

Positively

PENRITH



Penrith Biodiversity Strategy 2026–2036

Acknowledgement of Country

We acknowledge and pay respect to the Darug and Gundungarra people who are the traditional owners in which Penrith Local Government Area is situated. We also pay our respect to elders past, present and emerging, and to the First Nations people living in our community today.



Quality Assurance

Penrith Biodiversity Strategy

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Figure 1. Cover image: Platypus

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Executive Summary

Why does Penrith need a Biodiversity Strategy?

Penrith City Council is committed to ensuring that our city remains a vibrant, healthy, and liveable place for current and future generations. As our community grows and changes, we have a unique opportunity to protect and enhance our rich natural environment. By developing a Biodiversity Strategy, Council is taking proactive steps to safeguard native species, restore important ecosystems, and create green spaces that benefit everyone.

This Strategy sets a clear vision for “nature positive” outcomes where biodiversity is not only protected, but actively improved over time. Through collaborative partnerships, evidence-based actions, and the integration of biodiversity into planning and decision-making, we can strengthen the resilience of our landscapes, support community wellbeing, and ensure that nature and residents live in harmony.

The Penrith Biodiversity Strategy is a non-statutory planning document developed to guide Council’s actions and priorities, not to regulate private land. It does not change zoning, land-use permissions, or introduce legal restrictions. Participation by private landholders is voluntary.

Figure 2. Castlereagh Reserve (PCC Bushcare 2024)

Strong biodiversity underpins our economic prosperity, quality of life, health, and wellbeing

Our quality of life, health and wellbeing can be greatly enhanced by having access to places with healthy indigenous biodiversity. Individuals with strong nature connection are 1.9 times more satisfied with life than community members with little nature-connection (Sollis et al 2025). In Australia more biodiverse places have been linked to better mental and physical health, such as respiratory health (Liddicoat et al. 2018) and wellbeing (Mavoa et al. 2019). The COVID-19 lockdowns underscored the significance of this connection.

Biodiversity related processes are also critical to our agriculture, such as pollination, soil fertility and natural pest control. Biodiversity plays a key role in climate resilience by naturally cooling spaces and can reduce the impact of extreme climatic events, such as floods. Investing in protecting biodiverse places can reduce the need for costly artificial mitigation strategies and repair costs.

Strong biodiversity delivers a range of economic benefits. It can stimulate the local economy by attracting tourism, supporting recreational activities, and encouraging the growth of eco-friendly businesses through the presence of green spaces. In addition, natural infrastructure such as wetlands used for flood control and vegetated bioretention basins used to improve storm water quality often incur lower maintenance costs compared to artificial infrastructure. These nature-based approaches also help reduce expenses associated with urban heat mitigation, water treatment, and stormwater management.



Penrith's biodiversity is under threat. Action is needed to protect and restore biodiversity across the LGA

Estimates suggest that only 12% of indigenous vegetation remains in Western Sydney and just 7.8% of the critically endangered Cumberland Plain Woodland (CCN 2018). When illegal clearing is considered, the percentage of remaining vegetation is likely to be much lower; 5% or less for Cumberland Plain Woodland. Illegal clearing of native vegetation is a major issue that has been escalating year on year.

Areas of remnant indigenous vegetation serve as vital sanctuaries for fauna and flora species and underpin the ecological network across the region. The reduction in native vegetation further fragments corridors and reduces habitat connectivity. This creates barriers to wildlife movement, reducing access to the resources needed to survive and maintain genetically viable populations. Once sites with high biodiversity value are lost, their ecological value is difficult to recover.

As a result of this situation the number of threatened species continues to rise in Penrith, while the abundance of species declines. The species we treasure, such as koalas and platypuses, need our help to continue to exist in our LGA. Given the criticality of this issue, this Strategy prioritises actions to address the decline in biodiversity alongside measures to be implemented over the next 10 years to protect and enhance biodiversity across the LGA.

Changing the trajectory through collective action

Penrith City Council and the community have the opportunity to improve biodiversity outcomes. This will require the community, Council, community organisations, institutions and other Government and non-Government agencies to work together to protect high biodiversity value sites, restore priority areas and reinstate habitat corridors. Council will also need to adopt sustainable urban development practices, such as embedding biodiversity in Council projects and planning controls, while fostering greater nature connection between Penrith residents and their environment to create a healthier and more resilient LGA for future generations.

Figure 3. Looking for pollinators at Schoolhouse Creek (PCC Bushcare 2024)





How can this Strategy
help us make this change?

By setting an aspirational vision:

**By 2036, we halt and reverse
biodiversity loss.**

**By 2050, our community is
supported to live in harmony
with nature.**

By developing evidence based short- and long-term actions in 6 themes that consider public and private land across the LGA.



Maintaining Biodiversity

Protect and enhance existing biodiversity



Extending Biodiversity

Connect and foster new biodiversity



Caring for Country

Support and work with First Nations peoples to understand, connect to and care for Country



Promoting Healthy Community

Connect our community with nature to improve wellbeing



Collaborating & Forming Partnerships

Provide collaborative Council leadership and establish biodiversity partnerships



Staff Training & Compliance Communication

Manage and improve the built environment

By embedding a monitoring and evaluation framework, including steering committee, biodiversity strategy working group, key indicators and periodic evaluation into the strategy.

PLAN

- Cross Functional Biodiversity Strategy Advisory Group
- Penrith City Council Biodiversity Strategy Steering Committee



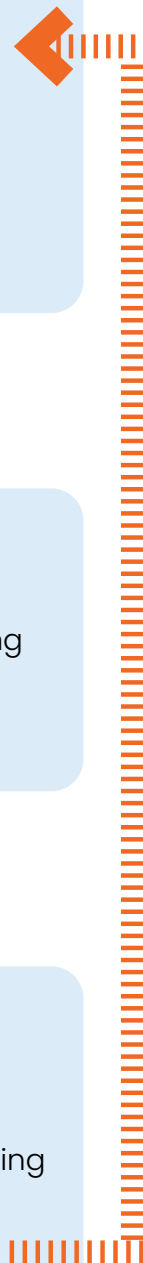
FUND

- Annual Planning and Budgeting
- Grant Funding Opportunities



DO / CHECK

- Tracking progress and impact through monitoring and reporting
- External Evaluation
- Adjusting the Strategy as necessary



Background

This section includes:

- Strategy Purpose
- Strategy Scope
- What is Biodiversity?
- The importance of healthy biodiversity for our community
- What does strong biodiversity look like?

Figure 4. Kookaburra (Everlens photography)







Purpose of this Strategy

The purpose of this Strategy is to:

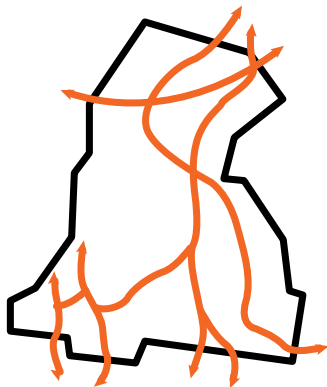
1. Document the current state of biodiversity in the Penrith LGA, including determining sites and corridors of significance that will be the priority for action in the short, medium and long term.
2. Set biodiversity protection and improvement key performance indicators to track progress over the life of this strategy (2036 in 10 Years) given the 2025 baseline.
3. Prioritise actions to protect and improve biodiversity and human-nature care and connection to achieve the outcomes sought. This will enable the community, Council and other agencies to collaborate around priority activities and seek external grant funding and in-kind support.
4. Support stakeholders to explain the value of biodiversity to others, its current and desired condition and what they can do to help.
5. Promote Circular Economy principles by enhancing ecological resilience and regenerative systems.

Figure 5. Thornton Canal

Scope of this Strategy

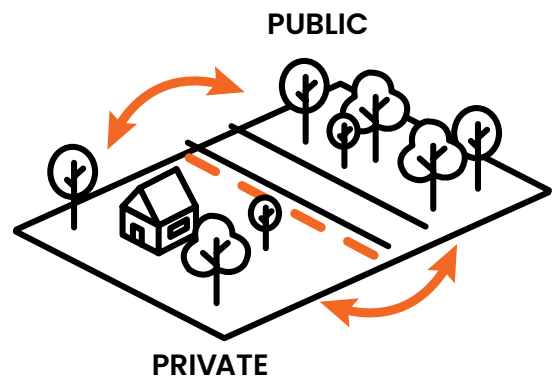
1. LGA wide corridors

Covers the whole Local Government Area (LGA) and considers corridors for species both within the LGA and into and out of the LGA.



2. Public and private land

Addresses biodiversity protection and restoration on public and private land.



3. Penrith's biodiversity

Considers the status of specific sites, corridors, species and plant community types to create a baseline and develop actions for these aspects of biodiversity.



4. 10 year plan

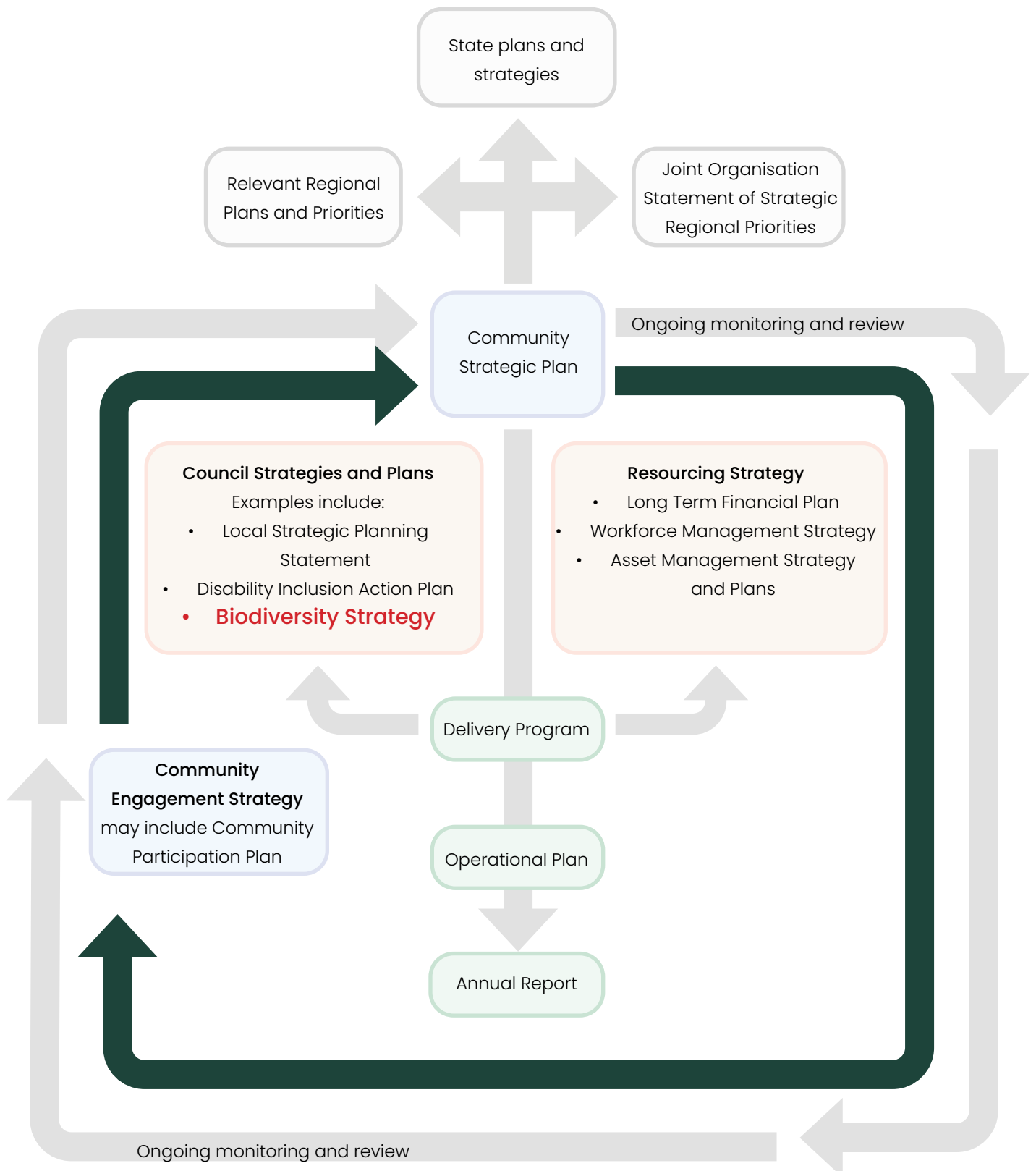
Documents enabling actions to be undertaken over the next 10 years.



Where does this Strategy fit into Council, regional and state plans & strategies?

This Strategy sits along a suite of other local strategies that inform Council operational requirements, such as resourcing, workforce skills and asset management. Together these documents inform the community strategic plan 'Penrith 2041', which delivers a 15 year vision for the Local Government Area. These documents inform and are informed by state and regional plans.

Integrated planning and reporting framework





What is biodiversity?

All the different kinds of life in an area are described as 'biodiversity'

Biodiversity encompasses plants, animals, fungi, and microorganisms, which all interact within ecosystems to maintain balance and sustain life. These relationships function like an intricate web where all species and organisms play a unique role in preserving ecosystem health, from worms enriching the soil to Koalas climbing in the trees and Platypuses navigating the rivers. Different ecosystems exist on land and in aquatic environments, such as rivers and wetlands.

Biodiversity is one measure of the health of an ecosystem. Indigenous or endemic species are those which are native to a region; if we have low biodiversity of local indigenous species and a high proportion of introduced or invasive flora and fauna, such as Blackberry (*Rubus fruticosus L.*) and Foxes (*Vulpes vulpes*), we know that ecosystem is out of balance and the ability of local indigenous flora and fauna species to persist will be under threat. This is the situation in Penrith LGA in 2025.

Figure 6. Left: *Grevillea junipera* (PCC Bushcare 2024)

Figure 7. Right: *Acacia elongata* (Peter Ridgeway 2023)



The importance of **healthy biodiversity** for our community

There has been an increasing focus on the importance of urban greening for human health, and to address the impacts of climate change. For example, using tree canopy to reduce urban heat and creating walkable/cycleable cities to reduce vehicle emissions. However, often these initiatives are not yet prioritising biodiversity. If we do not embed biodiversity as a key success factor, we undermine our ability to deliver a range of community benefits, such as:

- pollination.
- soil health.
- natural pest control.
- weed management.
- water-quality.
- flood mitigation.
- air quality.
- urban heat mitigation.
- mental and physical health and well-being.

Australia's unique biodiversity is a key part of our collective identity, but the system is out of balance. Many species have become extinct since colonisation, diminishing Country and its identity. All lifeforms have intrinsic value that humans should respect and protect. We must be responsible managers of what has been entrusted to us, so we can improve the environment for future generations.



1 | Country Centred Ecological Approach

By bringing together Indigenous and scientific ecological knowledge and land management practices we can foster healthy Country, as well as reconciliation and support employment outcomes for First Nations peoples and others in the community.



2 | Economic benefits

Nature-based regenerative tourism can promote visitation to natural assets while enabling site restoration. Greater indigenous biodiversity can enable more productive agriculture outcomes through pollination and regenerative farming. These approaches can lead to greater employment opportunities.



3 | Human health & wellbeing

Emerging evidence suggests that more biodiversely rich places can improve human health, wellbeing and social connection (Marselle et al. 2021). This can reduce healthcare costs.



4 | Healthy vegetation, soil, water & air

More resilient natural systems can support humans and wildlife alike through reduced flooding and sedimentation. Healthy soil can improve vegetation health which can improve the capacity of trees and other vegetation to cool us on hot days.



5 | Threatened species protection

Urban areas serve as critical habitat for many threatened species of flora and fauna, such as the Regent honeyeater (*Anthochaera phrygia*) (Ives et al. 2016). Protecting biodiversity in urban areas is critical to the survival of these species.



6 | Connection to nature & life satisfaction

Positive contact with nature can foster greater nature connection. This can lead to greater pro-environmental behaviour (Selinske, 2023). Individuals with the highest levels of nature connection are 4.6 times more likely to have the highest life satisfaction (Sollis et al 2025).



7 | Sustainable action on climate change

Climate change and biodiversity loss has been identified by the Intergovernmental Panel on Climate Change and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services as linked (Portner et al. 2021). Action on climate change can help improve biodiversity and vice versa if these actions are planned with biodiversity in mind.

What does **strong biodiversity** look like?

Strong biodiversity = healthy populations of diverse indigenous plants, animals and other organisms.

The composition, structure and function of biodiversity across Penrith LGA looks different depending on what ecosystems the site is in and whether it's a remnant pocket or a highly modified urban area.

Strong biodiversity and core areas of remnant bushland

Core areas are the least disturbed areas of bushland and waterways that support the most local indigenous biodiversity. They reference natural, often pre-colonisation remnant areas, in their structure, function, and composition. Protection and management of these areas is critical to protecting regional biodiversity and supporting ecological stability. There are no agreed size, width or shape benchmarks for core areas as the optimum size is linked to the ability to provide the ecosystem services sought, one of which is habitat for a diversity of indigenous plant and animal species.



Figure 8. Biodiverse street photomontage (de Beaujeu 2024)

Case study in core area management: Mountain View Reserve

Council secured \$1.8 million in funding from the Australian Government's Caring for Our Country program to undertake environmental restoration works at Mountain View Reserve in Cranebrook. The project saw the restoration of a regionally significant wetland near the corner of Castlereagh Road and Nepean Street as well as an adjoining area of critically endangered Cumberland Plain Woodland.

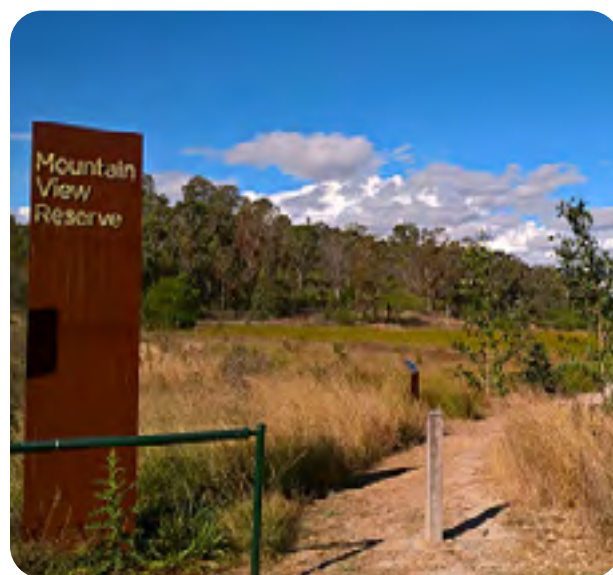


Figure 9. Mountain View Reserve (PCC n.d.)



Figure 10. Creating Canopies at Mountain View Reserve event (PCC Bushcare 2022)

What does **strong biodiversity** look like?

Strong biodiversity and urban areas ...

Urban areas have been disturbed by human development. This means that the environmental conditions of that place, such as soil, water systems and vegetation communities, will likely be significantly altered from their pre-colonial condition.

The diversity and abundance of indigenous species in urban areas is shaped by a number of factors, such as the type of place e.g. a street or park and its proximity to other green spaces and human disturbance.

However, urban areas can be designed to provide important habitat for a diversity of species and act as key stepping stones and wildlife corridors to connect high biodiversity places using Biodiversity Sensitive Urban Design (Garrard et al 2018).

Case study in Urban Biodiversity: Rewild Bondi

A Waverley Council's Small Environmental Grant funded the 'Rewild Bondi' project that transformed urban nature strips in Broughton Boulevard, Waverley. By shifting from traditional grass into a series of biodiverse street gardens, Rewild Bondi provided habitat and movement corridors for a wide range of flora and fauna species. The planting list was specifically tailored to local vegetation communities and by populating the street with specimens sourced from local nurseries, the project strengthens the local ecosystem.

Rewild Bondi had a strong focus on involving community in discussions around biodiversity, in implementation and in the ongoing maintenance. It involved putting Waverley Council's updated Verge Garden Policy into practice to set an example for future urban biodiversity projects.



Figure 11. Rewild Bondi community involvement (GANSW Biodiversity in Place 2024)



Figure 12. Rewild Bondi biodiverse street verge (GANSW Biodiversity in Place 2024)

Strong biodiversity in corridors and links ...

To reduce inbreeding and enable populations to persist, species need to be able to safely move between fragmented quality patches of habitat that are common in urban environments. This movement is enabled through habitat corridors or stepping stones such as private gardens, rooftops, parks, street plantings, waterways and railway corridors, and abandoned sites, among others. These corridors need to be safe and wide enough for a diversity of animals to use.

In summary, strong biodiversity in Penrith LGA requires:

1. Core areas of remnant bushland to be protected, maintained, enhanced where necessary and expanded.
2. Highly amended urban areas to be purposefully designed to create safe habitat and wildlife corridors for indigenous flora and fauna species and be supported by healthy soil and water systems.
3. Safe corridors, links and stepping stones to be created, protected and maintained to enable species to move between core areas and other habitat to reduce inbreeding and increase the size and health of populations.



Figure 13. Green corridor characteristics

Penrith Context

This section contains:

- Our Penrith; Demographics
- Council's obligations to conserve biodiversity
- Guiding legislation, policies and strategies
- Relationship between Biodiversity and First Nations Peoples
- What we heard from Community & Council





Marramarra
National Park

Ku-ring-gai
Chase National
Park

Rouse Hill

Mona Vale

Hornsby

Macquarie Park

**GREATER
PARRAMATTA**

Prospect
Reservoir

**SYDNEY
CBD**

Hurstville

Sutherland

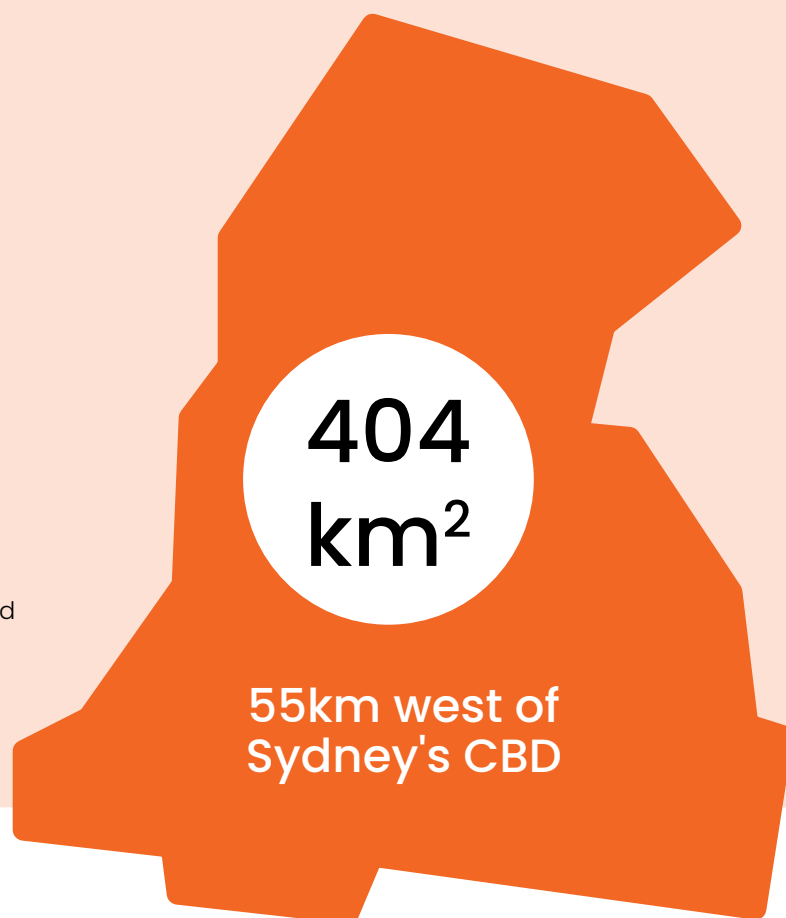
Cronulla

Royal National
Park

Our Penrith

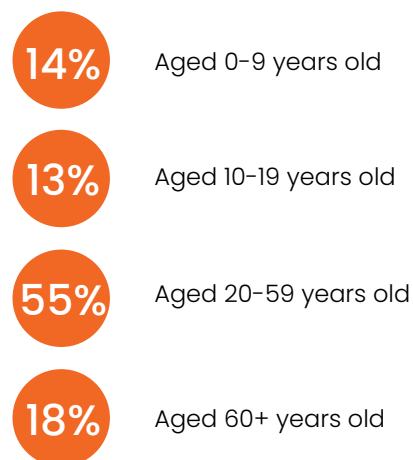
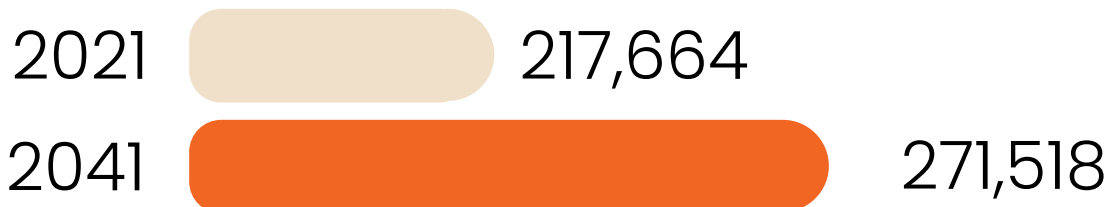
Penrith contains just over 404km² and lies 55km west of Sydney's CBD.

Geologically, Penrith contains low hills and undulating plains on top of Wianamatta shale base, and alluvial deposits in river and floodplain areas.



Our people

(ABS census; NSW Department of Planning Projection)



Penrith's population is projected to grow by over 50,000 residents in the next 20 years. To accommodate this growth, we must take action to enhance the environmental needs of the area alongside accommodating the growing human needs.

Our City



38 Suburbs



1 University



3 Libraries



1 Public hospital



72 Schools



1 Beach



5 Train stations
(plus 2 under construction)

Penrith City hosts a variety of amenity and services. With the completion of the Sydney Metro - Western Sydney Airport and M12 Motorway connective services as well as the establishment of the Western Sydney Airport, Penrith's connectivity will continue to be enhanced in the coming decades.

Our Biodiversity

**450
ha**

Bushland area under
Council management

70

Bushland reserves

<6%

Remaining Cumberland
Plain Woodland vegetation
in the Sydney Basin Bioregion

17%

Remaining bushland on
the Cumberland Plain is
hosted within Penrith

40

Creek
systems

2

Water catchments
Hawkesbury Nepean and
South Creek catchments

Penrith is a significant environmental place, the final buffer between Sydney and the Blue Mountains. While some of this biodiversity is protected in national/regional parks and bushland reserve, there is a large portion on private land and this provides an opportunity for collaboration between private land owners and Council to improve biodiversity outcomes.

Council's obligations to conserve biodiversity

Local Government plays a crucial role in biodiversity restoration and conservation through:

- Development assessment and planning on public and private land to protect, restore and extend areas with high biodiversity values, and areas that contain threatened flora and fauna species, ensuring developments protect, restore and extend biodiversity and comply with relevant legislation and biodiversity related conditions of consent.
- environmental management of public land with high biodiversity values.
- enacting obligations to protect biodiversity as documented in Federal and State Legislation.
- community education and engagement to enhance community knowledge of biodiversity and connection to nature through workshops, events and other activities.

Through this Strategy, Penrith City Council is committed to acting as one coordinated team to deliver meaningful biodiversity outcomes. The Strategy brings our efforts together under a unified vision. By identifying, consolidating, and aligning our collective actions, Council ensures a structured and collaborative approach that maximises our impact and drives continuous improvement in biodiversity across the local government area.



Figure 14. *Pimela spicata* at Gow Park (PCC Bushcare 2018)

Council plays a frontline role in development assessment, environmental management of public lands, community education and engagement and advocacy. We play a vital role in representation and facilitation of information flow between our community and higher levels of Government. We implement state legislation and policy and promote biodiversity through Strategies like the Penrith Biodiversity Strategy, Rural Lands Strategy, River Master Plan, Cooling the City Strategy and the Green Grid Strategy.

Although Council plays a vital role in biodiversity improvement and protection, this Strategy does have limitations to what it can and can't achieve by virtue of where it sits within the hierarchy of biodiversity initiatives and it is important to understand and acknowledge these limitations.

Whilst Council plays a role in development assessment, this Strategy sits below the legislative framework set by the NSW Government and does not have the ability or authority to set land use or other considerations within the development application pathway such as the Biodiversity Offset Scheme, the *Biodiversity Conservation Act, 2016* or *Environmental Planning & Assessment Act, 1979*.

Additionally, it recognises that Council does not purchase land specifically for the sole purpose of biodiversity conservation. However, Council does acquire land for other utility functions such as trunk drainage, bioretention and flood mitigation, often as part of the development process. While these acquisitions are not made for biodiversity conservation, they often present opportunities to enhance environmental and biodiversity outcomes. These parcels of land are typically embellished in accordance with acquisition plans and Council's Delivery & Operational Plans which may include weed removal and the planting of native vegetation.

While not the primary intent, these actions can deliver meaningful biodiversity benefits by enhancing habitat quality, improving ecological connectivity and contributing to better water quality outcomes.

Key Legislation

- Federal Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Council Obligations

Key legislation for protecting matters of national environmental significance (MNES), including threatened species, threatened ecological communities, and migratory species.

Local councils must consider the EPBC Act when planning and approving developments that may impact on MNES. If a proposed action is likely to have an impact on MNES, the project must be referred to the Environment Minister to decide whether the action needs assessment and approval under the EPBC Act.

- State Environmental Planning and Assessment Act 1979 (EP&A Act)

Governs land use planning and development and requires councils to:

- consider environmental impacts and community interests (including biodiversity) when making planning decisions.
- prepare and implement local strategic planning statements (LSPS) and local environmental plans (LEPs) to guide long-term planning and development within their LGA.

- Biodiversity Conservation Act 2016 (BC Act)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021
- Local Government Act 1993,
- National Parks and Wildlife Act 1974
- Fisheries Management Act 1994
- Local Land Services Act 2013 (LLSA)

All contribute to the conservation of biodiversity and the management of natural areas. This legislation places obligations on councils to:

- assess development impacts on biodiversity, particularly when processing Development Applications and Planning Proposals.
- consider environmental impacts when drafting strategic planning documents.
- develop Community Strategic Plans, which include biodiversity conservation objectives.

Guiding legislation, policies & strategies

This Strategy draws from and responds to key regulatory and guiding documents at international, national, state and local levels.

Level	Responsibilities	Legislation	Documents	Initiatives
International 	The Australian federal Government implements Australia's obligations under international agreements. Non governmental organisations support the delivery of these agreements.	No binding global legislation but international treaties, conventions, and agreements act as an international legal framework.	- International Climate Change Commitments - Migratory Birds Agreements - Kunming Montreal Global Framework, Convention on Biological Diversity (CBD) - Convention on International Trade in Endangered Species (CITES) - Ramsar Convention on wetlands of international importance - World Heritage Convention	- Australia is participating in the CBD's global monitoring framework. - Australia hosted the Global Nature Positive Summit in Sydney in 2024 to drive policy, private sector investment, and stakeholder engagement.
National 	The Federal Government focuses on national level coordination, policy, funding, and protection of matters of national environmental significance (MNES). Other non governmental organisations, such as the Society for Ecological Restoration Australasia, create evidence based guidelines that assist in promoting good practice across the country.	- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) - Water Act 2007 - Bio-security Act 2015 - Fisheries Management Act 1991 - Australian Heritage Council Act 2003 - Aboriginal and Torres Strait Islander Heritage Protection Act 1984	- Australia's Strategy for Nature 2024-2030 - Society for Ecological Restoration National Standards for Ecological Restoration. 2018	The Federal Government maintains data platforms and tools: - Species Profile and Threats (SPRAT) Database. - Protected Matters Search Tool. - Coordinates State of the Environment (SoE) reporting every 5 years. - Manages Australia's Strategy for Nature 2024-2030. - Coordinates the national science environmental program.

Level		Responsibilities	Legislation	Documents	Initiatives
State	 	The NSW State Government has responsibilities for biodiversity conservation under state legislation, land use planning, and program delivery across species protection, ecosystem restoration, land use regulation, and community engagement. Other non governmental organisations engage in these activities.	- State Environmental Planning Policy (Biodiversity and Conservation) 2021 - Biodiversity Conservation Act 2016 (BC Act) - Environmental Planning and Assessment Act 1979 (EP&A Act) - Local Land Services Act 2013 - National Parks and Wildlife Act 1974 - Forestry Act 2012	- Biodiversity in Place, Government Architect NSW, 2024 - NSW Biodiversity Outlook Report 2024, NSW Government - Caring for Country Aboriginal Outcomes Strategy 2024-2033, NSW Government	- Saving our Species (SoS) Program. - NSW Biodiversity Offsets Scheme (BOS). - Biodiversity Conservation Trust (BCT). - Regional Biodiversity Conservation Strategies such as the Cumberland Plain Conservation Plan. - Biodiversity values map and threshold tool, NSW Government.
Regional		There are a range of regional organisations and associated plans and strategies that help coordinate biodiversity protection across multiple Councils and agencies.	While there isn't separate regional biodiversity legislation, regional plans and policies have statutory weight through the planning system and guide biodiversity conservation at the regional level.	- Greater Sydney Regional Plan – A Metropolis of Three Cities 2018 - Western Sydney District Plan 2018 - Cumberland Plain Conservation Plan 2022 - Greater Sydney Water Strategy - Sydney Green Grid 2023 - Connected Corridors for Biodiversity Report 2016	- Regional Biodiversity Conservation Strategies such as the Cumberland Plain. - Connected Corridors for Biodiversity map of connected habitats and potential connections publicly available for use on-line.
Local		Local governments are responsible for integrating biodiversity protection into, development assessment, and managing local natural areas. They support community conservation efforts, enforce environmental regulations, and collaborate with state agencies to promote and preserve biodiversity. They are supported by a range of non governmental organisations.	- Penrith Local Strategic Planning Statement March 2020 - Penrith Local Environmental Plan 2010 - Penrith Development Control Plan 2014	- Penrith Green Grid Strategy 2022 - Penrith Biodiversity Study 2023 - Penrith Biodiversity Strategy, 2026	- Platypus monitoring programs. - Cultural burning programs - Indigenous plant nursery. - Community tree planting programs.



Relationship between Biodiversity & First Nations Peoples

The Darug and Gundungarra are the First Nations peoples of Penrith and surrounds. They have cared for Country for tens of thousands of years, with their unique cultural practices and language deeply entwined with local ecosystems. First Nations People concepts of 'connection to' and 'care for' Country are applicable to all. "If you give to Country it will give back to you " highlights the reciprocal relationship between people and the land – that when people respect, care for, and protect Country, it in turn provides for and sustains them.

The Government Architects Office NSW's Connecting with Country Framework (2023) highlights reciprocity as being "critical to achieve mutually beneficial relationships between project and Country. If built environment projects can help Aboriginal people to fulfil their obligation and responsibility to care for Country, then Country will care for us all" (GANSW 2023, p21).

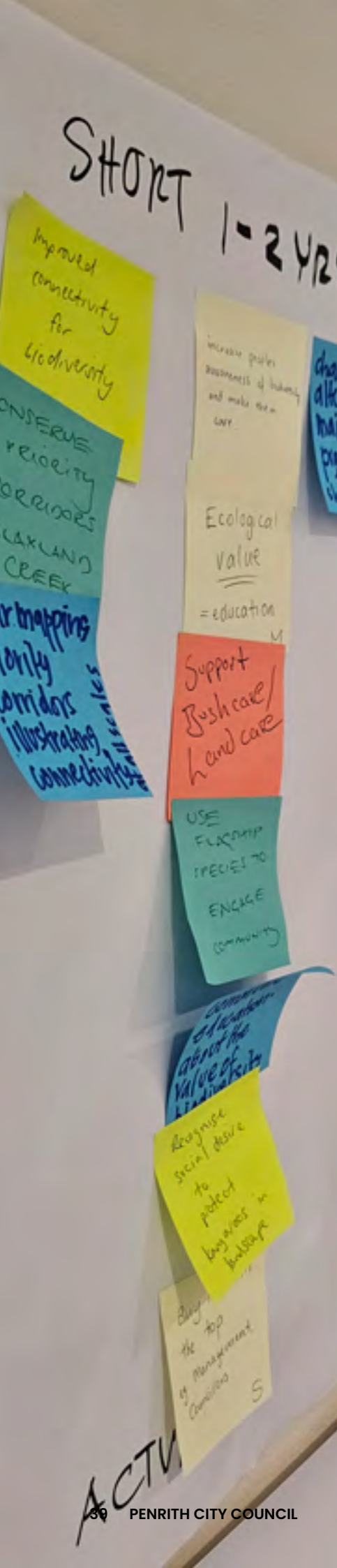
This reciprocal relationship with Country has informed First Nations ecological expertise and effective land management practices, refined through generations. Investment in this connection to, and ecological knowledge of, Country delivers tangible benefits for First Nations people, the environment and broader community across Penrith LGA. This Strategy considers the approach of reciprocity to secure and resource this work to ensure its lasting impact.



Benefit	Penrith Example
Cost-effective management of large areas	
Indigenous owned and managed lands account for a large percentage of threatened species' habitat ranges in Australia, suggesting a key role for First Nations peoples in threatened species conservation. This role can be enabled by drawing on traditional land management practices such as seasonal burning, plant identification and direct seeding to enable cost effective restoration.	The 2023 Right Plant, Right Country program entails harnessing Indigenous ecological knowledge to improve restoration results.
New businesses and employers	
The demand for businesses linked to better management of the land are growing, for example biodiversity sensitive site maintenance, seed collection, indigenous nurseries, bush food production and agroforestry. First Nations people are uniquely placed to lead in the development of these businesses which provide employment and economic gains for Penrith.	The Aboriginal Ranger Program is supported by a partnership between NSW Government and Local Land Services. It entails training and employing First Nations rangers across three local communities to care for Country.
Training for future employment	
Regenerative farming practices such as planting biodiverse windbreaks and restoring farm dams have been shown to enable greater yield, quality and resilience of farming outputs. Given the growing demand for sustainable land management practices Penrith LGA needs to build a workforce that can manage biodiverse landscapes sustainability.	Training in cultural burning through the FireSticks program that entails learning how to use fire as a way to care for and connect with Country through cultural knowledge and protocols. Similarly, water care programs that entail looking for Platypus to support conservation activities, and waterway testing.

Benefit	Penrith Example
Sustainable land management practices	
Cultural burning provides less severe fuel load reduction compared to the more extreme wildfires and hazard reduction burning, preserving most of a mature shrub population while wildfires and hazard reduction can kill over 99% of mature shrubs (McKemey et al. 2021).	Cool and storm burning approaches have been trialled across large areas in Penrith, such as 50 Hectares in Orchard Hills Department of Defence lands, to provide cost effective removal of invasive grasses such as African Love Grass (<i>Eragrostis curvula</i>) removing the need to use herbicides and expose the soil, reducing issues with soil becoming hydrophobic, and nutrient runoff to create a healthier waterway.
Better health outcomes for First Nations groups	
Being able to practice care for, and connection to, Country, have been linked to better health outcomes for Indigenous peoples and nature; the “healthy country, healthy people” effect (Taylor-Bragge et al. 2021:458).	Penrith City Council’s Community Wellbeing Survey (2022) identified that the First Nations population in Penrith has increased from 2016 and 2021 to account for 5% of Penrith’s total population and that Indigenous people living in Penrith LGA are more likely to be living with at least one long-term health condition compared with non-Indigenous residents. As such it is critical this population is supported to connect with and care for Country.
Cultural heritage protection of places and species	
Enacting Indigenous knowledge can reinforce the value of protecting places and species given their cultural significance.	

Figure 16. Key collaborators workshop (Tract 2025)



What we heard from Community & Council staff

The consultation process entailed setting up a cross functional Council project control group to progressively review the Strategy, focus groups with key Council teams, a call for community submissions via 'Your Say', as well as a workshop with key collaborators from across the community.

Consultation Process



Figure 17. *Yellow-tailed Black-Cockatoo* (Nerrel Loader)



Consultation Process

From the information collected during the consultation phase, 10 core themes were determined to focus on. The table below outlines key issues associated with each theme, as well as strategies to mitigate and reduce negative impacts.

Theme	Issues	What can be done
Focus on biodiversity corridors and high-quality patches in these areas	Penrith is a large LGA and efforts need to be prioritised.	• Use an evidence-based approach to map high quality patches and priority corridors to focus efforts. • Prioritise projects within these sites and corridors, especially on public land where Council can control activities.
Private land	A significant percentage of high biodiversity patches and biodiversity corridors exist on private land.	• Incentivise and support private land holders to protect and enhance biodiversity in their properties.
Illegal clearing	Illegal clearing has been increasing year on year. A critical issue that will determine whether the vision in this Strategy can be achieved.	• Support Council's Development Compliance team to improve enforcement processes. • Support the community with education to understand the implications for them and the environment. • Collaborate with adjoining councils and State Government to share best practice approaches to compliance and managing illegal clearing.
Community contact with, knowledge of, and connection to nature	The Penrith community need to be supported to understand the value of biodiversity and their role in protecting and enhancing biodiversity.	• The different needs of the Community need to be understood to determine their perspectives on nature and how best to target education and engagement programs to diverse groups.

Theme	Issues	What can be done
Council knowledge of biodiversity	Biodiversity impacts all Council areas from health to water and engineering. Council's Strategic Planning Asset Management, Engineering, City Presentation Teams and others need to be supported to understand these impacts and ensure their projects enable biodiversity outcomes.	Support Councillors and Council staff to understand how their work impacts on biodiversity and how they can champion biodiversity.
First Nations initiatives	First Nations knowledge and initiatives are making a tangible difference to local Indigenous people, the environment and community but Council need to make strategic investments to secure and grow these benefits in the long term.	Continue to invest in and grow activities that harness and embed First Nations ecological knowledge and land management practices.
Water, flood and fire	There needs to be greater clarity across Council of how plantings can support flood mitigation and address fire risks and recognition of Indigenous fire and land management strategies.	- Flood and fire mitigation strategies need to recognise and support expansion of riparian and biodiversity corridors where remnant bushland and riparian vegetation already exists. - Embrace Indigenous and academic ecological expertise for more effective and evidence based land management approaches.
Climate change	Biodiversity is being impacted by climate change, such as extreme heat days and flood events.	Consider future climate scenarios and manage and maintain biodiversity to build resilience to climate impacts/hazards.
Planning controls	The local planning controls (Local Environmental Plan and Development Control Plan) need to include best practice biodiversity controls.	- Amend local planning controls to protect and enhance biodiversity, drawing on best practice from across the State. - Support the planning teams with education to understand relevant legislation and how to best protect and enhance nature.
Value of urban sites, alongside larger rural or bushland sites	Small urban sites in residential and built-up areas can contribute to biodiversity and are important for fostering human-nature connection.	Discuss opportunities for urban biodiversity projects such as embedding biodiversity as a key goal in the majority of Council planned projects such as park upgrades.

The state of biodiversity in Penrith in 2025

This section considers the current state of biodiversity in Penrith including priority sites and corridors, species and plant community types across the LGA, and discusses select projects underway, as well as threats and opportunities to protect, enhance and extend these aspects of biodiversity.

- An overview of the outlook
- Plant Communities
- Fauna & Flora Species
- Case Study: Koala
- Case Study: Platypus
- LGA Wide Priority Corridors
- Priority Precinct Sites
- Threats and opportunities
- Action underway in Penrith

Figure 18. Castlereagh Reserve (PCC Bushcare 2025)





An overview of the outlook for biodiversity

The NSW State of the Environment Report (NSW EPA 2021) provides a snapshot of the status of the key environmental issues facing our state every 3 years. In 2021 biodiversity outcomes were going backwards in NSW. This trend is reflected in Penrith LGA.

Penrith houses unique plant community types and species that exist in terrestrial patches and corridors, as well as in waterways. These patches, corridors and waterways are supported by biodiversity in urban areas. Biodiversity in these ecosystem types has been consistently declining. This means that the important role Penrith plays in protecting biodiversity at a regional scale is also under threat, such as through the Cumberland Plain Conservation Plan (NSW Government, 2022).



Figure 19. Above: Key statistics from the NSW State of the Environment Report (NSW EPA 2021)

Figure 20. Right: Castlereagh Reserve (PCC Bushcare 2025)

Figure 21. Below: Sacred Kingfisher (*Todiramphus sanctus*) (Drew Meier)



Plant Communities

What are the plant communities in Penrith LGA?

A Plant Community Type (PCT) is a group of plant species that consistently occur together in a specific environmental setting (such as soil type, topography, or climate), forming a recognisable and repeatable unit of vegetation across the landscape. PCT mapping is the most detailed level of vegetation classification and is mapped across NSW in the State Vegetation Type Map (SVTM) and maintained in the BioNet Vegetation Classification System.

Penrith LGA contains over 25 distinct PCTs. Many of these PCTs align with a threatened ecological community (TEC), seen in the following table, while others are not associated with a TEC.

PCTs and TECs are closely linked but serve different purposes:

- A PCT is a descriptive unit based on vegetation structure and species composition.
- A TEC is a legal status applied to one or more PCTs when the community is at risk of extinction.

What are Penrith's priority threatened ecological communities?

TECs are defined by their ecological function and composition. Each TEC is made up by one or more PCTs and can be listed as:

- Critically Endangered
- Endangered
- Vulnerable

Approximately 90% of Penrith's remnant vegetation have TEC conservation status under State and/or Federal legislation.

Penrith supports 13 different TECs that constitute approximately 17% of remaining bushland in the Cumberland Plain region (PCC n.d.-a) as outlined in the table overleaf. Many of these TECs provide vital habitat for threatened flora and fauna species. TECs are a conservation priority and need additional consideration in planning processes.

The table below outlines TECs and their associated PCTs as at 2025. The following pages profile 7 vegetation communities that are critically endangered in either NSW or federally.

No.	Threatened Ecological Community	PCT Code	NSW BC Act 2016 Status	EPBC Act 1999 Status
1	Cumberland Plain Woodland in the Sydney Basin Bioregion	3320, 3319	• Critically Endangered	• Critically Endangered
2	Shale Sandstone Transition Forest in the Sydney Basin Bioregion	3321	• Critically Endangered	• Critically Endangered
3	Agnes Banks Woodland in the Sydney Basin Bioregion	3799	• Critically Endangered	• Endangered
4	Sydney Turpentine–Ironbark Forest in the Sydney Basin Bioregion in the Sydney Basin Bioregion	3262	• Critically Endangered	• Critically Endangered
5	Cooks River / Castlereagh Ironbark Forest in the Sydney Basin Bioregion	3448	• Endangered	• Critically Endangered
6	Shale Gravel Transition Forest in the Sydney Basin Bioregion	3448, 3320	• Endangered	• Critically Endangered
7	Castlereagh Swamp Woodland Community	3628	• Endangered	• Not Listed
8	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	1071	• Endangered	• Not Listed (in Penrith context)
9	River–Flat Eucalypt Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	4025, 4058	• Endangered	• Critically Endangered
10	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	3318	• Endangered	• Endangered
11	Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion	3629	• Vulnerable	• Endangered
12	Western Sydney Dry Rainforest in the Sydney Basin Bioregion	3082, 3110	• Endangered	• Critically Endangered
13	Moist Shale Woodland in the Sydney Basin Bioregion	3318	• Endangered	• Critically Endangered



Figure 22. Cumberland Plain Woodland (Peter Ridgeway)



Figure 23. Shale Sandstone Transition Forest

Cumberland Plain Woodland Critically Endangered (NSW & Commonwealth)

Once very common across the Sydney Basin bioregion, however it has been reduced to less than 6% of its original expanse since European settlement, with only approx. 7,841 ha remaining (Eco Logical, 2023).

Occurring naturally as a grassy open woodland the dominant canopy trees of Cumberland Plain Woodland are Grey Box (*Eucalyptus moluccana*) and Forest Red Gum (*E. tereticornis*), with Narrow-leaved Ironbark (*E. crebra*), Spotted Gum (*Corymbia maculata*) and Thin-leaved Stringybark (*E. eugenioides*) occurring less frequently. The shrub layer is generally sparse and in the ground layer it is common to find abundant grasses such as Kangaroo Grass (*Themeda australis*) and Weeping Meadow Grass (*Microlaena stipoides* var. *stipoides*).

Its primary threat is legal and illegal land clearing on private land and private incursions into public land.

Shale Sandstone Transition Forest Critically Endangered (NSW & Commonwealth)

This ecological community is found to the west of Sydney, on the edges of the Cumberland Plain where clay soils from the shale rock intergrade with earthy and sandy soils from sandstone, or where shale caps overlay sandstone. Once widespread but it has now suffered extensive decline due to urban expansion and land degradation. Today, much of it exists in small, fragmented patches.

This forest type typically features a tall open canopy dominated by Forest Red Gum (*Eucalyptus tereticornis*), Grey Gum (*E. punctata*), stringybarks (*E. globoidea*, *E. eugenioides*) and ironbarks (*E. fibrosa* and *E. crebra*). The understorey includes a mix of native grasses, herbs, and shrubs such as Gorse Bitter Pea (*Daviesia ulicifolia*), Kangaroo Grass (*Themeda triandra*) and Spiny-headed Mat-rush (*Lomandra longifolia*).

Its primary threats include land clearing for development, weed invasion, altered fire regimes, and degradation from recreational use and edge effects.



Figure 24. Agnes Banks Woodland

Agnes Banks Woodland Critically Endangered (NSW), Endangered (Commonwealth)

A rare and distinctive ecological community confined to deep, well-drained aeolian (wind-blown) sand deposits near Agnes Banks, on the north-western edge of the Cumberland Plain. Due to its highly restricted distribution and extensive clearing for sand mining, agriculture, and development, only a small portion of its original extent remains.

This woodland features an open canopy dominated by Scribbly Gum (*Eucalyptus racemosa*), Narrow-leaved Apple (*Angophora bakeri*), and Broad-leaved Ironbark (*Eucalyptus fibrosa*), often growing in association with *Banksia serrata* and *Melaleuca* spp.

Key threats include sand extraction, vegetation clearing, inappropriate fire regimes, and the spread of invasive species.



Figure 25. Sydney Turpentine-Ironbark Forest

Sydney Turpentine– Ironbark Forest Critically Endangered (NSW & Commonwealth)

A highly threatened ecological community that once covered large areas of the fertile shale-derived soils of the Sydney Basin, particularly on the Cumberland Plain and surrounding ridges. Today, it has been reduced to less than 0.5% of its original extent due to extensive clearing for agriculture, urban development, and infrastructure. This community is restricted to small scattered areas within the LGA.

Sydney Turpentine-Ironbark Forest is characterised by a tall open forest canopy dominated by Turpentine (*Syncarpia glomulifera*), along with Ironbark species such as Grey Ironbark (*Eucalyptus paniculata*) and Narrow-leaved Ironbark (*E. crebra*).

Major threats include ongoing habitat loss and fragmentation, weed invasion, altered fire regimes, and degradation from edge effects. Most remaining remnants are small, isolated, and located on roadsides, in urban reserves, making active conservation and management essential.



Figure 26. Shale Gravel Transition Forest

Shale Gravel Transition Forest Sydney Basin Bioregion Endangered (NSW), Critically Endangered (Commonwealth)

A highly restricted and fragmented ecological community that once occupied areas of gravelly soils over shale on the margins of the Cumberland Plain. Extensively cleared for agriculture, urban development, and infrastructure expansion, with only a small fraction remaining.

This forest typically consists of an open canopy dominated by Grey Box (*Eucalyptus moluccana*), Forest Red Gum (*E. tereticornis*), and occasionally Narrow-leaved Ironbark (*E. crebra*). The understorey includes a mix of native shrubs, grasses.

Key threats include ongoing land clearing, habitat fragmentation, weed invasion, inappropriate fire regimes, and soil disturbance. Remnants are often confined to roadside verges or small patches within degraded landscapes.



Figure 27. Cooks River / Castlereagh Ironbark Forest

Cooks River / Castlereagh Ironbark Forest Endangered (NSW), Critically Endangered (Commonwealth)

A unique and once-extensive ecological community that occurs on clay-rich soils derived from Wianamatta Shale and Tertiary alluvium in the Cumberland Plain, primarily in Western Sydney. This forest has been reduced to a fraction of its former range due to clearing for agriculture, infrastructure, and urban development.

The community is characterised by a canopy dominated by Narrow-leaved Ironbark (*Eucalyptus crebra*), Broad-leaved Ironbark (*E. fibrosa*), and Grey Box (*E. moluccana*), often interspersed with Forest Red Gum (*E. tereticornis*). The understorey varies but includes native grasses, herbs, and scattered shrubs.

Major threats include land clearing (both legal and illegal), weed invasion, habitat fragmentation, and inappropriate fire regimes.



Figure 28. River-Flat Eucalypt Forest (Grant Webster 2017)

River-Flat Eucalypt Forest Endangered (NSW), Critically Endangered (Commonwealth)

Found on the river flats of the coastal floodplains and within Penrith primarily along watercourses where it grades to other vegetation communities away from the riparian zone.

The most widespread and abundant dominant trees include Forest red gum (*Eucalyptus tereticornis*), Cabbage gum (*E. amplifolia*), Rough-barked Apple (*Angophora floribunda*) and Broad-leaved Apple (*A. subvelutina*). A layer of small trees may be present, including Prickly-leaved Paperbark (*Melaleuca decora*), Prickly-leaved Teatree (*M. styphelioides*), Grey Myrtle (*Backhousia myrtifolia*), River Oak (*Casuarina cunninghamiana*) and Swamp Oak (*C. glauca*).

Its greatest threats are illegal private land clearing and weed disturbance, particularly after flood events. It is estimated that only 11% of the original extent of this community remains (Eco Logical, 2023) however St Marys Town Centre mapping reveals evidence of further land clearing which suggests there may be even less remaining vegetation than originally estimated.



Figure 29. Castlereagh Scribbly Gum Woodland (PCC Bushcare)

Castlereagh Scribbly Gum Woodland Vulnerable Endangered (NSW), (Commonwealth)

Found often on slightly higher ground than Cooks River / Castlereagh Ironbark Forest or Shale Gravel Transition Forest in the Sydney Basin Bioregion.

Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion is dominated by Parramatta Red Gum (*Eucalyptus parramattensis* subsp. *parramattensis*), Narrow-leaved Apple (*Angophora bakeri*) and Narrow-leaved Scribbly Gum (*Eucalyptus racemosa*). A small tree stratum of *Melaleuca decora* is sometimes present, generally in areas with poorer drainage. The shrub understorey includes a number of listed threatened species including *Acacia bynoeana*, *Allocasuarina glareicola*, *Dillwynia tenuifolia*, *Grevillea juniperina* subsp. *juniperina*, *Micromyrtus minutiflora*, *Persoonia nutans* and *Pultenaea parviflora*, and may also possibly contain *Grevillea parviflora* subsp. *parviflora*.

Its greatest threatened threats are illegal private land clearing, clearing for urban development, damage caused by human disturbance including rubbish dumping, arson, trailbikes and 4WDs and Invasion of exotic plants.

Remnant vegetation

Penrith's remnant vegetation can be seen in the maps to the right which are also provided at a larger scale in Appendix A.

Remnant vegetation can be broken into specific vegetation communities and their threatened ecological status.

The majority of Penrith's vegetation is threatened and the conservation significance varies from Vulnerable to Critically Endangered. Some of these critical biodiversity core areas are protected as National Parks.

Figure 30 presents the estimated pre 1750 vegetation community presence across Penrith, highlighting just how much vegetation has been lost across the LGA.



Figure 30. Pre-clearing vegetation class occurrence in Penrith LGA



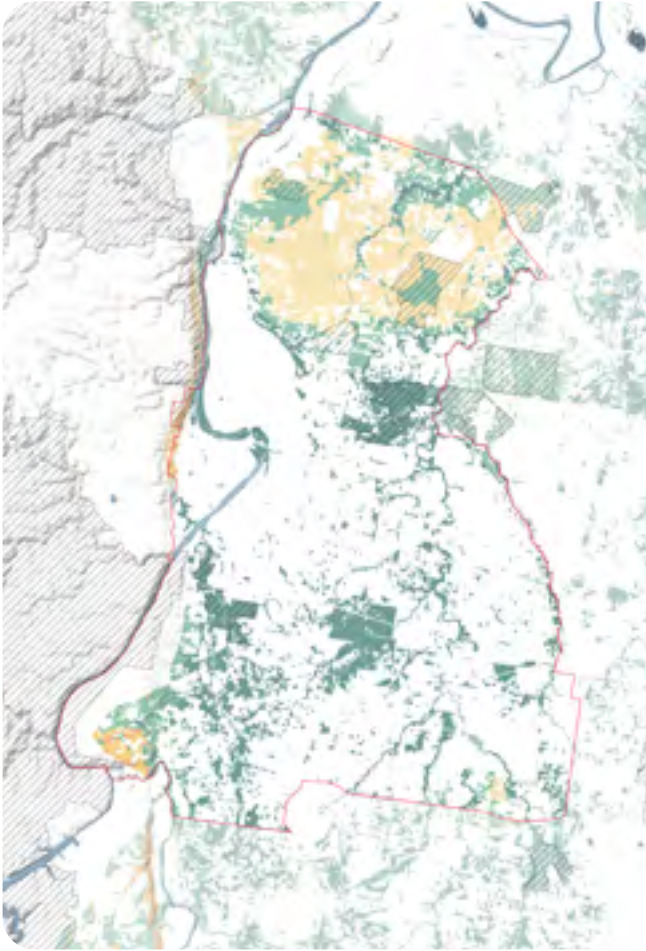


Figure 31. Remnant vegetation class occurrence in Penrith LGA

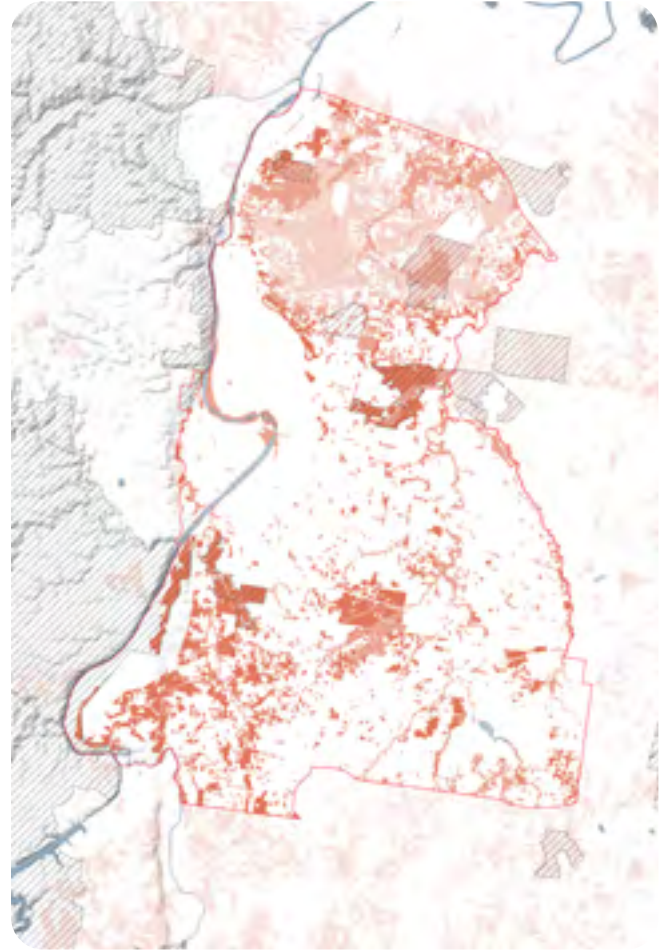


Figure 32. Threatened ecological communities in Penrith LGA





Fauna & Flora Species

According to the NSW Government's BioNet species database, Penrith LGA is home to over 2000 plant species and over 500 fauna species, including 88 mammals, 293 birds, 36 amphibians and 58 reptiles. While many of these are not officially threatened, many are still under pressure from development. They are significant in their local context and work together to create a complex, self-sufficient ecosystem.

According to the NSW BC Act 2016, if a species is classified as 'Threatened' in New South Wales, it means that the species is under threat to such an extent that it is at risk of extinction in the near future in our state. If the species is also listed as 'Threatened' under the Federal EPBC Act, then Australia is at risk of losing this species nationally. This could mean the total extinction of a species as many threatened species only reside in Australia. Threatened species are a conservation priority and need additional consideration in planning processes and recovery plans.

Penrith's threatened species list includes:

- Flora - 17
- Mammals - 14
- Birds - 36
- Reptiles - 1

Figure 33. Powerful Owl in Mulgoa (Henry Cook 2018)



Threatened flora species

Of Penrith's many threatened flora species, a snapshot is included on the following page (Figure 35).



Figure 34. *Hibbertia puberula* – Guinea Flower

- V Vulnerable
- E Endangered
- CE Critically Endangered

Figure 35. Subset of threatened flora species in Penrith LGA



Bynoe's Wattle
Acacia bynoeana



Downy Wattle
Acacia pubescens



Camden White Gum
Eucalyptus benthamii



Sydney Bush-pea
Pultenaea parviflora



Small-flower Grevillea
Grevillea parviflora subsp. *parviflora*



Scrub Turpentine
Rhodamnia rubescens



Spiked Rice-flower
Pimelea spicata



Nodding Geebung
Persoonia nutans



Micromyrtus minutifolia



Marsdenia viridiflora
subsp. *viridiflora*



Dillwynia tenuifolia



Juniper-leaf Grevillea
Grevillea juniperina

Threatened fauna species

Penrith is home to a number of threatened fauna species. Figure 37 (right) displays some of those species.

These threatened species are often quite sensitive to change and development, and there are a variety of documents that inform Penrith City Council on how to protect and manage these species. Some example documents include the State Environmental Planning Policy (Biodiversity and Conservation) 2021 and the Cumberland Plain Conservation Plan 2022.

Outside of the fauna groups displayed here, Penrith is also home to large populations of insect species and other invertebrates which play a critical role in maintaining healthy ecosystem function. Research suggests that the threatened status of invertebrate has been greatly underestimated (Woinarskiet & Marsh 2024) and they require targeted preservation actions alongside more well-known species.

Migratory bird species

Penrith provides habitat for migratory species during particular seasons. Fifteen migratory birds were identified with known, likely or potential habitat occurrence through the use of the Protected Matters Search Tool (DCCEEW 2023). Three of these species are listed as threatened, seen in Figure 36 (below).

Migratory species are protected through various policy documents. The EPBC Act 1999 has designated these listed migratory species as matters of national environmental significance, requiring federal approval regarding actions that might affect their conservation status. Australia is also part of a variety of international collaboration agreements with Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA) as well as the East Asian-Australasian Flyway Partnership, which allow for more migratory protection to occur across international waters.

Figure 36. Threatened migratory bird species in Penrith LGA



White-throated Needletail
Hirundapus caudacutus



Curlew Sandpiper
Petaurus australis



Eastern Curlew
Petaurus norfolcensis

- V** Vulnerable
- E** Endangered
- CE** Critically Endangered

Figure 37. Threatened fauna species in Penrith LGA



Spotted-tailed Quoll
Dasyurus maculatus



Yellow-bellied Glider
Petaurus australis



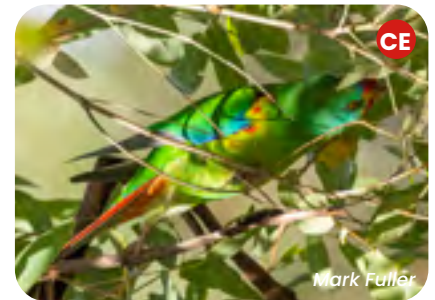
Squirrel Glider
Petaurus norfolcensis



East Coast Free-tailed Bat
Micronmus norfolkensis



Koala
Phascolarctos cinereus



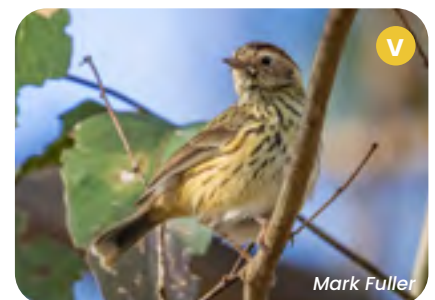
Swift Parrot
Lathamus discolor



Powerful Owl
Ninox strenua



Regent Honeyeater
Anthochaera phrygia



Speckled Warbler
Chthonicola sagittata



Glossy Black-Cockatoo
Calyptorhynchus lathami



Red-crowned Toadlet
Pseudophryne australis



Cumberland Plain Land Snail
Meridolum corneovirens

Case study: Koala

Species Introduction

The Koala (*Phascolarctos cinereus*) is an arboreal marsupial found along Eastern Australia. They dwell in trees in eucalypt woodlands / forests, surviving almost exclusively on eucalypt leaves.

Threats

While populations in Victoria and South Australia remain stable, in 2021, Queensland, New South Wales and Australian Capital Territory Koala populations were uplisted from Vulnerable to Endangered by both the EPBC Act (DAWE 2022) and the BC Act (2016).

Major threats include habitat clearing, climate change, disease, dogs and vehicle strikes. Koalas live in woodland patches throughout NSW and can be genetically cut off from one another by habitat fragmentation. Climate change is a severe threat as by 2030, over 20% of Koala habitat is predicted to be affected by more frequent and intense heatwaves, droughts, floods and bushfires (Adams-Hosking et al. 2011; DAWE 2022 p.51).

Protection

Australia's National Recovery Plan (NRP) for the koala utilises the EPBC Act as a key Koala protection document, outlining a 10-year plan from 2022-2032 to mitigate the impacts of climate change and improve metapopulation resilience, connectivity and genetic health across the country (DAWE 2022, p.16).

The NSW Government's Koala Strategy 2021-2026 is currently working toward key conservation targets to support Koala habitat that addresses:

- Koala habitat conservation
- Supporting local communities to conserve Koalas
- Improving the safety and health of Koalas
- Building our knowledge of Koalas

These documents have helped develop the Koala Habitat Information Base, established monitoring and conservation efforts and supported volunteer wildlife rehabilitation by providing grants and resources. The NSW Government has also committed over \$193 million in 2021 to double the NSW Koala population by 2050 (Department of Agriculture, Water and the Environment 2022, p.44).

Penrith Koala Conservation

The Blaxland Area of Regional Koala Significance (ARKS) stretches across the Blue Mountains and eastern areas of Penrith and Mulgoa, and is identified in the Koala Habitat Information Base (Figure 39). It lies between the southern Bungonia ARKS and northern Wollemi NP ARKS.

The Blue Mountains and Penrith provide over 60,000ha of Koala habitat (Biolink Ecological Consultants 2023) and its population is the most genetically diverse in Australia

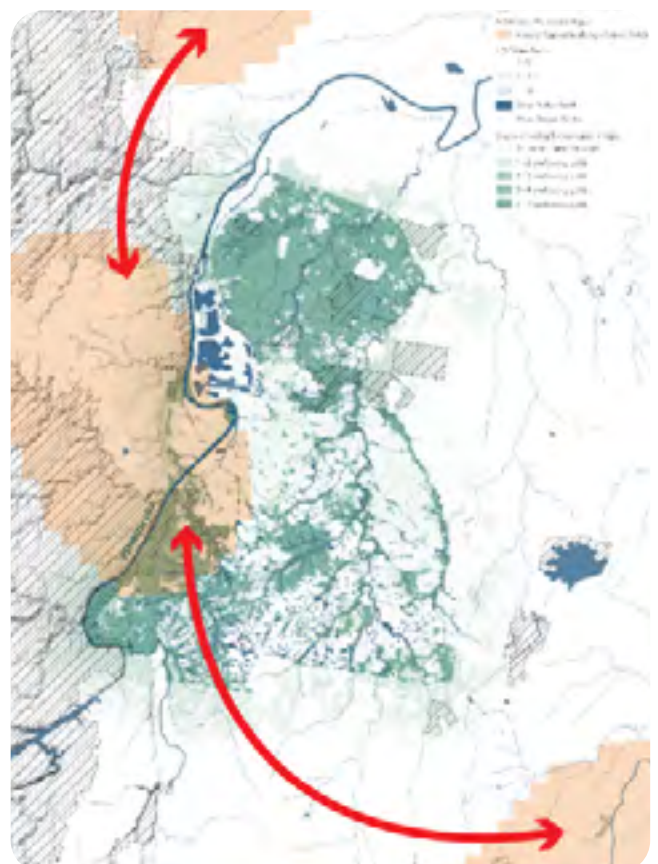
(Kjeldsen et al. 2019). It is therefore important to protect the Blaxland Area of Regional Koala Significance and link it with other significant habitat patches.

Locally Mulgoa Valley Landcare Group have invested \$100,000 of federal and state government funding into koala habitat restoration and monitoring in Mulgoa over the past three years. Recently Council has partnered with some of this work by assisting with sound recording surveys and call analysis.

Figure 38. Koala (WIRES n.d.)



Figure 39. Local Areas of Regional Koala Significance



Case study: Platypus

Species Introduction

The platypus (*Ornithorhynchus anatinus*) is a mostly aquatic monotreme species that lives in fresh waterbodies of Eastern Australia and survives primarily on insect larvae and freshwater shrimp. Platypuses hunt in the mud and silt along riverbeds and can stay underwater for up to 10 minutes (Department of Environment and Heritage 2020).

Habitat

Platypuses rest in multiple shallow burrows dug along a waterway, seeking protection from predators and extreme temperatures (Department of Environment and Heritage 2020). Nesting burrows used by females to raise young are generally much deeper and have multiple chambers. Platypuses need secure riverbanks to build burrows, often characterised by the presence of tree roots, boulders, logs, woody debris and dense vegetation on the water's edge (APC n.d.).



Threats

In rural areas, the greatest threat to platypus habitat and water quality is cattle grazing and riverbank trampling/bank erosion. In urban areas, they are threatened by polluted urban runoff and poorly vegetated and maintained riparian zones. In extreme cases these waterways may exist as concrete stormwater channels with steep sides and no vegetated riparian zones (APC n.d.).

Entanglement in litter and discarded fishing line and hooks can cause severe injuries and death to platypus. In fact, litter and inappropriate angling practices were responsible for 15% of platypus mortalities recorded by the Australian Platypus Conservancy.

Opera house traps are another serious and well-documented threat to platypus. Opera house traps are fully enclosed nets designed to catch yabbies. Unfortunately, their design makes them lethal to air-breathing aquatic mammals like the platypus and rakai (*Hydromys chrysogaster*). These animals are often lured into the trap by the scent or movement of yabbies inside. Once inside, they cannot escape and eventually drown because the trap does not allow them to surface to breath.



Penrith Platypus Conservation

Mulgoa Valley Landcare Group with some assistance from Penrith City Council has invested in platypus conservation efforts. In 2021 the Penrith Platypus Project was granted \$55,000 to aid platypus population recovery and future resilience post 2019–2020 bushfires, which caused an estimated 18% population decline (Landcare NSW n.d.). The project included regeneration and restoration work along Schoolhouse Creek and Mulgoa Creek.

The Mulgoa Valley Landcare Group have also received \$427,000 funding as part of the \$2 billion Western Sydney Infrastructure Grants program (2021). The work will support platypus habitat restoration at eight locations along Mulgoa Creek, community engagement events, permanent educational signage and research (supported by Western Sydney University and Council).

In 2025, Penrith's Bushcare team and event partner Mulgoa Valley Landcare Group hosted a Planting for Platypus event, where 34 volunteers from the community met at Factory Road Reserve to plant 250 sedges and grasses along the Nepean River where it meets with Schoolhouse Creek and Mulgoa Creek. The event also featured an education element where the community was invited to learn more about Mulgoa Valley Landcare's work and Dr Ryan's research into platypus preservation in Penrith (PCC 2025).

This Biodiversity Strategy includes actions that consider the potential future development of a Platypus Plan of Management.

Environmental DNA analysis

Due to the species' shyness and the difficulty of mark-recapture studies, platypus population numbers have been historically hard to quantify. Environmental DNA (eDNA) analysis is a way of tracking populations by examining content of faecal matter, skin cells and other biomaterials in water samples. The concentration and degradation of the eDNA sample can identify where it flowed from upstream (APC n.d.).

Dr Michelle Ryan from the University of Western Sydney has conducted extensive studies into Penrith platypus populations. In 2021 and 2022, eDNA sampling, water quality sampling and habitat assessment methods were used to track changing populations and environmental conditions.

Though population distribution has likely continued to shift since study samples were taken, we can still use this data to infer likely areas of platypus presence today, including Mulgoa Creek, Jerry's Creek and the Nepean River (Ryan 2022). Dr Ryan's study recommends the continuation of existing bushcare and identifies additional sites for riparian restoration. These potential habitat areas have been impacted by sedimentation or siltation and poor riparian vegetation (Ryan 2022).

Figure 40. Platypus (Tracy Middleton)

Threats & opportunities for biodiversity

The decline in biodiversity in the Penrith LGA is driven by a range of key threatening processes as listed in the Biodiversity Conservation Act 2016 (BC Act) and key threatening processes listed under the EPBC Act (EPBC Listed Key Threatening Processes 2024), as well as local threats that occur in Penrith LGA, such as illegal land clearing, invasion, establishment and spread of invasive weeds and water pollution.

Illegal land clearing

Threats

Vegetation clearing on both public and private land is a major threat to biodiversity in Penrith as a significant portion of high value biodiverse sites exist on private land. Illegal clearing has been identified as a major threat to Penrith's threatened vegetation communities, particularly the loss of the critically endangered Cumberland Plain Woodland community. See overleaf for recent clearing complaint statistics which indicate an overall increasing trend upwards.

Clearing of these sites further fragments quality pockets of habitat making it difficult for threatened species to persist in an area, or move to higher quality sites. According to the Penrith Development Control Plan, it is illegal to cut down, fell, uproot, kill, poison, ringbark, burn or otherwise destroy vegetation without Council permission (PCC n.d.-c). Vegetation clearing concerns can be reported to Council by the community and by Penrith City Council staff.

Compliance action for illegal clearing of vegetation can range from Penalty Notice, orders to revegetate to criminal prosecution. The management process and timeline differ between illegal clearing cases.

Where only a Penalty Notice or warning is required, a case can be resolved within 1 – 2 months. In cases of more significance vegetation removal a PIN may be accompanied by an order for replanting. These matters typically take 6 – 9 months to resolve. Anywhere from a quarter to half of Penrith's unauthorised vegetation clearing matters include the requirement to undertake restoration of the cleared area managed in accordance with a Vegetation Management Plan (VMP).

Opportunities

- Strong community education and incentives are needed for new and existing property owners.
- Effective Council planning controls and compliance measures such as financial penalties.
- Partnerships between councils to share knowledge and resources can improve capacity and best practice.

2023



47% externally raised

53% internally raised

68 vegetation complaints

60% of complaints resolved

2024



33% externally raised

67% internally raised

95 vegetation complaints

78% of complaints resolved

2025 (Jan - Sep)



72% externally raised

28% internally raised

103 vegetation complaints

so far projecting

78% of complaints resolved to date

Invasive flora

Threats

Invasive plant species pose a significant threat to biodiversity in the Penrith LGA. Penrith's locally significant weeds can be found in the Hawkesbury River County Council Priority Weeds List (HRCC 2024). Introduced grasses such as African Lovegrass (*Eragrostis curvula*) and other invasive weeds such as Lantana (*Lantana camara*) outcompete native flora species for sunlight, nutrients and water, reducing the resources available for native plants to grow. Disturbed areas and high levels of nutrients discharged into the natural environment exacerbate the invasive flora problem.

Land management practices targeting weeds such as hand weeding and herbicide application in accordance with best practice methods outlined by the Department of Primary Industries NSW WeedWise can help limit the spread and growth of invasive species.

The invasion of escaped garden and farmland plants, including aquatic plants, has caused a loss and degradation of native plant and animal habitat.

Opportunities

- Community education is key to encourage gardeners and nurseries to avoid selling or planting illegal weed species and certain plants that can also be an environmental threat.
- Accessing grants for weed management projects.

Figure 41. Land clearing at Castlereagh (Penrith City Council 2025)



Invasive fauna

Threats

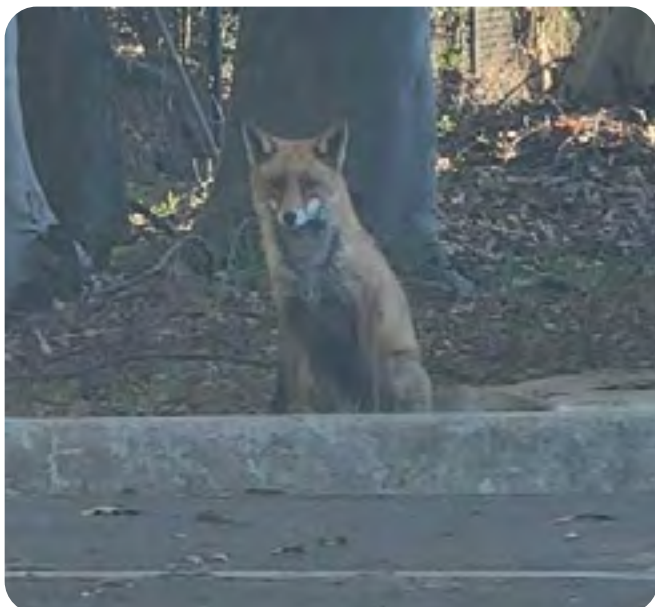
Invasive introduced fauna species like European wild rabbits (*Oryctolagus cuniculus*), feral cats (*Felis catus*), European red foxes (*Vulpes vulpes*) and feral pigs (*Sus scrofa*) degrade valuable habitat, compete with indigenous fauna for food, transmit disease and kill native fauna species.

Invasive species don't have to be exotic. The over-abundance of Noisy Miners (*Manorina melanocephala*) caused by habitat clearing and modification has led to an exclusion of native birds from woodland and forest habitat. While not currently a threat in Penrith, the imported fire ant (*Solenopsis invicta*) has been flagged as a potential threat to Australian native flora and fauna and cause a severe reduction in biodiversity across the country.

Opportunities

- Rabbit management programs.
- Bait poisoning or culling of foxes and feral pigs.
- Cat Containment Policies for domestic cats.
- Trap-neuter-release programs or culling of feral cats.
- Planting a diversity of local indigenous plant species to reduce the impact of Noisy Minor (*Manorina melanocephala*) incursions into bushland.
- Indian Miner (*Acridotheres tristis*) trapping program for residential/council land.
- European Carp (*Cyprinus carpio*) management programs in local waterways.
- Partnerships with other Government Agencies such as NSW NPWS for feral deer.

Figure 42. European Red Fox at Penrith (PCC Bushcare 2025)



Pathogens & diseases

Threats

There are a range of pathogens and diseases affecting Penrith's species that require attention:

- Flora dieback caused by the microscopic root-rot fungus (*Phytophthora cinnamomi*) is a key threatening process under the Commonwealth EPBC Act 1999.
- Myrtle rust (*Puccinia psidii*) is a fungal disease affecting the Myrtaceae family, creating leaf spots which affect plant growth and reproduction. It can be managed by fungicides and disposing of diseased specimens.
- Polyphagous shot-hole borer has spread devastating pathogenic fungi in trees across Western Australia and has potential to spread to NSW.
- Grey Box Psyllids are cicada-like insects that cause dieback in Grey Box trees (*Eucalyptus moluccana*), which has had a devastating impact on the Cumberland Plain Woodland. This species can be managed by planting understorey to improve tree health, containing outbreak populations and insecticide treatment by a qualified arborist.
- Pathogens targeting fauna, such as the chytrid fungus Chytridiomycosis, a potentially fatal skin condition affecting over 600 species of Australian amphibians.
- *Psittacine Circoviral* (beak and feather) disease is another potentially fatal disease which affects parrot nestlings, such as Cockatoos.

Opportunities

- Education on practices that can be used to manage the spread of pathogens and diseases should be explored, such as 'Protocols to protect priority biodiversity areas in NSW from *Phytophthora cinnamomi*, myrtle rust, amphibian chytrid fungus and invasive plants' 2020.
- Frog saunas, artificial structures that heat up in the sun, can treat chytrid fungus (Greenfield 2024).

Floods & urban runoff

Threats

Floods are becoming more frequent and severe, impacting the Nepean River, South Creek and other waterways. Increased urbanisation has resulted in increased runoff and altered hydrology.

Opportunities

- Better waterway health controls such as expanding riparian bushland corridors and planting more vegetation can enhance flood resilience by slowing overland flows into waterways stabilising the soil and improving the soil's water retention capabilities and reduce pollution and nutrient runoff.
- Water sensitive urban design (WSUD) is an urban specific water management strategy to improve water quality through biofiltration management and reduce urban runoff velocity from non-permeable surfaces.
- Tree planting can reduce flooding impacts in the following ways:
 - ◊ acting as a sponge and soaking up water through roots, reducing downstream flood risk and reducing the pressure on drainage systems after high flow rain events.
 - ◊ collecting raindrops on leaves that evaporate before falling on the ground, slowing rainfall rate.
 - ◊ woody debris creating hydraulic roughness which causes drag on flood waters to slow the flow.

Climate change

Threats

Climate change is intensifying climatic events such as floods, fires, heatwaves and storms, which will dramatically affect Penrith's delicate ecosystems. Urban heat is a particular concern in Penrith, with rising temperatures increasing heat-related mortality for humans and non-humans alike. Strengthening biodiversity can help mitigate these impacts.

Opportunities

- Penrith can harness natural green infrastructure, such as using climate-adaptive species in future Council revegetation and regeneration projects, to provide cooler and more liveable environments and alleviate climate hazards.

Figure 43. Nepean river flooding (NSW SES 2024)



Waterway pollution & debris

Threats

Injury and fatality to vertebrate aquatic life caused by ingestion of, or entanglement in, harmful debris, often caused by waterway pollution and inappropriate fishing practices. Certain nets can drown platypuses and non-catch species such as turtles can die from swallowing hooks that cannot be retrieved.

Opportunities

- Regulation, signage, regular clean-up programs and community education.
- Revegetation to reduce pollution entering waterways.
- Improve the management of invasive carp fish, as currently there is no appropriate way to dispose of carp once caught beyond leaving them on waterway banks.

Wildfires, hazard reduction burning & back burning

Threats

Wildfires and intensive high heat conventional hazard reduction burning and back burning can have negative impacts on biodiversity, such as killing mature shrubs destroying fauna habitat and altering vegetation structure and species composition.

Opportunities

- Adopting First Nations' cultural burning practices to implement a fire land management strategy that regenerates the land and reduces the risk of extreme wildfire occurrence and intensity across Penrith LGA.

Figure 44. Sydney backburning (ABC News 2019)



Development

Threats

Penrith is a growth area in Western Sydney and there is demand for additional housing in both infill and new estates. Currently the local planning system doesn't appropriately support developments to integrate leading biodiversity controls to protect and enhance biodiversity.

Opportunities

- Review the local planning system.
- Adopt methods such as Biodiversity Sensitive Urban Design in Council projects to improve human - nature co-existence.

Vehicle strikes

Threats

Urban development increases road infrastructure which in turn increases vehicle strike risk for native wildlife like wombats, kangaroos, possums and koalas.

Opportunities

- Identifying key fauna movement zones in Penrith and installing road warning signage and incorporating traffic calming devices that reduce speed, particularly at dawn and dusk, at key fauna crossings.

Figure 45. Red-browed Finches (Kristen Hutton)





Priority Sites & Corridors

As Penrith LGA covers such a large area, a methodology was required that considered the:

1. LGA wide sites and corridors of significance that should be supported over the life of the Strategy and beyond by Penrith City Council and others across the LGA.
2. Priority precinct level sites that would be the initial focus for funding and coordinated Council action in the short term (2 years).

Analysis and actions in this Strategy have been developed to accommodate these two scales.

Determining LGA wide sites & corridors of significance

To determine the LGA wide sites and corridors of significance, Penrith City Council commissioned NGH Consulting's 2023 Penrith Biodiversity Study to map key fauna corridors. Over 500 fauna species have been historically recorded in the Penrith LGA, so rather than mapping each individual species' movement, the study focused on seven species groups, named focal fauna guilds, using 17 indicator species within them, illustrated in Figure 47.

Figure 46. Left: Royal Spoonbill (Drew Meier)

Figure 47. Right: Focal Fauna Guilds

- V** Vulnerable
- E** Endangered
- CE** Critically Endangered

Fauna guilds and indicator species mapped in the 2023 Penrith Biodiversity Study (Penrith City Council & NGH 2023)

GROUND-DWELLING MAMMALS (M-L)



Common Wallaroo (Euro)
Macropus robustus erubescens



Common Wombat
Vombatus ursinus



Swamp Wallaby
Wallabia bicolor

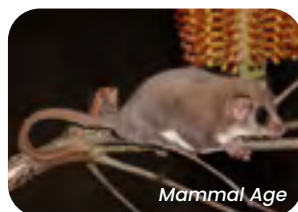


Red-necked Wallaby
Macropus rufogriseus

ARBOREAL MAMMALS



Sugar Glider
Petaurus breviceps



Feathertail Glider
Acrobates pygmaeus



Yellow-bellied Glider
Petaurus australis

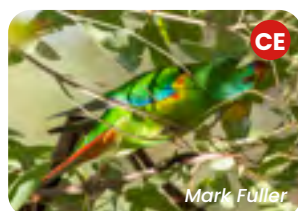


Squirrel Glider
Petaurus norfolcensis

FOREST MIGRANT BIRDS



Regent Honeyeater
Anthochaera phrygia

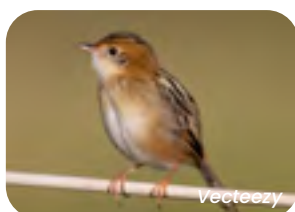


Swift Parrot
Lathamus discolor



Green and Golden Bell Frog
Litoria aurea

WET GRASSLAND & RIPARIAN BIRDS



Golden-headed Cisticola
Cisticola exilis

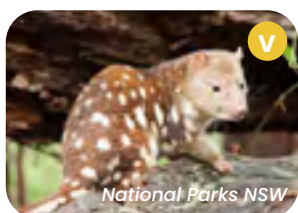


Australian Reed-Warbler
Acrocephalus australis



Speckled Warbler
Chthonicola sagittata

GROUND-DWELLING MAMMALS (S-M)



Spotted-tailed Quoll
Dasyurus maculatus



Long-nosed Bandicoot
Perameles nasuta



Cumberland Plain Land Snail
Meridolum corneovirens

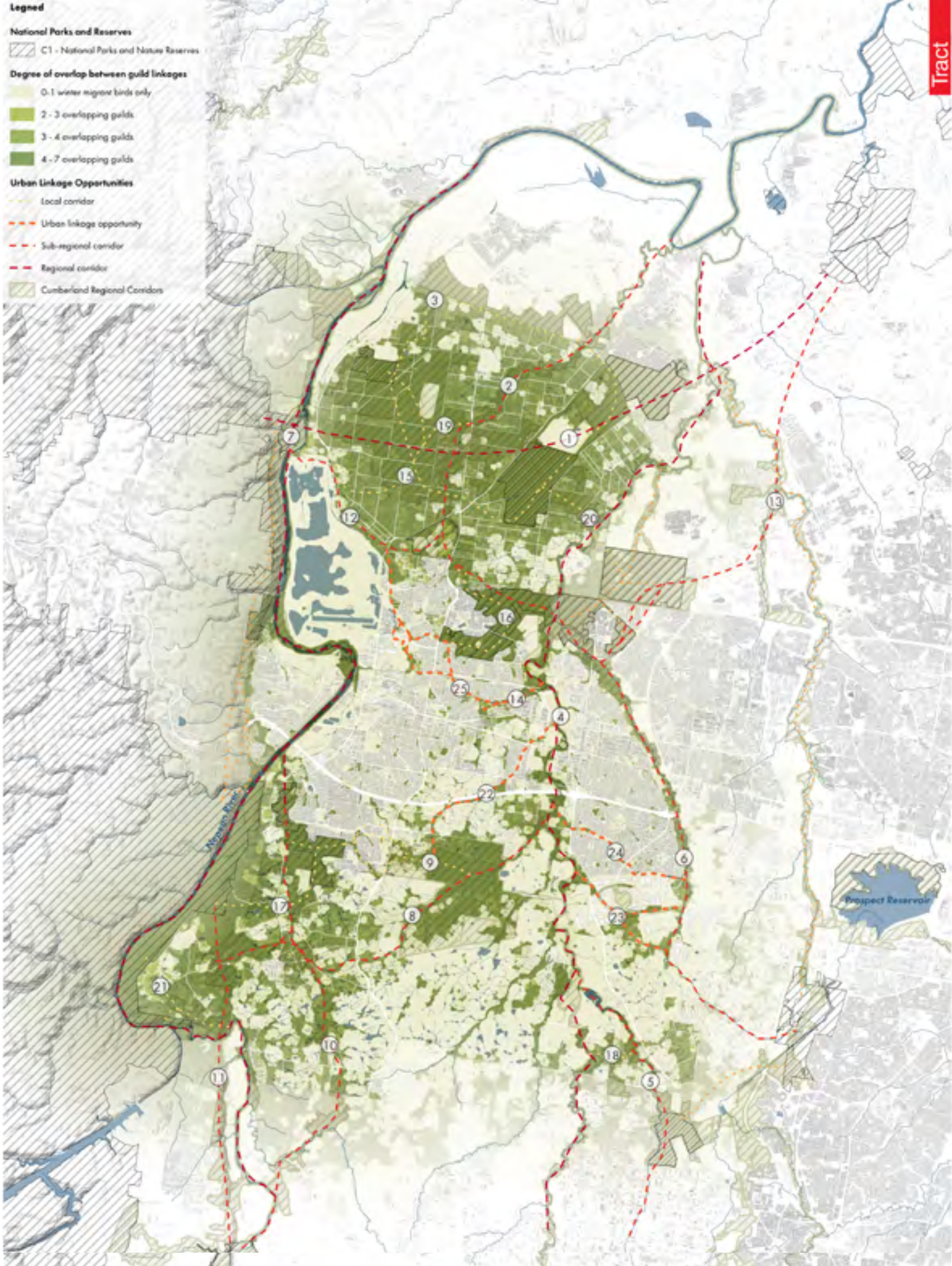
LGA wide corridors of significance

Figure 48 outlines the movement of these fauna guilds and highlights significant sites and corridors used by the 7 fauna guilds (darkest green areas), and more specialised areas used by fewer guilds (lighter green areas). An area with many overlapping guilds is a high value ecological zone with the ability to support diverse fauna types.

From this data, 22 existing local and sub regional corridors were documented. Three urban linkage opportunities (corridors 23-25) were also identified, where strong biodiversity corridors outside the LGA should be invested in. See Appendix B for more granular views of the LGA wide map.

Figure 48. Corridors of significance

1. Blue Mountains NP to Scheyville NP
2. Rickabys Creek to Wianamatta
3. Castlereagh-Wianamatta-Agnes Banks-Windsor Downs Core Areas
4. South Creek
5. Kemps Creek
6. Ropes Creek
7. North-south corridor along Nepean River
8. Blaxland Creek
9. Blaxland Creek-Mulgoa Creek NR
10. Mulgoa Creek-Bents Basin Creek
11. Ridge parallel to Bents Basin Road
12. Wianamatta NR-Nepean River link
13. Eastern Creek-Ropes Creek cross catchment link
14. Werrington Creek
15. Agnes Banks-creek link to Nepean River
16. Wianamatta link
17. Mulgoa-Blue Mountains NP link
18. South Creek-Kemps Creek link
19. Cross catchment link
20. Shanes Park-Castlereagh local corridor link
21. Mulgoa local corridor link
22. Claremont Creek-Blaxland Creek link
23. Erskine Park urban linkage opportunity
24. Banks Road urban linkage opportunity
25. Cranebrook urban linkage opportunity



Priority Precinct Sites

How were the priority precinct sites and corridors determined?

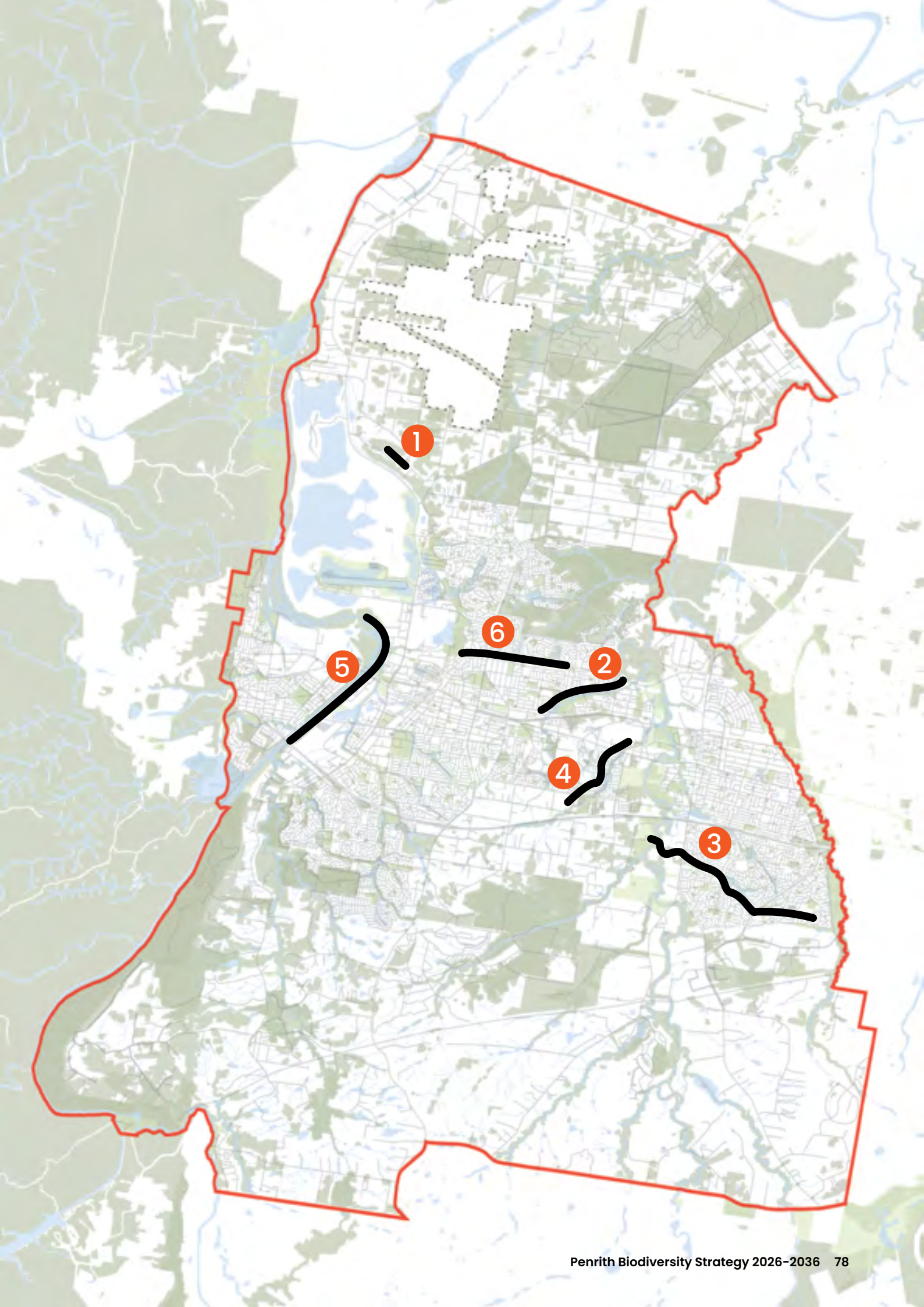
The LGA wide sites and corridors of significance were used as a base to determine precinct scale priority sites for focused Council action in the short term (two years). Expert input was used to select these sites based on a range of considerations, including biodiversity value and the ability for Council to take immediate action, among other factors.

Priority site location

The priority precinct scale sites are as follows:

1. Protect and enhance unformed roads in the northern, part of Corridor 12
2. Werrington Creek from Werrington Lakes to Dunheved Road, part of Priority Corridor 14.
3. Banks Road Urban Linkage Opportunity, part of Priority Corridor 24.
4. Claremont Creek-Blaxland Creek link, part of Priority Corridor 22.
5. Part of the Nepean River, part of Priority Corridor 7.
6. Cranebrook Urban Linkage Opportunity from Northern Road to Hickeys Lane / Bushland reserve, part of Priority Corridor 25.

Figure 49. Priority site location (Penrith Green Grid 2023)



Priority Project 1

Protect and enhance Council unformed roads in the northern, part of Corridor 12

Why focus on this area?

These unformed roads are important in managing edge effects on adjoining intact bushland areas and contain threatened vegetation communities, flora and fauna species, but are subject to unauthorised activities including vegetation clearing. Priorities would be to restore and manage the health of sites that adjoin private residential land and intersect with larger parcels of in-tact bushland.

Figure 50. Priority Project 1 corridor





Figure 51. Tempest Street aerial imagery (Nearmap 2025)

Potential project – Tempest Street off Church Lane

Tempest Street is a narrow strip of Council-owned land following an ephemeral creek between private properties. It runs closely parallel to the nearby Corridor 12, and currently suffers from edge degradation, overgrown weed populations, illegal mowing / dumping and nutrient pollution. Tempest Street has potential as a pilot project involving education, signage and delineating fencing to prevent unauthorised access. Its restoration would support movement along Corridor 12.



Figure 52. Tempest Street (Google Streetview 2021)

Priority Project 2

Werrington Creek from Werrington Lakes to Dunheved Road, part of Priority Corridor 14

Why focus on this area?

This area is a corridor of significance and contains land covered by a Stewardship Agreement near Dunheved Road. Opportunities exist to improve biodiversity sensitive recreation access with walking paths providing co-benefits for people and nature.

Figure 53. Priority Project 2 corridor

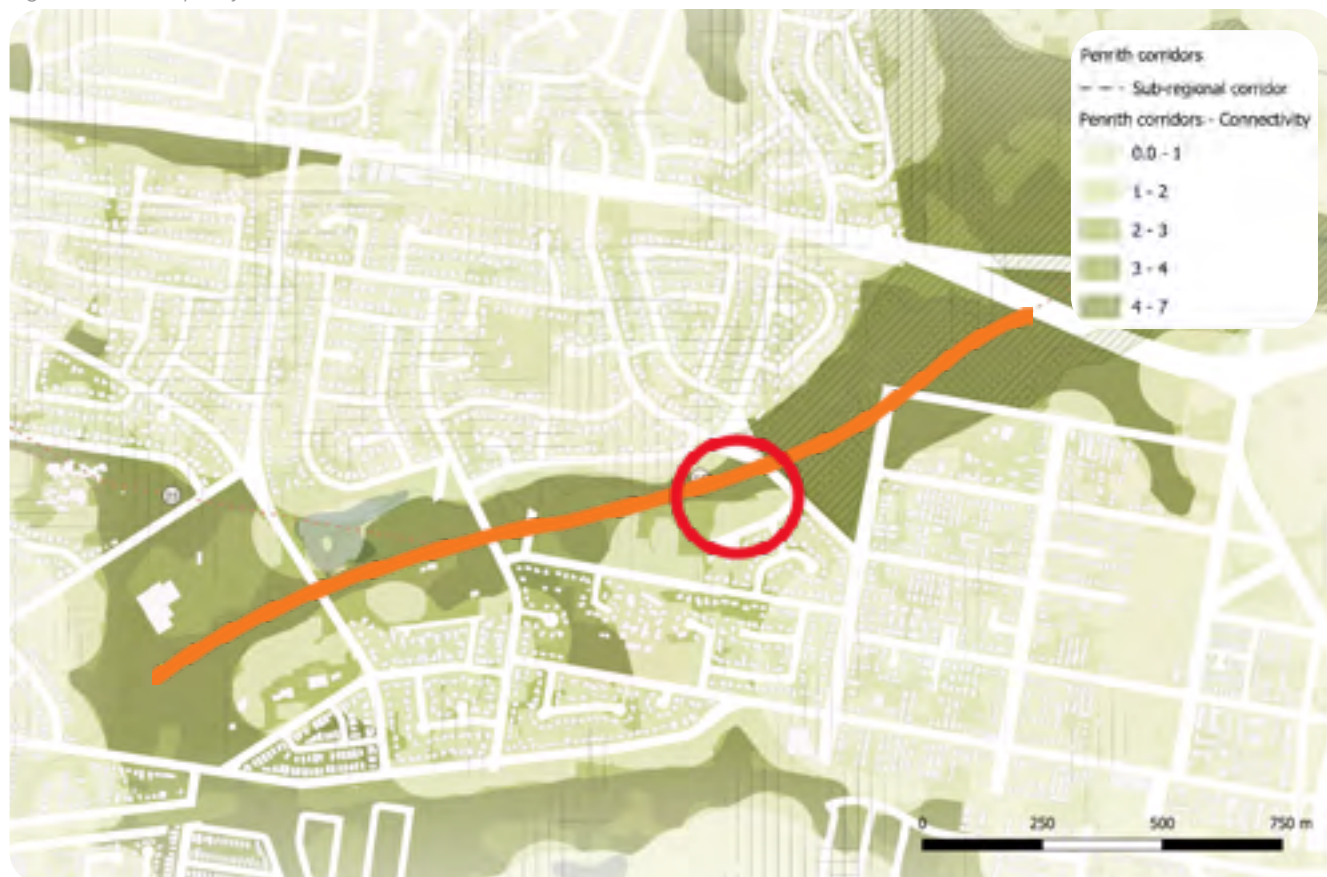




Figure 54. John Oxley Avenue aerial imagery (Nearmap 2025)

Potential project – John Oxley Avenue

A portion of land where John Oxley Avenue crosses over Werrington Creek presents the opportunity to engage in private landowner collaboration. Bush regeneration efforts have already begun on the northern side of the road, which can be extended on the southern side as well, creating a stronger green link. The Werrington Creek corridor has an associated flood risk and existing vegetation is thin, with a high weed presence over native species. To manage these constraints, the project would need clear specifications for riparian vegetation planting, expansion and management as it pertains to flood risk, which is a short term action in the Strategy (Goal 2, Action 2.2).



Figure 55. John Oxley Avenue (Google Streetview 2025)

Priority Project 3

Banks Road Urban Linkage Opportunity, part of Priority Corridor 24

Why focus on this area?

This area is part of a priority corridor and includes an electricity easement, grassed drainage channel and links into adjoining corridors which provide opportunities to revegetate this corridor in collaboration with asset owners.

Figure 56. Priority Project 3 corridor





Figure 57. Chameleon Reserve link aerial imagery (Nearmap 2025)

Potential project – Chameleon Reserve link

Chameleon Reserve hosts a remnant patch of Cumberland Plain Woodland vegetation in the form of an intact canopy. Its understorey planting is lacking and opens the opportunity to enrich multi-level biodiversity.

This small reserve is a key stepping stone in the long urban corridor, linking the powerline easement with a network of public greenspaces following a drainage easement.



Figure 58. Chameleon Reserve link (Google Streetview 2019)

Priority Project 4

Claremont Creek–Blaxland Creek link, part of Priority Corridor 22

Why focus on this area?

This area is part of a priority corridor. The space between the M4 Motorway and Great Western Highway includes large, grassed drainage channel areas with possible revegetation opportunities which may be constrained by flooding potential and subject to the Guideline and Specification that will be developed as part of this Strategy (Goal 2, Action 2.2).

Figure 59. Priority Project 4 corridor





Figure 60. Heaton Avenue aerial imagery (Nearmap 2025)

Potential project – Heaton Avenue

Heaton Avenue is an interface with dense bushland, classified as River-Flat Eucalypt Forest and Cumberland Plain Woodland, both threatened ecological communities.

This area is subject to significant illegal entry, rubbish dumping and vehicle parking. Illegal bike jumps and tracks are a significant threat on this site and across the LGA. The addition of fencing, educational signage about the bushland reserve's conservation value and additional planting will help restore and protect local biodiversity.



Figure 61. Heaton Avenue (Google Streetview 2013)

Priority Project 5

Part of the Nepean River, part of Priority Corridor 7

Why focus on this area?

This is an urban interface section along the Nepean River, with known Platypus sightings. Some of the land is under council control while other sections are privately owned.

Figure 62. Priority Project 5 corridor





Figure 63. Peach Tree Creek aerial imagery (Nearmap 2025)

Potential project – Peach Tree Creek Corridor

The Peach Tree Creek Corridor was identified in the Penrith Green Grid Strategy and runs parallel to Priority Corridor 7, making it an ideal project to target biodiversity corridor health.

Some of the riparian corridor is privately owned by Panthers Leagues Club. This creates the opportunity to engage in collaborative land management between public and private land, with Panthers and other adjoining private landowners.



Figure 64. Peach Tree Creek (PCC Bushcare 2024)

Priority Project 6

Cranebrook Urban Linkage Opportunity, part of Priority Corridor 25

Why focus on this area?

This site is part of a priority corridor and includes an electricity easement. This is an opportunity to explore low plantings to support a pollinator corridor. It may be possible to extend this intervention along Dunheved Road and the powerline to the retail area and past the shops to link to Corridor 14 'Werrington Creek' and Corridor 16 Wianamatta Link.

Figure 65. Priority Project 6 corridor





Figure 66. Dunheved Road aerial imagery (Nearmap 2025)

Potential project – Dunheved Road

This project focuses on a small remnant patch of Cumberland Plain Woodland vegetation. It is subjected to degradation from unauthorised driveways cutting through the undergrowth for direct access to Dunheved Road, rubbish dumping along its edges and pressure from the neighbouring electrical easement corridor. Protecting this patch would involve fencing, signage, bush regeneration and removal of unauthorised driveways.



Figure 67. Dunheved Road (Google Streetview 2025)



What's happening in Penrith?

Community & Council Projects

Council has been working to protect the LGA's unique biota and promote biodiversity. Actions are occurring at different levels, in the implementation of strategies and planning legislation and on the ground planting initiatives and projects.

Figure 68. Bushwalk at Castlereagh Reserve (Penrith City Council 2022)

Strategies & planning documents

Strategic documents and action plans provide direction for land management to improve biodiversity. For example ...

ST MARYS TOWN CENTRE Urban Ecology Action Plan

The St Marys Urban Ecology Action Plan was prepared in 2023 for the St Marys Town Centre Masterplan. While a suburb-specific document, it still provides valuable actions to be implemented at an LGA wide scale which have informed strategy actions in this document.

RESILIENT PENRITH ACTION PLAN 2010–2030

The Resilient Penrith Action Plan 2021–2030 is a strategic framework developed by Penrith City Council to help the community respond to challenges like extreme heat, flooding, and bushfires. It supports biodiversity improvement by increasing urban tree canopy, restoring native vegetation, and creating green corridors that connect habitats across the city. Through projects like large-scale tree planting, citizen science programs, and integration into local planning controls, the plan enhances ecological resilience, protects threatened species and communities, and encourages community involvement in conserving Penrith's natural environment.

PENRITH GREEN GRID STRATEGY

Penrith hosts key habitat zones in western Sydney, making it a significant link between other core areas in the Blue Mountains and other LGAs. The Penrith Green Grid Strategy was created in response to the wider Sydney Green Grid Strategy and seeks to improve connections between greenspaces, increase liveability and mitigate urban heat. The document builds on existing strategic work such as Cooling the City and the Street and Park Tree management strategies and balances human and non-human needs.

Planting initiatives and projects

Council works on the ground to change places across Penrith through site specific greenspace projects and Bushcare planting programs. Examples include ...



Figure 69. Australian Association of Bush Regenerators (AABR) bushcare event (Ben Lloyds)

Greening our City – Be Cool to School Program

The Greening our City program will see substantial green infrastructure working to combat urban heat in Penrith so that the community can live more comfortably. One element of the widescale project has seen 3,000 new trees planted in the parklands and streets of Cambridge Park, a region with high heat risk due to its low canopy coverage.

Bushland Management Programs

Penrith City Council runs a variety of Bushcare management programs and promotes community events through the Bushcare Bulletin. Some current projects include Creating Canopies in Greater Sydney tree planting, three Saving our Species projects targeting endangered species conservation and



Figure 70. Penrith nursery (Penrith City Council 2024)

Planting for the Platypus on the Nepean River. Penrith Nursery Upgrade 2024

In April 2024, Penrith City Council was given a grant approval to improve the Council nursery, which provides thousands of indigenous plants every year to be planted across the LGA and support a green, cool and biodiverse City. The upgrade will increase the nursery's capacity to produce the volume and quality of plants needed to support Council's future environmental programs.

Cultural Burning Programs

Penrith City Council, in collaboration with Greater Sydney Local Land Services, has developed a trial cultural burning project at Teresa James Reserve in Claremont Meadows. As part of the first phase of the project a selective layered cultural burn was undertaken in June 2025. This was aimed to reduce fuel loads and prevalence of African Love Grass and other invasive species in a targeted effort to promote biodiversity, and enhance the health of the landscape. Participants, including First Nations community members and Council staff, were actively involved in the planning and execution of the burn, ensuring that cultural perspectives were integrated into land management practices. This collaborative effort not only contributed to ecological restoration but also fostering a deeper connection to the land and its cultural heritage.



Figure 71. Operation Pollinator Program planting (Penrith City Council)

Operation Pollinator

Council's City Presentation team led 'Operation Pollinator', an international biodiversity program which aims to introduce and establish native wildflowers crucial for bees and other pollinating insects. A site was established on the northern side of Werrington Lakes, within proximity to a valuable water source for pollinators, and providing amenity and visibility to the community. The team prepared the site to improve soil health and create nesting habitat then planted out the site with carefully chosen native species to attract a range of beneficial pollinating insects, small mammals, and birds. The project was delivered as a group effort including field staff in Service Area 2, and staff from the Bushland Management, Nursery, and Sustainability and Resilience teams.



Figure 72. Cranebrook bush food trail (Joshua Stains)

Cranebrook bush food trail

The 600m trail was constructed in the vicinity of Grey Gums Oval, Cranebrook through funding by the NSW Government under the Greening the Great West Walk Program. The concept was developed in partnership with Muru Mittigar, Nepean Community and Neighbourhood Services and Koolyangarra Aboriginal Family Centre. The walk includes tree groves, bushfood plant beds, habitat planting, natural play, seating and rest area, interpretive signage and a gathering space. Approximately 140 trees and bush tucker plants have been planted along the trail, providing habitat for native wildlife, and dedicated no mow zones protect native grasses, shrubs and groundcovers, providing enhanced biodiversity outcomes.



Figure 73. Fauna Habitat Box with sugar gliders inside (Penrith City Council n.d.)

Nesting boxes placed at Penrith Cemetery

The Cemetery team installed fauna nest boxes at Penrith Cemetery. The nest boxes are being used by many bird species including galahs, lorikeets, rosellas and wood ducks. The team prunes any trees that they need to remove on-site for habitat and add nest boxes if natural hollow logs are unavailable.

Habitat boxes installed at Council reserves

In 2023, Council installed 34 fauna habitat boxes across 8 reserves to combat the increased loss of habitat and old trees in the Penrith LGA, with reserves selected due to their lack of native vegetation, the presence of multiple large trees, and location to housing and popular areas. Inspections of the 34 habitat boxes via ladders or tree climbing equipment discovered the boxes were used by sugar gliders (see Figure 73), ringtail possums, potter wasps, huntsmen spiders, caterpillars, eucalypt leaf beetles, bush cockroaches, white cedar moths, ants, and wasps.



Figure 74. Making blue banded bee hotels (Penrith City Council 2024)

Bee bonanza for Pollinator Week

Council's Bushcare and Natural Systems teams delivers an annual bee themed activity during Pollinator Week in November each year and have done so since 2022. It is held at a different location each year. It educates the community on the importance of our native pollinators and their role in our bushland ecosystems and participants have the opportunity to build their own bee hotels and take them home to their gardens to encourage native bees particularly in urban areas. Australia has over 1,600 species of native bees and this event encourages participants to be citizen scientists by learning how to record what species they see. Participants learned the importance of native bees and how vital bees are to our bushland ecosystem, playing a crucial role in pollinating our native flowers.



Figure 75. Sydney Zoo's camels eating African olive sourced from Penrith (Penrith City Council n.d.)

Zoo partnership

Since April 2020, our Bushland Management team has been donating suitable native and target weed species to Sydney Zoo for the animals to enjoy. The zoo keepers come to Penrith on a weekly basis and together with Council staff collect leafy material for the zoo animals. The plant materials include exotic species like African Olive, Bamboo and Chinese Celtis and are used to feed elephants, giraffe, camels, zebra, and red panda. The fresh plants donated by Council provides important nutritional and enrichment components of the diets to several of Sydney Zoo's animals. Removing weeds is crucial in maintaining our natural bushland areas and increasing the health of the sensitive vegetation communities within Penrith.



Figure 76. Penrith resnagging fish habitat project (Penrith City Council 2024)

Fish habitat resnagging project

Penrith Council and the NSW Department of Primary Industries (DPI) is restoring fish habitat at Emu Green Reserve, Emu Heights and Fowler Reserve, Wallacia.

Stage one of this project commenced in 2020 and the project is now in its second stage and focuses on restoring native fish habitat to the Nepean River. Works include introducing woody debris, such as root balls and logs, back into our river systems that were removed due to historical river clearing, to help create natural habitat.

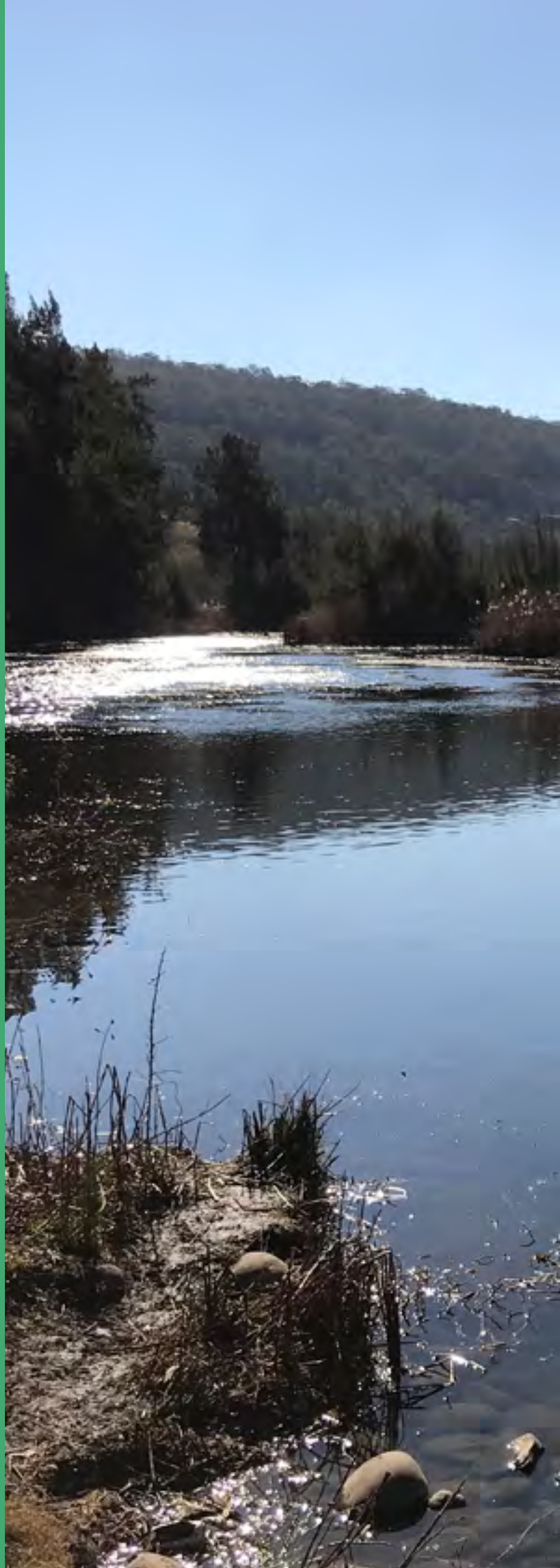
This habitat placed aims to encourage the native fish species populations to thrive. The works involved the use of machinery and were undertaken by highly trained experts in this field. The re-introduction of complex habitat using root balls and logs with hollows or branches will improve the aquatic ecology, provide native fish refuge and other resources, and lead to an increase in numbers of native recreational fishing species such as the Australian Bass.

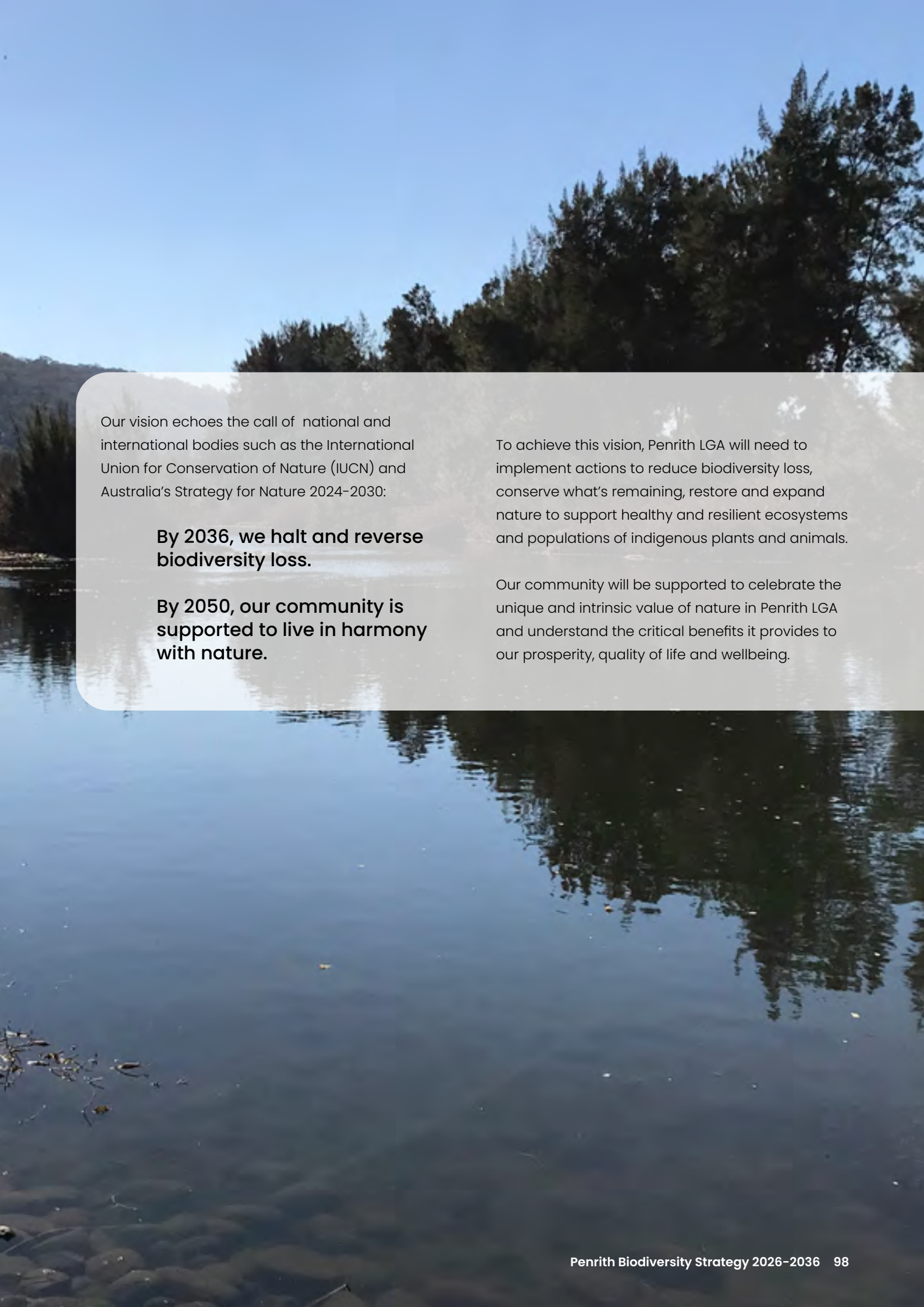
Where do we need to be in 10 years?

This section includes:

- Our vision

Figure 77. Emu Green Reserve (PCC 2018)





Our vision echoes the call of national and international bodies such as the International Union for Conservation of Nature (IUCN) and Australia's Strategy for Nature 2024–2030:

By 2036, we halt and reverse biodiversity loss.

By 2050, our community is supported to live in harmony with nature.

To achieve this vision, Penrith LGA will need to implement actions to reduce biodiversity loss, conserve what's remaining, restore and expand nature to support healthy and resilient ecosystems and populations of indigenous plants and animals.

Our community will be supported to celebrate the unique and intrinsic value of nature in Penrith LGA and understand the critical benefits it provides to our prosperity, quality of life and wellbeing.

Goals, Strategies & Actions

We have developed an action plan
to deliver on our vision and targets

Figure 78. Tawny Frogmouths (Wanda Optland)





Action Plan

The actions are grouped under 6 goals:



Maintaining Biodiversity

Protect and enhance existing biodiversity



Extending Biodiversity

Connect and foster new biodiversity



Caring for Country

Support and work with First Nations peoples to understand, connect to and care for Country



Promoting Healthy Community

Connect our community with nature to improve wellbeing



Collaborating & Forming Partnerships

Establish collaborative Council leadership and establish biodiversity partnerships



Staff Training & Compliance Communication

Manage and improve the built environment

Figure 79. *Melaleuca thymifolia* (Liz Carter)



Goal 1: Maintaining Biodiversity

Manage and enhance existing biodiversity



Why?

The diversity, abundance, and unique assemblages of flora and fauna in remnant bushland patches are irreplaceable. These areas serve as vital refuges for many species, including those that are threatened, and function as key nodes within the broader ecological network. The remaining high-quality patches of vegetation in our landscape are limited and fragmented, yet they support critical biodiversity that cannot be recreated once lost. Without protecting and enhancing these areas, the goals of this Strategy cannot be achieved. It is therefore essential to reduce threats and actively maintain and restore these important ecological assets.

We will:

1. Minimise threats to nature priority sites and corridors of significance.
2. Engage in threatened and significant species recovery plans, actions and research.
3. Improve conservation management and restoration of key public bushland reserves.

* For protection of private high biodiversity sites see Goal 6 : Planning and Development Policy

Legend

TIME

Ongoing = Annually or repeated periodically

Short = within 3 yrs by 2029

Medium = within 5 yrs by 2031

Long = within 10 yrs by 2036

 **Funded**

 **Part Funded**

 **Unfunded**

Strategy Actions

No.	Action	Time	Location
Minimise threats to nature at priority sites and corridors of significance and across the LGA			
1.1	Fauna crossing engineering • Work to deliver fauna friendly roads with appropriate traffic calming devices, fauna crossings, signage and exclusion fencing.	Medium	Focused
1.2	Cat containment requirements • Consider participation in initiatives designed to lessen the negative impacts on biodiversity from cats such as the RSPCA NSW project Keeping Cats Safe at Home, community consultation and advocacy.	Medium	LGA Wide
1.3	Invasive vertebrate pest management • Develop guidelines for best practice invasive vertebrate pest species management on Council owned land and integrate into Plans of Management. • Integrate guidelines into Plans of Management for key public reserves. • Implement the guidelines in high priority areas.	Long	LGA Wide
1.4	Natural Capital Accounting • Explore the feasibility and benefits of implementing natural capital accounting for Penrith to better understand, manage, and report on the value of our natural assets and ecosystem services.	Medium – Long	LGA Wide
1.5	Invasive flora management • Develop LGA wide guidelines for best practice eradication of invasive plant species and integrate into Plans of Management. • Implement the guidelines in high priority areas.	Short	LGA Wide
1.6	Invasive plant education • Develop community communications to outline the issues of garden plant escapees, value of planting indigenous species and how to access them at local indigenous nurseries. • Target education at market stalls to minimise invasive species sales from unlicensed growers.	Medium	LGA Wide
1.7	Light and noise pollution • Integrate a wildlife friendly lighting approach consistent with the national Light Pollution Guidelines for Wildlife (DEE 2020) and AS/NZS 4282:2019 into Council projects and assessment of external development applications. • Integrated noise shielding measures between high noise output assets and key fauna habitat patches/corridors. Integrate into Council projects where possible.	Short	Focused
1.8	Fencing and illegal rubbish dumping • Review asset monitoring and illegal dumping issues at key sites, including those managed by Council, implementing fencing and other mitigation measures where required to protect and maintain site biodiversity. • Review illegal dumping issues at key sites and consider and implement mitigation measures.	Short	Focused

No.	Action	Time	Location
1.9	Kangaroo and Emu encroachment Identify Kangaroo and Emu habitat encroachment sites across the LGA such as Dunheved Golf Course along Cadet Circuit and Private Circuit. Work with State Government and landowners to improve protection of animals.	Short	Focused
1.10	Infrastructure Roundtable Investigate opportunities for a round table meeting with government infrastructure providers on how manage vegetation and reduce wildlife hazards, such as better arboriculture practices to support tree health, illegal clearing by subcontractors and biodiversity sensitive maintenance practices.	Medium	Focused
Engage in threatened and significant species recovery plans, actions and research			
1.11	Koala Protection - Investigate feasibility of preparing and implementing a Koala Plan of Management. - Advocate to NSW Government on key issues affecting Koalas including resolution of the Koala SEPP and draft guidelines, developments and roads impacting on Koala habitat.	Short to ongoing	Focused
1.12	Platypus Protection - Investigate feasibility of preparing and implementing a Platypus Plan of Management. - Extend platypus eDNA project. Resample sites to confirm animals are persisting and add new sites after habitat restoration. - Mulgoa: Continue habitat monitoring and habitat restoration activities and explore innovative activities. - Support the Penrith Platypus Project.	Short to ongoing	Focused
1.13	Key species monitoring and action Establish monitoring to track presence of threatened focal species and develop appropriate conservation actions.	Ongoing	Focused

No.	Action	Time	Location
Improve conservation management and restoration of key public bushland reserves			
1.14	Natural Areas Conservation program • Develop Natural Areas Conservation program plan for key Council reserves. Include biodiversity sensitive maintenance practices and an asset funding review.	Medium	Focused
1.15	Low mow trials • Develop a low or no mow trial and implement recommendations.	Medium	Focused
1.16	Roadside and unformed road vegetation • Meet with key Council teams to determine improvements in how to protect, enhance and invest in roadside vegetation corridors. • Audit and develop actions for unformed roads.	Short	Focused
1.17	Support local indigenous nurseries • Support PCC Nursery's existing seed bank facility and seed collecting volunteer group and other local indigenous nurseries to secure/generate the volume of local and provenance sourced indigenous seed and plants for regeneration and urban projects.	Short	Focused
1.18	Riparian zone revegetation on Council land • Assess priority riparian zones and tributaries for land slip risk due to a lack of vegetation. • Develop a program of re-vegetation in partnership with the Community and Council nursery, drawing on best practice regeneration resources.	Medium	Focused
1.19	Riparian zone revegetation on private land • Assess private land abutting priority riparian zones and tributaries for land slip risk due to a lack of vegetation. • Develop a program of re-vegetation in partnership with the Community and Council nursery, drawing on best practice regeneration resources.	Medium	Focused
1.20	Seed production areas • Invest in purpose built threatened species Seed Production Areas (SPAs) and cutting production areas to alleviate pressure on remnant pockets and ensure availability of stock for revegetation. • Manage ex-situ potted collections, clonal propagation services in conjunction with DCCEEW Threatened Species officers.	Short	Focused
1.21	Provenance discussion paper • Develop a discussion paper on when and how to use climate adjusted provenance planting, what it means for urban and restoration projects. Action recommendations, such as integration into street, park and trail plantings, and plant selection guidance documents. Link with First Nations knowledge.	Long	Focused

Goal 2: Extending Biodiversity

Connect and foster new biodiversity



Why?

Our remnant pockets of vegetation need to be connected to enable species to travel and maintain healthy populations with high genetic diversity. Some species can also reside in corridors. We need to add nature in different forms in or near our identified LGA wide corridors of significance to support a diversity of indigenous flora and fauna in patches, links and stepping stones. For example, when upgrading a urban street or designing a new park, we can create habitat stepping stones to improve a corridors function or create new habitat for species that can reside in smaller patches, such as insect pollinators.

We will:

1. Ensure Council strategies, plans and policy prioritise the integration of biodiversity into the urban fabric.
2. Enrich public urban areas with nature to improve nature contact, liveability and create habitat stepping stones and corridors.
3. Increase tree canopy density and understorey across the LGA to improve biodiversity and liveability.

* for protection of significant corridors see Goal 6 : Planning and Development Policy

Legend

TIME

Ongoing = Annually or repeated periodically

Short = within 3 yrs by 2029

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Long = within 10 yrs by 2036

 **Funded**

 **Part Funded**

 **Unfunded**

Strategy Actions

No.	Action	Time	Location
Ensure Council strategies, plans and policy prioritise the integration of biodiversity into the urban			
2.1	Council design, construction and maintenance guidelines Undertake updates to Council design, construction, engineering and maintenance guidelines considering and incorporating contemporary biodiversity and stormwater management standards.	Short	LGA Wide
2.2	Drainage line/basin or easement planting Develop an evidence-based biodiversity sensitive position statement, guideline and specification on biodiverse plantings in drainage lines, basins, easements and riparian zones where flooding is a concern.	Medium	Focused
2.3	Integrate biodiversity into grant funding submissions Embed urban greening and biodiversity actions in all new appropriate Council infrastructure funding submissions to create biodiversity positive outcomes.	Ongoing	Focused
2.4	Community engagement and ownership Enable the community to input into the biodiversity goals of future places drawing on Biodiversity Sensitive Urban Design approaches.	Ongoing	Focused
2.5	Green infrastructure as an asset class Measure the benefits of green infrastructure on existing successful urban projects to apply to the business case for future projects.	Long	LGA Wide
2.6	Biodiversity Sensitive Urban Design Guide Review best practice literature to determine how future master planning and precinct planning can accommodate Biodiversity Sensitive Urban Design approaches.	Short	Focused
Enrich public urban areas with nature to improve nature contact, liveability and create habitat stepping stones and corridors			
2.7	Parks and public space pilot project - Create a biodiversity pilot project. Consider edible walking trails for indigenous foods and incorporate findings into asset design. - Consider developing biodiversity focused Nature Strip Guidelines, including planting plans and a prepare, plant and maintenance guide. - Investigate opportunities to enrich small parks with pollinator plantings. Develop pollinator planting strategy as part of Nature Strip Guidelines.	Medium	Focused
2.8	Community gardens - Use Council's Community Gardens Policy and Guidelines to identify and establish potential sites on Council land suitable for community gardens and promote these sites to community groups and residents wanting to establish and manage a community garden on Council land. - Provide advice to existing community gardens about how they can improve biodiversity.	As project presents	Focused

No.	Action	Time	Location
2.9	Retrofit carparks Consider opportunities to retrofit existing carparks and design new ones to reduce heat and support biodiversity goals.	As project presents	Focused
2.10	Investigate site suitability and commence implementation of priority precinct scale projects - Priority Project 1: Tempest Street unformed Council road - Priority Project 2: Werrington Creek along John Oxley Avenue - Priority Project 3: Chameleon Drive Reserve - Priority Project 4: Claremont Creek along Heaton Avenue - Priority Project 5: Peach Tree Creek corridor - Priority Project 6: Dunheved Road	As project presents	Focused
Increase tree canopy density and understorey in across the LGA to improve biodiversity and liveability			
2.11	Tree Canopy Cover Mapping Monitor tree canopy cover in priority areas and report on change within 5 years.	Medium	Focused
2.12	Significant Tree Register Develop a Significant Tree Register including Indigenous and exotic and hollow bearing trees, to identify and recognise the importance of significant trees and guide their management and protection.	Medium	LGA Wide
2.13	Integrated Catchment Management Advocate to the NSW Government for Wianamatta South Creek to ensure the objectives and requirements set out within the Western Sydney Aerotropolis Precinct Plan and other relevant strategic documents are being implemented.	Short	Focused

Figure 80. New Holland Honeyeater (Kirsten Hutton)



Goal 3: Caring for Country

Support staff, community and partners to work with First Nations peoples to understand, connect to and care for Country



Why?

First Nations people have been caring for Country across Australia for tens of thousands of years. Actively learning from and enacting their deep ecological knowledge can deliver great benefits for First Nations people in Penrith, the community and the environment, such as reducing the risk and intensity of wildfires through cool burning, among other land management practices.

We must:

1. Support First Nations social enterprise and grow partnerships with First Nations groups.
2. Understand, apply and promote Indigenous Ecological Knowledge and First Nations stewardship.

Legend

TIME

Ongoing = Annually or repeated periodically

Short = within 3 yrs by 2029

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Long = within 10 yrs by 2036

 **Funded**

 **Part Funded**

 **Unfunded**

Strategy Actions

No.	Action	Time	Location
Support First Nations social enterprise and grow partnerships with First Nations groups			
3.1	Traditional Custodian engagement Review staff knowledge and resources required to scale up engagement with Traditional Custodians and other regional partners to improve First Nations land management practices and enable ongoing engagement with First Nations people.	Short	Focused
3.2	Indigenous Rangers Scope the potential to co-fund an ongoing Indigenous Ranger role with adjoining municipalities after external funding ceases.	Medium	Focused
3.3	Caring for Country partnership Collaborate with other local councils and relevant stakeholders on the 'Caring for Country' partnership to ensure sharing of resources and approaches to research and promote First Nations land management practices.	Short	Focused
3.4	Land Council partnership protocol Scope a protocol for how Council can best partner with Land Councils to improve environmental and biodiversity outcomes.	Long	Focused
Ensure Council strategies, plans and policy prioritise the integration of biodiversity into the urban			
3.5	Cultural burning - Engage with Traditional Custodians and organisations to establish cultural burning practices. - Budget for appropriate burning regimes for all suitable Council reserves as part of management plans. Capture learnings and assess effectiveness from burnings and share the impact within and outside Council. - Assess and procure equipment required to undertake burning.	Short to ongoing	Focused
3.6	Seed collection protocol Update the seed collection protocol to support Council to go on Country and collect provenance sourced seeds for restoration works and Council nursery.	Short	Focused
3.7	Traditional Land Management training - Develop communication tools such as a videos to showcase local Traditional Land Management practices and why they are important for Penrith. Use this as part of engagement activities for this strategy. - Support First Nations people to run Country education programs. - Develop and roll out a Traditional Land Management training program for Council staff and community groups.	Medium	Focused
3.8	NAIDOC Week Event Incorporate the importance of local biodiversity to First Nations people and how traditional ecological knowledge can be used to protect and restore biodiversity as part of Council's NAIDOC	Short	Focused



Figure 81. Cranebrook Bush Food Trail (Josh Stains)



Goal 4: Promoting Healthy Community

Connect our community with nature to improve wellbeing



Why?

Understanding biodiversity and our role in it is essential for meaningful action. Many people don't realise how their everyday choices impact local ecosystems or how much has changed since pre-colonisation. From planting native species in gardens and balconies to supporting pollinators and reducing harmful practices like pesticide use or roaming pets, even small actions help connect fragmented habitats. On farms, weed control and bush regeneration can support biodiversity. Awareness of threats—like stormwater pollution, feral animals, and illegal clearing—is especially important near remnant bushland and threatened species habitat.

Hands-on involvement is key to building lasting care for biodiversity. People learn best when they can see and feel the impact of their efforts. Community planting days, bush regeneration, native gardening, soil workshops, and school or neighbourhood projects help people connect with nature and each other. These experiences foster a sense of ownership and make biodiversity protection personal—transforming values into everyday actions across Penrith. In addition, a significant portion of Penrith's biodiversity lies on private land, owned by community members. We need our community to engage in more targeted biodiversity behaviour if we are to reduce illegal clearing and protect, restore and expand biodiversity.

We will:

1. Encourage the community to experience and enjoy nature.
2. Support the community to understand the value of biodiversity and empower them to be active stewards of nature.
3. Collaborate with private land holders to protect and enhance sites and corridors of significance.
4. Support residents and private organisations to enrich their spaces with nature.

Legend

TIME

Ongoing = Annually or repeated periodically

Short = within 3 yrs by 2029

Medium = within 5 yrs by 2031

Long = within 10 yrs by 2036

 **Funded**

 **Part Funded**

 **Unfunded**

Strategy Actions

No.	Action	Time	Location
Encourage the community to experience and enjoy nature			
4.1	Citizen science Promote community and school engagement through citizen science events and school.	Medium	Focused
4.2	Animal Ambassadors Scope opportunities for key representatives of Council and high profile individuals within the community to become the ambassador for a nominated species and engage in activities to champion the protection of this species.	Short – Ongoing	Focused
4.3	Nature based community engagement - Deliver nature-based community engagement initiatives, including activities such as competitions and events that promote awareness, participation, and appreciation of biodiversity. - Identify community and stakeholder groups located in identified priority areas. Understand key benefits and concerns regarding increased biodiversity. Scope Focused engagement initiatives to engage these groups. - Develop and issue information pack on the value of biodiversity in the area to new and if possible existing residents. Prioritise rural residences and areas with high biodiversity values. - Develop a communication campaign to private property holders in the vicinity of selected priority sites to educate them on the benefit of protecting biodiversity on their property	Annual	Focused
4.4	Map of environmental groups and nature activities Map out environmental organisations and activities on a website. Link to this site from the Library, Council and other websites.	Medium	Focused
Support the community to understand the value of biodiversity and empower them to be active stewards of nature			
4.5	Accessible biodiversity resources - Consolidate and promote accessible biodiversity resources on Council's website that brings together Council and external information and highlights local initiatives. - Website reviewed every two years to update and improve information.	Short to ongoing	Focused
4.6	Site based educational signage Promote engagement with urban ecology through educational signage and/or QR codes at key sites that link to Council and other environmental websites, in accordance with Council's Wayfinding Guidelines.	Short	Focused
4.7	Council biodiversity induction and learning program Investigate opportunities for the development of education material for Councillors and Council staff.	Medium	Focused

No.	Action	Time	Location
4.8	Property biodiversity communication • Scope options to address the communication of land use and biodiversity values in property transactions, including how information is represented in advertising and conveyed to prospective buyers.	Short	Focused
4.9	Private land conservation • Identify opportunities for potential stewardship agreement sites. • Determine how to engage with landholders to make them aware of the options to manage their property for biodiversity conservation.	Short	Focused
Support residents and private organisations to enrich their spaces with nature			
4.10	Community / Council partnership • Explore opportunities for biodiversity focused community / Council partnership programs. • Provide funding for giveaways of native plant species grown by the PCC Nursery to residents.	Medium	Focused
4.11	Biodiversity education • Deliver community education programs that support biodiversity protection and enhancement, including resources on wildlife gardening, guidance for private landholders, and workshops on bush regeneration and weed management.	Short	Focused
4.12	Cemeteries collaboration • Meet with Council's Cemeteries Team to discuss biodiversity goals that could be integrated into their forward works program.	Long	Focused
4.13	Golf courses collaboration • Liaise with key golf courses to discuss conservation opportunities and grants for enhancing nature.	Long	Focused

No.	Action	Time	Location
4.14	Schools and childcare centres • Meet with key providers to discuss biodiversity including projects to develop biodiverse learning environments and nature play and connection in adjoining lands. • Host incursion/excursion events at schools to share knowledge and get children and young people excited about biodiversity in their neighbourhood.	Medium	Focused
4.15	Industrial lands • Look at national case studies on improving biodiversity and climate adaptation in industrial properties. Explore opportunities with owners to implement biodiversity improvements.	Long	Focused
4.16	Company Partnerships • Map out major multinational employers in the LGA. Understand their social and environmental responsibility agenda. Engage with relevant companies for biodiversity enhancement partnership opportunities.	Medium - Long	Focused

Goal 5: Collaborating & Forming Partnerships

Provide collaborative Council leadership and establish biodiversity partnerships



Why?

Biodiversity decline is a complex issue with many facets. Education and collaborative action between groups of different backgrounds and expertise is necessary to make sustained change and enable greater impact. By learning from and cooperating with others in an adaptive management approach, Council can harness knowledge from different sources and stay informed of new approaches.

We will:

1. Establish collaborative leadership, partnerships, resourcing, governance, monitoring and evaluation and data sharing

Legend

TIME

Ongoing = Annually or repeated periodically

Short = within 3 yrs by 2029

Medium = within 5 yrs by 2031

Long = within 10 yrs by 2036

 **Funded**

 **Part Funded**

 **Unfunded**

Strategy Actions

No.	Action	Time	Location
Establish collaborative leadership, partnerships, resourcing, governance, monitoring and evaluation and data sharing			
5.1	- Establish a governance framework for the implementation and oversight of Biodiversity Strategy actions - Develop an internal cross functional Biodiversity Advisory Group that meets as least three times a year to progress actions. - Develop a Steering Committee of senior Penrith City Council representatives and representatives from the Biodiversity Advisory Group that meets at least once a year.	Short	Focused
5.2	Report on Strategy targets and progress Reporting of key targets and progress annually.	Short	Focused
5.3	Regional meetings Engage with other Western Sydney Councils and relevant regional organisations to take a regional approach to biodiversity matters.	Medium	Focused

Goal 6: Staff Training & Compliance Communication

Manage and improve the built environment



Why?

Protecting and enhancing biodiversity requires a coordinated approach across planning, education, and enforcement. Providing training and education for planners, compliance officers, and decision-makers builds awareness of biodiversity's value and equips staff with the knowledge to support its protection in day-to-day decisions. Considering this understanding into planning pathways ensures biodiversity is considered from the outset—guiding land use, development design, and vegetation management to minimise impacts and promote ecological outcomes. At the same time, activating compliance processes helps safeguard priority sites from illegal clearing and degradation, while encouraging developers to go beyond minimum requirements to enhance biodiversity values.

We will:

1. Implement compliance and planning training and education on the value of biodiversity and how to support its protection and enhancement
2. Engage development compliance processes to protect priority sites from illegal clearing and encourage biodiversity enhancement

Legend

TIME

Ongoing = Annually or repeated periodically

Short = within 3 yrs by 2029

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Long = within 10 yrs by 2036

 **Funded**

 **Part Funded**

 **Unfunded**

Strategy Actions

No.	Action	Time	Location
Planning controls protect and enhance biodiversity			
6.1	Document review As part of scheduled reviews strategic planning documents will be updated to reflect and incorporate the biodiversity goals and actions from the Penrith Biodiversity Strategy.	Short – Medium	Focused
6.2	LEP and DCP review - As part of scheduled reviews, update Council's Local Environmental Plan (LEP) and Development Control Plan (DCP) to deliver improved biodiversity outcomes. Review environmental requirements from both Hawkesbury Nepean and Wianamatta South Creek catchments and incorporate within both where appropriate to ensure a consistent and holistic approach across the LGA. - Review and update Council's Natural Resource Sensitive Land Map to consider sites and corridors of significance identified in the Strategy for inclusion where appropriate.	Short – Medium	LGA Wide
6.3	Green Star and Green Factor tools Investigate opportunities to adopt and include Communities Green Star and other Green Star Certification.	Short	Focused
6.4	DCP developer biodiversity guidelines Post the DCP update. Develop developer biodiversity guidelines.	Medium	Focused
6.5	Vegetation Management Plan Guidelines Prepare a guideline for the preparation of Vegetation Management Plans.	Short	Focused
Development compliance processes to protect priority sites from illegal clearing and encourage biodiversity enhancement			
6.6	Best practice review Undertake a best practice review of other councils' approaches to reducing and proactively managing illegal vegetation clearing, and update Council's Compliance and Enforcement Guideline where appropriate.	Medium	Focused
6.7	Tree removal and replacement Work with Council's nursery to make available tree vouchers for residents to use for providing replacement trees following approval to remove trees on private land.	Short	Focused
6.8	Geospatial mapping tool - Develop and regularly update a geospatial map that highlights the LGA's biodiversity values in this strategy to understand which sites are most important for biodiversity. - Promote its use with the community and Council teams.	Short	LGA Wide

No.	Action	Time	Location
6.9	Cumberland Plain Conservation Plan • Continue to work with State Government and other relevant councils around the implementation of the Cumberland Plain Conservation Plan relating to education and compliance.	Short	Focused
6.10	Compliance Investigation • As part of the scheduled review of compliance enforcement policy and procedure ensure best practice for improved biodiversity and environmental outcomes are considered.	Short	Focused
6.11	Alignment with State Environmental Frameworks • Where appropriate, align Council's biodiversity requirements with those identified by the NSW Government to ensure a consistent and holistic approach across the entire Wianamatta South Creek catchment.	Medium	Focused

Strategy Implementation

This Strategy sets out a comprehensive long term agenda for biodiversity protection and improvement within Penrith. Given dependencies beyond Penrith City Council's control, such as funding and collaboration, it is important that this Strategy includes a monitoring and evaluation approach to navigate these challenges.

This section outlines key considerations in managing the evolution of this strategy and a monitoring and evaluation approach to enable priority actions and their delivery time frames to be actively managed and periodically reassessed.

Figure 82. Ring tree (Joshua Stains)





Resourcing & Funding

Council's current biodiversity programs are funded by a combination of general Council revenue and grant funding. Council has an annual budget and program of works for the implementation of biodiversity programs that sits alongside other Council priorities.

The ability to deliver the priorities in this Strategy in the stated time frames will be partly linked to the success of securing external grant funding, the availability of Council funding given other Council priorities and in-kind collaborative contributions.

It is important to note that Penrith Biodiversity Strategy 2026–2036 outlines a mix of actions which can be delivered within existing resources and implemented progressively over the 10-year life of the Strategy. In contrast, a number of more aspirational actions are also identified, which will be contingent on securing additional resources such as increased operational budgets, external grant funding, or additional staff capacity. There is no obligation to deliver all actions in full and any actions that remain incomplete at the conclusion of the Strategy may be reconsidered and potentially carried forward during the development of any subsequent Strategy.



Figure 83. Superb Fairy-wren (Kirsten Hutton)

Risk Management

In implementing the actions outlined in this Biodiversity Strategy, Council recognises the importance of identifying and managing both actual and perceived risks to public safety and community wellbeing. Actions that, due to their scope or potential impact, may pose risks will be subject to Council's risk assessment process prior to implementation. This process will assess factors such as public safety, environmental risk, operational feasibility, regulatory obligations, compliance and community impact and will inform decision making at each stage of action planning and delivery.

Council also acknowledges that risks and community perceptions of risk, may change over the life of the Biodiversity Strategy term. Accordingly, risk considerations will be revisited as actions are progressed, staged or reviewed over time. Where risks are identified or change, Council will determine appropriate responses based on the nature and level of risk, which may include implementing measures to reduce or minimise risk, adjusting the scope or timing of an action, or determining that an action cannot proceed as proposed. Where appropriate and at Council's discretion, stakeholder engagement may be undertaken as part of this risk-based approach. Where an action is assessed as unable to proceed due to unacceptable risk, clear justification will be provided and alternative approaches may be considered where practicable.

Council Funding

Expenditure on biodiversity programs varies year by year in accordance with Council's annual operational plan. The delivery of the Strategy will be incorporated into the

Operational Budget from financial year 2025/26, on a "subject to funding" basis. Operational budgets are used as leverage for matching funds from State and Federal government programs, allowing Council to expand its funding.

External Grant Funding

Council seeks additional funding for biodiversity conservation projects through external grants from Commonwealth and State programs such as the NSW Environmental Trust, the NSW Save our Species Program and the federal Environment Restoration Fund. Council enters grant partnerships with other organisations where grant program targets align with Council's core program outcomes. In this way, Council can extend the delivery

of environmental programs within Penrith and grow the value of rates. As these opportunities are dependent on external entities, they cannot be relied upon to deliver core Council functions but are a means of extending capacity opportunistically. This Strategy will increase the capacity of Council and the community to secure grant funding by providing a strategic framework with clear goals and actions to support funding applications, as well as directing priorities for grant applications.

Stakeholder Contributions

Collaboration and engagement with a diverse range of stakeholders will be necessary to deliver some of the actions within this Strategy. This includes in kind investment in joint funding applications, advocacy and project delivery.

Partnership In-Kind Contribution

Partnerships at all levels will be critical to successfully delivering this strategy. Everyone has a role to play in biodiversity conservation and we all need to work together to make the Strategy's vision a reality. A broad range of perspectives and expertise is needed to plan and implement the next steps, including from Federal, State, other Local Governments, Natural Resource Management groups, landholders, NGOs, industry, and the community.

Council will continue to collaborate with key agencies to manage biodiversity conservation in Penrith who may include:

- State Government agencies (eg Greater Sydney Local Land Service, Rural Fire Service, National Parks & Wildlife Service, Sydney Water, Water NSW, Transport for NSW, NSW Department of Climate Change, Energy, the Environment and Water, NSW Department of Planning, Housing & Infrastructure, Crown Lands NSW)
- other Local Governments
- Local Land Council
- Western Sydney University
- Hawkesbury Nepean Waterkeeper Alliance
- Mulgoa Valley Landcare Group
- Hawkesbury River County Council
- Hawkesbury Nepean Landcare Network
- Wallacia Progress Association
- Bushcare Groups
- Cumberland Land Conservancy
- Blue Mountains World Heritage Institute
- Landowners
- NGOs, industry, and the community
- Natural Resource Management groups

Community In-Kind Contribution

Many residents are environmentally engaged, with the skills and motivation to protect our local biodiversity. The contribution made by Bushcare volunteers, 16,678 volunteer hours over the past five years (an estimated valued at \$500,340) to support biodiversity conservation is also a significant factor in Council's success in procuring and delivering grant funded projects.

Private Landholder Engagement

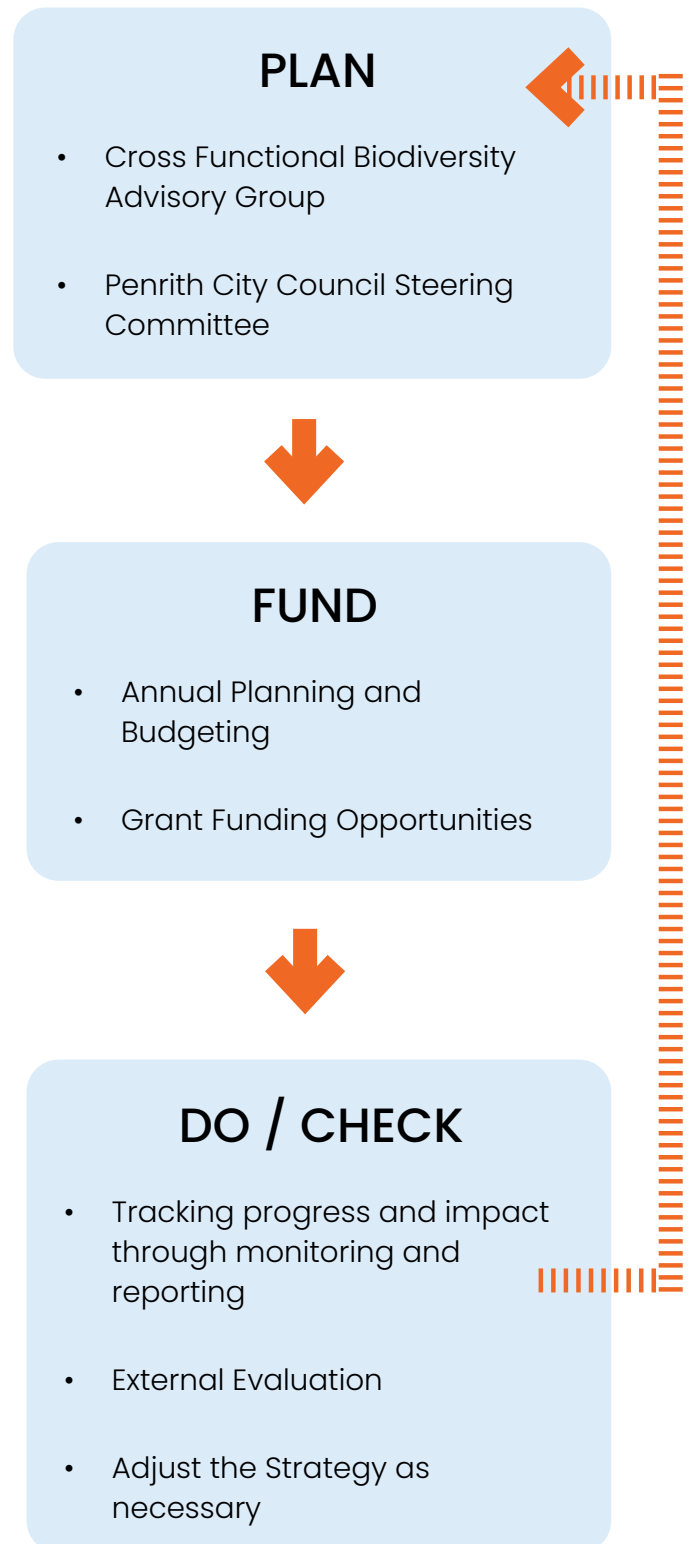
The majority of biodiversity, including many threatened species and ecological communities, exist on privately owned or leased land. In Penrith, this makes private land conservation important for achieving broader environmental outcomes.

A variety of mechanisms support biodiversity conservation on private land, as outlined below. This Strategy seeks to promote these programs and support interested private landholders to achieve better outcomes on their property:

1. Compliance monitoring and education;
2. Support programs such as Land care programs and Biodiversity Conservation Trust training programs;
3. Volunteer community stewardship agreements such as Biodiversity Conservation Agreements via the NSW Biodiversity Conservation Trust;
4. The Land for Wildlife (LFW) program, coordinated in NSW by the Community Environment Network (CEN) in partnership with the NSW Office of Environment and Heritage (OEH). Land for Wildlife is a voluntary, non-binding program for landowners who wish to manage part or all of their property for wildlife habitat and biodiversity. It is free to join and does not alter the legal status of the property. The program supports landholders in integrating nature conservation into broader land management practices;
5. Planning provisions in local instruments such as the Penrith Local Environmental Plan (LEP) and Development Control Plan (DCP).

Monitoring, Evaluating & Adjusting

While the goals of the Strategy will remain the same, the action plan will need to evolve in line with new technology, knowledge, resources and collaborations. The following monitoring and evaluation methodology accommodates this necessary evolution.



Plan

Cross Functional Biodiversity Advisory Group

A Biodiversity Advisory Group with cross functional Council representation to drive strategy implementation. Representation from key Council departments will identify and address barriers and harness opportunities, such as grant funding, and support collaboration across Council and with the community. This group will meet at least three times a year.

Penrith City Council Steering Committee

A steering committee of senior cross functional Council representatives, and key representatives from the Biodiversity Advisory Group will meet annually to discuss and support the Biodiversity Working Group to deliver the Strategy. Major roadblocks will be identified and be within the remit of the Committee to resolve.

Fund

Annual Planning and Budgeting

This Strategy, alongside advisory group discussions, will inform the departmental annual plans and budget requests. This will include discussion of how biodiversity can be embedded in other funded Council activities and projects, such as street upgrades, park upgrades, arts, cultural and health projects. These requests will then be considered in the overarching Council Community Plan, budget and reporting.

Grant Funding Opportunities

A grant coordination role is proposed to monitor grant opportunities to fund proposed actions in this Strategy. This will include discussion of how biodiversity can be embedded in other Council grant submissions. This role will be embedded in the advisory group and grant funding will be a standing agenda item.

Do / Check

Monitoring and reporting

Determining progress includes understanding whether the actions have been delivered and whether they have had the desired impact. The Strategy includes actions to

- track progress in delivering the actions.
- assess the potential to adopt a globally accepted city-scale biodiversity monitoring method such as the Singapore Biodiversity Index. This will enable Penrith to assess progress within the LGA compared to other cities across the world.
- monitor key impact targets and publish results internally and externally. This monitoring will be developed and managed by the advisory group and communicated to Council and Community annually. Results will be reported each year via Council's existing annual reporting process. This will include a review of funding requirements.

Adjusting the Strategy

Every 3 years, the short-term goals will need to be adjusted in an excel tracking tool. In the 9th year a full internal review will be required to inform the development of any new strategy.

Establishing performance indicators is important to the success of the Penrith Biodiversity Strategy. This process provides a framework for tracking progress, evaluating outcomes, and guiding adaptive management. By defining measurable targets for each strategic goal, Council can ensure that biodiversity actions are not only implemented but are effective in delivering tangible environmental, cultural, and community benefits. Performance indicators also support continuous improvement, enabling Council and its partners to respond to emerging challenges, celebrate achievements, and maintain momentum throughout the life of the Strategy. The following table provides initial performance indicators that can be used to measure progress and will be built upon as the Strategy evolves.

Performance Indicators	
Goal	Performance Indicators
Goal 2: Extending Biodiversity	The number of urban sites (e.g. parks, nature strips, reserves, council carparks and other public open spaces) that achieve a minimum threshold of native plant species richness (e.g. an agreed minimum number of locally indigenous species per site).
Goal 3: Caring for Country	Performance Measure: Number and area of Council managed sites using First Nations land management practices and ecological outcomes at these sites (e.g. species richness, reduction in invasive species, improved fire regimes).
Goal 4: Promoting Healthy Country	Number of residents participating in biodiversity related programs.

Get involved & help care for nature!

Sign up to the Council Newsletter...

Sign up to the Council newsletter so we can update you as initiatives are developed as part of this Strategy: <https://www.penrithcity.nsw.gov.au/community-library/community/our-place>

Join an environmental community group...

There are a range of bush regeneration activities and groups across the municipality, such as Land for Wildlife. Some are facilitated by Council and some are separate to Council.

Sign up to Penrith's Bushcare Bulletin and check in on Council's social media to keep up to date about what is happening and opportunities to get involved. See here to sign up: <https://www.penrithcity.nsw.gov.au/waste-environment/environment/bushland/bushcare-bulletin>



Understand the opportunities to conserve nature on your property... If you have a lot of land or land with high conservation value:

Private land represents a large portion of land within our LGA that wildlife use to live in and move through and can contain remnant plantings and Threatened Ecological Communities. As such encouraging and enabling landholders to take voluntary steps to manage their land to protect and preserve the natural environment on their property is critical.

This may entail maintaining and protecting native vegetation, planting local indigenous plants, managing weeds and pest animals, or restoring degraded areas.

The NSW Biodiversity Conservation Trust (BCT) offers private landholders a range of opportunities to protect, connect or restore biodiversity on their properties, and helps them manage the long-term or in-perpetuity conservation agreements they establish with BCT.

Figure 84. Emu Green native planting regeneration event (Penrith City Council 2021)

Get involved & help care for nature!

These agreements contribute to state, national and global ambitions to protect nature, with the Global Biodiversity Framework – agreed to by 196 countries, including Australia – setting a milestone target to protect 30 per cent of all lands and inland waters by 2030.

See the BCT website to learn more about their conservation options: <https://www.bct.nsw.gov.au/our-conservation-options>

If you're in a suburban site, plant a garden for wildlife...

You can learn more about what types of plants may attract local wildlife at your home: <https://www.penrithcity.nsw.gov.au/waste-environment/environment/connect-with-nature> You may consider planting out your verge as a garden for wildlife subject to certain conditions. See the Nature Conservancy Australia site for advice on how to build a garden for wildlife: <https://www.natureaustralia.org.au/get-involved/take-action/wildlife-friendly-garden/> Talk to your street, school, workplace or university about a plan for nature using this Strategy. Ask them what they are doing about improve biodiversity on their site and develop an action plan together.

Figure 85. Biodiverse streetscape photomontage (de Beaujeu 2024)



Get involved & help care for nature!

Look after urban biodiversity...

In the heat of summer, immature street trees and other native plants and animals in your area may benefit from additional water. A few cat-safe bird baths or frog hotels can mean the difference between life and death for some of our wildlife. Watering your tree in summer while its establishing will support the tree to deliver its benefits sooner.



Figure 86. Frog hotel community event
(Penrith City Council n.d.)

Become a citizen scientist...

Citizen scientists support researchers to understand how well urban greening is performing for biodiversity, for example, how many types of bird species there are in urban areas and whether more target species are arriving due to an increase in habitat. The NSW Government's 'Saving Our Species' program is one place to explore becoming a citizen scientist. The iNaturalist app enables you to take photos and have that plant or animal identified by an online community. Your data will then also inform state biodiversity data which is used to better protect species. See <https://www.inaturalist.org/>

Plant a street tree...

Residents can request a tree be planted on their nature strip by Council at any time, free of charge.

Additionally, Council's Adopt a Tree program launched in 2023. The Program provides residents with the opportunity to adopt and plant a tree on their own private property to increase urban canopy, shade and cooling. See here for how to register for the next round: <https://www.penrithcity.nsw.gov.au/waste-environment/resilient-penrith/tree-planting>

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