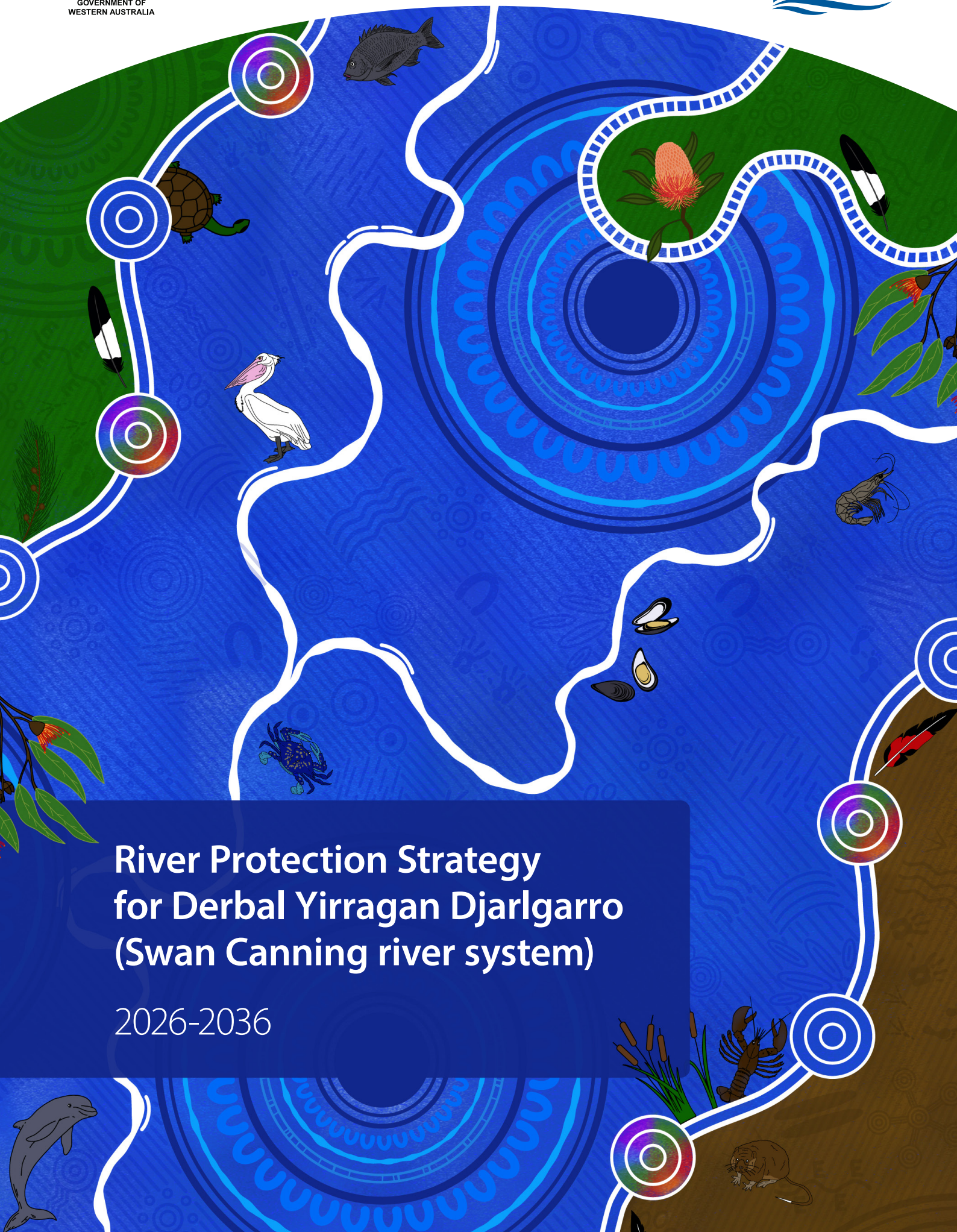
GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

SWAN RIVER TRUST



River Protection Strategy for Derbal Yirragan Djarlgarro (Swan Canning river system)

2026-2036

River Protection Strategy for Derbal Yirragan Djarlgarro (Swan Canning river system)

Swan River Trust and Department of Biodiversity, Conservation and Attractions

17 Dick Perry Avenue
Kensington, WA 6151

Phone: (08) 9219 9000

dbca.wa.gov.au
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The recommended reference for this publication is: Swan River Trust (2026). *River Protection Strategy for Derbal Yirragan Djalgarro (Swan Canning river system)*. Department of Biodiversity, Conservation and Attractions. Perth, Western Australia.

Traditional and cultural knowledge in this report is the cultural and intellectual property of the Noongar Traditional Owners. Written consent from the Whadjuk Aboriginal Corporation must be obtained for use or reproduction of any cultural material within this document. Thank you to the Whadjuk Aboriginal Corporation Board of Directors and Cultural Advice Committee, and the Whadjuk Aboriginal Corporation River Protection Strategy subcommittee for their input into the development of the strategy.

The Noongar language is diverse, and this is reflected in the various dialects and spellings used. Different Noongar communities may have their own unique words and ways of spelling. This diversity is a testament to the rich culture and heritage and the deep connection each community has to their specific region and traditions.

WARNING: This plan may show photographs of and refer to quotations from people who have passed away.



Whadjuk Aboriginal Corporation River Protection Strategy subcommittee; Karen Morich, Reg Yarren, Ben Ugle and Geri Hayden
Photo – Tammy Rose

Infographics in this strategy by Ooid Scientific. Desktop design and strategy framework image by Nani Creative.



View from Mount Eliza by Frederick Garling, 1827
Janet Holmes à Court Collection

ACKNOWLEDGEMENT OF COUNTRY

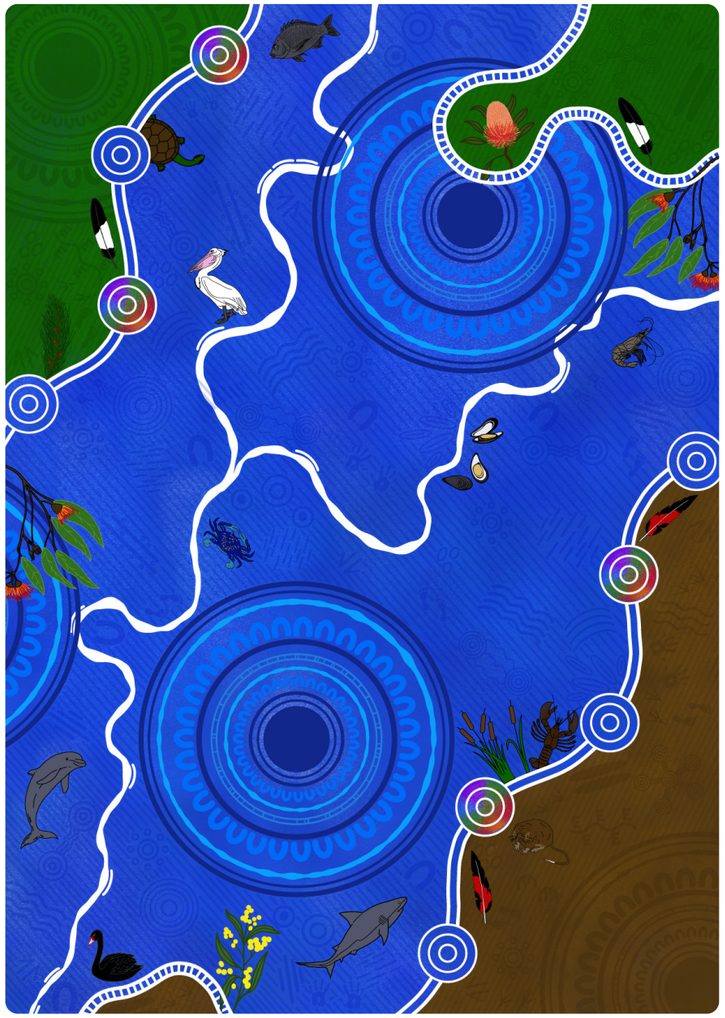
The Swan River Trust recognises and honours the Traditional Owners of the Derbal Yirragan Djarlgarro (Swan Canning river system) and recognises their continuing custodial connection to land, waters, and community.

For around 45,000 years prior to the arrival of settlers in 1829, the areas around the Derbal Yirragan (Swan River) and Djarlgarro Beeliar (Canning River) were home to the Whadjuk people of the Noongar Nation. Noongar people are the Traditional Owners and caretakers of the larger Swan Canning river system which includes the Derbal Yirragan (Swan River), Djarlgarro Beeliar (Canning River) and Golgular Beeliar (Avon River).

The region was rich in wildlife, fish, and natural resources, providing sustenance for the local Noongar people. They made extensive use of the foreshores as camping grounds, hunting areas, gathering spots, and trading posts with other tribes. They were, and still are today, custodians of the land and rivers, maintaining a spiritual bond and practising sustainability—they took no more than necessary and were mindful of the life cycles of the species they hunted and collected to ensure a balanced ecosystem.

Noongar people have a profound respect and familial bond with the rivers, wetlands and land, living a life deeply intertwined with the health of their local environment and ecology. Noongar people have a strong sense of responsibility to care for Country; a duty passed down through generations.

Our respect extends to all members of the Noongar Nation, both past and present. We are committed to preserving, celebrating, and learning from the rich culture, heritage and knowledge of Noongar peoples.



Artwork

This artwork is representing the Derbal Yirragan (Swan River) and Djarlgarro Beeliar (Canning River) and the connectivity of the rivers, waterways and the wetlands. This artwork is also representing the significance of the Waugal in its creation.

In this artwork you will see native animals and plants you will find along the rivers. The green and brown represent the changes in Country from the coast to inland.

You will see many different Aboriginal symbols faded into the background representing people, rain, smoke, flowing water, rainbows, footprints, handprints, kangaroo tracks, emu tracks, and bird tracks.

In the left top and right bottom, you will see meeting places connected to each other representing significant places along the rivers. Within four of the meeting places, you will notice rainbow colours to represent the Rainbow Serpent building and travelling within the waters.





About the artist

My name is Kaedisha Westberg (Yarran, Bennell, Pickett) and I am a Whadjuk Ballardong Noongar from Perth, WA. My grandparents on my mother's side are Angus (Poogy) Yarran and Theresa Yarran. Great grandparents are Peter Yarran and Sue Bennell. On my father's side, Stefan Westberg and Cheryl Pickett.

I have been doing art since I was a kid and branched out to commissions in 2021, opening my own business in 2022 called "Madjitil Mabarn", meaning Magic Healer.

Art has been a healing tool for me to feel more connected to my grandfather since his passing in 2015.

MESSAGE FROM THE MINISTER

The Derbal Yirragan Djarlgarro (Swan Canning river system) is not just a geographical feature that defines Perth's landscape; it is a place where we gather, play, and thrive. Its waters reflect our stories, culture, and our aspirations.

The River Protection Strategy for Derbal Yirragan Djarlgarro (Swan Canning river system) builds on decades of conservation and restoration work involving the community, Noongar partners, natural resource management groups, local government, and other land managers.

I am grateful for the input of local knowledge and experience from these groups to the strategy, which provides a plan to guide investment and keep our rivers healthy and accessible for the community to enjoy.

In the face of a changing climate, the State Government is committed to nurturing and preserving Perth's waterways for current and future generations to enjoy.

Through this strategy, we invest in a resilient river system that can withstand the test of time.

By taking action now, we can ensure a prosperous future for our waterways, their surroundings, and the people of Western Australia.

Our commitment extends beyond today; it echoes through generations to come.

I firmly believe that this strategy will serve as a robust foundation for the community, government, and non-government organisations to unite and work towards our shared vision. I extend an invitation to you to join us in this endeavour.

Hon Matthew Swinbourn MLC
Minister for the Environment;
Climate Resilience





Rowers and birds in Perth waters
Photo – Sue Harper

PREFACE

The Swan River Trust (the Trust) takes immense pride in introducing the River Protection Strategy for Derbal Yirragan Djarlgarro (Swan Canning river system). This strategy has been developed in accordance with the *Swan and Canning Rivers Management Act 2006* and supersedes the previous *Swan Canning River Protection Strategy (2015)*.

Developed through extensive consultation, including a comprehensive survey with the community, and workshops and interviews with stakeholders, this new strategy recognises the distinctive values that the rivers hold for both residents and visitors. The strategy emphasises the need for coordinated efforts to preserve and protect these essential waterways. The Trust extends its gratitude to all contributors who have helped shape this significant initiative, including the community, Aboriginal partners, natural resource management (NRM) groups, local government, State Government and other land managers.

The Derbal Yirragan (Swan River) and Djarlgarro Beeliar (Canning River), along with their tributaries and the interconnected wetlands, define many of the recreational, economic, spiritual, and cultural landscapes of our region. These waterways and wetlands serve as the lifeblood of our communities, nurturing a vital connection between people and the natural world amidst our ever-expanding urban environment.

We are privileged to have one of the healthiest river systems among major cities worldwide, which is enjoyed by thousands of Western Australians every day. These waterways carry intrinsic significance for generations to come, and there is a collective expectation that they will be treasured and safeguarded throughout the years, with river system stewardship recognised as a shared endeavour.

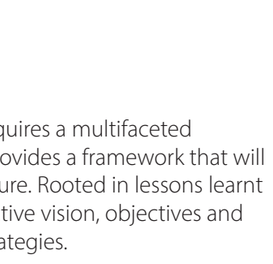
Managing our river system requires a multifaceted approach, and this strategy provides a framework that will enhance the river system's future. Rooted in lessons learnt from the past, it offers a collective vision, objectives and coordinated management strategies.

The strategy must confront threats head-on to safeguard the river system's wellbeing, vibrancy, and accessibility amid the challenges posed by climate change and rapid population growth. While comprehensive implementation of the strategy will include securing new funding sources, the care of our river system is more crucial than ever.

The Trust commits to regularly reporting on the strategy's implementation, with updates to be provided every two years. The strategy sets ambitious management targets aligned with the aspirations of our community, Noongar partners, NRM groups, local government, State Government and other land managers—a collective to protect our vital river system. Looking ahead, the strategy establishes a standard of care that aims to adapt and improve river management over the next decade.

Together, we will forge a resilient path towards a healthy and thriving river system today, tomorrow and into the future.

David McFerran
Swan River Trust Chair





Egrets on the Derbal Yirragan
Photo – Sue Harper

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Cygnets on the foreshore
Photo – Veronica McPhail

VISION

A healthy, thriving river system for nature and people, to be cared for and enjoyed as the heart of our community.

STRATEGIC GOALS

The River Protection Strategy for Derbal Yirragan Djarlgarro (Swan Canning river system) has six key goals:

1. **Identify core values** that drive strategic decisions through engagement, inclusion and collaboration with the community, Noongar partners and stakeholders.
2. **Identify and communicate priority threats** facing the river system and set objectives and strategies to help tackle these challenges.
3. **Provide strategic direction** and clear guidance to all stakeholders and agencies involved in the care and management of the Derbal Yirragan Djarlgarro (Swan Canning river system) and ensure that collective efforts are aligned and purposeful.
4. **Foster collaboration** by bringing together the community, Noongar partners, natural resource management (NRM) groups, local government, State Government and other land managers to develop the River Protection Strategy and continue to provide collaboration opportunities during the strategy's implementation to amplify impact of joint efforts.
5. **Secure sustainable resourcing** to be used by stakeholders by identifying resourcing required to achieve the River Protection Strategy's vision and objectives.
6. **Establish a long-term, high-level framework** that can be applied to management actions at local scales over shorter periods. The framework aims to align local actions with the River Protection Strategy's 10-year objectives, allowing stakeholders to work towards a shared vision through adaptive management practices.

Swans on the
South Perth Foreshore
Photo – Veronica McPhail



The connection of the waterways to the Noongar people spans more than 45,000 years.
The Waugal created the waterways as it slithered over land,
its body scouring out the course of the rivers, bays and lakes.

The Swan Canning Catchment is
2,090km²

The Avon Catchment is
124,000km²

The combined Swan Avon River is 280km long - that's almost twice the size of Perth's coastline.

High-quality **parks and reserves** occur within the waterway and line the banks of the rivers, providing ecological benefits and offering recreational opportunities for activities such as exercising, picnicking, boating, and kayaking.

Land, shore and water birds all live within the river system. Some migrate long distances.

The river system supports a **diverse urban**, **industrial** and **agricultural** environment.

The river system is a **tourism hotspot**, offering exploration of natural beauty, historical sites, and local culture.

The estuary supports many **different habitats**, including open water, sand shallows, mudflats, **samphire marshes**, fringing sedges, rushes and woodlands, submerged macrophytes, seagrass and macroalgae, submerged reefs, intertidal zones, woody debris and interconnected wetlands.

Approximately
20-25 resident dolphins
live within the Riverpark.

There are more than **30 shipwrecks** in the Swan River.

There are more than **200 species of fish** known to inhabit the Riverpark.

The Swan Canning Estuary is generally a **micro-tidal** (<1m) estuary, however water levels vary >2m with high pressure systems and storm surges.

Approximately 6km² of seagrass in the Swan and Canning rivers provide vital food and ecosystem services for black swan and other aquatic and shoreline life. Up to 75% of seagrass beds are found within the Swan Estuary Marine Park



A pair of great crested grebes
Photo – Veronica McPhail

DERBAL YIRRAGAN DJARLGARRO (SWAN CANNING RIVER SYSTEM)

The waterways are the lifeline to Ngarnk Boodja (mother earth). The Derbal Yirragan Djarlgarro (Swan Canning river system) extends well beyond the Derbal Yirragan (Swan River) and Djarlgarro (Canning River). The Gogulgar Beeliar (Avon River), despite its historical distinction, actually constitutes the upper reaches of the Derbal Yirragan (Swan River).

All the waterways and wetlands that make up the broader Avon Catchment are part of the Derbal Yirragan Djarlgarro (Swan Canning river system).

The connectivity of the waterways is central to Noongar culture and dreaming, with the understanding that to care for the rivers means caring for all the waterways and wetlands in Noongar Country.

The Swan Canning Catchment encompasses the majority of the Perth metropolitan region and extends into the northern regions of Chittering and Toodyay. The major tributaries of the Derbal Yirragan (Swan River) include the Mandoon Beeliar (Helena River), Wooroloo, Susannah, Ellen, Bayswater, Bennett, Henley and Jane brooks, Blackadder Creek, and South Belmont Main Drain. Tributaries entering the Djarlgarro Beeliar (Canning River) include the Southern and Wungong rivers, Churchman, Munday, Bickley and Yule brooks, Bannister and Bull creeks, and Mills Street Main Drain. The main rivers that flow to the Gogulgar Beeliar (Avon River) include the Yilgarn, Mortlock and Lockhart rivers. Thus, the Derbal Yirragan Djarlgarro (Swan Canning river system) is a complex and expansive network, reaching far beyond its namesake rivers, as shown in the map on pages 12 and 13.

"Without water we can't live and how important that water was and the river was to Noongar people because it supplied fish and jilgies and crabs and all sorts of things for people, and water, and it made an abundance of life there, the birds and so forth it was a part of that complete circle of life, without it Noongar people could never have existed. And a very special place too, always special, because Noongar people believe that the Waggle [Waugal] made all these places and still believe and will always believe, and that's the law [lore], and what we follow…"

Quote by Jean Boladeras, RIP
Indigenous history of the Swan and Canning rivers, 2010

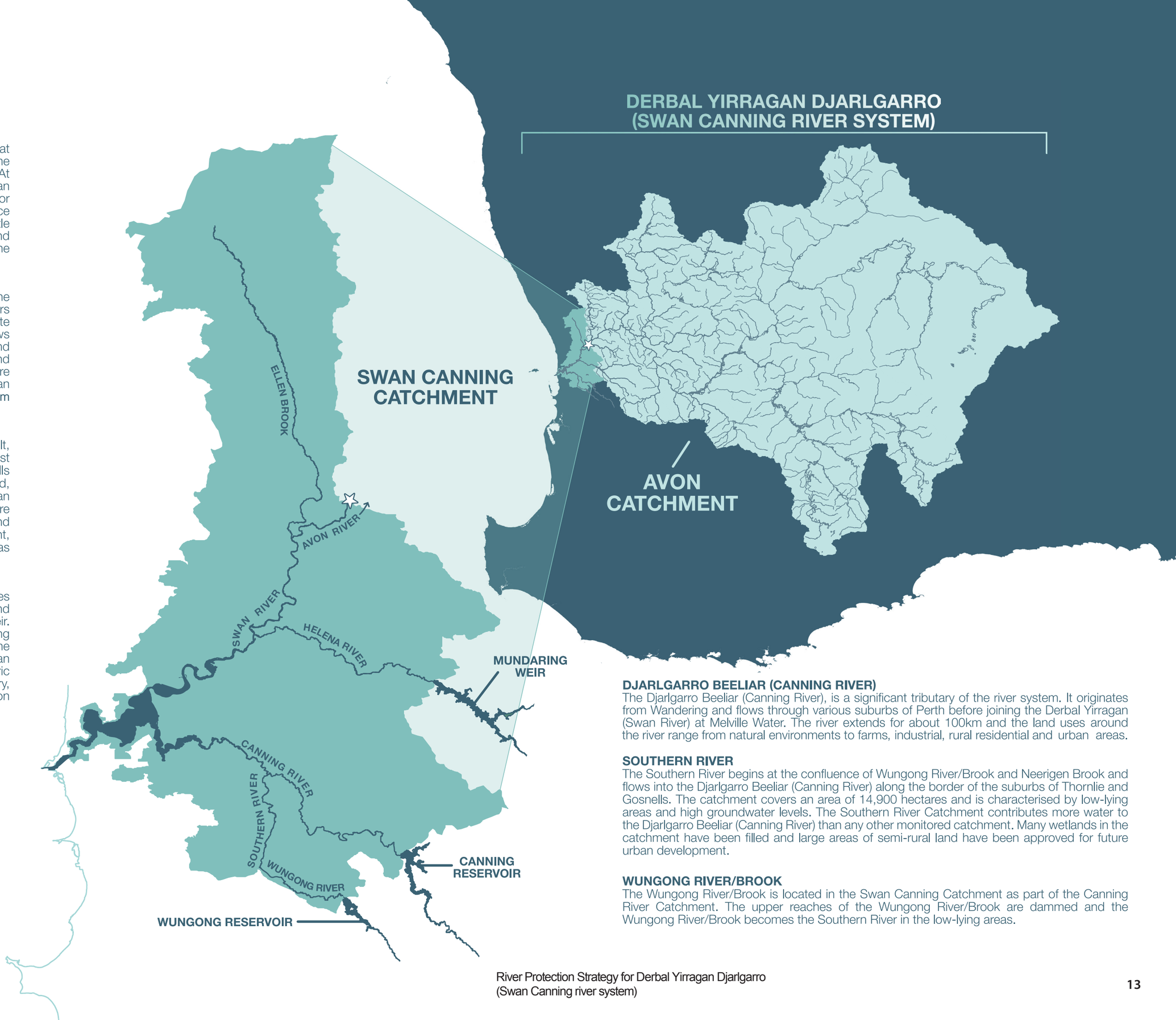
Djarlgarro Beeliar waterway
Photo – DBCA

ELLEN BROOK
Ellen Brook is an ephemeral waterway that originates just south of Gingin and joins the Derbal Yirragan (Swan River) in Belhus. At 71,500 hectares, it is the largest of the Swan Canning Catchments and a high priority for targeted management interventions to reduce nutrients. Land use is predominantly cattle grazing and horticulture in the north and increasing residential and light industrial in the south.

GOGULGAR BEELIAR (AVON RIVER)
A major source of water to the river system is the Gogulgar Beeliar (Avon River). The headwaters of the Gogulgar Beeliar (Avon River) originate approximately 500km inland and the river flows through an expanse of agricultural land (predominately wheat and sheep farming) and native vegetation in the Wheatbelt region before becoming known as the Derbal Yirragan (Swan River) in Walyunga National Park about 30km from Perth.

DERBAL YIRRAGAN (SWAN RIVER)
The main tributary on which Perth City was built, the Derbal Yirragan (Swan River) flows west from Walyunga National Park (just north of Bells Rapids), through the historic suburb of Guildford, through greater Perth and through to the Indian Ocean at Fremantle. Cattle grazing, horticulture and viticulture are common in the upper and northern sections of the estuary and catchment, while the southern portion of the catchment has urban and industrial land uses.

MANDOON BEELIAR (HELENA RIVER)
The Mandoon Beeliar (Helena River) originates near Mount Observation, Mount Talbot and Mount Dale and flows west to Mundaring Weir. The river then continues to flow west, passing the Lower Helena Dam, before it reaches the Darling Scarp and joins the Derbal Yirragan (Swan River) at the southern edge of the historic suburb of Guildford. Agricultural, light industry, State forest and bushland exist in the Mandoon Beeliar (Helena River) Catchment.



DJARLGARRO BEELIAR (CANNING RIVER)
The Djarlgarro Beeliar (Canning River), is a significant tributary of the river system. It originates from Wandering and flows through various suburbs of Perth before joining the Derbal Yirragan (Swan River) at Melville Water. The river extends for about 100km and the land uses around the river range from natural environments to farms, industrial, rural residential and urban areas.

SOUTHERN RIVER
The Southern River begins at the confluence of Wungong River/Brook and Neerigen Brook and flows into the Djarlgarro Beeliar (Canning River) along the border of the suburbs of Thornlie and Gosnells. The catchment covers an area of 14,900 hectares and is characterised by low-lying areas and high groundwater levels. The Southern River Catchment contributes more water to the Djarlgarro Beeliar (Canning River) than any other monitored catchment. Many wetlands in the catchment have been filled and large areas of semi-rural land have been approved for future urban development.

WUNGONG RIVER/BROOK
The Wungong River/Brook is located in the Swan Canning Catchment as part of the Canning River Catchment. The upper reaches of the Wungong River/Brook are dammed and the Wungong River/Brook becomes the Southern River in the low-lying areas.

KEY ISSUES AND THREATS

The Derbal Yirragan Djarlgarro (Swan Canning river system) faces a number of historical, current and emerging threats, such as climate change, pollution, pressures from urban, industrial and agricultural development, and increasing recreational demand. Understanding these threats is crucial for the formulation of effective strategies aimed at preserving the ecological integrity and amenity of the river system, and requires commitment and adequate investment.

Three key overarching issues have been identified and are explained below.



Population growth

Perth continues to undergo rapid growth, with the population doubling during the past 30 years to approximately 2.3 million, and further predicted to grow to 3.5 million people by 2050. Increasing demand for use of the rivers and their foreshores throughout the catchment is placing increased pressure on the river system. There is a need to balance development and use with the conservation and enhancement of the environment, so that the river system remains healthy and thriving for future generations.



Climate change

Globally, climate change is recognised as one of the most serious environmental and socio-economic issues faced today. Climate change is already affecting the river system and there is a high level of confidence that it will cause further increases in temperatures and in the frequency of extreme weather events, influencing sea and estuary water levels, shifting rainfall patterns, and continuing the long-term drying trend in the South West region of Western Australia into the future. This is expected to impact the river system, affecting groundwater levels and surface water movement and quality, which in turn impact on the system's biodiversity, and ecological functions and services (including carbon sequestration), and the ability for the community to continue to interact and recreate in and around the rivers. It is important that every opportunity is taken to further investigate the likely impacts of climate change on the river system. Proactive climate change mitigation and adaptation strategies will need to be established and these should be based on the latest climate science and an evidence-based approach to management of this issue.

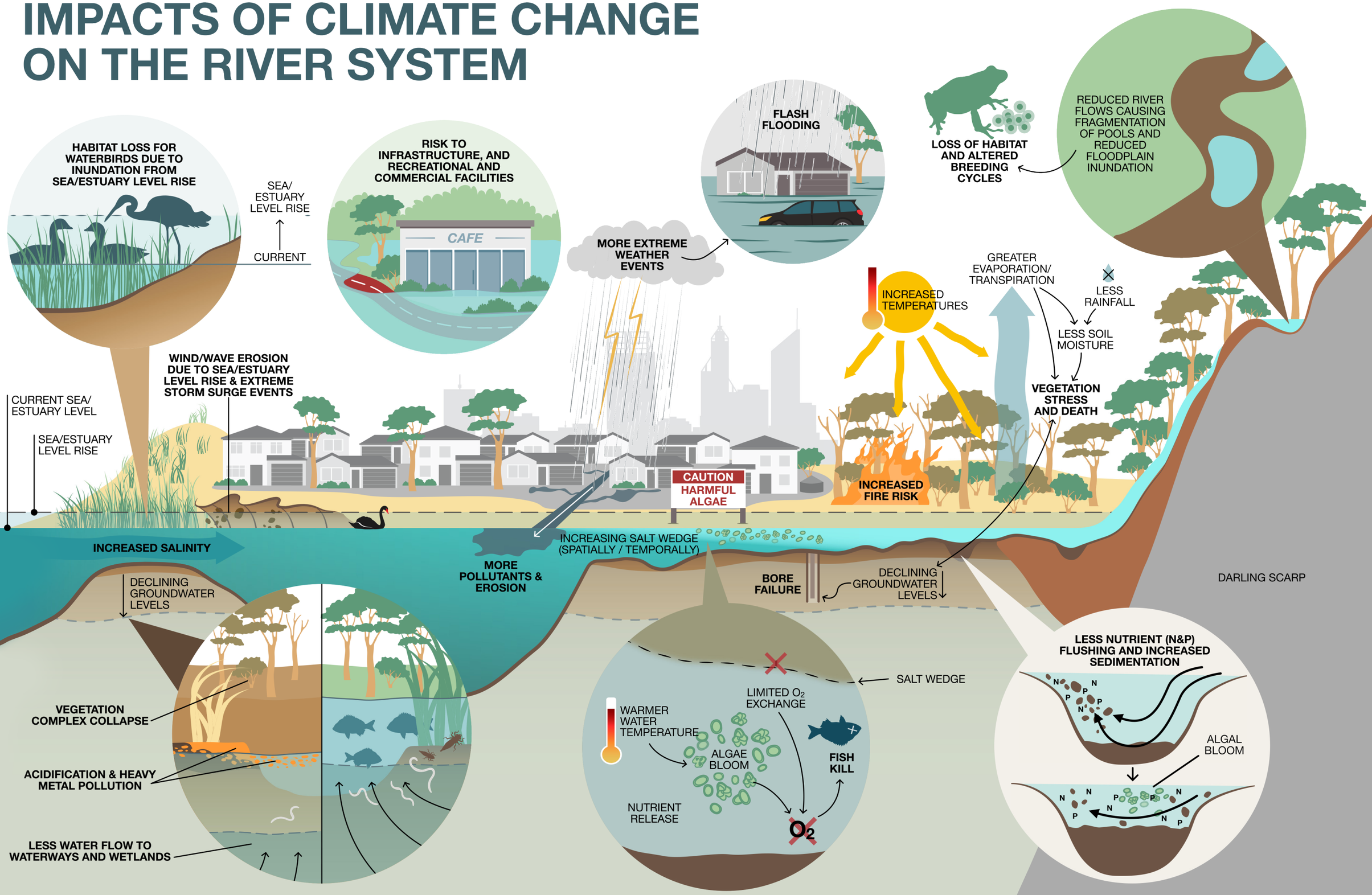


Resourcing

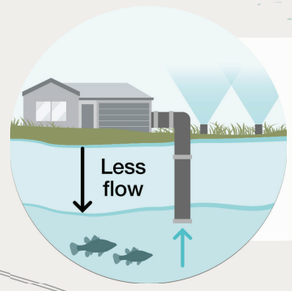
Commitment and resourcing play a pivotal role in the ongoing maintenance and protection of the river system. The health and vitality of the river system are dependent on the dedication of various stakeholders. Adequate and continuous resourcing, in terms of both funding and personnel, is crucial for effectively implementing the strategies. Resourcing needs to be long-term to strategically and proactively manage threats to the ecological and amenity values of the river system and to fully realise the opportunities the river system provides.

Measuring plastic contaminants in drains leading to the Djarlgarro Beeliar
Photo – DBCA

IMPACTS OF CLIMATE CHANGE ON THE RIVER SYSTEM



KEY THREATS TO THE RIVER SYSTEM

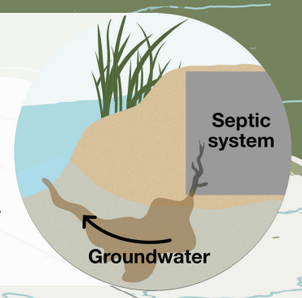


Water abstraction

Water abstraction results in less flow being available to sustain aquatic ecosystems and protect culture and heritage values.

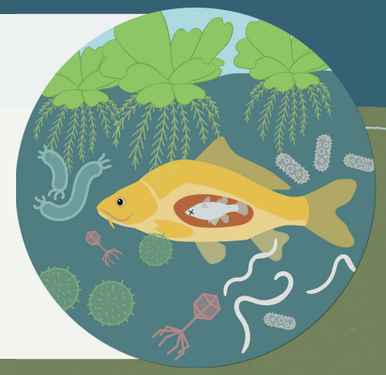
Contaminated water

Pollutants can enter waterways due to activities and developments occurring on or adjacent to waterways. They can also enter via drainage systems and groundwater movement from construction sites, industrial/commercial/residential areas, landfill sites, leaking chemical/fuel storage tanks, uncontrolled fill, wastewater disposal systems and overflow from sewerage pipes and pumping stations.



Weeds, pests, and diseases

Weeds can overrun and clog waterways. Invasive pests like feral fish, foxes, cats, rabbits, and pigs can prey on local animals and plants and harm waterways. Diseases and parasites can affect plant and animal health. The plant pathogen Phytophthora (or Phytophthora Dieback), the insect Polyphagous shot-hole borer and the parasite Anchor Worm are examples of the threats to plant and animal health. Mosquito breeding driven by tidal inundation of low-lying river margins can pose a risk to human health if not appropriately managed.





Erosion

Increased erosion as a result of climate change and poor land, foreshore, and asset management can lead to increased sedimentation in the rivers. This can interfere with navigation, impact channel form, cause inundation and destabilise riverbanks.





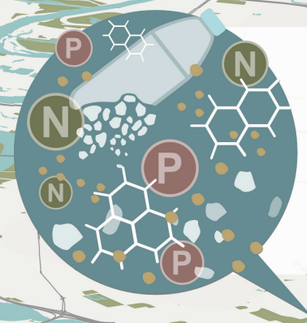
Cultural knowledge and access

Traditional knowledge has been displaced in river management and is at risk of further loss as Noongar elders pass away. Additionally, land tenure and current management practices restrict Traditional Owners' access, hindering their ability to fulfill cultural responsibilities and perform customary practices that help maintain the health of Country.

Wildlife entanglements and ingestion of pollutants

Pollutants in the river system pose a significant risk to wildlife through ingestion or entanglement, such as fishing line entanglements and ingestion of plastics.





Urban drains

Stormwater and groundwater drains can discharge pollutants from industrial, agricultural, and residential areas into waterways and wetlands year-round if not properly managed. These pollutants include plastics, litter, pathogens, nutrients, PFAS, sediment, and hydrocarbons.

Fertilisers and pesticides

The use of fertilisers and pesticides in urban areas and agricultural lands within the catchment can result in them entering waterways and wetlands, through urban drainage systems and groundwater movement.

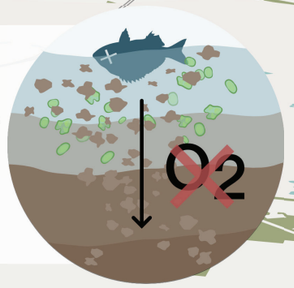


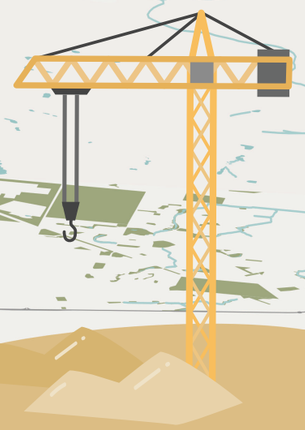
Agriculture

Agriculture can lead to nutrients and other contaminants entering the waterways and wetlands. Livestock access to waterways and wetlands can degrade riverbanks and foreshore areas and increase turbidity.

Sediment

Excess sediment primarily results from land clearing, new developments, agricultural practices, and erosion events and is transported into our waterways and wetlands through surface runoff or stormwater. This sediment fills river pools and wetlands, damaging crucial habitats, smothering aquatic plants and reducing water quality.





Human disturbance

As more people interact with the rivers and foreshore, risks to wildlife and vegetation increase, such as vehicle wildlife strikes, trampling, vandalism and disturbance of habitats. Boating can increase the risk of eroding and damaging foreshores from boat wake and improper storage, while also increasing the risk of chemical pollution through antifoulants, detergents and fuel leaks.

Growing user demand

With population growth, the demand for both recreational and commercial use of the rivers and foreshores is anticipated to increase. Without proper planning, this could potentially affect the health and amenity of the river system.



Vegetation loss

Vegetation loss from clearing and fire can lead to reduced biodiversity and fragmented habitats. Vegetation loss also increases urban temperatures and soil erosion. Reduced vegetation and increased constructed impervious surfaces can alter groundwater levels and stormwater flows, which increases flood risks.

Children swimming at the South Perth foreshore
Photo – Satori Cosgrove

THE SWAN AND CANNING RIVERS MANAGEMENT ACT 2006

The *Swan and Canning Rivers Management Act 2006* (SCRM Act) creates a governance, regulatory and approvals process to guide land use planning decision-making for the river system, and enables collaboration between multiple State and local government agencies and facilitates community consultation on matters affecting the Derbal Yirragan Djarlgarro (Swan Canning river system).

Before the preceding *Swan River Trust Act 1988* (SRT Act) was in place, the care and management of the rivers was fragmented, with the responsibility divided over almost 30 different State and local government agencies. The SRT Act saw the establishment of the Swan River Trust, which had authority over the river and brought together the agencies to ensure a unified and consistent approach in the planning, protection and management of the river system. The current SCRM Act recognises the overarching role of the Department of Biodiversity, Conservation and Attractions (DBCA) in relation to the river system and further developed the unified and consistent approach through the establishment of **management areas, guiding principles** and the requirement to develop a **River Protection Strategy**. The River Protection Strategy is a document that provides strategic direction and coordinated management arrangements for the river system. The first River Protection Strategy was released in 2015. This new strategy supersedes the previous version and establishes the strategic direction for the river system's protection for the next decade.

Key legislative management areas

Swan Canning Riverpark and the River reserve

The Swan Canning Riverpark (the Riverpark) consists of the waterways of the Swan, Canning, Helena and Southern rivers and the adjacent public land reserved as regional open space. The River reserve consists of the waterways of the Swan, Canning, Helena and Southern rivers.

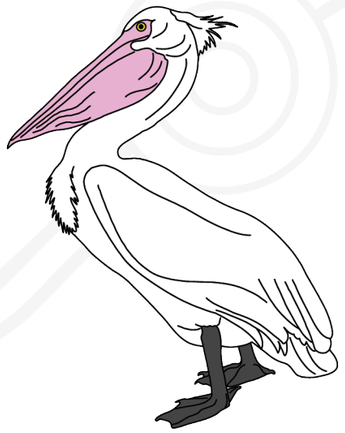
The SCRM Act places the care, control and management of the River reserve with the Swan River Trust and enables DBCA to undertake planning and management functions relating to the River reserve and Riverpark. The SCRM Act establishes the management of the Riverpark's shoreline as a joint responsibility between DBCA and other foreshore land managers, including local governments and several State Government agencies.

Development control area

The Swan Canning development control area (DCA) consists of the waterways of the Swan, Canning, Helena and Southern rivers and the adjacent regional open space. The DCA extends upstream from the Fremantle Traffic Bridge to Moondyne Brook on the Avon River, to the Lower Diversion Dam on the Helena River, along the Southern River to the Allen Road crossing and the Canning River to its confluence with Stinton Creek. In some cases, the DCA includes regional open space that is still in private ownership. Land use planning and development in the DCA is subject to the approval processes under Part 5 of the SCRM Act and the Swan and Canning Rivers Management Regulations 2007. Electronic copies of the DCA maps are available via the DBCA website.

Catchment

The total catchment area is approximately 126,000km^2, inclusive of both the Swan Canning Catchment and Avon Catchment, and is referred to as the 'river system' throughout this document (please see map on pages 12 and 13). Groundwater and surface water flows into the Riverpark from waterways, springs and drains across the catchment. Land and water management practices within the catchment directly influence the water quality and quantity in the Riverpark. DBCA promotes and facilitates the good management of the wider catchment.



GUIDING PRINCIPLES OF THE SCRM ACT

The SCRM Act outlines key principles that must be regarded by all stakeholders to guide effective planning, development and management decisions in order to effectively protect the ecological health, community benefits, and amenity of the river system.



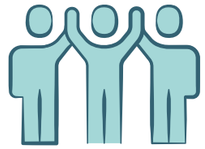
SUSTAINABILITY

1. Sound environmental practices and procedures should be adopted as a basis for sustainability for the benefit of all human beings and the environment today, while considering the environmental, social and economic needs of future generations.
2. Environmental, social and economic factors should be considered in decision-making, with the objective of improving community wellbeing and the benefit to future generations.
3. Environmental practices and procedures should be cost-effective and in proportion to the significance of the environmental risks and consequences being addressed.



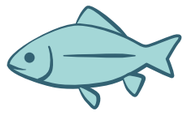
PRECAUTIONARY

1. Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
2. In the application of the precautionary principle, decision-making should be guided by:
   a. a careful evaluation to avoid serious or irreversible damage to the environment wherever possible; and
   b. an assessment of the risk-weighted consequences of the options.



INTERGENERATIONAL EQUITY

The present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.



BIODIVERSITY & ECOLOGICAL INTEGRITY

Biodiversity and ecological integrity should be maintained or enhanced as part of the irreplaceable life support systems upon which the earth depends.



SHARED RESPONSIBILITY

Protection of the environment is a responsibility shared by Government, industry, business, the community and the people of the State.



BEST PRACTICE

When designing policies, systems, procedures or technologies, the best practicable measures available at the time should be used.



CONTINUOUS IMPROVEMENT

Implementation of natural resource management should aim for continuous improvement and extend beyond compliance with relevant laws and requirements.



ACCOUNTABILITY & TRANSPARENCY

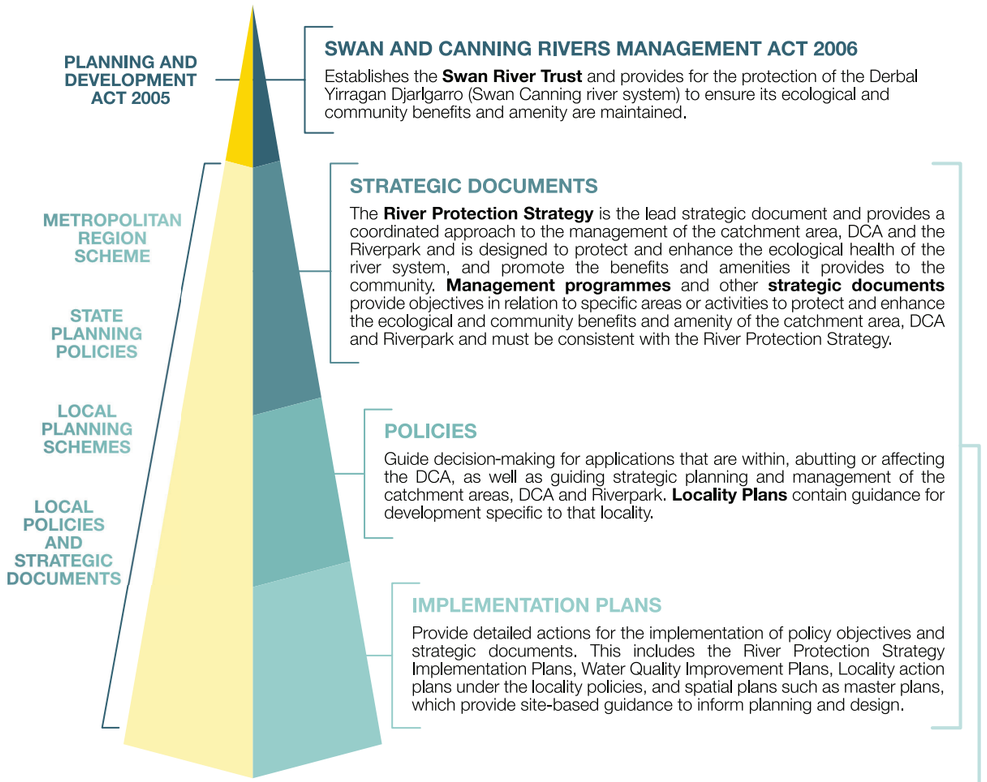
1. Members of the community should be given:
   a. access to reliable and relevant information; and
   b. opportunities to participate in policy and programme development.
2. Decisions should be made in a transparent manner and be made public.

DERBAL YIRRAGAN DJARLGARRO (SWAN CANNING RIVER SYSTEM) PLANNING FRAMEWORK

DBCA, the Western Australian Planning Commission (WAPC), the Swan River Trust, and other State and local governments are responsible for the effective planning of land use and development within, abutting and affecting the waters within the Swan Canning development control area, at all stages of the planning process.

The diagram below illustrates the foundation for planning and decision-making regarding the Swan Canning river system. This informs, and is equally informed by, the State and local planning framework.

This planning framework provides a clear structure to ensure consistency in decision-making, collaboration between agencies, and transparency of information for the community, with the goal of ensuring the protection and enhancement of the ecological and community benefits and amenity of the river system.



COLLABORATION IS KEY

Management of the river system relies upon the collaborative efforts of many different stakeholders. The community, Noongar partners, NRM groups, local government, State Government and other land managers, all play a role in the protection of the river system. While each group has independent responsibilities, they all need to work together to protect the ecological health, community benefits, and amenity of the river system and deliver the key objectives outlined in this River Protection Strategy.

The work undertaken by many organisations extends beyond the immediate boundaries of the Riverpark and into the broader catchment. NRM groups and local governments play a particularly important role in undertaking broader catchment activities, which support the ecosystem health and associated amenity and community benefits of the Riverpark. The following map shows the sub-regional groups in the Perth NRM region and key local governments that manage land within the Swan Canning Catchment.

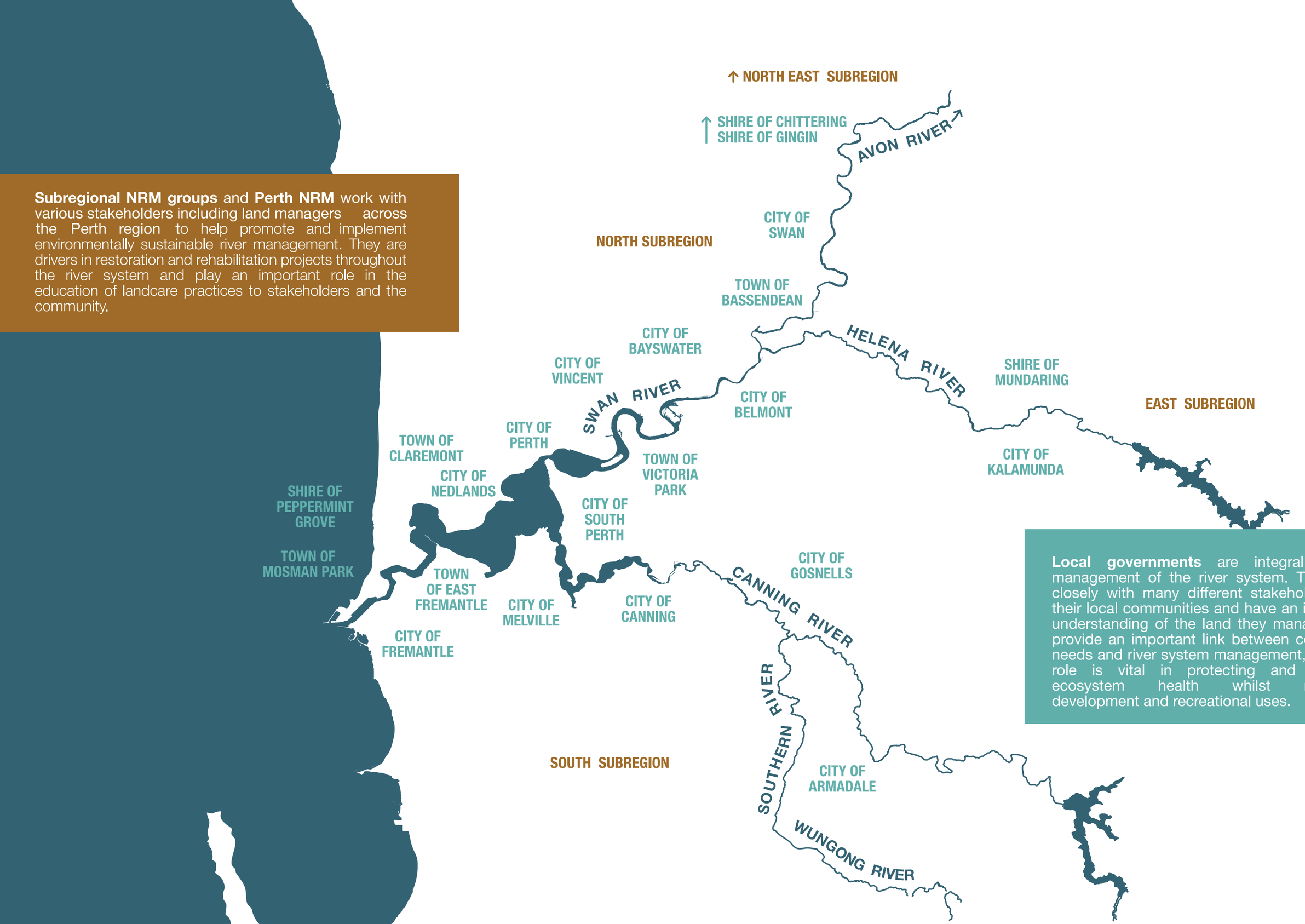
Besides the SCRM Act, many other pieces of legislation (listed below) have defined roles and responsibilities that affect the river system. See Appendix 1 for further information about how these apply to the river system.



Restoration efforts at Brentwood Living Stream
Photo – DBCA

- *Aboriginal Heritage Act 1972 (WA)*
- *Agricultural Produce Commission Act 1988 (WA)*
- *Australian Maritime Safety Authority Act 1990 (Cth)*
- *Biosecurity and Agricultural Management Act 2007 (WA)*
- *Biodiversity Conservation Act 2016 (WA)*
- *Conservation and Land Management Act 1984 (WA)*
- *Contaminated Sites Act 2003 (WA)*
- *Country Areas Water Supply Act 1947 (WA)*
- *Emergency Management Act 2005 (WA)*
- *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*
- *Environmental Protection Act 1986 (WA)*
- *Fish Resources Management Act 1994 (WA)*
- *Heritage Act 2018 (WA)*
- *Jetties Act 1926 (WA)*
- *Land Administration Act 1997 (WA)*
- *Local Government Act 1995 (WA)*
- *Main Roads Act 1930 (WA)*
- *Marine and Harbours Act 1981 (WA)*
- *Marine Safety (Domestic Commercial Vessel) National Law Act 2012 (Cth)*
- *Maritime Archaeology Act 1973 (WA) (under review at time of publication)*
- *Metropolitan Redevelopment Authority Act 2011 (WA)*
- *Metropolitan Water Supply, Sewerage, and Drainage Act 1909 (WA)*
- *Mining Act 1978 (WA)*
- *Noongar (Koorah, Nitja, Boordahwan) (Past, Present, Future) Recognition Act 2016 (WA)*
- *Planning and Development Act 2005 (WA)*
- *Pollution of Waters by Oil and Noxious Substances Act 1987 (WA)*
- *Port Authorities Act 1999 (WA)*
- *Public Health Act 2016 / Health Act 1911 (WA)*
- *Public Transport Authority Act 2003 (WA)*
- *Rights in Water and Irrigation Act 1914 (WA)*
- *Shipping and Pilotage Act 1967 (WA)*
- *Soil and Land Conservation Act 1945 (WA)*
- *Swan Valley Planning Act 2020 (WA)*
- *Underwater Cultural Heritage Act 2018 (Cth)*
- *Water Agencies (Powers) Act 1984 (WA)*
- *Water Corporations Act 1995 (WA)*
- *Water Services Act 2012 (WA)*
- *Waterways Conservation Act 1976 (WA)*
- *Western Australian Marine Act 1982 (WA)*
- *Western Australian Tourism Commission Act 1983 (WA)*

Subregional NRM groups and **Perth NRM** work with various stakeholders including land managers across the Perth region to help promote and implement environmentally sustainable river management. They are drivers in restoration and rehabilitation projects throughout the river system and play an important role in the education of landcare practices to stakeholders and the community.



Local governments are integral to the management of the river system. They work closely with many different stakeholders and their local communities and have an invaluable understanding of the land they manage. They provide an important link between community needs and river system management, and their role is vital in protecting and restoring ecosystem health whilst managing development and recreational uses.

VALUES AND ENABLERS

A healthy, thriving river system for nature and people, to be cared for and enjoyed as the heart of our community.



The vision for the river system was formulated through discussions with the community, Noongar partners, and key stakeholders, including NRM groups, local government, State Government and other land managers. A community survey was conducted in 2023-24 and included a representative sample of the Perth metropolitan area population to identify what the community most values about the river system. The vision, and healthy river system and healthy people values reflects the importance that the Perth community assigns to the Derbal Yirragan Djarlgarro (Swan Canning river system).

The 2030 Sustainable Development Agenda developed by the United Nations Environmental Program underscores the vital connections between development, environmental preservation, human welfare, and the comprehensive enjoyment of numerous human rights. The long-term preservation of the river system, enabling it to flourish in terms of the variety of life it nurtures and the lifestyle and wellbeing advantages it offers to the community, forms the fundamental principle of this River Protection Strategy. A healthy river system helps provide for healthy people.

Values

Healthy river system

A healthy river system is fundamental to ecological integrity. The river system's ecosystems and species have intrinsic value. **Catchment, water, biodiversity** and **foreshore** were identified as being highly valued by community and stakeholders. If these core environmental values are maintained, then the river system can continue to thrive now and into the future.

Healthy people

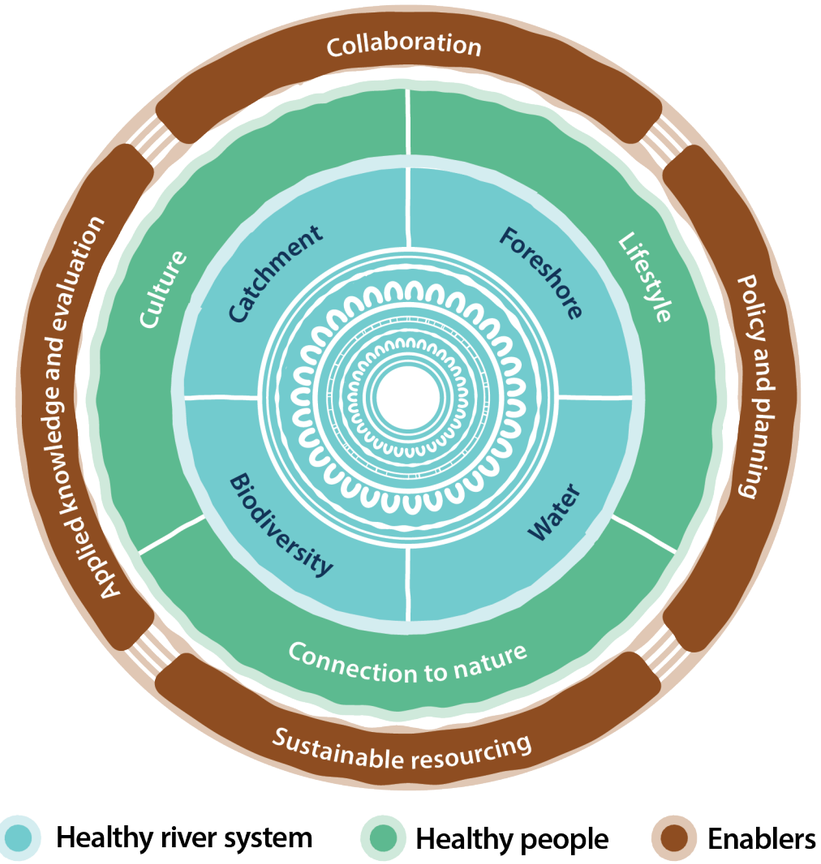
The rivers are an integral part of the Perth lifestyle and provide a multitude of benefits to the social, mental, physical and spiritual wellbeing of the community. Three key values were identified: **lifestyle, culture** and **connection to nature.**

The river system is valued as a key feature of the Perth landscape. The rivers are a meeting place, and the community feels a great connection to the shared history and culture of the rivers, especially the long history of Noongar culture and custodianship of the Derbal Yirragan Djarlgarro (Swan Canning river system).

As Perth continues to grow and develop, it has become clear the connection to nature that the river system provides is highly valued by the community.

Enablers

The community, Noongar partners, NRM groups, local government, State Government and other land managers need to work together to successfully protect these healthy river system and healthy people values, and a series of key 'enablers' have been identified to achieve this: **sustainable resourcing**, **collaboration**, **policy and planning**, and **applied knowledge and evaluation.**



STRATEGY FRAMEWORK

The values and enablers are inherently linked. Together they form the overall framework for this strategy and the management of the river system into the future. The river system is to be protected for its intrinsic value. Additionally, if healthy river system values are sustained, the community can continue to safely access and enjoy the river system, whether that be to swim, fish, sail, travel, appreciate nature, exercise or relax. Building a future in which the community can continue to engage with a healthy river system is vital for fostering community connection with and stewardship for the river system.

An **objective** has been set for each value and enabler for where the community, Noongar partners and stakeholders would like to be in 2035. Thirty-seven **strategies** to be delivered by a range of stakeholders then outline what is required to help achieve each of the objectives in the face of current and emerging threats. Thirty-one **management targets** have been developed to measure quantifiable change that will indicate progress towards meeting the 10-year objectives. Each management target has an underlying metric that is measurable using existing data sources and will be publicly reported. Further reporting on the implementation of the strategies will be undertaken through adaptive, locally scaled and shorter-term implementation plans.

The strategy framework provides strategic direction for stakeholders involved in management of the river system, with the understanding that collective action will be necessary to achieve the desired objectives and to successfully implement the strategies.

HEALTHY RIVER SYSTEM





CATCHMENT (pages 33-37)

Manage the catchment to protect biodiversity, ecological integrity, waterways and wetlands.

- Update and implement Water Quality Improvement Plans.
- Implement and maintain water sensitive design.
- Identify pollution sources and reduce contaminants.
- Implement targeted infrastructure retrofits.
- Retain and restore natural vegetation, waterways and wetlands to create ecological linkages.
- Prevent sediment mobilisation.
- Promote sustainable management practices.

FORESHORE (pages 45-46)

Enhance and revegetate foreshores and implement adaptive foreshore management practices.

- Understand and manage impacts of climate change, erosion and inundation.
- Investigate and implement innovative and collaborative approaches to foreshore planning and management.
- Retain, increase and improve natural vegetation within foreshore areas.





BIODIVERSITY (pages 41-44)

Protect and enhance local biodiversity and build resilience to climate change.

- Improve understanding of biodiversity and improve management of threats.
- Retain, enhance and extend areas for biodiversity.

WATER (pages 38-40)

Manage water quality and quantity to support ecological and cultural values.

- Monitor water quality, contaminants and ecological health and review targets.
- Determine and provide appropriate water regimes.
- Improve the accuracy of flow gauging.



ENABLERS

SUSTAINABLE RESOURCING (pages 58-59)

Obtain ongoing and sufficient resourcing for improved management.

- Prepare an investment plan.
- Develop a targeted research strategy.



COLLABORATION (pages 60-61)

Collaborate and effectively work together.

- Improve ways to work together.
- Increase Noongar participation in river management and build partnerships with Noongar Regional Corporations.
- Develop implementation plans.
- Engage openly and constructively with stakeholders.



HEALTHY PEOPLE





LIFESTYLE (pages 49-50)

Enhance culture, community lifestyle and connection by providing appropriate places in the river system to socialise, recreate and relax.

- Improve community access, enjoyment and connectivity.
- Support sustainable tourism, commercial offerings, development and events.
- Ensure river transport and on-water activities are planned and coordinated.
- Retain, conserve and manage historic heritage places.

CULTURE (pages 51-53)

Strengthen respect and care for the river system by recognising, conserving and sharing Noongar culture and knowledge and retaining and conserving Noongar sites, places and values.

- Identify, retain and conserve Noongar sites, places and values, and protect flora and fauna.
- Facilitate customary activities and caring for Country and incorporate culture and knowledge into management practices.
- Encourage Noongar tourism, commercial operations, employment and economic opportunities.





CONNECTION TO NATURE (pages 54-56)

Connect people with nature in the river system.

- Create, protect and enhance spaces that enable the community to connect with nature.
- Educate and engage to increase adoption of river protection behaviours.



POLICY AND PLANNING (pages 62-63)

Policy and planning protects and enhances the ecological and community benefits and amenity.

- Secure foreshore reserves in public ownership and increase the provision of regional open space.
- Implement, collaborate on and continuously improve legislation, policy, guidance and land use planning.

APPLIED KNOWLEDGE AND EVALUATION (pages 64-65)

Implement strategies and approaches that are adaptive and based on appropriate knowledge, monitoring and evaluation, with river health reported clearly and regularly.

- Improve information sharing systems to facilitate sharing of data and research with the community and to inform planning, decision-making and management.
- Provide high quality, timely and appropriate advice.
- Regularly review approaches to monitoring and evaluation.
- Monitor, report and share water quality and biodiversity outcomes.
- Encourage participation in citizen science, research and monitoring.



Healthy river system

Water and fish in the Derbal Yirragan
Photo – Matt Kleczkowski, @mat.kleczkowski.photography

Catchment

OBJECTIVE 1
Manage the catchment to protect biodiversity, ecological integrity, waterways and wetlands.

The Derbal Yirragan Djarlgarro (Swan Canning river system) covers approximately 126,000km^2. Surface water and groundwater from within the catchment flows towards wetlands and waterways and eventually to the Derbal Yirragan (Swan River) and Djarlgarro Beeliar (Canning River). This connectivity means that activity within the catchment can impact on the health of the rivers.

Pollutants, largely generated through human activity within urban, industrial, and agricultural areas, are transported into the waterways and wetlands from sources throughout the catchment via drainage systems and groundwater movement. Pollutants range from excess nutrients to non-nutrient contaminants, such as microplastics, pesticides, metals, litter, pathogens, perfluoroalkyl and polyfluoroalkyl substances (PFAS), and hydrocarbons. Excess nutrients can cause eutrophication, leading to harmful algal blooms and oxygen depletion in the water. It is considered more cost effective and practical to improve water quality within the river system by reducing pollutants (e.g. though waste avoidance) and treating pollutants at source and preventing them from entering the groundwater, wetlands and waterways.

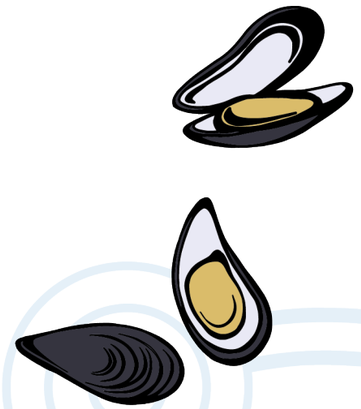
Various activities and land use practices can contribute to poor river system health. Agricultural land uses, including horticulture, animal keeping, and farming, remain significant contributors of nutrients to the river system. The development of new urban and industrial areas can potentially mobilise nutrients, sediment, and other contaminants. Management of construction works (including dewatering) and ongoing site maintenance is important to reduce the transportation of pollutants and sediment to waterways and wetlands.

Continued urban, agricultural and industrial expansion may result in the loss of vegetation and wetlands within the catchment. Over 80 per cent of Perth's wetlands have been lost. Vegetation retention within the catchment is critical for maintaining waterway and wetland health and water quality, by preventing erosion, stabilising foreshores, reducing nutrients entering waterways and wetlands, providing shade and managing salinity levels. Many local governments are adopting a target of 30 per cent urban canopy cover. Additionally, the Western Australian Government has adopted a target of 30 per cent urban canopy cover across the Perth and Peel regions through the Urban Greening Strategy: Whadjuk (Perth) and Bindjareb (Peel).

Vegetation removal results in loss of critical habitats, invasion of weeds, loss of biodiversity, increased temperatures and altered hydrology and water balance. Vegetation clearing can also significantly impact on sediment loads entering waterways and wetlands. Sediment fills river pools and wetlands, smothers aquatic plants, degrades critical aquatic habitats and reduces water quality. In some parts of the catchment, animal stock can directly access waterways and wetlands, damaging vegetation and destabilising riverbanks, causing increased sediment movement into the waterways and wetlands.

Effective catchment management will need to ensure that new developments and current land uses and activities are managed to protect ecosystem functions and retain and enhance natural areas, waterways and wetlands.

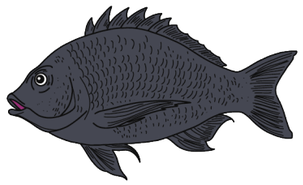
The image on page 35 shows how water flows from urban environments into waterways and wetlands, and how on-ground activities can impact on water quality.




Monitoring water quality in drains
Photo – DBCA

STRATEGIES

Strategy 1	Update and implement water quality improvement plans, including the Swan Canning Water Quality Improvement Plan.
Strategy 2	Implement and maintain water sensitive design in new urban and industrial developments, to ensure development and changes in land use and transport systems prevent pollutant export to waterways and wetlands and maintain the surface water and groundwater balance of waterways and wetlands.
Strategy 3	Identify pollution sources, ensure compliance with legislation and implement actions to reduce contaminants entering waterways and wetlands.
Strategy 4	Develop and implement plans for targeted infrastructure retrofits throughout the catchment to improve water quality, ecological health and amenity.
Strategy 5	Retain natural vegetation and implement on-ground actions, such as planting local trees and plants throughout the catchment and restoring waterways and wetlands, to enhance ecological functions, create/extend ecological linkages between habitats and reduce urban temperatures.
Strategy 6	Prevent sediment mobilisation due to stock entering waterways and wetlands, vegetation clearing, and from development and building sites.
Strategy 7	Promote and educate on sustainable gardening, land management and land development practices in urban and rural areas that protect waterways and wetlands and improve soil health.



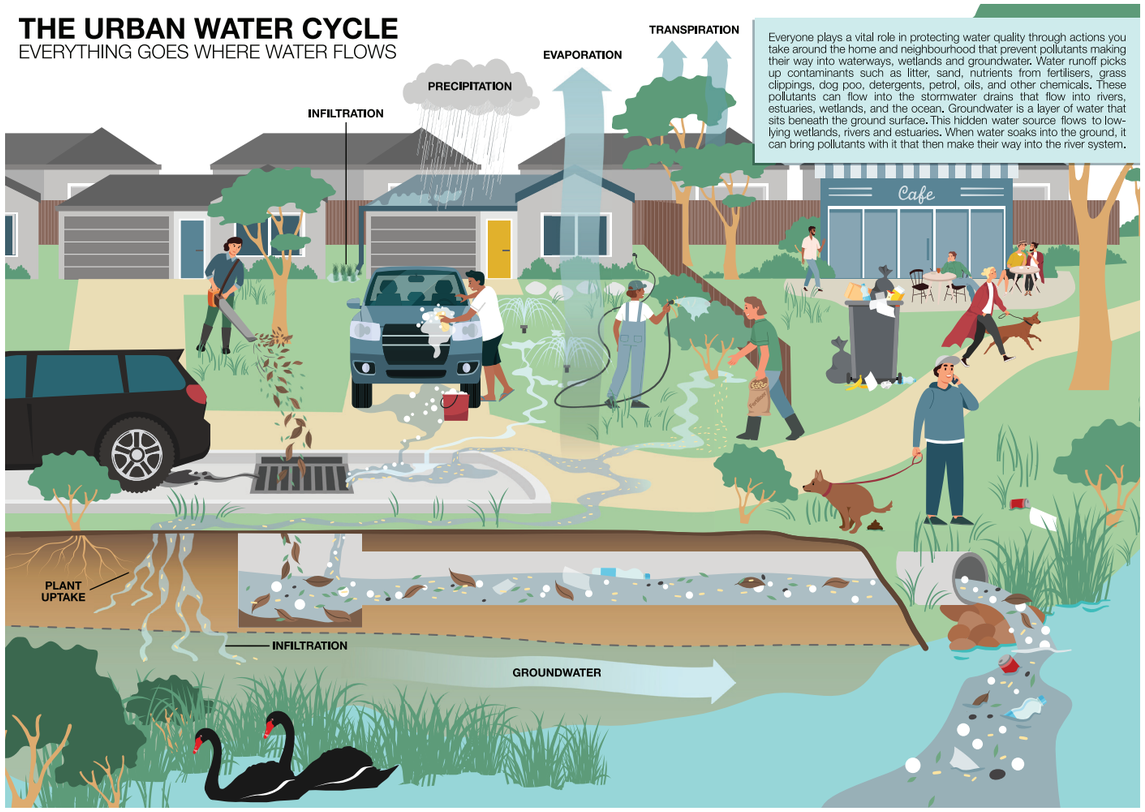
MANAGEMENT TARGETS

Target 1. Increase in net canopy cover in the Swan Canning Catchment.

Target 2. Plant at least five million local plants.

Target 3. Engage with 180,000 community members to increase knowledge about protection of the river system.

Target 4. Annual nutrient load targets met in the Avon Catchment and all Swan Canning catchments.

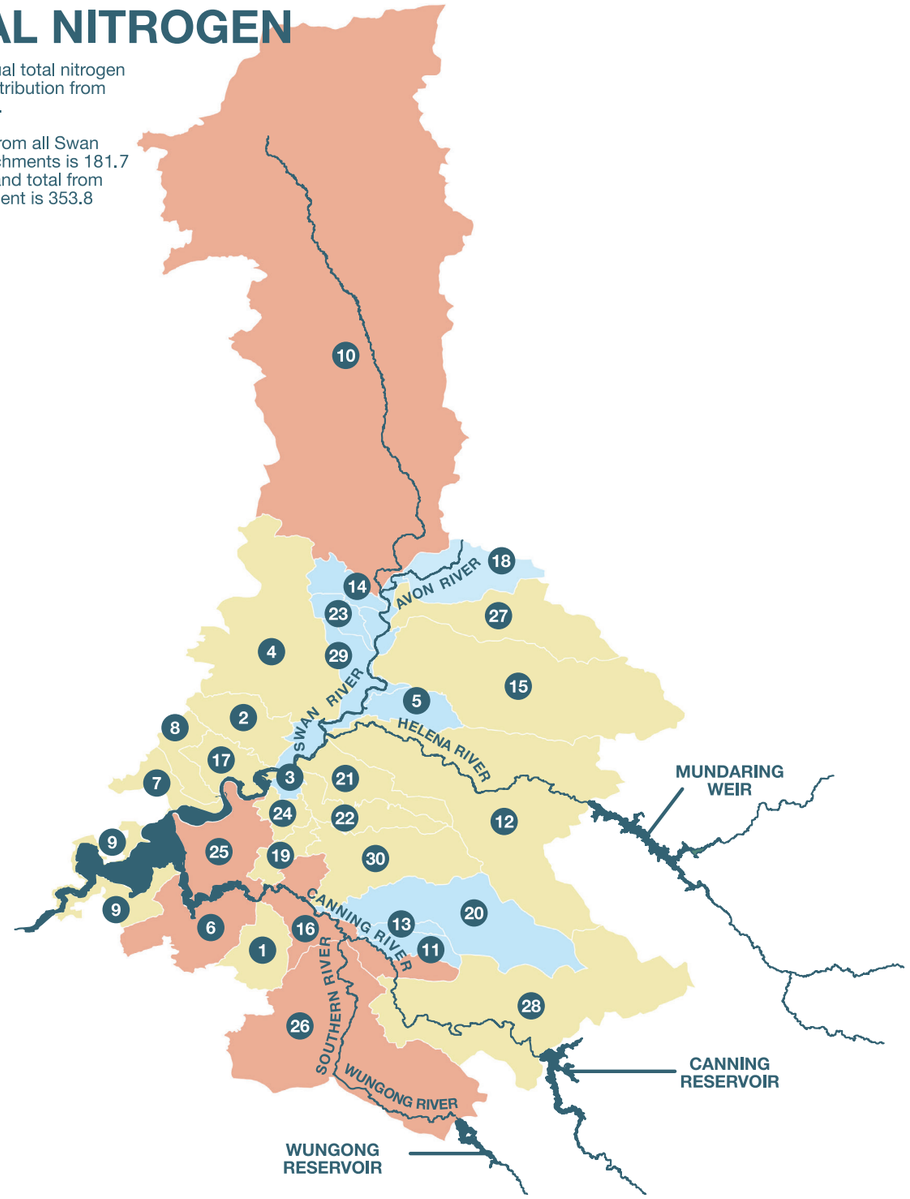


NUTRIENT LOAD CONTRIBUTIONS OF THE SWAN CANNING CATCHMENTS

TOTAL NITROGEN

Average annual total nitrogen (TN) load contribution from 2016 to 2020.

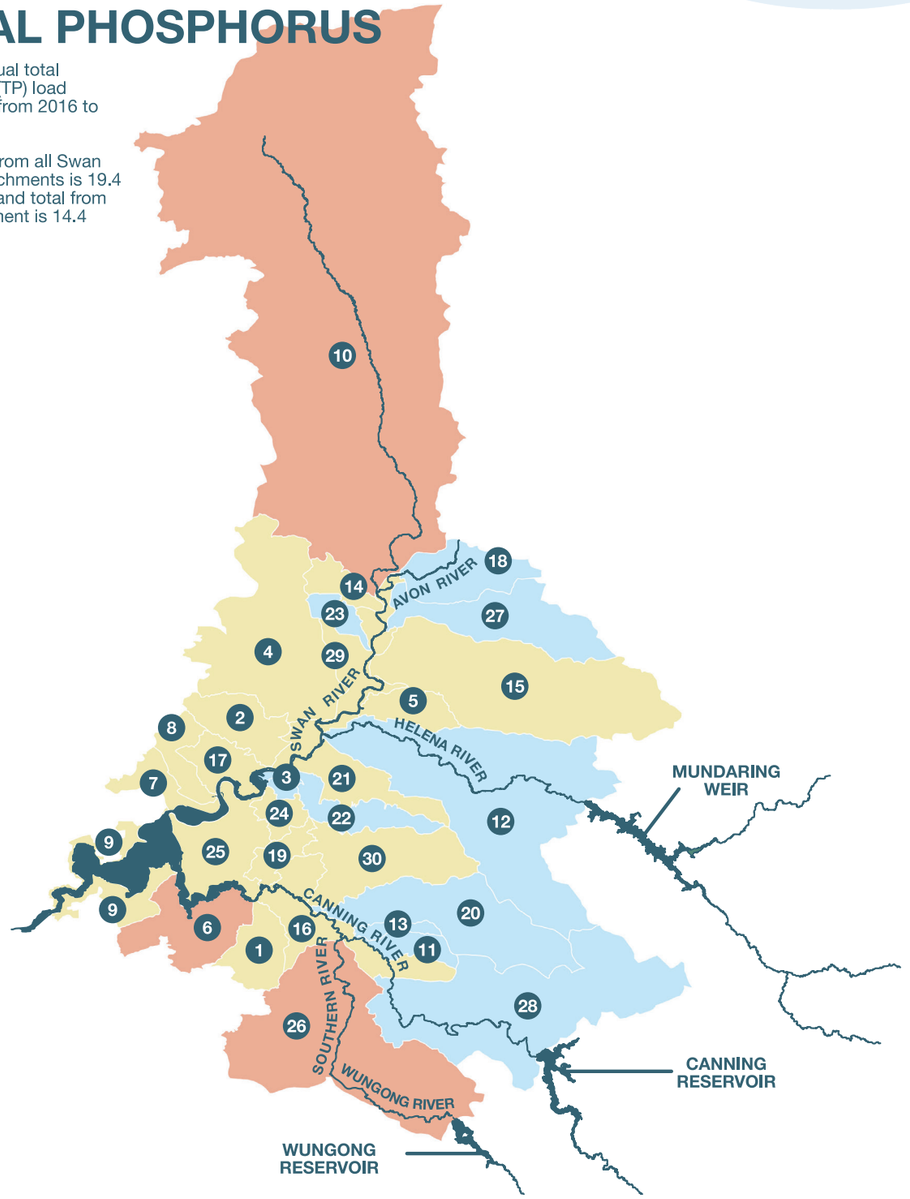
Average TN from all Swan Canning Catchments is 181.7 tonnes/year and total from Avon Catchment is 353.8 tonnes/year.



TOTAL PHOSPHORUS

Average annual total phosphorus (TP) load contribution from 2016 to 2020.

Average TP from all Swan Canning Catchments is 19.4 tonnes/year and total from Avon Catchment is 14.4 tonnes/year.



Load contribution:

- **High:** >5%
- **Moderate:** 1% to 5%
- **Low:** <1%

Swan Canning catchments:

G = Gauged catchment

E = Ungauged model estimated catchment

1. Bannister Creek (G)
2. Bayswater Brook (G)
3. Belmont Central (E)
4. Bennett Brook (G)
5. Blackadder Creek (E)
6. Bull Creek (E)
7. CBD (E)
8. Claisebrook Main Drain (E)
9. Downstream (E)
10. Ellen Brook (G)
11. Ellis Brook (E)
12. Helena River (G)
13. Helm Street Drain (E)
14. Henley Brook (E)
15. Jane Brook (G)
16. Lower Canning (E)
17. Maylands Main Drain (E)
18. Millendon (E)
19. Mills Street Main Drain (G)
20. Munday Bickley (E)
21. Perth Airport North (E)
22. Perth Airport South (E)
23. Saint Leonards Creek (E)
24. South Belmont (G)
25. South Perth (E)
26. Southern River (G)
27. Susannah Brook (G)
28. Upper Canning River (G)
29. Upper Swan (E)
30. Yule Brook (G)

Water

OBJECTIVE 2
Manage water quality and quantity to support the river system's ecological and cultural values.

The waterways within the Derbal Yirragan Djarlgarro (Swan Canning river system) help sustain life for both nature and people. Climate change is the biggest threat to the health of the waterways, with average annual freshwater flows predicted to reduce by up to 50 per cent across the coastal areas by 2050 compared to the 2010 to 2018 period, and even greater reductions predicted for inland areas.

Community consultation conducted in 2023-24 confirmed that Perth residents consider good water quality of key importance for the values of the river system. Perceptions of good water quality for healthy habitats for animals and plants and for community use, such as swimming and fishing, were considered top priorities for managing the river system.

Activities within the whole catchment influence water quality. Surface water and groundwater convey pollution (both nutrient and non-nutrient contaminants and pathogens) into receiving waters and these pollutants can pose a threat to waterway and wetland values.

DBCA, NRM groups, other State governments and local government work together to monitor and report on the water quality in receiving waters and drainage systems for both nutrient and non-nutrient contamination. The infographics on pages 36, 37 and 40 illustrate some of the water quality results for the 2016-2020 monitoring period.

The management of water regimes (volume, rate and frequency) is essential to maintaining a healthy ecosystem. In some waterways, such as the Djarlgarro Beeliar (Canning River), ecological water flows are managed through the implementation of allocation plans outlining the ecological provisions for the waterways. A reduction of water flows is a threat to not only the river system's ecological values, but also to the community's and Noongar people's cultural values of the river system. The waterways support life and their continued existence is integral to meeting community needs, whether that be spiritually, physically or by providing recreational opportunities. For Noongar people, maintaining water regimes brings balance to the waterway's ecosystems and is essential to maintaining connection to Country. It supports customary activities and preserves and protects important sites and places, which is key to the passing of knowledge down to future generations. A better understanding of the ecological and cultural water flows required for all the river system's waterways should be a priority, particularly under a drier climate.

Without improvements in water quality and the maintenance of ecological and cultural water values, conditions in the river system are expected to deteriorate.

STRATEGIES

Strategy 8	Monitor water quality, contaminants and measures of ecological health in the river system and review targets.
Strategy 9	Determine and provide, where possible, the water regime required to protect the ecological and cultural values of Swan Canning waterways, including the provision of water flows and the installation of adaptation measures.
Strategy 10	Improve the accuracy of flow gauging for priority catchments and investigate the feasibility of installing gauging stations in ungauged catchments.

MANAGEMENT TARGETS

Target 5. Improve protection of cultural and ecological values through the quantification and provision of water flows.

Target 6. Water quality concentration targets are met in the estuary and catchments.

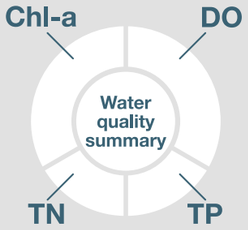
Target 7. Assess non-nutrient contaminants in water, sediment and biota in the waterway.



Bottlebrush in flower along the Derbal Yirragan
Photo – Veronica McPhail

WATER QUALITY SUMMARY

Calculated from surface water quality monitoring data in the Swan Canning river system 2016-2020 (Jan-May).



Good: >75% of samples achieved target

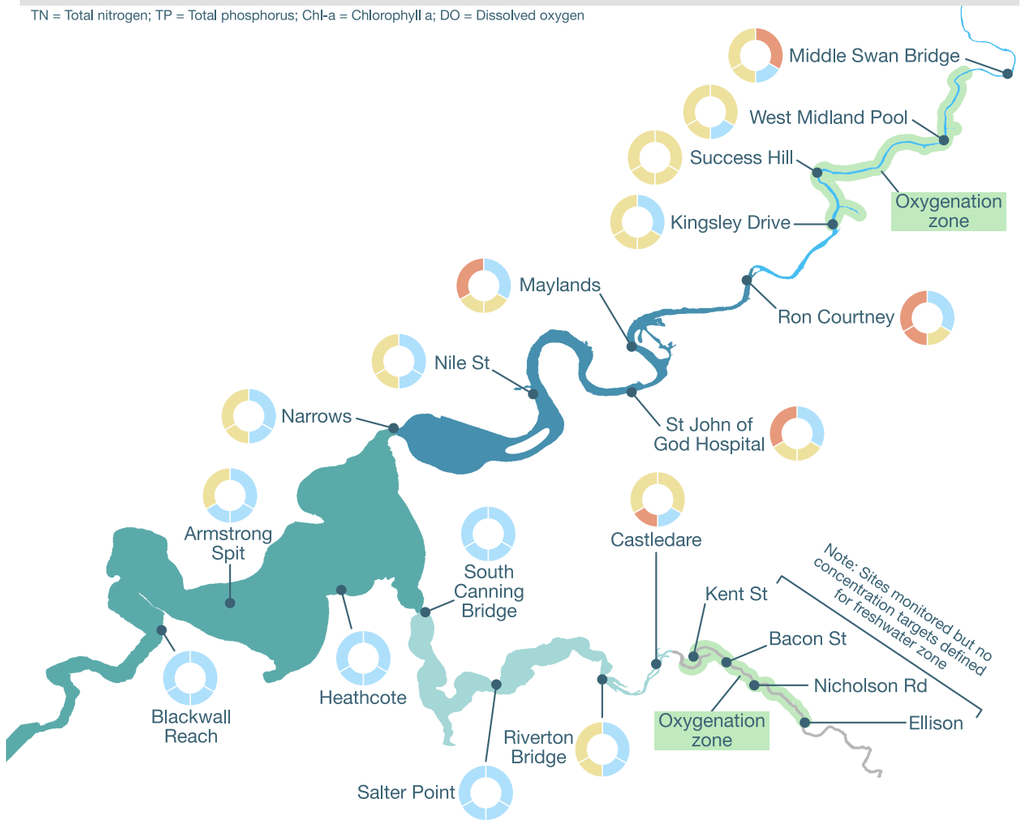
Fair: 25-75% of samples achieved target

Poor: <25% of samples achieved target

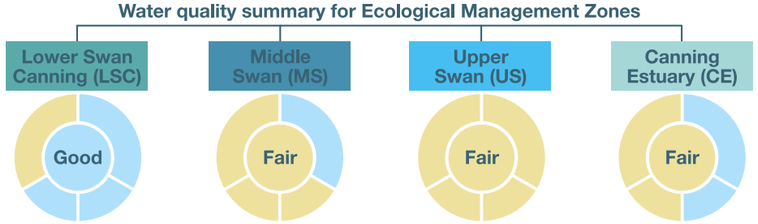
Concentration targets for zones of waterway (SRT, 2003).

	TN ug/L	TP ug/L	Chl-a ug/L	DO %
LSC	509	58	3.55	82.1
MS	790	110	8.75	75.1
US	1009	119	19.98	81.2
CE	790	190	11.67	49.1

TN = Total nitrogen; TP = Total phosphorus; Chl-a = Chlorophyll a; DO = Dissolved oxygen



Water quality summary for Ecological Management Zones



Biodiversity

OBJECTIVE 3
Protect and enhance local biodiversity of the river system and build resilience to climate change.

Community consultation conducted in 2023-24 found that maintaining good water quality and healthy habitats for flora and fauna were considered the top management priorities. The river system is home to an abundant array of aquatic and terrestrial wildlife, including more than 200 species of fish known to inhabit the Riverpark.

South-western Australia is internationally recognised as a 'biodiversity hotspot'. It is estimated that of Australia's plant species, 32 per cent are found in the south-west of Western Australia, of which approximately 79 per cent are endemic. However, more than 70 per cent of the original vegetation has now been cleared, posing a major threat to the biodiversity in the region. While the river system is only a part of the hotspot region, vegetation clearing remains of concern.

Legacy contamination, pollution and waste disposal within the river system continue to threaten wildlife. Ingestion and entanglements are often fatal to riverine species, such as birds and dolphins.

Understanding the biodiversity within the river system is vital for effective management of threats, such as human disturbance, existing and emerging pests and diseases, development pressure, climate change impacts, extreme weather events, degrading foreshores and habitats, aquatic and terrestrial weeds, and declining water quality.

Climate change impacts biodiversity in the Perth region through increased temperatures, decreased rainfall and increased frequency of extreme weather events, leading to habitat loss and altered ecosystems. Species extinction is a major concern. The Intergovernmental Panel on Climate Change predicted that up to 30 per cent of species are at risk if global temperatures rise by 1.5-2.5°C. Creating a resilient system is a priority in river system management. Protecting and enhancing aquatic and terrestrial vegetation and green spaces creates natural carbon sinks, which can help to combat climate change effects. Australia has approximately 10 per cent of the world's coastal blue carbon ecosystems, including the saltmarsh and seagrass meadows of the Riverpark, which can store 10 to 100 times more carbon than forests.

Healthy oxygen levels within the waterways are vital to sustaining biodiversity. Oxygen levels can become critically low due to factors such as decaying organic matter, algal blooms associated with nutrient releases, altered salinity levels causing stratification, and increased temperatures. To help combat this, four oxygenation plants are operated to increase oxygen levels within the Derbal Yirragan (Swan River) and Djarlgarro Beeliar (Canning River).

Sanctuary and wildlife refuge areas are vital for protecting critical habitats, vegetation and wildlife within the river system. These areas need to be strategically located to protect biodiversity and maximise ecosystem connectivity. Existing areas include the Swan Estuary Marine Park and Canning River Regional Park. The management, retention and enhancement of existing areas and the consideration of establishing new sanctuary and wildlife refuge areas will be important for biodiversity protection.

Incorporation of nature-based design that supports ecosystem biodiversity is a priority. In-water habitat structures are currently being trialled to support and improve ecosystem complexity and promote diversity.



Blue swimmer crab
Photo – Department of Primary Industries and Regional Development

STRATEGIES

Strategy 11	Improve understanding of the biodiversity in the river system, the processes that support biodiversity and the associated threats, through approaches such as green asset and ecosystem mapping, and improve management of threats by developing cross-boundary, multiple-stakeholder approaches.
Strategy 12	Retain, enhance and extend critical habitat, wildlife refuges and sanctuary areas for biodiversity in the river system.



Entangled darter in the Derbal Yirragan Djarlgarro (Swan Canning river system)
Photo – Sue Harper

MANAGEMENT TARGETS

Target 8. Fish communities' condition grades are maintained or improved.

Target 9. Seagrass condition and distribution is maintained or improved.

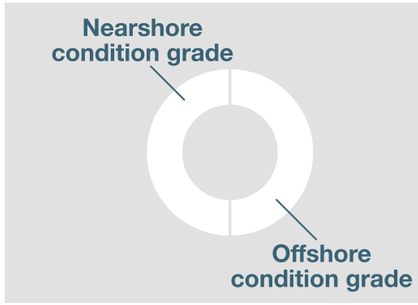
Target 10. No significant (>100 finfish) native finfish kill events caused by toxic algal blooms, anoxia or pollution events.

Target 11. Increase in wildlife refuges and sanctuary areas.

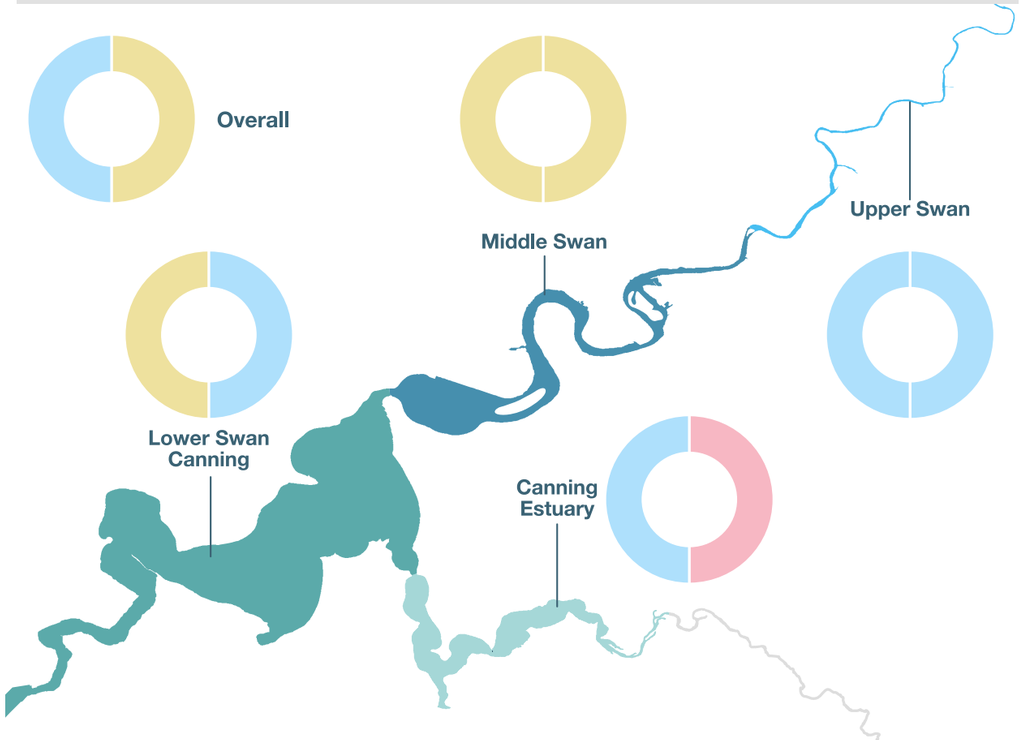
Target 12. Targets for the effectiveness of oxygenation are met.

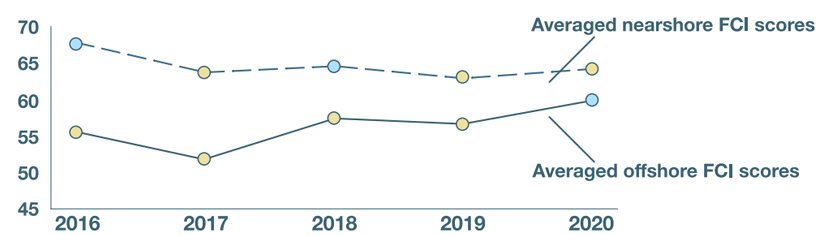
FISH COMMUNITIES

Based on Fish Community monitoring from 2016-2020 (Murdoch University).

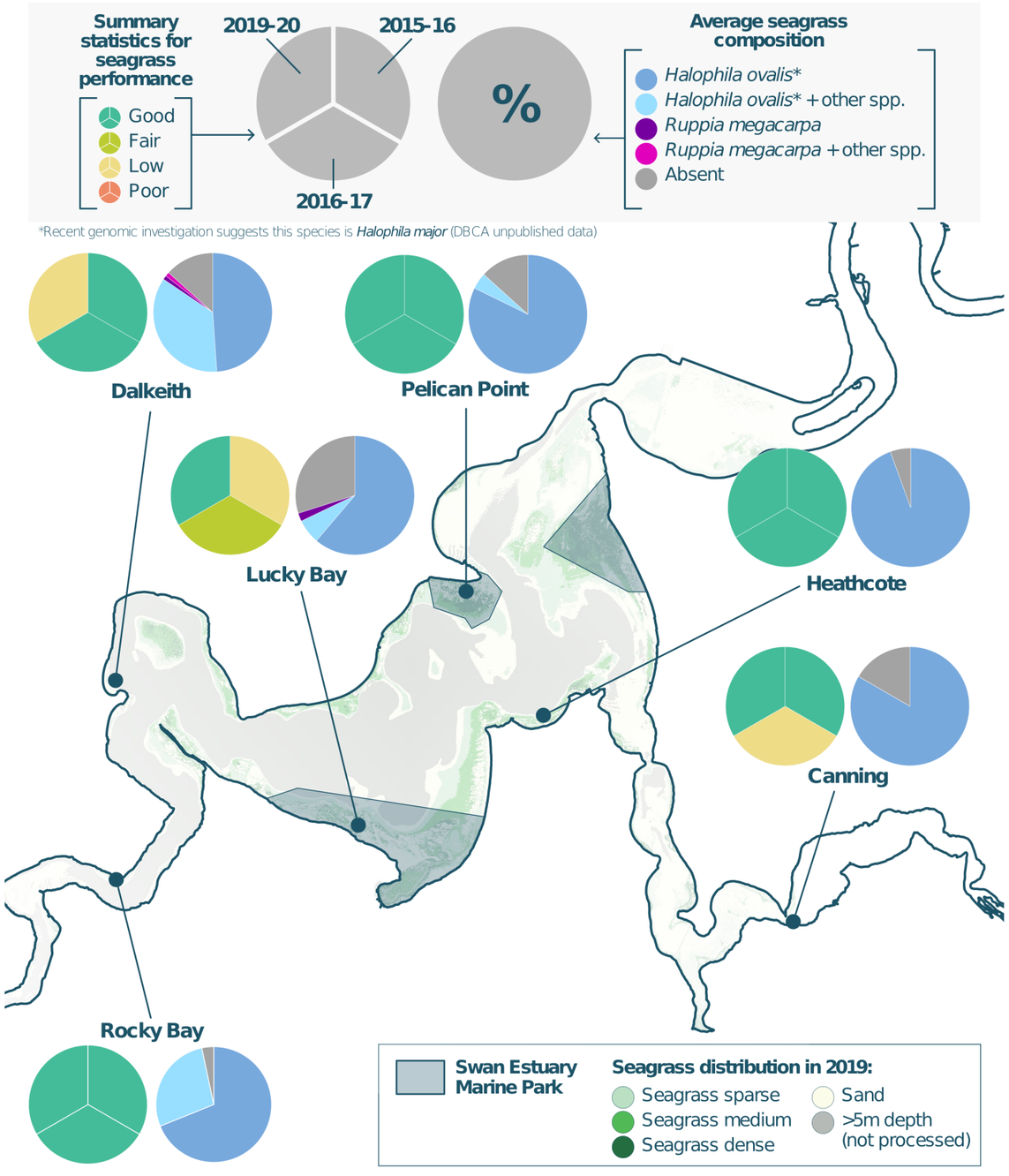


Ecological condition	Nearshore FCI scores	Offshore FCI scores
Very good	>74.5	>70.7
Good	64.6 - 74.5	58.4 - 70.7
Fair	57.1 - 64.6	50.6 - 58.4
Poor	45.5 - 57.1	36.8 - 50.6
Very poor	<45.5	<36.8





SEAGRASS



Foreshore

OBJECTIVE 4
Enhance and revegetate foreshores and implement adaptive foreshore management practices.

The foreshore refers to the foreshore areas of waterways within the Derbal Yirragan Djarlgarro (Swan Canning river system). As the interface between the terrestrial and aquatic environment, foreshores support a variety of ecological processes that are vital for the healthy functioning of waterways.

Community consultation conducted in 2023-24 found that most of the community's direct interaction with the waterways is through their use of foreshore areas, with 93 per cent of Perth metropolitan river users participating in land-based activities (such as visiting cafes, picnicking and walking).

The Perth community prioritises a balanced approach to foreshore management, valuing natural areas for wildlife appreciation (75 per cent), well-maintained walking trails and river access infrastructure (68 per cent), and parks for picnicking (60 per cent).

Foreshores face threats from poor historic land use decisions, such as insufficient foreshore reserves and setbacks, contamination, drainage pipes discharging directly into the waterway and clearing of vegetation, as well as current and emerging threats from development, climate change, fire management practices, flood, human use, trampling, weeds, sea/estuary level changes, erosion and bushland fragmentation.

To address these issues, best practice foreshore planning is being applied to strategically prioritise and manage foreshore use, development and foreshore management decisions. This must be done collaboratively between land managers and statutory authorities, in consultation with the community, ensuring that natural assets and infrastructure are being maintained and improved. Land managers need significant funding to undertake foreshore planning and to maintain and replace existing assets on Riverpark shorelines and move towards more nature-based solutions, where appropriate. Engagement with stakeholders, including engineers, environmental officers and landscape architects, to implement innovative and adaptive foreshore and Riverpark shoreline treatments that incorporate nature-based solutions should be prioritised.



Revegetating the waterways
Photo – DBCA

STRATEGIES

Strategy 13	Understand, communicate and manage impacts of climate change, erosion and inundation, based on up-to-date climate projections and risk modelling and mapping.
Strategy 14	Investigate and implement innovative and collaborative approaches to foreshore planning and management.
Strategy 15	Retain, increase the amount and improve the condition of natural vegetation within foreshore areas.

MANAGEMENT TARGETS

Target 13. Foreshore reserve plans are prepared and implemented.

Target 14. Riverpark shorelines are restored, renewed or upgraded, based on identified priorities.



Fairy tern feeding chick at Point Walter.
All images were taken as part of a research project with relevant permits and animal ethics approvals.
Photo – Claire Greenwell

Andrew Thompson Reserve
Photo – DBCA



Healthy people

Peering into the Derbal Yirragan (Swan River)
Photo – Satori Cosgrove

Lifestyle

OBJECTIVE 5
Enhance culture, community lifestyle and connection by providing appropriate places in the river system to socialise, recreate and relax.

The river system offers numerous health benefits, including urban cooling functions and flood protection. It also serves as a space for the community to exercise, relax, connect, and recreate. The rivers provide direct access to a variety of on-water and foreshore activities in the heart of Perth, such as fishing, boating, yachting, kayaking, rowing, walking, cycling, and swimming.

A healthy river system is integral to providing many of the lifestyle values for healthy people. The river system has intrinsic value due to its natural attributes and spiritual and cultural significance. The historical and cultural significance of the river system is a testament to the rich tapestry of Western Australia's heritage. It continues to be a symbol of the region's past, present, and future. Noongar culture and heritage are addressed under the Culture value in the following section.

As the city continues to grow, there is an increasing need to manage community use of the river system, balancing competing recreational, commercial and commuting demands and ensuring safe and environmentally appropriate access for all ages and abilities. Sustainable transport infrastructure including road networks, bridges, cycling routes, and public transport are essential to connect communities across the river and improve access to the river system.

Effective management of the river system is crucial not only to improve river health but also to address community health hazards such as mosquitoes and to improve amenity and user experience. This includes adequate monitoring, reporting and improvement measures to minimise impacts on the adjacent community and allow the community to safely interact with the water and the surrounding environment.

According to the 2023-24 community survey, 75 per cent of respondents agreed that walking and cycling access along the rivers was important, while only 14 per cent agreed with increased residential development along the rivers. This indicates that increasing public ownership and connectivity along the rivers is a priority. As the population grows, it will be crucial to ensure that development and use are appropriately managed to enhance and protect amenity, culture and heritage, and protect adjacent urban development and infrastructure from flooding and inundation, while also protecting the environmental values of the river system.



Playing in the Djarlgarro Beeliar (Canning River)
Photo – DBCA

STRATEGIES

Strategy 16	Improve community access, enjoyment and connectivity through provision and management of strategically located facilities, public spaces and assets.
Strategy 17	Support sustainable tourism, commercial operations, development and riverside events that enhance the community's use and enjoyment of the river.
Strategy 18	Ensure river transport and on-water activities, including ferry services, are planned and coordinated.
Strategy 19	Retain, conserve and responsibly manage significant historic heritage places within the river system.

MANAGEMENT TARGETS

Target 15. When resurveyed, community satisfaction of water quality for swimming increases.

Target 16. Average visitor satisfaction for the Riverpark increases and meets or exceeds 85 per cent.

Target 17. Increase the number of trails and interpretation nodes.

Target 18. Water quality is safe for recreational use.



Dolphins in the Derbal Yirragan
Photo – Sue Harper

Culture

OBJECTIVE 6
Strengthen respect and care for the river system by recognising, conserving and sharing Noongar culture and knowledge and retaining and conserving Noongar sites, places and values.

The Derbal Yirragan Djarlgarro (Swan Canning river system) is rich in Noongar heritage. The beeliar (rivers) themselves are sacred, with many ancestral birthing, burial, hunting and gathering, camping, and fishing sites that are still visited by Noongar people today. The cultural and historical significance of the river system is of great importance, and mapping is a crucial tool for enhancing our understanding.

The beeliar (rivers) are of great significance to Noongar people. Their significance is preserved and shared through song, music, dance, art, dreaming and storytelling. Central to these traditions are songlines—an ancient memory code used by Aboriginal people across the country. These songlines, which crisscross the Australian landscape, encapsulate the unique knowledge of Aboriginal people. They convey the laws, history, and culture of diverse groups across the country, having been created, maintained, and practiced for millennia. This transmission of knowledge to future generations is of paramount importance, allowing Noongar people to connect to the rivers spiritually, and with each other, fostering kinship.

Noongar culture, heritage, knowledge and customary activities provide invaluable insights into caring for Country. It is important this knowledge be recognised and respected. Noongar people have a cultural responsibility to care for the waterways and wetlands, maintaining a custodial relationship, much like their ancestors did in the past. All of the waterways and wetlands are part of the Derbal Yirragan Djarlgarro (Swan Canning river system) and understanding their connectivity is crucial in caring for Country. Water and nature do not know boundaries, and collaboration across the whole system is of the utmost importance.

Access to the river system is vital for Noongar people to carry out customary activities and fulfil cultural obligations. Furthermore, food sources and medicines derived from the river system play a significant role in Noongar people's cultural activities and healing processes.



Tynan Garlett playing didgeridoo at the Djarlgarro Beeliar
Photo – Tammy Rose

STRATEGIES

Strategy 20	Identify, retain and conserve Noongar sites, places and values, and protect flora and fauna to enable cultural activities and healing throughout the river system.
Strategy 21	Actively facilitate customary activities and caring for Country and incorporate Noongar culture and knowledge into management practices.
Strategy 22	Encourage and promote Noongar tourism, commercial operations, employment and economic opportunities around the river system.

MANAGEMENT TARGETS

Target 19. Riverpark is mapped for Noongar cultural and heritage sites, places and values.

Target 20. Appropriate Noongar knowledge holders are invited to be involved in all major projects.



Left
Karen Morich and Michael Little collecting soap bush
Photo – DBCA

Opposite page
Turtle basking (Bunuru)
Photo – Veronica McPhail

Carnaby's feeding on banksia (Djeran)
Photo – Veronica McPhail

Pairing swans (Makuru)
Photo – Satori Cosgrove

All other photos by DBCA

Noongar six seasons

Birak (December – January)

First summer – season of the young
Less rain as the warmer weather sets in. Reptiles look to shed their skin, and kwelak (frogs) transform into adulthood. Bilardong (pelicans) scoop for prawns in shallow waters. Seagrasses within the rivers enter peak growth phase and start to flower.



Bunuru (February – March)

Second summer – season of adolescence
The hottest, driest time of the year, where people lived, hunted and fished along the coast and rivers. Cobbler and other djiljit (fish) congregate in pools within rivers and streams. Swamps dry up.



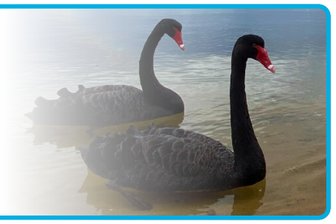
Djeran (April – May)

Season of adulthood
Cooling temperatures with dewy mornings. Marked by the flowering of mangatj (banksia), with freshwater animals and plants like the yanget (bullrush) being a key food source. Seagrass becomes dormant and leaves accumulate as wrack on shorelines.



Makuru (June – July)

First rains - season of fertility
Coldest and wettest time of the year. With increased flows, rivers become brown in colour. Wetlands and swamps fill with water. Karli (crabs) move out to the ocean with flow. Traditionally a good time to move back inland. It is a time of pairing for animals before the breeding season.



Djilba (August – September)

Second rains – season of conception
Sees a transition from cold wet days to cool sunny days. Kalyang (wattles) come out in full bloom, signaling the start of mass flowering. The rivers are at their freshest, pushing marine waters back to the lower reaches of the estuary. Migratory jirda (birds) begin to arrive from the north. Marli (swans) observed with cygnets. Gilgies (crayfish) begin brooding.



Kambarang (October – November)

Flowering
A transformational time of year. An explosion of colour as flowers continue to bloom, with receding rain, and temperatures rising. The rivers start to clear and warm. Marine fish like kalkarda (sea mullet) and mulloway move into the estuaries. Maadjit (bull sharks) head upstream to birth. Moorn barndi (black bream), fairy terns and koordjokit (little black cormorants) begin breeding; yarkan (turtles) begin nesting. Kwelak (frog) tadpoles arrive.



Connection to nature

OBJECTIVE 7
Connect people with nature in the river system.

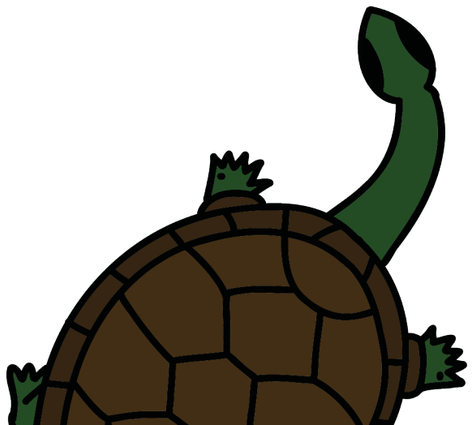
Connection to nature is widely recognised for its significant benefits to human mental and physical health and wellbeing. Community consultation conducted in 2023-24 found that 76 per cent strongly agreed that the river system benefits the community by being a place of sanctuary for plants and wildlife, and 68 per cent of people strongly agreed that they would like the river system to connect them to nature.

This indicates a demand for opportunities that allow the community to interact with the river system in a manner that preserves and enhances its natural state, while also managing threats from overuse and climate change.

The responsibility of caring for the waterways is a collective one, making community education on the management and care of waterways, wetlands, foreshores, and catchments crucial. We need to foster a sense of stewardship and be the voice for nature. There are many community-led groups and organisations throughout the catchment that are actively involved in river system protection. It will be important to continue to support, coordinate and provide opportunities for community members to engage in river system protection. River Guardians provides a coordinated platform for the community to engage with behaviour change programs that include river protection actions and information collection and sharing. For example, the River Guardians' Dolphin Watch Program has been crucial in monitoring the health of the rivers' resident dolphin population. This provides river managers with more information and educates the community on key issues within the river system, such as plastic contamination and wildlife ingestion and entanglement (see the information related to plastic contamination and dolphin deaths due to entanglement on page 56).

Expanding the size of vegetated areas within foreshore reserves not only improves the health of the waterways but also gives people a sense of being in nature. However, the lack of continuity of land ownership among different local governments, State and Federal Government agencies, and private landowners makes it challenging to provide consistent management that prioritises natural areas for community connection.

Education through programs and provision of consistent, strategic guidance for all land managers and the community will be crucial to creating enhanced natural spaces in which the community can experience nature in a way that does not negatively impact on the ecological health of the river system.



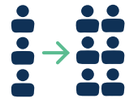
STRATEGIES

Strategy 23	Create, protect and enhance spaces and facilities that enable the community to connect with nature and the ecological values of the river system, particularly within the Riverpark.
Strategy 24	Implement education and engagement initiatives to increase appreciation and understanding of the river system values and threats, and to increase the adoption of river protection behaviours.

MANAGEMENT TARGETS



Target 21. When resurveyed, community satisfaction for the management of natural areas to appreciate wildlife and plants increases.



Target 22. Increase in the number of River Guardian members.



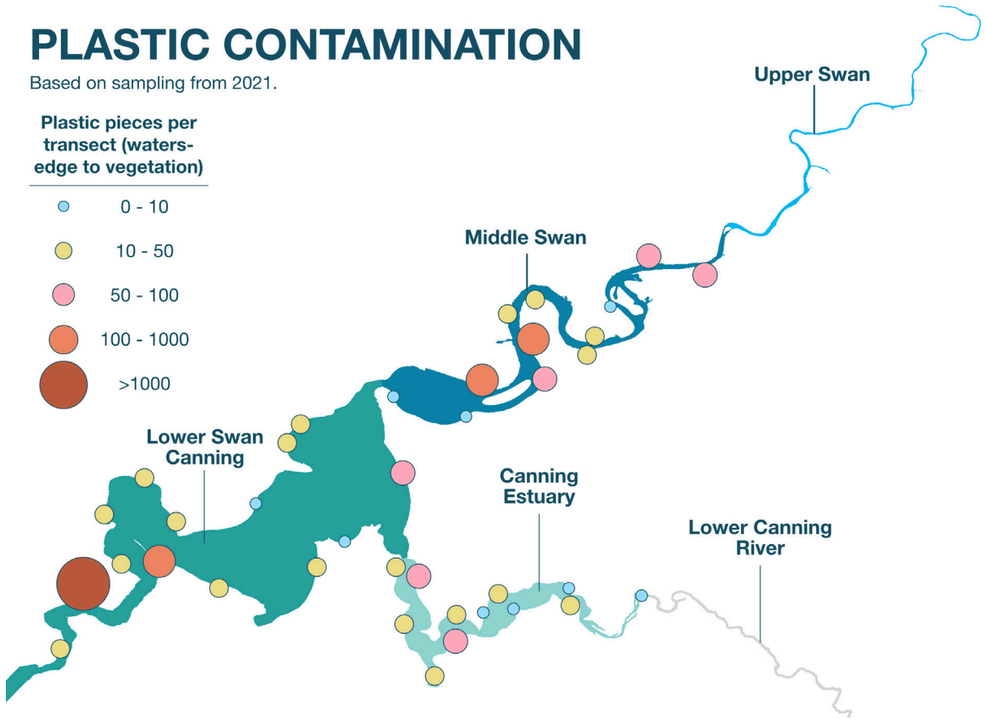
Target 23. Spaces and facilities that provide opportunities to connect with nature are created or enhanced.



Wood duck takes flight, South Perth Foreshore
Photo – Sue Harper

PLASTIC CONTAMINATION

Based on sampling from 2021.



Dolphin deaths due to entanglement:



Fishing line entanglement of sea birds is also known to be a significant issue with many rescues undertaken by WA Seabird Rescue and others annually.



Plastic pollution at Point Fraser
Photo – DBCA

Brothers exploring the Derbal Yirragan (Swan River) foreshore
Photo – Satori Cosgrove



Enablers



Learning about the rivers
Photo – DBCA

Sustainable resourcing

OBJECTIVE 8
Obtain ongoing and sufficient resourcing for improved management of the river system

Protection and management of the river system relies on adequate resourcing. A more strategic approach to identifying funding gaps and needs, involving all stakeholders, will support improved restoration, maintenance, monitoring, research and compliance activities.

Significant benefits to river system management and protection are derived through the substantial involvement of NRM groups and volunteer community groups in implementing on-ground actions. Access to adequate resources enables these groups to strategically plan the works required to protect the river system to the necessary standard and to sustain their membership.

STRATEGIES

Strategy 25	Prepare an investment plan for protection of the river system.
Strategy 26	Develop a targeted research strategy that addresses critical information gaps for the river system, including the impacts of climate change, and that supports partnerships and co-investment.

MANAGEMENT TARGETS

Target 24. Sustainable funding supports river system protection and management.



Tubestock planting at Bardon Park
Photo – City of Bayswater

Collaboration

OBJECTIVE 9
Collaborate and effectively work together to protect and improve the river system.

Planning and management of the river system is a collective effort involving the community, Noongar partners, NRM groups, local governments, State Government agencies, other land managers and volunteers. However, the responsibilities for river management and stakeholder priorities need to be better defined and communicated to break down barriers and work towards a shared vision.

Community consultation conducted in 2023-24 found that 57 per cent of respondents were satisfied with the management of the river system. Effective collaboration and coordination are the keys to achieving the best management outcomes for river system protection. This requires greater support and strategic direction from State and local government for NRM groups and community groups, who are essential for effective on-ground management.

Appropriately designed and managed development can help protect river system health and amenity by incorporating sustainable practices, such as creating vegetated foreshore areas, using water sensitive design and nature-based design, and managing construction works, including sediment control. Working collaboratively to identify innovative ways for sustainable development will be vital in the future protection and management of the river system as Perth continues to grow.

Engagement with the community, Noongar partners, and stakeholders, as well as education through events and forums, provide opportunities for knowledge sharing and networking. These platforms also promote active community involvement in river system protection, such as volunteering with NRM groups and participating in River Guardians projects. This collective effort is crucial for the long-term sustainability and protection of our precious river system. Education is an essential element of many of the strategies in this River Protection Strategy.



River Protection Strategy workshop with local government officers
Photo – DBCA

STRATEGIES

Strategy 27	Develop improved ways to work together in river management and planning, including improved communication, networks and knowledge sharing.
Strategy 28	Increase Noongar participation in the management of the river system and build strong partnerships with Noongar Regional Corporations.
Strategy 29	Develop River Protection Strategy implementation plans at a river reach scale with stakeholders and biennially report on the implementation of the River Protection Strategy.
Strategy 30	Engage openly and constructively with Traditional Owners, natural resource management groups, government agencies and service providers, volunteers, proponents, operators, the development industry and the community to ensure sustainable use, protection and improvement of the river system.

MANAGEMENT TARGETS

Target 25. 70 per cent of Perth residents are satisfied with the management of the river system.

Target 26. Traditional Owners are increasingly involved in decision-making and management of waterways and wetlands on their Country.

Target 27. Increase support to 'Friends of' groups, schools and other environmental groups that actively improve the ecological health of the river system.



Policy and planning

OBJECTIVE 10
Policy and planning protects and enhances the ecological and community benefits and amenity of the river system.

Stakeholders are seeking leadership, a clear regulatory framework, effective legislation and policies that are enforced to ensure compliance, and further support on emerging issues such as climate change from the State Government.

Multiple agencies are responsible for planning and decision-making that impacts the river system and access to it. A coordinated and consistent approach supported by a clear understanding of the decision-making framework is crucial. Several catchment-wide issues are identified as benefiting from additional policy and guidance within land use planning and environmental decision making systems, including: urban greening and vegetation retention and canopy on both public and private land; wetland buffers; onsite wastewater disposal water quality requirements; regulation of polluting land uses and activities; regulation of dewatering discharges to waterways and wetlands; and sustainable environmental flows for ecological and cultural values. These are considered vital for the ongoing protection of the river system.

Planning of the Riverpark also involves many different land managers. Spatial planning, including locality planning and foreshore reserve planning, is recognised as an important tool to understand community expectations around the future use of an area, provide clear guidance on acceptable development and good design outcomes, streamline assessment processes and assist with budgeting. However, sustainable resourcing will be required as this has been identified as a barrier to developing and implementing long-term spatial planning solutions.

Currently, 94.9 per cent of the reserved river foreshores are vested and managed for public benefit. Predicted sea and estuary level rises pose a significant risk to many foreshore areas. Ensuring that these areas and values are identified will be important for adapting management and the public's continued use of the foreshores. Stakeholders are seeking guidance on how to identify, plan for and manage risks associated with climate change. A management programme that defines key planning principles for protection and enhancement of the ecological and community benefits and amenity of the river system could be established to help provide guidance to stakeholders.



Paddling on the Derbal Yirragan
Photo – Veronica McPhail

STRATEGIES

Strategy 31	Continue to secure appropriate foreshore reserves in public ownership, ensure foreshore reserves are appropriately managed, and undertake long-term planning to increase the provision of regional open space adjacent to the waterways.
Strategy 32	Implement, collaborate on, and continuously improve legislation, policy, guidance and land use planning to ensure adequate provision for foreshore areas, ecological linkages and wetland buffers, and protection of flood function, ecological health, amenity and community connection to the river system.

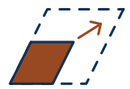
MANAGEMENT TARGETS



Target 28. Review and update policy and regulation to ensure their ongoing suitability and effectiveness.



Target 29. Increase the amount of publicly owned foreshore reserves.



Target 30. Increase the area of foreshore reserved as regional open space under the Metropolitan Region Scheme.



Cycling and walking along the South Perth foreshore
Photo – Veronica McPhail

Applied knowledge and evaluation

OBJECTIVE 11
Implement strategies and approaches for managing the river system that are adaptive and based on appropriate knowledge, monitoring and evaluation, with river health reported clearly and regularly.

Targeted research plays a crucial role in informing management and planning decisions. Enhancing the communication of research outcomes and data sharing can significantly improve planning and management of the river system, empowering decision-makers, management organisations, and the community.

Routine water quality monitoring is currently conducted weekly in the estuary and fortnightly in the catchment. Water quality reports are produced to help inform management and stakeholders and provide health warnings to the community. Key indicators of ecological health, such as fish communities and seagrass condition, are also routinely monitored. Existing and future measures of water quality and ecosystem health, developed through research and partnerships, require significant and ongoing investment.

Triennial river health assessments to assess streamflow, habitat, water quality and aquatic biota are conducted at key locations in the Djarlgarro Beeliar (Canning River) to evaluate the effectiveness of water releases from the Integrated Water Supply Scheme and Canning Dam.

The Swan Canning Estuarine Response Model, developed in collaboration with research partners, is a significant tool for informing water quality management. It provides insights into the potential impacts of climate change on water quality and ecosystems, thereby aiding in the development of effective mitigation strategies.

Other measures will be considered or developed to report against the River Protection Strategy and to help meet management targets outlined within this River Protection Strategy.

Maintaining and identifying current and new practices in monitoring and information sharing is a priority in river system management. These practices should be regularly reviewed to ensure that information produced meets management needs and community expectations.



Swan and cygnets on Djirda Miya
Photo – Veronica McPhail

STRATEGIES

Strategy 33	Improve information systems to facilitate sharing of data and research with the community and to inform planning, decision-making and management.
Strategy 34	Provide high quality, timely and appropriate advice to all stakeholders, including statutory authorities and the community.
Strategy 35	Regularly review approaches to monitoring and evaluation to ensure they are appropriate and adequately resourced to meet information needs for reporting against the objectives of the River Protection Strategy.
Strategy 36	Monitor, report and share water quality and biodiversity outcomes.
Strategy 37	Encourage participation in citizen science, research and monitoring.

MANAGEMENT TARGETS

Target 31. Increase in the number of trained Dolphin Watch volunteers.

IMPLEMENTATION AND EVALUATION

Monitoring and evaluation

Implementation of the River Protection Strategy is supported by the ongoing monitoring and evaluation of the management targets set for each value and enabler. Management targets have been developed to assess the overall efficacy of strategies and the advancement towards fulfilling the objectives. Strategies often contribute to multiple management targets and the chosen targets are measurable using existing data sources. Monitoring progress towards the targets facilitates tracking and evaluating the River Protection Strategy over time, providing insights for adaptive management opportunities. Progress towards the targets will be reported five-yearly as part of a review of the River Protection Strategy for Derbal Yirragan Djarlgarro (Swan Canning river system) by the Swan River Trust.

To gather information on the implementation of the 37 strategies, at least one metric has been developed for each strategy, which will form the basis of the monitoring and evaluation framework. Details on the monitoring and evaluation framework will be included within the River Protection Strategy implementation plans.

Reporting

Over the next decade, biennial reporting and five-yearly reviews by the Swan River Trust to the public and the Minister for the Environment will offer transparency about what is being delivered under the River Protection Strategy for Derbal Yirragan Djarlgarro (Swan Canning river system).

Reviews will be conducted after five and ten years to evaluate effectiveness of the River Protection Strategy. Biennial reports will be compiled using data collected during the implementation of the overarching River Protection Strategy and associated implementation plans. The reported information will be publicly available.

Implementation plans

Actions to improve the management of catchments, water quality and quantity, biodiversity, and foreshores to deliver lifestyle, culture, and connection to nature values will be outlined in the River Protection Strategy implementation plans. In consultation with stakeholders, these shorter-term implementation plans will be developed by DBCA on behalf of the Swan River Trust.

The plans will be prepared at a river reach scale to enable numerous stakeholders to collaborate in a practical and efficient manner for the benefit of the Derbal Yirragan Djarlgarro (Swan Canning river system). Working at a river reach scale will enable delivery partners to collectively share, measure, track, and demonstrate progress towards achieving the River Protection Strategy. Implementation working groups will be established and will include State and local governments, Noongar partners, and NRM groups.

Implementation plans will also detail the management actions and underlying projects necessary for executing the overarching River Protection Strategy, the optimal location of these management actions and projects in the landscape and the delivery timelines.

The implementation plans will outline the roles, responsibilities, and resources for the management actions and underlying projects, marking the next steps towards our collective vision of 'A healthy, thriving river system for nature and people, to be cared for and enjoyed as the heart of our community'.



"These waterways serve as a lifeline through spiritual and cultural connections for our community."
Noongar elder, Geri Hayden

"A healthy natural environment for future generations to enjoy because of action we have taken now to preserve and protect it."
Community survey

"Swan Canning river should be a place where people find happiness."
Community survey

"[My vision is to have] healthy, accessible rivers that are thriving spaces for future generations who actively maintain the rivers. They should be the envy of the world."
Community survey

"The sun is shining, the breeze blowing the branches and leaves of the trees. The river flowing, trickling, glistening puts my soul at ease."
Whadjuk Aboriginal Corporation Cultural Advice Committee member, Karen Morich

"I hope that the next generation will continue to look after the rivers. It is part of the ecosystem. It needs to be looked after. Like looking after our own home."
Community survey

"A haven for native wildlife, where people can recreate, interact with nature and enjoy the views in a responsible and respectful manner."
Community survey

"It is important that people not just acknowledge but also respect Noongar culture and the vast knowledge that we have in caring for our Country and rivers."
Noongar man, Ben Ugle

"The river is something we should all be proud of and should all feel inspired to protect and conserve. I'd love to see a river that everyone can enjoy no matter where they are from, and everyone feels proud of."
Community survey

"A river of life, for everyone, forever."
Community survey

"To take a custodian role over the health of the river and match any activity on or around the river with the principles of caring for Country in mind."
Community survey

Banksia
Photo – DBCA

GLOSSARY

Avon Catchment	The catchment area for the Avon River, as defined in the figure on pages 12 and 13.
Catchment/river system	The total catchment area is approximately 126,000km^2, inclusive of both the Swan Canning Catchment and Avon Catchment, as defined by the SCRM Act.
Dewatering	The process of removing groundwater from an aquifer to lower the groundwater table, particularly during construction and development.
Ecological linkages	A series of (both contiguous and non-contiguous) corridors and patches which, by virtue of their proximity to each other, act as stepping stones of habitat that facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape.
Foreshore area	The land that adjoins or directly influences a waterway. It is the area of transition between the edge of the waterway channel and the furthest extent of riparian vegetation, the floodplain and riverine landforms; or a negotiated area endorsed by the Department of Biodiversity, Conservation and Attractions where it relates to the Swan Canning Development Control Area (or Department of Water and Environmental Regulation when it is outside of the DCA).
Foreshore reserve	All or part of a foreshore area that is publicly owned and vested with a local government or State Government department. It may be reserved under a planning scheme, for purposes such as foreshore protection and/or public recreation.
Groundwater	Water that exists underground in which all pores and fractures of soil and rock are saturated with water.
Implementation plans	Detail the management actions and underlying actions necessary for executing the overarching strategy, the optimal location of these management actions and projects in the landscape, the timelines for delivery, roles and responsibilities and required resources.
Locality policy	Policy that contains locality-specific guidance for land use and development along sections of the Development Control Area.
Management target	A quantifiable change that will indicate progress towards meeting the 10-year objectives.
Nature-based/ positive design/ solutions	Approaches in architecture, urban planning, and landscape design that aim to enhance biodiversity, restore ecosystems, and create environments that support both human and ecological health. These designs go beyond minimising harm to actively improving the natural environment.
Objective	High-level statement of where we would like to be for that value enabler in 10 years.
Retrofitting	Using additional or alternative infrastructure or approaches that are installed or undertaken on existing infrastructure or in an existing development. Retrofitting can occur at the lot, block/ neighbourhood, or catchment scale.
River reach	A subsection of the river system that will be defined by ecological, topographical, and cultural factors, as well as land tenure boundaries.
Riverpark shoreline	The area of Crown land in the Riverpark extending from 2m below the high-water mark to 2m above the high-water mark, measured horizontally above the surface of the land and including the surface of any structure built to retain the land.
Strategies	High-level actions that people envision, plan, and commit to achieve. They are what is required to be done in order to achieve the River Protection Strategy's vision.
Strategic documents	Refers to the River Protection Strategy; a management programme; and documents approved under section 55 of the SCRM Act. These documents are approved by the Minister for the Environment under the SCRM Act.
Strategic goal	High-level and long-term aim that guides and aligns efforts towards achieving the strategy's vision and objectives.
Stormwater	Water that flows over ground surfaces and in natural streams and drains, as a direct result of rainfall over a catchment. Stormwater consists of rainfall runoff and any material (soluble and insoluble) mobilised in its path of flow.
Surface water	Water flowing or held in waterways or wetlands on the landscape surface.
Swan Canning Catchment	The catchment area for the Swan and Canning rivers, as defined in the figure on pages 12 and 13.
Tributary	A waterway that flows into a larger waterway.
Value	An element identified through community and stakeholder engagement to be of high importance to the protection of the river system or human health.
Wastewater	Sewage, and does not include stormwater, surface water, or groundwater of a type that is ordinarily drained from land as part of the provision of a separate drainage service. Sewage is any kind of sewage, faecal matter, or urine.
Water sensitive design	An approach to the planning and design of urban environments that integrates the urban water cycle (including water supply, wastewater, groundwater, and stormwater) into built and natural landscapes to provide multiple benefits to the community and the environment.
Waterway	Any river, creek, stream, or brook, including its foreshore area or reserve, floodplain, estuary, and inlet. This includes systems that flow permanently, for part of the year, or occasionally, and parts of the waterway that have been artificially modified.
Wetland	An area of seasonally, intermittently, or permanently waterlogged or inundated land, whether natural or otherwise, and includes lakes, swamps, marshes, springs, damplands, and sumplands.
Wetland buffer	An area of terrestrial land immediately surrounding a wetland that provides spatial separation between the wetland and adjacent land use(s).

LEGISLATION APPLICABLE TO THE RIVER SYSTEM

River reserve

Riverpark

Development Control Area (DCA)

Catchment

Swan and Canning Rivers Management Act 2006 (WA)

- Ensures the protection of the ecological and community benefits and amenity of the Riverpark.
- Establishes the Swan River Trust as the vesting body for the Swan Canning Riverpark and an advisory body to the Minister for Environment that provides high-level, independent advice on the protection of the River reserve and related developments.
- Defines the boundaries of the River reserve, Riverpark, development control area (DCA) and Catchment area.
- Outlines the management responsibilities of the Riverpark, including the granting of leases over the River reserve.
- Ensures joint management of the Riverpark shoreline and enables works to provide protection and erosion control for riverbanks.
- Regulates works, acts and activities that are proposed within the Swan Canning Riverpark and development control area through permits.
- Approves and provides the regulatory framework for development within the Swan Canning development control area.
- Enables the development of strategic documents that establish coordinated management arrangements necessary for the protection and enhancement of the ecological and community benefits and amenity of the Riverpark, such as the River Protection Strategy and Management Programmes.

Biodiversity Conservation Act 2016 (WA)

- Conserves and protects WA's biodiversity, including native and specially protected species and threatened ecological communities.
- Enables the development of recovery plans and biodiversity management programs to provide for the conservation, protection and management of native species, ecological communities, and critical habitats.
- Regulates wildlife interactions and disturbance, including establishing separation distances from dolphins and other marine fauna.

Marine fauna in the River reserve

Threatened Ecological Communities throughout the Swan Canning river system

Conservation and Land Management Act 1984 (WA)

- Establishes a body in which the State's conservation reserves are vested in (Conservation and Parks Commission).
- Outlines the management responsibilities for the State's conservation reserves, including leasing of land and regulation of activities.
- Allows for Joint Management Agreements for management of the conservation estate with Traditional Owners.
- Enables management plans for terrestrial parks and reserves to be developed for the Minister for Environment (e.g. the Swan Estuary Marine Park and Adjacent Nature Reserves Management Plan 1999-2009).

Pelican Point Nature Reserve, Matilda Bay Reserve, Canning River Regional Park, Walyunga National Park, Swan Estuary Marine Park (Alfred Cove, Pelican Point and Milyu)

Contaminated Sites Act 2003 (WA)

- Regulates the identification, reporting, classification and management of contaminated sites.
- Provides technical advice to land use planning authorities to support the management of acid sulfate soils.

Contaminated sites

Acid sulfate soils risk areas

Emergency Management Act 2005 (WA)

- Ensures the provision of a Hazard Management Agency for maritime environmental emergencies, which includes marine oil pollution and marine transport emergencies in the River reserve.

Environment Protection and Biodiversity Conservation Act 1999 (Cth)

- Australia's main environmental law.
- Provides legal framework to protect and manage unique plants, animals, habitats and places, including heritage sites, marine areas and some wetlands.

Environmental Protection Act 1986 (WA)

- Protects the environment through the regulation of single-use plastics, unauthorised discharges or emissions, and responses to serious pollution incidents.
- Regulates the clearing of native vegetation through permits.
- Regulates prescribed premises through works approvals and licences.
- Establishes the Environmental Protection Authority (EPA) to provide independent advice to government on environmental matters.
- Enables statutory (Environmental Protection Policies) and non-statutory (State Environmental Protection Policies) policies to protect the environment to be developed.
- Allows environmental impact assessments to be conducted.
- Enables compliance with conditions for Ministerial approvals to be monitored.

Pollution of Waters by Oil and Noxious Substances Act 1987 (WA)

- Protects the environment from and manages hazards resulting from oil pollution.

Soil and Land Conservation Act 1945 (WA)

- Through regulation, prevent and mitigate land degradation including erosion, salinity, eutrophication, flooding and loss of vegetation.

Waterways Conservation Act 1976 (WA)

- Enables the declaration of areas as Management Areas, such as the Avon River Management Area, to ensure the conservation, maintenance and management of those areas.
- Regulates dredging, reclamation, dewatering, drainage, excavation and construction activities in or over the rivers in declared management areas via licences

Avon River Management Area (within the Swan Canning river system)

Australian Maritime Safety Authority Act 1990 (Cth)

- Establishes Australia's national regulatory body for maritime safety that promotes the safety and protection of our marine environment.

Jetties Act 1926 (WA)

- Regulates the use of jetties through licences.

Main Roads Act 1930 (WA)

- Makes provisions for the construction, maintenance, and supervision of bridges, highways, main roads, secondary roads and other roads, including their shared and cycle paths, to ensure that the road network safely links goods, people and places, facilitates industrial, commercial and business development, and enables efficient access to other modes of transport.
- Outlines the responsibilities for the management of all highways and main roads, including freeways and bridges, as well as roads that are not highways and main roads, including rail bridges.

The State's network of highways and main roads, including shared paths, cycle paths and similar paths that form part of that network over, in or adjacent to the River reserve, Riverpark, Swan Canning development control area or throughout the Swan Canning river system. Kwinana Freeway is a prominent example.

Marine and Harbours Act 1981 (WA)

- Promotes efficient and safe shipping, effective boating and port administration by ensuring necessary facilities and services are provided.

Barrack Square

Marine Safety (Domestic Commercial Vessel) National Law Act 2012 (Cth)

- Provides certificates of survey and certificates of operation for domestic commercial vessels.

Port Authorities Act 1999 (WA)

- Establishes the Port Authorities, their functions and the boundaries of the areas they control and manage.

Public Health Act 2016 / Health Act 1911 (WA)

- Provides public health advice on issues potentially affecting water quality such as algal blooms, and contaminated sites.

Public Transport Authority Act 2003 (WA)

- Ensures the provision of public transport, including ferries.

Shipping and Pilotage Act 1967 (WA)

- Enables declaration of boat harbours, mooring control areas and ports.

Water Corporations Act 1995 (WA)

- Establishes corporations with the function of providing water services (water supply, sewerage, irrigation or drainage services).
- Ensures water corporations can manage Western Australia's drinking water supplies to provide a safe, high-quality product that consistently meets Australian Drinking Water Guidelines and other consumer and regulatory standards (i.e. treat, store and distribute drinking water) as well as manage wastewater (i.e. collect, store, treat and dispose of wastewater).

Water Services Act 2012 (WA)

- Regulates water service providers through the administration of licences.

Western Australian Marine Act 1982 (WA)

- Outlines the responsibilities for marine safety (in conjunction with the Australian Maritime Safety Authority).
- Outlines the responsibilities for coastal and estuarine facilities.
- Regulates the installation, removal and use of private moorings, as well as courtesy, emergency, rental and recreational or commercial moorings, including the administration of mooring licences and the associated waiting list.

SERVICES, INFRASTRUCTURE & INDUSTRY REGULATION

Western Australian Tourism Commission Act 1983 (WA)

- Establishes a Western Australian Tourism Commission responsible for promoting Western Australia as an extraordinary holiday and business event destination.
- Outlines the rules for developing, attracting and promoting major sporting, arts, cultural and business events; and supporting the development of significant tourism infrastructure and projects.
- Enables the WA Tourism Commission to act as an agent for any person engaged in the provision of travel or tourism facilities.
- Enables the provision of grants or loans to any person, local government or authority for the purposes of tourism.

PLANNING, DEVELOPMENT AND LAND MANAGEMENT

Land Administration Act 1997 (WA)

- Ensures the care, control and management of the Parks and Recreation reserve and other public reserves as well as enabling those land managers the power to lease, sub-lease or licence that land in line with that reserve purpose.

Local Government Act 1995 (WA)

- Ensures that community facilities are provided and maintained.
- Enables the management of commercial, residential and industrial premises.
- Enables the creation of local laws that concern public health, such as monitoring or management of human health issues, including noise pollution, water quality in local swimming beaches and mosquito management.

Metropolitan Redevelopment Authority Act 2011 (WA)

- Enables the responsible Minister to recommend redevelopment areas to be declared.
- Establishes a state agency with planning, development control, land acquisition and disposal and other redevelopment projects in respect of redevelopment areas.

Elizabeth Quay (Central Perth redevelopment area), Riverside (Central Perth redevelopment area), East Perth Power Station (Central Perth redevelopment area), Wungong Urban (Armadale redevelopment area), and Midland (Midland redevelopment area)

Planning and Development Act 2005 (WA)

- The lead legislation for land use planning and development in WA.
- Establishes a statutory authority that coordinates planning for future land use (the Western Australian Planning Commission).
- Enables the development and maintenance of State Planning Policies, which provides a policy framework to ensure that planning, land use and development maintain and enhance the health, amenity and landscape values of the river.
- Regulates the way in which communities can be built through developing and implementing policy and strategic plans.
- Ensures strategic planning for urban, rural and regional land use planning and land development matters.
- Ensures that planning and decision-making is consistent with, or gives due regard to, decisions made or strategic documents developed under the *Swan and Canning Rivers Management Act 2006*.
- Supports integrated planning and coordinates the development and delivery of land supply, affordable housing, and infrastructure to ensure well-planned and connected communities, particularly in the regional areas of the State.
- Ensures that public and private land is used appropriately and consistently, including location of industry, commerce, residential services, community facilities and necessary infrastructure.
- Approves planning, subdivision and development applications.
- Administers the Metropolitan Region Improvement Fund that can and is used to acquire land for public purposes, including foreshore reserves and parks, and Bush Forever sites. Land acquired through the fund may be vested with various management authorities, depending on the purposes for which the land was acquired.

Swan Valley Planning Act 2020 (WA)

- Enables the Swan Valley Planning Framework that guides future development and new tourism and hospitality opportunities, and protects long-term agricultural production in the region.

CULTURE AND HERITAGE

Aboriginal Heritage Act 1972 (WA)

- Improves service delivery and facilitates developing policy and programs that deliver sustainable economic, environmental and social benefits to Aboriginal communities.
- Ensures the public and private sectors and the community are advised on the management of Aboriginal heritage.
- Maintains a Register of Aboriginal Sites.
- Helps Aboriginal families and native title parties access information that may help them in reuniting families or demonstrating their connections to Country.
- Ensures developers undertake engagement with Aboriginal people, including building this into development planning processes where required.

Registered Aboriginal sites and places, such as the Swan and Canning rivers and many of their connected waterways

Heritage Act 2018 (WA)

- Establishes the Heritage Council as the State's expert body on matters concerning places of cultural heritage significance.
- Recognises the importance of, and promotes understanding and appreciation of, Western Australia's cultural heritage.
- Provides for the identification and documentation of places of cultural heritage significance and for the conservation, use, development and adaptation of such places.

Heritage places listed in the State Register of Heritage Places

Maritime Archaeology Act 1973 (under review at time of publication) (WA)

- Protects the wrecks and artefacts of historic ships lost before 1900 and maritime archaeological sites associated with a historic ship, in Western Australian State waters.

A stone barge wreck offshore from Point Walter, the earliest known shipwreck of the Swan River

Noongar (Koorah, Nitja, Boordahwan) (Past, Present, Future) Recognition Act 2016 (WA)

- Formally recognises the Noongar people as the Traditional Owners of the Noongar lands.
- Through recognition, allows for the establishment of the South West Native Title Settlement and subsequent establishment of individual Indigenous Land Use Agreements (ILUAs) and Aboriginal corporations. The Catchment area largely covers Country within the Whadjuk, Ballardong, Yued and Gnaala Karla Booja ILUAs.
- Recognises:

- the living cultural, spiritual, familial and social relationship that the Noongar people have with the Noongar lands; and
- the significant and unique contribution that the Noongar people have made, are making, and will continue to make, to the heritage, cultural identity, community and economy of the State.

Underwater Cultural Heritage Act 2018 (Cth)

- Ensures Australia's underwater cultural inheritance is protected for future generations.

City of Perth, a side wheel paddle steamer, in the waters below Rocky Bay

RESOURCE MANAGEMENT

Agricultural Produce Commission Act 1988 (WA)

- Guides the sustainability and profitability of the State's agriculture, food and fibre sectors.
- Encourages appropriate land, irrigation, and fertiliser practices.

Biosecurity and Agricultural Management Act 2007 (WA)

- Manages biosecurity risks associated with plant and animal pest and diseases including serious noxious weeds in Western Australia, through declared plants policies and regulations and by providing research and technical advice on weed issues (including Invasive Species Program and Pest Watch).

Country Areas Water Supply Act 1947 (WA)

- Safeguards water supplies to country catchment areas.
- Regulates the clearing of vegetation on controlled land or water reserves specified within the Act.

The Mundaring Weir Catchment Area is specified as controlled land.

Fish Resources Management Act 1994 (WA)

- Develops and manages fisheries and aquaculture in a sustainable way.
- Shares and conserves the State's fish and other aquatic resources and their habitats for the benefit of present and future generations.
- Manages the risk posed by noxious (non-native) fish. 'Fish' is defined as an aquatic organism of any species (whether alive or dead).

Metropolitan Water Supply, Sewerage, and Drainage Act 1909 (WA)

- Protects the State's drinking water resources from contamination.
- Informs the allocation of the State's water resources and ensures there is an adequate supply of surface water and groundwater to meet the needs of the community and the environment, now and in the future.

Mining Act 1978 (WA)

- Encourages investment in resource exploitation.
- Regulates extractive industries.
- Ensures an equitable and secure titles system for mining, petroleum and geothermal industries.
- Mining activities regulated under this Act are subject to the *Environmental Protection Act 1986* to ensure best environmental management is promoted through environmental regulatory and policy services.

There are several mining tenements across land in the upper reaches of the Swan and Canning rivers and geothermal resources underlying the Swan Coastal Plain

Rights in Water and Irrigation Act 1914 (WA)

- Regulates the taking of surface water and groundwater through licences.
- Regulates interference with the bed and banks of watercourses and wetlands via permits.

Water Agencies (Powers) Act 1984 (WA)

- Describes the general functions of the Minister for Water to conserve, protect, manage and assess water resources, including watercourses and wetlands.
- Provides works powers for water resources management.

Paddling on the Derbal Yirragan in Bicton
Photo – Gary Williams