

# Great Barrier Reef

Report Card 2012 and 2013

Reef Water Quality Protection Plan



Australian Government



Queensland Government



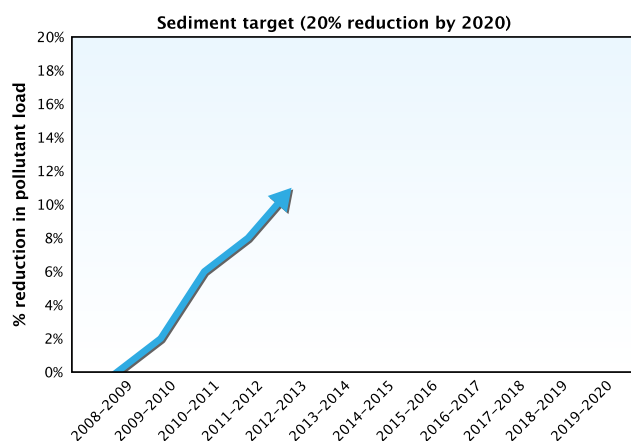
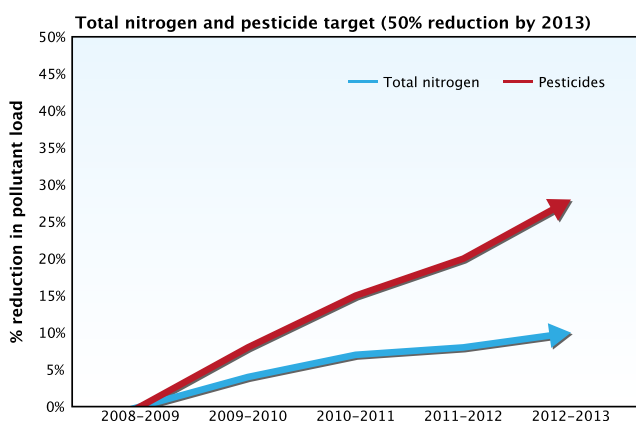
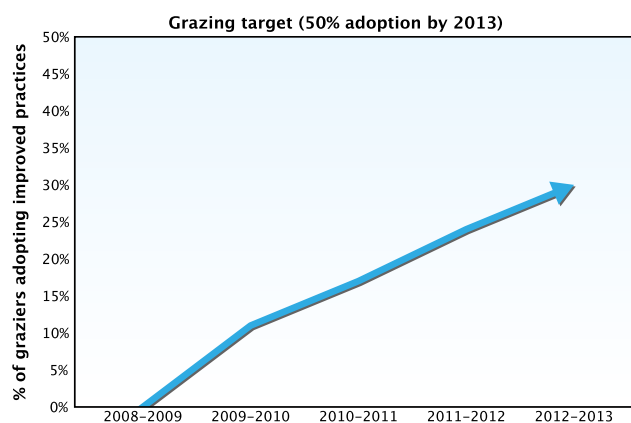
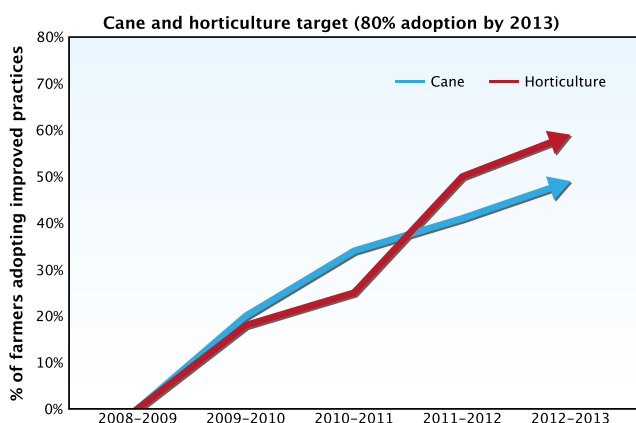
# Report card key findings

This report card measures progress from the 2009 baseline towards Reef Water Quality Protection Plan 2009 (Reef Plan) targets. It assesses the combined results of all Reef Plan actions up to June 2013.

- Results show modelled annual average pollutant loads entering the reef have significantly reduced, indicating the immediate 2013 goal of halting and reversing the decline in the quality of water entering the Great Barrier Reef has been met.
- The adoption of improved land management practices and resulting water quality improvements are an encouraging sign of progress towards the long-term goal of ensuring that by 2020 the quality of water entering the reef from adjacent catchments has no detrimental impact on the health and resilience of the Great Barrier Reef.
- Landholders have made major progress in adopting improved land management practices across the Great Barrier Reef catchment. Forty-nine per cent of sugarcane growers, 59 per cent of horticulture producers and 30 per cent of graziers adopted improved management practices by June 2013. The Burdekin and Burnett Mary regions recorded the highest levels of adoption (55 per cent) in the sugarcane industry. Two regions exceeded the grazing target of 50 per cent adoption—Mackay Whitsunday (69 per cent) and Burdekin (54 per cent).
- Progress towards the sediment target was rated very good, with the estimated annual average sediment load reducing by 11 per cent overall. The greatest reduction was in the Burdekin region (16 per cent).
- The pesticide load reduced by an estimated 28 per cent overall, with the greatest reduction in the Mackay Whitsunday region (42 per cent).
- Progress towards the nitrogen target was rated very poor with the estimated annual average total nitrogen load reducing by 10 per cent overall. The greatest reduction was in the Mackay Whitsunday region (17 per cent). Dissolved inorganic nitrogen, which contributes to crown-of-thorns starfish outbreaks, reduced by 16 per cent overall.
- The overall condition of the inshore marine environment remained poor in 2012–2013 due to extreme weather events in recent years. Inshore seagrass showed some signs of regional recovery and improved from very poor to poor.

## Progress towards targets

Reef Plan 2009 set ambitious targets which included halving the nutrient and pesticide loads by 2013 and reducing sediment by 20 per cent by 2020. It also included targets to encourage 80 per cent of the cane and horticulture industries and 50 per cent of the grazing industry to adopt improved practices by 2013.
















































# Progress from the 2009 baseline up to June 2013

## Management practice indicators

A significant proportion of agricultural producers have adopted individual improved land management practices since 2009 that will help reduce the amount of pollutants leaving the catchment and entering the reef. The status of each industry under the ABCD management practice framework is presented in the supporting technical information on the Reef Plan website, [www.reefplan.qld.gov.au](http://www.reefplan.qld.gov.au).

## Catchment indicators

Water quality modelling results based on reported improvements in land management practices show a reduction in the amount of key pollutants leaving reef catchments which will have a positive impact on the reef in the long term. Groundcover remained high during this reporting period.

	<b>Grazing</b> Proportion of graziers who adopted improved practices between 2009 and 2013.	<b>Sugarcane</b> Proportion of growers who adopted improved practices between 2009 and 2013.	<b>Horticulture</b> Proportion of producers who adopted improved practices between 2009 and 2013.	<b>Groundcover</b> Late dry season groundcover as at 2012–2013.	<b>Nitrogen</b> Reduction in annual average total nitrogen load between 2009 and 2013.	<b>Sediment</b> Reduction in annual average sediment load between 2009 and 2013.	<b>Pesticides</b> Reduction in annual average pesticide load between 2009 and 2013.
<b>Target</b>	50 per cent by 2013	80 per cent by 2013	80 per cent by 2013	50 per cent by 2013	50 per cent by 2013	20 per cent by 2020	50 per cent by 2013
<b>Great Barrier Reef</b> The greatest water quality risks to the Great Barrier Reef are nitrogen, sediment and pesticides.	 30%	 49%	 59%	 84%	 10%	 11%	 28%
<b>Cape York</b> Includes 43 000 square kilometres of catchments that drain into the reef. The main agricultural land use is grazing. Overall relative risk: low.	 48%				 6%	 8%	
<b>Wet Tropics</b> Covers 22 000 square kilometres. The main agricultural land uses are grazing, sugarcane and horticulture. Overall relative risk: very high.	 23%	 45%	 50%	 94%	 8%	 13%	 26%
<b>Burdekin</b> Covers 141 000 square kilometres and is largely drained by the Burdekin River system. The main agricultural land use is grazing. Overall relative risk: high.	 54%	 55%	 63%	 82%	 10%	 16%	 13%
<b>Mackay Whitsunday</b> Covers an area of 9000 square kilometres. The main agricultural land uses are grazing and sugarcane. Overall relative risk: moderate.	 69%	 49%	 66%	 91%	 17%	 9%	 42%
<b>Fitzroy</b> Covers 156 000 square kilometres and is the largest region draining into the reef lagoon. Grazing is the predominant land use. Overall relative risk: high.	 28%	 39% (Grains)	 42%	 84%	 3%	 4%	 5%
<b>Burnett Mary</b> Covers 53 000 square kilometres. The main agricultural land use is grazing. Overall relative risk: uncertain.	 19%	 55%	 50%	 92%	 15%	 3%	 28%

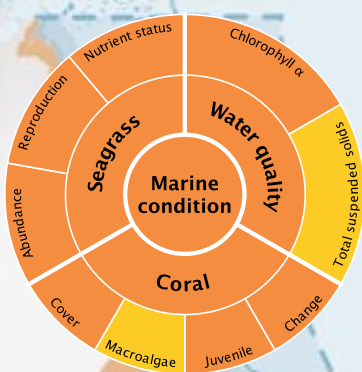


“Water quality at mid and outer shelf sites is generally good to very good overall because it is less directly influenced by river discharges.”

## Marine condition 2012–2013

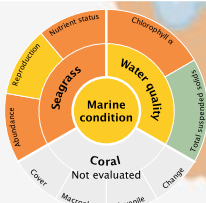
Improvements in land management practices will take time to translate into improved marine condition as there are significant time lags between implementation and measurable outcomes in these natural systems. Inshore marine condition is also strongly influenced by episodic events such as tropical cyclones and floods which have impacted all regions in recent years.

Confidence in the marine results for Cape York and the Burnett Mary remains low due to limited data availability and validation. Consequently, data from these regions are not used in the Great Barrier Reef-wide assessment.



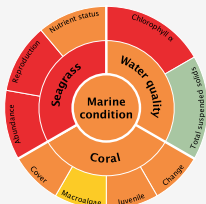
### Great Barrier Reef-wide

The overall condition of the inshore reef remained poor in 2012–2013. Inshore water quality was poor and varied from moderate to poor depending on the region. Inshore seagrass showed signs of recovery in some regions and improved from very poor to poor. Inshore coral reefs remained in poor condition.



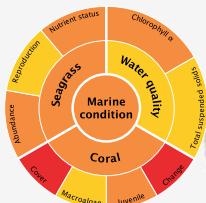
### Cape York

The overall marine condition adjacent to Cape York improved from poor to moderate. Inshore water quality also improved from poor to moderate. The one southern seagrass bed monitored was in poor condition.



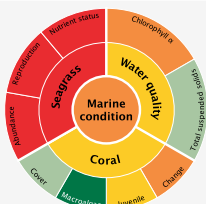
### Wet Tropics

The Wet Tropics' overall inshore marine condition remained poor. Inshore water quality remained poor and seagrass meadows declined from poor to very poor. Coral reefs were in poor condition having declined from moderate in 2011.



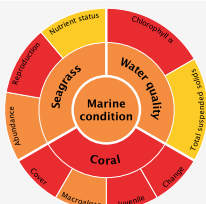
### Burdekin

The Burdekin's overall inshore marine condition remained poor. Inshore water quality remained moderate, while inshore seagrass meadows improved from very poor in 2011–2012 to poor. Coral reefs remained in poor condition.



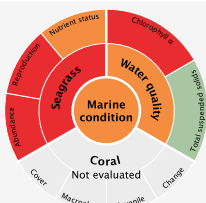
### Mackay Whitsunday

The Mackay Whitsunday's overall inshore marine condition remained poor. Inshore water quality improved from poor to moderate. Inshore seagrass meadows remained very poor and coral reefs remained in moderate condition.



### Fitzroy

The Fitzroy's overall inshore marine condition remained poor. Inshore water quality and inshore seagrass meadows also remained poor with coral reefs declining from poor to very poor condition.



### Burnett Mary

The Burnett Mary's overall marine condition remained poor. Inshore water quality declined from moderate to poor, with seagrass remaining very poor.

## Scoring system

A standardised scoring system was developed for each of the key indicators in the report card. The scoring system is used to assess and communicate progress towards the management practice and catchment targets as well as current marine condition using the following categories:

Very good

Good

Moderate

Poor

Very poor

The Reef Plan 2009 targets were considered ambitious and this report card shows the final result as at June 2013. Therefore, only results that are equal to or exceed the target are rated very good. Further details on the scoring system for each indicator are outlined in the supporting technical information on the Reef Plan website, [www.reefplan.qld.gov.au/scoring](http://www.reefplan.qld.gov.au/scoring).

# Reef Plan achievements and future action

Over the past 10 years, significant efforts have been made by landholders, regional natural resource management organisations, agricultural industry bodies, conservation groups and government agencies to implement improved land management practices throughout the reef catchments. This is a significant achievement following a long history of declining water quality.

Improvements in land management have been driven by a combination of the Australian Government's reef investments from 2009 to 2013, along with Queensland Government and industry-led initiatives.

As a result of the governments' collective investment of \$375 million from 2009 to 2013, with support and contributions from industry groups, participating landholders and other organisations:

- **2548** of the **8545** **graziers** managing **322 891 square kilometres** of land adopted improved land management practices
- **1857** of the **3777** **sugarcane growers** managing **4032 square kilometres** of land adopted improved land management practices
- **568** of the **970** **horticulture producers** managing **595 square kilometres** of land adopted improved land management practices
- **154** of the **207** **dairy producers** adopted improved land management practices
- **235** of the **600** **grain growers** managing **9146 square kilometres** of land in the Fitzroy region adopted improved land management practices.

While significant progress has been made towards the Reef Plan targets, more needs to be done. Achieving current best management practice alone may not be enough to achieve the nitrogen target and innovative approaches and broadscale commitment to improved nutrient management will be necessary.

The updated Reef Plan, released in 2013, continues to build on the efforts of the past five years to ensure that by 2020 the quality of water entering the reef from broadscale land use has no detrimental effect on the reef's health and resilience.

The Australian and Queensland Governments are committed to delivering Reef Plan and recognise improving the quality of water entering the reef will take considerable time and effort.

To enhance protection of the reef for future generations the Australian and Queensland Governments have also committed to:

- completing the comprehensive strategic assessment of environmental management arrangements to inform the Reef 2050 Long-Term Sustainability Plan which will provide an over-arching framework to guide protection and management of the Great Barrier Reef World Heritage Area
- establishing a Reef Trust that will deliver additional improvements in reef water quality and coastal habitat condition, and enhance species protection.

## About the indicators

More detailed information about how the indicators are measured is available on the Reef Plan website, [www.reefplan.qld.gov.au/methods](http://www.reefplan.qld.gov.au/methods).

## Management practices

Land management practices have been improving over time. Progress from the 2009 baseline to June 2013 is presented in this report card. Information for the cotton industry is not currently available; and information about the dairy industry is only available at the Great Barrier Reef-wide scale.

## Catchment indicators

Reef Plan's catchment targets aim to minimise the loss of wetlands, improve the extent of riparian areas and maintain groundcover on grazing land above 50 per cent to minimise soil erosion. Groundcover levels are estimated using satellite imagery. Progress for wetlands and riparian areas is not provided in this report card as they are only monitored every four years (see Report Card 2010 on the Reef Plan website, [www.reefplan.qld.gov.au](http://www.reefplan.qld.gov.au), for the latest data).

## Catchment loads

The pollutant loads leaving catchments vary significantly from year to year, mainly due to differences in annual rainfall. Catchment modelling has been used to correct the annual pollutant loads for climate variability and estimate the long-term annual load reductions due to the adoption of improved management practices. Progress towards load reduction targets is modelled using well-documented methods and assumptions

and long-term water quality monitoring is used to validate these modelled results. Progress is measured in terms of the reduction in loads due to improved agricultural practices. The load reductions do not include all activities undertaken during the reporting period and are, therefore, considered an underestimate of total progress.

## Marine indicators

**Chlorophyll *a*** indicates nutrient availability and productivity.

**Total suspended solids** measures particulate matter in water.

**Seagrass abundance** includes the cover and change in cover.

**Reproduction** indicates the potential of seagrass meadows to recover from disturbances.

**Nutrient status** measures the response of seagrass to nutrient conditions in surrounding waters.

**Coral cover** is a measure of the percentage of coral across reefs, and indicates the capacity of coral to persist under the current environmental conditions and its potential to recover.

**Coral change** measures change in coral cover that indicates coral resilience to disturbance.

**Macroalgal cover**—high abundance indicates poor water quality and negatively affects the resilience of coral communities.

**Coral juvenile density** measures the abundance of corals less than 10 centimetres in diameter which indicates the recovery potential from disturbances.

# Reef Plan

The Reef Water Quality Protection Plan is a joint commitment of the Australian and Queensland Governments to halt and reverse the decline in the quality of water entering the reef. It has been established to galvanise and target the collective actions of government and the community for the protection of the reef. Reef Plan reports on the efforts of land managers and agricultural industries to reduce the impacts of diffuse source agricultural pollution on the health and resilience of the reef. For more information see [www.reefplan.qld.gov.au](http://www.reefplan.qld.gov.au).

## Paddock to Reef

The Paddock to Reef program, funded jointly by the Australian and Queensland Governments, is a highly innovative approach to integrating monitoring and modelling information on management practices, catchment indicators, catchment loads and the health of the inshore reef. This program integrates the best available information, recognising that data confidence varies across the indicators and regions. The quality of data is continually improving and it is expected that some data may be updated as new methods are applied and more information becomes available.

# Great Barrier Reef

The Great Barrier Reef is the largest and best-known coral reef ecosystem in the world, spanning more than 2300 kilometres along the Queensland coast and covering an area of approximately 344 400 square kilometres. The coral reefs, around 3000 in total, represent about 10 per cent of all the coral reef areas in the world. The Great Barrier Reef receives runoff from 35 major catchments which drain 424 000 square kilometres of coastal Queensland. These catchments are spread from the Cape York region in the north to the Burnett Mary region in the south. Climate and soil characteristics vary across the catchments. Grazing (77 per cent) is the dominant agricultural land use, particularly in the Burdekin and Fitzroy regions. Sugarcane (1.4 per cent) and horticultural crops (0.2 per cent) are more prevalent on the coastal floodplain with high rainfall and irrigation. Grain crops and irrigated cotton are prevalent in the inland areas of the Fitzroy region.

Poor water quality from catchment runoff affects the health of the reef, causing degradation of inshore reefs and contributing to crown-of-thorns starfish outbreaks. This decreases the Great Barrier Reef's ability to withstand and recover from the cumulative impacts of climate change and increasing intensity of extreme events.

Pollutants from other point sources including manufacturing, industry, mining, urban environments, waste treatment, ports and shipping are relatively small but can be locally significant.

## Contributors



Australian Government



Queensland Government



Australian Government  
Great Barrier Reef  
Marine Park Authority



Australian Government



Australian Institute of Marine Science



CANEGROWERS



Queensland Farmers' Federation



TropWater



Burnett Mary Regional Group



Reef Catchments



Cape York National Park



terrain  
NATURAL RESOURCE MANAGEMENT



Cape York Sustainable Futures



growcom  
together we grow



FITZROY BASIN ASSOCIATION



QDO Queensland Dairyfarmers' Organisation

## More information

More information, methods and detailed results can be found on the Reef Plan website, [www.reefplan.qld.gov.au](http://www.reefplan.qld.gov.au).

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Australian Government



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