REEF CATCHMENTS
MACKAY WHITSUNDAY ISAAC

We're looking after our region!

Who are Reef Catchments?

Reef Catchments is the NRM (Natural Resource Management) group for the Mackay Whitsunday Isaac (MWI) region, the gateway to the iconic central Great Barrier Reef. The area is renowned for its natural beauty, including 204 islands, which help attract more than 640,000 visitors annually. The MWI region is rich in natural resources that sustain major agriculture, tourism and resource industries and which hold high ecological and biodiversity values. From inland to the islands, Reef Catchments works with a wide range of partners and stakeholders to facilitate education, on ground change and long-term solutions to protect and manage the area's valuable natural assets. We believe a healthy environment is the basis for a healthy region, a place where ecosystems are in good condition, the community is cohesive and the economy provides jobs and a reasonable standard of living.

Find us here:

Find us on facebook
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@ReefCatchments

See the area we cover
www.reefcatchments.com.au/about-reef-catchments/our-nrm-region-map/

Learn more about our work online
www.reefcatchments.com.au

REEF CATCHMENTS

Printed on environmentally friendly recycled paper.

Reef Catchments has offices in Mackay and Proserpine. *Contact us or drop in.*

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Photo: **Department of Environment**

REEF CATCHMENTS PROJECTS COVER OVER

800,000 ha

IN THE MACKAY WHITSUNDAY ISAAC REGION

DIVERSE PROJECTS COVER WATER QUALITY, SUSTAINABLE AGRICULTURE, FISH HEALTH, COASTAL MANAGEMENT, LAND AND ECOSYSTEM REPAIR, PESTS AND WEEDS, ***MARINE AND ISLANDS AND MORE.*** IN 2015-16...

MORE THAN 500 ha OF WEED CONTROL WORKS WAS UNDERTAKEN TO REMOVE INVASIVE SPECIES IN **COASTAL ECOSYSTEMS**

PROJECTS TO IMPROVE CHEMICAL, NUTRIENT, SOIL AND IRRIGATION MANAGEMENT **COVERED MORE THAN 32,000 ha**

1,400 *VOLUNTEERS*

CONTRIBUTED OVER ***6,000 HOURS*** TO COASTAL CONSERVATION WORKS

277 ha

OF AQUATIC HABITAT WAS ENHANCED ***BETWEEN 2013–16***

2 ARTIFICIAL WETLANDS

WERE CONSTRUCTED AND

3 TREATMENT TRAINS

BUILT TO IMPROVE WATER QUALITY AND PROVIDE AQUATIC HABITAT

THROUGH AUSTRALIAN GOVERNMENT FUNDING, IN 2015-16...

$1.7m

WAS PROVIDED TO CANE FARMERS VIA WATER QUALITY GRANTS TO IMPROVE ECONOMIC, SOCIAL AND ENVIRONMENTAL OUTCOMES

MORE THAN

4.2 tonne

OF MARINE DEBRIS WAS REMOVED FROM OVER ***150 ha*** OF COASTLINE ACROSS ***17 ISLANDS*** AND MAINLAND LOCATIONS

BETWEEN 2013–16

12 SEDIMENT BASINS WERE CONSTRUCTED TO CAPTURE SEDIMENT FROM RUNOFF

8 FISHWAYS

WERE CONSTRUCTED TO IMPROVE FISH PASSAGE BETWEEN ***IMPORTANT AQUATIC HABITATS***

5 *RURAL FIRE BRIGADES*

WERE ENGAGED IN TRAINING TO IMPROVE FIRE MANAGEMENT ON OVER **3000 ha** OF COASTAL LAND

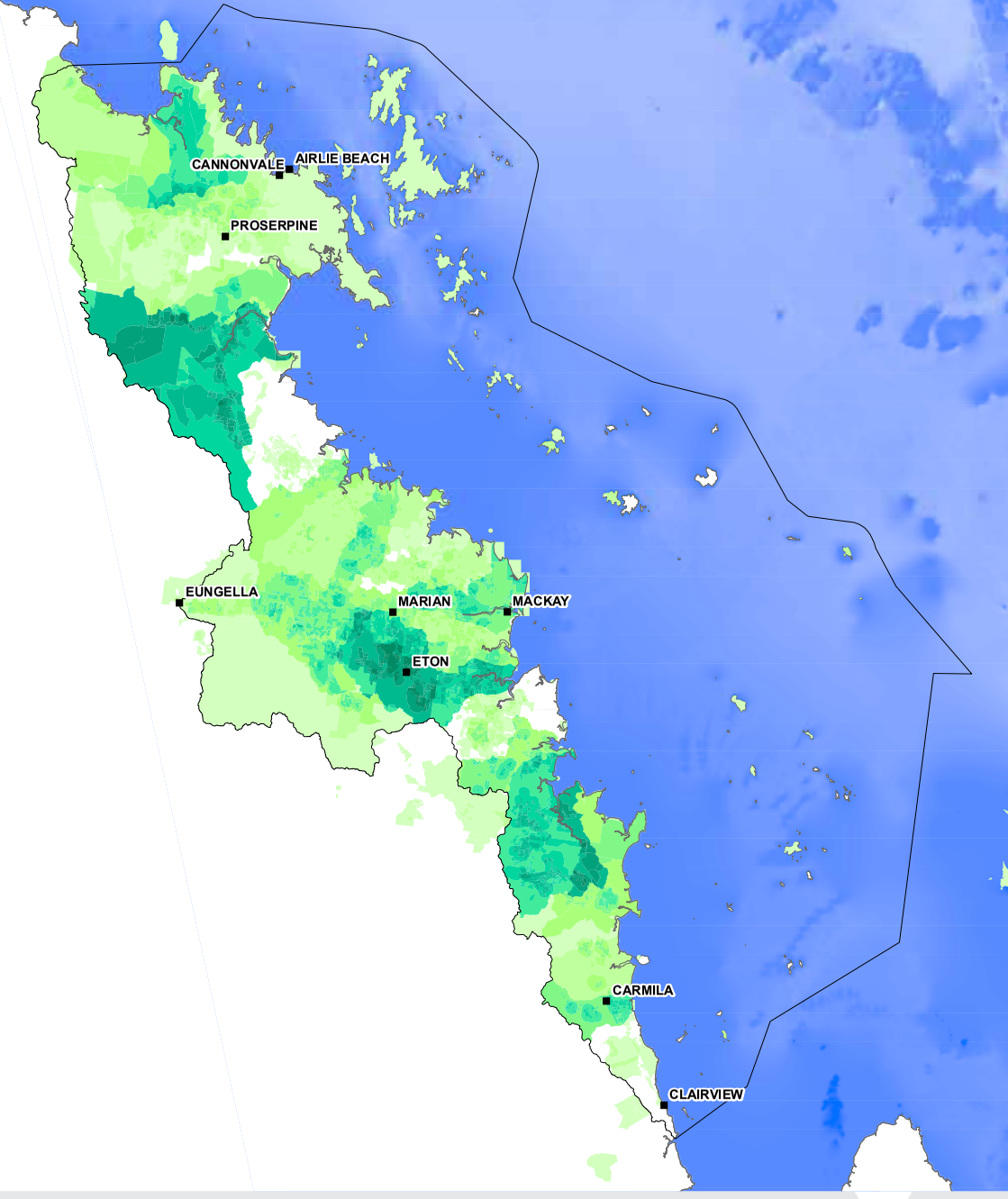
APPROXIMATELY

54,000 ha

WERE COVERED DURING FERAL PIG CONTROL, WITH SUCCESSFUL REDUCTION IN NUMBERS

53 GRAZIERS

WERE INVOLVED IN **58 ON GROUND PROJECTS**



Regional Impact Map

IMPACT

Low

High

N

0 10 20 30 40

kilometres

Scale at A4 is 1:827,039

Coordinate System: GCS GDA 1994

The Regional Impact map depicts all the significant projects undertaken by or with Reef Catchments in the Mackay Whitsunday Region since 2008, providing a geographic footprint of the reach of Reef Catchments project works.

Shaded areas are indicative of the extent of project works. An increase in the tone and intensity of the shading corresponds to a higher number of projects executed at the site.

Reef Catchments take a strategic approach to natural resource management. Areas of high impact reflect Reef Catchments' regional prioritisation of monitoring, management and community engagement activities tailored to protect our natural resources, including land, waterways, and Reef.

Projects represented include:

- Coastal including beach zones, mainland and islands
- Grazing
- Paddock to Reef research and monitoring
- Pest and weed management
- Fire management planning
- Local Coastal Zone management planning
- Australian Government Reef Programme projects including farm, chemical, nutrient, soil and water projects
- Systems and landscape repair
- Water quality improvement
- Fish Barrier Prioritisation works
- Healthy Rivers to Reef research and monitoring
- Traditional Owner Reference Group coordination

Regional Impact Map

Reef Catchments has a strong presence in the overall Mackay Whitsunday Isaac NRM region and community, with projects covering over 800,000 hectares from a subcatchment to landholder level.

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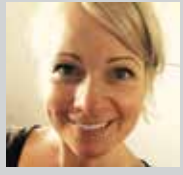

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CEO's Welcome

Welcome to the 2015-16 Reef Catchments (Mackay Whitsunday Isaac) Limited Annual Report. I hope you find the report and its overview of natural resource projects informative and of interest.

2015-16 has been a year of many challenges. The primary challenge continues to be meeting market and community expectations aligned to increasing environmental sustainability. The growing gap between community aspirations and available resource allocations to deliver and showcase improved environmental sustainability is a complex problem. It is however a problem that Reef Catchments is open to finding answers to. We continue to see large environmental pressures on our natural environment. However solutions do exist that allow us to better plan and more effectively and efficiently use our region's natural resources, while supporting economic and development aspirations and preserving our way of life and traditions.

The key to relieving these pressures remains aligned to realizing additional public interest and investment in support of sustainability actions. The focus is toward changing hearts and minds (behaviour) of all land mangers/custodians toward a clear responsibility – that being, to leave our region's natural assets in a better condition for future generations than they are today.

The success in meeting this responsibility seeks a combination of on ground changes and benefits via a legacy of partnership frameworks, where the total community is supportive and collaborative efforts are able to realise not only better environmental outcomes but also higher market value for goods and services offered.

As evidenced in this Annual Report, Reef Catchments' role and responsibility continues to be focused toward the coordination, integration and alignment of effort to sustainably manage our region's critical natural resources. Our actions are focused on working to support diverse stakeholders to implement improved land and water use, activity and planning – including farmers and land managers, industry, community, government and council, Traditional Owners and research bodies.

Reef Catchments' actions are supportive of a process that allows our region to act local and think global, thereby supporting regional opportunities as they relate to sustainable supply chains. Reef Catchments adds value to this process by mobilsing on ground natural resource management effort, investment and outcomes that are able to enhance regional community viability and prosperity.

I take this opportunity to thank our retiring Chairperson Mr Royce Bishop for his efforts and long-term commitment to natural resource management and the Reef Catchments organisation. I also welcome Mrs Julie Boyd, who takes on the role of Chairperson for Reef Catchments and I look forward to working with Julie over coming years.

My thanks goes to the Board of Reef Catchments Limited for their support and guidance over 2015-16. Each of our Directors devotes a significant proportion of their time and energy to Reef Catchments Limited and its operations. I also wish to thank the staff of Reef Catchments Limited. Our services and functions are complex and have many challenges, which the staff deal with on a daily basis. Despite these challenges the staff of Reef Catchments continue to deliver natural resources solutions and work together with our many and varied stakeholders to deliver tangible outcomes.

I would like to acknowledge our members, partners, collaborators and investors without whom Reef Catchments could not operate. A special mention must go to the Australian and Queensland Governments for their ongoing financial support of regional NRM arrangements. We look forward to increasing and ongoing investment commitment to our region.

Lastly and most importantly I thank the Mackay Whitsunday and Isaac community. Through the efforts of individuals, groups and our community at large we continue toward making a positive difference to the health of our region's people and the water, land, waterways, fauna and flora that they rely upon.

Rob Cocco
Reef Catchments Chief Executive Officer

Team

Reef Catchments had a tremendously productive year, wrapping up a number of major three year projects. These included the Australian Government Reef Programme for water quality grants; System Repair projects for Urban and the O'Connell River, Plane Creek and Pioneer River basins; and State Government programs for pest and weeds, sustainable agriculture and Paddock to Reef. The great work and results from these projects is set to continue via new funding and slightly altered projects from both Australian and Queensland governments from June 2016.

The Reef Catchments team worked tirelessly to complete these projects. Officers engaged with diverse partners to provide financial or in-kind support, allowing funding to go further and achieve better or increased NRM outcomes. It is rewarding to see ideas and projects come to life to establish a legacy of healthy ecosystems for future generations.

Congratulations to a dedicated and results-oriented team.

What have we been up to?

Of the projects that wrapped up this year, some of the highlights for me are:

The sugarcane water quality grants saw over $2.6 million issued to cane farmers through Reef Catchments via funding provided under the Australian Government Reef Programme. Cane farmers more than matched this investment to the tune of $3.7 million. Cane farmers contributed $1.42 for every $1 of government funding.

The final year of the Urban project saw two significant collaborations with Mackay Regional Council come to fruition - Little McCreadys Creek and the Lagoons wetland. The Department of Transport and Main Roads was also a driving partner for the Lagoons wetland. Both projects relied heavily on community input and engagement. The Little McCreadys Creek community has already seen a substantial increase in water dependent fauna species. This project will improve the local community's appreciation and understanding of local ecosystems, while the Lagoons wetland is a regionally significant project that has a community reach beyond the local neighbourhood. Both projects will see improvements in fish habitat, landscape connectivity and water quality.

In the Whitsundays a pile field was constructed within the O'Connell River basin catchment. It is the first pile field project in the Whitsundays, and the largest system repair project Reef Catchments has led. The site was the highest priority identified in the O'Connell River Stability Assessment. Approximately 275 piles were driven into the stream bank for realignment purposes and to provide an environment suitable for sediment deposition and vegetation establishment. The works have already provided considerable water quality improvements after a single wet season.

The ongoing funding for feral pig control programs has significantly reduced the feral pig population and has allowed landholders to learn where pigs congregate at various times in the year and the types of habitats they prefer during the different seasons. This makes it possible for the contractors engaged to target the most effective control method, according to the environmental conditions. This has resulted in increased efficiency in implementing the various control methods. Benefits of the programme are both environmental and economic. Landholders are the biggest contributor, as the program has demonstrated success.

Moving forward

What's next? Reef Catchments has secured funding for three years for the sugarcane industry and growers, to improve the quality of water entering the Great Barrier Reef lagoon. The project will target reductions in nutrients and herbicides and facilitate the adoption of best management practice.

There are a number of future opportunities for programs focused on improving water quality entering the Great Barrier Reef. Reef Catchments will continue to work with partners to prioritise, engage and collaborate with the regional community, to lead the way in identifying and adopting new and improved actions and practices for the benefit of our many and varied natural assets.

Katrina Dent
Manager, Reef Catchments

Reef Catchments Manager **(operations) report**

Corporate Shared Services **Manager's Report**

We are a small team that achieves a substantial volume of work covering a diverse range of activities - Administration, Finance, Communications, GIS, IT, Board support and WHS.

The Corporate Shared Services (CSS) team have effectively adapted to the challenges of the past year, and have continued to provide high quality support to the busy operations of the Reef Catchments Group.

We are a small team that achieves a substantial volume of work covering a diverse range of activities - Administration, Finance, Communications, GIS, IT, Board support and Workplace Health and Safety (WHS).

A definite highlight of the year was a CSS Field Day where we visited a number of project sites in the region to see, firsthand, the valuable work that we support behind the scenes.

WHS has been an important area of noteworthy achievement where major policies and procedures have been reviewed and implemented, and comprehensive training and support for staff in risk assessment, hazard identification and appropriate controls has also been provided.

In addition to our routine support functions, a number of improvement projects have been successfully implemented. We have a new phone system which has improved the connectivity between our Mackay and Proserpine offices, the field data capture application is working well and new budgeting/reporting software has been set up for use in the coming financial year. In the year ahead we will continue our updating of key policy and procedure, as well as implementing a purchasing system and developing a comprehensive communications strategy.

I am very proud to work with such a capable and hardworking team, and as always we are grateful for the support of operations staff, directors, members and the suppliers that we work with. Another busy year is already underway and we are working diligently and professionally to meet the challenge.

Sally Young
Manager, Corporate Shared Services

Chair's **Report**

"Sustainability is essential to everything that we do. It is not just environmental sustainability but also social and economic sustainability."

Since my appointment as Chair in July, I have been on a steep learning curve, finding out about the projects and programs being undertaken and seeing the incredible outcomes being produced by the team at Reef Catchments. I have previously worked with the organisation on individual projects, but I had been unaware of the depth of its work.

I have always had an interest and involvement in the natural resources sector and, on a personal level, I have undertaken an extensive revegetation program on our property which has an large area of vine forest.

In my time as Mayor of Mackay, I championed many projects that provided benefit to the natural resources sector. Examples include the establishment and construction of the effluent reuse scheme providing treated water for cane irrigation, building new solid waste and recycling facilities, introducing an environmental levy, producing a vegetation management plan with extensive mapping, and constructing the botanic gardens to showcase native vegetation.

In taking on this role, I have some very large shoes to fill. Former Chair, Royce Bishop, was a passionate advocate of the region and the company. His knowledge is extraordinary and I'd like to personally thank Royce for his long standing commitment to Reef Catchments and the natural resources sector.

Also retiring from the Board is Jennifer Whitney, the Local Government representative. Jenny has been an active member of the Board, her local community and Local Government and has provided wise counsel to the Board for many years.

Both Royce and Jenny's contribution will be missed.

Thank you also to the Board, whom I am delighted to have the privilege of working with, and I look forward to welcoming Mayor Andrew Willcox.

Rob Cocco, Sally Young and Katrina Dent have been invaluable in providing information, advice and support from their various roles and I look forward to working with them ahead to facilitate NRM outcomes for our region and community.

Julie Boyd
Chair, Reef Catchments Limited

LAND

Caption: **Hooded sprayer being utilised by a grower to improve herbicide application, co-funded through a water quality grant and grower contribution.**

Australian Government Reef Programme **CANE**

Project status: Three year Programme completed in June 2016. A new programme has commenced and is being progressed under Reef Trust 3 funding.

The Australian Government Reef Programme engages cane growers to implement sustainable farming practices. Funding provides an opportunity for growers and contractors to improve on-farm efficiencies linked towards chemical, nutrient, soil and irrigation practices. Farm practice change is a vital step toward improving water quality runoff to the Great Barrier Reef lagoon.

Reef Programme round two funding was via water quality grants, with extension providers engaged to provide support and services to farmers.

" The level of financial and physical investment from cane farmers to the Australian Government Reef Programme is evidence of the Mackay Whitsunday Isaac region growers' commitment towards achieving water quality outcomes. Cane farmers are more than matching government investment, **contributing $1.42 for every $1 of government funding.**"

Funding provided through the Australian Government Reef Programme, with co-contribution from landholders.

Australian Government
REEF CATCHMENTS
FARMACIST
Plane Creek Productivity Services Ltd
Sugar Services Proserpine
CANEGROWERS
maps
mackay area productivity services

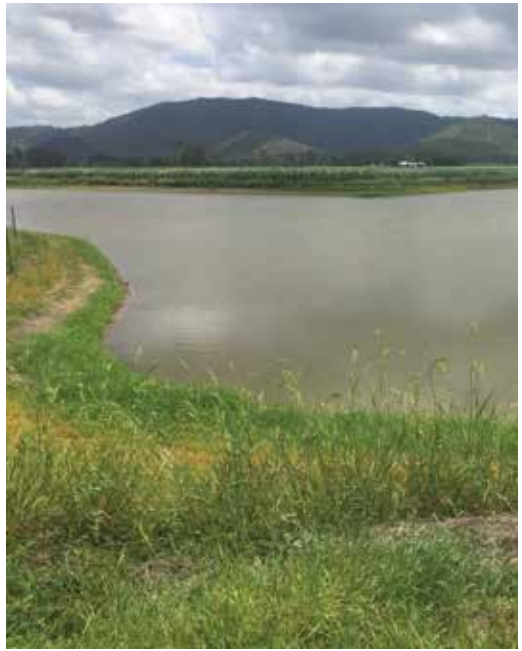
The final year of the Australian Government Reef Programme (round two) culminated in the completion of a number of projects enabling cane farming efficiency gains and practice improvements in the areas of soil, chemical, nutrient, and water management practices.

2015-16 saw the continuation of cane farmers receiving one-on-one extension support from Precision Planning Consultants throughout the Mackay Whitsunday region. Consultants assisted growers with formulating chemical and nutrient plans at a finer scale to try and improve productivity and profitability as a means to reduce losses off-farm.

This extension support service was complemented by cane farmers being able to access grants towards spray nozzle upgrades, EM mapping and soil testing, irrigation equipment, GPS systems and variable rate applicators for chemical and nutrient use. Grants also supported subsurface application of fertiliser, and the development/ rehabilitation of wetlands and sediment basins.

The Reef Programme looked to increase farm profitability through efficiency gains while maintaining or improving yields. Focusing on both productivity and water quality is a win-win and will ensure a sustainable industry and region in the years ahead. Improvements in water quality must be addressed sustainably, taking into consideration the range of factors impacting farm practices and decisions.

The programme delivered excellent value for money, with Government and industry investing in precision farm planning, equipment upgrades to assist growers to move towards precision agriculture as well as the establishment of multiple off-farm water capture basins and wetlands. The uptake of precision agriculture and improved practices will lead to water quality improvements in the region over the coming years.



Caption: **Sediment dam designed to capture off-farm outputs to assist with local water quality.**

In 2015-2016:

- $1,763,889 issued to cane farmers via water quality grant investment to improve economic, social and environmental outcomes
- Chemical management projects – 6,470 ha
- Nutrient management projects – 8,767 ha
- Soil management projects – 8,502 ha
- Irrigation management projects- 8,408 ha
- 60 cane farmers received irrigation extension support to identify inefficiencies that contribute to poor yields and nutrient runoff

Over the programme's completion (2013 – 2016), achievements included:

- $3,710,296 contribution from cane farmers
- $2,606,181 issued to cane farmers via water quality grant investment
- 348 cane farmers completed farm planning on 625 farms covering an area of 68,766 ha
  - Chemical management projects – 13,151 ha
  - Nutrient management projects – 20,424 ha
  - Soil management projects – 14,818 ha
  - Irrigation management projects – 13,300 ha
  - Stormwater – 8 constructed wetlands capturing 1125 ML and 8 detention/sediment basins capturing 241 ML

This programme offers strong value to growers in the form of one-on-one extension and support. The focus over the past three years has been on ensuring productivity and profitability are the key drivers for improving water quality. As the saying goes "it is pretty hard to be green when you are in the red."

Caption: **Subsurface fertiliser applicator co-funded with a variable rate controller to improve nutrient management under Reef Programme.**

OUR REGION, OUR STORIES

Precision herbicide application improves farm efficiency and water quality

Reef Programme Grower, Michael Vella

Michael has been a recipient of funding from the Australian Government Reef Programme to assist the cane farming family business to implement improved farming practices. These practices target efficiencies in chemical, nutrient and soil management to achieve water quality improvements and production efficiencies. Michael first decided to become involved in the programme in 2008 in order to access grants to assist with the cost outlay of a modified legume planter, GPS unit, tractor steer kit, modified ripper and a high rise spray tractor. Michael was also able to access extension support from Precision Planning Consultants to guide and educate himself on the changes he was making on-farm.

During 2015-16 Reef Catchments provided co-funding, through a water quality grant, to assist Michael in purchasing a four row hooded sprayer. Since operating the hooded sprayer across the farm, Michael has gained efficiencies in his chemical application by being able to change his rate and herbicide selection. He has noticed a significant reduction in weed pressure in the inter-row space due to the shields of the sprayer. The hooded sprayer has also enabled safe application of knockdown herbicides in the inter-row and less reliance on residual herbicides. Currently the only downside has been that Michael is restricted to spraying four rows at a time. However this inefficiency is more than compensated by effective weed control at a significantly reduced cost.

Michael has not only noticed a cost saving by changing to the hooded sprayer but he considers himself to be playing his part in sustainable agriculture and protecting the local environment. Michael has a vested interest in ensuring his livelihood and his children's future are safeguarded by looking after his land and surrounding local waterways.

Michael Vella is part of the family owned and operated 24,000 tonne cane farming operation located at North Eton, in the Sandy Creek subcatchment. Michael has been involved with the 280 ha cane farm for the past decade and anticipates that the 2016 crop will attain an above average yield for the farm.

Caption: **Andy Humphreys (Precision Planning Consultant, MAPS) and Michael Vella going over the joint funded hooded sprayer under Reef Programme.**

"Innovative cane projects are important to help get you thinking outside the square. You have to keep improving production and your production efficiencies because in the cane industry you're in part controlled by the world sugar price with regards to what you will get paid."

Michael Vella, Cane Farmer, North Eton.

Caption: **Michael Vella and Andy Humphreys inspecting the 2016 crop at the Vella's North Eton property.**

Michael recommends other growers get involved with projects like Reef Programme as it has not only improved the Vella's farming practices but has also provided one-on-one extension support to assist with farm planning.

Michael will continue to trial new technology, business ideas, crop rotations and farming practices because he believes "even if at first you don't succeed you can only improve with time."

Being involved with Reef Programme has helped growers look at neighbours' paddocks to see what changes they are making, resulting in shared ideas and lessons learned. It is testament to the region to have forward thinking growers who bounce ideas off each other, with Precision Planning Consultants providing support. These growers are looking to improve and are taking the initiative to tackle challenges. This can only help with ensuring younger generations become involved in the cane industry, supporting the long term viability and sustainability of sugar cane.

LAND

Caption: **Bea Perez (Coca-Cola Chief Sustainability Officer and Vice President) visiting Project Catalyst grower Scott Simpson, inspecting a skip row plot trial.** *Photo:* **Warren Papas.**

Project **CATALYST**

Project status: From 2009 – ongoing. Now in its 7th year, Project Catalyst growers are located in sugarcane growing regions that are also part of the Great Barrier Reef lagoon catchment, from Sarina to Mossman across the Reef Catchments, NQ Dry Tropics, and Terrain NRM Wet Tropics.

The goal of Project Catalyst is to reduce environmental impact, enhance crop production and increase farm viability within sugarcane production systems in the Great Barrier Reef catchment by accelerating the identification, validation and adoption of innovative farming practices.

With the project in its seventh year, it continues to engage with more growers, increase the number of trials being undertaken, and works to decrease the level of nutrients, chemicals and sediment runoff from cane lands.

Project Catalyst continues to support grower led innovation working to achieve significant reductions in nutrients, chemicals and sediments entering the Great Barrier Reef through improvements in farm management practices.

Project Catalyst is supported and funded by major partners: The Coca-Cola Foundation, WWF, the Australian Government, Bayer, Catchment Solutions, Reef Catchments, NQ Dry Tropics, Terrain NRM, industry and growers.

There are approximately 3,777 sugarcane growers in Australia managing 403,200 ha of land. Approximately 80 % of these growers – about 3,000 farms – are within the Great Barrier Reef catchment, which means water leaving these farms has the potential to impact on water quality to regional waterways and the Reef.

The knowledge from on ground trials and cultural change brought about through this work flows through to the broader sugarcane community through communication and extension activities, word of mouth and information sharing with partner programs such as the Australian Government Reef Programme.

Project deliverables include:

- Updates and results from 15 field trials underway across the NRM regions of Mackay Whitsunday, Burdekin and Wet Tropics, including dissemination of results in case studies, the project website, industry journals and other publications
- Farm improvement plans for each participating Project Catalyst grower
- Farmer field days to showcase trial results to Project Catalyst growers, other growers, and the wider sugarcane industry (productivity boards, agronomists, research institutions and mills)
- Grower forum - the annual get-together of project partners and growers to showcase results and exchange ideas. The forum now attracts 130+ growers and industry representatives each year

IN 2015-2016

Project Catalyst Partner Visits

Ms Beatriz R Perez, the Chief Sustainability Officer and Vice President of the Coca-Cola Company visited Mackay grower, Tony Bugeja and met with other Catalyst growers during her visit in October 2015.

Federal Government funding secured (2016-19)

The project secured Reef Trust (Australian Government) funding of approximately $3 million for the period 2016-19. The Australian Government's ongoing commitment to the project will focus on expanding participating growers from 78 to 120, and seeks a further 200 growers to adopt practices arising from the project.

Project Catalyst Grower Forum

The annual Project Catalyst Grower Forum was held at the Pullman International Hotel in Cairns on the 22 and 23 February 2016. The forum focused on innovation and technology and was attended by 140 people, including Project Catalyst partners, growers, government and industry representatives.

The Project Catalyst website www.projectcatalyst.com.au is currently being developed and scheduled to be launched in late 2016.

Project Catalyst works toward improved water quality in the Great Barrier Reef catchment regions by partnering directly with 78 sugarcane growers and their families.

Caption: **The focus of Project Catalyst is improving water quality entering the Great Barrier Reef. Pictured, the famous Heart Reef in the Whitsundays.** *Photo:* **Tourism Whitsundays.**

OUR REGION, OUR STORIES

Project Catalyst Grower Forum shines a light on innovation

Project Catalysts' value is its grower led approach. The growers develop practice change ideas and trials with the support and direction of independent agronomists, and share these ideas, experiences and learnings, including at the Project Catalyst Grower Forum.

The Grower Forum is an annual event bringing together Project Catalyst sugarcane growers from the Mackay Whitsunday, Burdekin Dry Tropics and the Wet Tropics regions to share information on the Project Catalyst supported trials run on their farms. It is an opportunity to exchange findings and information in the cane, agriculture and water quality space, with the focus always on innovation.

Project Catalyst and the Growers Forum are supported by major Project Partners: the Coca-Cola Foundation, the Australian and Queensland Governments, Bayer, Reef Catchments, NQ Dry Tropics, Terrain NRM and other sponsors. With an agenda spanning two days, the forum provides strong networking opportunities with updates and discussion on market transformations, international trends and innovation in agriculture in Australia and globally.

In 2016 the event attracted 130+ attendees and delegates to Cairns. It is an invitation only event, focused on fostering a networking and creative environment where the leading innovative growers from the sugar industry can learn from others and share their experiences. This includes growers discussing what has and has not worked with their trials, and identifying if there is anything they would adjust with their trial. Many of the grower families extend their stay to enjoy a bit of R&R.

"Being involved in running the Project Catalyst Grower Forum is a wonderful experience. You meet so many passionate grower families, and many of the partner organisations whose support helps to bring new agricultural innovations and ideas to fruition."

Craig Davenport Agricultural Innovations Coordinator, Catchment Solutions.

Caption: **Project Catalyst Forum growers share presentations on the trials (Cairns, 2016).**

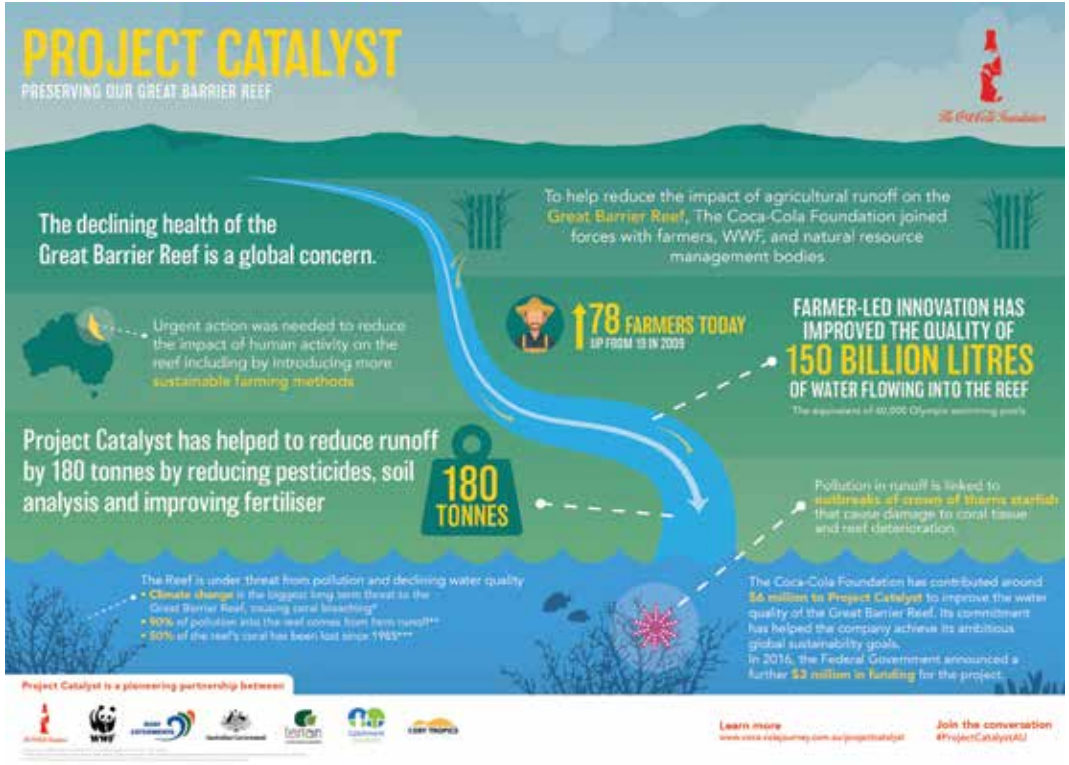
Project Catalyst Grower Forum shines a light on innovation

The Project Catalyst Grower Forum is the premier event to showcase innovation in sugarcane, leading to the protection of the Great Barrier Reef by improving water quality flowing from farms. The Grower Forum brings together WWF, Natural Resource Management groups and industry stakeholders with major funding Partners The Coca-Cola Foundation, Bayer, and the Australian and Queensland Governments to recognise growers for their passion for sustainable sugarcane production and innovation, leading to major improvements in water quality.

Mackay Grower Tony Bugeja is a passionate advocate for the benefits a program like Project Catalyst can bring, both for productivity gains and for the Great Barrier Reef.

“To me, everybody should be worried about things like soil erosion and water quality.” Tony undertakes trials, and is an active participant in the annual Grower Forum and always makes his experience available to others.

The next Project Catalyst Grower Forum will be hosted in Mackay by Reef Catchments in early 2017. The Forum will include a field focused event with demonstrations and a social evening. Attendees will hear about trials directly from the growers as they present their results and thoughts. The participants will split up for workshops before the formal dinner to end the event.



LAND

Caption: **Gerry Deguara and his sons Joe and Sam have a proud tradition of supporting innovative farm management trials conducted under projects such as Project Catalyst and GameChanger.**

Fast Tracking adoption of GameChanger sugarcane nutrient and pesticide **MANAGEMENT PRACTICES**

Project status: The majority of the GameChanger trial sites were completed in June 2016. Trial findings will now be utilised in Project Catalyst and other cane programmes.

This project had wide impact in the Mackay Whitsunday region, including the following subcatchments: Proserpine River, Myrtle Creek, O'Connell River, Blackrock Creek, Murray Creek, Pioneer River, Sandy Creek, Alligator Creek and Rocky Dam Creek, all flowing into the Great Barrier Reef lagoon. The project also had a wider impact on the catchments associated with the Burdekin cane growing region, and catchments associated with the Herbert River, Tully and Mossman cane growing areas within the Wet Tropics region.

The GameChanger project has developed and trialled innovative management practices in the Mackay Whitsunday, NQ Dry Tropics and Terrain Natural Resource Management (NRM) regions, with a focus on the use of precision agriculture technologies and advanced planning to provide opportunities for cane farming to be more economically and environmentally sustainable.

GameChanger management practices are an extension of Project Catalyst activities, where technologies and techniques are generally at a higher level than the best management practices identified in the regional Sugarcane Management Practice ABCD Frameworks.

Funding was provided by Reef Catchments through the Australian Government Reef Programme, with co-contribution from landholders.

Plane Creek Productivity Services Ltd

Sugar Services Proserpine

During 2015-16, data from the majority of the GameChanger trials has been collated and analysed across the three NRM regions. Trials at nine sites in the Terrain region were not completed during the 2015 harvest season predominately due to delays in harvest operations from wet weather. These trials have been extended and will be harvested and data analysed during the 2016 harvest season.

The project has been promoted and widely discussed at conferences, forums, and field days as well as in social media and written media articles. In excess of 30 case studies have been produced showcasing the results achieved from selected trials.

Data from selected trials was forwarded to the Department of Agriculture and Fisheries economic analysts to assess the viability of specific advanced management plans utilising precision agricultural technologies and expert agronomy.

Representatives from all on ground service providers, DAF economic analysts and the participating NRM groups conducted a workshop in May 2016 to discuss trial results and to help identify the GameChanger practices to be considered for incorporation into the current Sugarcane Management Practice ABCD Frameworks.

Over the programme's life (2013–16), achievements and results included:

- Sites where nitrogen application rates were modified to suit a block or zone yield potential, with no indicated yield decline when compared to grower rates or the Six Easy Steps rate (district yield). This is a significant outcome from the project, with a potential overall reduction in nitrogen inputs of more than 3,500 tonnes of applied nitrogen per annum across the three NRM regions.
- Trials involving changes to herbicide strategies (from extensive use of residual herbicides to the strategic use of knockdown and residual herbicides). These trials have the potential to provide strong environmental outcomes without suffering yield declines. Reduction in residual herbicide use of more than 25 % has been targeted as a result of these trials.
- Trials involving variable rate application of Balance ® herbicide based on changing soil properties. These trials were amongst the first of their type in the cane industry. Trials have proven to be successful in matching application rates to soil properties without loss of cane production, while maintaining effective weed control.
- Trials conducted in the Burdekin aimed to improve mill mud application by applying lower rates of mud onto the top of the row. These trials have resulted in commercial mill mud contractors undertaking their own development based on the results achieved. Banded applications have delivered a significant improvement in water quality compared to traditional high volume within row methods. In particular, Phosphorous (P) levels have shown improved losses by as much as 12 kg/ha in water exiting the paddock.
- Enhanced efficiency fertiliser trials undertaken within the project are considered to have led the way in research of this exciting new development in fertiliser technology. The trials have shown that in the majority of cases, reducing Nitrogen (N) rates in association with enhanced efficiency fertiliser resulted in no loss of production.

Growers in the GameChanger programme are making significant advancements in improving their farming operations as a result of their participation in the project. More importantly, growers external to the programme are increasingly aware of the successes achieved, with a particular emphasis in matching nutrient applications to the yield potential of aging ratoons.

Caption: **An image depicting large variations in crop yield which is a common occurrence in many cane paddocks across the region. Developing variable rate applications to better manage nutrient inputs to match crop production was successfully trialled and implemented in the GameChanger project.**

LAND

Caption: **Reef Programme graziers Jim and Juanita Angus (pictured), Bloomsbury.**

Australian Government Reef Programme **GRAZING**

Project status: Three year Programme completed in June 2016. Work done under this project is being progressed through the Queensland Government.

The Australian Government Reef Programme Grazing aimed to improve grazing land management practices in the Mackay Whitsunday Isaac region. Reef Catchments grazing project officers assisted local graziers to complete farm planning to transition to industry best practice and above. The programme funded landholders to establish offstream and land type watering points, undertake gully remediation, erect riparian and land type fencing and action pasture renovation and revegetation on riparian areas. The on ground projects delivered improvements to pasture groundcover and protection of the riparian zone, consequently reducing the risk of sediment discharge into the Great Barrier Reef lagoon.

The level of uptake, interest and financial contribution from graziers involved in the Australian Government Reef Programme is testament to graziers in the Mackay Whitsunday Isaac region who are eager to achieve sustainable land management practices and address the collective issue of reducing sediment runoff into the Great Barrier Reef.

Funding provided by Reef Catchments through the Australian Government Reef Programme, with co-contribution from landholders

Australian Government

REEF CATCHMENTS

The third and final year of the Australian Government Reef Programme Grazing continued to be successful with graziers throughout the region eager to engage in projects. Expressions of Interest in the programme exceeded expectation. During 2015-16, 38 graziers representing a land area of 10,844 ha were involved in the programme. Graziers were provided with farm maps including an aerial photo, land types, and contours and cadastral maps. Reef Catchments grazing project officers used these maps to provide one-on-one extension services to the grazier, developing and completing farm plans which build environmental resilience (i.e. pasture management) into grazing properties and practices.

In addition Reef Catchments grazing project officers continued to support improvements in grazing land management practices (through follow up extension) for graziers engaged during the earlier stages of the programme. The extension services provided to help build the graziers knowledge and confidence, and gives them reassurance they are not expected to address water quality issues on their own, or overnight, and that they have the support of the Australian Government and wider community.

Caption: **Land type fencing and offstream watering point co-funded to assist landowners with pasture renovation and restrict stock access for improved riparian vegetation.**

Reef Programme Grazing (2015-16), achievements included:

- $298,760 in grants distributed to local graziers for implementation of on ground works to improve water quality
- More than 15 km of land type fencing and 31 land type watering points to assist with pasture management and maintenance of groundcover across the regions diverse soil types and topography
- More than 10 km of riparian fencing and 15 offstream watering points to restrict stock access to streambank and gully areas.
- More than 315 ha of land management improvement and pasture renovation aimed at increasing groundcover to reduce sediment loss

Reef Programme Grazing (2013-16) achievements included:

- 69 graziers completed farm planning covering 33,531 ha
- 53 graziers involved in 58 on ground projects
- $618,906 in grants distributed to local graziers
- $1,068,273 contribution from graziers
- 41 km land type fencing and 52 land type watering points
- 42 km of riparian fencing and 60 riparian type watering points
- 1,186 ha land management improvement and pasture renovation
- 96 ha of gully management
- 3.5 ha of riparian vegetation

The region is fortunate to have a highly motivated and proactive grazing community that is committed to the long term economic and environmental sustainability of our grazing lands.

LAND

OUR REGION, OUR STORIES

Reef Catchments provides ‘leg-up’ for practice change at Glencoe Station

Bob Harris is a grazier on Glencoe Station, a 2,400 ha cattle property located just south of Bowen in the Eden Lassie subcatchment (northern section of the Mackay Whitsunday Isaac NRM region). Glencoe runs approximately 700 head of mixed cattle which meet local abattoir and live trade markets. Pasture on Glencoe consists of mainly native grasses, with the addition of stylos to increase soil nitrogen levels and forage protein levels.

Since purchasing Glencoe Station in 2000, Bob has been making changes to his property focusing on grassland management principles. Bob has been a recipient of funding from the Australian Government Reef Programme Grazing to assist him to implement on ground works to improve water quality runoff to the Great Barrier Reef. He is also an active member of the regional grazing working group that promotes best management practice to the local grazing community.

During 2014-15 Reef Catchments provided co-funding to help Bob install 6.2 km of land type fencing and five land type watering points. Sloping country was fenced off from the flats and plains to enable better stock rotation and more even grazing of pasture. The land type fencing and watering points helped prevent stock overgrazing favoured areas, and reduced soil erosion by maintaining greater groundcover. Since installing the land type fencing, Bob has noted a marked improvement in pasture cover in previously overgrazed areas and better utilisation of pastures on slopes. Bob also received funding towards 1.1 km of riparian fencing and an offstream watering point to control stock access to a series of gullies. The control of stock access to the gullies means less bank erosion, restoration of vegetative cover and better water quality outcomes.

“Reef Catchment projects are an encouragement to foster change in farming practices. Furthermore past projects serve as an example of improved practices and encourage wider change in others.”

Bob Harris, Glencoe Station, Reef Programme recipient – Water Quality Grants

Caption: **Bob has used fencing to separate the flats and plains to enable better stock rotation and more even pasture grazing.**

OUR REGION, OUR STORIES

Reef Catchments provides 'leg-up' for practice change at Glencoe Station

Caption: **Bob Harris runs Glencoe Station, a 2400 ha cattle grazing property just south of Bowen.**

In addition to work completed in partnership with Reef Catchments, Bob has installed at his own cost a further 23 km of mainly land type fencing. Bob recently achieved grazing best management practice accreditation and has a particular passion for grazing holistic management.

Bob believes one of the most important benefits of working in partnership with Reef Catchments to trial new activities is that it provides the impetus, support and tools needed to get things going. "What Reef Programme does is really give you that leg up to get you started. I believe every farmer has their - 'one day I'm going to do this, and I want to do that'. But you need a catalyst and that's what Reef Catchments has helped do, to get things started."

Bob has attended workshops and field days focused on holistic grassland management, and is very interested in implementing these methods, with a strong emphasis on improving soil health for both environmental and economic sustainability.

Bob will continue to utilise fencing to more tightly control the movement of cattle, dividing the property into segments and enabling longer rest periods between grazing events to help achieve optimum pasture utilisation and maintenance of groundcover.

LAND

Caption: **The development of a Climate Plan provides regionally specific climate projections for Mackay Whitsunday Isaac.**

Mackay Whitsunday Isaac Climate Change **PROJECT**

Project status: Ongoing. This project considered the impact that climate change is predicted to have locally on the Mackay Whitsunday Isaac region.

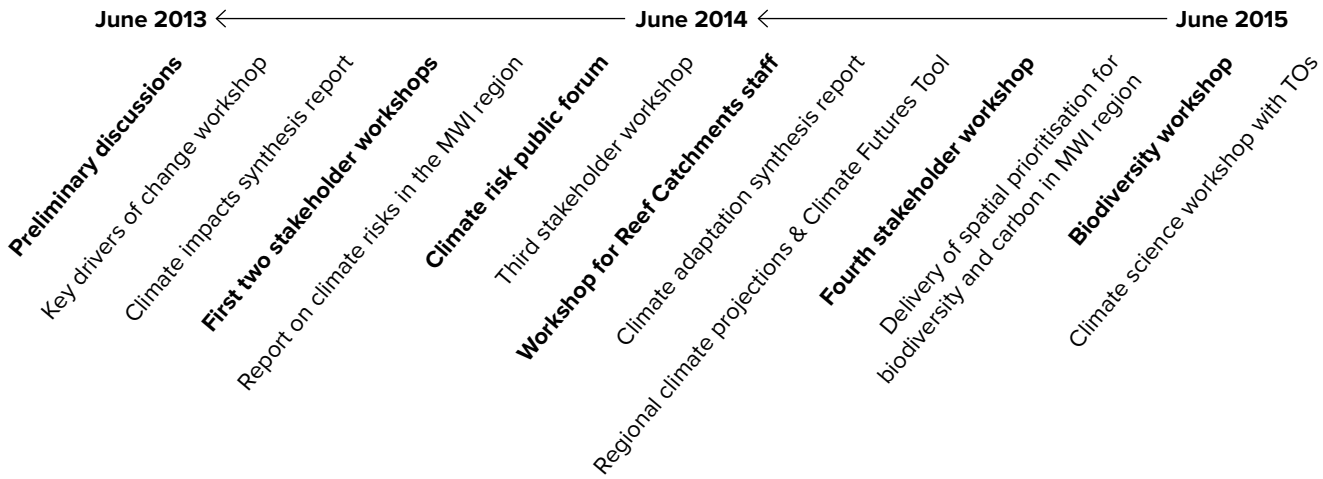
The Mackay Whitsunday Isaac Climate Change Plan (the Climate Plan) considers the most recent, regionally specific, climate change projections including rainfall, temperature and sea level rise and looks at how these may impact the region. Potential adaptation opportunities are explored, and strategies and actions presented to mitigate, build resilience and adapt to predicted climate change. Specifically, the Climate Plan considers issues around the availability and supply of fresh water, sustainability of industries, maintenance of healthy communities and the protection of natural systems.

Reef Catchments will play an important role in continuing to bring stakeholders together with researchers and industry to develop integrated, regionally relevant solutions to the major issues facing the region in the context of a changing climate.

This project is proudly supported by Reef Catchments through the Australian Government's NRM Planning for Climate Change fund.

Australian Government | National Landcare Programme

REEF CATCHMENTS



This project utilised a participatory planning process that engaged stakeholders including Traditional Owners, industry, tourism sector representatives and local and state government.

This project utilised a participatory planning process that engaged stakeholders including Traditional Owners, industry, tourism sector representatives and local and state government.

The last stage of the project has seen the development strategies and actions with key stakeholders. The strategies include - Collaboration: facilitate collaboration across sectors. Strategic planning: embed climate change and future sustainability into planning. Economic sustainability: assist industries to adapt. Ecosystem health and biodiversity: build resilience and foster adaptation. Cultural heritage: greater, meaningful involvement of Indigenous people. Community education: health and wellbeing and disaster risk management.

Some key actions identified by the climate plan working group for the region during 2015-16:

- Diversify industries and ensure climate ready crops
- Minimise losses from freshwater supplies, for example by improving dam design to reduce evaporative loss
- Build resilience in natural ecosystems
- Plan coastal retreat/protect with best science
- Increase community resilience in relation to extreme weather events
- Build community capacity to adapt.

Over the programme's completion (2013 – 2016), achievements included:

- Multiple workshops engaging a wide range of stakeholders
- Extended regional understanding of predicted climate change and the impacts this is expected to have on the region
- Clear strategies and actions ready to be implemented in the region to reach mitigation targets and ensure required adaptation can be achieved

LAND

Caption: **Sunset at Cape Hillsborough.** *Photo:* **Rebina Criddle.**

National Landcare Programme

INLAND AND BIODIVERSITY

Project status: Ongoing

The Inland and Biodiversity project is a multi-species and ecosystem recovery project in the plains and ranges landscape of the Mackay Whitsunday Isaac region. The focus is to protect priority habitat of national significance through a range of activities such as weeding, revegetation, fire management or fencing. The fire activities range from controlled burns by consultants or landholders, to working with rural fire brigades to review and update fire management plans.

The engagement of six local community groups to undertake activity relevant to their community or area has empowered them to identify and implement action and change. Projects increase participation, engagement and capacity of the community to contribute to natural resource management.

This project is proudly supported by Reef Catchments through the Australian Government National Landcare Programme, with co-contribution from landholders.

Australian Government | National Landcare Programme

REEF CATCHMENTS

Reef Catchments successfully engaged landholders in areas of high conservation value (e.g. areas adjacent to National Parks) to undertake conservation works. Works conducted by landholders promotes natural regeneration and native plant regrowth and protects and enhances valuable habitat. Through their participation landholders were able to protect priority habitat, riparian areas and creek systems on their property, and also on adjoining National Parks such as the Dryander National Park. All landholders delivered projects that supported essential habitat in the region for threatened or endangered species including Proserpine rock-wallaby (*Petrogale persephone*), northern quoll (*Dasyurus hallucatus*), lesser swamp-orchid (*Phaius australis*), black ironbox (*Eucaluptus raveretiana*), and the Eungella day frog (*Taudactylus eungellensis*).

Other landholder activities funded through the programme included improvements to grazing activities. Fencing excludes cattle, improves riparian corridors and allows for increased vegetation buffers. This promotes vegetation establishment and introduces additional habitat and biodiversity in modified environments. Landholders undertaking activities, such as fencing, commented that while projects have exceeded their original budget, they were happy with any funding to assist with the works and noted that the opportunity to apply for a grant had encouraged them to undertake the works.

Caption: **The Mt Blackwood branch of the Rural Fire Service Queensland (RFSQ) at a controlled burn.** *Photo:* **Fiona Hollingworth.**

IN 2015-2016:

- 114,500 hectares of improved fire management delivered through the development of 16 fire management plans (9 reviews, 7 new)
- 20,705 hectares were burned aiding the re-establishment of a natural buffer around fire sensitive ecosystems
- Management plans and associated training will foster the implementation of improved fire regimes in coming years
- Six community groups were funded under ‘Looking after Local Landscapes’, to a total of $45,450
- The ‘Mammals, Weed Management, and Cultural Heritage’ field day in June 2016 at Cape Hillsborough National Park saw the audience engage in discussions with Traditional Owners about Indigenous culture and its significance to natural resource management

Conservation works conducted by landholders promotes natural vegetation and native plant regrowth, while protecting and enhancing valuable habitat.

LAND

Caption: Palmyra grazier, Michael Shanks.

Regional Landcare **FACILITATOR**

Project status: Ongoing

The Regional Landcare Facilitator programme focuses on extension knowledge and capacity building of the region's primary producers.

The programme:

- Delivers community events, workshops, and training
- Promotes the Landcare ethic and sustainable agriculture
- Helps groups seek funding, membership, and resources for natural resource management activities
- Supports the development, delivery, monitoring, and evaluation of the Natural Resource Management Plan: Mackay Whitsunday Isaac 2014-2024

This project is supported by Reef Catchments through funding from the Australian Government National Landcare Programme.

Regional Landcare Facilitator

Australian Government

National Landcare Programme

REEF CATCHMENTS

The Regional Landcare Facilitator continues to build strong relationships with the regional forestry and grazing working groups, with both industries releasing and updating their ABCD Sustainable Frameworks in 2015-16.

The programme has delivered capacity building events focusing on sustainable forestry in subtropical regions, improving efficiencies in beef production, seasonal climatic forecasting, grazing holistic management, and soil health field days.

Local community leaders were sponsored to attend the National Biological Farming Conference in Lismore and the Reef, Ranges and Red Dust Conference in Caloundra, while Central Queensland Soil Health Systems have continued to be sponsored through the programme.

The Regional Landcare Facilitator has provided strong support to a number of Reef Catchments projects, specifically assisting the Sustainable Agriculture team to achieve three additional workshops for over 50 farming enterprises, and providing secretariat support to various Pests and Weed events. This encourages cross-promotion of ideas and discussions on future opportunities and projects.

The programme will continue to work across a number of industries to ensure land managers receive support and training to participate in activities that improve the natural resource base through sustainable land management practices.

In 2015-2016:

- Updated the Mackay Whitsunday Sustainable Grazing Guide
- Hosted the Healthy Soils Symposium in 2015 with over 55 attendees
- Supported 98 community leaders through partner groups such as Pioneer Catchment Landcare, Sarina Landcare Catchment Management Association, Whitsunday Catchment Landcare, Central Queensland Soil Health Systems, and primary industry working groups to increase their confidence in sustainable agriculture
- Hosted the Innovative Grazing Forum for 118 attendees
- Facilitated an Innovative Grazing Network for over 25 graziers to share and collaborate on ideas
- Ran six sustainable management building capacity events for more than 200 land managers

Caption: **Jacob Betros (right, Reef Catchments Regional Landcare Facilitator) with counterparts from Terrain NRM, Fiona George, and NQ Dry Tropics, Peter Arthofer.**

The RLF has provided strong support to a number of Reef Catchments projects, specifically assisting the Sustainable Agriculture team to achieve three additional workshops for over 50 farming enterprises.

OUR REGION, OUR STORIES

The future of Queensland farming on show

A number of the regions' most forward thinking land managers celebrated agricultural innovation and shared knowledge on a cross regional bus tour beginning on the Atherton Tablelands.

Visiting properties across the Wet Tropics, Burdekin Dry Tropics and finishing in the Mackay Whitsunday region, the 'Innovation in Agriculture' bus tour examined how farmers are trialling methods in mixed farming like horticulture, sugarcane and aquaculture to boost productivity while improving water quality and protecting the Great Barrier Reef.

Local cane grower John Attard left school to farm in 1976 at Eton. He's adopted many changes like homemade bio-fertiliser, brewing nitrogen fixing bacteria and vesicular-arbuscular mycorrhiza (VAM). "As we learn more, farm management systems will reduce these costs further, I'm on tour to learn what's working and what's not," John said.

Reef Catchments Regional Landcare Facilitator, Jacob Betros, spent the week on the road. Jacob said agricultural entities need to build resilience to climatic events in order to achieve financial, social, and environmental outcomes in the face of adversity. "Innovation wise it was great to see Pacific Reef Fisheries in action. They use water from the Great Barrier Reef to grow black tiger prawns. The trial they showcased was the bioremediation potential of high rate algae ponds."

Tour highlights also included Ray Zamora's sugarcane farm at Euramo, south of Tully. Ray's innovative practices are also part of Project Catalyst. The trials range from making bio-fertiliser, to cover cropping. Ray is now also trialing an aerator to reduce compaction.

Organic practices were shared at Inkerman. The Spotswoods, certified organic producers of low input vegetables, fruit, and herbs, are pioneering integrating cattle into their horticulture and sugarcane production.

"At the end of the day we're all learning, and NRM groups are pulling us all together."

Gary Spotswood, cane and organic produce grower

Caption: **Participants inspect the National Sea Simulator at the Australian Institute of Marine Science.**

Caption: **Participating land holders in Mackay as part of the innovation in Agriculture bus tour.**

Caption: **Marian cane farmer, Simon Mattsson is exploring crop diversity and soil health.**

"It is important that farmers have the opportunity to learn from other farmers. They're often visual learners and very good at solving problems when something is right in front of them," Jacob said.

Two local examples of innovation in agriculture are Simon Mattsson's cane farm in Marian (west of Mackay) along with Joe Muscat at Oakenden. Simon is well known for his trial of multi-species cover crops to enhance soil health and improve nutrient and pesticide use. Joe has been experimenting with rotations of legume, fibre, seed and oil crops in sugarcane.

The bus tour itself provided the opportunity for three Natural Resource Management groups to collaborate and share experiences, benefiting all farming entities.

"This is a huge step forward for individual landowners to work together in achieving whole of landscape outcomes. For ideas and skills to be shared widely and so seamlessly is a benefit to all primary producers."

The most exciting outcome for farmers networking this way is the ongoing learning. Reef Catchments will continue supporting innovation through the Australian Government's National Landcare Programme and the Queensland Government.

LAND

Caption: **Sharing learnings through on-site field days.**

Reef Catchments Regional Working **GROUPS**

Project status: Ongoing

Reef Catchments purpose is to facilitate improvement in the knowledge and condition of land, water, plant and animals for todays and future generations. Our strategy is to build community passion and understanding of NRM.

Ongoing facilitation of working groups across industries has allowed Reef Catchments to stay at the forefront of innovation and extension, while building the organisation's agility to react to changing industry needs. Working and consulting with leaders in each industry group has led to the development of ABCD Management Practice Frameworks, a set of guides to assist producers in achieving sustainable management of their land, whilst maintaining or enhancing farm efficiency and productivity. The guides, with their associated Sustainability Guides, allow land managers to move from dated or conventional practices to current practices promoted as best management.

Funding provided through the Australian Government Reef Programme, with co-contribution from landholders.

Australian Government

REEF CATCHMENTS

Reef Catchments is working with community and industry to promote sustainable management in the Mackay Whitsunday Isaac region. Regional Working Groups provide a platform to share locally developed knowledge, bring expertise to our region, trial ideas, and help gain consensus and feedback around practice management progression.

- By working with local communities, landholders, interest groups, businesses and government at the local, regional, state, national and global scales.
- Through effective collaboration with our community, we help ensure that future generations are able to enjoy the natural assets that are on offer to us today.

In working with our community we use science and technical information and knowledge, pushing boundaries through innovation and trials. We engage strongly with stakeholders, using leadership and community ownership as our key principles and driving force.

It's a community effort to bring about communal change.

How do we engage a wide range of community representatives?
Through our working groups, represented here:

Reef Catchments Limited

REGIONAL REPORT CARD

- Partners
- Management Committee

COASTAL

- Local Marine Advisory Committee
- Coastal Working Group (to be formalised)
- Coastcare Community

RURAL SECTOR

- Sugar Cane Working Group
- Grazing Working Group
- Fisheries Working Group
- Forestry Working Group
- Horticulture Working Group
- Regional Landcare Facilitator steering committee

URBAN

- Urban Think Tank

ECOSYSTEM AND WATER QUALITY

- Ecosystem Think Tank

In working with our community we use science and technical information and knowledge, pushing boundaries through innovation and trials.

LAND

Caption: **Rubber vine, a restricted species under the *Biosecurity Act 2014* and a weed of National Significance.**

Strategic Pest and Weed **MANAGEMENT**

Project status: Ongoing. Strategic pest and weed control projects occurred throughout the region covering more than 54,778 ha.

Reef Catchments is committed to working with regional stakeholders to reduce the impact of pests and weeds across the Mackay Whitsunday Isaac region. Pest and weed infestations threaten environmental health, impacting water quality and native flora and fauna, and degrade the condition of agricultural land.

During 2015-16, Reef Catchments focused on six priority pest and weed species in partnership with key stakeholders. Significant and meaningful management outcomes were achieved through these collaborative efforts, building on successes from previous years and providing strong foundations for future regional pest management activities.

IMAGE: Can you spot the Rubber vine? Rubber vine (*Cryptostegia spilanthoides and Cryptostegia grandiflora)* is a Restricted species under the *Biosecurity Act 2014* and a Weed of National significance. This rapidly growing vine is poisonous to livestock and strangles native vegetation. Rubber vine is easily distinguished by its 'wing-like' seed pods. New seedpods resemble two pointy, leafy, green 'dragonfly wings' and will begin to turn yellow as they mature.

During 2015-16, Reef Catchments focused on six priority pest and weed species in partnership with key stakeholders. Significant and meaningful management outcomes were achieved through these collaborative efforts, building on successes from previous years and providing strong foundations for future regional pest management activities.

This project is proudly supported by Reef Catchments, with funding and co-contribution from the Australian Government, Queensland Department of Natural Resources and Mines, Queensland Department of Agriculture and Fisheries, local landholders, Whitsunday Regional Council, Mackay Regional Council and the Mackay Regional Pest Management Group.

Queensland Government

Australian Government

REEF CATCHMENTS

Reef Catchments' core pest and weed projects for 2015-16 focused on six priority species. These projects were delivered as a continuation of the first two years of the Department of Natural Resources and Mines Natural Resource Investment Program (2013-16). The six species targeted included Mimosa pigra, rubber vine (*Cryptostegia grandiflora*), pond apple (*Annona glabra*), giant rat's tail grass (*Sporobolous pyramidalis, Sporobolus natalensis*), itch grass (*Rottboellia cochinchinensis*) and feral pigs (*Sus scrofa*). These priority species were selected in consultation with key stakeholders from the Mackay Regional Pest Management Group. Selection was also influenced by regional priorities outlined in the Mackay Whitsunday Isaac Regional Pest Management Strategy 2011-2014.

The primary focus of these projects is to reduce the impact of pests and weeds through on ground pest and weed control activities. On ground works in 2015-16 covered a total of just over 54,778 ha across the region. Another important priority for the year was to increase awareness of the distribution and impact of priority species within the community and to increase community capacity to control the target species. This is achieved through workshops, field days and training events. Investment in these projects will continue for 2016-17. This will allow for the delivery of more enduring, long term pest and weed management outcomes by building on the first three years of the projects and enhancing existing monitoring programs.

Caption: **Pictured and below, feral pig damage.** *Photo:* **Whitsunday Catchment Landcare.**

In 2015-2016:

- 32 ha of itch grass survey and control activities led to the identification of outlier sites beyond the three known main nodes of infestation in the Mackay Whitsunday Isaac region. Known sites have been treated where possible and will be revisited, along with bordering sites, in 2016-17 to resurvey and conduct follow up treatment to prevent infestations from spreading.
- The Mimosa pigra infestation at Peter Faust Dam is the only known occurrence of this species in Queensland. An unusually dry wet season saw dam levels lowered to approximately 60 %, exposing 'sleeper cells' of water-dormant seed and allowing for unusually high numbers for germination. 120 seedlings were surveyed and treated in 2015-16. The lower dam levels prompted the need for more frequent surveys and increased priority access for surveying. Reef Catchments funded 35.5 km of access track around the dam, in collaboration with Sunwater, the Department of Agriculture and Fisheries and the landholder.
- Successful reduction in feral pig numbers were achieved as a direct result of the Whitsunday Catchment Landcare, Sarina Landcare Catchment Management Association and Mackay Area Productivity Services integrated pest management projects, with approximately 54,000 ha covered during control activities.

On ground works in 2015-16 covered a total of just over 54,778 ha across the region.

OUR REGION, OUR STORIES

Progress in the fight against feral pigs

Pigs might not fly, but helicopters sure do and they have proven to be a very effective management tool in the battle to control feral pig populations in the Mackay Whitsunday Isaac region. Feral pigs cause extensive damage to environmental areas and high quality agricultural land each year as a result of rooting, wallowing, grazing, trampling and predation. They also carry weed seeds and have the potential to spread diseases. Feral pigs are a major pest for the sugarcane industry, damaging crops and causing significant yield losses.

In the Rocky Dam and Carmila Catchments, this management concern is recognised by the community. 58 landholders came together, in collaboration with Reef Catchments, Mackay Regional Council and Sarina Landcare and Catchment Management Association to contribute to the 2015-16 annual aerial pig shoot in the Rocky Dam and Carmila catchments.

The annual pig shoot aims to promote the regeneration and recovery of high quality vegetation and threatened ecological communities by controlling feral pigs using best management practices and humane animal control methods. Another key objective of the project is to reduce pig damage to productive agricultural land, providing support to the economically sustainable farms and communities. The major land uses in Rocky Dam and Carmila area include wetland reserves, grazing and sugarcane production.

During the 2015-16 pig shoot 58 feral pigs and 6 wild dogs were humanely controlled. The annual pig shoot was undertaken in December 2015, with a follow up shoot in January 2016. The treatment method involved the use of a helicopter and a local accredited shooter. The aerial shoot was timed to coincide with a large controlled burn across three properties, which improved visibility and forced pig movements. There was also an on ground baiting program conducted mid year in the nearby National Park.

Landholders have reported a significant decrease in the evidence of pig destruction and decreased sightings of feral pigs. Pig numbers are declining and landholder participation is increasing, evidence of the success of the project.

Caption: **Aerial control is a highly effective way to help manage feral pigs.**

Progress in the fight against feral pigs

Caption: **Aerial photograph showing sugarcane crop damage caused by feral pigs.** *Photo:* **Mike Spinaze.**

The success of the project is reflected in the decreased number of pigs controlled each year. Landholders in the area have reported a significant decrease in the evidence of pig destruction and decreased sightings of feral pigs. The aerial shoots in Rocky Dam area observed a trend of significantly decreasing feral pig numbers, with 264 pigs shot in 2012, 155 in 2013, 80 in 2014, 61 in 2015 and 27 so far in 2016. Landholder participation has also increased from the previous years, from 34 in the previous year to 58 in 2015-16. Continued community support is vital to the success of the program. Maintaining control efforts as the population decreases will prevent recovery of the feral pig population and continue to protect the environment and industry from feral pig damage.

The Carmila and Rocky Dam annual pig shoot is part of a wider pig control program. In 2015-16 this control program was delivered in partnership with Whitsunday and Mackay Regional Councils, Whitsunday Catchment Landcare, Sarina Landcare and Catchment Management Association, Queensland Parks and Wildlife Service and Mackay Area Productivity Services. Reef Catchments will continue to support aerial pig shoots in the Rocky Dam and Carmila catchments and throughout the region in 2016-17 to ensure the continued success of this program.

IMAGE: A lot of preparation goes into the aerial shooting programs before the helicopter reaches the site. Careful coordination and knowledge sharing between landholders, the pilot and the marksman is required well in advance to ensure everything runs smoothly. Weather forecast monitoring is incorporated into the planning process to ensure the aerial shoot occurs under optimal conditions for targeting the highest number of pigs.

Caption: **A father and son playing on Blacks Beach, Mackay.**
Image: Helene Buttigeig.

COASTS & BIODIVERSITY

Protecting species, ecosystems, coasts and communities
COASTS PROJECT

Project status: Ongoing

The Coast project was initiated to set a vision for the future of the Mackay Whitsunday Isaac coast, to engage coastal communities and deliver strategic coastal management initiatives. The project provides a strategic and coordinated approach to coastal management through the development of Local Coastal Plans, rural fire brigade management plans and other plans that provide the framework for collaboration between Reef Catchments and key land managers to deliver coastal management activities that build resilience across the coastal ecosystems and foster community capacity building.

Over the past year, 31 Coastcare activities were held across Mackay Whitsunday Isaac beaches, with 1,400 volunteers contributing over 6,000 hours to protect and enhance the coastal ecosystems.

Proudly supported by Reef Catchments through the Australian Government National Landcare Programme (NLP), with co-contribution and in-kind support from: Mackay Regional Council, Isaac Regional Council, Whitsunday Regional Council, Pioneer Catchment Landcare, Whitsunday Catchment Landcare, Sarina Landcare Catchment Management Association, the Great Barrier Reef Marine Park Authority, Mackay and District Turtle Watch, Eco Barge Clean Seas Inc, Birdlife Mackay and Queensland Parks and Wildlife Services.

Australian Government | National Landcare Programme

REEF CATCHMENTS

The Coast project has been running for the past three years, with major achievements evident across the Mackay Whitsunday Isaac coastline. Over the past year, through collaboration with key land managers, the Coasts project has protected and enhanced over 1,000 ha of priority coastal habitat using a range of conservation innovations.

Over the past year, the Coasts and Biodiversity team has worked through an intensive investigatory process combined with stakeholder consultation to produce a Local Coastal Plan for Grasstree Beach, Mackay. This plan outlines key environmental, social, cultural and economic values of the area. The pressures that development and recreation put on coastal locations and environments are addressed within the plan, as are the future predicted impacts of climate change. The plan proposes management solutions that aim to protect and enhance the natural values of Grasstree Beach while also providing recreational opportunities in the coastal zone.

The Coast project supported 500 ha of weed control across eleven sites along the Mackay Whitsunday Isaac coastline including Aspley Creek, Cape Hillsborough, Cape Palmerston, Carmilla Reserve, Conway Beach, and Far Beach. Biological control is being used to target prickly pear (Opuntia sp.), a weed of national significance, occurring in concerning levels on most beaches on the mainland and island locations. Weeds threaten native coastal vegetation and the animals that rely on native vegetation for habitat and food.

The Coast project trained rural fire brigades to improve management of regional ecosystems through the use of appropriate fire regimes. Seaforth Town, Seaforth District, Ball Bay, Haliday Bay, Ilbilbie and Clairview rural fire brigades participated in the training and review program contributing to over 3,000 ha of improved land management.

Community education and engagement through the Coastcare program is a central component of the Coast project. In the past year, 31 Coastcare activities were held across Mackay Whitsunday Isaac beaches, with 1,400 volunteers contributing over 6,000 hours to learn about and complete on-ground works to protect and enhance the coastal ecosystems.

Caption: **Coastcare volunteers at Bucasia Beach removing invasive weeds from coastal dune systems.**

In 2015-2016:

- 1,400 volunteers contributed over 6,000 hours to coastal conservation works
- More than 500 ha of weed control works was undertaken to remove invasive species in coastal ecosystems across the Mackay Whitsunday Isaac region
- A Local Coastal Plan was reviewed and updated, protecting over 600ha of coastal land within the Mackay region
- 5 rural fire brigades were engaged in training to improve fire management on over 3,000 ha of coastal land
- Over 30 community events were held to increase awareness of coastal issues and build community capacity to assist in coastal conservation
- Coastal events were expanded in the Whitsundays and Isaac with 12 events held in these areas in the past year

Over the past three years of program delivery, achievements included:

- 1,763 volunteers contributed more than 7,485 hours to coastal conservation works
- More than 1,500 ha of weed control works were undertaken across the Mackay Whitsunday Isaac area
- 12 Rural Fire Brigades were engaged in training to improve fire management in coastal areas
- More than 50 opportunities were made available for communities to engage in coastal conservation activities

The Coast project supported over 500 ha of weed control across eleven sites along the Mackay, Whitsunday and Isaac coastline.

Caption: **Young Coastcare volunteers helping propagate coastal vegetation for use in revegetation projects across the Mackay region.**

OUR REGION, OUR STORIES

Coastcare keeps kids learning over the holidays!

Coastcare events held over the school holidays have proved a hit! Given their popularity, school holiday activities will now be a regular feature of the Coastcare calendar.

Four events were held at popular Mackay and Whitsunday beaches over 2015-16, drawing over 350 children and their families to learn about the importance of coastal conservation and how they can help.

With a focus on native animals, kids were introduced to the local and, in some cases, rare animals unique to our region and were shown the threats that each face, such as marine debris, habitat destruction, boat strikes, clearing, and feral and domestic animals.

Interactive activities offered children the opportunity to have fun, think about the issues at hand and propose solutions as to how they can make a positive difference and protect these amazing animals and their habitat.

The events attracted positive media attention, with ABC Tropical North broadcasting live from Bucasia Beach. Coverage ensured that each represented organisation was involved in helping to spread key conservation messages to a broader audience.

Reef Catchments Coasts and Biodiversity Officer for Mackay and Isaac, Jess Berryman said the initiative was a great way for young beach-goers to learn.

“We want children to have fun learning about coastal conservation and leave with an idea of how they can help solve the issues causing declining populations in our unique native animals.”

She went on to explain that everyone was responsible for protecting wildlife, “There are easy steps everyone can take to protect native wildlife - putting a propeller guard on your outboard, picking up litter when you see it and keeping your cat indoors can all help protect our native wildlife.”

Caption: **Eager kids at Bucasia Beach learning all about turtles in the region from Mackay and District Turtle Watch Association’s Fay Griffin.**

OUR REGION, OUR STORIES

Coastcare keeps kids learning over the holidays!

Caption: **Coastcare kids at Wilsons Beach celebrating a fun filled day with Theodore the Turtle.**

"The events were exceptionally valuable for both my kids and my own understanding of the fragility of our coast and how we can help protect the incredible animals that live there."

Participant, Coastcare

Feedback from participants and their guardians at each event was very positive. One child commented on what they took out of the event - "I learnt so much today - all about turtles, marine debris, birds and fish!"

A guardian from one of the events provided encouraging feedback stating that, "The events are exceptionally valuable for both my kids and my own understanding of the fragility of our coast and how we can help protect the incredible animals that live there."

Olivia Brodhurst, Coasts and Biodiversity Officer for the Whitsunday region, summed up the crucial need for youth engagement.

"It is particularly important we engage young people and families to help ensure that conservation activities required along our coast are well received and the community is supported to make the necessary behavioural changes to help protect our precious coastline and wildlife."

We thank all the organisations involved and the wonderful families who came along to one or more events last year. We look forward to seeing you again soon.

COASTS & BIODIVERSITY

Caption: **Wild Mob volunteer Marcus Andersen assists in the control of weeds in Minnie Hall Bay, Goldsmith Island.**

Protecting species, ecosystems, coasts and communities

ISLANDS PROJECT

Project status: Ongoing. The Islands project has delivered on ground conservation on 17 high priority islands and bays of the Mackay and Whitsundays region that lie within the world heritage listed Great Barrier Reef Marine Park.

Islands have high biodiversity value, providing safe sanctuaries for almost a third of Australia's threatened species. Due to their isolation, conservation works on islands can achieve effective eradication of pests and weeds with limited opportunities for reinfestation. This, along with lower threats from human activities such as development, provides native animals opportunity to thrive. This is why islands are often referred to as arks for our native wildlife.

Reef Catchments Islands project successfully builds community capacity by engaging volunteers in implementation of on ground conservation activities. These island conservation expeditions focus on activities such as marine debris removal and weed control to foster ecosystem recovery. Island works are prioritised to assist the long term future of over 20 nationally threatened species and two endangered ecosystems within the Mackay Whitsunday Isaac region.

Proudly supported by Reef Catchments through the Australian Government National Landcare Programme, with co-contribution from Wild Mob Pty Ltd and Eco Barge Clean Seas (in-kind support).

Australian Government | National Landcare Programme

REEF CATCHMENTS

In the past year, the Islands project has supported conservation works on 17 priority islands including Brampton, Cocklemouth, Cole, Dent, Goldsmith, Hamilton, Lindeman, Little Lindeman, Long, Middle Percy, Penrith, Pentecost, Shaw, South Molle, South Percy, St Bees and the Whitsunday Islands. Some mainland coastal areas were also visited as weather and time permitted.

A creative model of delivery sees Reef Catchments collaborating with Eco Barge and Wild Mob to engage community volunteers in conservation activities including marine debris removal and management of invasive weeds. By tapping into volunteer resources, cost of labour is significantly reduced, therefore maximising the number of conservation expeditions that can be delivered. The program further plays an important role to build and enhance community capacity to protect the region's iconic and diverse islands and marine life.

Over the year, 103 individuals volunteered more than 293 days of their time with Eco Barge and Wild Mob removing over 4.2 tonnes of marine debris from over 150 ha of coast. Invasive weed species were controlled across 38 ha, providing opportunity for recovery of native vegetation including patches of the endangered regional ecosystem beach scrub. Intact native vegetation is important to the survival of our native wildlife, which rely on it for food and shelter (habitat).

Through the ongoing delivery of the Islands project, Reef Catchments contributes to protecting and enhancing island ecology, protecting matters of national environment significance, and raising the profile of islands as vital to future conservation particularly with predicted climate change.

Caption: **Eco Barge haul in marine debris from Long Island, Whitsundays.**

In 2015-2016:

- Invasive weed control across 38 ha of endangered and high value ecosystems
- Engagement of over 103 individuals volunteering more than 293 days to protect and enhance island ecosystems
- More than 4.2 tonnes of marine debris removed from over 150 ha of coastline across 17 islands and mainland locations

Over the programme's completion (2013 – 2018), achievements included:

- Engagement of over 160 volunteers
- More than 8.9 tonnes of marine debris removed from priority islands and mainland locations in the region
- Invasive weed control across more than 100 ha of endangered and high value ecosystems

Over the year, 103 individuals volunteered over more than 293 days with Eco Barge and Wild Mob, removing over 4.2 tonnes of marine debris from over 150 ha of coastline across 17 islands and mainland locations. Volunteers helped control invasive weed species across 38 ha, facilitating the recruitment of native vegetation and restoration of ecosystems including critically endangered beach scrub.

Caption: **Looking out into Stingray Bay through the field of grasstrees (*Xanthorrhoea latifolia subsp. latifolia*).**

OUR REGION, OUR STORIES

Students of the sea

It's not your everyday classroom, but the Great Barrier Reef and Mackay Whitsunday islands offer local students a truly memorable marine lesson.

Students from Mackay North, Sarina, Pioneer and Mackay State High Schools have participated in an outdoor education adventure as part of the Marine Classroom Program, each school spending four days on Brampton Island and out and about on the reef.

The Marine Classroom Program, a joint initiative of Reef Catchments and Wild Mob, allows students in the region with a passion for the marine environment to learn about marine science and conservation by getting their hands dirty conducting research and undertaking works with qualified scientists.

Reef Catchments Coasts and Biodiversity Officer, Jess Berryman, said the program offered an unmatched opportunity for young people to connect with their islands, coast and marine environment.

"With a focus on science and conservation, the trips highlight real issues that are both relevant to the region and in line with high school curriculum. We have delivered four trips this year and we are excited to have two additional schools, Mirani State High School and St Catherine's Catholic College coming on board to participate in the six trips scheduled to take place next year."

Ms Berryman said the students had an incredible time learning out on the water and islands, as well as contributing to island conservation efforts through weed and marine debris removal. "The program encourages students to act as real scientists, conducting valuable research with the 'Eye on the Reef' and 'Coral Watch' programs. Students also undertake physical weed identification and removal in endangered beach scrub communities, and remove and analyse marine debris from critical turtle nesting beaches!"

"This trip has taught me lessons which I will carry with me for life."

Alex Darmody, Sarina State High School

Caption: **The very eager Tyshaya Bickey of Pioneer State High School removing invasive weeds from a 2 ha site of endangered beach scrub.**

Caption: **Students conducting a transect of the reef flats off Brampton Island.**

Caption: **Students enjoying beautiful Brampton Island.**

"The trip is so rewarding for the students involved, both academically and personally. From transects and turtles, snorkelling to spotlighting, students learn direct from both environmental professionals and nature – the best teachers of all."

Pioneer State High School student Tyra Hutchinson snorkelled for the first time during her trip to Brampton Island.

"It was the most incredible experience. I have never seen the reef from such an up-close perspective. You have no idea how much life there is under the water until you see it for yourself! This experience has really highlighted the importance of marine conservation efforts for me."

Students from Sarina State High remarked that the removal of invasive weed species from the islands helped them see the 'whole picture' when it came to both island and coastal conservation efforts. Sarina State High School student Alex Darmody said he enjoyed learning about how removal of invasive weeds could help protect native fauna and flora, as well as the coast and islands themselves.

"This trip has taught me lessons which I will carry with me for life."

COASTS & BIODIVERSITY

Indigenous participation in Natural Resource Management in the Mackay Whitsunday Isaac region

Project status: Ongoing (until June 2018). The Indigenous project is delivered across the Mackay Whitsunday Isaac region as a means to increase Indigenous involvement in natural resource management.

The Indigenous project plays a central role in supporting Indigenous people and organisations to participate in the delivery of natural resource management (NRM) and contribute to wider economic and social benefits in the Mackay Whitsunday Isaac region. Focus is on engagement of Traditional Owners and/or representatives of the Ngaro, Gia, Juru, Yuwibara, Koinmerburra and Barada/Wiri tribes, while also facilitating engagement of stakeholder groups by Traditional Owners themselves. As a result Indigenous people will have increased capacity to take part in NRM planning and activities. In addition, cultural heritage information and priorities will be integrated to benefit NRM and biodiversity conservation decisions in this area.

Inclusion of Traditional Owner knowledge and cultural values in regional documents helps inform national resource management planning processes. Continued interaction between NRM agencies and the Traditional Owners Reference Group (TORG) is required to ensure that Cultural Heritage knowledge and values continue to be advocated for in future management objectives within

This project is proudly supported by Reef Catchments through the Australian Government National Landcare Programme, with co-contribution and in-kind support from Mackay-Whitsunday Healthy Rivers to Reef Partnership, Terra Rosa, Great Barrier Reef Marine Park Authority and Queensland Parks and Wildlife Services.

Caption: **Forging partnerships and friendships. From left: Sam Dallachy, Veronica Ah Wang, Samarla Deshong, Adrena Prior, Aunty Carol Prior, Aunty Sue West, Uncle George Tonga, Emma Carlos, Scott Chisholm and Charlie Morgan.**

Australian Government | National Landcare Programme | REEF CATCHMENTS

2015-16 continues the success of the Indigenous project through regular engagement between the TORG members, Reef Catchments and affiliated stakeholder groups. Six TORG meetings were held to discuss, develop and deliver opportunities to build capacity and share cultural heritage values. Three on Country/on Sea visits allowed TORG members to reconnect on Country to share and build cultural awareness and direct on ground activities that aim to protect sites of cultural heritage significance.

Five NRM facilitations allowed TORG members to engage with existing key stakeholders, such as councils, committees, industry/ advisory groups and education institutions to ensure cultural values are incorporated into NRM planning and activities. Examples include review and input into key regional planning initiatives such as the Reef Recovery Plan and the Mackay-Whitsunday Healthy Rivers to Reef Report Card. All activities were developed and delivered by Reef Catchments and the TORG. Ancillary partners during this stage included: Terra Rosa, Mackay-Whitsunday Healthy Rivers to Reef Partnership, Great Barrier Reef Marine Park Association and Queensland Park and Wildlife Services. Project partners and interest groups collectively contributed more than 100 hours of in-kind support to assist with meetings and events. For further information on TORG activities, visit: **www.reefcatchments.com.au/community/traditional-owners/**

Several on Country events were held including:

- Visits to Dunrock Beach, McEwens Beach, St Helens Beach, Cape Hillsborough, Harbour Beach and Slade Point as a means to inform development of future Local Coastal Plans
- Visits to St Helens, Hook Island, Nara Inlet, South Molle Island, Whitsunday Island, Cape Hillsborough, Andrews Point, Cape Hillsborough, Yuwibara Trail, Cape Hillsborough, Cape Hillsborough, Wetland Walkabout, Seaforth, Finlayson Point (midden and fish trap) and Haliday Bay to develop cultural heritage indicators for the Mackay-Whitsunday waterway health report card. The visits assessed the value, importance and the health of the sites for the report card

Numerous opportunities were made available for TORG members to take part in NRM advisory, panel or partnership meetings including:

- Sarina State High School Cultural Heritage and awareness training
- Feedback into the Reef Recovery Plan and the Feral Pig Threat Abatement Plan
- National Climate Change Adaptation Research Facility's annual Climate Change Adaptation Champion nomination
- 2015-18 All Indigenous Green Army Team application
- Development of interpretive signs installed along Galbraith Creek (Cannonvale) in partnership with Whitsunday Catchment Landcare

Caption: **Meeting Conservation Volunteers Australia to discuss on ground work opportunities.** *From left:* **Samarla Deshong Sam Dallachy, Veronica Ah Wang, Uncle George Tong, Shannon Smith (CVA), Aunty Carol Prior, Aunty Sue West, Adrena Prior, Sam Dallachy.**

COASTS & BIODIVERSITY

OUR REGION, OUR STORIES

Uniting on Country in the pursuit of sustainability

The Mackay Whitsunday Traditional Owner Reference Group (TORG) is working together to build a commonly shared understanding of the complex links between cultural heritage and our environment.

Terra Rosa and Reef Catchments have developed a training module to develop the TORG's skills in areas such as: GIS, interview/ media development, grant applications, artefact identification and record keeping, data collection, monitoring, and other management skills.

These skills will provide the group (and its individuals) with the foundations to work effectively with the natural resource management sector in the future. Terra Rosa continues to play an integral part in reinforcing training and skill development to ensure that the TORG is focused on the achievement of its goals. The recognition of consequential benefits and individuals (e.g. confidence building) is the backbone strength to the group.

Facilitated by Reef Catchments and Terra Rosa, the TORG (with representatives from Ngaro, Gia, Juru, Koinmeburra, Yuwibara and Barada/ Wiri) spent five days and four nights on Country, travelling the region from north to south in the pursuit of sites of Cultural Heritage Significance.

Informed by the TORG in earlier planning sessions and by Queensland's Aboriginal and Torres Straits Cultural Heritage online portal, the group of ten helped develop Cultural Heritage Health Indicators for the region. Sites visited include: St Helens, Hook Island, Nara Inlet, South Molle Island, Whitsunday Island, Cape Hillsborough, Andrews Point, Cape Hillsborough, Yuwibara Trail, Cape Hillsborough, Cape Hillsborough, Wetland Walkabout, Seaforth, Finlayson Point and Haliday Bay.

Terra Rosa demonstrated techniques in site and artefact identification and recording, and where no stories were available, provided context to the significance of the sites. Recordings taken on Country will be used to develop cultural heritage

"New representatives have added more skills and knowledge to the TORG. We are moving forward [with] meaningful projects that will support and help us with our objectives."

Samarla Deshong, Traditional Owner and TORG member

Caption: **Reef Catchments' Stefanie Wabnik discussing locations of Cultural Heritage Sites on Country with Aunty Sue West, Marcus Arthur, and Scott Chisholm.**

Caption: **Aunty Carol retracing her heritage, hand on hand at Nara Inlet, Whitsundays.**

indicators for the region. Significantly, these will now be used to inform the Mackay-Whitsunday Healthy Rivers to Reef waterway health annual report card for the region.

Queensland Parks and Wildlife Services (QPWS) (marine) was instrumental in the coordination of the on Sea trip to the island, freeing a vessel and two staff to escort the group around the islands. QPWS (land) afforded the time of one ranger to accompany the TORG throughout the day at Cape Hillsborough.

Caption: **TORG members are invited on Country by Ngaro Traditional Owners. From left, Adrena Prior, Aunty Sue West, Samarla Deshong, Uncle George Tonga, Aunty Carol Prior, Sam Dallachy, Stefanie Wabnik and Scott Chisholm.**

WATER & WATERWAYS

Caption: **The WQIP is an important document that aims to ensure water quality is suitable for human use and aquatic ecosystem protection.**

Mackay Whitsunday Isaac Water Quality Improvement Plan (WQIP) 2014-2021

Project status: Complete. The final Mackay Whitsunday WQIP is now available to be implemented across the region and will guide investment to improve the quality of water to ensure that it is suitable for the uses required by those that live in and enjoy the region.

The Mackay Whitsunday Isaac Water Quality Improvement Plan 2014-21 outlines the current condition of the region's water quality and provides the pathway towards ensuring water quality is suitable for human uses, agricultural uses and aquatic ecosystem protection. The plan builds on the 2008 WQIP and describes management interventions for rehabilitation of priority habitats and reduction of pollutant loads from diffuse and point sources.

www.reefcatchments.com.au/water/wqip

This publication was developed by Reef Catchments in collaboration with project partners, through funding provided by the Australian Government.

Australian Government

REEF CATCHMENTS

The Mackay Whitsunday Isaac Water Quality Improvement Plan 2014–21 is a pivotal document for the prioritisation of investment into the region to guide the improvement and use of the region's water resource. The plan has identified the current condition of the region's water and outlines targets through to 2021, as well as objectives to be achieved by 2050. The plan also outlines ecosystem health targets achieved through Systems Repair for a range of ecosystem indicators including terrestrial and aquatic connectivity and identifies the interventions and scope of works required to achieve these outcomes.

The updated WQIP (2014) has prioritised subcatchments according to their need for either Systems Repair or water quality management interventions.

The new iteration of the plan builds on the subcatchment reports that were the cornerstone of the WQIP (2008) and now includes eight receiving water reports which focus on the subcatchment groups that drain into a common marine environment or bay. These reports highlight a range of indicators including relative marine risk and wetland hazard. The receiving water reports also assess the hydrological connectivity of the subcatchments of the receiving waters and indicate the status of the ecological processes operating within the system.

Recently the plan has been utilised to prioritise a number of funding applications for programs looking to address water quality, including Reef Trust Three and Queensland Department of Natural Resources and Mines funding. Looking ahead the plan will be the key prioritisation tool to develop future funding proposals including further Reef Trust phases.

Caption: **Aerial, Mackay and surrounds.**

In 2015-2016:

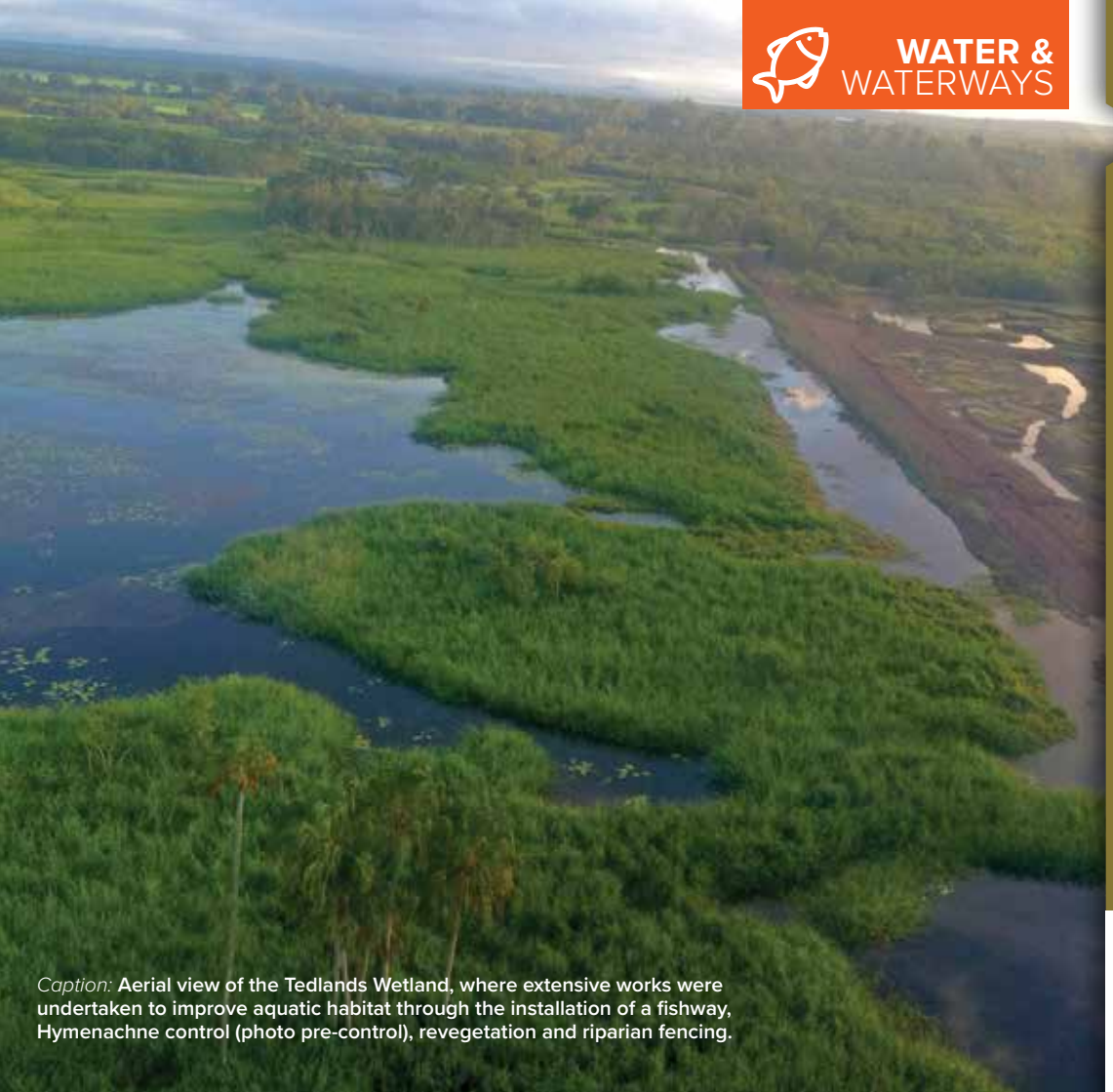
- Publication and release of the Mackay Whitsunday Isaac Water Quality Improvement Plan (2014–21)

Over the programme's completion (2013 – 16), achievements included:

- Identification of the current condition of the region's waterways including event and ambient based loads
- Development of subcatchment prioritisation for Systems Repair or water quality improvement
- Inclusion of Blue maps and EcoCalc (GBRMPA) scores as additional prioritisation tools
- Identification of the cost of implementation for the plan to achieve 2021 targets

You can view the WQIP online, here: **www.reefcatchments.com.au/water/wqip/**

The updated WQIP (2014) has prioritised subcatchments according to their need for either Systems Repair or water quality management interventions.



WATER & WATERWAYS

Caption: **Aerial view of the Tedlands Wetland, where extensive works were undertaken to improve aquatic habitat through the installation of a fishway, Hymenachne control (photo pre-control), revegetation and riparian fencing.**

O'Connell River, Plane Creek and Pioneer River
BASIN SCALE SYSTEM REPAIR

Project status: This three year programme was finalised on 30 June 2016. Similar works will be undertaken as part of future programmes.

Reef Catchments was awarded funding through the Australian Government Reef Programme to undertake System Repair works across three majors river basins of the Mackay Whitsunday Isaac region: the Plane, Pioneer and the O'Connell river basins. These are three of the four major basins in the Mackay Whitsunday Isaac region flowing to the Great Barrier Reef lagoon. Activities will improve the ecosystem resilience and water quality discharging to dugong and fish habitat areas, seagrass beds and coastal fringing reefs in high ecological value marine waters in the adjacent Great Barrier Reef.

"System Repair projects look to build resilience into the landscape to be able to deal with future pressures and ultimately improve the health of the Great Barrier Reef and the surrounding catchments. Together, these projects complement the water quality grants projects being undertaken through the Reef Programme, and significantly improve the water being discharged from the Mackay Whitsunday Isaac region." -

– Chris Dench, Water and Waterways Coordinator, Reef Catchments.

This project is proudly supported by Reef Catchments through the Australian Government Reef Programme, with co-contribution from landholders and Whitsunday and Mackay Regional Council.

Reef Programme System Repair funding available to landholders is an additional source of funding, separate from the Reef Programme water quality grants.

Australian Government

REEF CATCHMENTS

The O'Connell River and Plane Creek basins were identified as the two highest priority areas for System Repair in the Mackay-Whitsunday Water Quality Improvement Plan (2008). The Pioneer River basin is the most intensively farmed agricultural area within the Great Barrier Reef catchment for the region.

The O'Connell River is a major source of sediment to the Great Barrier Reef lagoon. Comparison mapping between 2010 and 2014 showed that some stretches of the river lost up to 165,000 m^3 of sediment during this period. In the O'Connell Basin majors works were conducted to reduce erosion and stabilise banks. Projects included pile fields and engineered bank stabilisation works using rock toes.

In the Plane Basin, activities focused on improving natural systems. Major works were undertaken to restore wetlands and aquatic habitat. This included the installation of fishways, Hymenachne control, bank stabilisation works, and constructing artificial wetlands.

At the Pioneer River, reducing sediment, nutrients and pesticides reaching waterways was the priority. Major works included a targeted network of 'treatment trains', which include sediment basins, bio-retention systems and constructed and rehabilitated wetlands. These were established to protect downstream freshwater, estuarine and marine environments.

During the 2015-16 period the planned on ground activities were undertaken, and the project was finalised. The overall achievements of the project will have substantial benefits for terrestrial and aquatic environments, as well as the Great Barrier Reef lagoon.

Over the duration of the programme (2013–16), achievements across the three river basins included:

- 8 fishways were constructed to improve fish passage between important aquatic habitats
- 2 priority fish barriers were removed
- 5,277 ha of aquatic habitat was enhanced
- 12 sediment basins were constructed to capture sediment from runoff
- 2 artificial wetlands were constructed to improve water quality and provide aquatic habitat
- 3 treatment trains built to improve water quality and provide aquatic habitat
- 92 erosion control measures were completed. These included gully repair and bank stabilisation works, watering points, riparian fencing, riparian revegetation, pile fields and log jams
- 41 km of riparian fencing was installed to exclude stock
- 30 watering points accompanied riparian fencing projects
- 8 structures were installed to improve and protect public access areas
- 39 ha of biodiverse plantings was completed
- 164 ha of native vegetation management was undertaken
- 70,000 native trees were planted
- 125, 928 ha basin scale pest and weed management completed
- 23 workshops and field days were held to engage, educate and share knowledge with stakeholders and landholders

Caption: **Using pile fields to stop continued erosion on the largest eroding bank on the O'Connell River.**

WATER & WATERWAYS

OUR REGION, OUR STORIES

System Repair funding increases irrigation capacity and improves water quality entering the Great Barrier Reef lagoon

Mackay sugarcane grower, Shane Cowley, has been able to improve the water quality flowing into a wetland on his property by installing a 'treatment train' before the water reaches the wetland and ultimately flows into Bakers Creek and the Great Barrier Reef lagoon. This project has also increased Shane's farm water capacity for irrigation and improved aquatic connectivity for native fish species.

The treatment train approach for improving water quality requires water to pass through multiple chambers to reduce nutrients, sediments, and pesticides before the water exits into waterways. The number, size and arrangement of the basins can be specific to the land area available which allows landholders to easily retrofit a treatment train to their existing farm layout. They also provide additional benefits such as increasing irrigation capacity. A typical treatment train would include a primary sediment detention basin, a shallow Macrophyte zone and a larger basin such as a wetland to increase the detention time of the water before exiting to the waterway.

With assistance from the Australian Government System Repair Reef Programme, Shane was able to build a treatment train on his property, which drains approximately 700 ha of land. Working with Reef Catchments to design a system to fit into the available area, a 1 ML first flush detention basin was constructed to capture the first flush event. This structure is large enough to capture a 25 mm runoff event. A second flush chamber was also created, consisting of a long deep marsh (Macrophyte) zone for filtering nutrients and fine sediment from the water. A second detention chamber features a 3 ML waterhole at its end to supply irrigation water. The water then flows over a rock weir at the end of the waterhole into a wetland, ensuring cleaner re-oxygenated water entering the wetland.

Reef Catchments worked together with Shane on this project to provide help with the system design and funding up to 50 % of the costs.

Caption: **Aerial overview of the Bakers Creek Treatment Train, showing rehabilitated and constructed wetland treatment chambers on the left and Bakers Creek on the right.**

System Repair funding increases irrigation capacity and improves water quality entering the Great Barrier Reef lagoon

Early results after the first flush wet season have showed some herbicide concentrations being reduced by 50 %. In addition to delivering significant environmental and ecosystem benefits, the 'treatment train' provides good operation and production outcomes.

"This extra water means that I can irrigate nearby cane blocks several more times each year and significantly increase their production, as well as improving the water quality for my wetland and the Great Barrier Reef lagoon."

Shane Cowley, Cane Farmer, Bakers Creek.

Caption: **Treatment Train irrigation reuse chamber.**

Caption: **Treatment Train deep marsh zone.**

Additional to the treatment train, a fishway was constructed at the bottom of the wetland to improve the movement of fish between Bakers Creek and the wetland.

Monitoring at the inlet and outlet of the treatment train was undertaken in 2015 and 2016. The monitoring tested for sediment, nutrients and herbicides entering and exiting the treatment train. Water quality improvement was shown across most of the tested pollutants. Some results showed herbicide concentrations being reduced by 50 %. The most significant water quality improvement was seen when rainfall events were captured in the system and retention times were longer.

Reef Catchments worked together with Shane on this project to provide help with the system design and funding up to 50 % of the costs. The wetland has also been revegetated with native plants to restore habitat and connectivity. The project is complete however Reef Catchments will continue to monitor and assess the effectiveness of the treatment train.

Caption: **Barramundi fingerlings tagged for release in the Gooseponds, including for national predatory control of the pest fish tilapia.**

WATER & WATERWAYS

Limiting the spread of tilapia in the southern Great Barrier Reef catchments

Project status: The project was completed at 30 June 2016.
The project was part of a wider initiative to prevent the spread of tilapia from the wet tropics into the Pioneer and Fitzroy Basin catchments as well as southern Great Barrier Reef catchments and potentially the Murray-Darling Basin.

Tilapia *(Oreochromus massambicus)* are listed in the world's 100 worst invasive species and are one of the greatest threats to Australia's native aquatic biodiversity. They compete with native fish for food and habitat, reducing native fish populations. Tilapia reduce water quality by uprooting and consuming large quantities of native aquatic plants. This increases sediment in waterways and reduces the capacity of wetlands and waterways to filter and remove pollutants.

The project was part of a collaboration of Natural Resource Management groups facilitating on ground activities to prevent the spread of tilapia.

Tilapia are currently a priority noxious fish species under the *Queensland Fisheries Act* 1994 and pose a real and imminent threat to Australia's aquatic biodiversity. If caught, they must be humanely killed and either buried away from water or disposed of in a bin. They cannot be kept, used as bait, or returned to the water.

This project is proudly supported by Reef Catchments through the Australian Government Reef Programme, with co-contribution from Rio Tinto, through funding from the Hail Creek Mine Community Development Fund. In-kind contribution was provided by Mackay Regional Council, Mackay Recreational Fishers Alliance Inc and the Mackay Fish Stocking Association.

REEF CATCHMENTS

Australian Government

Catchment Solutions

Mackay REGIONAL COUNCIL

Tilapia populations were confirmed in the Gooseponds in 2014. During 2015-16 the Gooseponds predator control project and the Gooseponds fish hotel projects were completed.

The aim of the predator control project was to trial the use of native predators to control tilapia populations in an open wetland system. Stocked barramundi were introduced into the Goosepond wetland to increase the number of predatory fish that may potentially feed on tilapia. In June 2014 and September 2015 barramundi fingerlings were released into the Gooseponds. This was conducted in conjunction with a childrens fishing and community field day to help raise awareness of tilapia in the region. The project did find direct evidence that barramundi (Lates calcarifer) preyed on tilapia, however the level of predation was insufficient to reduce tilapia numbers within the Gooseponds lagoons complex. Future management actions need to focus on habitat rehabilitation to improve resource availability and increase the capacity of our natives to compete with these unwanted pests.

Following on from the predatory trial, the Gooseponds fish hotel project aimed at improving habitat diversity within the lagoons. The fish hotels increase the complexity of diversity of habitat in the lagoon, encouraging native species to reside in the wetland area. During April 2016 ten fish hotels were constructed using rosewood posts and cement base plates, and installed in June 2016. The project will contribute to stronger and healthier ecosystems in the Gooseponds into the future.

The project wrapped up in June 2016. Ongoing investment into the management of tilapia in the region is essential to ensure healthy waterways into the future.

Caption: **Barramundi fingerlings release and kids fishing day at the Gooseponds.**

In 2015-2016:

- Completion of Gooseponds fish hotels project, ten fish hotels installed
- Completion of Gooseponds predatory control project - native tilapia predator barramundi released
- Two workshops to train the trainer
- Highly successful tilapia education community field day and barramundi tag and release, attracting an estimated total of 250 people in attendance

Over the programme's completion (2013 – 16), achievements included:

- Identification and mapping of tilapia populations
- Twenty information signs, increasing community awareness of tilapia
- Grosvenor Creek weed control project, three tiered salvinia control
- Eradication of jag cichlid (*Parachromis managuensis*), a close relative of tilapia, in the lower Pioneer
- 5 workshops - management implementation and train the trainer
- 4 field days - promoting community engagement and education

During April 2016 ten fish hotels were constructed using rosewood posts and cement base plates, and installed in June 2016.

Caption: **An eager crowd queues for the kids fishing and community awareness day.**

OUR REGION, OUR STORIES

Mackay's first fish hotels installed at the Gooseponds

Eradication of established tilapia populations is extremely difficult. Increasing the ability of native fish species to effectively compete with this pest fish species is essential.

With this in mind Reef Catchments, in collaboration with environmental consultants Catchment Solutions, proposed the introduction of fish hotels to increase the diversity of habitat within the Gooseponds, providing refuge for important species like barramundi and mangrove jack.

The fish hotel project involves diverse stakeholders and is proudly supported by Rio Tinto, through funding from the Hail Creek Mine Community Development Fund, with funding also provided by the Australian Government. The hotels were designed and delivered by environmental consultants, Catchment Solutions. The project is strongly supported by in-kind partners including Mackay Regional Council, Mackay Recreational Fishers Alliance Inc and the Mackay Area Fish Stocking Association.

This is the first time fish hotels have been installed in the region's waterways.

Fish hotels are engineered wooden structures, built to emulate what naturally occurs in rivers and streams when trees fall into the waterway (snags/woody debris). Unfortunately, in areas that have been cleared or developed, this natural process is interrupted. The hotels create spaces that provide habitat, refuge and living and breeding areas for important fish species. Fish hotels provide additional levels of complexity to the habitats available for native fish and other aquatic fauna. This will ensure that native fish have more resilience and positive competition against pest species, such as tilapia.

Aquatic ecologist Trent Power oversaw the installation of the fish hotels at the Gooseponds in Mackay.

"The project has been terrific, helping to improve the water quality and habitat for native fish and other aquatic species in the wetland area.

"Great news for the Gooseponds. This project will assist in improving the degraded conditions of this important lagoon system by providing valuable fish habitat. In turn, this will assist the environmental control of the pest fish tilapia, which unfortunately has been released into the system."

Keith Day, Mackay Area Fish Stocking Association

Caption: **Installation of roeswood timber fish hotels in Mackay**

Mackay's first fish hotels installed at the Gooseponds

Caption: **Mackay Regional Councillor Fran Fordham, with Rio Tinto's Ellissa Howard (board member of the Rio Tinto Hail Creek Mine Community Development Fund) and Trent Power, Catchment Solutions.**

The hotels are helping increase habitat diversity for a wide range of species that utilise or make the Gooseponds their home.

"Native fish species including barramundi and mangrove jack access the Gooseponds, where they can mature faster, before heading back downstream. This is an important part of these fishes' life cycle and is essential in ensuring robust native fish populations ahead," Trent said.

Construction of the fish hotels commenced in April 2016. In total ten hotels have been constructed and installed at sites identified through a feasibility study. Installation was finalised in June 2016.

A crane was used to position the fish hotels parallel to the bank at 1.5 - 2.0 m depth. Skilful operators were required to ensure the alignment and positioning of the hotels was done correctly. By slightly offsetting each hotel the complexity of hotels was further increased, maximising the benefit to the resident native fish.

Mackay Regional Council has seen the value in the fish hotels and will be installing an additional ten log hotels in the Gooseponds lagoon.

"Mackay Regional Council considers investing in the feasibility study for improved fish habitat and fish hotels as highly important," said Luke Galea, Waterways Team Supervisor from Mackay Regional Council.

"Improved habitat helps to build the resilience of our native fish populations which is a key component to limiting the spread of the pest fish tilapia. Council sees huge benefit in working to restore aquatic habitat in a bid to improve the diversity of our native fish. This allows them to combat tilapia as natural predators."

Caption: Marine Debris clean up event.

WATER & WATERWAYS

Improving urban water quality and native habitat in the Mackay Whitsunday region **URBAN PROJECT**

Project status: Completed 2016. The Urban project has delivered on ground conservation works across the Mackay Whitsunday Isaac region adjacent to the world heritage listed Great Barrier Reef Marine Park. Project locations were chosen based on impact by urban activities, their trajectory, their ecological and social significance, their ability to be treated effectively, and their hydrological connectivity to the Great Barrier Reef lagoon. Similar works will be undertaken and expanded under future programmes.

The Urban project provided a means to improve the quality of water entering the Great Barrier Reef lagoon from coastal urban development centres along the Mackay Whitsunday Isaac coast. The project also facilitated improvement in the resilience, condition and extent of biodiverse native habitats in the associated catchments. Restoration of wetlands, construction of bio-retention systems, and installation of gross pollutant traps resulted in reduced net sediment and urban pollutant loss, improving water quality prior to it reaching estuarine, seagrass and coral reef communities. Biodiverse native plantings and strategic weed management built resilience, improved connectivity, and enhanced the condition of estuarine and coastal ecosystems under pressure from coastal urban development. Founded on strong working relationships developed with state government agencies, councils, industry groups, community groups and others, the success of the Urban project effectively leveraged partners' resources, skills, and interest in protecting the Reef.

Comprised of members from the major urban land planners and managers, the Urban Think Tank provided a valuable platform to openly discuss urban priorities within the region and allowed partners to share progress of relevant activities. The working group facilitated cohesion between organisations and aided the development of strategic partnerships, working towards water quality improvement and enhancement of biodiverse habitats across the Mackay Whitsunday Isaac region.

Proudly supported by Reef Catchments through the Australian Government Reef Programme, with co-contribution and in-kind support from: Mackay Regional Council, Isaac Regional Council, Whitsunday Regional Council, Pioneer Catchment Landcare, Whitsunday Catchment Landcare, Sarina Landcare Catchment Management Association, Queensland Parks and Wildlife Services, North Queensland Bulk Ports, Department of Transport and Main Roads, Conservation Volunteers Australia, Great Barrier Reef Marine Park Authority, Mackay and District Turtle Watch, Eco Barge Clean Seas Inc and Birdlife Mackay and Catchment Solutions.

Australian Government

REEF CATCHMENTS

To ensure on ground works delivered value for money and targeted correct locations and actions, planning and prioritisation activities were undertaken with key stakeholders. The key planning tools used in determining activity locations and associated actions included the Great Barrier Reef Marine Park Authority blue maps, protected matters mapping, regional plans, local coastal management plans, regional pest management plans, the Mackay Whitsunday Isaac Natural Resource Management Plan 2014-2021, the region's Water Quality Improvement Plan and existing Stormwater Quality management plans.

On ground activities varied from soft landscaping and revegetation mitigation measures designed to stabilise dune and riparian systems to the installation of hard engineered structures such as rock lined channel, instream bunds, fences and stairways.

The construction and restoration of wetlands, bio-retention systems and installation of gross pollutant traps has reduced net sediment loss and improved water quality entering the Great Barrier Reef lagoon. Aquatic habitat improvement works now provide appropriate instream environments for fish migration. Riparian revegetation works complementary to aquatic habitat improvement include increased bed and bank stability, reduced stream power, and improve corridor values (both environmental and aesthetic), whilst promoting additional aquatic functional, such as shade, refugia, and food.

The economic benefits of improving water quality entering the Great Barrier Reef are vast due to the region's large dependency on the tourism and fishery industries to bolster the local economy. The tourism industry relies on a high quality marine environment and pristine beaches to attract investment. Improvement of water quality leading to the Reef directly correlates to positive economic outcomes and growth.

Caption: **Caught on camera, feral cat monitoring at Slade Point.**

Caption: **Marine Debris clean up event.**

A high quantum of on ground targets were planned and implemented over the course of the urban project. Works requiring significant on ground labour included: aquatic ecosystem improvements; small medium ecosystem improvements; erosion control actions; weed control; revegetation; public access management; and, feral animal management. Considerable planning, communication and in some cases, negotiation was required to ensure that activities were delivered in a timely manner.

Over the programme's completion (2013-16), achievements included:

- 1,008 ha of native vegetation protected or restored
- 5,748 ha of improved aquatic habitat works
- 35 erosion control measures installed
- 16 public access points managed
- 42 small medium scale ecosystem improvements
- 37 field activities
- 15.08 ha of biodiverse plantings
- 228.25 ha of weed control
- 500 ha of feral cat management

All achievements exceeded (some double) the original targets set for the programme in 2013.

Other notable achievements include the collection of 2,787 kg of rubbish and planting of 91,226 native plants. High volunteer engagement led to a contribution of 2,501 volunteered hours across a range of events, with 3,753 hours committed by project partners.

WATER & WATERWAYS

OUR REGION, OUR STORIES

Little McCreadys Creek - a naturalised waterway project

Little McCreadys Creek is a modified urban waterway corridor at the headwaters of McCreadys Catchment, surrounded by residential development. The creek retains remnant *melaleuca leucadendra* and is upstream of a continuous vegetated riparian corridor. The corridor is highly utilised and well considered by the community. Threats to the creek include channel modification (exacerbating erosion), stormwater runoff, fragmentation, invasive weeds and limited habitat features.

Aquatic habitat improvement works included the installation of four wetlands, four fishways, refuge pools, and instream habitat features (including wetland and instream planting).

Works will enhance the waterway corridor by providing habitat connectivity, increasing biodiversity, reducing runoff velocities and improving the amenity of the creek. Terrestrial revegetation and weed control works will also improve water quality (filtration and reduce runoff velocities), improve instream environments (shade, ph, leaf litter inputs, filtration capacity etc.) stabilise sediments (mitigate erosion), increase habitat and structural complexity, and improve the visual amenity, community connection and ecosystem service values. Instream vegetation intercepts marine debris and pollutants and prevents future deposition into the downstream environments.

Before works commenced at Little McCreadys Creek a flora and fauna survey was conducted. It recorded 69 flora species (44 introduced) and 38 fauna species (two invasive). The native waterway dependent species included striped rocket frog (*Litoria nasuta*), sawshell turtle (*Wollumbinia latisternum*), spangled perch (*Leiopotherapon unicolor*), rainbow fish (*Rhadinocentrus sp.*), a yabby and an array of macroinvertebrate. The community has reported to have seen a substantial increase in fauna species, particularly avian and water dependent

Aquatic habitat improvement works included the installation of four wetlands, four fishways, refuge pools, and instream habitat features (including wetland and instream planting).

Caption: **Australian Green Army planting instream vegetation.**

Little McCreadys Creek - a naturalised waterway project

The construction and restoration of wetlands, bio-retention systems and installation of gross pollutant traps has reduced net sediment loss and improved water quality entering the Great Barrier Reef lagoon. Community engagement has been a focus of the project. Overall, the collaboration with stakeholders and project partners has leveraged significant in kind investment, enhancing the return on Australian Government funding. Activities have not only been delivered within budget, but have exceeded monetary investment expectations with a combined amount of $1,273,375 contributed by partners.

species. What they have observed is spangled perch, rainbow fish, eels, yabbies and Litoria tadpoles are abundant and particularly visible in and around the installed fishways.

During the construction period Little McCreadys Creek was subject to water quality testing as a means to assess erosion settlement control efficacy. This assessment was one of three assessment types considered in a water quality monitoring proposal developed between Reef Catchments, Mackay Regional Council and North Queensland Bulk Ports. The water quality monitoring program was proposed as a means to assess water quality across a range of urban environments and included the assessment of the performance of Water Sensitive Urban Design (WSUD) structures, urban land management practices and general catchment sites. Little McCreadys Catchment was chosen for general catchment assessment to inform the Urban ABCD framework of the efficacy of erosion settlement control in planning/construction versus development/building phases. Recent results conclude that in general, sediment loads were comparable to other sites. Future monitoring will be undertaken through the water quality monitoring proposal.

Reef Catchments partnered with Mackay Regional Council on the Little McCreadys Creek project. The aim of the collaboration was to develop a holistic approach to urban waterway management, integrating environment and social aspects. Council funded the project through its Stormwater Voluntary Mechanism proposal. Mackay Regional Council adopted the structures and associated maintenance requirements in June 2016.

Photopoints were installed to monitor works throughout the project. This project attracted in-kind support from Mackay Regional Council, Conservation Volunteers Australia, Green Army Team and the kind generosity of community members.

Caption: **Fishway located at the downstream end of the Little McCreadys Creek project site.**

WATER & WATERWAYS

Caption: **From front, Independent Partnership Chair Diane Tarte, Executive Officer Charlie Morgan and Deputy-Chair and Reef Catchments Manager, Katrina Dent.**

Mackay Whitsunday Healthy Rivers to Reef Partnership

Project status: Ongoing – the 2015 report card was released in October 2016. The report card region covers from Home Hill in the north to Flaggy Rock Creek in the south, including the freshwater and marine environment. This includes the catchments of the Don, Proserpine, O'Connell, Pioneer and Plane basins, eight estuaries and the coastal and marine area to the eastern boundary of the Great Barrier Reef (GBR) Marine Park.

Launched in October 2014, the Partnership has come together with a shared vision for healthy rivers and Reef contributing to a prosperous and iconic region where people visit, live, work and play. The primary focus of the Partnership is the production of the region's first integrated waterway health report card which uses the best independent science and a wide range of GBR-wide and regional monitoring programs to measure waterway health in an environmental, social, economic and cultural context.

"The report card helps us learn what is happening behind the scenes with the health of one of the Mackay-Whitsunday region's most important natural resources – water, whether it be our rivers or our beautiful marine area."

Diane Tarte, Independent Partnership Chair

The Mackay Whitsunday Healthy Rivers to Reef Partnership is comprised of 22 Partners who are representatives of the agricultural, industrial, ports, government, recreational fishing, NRM, community, Traditional Owner, research institution and tourism sectors.

www.healthyriverstoreef.org.au

HEALTHY RIVERS TO REEF PARTNERSHIP
MACKAY-WHITSUNDAY

The 2015-16 period has been a busy time for the Partnership with the release of the 2014 pilot report card in October 2015 and the development of the 2015 report card (released October 2016). The pilot report card methodologies have undergone a comprehensive review via the Partnership's Technical Working Group and the Reef Plan Independent Science Panel.

The Partnership implemented its 2015-16 communications and engagement strategy, which involved showcasing the pilot report card to many different stakeholder groups. This includes through events, forums and festivals in the region, newspaper articles, quarterly newsletters, social media and the Partnership website. An Activities Spotlight and online showcase map have been developed to highlight work and activities being implement by individual Partners. For the first time this year, report card results will be available to the public online in a dynamic interactive format www.healthyriverstoreef.org.

As more report card findings are released, it will be important to measure the progress of management responses towards achieving improved waterway health. After 2017, the Partnership expects the findings of the report cards released to date will assist in informing investment into priority activities on ground / on water.

2014-2016:

- 22 Partners have come together to produce the region's first integrated waterway health report card, covering Mackay Whitsunday catchments, estuaries, inshore and offshore marine areas, as well as assessments of social, economic and stewardship amongst our communities and industries
- The 2015 report card includes new assessments of:
  - Water quality in our central inshore zone (off Mackay)
  - Fish community health in three of our five basins (O'Connell, Pioneer and Plane)
  - Fish barriers in our basins and estuaries (an indicator of fish health and the degree to which the movement of fish species is impacted)
  - Urban stewardship – how far above and beyond our urban sector perform against environmental management criteria. This includes local Councils and Whitsunday Island tourism operators
  - Indigenous cultural heritage of some key important areas in our region as chosen by the Mackay-Whitsunday Isaac Traditional Owner Reference Group (TORG)
- A new website function allowing interested parties to dig down into the report card data spatially (and in time, temporally)
- A new website feature showcasing Partner activities in the context of waterway and marine environmental health and educational initiatives via an interactive online map

Healthy rivers and Reef contributing to a prosperous and iconic region where people visit, live, work and play.

Caption: **The Mackay-Whitsunday region is rich in natural resources that underpin community lifestyles and a range of industries. The Partnership includes representatives of many of these industries including agriculture, ports, heavy industry and tourism.**