

# Bindjareb Djilba

## Peel-Harvey estuary Protection Plan

The Bindjareb Djilba (Peel-Harvey estuary) is the largest and most diverse estuary in the south-west of WA and is worth more than \$20 billion to the WA economy.<sup>1</sup> Unfortunately, it is suffering from pressures that threaten its health.

### Progress update 2024

#### Key points

- ⇒ The Bindjareb Djilba (Peel-Harvey estuary) Protection Plan drives collaborative action across state and local government, Traditional Owners, partner agencies and community to improve water quality, protect values and safeguard the future health of the estuary.
- ⇒ The estuary's health is under pressure from eutrophication, where the oversupply of nutrients causes an excessive growth of algae, pushing the ecosystem out of balance. The drying climate adds to this pressure.
- ⇒ To protect the estuary, we need to reduce the amount of nutrients entering the waterways that flow into the estuary.
- ⇒ A committee of dedicated Traditional Owners, organisations and stakeholders are working together to implement on-ground actions and change the way land is managed.
- ⇒ We are walking together with Bindjareb Traditional Owners to implement the plan, embed cultural values and deliver Aboriginal empowerment outcomes.
- ⇒ Much progress has been made but we must continue to increase the pace and scale of change, to safeguard the estuary and improve its resilience to climate change.

The Bindjareb Djilba (Peel-Harvey estuary) Protection Plan (the Protection Plan) was released in 2020 and is a whole-of-government approach to improve the health of the estuary.

The implementation of the Protection Plan over the long term will achieve a measurable improvement in water quality and prevent ecosystem collapse. The Protection Plan is a collaborative effort involving many groups of people to make meaningful change to protect the values and health of the Bindjareb Djilba.

High concentrations of nutrients, such as phosphorus, are the main cause of poor water quality in the Peel-Harvey estuary. Most of the nutrients entering the estuary come from agricultural land, where excess fertiliser and livestock effluent have been entering streams and rivers over many decades. This can lead to excess growth of algae and push the ecosystem out of balance, resulting in fish kills and making waterways unsightly and smelly.

Since 2020, significant work has been achieved to improve the health of the Bindjareb Djilba.

We have been:



**committed and working together**



**stronger together on Bindjareb Country**



**implementing meaningful on-ground actions**



**monitoring estuary condition.**

<sup>1</sup> For more information, see the [Economic Evaluation of the Peel-Harvey Waterways report](#), prepared by Urbis for the Peel Development Commission and Peel-Harvey Catchment Council.

## Achievements at a glance

- ✓ 137 farmers participating in soil testing
- ✓ 85 farmers participating in programs to transition to best grazing management practices and regenerative agriculture
- ✓ Over 23 km fencing and around 14 ha of priority waterway revegetation in progress
- ✓ 35 tonnes of hydrotalcite clay produced as a part of trials to remove nutrients already in waterways
- ✓ Phosphorus concentrations in treated water at targeted hydrotalcite clay trial sites reduced by up to 95%
- ✓ 25 sites monitored fortnightly in the estuaries, rivers and catchments
- ✓ 55% seagrass coverage in the estuary
- ✓ More than 1,000 water samples analysed
- ✓ 260 species of algae identified
- ✓ Soil amendments to improve phosphorus retention being trialled on 49 ha of farmland

## Committed and working together



The Bindjareb Djilba Policy and Planning Committee was established by the Department of Water and Environmental Regulation (the department) in 2022. It is co-chaired by the State Government Member for Mandurah and Member for Dawesville. This committee brings together the Bindjareb Noongar community, six State Government agencies, five local governments and the local catchment council, PHCC, to align and safeguard the future health of the estuary. The committee has met regularly since 2022 to discuss progress achieved so far and plan for the future.

Three working groups have been established to progress priority policy and planning work to safeguard the future health of the estuary and embed cultural knowledge into decision making.

This includes:

- the Bindjareb Djilba Kaadadjan Bidi which is a Bindjareb-led working group and yarnning circle
- a local horticulture working group
- a water sensitive urban design working group.



Meeting 9 of the Policy and Planning Committee, 2024

### Horticulture working group

In August 2024, the local horticulture working group delivered a series of resources for the horticulture industry, including a guide for investors and growers and a Model Local Planning Policy for Horticulture for local governments to integrate into their local policy framework. These resources help growers, investors and local governments identify land across the catchment with soil and landscape characteristics that are potentially suitable for different types of horticulture.

This supports the industry to identify appropriate areas for their intended cropping methods, ensuring sustainable growth of the industry while minimising impacts on the Peel-Harvey estuary.

### Water sensitive urban design working group

The water sensitive urban design (WSUD) working group is developing locally relevant resources and guidelines to facilitate, support and increase the uptake of WSUD in urban areas of the catchment. Well-designed WSUD reduces nutrients and other pollutants from urban areas entering the waterways, and creates cooler, greener neighbourhoods, integrating drainage design with streetscapes, quality public open space and natural areas. The resources and guidelines will showcase best-practice projects completed in the catchment, and include retrofitting the existing traditional urban drainage, as well as best-practice design principles for new residential development.



Bindjareb Boodja Baldja Innovation Aboriginal Ranger Program celebration. David Templeman MLA, Lisa Munday, MLA and Robyn Clarke MLA with Winjan, Harvey and Warooka Aboriginal Corporations, partners and friends, October, 2023

# Stronger together on Bindjareb Country

## *A word from Bindjareb Traditional Owners*

### The importance of cultural knowledge in looking after waterways

Bindjareb people have looked after the Bindjareb Djilba (estuary) and three rivers for more than 60,000 years based on governance and lore. We have a continuing life commitment and cultural responsibility to the preservation of this area, which holds great significance to us. The history of our occupation has been unbroken where Bindjareb people have gathered for ceremonies along the estuary and the Harvey, Murray and Serpentine rivers to hunt, fish, camp and look after Country in rhythm with the Noongar Six Seasons. As we face the challenges of climate change and a drying climate, our cultural knowledge is important in the walking together journey to heal waterways.

### The Bindjareb Djilba Kaadadjan Bidi yarning circle

The Bindjareb Djilba Policy and Planning Committee enables Bindjareb Noongar Elders and young leaders to come together from the Mandurah, Serpentine, Pinjarra, Warooka and Harvey areas to participate in a Bindjareb-led yarning and governance circle – the Bindjareb Djilba Kaadadjan Bidi (Peel-Harvey estuary knowledge pathway). The yarning circle oversees our own overarching water plan – the Bindjareb Gabi Wonga (Bindjareb Water Story) – and the implementation of several Bindjareb-led actions in the [Protection Plan](#) to embed cultural health at the centre of decision making for our country.

The Bindjareb Djilba Kaadadjan Bidi yarning circle gets us together just like our old people who walked our Country did. We are more resilient and stronger together for our Wirrin (spirit), Boodja (country) and Baalap (people).

**Yarning is cultural. When we gather, we productively yarn to walk together, be stronger together, across Bindjareb Country to realise our custodial responsibilities to look after our waterways.**

Lesley Ugle, Bindjareb Elder and community leader

[Healthy Estuaries WA](#) and the [Bindjareb Djilba Protection Plan](#) are walking with us in our [Bring Together, Walk Together](#) journey, putting culture first and listening to Bindjareb-led ways to address the challenges we face in looking after our important waterways. Together, with our partner Aboriginal organisations – Winjan Aboriginal Corporation, Murray Districts Aboriginal Association, Harvey Aboriginal Corporation and Waroona Aboriginal & Torres Strait Islander Corporation – we are achieving moorditj (great) outcomes for our people and waterways.



Bindjareb Djilba Kaadadjan Bidi yarning circle with Winyama Pty Ltd at Harvey Aboriginal Corporation's Boola Bidi Dreaming Centre, November 2023

Front row: George Walley, Sharon Cooke

Middle row: Carol Vitale, Lesley Ugle, Brad Vitale, Franklyn Nannup, Rick Ugle, Kallan Nannup

Back row: Andrew Dowding (Managing Director, Winyama Pty Ltd), Robert Jetta, Theo Kearing, Phyllis Ugle, Karrie-Anne Kearing

Absent: Gloria Kearing, Jane Nannup, Adrianna Jetta

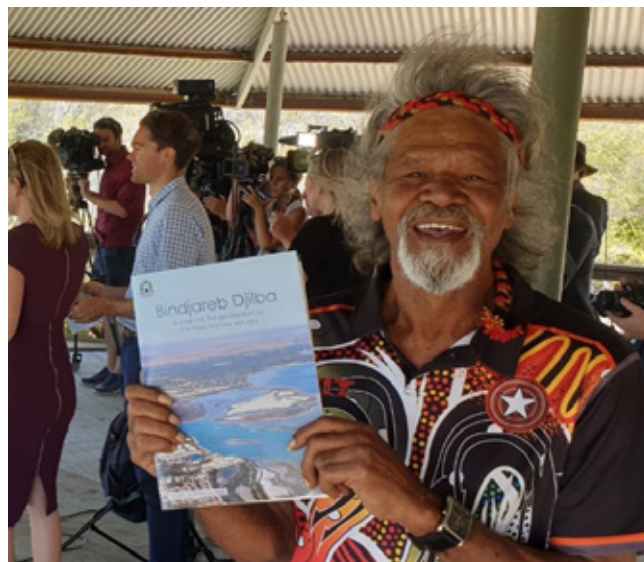
The Committee has supported us to strengthen the organisational governance of our Aboriginal partner organisations which integrates traditional cultural governance and contemporary corporate governance. All our partners now have organisational strategic plans which have empowered our people and helped us identify shared priorities like a ranger program and digital cultural mapping. Together, Winjan Aboriginal Corporation, Harvey Aboriginal Corporation and Waroona Aboriginal and Torres Strait Islander Corporation developed the Bindjareb Boodja Baldja Innovation Aboriginal Ranger Program; these three organisations, with Murray Districts Aboriginal Association, are creating the path for Aboriginal-led digital cultural mapping. The success of these programs and initiatives is attributed to the collaborative support from the Committee and our partners and friends.

Brad Vitale, Bindjareb champion

Our rangers are out on Country with Elders at special places like the Waangaamaap Bilya, the Serpentine River. The Committee played a key role in supporting Winjan Aboriginal Corporation's Keralup Waangaamaap Bilya vision to access and manage Country. Winjan recently entered a land access and management arrangement with the Department of Communities for Keralup Lot 8000 foreshore reserve near Mandurah, which is already bringing significant cultural health benefits for our mob.

Kallan Nannup, Bindjareb champion

Bindjareb Elder, Franklyn Nannup at the launch event for the Protection Plan, 2020





Kallan Nannup, George Walley and Andrew Dowding, Winyama Pty Ltd, mapping Country, 2024



# Mapping Country to preserve cultural knowledge for future generations

The Bindjareb Djilba Kaadadjan Bidi yarning circle is leading several initiatives on the journey to heal waterways, including mapping Country to preserve cultural knowledge for future generations and empower our people in decision making to heal the waterways. In 2023, we engaged Winyama Pty Ltd to build our geospatial tool, the Bindjareb Kaadaadjan Mia (the Bindjareb knowledge hub). The Bindjareb Kaadadjan Mia is owned and managed by our partner Aboriginal corporations to maximise the application of cultural mapping in land and water management decisions while protecting our cultural intellectual property. The direct-to-digital cultural mapping process can now be undertaken by our people, for our people. The Bindjareb Kaadadjan Mia is bringing about many benefits and has wide application to empower our people.

Our geospatial tool enables us to:

- engage our elders to share their lived experiences and cultural knowledge
- encourage truth telling and healing
- share cultural knowledge with our young people
- train our young people to become geospatial professionals
- get our stories back and keep them safe for future generations
- map Country to identify priority places to protect and manage
- plan and record activities of our Aboriginal Ranger Program
- keep records for our strategic projects
- share high-level cultural information to partners to embed cultural knowledge and values into decision making
- better understand the cumulative impacts of land uses on cultural values.

# Implementing meaningful on-ground actions



Actions in the catchment aim to decrease nutrients entering waterways from farmland or reduce nutrients already in waterways through innovative solutions. Additional State Government funding has allowed the local catchment council, PHCC, the department and the Department of Primary Industry and Regional Development (DPIRD), to up-scale on-ground actions through the Healthy Estuaries WA program that will improve the health of our waterways.

## Helping farmers

Through the Protection Plan, we are doubling the number of farmers participating in the Healthy Estuaries WA fertiliser management program and receiving funding for revegetation and fencing to keep livestock out of waterways.

## Innovative science

We are working with farmers to increase the soil's ability to hold onto nutrients. Most of the soils found on the Swan Coastal Plain are sandy, with very little clay, iron minerals or organic matter that can hold on to nutrients. Consequently, excess nutrients are easily leached through the soil as seepage or washed off as runoff. Soil improver products like clay and Iron Man Gypsum are being trialled as a part of the Protection Plan to retain nutrients on farms where they can be used for plant growth. A demonstration site has been established on a farm in Coolup, where events will be held to showcase the benefits of soil improvements.

Innovative water treatment techniques to reduce algal blooms in the short term may be an option to manage nutrients already in our waterways while nutrient reduction activities in the catchment take effect. Through the Protection Plan, 35 tonnes of hydrotalcite (HT) clay, a phosphorus-binding clay have been produced that can bind to nutrients in the water, making them unavailable to algae growth. Two trials have been carried out so far. At Gull Road Drain in Keralup 4.5 tonnes of HT-clay were applied in November 2023. We applied 8.4 tonnes of clay to Cox Bay North Lake



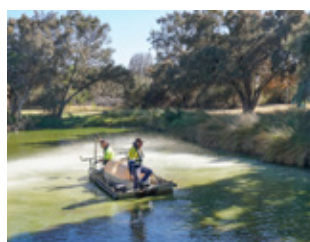
Farmers in the catchment learn how to take soil samples on their farms



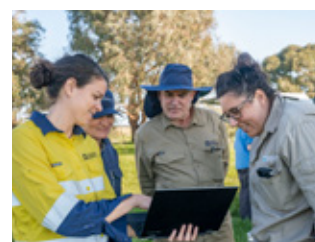
Farmers receive support from DPIRD staff to interpret their soil test results to inform fertiliser decisions

adjacent to the estuary in February and March 2024. In both trials, phosphorus concentrations in the treated water were reduced by up to 95 per cent. Additional applications of clay at Cox Bay North Lake are planned for November 2024 to February 2025.

Pre- and post-sampling of the trial sites continues, and analysis and reporting of results is underway.



Application of HT-clay to Cox Bay North Lake, 2024



Scientists from the department reviewing early results from the water quality treatment trial at Gull Road Drain in Keralup



Spreading soil improvement Iron Man Gypsum on a farm in Keysbrook



Incorporating clay as a soil improvement at the on-farm demonstration site in Coolup



Scientists from the department collecting fortnightly estuary water quality samples

# Monitoring estuary health



Scientific monitoring provides essential data to prioritise the location of on-ground actions, guide planning decisions and assess the effectiveness of ongoing work.

Through Healthy Estuaries WA, the department monitors 25 sites in the estuary and catchment. This monitoring shows that while the estuary itself tends to have good water quality, there are excessive concentrations of phosphorus and nitrogen in the estuarine part of the Serpentine River year-round. In the Murray River and Harvey estuary, phosphorus concentrations are also frequently higher than water quality guidelines during wetter months. Microalgae (phytoplankton) is monitored fortnightly and potentially harmful species are reported to the Department of Health and local governments.

The largest seagrass survey in Western Australian estuaries was conducted in March 2021. More than 450 observations were taken by boat, drone and kayak in the Bindjareb Džilba. This survey showed that seagrass covers about 55 per cent of the estuary, mostly in the Peel Inlet and northern section of the Harvey Estuary. The next seagrass survey is planned for early 2025.

We keep the local community and stakeholders informed of the latest scientific observations and work to protect the estuary through regular scientific snapshot publications, and a yearly community estuary forum hosted by PHCC. Community estuary forum events have been attended by at least 175 people since 2021.



Students from John Tonkin College learn about seagrass with scientists from the department, 2024



Seagrass *Halophila ovalis*, photographed during the 2021 survey

# Where to next?

Scientific monitoring and computational modelling show that nutrients continue to be a concern for the health of the estuary and waterways. While the work done so far is promising, sustained efforts are crucial to address the persistent water quality challenges that have developed over decades of land clearing and excess nutrient use.

We are focusing on continuing to scale-up on-ground actions, integrate cultural priorities into waterway management and adapting land-use planning policies. By continuing to work collaboratively and investing in innovative solutions, we aim to further reduce nutrient levels, bolster the estuary's resilience, and ensure a healthier future for the Bindjareb Djilba.

# Stay informed

You can stay informed about the work happening to protect the Bindjareb Djilba by connecting with PHCC and Healthy Estuaries WA at our annual community estuary forum or visiting their websites:

- PHCC – <https://peel-harvey.org.au/>
- Healthy Estuaries WA  
– <https://estuaries.dwer.wa.gov.au/>



↖  
*List of our  
publications*

# Delivering in partnership with:

- City of Mandurah
- Department of Biodiversity Conservation and Attractions
- Department of Planning, Lands and Heritage
- Department of Primary Industries and Regional Development
- Department of Water and Environmental Regulation
- Harvey Aboriginal Corporation
- Murray Districts Aboriginal Association
- Peel Development Commission
- PHCC
- Shire of Murray
- Shire of Serpentine-Jarrahdale
- Shire of Waroona
- Waroona Aboriginal and Torres Strait Islander Corporation
- Water Corporation
- Winjan Aboriginal Corporation

Policy and Planning Committee members meeting in Nambeelup, 2023



#WAestuaries

[estuaries.dwer.wa.gov.au](https://estuaries.dwer.wa.gov.au)

Delivering on the

**Bindjareb  
Djilba** | Peel-Harvey  
estuary  
**Protection Plan**



This project is part of the Bindjareb Djilba (Peel-Harvey estuary) Protection Plan and Healthy Estuaries WA, State Government initiatives to improve the water quality of the estuary.