

CENTRAL COAST COUNCIL

DRAFT

# BIODIVERSITY STRATEGY



*Lily Pily - (Acmena Smithii)*  
*Illustration - Dr Tanya Hoolihan*

# OVERVIEW 2019





Red necked wallaby - (*Macropus rufogriseus*)  
Illustration - Dr Tanya Hoolihan

# Overview of Biodiversity Strategy

This document is a summary of the Central Coast Council Biodiversity Strategy, prepared for the Central Coast community in 2019. The Biodiversity Strategy in its entirety is available to download from [centralcoast.nsw.gov.au](http://centralcoast.nsw.gov.au).

Biodiversity is a broad term for the many species and ecological processes that are essential for maintaining our community's health and the amenity of the Central Coast and its landscapes. As well as having economic, social and quality of life benefits, nature has intrinsic values that need protection.

The Biodiversity Strategy:

- is the first single strategy that combines the progress of the two former Councils in conservation planning and presents a scientifically-robust roadmap for the future of the biodiversity of the Central Coast;
- highlights the roles that Council has to support biodiversity: as a land use planning authority, a community leader, and a major landholder and land manager. Council currently manages

over 6,000 ha of land in the Central Coast local government area primarily for its natural values, and the goal is to increase this in the future;

- outlines Council's administrative and policy framework for responding to the actions identified to progress and implement on-ground change; and
- guides Council's own actions and informs the actions of the community and a wide range of other organisations who together will shape the future of the Central Coast.

Two of the main drivers for preparing the Biodiversity Strategy are firstly to respond to the outcomes of community engagement where the care and protection of the natural environment was identified as important to the Central Coast community and second, the amalgamation of the former Gosford City Council and Wyong Shire Council. The document builds on the two former Councils' biodiversity strategies and plans, and guides the new Council to protect, enrich and embellish existing biodiversity.



Areas with high natural, social or landscape values are considered critical for long-term protection and management and occur throughout the Central Coast on both publicly-owned land (such as national parks, state forests and Council-owned reserves) and privately-owned land. The Strategy outlines a framework for the identification of priority conservation areas and proposes a plan for their protection, whether that is by being in public ownership or through private land conservation.

Worldwide, the main threats to biodiversity are human population growth, resource over-consumption and climate change. Locally, these threats translate to habitat loss associated with vegetation removal and urbanisation, invasive plants and animals, and environmental degradation.

The Strategy sets out an ambitious but deliverable 5-year program to direct conservation planning and on-ground activities on the Central Coast for the long-term. It seeks to establish a framework to guide conservation efforts while planning for biodiversity conservation as an integral part of future development.

The specific actions and targets are organised into the following five themes, which are summarised in this document:

1. Planning and managing biodiversity in Council's natural areas
2. Ensuring adequate resourcing to enable Council to effectively manage its natural areas and expand the conservation estate
3. Promoting community appreciation and participation in biodiversity conservation
4. Protecting biodiversity through land use planning and information management
5. Demonstrating leadership in biodiversity conservation.

# Biodiversity Values of the Central Coast

## What is Biodiversity?

Biodiversity refers to the variety of all life including plants, animals, fungi, insects and microorganisms, their genes and the ecosystems that they form. Biodiversity is considered at three levels: genetic, species and ecosystem.

The Central Coast LGA extends from the Hawkesbury River in the south to Lake Macquarie and the Watagan Mountains in the north, and from the forests of Dharug National Park in the west, to the coastline.

Its forested scenic landscapes, peaceful sandy beaches, dynamic and productive estuaries, lakes and lagoons, and sandstone escarpment areas are appreciated by residents and visitors to the region.

It is also the traditional lands of the Darkinjung and Guringai people who have had a long connection with the region's landscapes and ecosystems.

On the Central Coast, there are thousands of different species of plants and fungi and hundreds of different animals (including birds, reptiles, amphibians, fish and insects). There are at least 83 distinct vegetation community types, each with their unique suite of interacting species and ecological conditions.

The importance of biodiversity at a local scale parallels its global importance: our economy and quality of life depends on it. The \$874M Central Coast tourism industry is dependent on high quality and functioning natural ecosystems, as is human health and well-being.

The following are examples of species endemic to the region, meaning that they grow nowhere else in the world as they are particularly adapted to the local soils and conditions:

- Somersby mintbush (*Prostanthera junonis*)
- Blue-leaved darwinia (*Darwinia glaucophylla*)
- Tranquillity mintbush (*Prostanthera askania*)
- *Grevillea diffusa* subsp. *filipendria*
- *Grevillea oldei*
- *Grevillea shiressii*
- *Genoplesium insignis*
- *Microtis angusii*
- *Thelymitra adorata*
- *Corunastylis* sp 'Charmhaven'
- Heart-leaved stringybark (*Eucalyptus oblonga*)
- Charmhaven apple (*Angophora inopina*)
- Magenta lilly pilly (*Syzygium paniculatum*).

## What has the Central Coast Community asked Council to do?

The Central Coast Council Community Strategic Plan 2018-2028 outlines the adopted direction of Council for the next decade. The actions set out in the Biodiversity Strategy will contribute to the vision, which is to *maintain a healthy, connected, and socially just community that cherishes and protects our natural landscapes, and balances social and economic needs with the protection of the environment and its irreplaceable biodiversity.*



Waratah - (*Telopea speciosissima*)  
Illustration - Dr Tanya Hoolihan

## *One – Central Coast, Community Strategic Plan 2018-2028*

*"The values of the Central Coast community are strongly tied to its natural areas and ecosystems, such as beaches, waterways, ridges, estuaries, lakes and valley floors. The parks, gardens and natural bushland contribute to the lifestyle, culture and beauty of the region.*

*Large bushland and wetland areas are important for our air and water quality and provide homes for birds, animals and native plants.*

*We value open space that is expansive and connected and that enables passive recreation activities such as walking, cycling and getting together with family and friends. Our natural areas can be quiet and peaceful places for contemplation and enjoyment of natural beauty that enhances our emotional wellbeing as well as places for active engagement like playing sports and running on the beach.*

*We are committed to leaving a positive legacy for future generations through responsible stewardship of our natural areas – this is our shared responsibility as residents of the Central Coast. We encourage our community to contribute to that stewardship by minimising resource use (energy, water, and waste) and treating these natural areas with respect."*

Golden-crowned snake - (*Cacophis squamulosu*)  
 Illustration - Dr Tanya Hoolihan



The community values that “the natural environment is well cared for and protected” as recognised in the Community Strategic Plan, prepared following extensive community engagement. Themes emerged in participant’s concerns and ideas on the environment (Table 1).

Table 1: Community engagement outcomes relating to the natural environment.

Important Community Value	Community Desire	Related CSP Objective
Abundant bushland areas, parks and green spaces	Council should take a proactive approach to protect and manage the natural environment under its care	F1 Protect our rich environmental heritage by conserving beaches, waterways, bushland, wildlife corridors and inland areas and the diversity of local native species
Access to clean and well-maintained lakes and waterways	Council’s Estuary Management Plan, catchment management program, Waterwatch Program and lagoon and coastal protection programs are important	E2 Improve water quality for beaches, lakes and waterways by minimising pollutants and preventing litter entering our waterways
New developments are built with consideration for the environment and local heritage	Development is removing habitat, trees and corridors – local and state government land use planning needs to protect these values	I3 Ensure land use planning and development is sustainable and environmentally sound and considers the importance of local habitat, green corridors, energy efficiency and stormwater management
Council works in the best interests of the community	Council should map wildlife corridors and extend corridors and protected areas	F2 Promote greening and ensuring the wellbeing of communities through the protection of local bushland, urban trees tree canopies and expansion of the Coastal Open Space System (COSS)
The community is concerned about the impacts of climate change	Our community is active in environmental protection, and Council should acknowledge and encourage this by undertaking community education about wildlife and local vegetation	E1 Educate the community on the value and importance of natural areas and biodiversity and encourage community involvement in caring for our natural environment  F4 Address climate change and its impacts through collaborative strategic planning and responsible land management



*Purple swamphen (Porphyrio porphyrio)*  
Illustration - Dr Tanya Hoolihan

The preparation of the Biodiversity Strategy is in direct response to the importance that the community places on the environment and is included as part of a suite of Council strategies aimed at implementing key Community Strategic Plan objectives. Other strategies include:

- the Urban Spatial Plan;
- the Greener Places Strategy, aimed at maintaining an urban tree canopy;
- the Sustainability Strategy, a pathway to a more sustainable region; and
- the Comprehensive Local Environmental Plan.

## Threats to Biodiversity

Australia's biodiversity is in rapid decline. According to the 2016 State of the Environment (SoE) report, the main pressures affecting the Australian environment today are the same as reported in the previous SoE report of 2011: climate change, land-use change, habitat fragmentation and degradation, and invasive species. There are no indications that these pressures have decreased since 2011, and there is evidence that some have increased (e.g. coastal waterways are threatened by new classes of pollutants such as microplastics and nanoparticles, dumped waste in the marine environment and invasive species generally).

Council's natural areas, as well as most remnant vegetation community types in the LGA, are currently affected to some degree by most of the above threats. In particular, Council targets weed invasion, grazing or predation by feral or domestic animals, firewood collection, rubbish dumping, and clearing of native vegetation as part of its land management planning.

The quantifiable result of the many threats to biodiversity mentioned above is that certain vegetation community types and flora and fauna species become so far reduced in extent or numbers that they are at risk of local extinction. If criteria are met and a panel of experts agree, a species, ecological community or population can be eligible for listing as being threatened with extinction. Listed entities have more legal protection and are eligible for funding for their management and restoration.

Species and populations specifically listed in the schedules of the NSW *Biodiversity Conservation Act* 2016 and the Commonwealth *Environmental Protection and Biodiversity Conservation Act* 1999 as threatened and that occur, or are likely to occur, in the Central Coast LGA are listed in the Biodiversity Strategy. There are 53 plants, 67 birds, 27 mammals, one insect, four reptiles, 9 amphibians and two populations on the list.

# Objectives and Strategic Context



## Purpose of the Biodiversity Strategy

The Strategy recognises that the irreplaceable biodiversity values are important to the community and the purpose of the Strategy is to:

*Provide an administrative and policy framework to support the protection and management of biodiversity on the Central Coast.*

The desired outcome of the Strategy is to protect and enhance the landscape and biodiversity values of the Central Coast, which includes maintaining functional connections between areas of habitat, maintaining core habitat as well as restoring marginal habitat, preserving threatened and iconic species and ecological communities, preserving significant Aboriginal cultural places, and protecting the scenic amenity of the region.

The Strategy sets out a 5-year program to direct and drive conservation planning and on-ground activities. It seeks to establish a framework to guide conservation efforts while balancing the needs of the community for future development.

Council acknowledges that effective conservation planning is considered over a much longer period, and a time horizon of 50 to 100 years should be the basis for the objectives, programs and principles in the Strategy. However, the reality is that administrative frameworks are not static and therefore the Strategy will require a review and update 5 years after adoption and periodically thereafter.

## Strategy Objectives

The objectives of the Strategy are to:

1. Define Council's role in biodiversity conservation in the context of other government strategic conservation and private land conservation.
2. Identify specific actions to allow Council to meet the relevant objectives of the 2018-2028 Community Strategic Plan and 2018-19 to 2022-23 Delivery Programs.
3. Summarise conservation priorities for the Central Coast in a way that provides a context for decision-making and strategic planning.
4. Identify measurable targets and specific actions for Council.

## Legislative and Policy Context of the Biodiversity Strategy

The focus of Council, State Government and Commonwealth Government biodiversity legislation, policy and plans is to promote and support biodiversity conservation and provide for the protection and management of the environment.

Activities in all councils in NSW are subject to legislation that seeks to ensure environmental protection, including state and federal legislation implementing international treaty obligations. Important legislative mechanisms that apply to the Biodiversity Strategy are identified below.





Assorted fungi - pretty grisette (*Amanita xanthocephala*), collared earth star (*Geastrum triplex*), *Phlebopus marginatus*, *Cortinarius* sp., *Leratiomyces ceres*, orange bracket. Illustration - Dr Tanya Hoolihan

- Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999
- *Aboriginal Land Rights Act* 1983
- *Biodiversity Conservation Act* 2016
- *Biosecurity Act* 2015
- *Coastal Management Act* 2016
- *Crown Land Management Act* 2016
- *Environmental Planning and Assessment Act* 1979
- *Fisheries Management Act* 1994
- *Local Government Act* 1993
- *Local Land Services Act* 2013
- *Rural Fires Act* 1997
- *Water Management Act* 2000
- SEPP (Coastal Management) 2018
- SEPP (Environment) 2017
- SEPP 44 (Koala habitat protection)
- SEPP (Vegetation in Non-rural Areas) 2017

Aside from legislation, there is a range of planning documents that guide and influence local plans and strategies, including the Strategy:

- Australia's Biodiversity Conservation Strategy 2010-2030
- NSW Biodiversity Conservation Investment Strategy 2018
- Central Coast Regional Plan 2036 (NSW)
- Central Coast Strategic Conservation Plan (NSW)
- Local Government Integrated Planning and Reporting Framework
- Council's Local Strategic Planning Statement / Urban Spatial Plan.

Short-beaked echidna - (*Tachyglossus aculeatus*)  
Illustration - Dr Tanya Hoolihan



The *Biodiversity Conservation Act* 2016, together with the Biodiversity Conservation Regulation 2017, outlines the framework for addressing impacts on biodiversity associated with development and clearing in NSW. The Biodiversity Offsets Scheme is a framework to avoid, minimise and offset impacts on biodiversity, and to ensure land that is used to offset impacts is secured in-perpetuity.

# Framework for Action

The goals and associated actions and targets to achieve the Biodiversity Strategy fall into five broad themes.

<p><b>Theme 1</b></p> <p>Planning and Managing Biodiversity in Council's Natural Areas</p>	<p><b>Theme 2</b></p> <p>Ensuring adequate resourcing to enable Council to effectively manage its natural areas and expand the conservation estate</p>	<p><b>Theme 3</b></p> <p>Promoting community appreciation and participation in biodiversity conservation</p>	<p><b>Theme 4</b></p> <p>Protecting biodiversity through land use planning and information management</p>	<p><b>Theme 5</b></p> <p>Demonstrating leadership in biodiversity conservation</p>
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The actions under the first three themes will be delivered by the proposed Conservation Management Program (CMP). The CMP is a comprehensive program of works covering natural asset planning and management, expansion of Council's natural area estate, and community involvement in biodiversity conservation (Figure 1). Output documents from the CMP such as strategies, plans and policies, will be prepared as key actions of the themes.



Figure 1: The main components of the proposed Conservation Management Program and associated key strategies, plans and policies

While Theme 5 focuses on Council's corporate responsibilities, Theme 4 provides a link between biodiversity protection and the strategic planning framework. Council is in a unique position having two roles: a public land owner and manager; and a planning and consent authority. There are opportunities to strategically manage high biodiversity value land using funding generated by developers offsetting unavoidable impacts in urban growth areas.

The following sections describe each theme and explain why it is relevant to Council. More detail is found in the Biodiversity Strategy.



*Black wattle (Callicoma serratifolia)*  
Illustration - Dr Tanya Hoolihan

# Theme 1: Planning and Managing Biodiversity in Council's Natural Areas



*Grey fantail (Rhipidura albiscapa)*  
Illustration - Dr Tanya Hoolihan

Council is a major landholder and land manager with legal responsibility for managing over 6000 ha of irreplaceable and high value bushland on behalf of the community. Carefully planning the effort and resources expended across Council is critical to a well-managed network of reserves.

The establishment of the amalgamated Central Coast LGA has provided an opportunity for Council to review its approach to natural area management and ensure that it is cost efficient, effective at achieving biodiversity management goals, and aligns with recent changes to NSW legislation.

The area of bushland that Council is responsible for increases due to land dedications through the planning and approvals process and land acquisition. It is important for Council to find a way to prioritise its resources and effort and track the effectiveness of its investment through site management planning. Reserves are generally considered as isolated management units; however, a land management decision support system would view the reserves as a consolidated network of assets, allowing more strategic planning.

Recent advances in spatial resolution and access to remotely sensed data, and the proliferation of citizen science will complement Council's field data collection program and lead to innovative uses of datasets to guide management actions. For example, use of historical satellite images and future modelling scenarios can contribute to Council's understanding of threats to biodiversity and the most effective management solutions.

Once thorough management planning has been undertaken, implementing the plans is critical to achieving on-ground biodiversity improvement. On-ground activities typically include weed control, vertebrate pest control, access and visitor management, use of fire, habitat augmentation and long-term legal protection.

Long-term legal protection has benefits to the community in terms of securing public assets for future generations, and to Council as a way to attract funding for their maintenance and management. In perpetuity legal conservation agreements afford the highest level of on-going protection.

## Summary Table of Goals, Actions and Targets (Theme 1)

ID	Action	Target
<b>Goal 1.1: Comprehensively plan for the management of biodiversity in Council's natural areas</b>		
1.1.1	Identify criteria for prioritising reserve management based on biodiversity and social values, and threats to biodiversity	By the end of 2020/21, criteria within a decision support system help make resourcing decisions for natural area management that or deliver natural area management objectives
1.1.2	Develop and resource a program to prepare and review site management plans for Council's natural areas (as well as Plans of Management as required by the LG Act)	By the end of 2023/24, all natural reserves have an up-to-date site management plan (or POM) in place
1.1.3	Identify climate change as a direct threat to natural areas in site management plans, including actions to mitigate impacts	By the end of 2023/24, progress is made towards planning for impacts associated with climate change for the majority of natural reserves such as identifying vulnerable species and new weed threats
<b>Goal 1.2: Improve biodiversity in Council's natural areas</b>		
1.2.1	Implement site management plans to rehabilitate degraded bushland and coastal ecosystems.	By the end of 2023/24, implementation of site management plans is progressed in at least 50 reserves
1.2.2	Prepare a policy for natural area encroachment management, and resource and implement a program to identify and manage threats to natural areas from encroachment	By the end of 2020/21, Council has a formal process and policy in place and has commenced managing natural area encroachment
1.2.3	Develop and implement a program for planning and undertaking ecological and/or cultural burns on Council managed land that complements hazard reduction burning (in line with the Bush Fire Management Committee adopted program)	By the end of 2023/24, appropriate fire management intervals will be incorporated into the Conservation Management Program, with a schedule for prescribed burning in place
<b>Goal 1.3: Improve information held on the biodiversity values of Council's natural areas</b>		
1.3.1	Collect and manage data to inform land management (e.g. vegetation condition, population size or locations of habitat for threatened species or ecological communities, invasive weed and vertebrate pest incursions, nest boxes installed or other information)	By the end of 2023/24, information about specific land management issues is collated into a central information management system
1.3.3	Use traditional Indigenous knowledge and management techniques for threatened species recovery and conservation management where available and appropriate	Established and maintain relationships with traditional owners
<b>Goal 1.4: Improve the long-term protection status of Council's natural areas</b>		
1.4.1	Explore available options for formal legal protection and management of Council reserves and formulate recommendations for conservation mechanisms	By the end of 2020/21, reserves strategically identified for formal protection and active land management
1.4.2	Establish conservation agreements as per recommendations in 1.4.1	By the end of 2023/24, identified reserves (see 1.4.1) are legally secured under long-term protective arrangements

## Theme 2: Ensuring adequate resourcing to enable Council to effectively manage its natural areas and expand the conservation estate

Maintenance of Council's natural areas is a requirement, as with any other public asset that is valued by the community, and a responsibility of Council's. The threats to natural areas are not always able to be eradicated, and therefore they generally present long standing management issues. A long-term funding commitment is essential for their upkeep. One of the key proposals of the Biodiversity Strategy is the Conservation Management Program, providing it with responsibility for biodiversity management and adequate resources and corporate support to do so.

The Strategy investigates mechanisms available to both secure land management funding and funding to expand the conservation estate. The following theme describes the NSW Biodiversity Offsets Scheme and how the funds generated by the sale of biodiversity credits will go back into the Conservation Management Program and the Environmental Lands Acquisition Program, the program nominated to acquire private land for the purpose of conservation. Land currently identified as 'proposed for acquisition' and other land identified for acquisition will be acquired under the Environmental Lands Acquisition Program as opportunities arise and funding allows.



*Powerful owl, Tuckeroo - *Ninox strenua*, *Cupaniopsis anacardioides*  
Illustration - Dr Tanya Hoolihan*

As part of expanding the conservation estate, Council will accept and acquire land where biodiversity outcomes are achievable and affordable. Higher biodiversity value land will be preferred in considering commitment to a long term management obligation on behalf of the community with the aim to more efficiently use resources across the conservation estate. Historically, Council has accepted land from developers that is not suitable for development, or that was identified for acquisition. Going forward, Council will carefully consider the land that it is asked to accept and ensure that it meets certain standards. Council will only accept dedication of conservation land that is of high biodiversity value and is either funded or capable of generating its own funding. Internal processes will be developed to support this policy as part of the actions within Goal 2.3.

## Summary Table of Goals, Actions and Targets (Theme 2)

ID	Action	Target
<b>Goal 2.1: Adequately resource the Conservation Management Program</b>		
2.1.1	Invest in a long-term commitment to the Conservation Management Program	By the end of 2020/21, operational budget planning recognises the CMP as an on-going program
2.1.2	Build expertise and qualifications in preparing and managing conservation agreements, community engagement on land management activities, and compliance enforcement for natural areas	By the end of 2021/22, all of Council's natural assets are managed by an adequately trained and resourced team of professional land managers
2.1.3	Investigate the benefits of investing in recruitment, training and leadership to establish and retain natural area management personnel (e.g. bush regeneration team, Indigenous officers, recreation planners, grants and trust officers)	By the end of 2019/20, undertake a cost benefit analysis to assess Council's requirements for a bush regeneration team and other positions
<b>Goal 2.2: Implement a funding program for land management and acquisition</b>		
2.2.1	Establish funding for the management and acquisition of land identified by the Conservation Management Program and Environmental Lands Acquisition Program	Commencement of a Central Coast Conservation Fund by the end of 2021/22
2.2.2	Investigate other funding options for Environmental Lands Acquisition Program	By the end of 2021/22, the feasibility of other funding options has been assessed
2.2.3	Develop and implement a Land Disposal Plan specifically for parts of natural assets with no biodiversity or recreational value (in order to generate income for the Central Coast Conservation Fund)	A Land Disposal Plan has been prepared by the end of 2021/22
<b>Goal 2.3: Expand Council's conservation network</b>		
2.3.1	Strategically plan Council's Environmental Land Acquisition Program	An Environmental Lands Acquisition Program plan has been prepared and resourced by the end of 2019/20 for a 20+ year timeframe
2.2.2	Purchase environmental land as per recommendations from 2.3.1	On-going
2.3.3	Develop criteria and an internal process for evaluating environmental land acquisition and land dedication opportunities	By the end of 2019/20, land acquisition criteria are being used as part of a land acquisition process



Eastern sedge frog (*Litoria fallax*), Peron's tree frog (*Litoria peronii*), broad-palmed rocket frog (*Litoria latopalmata*) and green and golden bell frog (*Litoria aurea*)  
Illustration - Dr Tanya Hoolihan

# Theme 3: Promoting community appreciation and participation in biodiversity conservation

The Central Coast community is passionate about the environment in which they live and work and community appreciation for biodiversity is high. Council will proactively encourage this interest and sense of pride through its education program and proposed environmental participation programs. Community participation takes many forms, such as joining the Landcare Program or participating in citizen science and monitoring programs, or landowners protecting their land with long-term agreements and management plans.

Community appreciation for environmental values can be enhanced when people have appropriate access to nature-based activities. However, not all recreational uses are compatible with biodiversity conservation. Council will review its current approach to recreational use of natural areas, especially places vulnerable to damaging and inappropriate activities. Where needed, Council will limit access to ensure the protection of biodiversity values and reduce management costs.

An illustration of a scrub she-oak branch. The branch is thin and woody, with several long, thin, green needles extending from it. Two small, brown, textured cones are attached to the branch. Below the main branch, there is a larger, more detailed illustration of a single cone, showing its intricate, overlapping scales and a small stem at the base.

*Scrub she-oak (Allocasuarina distyla)*  
Illustration - Dr Tanya Hoolihan

As part of supporting the academic community in active participation in biodiversity conservation, Council is providing access to conservation areas, data and information that can help researchers and students working on conservation and ecology projects. Improved ecological understanding feeds into effective management programs.



### Summary Table of Goals, Actions and Targets (Theme 3)

ID	Action	Target
<b>Goal 3.1: Planning for community appreciation and understanding of the value of local biodiversity conservation</b>		
3.1.1	Prepare a Biodiversity Education Plan to promote community appreciation of Council's natural areas	By the end of 2020/21, a Biodiversity Education Plan has been finalised and funded for implementation
3.1.2	Provide guidance for biodiversity management on private land with published guidelines for land owners	Biodiversity Guidelines have been published by the end of 2020/21
3.1.3	Prepare and publish a Nature-based Recreational Strategy for Council natural areas	By the end of 2020/21, a Recreational Strategy with Council's plan for nature-based recreation in reserves is published
3.1.4	Prepare a policy on public access to natural areas	By the end of 2019/20, a public land access policy has been endorsed by Council
<b>Goal 3.2: Strong community involvement and participation in biodiversity conservation</b>		
3.2.1	Develop a community biodiversity participation and education program	By the end of 2019/20, commence a biodiversity education program
3.2.2	Provide technical advice and assistance for community involvement in biodiversity conservation agreements (including staff resources and a grant/loan program) to reduce the barriers to entering conservation agreements	By the end of 2020/21, establish the resourcing and parameters for a community grants program and prepare technical educational materials
3.2.3	Provide additional ongoing support and resources for the Central Coast Landcare Program to address the community's demand	Maintain or increase the level of support with demand for the Central Coast Landcare Program
3.2.4	Further develop and continue existing community partnerships where appropriate and in the best interest of the Conservation Management Program	Continue providing annual support to partners and support additional partner projects when the opportunity arises
<b>Goal 3.3: Public access to biodiversity information and promotion of understanding of the goals of the Biodiversity Strategy</b>		
3.3.1	Investigate a tertiary education program for partnering with universities and other groups that study biodiversity with a view that the information will be shared publically	By the end of 2023/24, a tertiary education program has been established that provides support, grants or project ideas to students
3.3.2	Provide public access to Council's geospatial data and reports relevant to biodiversity	Publish vegetation community type mapping data by the end of 2019/20
3.3.3	Engage with the development industry to develop sustainable building practices	Organise and hold at least one engagement event by 2024

# Theme 4: Protecting biodiversity through land use planning and information management

Theme 4 defines those actions that allow the legal implementation of the Biodiversity Strategy by embedding its aims and objectives into the local policies and strategies that guide development assessment and strategic land use planning within Council.

In formulating a framework for action, Council has developed the following five core principles to provide guidance for decision-making and other Council functions in order to achieve the objectives of the Biodiversity Strategy, especially in the context of future planning decisions and climate change impacts.



*Coachwood (Ceratopetalum apetalum)*  
Illustration - Dr Tanya Hoolihan

## Principles for Land Use Planning

1. Preserving local and regional biodiversity is highly valued at Central Coast Council and is properly considered in all functions of Council.
2. Ensuring the protection of areas of high environmental value from the impacts of development, including corridors, is a priority for Council.
3. Loss of biodiversity is to be avoided, with mitigation measures and offset measures applied only where impacts from development are unavoidable.
4. Biodiversity offsets, when necessary, are to be sourced from within the LGA where feasible and practical.
5. Council's role as a public land manager is a core Council function and includes expanding and managing and maintaining the existing protected area network within the LGA.

Reliable and accurate information and data is important to the planning and assessment process. Council will identify where it lacks information on biodiversity values to support decision-making and find ways to fill the gaps and share information with other government agencies.

The following three key information products will be used by Council to shape future land use policy and decision-making and will be the basis for the future Central Coast protected area network with information updated over time:

1. Areas of high conservation value (i.e. high quality habitat, presence of iconic, rare and threatened features, and their contribution to the biodiversity of the region);
2. The connectivity between areas of high conservation value (i.e. biodiversity corridors); and
3. Locally significant vegetation.

#### *1. Areas of High Conservation Value*

Identifying areas of high conservation value is a critical process in the development of regional land use policy and urban development planning. Information on biodiversity values informs strategic planning and helps guide further in-depth studies which are required as part of the planning and assessment process. As stated above in the Principles for Land Use Planning, protecting areas with high biodiversity value, including corridors, is a priority for Council.

A spatial analysis to identify conservation priority areas has been undertaken by Council which quantifies the ecological trade-offs of planned and proposed development scenarios. The analysis is based on biodiversity values such as observed records of species, suitable habitat, species distribution models, threatened species and threatened ecological communities (NSW and Commonwealth listings). Current representation of high biodiversity values in the protected area network (national parks, state conservation areas and Council

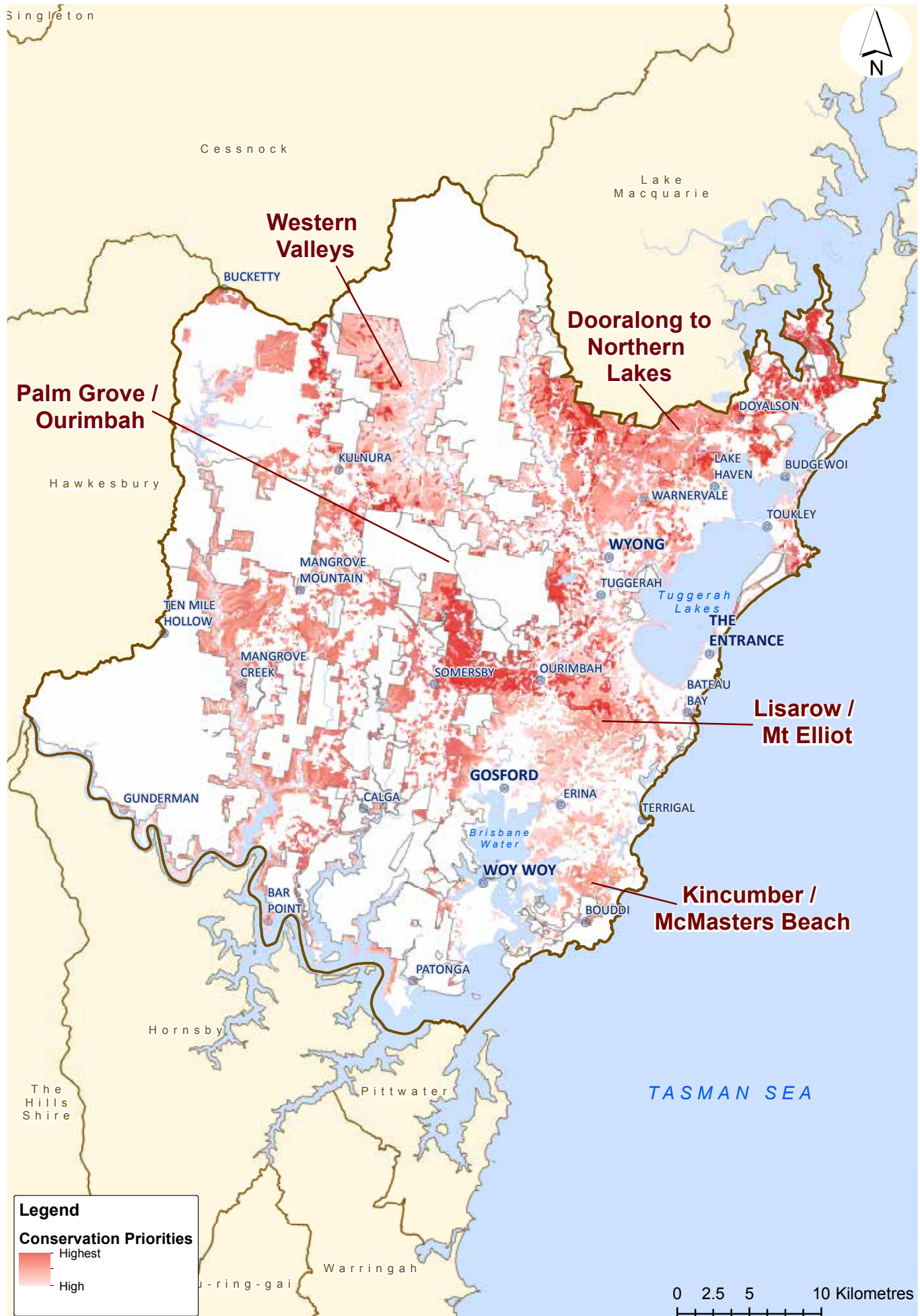
reserves) was considered. Areas of high biodiversity value that are at risk of local extinction due to development pressure are identified as higher priority for protection and rehabilitation, and therefore high conservation priority.

Spatial prioritisation of biodiversity values highlighted important areas for conservation as Dooralong to Northern Lakes, Warnervale, the Western Valleys, Palm Grove / Ourimbah, Lisarow / Mt Elliot and Kincumber/ Macmasters Beach (see Map 3). Expanding the protected area network to include these areas would significantly improve the representativeness of the network.

While about 50% of the LGA is owned and managed as state forest and national park, these areas protect less than half of the biodiversity in the LGA. Without formal protection, the remaining biodiversity values are potentially at risk of being lost to clearing and development.

If an additional 2640 ha of land was conserved within the identified priority areas (see Map 3), a total of 85% of the region's biodiversity values would then be protected (an increase from the current 50%). Therefore, by conserving land in suitably sized parcels in the priority areas, a minimal increase in the reserve area will provide the greatest biodiversity outcome.

In addition to the conservation priority areas identified above, there are other areas that are of importance for particular listed threatened species, populations or ecological communities, such as: Tuggerah Lakes shoreline (Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner bioregions), Norah Head (Low Woodland with Heathland on Indurated Sand at Norah Head), Bateau Bay, Forresters Beach, Tumbi Umbi, (*Eucalyptus oblonga* population) and the Woy Woy Peninsula (Umina Coastal Sandplain Woodland in the Sydney Basin Bioregion).



Map 3: Areas of high biodiversity conservation value outside the current protected area network within the Central Coast LGA. Data source: Office of Environment and Heritage (2018) and Kujula and Whitehead (2015). Disclaimer: Map is subject to future updates. For use at the scale of the LGA only.



*New Holland honeyeater (Phylidonyris novaehollandiae) and Banksia - (Banksia spinulosa)*  
 Illustration - Dr Tanya Hoolihan

## 2. Connectivity and Biodiversity Corridors

Maintaining and restoring connections between protected areas and areas of high biodiversity value are vital to landscape health and biodiversity of the region. These areas of remnant vegetation are also sometimes referred to as 'green corridors' or 'wildlife movement corridors'. Council has undertaken an analysis of corridors that identifies broad regional scale connections and local scale links (down to individual trees in some cases) as potential movement pathways. Gaps in the network of linkages can occur as cleared paddocks and roads and are identified as opportunities for rehabilitation or wildlife crossing structures, if appropriate.

Defining the difference between 'core habitat' and 'corridor' was a key component of the Central Coast Wildlife Corridor project. The following criteria were used to create the core habitat class using Council's vegetation community type mapping:

- Protected public land - all substantial parcels of public land, e.g. State Conservation Areas, are considered core habitat;
- Vegetation condition - vegetation that is in moderate to good condition<sup>1</sup> is considered core habitat;

<sup>1</sup>Vegetation condition is based on four classes:

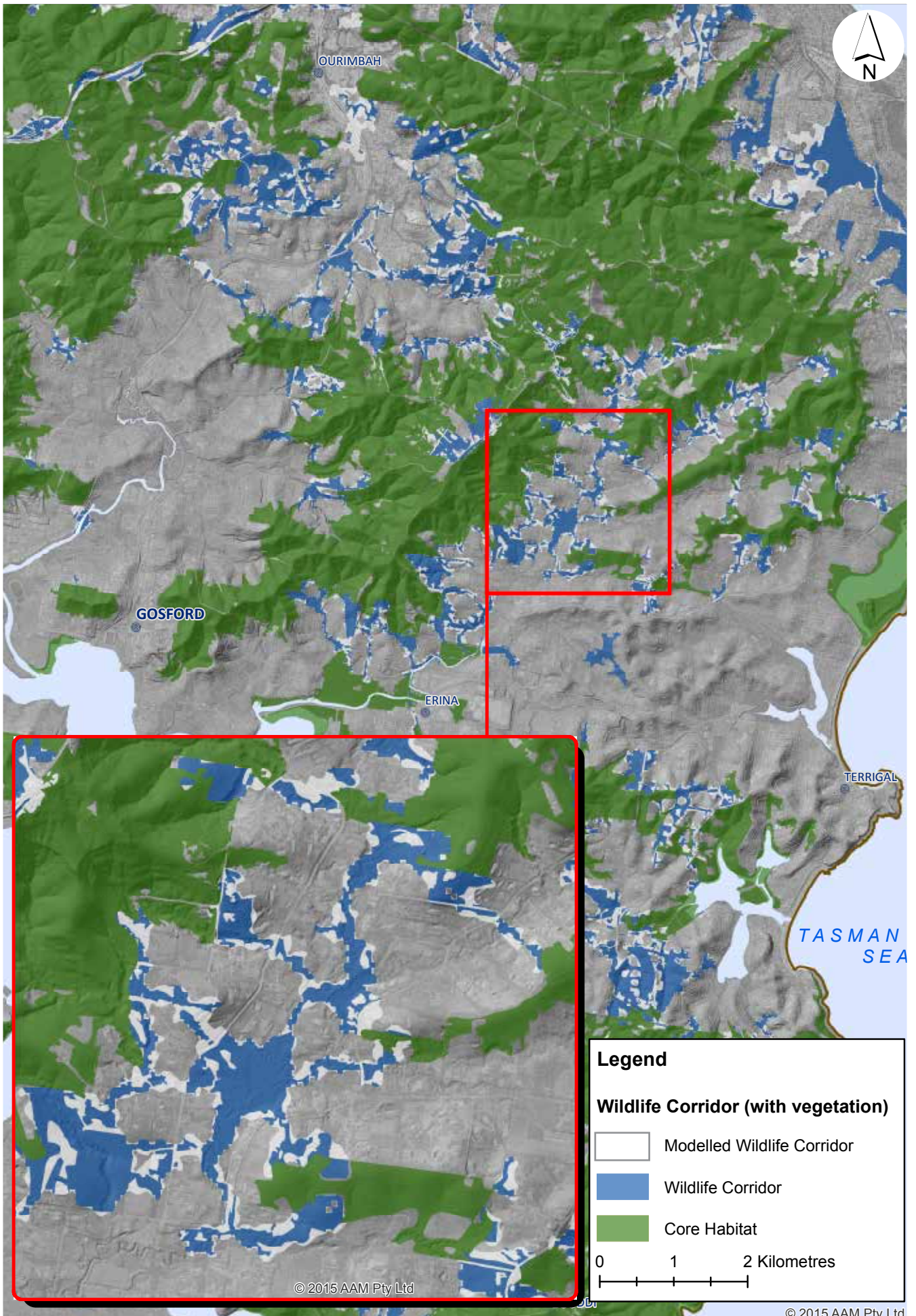
- Moderate to good (most areas of remnant bushland)
- Low (highly disturbed and weedy vegetation)
- Very low (could be reinstated as vegetation theoretically, e.g. golf courses, parks)
- Built environments (little to no vegetation)

- Polygon shape/configuration - core habitat areas have a low perimeter to area ratio; and
- Proximity to other areas of core habitat - i.e. if a patch of vegetation is non-linear and considered contiguous with a larger block of remnant vegetation, then it is included as core habitat.

Core habitat is used in the Central Coast Biodiversity Corridor Map to provide the user with a picture of where the large remnants are located so that it is clear where the wildlife movement opportunities lie between them. The corridor network is displayed as a combination of mapped extant vegetation nested within modelled corridors (using the Spatial Links Modelling Tool).

Places where the modelled corridor does not contain vegetation, for example, cleared paddocks or sparse vegetation, are priority locations in the landscape for rehabilitation through the introduction of vegetation to enhance the functionality of the entire corridor network (see white areas in Map 4). However, the white areas do not remove opportunities for allowable development.

Further details of the analysis can be found in a report referenced in Appendix B.



Map 2: Example of the Central Coast Council Biodiversity Corridor Map showing core habitat in green, local scale corridors in blue and modelled corridors in white. Data source: Harré (2018)

### 3. Locally Significant Vegetation

A review of all plant community types mapped in the Central Coast LGA (by Council in 2018) has identified 10 that have been greater than or equal to 70% cleared (i.e. less than 30% of their original extent remains across all of its range in NSW) (Table 4). The percent cleared figures for these plant community types are expert derived, that is, not based on a spatial analysis of pre-European settlement modelling and extant vegetation community type mapping.

While the majority of the highly cleared plant community types are also threatened ecological communities, two are not currently listed (PCT 1625 and PCT 1644). In addition, both of these plant community types have less than 15% of their pre-European settlement range remaining.

Table 4: Highly cleared (greater than 70%) plant community types (PCT) in the Central Coast local government area listed in order of per cent cleared.

PCT ID	Plant Community Type Name	Class	Formation	TEC	Per cent cleared
1645	Old Man Banksia - Rough-barked Apple - Bangalay shrubby open forest on coastal sands of the Central Coast	South Coast Sands Dry Sclerophyll Forests	Dry Sclerophyll Forests (Shrubby sub-formation)	Yes	98
1723	<i>Melaleuca biconvexa</i> - Swamp Mahogany - Cabbage Palm swamp forest of the Central Coast	Coastal Swamp Forests	Forested Wetlands	Yes	92
1720	Cabbage Gum - Forest Red Gum - Flax-leaved Paperbark Floodplain Forest of the Central Coast	Coastal Floodplain Wetlands	Forested Wetlands	Yes	90
1625	Red Bloodwood - Sydney Peppermint - <i>Podocarpus spinulosus</i> shrubby open forest of the southern Central Coast	Sydney Coastal Dry Sclerophyll Forests	Dry Sclerophyll Forests (Shrubby sub-formation)	No	88
1644	Coast Tea Tree - Old Man Banksia coastal shrubland on foredunes of the Central and lower North Coast	South Coast Sands Dry Sclerophyll Forests	Dry Sclerophyll Forests (Shrubby sub-formation)	No	86
1536	Tuckeroo - Lilly Pilly - Coast Banksia littoral rainforest	Littoral Rainforests	Rainforests	Yes	78
1718	Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Coastal Swamp Forests	Forested Wetlands	Yes	74
1589	Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest on Coastal Lowlands of the Central Coast	Hunter-Macleay Dry Sclerophyll Forests	Dry Sclerophyll Forests (Shrub/grass sub-formation)	Yes	71
1527	Bangalow Palm - Coachwood - Sassafras gully warm temperate rainforest of the Central Coast	Northern Warm Temperate Rainforests	Rainforests	Yes	70
1697	Kangaroo Grass - Coastal Rosemary grassland on coastal headlands	Maritime Grasslands	Grasslands	Yes	70

A review of the current extent of vegetation across the Central Coast LGA (excluding the national park and state forest estate) identified 20 plant community types which have less than 100 hectares remaining (Table 3).

Table 3: Poorly represented (less than 100 ha remaining) plant community types (PCT) in the Central Coast local government area listed in order of area remaining.

PCT ID	Plant Community Type Name	Extant area (ha)
1741	<i>Lepironia articulata</i> sedgeland	0.8
1700	Dwarf Casuarina - Prickly-leaved Paperbark - Hairpin Banksia Coastal Heath of the Central Coast and lower North Coast	2.4
1204	Spinifex beach strand grassland, Sydney Basin Bioregion and South East Corner Bioregion	4.4
1725	Swamp Mahogany - Broad-leaved Paperbark - Swamp Water Fern - Plume Rush swamp forest on coastal lowlands of the Central Coast and Lower North Coast	6.3
836	Forest Red Gum - Rough-barked Apple open forest on poorly drained lowlands of the Central Coast, Sydney Basin Bioregion	6.9
1697	Kangaroo Grass - Coastal Rosemary grassland on coastal headlands	17.8
1625	Red Bloodwood - Sydney Peppermint - <i>Podocarpus spinulosus</i> shrubby open forest of the southern Central Coast	21.0
978	Needlebush - banksia wet heath on sandstone plateaux of the Sydney Basin Bioregion	25.8
781	Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion	26.4
1645	Old Man Banksia - Rough-barked Apple - Bangalay shrubby open forest on coastal sands of the Central Coast	31.3
1746	Saltmarsh Estuarine Complex	38.3
1071	<i>Phragmites australis</i> and <i>Typha orientalis</i> coastal freshwater wetlands of the Sydney Basin Bioregion	42.4
659	Bangalay - Old-man Banksia open forest on coastal sands, Sydney Basin Bioregion and South East Corner Bioregion	46.9
925	<i>Melaleuca nodosa</i> closed shrubland on alluvium of the Central Coast, Sydney Basin Bioregion	71.8
1588	Grey Ironbark - Broad-leaved Mahogany - Forest Red Gum shrubby open forest on Coastal Lowlands of the Central Coast	73.9
1681	Smooth-barked Apple - Cabbage Palm - Broad-leaved Mahogany woodland on Wallarah Peninsular	79.7
1724	Broad-leaved Paperbark - Swamp Oak - Saw Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast	83.0
691	Blackbutt - Tallowwood dry grassy open forest of the southern NSW North Coast Bioregion	84.7
1701	Prickly-leaved Paperbark - Fern-leaved Banksia heath on coastal headlands of Central Coast	92.2
1619	Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands	96.0



The plant community types identified in Tables 4 and 5 have high local significance and high conservation priority as a direct result of historical reduction in extent. Drivers for the loss and degradation of these communities are likely to be urbanisation, increased human population and climate change. The Conservation Management Program will further investigate these drivers of change and the consequences for the future broader landscape. Actions arising in the Biodiversity Strategy relate to updating the analysis of local significance with local-scale vegetation community type mapping (rather than the coarser plant community type mapping) and updated versions of the NSW plant community type mapping for the east coast.

*Pink wax flower - (Eriostemon australasius)*  
Illustration - Dr Tanya Hoolihan





## Summary Table of Goals, Actions and Targets (Theme 4)

ID	Action	Target
<b>Goal 4.1 High biodiversity value areas are appropriately identified, protected and restored as part of future land use planning investigations</b>		
4.1.1	Develop a zoning framework for environmental zones supported by the spatial mapping project to inform comprehensive zoning amendments	By the end of 2019/20, through an amendment/s to the Comprehensive LEP, have developed and implemented a zoning framework
4.1.2	Create additional local provisions or development standards through the Comprehensive LEP project	By the end of 2019/20, a comprehensive review of local provisions for biodiversity conservation undertaken including consideration for opportunities for bonus lot subdivision
4.1.3	Update assessment procedures for planning proposal applications ensuring biodiversity values are fully considered and impacts to listed entities are avoided at the rezoning stage of developments	All rezoning of land is consistent with the principles of the Biodiversity Strategy and the zoning framework (on-going)
4.1.4	Identify appropriate mechanisms to achieve rehabilitation and enhanced landscape connectivity through the rezoning and development assessment process	Achieve rehabilitation of areas, identified by rezoning and development assessment process (on-going)
4.1.5	Promote use of appropriate locally indigenous species in landscaping and rehabilitation in development proposals through updated flora and fauna guidelines	By the end of 2019/20, Council's Flora and Fauna Survey Guidelines will have been updated, including guidance for appropriate local species in rehabilitation and landscaping
<b>Goal 4.2 The level of local biodiversity knowledge is adequate to support decision-making, conditions of consent and strategic planning</b>		
4.2.1	Produce and keep up-to-date spatial information and analyses about areas of high biodiversity value and threats to biodiversity	By the end of 2019/20, Council will have up-to-date spatial information available for planning (e.g. vegetation community types, biodiversity corridors, conservation priorities)
4.2.2	Identify strategic planning data needs (e.g. vegetation community type mapping and updates, priority threatened species surveys)	On-going
4.2.3	Develop and use geospatial data to inform and guide strategic planning to identify critical locations where vegetation, habitat, connections or species must be avoided and protected	By the end of 2021/22, a geospatial tool is in use
4.2.4	Design and invest in a Central Coast Biodiversity Monitoring Program in line with State and Commonwealth Government programs	By the end of 2020/21, scope a comprehensive and consistent MER program for natural areas
4.2.5	Explore options to internally share biological resource information such as receiving sites for natural resources such as soil, seeds, tree barrels, hollows, etc	By the end of 2020/21, options for sharing data internally have been explored
4.2.6	Collate all public biodiversity offsets geospatially	By the end of 2020/21, biodiversity offsets information available geospatially to Council staff through Geocortex
4.2.7	Provide regular updates to the Biodiversity Values Map held by NSW Government	On-going
4.2.8	Investigate additional State or Commonwealth threatened species or ecological community listings based on local significance information	As monitoring and spatial analyses reveal candidate listings (on-going)

# Theme 5: Demonstrating leadership in biodiversity conservation

The community expects Council to provide leadership in leaving a positive legacy for future generations through responsible stewardship of the environment – this is our shared responsibility with the residents of the Central Coast. By incorporating biodiversity protection into procedures, planning and corporate level programs, Council can demonstrate every day that it takes these principles seriously.

Some natural resource management issues, such as biosecurity, bush fire and emergency management and coastal area, estuary, lagoon and wetland management issues are initiated by Council but are not restricted to public land in their application. These types of programs are collected together into Theme 5.



*Gynea lily (Doryanthes excelsa)*  
Illustration - Dr Tanya Hoolihan

## Summary Table of Goals, Actions and Targets (Theme 5)

ID	Action	Target
<b>Goal 5.1 Council embeds biodiversity protection and conservation into its core business</b>		
5.1.1	Council's corporate Asset Management System is to include natural areas as an asset type in the technical asset register	The Asset Management System holds data on Natural Assets by the end of 2019/20
5.1.2	Natural assets are incorporated into Council's accounting and financial management application (Oracle) as a rolling maintenance program similar to a fixed asset register	Maintenance system in use by the end of 2019/20
5.1.3	Review of processes and extend the Vertebrate Pest Management Program to priority locations and monitor effectiveness of the program	By the end of 2020/21, a comprehensive program for vertebrate pest management across the LGA is in place, including internal policy and procedures
5.1.4	Develop and implement the expanded Biosecurity Management Program (including a weed policy)	By the end of 2019/20, have policies, procedures and educational material prepared to implement the Program
<b>Goal 5.2 Estuary, lagoon and wetland management is fully resourced and adheres to best practice</b>		
5.2.1	Prioritise staff resources and source funding to prepare Coastal Management Programs (including Tuggerah Lakes, Brisbane Water, coastal lagoons and open coastlines)	Prepare certified Coastal Management Program/s by end of 2021
5.2.2	Implement actions identified existing Coastal Zone Management Plans	The actions identified in the existing plans are implemented (on-going)
5.2.3	Review Council's water quality monitoring program for ecological health of lakes and estuaries	Implement indentified suitable opportunities to enhance the program.
5.2.4	Implement a fauna monitoring program for lakes and estuaries management	On-going
<b>Goal 5.3 All areas of Council administration have an understanding of the value of biodiversity and incorporate it into their responsibilities</b>		
5.3.1	The Environmental Management System ensures Council operational activities adequately assess impacts to biodiversity	100% of staff who undertake and authorise environmental assessments for Council's operations are trained in Council's Environmental Assessment Procedure by end of 2019/20
5.3.2	Ensuring proper management and maintenance of roadside vegetation containing threatened species or EEC with minimal environmental impact to protect Council workers, from litigation and help manage sensitive areas	By the end of 2019/20, roadside vegetation management program scoped, resourced and implemented, with responsibilities identified
5.3.3	Council operational plans, strategies and processes support the goals of the Biodiversity Strategy	Each new and revised document identifies how Council will avoid impacts on and protect biodiversity (on-going)



River mangrove (*Aegiceras corniculatum*)  
Illustration - Dr Tanya Hoolihan

# Conclusion

The Biodiversity Strategy documents the Central Coast's biodiversity values, legislative context for protection and presents a well-thought out action plan based on the latest scientific understanding of natural resource management. It aligns with the thinking in previous decades within both former Councils; and, its actions are achievable in a five year time frame.

The Biodiversity Strategy will have achieved its objectives when the following are fulfilled:

- Council supports an administrative structure and on-going resourcing for a Conservation Management Program for biodiversity conservation planning and management;
- Council explores the funding mechanisms for and supports an Environmental Lands Acquisition Program to expand the conservation estate;

- Council supports active management of natural areas to improve their biodiversity values over time;
- The community is an active and engaged participant in conservation programs across the LGA; and
- Land use planning, policy and decision-making protect lands with high biodiversity and social values.

Lastly, the Biodiversity Strategy acknowledges the exceptional and comprehensive work of the Council programs that contribute to biodiversity protection and management. There are many plans, programs, strategies and policies that are in place or are being developed that influence the success or otherwise of Council achieving the goals of the Biodiversity Strategy (See Figure 2 for some examples).



Figure 2: The actions of the Biodiversity Strategy complement other Council programs and plans, and therefore are not meant to be a comprehensive approach to all of Council's natural resource management.



## BIODIVERSITY STRATEGY SUMMARY

Central Coast Council

2 Hely St / PO Box 20 Wyong NSW 2259

49 Mann St / PO Box 21 Gosford NSW 2250

P 1300 463 954

E [ask@centralcoast.nsw.gov.au](mailto:ask@centralcoast.nsw.gov.au)

[centralcoast.nsw.gov.au](http://centralcoast.nsw.gov.au)

ABN 73 149 644 003

JULY 2019