conservation and recreation;
- regenerating compromised areas and restoring elements in both natural and built landscapes during redevelopment;
- continually improving natural open space in areas which are targeted for growth to meet the needs of new residents; and
- collaborate with identified landowners to ensure opportunities arise for enhanced education and celebration of the natural environment in development.

The biodiversity map over page illustrates at a strategic level, the Northern Beaches natural green grid, connectivity and examples of threatened and iconic wildlife (Source: Northern Beaches Council, 2019).

Northern Beaches Natural Green Grid, connectivity and examples of threatened and iconic wildlife



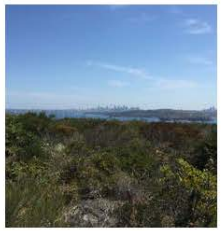
Legend

- Urban area
- Ingleside Growth Area
- National park
- Major public parkland/bushland
- Metropolitan Rural Area (MRA)
- Strategic and local centres
- Natural Green Grid OEH Native vegetation (2016) and Biodiversity values (2019)
- Wildlife corridors and connectivity

Threatened and iconic wildlife

- Bats
- Little penguins
- Wallabies
- Giant burrowing frog
- Weedy seadragons
- Eastern pygmy-possum
- Koalas
- Birds of prey
- Turtles
- Heath monitors
- Wading birds
- Whales
- Bandicoots
- Owls
- Glossy black cockatoo

*Littoral Rainforest EEC**



Eastern Suburbs Banksia Scrub EEC

Mangroves

Pittwater Spotted Gum EEC

Themeda Grasslands EEC

Barking Owl

Eastern Pygmy-possum

Eastern Water Skink

Red Crowned Toadlet

Sea Eagle

Swamp Wallaby

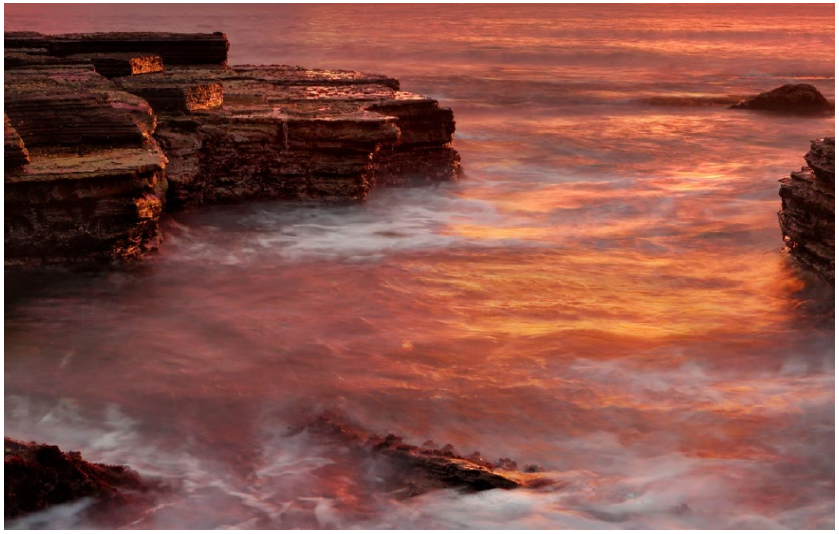
Osprey

* EEC - Endangered Ecological Community

The scenery of the Northern Beaches is iconic. Its diversity in a small area and proximity to a world city is remarkable. The area includes natural bushland, peaks and valleys, coastal headlands and treasured beaches, waterways, escarpments, headlands and cliff faces.

The townships, views and vistas to and from these locations in the public realm are equally impressive, especially the outstanding views to the skyline of Sydney and the Pacific Ocean.

Vantage points which contribute to scenic values, prized by locals and tourists alike are Governor Phillip Lookout, Barrenjoey Lighthouse, Shelly Beach Headland Lookout, Long Reef headland and plentiful vantage points along the coastline, headlands and surrounding elevated bushland. Together they weave the fabric of place attachment and give meaning to the people who live here.



Sunrise
Source: Northern Beaches Council

The region is spoiled for scenic beauty...

36km

Coastal walkway showcasing scenic and cultural icons

19

Lookout points to savour this beauty and create memories

13

Prized headlands each with its unique character and values

Our Challenges

The challenge is to position and respect these places on the Northern Beaches. The values given to these scenic landscapes must translate into the planning framework as important elements for future development to consider. The challenge includes maintaining, regenerating, and being long-term custodians of scenic values for the greater good. This means that the views and vistas to and from public places of significance remain primary. Their natural settings and attributes are maintained and precede considerations for new development or private property.

Striking a balance between allowing public access to scenic landscapes and preserving these for the future is a delicate task. Public access to these places may raise issues of safety and conservation, however understanding and appreciation of the contribution scenic places make to the lifestyle and identity of the Northern Beaches is enhanced when people can readily enjoy them.

Priorities in Practice

Council will consider, the scenic landscape values in the new land use planning framework through:

- continuing the implementation of adopted and committed plans or strategies that support the retention of scenic landscapes;
- ensuring adopted projects are woven into the new planning framework;
- designating and mapping important scenic and cultural landscapes as Scenic Protection Areas where possible;
- ensuring public views of scenic landscapes are enhanced through innovative urban design of new development and leveraged as an asset;

"An increased awareness of history of the local area should be pursued to make the community more aware and passionate, to protect the environment and culture we hold in Sydney's north."

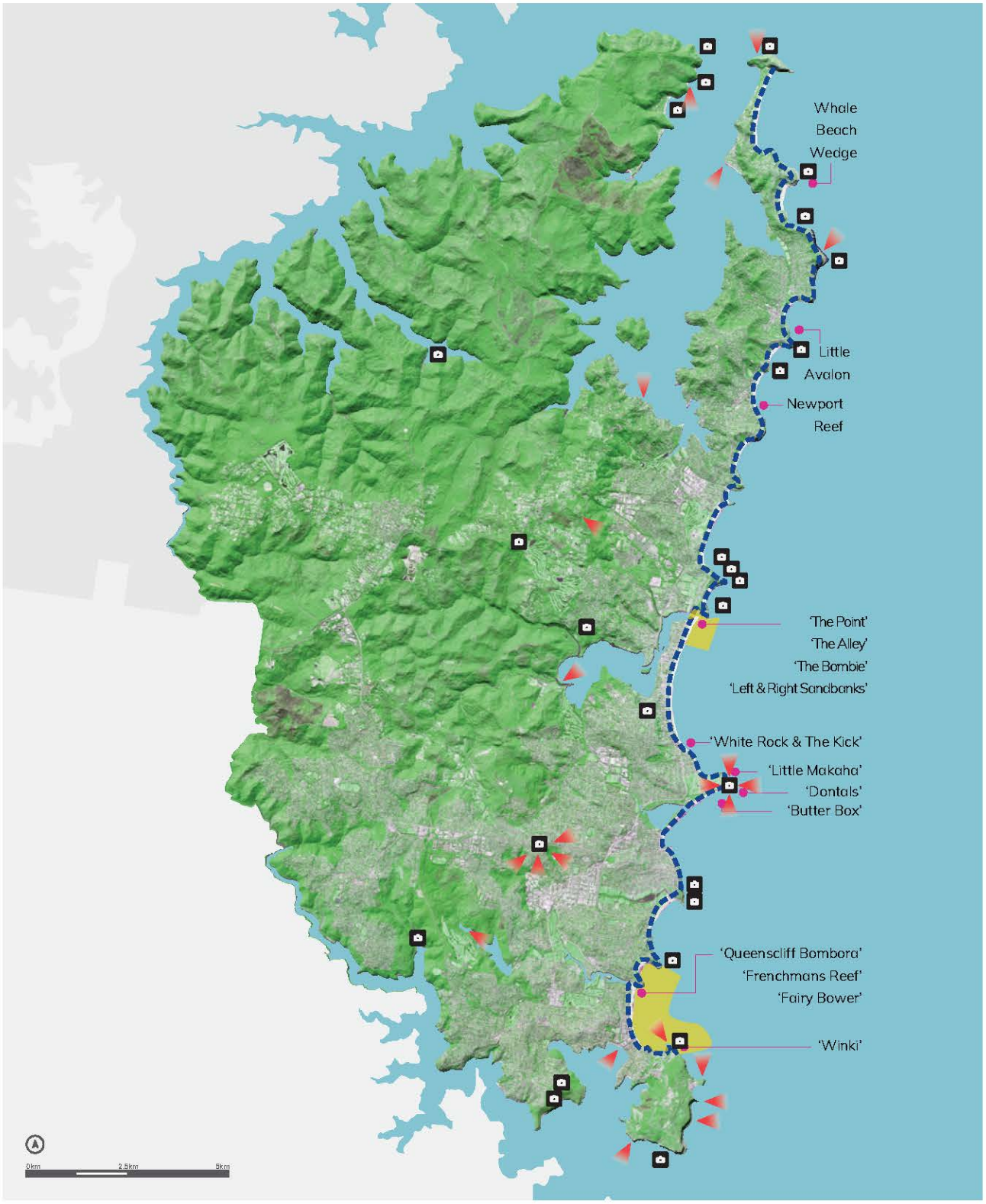
Source: Towards 2040 survey response

- protecting iconic and valued places natural and scenic beauty;
- explore opportunities to open up landscapes and connect centres through access points to scenic landscape views and places of significance; and
- ensuring new development is visually subservient to or enhances and incorporates significant scenic landscapes in a way that creates new opportunities for existing places of scenic importance.

The scenic landscapes map over page, jointly prepared by Meridian Urban and Northern Beaches Council, highlights scenic and cultural landscapes of the LGA, including lookouts, coastal landmarks and high-level view corridors.

The Headlands
Source: Northern Beaches Council

Scenic and cultural landscapes of the LGA, including lookouts, coastal landmarks and high-level view corridors[7]



Legend

- Popular lookouts
- View corridor
- Locally famous surf breaks
- National surfing reserves
- Coast walk

This priority focuses the role of the urban 'green grid' including the importance of shade and shelter, building resilience to the urban heat island effect (higher temperatures caused by concentrations of materials which store or reflect heat – like concrete and glass). The aim is to improve connections to green spaces, increase the urban tree canopy and green cover and integrating water features into spaces.

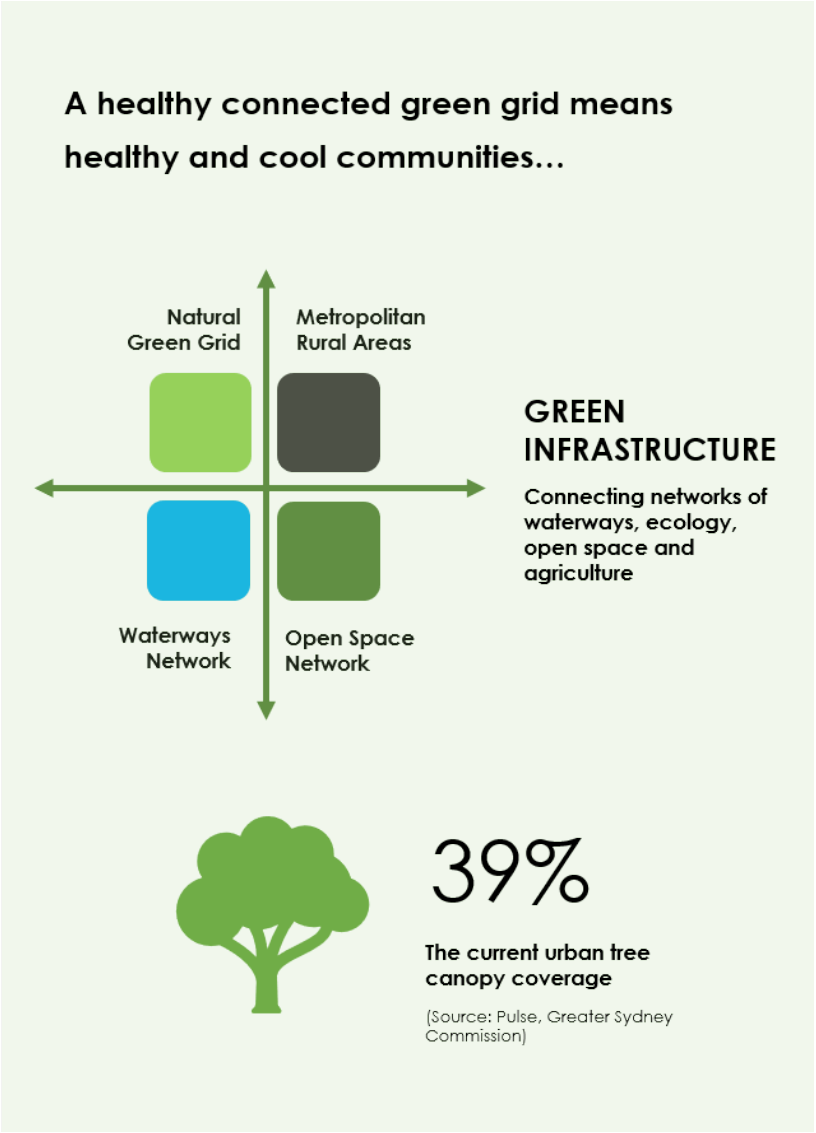
In recent years the focus has changed from building over or converting 'green' and 'blue' spaces (land and water) to reinstating natural areas. Recognising the important environmental services these connected networks play in the function of cities is paramount. These networks are assets and are comprised of narrow corridors, streetscapes, drainage lines, and connecting links between significant water bodies or green spaces.

Creating a greener urban environment delivers a range of benefits including the provision of shade and shelter and local habitat. It cools local environments, reduces the urban heat island effect, improves air quality and acts as a carbon sink. It encourages people to walk and spend time outdoors and protects us from the sun's rays.

Shady streets enhance visitor experience, reduce energy costs and add appeal for retail, business and office developments. Water quality can be improved before reaching water courses and maintenance costs are reduced or transferred to natural processes when water-sensitive urban design principles are employed. This green network plays a critical role in liveability. It is just as important as roads, car parks, water and buildings.

Our Challenge

The challenge is to shift gears and think of the tree canopy, streetscapes, links and connections of green infrastructure as a natural network.



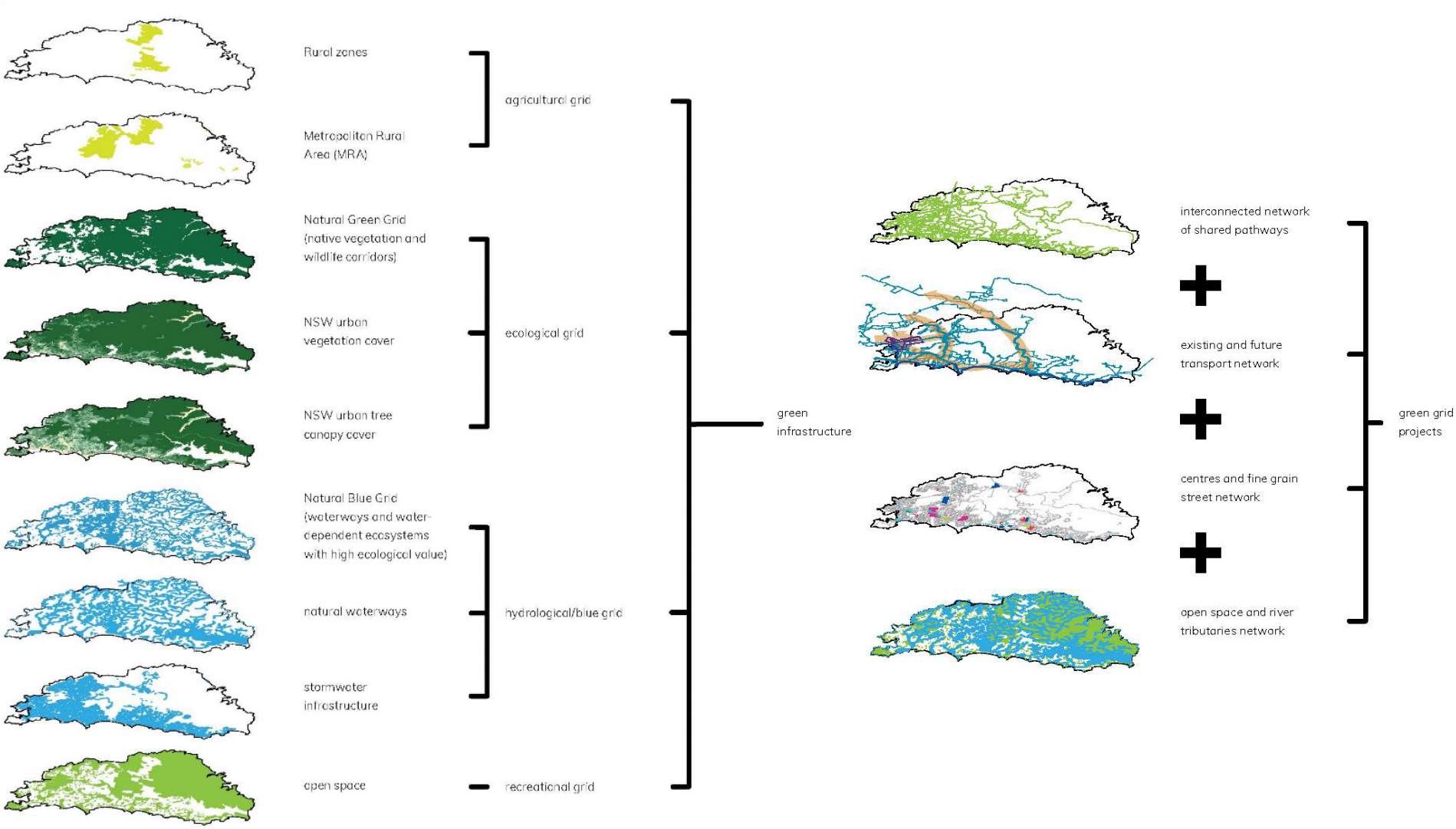
Expanding the urban tree canopy especially in areas with less tree canopy coverage than the rest of the Northern Beaches and in the intensely urban spaces is vital to create places for people. The tree coverage enjoyed by the residents of the Northern Beaches is highly valued in contributing to the character, standard of living, and amenity of the area. While the Northern Beaches is expected to grow, amenity will always be a fundamental characteristic of the area.

The Northern Beaches has one of the highest urban tree canopy coverages in Sydney. The NSW Government's 2016 data indicates the Northern Beaches' has an Urban Tree Canopy coverage of 39%. The 2016 data suggests that within business, commercial and industrial zones there is an average urban tree canopy coverage of 11%, with some areas as low as 4%. Within residential zones (R1, R2 and R3), the average tree canopy cover is 32% and can range from 11% - 48% (NSW Government's 2016 tree canopy data). Council is in the process of collecting local data.

A shady and welcoming environment on Park Street, Mona Vale
Source: Meridian Urban

Strategic centres and employment hubs of Mona Vale, Brookvale, Dee Why and Frenchs Forest and along major entry and transport routes of Pittwater Road, some parts of Barrenjoey Road and Condamine Street are particularly susceptible to the urban heat island effect.

The diagram on the following page illustrates the Northern Beaches local green grid, green infrastructure and green grid projects. Local green grid projects will connect with Greater Sydney Green Grid projects. This work will be underpinned by the Government Architect NSW's Greener Places Policy, which aims to reconceptualise waterways as an infrastructure asset and connectors that bind communities together.



Northern Beaches local green grid connects existing networks
Source: Northern Beaches Council

Our Opportunities

Communities should be sensitively designed within the natural environment to build resilience to heat and allow natural processes help manage the urban environment. In addition, the vision is to create welcoming places for people. Shade is integral to this vision.

The Greater Sydney Green Grid concept is visionary and displays solid principles about the importance of open space, landscape character and natural processes that benefit cities and towns. This concept would benefit from a local context and application which complements local strategies and visions.

The resulting advantages which emerge with striving for a greener urban environment include

- combatting the urban heat island effect with natural shade and cooling;
- assisting storm water quality, drainage and absorption;
- contributing to improved air quality;
- increasing habitat and safe corridors for wildlife;
- increasing resilience to climate change; and
- enhancing opportunities for environmental awareness and social activity through bush care and community gardens.

The Northern Beaches urban tree canopy includes a variety of tree types, including local and native species, deciduous and evergreens, found on tree-lined streets, urban bushland and private land.

"Green space is the hallmark of liveability in urban areas... promot[ing] sustainable development while maximising quality of life"

Source: Sydney Green Grid Project

Narrabeen Lagoon, multi-use path lined with mature native species
Source: Meridian Urban

The urban tree canopy is a new challenge which will be met through protecting existing shade and enhancing contributing spaces.

Priorities in Practice

The focus for planning is to ensure that green spaces, shade, natural processes and contributions to the urban tree canopy are made at every opportunity. Actions Council will consider for the new planning framework include;

- exploring options for repurposing streets to improve the environment for walking and cycling and ensure street design standards has space for the tree canopy and landscaping and encouraging street level activities;
- encouraging innovative urban design options which maximise green space and planting, including green roofs and green walls and create places for people in every aspect of new projects;
- including the tree canopy in the mapped network of green infrastructure for incorporation into planning instruments and policy using principles from the Sydney Green Grid;
- ensuring green grids are viewed as asset networks to be integrated with broader planning outcomes;
- applying protections where appropriate to existing mature trees to be mapped and identified in the planning instruments;
- ensuring the dual purpose of land: for example, waterways and bicycle and walking path corridors is enabled in the planning framework;
- improving tree health and species diversity through policy guidance;
- considering purchase of strategic land parcels;
- considering a policy to allow or require contributions to nearby greenspace where a site does not provide the opportunity internally;
- using offsetting to reduce net tree loss across the region where appropriate;
- introducing locally specific urban design guidelines which deliver a higher standard of development; greener urban environments, including minimum standards;
- introducing green roofs or green walls on urban rooftops as functional open space;
- improving levels of tree planting to have a cooling effect on the environment and reducing the urban heat island effect;
- ensuring communities have adequate access and proximity to enjoy the outdoors especially around centres; and
- promoting connection across and through the streetscape and land uses, to important local features and services at street scale.

Australia has committed to limit the increase in global average temperature to well below 2^0C, striving for 1.5^0C. The need to achieve emissions reduction targets through land use planning is initiated in the 'Greater Sydney Region Plan: A Metropolis of Three Cities' and echoed in the North District Plan. Priorities are for reduction and recycling for all resources: energy, waste and water.

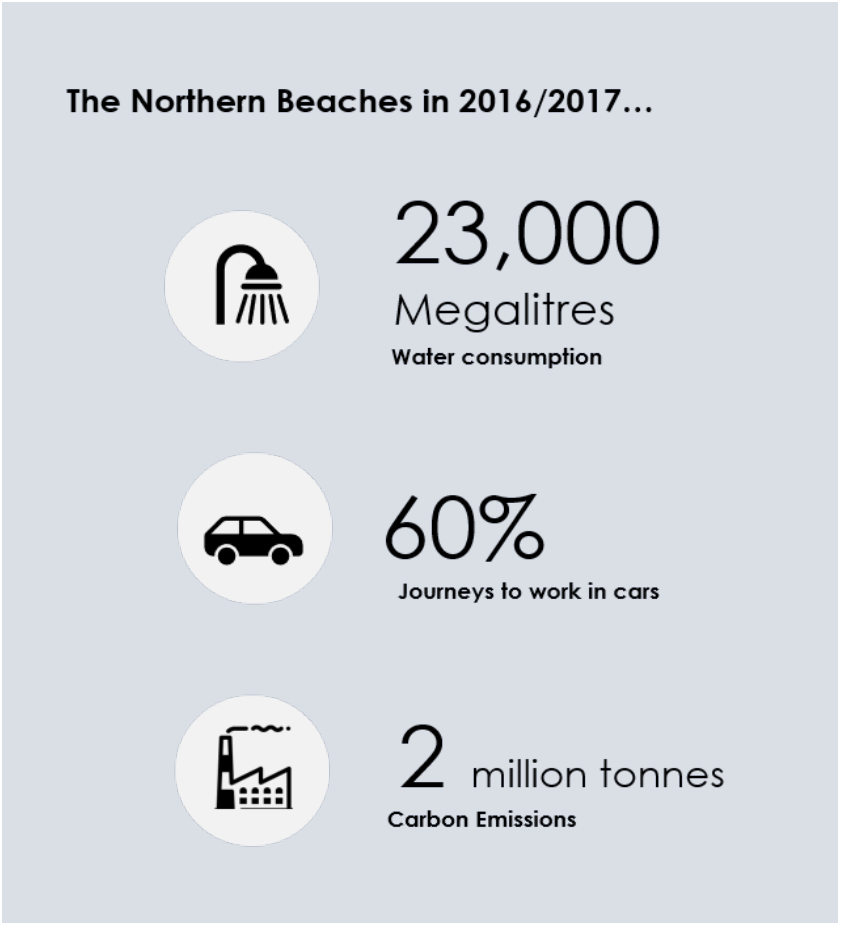
Baseline carbon emissions and water use provide an evidence base to monitor progress. This priority aims to reduce carbon emissions, improve energy efficiency and achieve reductions in waste to establish the Northern Beaches as an exemplar sustainable and energy, water and waste efficient community contributing meaningfully to the circular economy.

Fundamentally, land use planning shapes the efficiency of communities: how people move, connect, work, and recreate and how the community consumes resources. This ability to move is reflected in transport modes, usage and continued reliance on cars. Over 60% of the region's journeys to work are in cars, this is even though 52% of residents work in the area they live.

Our Challenges

The Northern Beaches community aspires to be leaders in managing resources sustainably, ensuring that development improves efficiency in the areas of energy, water and waste on a regional scale along with homes, workplaces, buildings, infrastructure and neighbourhoods. Designing a built environment with a zero-carbon emissions footprint is the challenge.

Average emissions per dwelling are lower in higher density areas in Manly, Dee Why and Narrabeen, assisted by an efficient settlement pattern. Conversely, low density urban development contributes to higher emissions through grater resource use and reliance on private vehicles.



The push for a carbon neutral region can be delivered through:

- a low carbon focus;
- a water and waste-wise community;
- a sustainable built form;
- an efficient settlement pattern; and
- a connected community with transport options.

The settlement pattern must foster opportunities for housing diversity in walkable suburbs with accessible services to enable less reliance on private vehicles and reducing the amount of space used for parking, lowering living costs and emissions, improving health and liveability. Effective settlement design delivers the greatest opportunity for sustainable living across all targeted efficiency areas.

"Make Northern Beaches a shining example of how to transition to a truly sustainable community"

Source: Shape 2028 p. 24

Our Opportunities

Opportunities to meet the challenge arise in the new planning framework. The way our cities are planned is an integral part of the carbon emissions profile. Actions will, connect vital services and jobs to reduce car dependencies and enhance the community with sustainability at the forefront. Land use planning will help deliver a low-carbon community.

New development must foster opportunities for housing diversity in walkable suburbs with accessible services to enable less reliance on private vehicles and reducing valuable space used for parking, lowering living costs and emissions, improving health and liveability.

Community recycling at the Northern Beaches
Source: Northern Beaches Council

Priorities in Practice

Areas that are subject to change provide the greatest potential for improved building sustainability performance. Some of the tools and mechanisms Council will consider in the planning framework include:

- continuing to advocate for a Green Star Communities rating for Frenchs Forest Planned Precinct;
- elevating the strategic centres as preferred residential areas by enhancing liveability in a range of housing choices that are close to service and recreation, promoting active streets and walkability;
- enabling renewable energy options at all scales through collaboration and planning or building regulation;
- incentivising innovative ways to reduce waste, water and energy consumption in new projects and buildings;

"Council aspires to be leaders in managing our resources sustainably and for the long term to ensure that development is balanced with our lifestyle and environment".

Source: Shape 2028

- mandating the highest possible sustainability standards in new building work;
- supporting the target of net zero emission buildings by 2030;
- supporting smart technologies and infrastructure;
- integrating transport and land use planning for an efficient settlement pattern;
- continuing to enhance and require connected communities with adequate walking, cycling and end-of-trip facilities;
- committing to compact centres with diverse housing choice which delivers efficient living and contributes to energy reduction targets;
- create places for people, new residents, business and activities which promote walkability and access;
- plan for a connected settlement pattern of physical and visual links between people, places and environments for a sustainable region;
- ensuring new developments are designed around and incorporate mobility infrastructure, e.g. bus stops, shelters, bike racks, pathways, signage and enable all types of connections; and
- incorporating sustainable and environmental building designs such as urban green rooftops, sustainable drainage and solar energy into larger developments.

A B-Line Bus express into the city
Source: Northern Beaches Council

Resilience to Natural Hazards

The Northern Beaches is exposed to significant natural hazard risk with a track record of events, including the 1966 storms; 1974 coastal erosion; 1994 bushfires impacting Terrey Hills, Ingleside and Elanora Heights; significant flash flooding events and the 2016 east coast low which brought heavy rainfall and coastal erosion. These natural occurrences will continue as our climate changes and are likely to intensify.

The proximity of urban areas to hazards such as bush fire prone vegetation, waterways and coastal processes places people at some of the highest levels of risk in the Sydney area and wider NSW and Australian context. The region's exposure will increase over time with population increase. However, how vulnerable the community becomes should be a focus now.

Our Challenges

The challenge for planning is to build a resilient Northern Beaches, by adopting a risk-based approach to planning. There is a significant role for land use planning in providing effective protection to existing urban areas, whilst also ensuring that new communities are not exposed to unacceptable levels of risk.

A resilient community and environment can 'bounce forward' and recover from shocks of natural disaster, and indeed transform to be ready for unforeseen events. The role of the built and natural environments to assist in recovery and resilience cannot be understated. The ability to embed resilience in land use planning enables infrastructure and building design and construction to be planned to be more resistant to future disaster events. Together they foster connected, resourceful, diverse and sustainable communities, essential for enduring resilience.

Our Opportunities

There are a range of options in the land use planning toolbox to enhance resilience to climatic and weather events. Much direction stems from work on a global, national and regional level.

Natural Hazard exposure...

22, 454

Homes exposed to flood hazard

20, 039

Homes exposed to bush fire hazard

455

Homes exposed to coastal hazard

Internationally, the 'Sendai Framework', the '2018 United National Disaster Risk Reduction Ulaanbaatar Declaration', informed the drafting of the 'National Strategy for Disaster Resilience' and the 'National Disaster Risk Reduction Framework'.

The national policy identifies a substantial role for land use planning, strategy and controls in minimising the potential impact of hazards on communities. This position is subsequently reflected by the 'Greater Sydney Region Plan: A Metropolis of Three Cities' as well as the 'North District Plan'. Collectively the current policy at all levels provide clear frameworks that help develop pathways for localised action'.

Through shared responsibility across the community and in conjunction with resilience measures such as natural land management, emergency management, structural treatment, community preparation and business continuity, collective ability to endure, withstand and 'bounce forward' from natural hazard shocks can be enhanced.

Beach erosion in 1966 at Narrabeen
Source: Northern Beaches Council

The opportunity to meet the challenge arises in a new planning framework for the Northern Beaches. The new framework can embed resilience principles, objectives and practices as part of sustainable development approaches. The principles aim to protect the community and environment from existing and increasing effects of natural hazards, to ensure desired social, economic and environmental aspirations set out in 'Shape 2028: Northern Beaches Community Strategic Plan 2018-2018' are achieved.

"Land use planning is perhaps the most potent policy lever for influencing the level of future natural disaster risk'

Source: Productivity Commission Report into Natural Disaster Funding Arrangements, 2014

Priorities in Practice

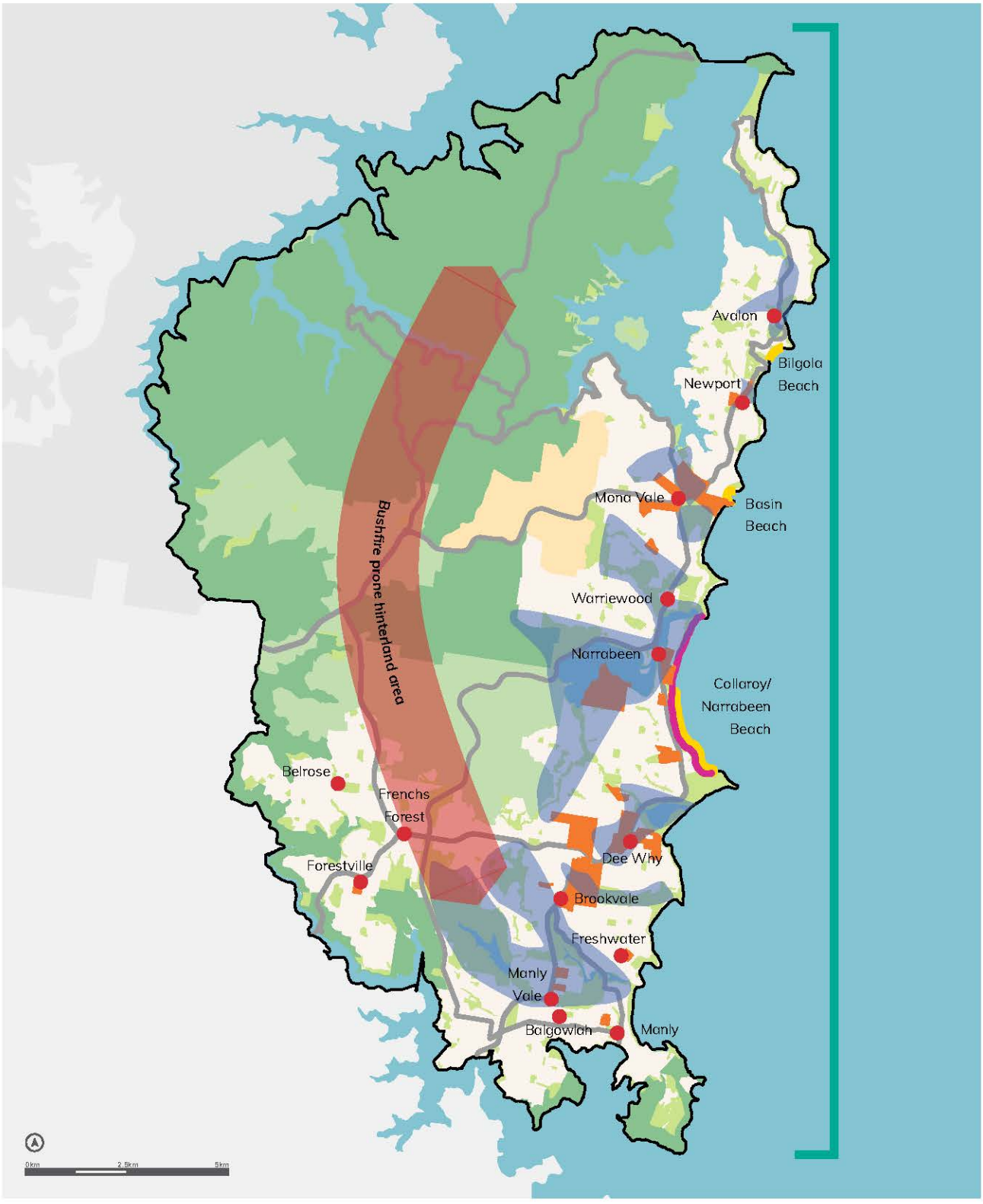
The direct and indirect social, economic and environmental costs (both tangible and intangible) can be partially treated by effective planning policies, strategies and controls. Building regulation responses provide opportunities to manage how communities live with and adapt to continuously changing circumstances. In investigating opportunities to enhance resilience across the Northern Beaches, Council may consider:

- ensuring growth does not occur in places where infrastructure is limited and protection from natural hazards where risk is intolerable through stronger development controls;
- embedding climate risk and natural hazard risk management, prioritising safety of life and property into planning policy, strategy and development controls;

- increasing setbacks from high risk natural hazard areas;
- investing in mapping and modelling to identify risk and exposure where required to inform decision making;
- undertaking risk-based assessments for various hazards (flooding, bushfire, coastal, severe storm, heatwave, landslip) to better understand risk and exposure;
- formulating a localised policy framework for disaster risk reduction which is specific to the risk context of the Northern Beaches and considers all land use planning treatment approaches (do nothing, protect, accommodate, retreat (Productivity Commission 2012));
- deriving a risk-informed settlement pattern to guide growth to lower-risk areas, avoiding intensification in higher risk locations; and
- implementing key land use management actions such as protection of key habitats, regeneration of bushland sites as well as works to maintain coastal environments such as beaches and headlands.

The resilience map over page illustrates at a strategic level, those areas of the Northern Beaches where resilience to natural hazard events may be a particular focus. This includes hazards such as flood, bushfire, coastal impacts (storm surge, coastal erosion, etc), as well as exposure to urban heat and climate-related events.

Bushfire
Source: Northern Beaches Council



Legend

- Urban area
- Ingleside Growth Area
- National park
- Major public parkland/bushland
- Metropolitan Rural Area (MRA)
- Strategic and local centres
- Populations vulnerable to urban heat[11]
- Flood prone area
- Bushfire prone hinterland area
- Build resilience to coastal hazard
- Partner with research organisations to understand climate change impacts
- Promote and maintain public access and build reslience through regeneration and beach nourishment

Conclusion

This background paper highlights the multitude of environmental opportunities available to the Northern Beaches. We know we will grow, as all desirable places do. How we manage this growth to protect our lifestyle aspirations whilst maintaining our valued environmental assets is critical in preserving the fabric of our existing community and the reasons we chose to live in this very special part of Sydney.

Some of our opportunities are more sustainable than others, having regard to climate change and resilience, transportation and mobility, cost of infrastructure and importantly, our impact on our surrounding landscape and its intrinsic ecological and lifestyle value.

This may mean that we, as stewards of our landscape, must consider the trade-offs we are willing to make to ensure we protect, connect, enhance our environmental assets, and celebrate new and existing opportunities to enjoy all the Northern Beaches has to offer.

To achieve this, as a community we must take the time to get engaged in the process of formulating our new planning framework. It is our opportunity to shape the agenda of Northern Beaches and our community over the next 20 years.

Peppermint Angophora forest
Source: Northern Beaches Council