ACKNOWLEDGEMENT OF COUNTRY

The Partnership acknowledges the continuing land and sea country management of the Traditional Owner groups within the Mackay-Whitsunday-Isaac region and Great Barrier Reef whose rich cultures, heritage values, enduring connections, and shared efforts protect the land and Reef for future generations.

HEALTHY RIVERS TO REEF PARTNERSHIP
MACKAY-WHITSUNDAY-ISAAC

THE MACKAY – WHITSUNDAY – ISAAC 2024 REPORT CARD

Reporting on waterway health data collected between July 2022 and June 2023

Waites Bay, Whitsundays - Photo by Jodi Salmond, Reef Check Australia

WELCOME TO OUR 10TH EDITION!

Welcome to the 2024 Waterway Health Report Card for the Mackay-Whitsunday-Isaac (MWI) region! We are incredibly proud to share this Report Card with you, our tenth edition. On our 10 year anniversary, it is fitting to reflect on what the Partnership has achieved, and our role in the community. In 2024, our collective work is certainly something to be proud of. We celebrate 10 years of data, monitoring and reporting, 10 years of community, and 10 years of collaboration, bringing together diverse stakeholders who think proactively about waterway health and regional sustainability. We provide the MWI region with local information that is comprehensive and rigorously reviewed. We facilitate real partnerships, that lead to on-ground action and results. We advocate for the use of collated data – more than $4 million worth annually – to help drive local decision making and investment where it is needed. Ultimately, it has always been the vision of the Partnership to foster a culture of collaboration to benefit our region's waterways, from rivers to Reef. In 2024, we know we continue to do that. We look forward to ongoing work with our many partners, in all sectors. Together, we can continue to grow our collective impact as both reporters and stewards of waterway health.

Charlie Morgan
Healthy Rivers to Reef Partnership Chair

We are proud to work with the Traditional Owners of our Partnership region.

ABOUT THE REPORT CARD

This Report Card assesses the condition of waterways in the MWI region based on data collected between **July 2022 and June 2023**.

We assess the condition of freshwater, estuary, and marine environments, and include human dimensions such as cultural heritage and urban water management.

By understanding how climate, population, development, and land use affect our waterways at a regional level, we can inform management responses and actions tailored to our local area. We aim to improve or maintain ecological health, while also supporting the important industries and social systems that rely on our waterways.

WHERE DOES OUR DATA COME FROM?

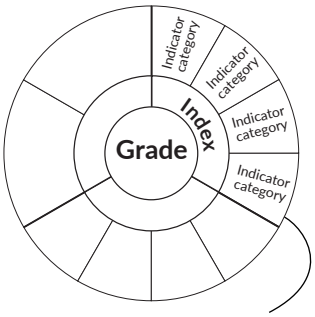
We use the best available science and integrate a range of Reef-wide and regional monitoring programs from governments, research organisations, and citizen science groups.

We draw on information from existing and Partnership-funded monitoring programs, which vary in their data collection cycles. Most of the data used in this Report Card is collected annually, however there are some data sets that are only collected every three to four years depending on what's appropriate for the indicator. In these cases, we assess conditions based on when the data was last collected.

WHAT GOES INTO A GRADE?

To arrive at a grade, indicators are selected based on the environment type (freshwater, estuary, inshore, and offshore marine) and external influences specific to our region. Each indicator is given a score, and these scores are averaged into a final grade that ranges from A (Very Good) to E (Very Poor).

All of our results undergo a rigorous review process with regional and national experts. You can read more about the Report Card by visiting our FAQs online.



One or more related indicators are combined to produce an indicator category

Grades

A	B	C	D	E	
VERY GOOD	GOOD	MODERATE	POOR	VERY POOR	NO MONITORING/ INSUFFICIENT DATA

Conditions **frequently meet guidelines**, with most **critical habitats intact** and close to pre-development levels.

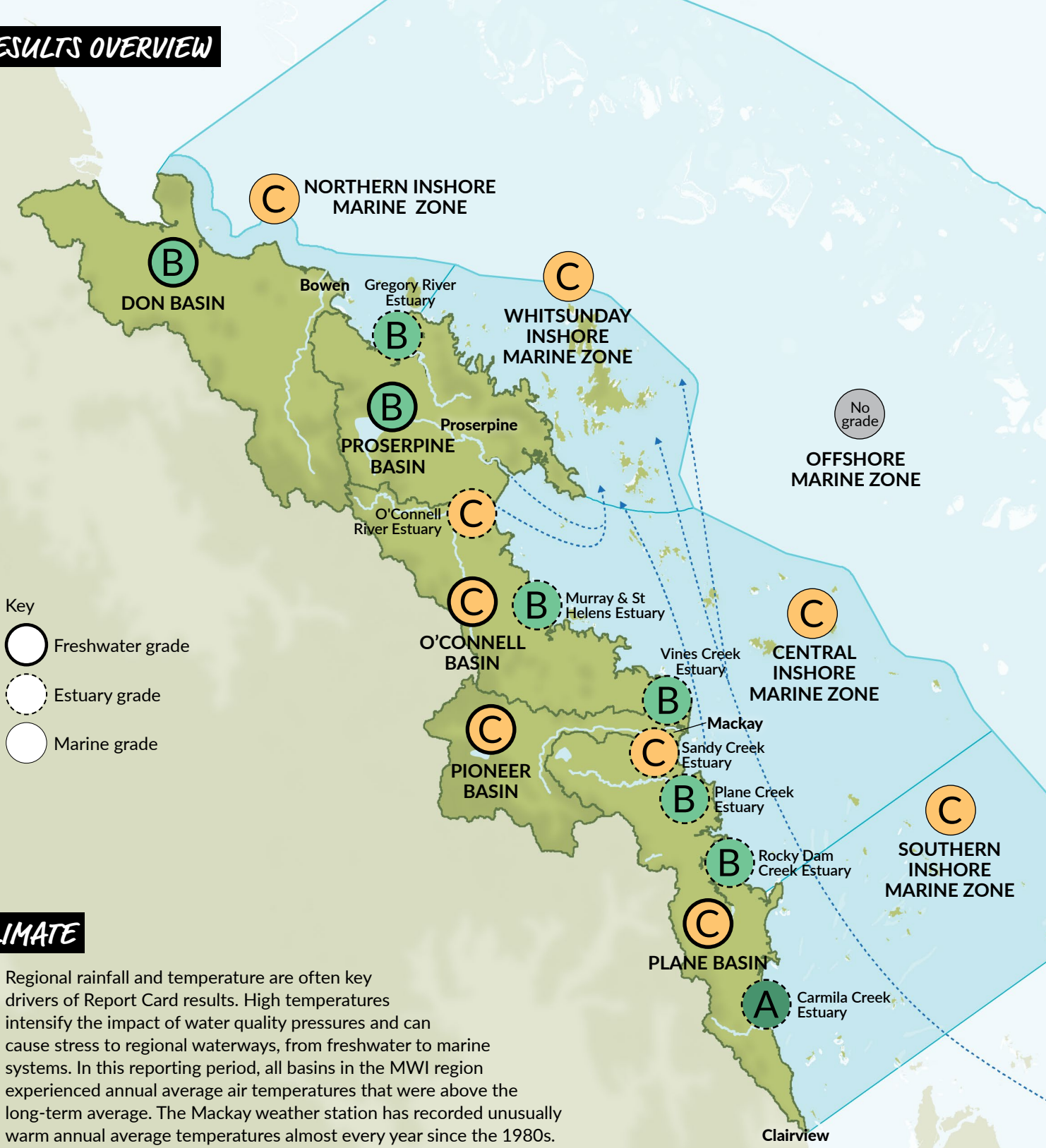
Most conditions **do not meet guidelines**, with most **critical habitats severely impacted** and departed from pre-development levels.

Check out our Report Card Technical Results

Additional, in-depth information in our technical results can be used to support project proposals and more!

Eungella Dam - Photo by Lenore Hansen

RESULTS OVERVIEW

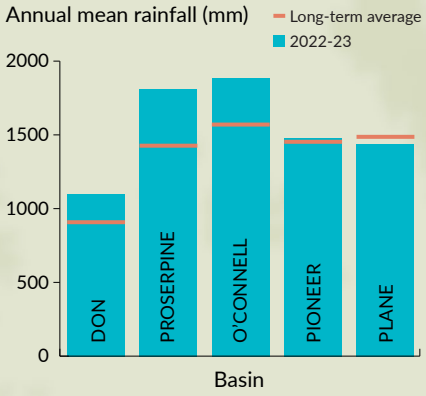


CLIMATE

Regional rainfall and temperature are often key drivers of Report Card results. High temperatures intensify the impact of water quality pressures and can cause stress to regional waterways, from freshwater to marine systems. In this reporting period, all basins in the MWI region experienced annual average air temperatures that were above the long-term average. The Mackay weather station has recorded unusually warm annual average temperatures almost every year since the 1980s.

Rainfall influences the amount of flow in rivers and estuaries, and runoff into the marine environment. In 2022-23, rainfall was above the long-term mean for all basins in the MWI region, except for Plane. During this reporting season, rainfall was higher across all basins in comparison to the previous three years.

There were no extreme weather events, such as cyclones or marine heatwaves, recorded in the MWI region during the 2022-23 reporting period, however historic extreme events can have long-lasting impacts on ecosystems, including the recovery of seagrass and coral in inshore marine zones. Although the coral bleaching risk was low in 2022-23, the monthly sea surface temperature was above the long-term mean from September 2022 to June 2023.



WHITSUNDAY COASTAL REGION

The Whitsunday Coastal reporting region stretches from Cape Upstart in the north, to Cape Conway in the south and includes the townships of Bowen, Airlie Beach, Cannonvale and Proserpine. Known internationally as a gateway to the Great Barrier Reef World Heritage Area, the region is highly diverse and supports thriving tourism, agricultural, and aquaculture industries. The Goorganga Plain wetlands complex extends south from Proserpine and is recognised in the Directory of Important Wetlands in Australia. Other areas of important ecological value include Conway and Dryander National Parks. Tropical beaches and islands, including the iconic Whitehaven Beach, are famed for their natural beauty and draw visitors from around the world.

DON BASIN

AREA
3,745 km²

TRADITIONAL OWNERS
Ngaro, Gia, Juru

MAJOR RIVER
Don River

MAJOR TOWN
Bowen

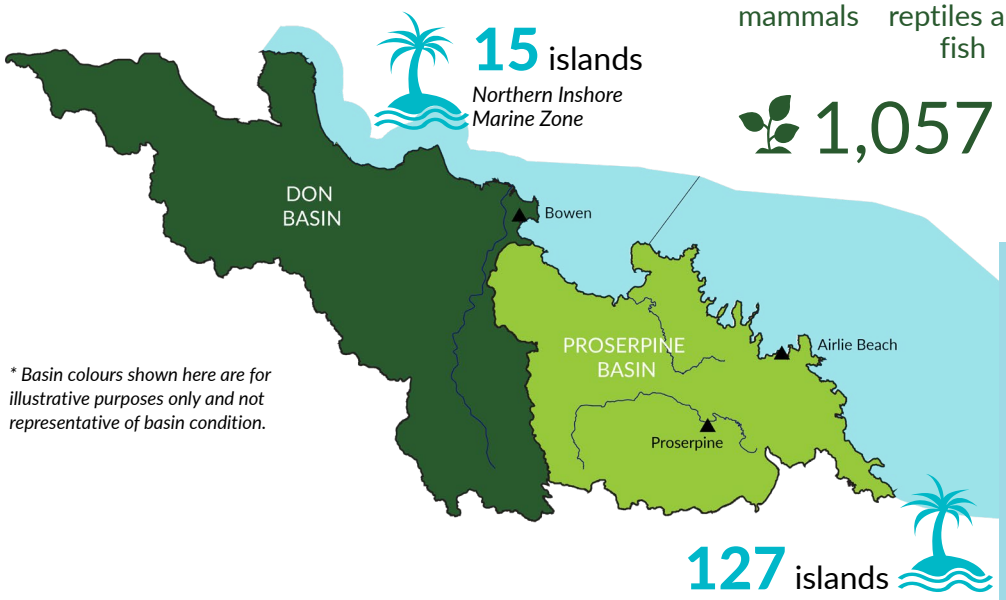
LAND USE

Conservation	Grazing	Horticulture	Urban/ industrial
5.5%	79.7%	3.6%	1.5%

BIODIVERSITY
551 animal species

55 mammals	110 reptiles and fish	331 birds	55 amphibians and insects

1,057 plant species



* Basin colours shown here are for illustrative purposes only and not representative of basin condition.

In this reporting period, the Don Basin recorded annual air temperatures well above average, in the 90th percentile of long-term annual average temperatures since 1910. The Don Basin has consistently been the driest of the MWI basins since 1911, but in this reporting period rainfall was above average.

PROSERPINE BASIN

AREA
2,500 km²

TRADITIONAL OWNERS
Ngaro, Gia, Juru

MAJOR RIVER
Proserpine River

MAJOR TOWNS
Proserpine, Airlie Beach

LAND USE

Conservation	Grazing	Sugarcane	Urban/ industrial
24.4%	49.4%	9.6%	3.7%

BIODIVERSITY
650 animal species

87 mammals	133 reptiles and fish	353 birds	76 amphibians and insects

1,768 plant species

MACKAY REGION

The Mackay reporting region spans from Cape Conway in the north, to the major urban centre of Mackay on the coast. Thriving smaller townships contribute significantly to the area - Bloomsbury, Midge Point and Seaforth north of Mackay, and the Pioneer Valley including Marian, Mirani, Finch Hatton, and Eungella to the west. The dramatic Clarke-Connors Range bounds the region's westerly limit, marking one of the largest wilderness areas in Queensland and a wildlife corridor of state significance.

This diverse region moves from high altitude rainforest to expansive cane fields and grazing lands, and is fringed by long stretches of coastline, bays, and beaches. The landscape supports major industry, including agriculture, and the mining and resources sector. The coastline is a key habitat for migratory shorebirds and marine turtles, and an important area of Queensland for six species of shorebird, including the beach stone curlew. Critically endangered beach scrub is also a feature of local coasts. The region is home to the high biodiversity areas of Cape Hillsborough and Eungella National Parks.

O'CONNELL BASIN

AREA
2,388 km²

Approximately 1,760km of stream network

TRADITIONAL OWNERS
Yuwibara, Widi, Barada

MAJOR RIVER
O'Connell River

MAJOR TOWN
Bloomsbury

LAND USE

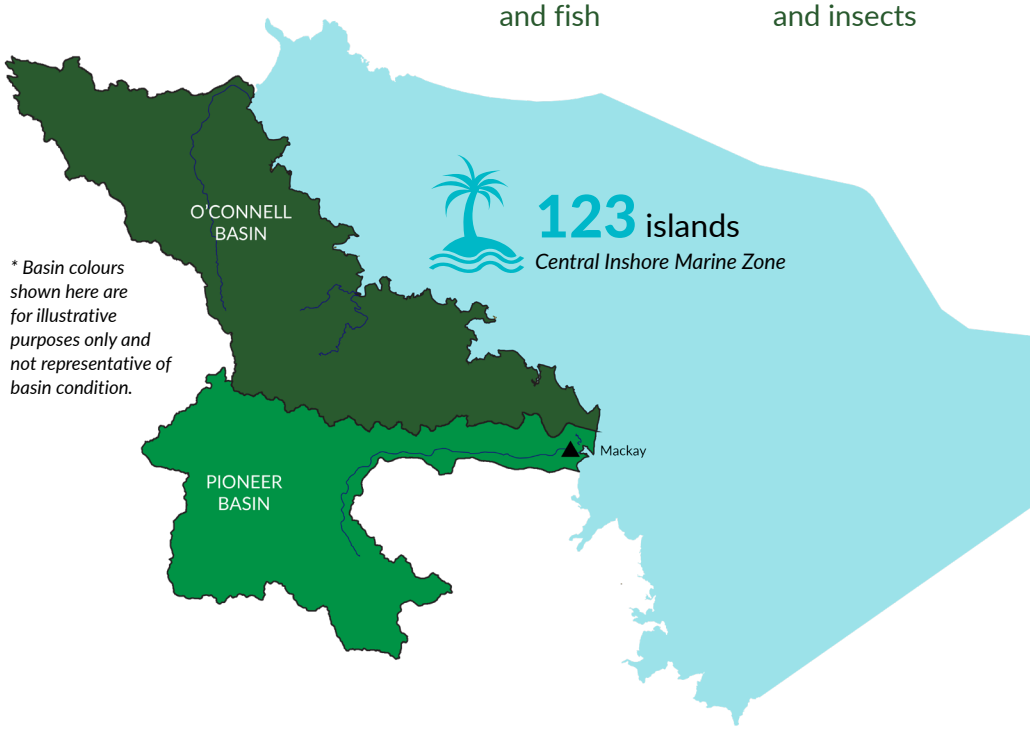
Conservation	Grazing	Sugarcane	Urban/ industrial
19.1%	49.3%	13.4%	3.9%

BIODIVERSITY

1,809 plant species

660 animal species

87 mammals	137 reptiles and fish	364 birds	71 amphibians and insects



PIONEER BASIN

AREA
1,574 km²

TRADITIONAL OWNERS
Yuwibara, Widi, Barada

MAJOR RIVER
Pioneer River

MAJOR TOWNS
Mackay

LAND USE

Conservation	Grazing	Sugarcane	Urban/ industrial
21.1%	31.7%	20.4%	4.3%

BIODIVERSITY

625 animal species

73 mammals	139 reptiles and fish	367 birds	44 amphibians and insects

1,914 plant species

MACKAY & ISAAC COASTAL REGION

This region hugs the coastline south of Mackay, down to Clairview, spanning both the Mackay and Isaac regional council boundaries. Unlike other regions in our Report Card, the Mackay and Isaac Coastal Region comprises of only one basin, and has several smaller waterways instead of one or two larger rivers. These waterways drain into Sarina Inlet, Ince Bay, and Carmila Coast receiving waters. Grazing is a common land use in the south of the basin, while sugarcane dominates in the north. The Plane Basin has the largest area (km^2) of sugarcane farming of all basins in our reporting region.

In the north, the small towns of Sarina and Eton service surrounding farmlands and beachside communities, while in the south, Clairview is a popular destination for recreational fishers, camping and caravanning. The Southern Inshore Marine Zone from Cape Palmerston to Clairview Bluff is considered an important habitat for protected dugongs and green sea turtles which graze on seagrass beds throughout the zone.

PLANE BASIN

AREA
2,544 km^2

TRADITIONAL OWNERS
Yuwibara, Koinjmal

MAJOR TOWN
Sarina

MAJOR RIVER
Sandy, Plane, Rocky Dam, Cape, Marion, Flaggy Rock and Carmila Creek.

LAND USE

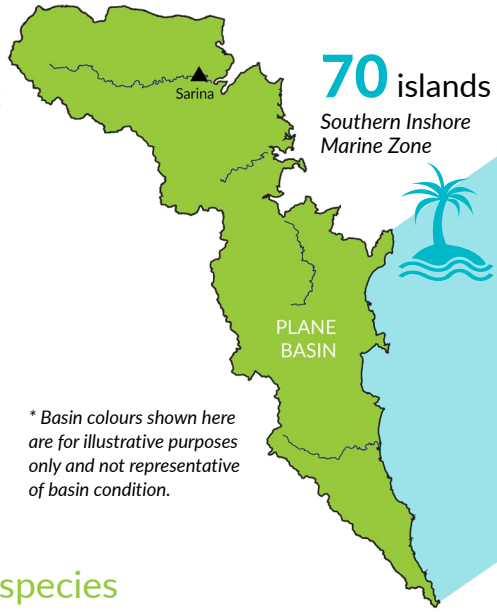
Conservation	Grazing	Sugarcane	Urban/industrial
14.6%	38%	25.4%	5.4%

BIODIVERSITY

528 animal species

- 59 mammals
- 102 reptiles and fish
- 344 birds
- 23 amphibians and insects

1,588 plant species



70 islands
Southern Inshore Marine Zone

** Basin colours shown here are for illustrative purposes only and not representative of basin condition.*

SOUTHERN INSHORE SPOTLIGHT

Our Southern Inshore Monitoring Program is now well established with data on coral, water quality and seagrass recorded across multiple years, thanks to continued investment from partner Dalrymple Bay Coal Terminal Pty Ltd (DBCT P/L) and Dalrymple Bay Infrastructure (DBI).

This zone was highlighted as a critical data gap back in 2014.

One exciting development of the program was the addition of seagrass to the Report Card in 2022! This followed the collection of five years' worth of baseline data.

Seagrass Snapshot

- Partnership-led seagrass monitoring thanks to funding from DBCT P/L and DBI
- Monitored by James Cook University TropWATER
- 4 main species of seagrass recorded
- Thickness and cover can vary greatly within meadow boundaries
- Supports many forms of life from dugongs and turtles, to plankton
- Seagrass has many vital ecosystem functions
- Helps stabilise sand and mud banks
- Filters the water and removes excess nutrients
- Efficient natural carbon sink

Seagrass is also an important food source for a vast array of life. In the Southern Inshore Marine Zone, monitoring has shown seagrass is well utilised by dugongs, with dugong feeding trails recorded in all meadows.

The sensitivity of seagrass to disturbance and environmental change makes it an excellent indicator of marine environmental health. Seagrass condition assessments require adequate baseline information on seagrass presence or absence, biomass, species composition, and meadow area, plus ongoing monitoring to understand and detect change.

Read more about this program on our website.

FRESHWATER

Don Basin, Proserpine Basin

Water quality

- Don Basin water quality improved from ‘poor’ to ‘moderate’ and pesticides improved from ‘poor’ to ‘good’.
- Metsulfuron-methyl (a herbicide) was the largest contributor to pesticide risk in the Don Basin.
- Pesticides in the Proserpine Basin were ‘very poor’ for the seventh year in a row. The main contributors were imidacloprid (an insecticide) and diuron (a herbicide).

What is metsulfuron-methyl? This hard-to-say herbicide has a high risk profile, so small amounts can influence results. It is commonly associated with urban and industrial applications and may also be used for clearing grazing land. It is not registered for use in sugarcane.

Fish

- The Don Basin has the highest score for fish species richness out of all the freshwater basins, based on repeat data (from 2020-21). A score decline was noted for fish barriers in the current reporting period due to the construction of new waterway barriers which may be tied to land clearing and development for intensive horticulture.
- Fish barrier and impoundment length scores (within the habitat modification index) in the Proserpine Basin improved due to the removal of a large sand dam, a significant change that enables migratory fish to travel upstream.

Wetlands

- In the Don Basin, a significant wetland area, wetland extent scored ‘very good’. However, this result included modified wetlands, reflecting the conversion of estuarine wetlands to freshwater wetlands through damming or bunding.

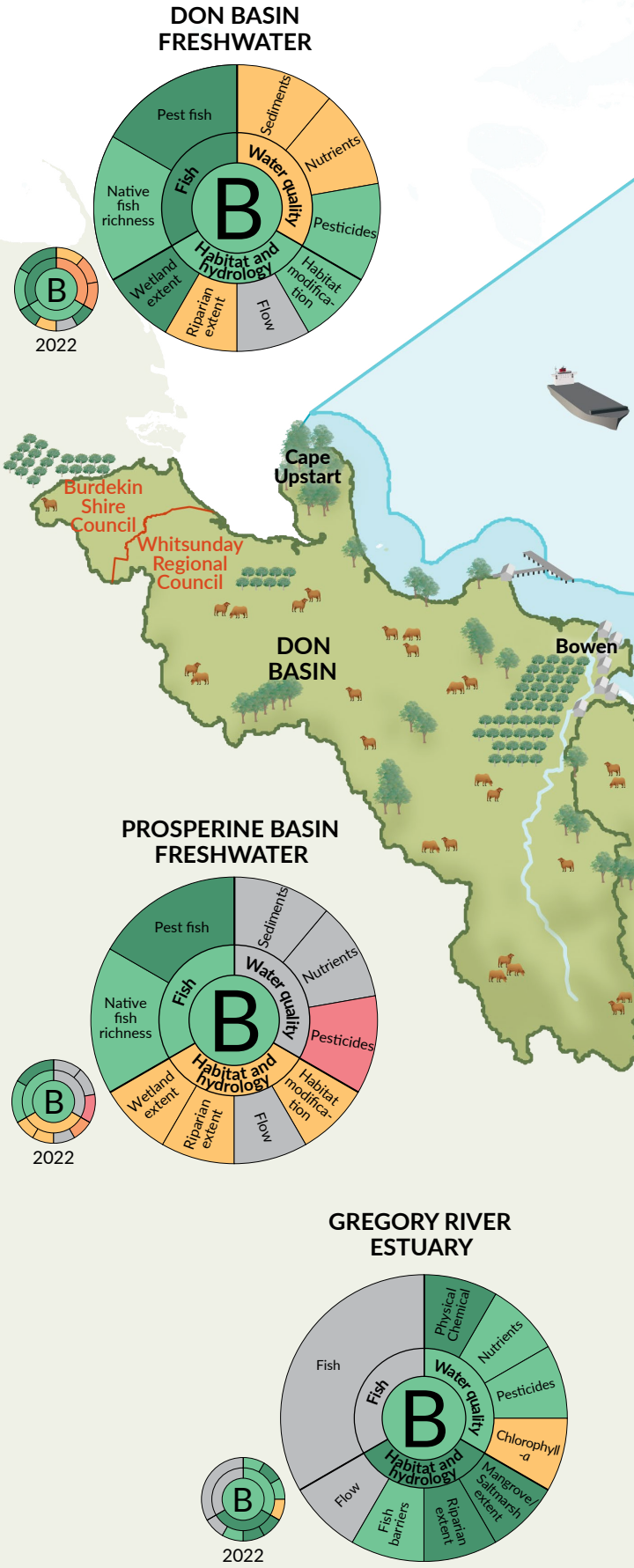
ESTUARY

Gregory River

Water quality

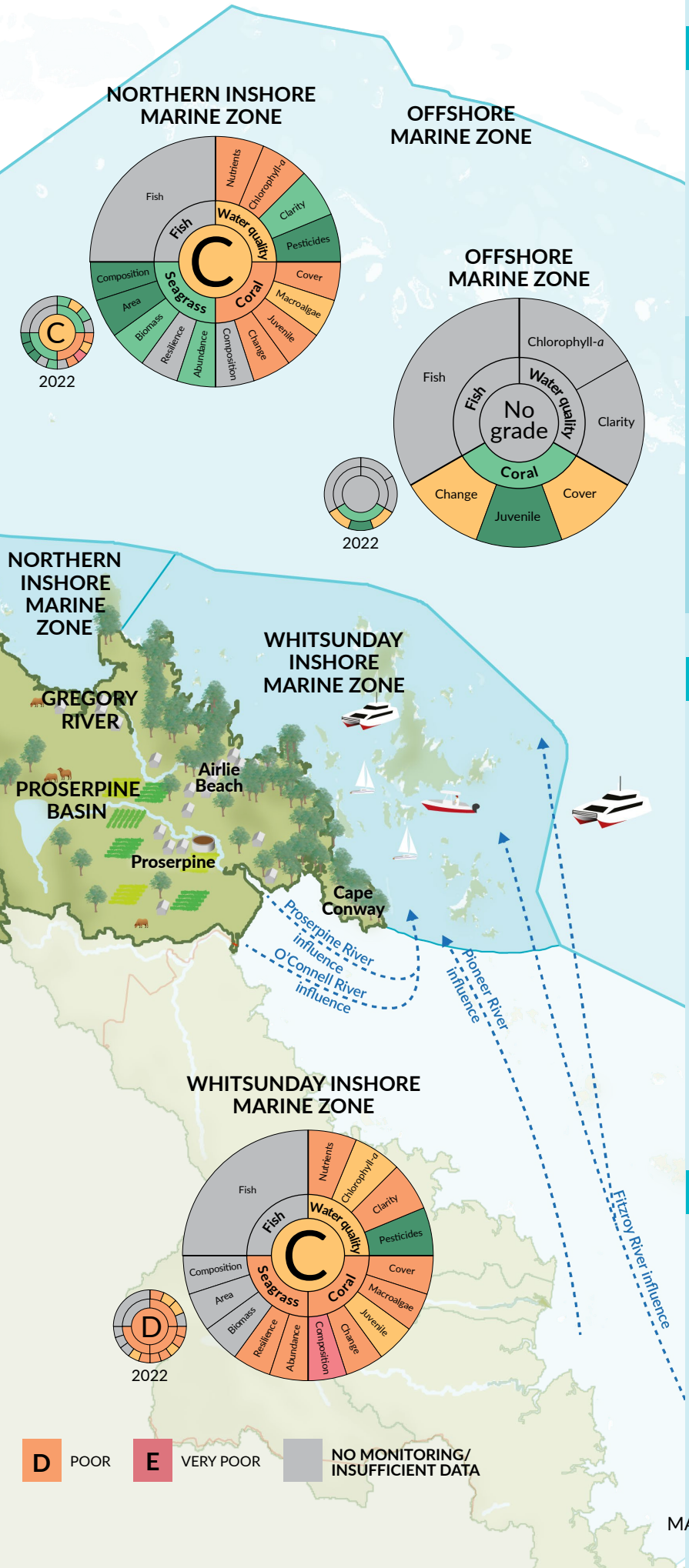
- Gregory River was the only estuary to record a change in nutrient grade, declining from ‘very good’ to ‘good’ due to increased concentrations of dissolved inorganic nitrogen (DIN). It also recorded its lowest chlorophyll-*a* (chl-*a*) score since the Report Card’s inception, dropping two grades from ‘very good’ in the 2015 Report Card to ‘moderate’ in the 2024 Report Card. However, the overall estuary grade remained ‘good’ as there were improvements in dissolved oxygen (DO) and pesticide scores.

WHITSUNDAY COA



GRADES A VERY GOOD B GOOD C MODERATE

STAL REGION



MARINE

Whitsunday Inshore, Northern Inshore, Offshore Marine Zones

Water quality

- For the first time, pesticide data is being reported for the Whitsunday and Northern zones, an exciting and important development.
- Whitsunday was the only zone to record a grade change in water quality, improving from 'poor' to 'moderate' influenced by decreased concentrations of nutrients, chl-*a* and the incorporation of pesticide data.

When it comes to pesticides, sampling style matters! The 'very good' pesticide result for the Whitsunday Zone was based on passive polar samples which averaged detected pesticide concentrations over a 6-to-8-week period. Conversely, grab sample results (analysed for reference only and representing a specific point in time), indicated that pesticides can reach the reef ecosystems in concentrations that pose short-term 'high' risk to marine species. Dilution in the marine environment is such that the annual risk to marine species is currently 'very low'.

Coral

- High turbidity was a continued cause for concern to coral communities in the Whitsunday Zone. Coral species tolerant of turbid conditions tend to be slower growing, and poor water quality favours macroalgae that makes it difficult for juvenile corals to establish themselves.
- Improvements in the Northern Zone were driven largely by increased juvenile recruitment at both sites, yet the overall grade remained 'poor'.
- The score for Offshore coral is the highest it has been in the past 10 years of monitoring. The high score is driven by on-going 'very good' grades for juvenile coral densities and 'moderate' but increasing grades for coral cover.

Seagrass

- Recovery of seagrass in the Northern Zone remains stable with indicators 'good' or above.
- In the Whitsunday Zone, seagrass was 'poor' for the fourth consecutive year, however improvement was seen at Pioneer Bay coastal meadow, and Hydeaway Bay was again 'very good'. Sites at Hamilton Island and Tongue Bay have consistently scored 'very poor', while new sites at Whitehaven Beach and Cid Harbour were graded 'poor' or lower.

FRESHWATER

O'Connell Basin, Pioneer Basin

Water quality

- Water quality grades were 'moderate' for the seventh consecutive year in the O'Connell Basin, and the tenth consecutive year in the Pioneer Basin.
- Pesticide scores declined in both basins causing a drop in grade to 'poor' in the O'Connell, while Pioneer remained 'poor'. Imidacloprid was a larger contributor to pesticide risk in the O'Connell, while diuron concentrations were the key contributor in the Pioneer Basin.
- The Pioneer Basin scored 'good' for sediment, with trends showing generally stable sediment scores across the reporting region.
- A trend of decreasing DIN concentrations was evident in the Pioneer Basin, with the score for this indicator improving for a fourth consecutive year.

DIN, a component of the nutrients indicator, is the sum of nitrate, nitrite and ammonia. It generally remains an area of concern for the MWI region. All monitored basins were graded 'moderate' or 'poor' in this reporting period except the O'Connell Basin ('good').

Fish

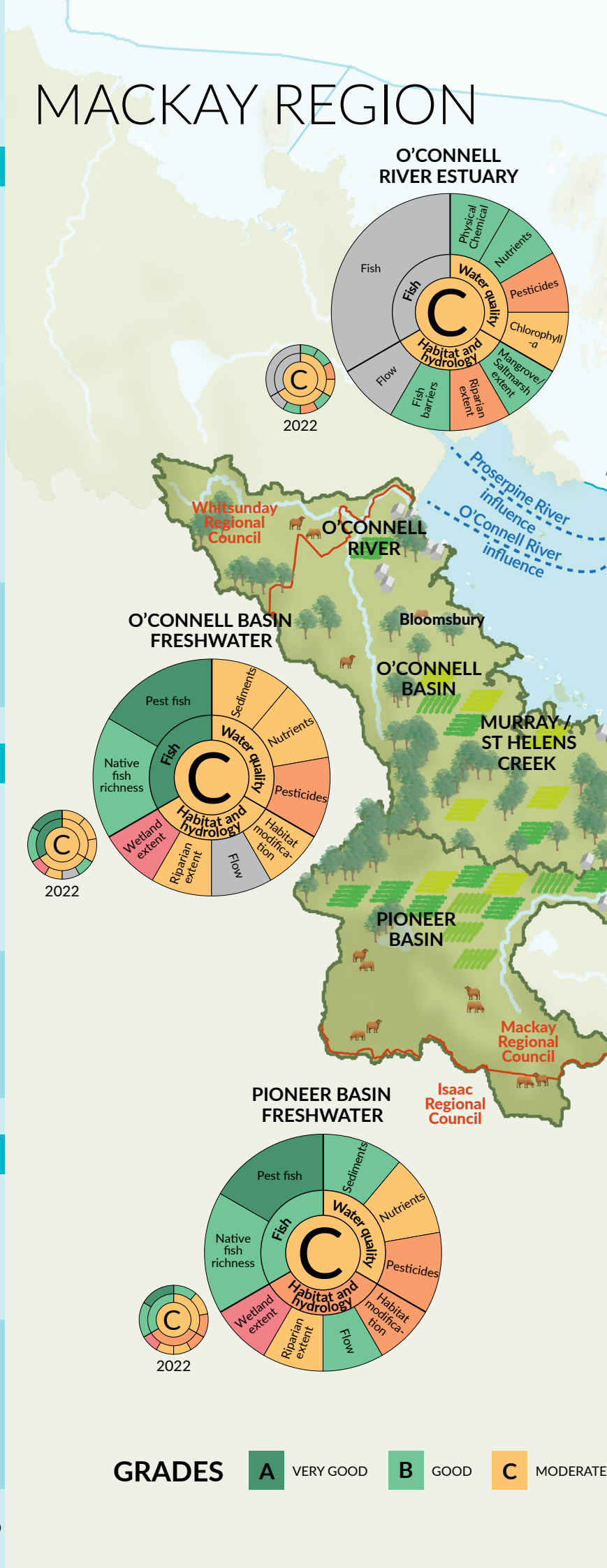
- The Pioneer Basin consistently scores the poorest of all basins for fish barriers as a result of population density, intensive agriculture and urban developments within the area. Infrastructure such as roads, causeways, weirs and dams create barriers to fish passage.

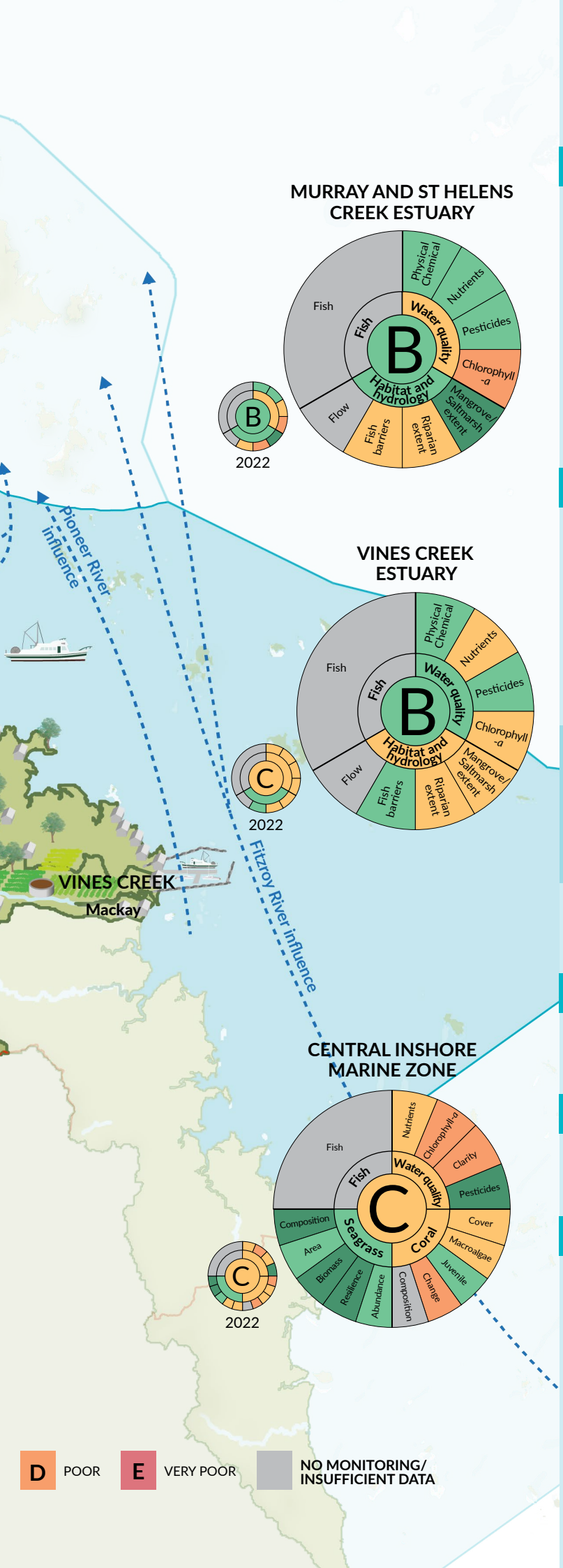
Many new infrastructure projects now consider implementing a fishway as part of the build! Fishways are structures that help support fish passage, allowing aquatic life to travel along a waterway. This improved connectivity ensures fish can complete their breeding cycle and helps keep local fish populations strong!

Flow

- Flow aims to assess the impact of water extraction for industrial and agricultural use. The Pioneer Basin grade for flow improved to 'good' in this reporting period, potentially reflecting changes in agricultural water use compared to the previous year.

Since the inception of the Report Card, there has been a marked increasing trend for chl-*a* concentrations in the Gregory River and Murray/St Helens Creek estuaries. Despite the noticeable trend, no obvious reasons have been identified. Continued monitoring may help determine if this is due to natural variability or other causes.





ESTUARY

Vines Creek, Murray and St Helens Creek

Water quality

- Vines Creek estuary was one of only two estuaries that received a grade change this year, improving from 'moderate' to 'good'. This change was due to improvements in all water quality indicators.
- For pesticides, Vines Creek saw the largest improvement of all estuaries, due in part to reduced concentrations of metsulfuron-methyl detected during sampling.
- Murray/St Helens Creek estuary recorded its lowest chl-*a* score since the Report Card's inception.

Fish

- Although the fish barrier grade did not change through the latest assessments, both Vines Creek and Murray/St Helens Creek scores declined due to increased barrier density. This was likely influenced by improved aerial imagery which allowed for better identification of barriers.
- Vines Creek estuary recorded no 'low passability' barriers.

Technology is helping drive informed data! The quality of aerial imagery and capability of drones and related mapping technology means we can now see more accurately what's happening on the ground. This technology has the potential to transform vast and complex landscapes into accessible and manageable data.

MARINE

Central Inshore Marine Zone

Water quality

- Water quality in the Central Zone has scored 'moderate' for the fourth consecutive year.

Coral

- Both coral cover and juvenile recruitment improved, however the overall coral grade remained 'moderate'.

Seagrass

- Although there was improvement in the overall score for seagrass in the Central Zone, three meadows (Dudgeon Point, St Bees Island, and Keswick Island) all declined in area from 'very good' to 'moderate'. The cause of these declines was not identified as environmental conditions were favourable for seagrass growth, however seagrass meadows can be highly dynamic due in part to animals such as turtles and dugongs feeding on plants, shifting the location of hotspots.

FRESHWATER

Plane Basin

Water quality

- Although there were no grade changes for water quality compared to last year, nutrients and sediment in the Plane Basin both recorded score improvements.
- Pesticides in the Plane Basin were 'very poor' for the seventh year in a row.

Fish

- Within the Plane Basin, rock ramp fishways were built at Flaggy Rock and Sandy Creek resulting in increased connected stream length, and improved scores within the freshwater fish barrier metric.

ESTUARY

Sandy Creek, Plane Creek, Rocky Dam Creek, Carmila Creek

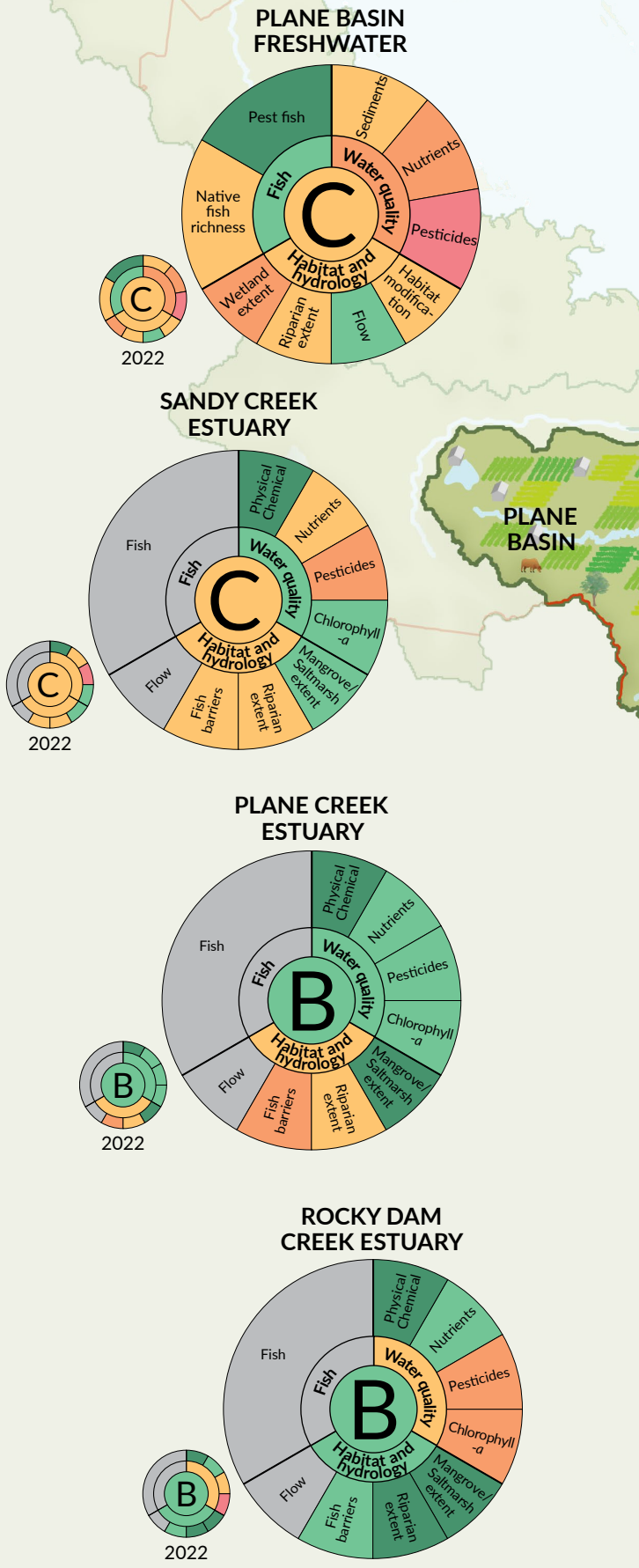
Water quality

- The overall grade for water quality improved at Sandy Creek from 'moderate' to 'good', driven by improvements in pesticides and decreased concentrations of chl-*a*. It was also the second year in a row that DIN improved at this estuary. These improvements are significant however scores for Sandy Creek remained the lowest of all estuaries for nutrients and pesticides.
- The pesticide grade for Rocky Dam Creek declined from 'moderate' to 'poor' due to increased risk from diuron. This was the only monitored estuary to record a drop in pesticide grade this year.
- Metsulfuron-methyl was a key contributor to the pesticide risk in Plane Creek estuary.
- Chl-*a* grades improved for Rocky Dam Creek and Carmila Creek, reversing a decreasing trend over previous years.

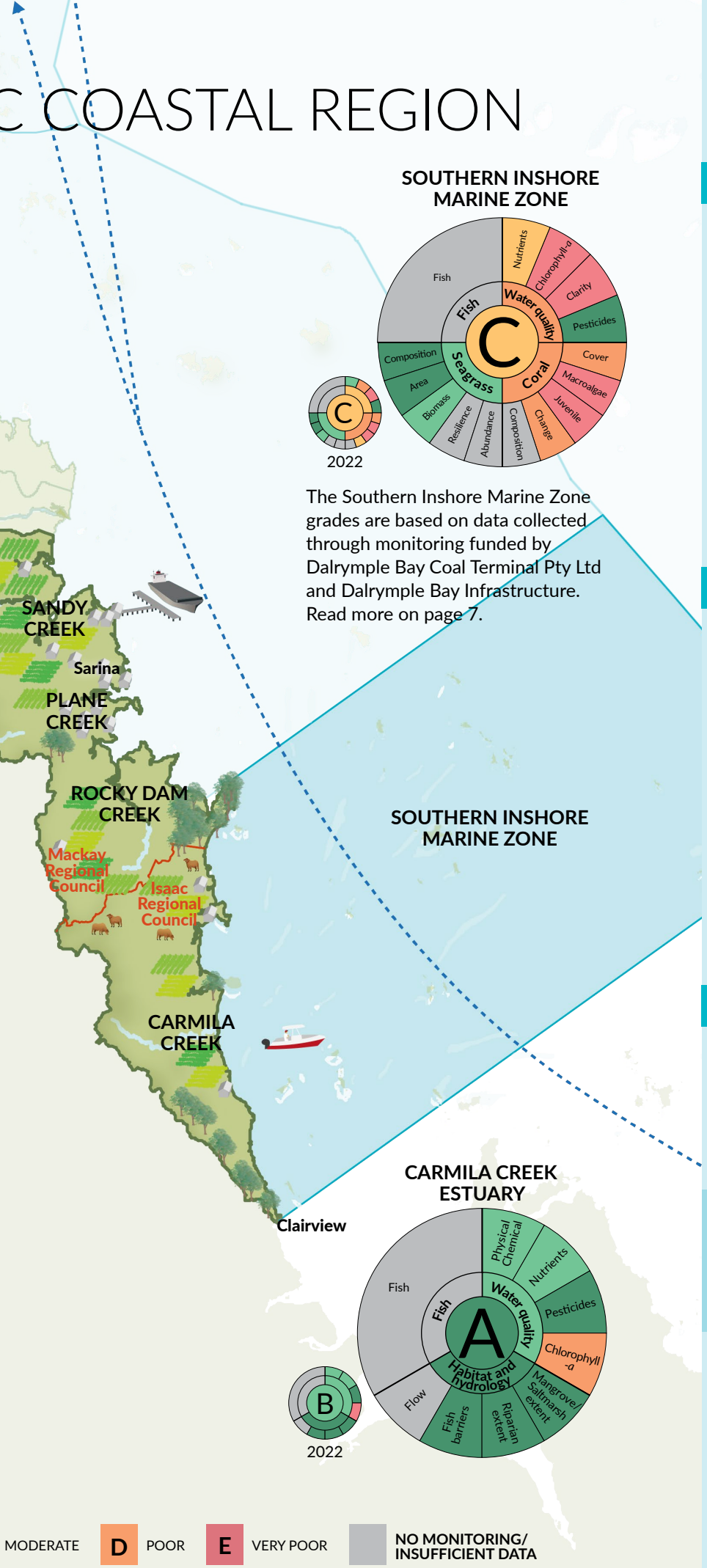
Fish

- Improved fish barrier scores at Sandy Creek estuary were driven by the construction of a rock ramp fishway at Palm Tree Road. These remediation works, completed in 2019, were designed to improve fish passage through the system.
- Carmila Creek estuary reported no barriers to fish passage, although there are fish barriers located above the estuary extent. Rocky Dam Creek recorded no 'low passability' barriers.
- Plane Creek estuary recorded the lowest fish barrier grade of 'poor' due to the urbanised nature of Plane Creek, which passes through the township of Sarina. Several 'low passability' fish barriers have been built to provide irrigation and water supply for the community and supporting industries.

MACKAY AND ISAAC



C COASTAL REGION



The Southern Inshore Marine Zone grades are based on data collected through monitoring funded by Dalrymple Bay Coal Terminal Pty Ltd and Dalrymple Bay Infrastructure. Read more on page 7.

MARINE

Southern Inshore Marine Zone

Water quality

- Water quality declined from 'moderate' to 'poor' due to increased concentrations of chl-*a* and nutrients.
- The change in nutrients was influenced by declines in particulate nitrogen and particulate phosphorus grades.
- Chl-*a* declined at all sites within the Southern Zone, most noticeably at Fanning Shoal.
- Pesticide scores were 'very good' in line with the other monitored inshore marine zones.

Coral

- Coral scores in the Southern Zone remained 'poor', despite favourable conditions and a lack of disturbances. Resilience of these ecologically isolated coral communities continues to be challenged by high cover of macroalgae and low density of juvenile hard corals, where persistent algae cover impedes hard coral recruitment.
- Henderson Island, with less macroalgae cover, is the only reef demonstrating continued recovery following the bleaching event in 2020.

Seagrass

- Meadows in the Southern Zone continued to show evidence of high usage by dugongs and turtles, with numerous feeding trails and animal presence detected during surveys.

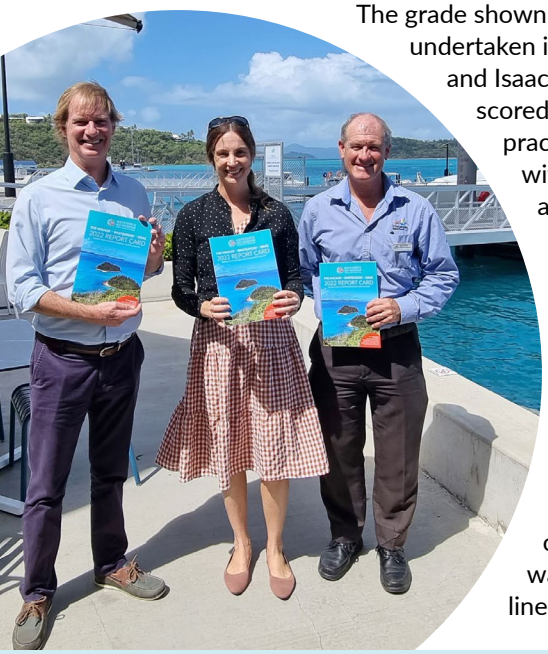
Did you know seagrasses are central to a web of life! Seagrass is a major food source for turtles and dugongs – marine animals of cultural and ecological significance in our region.

URBAN WATER STEWARDSHIP *Framework Results*

The Urban Water Stewardship Framework (UWSF), developed by the Department of Environment, Science and Innovation (DESI), is a tool for assessing the level of practice being applied to managing erosion during construction, stormwater runoff, and sewage treatment discharges, relative to best practice and legislative standards.

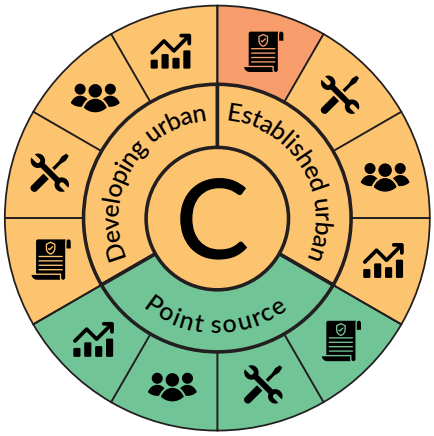
UWSF data can be used to assess practice level at local government, through to regional, and whole of Reef catchment scale.

Having a better understanding of how regional councils address nutrient and fine sediment loads from urban landscapes to the Great Barrier Reef lagoon is an important part of working together as a region toward water quality improvements.



The grade shown here is based on assessments undertaken in 2022-23 with the Mackay, Whitsunday and Isaac regional councils. The MWI region scored a 'C' grade for overall management practice level, denoting outcomes in line with minimum industry standards and a moderate risk to water quality. This suggests that improved erosion and sediment control and stormwater management planning should be a particular focus for improvement in the coming years.

Regionally, the poorest-scoring indicators related to policy, planning, and governance for the established urban component. The highest scoring component of urban water management was point source, which was considered in line with best management practice.



The 2022-23 UWSF grade for the Mackay, Whitsunday and Isaac regional councils.

A	Above best practice
B	Current best practice
C	Minimum standard
D	Superseded standard

Policy, planning and governance

Infrastructure management and maintenance

Social approaches

Monitoring and evaluation

KOINMERBURRA *Healthy Country* PLAN

Healthy Rivers to Reef Partnership is proud to support the development of the ***Koinmerburra Healthy Country Plan***, thanks to funding from our partner BHP Mitsubishi Alliance (BMA). The Koinmerburra Healthy Country Plan is also funded through the Queensland Government's $33.5 million Reef Assist program under the Queensland Reef Water Quality Program, and delivered by Reef Catchments.

This important plan focuses on the Traditional Country of the Koinjmal people in Central Queensland to the south of Mackay, and is being led by Koinjmal Traditional Owners, facilitated by RAIN (Regional Advisory and Innovation Network) Pty Ltd.

Koinmerburra Country is a place where freshwater meets saltwater with wetlands, saltwater plains, mangroves and swamps, known as 'Mixed Water Country'. An integral part of the Isaac Coastal region, Koinmerburra Country includes important ecological and cultural sites including seagrass meadows, dugong and turtle feeding trails and habitat, fishways, and shell middens.

Healthy Country Plans are designed to empower Traditional Owners to keep Country and culture healthy.

Koinjmal Elders Pam Viti, Judith Warrie, Allan Warrie at a Koinmerburra Healthy Country Plan workshop.

FILLING DATA GAPS WITH PROJECT BLUEPRINT

We are combining waterway health monitoring with tourism and traditional culture to improve knowledge of water quality in the Whitsundays, and establish connections between community, science, and culture. Each month, Ocean Rafting and Red Cat Adventures welcome a scientist and Traditional Owner on board to facilitate the collection of water samples and give Reef visitors the opportunity to immerse themselves in Indigenous culture.

THE SCIENCE

Water quality is a critical component of the health of coral reefs, seagrass and other organisms living within the marine environment. Through water quality monitoring we can help identify certain pressures such as land use runoff or impacts from extreme weather events, and implement effective action plans specific to the area.

As part of Project Blueprint, water sampling occurs monthly at two sites within the Whitsunday Inshore Marine Zone: Cairn Beach and Tongue Bay. Ten samples are collected at each site to monitor various environmental variables, and then sent to be processed at the James Cook University (TropWATER) laboratory.

Key components of the water quality monitoring program include:

1. **Nutrients**: comprises of particulate nitrogen (PN), particulate phosphorus (PP), and oxidised nitrogen (NOx). Monitoring nutrients is crucial for identifying sources of land-based runoff, wastewater discharge, and industrial pollution.
2. **Chlorophyll-*a***: is a key indicator of phytoplankton biomass and activity, and how this may be affecting the dynamics of marine ecosystems, including nutrient enrichment and algal blooms.
3. **Water Clarity**: includes total suspended solids (TSS), turbidity, and Secchi depth. These parameters provide insights into phenomena such as sedimentation and soil erosion, pollutants, light penetration, and photosynthetic activity.

Project Blueprint is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation, BHP Mitsubishi Alliance (BMA), and North Queensland Bulk Ports. The project would not be possible without strong support from local tourism operators Red Cat Adventures and Ocean Rafting, who provide regular passage to the Whitsundays.

Photos: Marty Strecker Photography

A number of report cards are produced in relation to the environmental condition of the Great Barrier Reef, including this one, with different purposes and coverage.

The **Reef Water Quality Report Card**, jointly produced by the Queensland and Australian governments, focuses on tracking towards the **Reef 2050 Water Quality Improvement Plan** targets (www.reefplan.qld.gov.au). The regional report cards form an important part of this framework by providing an annual snapshot of ecosystem health and water quality conditions of local waterways.

Wet Tropics Waterways | Healthy Waters Partnership dry tropics | Healthy Rivers to Reef Partnership Mackay-Whitsunday-Isaac | fitzroy partnership for river health | Gladstone Healthy Harbour Partnership

ABOUT US

Launched in 2014, the MWI Healthy Rivers to Reef Partnership has a shared vision of healthy rivers and Reef contributing to a prosperous region. The Partnership is a collaboration between community, Traditional Owners, farmers and fishers, industry, science, tourism, and government who recognise that more can be achieved by working together.

JOIN US

Is your organisation interested in becoming a partner? Contact us to find out how you can help build and shape our community's understanding of waterway health and how we respond.

ACKNOWLEDGEMENTS

The Partnership acknowledges the extensive input into the science behind the Report Card from the Regional Report Card Technical Working Group, the Reef 2050 Plan Independent Science Panel, and our data providers and collaborators, including: Australian Government, Australian Institute of Marine Science, Bureau of Meteorology, Commonwealth Scientific and Industrial Research Organisation, Central Queensland University, Queensland Government, the Great Barrier Reef Marine Park Authority, James Cook University, The University of Queensland, University of New South Wales, North Queensland Bulk Ports, Reef Check Australia, Seagrass Watch, Australian Marine Debris Initiative.

Biodiversity and area data sourced from DESI, WetlandInfo website (2013) accessed May 2024. Land use and Island information sourced from the Queensland Spatial Catalogue (2021 Land use dataset and 2024 Marine Islands Queensland dataset).

Australian Government | Queensland Government | BHP Mitsubishi Alliance | North Queensland Bulk Ports Corporation | Dalrymple Bay Coal Terminal Pty Ltd | CANEGROWERS Mackay | ARK ENERGY | Reef Catchments | Catchment Solutions | sra Sugar Research Australia | Tourism Whitsundays | The Mackay Isaac Region Queensland Nature. Reserved. | CQUniversity Australia | Queensland Resources Council | Australian Government Great Barrier Reef Marine Park Authority | Reef Authority | Whitsunday Regional Council | Mackay Regional Council | Isaac Region | Regional Development Australia Greater Whitsundays | TORG Traditional Owner Reference Group Mackay•Whitsunday•Isaac | CQSHS Central Queensland Soil Health Systems | NQ Dry Tropics | Sarina Landcare Catchment Management Association Inc. | Mackay Conservation Group | Reef Check Australia | Queensland Government | Queensland Rural and Industry Development Authority | Whitsunday Catchment Landcare | Pioneer Catchment Landcare | QWaLC Queensland Water & Land Carers | Healthy Recreational Fishers Alliance | Eco Barge Clean Seas Inc. Keeping Our Seas Clean! | Mackay and District Turtle Watch Assoc | Conservation Volunteers | CSIRO | Tangaroa Blue | WCBIA

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Want to learn more about waterway health?
Visit: www.healthyriverstoreef.org.au

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