

TZROY • COMET • NOGOA • MACKENZIE • ISAAC • DAWSON • C

Fitzroy Basin Report Card

JULY 2023 - JUNE 2024

fitzroy
partnership
for river health

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The first stewards

The First Nations people have cared for this continent for over 65,000 years and we pay our respects to them, their cultures and Elders past, present and emerging. We acknowledge the Barada Barna, Widi, Jangga, Barada Kabalbara Yetimarala, Gaangalu Nation People, Darumbal, Koinjmal, Woppaburra, First Nations Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda People, Wulli Wulli Nation People, Wadja, Iman/Jiman, Western Kangoulu, Kanolu, Bidjara, Karingbal and Wangan and Jagalingou (Clermont-Belyando) Area People as the First Nations peoples of the waters, and lands, within our reporting region.



OUR CATCHMENT at a glance



Our partnership was formed in 2012, tasked with developing the first regional Queensland report card to monitor the ecosystem health of waterways draining to the Great Barrier Reef lagoon. Today, there are five regional report cards that work to inform management decisions, to improve water quality and ecosystem health, and raise awareness of waterway conditions in regions of the Great Barrier Reef catchment.

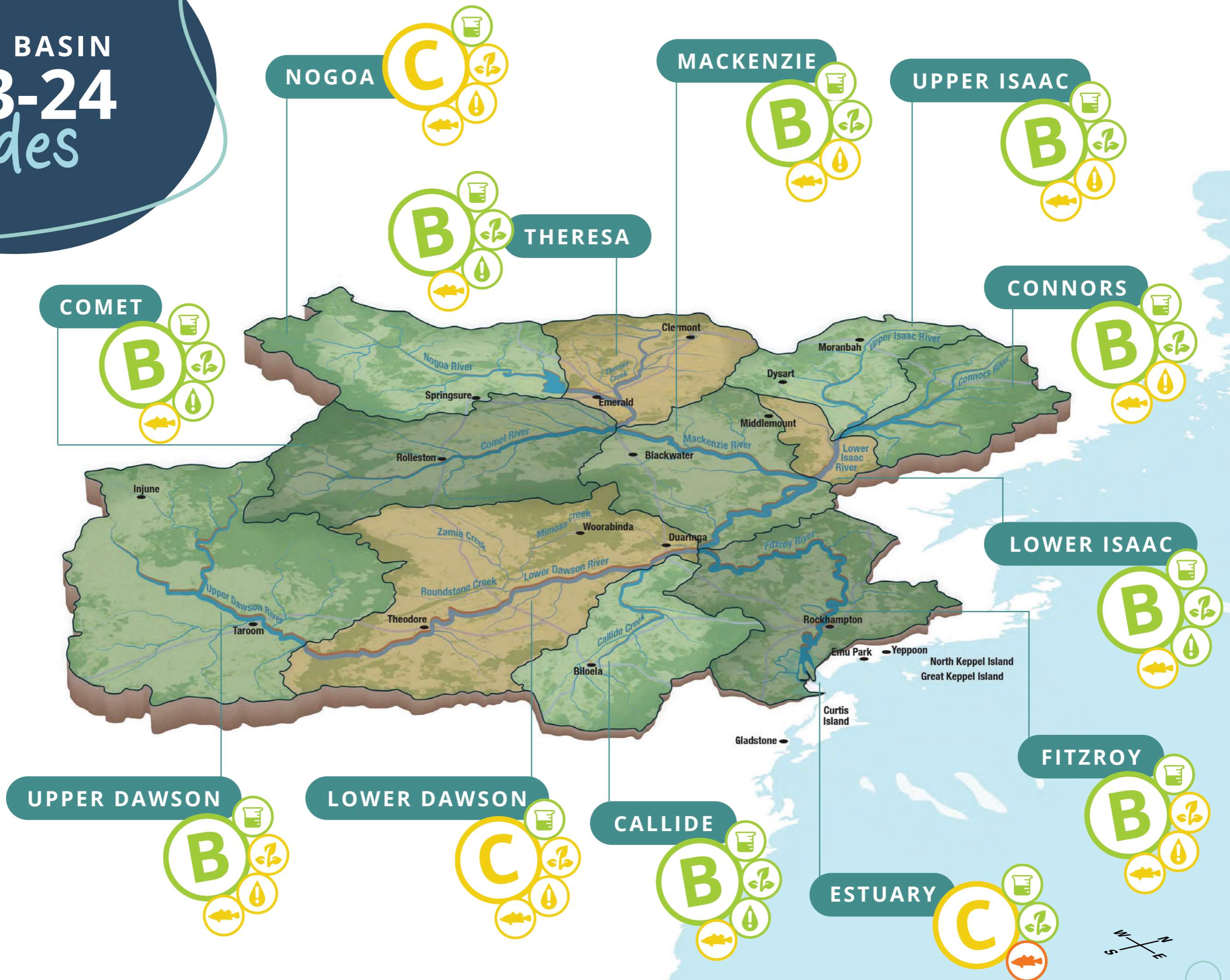
At over 142 600 km² the Fitzroy Basin is the second largest seaward draining basin in Australia and the largest draining to the Great Barrier Reef.

FITZROY BASIN 2023-24 Grades

- A** Excellent
- B** Good
- C** Fair
- D** Poor
- E** Fail
- N** No data

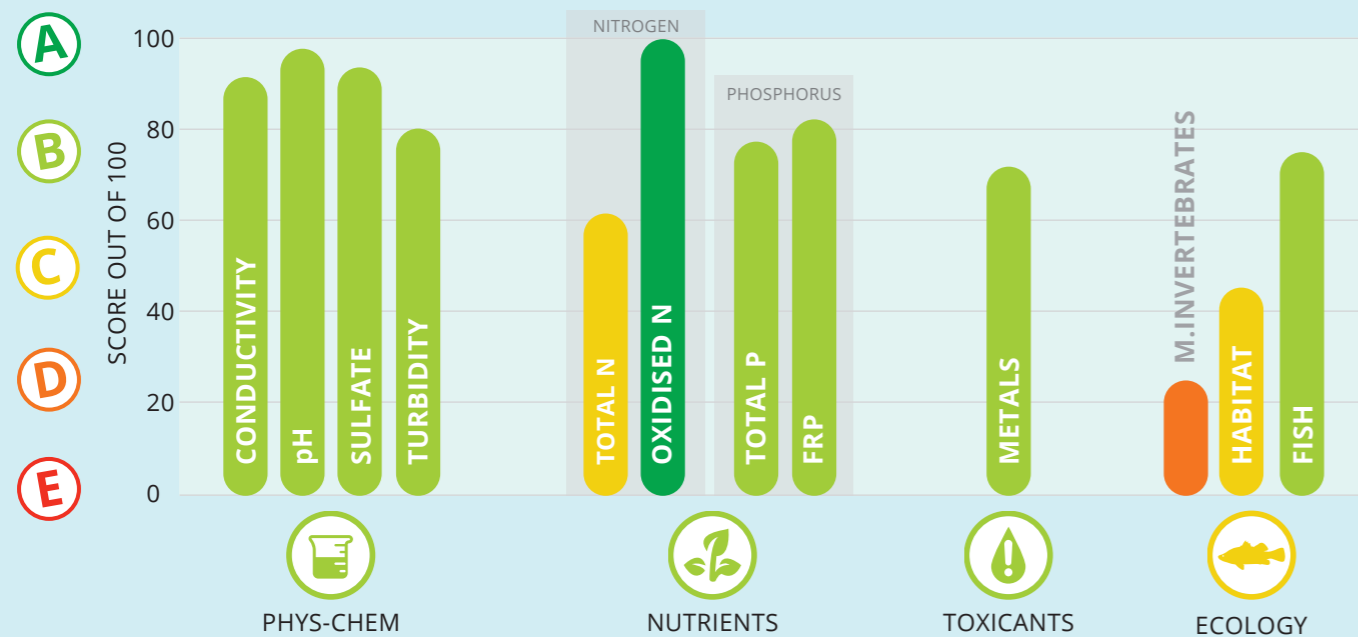
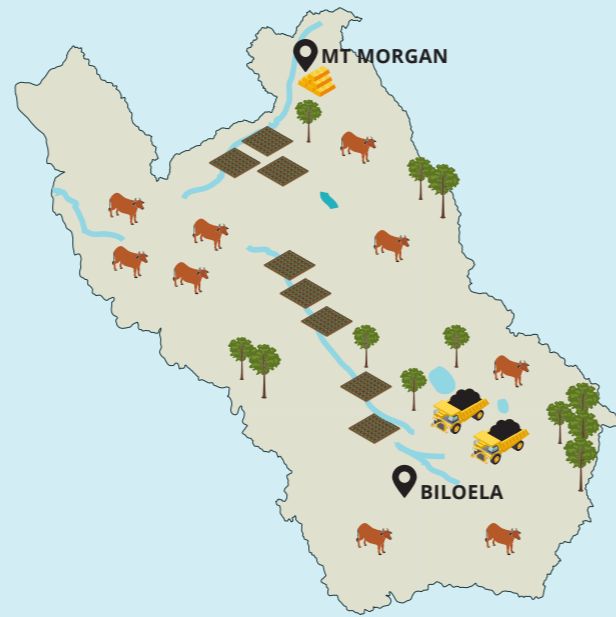
- Phys-Chem
- Nutrients
- Toxicants
- Ecology

- Rivers and creeks
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CALLIDE Catchment B

The Callide catchment, located in the south eastern most part of the region, encompasses the Dee River, Don River, and Callide Creek. At its centre lies Biloela, situated between the Callide and Kariboe Creeks. Water from the catchment flows northward, ultimately joining the Dawson River just downstream of Baralaba. A fertile floodplain stretches from Biloela to the Dawson River's junction. Rainfall across the catchment varies, with the eastern ranges, including Kroombit Tops, receiving over 1000 mm annually, while the western areas experience around 600 mm.



SALINITY improving

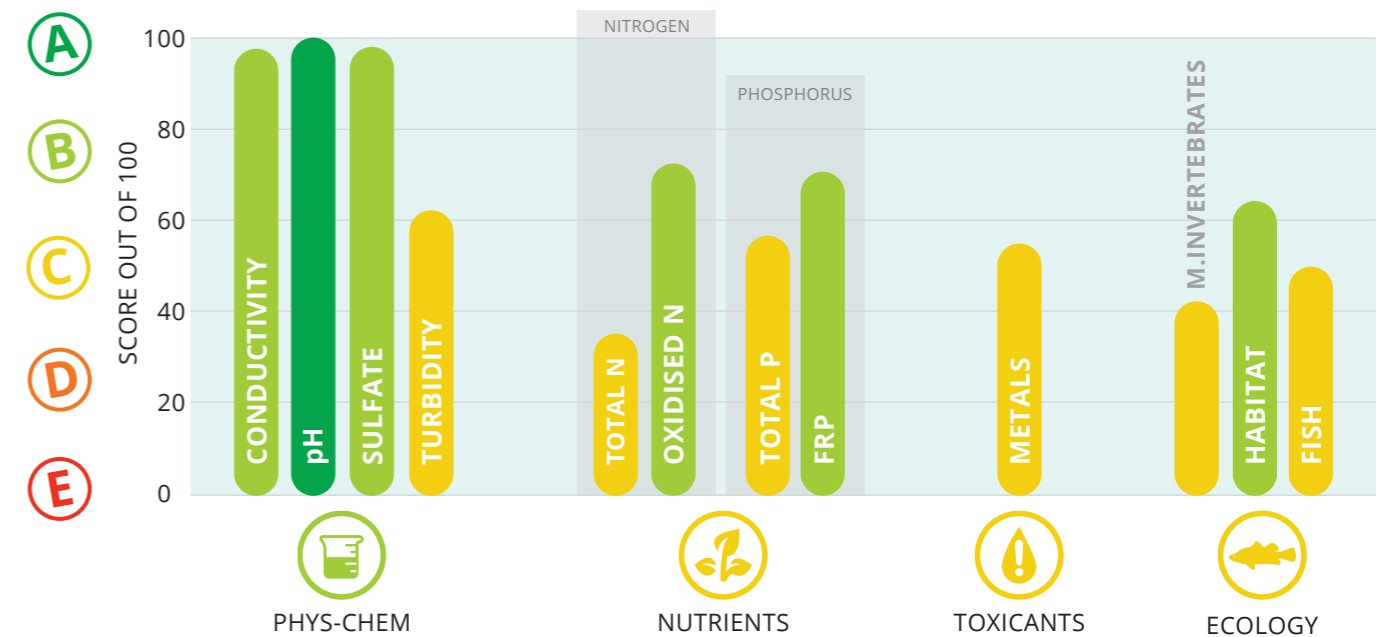
For the past 14 years, the Callide catchment has experienced consistently high Electrical Conductivity (EC), indicating elevated dissolved salt levels. Over time, these levels have reduced, improving to a score of 93 this year.



Spotted!
A Krefft's River turtle was spotted at one site in the Callide catchment this reporting period!

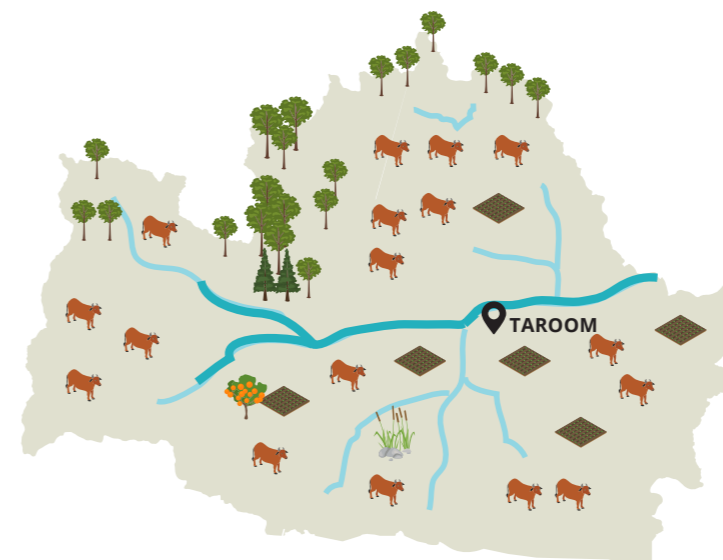
UPPER DAWSON Catchment B

The Upper Dawson catchment, located in the southern part of the Fitzroy Basin, sees the river flowing eastward from Injune, passing through Taroom before reaching the Lower Dawson catchment. Several major creeks from the eastern side of the catchment also flow northward, joining the Dawson near Taroom. Annual rainfall averages 800 mm in the eastern areas, gradually decreasing to around 600 mm in the southwest.



NUTRIENT scores decline

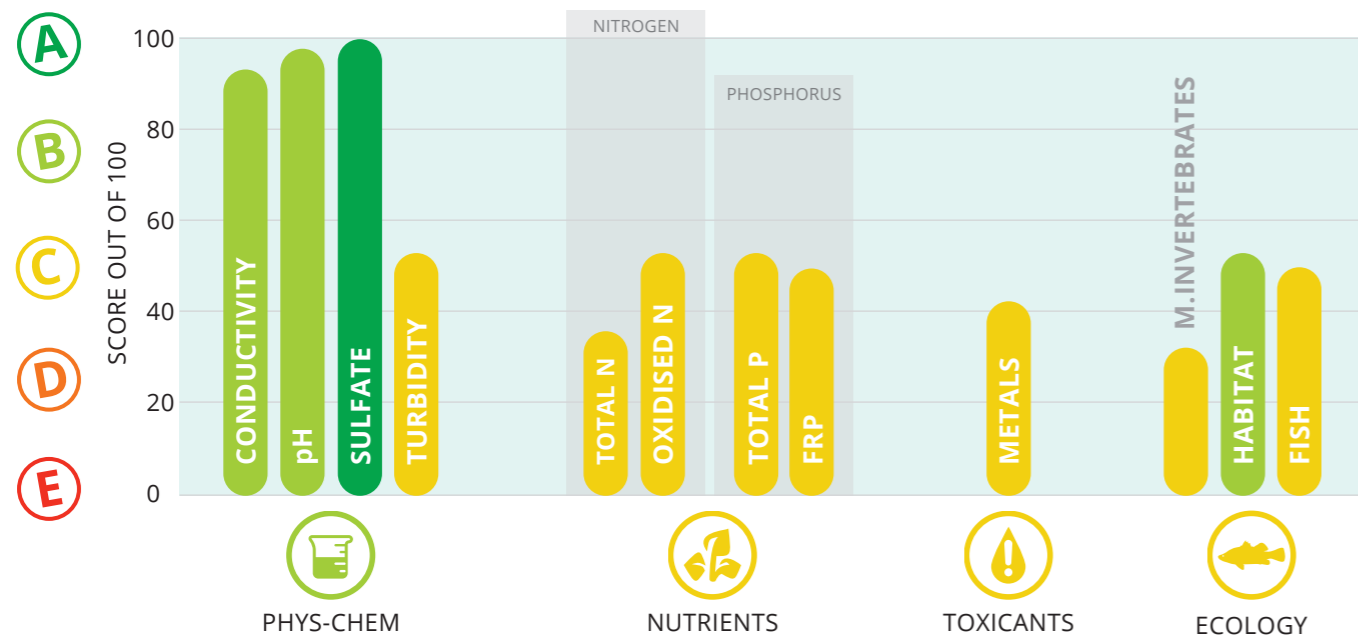
Nutrient levels in the Upper Dawson continue to rise. The score dropped slightly from 63 in 2023 to 60 this year in a declining trend.



LOWER DAWSON Catchment

C

The Dawson River winds its way through the valley, passing the towns of Theodore, Moura, and Baralaba. Glebe Weir signals the transition from the Upper Dawson to the Lower Dawson catchment, just upstream of Isla Gorge. Running north to south, the Dawson Range divides the Lower Dawson catchment in two. The river converges with the Mackenzie northeast of Duaringa, where the Fitzroy catchment begins. Average annual rainfall across the region ranges between 600 and 800 mm.



LOWER ISAAC Catchment

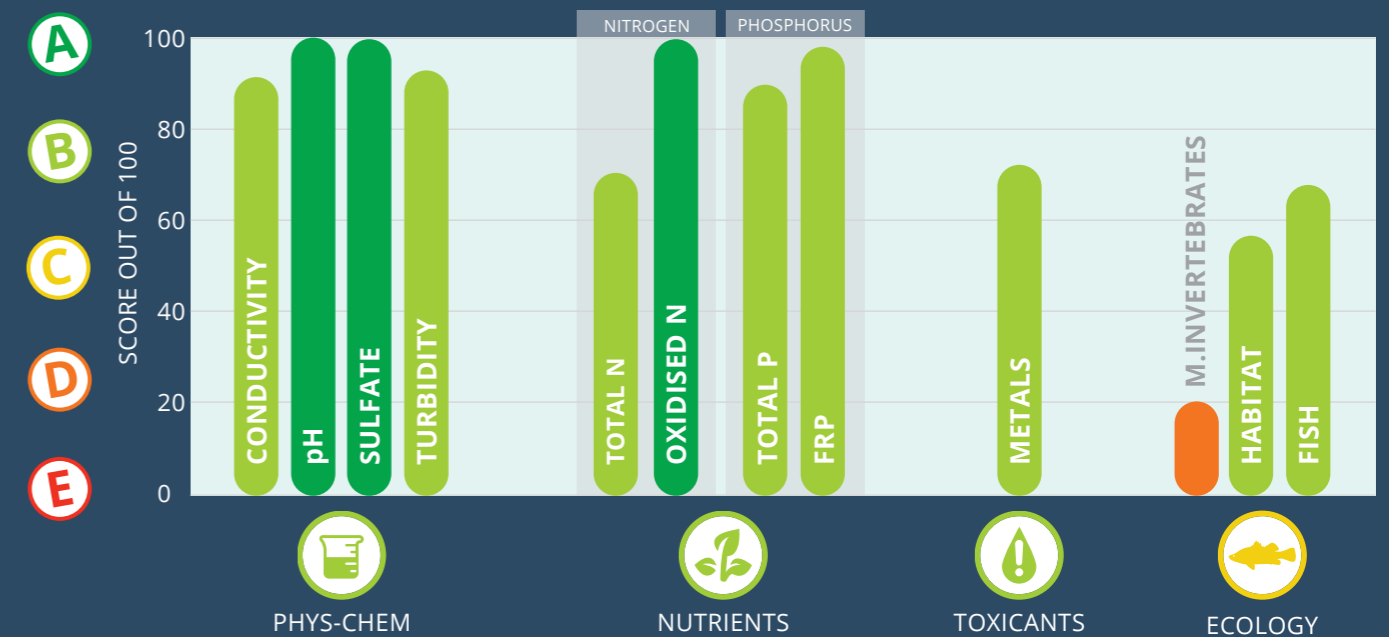
B

The Lower Isaac catchment starts where the Connors River merges with the Isaac River in the northern part of the Basin, from which the Isaac flows southeast. Along this stretch, several creeks, including Clarke and Rolf creeks, feed into the heavily braided Isaac River from both the east and west. Annual rainfall exceeds 1000 mm in the Eastern Ranges, but decreases sharply to around 600 mm in the western areas.



Toxicants

The Lower Isaac's toxicant score improved in 2024, with Aluminium scores improving from a D last year to a B. This improvement is likely due to increased flow and freshwater dilution in the system.



13

AI

Aluminium

26,982

Toxicants

Over 14 years of reporting in the Lower Dawson, Aluminium, Copper, and Iron have exceeded guideline values. This year, Aluminium improved to a score of 77, while Copper declined slightly to 42, grading a C.



Spotted!

The native Pacific Blue Eye fish was observed in the Lower Dawson catchment this reporting period!



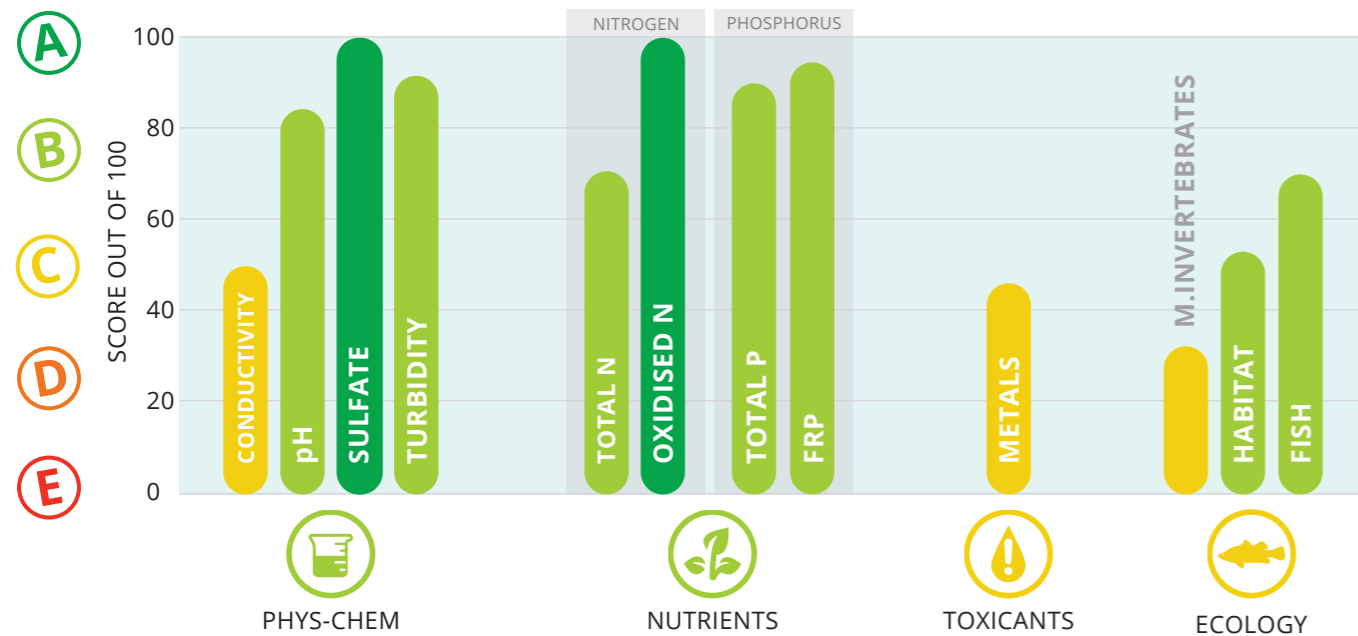
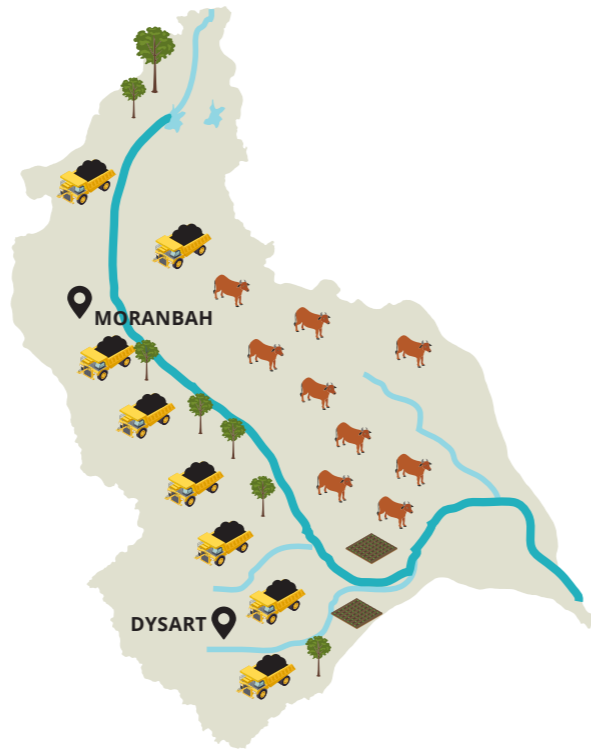
Spotted!

A sighting of the threatened White-Throated Snapping turtle, a rare freshwater species, was recorded at a location in the Lower Isaac.



UPPER ISAAC Catchment B

The Upper Isaac catchment lies in the northwest of the Basin, with the Isaac River flowing roughly southward past Burton Dam and east of Moranbah. Along its course, the river is fed by several creeks, including Stephens Creek, which runs near Dysart, before the Isaac converges with the Connors River, marking the beginning of the Lower Isaac catchment. Annual rainfall averages less than 600 mm across most of the region, except for the northeastern ranges, which receive over 1000 mm.



29

Cu

Copper

63,546

Toxicants

Copper was the primary toxicant responsible for the decline in the Upper Isaac's overall toxicant score in 2024. Elevated Copper levels led to a toxicant score of 45 in the region. Aluminium levels also increased, causing the score to drop from 62 last year to 50 this year.



PH & SALTS on the rise

In 2024, pH scores declined, indicating that pH levels occasionally fell outside of guideline values. Electrical Conductivity scores also dropped to 55, the lowest score recorded in 14 years for the Upper Isaac. This decrease could be attributed to first flush flows following a dry spell.

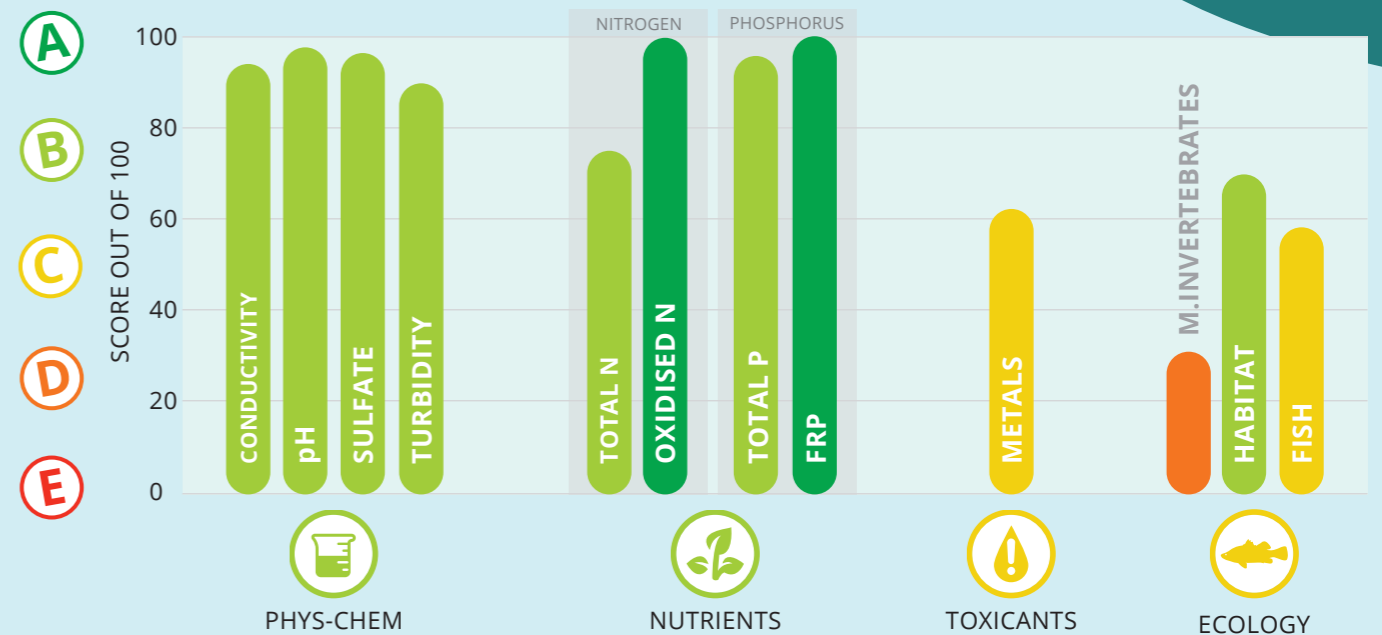
CONNORS Catchment B

The Connors catchment, located in the northeast of the Fitzroy Basin, is bordered by the Connors Range to the east and the Upper Isaac catchment to the west. The Connors River flows southward, merging with the Isaac River just south of Pink Lagoon. The eastern range of the Connors catchment receives over 1000 mm of rainfall annually, contributing around 50% of the Fitzroy Basin's total average flow.



RAINING champion

The Connors catchment boasts the highest rainfall in the Fitzroy Basin. This year, January recorded the heaviest average monthly rainfall, with an impressive 198 mm.



Credit: Christine Krebs

Both the endangered Platypus and White-Throated Snapping turtle were observed in the Connors catchment.

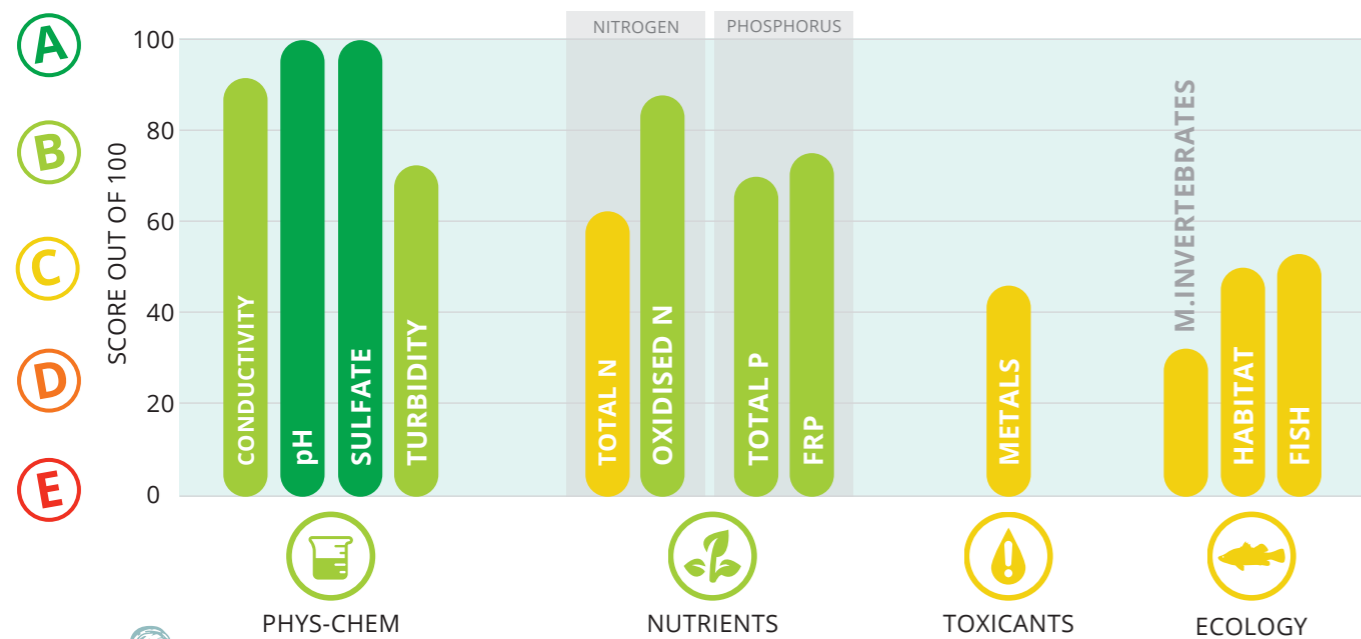
Toxicants

High concentrations of Copper and Aluminium, key toxicants in the Connors catchment, were detected during periods of heavy rainfall in 2024, likely linked to runoff. However, both Copper and Aluminium scores showed slight improvements this year.

MACKENZIE Catchment



The Mackenzie catchment is located in the heart of the Fitzroy Basin, starting at the junction of the Comet and Nogoia Rivers. It flows past several major creeks, including Blackwater Creek, before joining the Isaac River. From there, it flows southeast and eventually merges with the Dawson River to create the Fitzroy River. The catchment receives over 1000 mm of annual rainfall in the northeastern ranges, which quickly decreases to about 500 mm in the west.



METALS on the move IN THE MACKENZIE

High levels of Aluminium and Copper have been detected in the Mackenzie catchment over the past 14 years, with fluctuations in their concentrations. Both metals showed improvement in 2024 compared to last year, though Copper's score of 43 contributed to a C grade for toxicants overall.



This year, a rare endemic fish species, the Leathery Grunter (*Scortum hillei*), was observed at a site in the Mackenzie.



THERESA Catchment

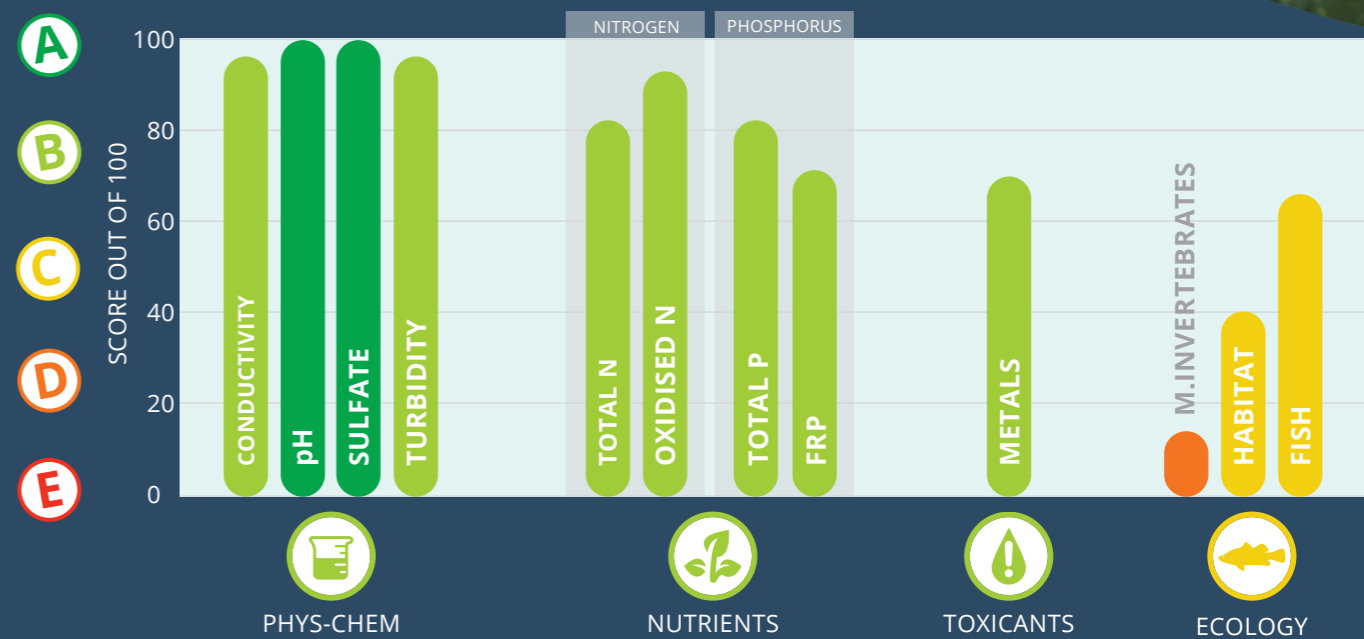


The Theresa catchment is situated in the west-northwest of the Fitzroy Basin, flowing southeast toward its junction with the Nogoia River. It also encompasses the section of the Nogoia River downstream of Fairbairn Dam. The catchment experiences relatively low average annual rainfall, ranging between 500 and 600 mm.

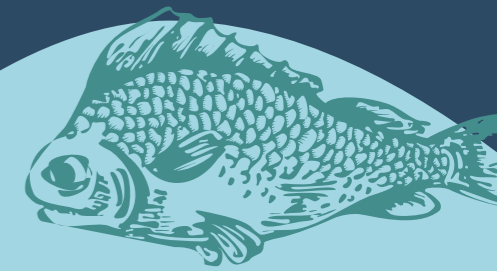


PHYS-CHEM most improved

Physical-chemical scores have shown a steady improvement over time across all parameters. This year, the Theresa catchment achieved an impressive score of 99 for phys-chem.



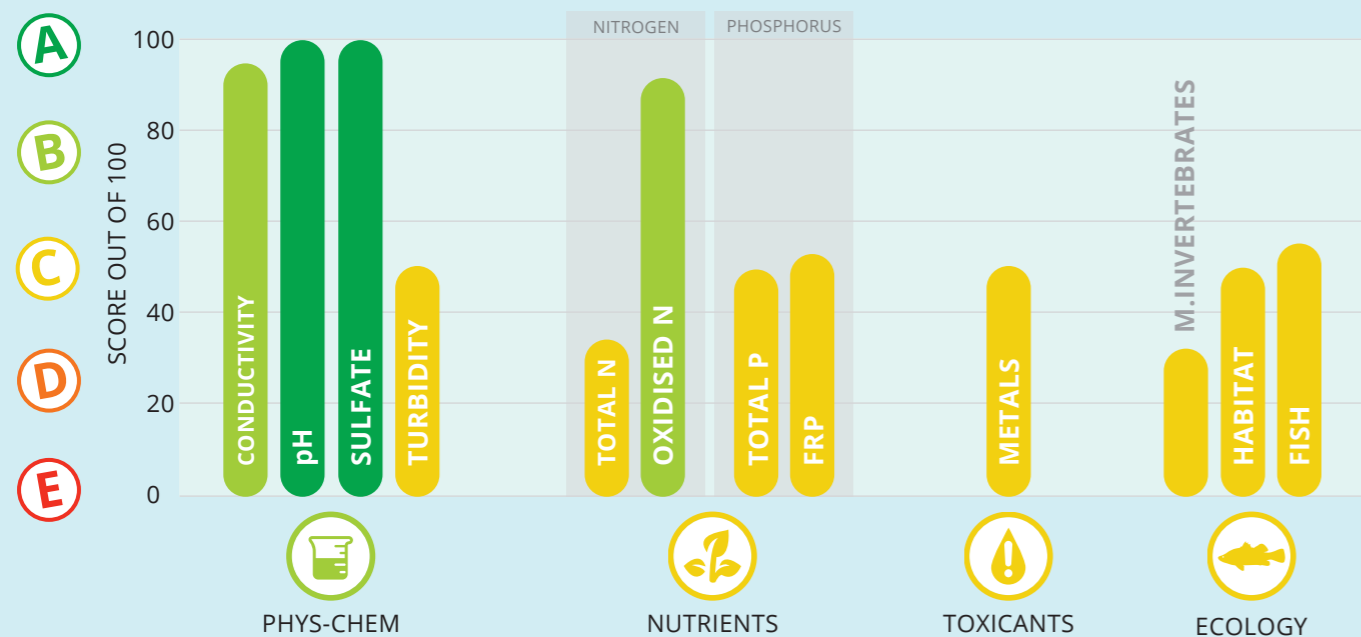
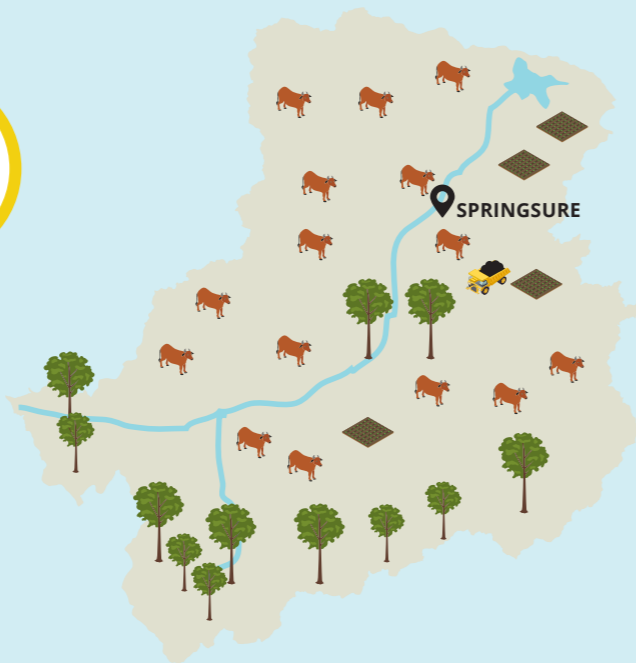
Spotted!



The Eastern Rainbowfish (*Melanotaenia splendida splendida*) is the most common native fish found in our Fitzroy Basin sampling sites. Although Rainbowfish are common, it's a key indicator of better water quality and habitat condition. This species was observed in the Theresa catchment.

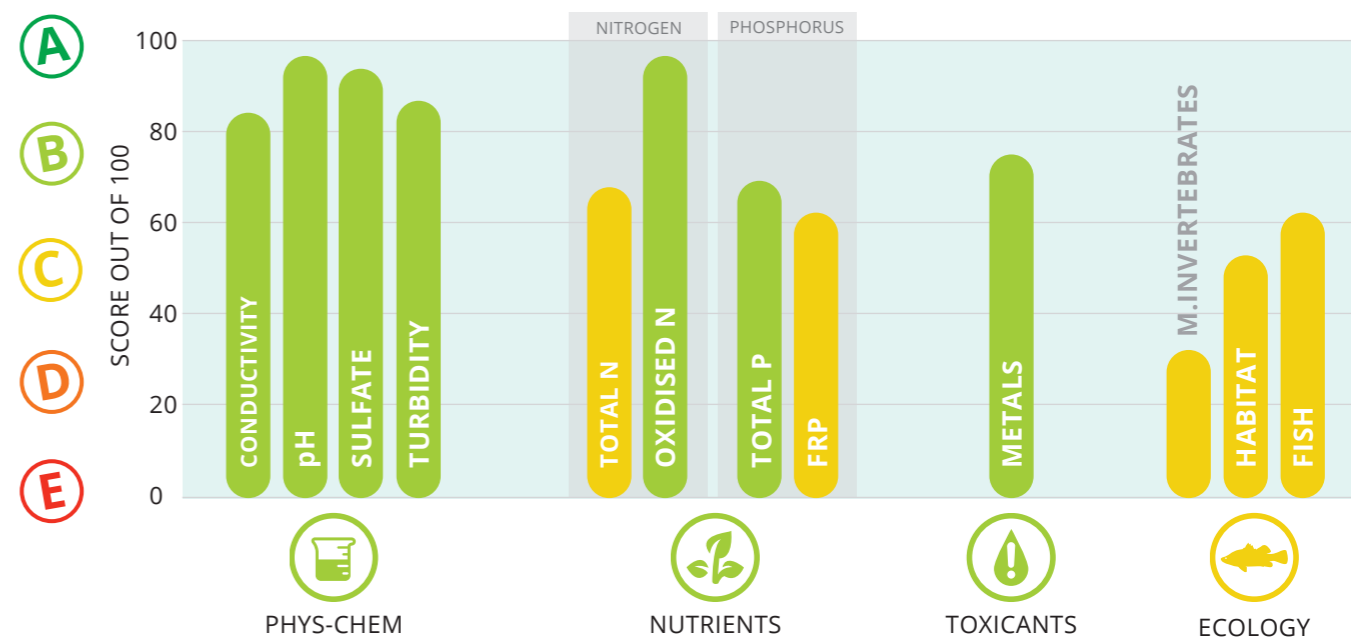
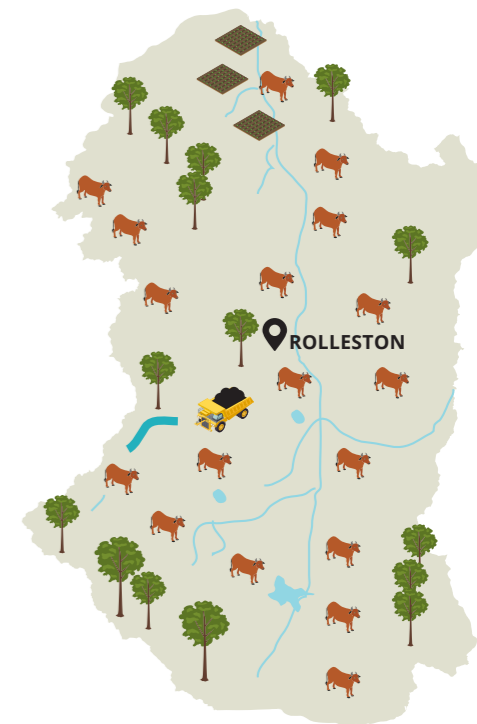
NOGOA Catchment C

The Nogoia catchment is located in the western part of the Fitzroy Basin, bordered by the Buckland Ranges to the south and the Drummond Ranges to the west. This fan-shaped catchment drains northeastward from Medway, Vandyke, Borilla, and Buckland creeks into Fairbairn Dam. The dam plays a vital role in supplying water for a significant area of irrigated agriculture downstream of the Theresa catchment. The average annual rainfall across most of the catchment is approximately 600 mm.



COMET Catchment B

The Comet catchment is bordered by the Expedition Ranges to the east and the Carnarvon Ranges to the west. It flows through the Arcadia Valley, past Rolleston, and east of Springsure, before joining the Nogoia River near the town of Comet. This junction marks the beginning of the Mackenzie catchment. Annual rainfall averages 800 mm in the southern ranges, gradually decreasing to 500 mm in the north.



Murky Waters

Turbidity levels in the Nogoia catchment have fluctuated significantly over time. This year, increased turbidity caused the score to drop to 46, resulting in a C grade.



Spotted!

A variety of common native fish species known for their tolerance to lower habitat and water quality conditions were observed, including the Spangled Perch (*Leiopotherapon unicolor*).



Spotted!

The *Tandanus tandanus* Freshwater Catfish was observed in the Comet river. Endemic to eastern Australia, its populations have been in sharp decline, particularly in the Murray-Darling Basin. Few freshwater fish species were noted during the June 2024 sampling, likely due to low rainfall.



The *Tandanus tandanus* has venomous spines on its dorsal and pectoral fins!

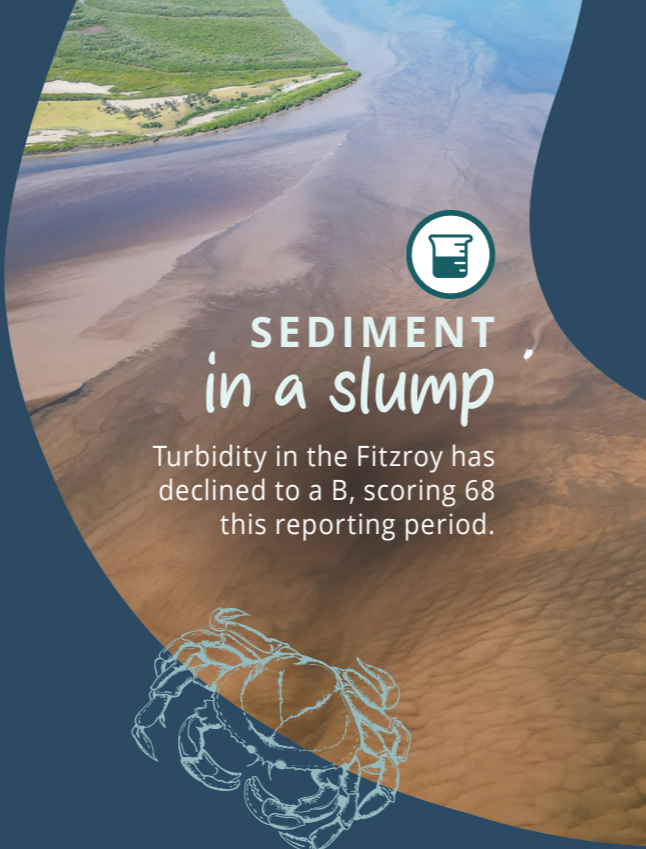
Toxicants

Since reporting began in 2010, Copper levels in the Comet catchment have been consistently high. However, there's been a positive trend toward improvement since 2020. In the 2023-24 Report Card, Copper scores significantly improved, rising from 50 to 75.

FITZROY Catchment

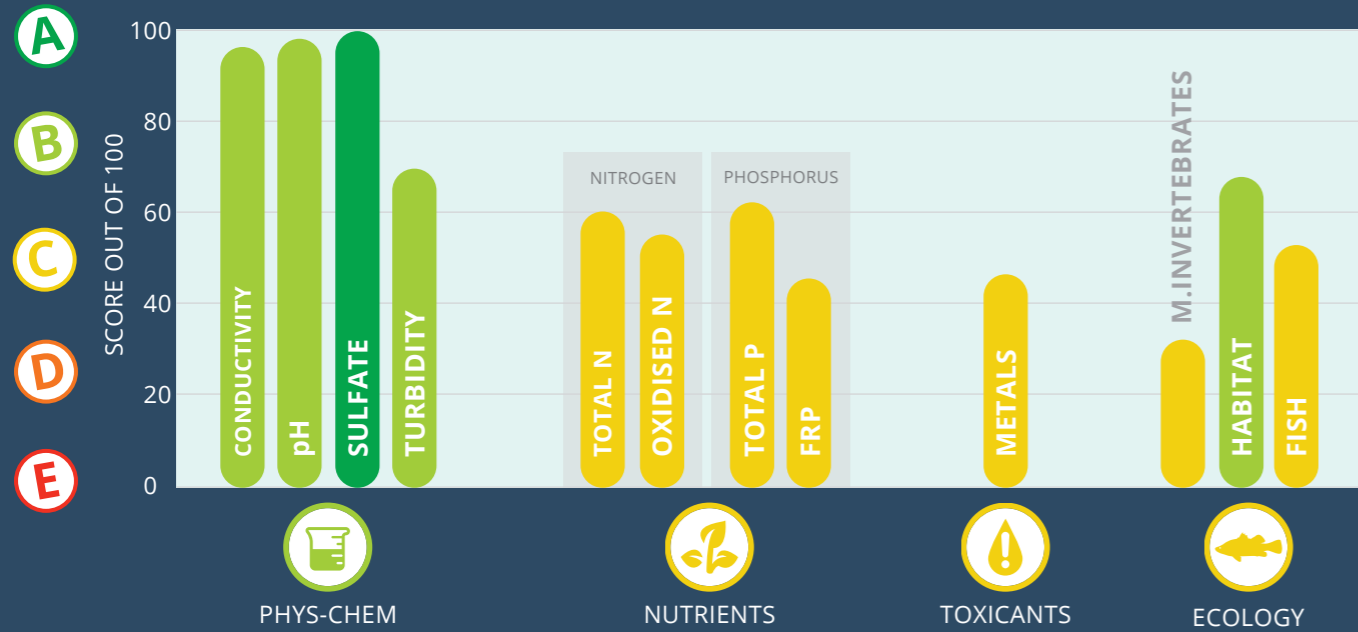
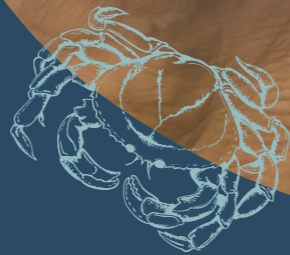


The Fitzroy catchment, known as Tunuba in the Darumbal language, begins at the junction of the Dawson and Mackenzie Rivers. The river flows northeast before turning southeast toward the Fitzroy River Barrage, which serves as Rockhampton's primary water supply. The barrage acts as a tidal barrier, marking the division between the freshwater catchment and the estuary. Annual rainfall exceeds 1000 mm in the Byfield and Berserker Ranges, gradually decreasing to 700 mm in the western parts of the catchment.



SEDIMENT in a slump

Turbidity in the Fitzroy has declined to a B, scoring 68 this reporting period.



Toxicants

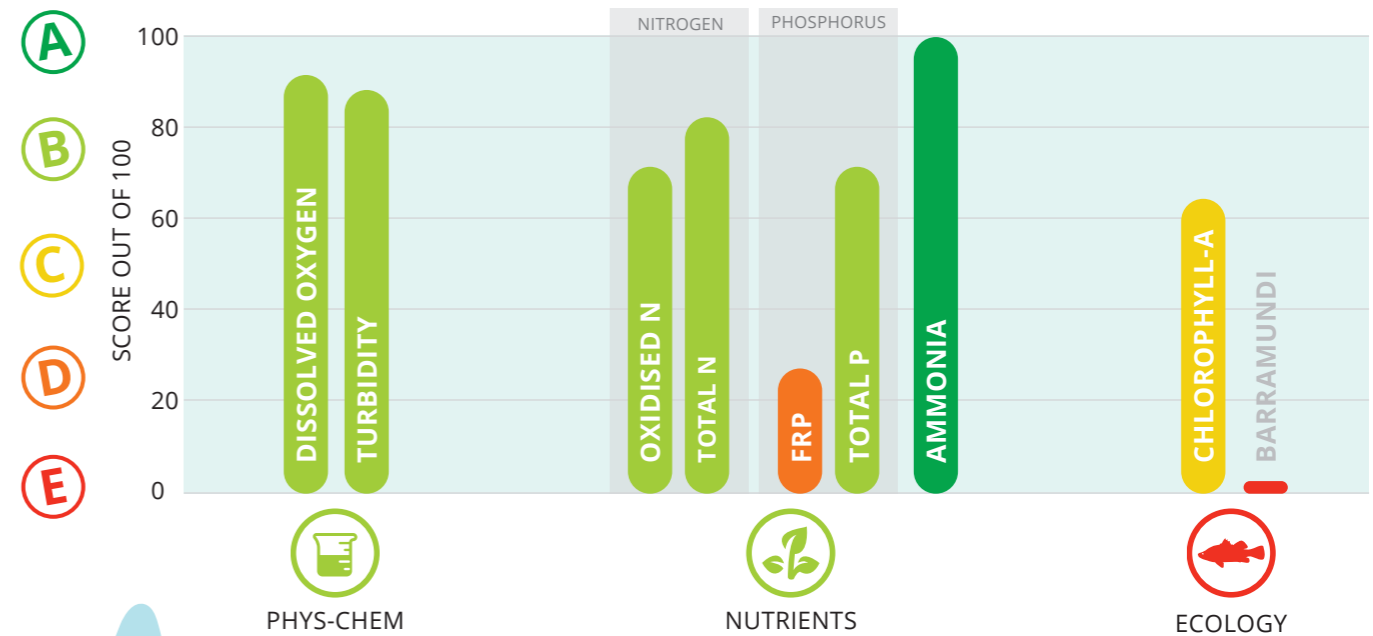
Copper and Aluminium are the primary toxicants in the Fitzroy catchment. Aluminium levels had been worsening over the past three years but showed improvement in 2024, returning to guideline values. Copper, which has exceeded guideline limits since 2019, has been gradually improving, with a score of 47 this year, earning a C grade.



FITZROY RIVER Estuary



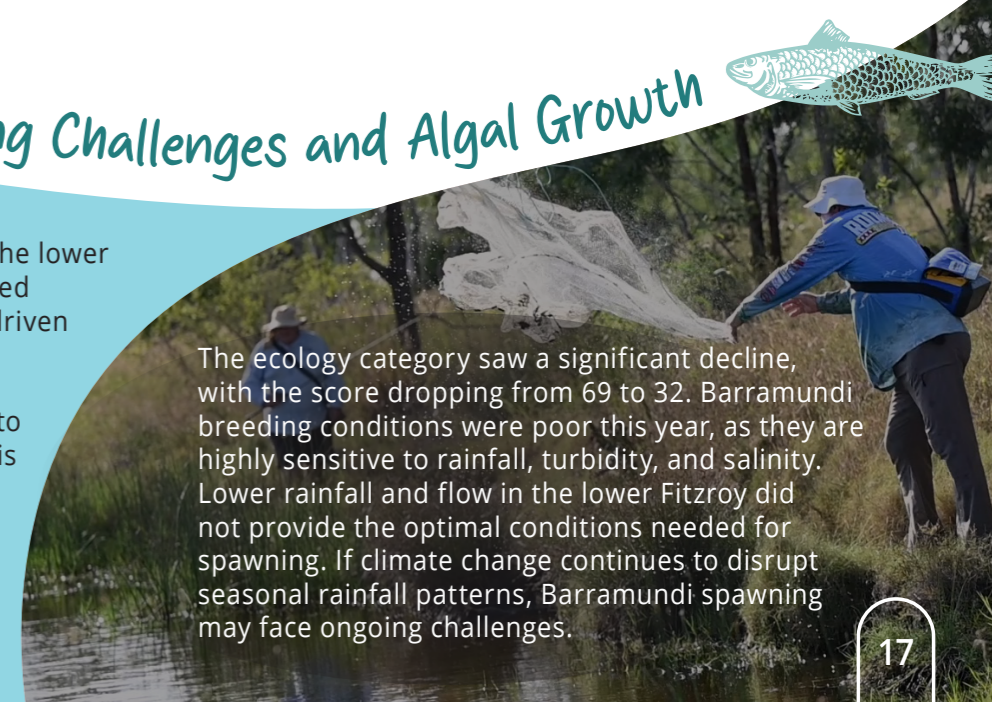
The Fitzroy River estuary begins at the Fitzroy River barrage in Rockhampton and flows 56 kilometres before reaching Keppel Bay. It encompasses inner Keppel Bay, curving from Station Point on Curtis Island to Cattle Point near Keppel Sands. With a tidal range of five metres, the estuary includes Port Alma, Raglan Creek, Connor Creek, and Balaclava Island, stretching south to The Narrows. This vibrant estuary supports thriving recreational and commercial fishing industries and has been developed with port facilities and salt works.

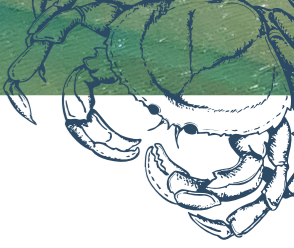


Barra Breeding Challenges and Algal Growth

Chlorophyll-a levels were elevated in the lower and middle estuary, indicating increased phytoplankton and algae production driven by nutrients and light. High nutrient levels, particularly from the southern freshwater catchments, are flowing into the Fitzroy catchment and estuary. This nutrient influx, along with favourable light conditions due to lower flows and turbidity, could be impacting estuarine ecosystems by promoting algae growth.

The ecology category saw a significant decline, with the score dropping from 69 to 32. Barramundi breeding conditions were poor this year, as they are highly sensitive to rainfall, turbidity, and salinity. Lower rainfall and flow in the lower Fitzroy did not provide the optimal conditions needed for spawning. If climate change continues to disrupt seasonal rainfall patterns, Barramundi spawning may face ongoing challenges.





Waterway
STORIES



MOST RECENT
Report Card



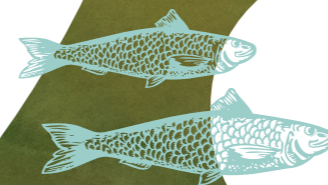
Marine Report



Human Dimensions
OF THE REEF



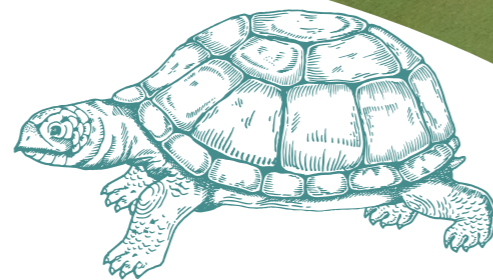
FITZROY
water watch



GRADING METHODS
explained
A B C



Summary



Report Cards give a snapshot of waterway health for the year of sampling. The results reflect interactions of climate, flow, the mobilisation of salt, nutrients and sediments in the landscape, as well as human activities, and any consequent changes to ecology over time.

Rainfall is one of the most significant driving factors influencing Report Card results. It's important to consider rainfall as we interpret each year's grades. Rainfall can affect the concentration of soluble compounds and the mobilisation of sediments, particulate nutrients and organic matter running off into streams. There was slightly lower rainfall this year compared to 2023. A pronounced seasonal pattern this year gave us a very dry winter, particularly in the catchments in the south-west of the basin (Nogoa, Comet, Lower Dawson, Upper Dawson). Between August and October, mean rainfall ranged between 0 mm and 10 mm across all catchments. This year's low winter rainfall resulted in some parts of the Basin becoming very dry, even drying up completely, which is common in the Comet catchment for example, during dry times.

Some key results our Independent Science Panel observed this year, considering rainfall and other driving factors of change and variability

in our Basin, are changes in Toxicant and Ecology scores. Toxicant values improved in all catchments except for the Upper Isaac and the Lower Dawson. Copper and Aluminium have been detected in lower concentrations this year throughout the Basin, which has produced this improvement in scores and grades.

Ecology values decreased across the Basin except for Upper Isaac, Callide and Upper Dawson. This is mainly due to lower Macroinvertebrate scores which are influenced by medium to long term accumulation of reduced water quality and habitat pressures, as well as flooding and dry spells.

The Fitzroy Basin Report Card aims to provide a more complete picture of river health every year. Last year we introduced additional Ecological indicators, Habitat Condition and Freshwater fish, providing a more comprehensive ecological picture. Our community's contribution to social surveys, Waterway Stories, and Human Dimensions reporting is helping build knowledge and understanding of peoples' interactions with waterway ecosystems. And in 2024, we launch an improved Marine Report for our Fitzroy inshore marine zone. We are continually striving to use the best science, to cover more stories and to report holistically on our Basin health.

OUR partners

We thank our partners for being the change that is needed for Fitzroy Basin's water future;



Get in touch to find out more



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