



# Reef Water Quality Protection Plan Achievements 2013–2014



Australian Government



Queensland Government





# Introduction



The Reef Water Quality Protection Plan (Reef Plan) is a collaborative Australian and Queensland government program of coordinated projects and partnerships aimed at improving the quality of water entering the Great Barrier Reef. Established in 2003, Reef Plan was updated in 2009 and again in 2013.

The implementation of Reef Plan 2013 actions is on track, and projects are well underway, delivering significant on-ground results. Prioritisation of funding and the delivery of funds to landholders is underpinned by the latest scientific knowledge and research and development outcomes continue to be considered during implementation.

This report provides information on Reef Plan achievements during 2013–2014 against the three priority work areas:

1. Prioritising investment and knowledge
2. Responding to the challenge
3. Evaluating performance.

Further information, including progress towards the targets and the corresponding pollutant load reductions, will be provided in the Reef Plan Report Card 2014 scheduled for release in September 2015.

© The State of Queensland (Department of the Premier and Cabinet) 2014. Published by the Reef Water Quality Protection Plan Secretariat, February 2015, 100 George Street, Brisbane Qld 4000. The Queensland Government supports and encourages the dissemination and exchange of information. However, copyright protects this document. The State of Queensland has no objection to this material being reproduced, made available online or electronically but only if it is recognised as the owner of the copyright and this material remains unaltered.

Copyright enquiries about this publication should be directed to the Department of the Premier and Cabinet, by email to [copyright@premiers.qld.gov.au](mailto:copyright@premiers.qld.gov.au) or in writing to PO Box 15185, City East Qld 4002. Copies of this publication can be obtained by contacting (07) 3003 9381 or at [www.reefplan.qld.gov.au](http://www.reefplan.qld.gov.au).

Image credits: Tourism and Events Queensland, Paul Dymond, Canegrowers and Terrain Natural Resource Management.

# Reef Plan outcomes 2013–2014

## Australian Government Reef Programme



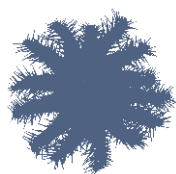
### 517 land managers

(315 farmers and 202 graziers) have instigated management practice change over a combined area of more than

**369,000 hectares.**

**\$6.6 million**

provided for individual on-ground projects (including equipment purchase) to improve the quality of water leaving farm lands.



More than

**307,000**

crown-of-thorns starfish (COTS) were culled between 2012 and June 2014.



**14**



ecological restoration projects throughout the Reef catchments are improving the condition and extent of biodiverse native habitats, as these ecosystems are the front line buffer to Reef water quality issues and the driver of net primary productivity across all Reef ecosystems.

This \$6.6 million was matched by \$9.5 million of land manager co-investment (\$5.9 million cash and \$3.5 million in-kind), equating to industry co-investment of more than



**\$1.40 for every dollar received.**

Direct injection of  
**\$12.5 million**  
into regional economies.



**1800**

outreach, training and farm planning activities were undertaken with farmers and graziers within the Reef catchments, including 1136 activities with cane farmers.

## Queensland Government Reef water quality initiatives

More than

**580**



**cane growers**, managing **65,000 hectares** of cane, were engaged in cane extension activities representing 16 per cent of the cane lands in Great Barrier Reef catchments.

Of those surveyed, 96 per cent reported an increase in knowledge and capacity, 48 per cent intended to make an improvement and around 40 per cent had made a management improvement that was likely to have a positive influence on water quality.

**555 beef producers**



managing **6.2 million hectares** of land and over **789,000 head of cattle** participated in extension activities in the Burdekin rangelands. Of those surveyed, 81 per cent reported an increase in knowledge and capacity, 57 per cent intended to make an improvement, and 76 per cent made a management practice change likely to have a positive influence on water quality over the life of the project.



More than **850 enterprises** covering **3.6 million hectares** in the Burdekin and Fitzroy catchments have embraced the Grazing BMP.

**687**

sugarcane enterprises covering 82,208 hectares under cane and a total farm area of 101,231 hectares registered for the Smartcane BMP program in the 12 months to December 2014.



A cost-benefit analysis showed that the Department of Agriculture and Fisheries

grazing extension support project is expected to achieve \$9 million of benefits utilising \$2.5 million in funds, or a

**net benefit of \$6.5 million.**

Therefore, for every dollar spent, \$3.58 would be expected to be generated in industry benefits.



# 1. Prioritising investment and knowledge



To support the development of Reef Plan 2013, a multidisciplinary group of scientists reviewed and synthesised the significant advances in scientific knowledge of water quality issues in the Great Barrier Reef and reached consensus on the current understanding of the system.

In 2013, the Reef Programme (the Australian Government's commitment under Reef Plan 2013) investment priorities were established based on the best available scientific and expert advice in order to maximise the water quality outcomes for the Reef. Funding was targeted to those areas that posed a significant and immediate threat to the Reef lagoon in terms of water quality.

Additionally, work undertaken during 2013 provided an analysis of management practices within the sub-catchments of Great Barrier Reef regions and is helping guide investment priorities at the regional level to deliver the biggest water quality improvements. Natural resource management organisations are better able to target hotspots for pollutants and determine which actions will achieve the best water quality improvements.

Research into water quality has been funded by a number of dedicated initiatives/program including:

- The **Australian Government Research and Development programme** (\$10 million from 2008 to 2013) helped improve the understanding of the link between land management practices and environmental impacts including those from major flood events. Findings were used to determine regional priorities and identify the most effective practice changes.
- The **Australian Government National Environmental Research Program** (approximately \$20 million from 2010 to 2014) funded multiple research projects under the Tropical Ecosystems Hub which were finalised in 2014. Building on this work, the new Australian Government **National Environmental Science Programme** (\$31.98 million from 2015 to 2020) Tropical Water Quality Hub will undertake research to maintain and improve coastal and marine water quality, particularly focussed on the Great Barrier Reef, Torres Strait and other tropical waters.
- **Crown-of-thorns starfish research** (\$1 million from 2013 to 2015) has informed development of more effective crown-of-thorns management such as control methods, total abundance estimates and population genetics.
- Great Barrier Reef Foundation research project '**Resilient Coral Reefs Successfully Adapting to Climate Change**' (\$12.5 million from 2013 to 2017) is improving our knowledge of resilient Reef systems.
- Queensland Government support for **Sugar Research Australia** (\$16 million from 2012 to 2015) is addressing industry research priorities, some of which will have benefits for Reef water quality.
- **Queensland Government Reef Water Quality Program** (\$55 million from 2014–2019) will continue to fund collaborative, partnership-driven projects that fill knowledge gaps, enhance scientific outcomes and distribute new knowledge to encourage on-ground changes.







## 2. Responding to the challenge

As part of the release of Reef Plan 2013, the governments collectively committed \$375 million from 2013 to 2018 to help achieve its goal and targets. The Queensland Government will invest an additional \$100 million over five years towards improving water quality, expanding scientific research, securing better agricultural and grazing practices, and more sustainable fisheries.

The Australian Government has continued to support a number of initiatives with approximately \$160 million committed for a suite of activities, including water quality improvements. Building on this will be investments through the new \$40 million Reef Trust.

The Queensland Government has also maintained its annual investment of \$35 million, which supports the roll out of Best Management Practice programs and broader Reef water quality initiatives.

### Australian Government Reef Programme

- **Water Quality Grants and Partnerships** (\$61 million from 2013 to 2016): provide financial support to agricultural land managers in Reef catchments to adopt improved management practices that will reduce the discharge of pollutants into the Reef lagoon while maintaining productivity outcomes. The Partnerships (\$3 million from 2013 to 2018) assist agricultural industry peak organisations to establish networks, and provide communication, training and outreach services for the agricultural industries in Reef catchments.
- **Systems Repair and Urban Grants:** on-ground grants (\$23 million from 2013 to 2018) target run-off from agricultural, urban and industrial lands through improved wetland and riparian management in the Reef catchments. Water Quality Improvement Plans (\$4.4 million from 2013 to 2015) inform the prioritisation of regional actions to deliver long-term water quality benefits in the Reef.

- **Water Quality Monitoring and Reporting and Research and Development** (\$19 million from 2013 to 2018): monitoring and reporting aims to track the progress of investment against the broader program objectives while monitoring the health of the Reef. Research and development assists with understanding the link between agricultural and industrial impacts and health of the Reef.
- **Crown-of-thorns starfish (COTS) control** (\$6.1 million): aims to decrease the impact of COTS by supporting tourism operators to continue to defend high value tourism sites.

### Queensland Government Reef water quality initiatives

- **Queensland Regional Natural Resource Management Investment Program** (\$30 million from 2013 to 2018): for natural resource management on-ground projects in the catchments adjacent to the Reef including more than \$10 million to deliver land and water management actions in key Great Barrier Reef catchments to June 2016.
- **Best Management Practice (BMP) programs:** \$5.4 million was invested in establishing industry-led BMP programs for the cane and grazing industries to mid-2014. A further \$4.5 million has been committed to the Grazing BMP until 2017 which includes expanding into the Burnett Mary region and a further \$5.8 million for the Smartcane BMP program until 2017. The Queensland Government is also working with the Australian Banana Growers' Council to develop a package of support for its Banana BMP.
- **Extension programs** (more than \$2 million annually): to assist the cane and grazing industries in priority areas where land management practice improvements are most needed to improve Reef water quality. A significant number of producers have improved their practices although a lag is expected between increasing knowledge and capacity and on-ground change.



## CASE STUDIES

### Trends in fertiliser placement going in the right direction for the Herbert

A huge shift towards sub-surface fertiliser application in the Herbert sugarcane growing region is benefiting the Reef. The sub-surface application of fertilisers enables a majority of the chemicals to be taken up by the plant, rather than fertilisers applied on the surface evaporating or being washed away during rain events.

Surface application of fertilisers has fallen from 78 per cent of area treated in 2008 to 38 per cent in 2014. Rainfall simulation trial research driven via Australian Government support through Terrain NRM organisation has helped to inform improved application techniques. Capacity building and training on the ground, in partnership with the Queensland Government, has assisted in extending the knowledge about these practices to a broad range of farmers.

#### First farmer to be accredited

*Mackay sugarcane grower  
Michael Deguara*



Mackay sugarcane grower Michael Deguara was the first farmer in Australia to receive accreditation as part of the Smartcane Best Management Practice (BMP) program funded by the Queensland Government.

Through BMP programs, farmers implement improved management practices which improve the quality of water flowing to the Reef.

Michael received the first certificate of accreditation for the Smartcane BMP Soil Health and Nutrition module in March 2014.

“Going through the module made us think about everything we do on the farm. That’s the thing about best practice – there are always new ways and better technology around the corner,” Michael said.

“I think growers will appreciate being able to know for certain they are doing the right thing—and as we go along, this Smartcane system is going to help us keep thinking about any new practices and technologies we could or should be using.”

#### Reducing runoff from a banana farm

*Banana grower Brad Finch*



Far North Queensland banana grower Brad Finch has introduced a range of measures to retain fertiliser on his 70 hectare farm and improve the quality of water leaving his property and entering the Reef catchment.

Sediment and nutrient runoff has long been a concern as his farm is sloped, so he employed a contouring professional to design a contour plan and engaged contractors to carry out the work.

“By curving the banana beds and contours around, you follow the gradients, keeping them between one per cent and four per cent,” Brad said. “Contouring gets the right gradient over the entire paddock. This stops the erosion and keeps our fertiliser in the paddock rather than running down the road.”

He has also installed a fully automated under-tree micro sprinkler system incorporating fertigation, the supply of nutrients through this system. The system distributes an even supply of water and evenly distributes fertiliser, minimising the loss of nutrients.

#### Reducing runoff to the North Johnstone River

*Malanda grazier Kerry Hanrahan*



By fencing two kilometres of his property that fronts the North Johnstone River, Malanda grazier Kerry Hanrahan has been able to improve the quality of water leaving his farm.

Sections of the riparian area were in very poor condition as cattle were accessing the river, causing bank erosion and fouling the water, leading to increased sediment and nutrient loads.

The riparian exclusion fencing has not only contained stock and improved the quality of water leaving his farm, but also significantly improved groundcover and soil health.

“It’s just amazing how even the really hard compacted areas have grassed up again,” Kerry said.

“There is also a gully on my property that runs right into the river. So anything that does come off it now will be captured and filtered.”





### 3. Evaluating performance

The Paddock to Reef Integrated Monitoring, Modelling and Reporting Program is a collaboration involving governments, industry bodies, regional natural resource management bodies, landholders and research organisations. Monitoring and modelling from the paddock to Reef allows measurement and reporting on progress towards Reef Plan targets.

The joint Australian and Queensland government program is a highly innovative approach to integrating data and information on management practices, catchment indicators, catchment loads and the health of the Great Barrier Reef.

The latest Reef Plan Great Barrier Reef Report Card 2012 and 2013, released in June 2014, measured progress from the 2009 baseline up to June 2013. While overall condition of the inshore marine environment remained poor, in part due to extreme weather events, improvements were made in a number of areas:

- Modelled annual average pollutant loads entering the Reef had significantly reduced — sediment by 11 per cent, pesticides by 28 per cent and nitrogen by 10 per cent.
- 49 per cent of sugarcane growers, 59 per cent of horticulture producers and 30 per cent of graziers had adopted improved management practices.

#### Reef Plan 2013 goals and targets

##### Long-term goal

To ensure that **by 2020 the quality of water** entering the reef from broadscale land use **has no detrimental impact** on the **health and resilience** of the **Great Barrier Reef**.

##### Water quality targets (2018)

At least a **50 per cent reduction** in anthropogenic end-of-catchment **dissolved inorganic nitrogen** loads in priority areas.

At least a **20 per cent reduction** in anthropogenic end-of-catchment loads of **sediment and particulate nutrients** in priority areas.

At least a **60 per cent reduction** in end-of-catchment **pesticide loads** in priority areas.

##### Land and catchment management targets (2018)

**90 per cent of sugarcane, horticulture, cropping and grazing lands are managed using best management practice systems** (soil, nutrient and pesticides) in priority areas.

Minimum **70 per cent late dry season groundcover** on grazing lands.

The extent of **riparian vegetation** is increased.

There is **no net loss** of the extent, and an improvement in the ecological processes and environmental values, of **natural wetlands**.

## Report Card 2014

The next Great Barrier Reef Report Card 2014 will be released in September 2015. It will be the first report card to detail progress towards the updated Reef Plan 2013 targets (for management practices, pollutant loads, groundcover and wetlands). It will assess the combined results of all Reef Plan actions up to June 2014.

It will also include a four-yearly update on wetland and riparian extent and additional contextual information about marine trends and disturbances.

The Reef Plan targets for land management and water quality improvement identify a pathway towards the 2020 goal. The targets are considered ambitious but seek to move land management to best practice in as wide an area as possible which will have positive water quality benefits for the Reef. For the first time, the Report Card 2014 will report the area of land managed using best

practice rather than the number of landholders to give a better picture of the extent of water quality improvements.

The nitrogen target remains very ambitious and, in order to be met, will likely require new approaches in the Wet Tropics and Burdekin regions.

While significant progress has been made, improving the quality of water entering the Reef will take considerable time and effort. There are also significant time lags in seeing a response in the Reef's marine system as a result of changing land management practices.

More detailed regional results will be available in report cards such as the Gladstone Harbour Report Card (a pilot report card was released in late 2014) and the Fitzroy Basin Report Card (the 2012–2013 report was released in late 2014) which complement the Reef Plan Report Card.

## Future action



### Reef 2050 Long-Term Sustainability Plan

The Reef 2050 Long-Term Sustainability Plan is the Australian and Queensland governments' overarching framework for managing the Reef from 2015 to 2050. The Long-Term Sustainability Plan builds on the success of initiatives—such as the Reef Water Quality Protection Plan 2013.

The 2050 water quality outcome of the Long Term Sustainability Plan—that Reef water quality sustains the Reef's outstanding universal value, builds resilience and improves ecosystem health over each successive decade—reflects Reef Plan's 2020 goal and will ensure continuity beyond the current time horizon.

