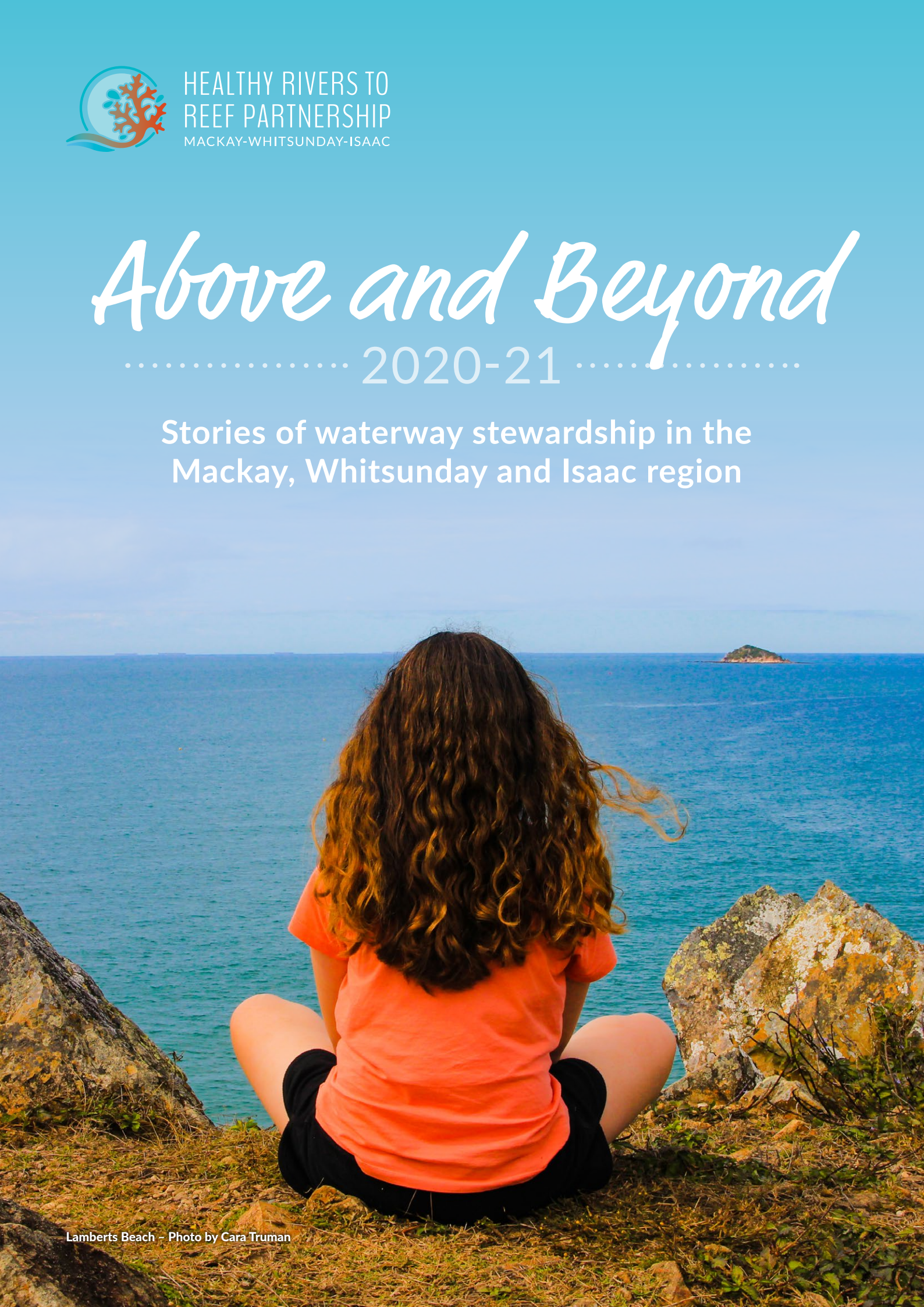
HEALTHY RIVERS TO REEF PARTNERSHIP
MACKAY-WHITSUNDAY-ISAAC

Above and Beyond

2020-21

Stories of waterway stewardship in the Mackay, Whitsunday and Isaac region



Lamberts Beach – Photo by Cara Truman

Above and Beyond

2nd Edition

A MESSAGE FROM THE HEALTHY RIVERS TO REEF CHAIR JULIE BOYD

The Partnership is delighted to launch a new edition of 'Above and Beyond', where we are once again highlighting the wonderful work that continues to be undertaken by our partners. While life in our region has not been overly impacted by the Covid 19 pandemic, it has made a difference with some businesses and projects, and also how we interact with others.

One of the projects that began this year was the *Urban Water Stewardship Framework*. This was a new initiative that was undertaken by all the report card partnerships in the Great Barrier Reef area. All three of our local councils were heavily involved and happy to participate. They willingly gave their time as they could see the benefits of adding this to our reporting information. Please take the time to read this on pages 4 and 5 to see what the councils are doing to improve urban water in our region.

At the recent report card launch, we heard about some new research work that will trap microplastics before they enter the waterways. While this is not available here yet, we are pleased to showcase the extension of gross pollutant traps in the Whitsundays (page 12). It is always surprising to see the types of litter that are prevented from going down the drains, but the usual suspects of plastic and cigarette butts are always present in large numbers. Getting the message out about not dropping litter is perennial for the sake of the health of our waterways and wildlife. Thanks to the Queensland Government for assistance with this project and to a number of our partners who have been instrumental in getting the traps installed.

This stewardship report continues to showcase efforts across all industry sectors and gives a snapshot of the improved outcomes that are being achieved. I hope you enjoy reading the case studies and learning more about the Partnership and our work!

Julie Boyd

ACKNOWLEDGMENT 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.

WHAT IS STEWARDSHIP?

Stewardship is defined as:

"The responsible and sustainable use, and protection of water resources, waterways and catchments to enhance the social, cultural, environmental and economic values of the region".

Water stewardship includes the planning and actions taken by organisations or individuals to minimise the impacts on our waterways and environment.

Stewardship and the Reef 2050 Long-Term Sustainability Plan

'Supporting industries and communities to build a culture of innovation and stewardship that takes them beyond minimum standards' is a core theme of the *Reef 2050 Long-Term Sustainability Plan* – the Government's overarching framework for protecting and managing the Great Barrier Reef.

Regional report cards play a crucial role in fostering local water stewardship. By bringing together governments, industries, research institutes, community-based organisations and other key stakeholders, the report card partnerships facilitate collaborative regional strategies and actions to improve waterway health.

URBAN WATER STEWARDSHIP FRAMEWORK

What is the Urban Water Stewardship Framework?

The *Urban Water Stewardship Framework* is a way to assess how regional councils manage urban water across the Great Barrier Reef region. It compares the management of various activities, such as stormwater, sewage wastewater and runoff of sediment from urban development, to what is considered best practice under state legislation and guidelines.

The framework was developed by the Queensland Government (Office of the Great Barrier Reef) in collaboration with the partnerships and regional councils. By creating a standard assessment process across the Reef catchments, the framework also provides councils with a tool to report and communicate achievements, improve efficiency, and support knowledge sharing.

How was it assessed?

The Healthy Rivers to Reef Partnership held a full-day workshop with urban water managers from each regional council. During the workshop, a facilitator guided rigorous group discussions about rating current urban water management practices (e.g. policies, infrastructure). These discussions, which focused on 66 different urban water-related activities, were used to calculate a grade for the region.

What was the result?

Based on the 2020 assessment, overall urban water stewardship was given a "C" grade for the region. This means that urban water stewardship across the Mackay Whitsunday Isaac region was assessed as meeting current minimum industry standards, equating to an overall moderate risk to water quality. Check out the grade coaster for the breakdown of different grade levels within the assessment! The point source indicator category received a B (low-moderate water quality risk) grade, recognising current best practice sewage wastewater management standards across the region.

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

Measuring urban water management is important because what we do on land contributes to the health of our basins, rivers, and the Reef.

Want to learn more? Stay tuned for the 2021 Report Card (to be released mid-2022).

Here's what councils are doing to help manage urban water in the region:

MACKAY

Mackay Regional Council has demonstrated its commitment to urban water stewardship by revising its Planning Scheme Policy – *Healthy Waters*. The updates will significantly improve Council's urban stormwater management during the development phase. Smart water quality sensors have also been installed in Council's largest wastewater treatment plants. They have almost halved the amount of nitrogen discharge generated while reducing electricity costs and the use of chemicals. Artificial intelligence is currently being deployed at these sites, which will reduce carbon emissions and the contaminants produced.

ISAAC

In 2020, Isaac Regional Council achieved an exciting milestone, releasing no effluent into the regions waterways for the entire year. Instead, treated urban effluent water has been used in greening Isaac's urban spaces by irrigating community assets such as parks, sporting fields and community gardens.

Council is also tackling urban erosion through a targeted in-house staff engagement program. The Liveability and Sustainability Department will engage more than 400 operational staff across eight towns through such initiatives as toolbox talk sessions about sediment entering Isaac's waterways.

WHITSUNDAY

Whitsunday Regional Council has developed an erosion and sediment control policy and program to ensure Council and private developers implement best practice measures during construction. New water quality guidelines are being used in collaboration with developers to minimise impacts after construction. Council is also stabilising urban streambanks through revegetation projects aiming to reduce erosion. One example of this is the restoration of Twin Creek in Cannonvale. Since it was featured in last year's stewardship magazine, a further 15,000 seedlings have been planted.

NUTRIENT OFFSET

The *Nutrient Offset Project* was inspired by Mackay Regional Council's need to undertake future upgrades of the Mackay North Water Recycling Facility, due to significant population growth in the Northern Beaches area.

As the technology required to undertake these upgrades is expensive and poor value for money, Council sought an alternative catchment-based solution for limiting nutrient load increases resulting from wastewater management.

The impetus for this project was the *Cleaner Wastewater Initiative*, linked to the Local Government Association of Queensland's (LGAQ) *Reef Councils' Reef Rescue Plan*, and funded by the Queensland Government through the *Queensland Reef Water Quality Program*. This program is designed to trial and share knowledge about low-cost, alternative wastewater management approaches that are more appropriate for smaller regional councils.

The trial project encompassed farms surrounding Tin Pot Creek at Balnagowan, with the intent of assisting local cane farmers to develop on-farm management plans that would reduce runoff while potentially reducing operating costs and increasing farm yields.

Council engaged local agronomic solution provider, Farmacist, to work with the farmers to review their current practices. This included reviewing their farming equipment, chemical and nutrient use and nutrient retention, and align these practices with the *Paddock to Reef Water Quality Risk Framework*.

The nutrient plans were a "win-win" for both Council and growers by providing a more affordable scheme for Council to manage expected wastewater-associated nutrient load increases and growers seeing improved rates of on-farm nutrient retention. Lowering nutrient input into waterways reduces the likelihood of harmful algal blooms occurring.

Mackay Regional Council (MRC) and local cane farmers are leading the way in an innovative trial project to reduce nutrient runoff into local waters.

SARINA CATCHMENT *Waterwatch*

Through a Queensland Government citizen science grant, Sarina Landcare Catchment Management Association commenced the *Sarina Catchment Waterwatch* at the end of last year. The program recruits local landholders and community members as 'citizen scientists' to monitor water quality within four creek systems in the Sarina catchment. By involving the local community, it aims to raise awareness of water quality issues and connect the community with their capacity to be involved in solutions. The program will run until 2023.

What is citizen science?

Citizen science is the practice of public participation and collaboration in scientific research to increase scientific knowledge. Through citizen science, people share and contribute to data monitoring and collection programs. Usually, participation is as an unpaid volunteer.

VISION FOR A *water-secure world* BY 2030

BHP recently developed its *Water Stewardship Position Statement* that expresses its commitment to, and advocacy for, water stewardship. The position statement was developed following internal and external engagement and is aligned to the *UN Sustainable Development Goals* and other initiatives such as the *CEO Water Mandate* and the *ICMM Water Position Statement*.

The *Water Stewardship Position Statement* commits BHP to set public, context-based targets that seek to improve water management and support shared approaches to address water challenges within the regions in which BHP operates. These targets are intended to more closely align performance to key regional challenges and priorities. In Queensland, BHP has commissioned Alluvium Consulting and the University of Queensland's Sustainable Minerals Institute to prepare a *Water Resources Situational Analysis (WRSA)*, which will identify the shared water challenges and collective action opportunities across the catchment, based on publicly available information and stakeholder input. The results of the WRSA will be publicly available. They will help BHP set context-based targets for company operations and contribute to addressing those shared water challenges through collective action.

BHP's vision is for a world where water resources are conserved and resilient so they can continue to support healthy ecosystems, maintain cultural and spiritual values and sustain economic growth; where the human right to safe and accessible water and the traditional rights of Indigenous peoples are realised and upheld; and where water governance is effective and beneficial, ensuring communities and ecosystems thrive for future generations.

IMPROVED IRRIGATION MANAGEMENT STRATEGIES AIM TO *keep nitrogen on-farm*

CANEGROWERS Mackay is undertaking a water quality project which seeks to prevent nutrient losses from farms and boost production by helping growers to optimise their water use through improved irrigation management strategies.

Agricultural Economist and Chief Operations Officer, John Eden, said that many people malign irrigation as creating environmental problems such as runoff, deep drainage, sodicity and denitrification.

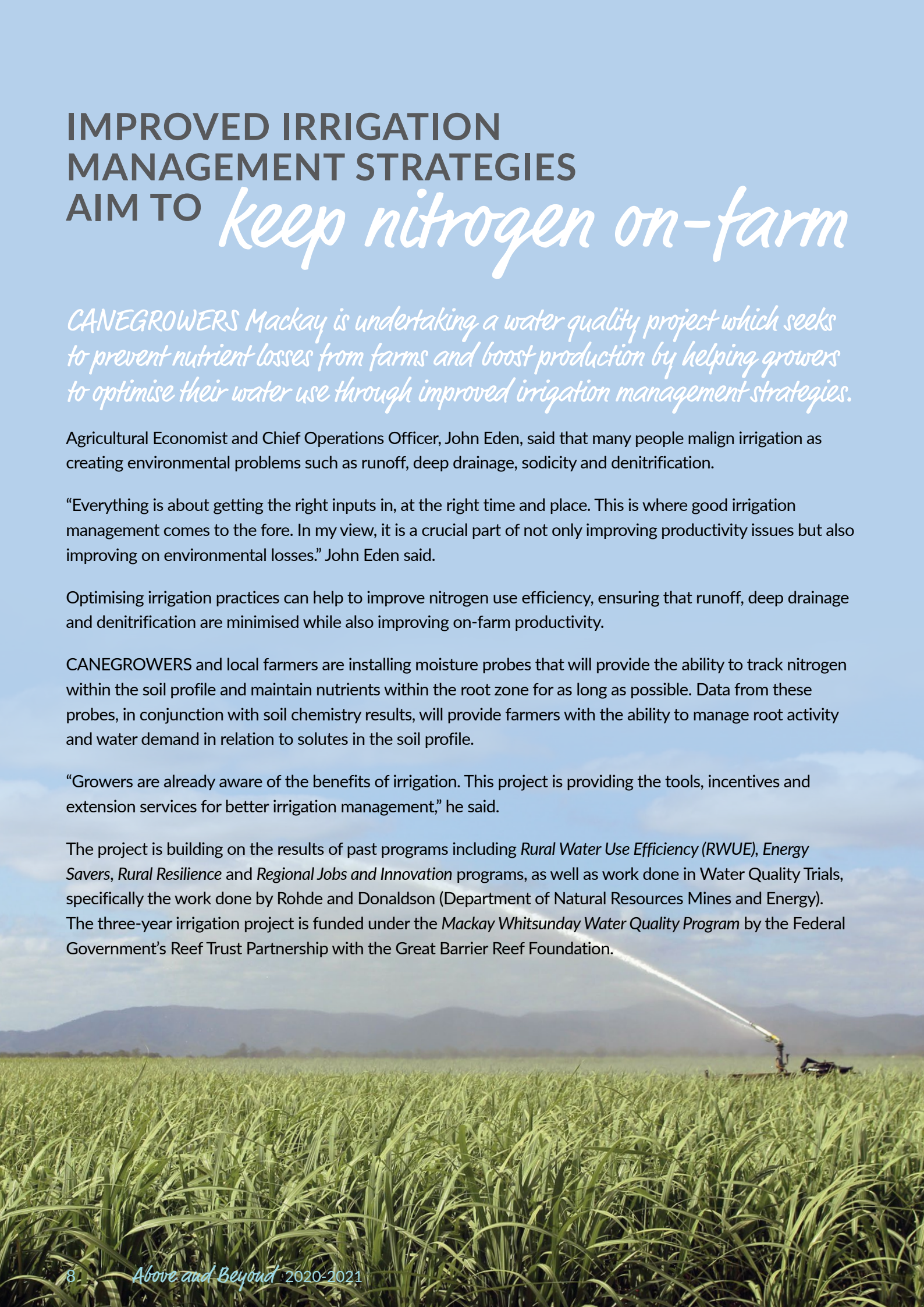
"Everything is about getting the right inputs in, at the right time and place. This is where good irrigation management comes to the fore. In my view, it is a crucial part of not only improving productivity issues but also improving on environmental losses." John Eden said.

Optimising irrigation practices can help to improve nitrogen use efficiency, ensuring that runoff, deep drainage and denitrification are minimised while also improving on-farm productivity.

CANEGROWERS and local farmers are installing moisture probes that will provide the ability to track nitrogen within the soil profile and maintain nutrients within the root zone for as long as possible. Data from these probes, in conjunction with soil chemistry results, will provide farmers with the ability to manage root activity and water demand in relation to solutes in the soil profile.

"Growers are already aware of the benefits of irrigation. This project is providing the tools, incentives and extension services for better irrigation management," he said.

The project is building on the results of past programs including *Rural Water Use Efficiency (RWUE)*, *Energy Savers*, *Rural Resilience* and *Regional Jobs and Innovation* programs, as well as work done in Water Quality Trials, specifically the work done by Rohde and Donaldson (Department of Natural Resources Mines and Energy). The three-year irrigation project is funded under the *Mackay Whitsunday Water Quality Program* by the Federal Government's Reef Trust Partnership with the Great Barrier Reef Foundation.



CANE TO *creek*

Sugar Research Australia's (SRA) project *Cane to Creek Mackay Whitsunday* aims to build knowledge of farming practices and the effects on the quality of water leaving the paddock and farm productivity. Growers can use this knowledge to select farming practices that are beneficial for both the environment and farm production.

The objective of the Cane to Creek project is to influence cane farming practices through communication of results from grower-led demonstration sites located in the Pioneer and Plane Creek catchments. Three demonstration sites were established in the first year of this project with water samplers, flumes, and rain gauges. Samples were collected for each farming practice assessed at the trial sites. Key learnings from Year One demonstration sites include the importance of the correct placement of liquid Imidacloprid, and the importance of considering the chemical properties of herbicide active ingredients (KOC and solubility) if applying late in the season when heavy rainfall events are likely to occur. This work will be extended in Years 2 and 3 at different demonstration sites. The Mackay Whitsunday Cane to Creek project is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation.

Mackay Whitsunday WATER QUALITY PROGRAM

Reef Catchments has been engaged to manage the program delivery of the *Mackay Whitsunday Water Quality Program*. The program is focused on working with landholders in the Pioneer and Plane basins to improve nutrient management, pesticide management and irrigation practices on-farm while maintaining and/or improving productivity and profitability. Growers engaged in the program receive agronomic and technical support and financial incentives to address barriers to change.

The program is currently in its second year with 226 projects under way across the Pioneer and Plane basins.

The target load reductions (end of program) are:

Pesticides	Dissolved Inorganic Nitrogen (DIN)
215 KILOGRAMS	26 TONNES

For information on how to become involved, visit www.reefcatchments.com.au/projects/mwwqp

The $22.7 million program is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation. The program runs until mid-2024.

HOME & GARDEN

How you can help protect our waterways

Our household activities can impact water quality as sewer and stormwater networks drain into our waterways. Here are three issues facing our freshwater and marine habitats that we can address in our own backyards.

NUTRIENTS

Phosphorus and nitrogen (two of the most commonly used nutrients) occur naturally in the environment, but too much can be harmful. Nutrients are in fertilisers, cleaning agents, and yard and pet waste. High levels can cause harmful algal blooms that lead to death in aquatic ecosystems and can even be harmful to humans who encounter polluted water or seafood.

Reducing nutrients

- Plant native lawn such as weeping grass or wallaby grass. Natives are suited to our climate and need less fertiliser, pesticides and water.
- Use permeable surfaces like gravel, mulch or pavers for landscaping. This allows rain to filter into the ground instead of into drains that transport pollutants directly to waterways.
- Use natural phosphorus fertilisers from seaweed, fish meal, or blood and bone instead of chemical fertilisers.
- Pick up after your pet and walk them in parks, not close to aquatic habitats.
- Use phosphate-free soaps and detergents to avoid releasing phosphorus into water networks. Use the appropriate amount – more is not better.

CONTAMINANTS

Pesticides, paints, pool chemicals and petrol products contain toxins that are harmful to humans and wildlife. These contaminants can travel through water networks into freshwater and marine environments and can leech through sediments into groundwater.

Reducing contaminants

Wash your car over lawn or gravel so that soapy water is filtered before it enters stormwater networks. Empty leftover washing water into the sink or toilet, or onto grass if outside.

Dispose of toxic chemicals, including e-waste (e.g. obsolete electronic devices) appropriately via transfer stations or hazardous waste specialists.

WATER CONSERVATION

Our water supply is under pressure from extreme heat events, drought, and increasing population. Domestic water use can divert water from aquatic ecosystems. Pumping and treating water for human consumption is also energy-intensive, causing greenhouse gas emissions.

Conserving water

Use low-flow taps, shower heads, and reduced flow toilets.

Water your garden early in the morning or late afternoon to allow roots to absorb outside of peak heat hours and prevent evaporation.

WHITSUNDAY REGIONAL COUNCIL
Feral Animal Control Program

North Queensland Bulk Ports has supported the *Whitsunday Regional Council Feral Animal Control Program* since its inception in 2014. The program aims to reduce the population of feral animals in the region.

Feral animals such as pigs, dogs and foxes cause extensive damage to the environment and the horticultural and agricultural industries. Feral pigs, in particular, are known to cause widespread destruction of crops and streambank vegetation and increase sediment erosion into local waterways.

Observations from areas that have participated in the aerial shooting program indicate lower levels of pig impacts as more pigs are removed over time. Anecdotally, Juru Enterprises Limited has seen a marked reduction in turtle nest predation around Abbot Point since the commencement of the program.

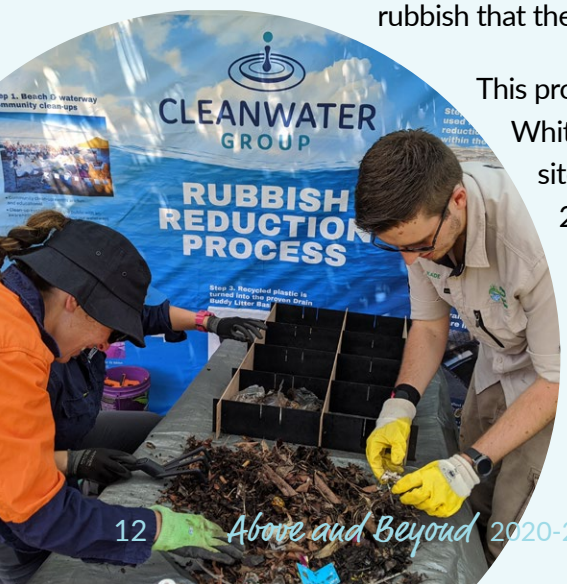
Since 2014, the program has flown over 32,000 km and removed almost 11,000 feral animals from farming and port land around the Whitsundays.

Over the years, the aerial shooting program has seen continual improvements such as increased land manager involvement, mapping, and flight path modification.

STOPPING LITTER AT ITS SOURCE

The Healthy Rivers to Reef Partnership is leading the *Whitsunday Gross Pollutant Trap (GPT)* project to stop litter at its source.

In collaboration with the local community and council, including Whitsunday Regional Council, Tangaroa Blue Foundation, Cleanwater Group, Whitsunday Plaza and Reef Catchments, the project will see fifteen 'drain buddies' installed into stormwater drains throughout the Whitsunday region. This project aims to reduce the amount of litter entering the Great Barrier Reef Marine Park by providing a physical barrier to litter passing into waterways in the Whitsundays. Litter caught in the traps will be used to identify the primary sources of litter in the region. The data will be used to create source reduction plans to help local communities and businesses reduce the amount of rubbish that they are creating and/or dispose of litter more appropriately.



This project puts the community at the forefront, collaborating and consulting with Whitsunday locals at every step. This includes helping to identify suitable GPT sites throughout the region, volunteering at auditing events (scheduled for 2022) and being involved in the eventual development and delivery of the source reduction plans.

The two-year Whitsunday GPT project is possible thanks to $50,000 of funding support from the Queensland Government's Community Sustainability Action grant program and a $15,000 contribution from the Healthy Rivers to Reef Partnership.

HEALTHY PLANET INITIATIVE

Dalrymple Bay Coal Terminal Pty Ltd is a proud sponsor of the Mackay Creatives' Plastic Boutique project, *Healthy Planet 2021*.

The Healthy Planet initiative raises environmental awareness of the 500,000 tonnes of synthetic clothing and fabrics that go into landfill each year in Australia.

The Plastic Boutique has delivered community workshops across the Mackay and Isaac regions as well as an art installation at Caneland Central Shopping Centre.

The project aims to get people thinking about their relationship with plastics and how they can be more conscious in their use and consumption.

"Plastic Boutique was set up after I witnessed the huge amount of plastics floating down the Pioneer River. Knowing the devastating impact plastics have on our marine life, I was compelled to raise awareness of plastic pollution." Margaret Burgess (local artist and founder of Plastic Boutique) said.

According to the World Wildlife Fund, 85 per cent of Australian seabirds are affected by plastic pollution; an estimated one million die each year because of plastic ingestion or entanglement.

FACT

In Australia, almost three million tonnes of plastic is manufactured every year, but only **12 per cent** is recycled. (WWF Australia)

NET-FREE ZONE

In 2015, a gill net-free zone was introduced by the Queensland Government into the waters between St.Helens and Cape Hillsborough, Mackay. The Mackay Recreational Fishers Alliance monitored the zone each year after its enforcement to compare fish size and abundance to before the area was established. Now, with six years (approximately 9,000 fishing hours) of data collected, the effects of the net-free zone are becoming apparent.

Fishers in the area are seeing increased catch rates that have stabilised, more legal fish, increased fish sizes and more trophy-sized fish. There are also rising numbers of king and blue threadfin compared to before the zone was introduced. Fishers are also changing their attitudes to releasing legal fish, with over half of all legal fish caught being released in 2020. The recovery of fish stocks in this area demonstrates the importance of net-free zones. The impact of the net-free zone could not have been documented without Mackay Recreational Fishers Alliance volunteers.

ARTIFICIAL REEFS WILL HAVE ANGLERS *hooked on Mackay*

Mackay Regional Council recently installed underwater structures aimed at improving fish habitat at three targeted locations along the Pioneer River. The structures are located within casting distance of popular fishing platforms on Brisbane Street, Carlyle Street and Bridge Road (next to Mackay Base Hospital).

These artificial reefs were specifically designed to provide habitats suitable for large predatory fish (that are desired among anglers) and juvenile fish species. The design, which is made from concrete, attracts a wide variety of species by incorporating separate compartments linked by various-sized entry points. This gives juvenile fish the opportunity to avoid predators, so they have a better chance of growing to maturity and reproducing.

The artificial reefs aim to enhance the fishing experiences of locals and tourists, while creating new tourism opportunities for the region.

For more details about this project visit www.mackay.qld.gov.au

SANDRINGHAM WETLANDS

Reef Catchments is working across multiple projects to improve water quality across the region. A key project is the *High priority coastal and island restoration for the protection of significant ecological communities and species* funded by the Australian Government's Reef Trust. This project aims to improve management practices which is important to improving water quality. The enhancement of the Sandringham Wetland Complex is one initiative being funded by the project.

The Sandringham Wetland Complex provides many vital functions to local coastal area due to its unique soil types and water holding capacity. Wetland habitats are an important part of many grazing properties in Queensland.

Most wetlands in Queensland are on private land, and many are on properties that run grazing businesses. Improvements and adoption of best management practices on these critical ecosystems can enhance the ecosystem and improve grazing systems. Graziers value the Sandringham Wetland Complex for providing water and feed for stock, and reserves during the dry season or droughts. The impacts of grazing on wetlands can include reduced water quality from additional nutrient inputs, increased soil compaction and reduced native vegetation. The result can be reduced capacity of the wetland to provide filtration and water quality within the ecosystem.

This project assists landholders in the Sandringham Wetland Complex to manage their land and practices, to optimise the balance between production and ecosystem protection, with improved connectivity between habitats.

Wetlands are the boundary between two different ecosystems, dry and wet, which means they have a unique role in nutrient exchange and water supply to the surrounding lands and provide habitat, food, and shelter to many different plants and animals.

Electrofishing was performed by Catchment Solutions in the wetlands to provide a baseline of fish stocks at the start of the project.

REEFCLEAN

The greatest threats to Australia's World Heritage listed Great Barrier Reef are climate change, coastal development, runoff, and human activities such as illegal fishing and pollution.

ReefClean is a five-year project funded by the Australian Government's Reef Trust program and delivered by Tangaroa Blue Foundation in collaboration with partner organisations, community groups, traditional custodians and individuals along the 2,300 km coastline of the Great Barrier Reef. The project aims to remove marine debris as well as prevent further pollution through source identification and reduction interventions, education and awareness campaigns.

ReefClean data is reported in the Australian Marine Debris Initiative (AMDI) Database. The AMDI enables volunteers and organisations to collect and share litter clean-up data on a nationally accessible database. Data from AMDI for the Mackay Whitsunday Isaac region is now reported in the Partnership's annual waterway health Report Card.

The partnership includes: Reef Check Australia, Capricornia Catchments, Eco Barge Clean Seas, Oceanwatch Australia, South Cape York Catchments and AUSMAP, along with community groups and volunteers.

Within the Mackay Whitsunday Isaac region, ReefClean has been active in monitoring, community clean-ups (both along coastline and offshore islands), education and awareness and school activities.

A ReefClean snapshot of the Mackay Whitsunday Isaac Region 2020-2021 Financial Year:

6.26
TONNES
marine debris removed

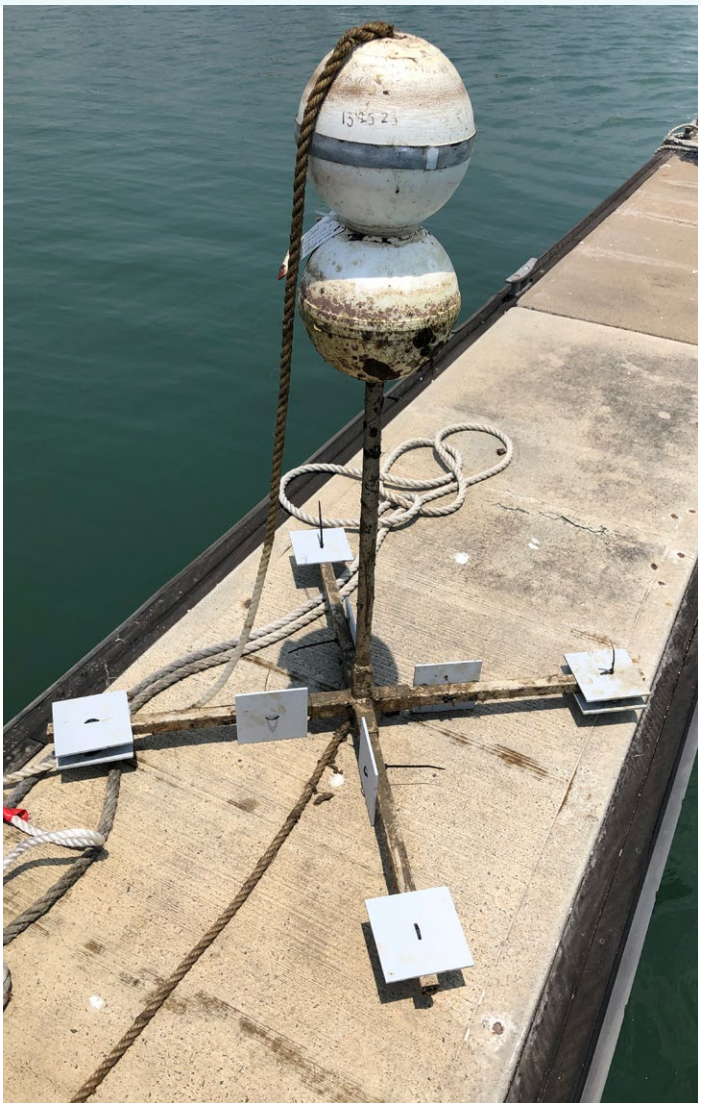
438
VOLUNTEERS/ PARTNERS
involved
(from clean-up data participation numbers)

139,912
ITEMS REMOVED

Southern Inshore MONITORING PROGRAM

The Partnership-funded *Southern Inshore Monitoring Program* began in 2017 to fill crucial data gaps in the marine waters around Clairview. Now in its fifth year, the program is continuing to improve knowledge of seagrass, coral and water quality in the Southern Inshore Marine Zone. The 2021 Report Card (to be released mid 2022) will be the first to report on the health of seagrass meadows in the area, following a period of baseline data collection.

In 2020, Dalrymple Bay Coal Terminal and Dalrymple Bay Infrastructure signed on to fund the project for a further three years, securing the project until at least 2023. This demonstrates the commitment of local industries and the Partnership to improve our understanding of waterway health in the Mackay Whitsunday Isaac region.



BIOSECURITY MONITORING

Protecting Australia's biosecurity is a responsibility shared by governments, industry and the community. North Queensland Bulk Ports (NQBP) has partnered with several agencies to undertake a range of surveillance programs in and around our ports, including surveillance of invasive marine pests and exotic insects. NQBP have a series of settlement arrays/plates installed at each of their four ports and invasive marine pest monitoring is undertaken by staff on a quarterly basis. These devices act as an early warning detection system and are located close to marine infrastructure, including berths. Recent improvements to the program have included the risk-based incorporation of plankton tows and environmental DNA (eDNA) analysis. This method samples DNA found in the water to identify if there are invasive species present in the area.

Stewardship

ACROSS THE GREAT BARRIER REEF CATCHMENTS

Want to read more stories of waterway stewardship across the Reef catchments? See the below publications from other Report Card Partnerships.

OUR PARTNERS

Stay in touch!

info@healthyriverstoreef.org

www.healthyriverstoreef.org.au

MWIHR2RP

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