



EUNGEDUP WETLANDS MANAGEMENT PLAN
2025-2030

WILSON INLET CATCHMENT COMMITTEE INC
EUNGEDUP MANAGEMENT GROUP

ACKNOWLEDGEMENTS

WICC acknowledges the Eungedup Management Group, City of Albany, Department of Water and Environmental Regulation, South Coast Natural Resource Management, community and donors who have all helped WICC acquire Eungedup Wetlands. This plan provides a framework for how WICC will manage this community asset and ensure that it remains an inspiring safe haven for wildlife.

Wilson Inlet Catchment Committee
October 2024



With most of the perennial wetlands between Albany and Denmark having been drained and cleared for agriculture, the importance of maintaining these wetlands for conservation purposes is huge.

'Eungedup is an exceptional part of an incredibly significant wetland complex, not just for threatened species like the Australasian Bittern but for waterbird populations on a much larger scale. Conserving the site will significantly improve waterbird resilience to increasing external pressures in the south west.'

Paul Sullivan, BirdLife, Australia CEO

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FOREWORD

Eungedup is a large freshwater wetland located on the south coast of Western Australia close to the south-eastern edge of Wilson Inlet, and part of a complex of drains and ephemeral lakes lying immediately to the east of the Nullaki Peninsula. Several of the wetlands in this area were cleared for agriculture last century and were largely used for potato growing. This land use ended in Eungedup in 2015 and as the wetlands lay fallow, they have naturally evolved into a mixture of habitats including *Typha* spp., flooded paperbarks, permanent water and areas of exposed mud/grasslands which flood annually, largely fed by winter rains.

The wetland is surrounded by mostly unspoilt remnant vegetation consisting of fringing paperbarks, and peppermint woodlands which extends into the Nullaki coastal heath. This combination of wetlands and woodlands provides a rare and viable habitat for many species of invertebrates, amphibians, reptiles, birds and mammals including several priority and endangered species, with the most noteworthy being the Australasian Bittern and the Western Ringtail Possum.

Eungedup is approximately 100ha in size and is surrounded largely by a coastal reserve and other neighbours, including private landholders, government land and public reserves. In late 2023, Eungedup was purchased by the Wilson Inlet Catchment Committee Inc (WICC) with the stated aim to conserve and maintain the wetlands for future generations. Following purchase of the property, WICC instituted a series of local community consultations in order to develop a strategy and plan for optimal management of Eungedup. These consultations highlighted the need to work cooperatively with the community, traditional custodians, local and state government and neighbouring landholders in order to maximise common interests. This document describes the recommended management plan and arising actions both immediate and long term.

As the wetland in its current state has only recently evolved, historical data is limited and anecdotal, but actions are underway to understand the richness and diversity of Eungedup. These include the measurement of seasonal water levels and flows in and out of the wetlands and the monitoring of water quality. Preliminary eDNA (Environmental DNA) testing of the water to detect species presence has been carried out and researchers have obtained samples of fish and other aquatic vertebrates. Vegetation surveys have pinpointed areas of weed infestation and controls are ongoing, and a community resourced revegetation program is underway. Online records of bird surveys have been compiled to produce a bird list of over 100 species which have been observed in the wetland and surrounds. Motion sensitive cameras and audio recorders are located throughout the wetland and have produced some interesting results including capturing the presence of feral predators for which a control program is in place. We continue to hear bitterns.

Obtaining a clearer picture of the existing ecosystem builds a foundation for further management actions and research. Collaboration in this regard is essential and initial planning of infrastructure including a wetland centre and a bird-hide has commenced, and it is envisaged that these facilities will be utilised by the local community, researchers, and for educational purposes.

WICC is an incorporated body, managed by local community members, and is largely funded by donations and grants. The purchase of Eungedup was made possible by generous private donations and it is anticipated that future donations will be used to execute the plans and actions laid out in this document.

Eungedup Management Group
October 2024

ACRONYMS

CoA	City of Albany
CCWA	Conservation Council of Western Australia
DBCA	Department of Biodiversity, Conservation and Attractions
DBG	Denmark Bird Group
DPLH	Department of Planning, Lands and Heritage
DRF	Declared Rare Flora
DWER	Department of Water and Environmental Regulation
eDNA	Environmental DNA
EMG	Eungedup Management Group
EPBC	Environment Protection and Biodiversity Conservation Act 1999
EW	Eungedup Wetlands
IUCN	International Union for Conservation of Nature
LLCR	Lowlands Coastal Reserve
NGO	Non-Government Organisation
SCNRM	South Coast Natural Resource Management
TEC	Threatened Ecological Community
UCL	Unallocated Crown Land
WICC	Wilson Inlet Catchment Committee
YSCA	Youngs Siding Community Association

1. INTRODUCTION

In early 2022, a group of concerned citizens and conservation groups came together to buy farmland featuring a unique wetland system, now known as Eungedup Wetlands (referred to as Eungedup throughout this document). Nestled between Denmark and Albany on the south coast of Western Australia, these wetlands provide a unique opportunity to preserve endangered wildlife.

With most of the perennial wetlands between Albany and Denmark having been drained and cleared for agriculture, maintaining remnant wetlands for conservation purposes is critical.

Eungedup will help to offset diminishing wetlands in the broader region and serve as a valuable addition to other wetland refuges close to the coast needed by waterbirds and other wildlife.

The value of Eungedup

Eungedup is part of a unique wetland system linking Lake Saide (Morangup) to Nenamup Inlet, Youngs Lake, and nationally important Wilson Inlet (Nullaki). As a part of this wetland complex, Eungedup plays a valuable role in providing a complementary but alternative breeding habitat for many waterbirds which is not provided to the same extent by other wetlands in this complex.

The historical draining of swamps for development in south-western Australia, coupled with extensive dry periods from changes in rainfall patterns, has resulted in a significant decline in the number of wetlands available as habitat for waterbirds on the south coast.

Eungedup is critically important for a number of nationally and internationally significant waterbirds including the Endangered Australasian Bittern (*Botaurus poiciloptilus*). Retention of these wetlands therefore presents a unique opportunity to overcome the loss of habitat which is the major threat faced by many waterbirds and migratory birds.

In addition to a vast diversity of waterbirds, the forest around Eungedup supports the Critically Endangered Western Ringtail Possum (*Pseudocheirus occidentalis*).

The vision for Eungedup

Conservation of Eungedup presents a rare opportunity to overcome many of the threats faced by wetland birds and other aquatic and terrestrial wildlife. Water levels in Eungedup can be managed using the existing network of channels to assist in providing ongoing habitat for its inhabitants without compromising other wetland bodies and drains downstream.

Effective management of these wetlands will assist with control of invasive predators and weeds. Revegetation works and water quality monitoring will be undertaken to ensure the wetland provides optimal conditions for survival of the Australasian Bittern and other wetland dependent species.

Land tenure

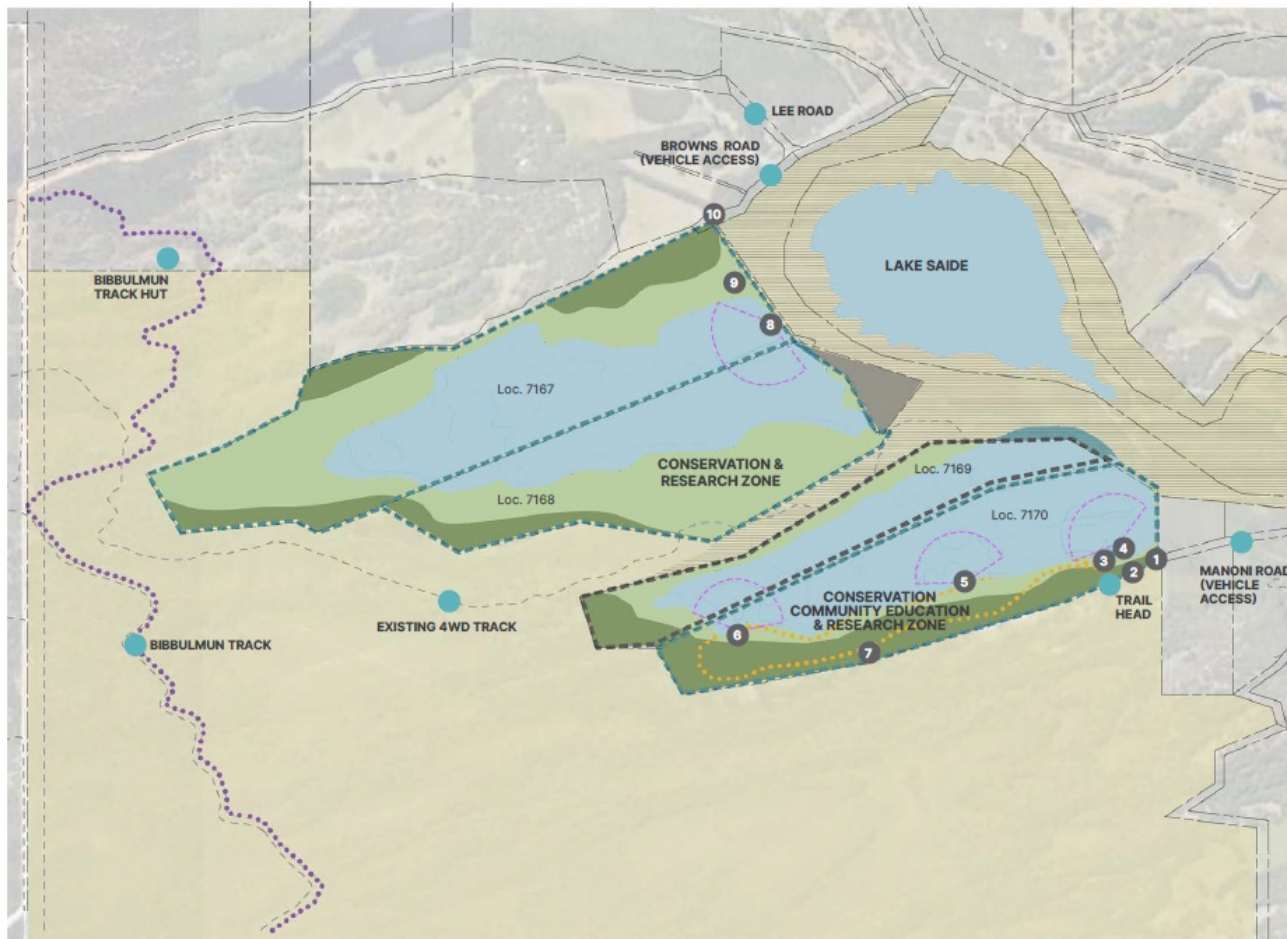
Eungedup is located near Youngs Siding (Quokerlip) within the City of Albany (CoA) and comprises locations 7167, 7168 and 7170 (see Figure 1 and 2). Location 7169 (Reserve 49829) is held by the Department of Water and Environmental Regulation (DWER), which WICC now has management authority for.

Eungedup is adjacent to the Lowlands Coastal Reserve (LLCR) and an area of Unallocated Crown Land (UCL), managed by CoA. The purpose of LLCR is defined as Environmental Protection under the CoA Local Planning Scheme. There is public access to the western portion of LLCR via Browns Road, however most people access only the eastern portion of LLCR as there is no coastal access via Browns Road.

Browns Road, which for the most part is a gravel track, runs along Location 7167 and part of 7168 then continues as an undesignated track

between locations 7168 and 7169. Browns Road, and the continuing track, is infrequently used for 4WD driving when water levels are low and the track is dry, and by occasional walkers, mountain bikers and horse riders.

The properties owned by WICC are classified by CoA as Rural (Local Planning Scheme 2) requiring compliance under rural zoning regulations for some types of infrastructure development and for fire prevention activities.



DESIGN INTENT

THE EUNGEDUP WETLANDS ARE A HIGH VALUE CONSERVATION WETLAND SYSTEM AND ARE CRITICALLY IMPORTANT FOR A NUMBER OF NATIONALLY AND INTERNATIONALLY SIGNIFICANT WATERBIRDS AND SHOREBIRDS INCLUDING THE ENDANGERED AUSTRALASIAN BITTERN.

THE WILSON INLET CATCHMENT COMMITTEE IS THE PROPERTY OWNER AND LEAD ORGANISATION IN THE DEVELOPMENT OF THIS MASTERPLAN WHICH IS DESIGNED TO PROVIDE A HIGH LEVEL OF PROTECTION FOR THIS UNIQUE ENVIRONMENT WHILST PERMITTING STRATEGIC INFRASTRUCTURE IN KEY LOCATIONS FOR THE STUDY, PROTECTION AND MANAGEMENT OF THIS IMPORTANT WETLAND.

CONSERVATION VALUES ARE PARAMOUNT AND ALL PROPOSED DEVELOPMENT WILL BE DESIGNED TO MANAGE ANY ADVERSE ENVIRONMENTAL IMPACTS BY ADHERING TO STRICT PROTOCOLS REQUIRED FOR THE MANAGEMENT OF DIEBACK, ACID SULPHATE SOILS, FERAL PLANTS AND ANIMALS AND MITIGATING BUSHFIRE RISKS AND DISTURBANCE.

THE HERITAGE CULTURAL VALUES WILL BE PROTECTED AND ENHANCED THROUGH ENGAGEMENT WITH THE INDIGENOUS AND LOCAL COMMUNITY AND BROADER CONSERVATION ORGANISATIONS IN CONJUNCTION WITH KEY STAKEHOLDERS SUCH AS THE CITY OF ALBANY, DEPARTMENT OF WATER AND ENVIRONMENTAL REGULATION AND THE DEPARTMENT OF BIODIVERSITY, CONSERVATION AND ATTRACTIONS.

LEGEND

1. PRIMARY ACCESS AND INFORMATION BOARD
2. VISITOR VEHICLE PARKING INCLUDING BUS PARKING, TURNAROUND AND ENTRY NODE
3. WETLANDS CENTRE - CENTRE TO INCLUDE GATHERING SPACE, WET LAB, TEACHING SPACES, ABLUTIONS AND ENTRY SPACES
4. FLOATING VIEWING PONTOON
5. BIRD HIDE - BIRD WATCHING AND PHOTOGRAPHY
6. VIEWING PLATFORM - ELEVATED IN THE LANDSCAPE
7. TRAIL INTERPRETIVE NODE
8. BIRD HIDE FOR RESEARCH PURPOSES - FOR FIELD STATION PERSONNEL ONLY
9. STORAGE AND MAINTENANCE SHED - FOR FIELD STATION PERSONNEL ONLY
10. SECONDARY (STAFF ONLY) ACCESS WITH CARPARK, INFORMATION BOARD & GATED ACCESS (CONTROLLED IN CONSULTATION WITH CoA).

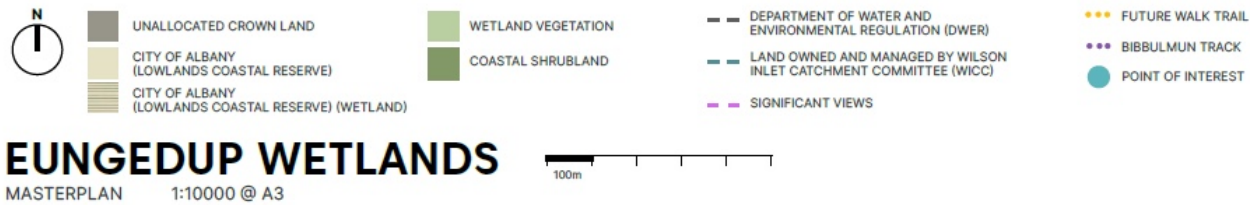


Figure 1-Eungedup Wetlands Masterplan

2. PURPOSE

In late 2023, a series of consultation sessions were held with key stakeholders and community members to establish a shared purpose, gain better understanding of agreed direction, and document people's expectations for management of the wetlands.

Participants agreed that all management actions should first consider potential impacts on the health of the wetland and its inhabitants, with the primary purpose of protection of this wetland system being to provide a safe haven for wildlife.

Participants also identified the following actions as being important to the future management:

- Establish a baseline to better understand the wetlands' systems and enable development of an evidence-based approach to management
- Undertake active management to control access, feral predators and feral herbivores, weeds and develop appropriate infrastructure
- Monitor water levels and water quality condition metrics data that better enables WICC to maintain the wetland and its inhabitants' health
- Work with partners in government, research institutions and local landholders and stakeholders to achieve agreed outcomes
- Develop an extension program for community education and engagement
- Continue to raise funds to ensure access to adequate resources.

This management plan will guide actions required to ensure Eungedup remains as a safe haven for wildlife into the future.

How Eungedup will be managed

WICC is managed by a board of conservation-minded farmers and scientists. The Eungedup Management Group (EMG) was formed as a subcommittee of WICC to provide management of Eungedup. This group includes experts in conservation, revegetation, water quality monitoring,

Australasian Bitterns and feral management, and will be ultimately responsible for monitoring water levels, salinity and pH of the wetlands to ensure their suitability for Australasian Bittern and other waterbirds.

Motion activated cameras are in operation to ensure wildlife are carefully monitored and can be protected from feral predators (and humans). WICC has implemented a feral predator management program which includes the trapping of cats and foxes, and use of 1080 baits. WICC has been carrying out feral management throughout Eungedup and surrounding properties since early 2022.

Eungedup will be owned and managed by WICC with the support of volunteers and government organisations with the aim of covenanting Eungedup to ensure that it can never be cleared of vegetation again.

Adjacent areas and integrated management

During the community consultation sessions held in late 2023, the importance of working with neighbouring landholders, both government and private, to implement effective management of Eungedup was discussed at length. It is imperative that management of Eungedup takes an integrated approach and considers current and planned programs by local and state government organisations (such as CoA, DWER, DBCA, and the Water Corporation). In addition, neighbouring landholders will need to be informed about management actions that may impact on them, and for WICC to consider if any actions taken by neighbouring landholders could affect the health of the wetland system.

As such, it will be important for WICC to work collaboratively with relevant government agencies, and other neighbouring landholders. Current WICC activity in the wetlands and on neighbouring properties includes feral predator control, weed management and revegetation. Management of drainage will need to carefully consider any potential detrimental impacts on adjacent wetlands and surrounding properties.

Neighbouring landholders

Eungedup is almost surrounded by LLCR, a 1550ha reserve that stretches from West Cape Howe National Park to the Nullaki Peninsula.

Surrounding land uses include stock grazing, agriculture, rural lifestyle properties, and operation of a lime quarry.

Adjoining land holders to Eungedup are CoA, DWER and private landowners on Manoni, Brown and Lee roads.



Figure 2-Eungedup context map

CoA

CoA has responsibility for LLCR which surrounds much of Eungedup and Lake Saide. This reserve includes part of Browns Road and road reserve. Since 2000, CoA has completed numerous reports and actions plans for LLCR and surrounding areas. Some of the CoA plans relevant to management of Eungedup include:

- Environmental Land Management Guidelines (2022)
- Environmental Weed Management Plan (2019)
- Lowlands Reserve Four Wheel Drive Survey (2012)
- LLCR Management Plan (2003)

The Environmental Land Management Guidelines outline policy and procedures that aim to minimise the environmental impacts of works and other undertakings on CoA managed land. These procedures apply to everyday maintenance and minor works undertaken by CoA staff or external parties. Management plans for specific locations (such as LLCR) may be developed as required.

The Environmental Weed Management Plan provides a list of priority sites. LLCR is ranked 11 out of 12 nominated reserves. It is stated that this reserve is one of the largest CoA bushland reserves and part of the Coastal Macro Corridor. The bushland is considered to be in excellent condition with minimal weeds, with an active community group working in reserve.

The Lowlands Reserve Four Wheel Drive Survey was conducted with 75 participants in 2012. This survey found that most 4WD activity occurred on tracks leading to the coastline. There was little evidence that the Browns Road Track was regularly used by recreational 4WD enthusiasts.

The LLCR Management Plan was developed in 2003. This management plan focused primarily on the coastal areas of the reserve, with very little attention paid to area surrounding Eungedup or Lake Saide. It has been superseded by the CoA Environmental Land Management Guidelines. There is no proposal to develop an updated management plan for LLCR at this time.

DWER

DWER holds Location 7169, north of Manoni Road (as shown on Figure 1). It is understood that DWER acquired this land for revegetation purposes

to offset nutrient output from potato growing into Lake Saide and Wilson Inlet. DWER has given permission to WICC to revegetate and integrate this lot as part of Eungedup management and has provided WICC with management authority to carry out weed control, feral control, monitoring and revegetation.

Private landholders

Apart from adjacent landholders, several local landholders attended the community consultation sessions held at Youngs Siding Hall in 2023. All had a variety of interests in future management of Eungedup, including potential flooding on their land (e.g. Gilgie Road landholders), neighbours who walk dogs and horses along Browns Road, and neighbours, mobilised by potential expansion of the lime pit development, who have a heightened interest in preserving environmental quality and protecting their way of life.

Several local landholders currently work with WICC to manage feral animals and allow use of 1080 baits on their properties.

3. BACKGROUND

3.1 History and heritage

Youngs Siding shares a rich past with beginnings dating back tens of thousands of years when the land was used and cared for by the Menang Noongar people.

The fertile land and waterways of the rivers, wetlands and ocean provided a “place of plenty”.

These very same fertile soils paved the way for the growth of agriculture, with Youngs Siding being one of the first districts settled by Europeans in the 1850s.

(Excerpt from interpretative signage at Youngs Siding, CoA)

Aboriginal connection to Eungedup

The area around Youngs Siding is home to a number of Aboriginal cultural heritage sites.

Sites between Wilson Inlet and Youngs Siding were culturally significant places for rest, food, ceremony and burial.

The fertile land and waterways of the rivers, wetlands and ocean were a great food source, which led the area to become an important place to gather, camp and travel through.

The fish traps and artifact scatters are testimony to the continuous of this area before Europeans arrived.

(Excerpt from interpretative signage at Youngs Siding, CoA)

Three registered Aboriginal sites in proximity to Eungedup are identified on the Aboriginal Cultural Heritage Inquiry System managed by the WA Department of Planning, Lands and Heritage. These are:

- Place 22557: Koirchekup Hill (Youngs Siding) used as a campsite, and for ritual and ceremony (men only)
- Place 4545: Youngs Siding Burial site
- Place 5475: Youngs Lake used as a campsite, with fish traps, and scattered artefacts

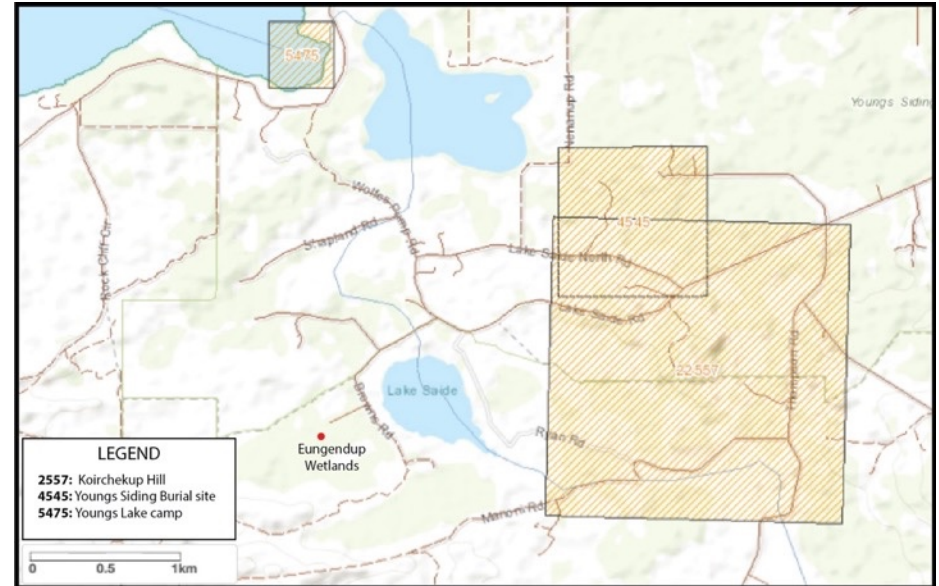


Figure 3-Registered Aboriginal Heritage sites (source: Aboriginal Cultural Heritage Inquiry System)

Agriculture and water management

The first farm in the district was established at Marbelup in 1837 and subsequently the local community, centred on Youngs Siding, prospered and grew with farming (beef, dairy, vegetables) and associated support as the principal occupations. Schools, stores, community facilities, local roads and a railway connection to Albany were all established over the next century.

Following the Depression in the 1930s, a network of drains was developed in the area to provide employment, and to drain previously unworkable, swampy land for agriculture.

The moist fertile soils proved very suitable for the growing of potatoes with up to 50 growers in the industry at its peak along the south coast.

The potential of Eungedup to be developed for agriculture, with its level terrain, a mixture of peat and marl soils and annual flooding was recognised, and the State offered leasehold tenancies to prospective growers.

Several local families, often in partnership with each other, took up the leases and cleared the land. The land flooded in winter and had to be pumped dry in springtime to allow access for sowing of seed potatoes. Winter flooding was beneficial in helping to suppress insect pests and weed growth which meant that insecticides were never used at Eungedup. Water was pumped into neighbouring Lake Saide and eventually found its way into Wilson Inlet via Nenamup and Wilson Lake. These waters are intimately connected and in times of high inlet water levels, Lake Saide remained full, and pumping became problematic until the inlet bar was opened.

With time the leases were consolidated by two prominent families, and subsequently only one, growing potatoes at Eungedup. When the government offered the land for sale, the remaining leaseholder took the opportunity and purchased the land which now comprises the Eungedup Wetlands.

The last crop was harvested in 2015 when the requirement for annual control of Typha and native sedges made further potato growing at Eungedup uneconomic. There have been no controls of vegetation growth or water levels at Eungedup since 2015, resulting in the current habitat and its suitability for waterfowl and the Australian Bittern.

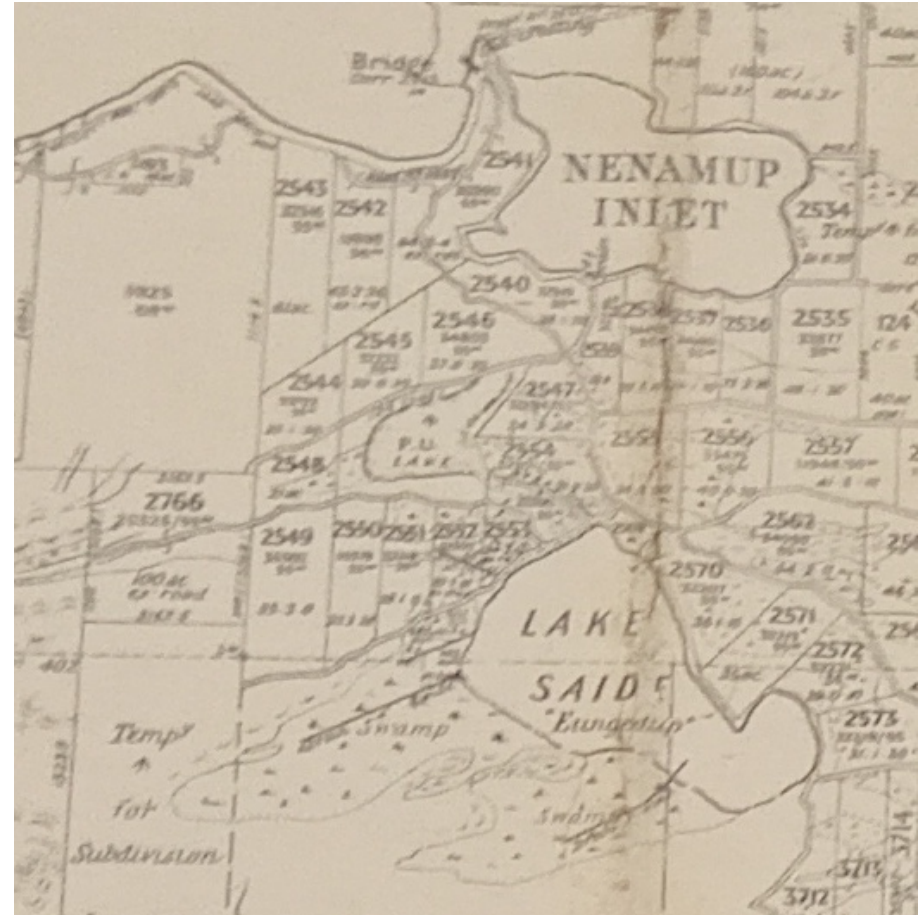


Figure 4-Cadastral map 1948 (source: Wilson Torbay Drainage Plan)

3.2 Geology and hydrology

An extensive dune system runs from the Nullaki along the south coast and provides a source of seepage water to a series of near coastal lakes and wetlands. This area has been largely cleared and drained for agriculture with an extensive drainage system in the eastern catchment feeding into Lake Saide.

Eungedup lies adjacent to the west of Lake Saide, which is connected by a drain to the north into Nenamup and then to Youngs Lake which is part of the much larger, nationally significant, Wilson Inlet. Typically, Lake Saide and Nenamup dry out during the summer months but fill rapidly with the onset of winter rains. Eungedup itself sits below sea level and maintains a constant water supply throughout the year, making it a vital refuge for wildlife.

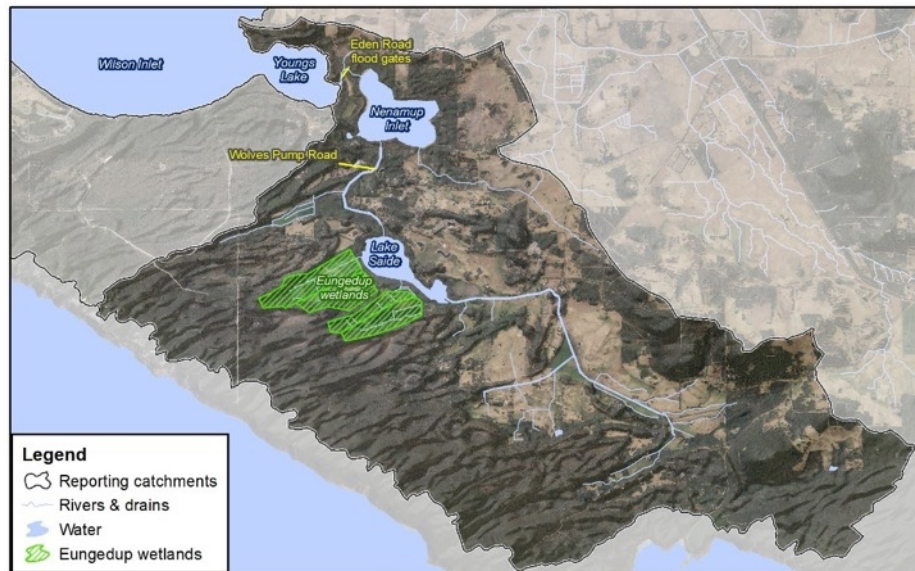


Figure 5-Eungedup catchment and links to Wilson Inlet

Soils

The wetlands are surrounded by deep sandy soils on the western side, with the soils in Eungedup wetlands and those to the east being wet and prone to seasonal waterlogging. The wetland soils contain a mixture of silt, lime sand and peat which have combined to form marl throughout the wetland. Marl is typically formed in a lacustrine environment as a fine to clayey calciferous sediment with low permeability.

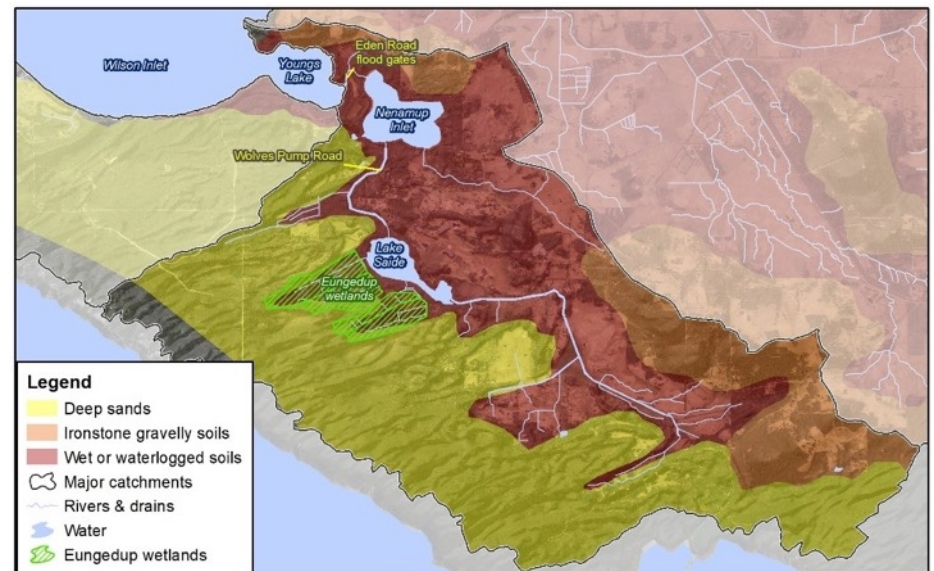


Figure 6-Soil types surrounding Eungedup

Hydrological systems and drainage

The previous owner of Eungedup farmed potatoes on the northern and southern sections of the wetlands. Both areas had to be pumped dry for crop planting, typically in November or December each year. This required creation of an internal drainage system within the wetlands (See Figure 7). On the northern wetland, channels around the boundary and aligned east/west, feed into a main eastern boundary channel. From here water can be pumped or passively drained into Lake Saide through two drainpipes underneath Browns

Road. The southern wetland has boundary and internal drains from which water can be pumped overland to Lake Saide.

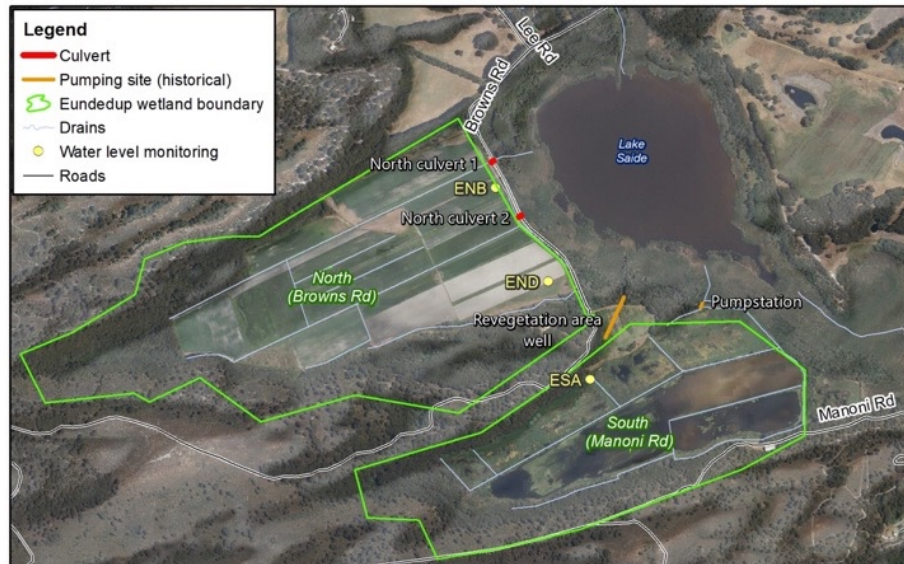


Figure 7-Location of drains from Eungedup to Lake Saide

Currently the North culvert 1 drain is blocked. In winter 2024 after significant rains, water began to flow through the Browns Road South drain to Lake Saide once the water level in the northern section of Eungedup reached 0.6m.

The southern section of Eungedup retains significant water levels throughout the year, particularly along the southern edge where ground levels are slightly lower and where groundwater seepage from the Nullaki Peninsula has a greater impact. The northern wetland dries out at the northern end and around the fringes in summer, with areas of deeper water retained all year long at the southern end.

Aerial photography taken in May 2019 and April 2024 (Figure 8), with the latter time being after one of the hottest and driest summers on record, showed similar areas of standing water when Lake Saide and Nenamup Inlet were dry. This strongly suggests that groundwater is sustaining the open water areas of

the wetland. To ensure the future viability of Eungedup, it will be critical to better understand and protect groundwater in this area.

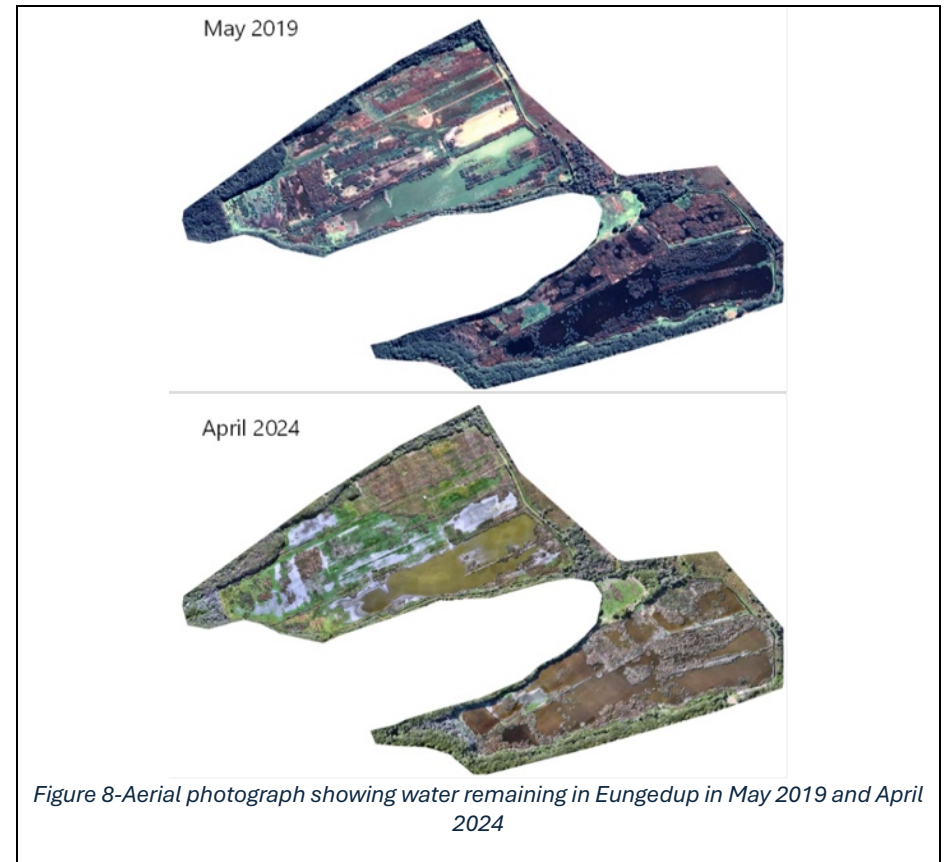


Figure 8-Aerial photograph showing water remaining in Eungedup in May 2019 and April 2024

3.3 Flora and Fauna

Eungedup has only evolved into its current state in the last 10 years. Prior to this the land was cleared and farmed and only remnants of the original vegetation are retained along the wetland fringes. Therefore, the current wetland flora consists largely of recently invasive and in some case feral species. Fortunately, this provides an excellent habitat for a wide range of flora and fauna, particularly avifauna, some of which are listed as Endangered or Critically Endangered under the federal EPBC Act 1999 or as Endangered or Priority Species under the WA Biodiversity and Conservation Act 2016.

Surveys of flora and fauna within Eungedup have been carried out in recent years but more work is required and ongoing. The surrounding LLCR was surveyed extensively by the Young's Siding Community Association (YSCA) in 2005 and 2006 and results from these surveys can be utilised when compiling species lists for Eungedup.

The 2005 Flora survey found a total of 114 vascular plant species representing 89 genera and 43 families and identified four distinct vegetation communities within the reserve. The majority being peppermint heath with minor tea-tree shrub-land, yate forest and degraded swamp banksia scrub on the wetland fringes. Currently the fringing vegetation remains largely unchanged but Bulrush (*Typha* spp) is now a dominant species within the wetland area. While it provides important habitat for Australasian Bitterns and numerous other waterbirds, its spread will need to be actively managed as it is capable of aggressive invasion that can transform wetland ecosystems.

The 2006 Fauna survey noted the presence of several mammal species including Bush Rat, Honey Possum, Dunnart, Antechinus, Western Grey Kangaroo, and Southern Brown Bandicoot. More than 50 bird species were identified across four locations. Numerous spider and insect species were observed included the Mouse Spider (or Double Door Trapdoor Spider), Wolf Spider, Orb Weaver, Huntsman and Christmas (or Jewel) Spider. Insects included scarab beetles, centipedes, weevils, earwigs, grasshoppers, mantids, ants and various beetle species.

Threatened species

The prime purpose of Eungedup is to protect all wildlife species and particularly the endangered, vulnerable and/or priority species which are present at Eungedup. No threatened species of Flora have been detected at Eungedup so far. The Threatened Species Action Plan developed by the Department of Climate Change, Energy, Environment and Water lists 110 priority species, including 22 birds of which three (3), the Australasian Bittern, Carnaby's Cockatoo and the Red-Tailed Black Cockatoo breed, roost or forage in or nearby to Eungedup. The Western Ringtail Possum is amongst the 21 mammals listed.

Avifauna

Eungedup provides habitat for breeding, feeding, roosting for 107 so far recorded bird species (see Appendix 4). Seasonal variation can determine particular species presence at any one time.

Australasian Bittern

Prominent amongst these is the Australasian Bittern an Endangered Priority species. It is a large, cryptic, heron-like bird that was once widespread across reedy wetlands of southern Australia, but loss and degradation of its preferred habitat caused substantial declines. The Australasian Bittern prefers fresh water with depths up to 30cm to feed upon crustaceans, fish, frogs and invertebrates. The global population is estimated to be fewer than 2,500 mature individuals and decreasing (Birdlife International, 2016). The Western Australian (WA) bittern population declined by 25-50% from the 1980s-2010 and continues to decline. It is estimated that fewer than 150 mature individuals remain. It is believed that up to five (5) pairs of Australasian Bitterns are resident within Eungedup during the breeding season with a potential suitable habitat range up to 15km during the non- breeding season.

Black Cockatoos

Carnaby's Black Cockatoo is listed as Endangered, and the status of Baudin's Black Cockatoo is under review for potential change to Critically Endangered species. The Forest Red-tailed Black-Cockatoo is listed as Vulnerable. All species have been declining in numbers since the 1950s, mostly due to loss of feeding and nesting habitat. In many places, the remaining feeding habitat is too far from good nesting habitat to allow for successful breeding. Carnaby's Black Cockatoo (Ngolyenok), Baudin's Black Cockatoo (Ngolak), Forest Red-tailed Black-Cockatoo (Karak) have all been observed at Eungedup.

Migratory Shorebirds

Many of Australia's freshwater marshes, estuaries, mangroves and coastlines are important feeding grounds for birds that fly to Australia annually from their breeding grounds 12000kms away in the Siberian Arctic. Several species are known to use the seasonal (summer/autumn) shallow water and exposed wet muddy beds of Eungedup to forage and feed. Migratory shorebirds observed at Eungedup include greenshank, stint, and sandpiper.

Resident Birds

Resident waterbirds include egret, spoonbill, ibis, heron, cormorant, crane, rail, grebe and bittern. Waterfowl include blue-billed, musk, black and wood duck, shelduck, shoveler, and teal. Resident shorebirds include plover and stilt.

Raptors (Birds of Prey) include wedge tail and little eagle, brown and peregrine falcon, whistling kite, swamp harrier, kestrel and brown goshawk.

Mammals

Observed mammals include Western grey kangaroos, quenda, bush rats, mardos, the Western Ringtail Possum and the Water Rat.

The Western Ringtail Possum is a Critically Endangered Priority species. By 1980, it was observed that many had disappeared from at least 80% of their pre-European range, and their distribution and population size has continued to decline due to habitat loss and fragmentation, changed fire regimes, and predation by cats, foxes and dogs. The Water Rat (Rakali/Ngurju) is listed by DBCA as a Priority 4 species (Rare, Near Threatened and other species in need of monitoring).

Reptiles

Snakes observed on site include Dugite, Tiger snake, Bardick and Crowned snake. Lizards include the Western Glossy Swamp Skink. Frogs observed within Eungedup include quacking frog, rattling frog, ticking frog, moaning frog, motorbike, banjo, slender tree, turtle, and spotted-thighed tree frog. The South-western Snake-necked Turtle (Yaakin) is currently listed as 'near threatened' by the IUCN, although its status has not been assessed for 20 years.

Aquatic species

Aquatic species observed using Fyke Netting include Blue-spot Goby and Western Minnow.

Introduced Species/Feral Predators

The 2005/2006 surveys highlighted the presence of feral cats and foxes in the LLCR which continue to be observed at Eungedup and pose a serious risk to native wildlife. Foxes are considered the more serious threat as they are less averse to damp conditions. They have been recorded often during the WICC monitoring program and have been observed with waterfowl in their jaws. Fortunately, foxes are more easily managed than cats through 1080 baiting programs.

Cats, though observed less frequently, are still present especially in the riparian and dune vegetation immediately adjacent to Eungedup. They prey on both threatened and non-threatened native species.

Black rats and house mice are also present. Black rats can potentially eat small native animals and bird eggs. Too many black rats can inhibit native rat species though observed numbers do not appear problematic as yet.

Feral herbivores, such as rabbits are present but so far have not been observed in high numbers. Larger populations exist on the Nullaki Peninsula and across LLCR.

Within the waterways, eastern gambusia, an introduced freshwater fish, are present.



Figure 9-Red Fox with waterfowl in mouth



Figure 10-Red Fox hunting at Eungedup

4. MANAGEMENT GOALS

Effective management of Eungedup has three overarching goals:

1. Provide a safe haven for wildlife
2. Develop community infrastructure and provide safe access
3. Create opportunities for research, education and community engagement

The various elements that will need to be considered to achieve these goals are outlined in the following sections. The tables included at the end of each section are expanded in the Action Plan (found later in section 5.1) where priority, responsibility, estimated cost, potential funding source, and investment opportunities are identified.

4.1 Provide a safe haven for wildlife

The primary purpose of conservation of Eungedup is to provide a safe haven for wildlife by managing water levels and drainage, protection of fauna and flora, monitoring and research, ensuring biosecurity and managing access, and fire protection.

The following section outlines the goal of different elements of management, and the actions that will be implemented to achieve this goal.

Water management and drainage

Managing and maintaining water at optimal levels will be important to protecting the health of the wetland and its inhabitants. It is identified that assessment and management of drainage will be a priority, with a flexible system that will enable release and retention of water as required. The current drainage system is in poor condition and may need extensive maintenance and repair.

Seepage from the base of the coastal dune system is a substantial water source into Eungedup. Flow from Eungedup into Lake Saide via pipe

drains under Browns Road may need to be withheld in the foreseeable future dependent upon the severity of decreased rainfall.

The long-term outlook for rainfall needs to be considered. The ability to manage water levels at Eungedup will increase its value as it may be one of few local wetlands to retain water in drying climate.

To manage water levels and potential drainage, it will be important to develop modelling to enable testing of different management scenarios and support changes in current drainage management. Ongoing monitoring will also enable WICC to work with DWER and the Water Corporation to ensure their requirements are met, and to assess potential ecological impacts of changing the hydrological regime within the catchment.

Apart from monitoring overall water levels and water quality, it will be important to continue to develop an increased understanding of environmental criteria for the wetland. Monitoring of selected criteria may include:

- Identifying optimal water levels for bittern nesting sites
- Minimising water levels in some areas to maintain mudflats for use by waders and shorebirds
- Measuring the extent of Typha and identifying how water levels affect its distribution
- Impacts of high-water levels on fringing vegetation

To do so will require monitoring of water levels of multiple seasons, particularly in drier years. Modelling may then be able to predict potential impacts associated with active managing of the drainage systems, including opening or closing channels, culverts and floodgates. Initial observations indicate that release or retention of water in Eungedup has little impact on the surrounding wetland systems that extend to Wilson Inlet.

It will be essential that management of water levels in Eungedup does not contribute to flooding or water deprivation within other areas of the catchment.

A Water and Drainage Action Plan will be developed to guide future decision-making and support potential management intervention.

Fauna protection

Management actions will enhance and protect wildlife through reduction of feral animal populations, and control of Typha and wetland weeds within Eungedup. Several programs are already in place. These include feral predator monitoring that commenced in 2022, cat cage traps put in place in spring 2023, and ongoing 1080 baiting commenced in February 2022. Data analysis has produced information about feral animal activity levels and trends.

Feral animals

Feral cats and foxes present one of the greatest threats to resident fauna. After deploying five camera traps throughout the wetland in early 2022, it was found that red foxes were eating resident waterbirds on a regular basis. No prior feral animal control in the wetland has taken place.

In February 2022, WICC implemented a 1080 baiting program targeting red fox using buried egg baits. There was an immediate decline in red fox sightings. The uptake of egg baits is still high (about 80% of baits were still being taken in July 2024). Unfortunately, the lack of feral fox management in LLCR means that more foxes can rapidly move into Eungedup as numbers there are reduced. Fox control is high priority.

Development of a Feral Animal Control Plan will utilise camera data, observations by volunteers and contractors, and the latest technology available to control red fox, feral cats and rabbits.

Typha and wetland weed management

Bulrush (*Typha orientalis*) is classified as a naturalised species in Western Australia and is no longer considered a weed. As such, removal of Typha may require approval from DWER.

Typha management is a priority as it needs to be retained for habitat purposes. Active management of the extent of Typha across Eungedup will be critical to retain habitat for Australasian Bitterns.

Clearing of selected areas of Typha will be important to opening up mud flats for wading birds. In addition to managing Typha, it will be important to remove invasive grasses, such as couch and kikuyu grasses, to retain open mud areas. A native damp land plant (*Bulboschoenus caldwellii*) and nutgrass (*Cyperus rotundus*) have also colonised two of the northern wetland sections and may be a greater impediment to future mud foraging habitat by shorebirds than the existing invasive grasses. Regular mapping of the extent of Typha and other wetland vegetation may be done using drone technology.

Flora protection

Steps will be undertaken to proactively manage bushland through rehabilitation and restoration of native vegetation, and suppression of invasive weeds. A revegetation plan to enhance and protect bushland vegetation at Eungedup is currently being developed.

The primary goals of the Revegetation Plan are to:

- Preserve naturally colonising native species where practicable and possible
- Irradicate non-native species using appropriate chemical and other control measures
- Revegetate using suitable native species grown from seed of local provenance
- Increase habitat value for nesting bird species and other wildlife

- Minimise disturbance and establish a resilient, biodiverse plant community.

To assist with revegetation, two seed collection events were completed in 2023.

Suppression of weeds will be an important element in successful native vegetation rehabilitation and restoration. Following identification of areas with high weed infestation, eradication activities were commenced in autumn 2024. These included

- Slashing and spraying of arum lilies and blackberry
- Goats were used to eat their way through several stands of blackberry on Manoni and Browns roads.



Figure 11-Goats eating blackberry along Browns Road

Bushland management

Long term planning is required if bush condition is to be improved. Methods used should reflect bushland condition and minimise disturbance to native vegetation. For example, if bushland condition is good to excellent, then minimal disturbance is recommended to reduce damage. The Keighery Vegetation Condition Scale can be used for assessment of selected sites (see Appendix 1).

It is proposed that bushland management adopts the Bradley Principles outlined in the CoA Environmental Weed Management Plan (2019). These are as defined as:

- Work from good areas towards bad
- Make minimum disturbance where possible
- Allow regeneration of native plants to dictate rate of weed removal
- Don't start on large weed infestation unless you are sure you will get back to do the follow up work (removing parent plants may create light and space for hundreds of new weeds)
- Many plants need three (3) years or more of control
- Plan to prevent the least weed-infested bush from becoming degraded
- Aim for control, not eradication, and tipping the balance in favour of local native plants.

It is acknowledged that use of herbicides and other chemicals for bushland management must be minimised to protect water quality and wildlife health. In specific circumstances, herbicide use may be necessary, particularly in areas where weed infestation is extensive, and the bush condition is considered to be degraded. In addition, selected biological control for management of blackberry infestation may be required, particularly in areas where the weed-eating goats cannot be deployed.

Development of a Bushland Management Plan will provide direction and indicators to measure progress on revegetation and weed management

including baseline vegetation mapping and scheduling of periodic follow up surveys to monitor change in the condition of flora.

Monitoring and research

Achieving monitoring goals will require safe, low impact access to monitoring locations, and it will be important to maintain current partnerships with organisations such as DWER and universities, and to explore new opportunities for research.

Monitoring will be undertaken to:

- Identify changing water levels and water quality
- Identify wildlife populations
- identify vegetation quality

Monitoring completed, and currently underway, includes:

- Three western ringtail possum surveys conducted in 2022/2023
- Audio recording units (ARU) set and data analysed for detecting the presence of bitterns – commenced spring 2023
- Ongoing camera monitoring for bitterns and other native species (including water rats/rakali and western ringtail possums) – commenced in 2022
- Ongoing Typha monitoring using QGIS mapping and onsite observations
- Water depth gauges installed in May 2024
- Water chemistry monitoring undertaken in May 2024, with the recommendation that this continues to be monitored in winter 2024 (when water levels increase), then every month for 18 months, and then potentially reduced to seasonal.

WICC commenced ongoing breeding season monitoring of Australasian Bittern in 2023 using ARU. WICC will continue to research best practice to monitor bitterns all year (not just breeding season) by visual aids (direct video or thermal image) using drones and thermal camera. DBG

monitors migratory waders every summer and records these using Birdlife Australia's Birdata system.

WICC is liaising with numerous groups to form monitoring and management partnerships, with additional opportunities for citizen science and education. These groups include SCNRM, DBCA, Birdlife Australia, DBG, Albany Bird Group, CoA and Shire of Denmark, local primary and high schools, Murdoch, Curtin and Edith Cowan universities, Albany TAFE, environmental consultants, and rangers from local Aboriginal Corporations.

The use of drones for monitoring purposes will need to be carefully controlled to minimise disturbance to wildlife populations. It is envisaged that use of drones will require approval by WICC, with use requirements ensuring minimum heights are maintained and potential noise impacts are minimised.

A Wildlife Monitoring Plan and database with a focus on citizen science will be developed. This plan may include:

- Continuing monitoring for bitterns using ARU, camera and other emerging technologies to determine numbers and locations
- Conducting annual Western Ringtail Possum surveys
- Collating observations of native species and quantity from motion camera records as a byproduct of measuring trends of feral predators
- Conducting small mammal trapping activities where appropriate
- Coordinating surveys using eDNA and aquatic species captured by Murdoch Uni Fish Group. (one survey of each completed in 2023)
- Undertaking bat surveys

Biosecurity and hygiene

The purpose of biosecurity and hygiene management is to stop the spread of pathogens and other biological threats through limiting access, hygiene protocols, community education, and removing rubbish and waste from the site.

Potential biological threats from myrtle rust and dieback will need to be managed. Myrtle rust (*Puccinia psidii*) is a fungal disease which infects plants in the Myrtaceae family such as eucalyptus, bottlebrush, paperbark, and tea tree. Plants such as banksias, jarrah and grass trees are susceptible to root system damage caused by dieback (*Phytophthora cinnamomic*).

All of these tree species are present at Eungedup, though at present there is little evidence of either myrtle rust or dieback. Installation of wash down stations, educational signage and adoption of hygiene protocols may stop any future infestation.

In addition to biological threats, much rubbish, including a large number of rubber tyres, and post-agricultural waste such as fertiliser bags, are present throughout the wetland.

A Hygiene Plan will be developed to guide actions of management and operational staff, and visitors to the wetland.

Fire protection

Prevention and control of fires will be essential to protect the health of the wetland and its inhabitants.

Eungedup is located within the southwest sector of CoA fire management zone and WICC will need to comply with fire management requirements (see <https://www.albany.wa.gov.au/services/emergency-management/fire.aspx>).

CoA (either directly or through local fire brigades) implements the requirements of the Bush Fires Act 1954 including:

- Prohibited burning dates (CoA)
- Total Fire and Movement Bans (CoA)
- Fire Management Notices (CoA)

- Permits to Burn (Youngs Brigade Fire Control Officer (FCO)
- Hazard reduction burns/prescribed burning (Youngs Brigade FCO)
- Local fire response (Youngs Brigade)
- Coordination of fire response (CoA)

Eungedup falls within the Youngs Bush Fire Brigade area. The brigade is comprised entirely of volunteers. The main fire shed, with two firefighting appliances, is located in Youngs Siding, with another shed, with one appliance, located on the Nullaki. The response to a fire within Eungedup would come from Youngs Brigade with support from other nominated CoA brigades.

There is potential legal liability for a fire starting on Eungedup and spreading to adjoining properties if WICC does not comply with fire management requirements.

A Fire Management Notice is issued by the CoA every year (<https://www.albany.wa.gov.au/services/emergency-management/fire-management-notice.aspx>). It outlines the minimum requirements for all landowners and occupiers to prepare for the bush fire season. It is issued under Section 33 of the Bush Fire Act 1954 and the requirements contained within are required by law. Non-compliance with the notice may result in penalties up to \$5,000 per offence. Compliance must continue through the Prohibited Burning dates (subject to change and as advertised). It is the responsibility of the landowners and occupiers to implement whatever is necessary to comply.

It is essential that WICC comply with the CoA's annual Fire Management Notice including creating and maintaining perimeter fire breaks, hazard specific fire breaks and building protection zones. Alternatively, WICC can apply to the CoA for a Variation to the Requirements of a Fire Management Notice before 1 November each year. See Appendix 2 for information on Variation to the Requirements of a Fire Management Notice Fire Management Notice.

For the purposes of the Fire Management Notice, Eungedup fits within the following category:

- Non-Agricultural Non-Cropping Non-Stock Properties over 50 Hectares

This would mean Eungedup must reduce any fire hazard on the land by:

- Creating and maintaining perimeter fire breaks
- Creating and maintaining hazard specific fire breaks
- Creating and maintaining building protection zones

Prior to a Bush Fire Management Plan being developed, WICC will contact CoA to confirm Eungedup is not in a 'special' zone and if any specific conditions apply.

It will also be important to work with Youngs Bush Fire Brigade to identify important habitat areas where protection may be prioritised should a fire occur.

Future construction of the Wetland Centre will involve planning and development of an upgraded bushfire management response.

Proposed actions

Goal 1: Provide a safe haven for wildlife	
ID #	Action required
SH1	Continue to collect water level data to inform development of Water and Drainage Action Plan
SH2	Determine environmental water needs to inform development of Water and Drainage Action Plan
SH3	Develop Water and Drainage Action Plan
SH4	Develop a Water Quality Monitoring Plan
SH4	Develop Feral Animal Control Plan
SH5	Develop a Typha Monitoring and Control Plan which includes monitoring and control of Typha to maintain a mosaic of habitats for wetland wildlife
SH6	Develop Bushland Management Plan after completion of vegetation mapping and condition reporting of all flora
SH7	Commence implementation of initial Revegetation Plan
SH8	Develop a Wildlife Monitoring Plan and database with a focus on citizen science
SH9	Establish research and monitoring partnerships to identify changing water levels and water quality, wildlife populations and vegetation quality
SH10	Develop and implement a Hygiene Plan
SH11	Develop an approved Bush Fire Management Plan (BFMP) completed by an accredited Bush Fire Planning and Design Practitioner

4.2 Develop community infrastructure and provide safe access

Development of appropriate infrastructure and provision of safe access will be essential to support proposed community education and research activities. Proposed infrastructure includes construction of a Wetland Education Centre, bird hides, walk trails and viewing platforms, and installation of signage for visitor safety and education.

WICC worked with H+H Architects in Albany to an overall masterplan for the site (refer Figure 1) that identifies potential infrastructure locations and access points. In addition, H+H Architects developed a design for a bird hide to be constructed on the southern section of Eungedup.

It is envisaged that access to the northern section of Eungedup will be restricted for conservation and research purposes to minimise impact to wildlife. The southern section will be developed for community education and research purposes, in line with conservation and minimal impact principles. It is imperative that facilities are low-impact and fit-for-purpose and are designed to enhance visitor safety.

Development of Eungedup Wetland Centre

The Eungedup Wetland Centre will provide a window for visitors to engage with the wetland with minimal impacts to wildlife. It will be constructed to allow for small school groups, bird groups, researchers, to study and learn about wetland ecology.

The design will ensure that the centre can be rented to small groups for meetings and conferences to allow for cost recovery of the wetland centre. It will be an example of environmental best practice in every way, from building materials, site disturbance, effluent management, and power generation.

It will provide for small extension activities (walk to nearby bird hide, floating jetty, Elevated bird hide incorporated in wetland centre), as well

as a link to a network of remote cameras throughout the wetland which visitors can access from the wetland centre to carry out bird surveys.

A small laboratory and basic bunk bed style accommodation, with kitchen and ablutions, will be part of the centre. Researchers utilising these facilities will be able to collate available data to gain further understanding of the wetland ecosystem. This will not only support fundamental research but will provide direction for future management and improvement of the wetland habitat and provide support to our visiting school groups.

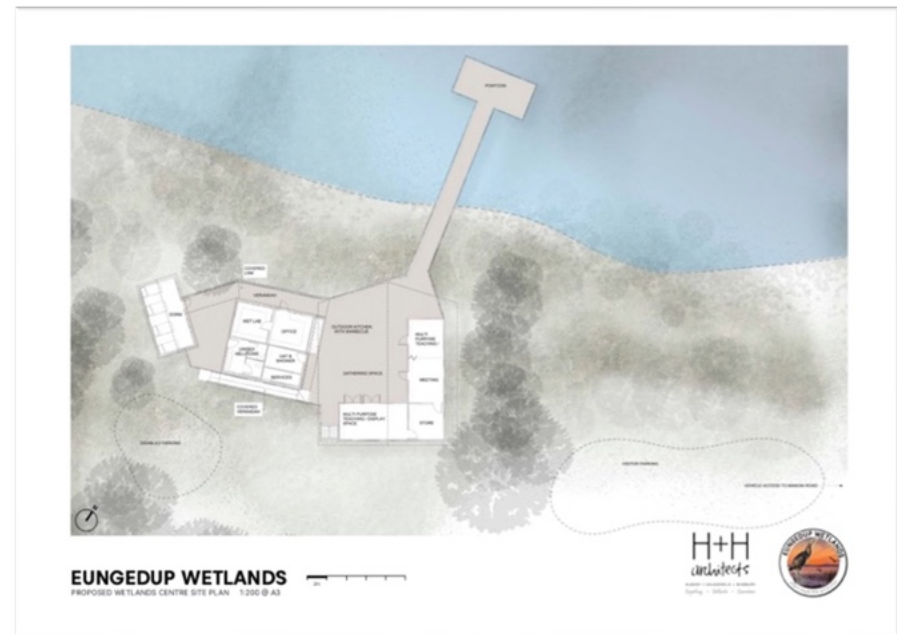


Figure 12-Concept of future Eungedup Wetlands Centre

It is proposed that a loop trail be established around the Manoni Road site, extending from the Wetland Centre, to the Bird Hide and viewing platforms that can be used for observation and monitoring.

Installation of Bird Hides

It will be important to ensure bird hide/s are fit-for-purpose (i.e. size and location) suitable for bird photographers. Two potential bird hide sites were identified, one in the northern section along Browns Road, and the other in the southern section approximately 250 metres west of the proposed Wetland Centre site. Design of the bird hide to be constructed in the southern section is complete and development approvals are being sought.



Figure 13-Concept of bird hide at Manoni Road

Visitor safety and signage

Safety of visitors and staff is paramount. This will be achieved by maintaining intuitive signage, policies, infrastructure and briefings for all visitors. Signage will be installed in such a way as to not detract from the natural beauty of the wetland. All signage will follow a similar theme

using common style, font and displays so it creates a ‘Eungedup brand’”. It will be informative yet unobtrusive. Access Guidelines for Visitors are provided in Appendix 3.

Visitor safety is especially important because WICC will be concentrating efforts on engaging the next generation of wetland custodians, our youth. Any accidents, or incidents which could have resulted in an accident, will be reported on the WICC Accident Report Form and reviewed by the EMG to ensure that WICC implement necessary changes to prevent future incidents of that nature. WICC will maintain public liability, management liability and volunteer insurance as a fall back, however prevention of incidents will be our primary focus.

Proposed actions

Goal 2: Develop community infrastructure and provide safe access	
ID#	Action required
CI1	Work with H+H to develop overall concept plan which considers locations, costs and the community led strategic plan
CI2	Identify key design elements of bird hides to ensure for-purpose facilities
CI3	Gain relevant approvals and construct Bird Hide 1
CI4	Work with H+H to develop Wetland Centre design plan
CI5	Manage visitor access using gates and signage.
CI6	Update WICC Operational Guidelines to include procedures for staff, volunteer, and visitor safety
CI7	Seek funding to build infrastructure
CI8	Determine and develop walk trail route (Manoni)
CI9	Install lookout points along walk trail (Manoni)
CI10	Design and construct Bird Hide #2 on Browns Road
CI11	Construct Wetland Centre

4.3 Create opportunities for research, education and community engagement

As part of ongoing management of Eungedup it will be important to maintain contact with all stakeholders in regards to Eungedup happenings and opportunities for involvement.

Some of the communities that will be informed and involved include:

- Donors
- Volunteers
- Aboriginal organisations such as Wagyl Kaip and Southern Aboriginal Corporation
- Partners – local and state government, schools and universities, bird and other special interest groups, other catchment and environmental groups.
- Neighbours and local community

It will also be important to develop opportunities for Aboriginal involvement in planning, management and program delivery through engagement with Noongar Elders and educators, and ongoing communication with Wagyl Kaip.

Donor and volunteer involvement

Eungedup Custodians are the donors and volunteers who are integral to achieving the vision for Eungedup. It is essential that WICC provide regular communication and opportunities for people to become involved, educated and inspired. This will ensure WICC have the resources to manage Eungedup into the future.

A register of donors and volunteers will be maintained. As part of this register, each volunteers' skills and interest will be recorded in order to maximise their contributions and maintain their interests.

A quarterly Eungedup update will be provided electronically which will update donors and volunteers as to recent Eungedup observations, activities and how they can contribute – be it on ground or financially.

The aim is to create a donor community that builds a sense of belonging among donors. This can be achieved by personalising communications and offering exclusive opportunities for behind-the-scenes access and invitations to events. We must ensure transparency across our financials and decision making so donors know that their investment is secure and well managed. Sharing the long-term vision and emphasising how important donor support is critical to achieving goals, and encouraging donors to contribute through legacy gifts, endowments, and setting ongoing donations.

Aboriginal engagement

Ensuring that Noongar knowledge and understanding of the importance of this site (and the surrounding area) are included in decision-making and future education and research programs will be important to the management of Eungedup.

Working with Wagyl Kaip and making connections with local Elders, custodians, and educators will enable development of a Noongar Engagement Plan. Future activities may include cultural mapping, collection of oral histories and other projects as determined through consultation.

Education and interpretation

The Eungedup Masterplan (Figure 1, p.3) was designed following a series of community consultation workshops and further input from the EMG. It balances the conservation of Eungedup's ecological assets while providing educational and extension opportunities for the community to learn and become inspired by Eungedup. This will foster a broader appreciation of wetlands and encourage others to conserve other wetlands using Eungedup as an example.

At the heart of this all is the proposed Wetland Centre which will be designed with a focus on engaging the next generation of wetland custodians, particularly young people. Students will be able to attend the centre and become involved in monitoring, revegetation, weed control. A network of high-resolution video cameras which are elevated throughout the wetland will be able to be accessed in the centre which students can use to assist in monitoring. This will minimise human encroachment on the wildlife habitat while engaging students through electronic media.

To balance this will be outdoor opportunities which are thoughtfully designed to minimise wildlife disturbance and maximise the experience for visitors. Low impact interpretive signage will be designed and installed on a network of bird hides. This will allow the students and broader community to learn about Eungedup and wetland ecology independent of a guide. A floating jetty will allow people to experience the wetland from the water and be involved in water quality monitoring.

Social media and information dissemination

Keeping the community informed is essential in order to maximise our extension, volunteer engagement and ensuring ongoing funding. This has to be done through a spectrum of media as each media type (e.g. Facebook) will only engage a segment of our target audience). WICC has ongoing presence via monthly Denmark FM Morning Radio interviews, bi-monthly newsletter and Facebook. WICC also have the contact details of all people who have donated to the Eungedup campaign.

WICC will adhere to the following communications:

Media	Frequency	What WICC will do
WICC News	Bi-monthly	Standing 'Eungedup Update'
Denmark FM	Monthly	Discuss Eungedup
Facebook	Ad hoc	Eungedup things of interest
Direct email	Quarterly	Update donor base

Partnerships with other community organisations

Partnerships with NGOs, universities and local schools will ensure that WICC can maximise educational and interpretive opportunities. Eungedup will ultimately be an outdoor classroom. Groups will be able to access Eungedup's remote camera network from anywhere in the world and then visit Eungedup in person. By having a small dorm which allows overnight stays for universities and other science institutions will help to overcome accommodation barriers and encourage further research at Eungedup. This will be used to better manage Eungedup's assets and provide further extension opportunities which WICC can use to engage local students and community.

The Wetland Centre will be available for hire by small groups. The groups will be required to adhere to guidelines which will be designed to minimise human impact on wildlife (e.g. noise, group size and movement through the wetland).

Proposed actions

Goal 3: Create opportunities for community education and engagement	
CE1	Maintain register of donors and volunteers
CE2	Identify opportunities for volunteer involvement
CE3	Identify opportunities for investment
CE4	Develop Communication Plan for Eungedup
CE5	Work with Wagyl Kaip to develop Noongar Engagement Plan
CE6	Establish research partnerships for student placement, post-graduate and funded projects
CE7	Develop curriculum-based education activities and programs with local schools
CE8	Develop community-focused education and activity programs

5. IMPLEMENTATION

Priorities, timelines, and operational plans

The following Action Plan consolidates all goal-related actions identified in previous sections and identifies priority, responsibility, projected cost, funding source and potential for donor contribution.

To facilitate implementation of this management plan, operational plans to address specific issues will be created. These will include:

- Water and Drainage Action Plan
- Water Quality Monitoring Plan
- Feral Animal Control Plan
- Typha Monitoring and Control Plan
- Bushland Management Plan
- Revegetation Plan
- Wildlife Monitoring Plan
- Hygiene Plan
- Bush Fire Management Plan
- Communication Plan
- Noongar Engagement Plan (in consultation with Wagyl Kaip)

Establishing measurable key performance indicators (KPIs) within operational plans will be vital to ensuring that WICC is making progress in the implementation of this management plan. An annual operational review will be carried out by WICC staff and the EMG.

Funding and ongoing donor contributions

Identifying opportunities for investment through grants and donor incentives will be critical to the implementation of this management plan and future operations at Eungedup. It is expected that over time, donor plans identifying opportunities for legacy gifts, endowments and ongoing donations will be developed.



Figure 14-Dr Elke Reichwaldt, DWER

5.1 Action Plan

Priority descriptions	
0	Currently underway
1	To be implemented by end 2025
2	To be implemented by end 2026
3	To be implemented by end 2027
4	To be considered and/or commenced prior to 2030, when preliminary and/or complementary actions are completed

Notes on table headings	
On Ground	Denotes the year (as per descriptions above) that on ground works will be implemented for this action item
Plan	Denotes the year (as per descriptions above) that the applicable project plan will be completed for this action item
Responsibility/partnerships	WICC will have primary responsibility for all actions Identifies responsibilities and partnerships outside of WICC
Estimated Cost	Stated costs are indicative only and based on a best estimate approach. \$0 denotes that cost will be covered by WICC operational funding and/or complementary program grants
Funding source	Identifies potential funding sources
Donor opportunity	Identifies opportunity to generate community interest and seek DGR donations

ID #	Action required	On ground	Plan	Responsibility/partnerships	Estimated Cost	Funding source	Donor opportunity (Y/N)
Goal 1: Provide a safe haven for wildlife							
SH1	Continue to collect water level data to inform development of Water and Drainage Action Plan	0		DWER, WC, Volunteers	\$0 with gauges, \$3600 with data loggers	DWER In Kind, DGR	Y
SH2	Determine environmental water needs to inform development of Water and Drainage Action Plan	1		DWER, CoA, DBCA, BWA	\$5000	Grants, DWER	N
SH3	Develop Water and Drainage Action Plan	1	2	DWER	\$2500	Grants, DWER	N
SH4	Develop a Water Quality Monitoring Plan	0	1	DWER, Volunteers	\$1000	DWER In Kind, DGR	N

ID #	Action required	On ground	Plan	Responsibility/partnerships	Estimated Cost	Funding source	Donor opportunity (Y/N)
SH4	Develop Feral Animal Control Plan	0	1	CoA, DPIRD, DBCA, Feral Contractor, Volunteers	\$1000	Birdlife, DGR, grants	N
SH5	Develop a Typha Monitoring and Control Plan which includes monitoring and control of Typha to maintain a mosaic of habitats for wetland wildlife.	0	2	DWER, Volunteers	\$40,000	DGR, grants	Y
SH6	Develop Bushland Management Plan after completion of vegetation mapping and condition reporting of all flora.	0	1	SCBCS	\$2000	DGR	N
SH7	Commence implementation of initial Revegetation Plan	0	1	Volunteers	\$850	CoA, DWER, GA, DGR	Y
SH8	Develop a Wildlife Monitoring Plan and database with a focus on citizen science	0	2	DBCA, Birdlife, Volunteers	\$2000	Grants, DGR	Y
SH9	Establish research and monitoring partnerships to identify changing water levels and water quality, wildlife populations and vegetation quality	0		DBCA, BLWA, DWER, MU, Volunteers, CCWA, DBG, TCG, SAC	\$0	NA	Y
SH10	Develop and implement a Hygiene Plan	1	2	SCNRM, DBCA, Volunteers	\$2000	DGR	N
SH11	Develop an approved Bush Fire Management Plan (BFMP) completed by an accredited Bush Fire Planning and Design Practitioner	0	1	Youngs Bush Fire Brigade, Volunteers, CoA	\$1500	Grants	N
ESTIMATED COST					>\$61,450		

ID #	Action required	On ground	Plan	Responsibility/partnerships	Estimated Cost	Funding source	Donor opportunity (Y/N)
Goal 2: Develop community infrastructure and provide safe access							
CI1	Work with H+H Architects to develop overall concept plan which considers locations, costs and the community led strategic plan	0		H+H Architects, Volunteers	\$0	NA	Y
CI2	Identify key design elements of bird hides to ensure for-purpose facilities	0		Volunteers	\$0	NA	Y
CI3	Gain relevant approvals and construct Bird Hide 1	1		CoA, Volunteers, Engineer	\$67000	DGR	Y
CI4	Work with H+H to develop a design plan for the Wetland Centre	1	3	H+H Architects, CoA, Volunteers, Engineer	\$15000	DGR	Y
CI5	Manage visitor access using gates and signage.	1		CoA, Volunteers, Youngs Bush Fire Brigade, DBCA	\$6000	DGR, Grants	N
CI6	Update WICC Operational Guidelines to include procedures for staff, volunteer, and visitor safety	1		Volunteers	\$500	WICC	N
CI7	Seek funding to build infrastructure	0		Philanthropist, Lotterywest	\$10000	WICC, Grants, DGR	Y
CI8	Determine and develop walk trail route (Manoni)	1		Volunteers	\$2000	WICC, DGR	Y
CI9	Install lookout points along walk trail (Manoni)	2		Volunteers	\$5,000	WICC, DGR, Grants	Y
CI10	Design and construct Bird Hide #2 on Browns Road	3		CoA, H+H Architects, Engineer, Volunteers	\$50000	DGR, Grants	Y
CI11	Construct Wetland Centre	3	4	H+H Architects, CoA, Volunteers, Engineer	\$1000000	DGR, Grants	Y
ESTIMATED COST					>\$1,155,500		

ID #	Action required	On ground	Plan	Responsibility/partnerships	Estimated Cost	Funding source	Donor opportunity (Y/N)
Goal 3: Create opportunities for community education and engagement							
CE1	Maintain register of donors and volunteers	0		WICC	\$0	NA	N
CE2	Identify opportunities for volunteer involvement	0		WICC, Volunteers	\$0	NA	Y
CE3	Identify opportunities for investment	0		WICC, Volunteers	\$0	NA	Y
CE4	Develop Communication Plan for Eungedup	1	1	WICC, Volunteers	\$1500	WICC	N
CE5	Work with Wagyl Kaip to develop Noongar Engagement Plan	0	2	Wagyl Kaip, Volunteers	\$1500	WICC	N
CE6	Establish research partnerships for student placement, post-graduate and funded projects	1		Volunteers, Universities, DBCA	\$0	NA	Y
CE7	Develop curriculum-based education activities and programs with local schools	1		Local schools, Volunteers, Lotterywest	\$25000	Grants, DGR, School in kind	Y
CE8	Develop community-focused education and activity programs	2		Local schools, Volunteers, Lotterywest, DBG, Green Skills	\$20000	Grants, DGR, School in kind	Y
ESTIMATED COST					>\$48,000		
TOTAL ESTIMATED COST TO IMPLEMENT 2025-2030					>\$1,264,950		

APPENDICES

Appendix 1: Keighery Vegetation Condition Scale

Condition category	Definition
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact; disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered; obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires; the presence of some more aggressive weeds; dieback; logging; and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires; the presence of some very aggressive weeds at high density; partial clearing; dieback; and grazing.
Degraded (Poor)	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires; the presence of very aggressive weeds; partial clearing; dieback; and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs

Described in Bushland Plant Survey: A Guide to Plant Community Survey for the Community (1994) as developed by B.J. Keighery and published by the Wildflower Society of WA

Appendix 2: Variation to the Requirements of a Fire Management Notice

CoA recognises that in some instances, landowners or occupiers may not physically be able to meet all of the fire management measures listed in the Fire Management Notice. If the Fire Management Notice requirements cannot be met a variation or an approved Bush Fire Management Plan (BFMP) must be submitted to the CoA in November each year.

CoA will only accept a BFMP completed by an accredited Bush Fire Planning and Design Practitioner. A BFMP can encompass single or multiple properties. All properties covered by a BFMP must comply with the conditions of the BFMP.

Three of CoA stated possible reasons a variation may be considered could apply to Eungedup:

- Property is steep and inaccessible, and the installation of firebreaks or other fire mitigation measures would be dangerous or impractical.
- Parts of the property are permanently waterlogged. (If only seasonally waterlogged, the Fire Management Requirements must be met as soon as the area has dried out sufficiently.)
- Clearing of vegetation is likely to impact upon areas of declared rare flora or environmentally sensitive areas as defined under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004.
- Building positioning on block prevents the installation of an Building Protection Zone of the required size (in relation to proposed visitor centre as no other buildings on site)

Where a variation has been approved, any special conditions that have been placed on the variation must be complied with. Any requirements stipulated in the Notice for which a variation has not been granted must still be met. To apply for a variation:

- Fill in a [Variation to the Fire Management Notice](#)
- Include a detailed, legible current map showing alternative fire mitigation measures

Advice can be sought from the FCO of Young's Brigade, for example in regard to Fire Management Notices. Youngs Brigade contacts (Not to be used to report a fire - call 000):

- Captain/Fire Control Officer (FCO) Michelle Hollands
0476 210 322
- FCO Kevin Martin 0427 452 032
- FCO Martin Peterson 0448 320 352

Further information is available from CoA:

- Fire Information:
<https://www.albany.wa.gov.au/services/emergency-management/fire.aspx>
- Fire Management Notice:
<https://www.albany.wa.gov.au/services/emergency-management/fire-management-notice.aspx>.

Appendix 3: Access Guidelines for Visitors

EUNGEDUP WETLANDS ACCESS GUIDELINES

1. As the property is private land carrying numerous responsibilities for WICC as the owner, access will not be permitted without authorisation by the WICC Office.
Potential donors requiring site inspection should contact the WICC office directly.
Initial access will not be granted unless an individual or group is accompanied by at least one staff member or guide from WICC or DBG.
2. Applications for individual or group access shall be by email to WICC stating:
 - Name/s of persons/group and number of people
 - Purpose of visit e.g. bird observation, site inspection, photography
 - Date of intended access – 30 days minimum notice required to ensure guide availability
3. Conditions of Grant of Access (provided by email)
 - Maximum number of people permitted will be stated
 - Other conditions as determined at the time by WICC
4. If access is granted recipients are to sign an acknowledgement (by email) stating:
 - They will not take or introduce unauthorized people to the site
 - When referring Eungedup to others, they must inform them that access approval is required before visiting the site
 - They agree to indemnify WICC as the property owner in all respects in the event of accident, injury, property damage or fire caused by recipients and authorised visitors.
 - When attending events at the wetland, all visitors will be required to sign an acknowledgement of attendance releasing WICC, as the property owner, from all obligations arising from accident, injury, and property damage including fire.

Appendix 4: Eungedup Bird List as at October 2024

#	Common Name	Scientific Name	Conservation Status			Abundance	Breeding
			WA BCA	EPBC	IUCN		
A	Pelicans, Cormorants and Darters						
1	Australian Pelican	Pelecanus conspicillatus				C	
2	Great Cormorant	Phalacrocorax carbo				M	
3	Little Black Cormorant	Phalacrocorax sulcirostris				C	
4	Australasian Darter	Anhinga novaehollandiae				M	
5	Little Pied Cormorant	Microcarbo melanoleucos				C	
6	Pied Cormorant	Phalacrocorax varius				C	
B	Gulls and Terns						
7	Silver Gull	Larus novaehollandiae				M	
8	Whiskered Tern	Chlidonias hybrida				U	
C	Shorebirds						
9	Pied Stilt	Himantopus leucocephalus				C	
10	Red-capped Plover	Charadrius ruficapillus				C	
11	Black-fronted Dotterel	Elseyornis melanops				U	
12	Common Greenshank	Tringa nebularia	MI	EN	EN	M	
13	Marsh Sandpiper	Tringa stagnatilis	MI			R	
14	Wood Sandpiper	Tringa glareola	MI			M	
15	Red-necked Stint	Calidris ruficollis	MI		NT	C	
16	Long-toed Stint	Calidris subminuta	MI			U	
17	Curlew Sandpiper	Calidris ferruginea	CR	CR	CR	U	
18	Pectoral Sandpiper	Calidris melanotos	MI			R	
19	Sharp-tailed Sandpiper	Calidris acuminata	MI	VU	VU	M	
D	Ducks and Swans						
20	Black Swan	Cygnus atratus				C	Yes
21	Musk Duck	Biziura lobata				C	Yes
22	Blue-billed Duck	Oxyura australis	P4			M	Yes
23	Australian Wood Duck	Chenonetta jubata				C	
24	Australian Shelduck	Tadorna tadornoides				C	
25	Pink-eared Duck	Malacorhynchus membranaceus				M	
26	Australasian Shoveler	Spatula rhynchotis				C	Probable
27	Northern Shoveler	Anas clypeata				V	
28	Chestnut Teal	Anas castanea				M	
29	Grey Teal	Anas gracilis				C	
30	Hardhead	Aythya australis				M	
31	Pacific Black Duck	Anas superciliosa				C	Yes
E	Grebes						
32	Hoary-headed Grebe	Poliiocephalus poliocephalus				C	
33	Australasian Grebe	Tachybaptus novaehollandiae				C	
F	Hérons, Egrets and Bitterns						
34	White-necked Heron	Ardea pacifica				U	
35	White-faced Heron	Egretta novaehollandiae				C	
36	Eastern Great Egret	Tyto delicatula				C	
37	Nankeen Night-Heron	Nycticorax caledonicus				U	

#	Common Name	Scientific Name	Conservation Status			Abundance	Breeding
			WA BSA	EPBC	IUCN		
38	Australasian Bittern	Botaurus poiciloptilus	EN	EN	EN	M	Probable
39	Australian Little Bittern	Ixobrychus dubius	P4			U	
G	Spoonbills and Ibis						
40	Yellow-billed Spoonbill	Platalea flavipes				C	
41	Australian White Ibis	Threskiornis molucca				C	
42	Straw-necked Ibis	Threskiornis spinicollis				C	
43	Glossy Ibis	Plegadis falcinellus	MI				
H	Rails, Crakes and Water Hens						
44	Buff-banded Rail	Hypotaenidia philippensis				M	Yes
45	Baillon's Crake	Porzana pusilla				C	
46	Australian Spotted Crake	Porzana fluminea				C	Probable
47	Spotless Crake	Porzana tabuensis				U	Probable
48	Australasian Swamphen	Porphyrio melanotus				M	Yes
49	Eurasian Coot	Fulica atra				M	Probable
50	Dusky Moorhen	Gallinula tenebrosa				M	Probable
I	Quails and Buttonquails						
51	Painted Buttonquail	Turnix varius				R	
J	Ospreys, Eagles, Hawks, Kites and Harriers						
52	Eastern Osprey	Pandion cristatus				M	
53	White-bellied Sea-Eagle	Haliaeetus leucogaster				M	
54	Little Eagle	Hieraaetus morphnoides				M	
55	Wedge-tailed Eagle	Aquila audax				U	
56	Whistling Kite	Haliastur spheurnus				M	
57	Square-tailed Kite	Lophoictinia isura				U	
58	Swamp Harrier	Circus approximans				C	Probable
59	Brown Goshawk	Accipiter fasciatus				M	
60	Black-shouldered Kite	Elanus axillaris				M	
K	Falcons						
61	Nankeen Kestrel	Falco cenchroides				U	
62	Brown Falcon	Falco berigora				R	
63	Australian Hobby	Falco longipennis				U	
64	Peregrine Falcon	Falco peregrinus	OS			U	
L	Owls, Frogmouths, Owlet Nightjars and Nightjars						
65	Eastern Barn Owl	Tyto delicatula				U	
66	Southern Boobook	Ninox boobook				U	
67	Tawny Frogmouth	Podargus strigoides				U	
M	Cockatoos, Parrots, Rosellas and Lorikeets						
68	Red-tailed Black-Cockatoo	Calyptorhynchus banksii	P4	VU	VU	U	
69	Carnaby's Black-Cockatoo	Calyptorhynchus latirostris	EN	EN	EN	M	
70	Galah	Eolophus roseicapilla				M	
71	Purple-crowned Lorikeet	Glossopsitta porphyrocephala				M	
72	Red-capped Parrot	Purpureicephalus spurius				M	
73	Australian Ringneck Parrot	Barnardius zonarius				C	
74	Western Rosella	Platycercus icterotis				C	
75	Elegant Parrot	Neophema elegans				M	

#	Common Name	Scientific Name	Conservation Status			Abundance	Breeding
			WA BCA	EPBC	IUCN		
N	Pigeons and Doves						
76	Common Bronzewing	Phaps chalcoptera				C	
O	Cuckoos						
77	Fan-tailed Cuckoo	Cacomantis flabelliformis				M	
78	Shining Bronze-Cuckoo	Chalcites lucidus				M	
P	Kingfishers						
79	Laughing Kookaburra	Dacelo novaeguineae				C	
80	Sacred Kingfisher	Todiramphus sanctus				M	
Q	Swallows and Martins						
81	Welcome Swallow	Hirundo neoxena				U	
82	Tree Martin	Petrochelidon nigricans				C	
R	Scrubwrens, Thornbills and Geryones						
83	White-browed Scrubwren	Sericornis frontalis				M	
84	Inland Thornbill	Acanthiza apicalis				C	
85	Yellow-rumped Thornbill	Acanthiza chrysorrhoa				M	
86	Western Gerygone	Gerygone fusca				M	
S	Fairy-wrens						
87	Splendid Fairy-wren	Malurus splendens				C	Probable
88	Red-winged Fairy-wren	Malurus elegans				C	Probable
89	Southern Emu-wren	Stipiturus malachurus				U	
T	Honeyeaters						
90	New Holland Honeyeater	Phylidonyris novaehollandiae				C	Probable
91	Western Spinebill	Acanthorhynchus superciliosus				C	
92	Western Wattlebird	Anthochaera lunulata				M	
93	Red Wattlebird	Anthochaera carunculata				C	
U	Chats, Babblers, Treecreepers						
V	Cuckoo-shrikes, Butcherbirds, Magpies, Ravens and Currawongs						
94	Black-faced Cuckoo-shrike	Coracina novaehollandiae				M	
95	Grey Currawong	Strepera versicolor				U	
96	Grey Butcherbird	Cracticus torquatus				M	
97	Australian Magpie	Cracticus tibicen				C	
98	Australian Raven	Corvus coronoides				C	
W	Fantails, Wagtails						
99	Grey Fantail	Rhipidura albiscapa				C	Probable
100	Willie Wagtail	Rhipidura leucophrys				M	Probable
X	Robins and Whistlers						
101	Scarlet Robin	Petroica boodang				U	Probable
102	Rufous Whistler	Pachycephala rufiventris				R	Probable
103	Western Whistler	Pachycephala occidentalis				C	Probable
Y	Silvereyes, Reed Warblers and Grassbirds						
104	Silvereye	Zosterops lateralis				C	
105	Australian Reed-Warbler	Acrocephalus australis				C	Probable
106	Little Grassbird	Poodytes gramineus				C	Probable
Z	Firetails and Finches						
107	Red-eared Firetail	Stagonopleura oculata				M	

LEGEND

Conservation Status	
WABCA	
Western Australian Biodiversity and Conservation Act 2016	
CR	Critically Endangered
EN	Endangered
VU	Vulnerable
MI	Migratory
OS	Species otherwise in need of special protection (other specially protected)
P	Priority species
P4	Rare, Near Threatened and other species in need of monitoring
EPBC	
Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)	
CR	Critically Endangered
EN	Endangered
VU	Vulnerable
NT	Near Threatened
Global IUCN Red List Categories	
International Union for Conservation of Nature	
CR	Critically Endangered
EN	Endangered
VU	Vulnerable
NT	Near Threatened
Mi	Migratory
OS	Otherwise in need of special protection

Abundance	
Frequency of species sightings within the Eungedup/L.Saide (polygon) area	
R	Rare
U	Uncommon
M	Moderately common
C	Common
A	Abundant

Breeding	
Probable	Probable - based on frequent presence during the breeding season
Yes	Yes - breeding observed

POLYGON RESTRICTING SURVEY POINTS: MAP

