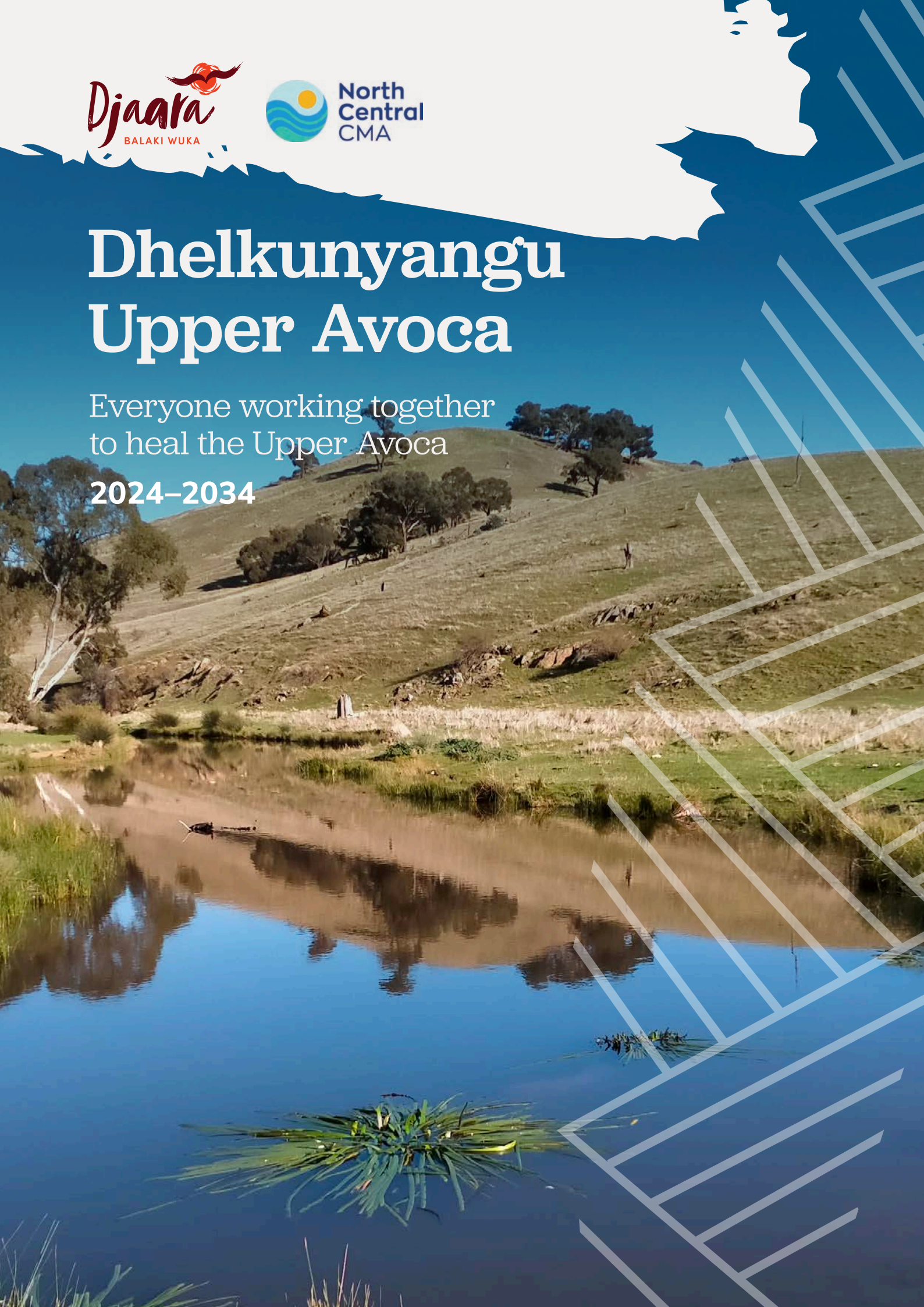
Djaara
BALAKI WUKA

North Central CMA

Dhelkunyangu Upper Avoca

Everyone working together to heal the Upper Avoca

2024–2034



“Our yaluk (rivers) are the veins of Djandak (Dja Dja Wurrung Country), and provide food and medicine, and places to camp, hunt, fish, swim and hold yapenya (ceremonies).
They are places that are central to our creation stories, and many of our Malamiya (Cultural Heritage) sites are associated with waterways – burial sites, birthing sites and middens.
Our waterways are places that we connect with our Ngurar Balak (Ancestors) and pass traditional knowledge on to our children and grandchildren.”

Dja Dja Wurrung Dhelkunya Dja Country Plan

Acknowledgement of Country

We, the Djaara people, are the Traditional Owners of the Country where this work is being undertaken. We affirm our continuing connection to land, waters and Culture and pay respects to our Elders past and present.

We pay respects to all Aboriginal and Torres Strait Islander communities and express gratitude for the knowledge, passion and commitment of Djaara, as strong, resilient caretakers of this land.

Colonisation of our Country caused the dispossession of our People, though sovereignty has never been ceded. Our people have been prevented from accessing and caring for our lands and waters.

This exclusion, together with a legacy of poor management decisions, has made our yaluk (rivers), lakes and swamps sick. We articulate our communities' priorities and walk together in the spirit of reconciliation to heal gatjin.

Kapa Gatjin Acknowledgement

We acknowledge Kapa Gatjin, Dja Dja Wurrung water knowledge group, for their insights and direction shared during the original Aboriginal Water Assessment and throughout the development of this plan, Dhelkunyangu Upper Avoca.

Partnership

Dhelkunyangu Upper Avoca has been developed through a proud partnership between DJAARA and the North Central Catchment Management Authority (CMA). This document represents our shared commitment to caring for Country, and mutual respect. It supports self-determination for Djaara (Dja Dja Wurrung People).

Artists

We acknowledge the Dja Dja Wurrung artists who contributed the artwork used in this plan: Aunty Kathy Nicholls and Suzanne Taylor.

Contents

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Dhelkunyangu Upper Avoca Summary

VISION

The Upper Avoca is a healthy and resilient catchment that fosters connections between people and Country.

- There are healthy connections between Country, Djaara, communities, landscapes and habitats.
- The catchment is ecologically healthy and functioning.
- The catchment is resource-abundant so that all people can value, enjoy, and be proud of the Upper Avoca.
- The catchment has something everyone can value from cultural food and fibre to river red gums.
- Everyone is advocating for, sustaining, and healing Country for future generations.

This vision was derived from a series of DJAARA-led stakeholder workshops.

GOALS

To achieve the vision, Dhelkunyangu Upper Avoca has the following four goals:

1. **Djaara-led cultural management:** Djaara-led cultural management and empowerment of landscape throughout the Upper Avoca, upholding Djaara rights to access Djandak and to practice Culture.
2. **Healthy connected landscapes:** nurturing ecosystems that are robust and interconnected – supporting healthy native animals, waterways and landscapes and connection of people with Country.
3. **Working together:** working together to achieve a healthy, connected catchment, including Djaara, government, not-for-profit and community organisations.
4. **Culture of caring for Country:** fostering a sense of stewardship amongst the wider community who are connected to the Upper Avoca, and cultivating a deep personal commitment to the care and management of the broader catchment.

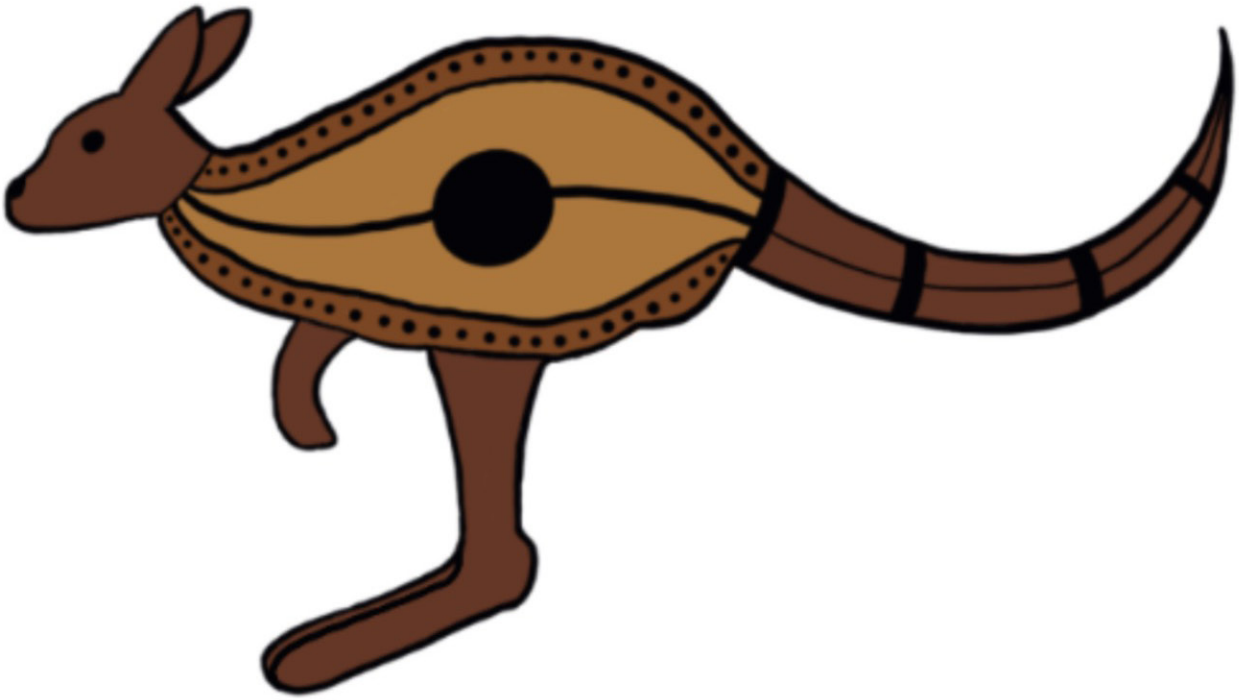
ACTIONS

In line with these four goals, Dhelkunyangu Upper Avoca presents a series of outcomes and measures of what success looks like and a range of SMART actions.

These actions directly contribute to other DJAARA and North Central CMA plans and state and regional strategic plans aimed at protecting the catchment, in particular the 2021 North Central Regional Catchment Strategy and Biodiversity 2037.

Key actions focus on:

- improving landscape connections within the catchment and linkages with other catchments
- protecting waterway health, particularly deep pools that hold special cultural value and act as refuges during periods of low flows
- protection of flagship species, such as:
    - red gums
    - endangered orchids
    - Swift Parrot
    - Powerful Owl
    - yam daisy
    - Koala
- engaging the wider community in protecting and improving connections within the Upper Avoca catchment.



Glossary

Biodiversity – the variety of all life on earth (animals, plants, fungi, microbes), their interactions and the natural patterns they form. This includes the variety (or diversity) of species, the variety within species (genetic diversity) and the variety of ecosystems.

Biolink/Corridor – geographical area that provides suitable conditions for animal and plant movement through the landscape.

Citizen science – the collection and analysis of data relating to the natural world by members of the general public, typically as part of a collaborative project with professional scientists or natural resource managers.

Djaara – People (Dja Dja Wurrung People).

Djandak – Country (Dja Dja Wurrung Country).

Ecosystem – a unique community of living and non-living organisms interacting as a system.

Ecosystem services – the benefits provided to humans through the transformation of natural resources (including land, water, vegetation and atmosphere) into essential goods and services, such as clean air, water and food.

Fauna – animal species.

Flagship species – locally significant or culturally important species, identified during the plan's development (refer also page 10).

Flora – plant species.

Habitat – an area that has the right structure and composition of native vegetation to provide food and shelter and opportunities for breeding for a species.

Habitat connectivity – the connections available in the landscape for flora and fauna to access resources and to retain natural patterns of movement and dispersal.

Nature Kit – an online mapping and data exploration tool for biodiversity data integration and decision support.

No net loss – the 'no net loss' objective of Victoria's native vegetation removal regulations means through an 'avoid, minimise, and offset' hierarchy, there will not be a reduction in the state's biodiversity value from the approved removal of native vegetation.

Stewardship – (in a catchment context) individual and collective efforts in managing natural systems to generate intergenerational benefits for the environment, people and place.

ACRONYMS

CFA
Country Fire Authority

CMA
Catchment Management Authority

DEECA
Department of Energy, Environment and Climate Action

EPBC Act
Environment Protection and Biodiversity Conservation Act 1999

FFG Act
Flora and Fauna Guarantee Act 1988

PV
Parks Victoria

TfN
Trust for Nature

1. Background

Djaara Values

"Gatjin is life, it is a living entity in itself and all life depends on the free flow of water throughout Country. We are nurtured by and born of water - we are gatjin."

Water is Life, Djaara Nation Statement

Dja Dja Wurrung People, known as Djaara, are the Traditional Custodians of Djandak (Dja Dja Wurrung Country). Djaara have cared for Djandak and for the Upper Avoca catchment for millennia and, for Djaara, this living landscape is embedded with Culture, stories and history.

Djaara have a special relationship with Country. In the Djaara worldview, dreaming stories of Djandak and Dja Dja Wurrung date back to the creation of these lands and all within them. Djaara evolved with Djandak. Djandak has been shaped and nurtured by the traditional way of life of Djaara and their Ancestors, reflecting principles embedded in kinship, language, spirituality and Bundjiyl's Law. Bundjiyl is the creator being who bestows Djaara with the laws and ceremonies that ensure the continuation of life. Dja Dja Wurrung People know Mirndayi the giant serpent as the keeper and enforcer of Bundjiyl's Law.

The Upper Avoca catchment is rich in cultural significance. Areas of Cultural Heritage sensitivity that are known to contain, or likely to contain, Aboriginal Cultural Heritage places and objects and are defined in the Aboriginal Heritage Regulations (2018), have been identified and mapped in the Upper Avoca catchment.[1]

However, Djandak is a cultural landscape that encompasses more than just tangible objects and landmarks; imprinted in it are the dreaming stories, lore, totemic relationships, songs, ceremonies and Ancestral spirits, which give it life and significant value to Djaara. The values Djaara hold for Djandak are shaped by belief systems that all things have a murrup (spirit) – water, birds, plants, animals, rocks and mountains. Djaara see all the land and its creatures in a holistic way, interconnected with each other and with the people.

1 Recognition and Settlement Agreement between Dja Dja Wurrung Clans Aboriginal Corporation and the State of Victoria, Recognition Statement (15 November 2013).

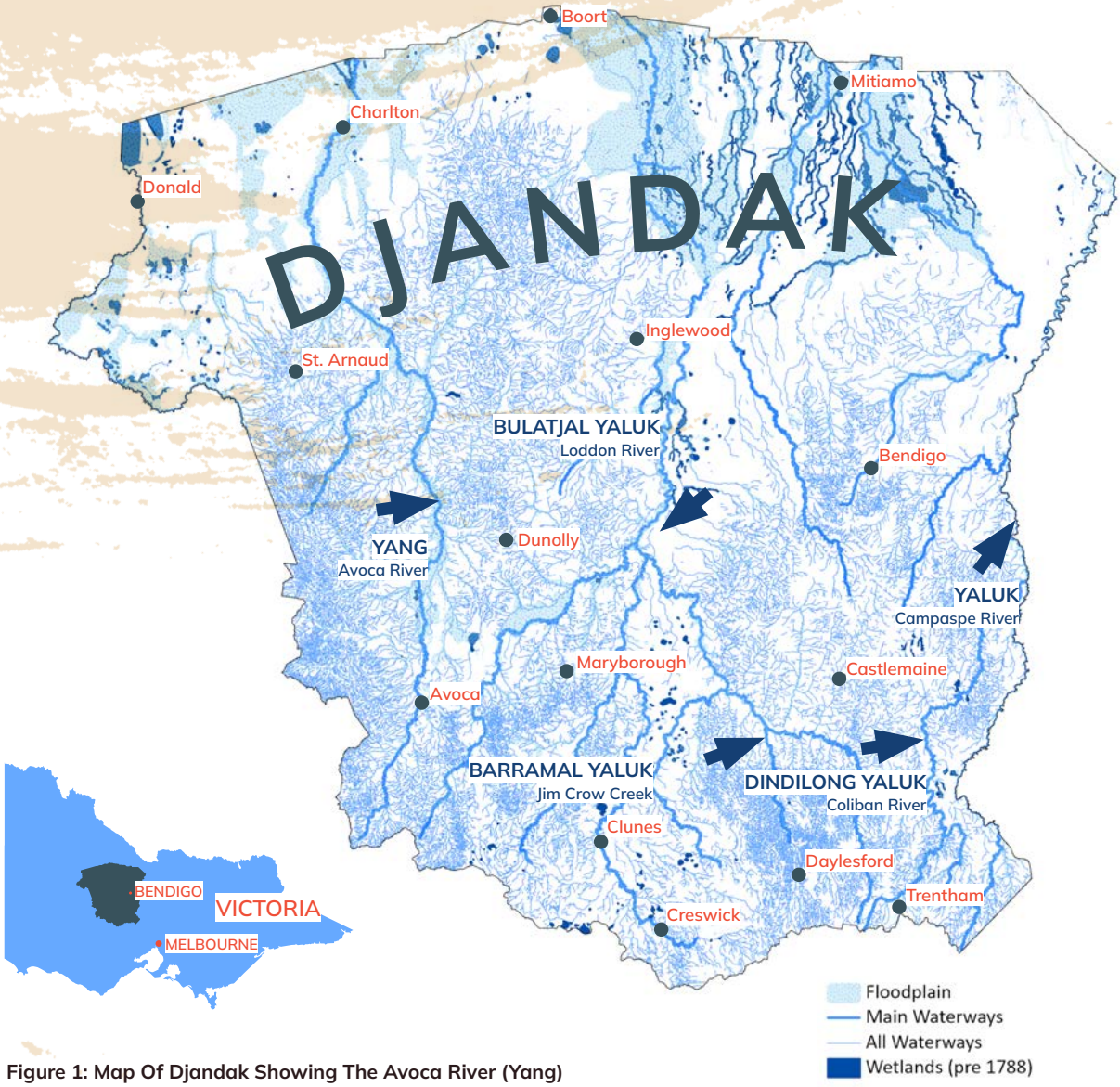


Figure 1: Map Of Djandak Showing The Avoca River (Yang)

OUR DJANDAK, OUR GATJIN

Excerpt from Dhelkunyangu Gatjin – Djaara water strategy

> **Gatjin is the lifeblood of our Country.**
>
> **As gatjin moves through Djandak: seeping into our soils, entering our groundwater, flowing down our waterways, and pooling in our wetlands, it shapes and nourishes our landscape. It is integral to the health of our People and our Country.**
>
> **Our involvement in water management is fundamental. It enables us to live our Culture and follow in the footsteps of our Ancestors to dhelkunya (care) for Djandak. It also allows us to apply and share our knowledge to help heal our water systems for the benefit of all.**

Introduction

Dhelkunyangu Upper Avoca means 'everyone working together to heal the Upper Avoca' in Dja Dja Wurrung language. This plan has been built on Djaara knowledge, values and traditional management expertise, with input from the community and other stakeholders in the catchment. The intention of Dhelkunyangu Upper Avoca is for Djaara knowledge, values and lore to become central again to the management of the Upper Avoca catchment.

THE REGION

The Avoca River flows 270 km, linking the landscapes of the Pyrenees region in central Victoria to those in the north as it carries water to Lake Bael Bael near Kerang, where the river terminates. In periods of high flow, the waters of the Avoca River spill into the Kerang Wetlands, facilitating many ecological functions in this internationally important wetland, with water reaching as far as the Murray River.[1]
The flow in the Avoca River is highly variable, and the river is largely unregulated.

This plan focuses on the upper reaches of the Avoca catchment, from Amphitheatre in the south to Charlton in the north (Figure 2). The Upper Avoca can remain dry for several months of the year, yet it also has a long history of flooding. It encompasses two primary landscapes – the Western Goldfields and the Western Dryland Plains, which are made up of forests, woodlands, gullies, gently undulating plains and flat open grasslands.

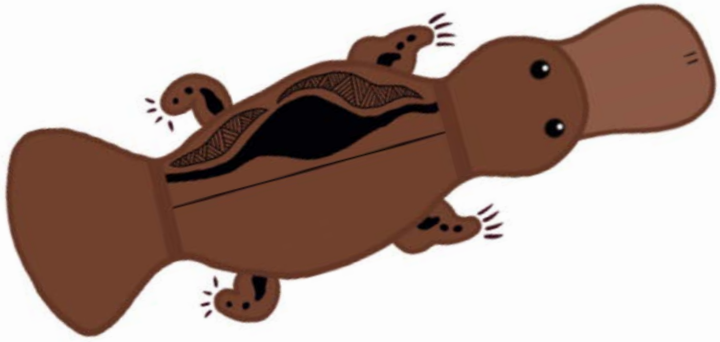
Many of the natural ecosystems of the region have been converted to dryland cropping and grazing, especially in the north of the catchment which has been largely cleared for large-scale broadacre cropping. The forest and woodland areas in the catchment have experienced a recent history of logging and mining and, while conservation reserves have been created to protect remnants of these ecosystems, these past land uses have left a legacy of degradation.

The major towns of the region are Avoca, St Arnaud and Charlton, and there are several smaller localities, including Emu, Natte Yallock, and Amphitheatre. Avoca has a gold mining history and attracts many visitors throughout the year. The surrounding Pyrenees region supports an established wine industry, and there are many opportunities for recreation in the natural areas of the region.

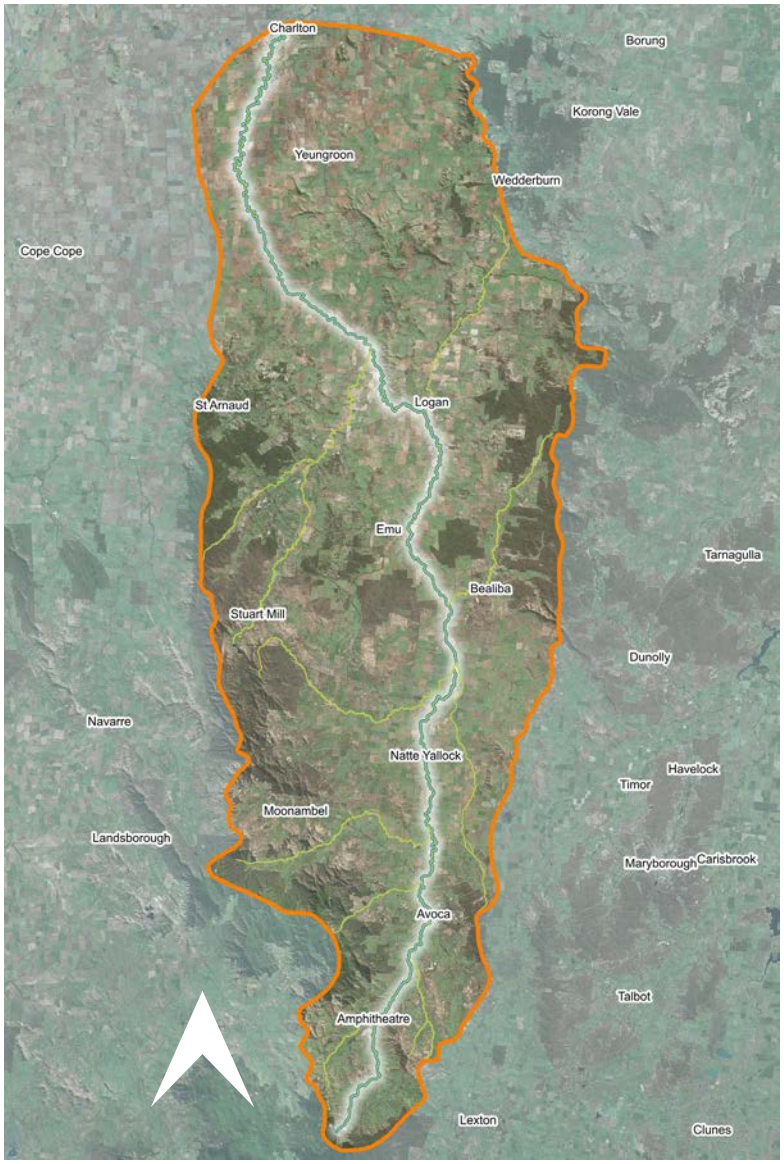
1 Murray–Darling Basin Authority (MDBA), *Loddon–Avoca catchment*, MDBA website, accessed 2023. https://www.mdba.gov.au/basin/catchments/southern-basin-catchments/loddon-avoca-catchment

Table 1: Upper Avoca Catchment At A Glance

THE REGION AT A GLANCE	
TOTAL LAND AREA	3203.83 km²
TENURE	Approx. 16.63% public land (parks and reserves) and 83.37% private land (agricultural, residential and other)
MAJOR PARKS AND RESERVES	Kooyoora State Park Kara Kara National Park Avoca River Frontage
RIVER BASINS	Avoca River catchment
MAJOR WATERWAYS	Avoca River
TRADITIONAL CUSTODIANS	Djaara – Dja Dja Wurrung People
WETLANDS OF NATIONAL IMPORTANCE	The Avoca drains into the Ramsar-listed Kerang Wetlands downstream
SIGNIFICANT NATURAL LANDSCAPES OR BIOREGIONS	Western Goldfields, Western Dryland Plains
LAND USE	Primary agricultural production is the major land use in the catchment, consisting primarily of dryland grazing (40% of land use) and cropping (34%). Conservation areas and state forests make up 11% and 6% of land use respectively.
LARGEST CONTRIBUTORS TO THE REGIONAL ECONOMY	Dryland grazing, broadacre cereal cropping and viticulture are important contributors to the local economy. Tourism is also important to the region, as visitors are drawn to the wineries and history of the area.



NORTH CENTRAL WATERWAY STRATEGY REACHES

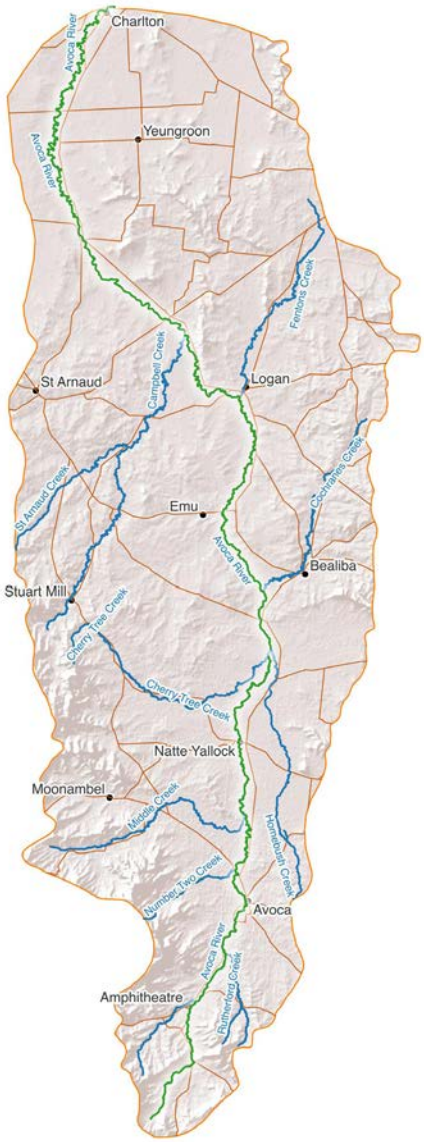


Upper Avoca Catchment

Avoca River — Priority waterway in the North Central Waterway Strategy

0 10 20 30 km

Figure 2: Regional Context



Priority waterway reaches

Other major waterway reaches

0 10 20 30 km

Figure 3: Major Waterways In The Catchment (North Central CMA, 2014)

Natural Values

The Upper Avoca catchment supports significant environmental and landscape assets that hold cultural and environmental importance and contribute to the region's liveability and tourism economy. Outstanding natural features of the catchment include large areas of protected native vegetation, important remnant ecological communities and unique species across terrestrial, aquatic and wetland habitats.

WATER

The Avoca Basin is Victoria's fifth largest catchment, occupying an area of 1.2 million hectares.[1] The Avoca River is one of the most significant waterways in western Victoria and is the major waterway in the catchment, with smaller waterways including Glenlogie Creek, Sugarloaf Creek, Cherry Tree Creek and Strathfillan Creek draining into the Avoca River.

The Avoca River has significant cultural values including scar trees, ring trees, scatter sites, middens and artefacts that have been recorded along the waterway. Significant threatened species dependent on the aquatic and riparian habitat within the catchment include Brolga, Flat-headed Galaxias, Growling Grass Frog and Freshwater Catfish.

When flows permit the catchment supports water-based recreation including swimming, fishing, canoeing and camping.[2]

The Avoca catchment has undergone drastic land use change in the last 200 years. Land clearing for agriculture, mining and logging have altered the landscapes of the region and the natural geomorphological processes of its waterways. As a result, erosion and sediment accumulation have increased, reducing water quality, blocking deep water holes, covering springs, modifying water channels and encouraging weed infestations.[2]

1 Alluvium & HLA, *Upper Avoca River – Catchment Action Plan*, NCCMA website, 2007 accessed 2025. https://www.nccma.vic.gov.au/media/documents/nccma-13120-upper_avoca_river_-_catchment_action_plan.pdf

2 DJANDAK, *Draft Upper Avoca River Aboriginal Waterway Assessment*, Dja Dja Wurrung Enterprises Pty Ltd trading as DJANDAK, Bendigo, 2023.

ECOSYSTEMS

The Upper Avoca catchment is characterised by three bioregions: the Goldfields, the Victorian Volcanic Plains and the Wimmera.[1] Less than 25% of the remaining area of these bioregions is protected in reserves across the state.

- The Goldfields include important remnant native vegetation such as Box Ironbark Forests protected in reserves like Kara Kara National Park.[2] This bioregion is the most forested in the catchment.
- The Victorian Volcanic Plain contained extensive grasslands before it was heavily cleared for grazing and cropping, and these important ecological communities, such as the endangered Plains Grassland, are now mostly restricted to small reserves, roadsides and rocky areas.[3] Kangaroo Grass *(Themeda triandra)* is a dominant species in remnant grasslands and has cultural and nutritional values.
- The Wimmera bioregion extends across the north of the catchment and is also heavily cleared. Savannah Woodland was once extensive in the region, and remnants can be found along roadsides, public land and reserves. Mighty Red Gums *(Eucalyptus camadulensis)* remain a feature of this landscape, found along river floodplains and around swamps.[4]

The region contains many Ecological Vegetation Classes (EVCs), including several which have been listed as vulnerable or endangered (Figure 5). The endangered Creekline Grassy Woodland EVC remains in small linear strips along waterways in the region, and the endangered Plains Grassland and Plains Woodland EVCs exist in remnants in private and public land.

Due to land use change since colonisation, many of the region's ecological communities have been cleared and reduced in area. However, over the past 25 years, significant efforts in conservation across both public and private land have led to greater protection for the region's threatened ecosystems. DJAARA – Dja Dja Wurrung Clans Aboriginal Corporation – jointly manages reserves in the catchment, for example, Kara Kara National Park, which contains important remnants of Box Ironbark Forest, Valley Grassy Forest and Grassy Woodland. Other jointly managed parks include the Kooyoora State Park.

1 DEECA (Department of Energy, Environment and Climate Action, *Bioregions and EVC benchmarks*, DEECA website, 2023. https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks

2 NCCMA (North Central Catchment Management Authority), *North Central Regional Catchment Strategy 2021–2027*, North Central Regional Strategy website. https://northcentral.rcs.vic.gov.au/local-areas/western-goldfields/

3 VicFlora, *Victorian Volcanic Plain*, VicFlora website, accessed 2025. https://vicflora.rbg.vic.gov.au/pages/victorian-volcanic-plain

4 VicFlora, *Wimmera*, VicFlora website, accessed 2025. https://vicflora.rbg.vic.gov.au/pages/wimmera

KEY SPECIES

The diverse landscapes and environments of the Upper Avoca catchment support a range of important terrestrial and aquatic animal and plant species including species listed as threatened under the Environment Protection Biodiversity Conservation (EPBC) Act 1999 and Flora and Fauna Guarantee (FFG) Act 1988 (Table 2).

Table 2: FFG-listed rare and threatened animal and plant species.[1]

	ANIMALS	PLANTS
CRITICALLY ENDANGERED	Barking Owl	Ben Major Grevillea
	Bush Stone-curlew	Brilliant Sun-orchid
	Plains Wanderer	McIvor Spider-orchid
	Regent Honeyeater	Kamarooka Mallee
	Swift Parrot	Northern Golden Moths
ENDANGERED	Crested Bellbird	Candy Spider-orchid
	Grey Goshawk	Lowly Greenhood
	Red-chested Button Quail	Robust Greenhood
	Samphire Skink	Tawny Spider-orchid
	Speckled Warbler	White Sunray
	Pink-tailed Worm-Lizard	Yellow-tongue Daisy

In developing this plan, DJAARA has identified key flagship species across the catchment that hold particular significance for their cultural values, vulnerability, and because their protection is likely to have benefits for further connected species and habitats.

- **Red Gums** *(Eucalyptus camadulensis)* are the most widely distributed eucalypts in Australia. They can grow to an enormous size, with a trunk circumference of up to 5 m and height exceeding 40 m. They grow primarily along watercourses and may live for up to 1,000 years.[2] They have many important cultural uses, and also form critical habitat such as hollows and nesting sites.

1 DEECA 2024, *Flora and Fauna Guarantee Act 1988 Threatened List*, https://www.environment.vic.gov.au/conserving-threatened-species/threatened-list

2 G Moore, 'The river red gum is an icon of the driest continent', *The Conversation*, 2019, The Conversation website. https://theconversation.com/the-river-red-gum-is-an-icon-of-the-driest-continent-118839

- **Endangered orchids** have highly specialised and complex life cycles, and many undergo long dormancy phases as a survival mechanism against climate stressors such as drought. Of the 400 orchid species in Victoria, 70% are rare or threatened[1].
- **Swift Parrots** *(Lathamus discolor)* are small, colourful migratory parrots that breed in Tasmania during summer and migrate to Victoria and New South Wales in winter. They rely on old-growth forest for nesting habitat and when in Victoria they frequent dry forests and Box-Ironbark Woodlands to feed[2].
- **Powerful Owls** *(Ninox strenua)* are Australia's largest owl species, and they feed primarily on possums and large bats. They prefer open forests and woodlands, and sheltered gullies in wet forests along watercourses. They require hollow-bearing old-growth trees to nest[3].
- **Yam Daisies** or murnong *(Microseris lanceolata)*, are bright yellow daisies that flower each spring after resprouting from thick, tuberous roots. The roots were a staple food source for Aboriginal Australians across all of south-eastern Australia, and there are many records of this plant being cultivated and harvested by First Nations peoples across Australia[4].
- **Koalas** *(Phascolarctos cinereus)* are a widely recognisable species, yet they are nationally endangered. They are tree-dwelling marsupials that feed almost exclusively on eucalyptus species. They are widely, yet patchily distributed throughout the woodlands and forests of Victoria[5].
- **Squirrel Gliders** *(Petaurus norfolcensis)* are nocturnal gliding possums which are larger and less common than their better-known relatives, the Sugar Gliders. They inhabit dry sclerophyll forests and Box-Ironbark Woodlands, preferring open forest types, and have diverse food sources including sap, pollen, insects, seeds and flowers[6].

There are several other native animals that are iconic to the Upper Avoca catchment that are not threatened. They are very important from a biodiversity and cultural perspective, and can provide an indication of habitat condition and diversity. Species like the River Blackfish, Echidna, Wallaby, Water Rat (Rakali), Brush-tailed Possum, Ring-tailed Possum, and Koala are often spotted in catchment, particularly along river corridors and areas of public land.

1 M Duncan, *Understanding threatened orchids - the dormancy puzzle*, Arthur Rylah Institute, 2018, Arthur Rylah Institute website. https://www.ari.vic.gov.au/research/threatened-plants-and-animals/plants/understanding-threatened-orchids-the-dormancy-puzzle

2 Threatened Species Scientific Committee, *Conservation Advice: Lathamus discolor* Swift Parrot, 2016.

3 Birdlife Australia, *Powerful Owl*, 2024, Birdlife Australia website. https://birdlife.org.au/bird-profiles/powerful-owl

4 Mallee Conservation, *Murnong – the Yam Daisy*, 2021, Mallee Conservation website. https://www.malleeconservation.com.au/blog/murnong

5 NSW Department of Environment and Heritage, *Koala*, 2024, Environment NSW website. https://www.environment.nsw.gov.au/topics/animals-and-plants/native-animals/native-animal-facts/koala

6 SWIFT (State Wide Integrated Flora and Fauna Teams), *Squirrel Glider*, 2024, SWIFT website. https://www.swifft.net.au/cb_pages/sp_squirrel_glider.php

Figure 4: Endangered Candy Spider Orchid (Caladenia Versicolor)

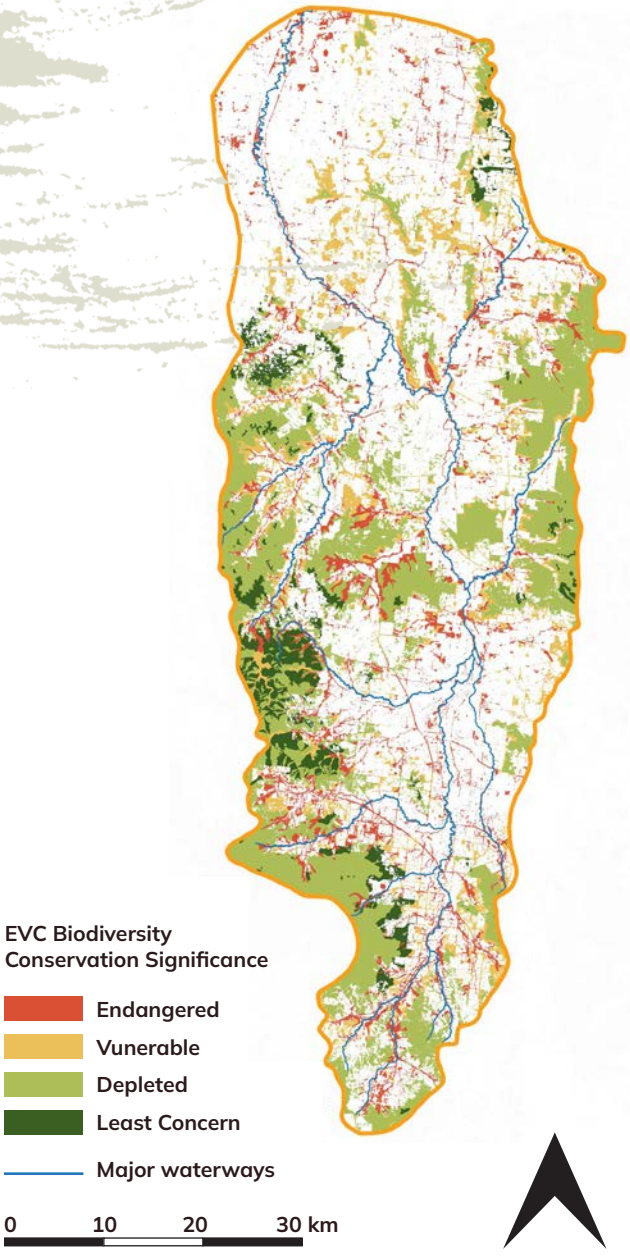


Figure 5: Vegetation Extent And Conservation Status [1]

1 Native Vegetation - Modelled 2005 Ecological Vegetation Classes (with Bioregional Conservation Status), DEECA, 202

Drivers of Change and Emerging Issues

CLIMATE CHANGE

The north-central region of Victoria has a relatively warm and dry climate. The effects of climate change are already being experienced across the region, and further changes are projected to occur into the future. The changes that are expected with high or very high confidence are:

- continued increase in average temperatures in all seasons
- more hot days and warm spells, and fewer frosts
- a decrease in cool season rainfall
- increased severity and frequency of bushfires[1]
- a decrease in mean annual rainfall, but more intense heavy rainfall.

Many Australian plants and animals are resilient and adapted to a high degree of environmental variability, and some are able to shift in response to a changing climate. However, the speed and degree of climate change that is currently occurring is unparalleled – leaving many plants, animals and ecosystems vulnerable to decline. Some of the changes that may occur in the Upper Avoca region are described below.[2]

NATIVE VEGETATION AND WATERWAYS

Increasing droughts, low rainfall and higher temperatures may result in changes to the composition, distribution and function of vegetation communities. Decreasing soil moisture and water availability will favour species and communities that are more drought-tolerant than those with higher water requirements. This may have carry-on effects on the animal species that rely on certain vegetation communities, as their habitat will be reduced.

The composition, distribution and function of vegetation communities around waterways and wetlands is also likely to change as a result of reduced seasonal flooding. With less frequent flooding to replenish vital water and nutrients, wetlands may be replaced by dryland vegetation.

Bushfires are expected to become more frequent and intense. Many plant species have not evolved with frequent fire and are highly sensitive to it, so they may be replaced with faster-growing, fire-tolerant species. A loss of organic matter and vegetation cover through frequent fire can also lead to increased soil erosion, loss of nutrients for plant growth, and increased sedimentation of waterways.

1 Climate Change in Australia, *Regional Climate Change Explorer*, 2024, Climate Change in Australia website. https://www.climatechangeinaustralia.gov.au/en/projections-tools/regional-climate-change-explorer/super-clusters/

2 DEECA (Department of Energy, Environment and Climate Action), *Natural Environment Climate Change Adaptation Action Plan 2022–2026*, DEECA website. https://www.environment.vic.gov.au/natural-environment-adaptation-action-plan/climate-change-impacts; B Trewin, D Morgan-Bulled, and S Cooper, 'Climate: Outlooks and impacts', *Australia State of the Environment*, 2021, Australian Department of Agriculture, Water and the Environment, Canberra. https://soe.dcceew.gov.au/climate/outlook-and-impacts

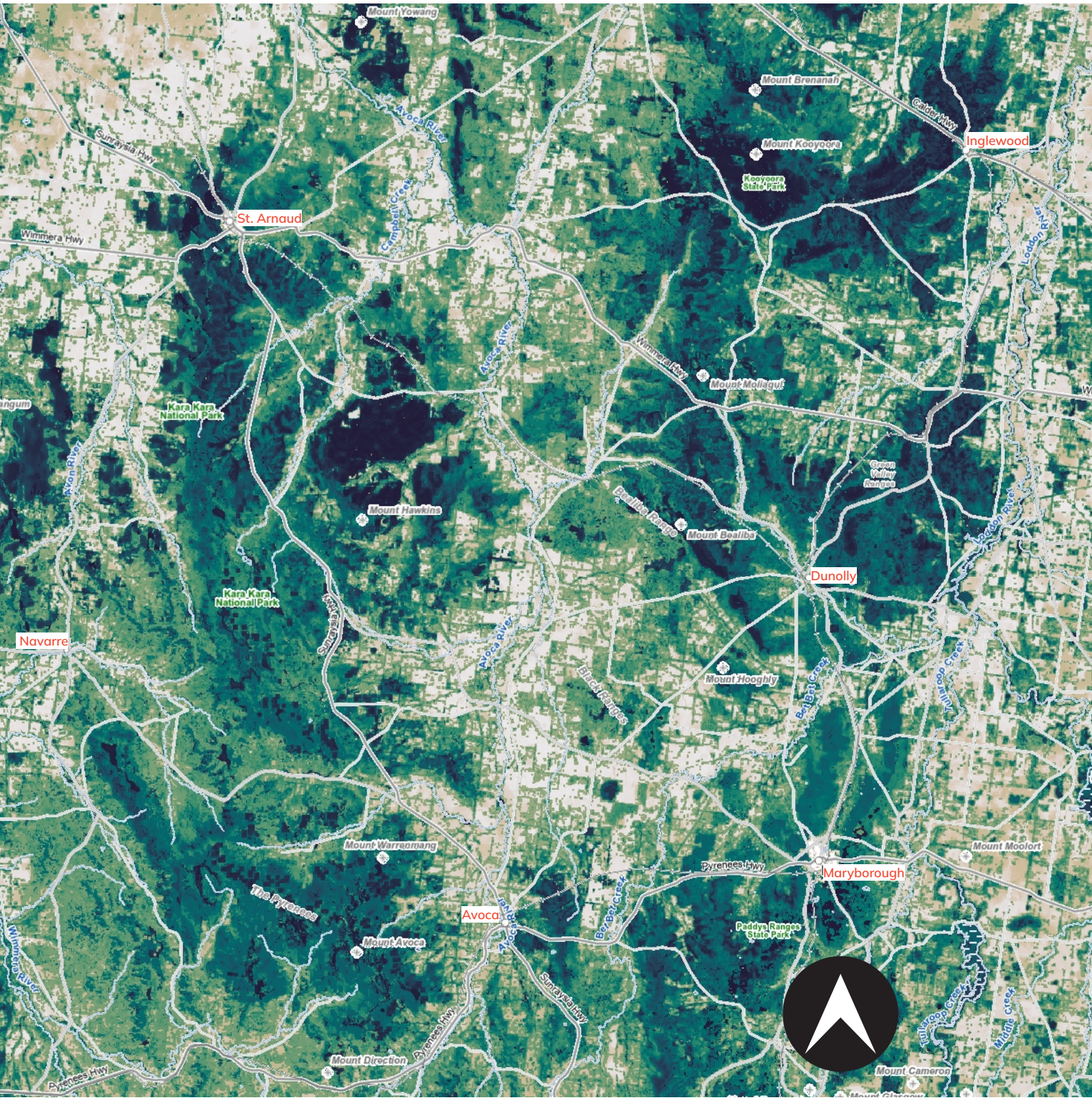


Figure 6: Map Of Strategic Biodiversity Values In The Upper Avoca Catchment

Native animals

Changes in the distribution and function of habitats will affect the animal species that live in these environments. More frequent and severe bushfires are likely to have severe effects on animal populations as those that rely on unburnt vegetation communities experience significant habitat contraction.

Wetland and waterway species will be affected by the drying of their habitat and a lower incidence of flooding. Flood events are often triggers for critical breeding, feeding and migration events, so less flooding can severely impact entire populations. As water in waterways declines due to less rainfall and higher evaporation, water temperatures can rise along with dissolved oxygen. This favours toxic algal blooms.

Climate change is likely to favour invasive species, which are often capable of tolerating a wide range of environments and can breed quickly, allowing them to colonise new habitats. Climate change will have compounding effects because native species will experience multiple pressures at once, for example increasing competition or predation from invasive species along with dwindling food sources and habitat or increasing fires.

Cultural impacts

Climate change has significant and unique impacts for Indigenous People. The loss of biodiversity and risk of species extinctions will affect Indigenous knowledge, culture, spirituality and worldview. Species and ecosystems that are important for resources, or for cultural use, may decline and inhibit cultural practices from occurring. Indigenous seasons are also changing, with environmental and climate triggers occurring at different times or out-of-sync. The inability for First Nations Australians to practice cultural burning for centuries has led to changes in ecosystems across Country, and stopped people from healing and regenerating Country as they have for millennia.

Indigenous People understand Country, climate and change in deep and nuanced ways, based on the knowledge they have built from living with Country for thousands of generations and through many eras. Their knowledge and voices are incredibly important and powerful for climate change adaptation and for managing and supporting the environment through change.

Agricultural impacts

The region has been experiencing changes in rainfall patterns and water availability since the 1990s. This may especially affect viticulture. Shorter harvest weather windows, and increasing extreme weather, can affect farm logistics and the quality of produce.

Declining soil health is a significant and constant issue for producers in the region. Vegetation clearing and conventional agricultural practices that deplete soil carbon and damage soil structure have contributed to this problem. Erosion is a significant issue that is likely to worsen with hotter, drier conditions and more intense rainfall events. Erosion removes critical topsoil, and damages waterways by increasing sedimentation.

Biosecurity issues may also intensify in a changing climate. The negative impacts of diseases, pests and weeds may be exacerbated by increasing temperatures and changes to rainfall patterns because conditions may become more favourable for them to spread and thrive. Stress in crops and livestock from climate extremes may make them more susceptible to disease.

LAND USE CHANGE

The Upper Avoca catchment has undergone significant clearing and removal of vegetation in its recent history. Native vegetation now largely remains within reserves and parks on public land which protect remnants of important habitats that have largely been cleared elsewhere. Outside reserves, native vegetation is largely fragmented and found in small patches on roadsides, along steeper gullies and waterways, and on private property. These fragmented landscapes, where widespread removal of native vegetation has taken place, make up about 79% of Victoria, while intact areas of contiguous native vegetation make up only 21%.[1] Past large-scale land clearing has also led to raised water tables and leached salt into groundwater, rivers, wetlands and the upper layers of soils.

Agricultural land use across the Upper Avoca catchment is changing. Increasing mechanisation has led to farm aggregation – larger corporate farms absorbing smaller family enterprises. This has led to population decline and knock-on effects to the economies of local areas in the north of the region especially, which continues at a slow rate[2].

Native grasslands have been particularly impacted by clearing for agriculture in recent history, because they occupied land that was perceived to be most conducive to grazing and cropping. As a result, EVCs such as Plains Grassland and Plains Grassy Woodland are endangered in the region. Natural Temperate Grasslands and Grassy Eucalypt Woodlands of the Victorian Volcanic Plain are biodiversity hotspots and are nationally listed as critically endangered[3]. They are mapped as likely to occur in the southern half of the Upper Avoca catchment and provide critical habitat for threatened species like the Swift Parrot *(Lathamus discolor)* and Clover Glycine *(Glycine latrobeana).*

Further decline of important habitat is occurring as farm mechanisation continues to increase, for example, the removal of paddock trees to facilitate GPS tractor operations or pivot irrigation. A general lack of understanding or regard for legislation designed to protect biodiversity and Cultural Heritage in the region has been identified as a concern.[2]

STRATEGIC BIODIVERSITY VALUES

The Victorian Government's NatureKit is an online mapping and data exploration tool for both biodiversity data integration and to support stakeholders in making effective investment and management decisions that support biodiversity protection in line with Biodiversity 2037.

The Map of Strategic Biodiversity Values (Figure 6) has been derived from NatureKit to provide an indicative focus for strategic biodiversity values within the catchment, with the darker shades representing higher biodiversity values.

These higher values correspond with existing areas of public land, including Kara Kara National Park, nature reserves, roadsides and waterways, as well as, areas of private land, including native grasslands on the Victorian Volcanic Plains.

1 Victorian National Parks Association (VNPA), Victoria: *Habitat trends and native vegetation,* 2017, VNPA website. https://vnpa.org.au/wp-content/uploads/2016/01/Fact-sheet-Victoria-habitat-trends-and-native-vegetation.pdf

2 NCCMA (North Central Catchment Management Authority), *North Central Regional Catchment Strategy 2021–2027.*

3 Department of Sustainability, Environment, Water, Population and Communities, Nationally Threatened Ecological Communities of the Victorian Volcanic Plan: *Natural Temperate Grassland and Grassy Eucalypt Woodland,* 2011, Australian Government Department of Climate Change, Energy, the Environment and Water website. https://www.dcceew.gov.au/sites/default/files/documents/grasslands-victoria.pdf

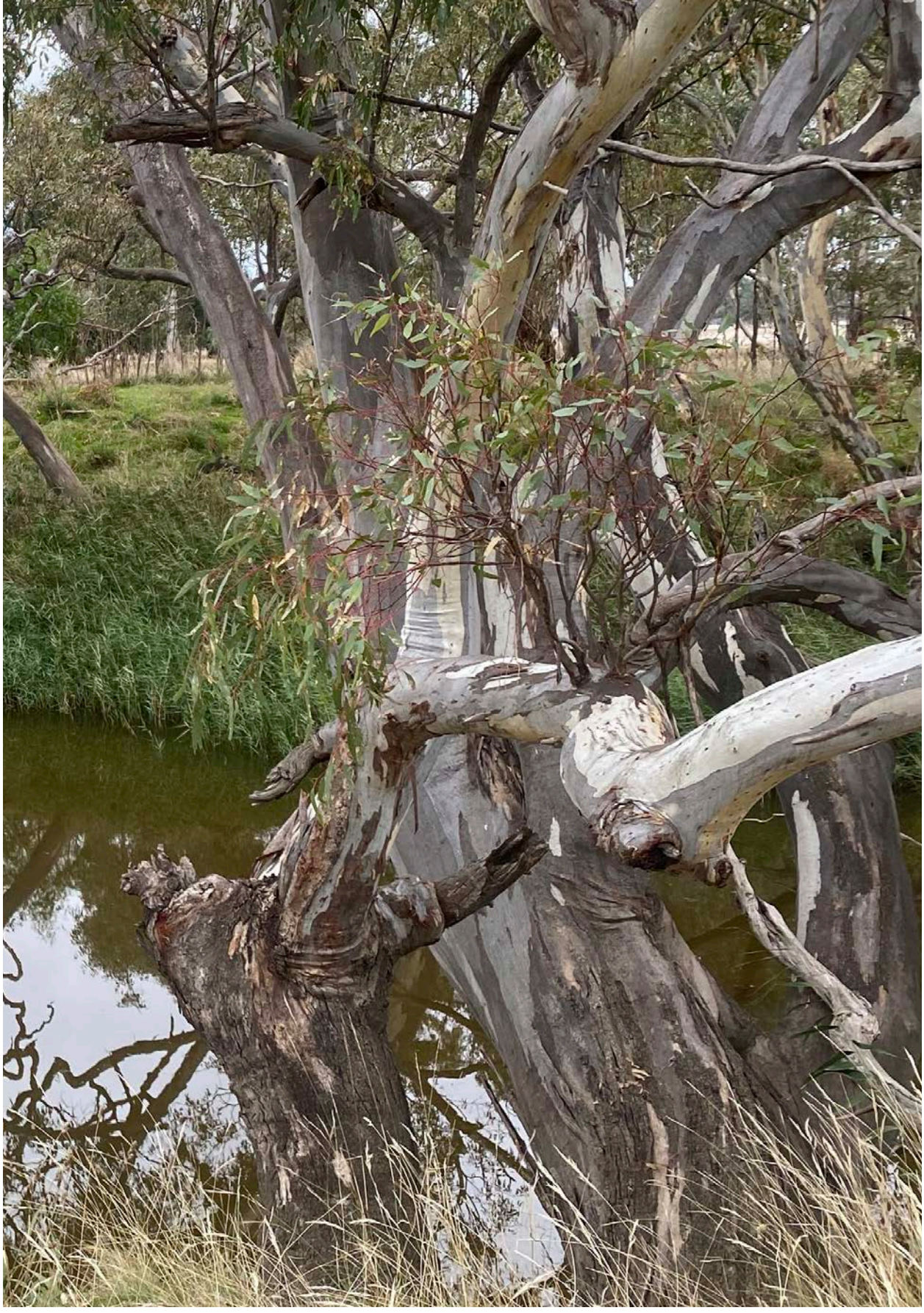


Figure 7: Red Gum on Avoca River (photo: T Wallis)

Strategic Foundations

This plan, Dhelkunyangu Upper Avoca, has been informed by a strong strategic foundation. DJAARA strategies and plans, as well as those of relevant government agencies, have been used to inform its aims, themes and actions.

DJAARA STRATEGIES AND PLANS

There are several DJAARA strategies that provide direction for environmental and cultural values management in the catchment and complement national, state and regional strategies and plans:

Dhelkunya Dja – Dja Dja Wurrung Clans Country Plan (2014–2034)

The Dhelkunya Dja Country Plan sets out the Dja Dja Wurrung vision and aspirations over 20 years. The plan is a living document that is updated as new knowledge comes to light. There are nine goals in the current plan. Delivery of the plan is guided by a set of principles based on Djaara philosophy about how land and natural resources should be managed. Each goal includes objectives, challenges, achievements and actions going forward.

Dhelkunyangu Gatjin Strategy – Working together to heal water (2023)

The Dhelkunyangu Gatjin plan aims to guide water management across Djandak (Country) and allow Djaara self-determination to improve water management and heal Country. It acknowledges traditional rights and incorporates Djaara Lore and knowledge into current water management frameworks and allows Djaara to participate in and benefit from the water economy.

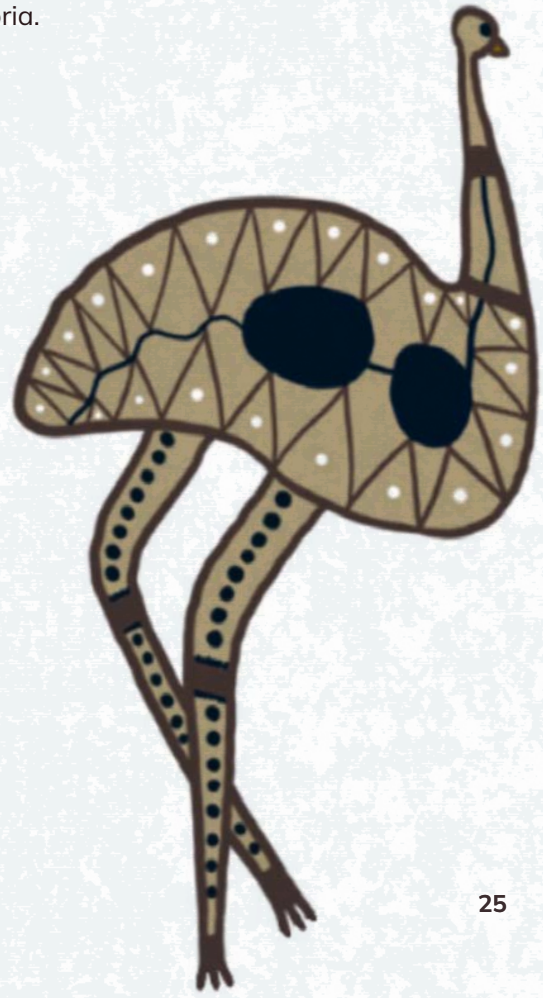
DJANDAK Aboriginal Water Assessment (draft, 2023)

The DJANDAK Aboriginal Water Assessment documents the location and condition of cultural values along the Avoca River. It is used to inform planning and delivery of restoration in the Upper Avoca catchment.

Joint Management Plan for the Dja Dja Wurrung Parks (2018)

The jointly managed Kara Kara National Park, within the Upper Avoca catchment, is one of the largest areas of intact Box-Ironbark vegetation in Victoria.

Kara Kara National Park is one of six Aboriginal-title parks jointly managed by DJAARA and Parks Victoria.



NORTH CENTRAL CMA STRATEGIES AND PLANS

Upper Avoca Reconnections (2021–2024)

Upper Avoca Reconnections is a collaboration between the North Central CMA and DJANDAK, which has identified opportunities for connection across public and private land and joint-managed parks.

Upper Avoca Catchment Action Plan (2007)

A Catchment Action Plan (CAP) was developed by North Central CMA for the Upper Avoca River to identify targets and key actions to achieve targets within priority reaches.

This Dhelkunyangu Upper Avoca plan replaces the CAP. It is informed by the Upper Avoca Reconnections project, which has provided a clear plan for future funding of activities in the catchment.

North Central Waterway Strategy (2014–2022)

- Regional planning document for waterway management and high-level regional works program to guide investment.
- Overview of the Avoca catchment.
- Regional Works Program for the Upper Avoca.
- Identifies priority rivers, streams and wetlands for the Avoca River.

North Central Region Index of Stream Condition Report (2010)

- Provides an assessment of condition of rivers in the Avoca basin.
- Includes assessment of hydrology, physical form, streamside zone, water quality and aquatic life.
- Reach by reach score and condition rating.

Saving Chain of Ponds Prospectus – Invest in the future of native fish

- Focus on protecting critical drought refuges for aquatic species in the Pyrenees region of the Upper Avoca catchment.
- Djaara have a strong interest in improving the condition of the creeks and protecting native fish.
- DJANDAK are involved in the delivery for ecological surveys and delivery of on-ground works.

Avoca Deep Pool Investigation (SKM, 2012)

- Geomorphic and ecological study of selected deep pools along the Avoca River.
- Provided an increased understanding of the condition of deep pools and the benefits of reducing sediment impact along the Avoca River.

Figure 8: Middle Creek refuge pool that contains Southern Pygmy Perch and River Blackfish (photo: North Central CMA)

PARTNERSHIPS

- DJAARA
- DJANDAK
- North Central Catchment Management Authority
- Parks Victoria
- Department of Environment, Energy and Climate Change (DEECA)
- Trust for Nature
- Bush Heritage
- Biolinks Alliance
- Central Highlands Water
- Local government (Buloke Shire, Central Goldfields Shire, Loddon Shire, Northern Grampians Shire, Pyrenees Shire)
- Landcare/Community Groups (e.g. Buloke & Northern Grampians Landcare Network)
- Landholders
- Water corporations

Approach

This plan, Dhelkunyangu Upper Avoca, is the product of a partnership between DJANDAK, a Dja Dja Wurrung enterprise and North Central CMA.

An independent consultant (RM Consulting Group) was engaged to develop the content of the plan by analysing and incorporating existing DJANDAK strategy and policy, North Central CMA plans and strategies and data from the Upper Avoca catchment; hosting facilitated workshops with stakeholders, conservation experts and community representatives; and spending time on Country.

DEVELOPING DHELKUNYANGU UPPER AVOCA

The early stages of developing the plan involved working directly with DJAARA to understand how, and to what extent, cultural knowledge should be shared, and how culturally sensitive knowledge could be protected. DJAARA's recent Upper Avoca Aboriginal Water Assessment (AWA) was key to this process. Knowledge from the AWA was used, along with input from past studies and existing strategies, to develop a Discussion Paper which collected important information for the plan.

DJAARA led a series of four community and stakeholder workshops that aimed to:

- develop the vision and goals for Dhelkunyangu Upper Avoca
- refine specific, measurable, achievable, realistic and time-bound (SMART) actions for the Dhelkunyangu Upper Avoca
- assess the feasibility of actions to achieve the actions.

Stakeholders that were involved in the workshops included representatives from:

- DJANDAK
- North Central CMA
- Parks Victoria
- Landcare
- Trust for Nature
- Biolinks Alliance
- Bush Heritage
- Central Victoria Biolinks, Pyrenees Shire Council
- Department of Energy, Environment and Climate Action (DEECA)
- Wedderburn Conservation Management Network
- Kara Kara Conservation Management Network
- Buloke and Northern Grampians Landcare Network.

This plan was developed based on the findings and insights gained through this engagement. Throughout the process, the aim was to centre Djaara values and knowledge, and incorporate partners' priorities, to ensure mutual beneficial outcomes for Djaara, Djandak and the protection of waterway health in the Upper Avoca catchment.

Following the third workshop, a meeting was held with Djaara water knowledge group Kapa Gatjin to assist with the development of Djaara objectives and review of collective goals.

DJAARA OBJECTIVES

The Dhelkunya Dja - Dja Dja Wurrung Clans Country Plan describes Djaara aspirations for the management of Djandak (Dja Dja Wurrung Country). Aspirations for gatjin (water) are guided by Goal 5: Our rivers and waterways are healthy and meet the needs of our people and land.

This goal will be achieved by:

- ensuring all waterways are healthy, with the right gatjin in the right place at the right time to meet the needs of the environment, Djaara (Dja Dja Wurrung People) and the broader community
- having the Gatjin Authority recognised as a leader in gatjin governance, which genuinely contributes to decision-making about waterways and catchments on Djandak
- securing adequate and equitable water rights that meet Djaara social, cultural, spiritual, economic and environmental needs
- Djaara sharing creation stories to teach people how water works in the landscape.

2. The Plan

Vision

Dhelkunyangu Upper Avoca vision statement:

The Upper Avoca is a healthy and resilient catchment that fosters connections between people and Country.

- There are healthy connections between Country, Djaara, communities, landscapes and habitats.
- The catchment is ecologically healthy and functioning.
- The catchment is resource-abundant so that all people can value, enjoy, and be proud of the Upper Avoca.
- The catchment has something everyone can value from cultural food and fibre to River Red Gums.
- Everyone is advocating for, sustaining, and healing Country for future generations.

This vision was derived from a series of DJAARA-led stakeholder workshops.

Goals

To achieve the vision, the Dhelkunyangu Upper Avoca has established the following goals:

1. **Djaara-led cultural management:** Djaara-led cultural management and empowerment of landscape throughout the Upper Avoca, upholding Djaara rights to access Djandak and to practice Culture.
2. **Healthy connected landscapes:** nurturing ecosystems that are robust and interconnected – supporting healthy native animals, waterways and landscapes and connection of people with Country.
3. **Working together:** working together to achieve a healthy, connected catchment, including Djaara, government, not-for-profit and community organisations.
4. **Culture of caring for Country:** fostering a sense of stewardship amongst the wider community who are connected to the Upper Avoca, and cultivating a deep personal commitment to the care and management of the broader catchment.

Goal 1: Djaara-led Cultural Management

This goal is about empowering Djaara to lead cultural management of landscape throughout the Upper Avoca. It encompasses upholding Djaara rights to access Djandak and to practice Culture. Using Traditional Ecological Knowledge, Djaara will help restore Country so it can provide for Djaara needs.

"Djaara have cultural rights associated with the gatjin (water) that falls on and flows across Djandak (Djaara Country). We have an inherent connection to our Ancestors, and we follow in their footsteps to care for gatjin."

Excerpt from Dhelkunyangu Gatjin – Djaara water strategy.

CONTEXT

Since colonisation, Djaara and other First Nations Peoples have been dispossessed of their Country. Much of Djandak is privately owned. The rest is a combination of parks, forests and reserves, six of which are Aboriginal Title lands that have been leased back to the Victorian Government under Aboriginal joint management.[1]

For Djaara to practice Culture and care for Country on a wider scale, access to Country needs to improve. Djaara wish to identify, understand and map cultural values across the Upper Avoca catchment on both public and private land. Djaara also want to develop relationships with private landholders to increase access to Country.

KEY OUTCOMES

- Djaara are leading the identification, protection and management of cultural value.
- There is increased Djaara access to private land for cultural practice.
- Djaara are practising using traditional knowledge (including ecological cultural knowledge).
- Cultural burning is reintroduced as a regular management practice.

WHAT SUCCESS LOOKS LIKE

- Three additional Aboriginal Water Assessments have been conducted on priority reaches in the Upper Avoca catchment.
- DJAARA has positive relationships and land management input on ten properties owned by private landholders.
- DJAARA has identified and is managing cultural values across 100 hectares of Country on both public and private land.
- Cultural burning practices have been trialled and impacts assessed at five areas of high biodiversity and cultural value on both private and public land.

1 Dja Dja Wurrung Clans Aboriginal Corporation, *Dhelkunya Dja - Dja Dja Wurrung Clans Country Plan 2014–2034,* 2014 (Revised 2025), DJAARA (Dja Dja Wurrung Clans Aboriginal Corporation, Bendigo. https://gg-wordpress-offload.s3.ap-southeast-2.amazonaws.com/djadjawurrung.com.au/wp-content/uploads/2025/06/25165731/Dhelkunya-Dja-Refresh-2025_Digital.pdf

Goal 2: Healthy Connected Landscapes

This goal is about nurturing ecosystems that are robust and interconnected – supporting healthy native animals and plants and connection of people with Country. While the Avoca River is unregulated, the Upper Avoca catchment is highly modified. Long term catchment health depends on protecting and connecting places of high-value Cultural Heritage, remnant vegetation, and waterways (or chains of ponds) with deep refuge pools.

CONTEXT

A healthy, connected landscape is one where patches of high-quality habitat are protected and linked together, allowing species to move, disperse and interact within a landscape. Connectivity promotes biodiversity by providing better access to resources like food and shelter for animals, supporting stronger populations of organisms with more opportunities for genetic exchange, and allowing species to adapt to environmental change or survive climate extremes and disasters.

Healthy connected landscapes are also important for supporting cultural values and ensuring the continuity of traditional knowledge, stories and practices, including songlines and travel routes. Protecting and enhancing natural places (including deep habitat pools) and their connections throughout the Upper Avoca catchment will help care for sites of cultural significance and their important uses for Djaara. It will also support greater connection of people with Country.

KEY OUTCOMES

- High-value places and landscapes are protected and connected.
- Strategic biodiversity corridors are supporting biolinks both within and between catchments and landscapes.
- Travel routes and songlines are protected.
- Waterway health and water quality is improving and supporting cultural values.

WHAT SUCCESS LOOKS LIKE

- A north–south biolink has been established and is being actively managed.
- Baselines for water quality have been established.
- A mapped baseline of riparian areas protected from stock access has been established.
- Activities to protect riparian areas have been carried out over 30 km of priority river reaches.
- Activities to protect high-priority drought refuge areas have been carried out for four deep habitat pools.
- Djaara has identified and recorded four travel routes and story lines.
- Strategic revegetation works to connect places of high biodiversity and cultural value have been carried out over 50 km of land.

Goal 3: Working Together

This goal is about all stakeholders working together to achieve a healthy, connected catchment, including DJAARA, government, not-for-profit and community organisations.

CONTEXT

- All stakeholders are involved in enhancing and maintaining the health of the Upper Avoca catchment, and ensuring the landscape remains vibrant and resource-abundant for future generations. From communities living across the catchment, to volunteer organisations, local government, businesses and organisations, and DJAARA – everyone has a part to play in caring for the catchment. Collaborating in caring for the catchment involves bringing together different knowledge systems – Djaara knowledge and ways of being and Western science – and working side-by-side for the best outcomes for Country.

KEY OUTCOMES

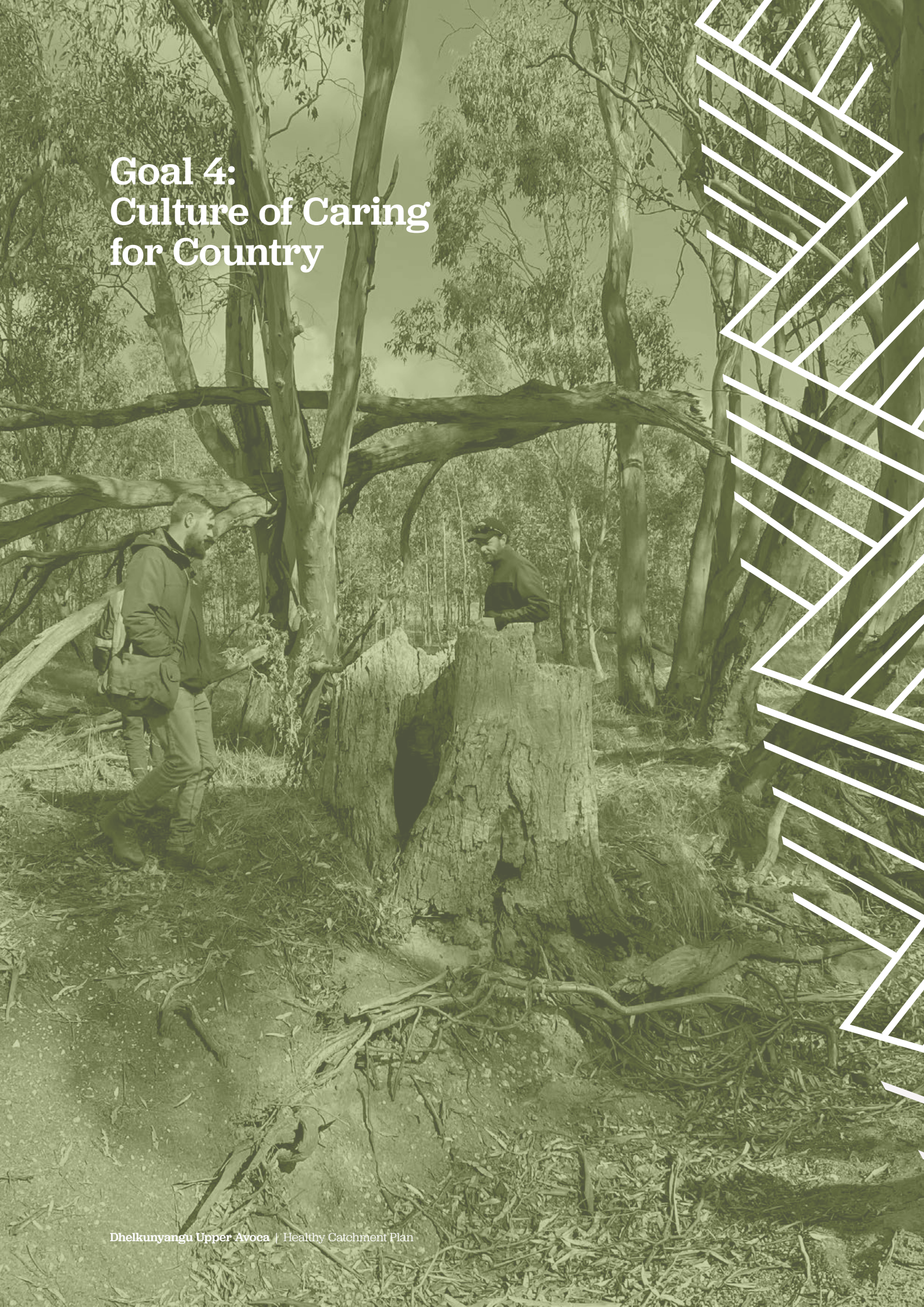
- Djaara stewardship and knowledge sharing is leading to healthy catchment outcomes.
- Citizen science is informing management.
- Partners are engaged and aligned in their management efforts.
- Community groups are engaged and actively contributing to catchment health.

WHAT SUCCESS LOOKS LIKE

- The regional community is more engaged and empowered to participate and partner in regional biodiversity management (including large areas of public land, reserves and roadsides).
- The regional community recognises that the social, cultural and economic benefits of people connecting with nature depend on a healthy environment.[1]
- Agencies are working together to manage jointly held public assets.
- A waterway monitoring program using citizen science has been established, with the data being online and publicly accessible.
- Baselines for community awareness and participation have been established through surveys.
- A resource of links to existing environmental programs in the region is publicly available online.
- Five community education and communication resources aimed at raising awareness about protecting remnant vegetation have been released.
- Djaara is actively involved in four stakeholder partnerships to manage land in the catchment.

[1] This target is linked to the Biodiversity 2037 goal that 'Victorians value nature' and that Victorians understand that their personal well-being and the economic well-being of the state are dependent on the health of the natural environment.

Goal 4: Culture of Caring for Country



This goal is about fostering a sense of stewardship amongst the wider community who are connected to the Upper Avoca. It is about cultivating a deep, personal commitment to the care and management of the broader catchment.

CONTEXT

Stewardship goes beyond short-term thinking and looks at the landscape from a holistic point of view – asking how our actions and ways of thinking now will affect the long-term health of the catchment and the future generations that live on Country. Stewardship is a mindset that considers how we can contribute to the resilience of landscapes as they continue to endure change long into the future. Centring Djaara values in planning for the catchment encourages this long-term mindset and supports genuinely sustainable resource use, and continued restoration and conservation of the landscape.

KEY OUTCOMES

- The local community and landholders are active and engaged in catchment stewardship and two-way knowledge exchange.
- The community has the awareness, knowledge, skills and networks to effectively participate in protecting and enhancing condition of the catchment.

WHAT SUCCESS LOOKS LIKE

- Forty private landholders are engaged in stewardship agreements such as Trust for Nature conservation covenants to protect biodiversity, natural values.
- Baseline information on the distribution and abundance of flagship species has been collected and shared with the wider community.
- Habitat for flagship species on private land has been identified and the area of habitat protected in the region for these species has increased by 5%.

3. Methodology

Priority actions towards the four goals are organised around four key focus areas. These 37 Specific, Measurable, Achievable, Relevant, and Time-Bound (SMART) actions are listed in Table 3. Target outcomes and a measure of what success looks like are described for each goal in the previous section. The timeline for the commencement of each of the actions has been identified as:

- short-term (within 1 to 2 years)
- medium-term (within 2 to 5 years)
- long-term (within 5 to 10 years).

Estimated resourcing for each action is identified as follows:

- **Orange:** external alternative resources required.
- **Yellow:** medium level of resources required, budget implications yet to be identified.
- **Green:** existing resources are sufficient.

These actions were supported by a separate Cost Benefit Analysis, where benefit was derived from a combination of breadth, impact, adoption and feasibility:

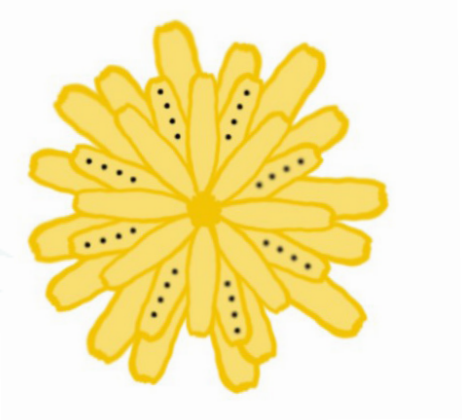
- **Breadth** – the number of goals the action contributes to.
- The relative **impact** of the action on the target assets, considering whether the action is measuring, researching, teaching or enhancing.
- The likelihood of **adoption** of the action by stakeholders.
- The **feasibility** of delivering the action.

The establishment of baselines and smart targets for reporting and evaluating the success of the actions and outcomes have been detailed in the section on monitoring and evaluation.

Table 3: Priority Actions

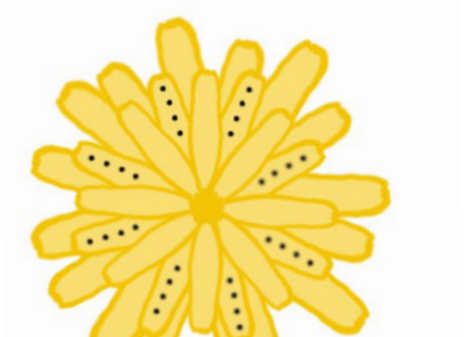
ACTIONS		GOAL 1: DJAARA-LED CULTURAL MANAGEMENT	GOAL 2: HEALTHY CONNECTED LANDSCAPES	GOAL 3: WORKING TOGETHER	GOAL 4: CULTURE OF CARING FOR COUNTRY	COST/ RESOURCING	TIMEFRAME
1	Complete further cultural assessments across Country including further Aboriginal Waterway Assessments, Cultural Values Assessments.	✓					Long-term
2	Implement signage and site renaming informed by Cultural Values Assessments.	✓					Medium-term

ACTIONS		GOAL 1: DJAARA-LED CULTURAL MANAGEMENT	GOAL 2: HEALTHY CONNECTED LANDSCAPES	GOAL 3: WORKING TOGETHER	GOAL 4: CULTURE OF CARING FOR COUNTRY	COST/ RESOURCING	TIMEFRAME
3	Implement the Upper Avoca Aboriginal Watering Assessment actions that inform the healing of Country.	✓	✓				Medium-term
4	Maintain landscapes, by revisiting and reviewing sites to observe how Country is healing.	✓	✓				Short-term
5	Educate and inform the wider community on: • Djaara values and practices • Djaara work to clean up Country and our shared responsibility • Cultural practices to heal Country and people.	✓	✓	✓	✓		Short-term
6	Advocate for Djaara rights to access areas for cultural practices, e.g., harvesting plants for weaving.	✓	✓	✓	✓		Short-term
7	Identify, manage and protect cultural values and places.	✓	✓				Medium-term
8	Identify well-known travel routes and storylines.	✓	✓				Medium-term
9	Trial cultural burning practices in areas of high biodiversity and cultural value.	✓	✓				Long-term



ACTIONS		GOAL 1: DJAARA-LED CULTURAL MANAGEMENT	GOAL 2: HEALTHY CONNECTED LANDSCAPES	GOAL 3: WORKING TOGETHER	GOAL 4: CULTURE OF CARING FOR COUNTRY	COST/ RESOURCING	TIMEFRAME
10	Develop a list of cultural plants and resources.	✓					Short-term
11	Develop a map for cultural values and flagship species.	✓	✓				Short-term
12	Work towards better connections between private landholders and Djaara for two-way, respectful and creative ways to look after Country.	✓	✓	✓	✓		Long-term
13	Create baselines for water quality in the Upper Avoca.		✓	✓			Short-term
14	Establish a waterway monitoring program using citizen science and Traditional Ecological Knowledge, building on Djaara's cultural waterway monitoring program.		✓	✓	✓		Short-term
15	Create a mapped baseline of riparian areas protected from stock access.		✓				Short-term

ACTIONS		GOAL 1: DJAARA-LED CULTURAL MANAGEMENT	GOAL 2: HEALTHY CONNECTED LANDSCAPES	GOAL 3: WORKING TOGETHER	GOAL 4: CULTURE OF CARING FOR COUNTRY	COST/ RESOURCING	TIMEFRAME
16	Implement actions to protect priority riparian reaches along the Avoca River, including: • stock exclusion fencing • woody weed management and other weed control (i.e. introduced grasses) • pest animal control • revegetation works • research to build knowledge and inform actions.		✓				Medium-term
17	Implement actions to protect high priority deep pools to provide drought refuge, including: • stock exclusion fencing • woody weed management and other weed control (i.e. introduced grasses) • pest animal control • revegetation works • research to build knowledge and inform actions.		✓				Medium-term
18	Conduct education and communication activities for the wider community on the value of protecting riparian zones and deep pools.		✓	✓	✓		Short-term



ACTIONS		GOAL 1: DJAARA-LED CULTURAL MANAGEMENT	GOAL 2: HEALTHY CONNECTED LANDSCAPES	GOAL 3: WORKING TOGETHER	GOAL 4: CULTURE OF CARING FOR COUNTRY	COST/ RESOURCING	TIMEFRAME
19	Develop a monitoring plan and conduct surveys of priority areas to better understand impacts and inform actions.		✓				Short-term
20	Conduct education and communication activities for the wider community on the value of protecting remnant vegetation.		✓	✓	✓		Short-term
21	Consider NatureKit Strategic Management Prospects (SMP) data to inform vegetation protection and enhancement activities.		✓				Short-term
22	Prepare and enhance habitat to reintroduce species that have been lost, e.g., emus, blackfish and catfish.	✓	✓				Long-term
23	Conduct native fish surveys and consider restocking enhanced and protected habitat with native fish.		✓				Short-term
24	Conduct pest plant and animal control informed by SMP.		✓				Medium-term
25	Provide advice and resources for landholders on pest plant and animal control.		✓	✓	✓		Short-term

ACTIONS		GOAL 1: DJAARA-LED CULTURAL MANAGEMENT	GOAL 2: HEALTHY CONNECTED LANDSCAPES	GOAL 3: WORKING TOGETHER	GOAL 4: CULTURE OF CARING FOR COUNTRY	COST/ RESOURCING	TIMEFRAME
26	Undertake strategic revegetation to connect places of high biodiversity and cultural value, including: • parks and reserves • roadside vegetation • streamside vegetation • areas protected under agreement (e.g., covenants) • other areas of private land.	✓	✓				Medium-term
27	Explore and promote opportunities to use natural capital and carbon markets in agriculture for best practice vegetation protection and enhancement.			✓	✓		Long-term
28	Promote publicly accessible and online citizen science data.			✓	✓		Short-term
29	Collaborate with the Cooperative Research Centre (CRC) for High Performance Soils) to measure the performance of soils in the catchment – building on past surveys.		✓	✓	✓		Medium-term
30	Conduct baseline community awareness and participation surveys (including social benchmarking).			✓	✓		Short-term

ACTIONS		GOAL 1: DJAARA-LED CULTURAL MANAGEMENT	GOAL 2: HEALTHY CONNECTED LANDSCAPES	GOAL 3: WORKING TOGETHER	GOAL 4: CULTURE OF CARING FOR COUNTRY	COST/ RESOURCING	TIMEFRAME
31	Communicate existing environmental programs.		✓	✓	✓		Short-term
32	Collect baseline information on flagship species (which includes culturally important species) and promote awareness.		✓	✓	✓		Short-term
33	Engage private landholders in caring for Country through incentives and education.		✓	✓	✓		Medium-term
34	Support community initiatives to protect hollows that provide habitat.		✓	✓	✓		Short-term
35	Form partnerships for the implementation of on-ground landscape restoration works (e.g., DJAARA with local Landcare groups).		✓	✓	✓		Short-term
36	Explore innovative ways to attract or leverage funding, e.g., government grants, energy funds, public-private partnerships and corporate and philanthropic funds.			✓			Long-term
37	Establish an implementation group for the Healthy Catchment Plan, which includes project partners and members of Kapa Gatjin.	✓	✓	✓	✓		Short-term

Implementation and Renewal

Implementation of the Dhelkunyangu Upper Avoca plan will be Djaara-led with support from the North Central CMA.

A key focus will be partnerships and two-knowledge exchange, noting Djaara will self-determine what it shares with communities.

Successful governance and implementation of the Dhelkunyangu Upper Avoca by DJANDAK and North Central CMA requires the combination of long-term and annual monitoring, and regular evaluation so actions can be improved.

Figure 9 highlights the annual cycle to renew the implementation of the Plan and the longer-term cycle to update the Plan every ten years.

The Dhelkunyangu Upper Avoca plan will be delivered via annual funding cycles focused on achieving the actions and targets.

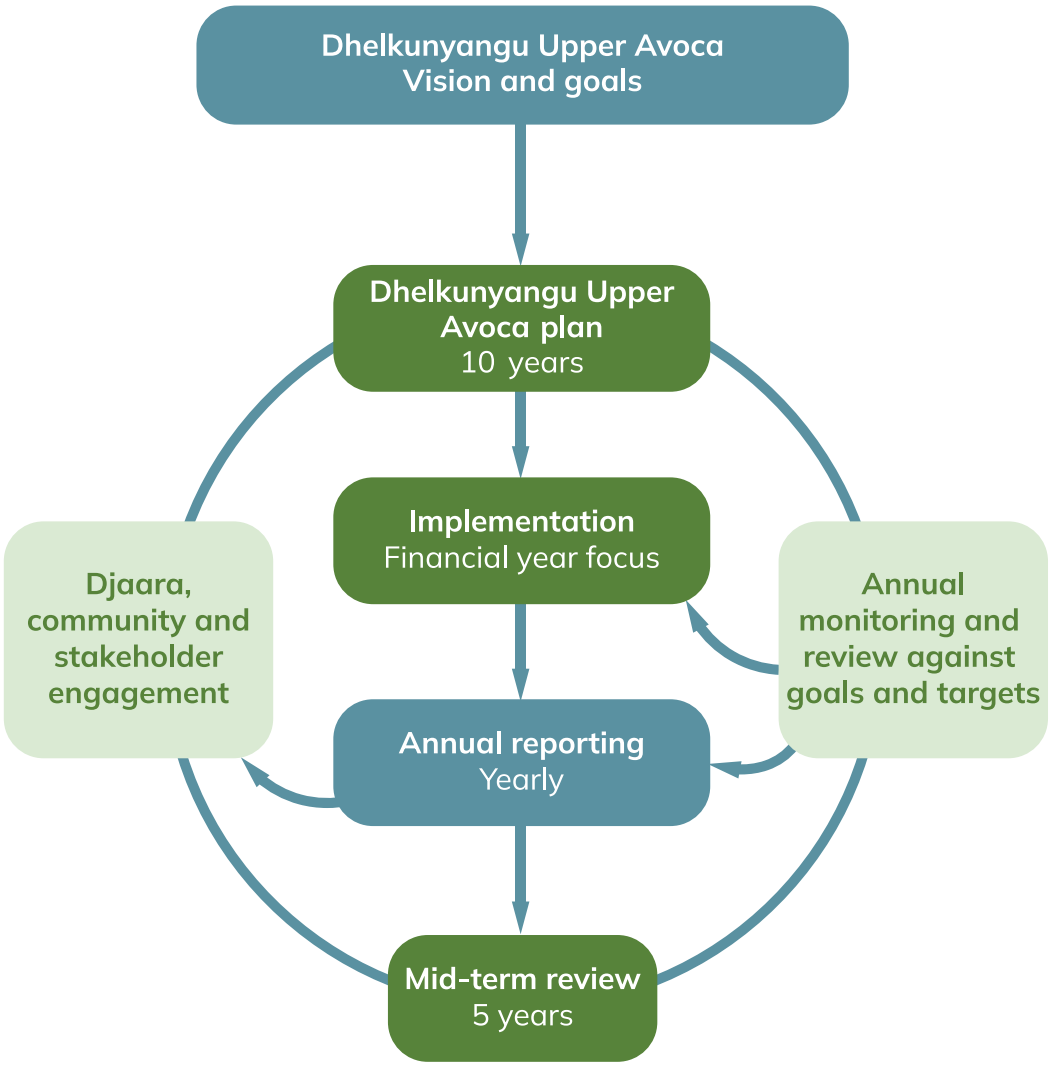


Figure 9: Dhelkunyangu Upper Avoca Implementation

Kapa Gatjin on Country

Monitoring and Evaluation

DJANDAK and North Central CMA are committed to monitoring and evaluation, as this formalises the collection of lessons from the implementation of the plan. It further enables continuous improvement, as collected learnings will inform future actions.

A key focus for measuring the success of the plan will be collecting appropriate baseline information against each of the focus areas and the development of SMART (specific, measurable, achievable, relevant, and time-bound) targets.

Table 4: Monitoring Requirements

WHAT NEEDS MONITORING?	BASELINE EXISTS	WHEN?
Number of areas where language, stories or cultural practice is re-established	No	Every five years
Areas of public land where collaborative relationships exist between Traditional Owners and partners	No	Every five years
Environmental volunteer group health	No	Every five years
Habitat quality of deep pools	No	Every five years
Waterway condition of the Avoca River	Yes	Every 10 years (needs updating)
Change in native vegetation extent (ha) in priority locations	Yes	Annually
Length of riparian works (km)	Yes	Annually
Area of revegetation (ha) supporting habitat connectivity in priority locations	Yes	Annually

Evaluating the success of this plan will also be guided by the themes and key evaluation questions (KEQs) in Table 5.

Table 5: Themes And Key Evaluation Questions

THEMES	KEY EVALUATION QUESTIONS (KEQS)
Plan design • Focuses on whether the governance and actions were appropriately designed to deliver the intended targets (and goals).	1. Was the design of the Healthy Catchment Plan appropriate to deliver the intended outcomes?
Plan implementation • Focuses on whether the actions of Dhelkunyangu Upper Avoca were delivered as planned and seeks to identify how these approaches have ensured efficient and cost-effective delivery.	2. To what extent have Dhelkunyangu Upper Avoca actions been delivered as planned?
	3. To what extent was the delivery good value for money?
Plan impact • Focuses on what Dhelkunyangu Upper Avoca has achieved to date against the intended targets (and goals). • At the end of the Dhelkunyangu Upper Avoca term, the focus is also on the legacy of the program and to what extent the impact of the actions will extend beyond the life of Dhelkunyangu Upper Avoca (long-term outcomes).	4. To what extent did the actions lead to the achievement of the targets?
	5. What impact will the actions have beyond the life of Dhelkunyangu Upper Avoca?

Appendices

APPENDIX 1 : THREATENED SPECIES

TABLE A-1: THREATENED SPECIES IN THE UPPER AVOCA CATCHMENT

TERRESTRIAL AND AQUATIC SPECIES
Australian Government EPBC Act listed species
Terrestrial fauna species • Golden Sun Moth *(Synemon plana)* • Plains-wanderer *(Pedionomus torquatus)* • Regent Honeyeater *(Anthochaera phrygia)* • Swift Parrot *(Lathamus discolor)* • Painted Honeyeater *(Grantiella picta)* • Pink-tailed Worm-Lizard *(Aprasia parapulchella)*
Aquatic / riparian fauna species • Flat-headed Galaxias *(Galaxias rostratus)* • Growling Grass Frog *(Litoria raniformis)* • Murray Cod *(Maccullochella peelii)*
Flora species • Ben Major Grevillea *(Grevillea floripendula)* • Brilliant Sun-orchid *(Thelymitra mackibbinii)* • Candy Spider-orchid *(Caladenia versicolor)* • Clover Glycine *(Glycine latrobeana)* • Lowly Greenhood *(Pterostylis despectans)* • McIvor Spider-orchid *(Caladenia audasii)* • Robust Greenhood *(Pterostylis valida)* • Tawny Spider-orchid *(Caladenia fulva)* • White Sunray *(Leucochrysum albicans subsp. tricolor)* • Yellow-lip Spider-orchid *(Caladenia xanthochila)*

TERRESTRIAL AND AQUATIC SPECIES

Victorian FGG Act listed species

Terrestrial fauna species

- Barking Owl *(Ninox connivens connivens)*
- Brush-tailed Phascogale *(Phascogale tapoatafa)*
- Bush Stone-curlew *(Burhinus grallarius)*
- Chestnut-rumped Heathwren *(Calamanthus pyrrhopygius)*
- Crested Bellbird *(Oreoica gutturalis gutturalis)*
- Diamond Dove *(Geopelia cuneata)*
- Diamond Firetail *(Stagonopleura guttata)*
- Grey Goshawk *(Accipiter novaehollandiae novaehollandiae)*
- Hooded Robin *(Melanodryas cucullata cucullate)*
- Powerful Owl *(Ninox strenua)*
- Red-chested Button-quail *(Turnix pyrrhothorax)*
- Samphire Skink *(Morethia adelaidensis)*
- Speckled Warbler *(Chthonicola sagittatus)*
- Square-tailed Kite *(Lophoictinia isura)*

Aquatic / riparian fauna species

- Blue-billed Duck *(Oxyura australis)*
- Brolga *(Grus rubicunda)*
- Brown Toadlet *(Pseudophryne bibronii)*
- Eastern Great Egret *(Ardea modesta)*
- Freshwater Catfish *(Tandanus tandanus)*

Flora species

- Buloke *(Allocasuarina luehmannii)*
- Grey Grass-tree *(Xanthorrhoea glauca subsp. angustifolia)*
- Hairy Tails *(Ptilotus erubescens)*
- Kamarooka Mallee *(Eucalyptus froggattii)*
- Northern Golden Moths *(Diuris protena)*
- Red-cross Spider-orchid *(Caladenia cruciformis)*
- Silky Glycine *(Glycine canescens)*
- Slender Club-sedge *(Isolepis congrua)*
- Small Milkwort *(Comesperma polygaloides)*
- Stuart Mill Spider-orchid *(Caladenia cretacea)*
- Yellow-tongue Daisy *(Brachyscome chrysoglossa)*

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