

Reef Trust Partnership

Mulgrave-Russell Water Quality Program

Regional Program Plan



Revised March 2023

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Overview

As part of the Reef Trust Partnership (the Partnership), the Great Barrier Reef Foundation (GBRF), in collaboration with several partners, is implementing a series of regional programs aimed at improving the quality of water entering the Great Barrier Reef lagoon from neighbouring catchments.

The Mulgrave-Russell Water Quality Program (MRRWQP) aims to improve the quality of water flowing from the Mulgrave-Russell catchments. A total of \$6.2 million has been allocated under the Partnership to the program. This MRRWQP plan describes the framework and activities underpinning the composition and subsequent implementation of the program. The plan sets out:

- Program objectives and scope
- Governance arrangements
- An overview of the key actions proposed under the program
- The proposed approach to communications and engagement, including opportunities for stakeholders to be involved in the program.

The Mulgrave-Russell catchment sits in the central section of the Wet Tropics region, located along the coastal plain south of Cairns (Figure 1). The catchment is divided into two major sub-catchments that join close to the coast, the Mulgrave River in the north and the Russell River in the south, and a number of smaller creeks that flow into Trinity Inlet or directly to the coast. The upper catchment is in the relatively undisturbed rainforest environments of the Bellenden Ker Range. A small portion of the upper catchment is on the edge of the developed agricultural area of the Atherton Tableland. The lowland reaches of the two catchments flow through the floodplains of a river valley dominated by sugarcane farms. The northern section of the Mulgrave-Russell includes the city of Cairns and Trinity Inlet.

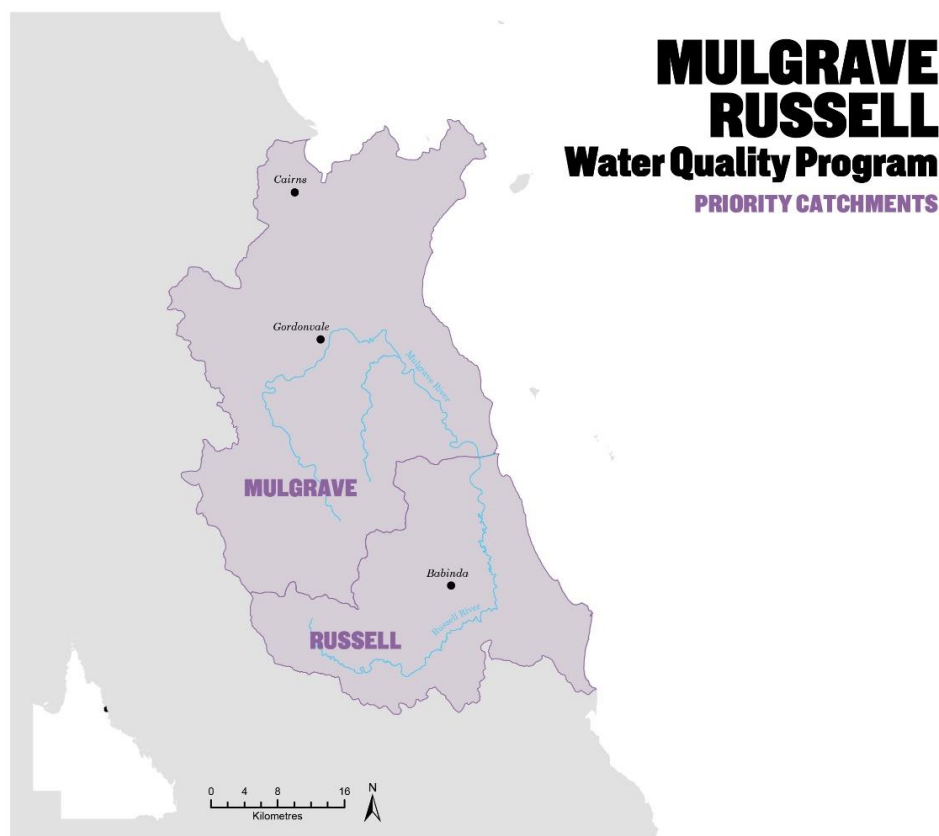


Figure 1. Map of Mulgrave-Russell priority catchment area

The Mulgrave-Russell catchment is one of the top five basins contributing anthropogenic dissolved inorganic nitrogen (DIN) loads from the GBR catchment area (930 tonnes/year) (Scientific Consensus Statement 2017). Moreover, catchment DIN yields in the Mulgrave-Russell catchment also rank as some of the highest in the GBR catchment area ($\sim 470 \text{ kg/km}^2/\text{year}$). Most dissolved inorganic nitrogen comes from sugarcane production, and some banana cultivation, in the catchment area. Under the Reef 2050 Water Quality Improvement Plan (WQIP), 2017-2022 the Mulgrave-Russell catchment is identified as a high risk for DIN, with end-of-catchment load reduction targets set at 70% (300 tonnes). The most recent Reef 2050 Water Quality Improvement Plan Report Cards (2013-2016) highlight that DIN load reduction trajectories fall well below desired targets (Queensland Government, 2017).

Despite nearly 20 years of concerted effort and significant resources to improve catchment water quality entering the GBR, progress against targets has been modest at best. The recent Senate Inquiry into agricultural practices affecting water quality of the GBR highlighted that many farmers and their representative organisations don't trust the science behind the water quality targets or regulations. If they don't trust the science, the likelihood of their adopting improved practices is diminished. A lot of this is based on the fundamental distrust of modelling, with many farmers saying 'if you show me that it is my nitrogen leaving the farm and entering the reef, then I will change'. Working collaboratively with farmers to provide visible demonstrations of farm run-off that they will have trust in, is the basis of the approach and one that has been trialled successfully in the Mulgrave-Russell catchment under NESP Project 25, since 2015.

Demonstrating how DIN runoff can be reduced results in more willingness by farmers to adopt land management practices that improve water quality. Participating farmers are likely to share the findings through their peer networks, thus bringing about more widespread understanding for the underpinning need for practice change. A deeper commitment to change, driven by an understanding of the science is a more robust and lasting mechanism for improving reef water quality.

Background

1.1 The establishment of the Reef Trust Partnership (RTP)

The Partnership, which was established by the Australian Government and the Great Barrier Reef Foundation (GBRF) in 2018, is centred on a landmark investment of \$443.3 million to build the resilience of the Great Barrier Reef (the Reef). The RTP includes an investment of \$201 million to address water quality improvement targets impacting the Great Barrier Reef World Heritage Area over a period of six years to June 2024.

The approach to investing the \$201 million for water quality improvement is identified in the Annual Work Plan for 2019-20. The plan allocates:

- \$141 million for regionally focussed on-ground actions
- \$20 million for Traditional Owner-led water quality improvements
- \$10 million for innovation and system change, and
- \$10 million for protection and conservation measures aimed at maintaining water quality, particularly in less disturbed catchments.

In addition, \$19.7 million has already been contracted under the Reef Water Quality Improvement Grant Program Stage 1.

The \$141 million for regionally focussed on-ground actions will be delivered through a series of regional programs, such as the Mulgrave-Russell program, targeting catchments identified by GBRF as a priority for water quality improvement. Regional priorities for investment have been guided by, amongst other factors, the priorities set out in the Reef 2050 Water Quality Improvement Plan 2017-2022 and informed by a consultancy undertaken by Alluvium Consulting.

For each regional program, the GBRF identified:

- **Priority catchments** and **target pollutants** based on a prioritisation process undertaken by GBRF that was underpinned by the Reef 2050 WQIP and informed by the Alluvium Report
- **Target load reductions** for the target pollutants at the end of the catchment.

These targets are the intended load reduction at the end of the catchment to be achieved by the investment under the Partnership and are set out in the [Partnership Monitoring and Evaluation Plan](#). Further detail on the various plans related to the Partnership, including the Partnership investment strategy, annual work plans, and the monitoring and evaluation plan, are available [here](#).

Alluvium (2019) used a range of water quality and economic tools to determine the most cost-effective catchment management actions to achieve the RTP water quality targets across the GBR catchment. A range of potential investment pathways were evaluated and further stakeholder input gathered on the anticipated benefits and existing regional delivery capacity to determine the preferred investment pathway for cost effective delivery of water quality outcomes. As a result of this process, a total of \$6.2 million was allocated to deliver targeted reductions in the Mulgrave-Russell.

Other activities under the RTP that the Mulgrave-Russell Water Quality Program will complement include:

- Innovation and Systems Change – A dedicated innovation program aimed to improve the cost-effectiveness of actions and ensure enduring outcomes from investments in water quality improvements
- Traditional Owner-led water quality Reef protection initiatives – The program aim is to improve Traditional Owner decision-making and participation in on-ground water quality activities as well as to address known information gaps around Traditional Owner values (cultural and other) associated with water sources.

1.2 Mulgrave-Russell Regional Water Quality Program (MRRWQP) process

In October 2020, GBRF opened a competitive process calling for expressions of interests (EOI) from delivery partners and organisations to deliver on ground projects, which will result in improved water quality outcomes (Table 1). Prospective projects were initially short-listed based on the following, selection criteria:

- i) the cost effectiveness of the project in contributing towards improving Reef water quality
- ii) the capability of the delivery provider to implement the project and
- iii) the effectiveness of the proposed approach in delivering the water quality outcomes.

In parallel to identifying prospective projects and planning the MRRWQP, GBRF issued a separate request for proposal (RFP) for professional services in two positions, Program Manager and Regional Program Coordinator, to manage the program locally. Another procurement process was completed in mid-2022 to expand the appointments of existing RTP Regional Water Quality Programs, with up to \$50,000 for 'value-add activities' and up to \$500,000 for additional 'on-ground water quality improvement activities'.

Table 1. RTP Grant timeline for the MRRWQP

GBRF Call for Expressions of Interest	October 2020
Engagement of Program Manager (Reef & Rainforest Research Centre) and Regional Partnership Coordinator (Cairns Canegrowers)	January 2021
Delivery Partner Applicants advised of successful EOIs	February 2021
Request for Information for shortlisted providers	May 2021
Request for detailed proposals from selected delivery providers	July 2021
Final proposals	August 2021
Contracting of selected delivery providers	September 2021
GBRF call for on-ground	May 2022
Contracting of value-add extension activities	October 2022

1.3 Water quality improvement reports

Significant efforts have been made to improve the quality of water entering the Reef through implementing a series of Reef Water Quality Protection Plans in 2003, 2009 and 2013. One of the key reports on the review of water quality issues in the Great Barrier Reef was the 2017 Scientific Consensus Statement. It is a comprehensive peer reviewed research report, that identified that progress towards the 2013 targets had been slow and that the projected medium and long-term goals would not be met. The report identified that the management options to reduce pollutant run-off to the Great Barrier Reef provide a solid foundation for program implementation, but an expanded scope of tailored and innovative solutions was urgently required to meet the Reef 2050 Water Quality Improvement Plan targets by 2025 or the targets of the Reef 2050 Long-Term Sustainability Plan.

A few of the recommendations from the 2017 Scientific Consensus Statement can be summarised as:

- Introduce tailored practice change programs that work with and involve collaboration with landholders, industry organisations and service providers to design and deliver water quality programs. These programs would provide trusted and diverse advisory services, involve knowledge exchange between landholders, scientists and others; address perceptions of risk; and deliver adequate financial, cultural and social rewards.
- Develop a detailed comprehensive and costed water quality management plan, drawing on the existing regional water quality improvement plans, to guide strategic investment in priority, water

catchment, areas. The Mulgrave-Russell, Johnstone, Tully, Herbert, Haughton, Burdekin, Pioneer, Plane, Fitzroy and Mary were identified as high priority catchments.

A detailed investment prioritisation study was commissioned by the GBRF and conducted by Alluvium Consulting and the Final Alluvium Report was released in 2019. The Queensland Governments Reef 2050 WQIP reduction targets across the entire Great Barrier Reef Region are to reach a 60% reduction in anthropogenic end-of-catchment dissolved inorganic nitrogen (DIN) loads and for pesticides, to protect at least 99% of aquatic species by 2025. This target is an average of individual targets for the high priority catchments. The Australian Governments Reef 2050 Long-Term Sustainability Plan sets the long-term goal by defining targets, actions, objectives and outcomes, and responsibility to preserve the Reef's health and resilience, while allowing ecologically sustainable use.

1.4 The Mulgrave-Russell Regional Water Quality Program

The Mulgrave-Russell Regional Water Quality Program (MRRWQP) aims to improve water quality outcomes specific to the management of DIN leaving cane farms, by achieving a reduction of 72 tonnes DIN through the following activities:

- Identification of hotspot DIN sources across the Mulgrave-Russell catchments for targeted extension and intervention activity.
- Improved understanding of the impact to water quality from farming systems changes. Growers will be actively involved with localised water quality monitoring activities.
- Providing knowledge and empowering farmers to see first-hand the impacts they have on water quality through real time water quality monitoring activities. This knowledge will give growers the confidence needed to make necessary changes to their own individual farming operations to address issues as they arise, which would lead to adopting practice change that leads to water quality improvements.
- Water quality remediation strategies which utilise existing agricultural drainage systems to selectively target, divert and treat early wet season, high nitrate 'first flushes'. This style of management intervention is also complementary to other catchment management initiatives such as wetland and riparian restoration, activities that are often only superficially integrated with water quality improvement by farmers, other landholders and NRM organisations.

To reduce DIN load from sugarcane land use, it is not just about percentage reductions in nutrient applied, it's also about understanding:

- Soil variation that impacts on the ability of the soil to hold nutrient and water
- crop class variations that enable alternative sources of nitrogen (such as legume or mill mud) to be accounted for
- Temporal and spatial climate variations that impact on yield potential
- The form (e.g., enhanced efficiency fertilisers), placement and timing of application of inorganic N fertilisers
- The behavioural science factors of the farmer population that influence the individual farmers willingness to adapt their nutrient management
- The aspects of the individual farmers crop agronomy and capacity that nutrient management is constrained by and fits within.

The MRWQP has a cross organisational team focussed on the Mulgrave-Russell catchment with a core group of experienced spatial agronomist that can collect, utilise and interpret datasets within a precision agriculture approach. This provides a pathway for sustainable sugarcane production systems that address and quantify the DIN water quality problem in the following key areas:

- Determine appropriate management zones across farms for strategic soil sampling and precision nutrient management
- Determine accurate paddock boundaries for nutrient planning and budgeting
- Matching N supply to crop N requirements taking consideration of soil types, crop class and climate predictions
- Understanding yield variation through the analysis of satellite and drone imagery
- Identify areas of constraint thereby targeting specific sites with high quality agronomic support to improve nitrogen use efficiency (NUE), profitability and productivity
- Create decision support tools and develop local evidence to achieve full B Class fertiliser management practice and opportunities to reduce nitrogen fertiliser rates below the legislated amounts.

The MRWQP will be accessible and available to growers of all sizes and capacities. It is committed to working with growers who have not engaged in Reef programs and nutrient management planning to date as well as those who have engaged and are ready to take the next steps.

The key focus of the MRWQP is to address the issues of DIN being exported from the farm into freshwater and marine ecosystems within the Catchment area, with a range of on and off-farm interventions. Other pollutants like soluble phosphorus, sediment and pesticides will also be addressed with growers when the opportunity exists. Many leading farmers and/or growers are already at BMP, however, suggest they cannot move any further on their nitrogen reduction practices. This sentiment suggests that off-paddock approaches (such as regulating runoff through the drainage network) should also be included in the mix. Not only will off-paddock practices provide additional scope for water quality improvement, but such approaches also make farming stakeholders feel like the burden is not entirely resting upon their shoulders, an important aspect of maintaining trust frameworks with primary industries.

Farmacist will introduce a more astute land resource management through efficiencies in agricultural inputs and the finetuning of nitrogen and phosphorous applications in the sugarcane production system. The SIX EASY STEPS nutrient management program has provided the sugar industry with a set of guidelines to manage nutrient inputs. The first four steps of the SIX EASY STEPS methodology forms the basis of the Queensland Government's regulatory requirements to ensure a base standard for nutrient management for sugarcane production. The first four steps regulatory approach (C Class Fertiliser Management) will only partially resolve the water quality issues faced by the Great Barrier Reef.

Farmacist's Precision to Decision (P2D) project will facilitate a transfer of nutrient and water quality research through a team of expert spatial agronomists to support and enhance the application of steps five and six of the SIX EASY STEPS on sugarcane farms in the Mulgrave Russell. Through this process there is a real opportunity to refine nutrient management based on a more detailed understanding of nutrient requirements of different crop classes, growing in different soil types, under different climate patterns in wet vs dry years. Such a strategy is consistent with the principles of precision agriculture (PA), namely selectively applying inputs and management practices to spatially defined parcels of land (i.e. management zones) within a farming location.

Research, and the practical experience of pioneers of PA in the sugar industry, have shown that precision nutrient management will maintain (or improve) productivity while significantly improving nitrogen (N) use efficiency (i.e. reduce the amount of applied N required to produce a tonne of sugarcane). This increased efficiency results in improvement in the quality of water leaving farms without impeding productivity. The P2D project will utilise PA to improve efficiencies and provide sugarcane growers with nutrient management plans aimed at fine-tuning nitrogen and phosphorous applications rates to best match spatially defined zones that represent crop class x soil type x climate. Identifying these spatial zones will involve the use of decision support software to process data sourced from active soil mapping technologies (EM or EC soil mapping), Satellite Yield analysis and drone mapping. The incorporation of remote technologies such as EM and drone mapping and Satellite Yield analysis will provide growers with access

to data and decision support that was previously not available. This will enable the adoption and ongoing refinement of precision in nutrient management into the future.

MRRWQP key documents

This Regional Plan establishes the strategies and activities that will be implemented by the MRRWQP. This document, along with a supporting Communications and Stakeholder Engagement Plan and a Monitoring and Evaluation Plan, provide the framework for the management and integration of projects, tracking progress, evaluating the program, and for communicating and engaging with key stakeholders (Figure 2).

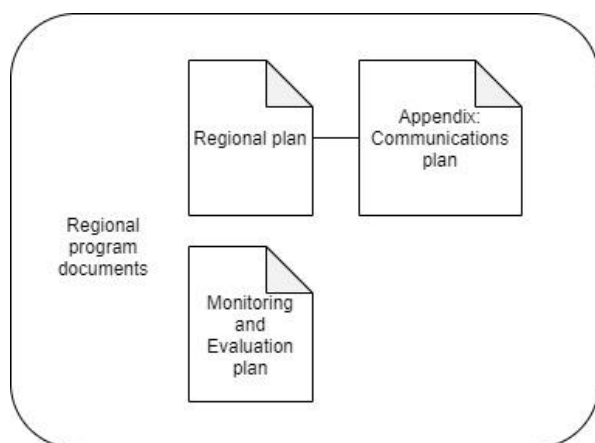


Figure 2. The founding documents of the MRRWQP

Objective and Scope of the MRRWQP

Regional priorities for investment have been guided by the priorities set out in the Reef 2050 Long-term Sustainability Plan, Reef 2050 WQIP and informed by an investment prioritisation report by Alluvium Consulting and supporting documentation for these plans and reports. These have determined the primary objective and scope for each of the RTP regional water quality programs.

The primary objective of the RTP MRRWQP is to achieve an enduring reduction in the long-term end-of-catchment pollutant loads. The MRRWQP aims to achieve an end-of-catchment target load reduction of 72 tonnes DIN per year by working with the sugarcane and banana industries to improve long-term enduring land management practices and stewardship. This includes:

- Introducing new solutions and innovative models for increasing knowledge in water quality issues and system change
- Providing extension support and financial incentives to adopt improved practices
- Demonstrating potential of adopting improved farming practices to enhance productivity and/or profitability
- Promoting collaboration including key stakeholder and peer to peer learning across the industry
- Improve understanding of behavioural and social indicators influencing adoption and community engagement to facilitate long term sustainability.

The geographical scope of this Program is the Mulgrave-Russell catchment where sugarcane is the predominant agricultural land use. The Program commenced late in 2020 and will conclude 30 June 2024.

Program Governance

The governance and contractual arrangements for the MRRWQP are shown in Figure 3. The Program Governance involves:

- The Great Barrier Reef Foundation (GBRF) manages and oversees the planning and implementation of the Program including an internally appointed Program Manager to work in collaboration with the Regional Program Manager and Partnership Coordinator. GBRF contracts the Regional Program Manager and Partnership Coordinator directly via a Consultancy Agreement.
- The Regional Program Manager manages overall delivery of the Program, including governance, planning, implementation and reporting. The role of the Program Manager focuses on ensuring the delivery of the program by managing the implementation of projects, tracking project deliverables, designing the Monitoring and Evaluation Plan and synthesising progress towards targets. The Reef and Rainforest Research Centre (RRRC) was appointed as the Regional Program Manager.
- The Regional Partnership Coordinator supports the design and implementation of the Program and leads engagement and coordination activities and provides support to participating growers and delivery providers. The Partnership Coordinator has a strong role in coordinating engagement, promoting community support for the program, developing networks, assessing technical advice and needs, and managing project communications. Canegrowers Cairns was appointed as the Regional Partnership Coordinator.
- Delivery Providers implement individual water quality improvement projects as part of the Regional Program. They will liaise directly with the growers to enable and achieve the water quality outcomes of the program. GBRF will contract each Delivery Provider directly, via a deed of grant.
- Technical Advisory Group (TAG) - a pool of experts providing guidance to various elements of the Program including assessment, verification, analysis, and integration of technical, economic/financial, and social aspects of the Program. GBRF leads the Technical Advisory Group.
- The Program Steering Committee oversees the MRRWQP, which is chaired by GBRF and includes representatives from the RTP Water Quality Working Group, RRRC and Canegrowers Cairns. The Program Coordinator participates in and provides the secretariat function for the Program Steering Committee. The Terms of Reference (TOR) for the Program Steering Committee are included (Appendix 1).

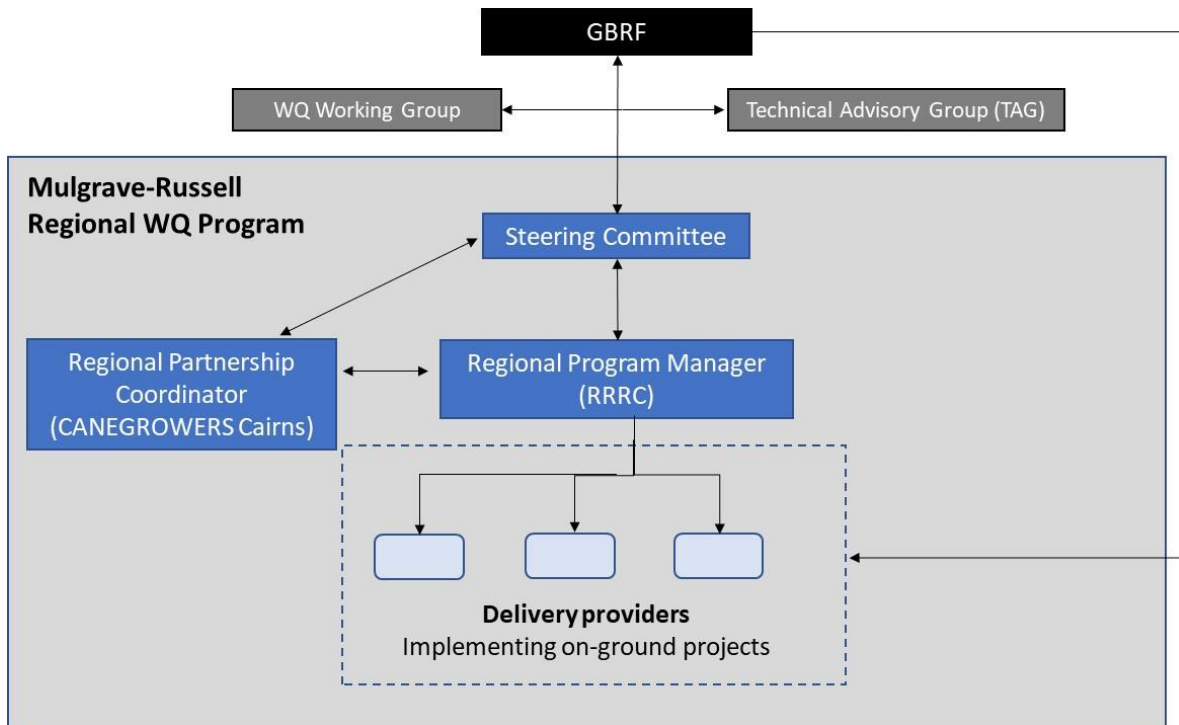


Figure 3. Governance arrangements within the MRRWQP

The GBRF will ensure that the MRRWQP remains focussed on delivering the contractually agreed water quality outcomes through regular revision and reporting requirements at the regional project level. Regular Steering Committee meetings provide an additional review process for tracking project delivery. Similarly, GBRF can call on the TAG and other invited experts to provide advice on technical issues.

The Regional Program Manager and Partnership Coordinator will lead day to day management, oversight and coordination of the MRRWQP and provide support to participating growers and delivery providers. The Partnership Coordinator and Delivery Providers will have a close working relationship focused on collaboration and communication. This is essential to avoid grower fatigue, to identify data and training gaps and needs across the program, and to ensure consistency in data collection, sharing of information and reporting.

Program Linkages

Water quality programs being implemented in the Mulgrave-Russell catchment include:

Project uplift funded by MSF Sugar and running until June 2022, this project works with growers to improve farm profitability and reef water quality. The project aims to improve soil health, reduce operational time and cost and improve water quality for better reef outcomes. There are three main parts consisting of cash grants for eligible farming practice changes, interest free loans and uplift team support. Project uplift also uses the Paddock to Reef reporting program. Where appropriate, collaborating with the Uplift team will allow the delivery providers the potential opportunity to offer services to growers to compliment practice changes being achieved with other projects.

The RP222 Project: Mulgrave-Russell Complete Nutrient Management Planning for Cane Farming, delivered by Sugar Research Australia (SRA) and Farmacist has assisted growers to develop whole of farm plans over the past two years. With on ground grower engagement ceasing at the end of 2021. The project has also utilised the Paddock to Reef reporting tool to capture grower practice change.

The use of the Paddock to reef practice change reporting tool will allow the delivery providers within the MRRWQP to cross check growers benchmarking and practice change to date, reducing the potential of capturing the same practice change twice. Growers who have been involved in the project may have already made significant reductions to fertiliser application rates in line with the Six Easy Steps Toolbox.

Sugar Research Australia have developed many nutrient management tools and resources including trial information that will form important rational as the basis of fine tuning and where appropriate reducing nutrient inputs whilst maintaining profitability and productivity. The SRA Far North District Manager and the Far North District Delivery Officer will be an important collaborative partner within the MRRWQP regarding sugarcane specific nutrient resources and where appropriate delivery of nutrient and 6 Easy Steps training to assist in achieving the programs DIN reduction target.

Representatives of each of the collaborating organisations from the MRRWQP will form an initial overarching **Project Reference Group** to manage and co-ordinate project activities during the life of the project. Proposed membership of the Project Reference Group includes:

- Regional Program Manager – RRRC
- Regional Partnership Coordinator – Cairns Canegrowers
- Farmacist
- James Cook University, TropWATER
- Sugar Research Australia (SRA)
- Sugarcane growers.

The initial overarching Project Reference Group aims to ensure that the objectives and outcomes of the MRRWQP are successful and enduring. The Project Reference Group will meet at the commencement of the program to identify project operational and communication goals, with participating growers involved to increase collaboration and facilitate continuous improvement beyond the life of the program.

Delivery providers will also set up project specific Project Reference Groups which include a combination of local growers, industry representative bodies, research organisations and catchment groups. Aiming to ensure project outcomes are met and the projects legacy extends beyond the life of the program.

Regional Overview

The Major towns within the Russell and Mulgrave catchments of Babinda and Gordonvale were developed around sugar cane and sugar cane mills. Historically the regions prosperity has fluctuated with the highs and lows of the sugar industry. Sugarcane is still the dominant crop grown within the catchments. There is pressure from urban development which is reducing the overall cane land within the area. The viability of the Mulgrave mill is of a major concern, as a continued reduction of the available tonnes of sugarcane to be processed at the mill will eventually reduce the mills productivity to an unviable level.

The average age of a sugarcane grower in Australia is approximately 59 years. Many growers within the Mulgrave-Russell catchment are over this age. The aging grower population is also another challenge as historically growers contributed \$1.33 for every dollar of government funding to achieve on-ground practice change.

The Mulgrave-Russell catchment has received several funding rounds to incentivise growers to upgrade implements and machinery in line with the Sugar Water Quality Risk Framework for farming practices relating to sugarcane farming within reef catchments. These include the Reef Rescue Program from 2008 to 2013, followed by the Australian Governments Reef Program from 2013 to 2016. As a result of the collaboration between industry and NRM groups within the catchment, the Wet Tropics Sugar Industry Partnership (WTSIP) evolved as a body to deliver grants, extension and training across the wet tropics region, including the Mulgrave-Russell Catchments. WTSIP extension engagement ceased in July 2021.

The Mulgrave-Russell catchments location within the Wet Tropics in a high rainfall and flood prone environment limits many opportunities to grow alternative crops, as they will not be profitable under the local climatic conditions.

Program Design

1.5 Program logic

The program logic (Figure 4) describes the long-term goals and end of partnership and intermediate Water Quality outcomes will be achieved through on-ground projects and core regional program activities. The program logic shows clear alignment with the RTP program logic and is outlined in the MRRWQP Monitoring & Evaluation (M&E) Plan.

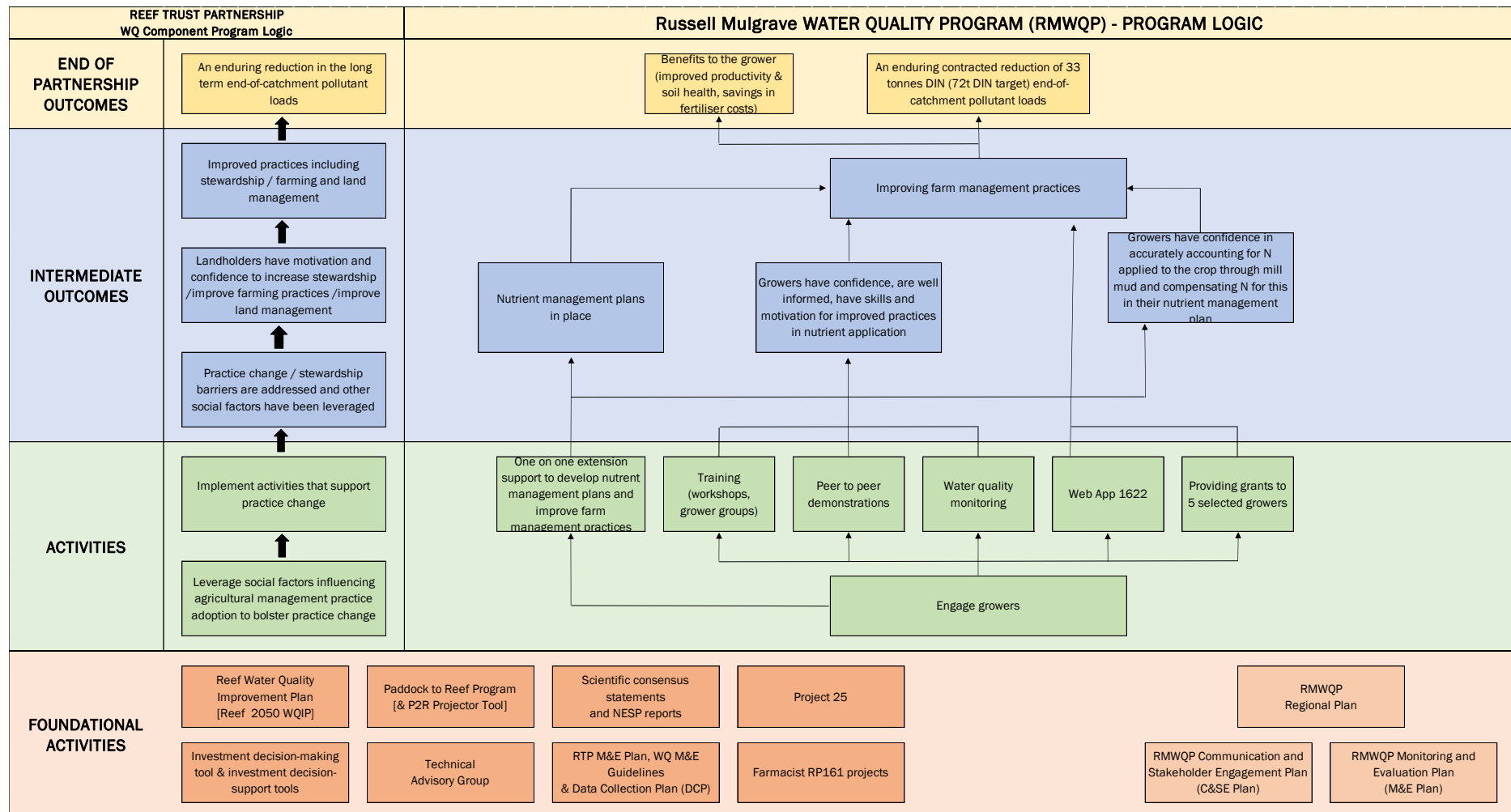


Figure 4. MRRWQP Logic

1.6 Budget

A total of \$6.2 million has been allocated to the program with the proposed funding breakdown in Table 2.

Table 2. Mulgrave-Russell Program Budget

Mulgrave-Russell Regional Water Quality Program	
PM/PC	\$553,000
TAG/Cross cutting	\$124,000
Contingency	\$269,590
RAP2 Extension	\$265,590
On-ground projects	\$4,987,820
Total RTP Grant	\$6,200,000

1.7 Program activities

The MRRWQP will support and promote improved land management practices and stewardship in the local sugar industry. Program activities will collectively contribute towards the primary objective to further Mulgrave-Russell catchment grower commitment to improved nutrient management practices, with a focus on achieving an enduring reduction in end-of-catchment loads of dissolved inorganic nitrogen (DIN) of 72 tonnes by June 2024.

Examples of activities that will be completed to help achieve the MRRWQP objectives include:

- Cane grower-focused engagement workshops
- Customised, detailed farm DIN management plans with precision agriculture management plans for nutrient application
- Provision of incentive funding for practice change to improve water quality
- Support for growers via forums, workshops and on farm agronomy services fostering and promoting uptake in nutrient management practices
- Measurement of water quality parameters in real time using sensor technologies
- Identification of hotspot DIN sources for targeted extension and intervention
- Data collation and sharing to provide real time measurement of progress towards achievement of water quality targets
- Barriers and motivations for change, including those specific to the MRRWQP activities
- The role of individual project activities in assisting with change
- Grower relationship to water quality and reef science
- Sugar industry image and representation.

The Regional Partnership Coordinator will work with the delivery providers to facilitate harmonious on-ground delivery. The success of each project will be closely monitored and evaluated, with oversight by the Regional Partnership Coordinator and Program Manager aiming to identify positive outcomes and potential issues. This will provide a fast, proactive approach where positive outcomes are promoted across the MRRWQP.

Growers will be actively involved with water quality monitoring activities, improving knowledge and empowering farmers to see first-hand the impacts they can have on improvements to water quality. This knowledge will give growers the confidence needed to make necessary changes to their individual farming operations to improve water quality.

Growers will receive support to identify soil and productivity constraints and opportunities to improve nutrient efficiency. They will collaborate on the development of precision agriculture concepts that enable intra-paddock variable rate application of fertilisers. Growers will receive extension support from the

dedicated agronomy service providers, ensuring that PA technologies and practices are introduced using proven science-based principles backed by leading industry researchers.

There have been significant learnings from previous and current investment programs, key amongst them being that no single approach will achieve enduring change. All projects funded as part of the MRRWQP are based upon proven methodologies that have previously demonstrated water quality improvement outcomes.

1.8 Activities that improve land management practices and stewardship

The MRRWQP aims to build a robust, multi-scale (paddock to sub-catchment) behaviour change and water quality monitoring program, to support and target local extension for improving farming practices across the Mulgrave-Russell district. This will target priority locations that are identified as 'hot spots' and have the potential to reduce the highest amount of DIN.

Precision agriculture (PA) provides a pathway and a framework for enhanced economic and environmental sustainability in the sugarcane growing sector. One of the major barriers to the adoption of proven PA practices into the sugar industry has been the lack of data and knowledge required to implement a successful PA program. The removal of the barrier for the viability and ultimate adoption of PA is pivotal upon obtaining the relevant base datasets of soil maps, digital elevation and yield variability maps, at a scale capable of driving significant and beneficial change across the Mulgrave-Russell sugarcane growing catchments.

1.8.1 Prioritising landscape 'hotspots' for management interventions

The MRRWQP will support on-ground farmer extension and trust framework development through robust, participatory, localised water quality monitoring. The water quality monitoring project will use real-time nitrate sensing technologies and more traditional monitoring approaches as an engagement-communication tool with sugarcane farmers. As well as targeting extension efforts to the most relevant sub-catchments, the real-time data will provide enhanced timely and locally relevant information to farmers on land use-water quality interactions. This part of the water quality program will be integrated with extension and implementation of farming systems that will have positive productivity and sustainability outcomes for industry.

Project delivery providers will lead activities involving extension and working with farmers. Extension staff will bring together farmer groups from 'hot spot' areas to nominate locations for real-time nitrate sensors to be deployed, undertake group extension activities, working collectively to address water quality issues and facilitate appropriate practice change measures. As part of the project's one-on-one extension component, staff will be required to engage and work with a specified number of farmers who have limited or no previous association in any associated Reef programs.

The prioritisation process will have several stages:

- Project design and site selection (in collaboration with industry and extension Delivery Providers)
- Procurement and establishment of paddock and sub-catchment monitoring sites
- Collection, QA/QC checking and storage of water quality data
- Data presentation and production of extension materials for growers and industry stakeholders
- Review based on extension staff and grower feedback
- Adjustments to better meet the knowledge needs of growers and industry stakeholders
- Reporting on project progress and Monitoring and Evaluation (ongoing).

1.8.2 Precision to Decision – Sharpening the focus of nutrient management in the Mulgrave-Russell catchment

Project outcomes:

- 9,400 kg of DIN load reduction (as per P2R Projector Tool (version 3) estimates).
- 80 sugarcane growers completing precision nutrient management plans
- 2,800 ha of EM soil mapping of the most variable locations
- 8,000 ha of precision agriculture data sets generated and analysed
- 8,000 ha of sugarcane land implementing precision nutrient management plans
- 9 nitrogen rate trial sites to test and validate precision N rates
- 6 Six Easy Steps Toolbox demonstration sites
- 6 case studies.

The activities include:

- 1) **Mapping of soil boundaries and capture of elevation data:** on 3,400 hectares of sugarcane growing land, using a combination of EM mapping and RTK-GPS technologies.
- 2) **Provision of yield variation maps:** Professor Andrew Robson from the University of New England will provide sugarcane biomass data derived from the processing of calibrated satellite imagery for 80 farms. Where satellite imagery is unreliable, drone technology will be utilised.
- 3) **Collation, storage, processing and exporting of data layers:** using Farmacist's Grower Services Manager (GSM), which is a custom-built geographic information system for precision management of farming land.
- 4) **Preparation and delivery of an extension delivery platform:** growers targeted in the project will receive extension support from dedicated service delivery providers to ensure that PA technologies and practices are introduced into a farming operation using proven science-based principles that will facilitate the move to B class nutrient management practices.
- 5) **Validation and communication activities integrated into extension delivery platform:** paddock scale management practice validation activities to demonstrate crop response to PA nitrogen application in various soil types and locations to build advisor and grower knowledge and understanding of crop N uptake.
- 6) **Provision of incentives to growers:** a grower incentive program will be introduced into the project to provide strategic funding to approximately eight growers to partially cover the costs of converting existing nutrient application equipment to support precision and control of fertiliser application rates.
- 7) **Disseminate an extension delivery platform:** provides a platform for the delivery of the full SIX EASY STEPS with integration of PA principles to researchers, agronomists, productivity service staff, re-sellers and growers.

1.8.3 Controlled drainage infrastructure and intervention and water quality monitoring

The catchment drainage intervention project will be guided by the outcomes of the NESP and inputs from Cairns Regional CANEGROWERS, JCU TropWATER and the Babinda Drainage Scheme Management Committee. This project will involve drainage-wetland digital elevation model mapping in the Mulgrave-Russell including the main Babinda Swamp Drainage Area and additional smaller areas. This project will deliver ground-truthing of the drain mapping, engagement and gathering of local knowledge of flow pathways with local farmers, and prioritisation of candidate areas for drainage intervention. More importantly, it will allow for mapping of water quality benefits and denitrification rates of farm run-off that is being held in the drainage canals before released into the creek and the GBR lagoon.

There will be a cost attached to the instalment of the drainage intervention infrastructure and ongoing maintenance and monitoring activities. There are several water quality related drainage interventions (sediment trap dams) already installed in the Babinda Swamp Drainage Scheme area, which have been maintained for some years by local growers and drainage board members. Hence, the precedent for local ownership, management and maintenance has already been successfully established.

1.9 Activities that involve Traditional Owners

The MRRWQP will strive to identify opportunities to engage and collaborate with Traditional Owners of the Mulgrave Russell region. This will include opportunities for sharing project information and new knowledge, storytelling, co-design and establishing relationships that deliver the healthy country outcomes.

1.10 Innovation activities

As noted above, \$10 million has been allocated towards projects focussed on innovation and system change as part of an innovation program. The MRRWQP will make appropriate linkages to projects under the innovation program. Piloting innovative technologies and approaches is expected to lead to new practices being available for farming, land management and stewardship. It is also intended to lead to changes in how farmers make decisions, how agronomists provide support services, and how donors choose to invest. This will lead to improved practices (improved land management pathway) and contribute to innovative solutions for systems change in water quality.

1.10.1 Electromagnetic Induction Soil Mapping in the Russell River Catchment – Jaragun Ecoservices

This project uses electromagnetic induction (EMI) technology and conventional soil profiling methods to map up to 2,000 ha of cane area in the Russell River catchment. This will provide the basis for production of detailed soil management unit mapping and information at 1:10,000 scale, with outputs 25 times more detailed than existing 1:50,000 scale soil information. This will guide precision soil-based nutrient management that matches fertiliser application rates to crop needs. The project aims to improve farm productivity and reduce surplus nutrients entering adjacent waterways across the Wet Tropics GBR region. A repeatable methodology will be developed that encourages broader implementation across Wet Tropics catchments, with the mapping products immediately available to support industry implementation of the 'Six Easy Steps' program across approximately 20% of sugarcane within the Russell River catchment. The two-year project is a partnership between Jaragun Pty Ltd and the Queensland Department of Natural Resources, Mines and Energy (DNRME).

1.10.2 On-ground testing and modelling of the effectiveness of Enhanced Efficiency Fertilisers in the Wet Tropics catchments of the Great Barrier Reef – Sugar Research Australia

This project builds on the work of '*Cane Farmer Trials of Enhanced Efficiency Fertilisers (EEFs) in the Catchments of the Great Barrier Reef: EEF60*' to identify where enhanced efficiency fertilisers can provide agronomic and economic benefits to cane farmers. Knowledge of in-field nitrogen (N) loss reductions when using EEF's will be quantified, and modelling used to explore where and when N loss reductions can be expected in the Wet Tropics. The two-year project is a partnership between SRA, the CSIRO and the Queensland Department of Agriculture and Fisheries (DAF).

1.11 Grower incentives

A grower incentive program will be designed in year one and introduced into the project in year two to provide funding to approximately five growers. This funding will partially cover the costs of converting existing fertiliser application equipment to support variable rate capability and enable precision fertiliser application. It is intended to cap the incentive program at 50% of the cost in converting existing fertiliser

equipment to a maximum of \$5,000 per grower. This incentive program is to convert existing fertiliser equipment only and will not support the purchase of new applicators.

1.12 Future opportunities

The Australian and the Queensland Governments have invested significantly in water quality improvement programs across the Great Barrier Reef catchments. Future funding may be available through the Reef Trust Partnership and the Queensland Government.

Communication and Engagement

The Communications and Stakeholder Engagement Plan sets the communication framework for the projects. The Communication and Stakeholder Engagement Plan will be revised and updated if new and interesting information surface and positively connects growers with project and community involvement.

Effective communication and stakeholder engagement is critical to building understanding, trust and community ownership of the RTP projects. The Reef space is busy, crowded and in some areas fragmented with hundreds of organisations working for the Reef including Traditional Owners, government agencies, research organisations, scientists, the agriculture sector, tourism operators, international conservation bodies and community organisations. A key aim of the GBRF is to support improved alignment and cohesion of existing activities and ensure new work is complementary and collaborative.

To be successful, participating organisations should have a sense of ownership of the projects in their design and delivery under the MRRWQP. It is also important to understand how each project is contributing to the long-term outcomes of the Reef and the Reef 2050 Plan. It is critical that engagement and communication activities are driven by the strategic objectives of the Partnership, and the approach will ensure this occurs through the framework illustrated in Figure 5.

1.13 Communication Goals

The MRRWQP will contribute to the Wet Tropics regional overarching goals in DIN end-of-catchment load reduction in the Mulgrave-Russell catchment. Key communications and stakeholder engagement goals for the projects are to:

- Effectively engage with MRRWQP delivery providers to facilitate open communication and collaboration, ensuring that there is clear recognition of the requirement for alignment with the goals of the overarching Regional Plan and the Regional M&E plan.
- Effectively communicate the objectives, progress and achievements of the MRRWQ program between GBRF, RRRC, CCR, project delivery providers and participants, and other regional stakeholders
- Develop meaningful relationships with the Traditional Owners of the Mulgrave-Russell catchment
- Increase awareness of best management practices that keep nutrients on farm, resulting in improved profitability and water quality outcomes.
- Increase awareness and understanding among cane growers of how improvements to local water quality increases the resilience of the Great Barrier Reef.
- Communicate the benefits of MRRWQ project DIN reductions and water quality improvement goals through management practice changes and catchment intervention.
- Develop and distribute effective communications materials (eg. workshops, forums, social media and local media) to promote precision agriculture, best practice nutrient application and water quality improvement.



Figure 5. Partnership Communication and Engagement approach (source: [RTP Communication and Engagement Plan](#))

The MRRWQP will have targeted community communications activities such as:

- Short presentations at Landcare events
- Joint presentations to LMAC and CAFNEC
- Promotional articles in community focused media (i.e., Pyramid Views newsletter)
- Utilisation of close relationships with local media outlets.

It is anticipated that the ‘good news focus’ will make the program more attractive to growers and promote a sense of pride in being involved. Growers will be encouraged and supported to tell their story highlighting that many growers are undertaking the activities, which are accessible to all.

Communication activities with growers will focus on promoting project learnings and translating existing and new nutrient management and water quality science into easily understood messages. This messaging will aim to build capacity and confidence in incorporating SIX EASY STEPS Toolbox, PA and climate forecasting activities into on-farm management. Activities will include publication of articles for industry, case studies, workshops, field days, demonstration of technology and focus groups to share learnings among farmers, researchers, extension agronomists. Social and behavioural science and M&E will help to inform and refine the activities over the three years.

Key stakeholder communication activities will focus on promoting project learnings and translating nutrient management and water quality science into easily understood messages, targeting local growers, extension providers, agronomists, stakeholders and the broader community (Figure 6).

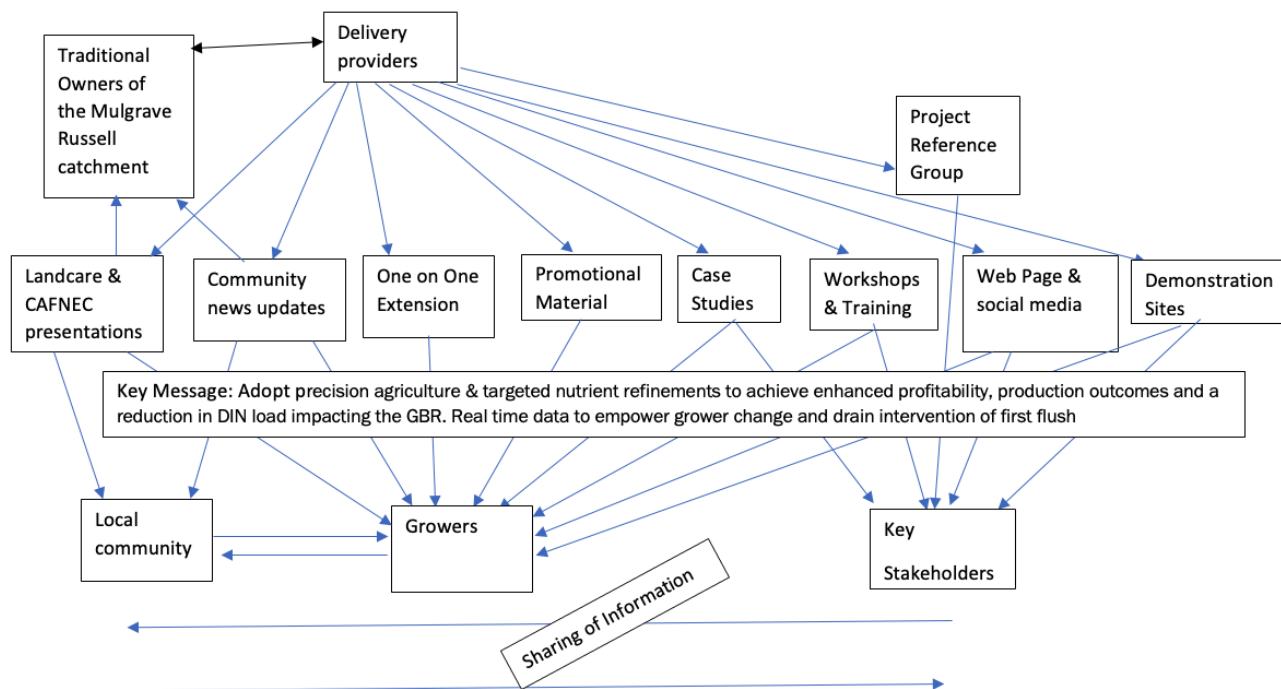


Figure 6. Delivery providers communication and engagement approach in the Mulgrave-Russell catchment

1.14 Communication videos

A series of video communications will be developed in collaboration with key stakeholders including the GBRF funded Traditional Owners Healthy Waters and Healing Waters Programs and Mulgrave Landcare Group, to showcase the local community and highlight the success of the MRRWQP. These communications will be disseminated to the public via online platforms, with special emphasis on Traditional Owners to frame their cultural values. The process will be collaborative with all stakeholders and partners on the journey.

Content will be published online and connect partners, growers and the community and using targeted hash tags for broader reach. Stakeholders will be provided with the opportunity to reshare content and there will be targeted recirculation of videos at related communication opportunities and events. Video communication material will engage with stakeholders in the region that have an association to the MRRWQP and the overarching goal of improving the water quality. This initiative will support the MRRWQP and strengthen the social, cultural, and environmental values associated with the investment.

1.15 Regional Forums

Social research has shown that growers feel they are poorly portrayed by media and that their accomplishments in the water quality arena are not promoted beyond the industry. To increase grower engagement, the MRRWQP will commence with a cane grower workshop, where local farmers, stakeholders and community representatives will be invited for an evening of discussion about previous research conducted in the regional water quality space with the aim of sharing knowledge, successes and learnings through an annual forum. The regional forums will aim to positively link growers, stakeholders and community to delivery providers, with an emphasis on collaboration for genuine positive outcomes for the growers, the community and the Great Barrier Reef. Opportunities will also be explored and encouraged for knowledge sharing, storytelling and establishing relationships with Traditional Owners of the Mulgrave Russell catchment.

Monitoring and Evaluation (M&E)

All projects funded under the RTP Water Quality Component are required to develop and implement project M&E plans that align with the RTP M&E plan and the MRRWQP M&E plan (Figure 7). The regional M&E plan describes the framework to monitor and evaluate the MRRWQP against its objectives and contractual requirements (full version located in Appendix II).

The M&E Plan provides an extensive framework which integrates the individual delivery providers M&E plans. The project management process with its oversight in how projects are progressing in line with projected delivery provider goals. To ensure success, projects are monitored, and progress mapped ongoingly to ensure that projects are within completion of original target timeline and within allocated budget.

MRRWQP delivery providers create their own M&E plans that closely links to the overarching M&E plan, which is developed by the program manager in consultation with program coordinators and delivery providers. The M&E plan is a living document that will be reviewed regularly against delivery providers progress and updated as new information/practises/public reporting surface.

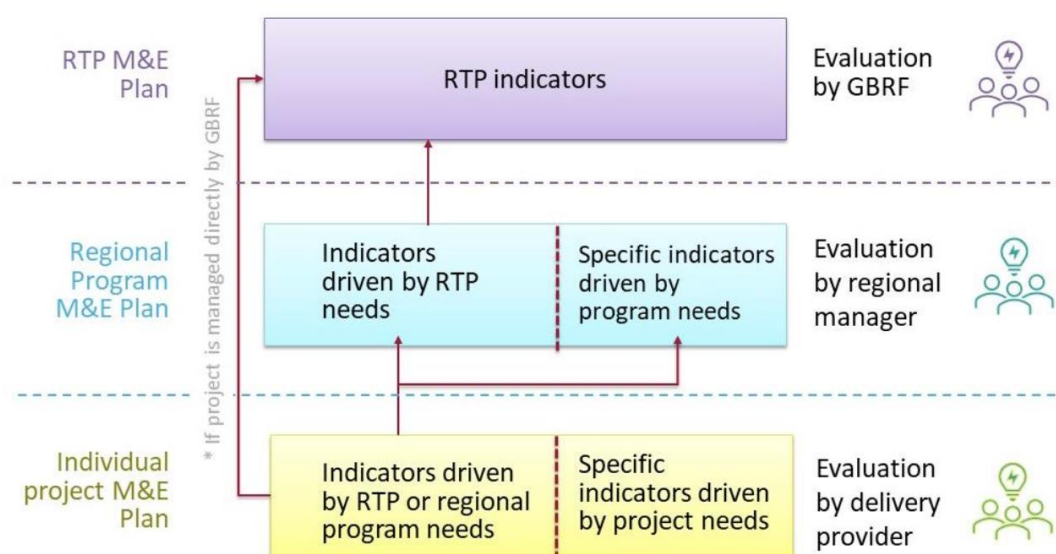


Figure 7. Monitoring and Evaluation flow-chart

Annual Program plan

The MRRWQP Annual plan will be developed with delivery providers and on-ground coordinators. This document will evolve as the projects are underway. Communication is key among project managers, coordinators, delivery providers, industry stakeholders and local growers to ensure success with realistic timeline for project completion. The 2021-22 Annual Program plan indicates the planning and implementation phase activities and to be undertaken during the first 12 months of the Program. An updated, more detailed annual work plan will be completed by March each year to document Program activities. See Appendix 1.17.

Risk Management Plan

The risk management plan is an evolving document that will support monitoring, management and mitigation of program and project related risks, including safe work practices.

Glossary and Acronyms

CGC	Canegrowers Cairns
DAF	Department of Agriculture and Fisheries, Queensland Government
DES	Department of Environment and Science, Queensland Government
DIN	Dissolved inorganic nitrogen (1 tonne DIN = 1000 kg DIN)
GBRF	Great Barrier Reef Foundation
JCU	James Cook University
OGBR	Office of the Great Barrier Reef, Department of Environment and Heritage Protection, Queensland Government
PA	Precision Agriculture
MRRWQP	Mulgrave-Russell Regional Water Quality Program
RTP	Reef Trust Partnership
RRRC	Reef and Rainforest Research Centre
WQ	Water Quality

Appendices

1.16 Portfolio of Projects

The following tables provide a summary of each project to be undertaken under the MRRWQP.

1.16.1 Project overview

Project A	Precision to Decision (P2D)
Delivery Provider	Farmacist
Location	Mulgrave-Russell, Wet Tropics
Target pollutant	Dissolved inorganic nitrogen (DIN)
Budget	\$3,430,970 (excl GST)
Completion date	30 June 2024
Cost-effectiveness	\$387.1/kg DIN
DIN savings	9,400 kg DIN
Summary	Precision agriculture provides a pathway and framework for enhanced economic and environmental sustainability. This project will engage directly with 80 growers, conducting 3,400 hectares of EM soil mapping, 8,000 hectares of precision agriculture will be generated and 8,000 hectares of sugarcane land implementing precision agriculture to shift growers nutrient management practices from D or C class practice to B or A class.
Activities	<p>The scope of activities include:</p> <ul style="list-style-type: none"> • Mapping of soil boundaries and capture of elevation data: on 3,400 hectares of sugarcane growing land, using a combination of EM mapping and RTK-GPS technologies. • Provision of yield variation maps: Professor Andrew Robson from the University of New England will provide sugarcane biomass data derived from the processing of calibrated satellite imagery for 80 farms. Where satellite imagery is unreliable, drone technology will be utilised. • Collation, storage, processing and exporting of data layers: using Farmacist's Grower Services Manager (GSM), which is a custom-built geographic information system for precision management of farming land. • Preparation and delivery of an extension delivery platform: growers targeted in the project will receive extension support from dedicated service delivery providers to ensure that PA technologies and practices are introduced into a farming operation using proven science-based principles that will facilitate the move to B class nutrient management practices.

	<ul style="list-style-type: none"> • Validation and communication activities integrated into extension delivery platform: paddock scale management practice validation activities (N rate trials) to demonstrate crop response to PA nitrogen application in various soil types and locations to build advisor and grower knowledge and understanding of crop N uptake. • Provision of incentives to growers: a grower incentive program will be introduced into the project to provide strategic funding to approximately eight growers to partially cover the costs of converting existing nutrient application equipment to support precision and control of fertiliser application rates. • Disseminate an extension delivery platform: provides a platform for the delivery of the full SIX EASY STEPS with integration of PA principles to researchers, agronomists, productivity service staff, re-sellers and growers.
Goals	<p>Project goals:</p> <ul style="list-style-type: none"> • 9,400 kg of DIN load reduction (as per P2R Projector Tool (version 3) estimates). • 80 sugarcane growers completing precision nutrient management plans • 3,400 ha of EM soil mapping of the most variable locations • 8,000 ha of precision agriculture data sets generated and analysed • 8,000 ha of sugarcane land implementing precision nutrient management plans • 9 nitrogen rate trial sites to test and validate precision N rates • 6 Six Easy Steps Toolbox demonstration sites • 6 case studies • 1 extension delivery platform tested and documented.

Project B (part 1)	WQ Monitoring Extension Support
Delivery Provider	JCU TropWATER
Location	Mulgrave-Russell, Wet Tropics
Target pollutant	Dissolved inorganic nitrogen (DIN)
Budget	\$728,550 (excl GST)
Completion date	30 June 2024
DIN savings	This project will target on-ground extension resources from other Mulgrave-Russell consortium delivery providers into priority locations that are identified as 'hot spots' and have the potential to reduce the highest amount of DIN.
Summary	This project uses high quality nitrate sensors, each sensor location measuring runoff from a small number (often 6-10) of farms. The runoff data is relayed to farmers in real-time via the CSIRO 1622-app (accessed on their mobile phones). Under these conditions, the local farmers will receive notification of any spikes in DIN and will be able to relate them to recent practices/actions (e.g., a recent fertiliser application) on one or more of the contributing farms. In our experience, when a DIN spike is recorded, the farmers in that sub-catchment determinedly seek out the source themselves. Through this approach, farmers not only get to witness for themselves that elevated DIN runoff does come from their farms, but because of the real-time feedback, they come to realise its relationship with specific farm activities in recent days. This self-realised connection between the farm activity and runoff response, and the peer pressure by other farmers in that sub-catchment to eliminate DIN spikes, is a very powerful factor in empowering practice change.
Activities	<p>The scope of activities include:</p> <ul style="list-style-type: none"> • The Project water quality monitoring team will assist with the establishment of paddock and catchment scale, water quality monitoring and extension activities across the target catchment. • Identification of hotspot DIN sources across the Russell-Mulgrave catchments for targeted extension and intervention activity. • Improved understanding of the impact to water quality from farming systems changes. • Providing knowledge and empowering farmers to see first-hand the impacts they have on water quality through real time water quality monitoring activities. • Increasing understanding around broader issues relevant to water quality improvement in the Great Barrier Reef.
Goals	The project goal is to empower growers to improve farming practices that reduce dissolved inorganic nitrogen and other agriculturally based pollutants entering local water ways through provision of high quality, timely local water quality data relevant to their farming operations.

Project B (part 2)	Controlled drainage
Delivery Provider	JCU TropWATER
Location	Mulgrave-Russell, Wet Tropics
Target pollutant	Dissolved inorganic nitrogen (DIN)
Budget	\$828,300
Completion date	30 June 2024
Cost-effectiveness	\$34.90/kg
DIN savings	24 tonnes through retainment of 2,000 ML/year of high N water from farms in 2-3 runoff events (assuming 50% denitrification in retained water)
Summary	Work conducted under Project 25 has demonstrated that up to half of the DIN leaving cane farms is exported during the first 1-3 events of the year, which typically occur during October-December. By the height of the wet-season, DIN concentrations in rain event flushes are back to background levels. This new finding brings in to focus, the benefits of treating these smaller, early season flushes. The extensive drainage network within many Wet Tropics catchments (like the Mulgrave-Russell) provides the largest piece of potential existing infrastructure that could be utilised for water quality treatment. With installations of gates and similar minor infrastructure, these flushes can be adequately retained for days in the existing drainage networks, where water can denitrify before drain into the catchment. Controlled drainage has significant potential to have a large impact on water quality remediation, at a relatively low cost.
Activities	Install a range of small-to-medium-sized drainage control infrastructure that are commercially available. Ongoing upkeep requirements and costs associated with maintaining any drainage intervention infrastructure to maintain water quality improvements by collaborating drainage boards and Canegrowers.
Goals	The goal of the controlled drainage project is to hold back a minimum of 2,000 ML of this early wet season first-flush runoff (in the 5-10 mg/L nitrate-N range) over the early stages of each wet season (within drains, or diverted into nearby wetlands), where it is held for an additional period of time (days to weeks).

1.17 MRRWQP Annual Work Plan

RMWQP ANNUAL REGIONAL WORK PLAN	2022											
	January	February	March	April	May	June	July	August	September	October	November	December
1c Technical Advisory Group Meeting												
1d Program Managers / Partnership Coordinators Meeting (weekly via phone, email and in person)												
1e Farmacist project specific Technical Advisory Group												
2_Regional program planning/design												
2a Ongoing assessment of RM Project terms and scope of services in relation to WQ Outcomes												
2b Coordinate forums/meetings with, and promote input from, regional Delivery Partners												
2c Develop the Regional Program Plan												
2d Review and update Regional program Risk Management Plan												
2e Review and update Regional program Communications & Stakeholder Engagement Plan												
2f Prepare detailed communications strategy for using videos (value-add activities)												
3_Regional Partners Forum												
3a Regional Growers Forums												
3b Involve Traditional Owner and stakeholder groups in Regional Plan - meeting, planning and implementation												
3c Annual Regional Program Forum (PM arrange with support from PC)												
4_Communications												
4a Implement Communication and Stakeholder Engagement Plan												
4b Implementation of activities in accordance with the Communication and Stakeholder Engagement Plan												
4d Grower eNewsletter Annually												
4e Community Newsletter (6-monthly)												
4f Facebook/Instagram/Twitter/LinkedIn												
4g Community Engagement (regular events delivered to engage community & provide program communications)												
4h Communication videos												
4i Create key messages and storylines for videos to promote the MRRWQP (value add activities)												
5_Regional program implementation/delivery												
5a Historical work/overlaps checks, approvals & landholder consents for new on-ground projects												
5b Support Delivery Providers to collaborate with key stakeholders and promote landholder engagement												
5c Coordinate engagement and alignment between the Program and other regional initiatives												
5d Promote landholder and community support for the program												
5e Support GBRF in overseeing on ground projects by delivery providers												
5f Support periodic reviews of the RMWQP and RM Projects and provide sound advice												
5g Farmacist to load project data - P2R Projector Tool and GBRF Dashboard												
5h Use P2R Projector Tool to assess RM Project performance and progress towards targets												
5i Implement RM program in accordance with the Regional Program Plan												
5j Supporting delivery providers with project data issues (check data entry, quality, benchmarking, P2R)												
5k Data & GBRF Dashboards - ongoing reviews and checkins												
6_Monitoring and Evaluation (M&E)												
6a Implement Program M&E Plan												
6b Incorporate other indicators into Program M&E Plan												
6c Support the whole of partnership M&E program												
6d Review and update Regional Program M&E Plan												
7_Capacity and Capability Support												
7a Advise GBRF and liaise with the TAG where required												
7b In collaboration with GBRF and its advisors assess needs for regional technical advice and support												
7c Develop and implement strategies for synergies with other strategies and programs												
7d Training and program updates												
8_Reporting												
8a Delivery Providers Progress Reports- - Collation and revision of progress reporting from delivery providers												
8b Annual Work Program Plan [31 August @ year]												
8c PM & PC Progress Reporting												
8d Annual Regional Program Performance Report												
8e Final Report (not until June 2024)												
8f Provide contractual financial reporting to GBRF (as requested)												
	January	February	March	April	May	June	July	August	September	October	November	December
RRRC												
Cane Growers												
Farmacist												
JCU Part 1 & 2												
GBRF												
Others												

RMWQP ANNUAL REGIONAL WORK PLAN	2023											
	January	February	March	April	May	June	July	August	September	October	November	December
1a Steering Committee Meeting (PM management)												
1b Steering Committee Meeting (PC participation)												
1c Technical Advisory Group Meeting												
1d Program Managers / Partnership Coordinators Meeting (weekly via phone, email and in person)												
1e Farmacist project specific Technical Advisory Group												
2_Regional program planning/design												
2a Ongoing assessment of RM Project terms and scope of services in relation to WQ Outcomes												
2b Coordinate forums/meetings with, and promote input from, regional Delivery Partners												
2c Develop the Regional Program Plan												
2d Review and update Regional program Risk Management Plan												
2e Review and update Regional program Communications & Stakeholder Engagement Plan												
2f Prepare detailed communications strategy for using videos (value-add activities)												
3_Regional Partners Forum												
3a Regional Growers Forums			Young Grower	RA Meringa day								
3b Involve Traditional Owner and stakeholder groups in Regional Plan - meeting, planning and implementation				30th								
3c Annual Regional Program Forum (PM arrange with support from PC)				Grower Site visit/Forum								
4_Communications												
4a Implement Communication and Stakeholder Engagement Plan												
4b Implementation of activities in accordance with the Communication and Stakeholder Engagement Plan												
4d Grower eNewsletter Annually												
4e Community Newsletter (6-monthly)												
4f Facebook/Instagram/Twitter/LinkedIn												
4g Community Engagement (regular events delivered to engage community & provide program communications)												
4h Communication videos												
4i Create key messages and storylines for videos to promote the MRRWQP (value add activities)												
5_Regional program implementation/delivery												
5a Historical work/overlaps checks, approvals & landholder consents for new on-ground projects												
5b Support Delivery Providers to collaborate with key stakeholders and promote landholder engagement												
5c Coordinate engagement and alignment between the Program and other regional initiatives												
5d Promote landholder and community support for the program												
5e Support GBRF in overseeing on ground projects by delivery providers												
5f Support periodic reviews of the RMWQP and RM Projects and provide sound advice												
5g Farmacist to load project data - P2R Projector Tool and GBRF Dashboard												
5h Use P2R Projector Tool to assess RM Project performance and progress towards targets												
5i Implement RM program in accordance with the Regional Program Plan												
5j Supporting delivery providers with project data issues (check data entry, quality, benchmarking, P2R)												
5k Data & GBRF Dashboards - ongoing reviews and checks												
6_Monitoring and Evaluation (M&E)												
6a Implement Program M&E Plan												
6b Incorporate other indicators into Program M&E Plan												
6c Support the whole of partnership M&E program										30th		
6d Review and update Regional Program M&E Plan												15th
7_Capacity and Capability Support												
7a Advise GBRF and liaise with the TAG where required												
7b In collaboration with GBRF and its advisors assess needs for regional technical advice and support												
7c Develop and implement strategies for synergies with other strategies and programs												
7d Training and program updates			P2R + HQ									
8_Reporting												
8a Delivery Providers Progress Reports- - Collation and revision of progress reporting from delivery providers				30th	31st					31st	30th	
8b Annual Work Program Plan [31 August @ year]								31st				
8c PM & PC Progress Reporting			15th						15th			
8d Annual Regional Program Performance Report												
8e Final Report (not until June 2024)												
8f Provide contractual financial reporting to GBRF (as requested)			15th						15th			
	January	February	March	April	May	June	July	August	September	October	November	December
RRRC												
Cane Growers												
Farmacist												
KU Part 1 & 2												
GBRF												
Others												

1.18 Risk Management Plan

No	Risk description	Likelihood	Consequence	Risk rating	Management and mitigation measures	Risk mitigation	Revised Likelihood	Revised Consequence	Revised Risk rating
1	Delivery Providers are not committed to maximising end of Partnership outcomes	Unlikely	Major	Medium	Y	Consistent high quality work delivered by current delivery providers, PC and PM with regular updates to ensure that work is progressing according to milestone targets.	Unlikely	Moderate	Medium
2	That there are insufficient sugarcane growers in the Russell Mulgrave interested in improving nutrient management practices by participating in the program.	Possible	Major	Significant	Y	We believe that there are a sufficient number of growers to successfully complete the project. However, after the first year we will know how many farmers that are willing to participate from the pool of growers not participated in these kind of programs earlier.	Unlikely	Moderate	Medium
3	The results from the GBRF and P2R Systems do not reflect actual WQ outcomes of nutrient management practice change that has occurred in the Russell Mulgrave	Possible	Major	Significant	Y	GBRF understands the limitations of the P2R Projector. Multiple lines of evidence are being considered to assess water quality improvements.	Unlikely	Moderate	Medium
4	PM/PC team fails to provide adequate guidance and support to the RMWQP throughout its term	Unlikely	Moderate	Medium	Y	PC/PM have regular contact with delivery providers while a broader evaluation led by GBRF will capture partner's views on GBRF management.	Unlikely	Minor	Low
5	Farmers don't change their practices	Possible	Major	Significant	Y	It is always a chance that farmers do not change their practices. Regular contact, advice and follow up with farmers to ensure early success.	Unlikely	Moderate	Medium
6	Delivery partners do not have the capacity and capability to implement projects at the required scale	Unlikely	Moderate	Medium	Y	Experience with previous and ongoing Reef projects indicate high project success rate. PM will track progress and advise GBRF of any changes to foreseen capacity and capability.	Unlikely	Minor	Low
7	Program fails to deliver on budget and on schedule	Unlikely	Moderate	Medium	Y	Experience with previous and ongoing Reef projects indicate high timely and on budget project success rate with clear start and stop dates for milestone delivery. PM will monitor and report on project progress to GBRF, with stakeholders to be queried/notified of any potential or occurring issues in order to rectify. The Steering Committee and WQ Working Group is there to consult if required too.	Unlikely	Minor	Low
8	Program fails to deliver regional water quality targets	Possible	Moderate	Medium	Y	Regular contact with farmers to ensure that they adopt practice change will reduce the likelihood of not reaching target. Six-monthly progress reporting, which includes annual review of progress against contracted WQ targets. The GBRF Dashboards will allow Regional PM to monitor progress.	Unlikely	Minor	Low
9	Poor communication and/or engagement leads to disengaged stakeholders	Unlikely	Moderate	Medium	Y	PC will communicate with delivery providers in their daily operations with visits to growers and participate in shed meetings to reduce disengagement.	Unlikely	Minor	Low
10	Limited capacity of interested farmers to participate in the project causes disengagement	Possible	Major	Significant	Y	Regular contact and communication from PC and delivery providers with farmers will reduce disengagement with clear regional communication plan objectives and activities to facilitate effective engagement across the program.	Unlikely	Moderate	Medium
11	Farmers in targeted areas are not interested/motivated to participate and do not implement the changes required for a water quality outcome	Possible	Major	Significant	Y	PM/PC support to identify hotspots and engaging with these farmers and with regular contact and communication by delivery providers with farmers will reduce the likelihood of disengagement.	Unlikely	Moderate	Medium
12	Insufficient notice for key events results in poor attendance/messaging	Unlikely	Moderate	Medium	Y	Delivery providers will communicate meeting time well in advance through several outlets such as phone calls, email, face to face and through the regular PC channels.	Unlikely	Minor	Low
13	Lack of involvement by indigenous interests in the program	Possible	Moderate	Medium	Y	Indigenous people were invited to the inception meeting in Babinda and regular contact with PM/PC and delivery providers will ensure collaboration and partnership building.	Unlikely	Minor	Low
14	Workplace health & safety incident impacts on the delivery of program outcomes	Possible	Major	Significant	Y	All stakeholder organisation have their own risk assessment that they follow.	Unlikely	Minor	Low
15	Unpredictable weather conditions (including unseasonal extreme weather events) impact on project activities	Possible	Major	Significant	Y	Cyclones and torrential rain occur on a regular basis in Northern Queensland. In such instances, this will be communicated directly with all stakeholders and farmers in conjunction with a way forward and revised time lines.	Possible	Major	Significant
16	COVID-19 impacts on the delivery of program outcomes	Possible	Major	Significant	Y	Stakeholder organisations have their own COVID protocols and follow Governmental health directives to reduce the risk that all staff members are unwell at the same time.	Possible	Moderate	Medium

1.19 Steering Committee Terms of Reference

Mulgrave-Russell Regional Water Quality Program Steering Committee - Terms of Reference

1. Background

- a) The Great Barrier Reef Foundation (**GBRF**) entered an agreement with the Australian Department of Agriculture, Water and the Environment (**DAWE**; previously the Department of the Environment and Energy), which resulted in the Reef Trust Partnership (**the Partnership**).
- b) As part of the Partnership, GBRF agreed to undertake a range of activities for the benefit of the Great Barrier Reef World Heritage Area.
- c) Activities under the Partnership include a program of work aimed at improving water quality from the Mulgrave-Russell regions flowing to the Great Barrier Reef (the **Mulgrave-Russell Regional Water Quality Program**).
- d) GBRF has appointed Reef and Rainforest Research Centre (RRRC) to the role of **Regional Program Manager** to oversee implementation, and Canegrowers Cairns as **Regional Partnership Coordinator** to oversee coordination of the Regional Water Quality Program.
- e) GBRF established the Steering Committee (the **Steering Committee**) in March 2021 to provide advice to GBRF and to the Regional Program Manager in implementing the Partnership and undertaking the Regional Water Quality Program.

2. Purpose and Role

2.1 The purpose of the Steering Committee is to guide the planning and implementation of the Regional Water Quality Program.

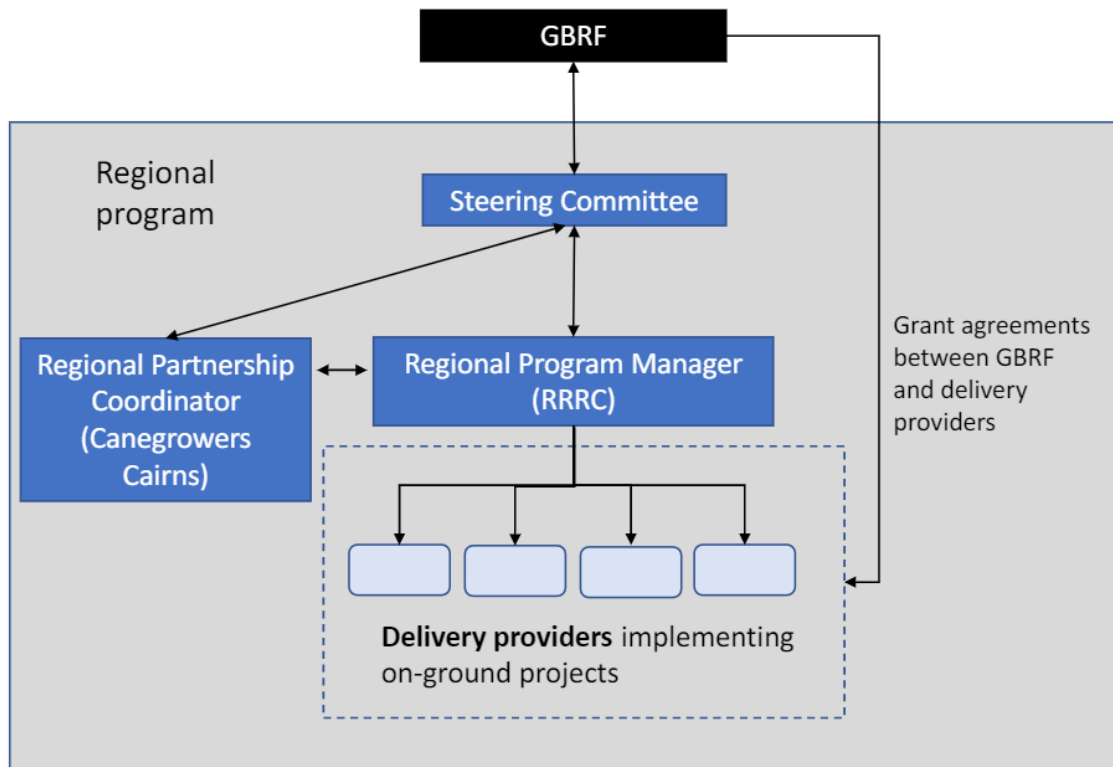
2.2 The role of the Steering Committee is to guide the Regional Water Quality program, through the following:

- a) **Technical and strategic guidance:** Overseeing and endorsing the proposed approach to delivering the Regional Water Quality Program, including the regional plan, annual work plans, and related plans, including the suitability, efficacy and efficiency of the approach and related activities.
- b) **Risk management:** identifying and providing guidance on the approach to manage key risks to the program.
- c) **Review of key milestones:** Reviewing and providing feedback on key program deliverables, including regular progress reports.
- d) **Linking to other programs:** Identifying linkages and synergies with other existing or proposed programs related to improving water quality in the Great Barrier Reef.
- e) **Assessment panel:** Providing support in the assessment of proposals submitted by external organisations, such as potential delivery providers.

2.3 The Steering Committee may make recommendations to the GBRF but is not a decision-making body.

3. Reporting

The Steering Committee provides advice to the Water Quality Team within the GBRF and Regional Program Manager and Partnership Coordinator. The reporting arrangements for the Steering Committee are shown below.



4. Membership

4.1 Composition

The core members of the Steering Committee are:

- Robert Speed (Chair) – Director, Water Quality, GBRF
- Scott Robinson – Director Reef Programs, Office of the Great Barrier Reef, Department of Agriculture, Water and the Environment
- Sheridan Morris – Reef and Rainforest Research Centre
- Rick Abom (Secretariat) - Reef and Rainforest Research Centre
- Sarah Standen – Canegrowers Cairns
- Carolyn Trewin – GBRF Program Manager.

The Regional Program Manager will provide secretariat support to the Steering Committee.

5. Meetings

5.1 Frequency

The Steering Committee shall meet as often as is necessary to carry out the responsibilities of the group. It is anticipated that the Steering Committee will initially meet on a monthly basis, but likely revert to meeting every three months once the program is established.

5.2 Attendance

- a) Unless otherwise agreed, only members of the Steering Committee are entitled to attend Steering Committee Meetings.
- b) Proxies will only be permitted with the approval of the Chair.
- c) Attendance can be in person or via tele or video-conference.

5.3 Minutes

- a) The secretariat will keep minutes of proceedings of all Steering Committee meetings.
- b) Minutes of Steering Committee meetings shall be circulated to all members of the Steering Committee.
- c) Minutes shall be approved by the Steering Committee.

6. Confidentiality and conflicts of interest

6.1 Confidential information provided by any member to the Steering Committee is provided solely for the purpose of the Steering Committee and must not be shared beyond the group without the express approval of the person who has provided the information. Confidential Information in this context means information that would not otherwise be available to the recipient.

6.2 Steering Committee members will keep group discussions confidential unless the group agrees otherwise.

Despite clauses 6.1 and 6.2, and unless otherwise provided, confidential information and Steering Committee discussions may be shared:

- a) With employees or contractors of GBRF involved in the Water Quality Component, or
- b) By the government representatives on the Steering Committee with other Australian or Queensland Government officials.

Any information so shared is required to be kept confidential.

6.3 Steering Committee members must fully and promptly disclose to the Chair any matter which may lead to potential or actual conflicts of interest.

6.4 The secretariat will maintain a record of conflicts of interest.

6.5 Steering Committee members will be required to sign a confidentiality and conflict of interest deed.

7. Expenses

Unless otherwise agreed, each member of the Steering Committee will bear their own costs of participating in Steering Committee activities.

8. Term

The Steering Committee was established in March 2021 and its support to GBRF and the Partnership will be ongoing until the end of the Reef Trust Partnership. However, the purpose, role and composition of the Steering Committee will be reviewed every year.