Nature Positive Strategy

Towards 2100

GREATER SYDNEY PARKLANDS

Contents

Western Sydney Parklands sunset

Acknowledgement of Country

We pay respect to the Traditional Custodians of the lands, waters and sky that make up our parklands and pay respect to the Elders – past and present. These places are part of Country, cared for by First Nations peoples for thousands of years.

We recognise the deep cultural and spiritual connection First Nations peoples have to these places and their knowledge of how to care for them. The land beneath us, the rivers and creeks of freshwater Country, the coastal and estuarine areas of saltwater Country, and the skies above that connect us all.

We will work together with Traditional Custodians, Local Aboriginal Land Councils and First Nations communities to embed Caring for Country principles in our work. Guided by Two-Eyed Seeing, we will combine Indigenous knowledge and Western science to protect nature, restore healthy ecosystems, and create spaces where First Nations peoples can connect to Country.

About this strategy

Nature Positive Strategy – Towards 2100 is a long-term vision to protect and enhance the natural environment across the Greater Sydney Parklands estate. Restoring nature takes time and commitment, often spanning decades. A long-term view ensures we work with natural processes and adapt to changing climate so ecosystems can build resilience.

For Greater Sydney Parklands, nature positive means protecting plants, animals, and habitats; restoring damaged ecosystems, creating more green spaces for wildlife; and involving the community in caring for nature. It identifies opportunities in historic and cultural landscapes and guides the design and development of new precincts to ensure future activities respect and support nature.

We have set overall goals for the whole parklands estate to provide clear direction and a consistent approach across all parks. This strategy outlines the management approaches we can take across our parklands that will help us achieve our vision.

Each park has its own character, setting and context. Park-specific objectives identify and consider opportunities, key threatening processes and specific management approaches.

In line with national biodiversity goals, we can consider the parklands as credible nature markets. This can attract investment to restore habitats, capture carbon and improve biodiversity while respecting Aboriginal connections to Country and supporting long term care of the land. We will continually consider our position against these opportunities and our nature positive goals.

This is a draft document for public comment. We prepared it in consultation with our community trustee boards for each of the parks, bushcare volunteers, working groups and local Aboriginal community.

We will review and update this strategy when each park's plan of management is renewed or when a new park becomes part of the parklands estate. This will help us stay consistent with the plans of management and adapt to emerging issues, community needs and feedback.

Revegetation at Centennial Parklands – *Photo: Greening Australia and think Mammoth*

A vision for the Greater Sydney Parklands estate

By committing to protect and enhance the environments that exist in the parklands, our vision is for an estate where wildlife finds safe refuge in thriving ecosystems and people are fascinated by nature.

Strategic goals for the parklands estate

Protect and preserve

We can reach this goal by enhancing ecological regimes and protecting nature. We will:

- create protection areas around high conservation sites and threatened species through stewardship agreements, targeted bush regeneration and landscape design
- undertake bush regeneration work to continually improve quality and diversity
- manage feral animals and overabundant native animals when necessary and with relevant permits
- respond to biosecurity threats with a coordinated partnership approach
- control priority weeds across all landscapes
- use land management techniques that minimise chemical usage
- seek alternate control methods to reduce poison use and minimise off-target impacts
- repair eroded sites and continue erosion control
- integrate a wildlife-friendly lighting approach in project reviews and design guides.

Restore and expand

We can reach this goal by increasing vegetation and habitat. We will:

- undertake planting to expand bushland, increase structural diversity and provide new habitat and connected corridors
- install hollows and other habitat structures such as fallen trees and rocks
- reestablish hydrology, native vegetation and habitat to improve wetlands, waterways, ponds and farm dams
- plan, design and build with nature, such as formalised walking trails, nature play areas and recognising areas for exclusion of people
- collaborate with Aboriginal knowledge holders and Rural Fire Service to return fire management practices to the landscape.

Understand and engage

We can reach this goal through research, education and engagement. We will:

- facilitate and support opportunities for Aboriginal people to connect with Country (sky, water and land)
- engage in partnerships with researchers and institutions to provide sites as a 'living lab' for applied research
- progress our 10-year strategies for education, community and volunteering programs, including volunteer bush care and nature play programs like Bush School, school holiday programs, or school excursions
- partner with wildlife agencies to improve care of animals and particularly threatened species
- collaborate and participate in regional programs and cultivate key partnerships with state and local government and private partnerships to improve outcomes for nature
- undertake fauna surveys of key indicator species such as birds and reptiles and strategic counts of key species such as the grey-headed flying fox
- undertake floristic surveys of bushland assets every 5 years.

See site-specific objectives for:

Fernhill Estate	Western Sydney Parklands	Parramatta Park including Wistaria Gardens	Callan Park	Centennial Parklands including Centennial, Moore and Queens Parks

Australian Magpie

Policy and legislative context

This strategy fulfils several NSW and Australian legislation and policy requirements to preserve landscapes, habitats and ecosystems.

		RESPONSIBILITY	GUIDANCE
INTERNATIONAL		UN Sustainable Development Goals • SDG 6 – Clean Water and Sanitation • SDG 13 – Climate Action • SDG 14 – Life Below Water • SDG 15 – Life on Land	Captures the biodiversity restoration, climate–ecosystem integration, and land water conservation objectives
	GLOBAL BIODIVERSITY FRAMEWORK	Convention on Biological Diversity – Kunming–Montreal Global Biodiversity Framework	Applies the principles locally through conservation, restoration and engagement of culture in nature
NATIONAL	Australian Government	Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Protects threatened species and habitats by regulating significant environmental impact activities
		Australia's Strategy for Nature 2024-2030	Promotes restoring ecosystems and protecting biodiversity to achieve nature-positive outcomes
STATE	NSW GOVERNMENT	Biodiversity Conservation Act 2016	Protects threatened species and ecosystems in NSW and supports nature-positive outcomes by encouraging conservation, habitat restoration and biodiversity offsets
		NSW Plan for Nature (2024)	Sets a strategic direction to protect, restore and improve biodiversity across NSW
GREATER SYDNEY		A 50-year vision for Greater Sydney's Open Space and Parklands	A vision to transform Sydney into a 'city within a park', ensuring quality, connected green and blue grids are integral to daily life
		NSW Government Green Grid and Greener Places Guides	Regional and local planning guides that shape connected open space, parklands, and biodiversity outcomes across Greater Sydney
	LOCAL GOVERNMENT NSW	Local government strategies	Aligning neighbouring local government biodiversity and green grid strategies and plans

It operates within a hierarchy of plans for Greater Sydney Parklands.

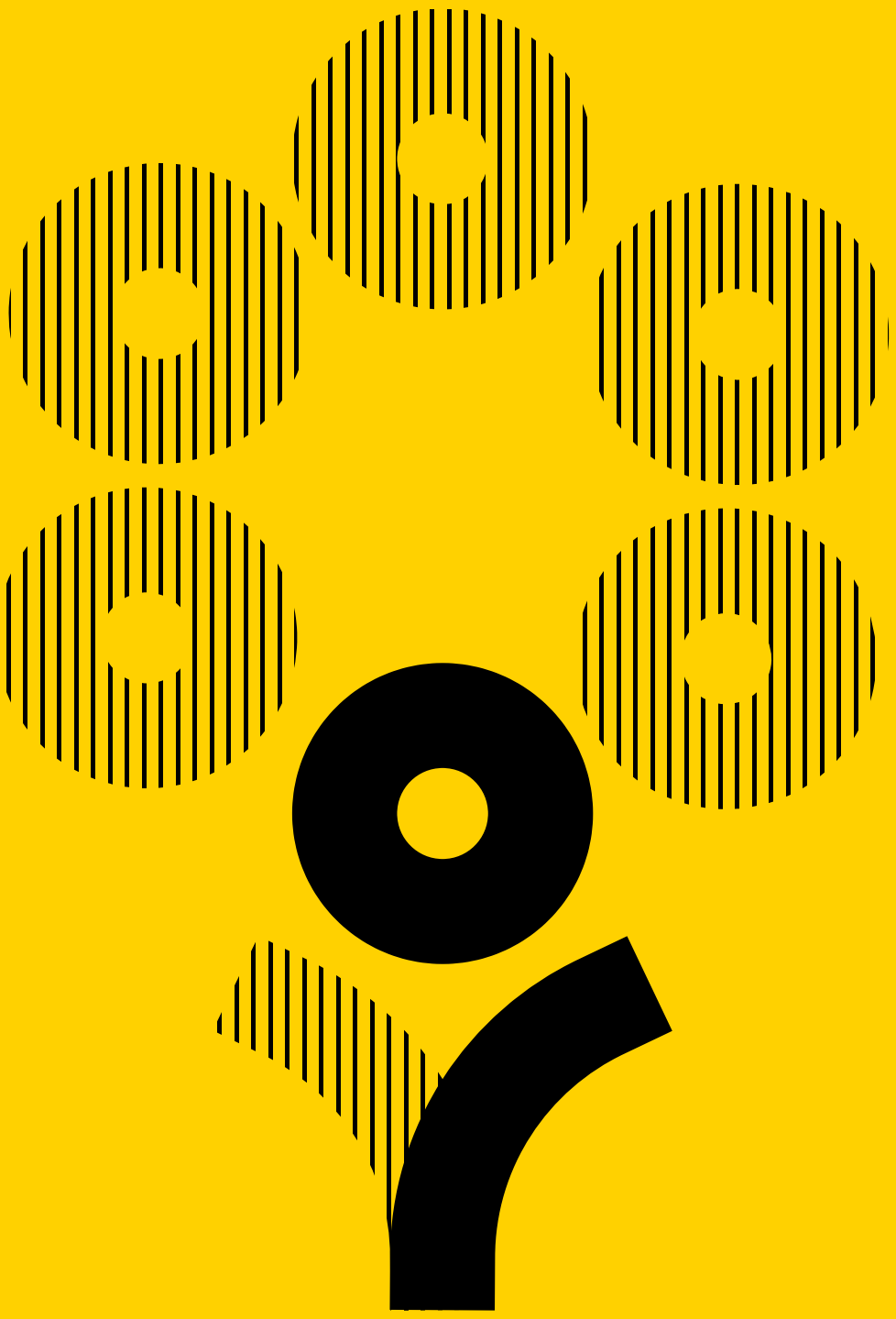
GREATER SYDNEY PARKLANDS

- Greater Sydney Parklands Trust Act 2022
- Centennial and Moore Park Trust Act 1983
- Parramatta Park Trust Act 2001
- Western Sydney Parklands Act 2006

- Fernhill Estate Foundation Plan of Management to 2026
- Western Sydney Parklands Plan of Management
- Your Parramatta Park 2030
- Callan Park Plan of Management
- Centennial Parklands Plan of Management

- Sustainability Strategy
- Education and Volunteering Strategy
- Nature Positive Strategy

- Site master plans
- Tree management plan
- Bushland management contracts
- Bushfire management plan
- Reconciliation Action Plan



Greater Sydney Parklands

Greater Sydney Parklands is a 6,000-hectare network of green spaces. It includes Fernhill Estate, Western Sydney Parklands, Parramatta Park (with Wistaria Gardens), Callan Park and Centennial Parklands (Centennial, Moore and Queens Parks).

The parks of Greater Sydney Parklands

These parklands are vital for people and nature. They provide places to relax, exercise, and connect with the outdoors, while also protecting wildlife habitats in the heart of Sydney's growing urban area. They safeguard some of Sydney's most threatened plant communities ensuring future generations can experience Sydney's natural heritage.

Greater Sydney Parklands is a key part of Sydney's blue-green grid and the NSW Public Open Space Strategy.

The network of parks, waterways and bushland creates corridors for wildlife and people, supports biodiversity and strengthens climate resilience.

These green spaces help cool the city, manage stormwater, improve air and water quality, and provide opportunities for cultural connection and learning. By linking nature and community, Greater Sydney Parklands plays a leading role in creating a healthier, greener and more liveable city.

Waterway at Western Sydney Parklands

Plants and animals

The parklands estate encompasses diverse plant communities from woodland and rainforest gullies, to heath, wetlands and grasslands. Nature is also found in its landscaped gardens, sports fields, constructed ponds and amenity trees.

These valued green spaces provide refuge for wildlife. The western parklands are home to kangaroos, wallabies, echidnas, water dragons and snakes; the eastern parklands harbour birds, skinks, flying foxes and wildlife adapted to urban living.

Much of the estate features threatened species and plant communities, such as the Eastern Suburbs Banksia Scrub in Centennial Parklands and Cumberland Plain Woodland across western Sydney. The regent honeyeater and swift parrot are critically endangered species found in Fernhill Estate. Three microbat species including the large-footed myotis, little bent-winged bat and large bent-winged bat found in Callan Park and Centennial Parklands are listed as vulnerable. The powerful owl found closer to the coast and the grey-headed flying-fox with camps in 2 of our parks, are both vulnerable species.

See a list of threatened species in Appendix A.

Soil and water

Greater Sydney Parklands sits on diverse landscapes shaped over millions of years. Across the estate, sandstone plateaus, shale plains and fertile river valleys create unique soils that support a variety of ecosystems.

In the west, heavy clay soils from the Wianamatta shale dominate, while the east features sandy soils and sandstone outcrops. These soils influence what plants grow and how water moves through the land.

Major waterways such as the Nepean, Hawkesbury and Parramatta Rivers, along with creeks and wetlands within the parklands, act as ecological lifelines and hold deep cultural significance. They provide habitat for wildlife and connect communities to nature. Even altered waterways like stormwater systems, old farm dams and constructed ponds continue to support biodiversity.

People and culture

Long-term conservation works best when people feel connected to nature and wildlife. Greater Sydney Parklands gives this opportunity to more than 5 million local residents and visitors from across NSW, Australia, and overseas. These parklands are deeply important to First Nations communities, including the Dharug, Dharawal, and Gundungurra peoples, who maintain strong connections to Country.

The communities surrounding the parklands are diverse. The Centennial Parklands and Callan Park have high-density populations with strong cultural and recreational interests, while Parramatta is one of Sydney's fastest-growing city centres with a mix of young families and professionals.

Western Sydney is home to a culturally rich population, with many residents born overseas. Fernhill Estate in the Mulgoa Valley retains a semi-rural character with strong ties to land and heritage.

Today, the parklands offer opportunities for ecotourism, outdoor activities and cultural experiences for all these communities. We work with Traditional Custodians, universities, volunteers and the wider community to share knowledge and care for nature. Through education programs and nature-based activities, we help people experience and value these special places.

Opportunities and challenges

There is a chance to expand and connect bushland areas to create wildlife corridors that allow species to move safely. We can do this within our parklands and by working with local government, state government and other open space landowners. Partnerships with Aboriginal communities can strengthen cultural practices such as cultural burning and heritage protection. At the same time, urban pressures like feral animals, invasive species and habitat fragmentation need careful management.

Building climate resilience is also essential, which includes reducing fire risks, restoring seed banks and adapting to changing rainfall patterns.

Dragonfly

Key threatening processes

Key threatening processes are things that can harm nature, such as activities or conditions that put plants, animals or entire ecosystems at risk.

Our strategic goals and site-specific strategies aim to improve species resilience and connectivity and reduce external pressures. They address each of the key threatening process below.

Climate change

Climate change is already affecting our parklands. Extreme weather events like heavy rainfall and long, hot summers are putting pressure on plants and animals. These conditions are very different to the conditions these species have adapted to over thousands of years. Rising temperatures, bushfire risks, sea level rise, storm surges and flooding all add stress to ecosystems, making it harder for nature to survive and thrive.

Loss of habitat

Habitat loss disrupts ecosystems and hampers the ability of native flora and fauna to thrive. Around the parklands, shrinking and fragmented habitats make nature more vulnerable to pests, diseases and invasive weeds.

Weed species

Weeds can harm native plants by taking their water, nutrients and space. They push out native species, change how fires behave, reduce homes for wildlife and can spread diseases. Some weeds, called 'transformer' weeds, are especially damaging because they completely take over an area, smother other plants and create a single-species environment with very little diversity or habitat.

Pest animals

Feral animals and some overabundant native species can damage nature by destroying habitats, upsetting the balance of ecosystems and spreading disease. Foxes, cats and pigs hunt native wildlife, causing big losses to already vulnerable populations. Growing numbers of cockatoos, noisy miners and white ibis show that habitats have changed and species are out of balance. New threats are constantly emerging, such as the shot hole borer (an invasive beetle) that could severely harm trees.

Erosion and pollution

Poor land management practices and land clearing has accelerated erosion, causing the loss of soils and sediments and smothering downstream habitat. Heavy metals from roads, waste from streets, nutrient rich fertilisers and pesticides are among the pollutants that concentrate in soils and also rivers, lakes and wetlands before finding their way into the food chain. When the environment becomes richer with nutrients, weed species are favoured and algae blooms can develop in waterways.

Disease and pathogens

Diseases and pathogens can be devastating to a population by significantly reducing the numbers, particularly if a population is already in decline. Avian influenza threatens Australian native birds with the virus now confirmed in the country. Fungi such as myrtle rust, armillaria and phytophthora also threaten tree species.

Hygiene management, greater plant diversity and numbers and better habitat structure can all improve nature and animal resilience. Ongoing monitoring is key across all our parks.

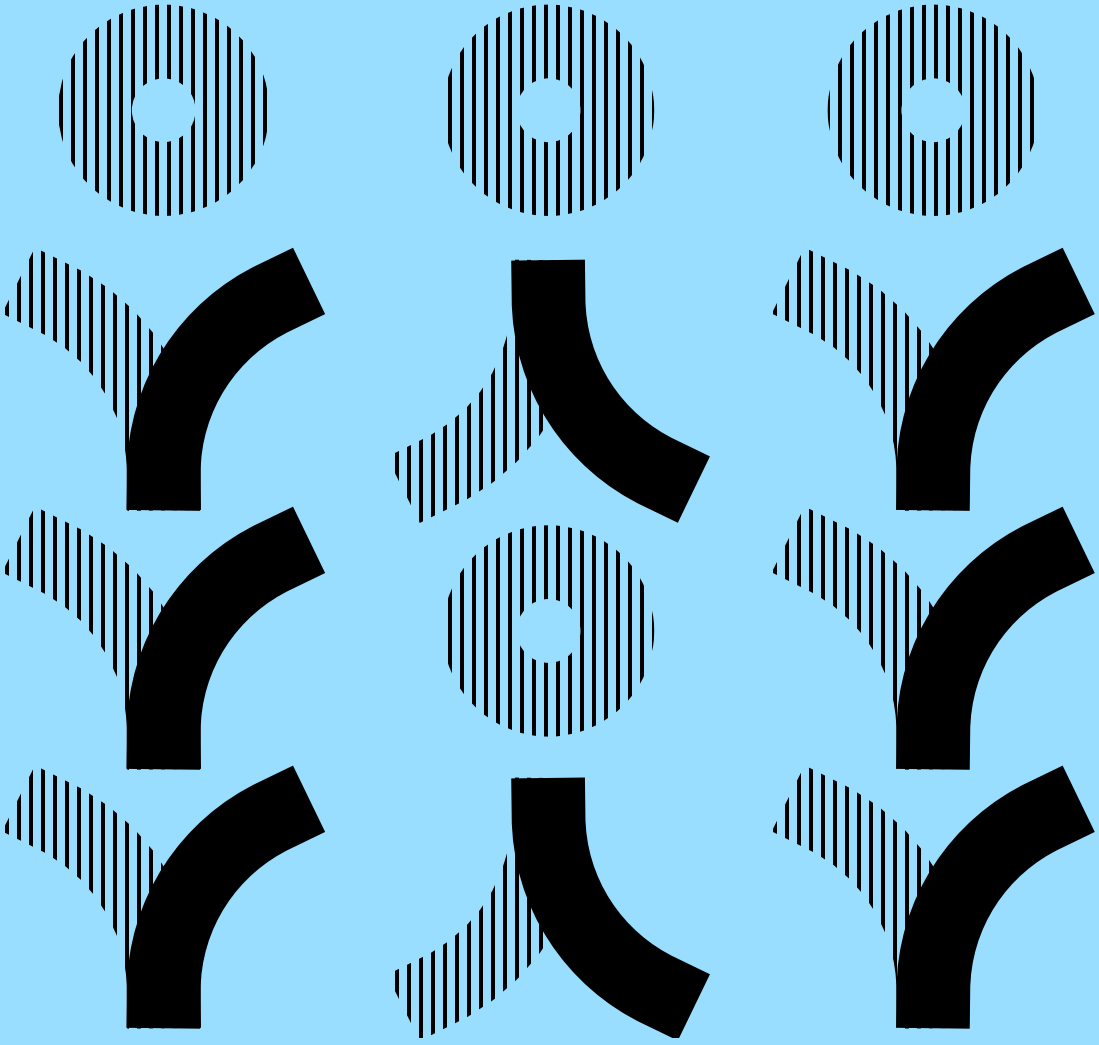
Fire regimes

Changes in fire patterns are harming nature. Many landscapes have emerged under Aboriginal burning over thousands of years. When fire is absent, or occurs in the wrong way, it puts ecosystems at serious risk.

Growing visitor numbers and activities

Our parklands will experience increasing uses and visitor numbers as Greater Sydney's population grows. Increased visitor numbers, non-natural surfaces, light and noise pollution all affect animal behaviour and reproduction. Changing animal behaviours and the loss of niche habitats can foster more suburban wildlife and lead to a loss of diversity.

Australasian Darter and chicks



Fernhill Estate

Selectively retained Angophora species, Fernhill Estate

Introduction

Nestled in Mulgoa Valley next to Blue Mountains National Park, the 423 hectares of Fernhill Estate is part of a network of open landscapes that support nature amid the broader urban development of Greater Sydney.

Fernhill Estate is on the ancestral lands of Dharug and Gundungurra speakers. Parts of the estate show signs of clearing and retention of some native species by early colonists. Visitors can also see regenerating vegetation and large areas of high-quality bushland, showing the site's resilience.

The Fernhill Estate Plan of Management 2026 aims to protect and enhance bushland, remnant paddock trees and nature through biodiversity stewardship agreements, which cover more than 60 per cent of the estate. The estate has in-perpetuity conservation covenants and annual management payments from the biodiversity stewardship payments fund. These help safeguard habitats for endangered species like the regent honeyeater and swift parrot and help manage riparian corridors, erosion and soil landscapes.

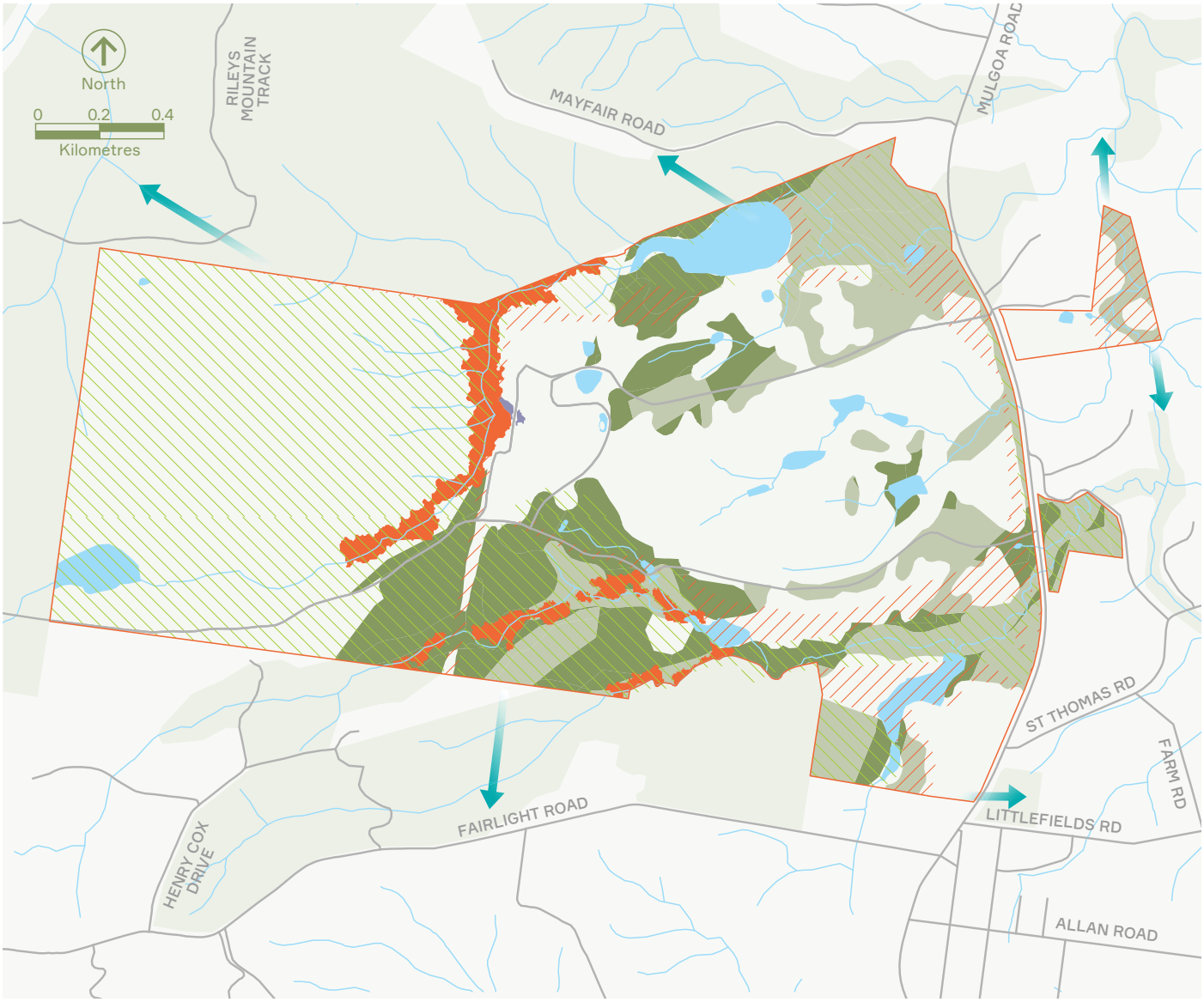
Fernhill Estate
Historic vegetation types before colonisation

Source: *Pre-1750 Major Vegetation Groups (estimated).*

LEGEND

- Fernhill Estate boundary
- Creeklines
- Water bodies
- Rainforest
- Grassy woodland
- Dry sclerophyll forest
- Forested wetland
- Wet sclerophyll forest

Fernhill Estate
Habitat and restoration sites



Source: *Pre-1750 Major Vegetation Groups (estimated).*

LEGEND

- Fernhill Estate boundary
- Connected corridors
- Waterway
- Waterbody
- Biodiversity stewardship agreement site
- Restoration zones
- Grassy woodland
- Dry sclerophyll forest
- Wet sclerophyll forest
- Rainforest
- Surrounding green spaces

Threatened species

- Regent honeyeater
- South-eastern glossy black-cockatoo
- Swift parrot
- Scrub turpentine

Pest species

- European fox
- Pigs
- Deer
- Przewalski's horses

Plants and animals

Fernhill Estate boasts sandstone forests and open woodlands, lush rainforest gullies and grassy meadows.

It is home to critically endangered Cumberland Plain woodland, once widespread but now scarce. This diverse geology and topography include Sydney hinterland sandstone forest, Western Sydney dry rainforest, Castlereagh scribbly gum woodland, sandstone transition forest and river-flat eucalypt forest.

Old growth Angophora trees dominate the eastern part of the estate, selectively retained during past clearing practices as they resembled English oak trees. Scribbly gums and honeymyrtles can also be seen, while the sandstone gullies nurture the rare scrub turpentine.

On the hill crests in the western bushland bordering the Blue Mountains National Park, grass trees are abundant in the shrub layer.

Varied terrain such as the cool shaded gullies provides refuge for the gully shadeskink while woodlands provide habitat for occasional sightings of the endangered regent honeyeater.

Fernhill Estate is home to possums, bats and owls, and iconic Australian natives like wallabies and kangaroos, lace monitors and echidnas. Platypus have been spotted nearby in Mulgoa Creek and koalas have been monitored moving through the estate.

Dam, Fernhill Estate

Soil and water

Fernhill Estate is positioned above 2 geological faults. The diverse topography, soils and water flow support the estate's varied vegetation.

The Mulgoa Valley was shaped 15 to 22 million years ago by the uplift of the Blue Mountains and the estate mirrors the valley's landscapes. A mix of soils and landscapes emerge where clay shale meets Blue Mountains sandstone at the Cumberland Plain edge. To the west is the Nepean Gorge, etched by water during the slow sandstone uplift. Moving east, the sandstone crests and plateaus fall away to rolling hills and to clay shale plains distinctly visible in the shale cliffs at Mulgoa Nature Reserve.

The blocky sandstone framing the western edge of the estate captures water which rushes overland or seeps down vertical faults in the rock before moving horizontally to moist gullies protected from fire. Low rolling hills concave steeply into drainage lines then flatten out across the lowland clay soils into Mulgoa Creek. Mulgoa Creek and Littlefields Creek frame the southern and eastern edge of the estate with the large expanse of flat clay country central to the estate that is the western edge of the Cumberland Plain.

People

The Mulgoa region is Dharug Country, recognised as freshwater Country, with the Mulgoa and Nepean Rivers holding deep cultural and spiritual significance. The ancestral lands of the Dharug stretched west of the forest lands along the Nepean River near Mulgoa.

The fenced property of Fernhill Estate dates back to early colonial land concessions in the 1810s, with the productive grazing lands selectively cleared for agriculture. Over time, equestrian facilities, a horse racing track and a small private zoo have left a legacy at the property. The abandoned Przewalski's horses from the zoo still remain, with relocation efforts underway.

The NSW Government acquired Fernhill Estate in 2018. Surveys by Local Land Services and the Mulgoa Landcare Group have documented the site's ecological value, including the presence of a male platypus downstream in Mulgoa Creek. The Mulgoa Landcare Group is actively working to improve habitat in the area.

Penrith City's population is expected to be around 300,000 people by the late 2030s. When Western Sydney International Airport opens, the estate will serve an increasingly important role for tourism, outdoor recreation, ecotourism and cultural experiences. The region is home to a diverse population, with 20 per cent of residents born overseas. The park is likely to attract young families seeking outdoor experiences, bushwalkers exploring the landscape backing the Blue Mountains and visitors looking to connect with the natural and cultural history of the area.

Fernhill Estate and its surroundings are an important recreational, ecological and hydrological corridor, particularly for communities in Mulgoa Valley and Penrith. Future planning must recognise and respect the ongoing connection of the Dharug people to Country, ensuring opportunities to share cultural knowledge, protect sacred sites and collaborate on land and water management.

The design of Fernhill Estate focuses on restoring the historic Fernhill House and creating accessible walking and cycling trails that connect to Penrith City Council and Blue Mountains National Park.

Opportunities and challenges

The estate's high-quality bushland can be used to increase wildlife corridors. However, these corridors create challenges in managing feral animals and movement across Mulgoa Road.

The estate also offers opportunities to increase habitat and protect breeding areas, particularly in the stewardship areas. Examples include providing nesting sites for the regent honeyeater, adding artificial structures for turtle nesting and creating more hollows in trees.

Fire brings ecological, cultural and land management challenges. We have an opportunity to work with Aboriginal people on cultural burning and the Rural Fire Service to manage wildfire risks. Fuel load reduction can help regenerate species from the seed bank in the soils, particularly in the quality bushland of the Hinterland Forest. Cultural burning workshops can improve connections to Country, enhance cultural awareness and improve nature.

Forest red gum

Key threatening processes

Climate change

Fernhill Estate is increasingly vulnerable to extreme heat and bushfires. Projections show that by 2050, the number of days with temperatures over 35°C could double. This rise in extreme heat will likely trigger more frequent heatwaves and bushfire events. More frequent and intense storm events will also create challenges, particularly for dams and waterways.

Loss of habitat

Although there are large areas of bushland to the west, the east has been cleared. The only remnants of the once-extensive Cumberland Plain woodland are old-growth Angophora species trees that have been selectively retained. Grazing of young saplings by feral animals, along with competition from invasive grasses such as whiskey grass, threaten to erode the remaining vegetation as the old trees reach end of life. Development around the estate is reducing connected habitat and limiting fauna movement.

Weed species

Weedy species such as lantana and blackberry have spread extensively across Fernhill Estate, outcompeting native plants for space and light. Blackberry provides ideal shelter for foxes. There are ongoing threats of weed incursions from neighbouring areas. The spread of invasive species also threatens the estate's aquatic and riparian zones, affecting work on stabilising banks and impacting ecological health.

Pest and feral animals

Trail cameras have captured sightings of feral pigs, deer and foxes across Fernhill Estate. Rabbits, goats and domestic dogs also create management concerns. The abandoned Przewalski's horses, listed as endangered by the International Union for Conservation of Nature's Red List, continue to roam around the Littlefields Creek area. The shot hole borer, an invasive beetle species, threatens the old growth trees if introduced to NSW.

Erosion and pollution

Erosion caused by land clearing and soil instability at several locations impacts habitats and waterway health. Examples include dam walls and spillways and fire trails in the biodiversity stewardship agreement areas. Higher vehicle use as the parkland becomes more accessible, along with unregulated foot traffic and off-track activity, further heighten this threat.

Disease and pathogens

Fernhill Estate does not have any known disease outbreaks. The historic farm dams are a focal point for water birds and avian influenza is a risk. This requires monitoring and working with the Department of Primary Industries and Regional Development and the emergency animal disease team to sample and test any sick or dead birds.

Fire regimes

The impacts from large historic wild fires are seen in the sandstone ridge to the estate's western edge. Connections to the Blue Mountains National Park mean uncontrolled fires are always a risk.

Growing visitor numbers and activities

Fernhill Estate is expected to attract many more visitors in the coming decades. Growing visitor numbers are likely to increase waste, noise and light pollution, contribute to erosion and spread introduced weeds. Mulgoa Road has significant wildlife strike risks, due to its proximity to natural areas like the Blue Mountains.

Site-specific objectives for Fernhill Estate

The Fernhill Estate Foundation Plan of Management contains key moves and opportunities that relate to this strategy, including conserving bushland habitat, waterways and lakes and managing biodiversity stewardship sites. This strategy includes these actions and further objectives to benefit the natural environment.

Protect and preserve

- Review biobank agreements and consider variations and additions to better manage the balance between expected visitation and conservation
- Expand woodland plantings around the key habitat for the regent honeyeater
- Finalise rehoming of the Przewalski's horses
- Repair the dam at Littlefields Creek to maintain habitat
- Repair eroded trails in the western bushland area and consider closing trails that aren't necessary

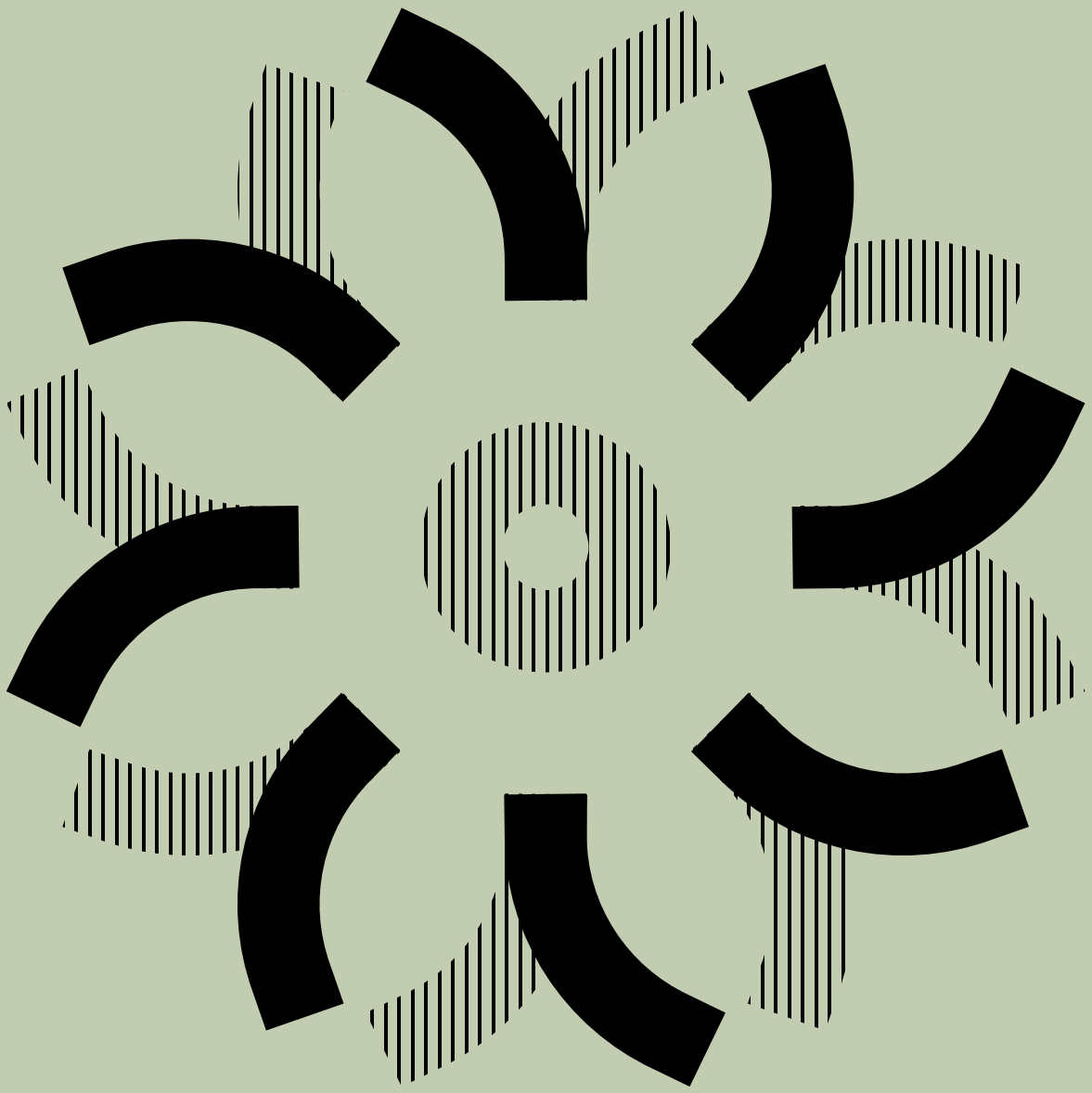
Restore and expand

- Plant small shrubs and groundcover as lantana thickets are progressively removed
- Collect provenance seed from Angophoras along the driveway and germinate and plant these to provide succession
- Install turtle island in the northern dam and explore other supplementary habitat opportunities
- Support Mulgoa Valley Landcare's work along Mulgoa Creek, including planting to widen the riparian corridor
- Collaborate with Aboriginal knowledge holders and Rural Fire Service to return a mosaic of fire in the landscape

Understand and engage

- Engage with researchers and institutions such as the Difficult Bird Research Group to provide sites for applied research
- Leverage nature positive such as the turtle island to focus activities for education, community, and volunteering programs

These are specific approaches for Fernhill Estate.
The overall management approaches for the Greater Sydney Parklands Estate also apply.



Western Sydney Parklands

Western Sydney Parklands city view

Introduction

Western Sydney Parklands is Australia's largest urban park. Spanning 3 local government areas, the parklands extend more than 27 km from Quakers Hill in the north to Leppington in the south.

The parklands are in the heart of Gandangara and Dharug Country and showcase the nature of the Cumberland Plain. Remnant, regenerating and reconstructed woodlands cover rolling hills and extend onto floodplains. Waterways including Eastern, Hinchinbrook and Wallgrove creeks feed and support native flora and fauna.

Over a third of the parklands, roughly 2,000 hectares, is dedicated bushland under the Western Sydney Parklands 2030 Plan of Management. This bushland provides connections for native wildlife. The estate has in-perpetuity conservation covenants and key locations to provide a wildlife sanctuary. In many areas the parklands connect to national parks, regional parks and the South Creek corridor.

This vital large-scale wildlife sanctuary also provides exceptional recreational opportunities for visitors.

Western Sydney Parklands

Historic vegetation types before colonisation

LEGEND

- Western Sydney Parklands boundary
- Creeklines
- Grassy woodland
- Dry sclerophyll forest
- Forested wetland
- Freshwater wetland

Source: *Pre-1750 Major Vegetation Groups (estimated).*

Western Sydney Parklands

Habitat and restoration sites

LEGEND

- Western Sydney Parklands boundary
- Connected corridors
- Waterway
- Waterbody
- Biodiversity stewardship agreement site
- Restoration zones
- Dry sclerophyll forest
- Grassy woodland
- Forested wetland
- Freshwater wetland
- Rainforest
- Surrounding green spaces

Threatened species

- Little eagle
- Cumberland land snail
- Spiked rice-flower
- Downy wattle
- Prickly spider flower

Pest species

- European fox
- Deer

Plants and animals

Western Sydney Parklands has open woodlands and floodplain forests, with open grasslands and riparian vegetation along the creeks. The critically endangered Cumberland Plain woodland is the dominant plant community, supported by river-flat eucalypt forest, moist shale woodland and dry rainforest communities.

Spotted gums dominate the hill slopes and ridges. Grey box is conspicuous in the grassy woodlands with its fibrous bark and smooth, whitish branching canopy. Forest red gum towers over the lower storey species, keeping a foothold in heavier clay soils. The woodlands floor has abundant grasses and wildflowers. The brightly coloured berries of the climbing saltbush are a popular food source for woodland birds and smaller lizards.

Swamp wallabies and eastern grey kangaroos feed in the early mornings and evenings and rest during the day in a bed of weeping grass. Lace monitors can be seen basking on tree trunks. Elusive species like echidnas, gliders and snakes also call Western Sydney Parklands home.

Kangaroo

Soil and water

The main soil type is a heavy clay soil derived from the Wianamatta Group shales. These soils are poorly drained and easily shift from saturated to dry, cracking landscapes, making the growing environment challenging.

Western Sydney Parklands is on a prominent ridge in the middle of the Cumberland Plain. The ridge forms the border of major catchments; one that flows predominately north to the Hawkesbury River and those that flow east to Georges River, Cooks River and a small subcatchment to Sydney Harbour. Western Sydney Parklands is the headwaters to many tributaries, most notably Eastern Creek.

Eastern Creek, which feeds South Creek and onto the Hawksbury River, meanders from Sugarloaf Ridge in Abbotsbury to the north of the park and provides the clay soil floodplain. Many tributaries flow into this creek.

The creeks, floodplains, ephemeral wetlands and historic farm dams offer natural and man-made features and support native wildlife.

People

Western Sydney Parklands is in the boundaries of the Deerubbin and Gandangara Local Aboriginal Land Councils. It forms part of the traditional Country of the Gandangara and Dharug people. The landscape has been shaped by thousands of years of Aboriginal land management practices, and the parklands continue to hold deep cultural significance.

Western Sydney has historically been the food bowl for Greater Sydney, with agriculture dominating the landscape up until the 1940s. The area now constituting the parklands was originally identified in the 1968 Sydney Region Outline Plan, to provide for infrastructure and future regional open space needs in Western Sydney.

Western Sydney is experiencing significant population growth, with projections indicating that by 2036, more than half of Sydney's population – over 3 million people – will live west of Parramatta.

Surveys show that people visit the parklands for walking, relaxing, dog recreation, enjoying the environment and spending time with family and children. The median travel time to the parklands is just 10 minutes, meaning most parklands users are representative of the surrounding communities.

The region is also known for its cultural diversity. A large proportion of residents were born overseas, reinforcing the need for inclusive, safe and accessible public spaces.

The Parklands are still evolving with plans for new recreation and amenity areas, transport links, and business/community hubs. The parklands also provide a vital balance between conservation and recreation, offering playgrounds, picnic areas, bike and bushwalking paths and event spaces.

As Western Sydney's urban area expands, the parklands will continue to be an important green refuge, not only for wildlife but also for people seeking respite from the built environment.

Sulphur Crested Cockatoo

Opportunities and challenges

Native vegetation, once mostly cleared, has seen large-scale revegetation and natural regeneration since the 1990s. This work closely aligns to the Cumberland Plain Conservation Plan, a landscape scale strategic conservation project for western Sydney.

Western Sydney was historically the food bowl for Greater Sydney, with agriculture and horticulture dominant land uses until the 1940s. In the last 20 years, land use has changed with rapid urbanisation. The parklands' urban farming lands (Horsley Park precinct) help to maintain Western Sydney's farming heritage.

Fragmented patches of native vegetation sit within the farming lots.

There are further opportunities to improve the existing habitat, providing large areas for wildlife refuge and spaces for people to immerse themselves in nature.

Red-bellied Black Snake

Key threatening processes

Climate change

Mean temperatures, heatwaves and extreme heat days will increase and the number of days above 35°C will double by 2050 in Western Sydney Parklands. The likelihood of bushfires will increase, threatening the Cumberland Plain Woodland communities and the animals relying on them.

Forecast changes to extremes from prolonged dry periods to extreme wet will stress wildlife and can provide conditions for insect populations to explode.

Loss of habitat

The linear nature of the parklands and closeness to urban centres is a significant challenge. The bushland area is not connected to other natural regions nearby, and narrow corridors connecting the parklands are increasingly threatened by urban development. Light and noise pollution from nearby highways affects nocturnal fauna and disrupts their movement through the parklands. Physical barriers, such as roads, bridges and developments, completely restrict fauna movement and further fragment their habitats.

Weed species

Invasive weeds such as African olive and vines dominate the valleys and creeks, while drought-tolerant African lovegrass thrives in sunnier areas. These plants outcompete native species and reduce food sources for native animals. Other problematic transformative species include blackberry and lantana, while species like Chilean needlegrass and invasive vines further encroach on the landscape. Access to control and manage these weeds is difficult in some areas, hindering efforts to protect native flora.

Pest and feral animals

Pest animal control is a challenge. Western Sydney Parklands spans a large area and is close to residential housing and industrial distribution centres. European foxes are seen throughout the area. Fallow Deer are expanding in numbers after migrating south along Eastern Creek. Biosecurity risks, such as insect escapees from imported freight containers, have occurred. We work with Local Land Services, councils and private contractors to control and manage these threats.

Erosion and pollution

Historic cattle grazing has destabilised soil structure in the southern areas. This has increased the amount of flowing surface water and caused gully erosion. Old farm dams across the site can have structural issues and dam walls can fail.

Stormwater from urban runoff contains a range of pollutants. *Typha sp* (bullrush) is feeding off this increasing nutrient load and choking waterways, drainage lines and wetlands. Previous farming practices added fertilizers to the soils and this has exacerbated the process.

Disease and pathogens

Phytophthera is a known threat to the bushland around the Kemps Creek Nature Reserve. This soil borne disease can lead to root rot, collar rot and brown rot. It impacts the plant's roots and spreads through the plant, causing dieback.

The Eastern Creek floodplain and historic farm dams are a focal point for water birds, which carries the risk of avian influenza. We will need to monitor and work with the Department of Primary Industries and Regional Development and the emergency animal disease team to sample and test sick and dead birds for the disease.

Fire regimes

The woodlands have experienced changing fire regimes and fewer cool burns traditionally done by Aboriginal people. This has changed the vegetation structure that has favoured denser tree and shrub growth, reducing the woodland ecology. The rapid residential and industrial development and associated infrastructure surrounding the parklands requires a careful balance to manage fire risk with woodland ecology.

Growing visitor numbers and activities

Western Sydney Parklands has plenty of opportunities for people to interact with nature. Growing visitor numbers will place pressure on native habitat, particularly for wallabies and kangaroos. It will also increase interactions between people and wildlife. Unregulated recreational activities, vandalism, rubbish dumping and arson are contributing to vegetation loss, degrading core bushland sites and reducing connections between bushland areas.

Site-specific objectives for The Western Sydney Parklands

Western Sydney Parklands Plan of Management sets a strategic direction for environmental protection and land stewardship. Priority objectives include improving the health of waterways and wetlands, protecting water supply assets and increasing bushland biodiversity. This strategy recognises the importance of these objectives for environmental conservation.

Protect and preserve

- Identify new opportunities for biodiversity stewardship agreements to create conservation refuges within the bushland corridor
- Expand fox control programs and continue to manage deer population
- Actively thin trees from historic planting sites to ensure appropriate tree density and growth of large trees
- Continue to advocate for wildlife connectivity on development and infrastructure projects

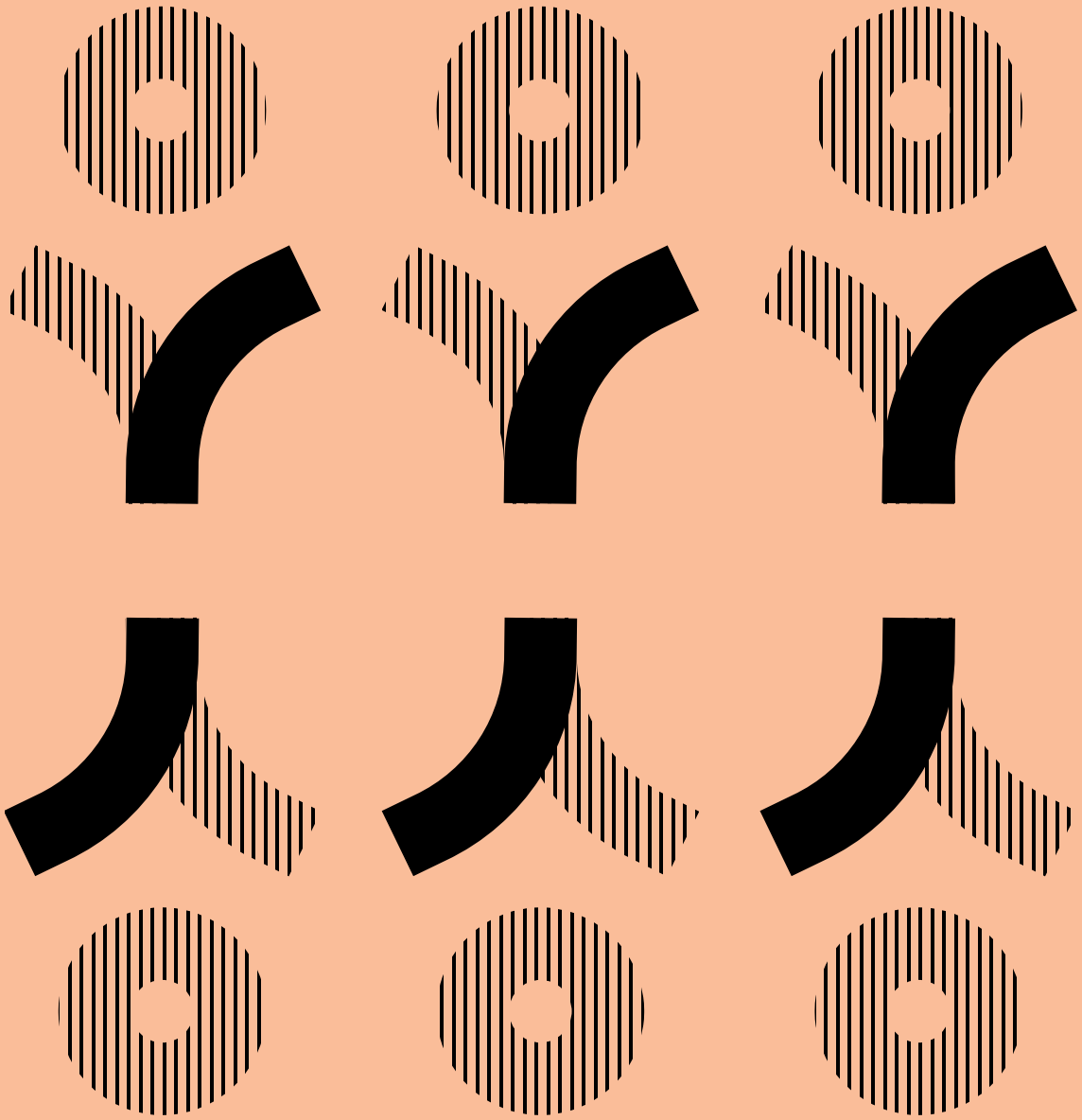
Restore and expand

- Identify locations where expansion of dry rainforest communities may thrive and revegetate with appropriate species
- Continue to revegetate diversity nodes to return plant species not naturally regenerating
- Continue large scale revegetation to expand the bushland corridor
- Collaborate with Aboriginal knowledge holders and Rural Fire Service to return a pattern of fire in the landscape

Understand and engage

- Engage with researchers and institutions on projects such as the Cumberland Plain Conservation Plan to provide sites for applied research
- Provide sites for Aboriginal cultural programs such as cultural burns to help return knowledge of Country

These are specific approaches for Western Sydney Parklands.
The management approaches for the overall Greater Sydney Parklands Estate also apply.



Parramatta Park

White-faced Heron

Introduction

Parramatta Park, in the heart of Parramatta city centre, is an important green space for native animals. The park links the vegetation along surrounding creeks, with Parramatta River as the focus.

The park is the ancestral lands of the Barramattagul and Dharug speakers. It is listed on the State Heritage Register and the National Heritage Register. The Old Government House and Domain is one of 11 sites that form the Australian Convict Sites, inscribed on the UNESCO World Heritage List in 2010.

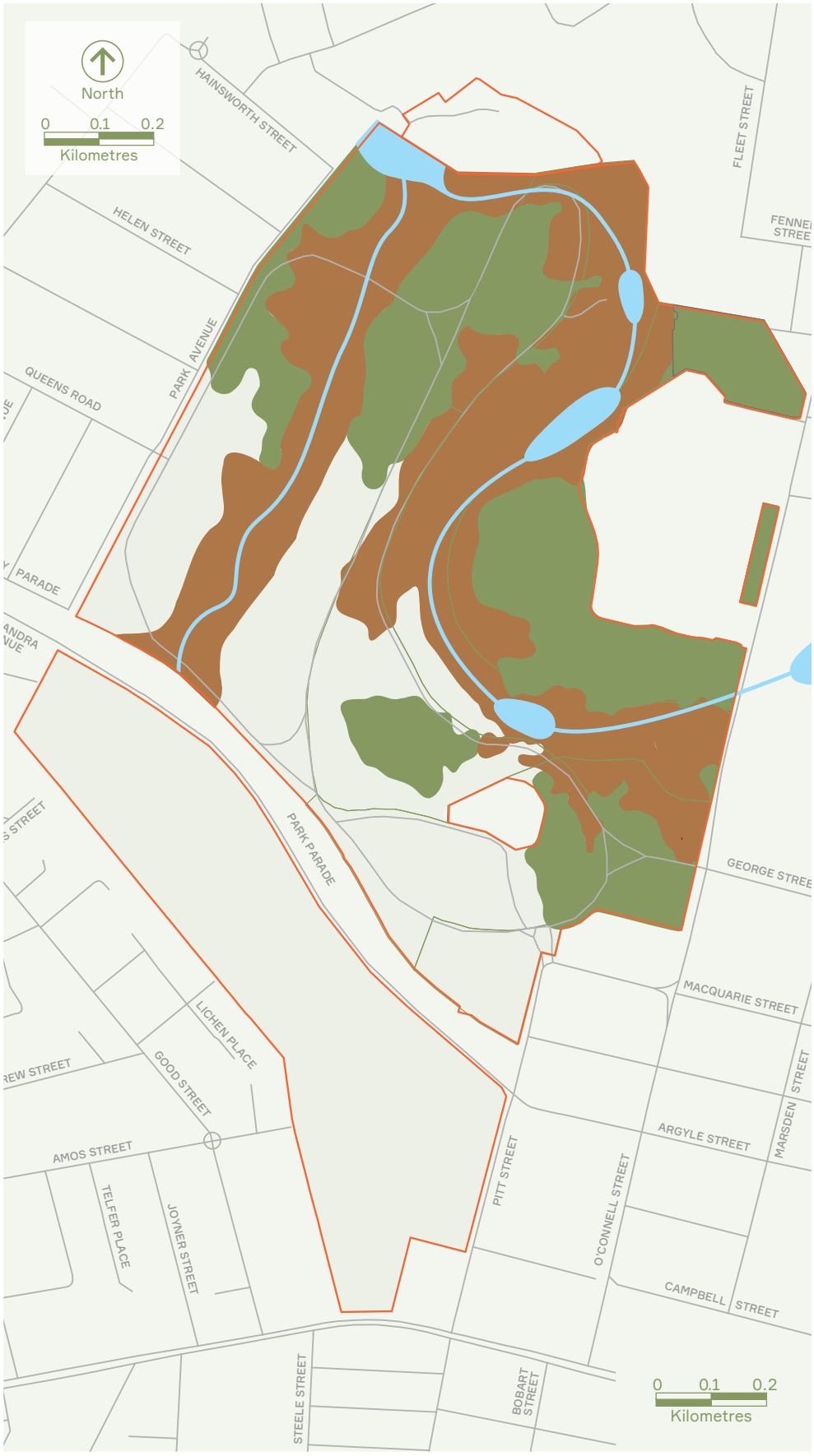
The park has fragments of remnant and reconstructed ecosystems from the Cumberland Plain. The Your Parramatta Park 2030 conservation management plan and plan of management aim to protect vegetation along the waterways, water quality and improve habitat and vegetation communities.

Parramatta River curves through the Parramatta Park, supporting floodplain vegetation like the river-flat eucalypt forest and animals such as the grey-headed flying fox.

Parramatta Park attracts around 2 million visitors a year. With the neighbouring area of the park developing, demand for natural areas and open space is increasing. Within this context, we can manage the park's nature by providing habitat refuge and improving nature values.

Parramatta Park

Historic vegetation types before colonisation



LEGEND

- Parramatta Park boundary
- Creekline/river
- Water bodies
- Grassy woodland
- Dry sclerophyll forest
- Forested wetland

Source: *Pre-1750 Major Vegetation Groups (estimated).*

Parramatta Park

Habitat and restoration sites

LEGEND

- Parramatta Park boundary
- Connected corridors
- Creekline/river
- Tree avenues (exotic/native)
- Restoration zones
- Grassy woodland – Cumberland Plain woodland
- Forested wetland – River Flat Eucalypt Forest
- Surrounding green spaces

Threatened species

- Grey-headed flying-fox
- Prickly spider flower

Pest species

- European fox
- Common mynah

Source: *Pre-1750 Major Vegetation Groups (estimated).*

Plants and animals

The park has a mix of endemic native and exotic plant species from periods of clearing and reestablishment. The waterways and ridgeline above The Crescent contain remnant and reconstructed bushland of 2 critically endangered communities; the Cumberland Plain Woodland and River-flat Eucalypt Forest. The prickly Grevillia juniperina shrub is listed as a vulnerable species and occurs on the road-verge.

Forest red gums are the main tree species and appear on the park's slopes and ridges. There is the occasional broad-leaved ironbark and grey box. Rough-barked apple, broad-leaved apple and river oak dominate the riparian zone. They are interspersed with narrow- leaved paperbark on the swampy ground, and white feather honeymyrtle and prickly-leaved paperbark in groups on the slightly better drained terrain next to the creek lines.

Pines, English oaks, and jacarandas reference the vice regal domain period and the 19th century park period, where connections to the European world influenced the park's setting. There are introduced grass species throughout the park.

A colony of the threatened grey-headed flying-fox has a home in the canopy of river-flat eucalypt forest near Buttons Bridge. Eastern water dragons use the riparian vegetation near The Crescent for refuge. The elusive, red-bellied black snake may be spotted during warmer months curled up in the sun in soft ground cover.

The waterways also support eastern long-necked turtle, longfin eel and Australian bass. The azure kingfisher and dusky moorhen rely on the habitat of the riparian zone of the river and creeks in the western and eastern Domain.

Grey-headed Flying fox

Soil and water

In the centre of the Sydney Basin, Parramatta Park bolsters the arc of the Parramatta River as it bends towards Sydney Harbour. The natural water forms have been altered for different uses and are now part of the urban catchment of Parramatta River and Toongabbie and Darling Mills creeks.

The 2 geological systems in the park are the Wianamatta Group of shales in the south and the underlying Triassic sediments of Hawkesbury Sandstone in the north. The higher areas of the park have mostly shale-derived soils that are compacted, poor-draining and highly sodic. These limit the vegetation type to the Cumberland Plain landscapes in the centre of the park. The deposited alluvial matter from Parramatta River in the central east of the park supports the old growth forest red gums and grey box. The creek and river drainage system has carved through the shales to reveal sandstone outcrops and cliffs in the river valley.

Eastern Water Dragon

People

Parramatta Park sits at the core of the territory of the Barramattagul clan of the Dharug people. The park holds deep cultural and historical significance, with archaeological evidence of Aboriginal camp sites and activities scattered across the landscape. These sites reflect the continuous connection of the Dharug and broader Aboriginal communities to the area, in the past and into the future.

The area was used for early colonial land concessions and farming until the 19th century. A growing need for public green spaces led to the development of roads, walkways, gates, gatehouses, fences and bridges, until the park was officially established in 1857. Since then, it has remained one of Sydney's most significant urban parklands.

As Parramatta's population continues to grow, so too does the demand for public green space. The park borders Parramatta city centre to the east, an area undergoing rapid transformation into a metropolitan hub. Increasing medium and high-density development will further drive the park's role as a crucial recreational and environmental refuge for residents, workers and visitors.

The area is home to a diverse community, with a substantial proportion of residents born overseas and many speaking languages other than English at home. Parramatta Park is a hotspot for cultural events, enjoyment of the outdoors, relaxation and family time, attracting people from a wide range of backgrounds and fostering a sense of shared community.

With its rich Aboriginal heritage, historical significance and role as a major recreational space, the park will continue to be a vital part of Parramatta's identity. Future planning will need to balance the growing demand for event spaces and recreational use with the ongoing conservation of its cultural and environmental values, ensuring it remains a welcoming and accessible place for all.

Opportunities

The remnant and reconstructed Cumberland Plain Woodland and River-flat Eucalypt Forest is of varying conditions. Improving the diversity of species will allow for a more robust ecosystem and help restore these communities. Parramatta Park's environmental conservation aligns with the Cumberland Plain Conservation Plan.

Parramatta River supports native animals such fish, reptiles, birds and mammals. This wildlife gives people an opportunity to connect with nature and learn about the natural environment.

Parramatta Park has a long history of Aboriginal presence. This creates an opportunity for connection to Aboriginal stories with plantings of native tucker such as yam daisies. By holding revegetation and planting activities with Aboriginal people, we can celebrate their connection to Country while advancing nature and cultural understanding.

New planting activities will need to consider the natural and cultural heritage of the Parramatta Sand Body Conservation Area and military barracks site, which are listed as heritage archaeological sites.

There are opportunities to install hollows and retain stags. We will assess the impact of these trees on recreation use, cultural landscapes and confirm the proposed locations do not include the Aboriginal scar trees, which hold particular significance for Parramatta's first peoples.

Key threatening processes

Climate change

Mean temperatures, heatwaves and extreme heat days will increase, with the number of days above 35°C to double by 2050 in Parramatta. Heatwaves impact the grey-headed flying fox colony and lead to high mortality rates. Rising temperatures may also alter environmental conditions, fostering invasive weeds and placing pressure on the Cumberland Plain woodland and river-flat eucalypt forest communities.

Substantial rainfall and storms will impact drainage lines and waterways exacerbating erosion and increasing pollutants into the waterways.

Loss of habitat

The natural flow of the Parramatta River was significantly altered when weirs were installed in the 19th century. While these structures controlled river height and allowed for boating and swimming, they negatively impacted fish migration and natural sediment removal. Fishways were added to aid the migration of some native species, but the most abundant species remain the exotic common carp and the native long-finned eel. Further development along Parramatta River may have consequences on riparian connections.

Weed species

Weed incursions take place along the river and creek systems, with suburban weed sources flowing downstream into the park. The grey-headed flying fox drops seeds and fruiting native shrubs such as Pittosporum are overabundant. Historic landscape plantings such as jacarandas provide shade in the park, but escapees into bushland sites are a management issue. Challenges in removing woody weeds and vines and managing erosion also complicate efforts to restore the natural habitat.

Pest and feral animals

The European fox is a significant threat. Its diet targets ground-nesting birds and reptiles such as the eastern long-necked turtle. It is often seen near the grey-headed flying fox camp during birthing season. We can work with Local Land Services and private contractors to control fox populations. However, managing them is difficult as there are refuges outside the park. Risks to pet dogs also limit our control options.

Native birds such as noisy miners and bell miners, white ibis and cockatoos are also a problem in these altered parkland settings as they dominate landscapes and outcompete other animals for habitat. Managing native plantings and shrub layers will provide more habitat and refuge for other native bird species.

Common carp, a major pest species in freshwater, are particularly damaging to aquatic ecosystems, affecting both plant and animal life, as well as bank stability on Parramatta River.

Erosion and pollution

Some erosion control works and stream bank revegetation took place in 2010, including adding culverts and gross pollutant traps in Domain Creek to manage flooding, sediment, and litter. Ongoing management of the river bank and creek systems will help minimise erosion. Pollution, urban stormwater runoff and nearby developments will continue to impact the water quality of the Parramatta River, stressing the health of the aquatic ecosystem and the wildlife that depend on it.

Disease and pathogens

The native root born fungus armillaria is found in the park. In healthy ecosystems, armillaria plays a role in natural decay. However, it can be devastating to trees in parkland and garden settings.

The creeks and waterbodies are a focal point for water birds, which carries the risk of avian influenza. We will need to monitor and work with the Department of Primary Industries and Regional Development and the emergency animal disease team to sample and test sick and dead birds for the disease. There has previously been a case of avian botulism in the park.

Fire regimes

Due to the setting of Parramatta Park, it is extremely challenging to use controlled burns to support the bushland sites. Many of the native plants in Parramatta Park were planted and are managed using mechanical techniques under bush regeneration contracts. Introducing fire in bushland areas will need careful consideration but may be achievable in some form by partnering with Aboriginal community.

Growing visitor numbers and activities

Parramatta Park is in the heart of the developing Parramatta city. The number of park users will continue to grow. More night-time activities and noise and light disturbance from the surrounding Parramatta and Westmead areas will put pressure on nocturnal wildlife.

Site-specific objectives for Parramatta Park

The Your Parramatta Park 2030 Conservation Management Plan and Plan of Management consider the strategies and actions we can take to identify, conserve, restore and communicate the park's cultural and natural heritage for more people to enjoy now and into the future. They draw on the park's Aboriginal and non-Aboriginal heritage and promote its World Heritage status. This strategy supports the plan of management's objectives.

Protect and preserve

- Continue revegetation to provide habitat for the grey-headed flying-fox and manage the flying-fox colony in line with the Camp Management Plan
- Identify and manage areas for wildlife refuge to limit activities, noise and light spill

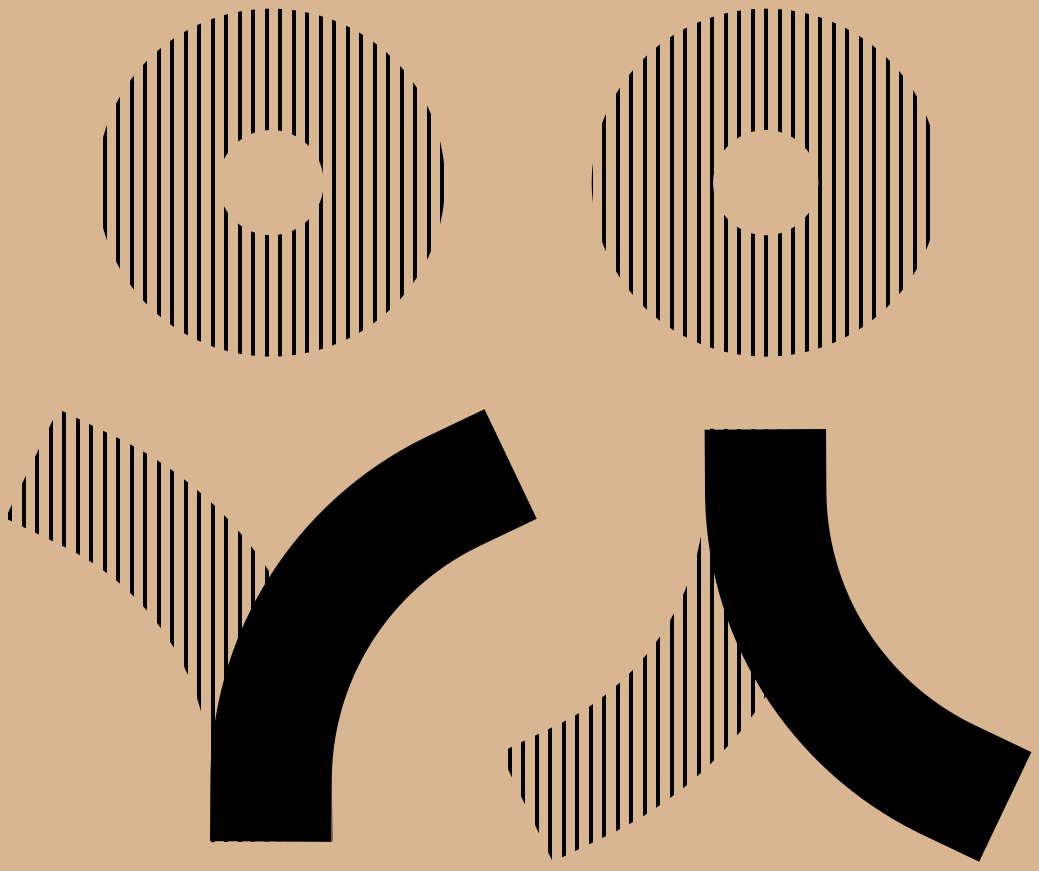
Restore and expand

- Plant diverse native groundcovers to improve diversity along Domain Creek and the Crescent ridgeline
- Continue to add artificial hollows to trees, large timber on the ground and rocks for wildlife habitat
- Strengthen vegetation along Parramatta River to stabilise the bank and secure funds to restore erosion sites

Understand and engage

- Develop a memorandum of understanding with WIRES wildlife agency to support the care of the grey-headed flying fox
- Support education and community programs to undertake quarterly counts to support the Australian Flying-fox Monitor

These are specific approaches for Parramatta Park.
The management approaches for the overall Greater Sydney Parklands Estate also apply.



Callan Park

Foreshore of Callan Point, Callan Park

Introduction

Callan Park has a rich history as a mental health facility that highlights the importance of nature. Its mix of buildings and landscaped gardens were originally designed for mental health care in the late 1800s. The park provides glimpses of a past landscape with diverse plantings and habitat niches along Iron Cove's rocky outcrops.

Callan Park is the traditional land of the Gadigal and Wangal people. Evidence such as shell middens, axe grind grooves and rock paintings illustrate a rich and productive landscape. Since European settlement, part of the coastline has been reclaimed, modifying vegetation communities and habitat.

The Callan Park Plan of Management aims to protect and enhance bushland vegetation, improve the condition of the foreshore and improve habitat. Many hollows in the park provide habitat for the rainbow lorikeets and sulphur crested cockatoos.

Callan Park attracts visitors within the neighbouring area and beyond for all types of recreation, including sports and dog walking. Within this context, we can manage the park's nature by providing habitat refuge and understanding and carefully managing its landscape.

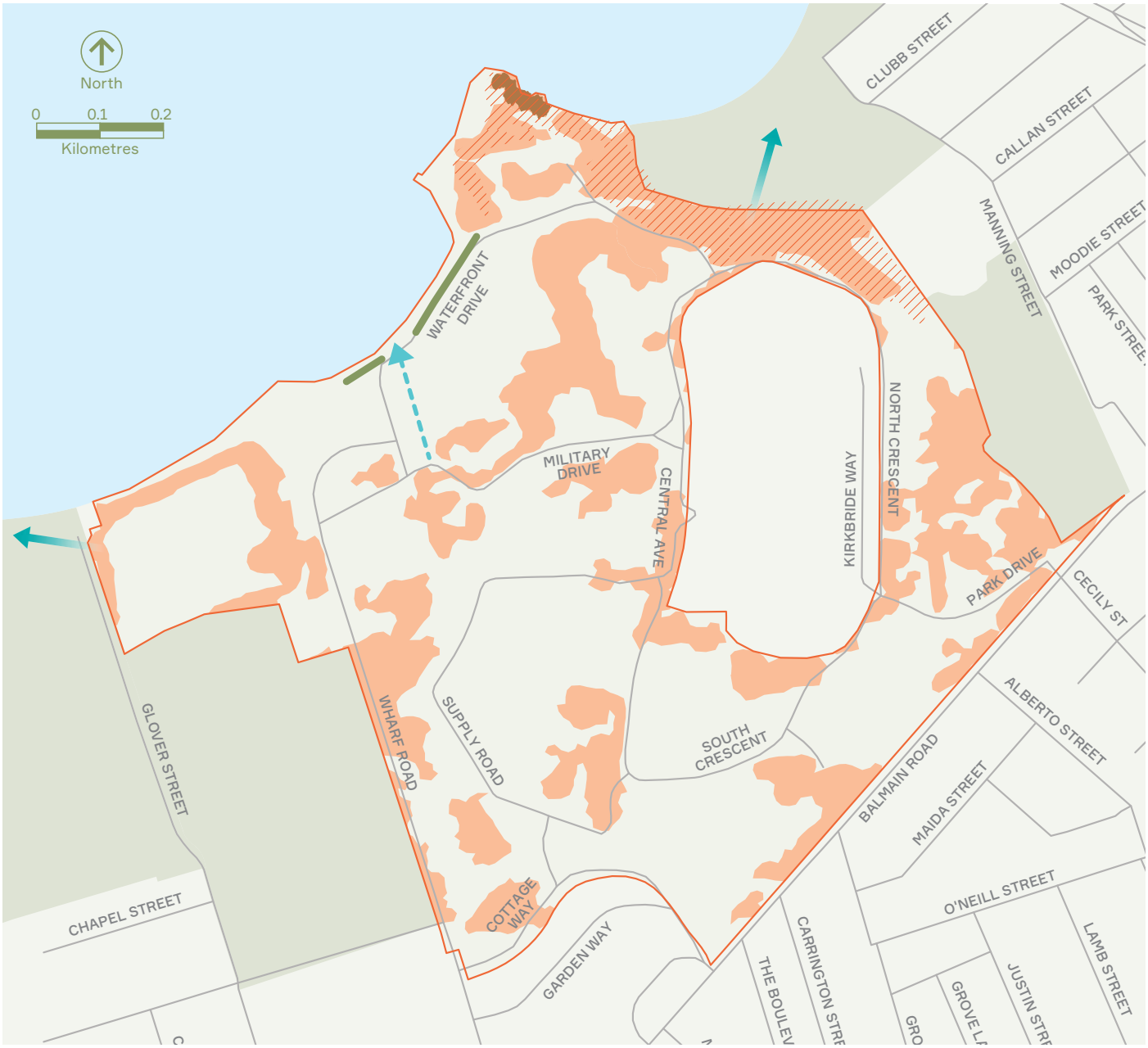
Callan Park
Historic vegetation types before colonisation

Source: *Pre-1750 Major Vegetation Groups (estimated).*

LEGEND

- Callan Park boundary
- Water flow
- Dry sclerophyll forest
- Forested wetland
- Mangroves

Callan Park
Habitat and restoration sites



Source: *Pre-1750 Major Vegetation Groups (estimated).*

LEGEND

- Callan Park boundary
- Connected corridors
- Water flow
- Tree avenues (exotic/native)
- Restoration zones
- Urban forest (exotic/native)
- Forested wetland – swamp oak floodplain forest
- Surrounding green spaces

Threatened species

- Grey-headed flying-fox
- Prickly spider flower

Pest species

- European fox
- Common mynah

Plants and animals

Callan Park's vegetation is mostly landscaped plantings designed to support mental health care. These range from large stands of Port Jackson figs and copses of native eucalypts to regenerated coastal sandstone forest and swamp oak twig-rush forest along Callan Point. A reclaimed seawall, made of stones, rocks and rubble, supports colonised species, including Sydney flat-rock oysters, little blue periwinkles and black nerites.

Large blackbutt, turpentine, scribbly gum and grey ironbark trees create woodland settings throughout the park. A planted canopy of sandpaper fig, Bangalow palm and cabbage tree palm creates a short rainforest walk either side of a small creek. Callan Point bush regeneration area has helped an endemic coastal sandstone community return. This diversity provides foraging habitat for grey-headed flying-fox, bent-winged bats and other urban wildlife.

While the long-nosed bandicoot has been reported as sighted in the local area, it is yet to be sighted at Callan Park.

The site provides opportunity for birds, bats and possums to use the park's large, open lawned areas, cement structures and abandoned buildings for nesting and foraging.

Remnant Bushland, Callan Park

Soil and water

Callan Park slopes from the southeast to the northwest towards Iron Cove with drainage lines taking overland flow and directing it to constructed stormwater systems and through concrete channels. The underlying sandstone and shallow soils provide rocky outcrops throughout the landscape. The reclaimed land along the foreshore has buried the potential acid sulfate soils and tidal embayment. Some of the upper slopes and ridges contain shale soil outcrops. Made of stones, rocks and rubble, it supports colonised species, including Sydney flat-rock oysters, little blue periwinkles and black nerites.

Chestnut teal

People

Callan Park holds significant cultural and historical value, particularly to the Aboriginal people of the area. The caves and overhanging rocks of Iron Cove provided shelter and protection, allowing Aboriginal people to fish and stay shielded from the elements. The area is home to some of Sydney's oldest Aboriginal artefacts, reflecting over 5,000 years of regular visits by Aboriginal communities to Callan Park.

From the mid 1800s, the area consisted of 3 separate estates. The government acquired these in 1874 to house mental health patients. This use continued until 2008, when the buildings became part of Rozelle Hospital. Callan Park is today known for its expansive open spaces, with a mix of native and exotic vegetation, offering a range of recreational opportunities.

The surrounding inner west Sydney community is renowned for its diversity, progressive values and wide-ranging interests, spanning sports, arts, bushcare, fitness and pet ownership. There is a strong emphasis on heritage conservation, with long-term residents committed to the area and a rich history of community activism.

As the area continues to evolve, balancing its historical significance with the needs of the growing community and providing refuge for urban wildlife is important. The park's blend of nature, pockets of regenerating bushland, recreational facilities and community-focused ethos will continue to make it an important space in Sydney's inner west.

Opportunities

Callan Park Bushcare maintains many of the native remnant patches of vegetation, particularly in the north-eastern bushland. The volunteer bushcare group works to preserve and enhance the park's remaining native species. We will continue to support the group and to work with bush regeneration contractors on the site.

Many tall and ageing trees have developed natural hollows. Rainbow lorikeets use these during breeding seasons. Possums and microbats also use them. We have an opportunity to increase hollows by installing logs and nesting boxes around younger trees.

Banksia

Key threatening processes

Climate change

Callan Park is vulnerable to the compounded impacts of sea level rise, storm surges and flooding. All of these exacerbate risks to the park's natural assets. Increasing temperatures, heatwaves and extreme heat days will place significant stress on plants and animals within the park. Natural spaces that give refuge from the heat will be increasingly important. The potential for significant habitat loss in coastal areas is a growing concern. The high costs of repair or mitigation efforts will add a further financial burden, making long-term management even more challenging.

Loss of habitat

Most of the original vegetation at Callan Park has been cleared. Many older trees across the park provide hollows for many animals that reside there. Habitat exists in the northern sections of the park in the plantings and assisted revegetation along Callan Point and along Waterfront Drive.

Weed species

Invasive weeds include lantana and madeira vine in the north-eastern bushland areas. The opportunistic panic veldtgrass takes a foothold in sunny and shady areas. There are many trees with potential heritage value but the species have become problematic weeds. These need careful understanding and management.

Pest and feral animals

The European fox and both feral and domestic cats remain ongoing threats due to their broad diets and ability to thrive in urban environments. While we can work with private contractors to control foxes in the park and liaise with local councils to manage feral and domestic cats, challenges remain. Managing fox populations in a highly urbanised environment is difficult, especially with the added risk to pet dogs. Foxes can also migrate from nearby parks or refuges not under our management.

Off-leash dogs also pose a threat to wildlife. A dog running through bushland can permanently disturb nesting birds or fatally harm smaller animals such as lizards. Educating the community on the impacts of off-leash dogs can help mitigate these threats.

Common mynahs can dominate landscapes and outcompete native birds. Although noisy miners are native, the modified woodland type landscapes have favoured their expansion. Increasing shrub layers will provide more habitat for other native bird species, promoting a more balanced ecosystem.

Erosion and pollution

Erosion is an issue where inclines are steep and lack vegetation or where tracks have formed. This includes the north-eastern bushland where the slope is significant. Coastal erosion from rising sea levels will progressively increase. More storms and king tides will impact the beach areas and rocky outcrops.

The urban stormwater system provides challenges for pollution and nutrient runoff.

Disease and pathogens

The shoreline at Callan Park is a focal point for migratory birds, which carries the risk of avian influenza. We will need to monitor and work with the Department of Primary Industries and Regional Development and the emergency animal disease team to sample and test sick and dead birds for the disease.

Fire regimes

Most of Callan Park's diversity is through cultured planting and the threat of fire is low. It is extremely challenging to use fire to support the regenerating endemic bushland site at Callan Point. Introducing fire in this location will need careful consideration but may be achievable in some form by partnering with Aboriginal community.

Growing visitor numbers and activities

Callan Park has high visitor numbers, particularly dog walkers and active recreation. As the park transitions to more open space recreation and other community uses, increasing visitor numbers will put pressure on the urban wildlife and diversity.

Site-specific objectives for Callan Park

The Callan Park Plan of Management sets a direction to understand and care for the park's natural and cultural values. A key priority is to care for the park's precious habitats and biodiversity and work to connect it to surrounding blue-green corridors. This strategy aligns with the plan of management to support and improve nature in Callan Park.

Protect and preserve

- Continue the restoration of native vegetation at Callan Point
- Continue planting for tree diversity and canopy at Callan Park
- Identify areas of habitat potential and connections and include in masterplan design as the park transitions from a health precinct to a recreation destination
- Work with private contractors to control foxes in the park and liaise with local councils to manage feral and domestic cats

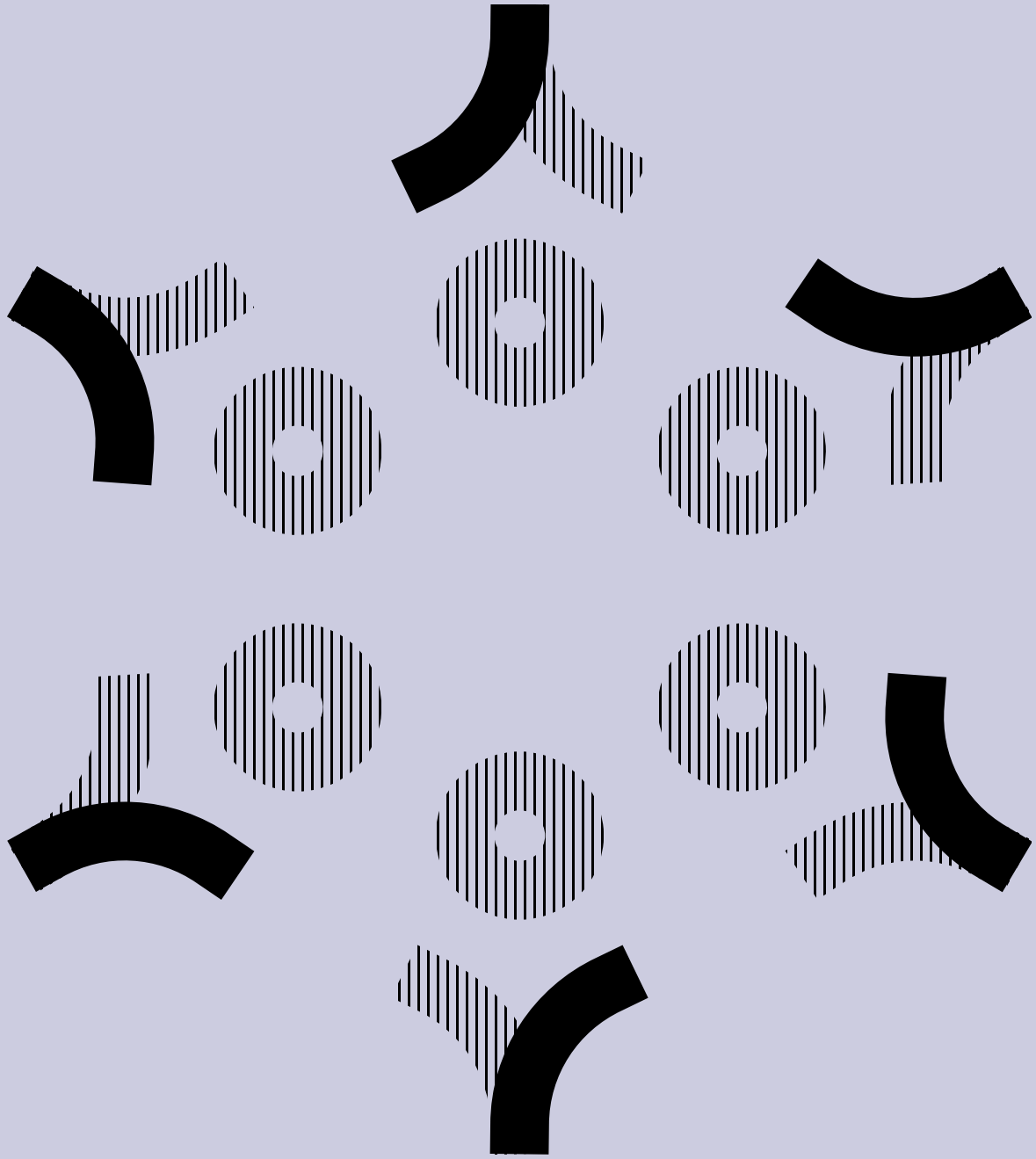
Restore and expand

- Plant diverse shrub species and groundcovers to improve structural habitat and connectivity
- Continue to add artificial hollows to trees, large timber on the ground and rocks for wildlife habitat
- Provide habitat structures for marine life when restoring and raising the existing sea walls
- Consider improvements to the drainage line to retain water in the landscape, create habitat, improve water quality and create opportunities for water play

Understand and engage

- Work with research and healthcare organisations to build on the importance of nature for human health
- Engage with research opportunities such as Sydney Institute of Marine Science to explore habitat improvements
- Engage Aboriginal bush regeneration teams on the restoration and care of Callan Point

These are specific approaches for Callan Park.
The management approaches for the overall Greater Sydney Parklands Estate also apply.



Centennial Parklands

Powerful Owl

Introduction

Centennial Parklands incorporates Centennial, Queens and Moore Parks. It is around 5 km south-east of Sydney's city centre across 3 local government areas: City of Sydney, Randwick City and Waverley. It shares a boundary with Woollahra.

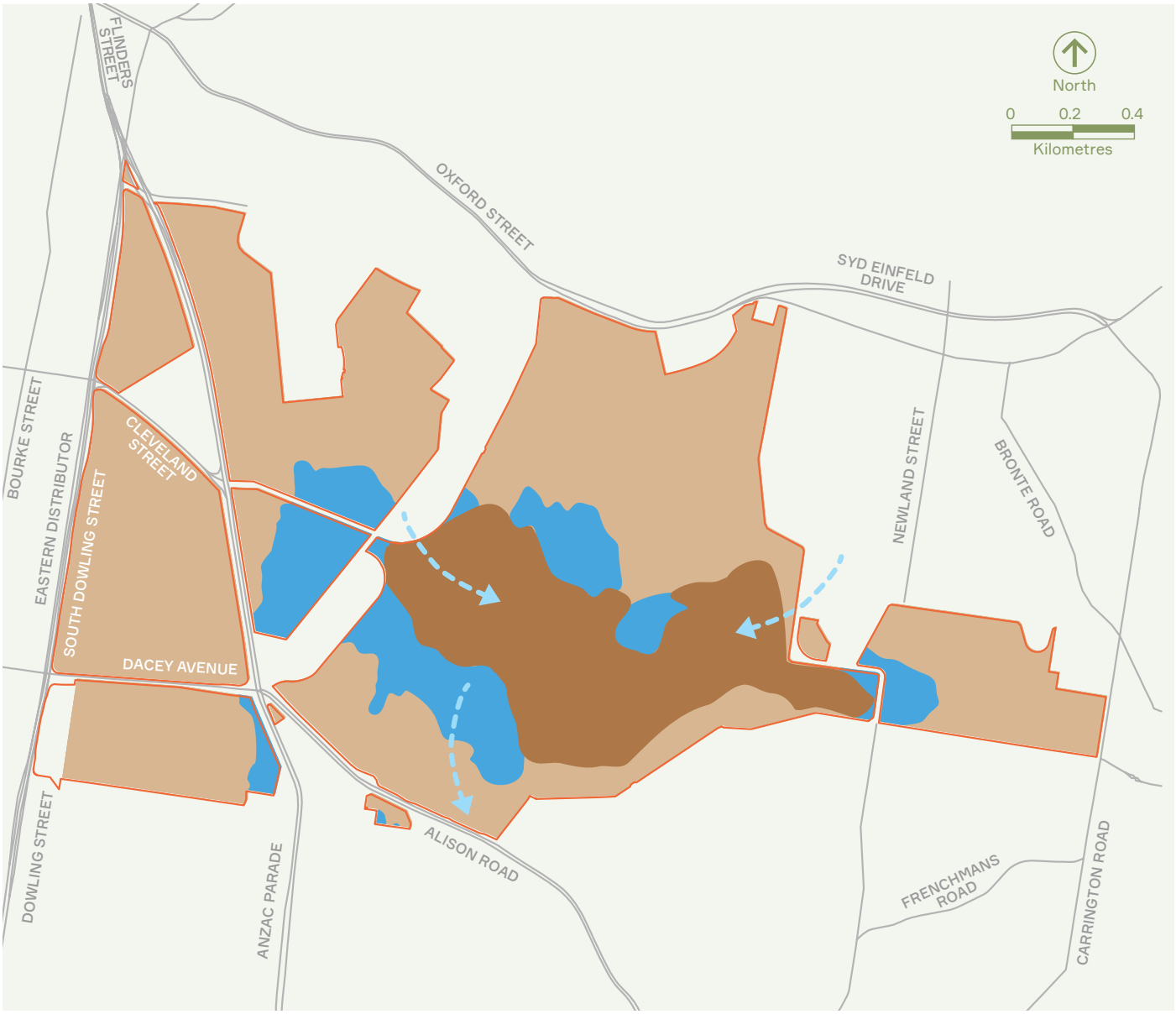
The 360-hectare parklands are a biodiverse space and a remarkable ecosystem in the heart of Sydney's eastern suburbs. The Centennial Parklands Plan of Management 2018 outlines the parklands role as a place where wildlife can seek habitat and refuge and native vegetation is protected and nurtured. The plan of management will be updated in 2026 to align with the Greater Sydney Parklands Trust Act review.

Sitting on the ancestorial lands of the Bidjigal and Gadigal people, the parklands show signs of past landscapes. Some sections are preserved and protected, including the Eastern Suburbs Banksia Scrub and the sandstone cliffs within Queens Park.

The Centennial Parklands Master Plan 2040 prioritises shelter and homes for native birds and animals. This includes safeguarding significant trees for the powerful owl and the grey-headed flying-fox colony and enhancing bushland in the outer wild areas.

The State Heritage Register of NSW lists the 3 parks (excluding the entertainment precinct) and various items as having state or local heritage significance.

Centennial Park
Historic vegetation types before colonisation



Source: *Pre-1750 Major Vegetation Groups (estimated).*

LEGEND

- Centennial Parklands boundary
- Water flow
- Heathlands
- Forested wetland
- Freshwater wetland

Centennial Parklands
Habitat and restoration sites

LEGEND

- Centennial Parklands boundary
- Connected corridors
- Water flow
- Tree avenues (exotic/native)
- Ponds
- Restoration zones
- Urban forest (exotic/native)
- Protected coastal wetland
- Forested wetland
- Heathlands – Eastern suburbs banksia scrub
- Surrounding green spaces

Threatened species

- Grey-headed flying-fox
- Powerful owl
- Sunshine wattle

Pest species

- European fox
- Common mynah
- Carp

Plants and animals

Rising from small patches of coastal sand are the banksias, tea tree and coastal wattle belonging to the Eastern Suburbs Banksia Scrub community. These patches throughout the park offer a glimpse of the vegetation types that existed before colonisation. The banksia scrub is a resource for rainbow lorikeets, wattle birds and New Holland honeyeaters. You can often hear corellas and sulphur-crested cockatoos high in the trees cracking open the seed pods.

Port Jackson fig and Moreton Bay figs have been planted and established across the park. In lower-lying areas swamp oak, cabbage tree palm and prickly-leaved tea tree provide a hint of past coastal swamp and floodplain communities.

Planted broad-leaved tea tree dominate in rows of paperbark cloisters throughout the park. Blueberry ash, cheese tree and bleeding hearts thread through the planting. Exotic trees planted in outer areas include radiata pine, coral tree and weeping willow.

Grey-headed flying-foxes roost during the day at Lachlan Swamp/badu ngura trail in the south-east, settling after a night feeding in the city area. While the majestic powerful owl sits high in the paperbarks, yellow-tailed black cockatoos move through vegetation, feeding on nuts and seeds or perching in the radiata pine.

Superb Fairy-wren – *Photo: Tony Spira*

Soil and water

Most soils in Centennial Parklands are windblown sandy soils with outcropping sections of sandstone. The sandstone cliffs are most dramatic in the east at Queens Park and also occur to the north along the sandstone ridge. Moore Park to the west has the largest remaining windblown sand dune. This landform provides the contours to create a flow of water from east to west.

The water moves through constructed ponds towards Botany wetlands and Botany Bay. Also notable is the underground aquifer (Botany Sands Aquifer) that is relatively shallow, often less than 1 to 2 metres below the ground surface, and is an important water resource for the parklands. The groundwater is seen as a natural spring at Lachlan Swamp that provides a constant source of water flowing from the centre of the park.

Centennial Parklands volunteers

People

Centennial Parklands is a significant natural area with deep historical roots, providing resources for Aboriginal people across the region who made use of the ocean and estuarine resources in Port Jackson and Botany Bay. These early inhabitants lived sustainably within the area, using the land's natural resources for thousands of years.

In the early 1800s, Centennial Parklands were part of the Sydney Commons, with the area's natural aquifers pumped for use in the growing city. These aquifers were later dammed, creating the ponds that are now a central feature of the parklands. By 1888, the site was officially designated as Centennial Park to commemorate 100 years of colonial settlement. As surrounding suburban areas expanded, Centennial Parklands became a vital recreational space, offering playgrounds, picnic areas, paths for cyclists and walkers, and spaces for major events.

Centennial Parklands Bushcare maintains many of the native remnant patches of vegetation, particularly the Eastern Suburbs Banksia Scrub. The volunteer bushcare group works to preserve and enhance the park's remaining native species. We will continue to support the group and to work with bush regeneration contractors on the site.

The park hosts major events that attract people from across Australia and New Zealand, with festivals catering to all ages and music tastes. As an iconic inner-city parkland, Centennial Park attracts a wide range of visitors engaged in activities such as sports, fitness, horse riding, children's play, bushcare and the arts.

The park's demographic reflects a significant proportion ofresidents from English-speaking and Anglo-European backgrounds, with a strong community of pet owners, cyclists, and volunteers involved in bushcare. Centennial Parklands is a hub of activity throughout the day, with diverse groups of people making use of the park for both leisure and active pursuits.

As the park continues to serve as a major recreational space, balancing the needs of its vibrant, diverse community with the ongoing conservation of its natural and historical features will remain a key priority. The park's role as both a heritage site and a modern recreational space ensures it will continue to be a treasured destination for generations to come.

Opportunities

Centennial Parklands gives people the opportunity to connect with wildlife and native vegetation. We can encourage bird and bat movements by increasing plant diversity and structure through plantings and weed removal in Centennial Park's outer bushland areas.

Fire is essential to the Eastern Suburbs Banksia Scrub and to various ecological and cultural aspects. At Centennial Park and Queens Park, we can work with Aboriginal people and the NSW Fire Service to manage wildfire risks by reducing fuel loads and regenerating Eastern Suburbs Banksia Scrub from seed bank in the soils, particularly the banksia species.

Cultural burning workshops can boost connections to Country and improve cultural awareness and nature.

Expansion of outer wild areas – while increasing native trees, shrubs and grasses – is a pathway for small birds such as the superb fairy wren, and habitat for small mammals and lizards. This is a target in the Centennial Park Master Plan 2040.

Many vegetation stands are isolated and restrictive for small birds to move through. A richer mid-storey layer of vegetation will protect small birds as they move from patch to patch and reduce the chances of predation from larger birds and foxes.

Hollows provide homes for birds, possums and microbats. Partnering with organisations that install hollows in some of the younger trees will support the fauna population.

Key threatening processes

Climate change

The low-lying areas and wetlands of Centennial Parklands are particularly vulnerable to flooding, a risk further intensified by extreme rainfall events. Rapidly flowing water can erode the park's slopes, while higher water levels and increased flow into the ponds contribute to bank erosion.

Many of the park's trees may not be suitable for the changing climate, with prolonged hot periods increasing the risk of trees deteriorating. To ensure ongoing resilience, replacing existing tree species with drought-tolerant varieties that provide habitat will be essential.

Loss of habitat

Since European settlement, much of the native vegetation at Centennial Parklands has been cleared, leaving behind significantly modified vegetation communities. These altered habitats lack the necessary structure, hollows and food sources to support many native urban wildlife species. Reintroducing native plants to the outer wild areas will help restore habitat and increase structural diversity, while installing artificial hollows can supplement the loss of natural tree hollows.

Weed species

Several problematic Weeds of National Significance have been identified including asparagus fern, Madeira vine, lantana and fireweed.

Centennial Parklands is highly susceptible to weed infestation, with wind-blown garden escapees and water-borne weed seeds contributing to their spread. Invasive species such as coral tree dominate the south-eastern bushland corridor, while African lovegrass and Mexican feather grass is prevalent in the northern, eastern and southern edges of Centennial Park. These species outcompete native plants, reducing food sources for native animals.

In the ponds, species such as giant sea holly and Peruvian primrose-willow threaten pond banks, while Mexican water lily blankets the water surface during warmer months, blocking light to aquatic plants and reducing oxygen levels in the water.

Exotic tree regrowth, trad-dominated groundcover in some areas, as well as invasive ferns and vines, pose further challenges for maintaining healthy native ecosystems.

Pest and feral animals

The European red fox has a broad diet that includes ground nesting birds, and small to medium mammals and reptiles. Managing fox populations in a highly urbanised environment is difficult, especially with the added risk to pet dogs and the migration of foxes from nearby parks or refuges not under our management. Common mynahs, and certain native species, particularly cockatoos and white ibis, can dominate parkland landscapes and outcompete with other native birds.

Erosion and pollution

The decline in aquatic vegetation favours exotic pest species like the common carp, further impacting native fish and turtles.

Controlling contaminants entering the park through storm-water infrastructure remains difficult, often requiring reactive rather than proactive responses. Increased urban development and impervious surfaces further exacerbate local flooding and erosion by limiting natural water infiltration.

Disease and pathogens

Australian bat lyssavirus can be carried in bat species, such as the grey-headed flying-fox and microbats. The disease is transmitted to people though a bite or scratch from an infected animal and is often fatal to the animal. People who handle bats are at risk of infection.

Avian influenza can significantly impact bird populations. It is a significant risk to water birds, which in turn have the potential to infect other birds across Centennial Parklands.

We will need to work with the Department of Primary Industries and Regional Development and the emergency animal disease team to monitor and test for Australian bat lyssavirus and avian influenza.

Myrtle rust is present in Centennial Parklands and threatens trees and shrubs including honeymyrtles and eucalypts. Monitoring the locations where myrtle rust is present will assist in the management of infected plants to reduce spread. Across Centennial Parklands, fungus such as cinnamon fungus is a potential threat to the bushland. This soil-borne disease impacts the plants roots and spreads through the plant, causing dieback.

Fire regimes

Banksias rely on fire for seed germination in plant communities such as the Eastern Suburbs Banksia Scrub. Introducing regular ecological burns in the remnant scrub areas will encourage regeneration of the banksias to replace the ageing population and introduce a variation of age structure.

Growing visitor numbers and activities

Centennial Parklands hosts numerous events which have the potential to disrupt native species. Evening events near the grey-headed flying fox camp are particularly concerning, as noise and large crowds can disturb the colony. Scheduling events outside of breeding seasons and ensuring they occur after the colony has left the site can help minimise disturbance.

Maintaining strict speed limits for cars and bicycles is essential to reduce wildlife-vehicle collisions, particularly as animals move between the ponds and outer bushland. Growing visitor numbers and the increasing diversity of activities and users is causing stress to local fauna, pollution and unregulated movement through sensitive bushland. This amplifies the need for careful management strategies.

Site-specific objectives for Centennial Parklands

The Centennial Parklands Plan of Management identifies the vital role of the parklands in sustaining natural processes and biological diversity on a scale that is rare in Sydney's inner urban environment. This strategy includes our objective to strive for ecological sustainability and captures further opportunities to protect and enhance natural areas.

Protect and preserve

- Continue the restoration of native vegetation of areas containing remnants of the original Eastern Suburbs Banksia Scrub, such as York Road, Queens Park and the bird sanctuary
- Collaborate with partners such as OzFish and Sydney Water to reduce carp in the ponds
- Implement the actions of the Ponds Management Plan (planting, sediment removal, stabilise eroding banks) to achieve the long term outcomes for the Centennial Parkland ponds
- Manage the flying-fox colony in-line with the Camp Management Plan

Restore and expand

- Expand patches of the Eastern Suburbs Banksia Scrub species in line with the Centennial Parklands masterplan
- Plant mid and understorey native species to support small bird habitat and movement and increase forage trees within the park
- Progressively manage the sandstone ridge area to restore endemic plant communities
- Revegetate pond edges and provide habitat structures in ponds for wildlife refuge
- Progressively remove Nymphea Mexicana from Kensington Pond East and Kensington Pond West, and Nymphaea alba from Lily Pond, Busby Pond and Randwick Pond
- Continue to create artificial hollows in trees, with a particular focus on identifying opportunity to create alternate hollows for the powerful owl

Understand and engage

- Work with research and healthcare organisations to build on the importance of nature for human health
- Engage with research opportunities such as UNSW Sydney's habitat and hollow monitoring projects
- Continue Aboriginal interpretation for the parklands including walking tours, the Centennial Parklands website, bush tucker self walking tracks and various signs
- Support education and community programs to do quarterly counts as a key component of the Australian flying-fox monitoring program, and volunteer Birding NSW surveys

These are specific approaches for Centennial Parklands.
The management approaches for the overall Greater Sydney Parklands Estate also apply.

Centennial Park

Flying-fox and pup

Appendix – Threatened species

Fernhill Estate

FLORA

Rhodamnia rubescens	Scrub turpentine

FAUNA

Anthochaera phrygia	Regent honeyeater
Artamus cyanopterus cyanopterus	Dusky woodswallow
Callocephalon fimbriatum	Gang-gang cockatoo
Calyptorhynchus lathami lathami	South-eastern glossy black-cockatoo
Daphoenositta chrysoptera	Varied sittella
Gallinago hardwickii	Latham's snipe
Haliaeetus leucogaster	White-bellied sea-eagle
Lathamus discolor	Swift parrot
Meridolum corneovirens	Cumberland Plain land snail
Micronomus norfolkensis	Eastern coastal free-tailed bat
Myotis macropus	Southern myotis
Petroica boodang	Scarlet robin
Phascolarctos cinereus	Koala
Pseudophryne australis	Red-crowned toadlet
Pteropus poliocephalus	Grey-headed flying-fox
Scoteanax rueppellii	Greater broad-nosed bat
Tyto novaehollandiae	Masked owl

Callan Park

FAUNA

Miniopterus orianae oceanensis	Large bent-winged bat
Pteropus poliocephalus	Grey-headed flying-fox

Centennial Parklands

FLORA

Acacia terminalis subsp. terminalis	Sunshine wattle
Syzygium paniculatum	Magenta lilly pilly

FAUNA

Gallinago hardwickii	Latham's snipe
Haliaeetus leucogaster	White-bellied sea-eagle
Miniopterus australis	Little bent-wing bat
Miniopterus orianae oceanensis	Large bent-winged bat
Myotis macropus	Large-footed myotis
Ninox strenua	Powerful owl
Pteropus poliocephalus	Grey-headed flying-fox
Stictonetta naevosa	Freckled duck

Western Sydney Parklands

FLORA

Acacia pubescens	Downy wattle
Cynanchum elegans	White-flowered wax plant
Dillwynia tenuifolia	Pea-flower shrub
Grevillea juniperina subsp. juniperina	Juniper-leaved grevillea
Marsdenia viridiflora subsp. viridiflora	Marsdenia viridiflora R. Br. subsp. viridiflora population
Pimelea curviflora var. curviflora	Curved rice-flower
Pimelea spicata	Spiked rice-flower
Pultenaea parviflora	Sydney bush-pea

FAUNA

Anthochaera phrygia	Regent honeyeater
Apus pacificus	Fork-tailed swift
Artamus cyanopterus cyanopterus	Dusky woodswallow
Circus assimilis	Spotted harrier
Daphoenositta chrysoptera	Varied sittella
Falsistrellus tasmaniensis	Eastern false pipistrelle
Gallinago hardwickii	Latham's snipe
Glossopsitta pusilla	Little lorikeet
Haliaeetus leucogaster	White-bellied sea-eagle
Hieraaetus morphnoides	Little eagle
Hirundapus caudacutus	White-throated needletail
Ixobrychus flavicollis	Black bittern
Lathamus discolor	Swift parrot
Lophoictinia isura	Square-tailed kite
Meridolum corneovirens	Cumberland Plain land snail
Micronomus norfolkensis	Eastern coastal free-tailed bat
Miniopterus australis	Little bent-winged bat
Miniopterus orianae oceanensis	Large bent-winged bat
Myotis macropus	Southern myotis
Ninox strenua	Powerful owl
Pluvialis squatarola	Grey plover
Pteropus poliocephalus	Grey-headed flying-fox
Saccolaimus flaviventris	Yellow-bellied sheathtail-bat
Scoteanax rueppellii	Greater broad-nosed bat
Tyto novaehollandiae	Masked owl

Parramatta Park

FLORA

Grevillea juniperina subsp. juniperina	Juniper-leaved grevillea

FAUNA

Pteropus poliocephalus	Grey-headed flying-fox

Western Sydney Parklands sunrise

Acknowledgements

We thank the individuals, Aboriginal groups, NSW Government agencies, councils, private organisations and Community Trustee Board members who provided feedback and input to the strategy.

NSW GOVERNMENT