



Ku-ring-gai Council

# Biodiversity Policy

Version Number 2

Adopted: 15 February 2022

Effective: 16 February 2022



# Biodiversity Policy

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## Controlled Document Information

### Authorisation Details

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<b>Controlled Document Number:</b>	120	<b>TRIM Record No:</b>	2021/213437
<b>Controlled Document Type:</b>	Policy		
<b>Controlled Document Name:</b>	Biodiversity Policy		
<b>Version Number:</b>	2		
<b>Department:</b>	Strategy and Environment		
<b>Distribution:</b>	Internal and External		
<b>Review Period:</b> Max < 4 years	4	<b>Next Review Date:</b>	2026
<b>Document Status:</b>	Approved		
<b>Approval Type:</b>	Adopted by Council		
<b>Version Start Date:</b>	16/02/2022	<b>Version End Date:</b>	2026

### Related Document Information, Standards & References

<b>Related Legislation:</b>	<i>Biodiversity Conservation Act (NSW) 2016</i> <i>Biosecurity Act (Cth) 2015</i> <i>Crown Land Management Act (NSW) 2016</i> <i>Environmental Planning and Assessment Act (NSW) 1979</i> <i>Environment Protection and Biodiversity Conservation Act (Commonwealth) 1999</i> <i>Fisheries Management Act (NSW) 1994</i> <i>Local Government Act (NSW) 1993</i> <i>National Parks and Wildlife Act (NSW) 1974</i> <i>Protection of the Environment Operations Act (NSW) 1997</i> <i>Protection of the Environment Administration Act (NSW) 1991</i> <i>Rural Fires Act (NSW) 1997</i> <i>State Environmental Planning Policy 19 Bushland in Urban Areas</i> <i>State Environmental Planning Policy (Koala Habitat Protection 2020 and 2021)</i> <i>State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017</i> <i>Sydney Regional Environmental Plan 20 Hawkesbury Nepean River</i> <i>Sydney Regional Environment Plan (Sydney Harbour Catchment) 2005 (and associated DCP)</i> <i>Water Management Act (NSW) 2000</i>
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<b>Related Policies and Strategies (Council &amp; Internal)</b>	Bushfire Management Policy (2020) Bushland Dumping and Encroachment Policy (2020) Climate Change Policy (2020) Corporate Sustainability Action Plan (2020-21) Fauna Management Policy (2021) Hornsby Ku-ring-gai Bushfire Risk Management Plan (2016-21) Ku-ring-gai Biodiversity and Riparian Lands Study Ku-ring-gai Development Control Plan Ku-ring-gai Flying-fox Reserve Plan of Management Ku-ring-gai Local Environmental Plan 2015 (KLEP) Ku-ring-gai Local Strategic Planning Statement (2020) Natural Areas Plan of Management (Draft) and other site specific including bushland areas Recreation in Natural Areas Strategy (2020) Soil Landscape of Ku-ring-gai (1998) Sustainable Events Management Policy (2019) Towards Zero Emissions - 2030 Action Plan Urban Forest Policy (2020) Urban Forest Strategy (pending) Water Sensitive City Policy (2022) Water Sensitive City Strategy (2022) Weed Management Policy (2018)
<b>Related Policies and Documents (External)</b>	Australian Strategy for Nature 2019-2030 National Recovery Plan for the Grey-headed Flying-fox <i>Pteropus poliocephalus</i> The Greater Sydney Region Plan, A Metropolis of Three Cities The North District Plan

## Version History

Version Number	Version Start Date	Version End Date	Author	Details and Comments
1	10/08/2016	15/02/2022	Suzy Lykos Marnie Kikken	First version
2	16/02/2022	TBA	Jacob Sife, Penny Hemsworth, Caitlin Foulis	Policy scope has been updated to reflect legislative changes and Council policies and plans.

## Policy

### Purpose

This Policy provides a management framework for the protection and conservation of the Ku-ring-gai Local Government Area's biodiversity assets and values, in accordance with international, national and state agreements, legislation, policies and programs.

### Objectives

Objectives of this Policy are:

1. Conservation  
Retain, maintain and restore biodiversity within Ku-ring-gai LGA, including:
  - i. protecting biological diversity of native fauna and flora,
  - ii. protecting the ecological processes necessary for their continued existence,
  - iii. enhancing the recovery of threatened species, communities, populations and their habitats,
  - iv. identifying and mitigating key threatening processes,
  - v. protecting, restoring and enhancing connectivity corridors and buffers,
  - vi. applying best practice natural resource management and Ecologically Sustainable Development (ESD) principles.
2. Appropriate governance  
Biodiversity is considered central within strategic land use planning, policy and decision-making and is recognised as a key resource that provides significant environmental, social and economic benefit.
3. Knowledge and data  
Continually improve knowledge of the area's biodiversity resources, values and ecological processes through systematic surveys and data management.
4. Collaboration and partnerships  
Strategically collaborate with the community, educational institutions, NGOs, special interest groups, the Indigenous community and all levels of government to maintain, enhance and restore biodiversity at a local, regional and national level.
5. Measurement and improvement  
Undertake frequent monitoring and evaluation reporting to assess conservation performance; enable adaptive management; provide feedback to the community and identify future management priorities.
6. Climate change responsiveness  
Protect and enhance the carbon reservoir in Ku-ring-gai's ecosystems to mitigate against climate change and implement adaptive management responses to reduce and address the impacts of climate change on Ku-ring-gai's biodiversity.
7. Investment and innovation  
Continually seek investment opportunities with key organisations to advance improvements in biodiversity and to encourage innovation.

## Scope

This Policy applies to:

- Bushland and natural areas under the control of Council
- Open space, public parks, gardens, sporting fields and golf courses
- Roadside vegetation and nature strips
- Riparian zones and aquatic habitats
- Other public land
- Private land

## Responsibilities

Specific responsibility for the implementation of this policy lies with the following sections of Council:

- Environment and Sustainability
- Urban Planning and Heritage
- Property
- Development and Assessment
- Compliance and Regulation
- Infrastructure Services
- Traffic and Transport
- Waste and Cleaning Services
- Technical Services
- Corporate Communications
- Land Information
- Procurement and Contracts
- Community Development

Council's Manager Environment and Sustainability has overall responsibility for compliance with this Policy.

## Policy Statement

Ku-ring-gai is rich and unique in biodiversity, however our biodiversity is facing increased pressure due to a multitude of key threatening processes. Our local biodiversity is recognised as forming part of a wider regional, national and global network of ecological systems which Council, together with the community, has a duty to conserve. Implicit in this duty is the recognition of Aboriginal peoples' spiritual and cultural values and their association with the conservation of remnant landscapes and natural systems.

Climate change and biodiversity are interconnected. Whilst biodiversity is at risk from climate change, it plays a crucial role in sequestering and storing carbon dioxide from the atmosphere, making an important contribution to climate change mitigation. Consequently, conserving and sustainably managing biodiversity is critical to addressing climate change.

### Background

Biological diversity or “biodiversity” is comprised of the variety of plants, animals and microorganisms, the genes they contain and the ecosystems they form. Biodiversity is usually explored at three levels - genetic, species and ecosystem diversity.<sup>1</sup>

This layer of living organisms, termed the biosphere, physically and chemically unites the atmosphere (air), geosphere (mineral earth), and hydrosphere (water) into one environmental system through the collective metabolic activities of its innumerable plants, animals, and microbes. This system has allowed millions of species, including humans, to flourish. Thus, biodiversity management is not just about protecting particular species of flora and fauna, such as threatened species, it is about maintaining functioning ecosystems and their physical and chemical interactions that support all species.

Whilst there is a growing awareness of the challenges that biodiversity loss and climate change mean for our society, the role soil plays in these processes is often a neglected factor. Soil is the second biggest active carbon pool on the planet after the oceans and is home to more than one quarter of our planet's species; a living skin that provides food, fibre, shelter, natural recycling and a much-valued engineering media. If we are to meet our goals in terms of protecting biodiversity, fighting climate change, and safeguarding our resources, we need to improve our understanding and preservation of soil and soil functions.

Council recognises that biodiversity is part of Ku-ring-gai's common goods and that its condition and function in the landscape is intrinsic to the wellbeing of the community, including future generations; the health of our economy; and to our social and cultural identity.

### Policy context

Australia is home to between 600,000 and 700,000 species, many of which occur nowhere else in the world.<sup>2</sup> The importance of conserving local, native (indigenous) flora and fauna and their habitats has been recognised in international agreements and in legislation at Commonwealth and state levels and is reflected in a variety of regulations, policies, strategies and programs at all levels of government. In addition, a number of non-government organisations have developed biodiversity programs.

Australian international instruments which incorporate biodiversity values include the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Biological Diversity (CBD), the Convention on Wetlands (Ramsar, Iran, 1971), the Japan/Australia and China/Australia migratory bird agreements (JAMBA and CAMBA respectively), the Convention on Migratory Species, the Convention to Combat Desertification, the Commission for Sustainable Development and the United Nations Environment Programme.

The *Australian Strategy for Nature 2019-2030* builds on international commitments and sets an overarching framework for national, state/ territory and local actions that target nature. The vision of this strategy is to support healthy and functioning biological systems that promote an approach that strives to incorporate adaptation, resilience, and natural resource management across all environments.<sup>2</sup>

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The NSW Government is committed to securing the future of Australia's plants and animals through the Biodiversity Conservation Program. This program is delivered through *Saving our Species* and replaces the Priority Action Statement as a part of the *Biodiversity Conservation Act 2016*. It outlines the strategies for assisting threatened species, populations and ecological communities and provides a process for monitoring the overall outcomes and effectiveness of the program.<sup>3</sup>

Local government is a key player in delivering the SoS program and benefits by aligning and attracting investment with multiple stakeholders over the long-term. Whilst local government is the poorest of Australia's three spheres of government, it makes the greatest financial contribution to the environment.<sup>4</sup>Hence, it is important for local government to improve its resourcing opportunities.

Over and above this strategic involvement, Council's biodiversity and conservation responsibilities involve strategic land use planning, environmental impact assessment, regulation and compliance, surveys and mapping, community engagement and natural area management. All these management activities have tangible effects on biodiversity and threatened species, making local government a significant tier in delivering biodiversity outcomes.<sup>5</sup>

Of current focus for metropolitan councils is the delivery of the NSW Government's *A Metropolis of Three Cities*, which establishes a 20 year plan to manage growth and change in Greater Sydney. A core component of the plan is to manage environmental resources and improve sustainability. This includes protecting and enhancing bushland and biodiversity as well as increasing urban canopy cover and green grid connections and is delivered through the *Ku-ring-gai Local Strategic Planning Statement (2020)*.<sup>6</sup>

It is key for local government to form constructive and effective partnerships with all spheres of government both in its' administrative and advocacy capacity. This will also enable jurisdictional flexibility that corresponds to the scientific imperatives of biodiversity protection at a landscape level.

## **Ku-ring-gai's biodiversity**

The Ku-ring-gai LGA is favourably positioned in an area connecting a predominantly low-density urban environment with extensive bushland, including three national parks. Its unique natural diversity is derived from its elevated position, high rainfall and a deeply dissected plateau of varying, underlying geology. Water flows through a myriad of creeks spanning a total of 200km, eventually shedding into the three catchment areas of Cowan Creek, Middle Harbour and Lane Cove River, all highly valued recreational water bodies. This combination of an incised topography, deep soils and high precipitation give rise to typically wet sclerophyll forest ecology of high conservation value.<sup>7</sup> Ku-ring-gai's natural habitat remnants are regarded as the last remaining biodiversity hotspots in the Sydney metropolitan area.<sup>7</sup>

The mosaic of bushland and urban forest in the LGA consists of biodiversity in protected reserves as well as connected vegetation corridors in public parks, golf courses, ovals, residential streets and private gardens. Both large areas of bushland and isolated patches of habitat, including individual trees with hollows and roosting sites, all contribute to the total habitat resources within the LGA. They contain not only locally and regionally significant and threatened ecological communities, species and populations, but also an important seed-bank that together forms Council's Greenweb, Ku-ring-gai's biodiversity reservoir.

Greenweb categories and their associated maps guide the management of significant vegetation and habitat, biodiversity corridors and waterways throughout the LGA. In addition, Ku-ring-gai's Greenweb contributes to our comfort, coping and carrying capacity through a myriad of essential health and well-being services ranging from carbon storage and sequestering, air pollution amelioration, improved water quality, thermal regulation, food, recreation, place and belonging.

Within this green network in an LGA of 85 km<sup>2</sup>, Council manages 1,160 hectares of bushland, comprising 24 vegetation communities. This includes 7 vegetation communities listed under the *NSW Biodiversity Conservation Act 2016* (BC Act) and 4 listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). These vegetation communities provide habitat for more than 700 native plant species and over 300 vertebrate species, including 18 threatened flora species and

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30 threatened fauna species (13 mammal, 14 bird, 2 amphibian and 1 reptile species). Many more threatened species have been recorded either infrequently or are considered transient visitors to the area which are required to be considered in impact assessments. For a comprehensive listing of Ku-ring-gai’s flora and fauna, refer to Council’s Biodiversity and Riparian Lands Study.<sup>8</sup>

Land history has considerably influenced the distribution of Ku-ring-gai’s biodiversity. The pattern of development along the fertile ridges of the North Shore rail line, constructed in the 1890s, has largely reduced shale derived High Forest to critically endangered scattered trees in residential gardens. Steeper landforms associated with Hawkesbury Sandstone formation were not readily developed until post World War 2 and retained a greater native vegetation cover than developments on gentler slopes.

Over 70% of Ku-ring-gai’s Endangered Ecological Communities (EECs) now occur on private land in a highly fragmented state. The need for conservation on private land, in addition to Council’s reserve system, is essential in conserving Ku-ring-gai’s biodiversity assets.

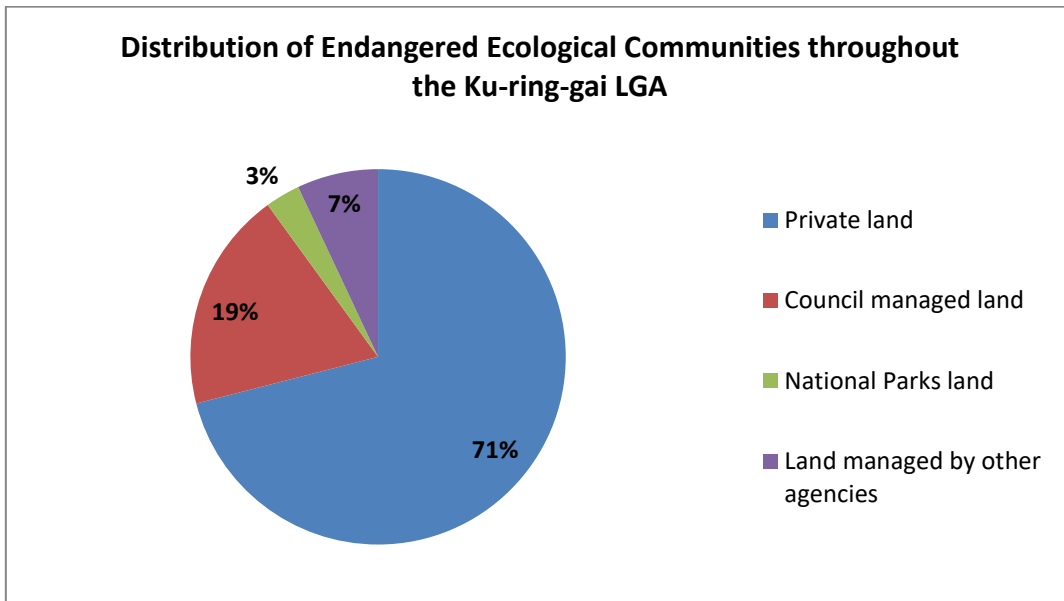


Figure 1 Distribution of Endangered Ecological Communities within the Ku-ring-gai Local Government Area

**Management challenge**

The 2018 NSW State of the Environment (SoE) report described the status of biodiversity in NSW as ‘poor’, with over a thousand species listed as threatened.<sup>9</sup>

In the three years since the previous SoE was released, there has been a three percent increase in the number of threatened species. The clearing of native vegetation and the associated destruction and fragmentation of habitat has been identified as one of the greatest threats to biodiversity, affecting 87% of terrestrial threatened species. Invasive species have been implicated in the decline of over 70% of listed threatened species.<sup>9</sup>

Climate change is affecting biodiversity both directly (from changes such as rising temperatures and sea levels, changes in water availability and ocean chemistry) and indirectly (via interactions with other threats to ecosystem function and changes to the interactions between species) and is expected to exacerbate existing threats to biodiversity. Relatively modest changes in the climate over the past few decades have already affected species distributions, life cycle events, abundances, genetic make-up, species interactions and ecosystem-level processes.<sup>10</sup>

The accelerated rates of change in some climate variables may overwhelm the adaptive capacity of many species and lead to widespread reorganisation of ecosystems and an increasing number of extinctions, compounded by other concurrent threats to biodiversity limiting potential responses.

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Moreover, the SoE lists invasive pests, weeds and diseases as one of the top seven factors threatening Australia's fauna and flora and their unique habitats. These biosecurity risks are recognised under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), *Biodiversity Conservation Act 2016* (NSW), and the *Biosecurity Act 2015* (Cth).

There are currently 46 key threatening processes listed under the BC Act. The SoE 2018 purports that these pressures operate together to have a cumulative or synergistic impact on species' decline.<sup>9</sup>

In particular, landscapes in Sydney are facing a death from a thousand cuts from the cumulative impacts associated with developments and major projects to uncompensated exemption impacts. Negative impacts from urban runoff and sediment loads, weed invasion, feral animals, pathogens and inappropriate fire regimes have synergistically impaired the resilience of ecosystems, necessitating even greater restoration effort bargained through the re-distribution of finite local government resources.

Whereas historically environmental legislation emerged from concerns with land degradation arising from wide-scale clearing and agriculture, the current era of environmental policy is driven by the impact of fast urban growth and infrastructure on the environment's capacity to continue to support economic growth whilst maintaining natural amenity. Undeniably, the future challenge for Ku-ring-gai Council is to bridge these seemingly incongruent objectives by delivering a high quality sustainable built environment whilst protecting and enhancing the natural environment.

## Management principles

Under the *NSW Local Government Act 1993*, councils are required to manage the local environment with consideration to the principles of Ecologically Sustainable Development (ESD). Section 7e of the Act requires 'councils, councillors and council employees to have regard to ESD principles in carrying out all of their responsibilities'. A shared responsibility management framework, involving Council, the community, private landholders, businesses, Aboriginal Land Councils, NGOs, public utilities and other agencies is essential in delivering positive biodiversity outcomes across the LGA.

### Ecologically Sustainable Development

In accordance with the *Protection of the Environment Administration Act 1991*, ecologically sustainable development can be achieved through the implementation of the following management principles and programs:

- A. The precautionary principle – namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:
  - i. careful evaluation to avoid, wherever practicable, significant, serious or irreversible damage to the environment, and
  - ii. an assessment of the risk-weighted consequences of various options;
- B. Inter-generational equity – namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations;
- C. Conservation of biological diversity and ecological integrity – namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration;
- D. Improved valuation, pricing and incentive mechanisms – namely, that environmental factors should be included in the valuation of assets and services, such as:
  - i. polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,
  - ii. the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

- iii. environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market based mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

#### Evidence based management

Sound underlying scientific principles together with the most up to date science and research will inform decision-making and enable best practice.

#### Adaptive management

Biodiversity management must incorporate an adaptive approach that is flexible and inclusive, continually improved by testing and learning to drive best practice.

#### In-situ conservation

Biodiversity is best conserved in-situ where landscapes, ecosystems and ecological processes maintain species in their natural habitats. Complementary ex-situ conservation activities should support in-situ conservation.

#### Mitigation hierarchy

The mitigation hierarchy for biodiversity offsetting is applied to address 'no net loss' outcomes in planning and development assessment. This mitigation hierarchy specifies offsets will be used as a last resort, after avoidance, minimisation and mitigation measures have been exhausted.

#### Landscape management

Landscape-level assessments of conservation priorities and development should inform the application of the mitigation hierarchy. They should be conducted in advance of project decisions and investments and should identify important conservation values and potential direct, indirect, and cumulative impacts to these values.

#### Cumulative impacts

Seek a cumulative improvement to biodiversity from all relevant activity and development decisions.

### **Implementation program**

The importance of protecting and enhancing Ku-ring-gai's biodiversity is reflected in the long-term objectives of Council's Community Strategic Plan, namely:

- A community empowered with knowledge, learning and information that benefits the environment
- Our bushland is rich with native flora and fauna

Implementation of this Policy is divided into the following 3 management streams:

1. Natural Resource Management
2. Statutory Planning, Policy and Regulation
3. Partnerships, Advocacy and Education

## 1. Natural Resource Management

The protection and management of biodiversity relies upon the fundamental principles of retaining, maintaining and restoring ecosystem structure and function and managing threatening processes to species and populations. From an ecological and economic perspective, it is wiser to prevent biodiversity decline and protect remnant vegetation rather than trying to ameliorate damage to typically complex systems.

The protection of our biodiversity will require management actions from a species level to a landscape level, which improve the extent and condition of native vegetation, promote landscape functionality and improve urban forest and bushland resilience and connectivity.

Council must assess the potential impacts to biodiversity from development, capital works and operational activities and planning decisions. These decisions should be informed by current and accurate biodiversity data as well as a commitment to continuing fauna and flora monitoring programs.

A key natural resource management tool used by Council to achieve ecosystem maintenance, restoration and resilience is the use of controlled burning. Fire has been fundamental in shaping current biodiversity resources and its exclusion can potentially lead to vegetation change and rapid species declines, even localised extinctions. The revitalisation of species richness in our bushland areas and smaller reserves is incumbent on appropriate fire intensity and frequency.

There is also significant potential for cutting future emissions of greenhouse gases through maintaining healthy ecosystems and restoring degraded environments, with these ecosystems acting as carbon reservoirs.

## 2. Statutory Planning, Policy & Regulation

Statutory planning processes provide a mechanism for integrating biodiversity protection and conservation into decision-making frameworks, including strategic land use planning and development approvals (through local environmental plans and development control plans).

Emerging policy frameworks in NSW will influence the regulation of biodiversity through a suite of new offsetting provisions. It is imperative in the face of change that Council manages and ensures that offsetting provides a co-ordinated interagency 'improve or maintain' outcome for Ku-ring-gai's biodiversity, through the no-net-loss provisions in its Local Environmental Plan, that specify that offsets will be used as a last resort, after avoidance, minimisation and mitigation measures have been exhausted.

## 3. Partnership, Advocacy and Education

Engaging landholders is essential to increase the uptake of conservation actions and long-term protection mechanisms on private land and to facilitate biodiversity conservation across the Ku-ring-gai LGA.

Restricting biodiversity to public reserves will eventually lead to incremental genetic erosion and the eventual collapse of species and communities. It also follows that the greatest losses to biodiversity will potentially come from urban development through direct loss and fragmentation. Whilst statutory planning and policy will assist in reducing the rate of biodiversity loss on private lands through legislation, the delivery and achievement of improved biodiversity outcomes can only be realised through the support and involvement of the broader local community.

Council needs to tailor and implement engagement and capacity building opportunities and educational resources to the varying levels of interest, experience and availability of the local community. With a changing demographic, innovative ways of interacting with community sectors need to be created to ensure that messages remain relevant, compelling, accessible, easily understood and practical to trigger attitude and long-term behaviour change.

### Implementation activities

To meet the objectives of this policy, the following activities will be implemented across a number of sections of Council.

Management Activity	Strategy			Development and Regulation		Operations				Community		Corporate		
	Environment and Sustainability	Urban Planning & Heritage	Property	Development & Assessment	Compliance & Regulation	Infrastructure Services	Traffic and Transport	Technical Services	Waste and Cleaning Services	Visitor Experience and Events	Corporate Communication	Land Information	Procurement and Contracts	Community Development
<b>Generic</b>														
Implement actions of relevant Threat Abatement Plans, Recovery Plans and Priority Action Statements (PAS) to achieve best practice biodiversity management.	√			√		√		√						
Utilise statutory planning provisions to protect Greenweb, Biodiversity Lands and Riparian Lands, including prescribed buffers.	√	√	√	√	√	√	√	√	√	√				
<b>Bushland and Urban Forest</b>														
Prioritise bushland restoration and investment using Council’s Bushland Prioritisation Matrix and relevant conservation investment strategies.	√					√								
Implement site management plans to guide actions within Council’s priority bushland management and care program (Bushcare, Streetcare, Trailcare, Parkcare) sites.	√					√								

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Develop practical indicators of terrestrial biodiversity health, including monitoring and reporting.	√					√								
Investigate, facilitate and promote improved legal security for areas of biodiversity where appropriate. Such as Biodiversity Stewardship Sites, Conservation Agreements, Covenants, land acquisition and classification / categorisation as natural areas under the <i>Local Government Act 1993</i> .	√	√		√		√						√		
Minimise fragmentation and promote, protect and enhance connectivity corridors including Riparian Lands, Green Grid and Greenweb (including biodiversity corridors).	√	√	√	√	√	√		√		√	√			
Implement Council’s bushland dumping and encroachment program.	√			√		√			√					
Strategically plan and manage the sustainable recreational use of bushland.	√	√				√				√				
Implement Council’s Urban Forest Policy and Strategy actions.	√	√		√		√		√		√	√	√		

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<b>Riparian</b>														
Implement Council’s Water Sensitive City Policy and future Strategy actions.	√	√	√	√	√	√	√	√	√	√	√	√	√	
Apply best practice guidelines for restoration of riparian and instream habitats.	√			√		√		√						
Implement strategic water quality sampling program to establish water quality trends including biological, physical and chemical indicators.	√													
<b>Bushfire</b>														
Implement Council’s Bushfire Management Policy actions.	√	√	√	√	√	√	√	√		√	√	√		
Undertake controlled burning activity with regard to preferred ecological fire regimes.	√					√								
Identify and map fire history across all Council managed land, and link to monitoring and reporting.	√					√						√		
Implement measures to retain and protect structurally rich fauna refugia during and after controlled burning, as appropriate.	√					√								

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Develop and implement procedures to guide consistent and best practice approach to controlled burning.	√					√								
Council will seek to minimise loss of bushland for asset protection zones by utilising strategies governed by principles of ecological sustainability through the use of improved planning, building design and construction controls as an effective fire mitigation measure.	√	√	√	√		√		√						
<b>Monitoring and Evaluation</b>														
Develop and implement biodiversity surveys, monitoring and inventories to support land use management decision-making and environmental performance.	√					√								
Implement timely and quality assured inter-agency data capture to record locally rare and threatened species.	√					√						√		
Implement Urban Forest Monitoring Program (including periodic monitoring of canopy cover) as per the Urban Forest Policy and future Strategy.	√	√		√		√		√			√	√		

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Investigate improved provision and capture of soil data (such as eSPADE, soil profile mapping and reports).	√	√				√		√				√		
<b>Climate Change</b>														
Increase our understanding of climate change impacts on biodiversity to inform future adaptation priorities for biodiversity conservation programs.	√					√				√	√			
Integrate knowledge of climate change impacts into Council biodiversity / land management programs and policies.	√			√		√								
Implement priority actions from Towards Zero Emissions – 2030 Action Plan as they relate to biodiversity.	√	√		√		√		√						
<b>Biosecurity and Pest Fauna</b>														
Implement pest animal and targeted weed control programs on public and private land by coordinating with other land management agencies, adjacent local government areas and residents.	√			√	√	√								
Develop and implement invasive species and companion animal educational material and programs.	√			√		√				√	√	√		

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Management Activity	Strategy			Development and Regulation		Operations				Community		Corporate		
	Environment and Sustainability	Urban Planning & Heritage	Property	Development & Assessment	Compliance & Regulation	Infrastructure Services	Traffic and Transport	Technical Services	Waste and Cleaning Services	Visitor Experience and Events	Corporate Communication	Land Information	Procurement and Contracts	Community Development
Create and implement a Ku-ring-gai Plant Pathogen Strategy.	√					√								
<b>Statutory Planning, Policy and Regulation</b>														
Ensure Council issued leases, licenses and permits in or adjacent to Greenweb are appropriately assessed and managed (including the development of standard condition).	√		√			√		√						√
Ensure Plans of Management for Council managed lands (as required under <i>the Local Government Act 1993</i> and <i>Crown Lands Management Act 2016</i> ) address the protection, management and potential for enhancement of biodiversity.	√	√	√			√								
Ensure assessment of development, activities and proposals affecting biodiversity are subject to comprehensive ecological assessment. In accordance with current legislation, state policies, local planning controls, relevant Council policies, strategies, guidelines, procedures and codes of conduct, NSW Land and Environment Court	√	√	√	√	√	√		√	√					

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Principles and best practice guidelines as set by DPIE (including relevant Recovery Plans, PAS and threat abatement plans).														
Audit and where necessary enforce the effective implementation of environmental consents and approvals for the life of the development or activity, as resources permit.	√	√	√	√	√			√						
Investigate a mechanism to ensure certifiers and utility providers are aware of environmental responsibilities and appropriately enforce.	√			√		√		√						
Ensure compliance with, and where relevant investigate breaches of, biodiversity conditions, controls and legislation (where resources permit).	√				√			√						
Acquire and reserve bushland with significant ecological, habitat, recreational or scenic values as resources permit.	√	√	√			√								

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Avoid impacts to high biodiversity conservation values recognising that some values cannot be offset in accordance with the mitigation hierarchy.	√	√	√	√		√	√	√		√				√
<b>Partnerships, Advocacy and Education</b>														
Continue to expand the base of current environmental civic leadership such as Care programs (Bushcare, Parkcare, Trailcare and Streetcare) and fauna monitoring programs (Eastern Pygmy-possum and Grey-headed Flying-fox) to other areas including private lands.	√					√				√	√			
Develop and implement a suite of tailored community education, engagement and capacity building resources and programs specifically targeted at biodiversity protection, management and enhancement.	√					√				√	√			

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Investigate and develop active partnerships to enhance biodiversity outcomes with stakeholders (for example, programs, activities, promotion and strategic planning with Government, land holders, citizen science programs, start-ups, and businesses).	√	√				√		√		√				
Support research projects conducted in the LGA into best practice biodiversity management with appropriate tertiary institutions.	√	√				√								
Increase Council staff engagement and understanding of biodiversity values, threats and management through targeted training.	√					√								
Continue partnership with the Aboriginal Heritage Office to ensure that traditional knowledge is incorporated into land management and that significant aboriginal sites are acknowledged and appropriately protected.	√	√				√						√		

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Provide environmental interpretation of features with special ecological and cultural significance where appropriate.	√					√					√			
Actively use multiple communication channels to inform the community on biodiversity discoveries and practices.	√					√				√	√			
Proactively engage with State and Federal Government and other relevant agencies to influence policies and reforms that affects local biodiversity and Council’s biodiversity management program.	√	√				√								

### Monitoring and evaluation

Results of the monitoring are reported against Council’s Delivery Program and Operational Plan and are presented to the community as part of Council’s Annual Report. Greenweb and vegetation mapping are undertaken every three to four years.

Council will monitor and report against this Policy as follows:

Objectives	Data application / indicator	Data collection / measurement
<p><b>Conservation</b></p> <p>Retain, maintain and restore biodiversity within Ku-ring-gai LGA, including:</p> <p>i) protecting biological diversity of native fauna and flora,</p> <p>ii) protecting the ecological processes necessary for their continued existence,</p> <p>iii) enhancing the recovery of threatened species, communities, populations and their habitats,</p> <p>iv) identifying and mitigating key threatening processes, and</p> <p>v) protecting, restoring and enhancing biodiversity corridors and buffers,</p> <p>vi) applying best practice natural resource management and ESD principles.</p>	<p>Improvement in bushland condition rating for areas actively managed through a bushland site management plan</p> <p>Maintain or improve the area of Council bushland regenerated (annually)</p>	<p>Monitoring conducted through bushland site management plans and the Bushland Prioritisation Matrix</p> <p>Area of bushland actively managed by Council</p> <p>Area of bushland actively managed by volunteers</p> <p>Number of bushland dumping and encroachment issues investigated by Council.</p> <p>Linear meters proactively monitored for dumping and encroachments by Council</p>
	<p>Maintain and improve in-stream and riparian corridor health</p> <p>Water quality maintained or improved</p> <p>Water Sensitive Cities Strategy created and implemented</p>	<p>Lengths of creek bank restored and maintained</p> <p>Number of stormwater improvement devices installed</p> <p>Macroinvertebrate sampling</p> <p>Water quality monitoring and stream health score</p>
	<p>Abundance of desirable species post burn and comparisons of changes in species richness and composition before and after burning</p>	<p>Control burn history mapped</p> <p>Number of eco-burn sites conducted</p>
	<p>Applied in environmental and development assessments and to inform management activities</p>	<p>Species presence and distribution mapping (regularly updated) and fauna habitat mapping (opportunistically updated) made available to Council staff</p>
	<p>Threatening processes are controlled</p> <p>Ku-ring-gai Plant Pathogen Strategy created and implemented</p>	<p>Number of targeted pest species programs implemented</p> <p>Number of new <i>Phytophthora cinnamomi</i> sites investigated</p>
	<p>Management activities conform to actions listed in relevant Recovery Plans, Priorities Action Statement and Threat Abatement Plans</p>	<p>Relevant Recovery Plans, Priorities Action Statement and Threat Abatement Plans are made available on Council’s website and align with Council’s plans of management and site management plans (bushland/ Care sites)</p>

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Objectives	Data application / indicator	Data collection / measurement
	<p>Maintain or increase the number and/ or extent of bushland reserves and their protection status</p> <p>Maintain or increase Ku-ring-gai's urban forest canopy (as informed by the Urban Forest Strategy). Greenweb biodiversity corridors reviewed, promoted, maintained or improved.</p> <p>Greenweb extent maintained or increased</p> <p>Green Grid Strategy and Urban Forest Strategy created and implemented</p>	<p>Number and hectares of bushland reserves</p> <p>Review of Ku-ring-gai vegetation mapping and canopy mapping</p> <p>Area of urban forest canopy</p> <p>Greenweb mapping reviewed and updated</p> <p>Canopy extent within biodiversity corridors improved or maintained</p> <p>Number of Green Grids, including infrastructure, improved</p>
<p><b>Appropriate governance</b></p> <p>Biodiversity is considered central within strategic land use planning, policy and decision-making and is recognised as a key resource that provides significant environmental, social and economic benefit.</p>	<p>Appropriate policies, assessment processes, planning controls and decision-making tools are in place that address and integrate biodiversity</p>	<p>LEP / DCP</p> <p>Environmental assessment procedures and processes</p> <p>Bush Fire Prone Lands Mapping</p> <p>Number of Wildlife Protections Areas/ formal reserves/ Conservation Agreements, Biodiversity Stewardship Sites and biodiversity corridors created or expanded</p>
<p><b>Knowledge and data</b></p> <p>Continually improve knowledge of the area's biodiversity resources, values and ecological processes through systematic surveys and data management</p>	<p>Applied in environmental and development assessments and to inform management activities</p> <p>Improvement in environmental assessment competency</p> <p>Increased community knowledge and understanding</p>	<p>Species presence and distribution mapping</p> <p>Fauna habitat mapping</p> <p>Bushland and Care Site Management plans</p> <p>Expert advice sought through consultancies engaged</p> <p>Participation of staff in specialised environmental training sessions (for example Aboriginal Heritage)</p> <p>Community surveys</p> <p>Number of visits to Council website/s and social media information on biodiversity</p> <p>Number of interpretative signs installed</p> <p>Number of and attendance rate at biodiversity related community events and presentations</p>



Objectives	Data application / indicator	Data collection / measurement
<b>Collaboration and partnerships</b> Strategically partner with the community, educational institutions, NGOs, special interest groups, the indigenous community and all levels of government to maintain, enhance and restore biodiversity at a local, regional and national level	Community participation in biodiversity projects	Number of volunteers and volunteer hours : <ul style="list-style-type: none"> <li>• 'Care' Sites and the Garden Shed</li> <li>• Eastern Pygmy-possum monitoring</li> <li>• Grey-headed Fly-fox counts</li> <li>• WildThings programs</li> </ul>
	Participation in research projects	Number of research projects delivered
	Participation in partnership projects	Number of partnership projects delivered
<b>Climate change responsiveness</b> Protect and enhance the carbon reservoir in Ku-ring-gai's ecosystems to mitigate against climate change and implement adaptive management responses to reduce and address the impacts of climate change on Ku-ring-gai's biodiversity.	Participation in research projects	Number of locally relevant research projects undertaken
	Adaptive responses implemented	Number of adaptive responses implemented based on research results
<b>Investment and innovation</b> Continually seek investment opportunities with key organisations to advance improvements in biodiversity and encourage innovation.	Grant programs delivered	Number of grants procured
	Saving our Species projects, programs, grants and/ or partnerships delivered	Number of Saving our Species projects, programs, grants and/ or partnerships delivered
	Participation in Federal threatened species recovery programs	Number of Federal threatened species recovery program activities, grants and / or partnerships
	Community projects delivered	Number of community grants awarded
	Recognition of Council best practice	Number of awards received

## Definitions

Term / Abbreviation	Definition
Adaptive management	Adaptive management is environmental management practice that accommodates uncertainty and responds to events as they unfold. It includes monitoring change over time, so that the results of management choices can be assessed and changes made if needed to improve future management.
Best practice	Best practice is an aspirational goal that continually improves by testing and learning and is underpinned by current science, professional procedures or research accepted or prescribed as being correct or most effective in the absence of science.
Biodiversity (biological diversity)	Biodiversity is the variability among living organisms from all sources (including terrestrial, aquatic, marine and other ecosystems and the ecological complexes of which they are part), at all levels of organisation, including genetic diversity, species diversity and ecosystem diversity.
Biodiversity Corridors	An area to facilitate the connection and maintenance of native flora and fauna habitats (as mapped Greenweb). Within the urban landscape, biodiversity corridors may be broken by roads and other urban elements and may include remnant trees and associated native and exotic vegetation. For further information, see the Ku-ring-gai Biodiversity & Riparian Lands Study (available on Council's website).
Biodiversity Lands	Biodiversity Land includes land identified as "Biodiversity" on the Terrestrial Biodiversity Map under <i>Ku-ring-gai Local Environmental Plan 2015</i> (KLEP)
Bushland	Bushland is land categorised as Natural Areas under the <i>Local Government Act 1993</i> (NSW).
Climate change	Any long-term significant change in the average weather that a given region, or the Earth as a whole, experiences. In recent usage, the term climate change often refers to changes in the contemporary climate due to human activities, primarily the emission of greenhouse gases to the atmosphere (this is sometimes called anthropogenic climate change, or global warming).
Climate change adaptation	Encompasses measures taken in response to the actual or expected changes in climate, to negate or reduce their impact. Adaptation measures aim to reduce vulnerability to climate change risks and impacts.
Climate change refugia	Climate change refugia is used in reference to areas that may provide habitat for species displaced as the climate changes.
Conservation	In relation to biodiversity, conservation is the protection, maintenance, management, sustainable use, restoration and improvement of the natural environment; in relation to natural and cultural heritage, conservation is, generally, keeping in safety or preserving the existing state of a heritage resource from destruction or change.
Connectivity corridors	Connectivity corridors are elements of the landscape which, by linking otherwise isolated areas, permit movement of organisms or genetic flows across the landscape. This is a more general term than wildlife corridors, which are strips of habitat that permit movement of animals between otherwise isolated patches of habitat.
Degradation	In the context of environmental values, degradation refers to a loss of quality or functionality.
Ecological communities	Ecological communities are naturally occurring groups of plants and animals. Their species composition can be determined by factors such as soil type, position in the landscape, climate and water availability.
Ecological processes	Actions and events that shape ecosystems - both continuous processes like nutrient cycling and carbon sequestration, and periodic or irregular disturbances like fire.
Ecologically Sustainable Development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Ecosystem	An ecosystem is a dynamic combination of plant, animal and micro-organism communities and their non-living environment (e.g. soil, water and the climatic regime) interacting as a functional unit.
Ecosystem diversity	Ecosystem diversity refers to the variety of habitats, ecological communities and ecological processes.

Term / Abbreviation	Definition
Ecosystem services	The functioning of natural ecosystems provides services essential to human survival and well-being including atmospheric maintenance; clean water provision; soil erosion, pollution and pest control; plants pollination; and provides many essential processes.
Environment	Includes ecosystems and their constituent parts, including people and communities; natural and physical resources; the qualities and characteristics of locations, places and areas; and their social, economic and cultural aspects.
Fragmentation	Fragmentation is used to describe the result of removal of natural area, resulting in the retention of only small parts (fragments or remnants) of habitat.
Greengrid	The network of parks, reserves, gardens, nature strips and water systems (creeks, dams, water retention and stormwater management systems) that deliver environmental, economic and social values and benefits to urban communities. Including both natural and built elements such as green roofs (landscaped roof top gardens) and green walls (vertical gardens).
Greenweb	Greenweb includes all land identified on the Greenweb map in the Ku-ring-gai Development Control Plan and includes land identified as: <ol style="list-style-type: none"> <li>Core Biodiversity Lands;</li> <li>Support for Core Biodiversity Lands;</li> <li>Landscape Remnant;</li> <li>Biodiversity Corridors and Buffer Areas;</li> <li>Canopy Remnants; and</li> <li>Other lands that meet the criteria for Greenweb in accordance with the methodology contained within the Ku-ring-gai Biodiversity and Riparian Lands Study (as used for mapping).</li> </ol>
Habitat	The locality or natural home in which a plant, an animal or a group of closely associated organisms live.
In situ conservation	Conserving species within their natural habitat.
Invasive Species	A non-indigenous species occurring, as a result of human activities, beyond its accepted normal distribution and which has adverse effects on the environment, economy, or the community.
Legally secure biodiversity mechanism	Legally secure biodiversity mechanism include: <ul style="list-style-type: none"> <li>Biodiversity stewardship site creation and / or credit retirement in accordance with BC Act . . Covenants under Sections 88BA and 88E of the Conveyancing Act 1919 (NSW), or</li> <li>Conservation Agreements under the BC Act;</li> <li>Planning agreements under Section 7.4 of the EP&amp;A Act</li> </ul>
Offset	The term offsets is a general term used to mean measures that are taken, usually as a requirement under planning or conservation law, to compensate for the environmental impacts of a development or other land use action, for example - setting aside an area of land for conservation to offset unavoidable loss of vegetation a development site.
Precautionary principle	A principle of ecologically sustainable development whereby if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
Recovery Plans	Recovery plans set out the research and management actions necessary to stop the decline of, and support the recovery of, listed threatened species or threatened ecological communities. The aim of a recovery plan is to maximise the long term survival in the wild of a threatened species or ecological community.
Species	A level of biological classification comprising one or more populations of individuals capable of interbreeding to produce fertile offspring.
Species diversity	Species diversity refers to the variety of species on the Earth.

Term / Abbreviation	Definition
Threatened (in reference to species or ecological communities)	Threatened species or threatened ecological communities are those threatened with extinction or destruction. In the International Union for the Conservation of Nature Red List of Threatened Species the term 'threatened' encompasses, from most to least likely to become extinct: critically endangered; endangered; and vulnerable. This terminology is widely used in Australia, including in legislation relating to biodiversity conservation and protection.
Urban forest	<p>All of the trees, other vegetation as well as the soil, seedbank and water that support these. It includes the network of vegetation within both public and private ownership, encompassing the spectrum of vegetation growing within:</p> <ul style="list-style-type: none"> <li>• Natural soils that exists independent of human involvement</li> <li>• Altered soils, including gardens, bio-retention basins, raingardens</li> <li>• Engineered structures such as tree cells / vaults, vertical and roof top gardens</li> </ul>

<sup>1</sup> The Australian Museum Website (2020) *What is Biodiversity*,

<https://australian.museum/learn/science/biodiversity/what-is-biodiversity/>

<sup>2</sup> Commonwealth of Australia (2019), *Australia's Strategy for Nature 2019-2030*, Biodiversity Working Group

<sup>3</sup> NSW Department of Planning Industry and Environment (2021), *Saving Our Species Program*,

<https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/saving-our-species-program>

<sup>4</sup> Wild-River, S. (2006) *The role of local government in environmental and heritage management*, Department of Environment, Water, Heritage and the Arts, Canberra.

<sup>5</sup> Local Government NSW (2020) *Biodiversity*,

<https://lgnsw.org.au/Public/Policy/Biodiversity.aspx>

<sup>6</sup> NSW Department of Planning Industry and Environment (2018), *A Metropolis of Three Cities – The Greater Sydney Region Plan*,

<https://www.greater.sydney/file/12064/download?token=bdYDWQIH>

<sup>7</sup> FOKE (2011), *Mayday For Urban Forests Urgent Changes Needed To The NSW Planning Act To Prevent Loss Of Biodiversity & Critical Habitat & Consider Cumulative Impacts In Our Future Cities*, Newsletter June 2011 Friends of Ku-ring-gai Environment Inc (FOKE)

<https://www.foke.org.au/wp-content/uploads/2018/12/NltrJun11Mayday.pdf>

<sup>8</sup> Ku-ring-gai Council (2016), *Ku-ring-gai Biodiversity and Riparian Lands study v5* (or most recent version)

<sup>9</sup> Environment Protection Authority (2018), *New South Wales State of the Environment*,

<https://www.soe.epa.nsw.gov.au/>

<sup>10</sup> Department of Environment, Climate Change and Water (2010), *Priorities for Biodiversity Adaptation to Climate Change*.