

# WORLD HERITAGE BRIEFING GREAT BARRIER REEF

## WATER QUALITY: THREATS AND SOLUTIONS





# INTRODUCTION

In 2021, the 44<sup>th</sup> session of the World Heritage Committee (the Committee) considered a draft decision, recommending that the Great Barrier Reef (the Reef) be inscribed on the List of World Heritage in Danger. The 2019 Great Barrier Reef Outlook Report, prepared by the Australian Government's Great Barrier Reef Marine Park Authority (GBRMPA) downgraded the outlook for 'the Reef' from 'poor' to 'very poor' after two severe coral bleaching events in 2016 and 2017 and the slow pace of improvement in reducing local threats, such as water quality<sup>1</sup>.

While the Committee did not immediately inscribe the Reef on the in Danger List, it requested a Reactive Monitoring Mission and a report by the State Party by 1 February 2022 with the intent of reviewing Australia's management of the Reef at its 45<sup>th</sup> session.

Importantly, the Committee noted that actions to build the resilience of the Reef remain of utmost importance and urged the Australian Government to "urgently create opportunities for recovery of the property, in particular with regard to water quality" (Decision 44 COM 7B.90).

This paper provides an overview of one of the significant conservation issues facing the Reef – the impact of poor water quality – and recommends actions for how the Reef's Outstanding Universal Value (OUV) could be better protected from land-based pollution.

**ACKNOWLEDGEMENT:** The Australian Marine Conservation Society and WWF–Australia acknowledges the sea country management and custodianship of the Great Barrier Reef by Aboriginal and Torres Strait Islander Traditional Owners, whose rich cultures, heritage values, enduring connections and shared efforts protect the Reef for future generations. We pay our respects to their Elders, both past, present and emerging leaders. We acknowledge that the Great Barrier Reef was and always will be Aboriginal land and sea.

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# EXECUTIVE SUMMARY

The Great Barrier Reef is an incredible ecosystem, home to a network of almost 3,000 coral reefs, a diverse array of marine habitats, and a global biodiversity hotspot for iconic threatened marine life. The Reef is a stronghold for the threatened dugong and home to six of the world's seven species of marine turtle. These populations are so significant they contribute to the Great Barrier Reef's Outstanding Universal Value (OUV).

The health of inshore Reef ecosystems that support these species, such as coastal wetlands, seagrass meadows and coral reefs, has been significantly impacted by major land-use change in much of the 424,000 square kilometre catchments draining into the Reef. This has resulted in increased sediment and nutrient pollution from land-based run-off. The predominant land use in the Reef catchments is agriculture and diffuse source pollution from agriculture is recognised as the major cause of poor water quality in the Reef.

The Australian and Queensland Governments are attempting to minimise impacts by implementing the Great Barrier Reef 2050 Long Term Sustainability Plan (the Reef 2050 Plan) and the Reef 2050 Water Quality Improvement Plan (WQIP). However, the implementation of these management plans is significantly behind schedule, with a number of objectives yet to be achieved and considerable uncertainty as to whether they can be achieved under current policies and funding commitments.

Excessive vegetation clearing in the Reef catchment leads to soil erosion and sediment pollution entering the Reef World Heritage Area. More than 800,000 hectares of vegetation has been cleared in the Reef catchment since 2008–09. Despite strengthened Queensland Government vegetation clearing laws being promised in the Reef 2050 Plan and introduced in 2018, recent data shows clearing has not slowed. In the years 2018–2019, more than 200,000 hectares of forest and woodlands were destroyed in the Great Barrier Reef catchment, demonstrating that Queensland's vegetation laws are not strong enough.



## EXECUTIVE SUMMARY CONT.

Sediment and excess fertilisers running from farmland into the Reef's waters continue to degrade inshore Reef ecosystems. Although water quality targets have been set to reduce these pollutants, progress has been exceptionally slow. For example, inorganic nitrogen is to be reduced by 60% by 2025, yet in 2019 only a 25.5% reduction had been achieved.

After years of low uptake of voluntary best management practice programs led by farmers, the Queensland Government implemented the Great Barrier Reef Protection Regulation in 2019. The regulations set minimum farming standards within Reef catchments and are the key government initiative to address land-based sources of water pollution flowing to the Reef.

While the regulations are a significant step towards achieving the water quality targets, a lack of compliance continues to be a problem. Under-resourcing of the Queensland Government compliance team has resulted in insufficient compliance activity being undertaken since 2010, resulting in up to 85% of growers in high-risk catchments not being inspected<sup>2</sup>.

Proposed dams and agricultural development in the Reef catchment have the potential to exacerbate poor water quality and hamper efforts to achieve water quality targets. Currently, there are 10 major dam and weir proposals that may significantly increase pollutant loads to the Reef from construction activities, ongoing operation and the agricultural expansion the development supports.

Poor water quality is having a detrimental impact on the Outstanding Universal Value of the Reef and significant interventions are required to improve water quality and increase the resilience of the property in the face of other threats such as climate change and commercial fishing.

## RECOMMENDATIONS

Consistent with Decision 44 COM 7B.90 to “urgently create opportunities for recovery of the Great Barrier Reef, in particular with regard to water quality” the following recommendations are proposed for implementation by the Queensland Government:

- 1 Increase investment in and accelerate the roll-out of an effective Reef Protection Regulation compliance program that is consistent with achieving water quality load reduction targets by 2025.
- 2 Strengthen the current Reef Protection Regulation to include; (i) requirements that industry and land management practice change, in particular for sugar cane farming and grazing, achieve a “net-benefit” for water quality; and (ii) ensure the strengthened regulation covers changing crop type, new infrastructure and agricultural development.
- 3 Legislate the soon-to-be updated Reef 2050 WQIP water quality targets.
- 4 Accelerate the development and adequately fund the implementation of a program to transition high-risk land uses to low-risk land uses, such as treatment wetlands, to improve water quality in the coastal floodplains.
- 5 Commit to end clearing of remnant native vegetation in Reef catchments by 2025, through stronger native vegetation laws plus a major boost in conservation financing to protect high conservation value forests and woodlands, particularly vegetation that is exempt from regulation (Category X) under the Vegetation Management Act.

Consistent with Decision 44 COM 7B.90, the following recommendations are proposed for implementation by the Australian Government:

- 6 Ensure the Australian Government funds projects to improve water quality, including: Appropriately allocate the \$580 million Reef funding package to prioritise the delivery of the 2050 WQIP and regional WQIPs. This funding, together with the Queensland Government's five-year commitment for \$270 million, should be front-loaded over the next three years and coordinated to fully meet the 2025 water quality targets, including adequate funding for the above-mentioned recommendations.
- 7 Match the Queensland Government's \$500 million Land Restoration Fund, including targets to increase native vegetation sinks in Reef catchments. By co-investing in broad-scale land restoration, both Governments can scale up support for existing Reef restoration projects for the next five-years and ensure catchment restoration not only contributes to meeting the 2025 water quality targets but also contributes to emission reduction targets by restoring and protecting carbon sinks for decades to come.



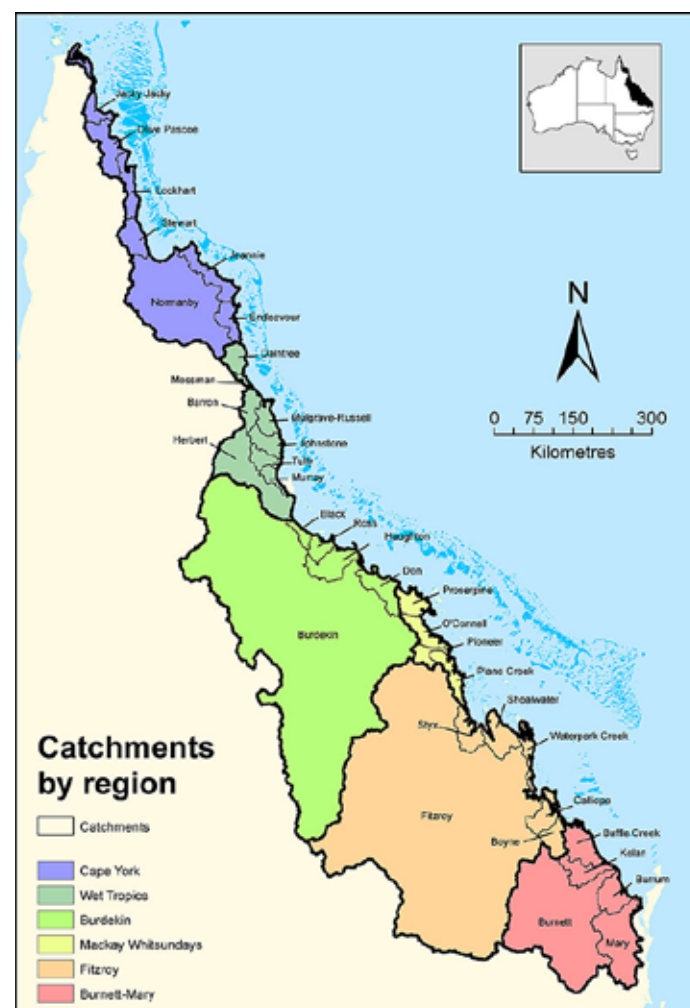


## INTRODUCTION

The Great Barrier Reef is breathtakingly beautiful, a remarkable natural wonder and one of Earth's most diverse marine ecosystems. The enormous diversity of the Reef's ecosystems means it is also one of the most complex natural ecosystems on Earth and is responsible for supporting thousands of marine and terrestrial species that make up part of the Reef's OUV<sup>3</sup>. The Reef is one of Australia's most loved places, however, for many decades poor water quality from the adjacent catchment has degraded inshore Reef ecosystems.

The Reef's catchment is vast – 424,000 square kilometres. It includes 35 major river catchments that drain surface and ground water into the World Heritage property. Fourteen coastal ecosystems connect the Reef to the catchment. Another eleven unique ecosystems occupy the lagoon floor between the coastline and the outer barrier reef. Together these coastal and lagoon ecosystems comprise 61% of the World Heritage Area and support over 5,000 species.

The catchment's 35 major rivers are important corridors for many Reef species to move between freshwater ecosystems, estuaries and the marine ecosystems of the World Heritage property. The catchment contains around 13,000 wetlands. Extensive mangrove and saltmarsh habitats are found in the intertidal zone. These habitats play an important role in the life cycle of many fish species, help to filter out pollutants before they reach the ocean, and are important carbon stores. Seagrass meadows provide shelter and food for many fish and marine mammals such as threatened dugongs, turtles and inshore dolphins, and play an important role in nutrient cycling and stabilising the seafloor<sup>4</sup>.



Since European colonisation, Reef water quality has declined significantly, due to the clearing of vegetation and expansion of agriculture in the catchment. The catchment is dominated by agriculture, which comprises 80% of all land use. As water drains from the catchment to the Reef, it carries with it a mixture of eroded sediment and pollutants from the land which influences the health and resilience of the Great Barrier Reef<sup>5</sup>.

The decline in water quality has impacted coastal ecosystems including loss of seagrass meadows, die-back of mangroves, increased algae on coral reefs, accumulation of pollutants in sediment and marine species, reduction in light and the smothering of corals. These ecosystems are still under threat today from vegetation clearing and agricultural run-off, particularly during high rainfall and river discharge events. These extreme weather events have devastating impacts on seagrass meadows, and associated wildlife such as dugongs and green turtles, and on corals in the inshore areas of the Reef.



Aboriginal and Torres Strait Islander people are the First Australians and the Traditional Owners of the Great Barrier Reef and have a long and continuing connection to the Sea Country of the Reef. Freshwater wetlands are significant sources of food and are places of ceremony, meeting and teaching. For Traditional Owners the value of the Great Barrier Reef and its biodiversity is immeasurable and is intertwined with identity and culture. In addition to the property's OUV and cultural values, the Reef is of high economic and social importance to coastal communities, supporting over 60,000 tourism jobs.

## WHAT IS THE CAUSE OF POOR WATER QUALITY?

### Agricultural water pollution

More than 80% of the Reef catchment supports some form of agriculture. Grazing is the predominant land use covering 77% of agricultural lands, followed by sugarcane which dominates the low-lying coastal floodplain. Other land uses include grains, cotton, horticulture and a number of urban centres located on the coastal strip<sup>1</sup>. In total, there are approximately 13,000 farmers and graziers operating in the Reef catchment<sup>6</sup>.

Catchment modelling shows that mean-annual fine sediment, nutrient (nitrogen and phosphorus) and pesticide loads delivered to the Reef have increased substantially since pre-development conditions<sup>7</sup>. Approximate pollutant increases since pre-development include a 500% increase in fine sediment, 200% increase in dissolved inorganic nitrogen, 150% increase in particulate nitrogen and 290% increase in particulate phosphorus<sup>8</sup>.



Today, land-based run-off from agriculture remains the greatest contributor to poor water quality in the inshore areas of the Reef. The main pollutants in agricultural run-off that harm the Reef include:

- **Fine sediment:** Vegetation clearing and overgrazing of paddocks causes soils to erode and wash into creeks and rivers that run into the Reef. Sediment discharged from rivers causes turbid river plumes and can reduce available sunlight to seagrasses and corals, which is required for their growth and reproduction.
- **Excess nutrient:** When fertiliser is inefficiently applied or too much is used on crops such as sugar cane or bananas, excess fertiliser washes into rivers and waterways, where it is carried out to the Reef. Nitrogen from these fertilisers is linked to very extensive algal blooms, which can reduce the amount of available light required for seagrasses to grow and be healthy. High nutrient levels are also linked to crown-of-thorns starfish outbreaks. These starfish destroy vast amounts of coral and pose an ongoing threat to the recovery of the Reef from coral bleaching events.
- **Pesticides:** Pesticides and herbicides have been detected in high concentrations in inshore areas of the World Heritage property and pose a risk to marine plants and animals. Herbicides are applied to crops to kill weeds by inhibiting their ability to grow, however, when they wash into the World Heritage property, they also inhibit the growth of other non-target plants, such as seagrasses on which dugongs, turtles and fish depend.<sup>9</sup>

### Vegetation clearing

Excessive forest and bushland clearing in the Reef catchment leads to soil erosion and sediment pollution entering the Reef. More than 800,000 hectares of vegetation has been cleared in the Reef catchment since 2008-09. Despite the Queensland Government introducing strengthened vegetation clearing laws in 2018 (fulfilling a commitment in the Reef 2050 Plan), recent Statewide Landcover and Trees Study (SLATS) data shows clearing has not slowed. Between 2016 and 2018, 314,000 hectares of forest and woodland were destroyed in the Reef catchment. In the years 2018-2019, more than 200,000 hectares were destroyed<sup>10</sup>. These alarming figures demonstrate that Queensland's vegetation laws are not strong enough.

The strengthened laws of 2018 left large areas of forest designated "category x" unregulated. Landholders can continue to clear high conservation value vegetation, without approval, based on "category x" land maps that were determined under old legislation. To protect the Reef, stronger laws are urgently needed to stop unregulated vegetation clearing that results in damaging pollutants entering the World Heritage property.

Land clearing at Olive Vale. © The Wilderness Society



## CURRENT MANAGEMENT

The scientific consensus on the detrimental impacts of poor water quality on this iconic World Heritage site is reflected in the numerous Australian and Queensland plans that, if fully implemented, aim to protect the Reef, including:

- The *Reef 2050 Long Term Sustainability Plan*, which sets the long-term (2050) goal that 'The quality of water is improved through increased effective land management practices in catchments'.
- The *Reef 2050 Water Quality Improvement Plan* (WQIP) identifies how the Reef 2050 Plan goal will be delivered to improve Reef water quality.
- The *2017 Scientific Consensus Statement*, reviewed every five years is synthesised from ~2000 scientific studies on best available evidence, from 48 scientists with expertise in Reef water quality science and management. A new statement is due to be released in 2023.
- The *Great Barrier Reef Marine Park Authority Outlook Report 2019*, published every five years after thoroughly examining the Reef's health, pressures and likely future. The 2019 report is the third in the series and identifies the greatest threats to the Reef's health as climate change and polluted land-based run-off.

These documents underscore the consensus that the decline of marine water quality associated with land-based run-off from adjacent Reef catchments is a major cause of the current poor state of many coastal and marine ecosystems.

In February 2021, the Great Barrier Reef Marine Park Authority released its position statement on water quality stating that:

**Poor water quality still remains a major threat to the Reef and improving water quality is critical and urgent.<sup>16</sup>**





## WATER QUALITY TARGETS

Water quality targets are a crucial part of the Reef 2050 Plan and the Reef 2050 WQIP. They are based on the quality of water that inshore corals, seagrasses and other aquatic species need to be healthy. These targets aim to reduce the amount of sediment, nutrients and pesticides entering the Reef's waters by 2025 and include:

- 60% reduction in dissolved inorganic nitrogen
- 25% reduction in sediment
- 20% reduction in particulate nutrient loads, and
- 99% of aquatic species are protected from pesticides.

A baseline year, 2009, is used to track progress toward the pollutant load reduction targets. The first targets for pollutant load reduction were to be achieved by 2013. The Australian and Queensland Governments failed to meet these targets and set a new horizon of 2018, and again failed to meet the revised deadline. Current targets are set for 2025 and with progress to date, the targets are unlikely to be met. The targets are reviewed every five-years. The current 2025 targets are under review and due to be finalised by the end of 2022, with a new five-year horizon. Targets must remain ambitious and the periodic reviews should not be used to prolong the government's responsibility to meet targets that the Reef needs for its recovery.

The joint Australian-Queensland Government Reef Report cards track progress towards the water quality targets. The 2019 Reef Report Card concluded that in order to meet the 2025 targets, **there needs to be more of a reduction of pollutants in the next three years than has been achieved since 2009.**

### Long-term progress to water quality pollutant load reduction targets:

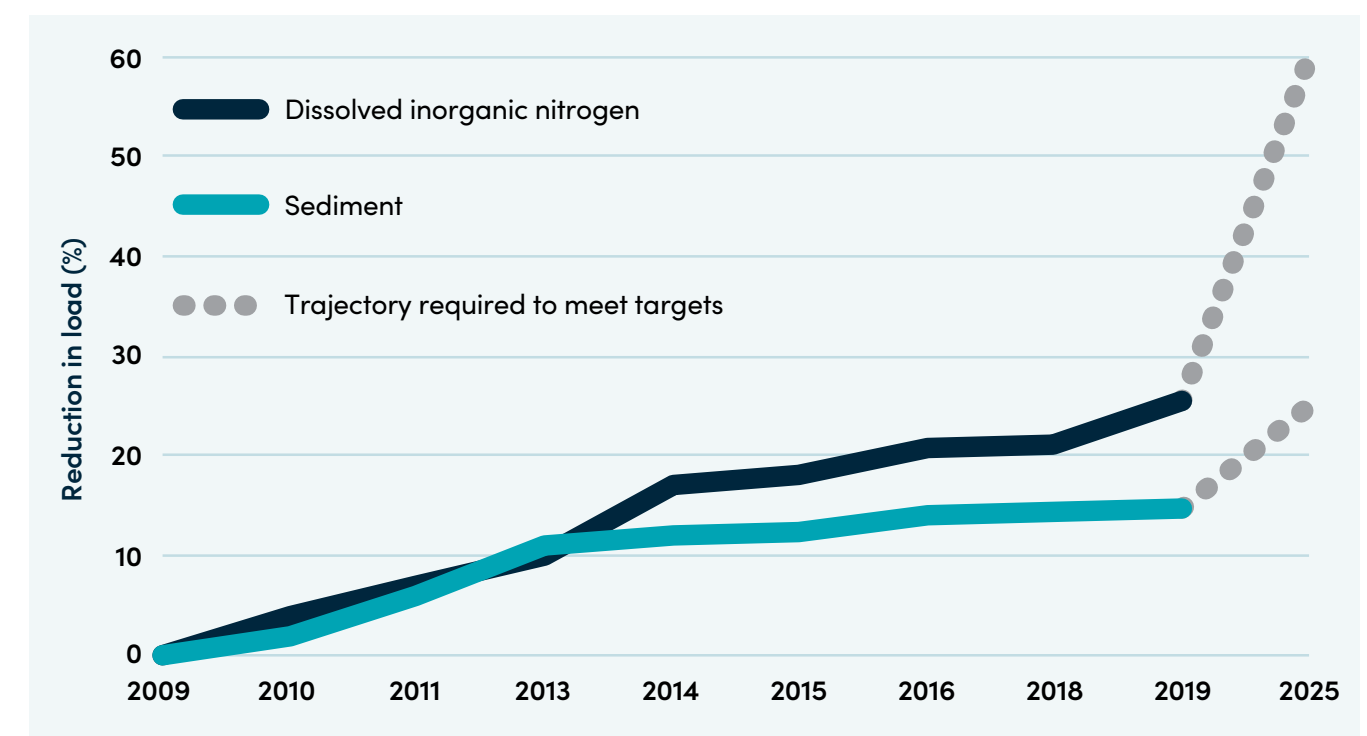


Image: graphically designed graph of progress to targets -raw data to be supplied in Excel. Caption: As of 2019, the trajectory towards the pollutant reduction target for dissolved inorganic nitrogen is not on track. It is currently at 25%, which is still 35% short of the target. We are also falling short of the sediment reduction target of 25% by 2025, with progress so far at 14.6% (just past halfway).

## WATER QUALITY TARGETS TIMELINE





In 2016, the Great Barrier Reef Water Science Taskforce concluded that progress to improve water quality had not been rapid or widespread enough to improve or even maintain water quality and accelerated uptake of improved practices was urgently needed to spur progress to the targets. The Queensland Audit Office, in providing feedback to the taskforce, stated that the right balance had not been achieved between industry-led, voluntary approaches and regulatory enforcement. As a result, the taskforce recommended that transformational change was needed over the next 5-10 years if targets have any chance of being achieved and a mix of tools will be needed to meet the targets and give the Reef the clean water it needs, including a **staged regulation pathway, supported by extension, incentives and compliance**<sup>11</sup>.

## REEF PROTECTION REGULATIONS

In 2010, the Queensland Government's *Great Barrier Reef Protection Amendment Act 2009* came into effect. At the time, this was a significant achievement, as the regulations gave the Queensland Government the ability to control actions that posed a threat to the Reef, such as land management practices that resulted in diffuse water pollution<sup>12</sup>.

In 2012, a policy change saw the redirection of funding and effort away from regulation towards voluntary, industry-led, best management practice (BMP) programs and incentives for the sugarcane and grazing sectors. A newly-elected Queensland Government chose not to enforce the regulations. Compliance activity ceased and did not recommence until 2016, focusing only on the sugarcane industry. In 2018, documents obtained through a right to information request showed that despite widespread overuse of nutrients (nitrogen and phosphorus) there was no evidence any farmer had been prosecuted under the Act. The same government documents showed that in 2016-17 only 14% of audited farms were compliant, and in 2017-18 of 344 sugarcane farms inspected 49% did not comply with the law, however, no prosecutions were made<sup>13</sup>.

In September 2019, the Queensland Government strengthened its Reef Protection Regulations aimed at improving water quality. Starting 1 December 2019, the regulations are being rolled out in stages over five years. The regulations now require farmers and graziers to abide by minimum practice agricultural standards, keep records of land management practice activities, and develop nitrogen and phosphorus budgets. This includes agricultural sources of nutrient and sediment pollution from all six Reef regions—Cape York, Wet Tropics, Burdekin, Mackay Whitsunday, Fitzroy, and Burnett Mary.

Regulation has been a necessity for many landmark initiatives and is already used extensively within the Reef to limit the impact of industries such as tourism, fishing and aquaculture. The regulations

provide the structure to reduce the impact of agricultural pollution and to contribute towards achieving the water quality targets, however, adverse impacts will continue to occur unless the regulations are strengthened. To address gaps, the Reef Protection Regulation should be strengthened to:

- require all existing and new commodities to have an industry best management practice standard consistent with providing a “net-benefit” to water quality;
- ensure that, when crop types are changed, irrigation impacts and potential pollutant loads on the Reef are assessed to deliver a “net-benefit” to water quality;

In addition, the regulations need to be bolstered with good information, access to technical assistance and an effective compliance program.

## COMPLIANCE IS CRITICAL

The Queensland Government tracks progress and reports on compliance management activities with the latest report including activities undertaken from March 2016 – June 2021. Compliance reporting shows that on-ground compliance audits are a necessary component of improving water quality and land management practices. On average, approximately 45% of landowners are compliant with regulations on the first visit by an authorised officer. This number increases to 65% on the second visit, evidence that repeat compliance visits successfully increase uptake of the regulations and demonstrate the regulatory approach is necessary.

However, progress has been slow. Since 2010, under-resourcing of the Queensland Government compliance team has resulted in insufficient compliance activity being undertaken. In the Mackay-Whitsundays region, 81% of farms have not been inspected, in the Wet Tropics region 63% of growers have not been inspected and in the Burdekin region 50%. As of December 2021, the Queensland Government commenced recruitment to increase staff and develop a compliance strategy. Urgent action to enforce the Reef Protection Regulation and achieve a high level of compliance is critical to help meet the 2025 targets.

In 2020, the Queensland Government updated modelling for what different land management practices' contribute towards the water quality targets<sup>14</sup>. This report shows that the regulations, if fully implemented, can achieve approximately 31.5% progress towards the dissolved inorganic nitrogen water quality targets. This is a significant amount of progress towards the nutrient targets, however, it requires all farmers to meet the minimum standards. To be able to achieve the targets the Queensland Government must appropriately fund and prioritise compliance and enforcement activities.





## LAND MANAGEMENT PRACTICES BEYOND REGULATION

The modelling also shows that full compliance with the regulations is insufficient to achieve the water quality targets. The modelling considers progress to targets if all landholders go above the minimum standards in the regulations and implement *best* management practices and *innovative* management practices. These practices are voluntary and largely dependent on government grants and incentives. With the adoption of best and innovative management practices across all industries in all catchments, the 2025 targets can be met.

The exception to this is the Mackay-Whitsundays region where, under all scenarios modelled, the dissolved inorganic nitrogen targets are still unlikely to be met. In these catchments, transformational action is needed, which requires significant government investment and accelerated development and implementation of a program to transition high-risk land uses, such as sugarcane crops planted along waterways, to low-risk land uses, such as treatment wetlands, to improve water quality in the coastal floodplains.

The 2019 Reef Report Card shows that, after more than a decade of engaging with landholders, best management practice systems are used only on 36.2% of grazing land and 12.7% of sugarcane land in the Reef catchment. Both of these land uses have a target of 90% of the land at best management practice systems by 2025, showing progress is significantly behind the adoption of practice changes.

## PROPOSED DAMS AND AGRICULTURAL EXPANSION

Proposed dams and agricultural development in the Reef catchment have the potential to reverse progress to date and exacerbate poor water quality conditions. Currently, 10 major dam and weir proposals which may significantly increase pollutant loads to the Reef from construction activities, ongoing operation and the agricultural expansion the developments would support.

The purpose of the proposed developments are to supply water to irrigate crops and other developments in the catchments of the Great Barrier Reef. Based on the estimated agricultural expansion supported by these developments, it is estimated that an additional 296 kilotonnes of sediment per annum and 2.6 kilotonnes of nitrogen per annum, will potentially enter the World Heritage property.

The effort and investment to date to reduce sediment and nutrient pollution to the Reef is considerable. The proposed developments have the potential to not only rapidly reverse progress to improve water quality but further exacerbate poor water quality impacts. For example, the Reef report cards show that from July 2016 to June 2019, the average annual sediment discharged to the Reef was reduced by 43 kilotonnes (approximately 14 kilotonnes per annum). This is equivalent to only 4.7% of the potential annual sediment increase from agricultural expansion.

The 2018 *Reef 2050 Net Benefit Policy* should be considered when making decisions about agricultural development. To avoid exacerbating water pollution to the Reef, the Queensland Government should use its regulatory framework to ensure that any development and use of water from new infrastructure does not impact the quality of water entering the Reef and results in an overall net improvement. The Queensland Government should require for all new developments to assess all externalities including the increased pollutant loads and the effort and cost required for the development to meet the pollutant load targets.

## WATER QUALITY INVESTMENT

Although the Australian and Queensland Governments have committed a substantial amount of funding towards improving water quality for the Great Barrier Reef, investment still falls well short of what is needed, and expenditure to date has not been sufficiently outcomes-focused. As a result, pollutant load reductions are not on track to achieve the 2025 water quality targets.

In 2021, the Queensland Government matched their previous five-year commitment and committed \$270 million for Reef water quality investment to 2026. In 2018, the Australian Government committed \$500 million over six years for all Reef health initiatives (\$443 million of which was granted to the Great Barrier Reef Foundation, which included \$201 million for water quality). This investment is due to be delivered in full by June 2024.

On 28 January 2022, the Australian Government announced \$1 billion to continue funding Reef initiatives over the next 9 years, starting 1 July 2022. The package includes \$580 million for water quality projects, or \$64 million on average each year. This is an annual increase in the average annual water quality expenditure by the Commonwealth from 2014/15 to 2022/23 of about \$20 million.

Despite the January announcement, the total government investment to improve water quality still falls significantly short of the projected \$4 billion needed to meet the WQIP water quality targets. Given the health crisis the Reef is facing, it will be important this investment is front-loaded over the next three years and coordinated with the Queensland Government to deliver projects that demonstrate a reduction in pollutants entering the Reef. Further, on-ground actions to address water quality have been too slow and initiatives to voluntarily improve water quality have been continuously opposed by some politicians and agricultural industry associations, hampering progress and innovation in the sector.





# ANALYSIS

Good water quality sustains the OUV of the Reef, builds resilience, and improves ecosystem health<sup>15</sup>. To help keep the Reef off the in Danger list, we need a clear pathway to the Reef 2050 WQIP 2025 targets, including new policy commitments and a revised investment framework that prioritises compliance and on-ground action.

In order to meet the 2025 water quality targets, there needs to be more of a reduction of pollutants in the next three years than has been achieved since 2009. The Queensland Government, with the public support of the Australian Government, needs to strengthen the Reef Protection Regulation and accelerate the roll-out of an effective compliance program.

The inadequacy of compliance activities and slow uptake of voluntary best and innovative land management practices have hindered progress. Improving compliance is crucial for the future of this iconic World Heritage site. Governments also needs to bolster regulation with good information and access to technical assistance.

The funding committed by the Australian and Queensland Governments to date is significant, however, it still falls well short of the estimated \$4 billion needed to meet the water quality targets. A significant increase in funding is required from the Australian Government to support industries and communities to implement innovative initiatives, continue critical research and development, transition high-risk land uses to low-risk land uses and restore catchments through repairing ecosystems, in particular wetlands and vegetation along waterways and wetlands.



## RECOMMENDATIONS

### Queensland Government:

1. Increase investment in and accelerate the roll-out of an effective Reef Protection Regulation compliance program that is consistent with achieving water quality load reduction targets by 2025.
2. Strengthen the current Reef Protection Regulation to include; (i) requirements that industry and land management practice change, in particular for sugar cane farming and grazing, achieve a "net-benefit" for water quality; and (ii) ensure the strengthened regulation covers changing crop type, new infrastructure and agricultural development.
3. Legislate the soon-to-be updated Reef 2050 WQIP water quality targets.
4. Accelerate the development and adequately fund the implementation of a program to transition high-risk land uses to low-risk land uses, such as treatment wetlands, to improve water quality in the coastal floodplains.
5. Commit to end clearing of remnant native vegetation in Reef catchments by 2025, through stronger native vegetation laws plus a major boost in conservation financing to protect high conservation value forests and woodlands, particularly vegetation that is exempt from regulation (Category X) under the Vegetation Management Act.

## RECOMMENDATIONS

### Australian Government:

6. Ensure the Australian Government funds projects to improve water quality, including: Appropriately allocate the \$580 million Reef funding package to prioritise the delivery of the 2050 WQIP and regional WQIPs. This funding, together with the Queensland Government's five-year commitment for \$270 million, should be front-loaded over the next three years and coordinated to fully meet the 2025 water quality targets, including adequate funding for the above-mentioned recommendations.
7. Match the Queensland Government's \$500 million Land Restoration Fund, including targets to increase native vegetation sinks in Reef catchments. By co-investing in broad-scale land restoration, both Governments can scale up support for existing Reef restoration projects for the next five-years and ensure catchment restoration not only contributes to meeting the 2025 water quality targets but also contributes to emission reduction targets by restoring and protecting carbon sinks for decades to come.



## PROPOSED DAMS AND AGRICULTURAL DEVELOPMENT IN GBR CATCHMENTS AS OF DECEMBER 2021

Name of proposed dam	Catchment	Size and location	Purpose	Sediment and DIN discharged to GBR (t/a)	Status
Nullinga Dam	Mitchell	491,000 ML dam on the Walsh River near Mareeba	Irrigated agriculture	Sed: N/A DIN: N/A	Preliminary and detailed business cases <sup>17</sup> completed. Upgrade to Mareeba Dimbulla WSS underway. Assessment and approval of dam on hold.
Southern Atherton Tablelands Irrigation Scheme	Wet Tropics	In-stream dam on the upper Herbert River	100,000 ha of irrigated sugarcane and other crops	Sed: 82,793 DIN: 710	Preliminary Business Case <sup>18</sup> completed. Currently on hold.
Hells Gate Dam	Burdekin Basin	995,000 ML dam on the upper Burdekin River	125,000 ha of irrigated sugarcane and other crops	Sed: 10,3500 DIN: 888	Feasibility study completed <sup>19</sup> . Proponent preparing Detailed Business Case. Privately owned and operated.
Urannah Dam	Burdekin Basin	150,000 ML dam on Bowen River	30,000 ha of irrigated sugarcane and other crops	Sed: 24,800 DIN: 213	Preliminary business case completed <sup>20</sup> . Detailed Business Case completed, but not released. Declared a Coordinated Project and proponent preparing draft EIS <sup>21</sup> . Privately owned and operated.
Raising Burdekin Falls Dam	Burdekin Basin	Raise height of existing dam wall to enable storing an additional 150,000 ML of water	60,000 ha of irrigated sugarcane and other crops	Sed: 49,700 DIN: 426	Feasibility study completed. Declared a Coordinated Project. Proponent preparing draft EIS <sup>22</sup> .
Big Rocks Weir	Burdekin Basin	10,000 ML weir on the upper Burdekin River near Charters Towers	5,000 ha of irrigated mixed crops and to augment town water supply	Sed: N/A DIN: N/A	Detailed Business Case completed. Declared a Coordinated Project. Proponent preparing draft EIS <sup>23</sup> . Privately owned and operated

Burdekin to Bowen Pipeline <sup>24</sup>	Burdekin Basin	Transfer 100,000 ML of water from lower Burdekin River to Bowen	4,000 ha of irrigated horticultural and other crops		Proponent currently seeking Coordinated Project designation. Privately owned and operated.
Rookwood Weir <sup>25</sup>	Fitzroy Basin	76,000 ML weir on the lower Fitzroy River	8,500 ha of irrigated agriculture, urban and industrial development	Sed: 292 DIN: 3	Approved under QLD and Commonwealth Legislation. Construction of weir has commenced
Lakeland Irrigation Scheme	Mitchell	300,000 ML dam on the upper Palmer River	20,000 ha bananas and other crops at Lakeland in the Normanby Catchment, Eastern Cape York	Sed: 30,000 DIN: 288	Strategic Business Case and Technical Feasibility Assessment completed <sup>26</sup> . Proponent preparing Detailed Business Case. Privately owned and operated.
Gayndah Region Irrigation Development	Burnett	28,000 ML dam on the Burnett River	6,800 ha of irrigated sugarcane	Sed: 5,600 DIN: 50	Detailed Business Case completed <sup>27</sup>





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