

Reef Trust Partnership

Fitzroy Water Quality Program: Regional Program Plan

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Water Quality Programs



Great Barrier
Reef Foundation

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1 Introduction to the Fitzroy Water Quality Program

1.1 The Reef Trust Partnership

The Reef Trust Partnership (RTP), established by the Australian Government and the Great Barrier Reef Foundation (GBRF), is centered on a landmark investment of \$443.3 million to build the resilience of the Great Barrier Reef (the Reef). Commencing in July 2018 and running for six years, the RTP includes an investment of \$201 million to address water quality improvement targets impacting the Great Barrier Reef World Heritage Area. Further detail on the various plans related to the RTP, including the investment strategy, annual work plans, and the monitoring and evaluation plan, are available [here](#).

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, \$19.6 million was committed 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 Fitzroy 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 the report 'Effective and Efficient Pathways for Investment in Improved Water Quality in the Great Barrier Reef' (Alluvium 2019) (available [here](#)) which highlighted sediment loss was a major consideration in the Mackenzie and Lower Fitzroy.

1.2 RTP Overview

As part of the RTP, the GBRF, in collaboration with a number of 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 Fitzroy Water Quality Program aims to improve the quality of water flowing from the Mackenzie and Lower Fitzroy sub-catchments. A total of \$19.6 million has been allocated under the RTP to the program. This Regional Program Plan describes the framework and activities underpinning the composition and implementation of the program. It sets out:

- the objectives and scope of the program
- the 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.

For each regional program, the GBRF has 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 RTP and are set out in the [Partnership Monitoring and Evaluation Plan](#).

1.3 Fitzroy Program Overview

1.3.1 Objective

The primary objective of the Fitzroy Water Quality Program is to achieve an enduring reduction in the end-of-catchment loads from the priority catchments in the Fitzroy Basin – specifically, a 50,000 tonne reduction in fine sediment in the Mackenzie and Lower Fitzroy sub-catchments. This target relates to the modelled long-term average pollutant load at the end of the catchment.

1.3.2 Scope

The program design is guided by the goals, outcomes and activities of the water quality component of the overall RTP Monitoring and Evaluation Plan. The most relevant RTP activities for the Fitzroy Water Quality Program are to implement activities that restore landscapes and/or support practice change. Described in sections 2.3 and 2.4, these activities will focus on sediment reduction in grazing and cropping lands.

1.3.3 Regional Context

Approximately 235,500 people live in the Fitzroy NRM region¹. The major centres include Rockhampton, with a population of approximately 73,000 people; Gladstone, with a (regional council area) population of approximately 58,000; Emerald, with approximately 13,000; and the Livingstone Shire Council area, which includes the town of Yeppoon, also approximately 13,000 people. Additionally, there are a number of smaller towns servicing the agricultural and resource industries in the western area of the Fitzroy.

The Fitzroy NRM region supports a large proportion of Queensland's industry assets: 26% of Queensland's beef cattle, 47% of the state's gas mines and 74% of coal mines. Grazing is the most common land use, with approximately 117,000 km² or 75% of the region dedicated to cattle production. The second largest land use is conservation which is approximately 10.4%, followed by forestry at 6.6%. Large areas of dryland cropping (~5,400km² or 3.5%) occur in the western part of the basin, while irrigated cropping (including cotton) occurs around the townships of Emerald, Theodore and Biloela (~0.6% of the region). There is also extensive coal mining in the Bowen Basin, especially around the townships of Moranbah, Dysart, Blackwater, Moura and Middlemount. The coastal basins have a mix of land uses, dominated by grazing and conservation areas (refer Figure 1).

The Fitzroy region experiences a typical sub-tropical climate with humid, wet summers and mild, dry winters. Average yearly rainfall in the catchment ranges from 1,700 mm in the north-eastern to less than 600 mm in south-western areas. However, totals can be highly variable due to climatic drivers such as the El Niño Southern Oscillation (ENSO) and the Pacific Decadal Oscillation (PDO). Long-term rainfall and stream flow reconstructions correlate well with ENSO records, indicating a long-term climatic cycle of extended dry and wet conditions. The mean annual flow is estimated as ~5,800 GL (1986–2009) of which the Fitzroy produces the majority of the discharge ~80%, with the coastal basins discharging the remaining 20%.

Over 100 soils types described with a complex distribution pattern. Cracking clays are predominantly used for cropping throughout the basin, with high erosion on sloping ground where surface cover is low. Surface and gully erosion can occur on texture contrast (or duplex) soils where hard setting surfaces increase run-off. Where run-off concentrates and there is a high Exchangeable Sodium Percentage in the clay subsoil, gully erosion is accentuated.²

¹ Population data correct as of 27/09/2018. Data source: Census of Population and Housing, 2016, © Copyright Commonwealth of Australia, 2018. <https://www.fba.org.au/our-region/people-community/landuse-industry-and-population/population-demographics/>

² Dougall, C., McCloskey, G.L., Ellis, R., Shaw, M., Waters, D., Carroll, C. 2014 Modelling reductions of pollutant loads due to improved management practices in the Great Barrier Reef catchments – Fitzroy NRM region, Technical Report, Volume 6, Queensland Department of Natural Resources and Mines, Rockhampton, Queensland (ISBN: 978-0-7345-0444-9).



Figure 1: Land Uses in the Fitzroy Region³

1.4 Fitzroy Water Quality Program Establishment

The establishment of the Fitzroy Water Quality Program has involved several steps to ensure value for money and to maximise the water quality outcomes expected from the program. Initially, there was an open expression of interest that resulted in the selection of a short-list of potential projects and providers. A request for further information to selected applicants sought to better understand the engagement, extension, site selection, and cost-effectiveness of projects.

This program design process was implemented through an open, competitive process that independently reviewed the full proposals. Projects, and their respective Delivery Providers, were selected based on cost-effectiveness and proven capacity to deliver. A collaborative design process was also implemented to maximise the benefits and synergies between the short-listed projects. An open expression of interest process was also conducted for the roles of Program Manager and Partnership Coordinator. Following detailed review by the GBRF, The Fitzroy Basin Association (FBA) was selected as the Partnership Coordinator. No appointment was made for the Program Manager role, with the GBRF assuming this function.

³ Prepared by the Fitzroy Basin Association using Queensland Land Use Mapping Program (QLUMP) data

1.5 Key Documents

At the **regional program level** - the Fitzroy Water Quality Program comprises five projects, described in section 3.1 and Attachment 1. The documents that describe the overall regional program are:

- **Regional Program Plan** (this document) – that establishes the overarching objectives, logic and strategies.
- **RTP Fitzroy Communications Plan** - that provides the objectives and strategies for communication and engagement with key stakeholders regarding the five projects as well as the regional program as a whole.
- **RTP Fitzroy Monitoring and Evaluation Plan** – that provides the framework for the management and integration of projects, tracking progress, and program evaluation.

At the **project level** each of the five projects has developed a project-specific:

- Communications and Stakeholder Engagement Plan; and
- Monitoring and Evaluation Plan.

These are reviewed and endorsed by the GBRF in its capacity as Program Manager.

Detailed project implementation is further defined by **detailed technical project designs** that specify how the projected reduction of fine sediments are to be achieved. These are reviewed by the Regional Partnership Coordinator and Program Manager, in consultation with relevant technical specialists from the GBRF's Technical Advisory Group (TAG) (refer section 2.1 Program Governance).

2 Design of the Fitzroy Water Quality Program

2.1 Program Governance

The governance arrangements for the Fitzroy Water Quality Program are shown in Figure 2. GBRF acts as the **Regional Program Manager**, overseeing the program planning, monitoring, evaluation and reporting.

The Fitzroy Basin Association (FBA) has been appointed as the **Regional Partnership Coordinator** and will support GBRF in designing and implementing the Fitzroy Water Quality Program, including through establishing and coordinating a regional partners forum as means for undertaking a co-design process. FBA is responsible for identifying, developing and growing strategic partnerships between delivery providers, landholders, Traditional Owners, and other stakeholders to foster community support and to provide a sustainable platform for long-term water quality outcomes.

The overall program will also be overseen by a **Steering Committee**. The Steering Committee will be chaired by GBRF, and comprises:

- GBRF (Chair): Ana Perez, Associate Director Water Quality
- Fitzroy Basin Association (as Regional Partnership Coordinator): Elyse Riethmuller, CEO
- Independent technical advisor to GBRF: Jane Waterhouse
- Independent technical advisor to GBRF: Ian Prosser
- GBRF (Secretariat): Greg Oliver, Water Quality Program Manager

The **Delivery Providers** have been engaged to implement five individual water quality improvement projects which comprise the Fitzroy Water Quality Program. These are Catchment Solutions, Greening Australia, Fitzroy Basin Association, and Verterra. Delivery Providers are overseen by, and report to, GBRF.

The Delivery Providers, together with the Regional Program Manager and Regional Partnership Coordinator, have formed a **Project Working Group** to foster collaboration across the program to ensure consistency and coordination across the projects. A Terms of Reference for this Project

Working Group has been agreed and endorsed and it will meet regularly. Additionally, as required, Delivery Providers will have individual meetings with the Regional Partnership Coordinator and GBRF.

GBRF has also established a **Technical Advisory Group (TAG)**. This group of experts will support the oversight and delivery of the water quality work across the RTP, including through setting standards or guidelines for water quality programs and projects. For projects that involve major gully or streambank restoration works, proponents will be required to prepare a technical design report for each major campaign of works (whether that be one large site, or a cluster of sites) including the streambank and gully toolbox or detailed design works. The TAG is responsible for reviewing and endorsing key technical elements of the Fitzroy Water Quality Program and projects. The TAG is also responsible for identifying and designing additional monitoring requirements for individual projects, or across the program, where appropriate.

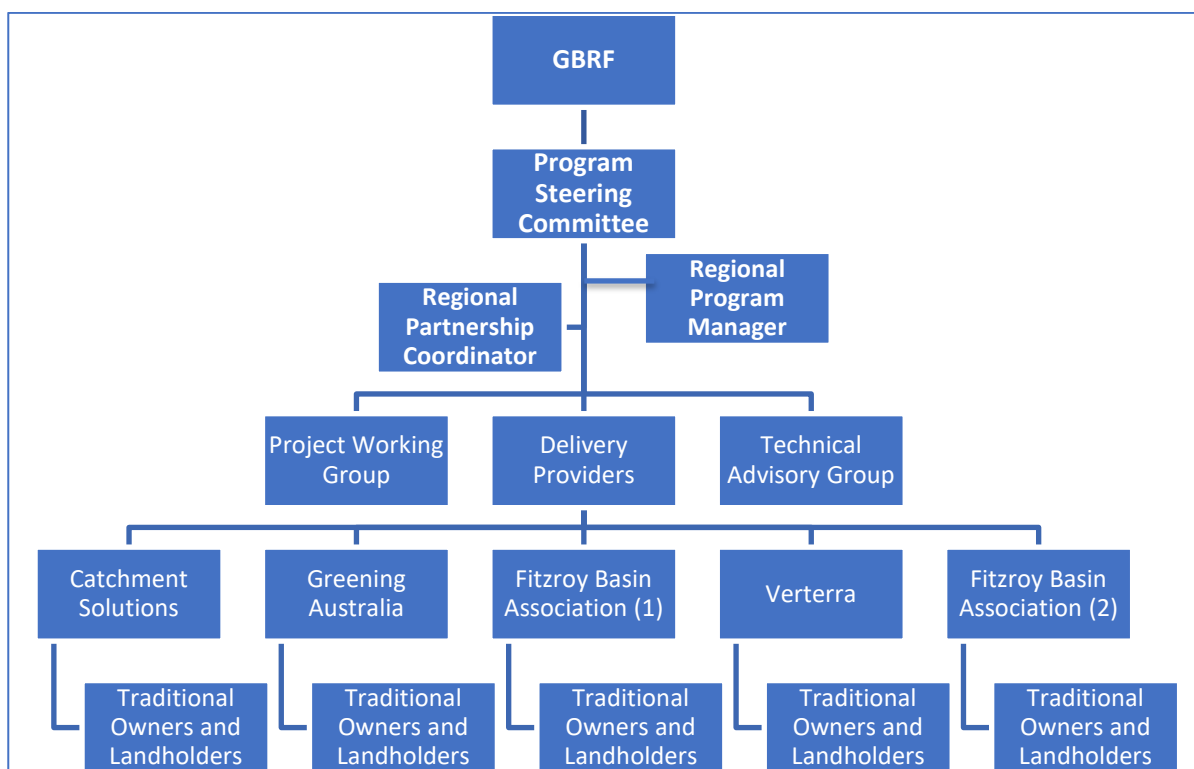


Figure 2: Fitzroy Water Quality Program - Governance Arrangements.

2.2 Developing the Program Logic for the Fitzroy Water Quality Program

The overarching program logic for the Fitzroy Water Quality Program is guided by the goals, outcomes and influence activities of the overarching RTP Monitoring and Evaluation Plan. It sets out how the performance of the RTP will be measured over the life of the partnership and provides a robust methodology for demonstrating the outcomes from and broader impact of the RTP across all its components (including water quality). An overview of the Fitzroy Water Quality Program Logic is at Attachment 1.

The Fitzroy Water Quality Program Logic proposes that water quality outcomes are achieved through **on-ground activities** that either:

- improve catchment function (refer section 2.3 below); and / or
- activities that improve land management and stewardship (refer section 2.4 below).

The specific relationship between these activities and the five selected projects is highlighted in section 3.2.

2.3 On-Ground Activities that Improve Catchment Function

Sediment is the main pollutant of concern for the Reef in the Fitzroy Region. As indicated above, as the basis of this investment program by GBRF, the Reef 2050 Water Quality Improvement Plan 2017-2022 (informed by the Alluvium 2019 report) highlighted sediment loss as a major consideration in the Mackenzie and Lower Fitzroy. The key factors considered in this analysis were:

- amount of sediment per hectare that is eroded and delivered to the Reef;
- a ground cover factor that considered the impact of rainfall variability (grazing); and
- the cost-effectiveness of current management practices and the likelihood of adoption of new practices.

Activities proposed to improve catchment function to mitigate fine sediment losses include remediation of degraded grazing lands, gully remediation, streambank remediation and the establishment of contour banks in cropping lands.

2.3.1 Degraded grazing land remediation

It is well established that degraded lands with scalds and increased bare ground lead to landscape vulnerability and increased soil erosion. Once land condition has declined, mechanical intervention will be required to improve the water holding capacity and mitigate further soil loss. There are several ways to do this and the activity required for specific locations will be assessed on an individual basis, with the biophysical influences on remediation success to be considered.

2.3.2 Gully remediation

Gullies are a large source of soil erosion in the Fitzroy, with steep-sided, incised drainage lines. Gullies are predominantly formed as networks that enter a stream system and once started, gully erosion control requires a combination of earthworks, fencing, revegetation and engineering structures. Remediation works can involve a number of interventions such as reshaping the gully and stabilising the drainage pathway, or stabilisation of the head of the gully through rock cuts, stick traps, or check dams. These gully remediation activities will be undertaken as part of the Fitzroy Program, primarily in grazing lands.

For gully remediation to be effective, the geomorphology and underpinning biophysical characteristics of the landscape are critical to the site-specific design which involves earthworks, revegetation and placement of engineering structures.

2.3.3 Streambank remediation

Streambank erosion occurs when the velocity of the water entering the stream causes incision in the stream or the banks of the stream to slump. Management of streambank erosion can be addressed at a range of scales. The activities incorporated to the Fitzroy Program involve slowing the water down through the re-introduction of snags, instream-structures and vegetation to make the stream less uniform and cause the water to slow down whilst increasing streambank stability. Along with reducing the cattle pads down to streams through fencing off waterways for stock exclusion and off stream watering points and riparian revegetation to develop bank stability.

The project activities for managing streambank erosion will also require engineering design and fluvial geomorphology assessment to ensure that the site-specific aspects are taken into account in the project design.

2.3.4 Contour banks

Contour banks intercept water runoff before it concentrates and starts to cause erosion. The contour bank acts like a channel to move the water to a stable grassed waterway, natural depression or grassed area adjacent to the paddock. The establishment of contour banks is a common approach for managing soil erosion in cropping lands. The major considerations for this activity will be the design of the contour banks in consideration of the land slope, soil type and rainfall of the catchment area. It will also be important to consider the trafficability when selecting the

spacing and design of contours. Particular attention is required to the design and maintenance of the channel outlets as these are weak points where erosion can then occur. The project delivery providers will ensure that these key aspects are considered in the project design.

2.4 On-Ground Activities that Improve Land Management Practices and Stewardship

To improve land management practices and stewardship within the broader catchment area, a number of activities have been incorporated into the program design. The activities are centered around the provision of education and capacity building activities for landholders, and direct support for improved land management and stewardship leading to enduring land management change.

The program will use the following five key functions of extension to support practice change:

- Group facilitation and empowerment (Peer to peer learning)
- Technology development (On farm trials, demonstrations, and adaptations)
- Information access (Information packages, internet sites)
- Program learning (Workshops, courses and seminars)
- Mentoring and consulting (One-to-one extension services)

2.4.1 Land management and stewardship

To support enduring change in improved sediment management, projects are required to consider a whole of landscape management approach, this means that gully and streambank projects are required to consider the adjacent hydrological morphology and management in the proximity to the site. To support this, all projects are required to have an extension component to extend support for the landholders to develop their overall land management skills. It is these skills that the landholder will then have the capacity to draw on for future land management.

Extension and engagement are considered a key part of the Fitzroy Program. As the program develops, the Regional Partnership Coordinator and delivery providers will determine which of the following extension models and approaches are appropriate and valuable facilitated groups (experiential learning and peer-to-peer learning); technology development (on-farm trials, demonstrations, adaptation); training and group presentations (workshops, shed meetings, field days); information provision and access (information packages,); one-one advisory; e-extension (including webinars, videos); benchmarking approaches; co-innovation (stakeholder forums for developing new approaches); and social marketing (using marketing principles in addressing problem).

These extension and engagement activities of the Fitzroy Program will be led by the Regional Partnership Coordinator. In addition, this work will utilise the Fitzroy Reef Extension Network (FREN). The FREN is a network of extension and service providers working together for effective delivery across the agricultural industry in the Fitzroy Region. The primary purpose is to grow and enhance collaborative networks across the region. The Fitzroy Reef Extension coordinator will also sit on the Project Working Group where needed to support the Delivery Providers with connections to the FREN and the Basecamp online platform.

2.4.2 Incentives

For the individual project activities, there will be a mix of incentives for landholders to complete the works, especially with the larger streambank and gully projects where there is little to no private benefits for the landholder from being involved in the project. Incentives will also be offered as a shared cost measure for the grains activities to increase the speed at and which adoption occurs in the Mackenzie catchment.

2.4.3 Engagement of Traditional Owners

Supported by the FBA, as the Regional Partnership Coordinator, Traditional Owners will be engaged by all delivery providers regarding the on-ground projects. This engagement will aim to create awareness about, and exploring opportunities for involvement in, these projects.

3 Delivery of the Fitzroy Water Quality Program

3.1 On-Ground Projects

The five projects selected for this program are summarised as follows. Detailed project descriptions are at **Attachment 1**.

Projected sediment savings and related project budgets and are listed in sections 3.2 and 3.3.

1. Gully and streambank rehabilitation (Fitzroy Alliance: Verterra with Alluvium and FBA)

This project aims to undertake alluvial gully and streambank rehabilitation works that collectively deliver significant end-of-catchment fine sediment savings for the Lower Fitzroy and Mackenzie.

2. Reducing streambank erosion (Fitzroy) (FBA 1)

Through major streambank restoration, this project aims to encourage cost-effective and innovative approaches to delivering sediment reduction. The objective of the intervention is to create an environment for vegetation to re-establish, to provide natural bank stability and erosion protection in the future.

3. Soil conservation in broadacre cropping (FBA 2)

FBA will partner with Precision Cropping Technologies (PCT) to work with landholders in the Mackenzie and Lower Fitzroy catchments and achieve whole-of-property practice change, with a focus on reducing water flow across broadacre cropping. The project aims to move farmers from High Risk (D) practices where contour and diversion banks are not present or not maintained in a functional state to Moderate Risk (B) practices, where contour and diversion banks are present and regularly maintained (as per the Grains Reef Water Quality Risk Framework 2017-2022).

4. Resilient riparian habitats and grazing (Catchment Solutions)

This project aims to improve reef water quality by reducing streambank and gully erosion, with a reduction in fine sediments reaching the waters of the reef from the Fitzroy and Mackenzie sub-catchments, by targeting large scale streambank and gully erosion. It will improve health and resilience of riparian habitats through habitat restoration and improved riparian connectivity, as well as working with landholders to improve grazing practices.

5. Best practice grazing (Greening Australia)

This project aims to achieve a sediment load reduction through:

- Implement improved grazing practices across select Mackenzie catchment properties to bring both land condition and water quality improvements.
- Work with Traditional Owners to provide training to implement best practice grazing across all seven properties managed by the Woorabinda Pastoral Company.
- Investigate the opportunities to create Reef Credits, and additional co-benefits such as carbon storage.

3.2 Project Linkages and Proposed sediment Load Reductions

These five projects collectively will deliver the program goal of a 50,000 tonnes / year reduction in fine sediment. Table 1 highlights the linkages across the projects and with activities that improve catchment function and/or land management and stewardship.

Table 1: Project links across activities to improve catchment function and land management and stewardship.

Project	1. Gully and streambank rehabilitation	2. Reducing streambank erosion	3. Soil conservation in broadacre cropping	4. Resilient riparian habitats and grazing	5. Best practice grazing
Delivery Provider	Verterra	FBA 1	FBA 2	Catchment Solutions	Greening Australia
Activities that improve catchment function					
<i>Degraded grazing lands remediation</i>	x	x		x	x
<i>Gully remediation</i>	x	x		x	
<i>Streambank remediation</i>	x			x	
<i>Countour banks</i>			x		
Activities that improve land management and stewardship					
<i>Land management and stewardship</i>	x	x	x	x	x
<i>Incentives</i>			x		
<i>Engagement of Traditional Owners</i>	x	x	x	x	x
Targeted Fine Sediment Reduction					
<i>Tonnes / year</i>	16,667	14,459	8,095	7,500	2,837
<i>Average \$ / Tonne</i>	300	283	210	450	564
<i>Total Project Budget \$</i>	5,000,000	4,095,520	1,700,000	3,400,000	1,600,000

3.3 Program Budget

Table 2 summarises the specific budget allocations for the five projects and other components of the total Fitzroy Water Quality Program.

Table 2: Budget allocations across projects and functions in the Fitzroy Water Quality Program

Projects	Delivery Provider	Amount (AUS\$)
1. Gully and streambank rehabilitation	Verterra (with Alluvium and FBA)	\$5,000,000
2. Reducing streambank erosion	FBA1	\$4,095,520
3. Soil conservation in broadacre cropping	FBA2	\$1,700,000
4. Resilient riparian habitats and grazing	Catchment Solutions	\$3,400,000
5. Best practice grazing	Greening Australia	\$1,600,000
Projects sub-total		\$15,795,520
Regional Partnership Coordinator (FBA)		\$972,600
Technical support (TAG), project management support, and cross-cutting		\$880,915
WQ monitoring (5%)		\$980,500
Contingency (5%)		\$980,500
TOTAL – Fitzroy Water Quality Program		\$19,610,000

3.4 Annual Work Planning and Progress

The first year of the Fitzroy Water Quality Program in 2020 involved the process of overall program design, appointment of FBA as the Regional Partnership Coordinator, selection and contracting of five project Delivery Providers, completion of an M&E Plan and a Communications Plan. Additionally, each delivery provider completed project-level M&E and Communication Plans.

The Program Steering Committee commenced regular meetings to oversee the design and implementation of the Fitzroy Water Quality Program and all five projects. In 2020, it met twice, with monthly meetings commencing in 2021. The Steering Committee will review the progress of all projects, oversee and endorse the technical design of projects, monitor the risk management plan and review the implementation of communications activities.

An Annual Work Plan will be developed in December each year for the following calendar year. The 2021 has been developed collaboratively by the Regional Partnership Coordinator in consultation with the Regional Program Manager.

3.5 Communication and Stakeholder Engagement

Communication and engagement will be critical to ensure that that individual project and overall program outcomes are provided broadly to other landholders and the regional community. This will provide strategies to the wider community that support improved landscape function and land management practices. These successful strategies can be used for future investments in water quality.

FBA, in its capacity as the Regional Partnership Coordinator, will lead and coordinate the program's communication and engagement activities documented in the 'RTP Communications Plan for the Fitzroy Water Quality Program'. This Plan outlines the approach the program will take to inform the community of the program and promotion of the projects.

All Delivery Providers have a role in communication and engagement activities for their respective projects and collectively to contribute to the Fitzroy Program. Project-specific communication and engagement plans have also been prepared by the Delivery Providers that specify engagement with a diverse range of stakeholders. These have been endorsed by GBRF.

3.5.1 Annual Regional Forum

Each RTP regional program will conduct an annual Regional Forum. The purpose of these is to connect Delivery Providers with key stakeholders, other landholders and the broader community. It is also an opportunity to highlight how this RTP investment and these projects contribute to the the broader water quality improvement in the Fitzroy region.

FBA will work with the existing networks in the Fitzroy region such as the Fitzroy Regional Extension Network (FREN), Capricorn Enterprise, the Regional Agricultural Landcare Facilitator (RALF) and the Delivery Providers to ensure a broad range stakeholders are informed of the program. FBA will liaise with the delivery providers to develop and implement the annual Regional Forum, aiming to:

- connect and promote program/s being implemented in the Fitzroy;
- share learnings between delivery partners; and
- link in with existing programs being implemented in the Fitzroy.

3.6 Monitoring and Evaluation

The 'RTP Fitzroy Monitoring and Evaluation (M&E) Plan' sets out the program logic for this regional program. In particular, the key outcome which specifically pertains to the Fitzroy Program is to achieve an enduring reduction in the long term end-of catchment fine sediment pollutant loads. The plan comprises two different components: validation and learning.

- The *learning* component will be developed when the project sites and designs have been approved. These local monitoring sites will be considered in the design phase of projects and evaluated by the TAG.
- The *validation* component of the plan is an essential instrument to demonstrate accountability and ensure key challenges are addressed and sustained benefits are delivered to the Great Barrier Reef, in accordance with the Reef 2050 Plan. It will inform learning and improvement across the RTP, including the prioritisation of investment, and be critical for testing the assumptions and process steps which underpin the delivery of change. The monitoring and evaluation utilises the Paddock to Reef (P2R) monitoring and modelling program for the validation aspect of the Fitzroy M&E Plan.

In addition, project-specific M&E plans for individual on-ground projects have also been prepared and endorsed by GBRF. While all Delivery Partners have prepared M&E Plans and are required to monitor their projects, the GBRF has recognised that given the scale and complexity of some projects, there may be additional M&E effort required. To that end, and as indicated in Table 2 above, an additional \$980,000 has been set aside to support and extend the scope and/or scale of monitoring across the suite of indicators required to be addressed (eg. water quality, landholder stewardship, community engagement). Relevant experts in the TAG will be specifically engaged to provide input to the design and implementation of this additional monitoring.

Attachment 1: Project Descriptions

Gully and Streambank Rehabilitation

Lead Organisation: Verterra

Key Partners: Alluvium, FBA - forming the **Fitzroy Alliance**.

Budget: \$5 million

Location: Lower Fitzroy

Target Pollutant: Fine suspended sediments

Target Reduction Load: 16,667 tonnes / yr

Goals:

Reduce fine suspended sediment through gully and streambank restoration and ensure supported landscape features such as a grazing land management complement the site for enduring long-term outcomes. The project aims to achieve the reduction at an average cost of \$300 per tonne of fine sediment reduced.

Description:

The project is based around the activities of landscape remediation of gully and streambank remediation. The site selection will be initially scoped through a desktop analysis using satellite imagery, historical air photos and biophysical data layers. Where LiDAR is available, the newly developed metric Potentially Active Erosion will be used to assess sediment export rates.

In the Fitzroy Alliance the FBA will provide the technical and extension support to engage landholders, while Alluvium will provide the fluvial geomorphology, hydrology, and hydraulic, and Verterra will provide the soil science, erosion management and restoration ecology.

Landholders will then be engaged and five potential rehabilitation interventions will be employed in various combinations to address site-specific conditions:

1. Grade Control - Rock chutes constructed in gully channels to intercept flows reducing flow rate and remove energy from the water, allowing particulate matter to settle and promote the re-establishment of stream bed vegetation.
2. Landforming- Bulk earthworks to reshape highly eroded gullies and re-establish a self-sustaining non-erosive land surface. Following this sub-soil amelioration will occur to increase the stability of the soil.
3. Contributing Catchment - treated by cultivation and incorporate ameliorants to reduce soil bulk density and to promote dense vegetation cover, increased surface roughness, increased rainfall infiltration and reduced runoff and runoff velocity.
4. Protection- Post-rehabilitation, a form of protection will be required which may include approaches such as a modified grazing regime and/or fencing.
5. Grazing land Management- Across the wider property adjoining the gully rehabilitation site to ensure a holistic approach is taken.

Maintenance of the site works will also occur, along with monitoring and evaluation as per the guidelines.

Reducing Streambank Erosion

Lead Organisation: Fitzroy Basin Association

Key Partners: Alluvium, Verterra, Greening Australia

Budget: \$4,095,520

Location: Lower Fitzroy

Target Pollutant: Fine suspended sediments

Target Reduction Load: 14,459 tonnes / yr

Goals:

Reduce fine suspended sediment through streambank restoration activities and ensure supported landscape management such a grazing land management complement the sites for enduring long-term outcomes.

Description:

Streambank rehabilitation forms the central landscape remediation activity with sites proposed works to include bank reprofiling, pile fields, and revegetation. The objective of the intervention is to create an environment for vegetation to re-establish, to provide natural bank stability and erosion protection in the future. The Fitzroy Alliance will play a role in the planning, design, and on-ground delivery to ensure that the synergies between these project activities and the activities of the Verterra project occur. Greening Australia will provide expertise on the revegetation regarding location, species and on-going management of vegetation.

High priority sites have been selected with the use of LiDAR and desktop reviews and will be confirmed through the stakeholder engagement process. Potential remediation approaches will include bank reprofiling, piles, placement of rock and active revegetation, and rock chutes. The site design will incorporate developing property level maps and identifying wider extension opportunities. The landholders who engage in having the project work to be completed on their properties will also have the opportunity to be involved to achieve a landscape level management change. With the Fitzroy Basin will be providing the grazing land management technical skills to support long term ground cover improvements in the catchments that feed into the landscape remediation sites. The project sites will undergo the mandatory monitoring and evaluation requirements, which will be completed by two senior land management officers.

Soil Conservation in Broadacre Cropping

Lead Organisation: Fitzroy Basin Association

Key Partners: Precision Control Technologies

Budget: \$1.7 million

Location: Mackenzie, Lower Fitzroy

Target Pollutant: Fine suspended sediments

Target Reduction Load: 8,095 tonnes / yr

Goals:

Reduce fine suspended sediment through contour banks in cropping landscapes in the Mackenzie along with improved practices.

Ensure supported landscape management such as improved cropping management, compliments the sites for enduring long-term outcomes.

Description:

The project will work with cropping landholders on the Mackenzie to strategically place contour banks on their property to mitigate soil loss through hillslope erosion. The project will provide extension and training on shifting to an improved whole of system management through soil management.

This project aims to move farmers from High Risk (D) practices, where contour and diversion banks are not present or not maintained in functional state to Moderate Risk (B) practices, where contour and diversion banks are present and regularly maintained. The placement and design of banks will be informed by a skilled third party.

FBA and our delivery partners will work with farmers in high risk catchments in the Fitzroy and Mackenzie catchment to improve practices to maximize water quality outcomes for the reef. Through this project landholders will receive site specific soil conservation plans supported by education and on-going, practical extension to help:

- increase their knowledge and skills to appropriately design, develop and maintain their contours
- implement on-ground works
- improve management in areas at high risk of erosion or gully formation.

The project sites will undergo the mandatory monitoring and evaluation requirements, highlighted in the Monitoring and Evaluation Guidelines.

Resilient Riparian Habitats and Grazing

Lead Organisation: Catchment Solutions

Key Partners: Neilly Group, Conservation Volunteers Australia, Griffith University, Grazing Best Practices.

Budget: \$3.4 million

Location: Lower Mackenzie, Lower Fitzroy

Target Pollutant: Fine suspended sediments

Target Reduction Load: 7,500 tonnes / yr

Goals:

Reduce fine suspended sediment through streambank restoration activities and ensure supported landscape management such as grazing land management complement the sites for enduring long-term outcomes.

Description:

Gully and Streambank rehabilitation forms the central landscape remediation activity with sites proposed works to include instream river and gully structures, porous check dams, and livestock fencing and riparian revegetation works. The aim of the project is to reduce streambank and gully erosion by 7,500 tonnes and to improve the health and resilience of riparian habitats through restoration and improved riparian connectivity. Griffith University will support the project with technical design support to the selected project sites, and Conservation Volunteers will provide riparian vegetation support with technical advice regarding the plant species required and the planting of riparian areas.

In addition to the establishment of porous check, dams and diversion bunds, where appropriate to support the remediation of gully and streambank erosion. Stock exclusion fencing (with appropriate setbacks) and off-stream watering points to assist in restoring eroded stream banks and riparian vegetation at project sites associated with large scale erosion will also be partially funded.

The landholders who engage in having the project work completed on their properties will also have the opportunity to be involved to achieve a holistic landscape level outcomes. Grazing Best Practices will provide the technical insights for land managers to improve skills and practices to improve ground cover management over the long term and support enduring change. This will also ensure that the catchment areas entering into the project sites are managed more effectively long term ensuring that the project sites achieve long term change.

The project sites will undergo the mandatory monitoring and evaluation requirements.

Best Practice Grazing

Lead Organisation: Greening Australia

Key Partners: Woorabinda Pastoral Company, Resource Consulting Services, Fitzroy Basin Association, Rock-It Science, Fruition Environmental.

Budget: \$1.6 million

Location: Mackenzie

Target Pollutant: Fine suspended sediments

Target Reduction Load: 2,837 tonnes / yr

Goals:

Reduce fine suspended sediment through activities to rehabilitate degraded lands. Work with Traditional Owners to provide training and shared knowledge to implement best practice grazing across all seven properties managed by the Woorabinda Pastoral Company, and provide a model for how Indigenous run grazing operations can operate more profitably and sustainably.

Description:

Sediment savings will largely be sourced from extension to move grazing practices from D to C as well as related infrastructure and works such as fencing, off-stream watering points and small-scale earthworks. Whilst the focus will be on grazing operations, where selected properties also undertake cropping, erosion control works may also occur where cost-effective. Opportunities for lowcost streambank and gully erosion stabilisation will also be identified. The on-ground actions will be finalised through the development of property management plans, with expected sediment savings from the project to be 2,837 tonnes per annum.

A priority component of this project will be working closely with Traditional Owners in the region and building on the Queensland Indigenous Land Conservation Project and the Fitzroy Water Quality Project through an established Indigenous partnership with Woorabinda Aboriginal Shire and Woorabinda Pastoral Company. A key part of this engagement has been with the Gangalu Traditional Owners and with the Indigenous run Woorabinda Pastoral Company which has properties located in the Mackenzie catchment and will contribute directly to increasing Traditional Owner-led WQ improvement projects.

Attachment 2: Fitzroy Water Quality Program Logic

