

Reef Trust Partnership



Great Barrier
Reef Foundation

Water Quality Progress Dashboard

Almost half of the \$443 million partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation is allocated to improving water quality entering the Great Barrier Reef, in line with the [Reef 2050 Long-Term Sustainability Plan](#) (Reef 2050 Plan).

A long-term goal of the Reef 2050 Plan is that the quality of water entering the Reef has no detrimental impact on the health and resilience of the Great Barrier Reef. The [Reef Trust Partnership's Water Quality Component](#) will contribute to this goal by achieving a reduction in the total load that reaches the Reef of three priority pollutants identified in the Reef 2050 Plan: sediment, dissolved inorganic nitrogen (DIN), and pesticides.

Progress Dashboard Frequently Asked Questions

What are the Reef Trust Partnership's pollutant load reduction targets, and how were they set?

The Water Quality component aims to achieve an enduring reduction in long-term, end-of-catchment pollutant loads. As outlined in the Partnership's Monitoring and Evaluation Plan, the Foundation is measuring this outcome through the reduction in the long-term average modelled pollutant load at the end of specific catchments.

The Partnership's load reduction targets are a subset of the [Reef 2050 Water Quality Improvement Plan](#) targets. They were established through a quantitative assessment of the most cost-effective actions available Reef-wide that could deliver the greatest impact. For more information on these targets, click [here](#).

A principle of the Reef Trust Partnership is that **the targets are fixed**. Despite knowledge that emerged after the projects started indicating they were overambitious (certain interventions were not as cost effective as initially thought, and some costs were initially underestimated), the Foundation decided to retain the original targets to maintain its credibility.

Why do some Reef catchments not have a pollutant load reduction target?

Not all catchments have the same impact on the Reef. Given the available funding is not enough to meet all the Reef 2050 Plan's water quality targets across the Reef, a prioritisation process was necessary, and 15 catchments were prioritised¹. Targets were set for those priority catchments, and these are the focus of the majority of the work under the Reef Trust Partnership.

¹ [Alluvium-2019-Effective-and-Efficient-Pathways-for-Investment-in-Improved-Water-Quality-in-the-GBR-Web-1.pdf](#) ([barrierreef.org](#))

How do we measure progress towards achieving Water Quality targets?

Progress is measured through modelling data obtained by our partners. Modelling rather than monitoring data (measurements taken at different points in time) is used for reporting progress due to the variable nature of monitoring data and its dependency on climatic conditions at the precise moment in which samples are taken (in particular, rainfall). For monitoring to provide reliable trends, more than a decade's worth of data would be needed. In addition, improvements from land management practice changes take time to be reflected in monitoring samples. Depending on the practices implemented and climate conditions, these time lags can be many years.

As an alternative, models can represent the observations we see in monitoring and anticipate what changes will be over time. Two model-based tools are being used to estimate and report the reduction in pollutant loads as a result of landscape restoration and farming practice changes driven through our projects. These tools incorporate the best available science in the field of Reef Water Quality and are publicly available. They are [P2R Projector](#) to estimate the water quality improvement from management practice changes and the [Gully and Streambank toolboxes](#) to estimate the changes from gully and large streambank repair.

Note that while the tools above have evolved in response to new knowledge, the Foundation applies the original **versions used at the time of setting targets and selecting projects**. The most up-to-date versions of the tools are not used because they have different parameters and would not allow a like-for-like comparison. This is another principle of the Reef Trust Partnership **to ensure consistency**.

There are a few practice changes that the Reef Trust Partnership Water Quality component is funding which are not represented in the models. The Foundation commissioned the **development of methods to estimate the water quality improvement from practices not covered by the standard tools**, under the criteria that they were evidence-based, scientifically sound and conservative. Those alternate methods are used and are also part of the principles to report progress to targets. Papers describing the methods are published on our website or available on request.

Is this investment captured in the Reef Report Card?

The [Paddock to Reef program](#) produces an annual or biennial product summarising the improvements from all Reef water quality investments. It is the [Reef Report Card](#). The Reef water quality report card measures progress towards the Reef 2050 Water Quality Improvement Plan targets, objectives and long-term outcome. The information in these reports determines the success of actions and identifies whether further measures need to be taken to address water quality in the Great Barrier Reef.

The Water Quality Component will report to Paddock to Reef when it ends, and its outcomes will be incorporated in the report card following that.

What is Pesticide Risk, how is it measured and how was the target set?

In the case of DIN and sediment, the ecological impact of the pollutant is proportional to their loads. However, for pesticides, the ecological impacts depend on the concentration and the toxicities of the mix of products released. The impact of pesticides on water quality is better measured as pesticide risk, which is the estimated per cent of aquatic species that are protected from the direct impacts of the mixtures of pesticides in a waterway and, therefore, should not experience adverse effects from pesticides. The reduction in risk to marine species related to

pesticides is expressed in Risk Units (RU). RU represent the relative risk to species from the pesticide runoff of an area (in this case the farmland under the projects). The targets set in this program are based on an assessment of the reduction in risk that is considered achievable with the available funds. Note that pesticide risk is not being measured in all sugarcane projects, just two projects that are capturing information about pesticides products (Bluewater, delivered by Farmacist, in the Pioneer, Plane Creek, and Haughton catchments). Therefore, the pesticide risk target is only relevant to the potential water quality improvement from these two projects.

Why is the pesticide risk expressed in different units in Reef Report Cards than in the Reef Trust Partnership dashboard?

While the Reef Report Cards measure the pesticides risk in the environment through annual water quality monitoring, the Reef Trust Partnership Water Quality component is measuring the reduction in risk from its projects through a different method, called Pesticide Decision Support Tool (PDST²³). Endorsed by Paddock to Reef and the Queensland Government Department of Environment, this method relies not on a direct water quality measurement but on an estimation based on the actual pesticide active ingredient application data from grower records before and after the grower changed practices over a certain area. When the pesticide application records are run through the PDST model, it calculates a reduction of Risk Units for pesticides, which equates to a potential water quality improvement measured as percentage of change. The reason for using this approach is it allows to measure the specific reduction in pesticide risk from the projects we have funded, irrespective of what else is happening in the environment.

The PDST is part of the P2R Projector tool described above.

About the Reef Trust Partnership

During the International Year of the Reef in 2018, the Australian Government announced the largest ever single investment in reef protection.

This includes a \$443.3 million partnership with the Great Barrier Reef Foundation to help fund new and existing projects that protect and restore the Reef – delivering and building on the Reef 2050 Plan.

At its core, the Partnership represents an elevation and escalation of effort – from governments, communities, Reef management, Traditional Owners and more – building on the phenomenal work by many and accelerating and amplifying their efforts for the benefit of the Reef. It brings us all together in one of the most exciting and important collective efforts of our time.



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² St. John Warne M, Neale PA, Macpherson MJ (2023) A Pesticide Decision Support Tool to guide the selection of less environmentally harmful pesticides for the sugar cane industry. *Environ Sci Pollut Res*, 30, 108036–108050. <https://doi.org/10.1007/s11356-023-29814-w>

³ Warne MStJ, Neelamraju C, Strauss J, Smith RA, Turner RDR, Mann RM (2020) *Development of a method for estimating the toxicity of pesticide mixtures and a Pesticide Risk Baseline for the Reef 2050 Water Quality Improvement Plan*. Department of Environment and Science, Queensland Government, Brisbane, Australia.