

A1: Minimum practice standards apply everywhere

Contributing agencies and partners: Natural Resource Management bodies, Industry, Local government

Intermediate Outcomes	Id	Actions	Status	Australian Government	Queensland Government
Minimum practice standards are met by all industries and activities.	1.1	Implement minimum practice standards for agricultural industries, which can be met either voluntarily, e.g. through industry-led best management practice (BMP) programs, or as a result of regulation.	On track / Underway		<ul style="list-style-type: none"> The Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Bill 2019 (Reef Bill) was introduced into the Queensland Parliament on 27 February 2019. The Bill was referred to the Innovation, Tourism Development and Environment Committee for detailed consideration. The Committee held a public briefing in Brisbane and regional hearings in Cairns, Townsville, Mackay and Bundaberg. The Committee tabled its report on 26 April 2019, recommending the bill be passed. The bill was expected to be debated in Parliament in the second half of 2019. As part of the Queensland Government's commitment to improving water quality in the Great Barrier Reef catchment, activities are undertaken to ensure compliance with the Reef protection measures of Chapter 4A of the <i>Environmental Protection Act 1994</i> (the Act). Since early 2016 the Reef compliance program has been implemented to increase adoption of the soil testing, fertiliser use and record keeping provisions under the existing Reef protection regulation. The Reef compliance program is in the priority regions of the Wet Tropics, Burdekin and Mackay-Whitsunday, targeting sugarcane production with 364 compliance activities undertaken during 2018–2019. While non-compliance rates are high at initial grower meetings, follow-up visits indicate the majority of growers have changed their farm practices after the initial inspection. The Queensland Government continues to support voluntary, industry-led BMP programs for cane, grazing, bananas and grains to assist producers to identify practices that improve long-term productivity, profitability and sustainability of their enterprise. Other activities include the development of management practice standards, partnership projects to demonstrate improved practices, and support to align Queensland and Australian government programs for nutrient use efficiency, sediment and pesticide land management improvements. A new project, Hort360 BMP GBR, to support horticultural producers in Reef Catchments was launched in partnership with industry. A certification pathway for growers to demonstrate best practice in horticultural production has commenced which will allow growers to be accredited by a third party enabling greater acknowledgement and certainty of improved farming practices.
	1.2	Ensure that urban, industrial and mining activities comply with requirements under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> , <i>Planning Act 2016</i> , <i>Environmental Protection Act 1994</i> , and <i>Waste Reduction and Recycling Act 2011</i> .	On track / Underway	<ul style="list-style-type: none"> The Department of the Environment and Energy has a dedicated team within the Office of Compliance undertaking a compliance monitoring program, as outlined in the Office of Compliance Annual Compliance Plan 2018–19, and directed by the Department's Compliance Policy (2019). 	<ul style="list-style-type: none"> The Queensland Government banned the supply of single-use lightweight plastic shopping bags on 1 July 2018, and introduced a container refund scheme on 1 November 2018. As at October 2019, over 946,000,000 containers have been returned. The Queensland Government continued to build capacity for erosion and sediment control, and urban stormwater quality management through the Erosion and Sediment control capacity building and urban stormwater quality management project. The Queensland Government Water Tracking and Electronic Reporting System (WaTERS) captures point source environmentally relevant activities (ERAs) release data within Great Barrier Reef catchments to inform environmental regulation, policy and guidelines in relation to sewage treatment in the Great Barrier Reef catchment. A case study review of leading practice examples for sewage treatment will be used to inform councils of potential alternate wastewater treatment options. Under the Reef Bill, new or expanded point source environmentally relevant activities (ERAs) including sewage and water treatment plants or aquaculture will need to avoid additional nutrient or sediment releases to ensure that new development does not negatively impact on the water quality improvements made to date.
	1.3	Refine existing standards, regulations and planning frameworks as new information improves knowledge for all industries.	On track / Underway		<ul style="list-style-type: none"> The review and update of the Environmental Protection Regulation and Environmental Protection (Water) Policy continued for progression through legislative amendments in the second half of 2019.

A2: Culture of innovation and stewardship

Contributing agencies and partners: Natural Resource Management bodies, Healthy Land and Water, Industry, Local government, Great Barrier Reef Marine Park Authority

Intermediate Outcomes	Id	Actions	Status	Australian Government	Queensland Government
Reef communities are engaged and empowered to improve practices and behaviours beyond minimum practice standard for water quality improvement.	2.1	Support land managers, industries and local governments to adopt improved management practices, e.g. through coordinated extension, education and awareness programs.	On track / Underway	<p>The Reef Trust continued to support projects that are delivering extension and education targeted at adopting improved practices, primarily addressing management practice adoption in cane and grazing.</p> <ul style="list-style-type: none"> The Reef Alliance – Growing a Great Barrier Reef Project built agricultural extension capacity through the Queensland Farmers’ Federation Pilot Agricultural Capacity Building. This included training extension staff in Reef regions on agricultural issues such as precision agriculture or grazing management, leadership, people management, and monitoring and evaluation. The project assisted in coordinating extension officers in the Reef regions to foster a link between building capacity and water quality extension activities. The project continues to provide training, extension and on-ground support to agricultural land managers in ‘best practice management’ of their agricultural practices. As of June 2019, 1,464 landholders have been engaged in one-on-one extension and many are developing more sustainable farm business skills, which will contribute to their farm’s business long-term sustainability and profitability. Project Pioneer: Innovation in Grazing Land Management continued to work with landholders who have developed property plans and identified key on-ground projects to reduce run-off into the Great Barrier Reef through sustainable farm practices. Over this period, 144 participants attended grazing field day activities to raise awareness of improved management practices including weed management and pasture improvement to increase ground cover. As of June 2019, 300 graziers have been engaged to complete formal training courses. The F11 - Fitzroy sub-catchment gully and stream bank erosion control project is undertaking an integrated catchment approach to sediment reduction associated with gully and stream bank erosion. Over the reporting period, large numbers of people (including high school students) were engaged in volunteer activities including seed collection, plant propagation, porous check dam construction, gypsum application, mulching and seeding. Workshops were held to present the issues around sediment loss and their impact on the Great Barrier Reef, and to present methods to address sediment loss and highlight the project opportunities to address erosion at a regional community level. This training and involvement in events enhances the community’s understanding of environmental issues and the actions being undertaken to address impacts on the Reef. As of June 2019, 22 community participation and engagement events have been run and 450 volunteers have participated in project activities. The GRZ’M. Great Barrier Reef Riparian Zone Management - a Mary project, delivered by the Mary River Catchment Coordinating Committee, aims to cost effectively address streambank and drainage line erosion using best available science and in a form that is practical for graziers, canegrowers and dairy farmers to implement. As of June 2019, 24 community events have been held and 61 people have received formal training. 	<p>The Queensland Government continued to support landholders to make long-term farm management changes, extension and education services, increased monitoring and large-scale social change programs.</p> <ul style="list-style-type: none"> Enhanced education and extension coordination and delivery, providing greater access for farmers to enable practice change in farming communities and building long-term capacity. Farmers across the Burdekin, Mackay Whitsunday, Herbert and Burnett Mary were successfully engaged in one-on-one agronomy support to reduce nitrogen application through tailor-made nutrient management plans. As a result, nearly 300 tonnes less nitrogen was applied across 213 farms in the Burdekin and Mackay Whitsunday regions. Urban stormwater quality management activities are continuing, including the roll-out of new technology training for urban stormwater management, along with Reef Urban Stormwater Management Group (RUSMG) meetings held in Mackay and Brisbane. Two co-design projects were initiated in Townsville and Rockhampton to restore sections of urban streams with significant community and ecosystem value. Urban stormwater workshops were held in Brisbane, a bus tour in Mackay, and stormwater and erosion and sediment control workshops and a field day in Mareeba. The Major Integrated Projects (MIPs) continue to be implemented. Farm demonstration sites, local scale monitoring and catchment repair interventions such as bioreactors, high efficiency sediment basins and in-drain wetlands were established in the Wet Tropics. In the Burdekin, the first round of alluvial gully remediation was finalised with promising early results in sediment run-off and ground cover improvement. Over 40 graziers have entered into agreements to change management. Additionally, nine graziers established a local monitoring group and collected the first round of water quality samples. Training continues for local government and utilities staff to support a whole-of-catchment effort. The Reef Credit scheme is being developed with at least 20 growers interested in the Reef Credit pilot to reduce nutrient run-off from their farms. The Cane Changer project delivered ways to better understand and recognise the factors that influence the adoption of best management practices in the cane industry, and how these practices can bolster the resilience of the cane industry. The Wet Tropics region, through the contribution of Cane Changer, is leading the process of Best Management Practice adoption. A total of 660 sugarcane farmers were engaged in the project, increasing Smartcane BMP accreditations, and 246 farmers signed Cane Changer commitments accounting for over 32,000 hectares of land. There has been increased use of grazing extension tools Forage and Vegmachine which extension service providers use to support graziers to make climate responsive management decisions to improve water quality. Improved tool functionality has also been introduced.

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				<ul style="list-style-type: none"> The National Environmental Science Program Tropical Water Quality Hub Project 3.1.2 is showing sugarcane growers in the Burdekin how they can reduce their power bills, save water and reduce run-off to the Reef by applying the right amount of water, at the right time, in the right crop, to match that crop's requirements. 	
	2.2	Empower stewardship leaders to influence peers and the broader community to adopt improved practices.	On track / Underway	<ul style="list-style-type: none"> The annual Reef Trust Erosion Control Forum was held in Mackay in June 2019. Sixty practitioners in gully and stream bank erosion control came together over three days to share learnings, stocktake progress, build community practice and discuss methods to address challenges. Learnings from the forum are used to shape future government-funded gully program projects and inform on-going projects. Through the Reef Trust Streambank and Gully program, community and landholder workshops and events were held to facilitate peer-to-peer learning across all Great Barrier Reef regions. The 2018 Reef Champion Awards announced in November 2018, enabled networking between participants and highlighted peer achievements. Project Catalyst Revamp - game changing farm management practices continued to enable a peer-to-peer learning platform where farmer involvement is producing cutting-edge innovative solutions to cane farming problems. The project provides growers, their families, suppliers, on-ground providers and government agencies with networking opportunities to provide information on trial successes and failures, mentoring and education without fear of ridicule, negativity or being made to feel less important. Five grower stories were published on the project website highlighting the work of project farmers. The project has generated positive results from an environmental aspect as well as social and economic factors for the growers (and sugarcane industry). During this reporting period, 133 innovative and early adoption trials were conducted, with 26,000 hectares of sugarcane production land (8.5% of sugarcane land in the three regions) demonstrating improved practices. Project Pioneer: Innovation in Grazing Land Management provided opportunities for grazing businesses to undertake peer property visits from the Burnett Mary region in the south to the Cape York region in the north, to experience life in their peers' shoes and see how things are done on other properties. This unique opportunity enabled learning, networking and camaraderie, and associated social, economic and environmental benefits. As of June 2019, 150 grazing businesses have adopted sustainable practice change with more than 1.2 million hectares of land under improved management practices. Over four years, more than 370 new participants attended events and/or activities designed to improve management practices. The Project Uplift Farming Systems Initiative has engaged growers in extension methodology to achieve farming practice change. As of June 2019, 46 entities have adopted Sugar Research Australia's farming system to minimise soil compaction and reduce farm water run-off. The project has implemented extensive engagement activities to encourage sugarcane growers to participate with 240 new farmers attending events over the reporting period 	<ul style="list-style-type: none"> The Queensland Wetlands Program continued to be implemented including wetland demonstration on-ground case studies, wetland extension with landholders to engage local stewardship leaders, and build capacity in regional Natural Resource Management bodies to facilitate their own workshops to promote the benefits of improved practices. Paddock and sub-catchment water quality monitoring and 13 best practice pesticide management use demonstrations with sugarcane growers in the Tully, Innisfail-Babinda and Mulgrave raised awareness of practices that have the potential to reduce the water quality impacts of herbicides and insecticides used in sugarcane production, and to bring about practice change in these target catchments. The Wet Tropics Major Integrated Project is supporting the development of peer-to-peer networks through establishing cluster groups to work together on particular water quality or productivity issues. Local agronomists and growers are identified and encouraged to provide advice about farm practice to other growers, embedding this local expertise into the fabric of industry. Twenty-one landholders have participated in professional leadership training with the intent of strengthening stewardship and supporting a legacy in this region beyond the project. The Burdekin Major Integrated Project is also working to build capacity within the community. Fourteen graziers have participated in professional leadership training with the intent of empowering a group of leaders to drive long-term environmental stewardship. Four cluster groups of 13 graziers have been established with the groups working together to solve land management problems common to their properties. There are positive early signs that landholders are responding to these efforts to promote peer-to-peer networks, with both MIPs seeing increasing participation and interest in a range of activities, which is primarily driven by word of mouth. Support for facilitated peer-to-peer learning groups through regional extension co-ordinators has reached new, previously unengaged landholders and encouraged them to engage in Reef initiatives such as Best Management Practice programs. Peer-to-peer groups have also been a source of new ideas and innovations that are taken forward through collaboration with the wider extension network.

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				<p>and 14,400 hectares of sugarcane under improved management as of June 2019.</p> <ul style="list-style-type: none"> The Great Barrier Reef Marine Park Authority's Reef Guardian Grants Program invested in 25 community and stewardship projects to stimulate and empower communities to take action to enhance the health and resilience of the Reef. For every \$1 granted, approximately \$5 will be leveraged into projects including direct action such as urban drain clean-ups and revegetation, awareness and education activities targeting specific practices and behaviours relevant to local situations, and monitoring. A new round of Reef Guardian Grants, will be offered in 2019, to fund projects that help build a network of informed, connected and empowered environmental stewards working to protect and conserve the Reef. The objectives of the grant opportunity are to support initiatives that: recognise and foster leadership in Reef stewardship to encourage people to care for and respect the Reef, enable people to learn about the Reef and build knowledge and skills to assist in its protection, involve others in minimising environmental impacts and conserving resources, and promote a culture of stewardship for the Reef by sharing knowledge, facilitating partnerships and collaborating. All projects supported through the Reef Guardian Grants are undertaken in the Great Barrier Reef World Heritage Area and/or its catchment. A total of 1294 students from 113 schools participated in 13 Reef Guardian Future Leader Eco Challenge events spanning Cooktown to Bundaberg, which were delivered with support from 55 partners from local councils, environmental and Indigenous ranger groups. Students acquired knowledge and skills to build their capacity to: conduct waste audits to inform action to reduce marine debris, investigate water quality and biodiversity, and revegetate coastal ecosystems. Communication about the events within the school communities and through the media reached over 130,000 people to raise awareness that everyone can play a part in caring for the coastal ecosystems and the Reef. The 2019 Future Leaders Eco Challenge theme was 'Protect your Patch' focusing on how the small acts of many people make a big difference, as well as how we can all think global while acting local. Nine Future Leaders Eco Challenges were facilitated within the Reef catchment involving 63 Reef Guardian Schools, 505 students, 74 teachers and 49 partner organisations. The Great Barrier Reef Marine Park Authority's Reef Guardian Councils Highlights Report, 2017-2018 showcased the initiatives councils are taking to lead the way in practice improvement. This is a resource for sharing ideas, influencing peers and community, and acknowledging the significant contribution local government is making towards protecting the values the Reef provides to coastal communities. There are 18 councils between Bundaberg and Cooktown in the Reef Guardian Councils program undertaking a range of projects, covering a 300,000 square kilometre area within the Great Barrier Reef catchment and a population of almost one million people. 	
	2.3	Support extension and education providers to deliver	On track / Underway		<ul style="list-style-type: none"> Significant progress was made by regional extension coordinators to support cross-regional and cross-industry links and coordination in extension programs. Regional coordination plans are guiding regional coordination. Improved

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		effective extension and education programs that reach a broad audience of land managers.			<p>coordination and collaboration has reduced duplication and increased the efficiency of on-ground programs. The provision of flexible funding has engaged local stakeholders in decision making, and developed systems and processes in regional working groups to identify gaps and barriers. The funding has then been used to address regional priorities to make Reef programs more effective. Training targeted towards regional specific needs has been enthusiastically embraced and provided the opportunity for new, and not-so-new, extension practitioners to develop relevant skills and expertise as well as increase regional capacity.</p> <ul style="list-style-type: none"> The pilot agricultural capacity building program has successfully assisted organisations to increase their capacity to deliver extension services by employing additional graduate staff who have been upskilled during the reporting period through on the job learning, formal training and mentoring from their host organisations. Five out of six graduates have secured a position beyond their initial year with their host employer. Due to the success of the program, it is being rolled out again in 2019–2020 with an additional six extension graduates funded for a one year placement with organisations in Reef catchments.
	2.4	Identify and address barriers to change and practice improvement uptake through programs and policy.	On track / Underway	<ul style="list-style-type: none"> The Reef Trust Reverse Tenders are addressing barriers to change by enabling sugarcane farmers across the Wet Tropics and Burdekin regions to implement their own cost-effective approaches for improving fertiliser application on their farms. In addition to providing considerable cost savings for participating farmers, as of June 2019, the program has achieved a reduction of over 1900 tonnes in applied fertiliser – meaning less run-off of dissolved inorganic nitrogen into the Reef. The Reef Alliance through its Growing a Great Barrier Reef project used the Paddock to Reef Projector as an engagement tool to help growers bridge the gap between farm practices and water quality outcomes in a visual and readily understandable format. The Project Uplift Farming Systems Initiative continued to work with cane farmers to adopt Sugar Research Australia's farming system to provide the opportunity for a greater impact and a different engagement point with growers. Outcomes of the Behaviour Innovation Reports were shared with a cross section of industry stakeholders and significant growers (approximately 63 influencers). Low sugar prices and the cost of specialist equipment to adopt changes to farm systems are significant barriers to change. To address this, the project offers a combination of interest free loans and small grants to participating enterprises. As of June 2019, nine of the 34 participating enterprises have entered interest free loans and 17 have taken up grants. Project Catalyst Revamp - game changing farm management practices coordinated communications with participating growers and others for the broader adoption of trials via electronic media, shed meetings and field days. As of June 2019, a total of 429 growers participated in events including 15 shed meetings, one training session, three evaluation events, the 2019 Project Catalyst Forum 2019, four videos, two articles and one field day. 	<ul style="list-style-type: none"> A new Queensland Reef Water Quality Program project to validate the economics of management practice to improve water quality and provide this information to landholders as part of the extension program continued. The project provided vital information about the economic value of practice change in Reef catchments and received strong positive feedback from these events with 81% of participants intending to change their management. Feedback also shows a high demand for economic activities and information to be embedded in extension programs. Extension program economists collaborated with industry organisations, government departments and Natural Resource Management groups to evaluate the economics of best management practices within sugarcane, grazing, grains and bananas. Key project themes in the 2018–2019 year included nutrient and pesticide management practices, soil health, grazing cover management, gully rehabilitation and sugarcane harvesting. A gap analysis report "Understanding the economics of grain cropping management practices and systems for improving water quality run-off in the Great Barrier Reef catchment areas" was completed. The report identifies knowledge and gaps in the practices recommended by the Paddock to Reef Practice Framework for improving water quality in the grains industry. This report will assist in prioritising research activities in grains. Feedback shows a high demand for economic activities and information to be embedded in extension programs. An economic modelling project commenced to assess the costs and benefits of shifting farmers and producers to lower risk water quality management practices (as outlined in the Paddock to Reef Management Practice Framework). Targeted research about barriers and motivators of practice change continued as part of the Cane Changer, Major Integrated Projects, Reef Water Quality

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				<ul style="list-style-type: none"> Project Pioneer: Innovation in Grazing Land Management continued to work with landholders who developed property plans and identified key on-ground project activities that will achieve water quality outcomes. At its completion in June 2019, a total of 370 graziers had attended project events and/or activities designed to increase drought resilience and undertake more effective stocking rates across more than 1.2 million hectares. Through the National Environmental Science Program (NESP), a research project (2.1.3) is looking at the science of social marketing and behaviour change for improved water quality in the Great Barrier Reef. The project uses insights from the science of social marketing and behaviour change to implement (and test the efficacy of) changes to the marketing and engagement strategy associated with programs designed to be rolled out under the Reef 2050 Plan. It aims to change key behaviours, particularly amongst those who have not previously engaged, to improve water quality. Another research project under the NESP (2.1.7) is engaging with farmers and demonstrating water quality outcomes to create confidence in on-farm decision-making. This project (known as Project 25) will combine recent hotspot identification in the Russell/Mulgrave catchment with targeted sugarcane farmer interaction activities (related to sub-catchment and localised monitoring activities), focusing on emerging monitoring technologies (real-time water quality monitoring) to link farmer on-farm practices with feedback from sub-catchment water quality measurements. The use of both scientific and citizen science monitoring approaches will deliver robust feedback loops to enable farmers to directly link their activities with water quality conditions. 	Extension and Education, and Science in the Paddock programs. Key findings will assist program and policy development and delivery to address barriers to change and practice improvement.
	2.5	Provide incentives to support land managers, including Traditional Owners, with practice change.	On track / Underway	<p>Reef Trust projects continued to provide financial incentives to support land managers.</p> <ul style="list-style-type: none"> The Reef Alliance – Growing a Great Barrier Reef Project provided financial incentives for on-ground and innovative projects across cane, grazing, grains, horticulture and dairy industries to enable land managers to make the changes required for better on-farm management practices. As of June 2019, over \$12.5 million has been provided to participating landholders, which in return has leveraged more than \$6.6 million in cash and \$15.3 million of in-kind support from the landholders. Project Pioneer: Innovation in Grazing Land Management provided subsidies for participants to undertake business analysis through Resource Consulting Services Profit Probe benchmarking. This program enables participants to identify and make informed changes as a result of the latest financial and economic benchmarking. The Laura Gullies Project, fix up and skills for the future continued to build the capacity of local Indigenous people to develop new skills and expertise in adaptively managing the landscape for erosion minimisation. Crocodile and Welcome Stations are working pastoral leases that provide jobs and training in agriculture for Indigenous people as part of a group of 14 properties. 	Reef Credits, as a mechanism to fund Reef water quality outcomes, are being developed through the Major Integrated Projects (MIPs). Work continued on configuring spatially-specific credit trading simulations to include supply of water quality credits from different credit sources, together with demand for purchase of water quality credits from buyers. The potential for the supply of water quality credits from practice change in sugarcane farming, restoration of natural wetlands, construction of treatment systems and remediation of large-scale gullies have been quantified. The potential demand for water quality credits generated by tightening licence conditions for point sources (principally sewage treatment plants, aquaculture businesses and urban stormwater) have also been quantified.
	2.6	Trial and implement innovative monitoring, land	On track / Underway	Reef Trust projects continued to trial and implement innovative land management solutions.	The Great Barrier Reef Innovation Fund addresses agricultural management practices, water treatment systems and water quality monitoring; and supports the Coral Abundance Innovation Challenge.

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		management and treatment system solutions that aim to deliver water quality benefits.		<ul style="list-style-type: none"> The Project Uplift Farming Systems Initiative is assisting growers to transition to more efficient farming systems, which will improve on-farm nutrient management and improve the quality of water entering the Reef. As of June 2019, approximately 14,400 hectares of sugarcane land has been converted to the Sugar Research Australia Farming System. The Stomping out Sediment in the Burdekin - livestock impact for gully remediation project is trialling a new grazing concept called 'biological carpeting'. This grazing practice, alongside ultra-high-density grazing technique on livestock, is being used to investigate the impact on the land to address gully erosion across a range of regionally representative soil types. As of June 2019, the project has trialled these techniques across five properties covering over 100 hectares. Project Pioneer: Innovation in Grazing Land Management continued to support targeted graziers in Reef catchments to adopt practices by providing tools tailored to their circumstances that improve farm management capacity and profitability, facilitate the transition to A class land condition, showcase sustainable grazing businesses, and help reduce sediment entering the Reef. A whole-of-business approach to reducing sediment in run-off is taken by coaching graziers in multiple facets of their business including, but not limited to, ground cover. At its conclusion in June 2019, the project reported a strong theme of innovation coming from engaged landholders as it provided producers with a framework in which they could take some risks of innovation and trial different approaches. These changes are sustainable because they are driven by improved understanding of productivity and profitability trade-offs. The Reef Alliance – Growing a Great Barrier Reef Project is delivering 21 innovation projects across sugarcane, grazing, grains and banana enterprises with the primary purpose of demonstrating the feasibility of new practices. The projects have delivered trials and demonstration activities for a range of new agricultural practices across the commodities. The communication network created by this project has seen approximately 536 people subscribed to receive information about the project and innovation activities. Ten of these projects undertaken on cane farms were completed in June 2019. Two explored efficiencies in nitrogen applications that generated a high level of interest and were included in events such as farm bus tours, roving field days and the Canegrowers Virtual Bus Tour. The National Environmental Science Program Tropical Water Quality Hub Project 3.1.2 is supporting innovative science to improve the efficiency of automated irrigation systems in the Burdekin sugarcane catchment. More efficient irrigation results in both improved water quality outcomes for the Great Barrier Reef and improved return on investment for farmers. 	<ul style="list-style-type: none"> Work progressed on developing a treatment system wetland in the Burdekin region, including monitoring its ability to reduce nitrogen run-off. Work continued in trialling innovative water quality monitoring, agricultural management practices and water treatment systems. Biophysical data was analysed for 20 trials of innovative practices in the sugarcane industry. The impact of these water quality improvement practices on business performance was validated. For high-intensity grazing trial sites, baseline data was established, and training for the innovative use of intensive grazing for gully remediation was conducted. Variable rate technology was successfully used on three farms in the Wet Tropics and Burdekin regions to optimise crop development and nutrient use efficiency. Run-off and sediment modelling has been initiated on one farm to understand the risk of sediment and nutrient transport under irrigation and rainfall events. A low-cost nitrogen sensor challenge was funded to develop and trial significantly cheaper nitrogen sensors for monitoring in Great Barrier Reef catchments. The proof of concept field trials were completed across the Wet Tropics and Mackay Whitsunday regions, enabling wet season data comparisons with established sensors and lab samples. A small additional field trial was carried out during the wet season to further test the capabilities of nitrogen sensor probes. The project has now concluded with the government ceasing further investment at this point. The Wet Tropics Major Integrated Project (MIP) is trialling a range of catchment repair and treatment systems to investigate their effectiveness at removing pollutants. Seven denitrifying bioreactors have been installed on sugarcane farms, with many of the recent installations modified to suit local landscapes and reduce installation costs. Three constructed wetlands and one large landscape wetland have been constructed. A high efficiency sediment basin has been retro-fitted to a banana farm dam to reduce sediment losses, which is the first time this technology has been trialled in an agricultural setting in Queensland. The project is also investigating if modifying cane drains to promote vegetation can help to treat nitrate. Monitoring is underway with positive early results from some interventions, but more time is needed to increase confidence in the results. The Burdekin Major Integrated Project (MIP) is investigating cost effective solutions to remediate large-scale alluvial gullies. The first large-scale gully remediation has been completed at Mount Wickham across 14 hectares of gully area and upstream catchment, with promising ground cover and run-off results. Two more large-scale gully projects are underway. The team is also working with graziers to remediate small-scale gullies, with 18 projects underway. This approach has been a successful engagement tool, with a high level of interest from landholders.

A3: Catchment restoration

Contributing agencies and partners: Natural Resource Management bodies, Industry

Intermediate Outcomes	Id	Actions	Status	Australian Government	Queensland Government
On-ground interventions are targeted to deliver water quality improvement.	3.1	Use whole-of-system catchment management, planning and information to support prioritisation.	On track / Underway	<ul style="list-style-type: none"> Through a contract with CSIRO, approximately 6300 square kilometres of priority erosion areas are being mapped in the Cape York, Wet Tropics, Burdekin, Fitzroy and Burnett Mary regions using aerial terrain (LiDAR – Light Detection and Ranging). The data captured will help to further prioritise sediment management actions and investment in gully and stream bank erosion remediation. 	<ul style="list-style-type: none"> Scientific enhancements to the Statewide Landcover and Trees Study (SLATS) and the establishment of a vegetation condition monitoring and mapping framework for the state is underway. The data and information generated by the program will inform a range of land management and biodiversity conservation initiatives in Queensland including vegetation management, Great Barrier Reef programs, the Land Restoration Fund, fire management and planning, and conservation planning. The Gully Erosion Mapping project has mapped 58% of the Great Barrier Reef catchment including high priority catchments in the Burdekin, Fitzroy, Wet Tropics and Burnett Mary regions. The mapping of broad-scale gully presence and density along with the capture of gully geometry data has led to improved knowledge of the distribution and size of gullies throughout the Great Barrier Reef catchment and has improved gully erosion model inputs.
	3.2	Use guidelines, Traditional knowledge and decision support tools to design and inform interventions.	On track / Underway	The Reef Alliance – Growing a Great Barrier Reef Project used the Queensland Government’s Paddock to Reef Project Selector (P2R Projector) to inform reporting for sugarcane. The tool enabled delivery partners to estimate the dissolved inorganic nitrogen (DIN) reductions, and extension officers to forecast and communicate the resulting water quality improvement of grower proposed changes. It was a very useful engagement tool as it helped growers to bridge the gap between farm practices and water quality outcomes in a visual and readily understandable format. The tool allowed extension staff and growers to fine tune projects to optimise the water quality benefits and return on investment. Using the P2R Projector, it is estimated that as of June 2019, more than 346 tonnes of DIN has been saved through specific project activities.	<ul style="list-style-type: none"> The Queensland Wetlands Program continues to provide policy, governance, tools, information and stakeholder relationships in order to ensure the effective delivery of the Wetlands in the Great Barrier Reef Catchments Management Strategy 2016–21. Key achievements include: <ul style="list-style-type: none"> wetland education modules and further catchment stories were published on the WetlandInfo site training Natural Resource Management bodies in catchment story production, walking the landscape and WetlandInfo continued WetlandInfo updates ensuring stakeholder have relevant up-to-date information to effectively manage wetlands.
	3.3	Trial and implement innovation in catchment repair projects to reduce sediment and nutrient delivery to the Reef.	On track / Underway	<p>Reef Trust projects continued to trial and implement innovative catchment repair projects to reduce sediment.</p> <ul style="list-style-type: none"> The Stomping out Sediment in the Burdekin - livestock impact for gully remediation project is trialling a new grazing concept called ‘biological carpeting’. This grazing practice, alongside ultra-high-density grazing technique on livestock, is being used to investigate the impact on the land to address gully erosion across a range of regionally representative soil types. As of June 2019, the project has trialled these techniques across five properties covering over 100 hectares. 	<ul style="list-style-type: none"> A suite of gully remediation design and approaches was finalised for Springvale Station to provide property-wide remediation including erosion management works to reduce sediment run-off as per the Springvale Erosion Management Plan. <ul style="list-style-type: none"> Improved infrastructure for the Normanby River water quality monitoring program and the Great Barrier Reef Catchment Loads Monitoring Program has been implemented to monitor changes in sediment and nutrients from catchment repair projects. A program of managing feral pigs and cattle destocking has been undertaken and has significantly improved groundcover and reduced sediment loss from the station. Cook Dam (approximately 28 hectares), an unauthorised dam on the property, was decommissioned and adjacent areas rehabilitated (e.g. revegetated) to reduce sediment loss and remove future erosion risk from dam failure. Use of new native seed collection methods with Traditional Owners guided by a Property Erosion Management Plan for Springvale revegetation following rehabilitation works. Bioreactor locations were finalised and installed ahead of the wet season, with measurements of effectiveness commenced. Bioreactors are a passive, low

Intermediate Outcomes	Id	Actions	Status	Australian Government	Queensland Government
					<p>cost solution which can be deployed on the edge of fields or in irrigation ditches to reduce nitrogen pollution of waterways.</p> <ul style="list-style-type: none"> Approximately 17.4 hectares of priority gully areas were remediated between 2017 and 2019 at Strathalbyn Station in the Burdekin region, which represents the largest gully remediation project in the Great Barrier Reef catchment. It is estimated the first two phases of the project have prevented over 4000 tonnes of sediment run-off to the Great Barrier Reef per year. This is expected to increase to more than 6000 tonnes with the completion of 2019 works.
	3.4	Modify existing urban area stormwater management and rehabilitate urban waterways.			<ul style="list-style-type: none"> Water by Design continues to engage and expand its urban stormwater and erosion and sediment control network across government and industry through a range of forums and activities to help build stakeholder capacity to deliver improved urban stormwater and erosion and sediment control practices.
	3.5	Partner with voluntary stewardship groups, Traditional Owner groups, Indigenous Land and Sea Rangers and other organisations to deliver catchment repair projects.	On track / Underway	<ul style="list-style-type: none"> A core component of the Laura Gullies Project, fix up and skills for the future involves local Indigenous people participating as Indigenous Land and Sea Corporation employees or as Ranger teams to undertake works which will provide cost-effective erosion control and build local capacity. The project is building on effective local Indigenous ranger and corporate capacity to manage erosion threats on Crocodile and Welcome Stations, and the Ang-gnarra Aboriginal Lands Trust in the Cape York region. 	<ul style="list-style-type: none"> The Queensland Government provides funding and support for the Indigenous Land and Sea Ranger Program. Indigenous land and sea rangers undertake caring for country activities and contribute to protecting Indigenous cultural heritage and improving water quality outcomes for the Great Barrier Reef.
On-ground organisations, land managers, Traditional Owner groups and voluntary stewardship groups implement catchment restoration.	3.6	Support the development of ground up, multi-stakeholder programs for the delivery of catchment repair projects.	On track / Underway	<ul style="list-style-type: none"> The Reef Trust: Great Barrier Reef Foundation Partnership continues to build on existing partnerships and initiate new collaborations. The grants will support a range of organisations and landholders in the Reef catchment to change management practices to improve water quality. The Reef Alliance – Growing a Great Barrier Reef project continued to deliver a cross industry and natural resource management based program providing a structure and framework that facilitated operational discussions, joint decision-making and a common data capture and reporting platform for partners. In addition to the practice change achieved during the life of this project, there will be a legacy of a large pool of landholders engaged in improving management practices of relevance to water quality who are on the pathway to adoption. 	<ul style="list-style-type: none"> The Queensland Government continues to support the development and strengthening of regional waterway health partnerships for monitoring and reporting local catchment information to the community and stakeholders. An estuary pesticide monitoring program initiated in partnership with Reef Catchments will provide a comprehensive water quality data set for nine Mackay estuaries.

B1: Applying the best available science and knowledge

Contributing agencies and partners: Natural Resource Management bodies, Industry

Intermediate Outcomes	Id	Actions	Status	Australian Government	Queensland Government
Gaps in science and knowledge to underpin evidence-based decision making are filled.	4.1	Identify, prioritise and fill knowledge gaps through the Reef 2050 WQIP Research, Development and Innovation (RD&I) Strategy.	Completed	<p>The five-year Reef 2050 Water Quality Research, Development and Innovation Strategy 2017-2022 (RDI Strategy) was developed in 2018. It is a joint action of the Queensland and Australian governments. The strategy:</p> <ul style="list-style-type: none"> identified the knowledge needs through the 2017 Scientific Consensus Statement, the previous Research, Development and Innovation strategies and consultation with science, policy and on-ground management experts refined and prioritised the knowledge needs for the next five years through engagement with over 100 science, policy and on-ground management experts and stakeholders at the 2017 Synthesis Workshop and through expert working groups to support the Reef 2050 Water Quality Improvement Plan. 	
	4.2	Integrate forms of knowledge including science, policy, management, Traditional Owner and community through regular synthesis workshops and theme-specific working groups to support consistent communication messages and guidance for managers.	On track / Underway	<ul style="list-style-type: none"> The third Great Barrier Reef Water Quality Science Synthesis Workshop was held in November 2018. The event provided an opportunity for science, government and industry practitioners to interact, share ideas and insights, and collaborate to support improved delivery and implementation of Reef water quality management activities. A number of project ideas and initiatives arose as part of the workshop. The annual Reef Trust Erosion Control Forum was held in Mackay in June 2019. Participants consisted of government program delivery partners, scientists and Australian and Queensland government representatives. 	
Science and new knowledge are accessible and used to support policy, programs and practical on-ground management to improve water quality outcomes.	4.3	Deliver decision support tools, communication and education products tailored to specific audiences.	On track / Underway	<ul style="list-style-type: none"> The Reef Trust Phase IV Gully and Stream Bank Toolbox, 2nd Edition, a guide to targeting, designing and implementing gully and stream bank erosion control activities in Great Barrier Reef catchments, was published in June 2019. Outcomes from the National Environmental Science Program Tropical Water Quality Hub research are documented on the website and shared via e-newsletters and social media platforms. 	<ul style="list-style-type: none"> The Reef 2050 Communication Network meeting in Townsville was attended by 40 people to facilitate communication and coordination of water quality activities across the Great Barrier Reef. Teleconferences were held in December 2018 and March and June 2019. The ‘Love the Reef’ digital game-based application, developed for primary school aged children, was released in March 2019. It aims to inspire a love and respect for the Great Barrier Reef empowering children to make positive change and enhance their environmental citizenship. STEM Matters was appointed in June 2018 and developed a range of tools identified in the Science Communication Implementation Plan including videos, podcasts and explainers. The content was made available through the Reef 2050 Water Quality Improvement Plan website which was redesigned and updated as part of this project. The Paddock to Reef Project Selector (P2R Projector) prioritisation tool was created to support groups working with farmers to improve their water quality. It assists with the process of assessing and prioritising projects for funding. The projects propose changes in agricultural management practices for key industries in the Great Barrier Reef region. Major revisions are underway to improve functionality for users and reflect the updated Water Quality Risk Frameworks and new modelling outputs.

B2: Coordinating and prioritising investment

Contributing agencies and partners: Natural Resource Management bodies, Industry

Intermediate Outcomes	Id	Actions	Status	Australian Government	Queensland Government
Water quality activities are boosted beyond government funding through coordination and alignment of resources and funding across all sources.	5.1	Identify opportunities for innovative financing mechanisms to amplify funding for water quality outcomes.	On track / Underway	<ul style="list-style-type: none"> Through two Reef Trust projects designed to restore priority Great Barrier Reef wetlands, Greening Australia continued to leverage funding to match the Australian Government investment. The Reef Funding Program through the Clean Energy Finance Corporation (CEFC), announced in June 2016, established up to \$1 billion in debt or equity financing available over 10 years to support projects in the Reef catchment area that reduce emissions and support delivery of the Reef 2050 plan. To date, total CEFC commitments of over \$370 million can be attributed to the Reef Funding Program: <ul style="list-style-type: none"> \$320 million is in large-scale investments (Ross River, Whitsunday and Hamilton Solar Farms, Collinsville, Daydream and Hayman Solar Farms, and Clermont Solar Farm), and over \$50 million in over 370 small projects through aggregation partners at 31 December 2018 six projects with a total value of \$1.1 million specifically targeting on-farm irrigation equipment which has a positive co-benefit for water quality. 	
	5.2	Identify opportunities for co-investment or alignment of funds and resources with industry, research organisations, philanthropists, Natural Resource Management bodies, community and corporate organisations to achieve water quality objectives.	On track / underway	<ul style="list-style-type: none"> The Great Barrier Reef Foundation through the Reef Trust: Great Barrier Reef Foundation Partnership drafted the Collaborative Investment Strategy, which has set a target of attracting an additional \$300 to \$400 million from private donors and partner organisations to complement the government's investment. The Reef Alliance – Growing a Great Barrier Reef project, through its unique cross-regional and cross-industry platform, enabled a collaborative approach to improve management practices and water quality in Reef regions. It has provided a practical opportunity for Reef Alliance partners to be funded and work as a group towards the common goal of improving water quality outcomes in the Reef. The project has led to a strengthening of networks between regions and commodities as well as building capacity of staff and extension delivery partners which will allow for a more informed collaboration in future projects. 	<ul style="list-style-type: none"> Greening Australia's Reef Aid™ fundraising program has raised \$1.75 million in co-contributions to match the Queensland Government's \$2 million commitment for the Innovative Gully Remediation Project on Strathalbyn Station. Detailed monitoring and evaluation of remediation work demonstrates a significant reduction in sediment loss from treated compared to untreated gullies. The Great Barrier Reef Foundation has funded further gully remediation on Strathalbyn building on the project's success. This is the largest alluvial gully project in the Great Barrier Reef catchment. It also directly links to other Great Barrier Reef programs to provide information on the costs associated with remediating alluvial gullies at a property level scale. The extensive monitoring at the gully and catchment scale enables essential information on the proposed costs and ability of such programs to have significant impact on reducing sediment. The project brings together a unique partnership involving Greening Australia, the Office of the Great Barrier Reef (Queensland Government), Griffith University, on-ground specialists (Fruition and Bashforth Rugendyke), finance specialists (Green Collar) and a progressive influential landholder.
Investment is prioritised to ensure interventions are effective and cost-efficient and delivery mechanisms are appropriate.	5.3	Prioritise investment across Reef catchments according to catchment priorities and targets.	On track / Underway	<ul style="list-style-type: none"> Through the Reef Trust: Great Barrier Reef Foundation Partnership, Alluvium was engaged to revise and expand on earlier work designed to guide investment and actions for prioritising Reef investments. The Great Barrier Reef Foundation used this information to prioritise investment in the 2019–2020 Annual Work Plan. 	<ul style="list-style-type: none"> The Queensland Reef Water Quality Program and Queensland Water Modelling network engaged Truii to build on the Reef Planning and Investment Tool with the Reefonomics tool which is an updateable modelling platform.
	5.4	Identify the benefits and appropriate applications of	On track / Underway	<ul style="list-style-type: none"> National Environmental Science Program Tropical Water Quality Hub research is providing innovative research for practical solutions to maintain and improve 	

Intermediate Outcomes	Id	Actions	Status	Australian Government	Queensland Government
		different investment mechanisms.		<p>tropical water quality from catchment to coast. A number of projects are underway including:</p> <ul style="list-style-type: none">○ Project 2.1.4 Demonstration and evaluation of gully remediation in Great Barrier Reef rangelands – providing a cost-benefit analysis of erosion remediation strategies and demonstrating the benefits of best-practice erosion control to graziers, with a focus on Queensland’s Burdekin region.○ Project 2.1.2 Scoping options for low-lying, marginal sugarcane land to reduce dissolved inorganic nitrogen in priority Wet Tropics catchments – exploring alternative land use options to reduce nitrogen losses from marginal sugarcane land in priority Wet Tropics catchments, co-funded by the Queensland Government.	

B3: Governance to support coordinated decision-making and accountability

Contributing agencies and partners: Natural Resource Management bodies, Industry

Intermediate Outcomes	Id	Actions	Status	Australian Government	Queensland Government
Governance arrangements are progressively and continuously adapted, improving coordination between partners and structures at all levels.	6.1	Collaborate and coordinate between the Queensland and Australian governments, in line with the Reef 2050 Plan governance structures.	On track / Underway	<ul style="list-style-type: none"> The Joint Secretariat continues to collaborate with all levels of Reef 2050 governance (Directors-Managers, Executive Steering Committee) including the Advisory bodies (Reef Advisory Committee and Independent Expert Panel) through regular meetings, and reports to the Great Barrier Reef Ministerial Forum. 	
	6.2	Ensure program design aligns with water quality priorities.	On track / Underway	<ul style="list-style-type: none"> Queensland Reef Water Quality Program aligned with Reef 2050 Water Quality Improvement Plan. Continued delivery of Reef Trust projects aligned with water quality priorities. Reef Trust: Great Barrier Reef Foundation project aligned with the Reef 2050 Plan and Reef 2050 Water Quality Improvement Plan. 	
	6.3	Ensure accountability of investment to outcomes in the Reef 2050 WQIP.	On track / Underway	<ul style="list-style-type: none"> The Reef Trust Investment Strategy Phase VI was published in August 2018. The Reef Trust: Great Barrier Reef Foundation Partnership Project – Investment Strategy was published in December 2018. 	<ul style="list-style-type: none"> The 2017-2018 Queensland Reef Water Quality Program Annual Report was published.
	6.4	Include all stakeholders including local organisations, communities and Traditional Owners in decision-making and priority setting.	On track / Underway	<ul style="list-style-type: none"> Under the Reef Trust: Great Barrier Reef Foundation Partnership project, the Foundation released its Communication and Engagement Plan. 	<ul style="list-style-type: none"> The Reef 2050 Advisory Committee meets regularly to provide strategic advice on the implementation of Reef 2050 actions, stakeholder priorities, and highlight any emerging cross sectoral issues that need to be addressed.

B4: Evaluating performance

Contributing agencies and partners: Natural Resource Management bodies, Industry

Intermediate Outcomes	Id	Actions	Status	Australian Government	Queensland Government
Progress towards Reef 2050 WQIP targets is assessed.	7.1	Monitor and model management practice and water quality improvements through the Paddock to Reef Integrated Monitoring, Modelling and Reporting Program (Paddock to Reef).	On track / Underway	<p>Great Barrier Reef monitoring programs continue to monitor ground cover, catchment loads, riparian vegetation, wetland condition and extent in Great Barrier Reef catchments. The Paddock to Reef Integrated Monitoring, Modelling and Reporting Program (Paddock to Reef program) Design 2018-2022 was released in late 2018.</p> <p>The Paddock to Reef program provides the framework for evaluating and reporting progress towards Reef 2050 Water Quality Improvement Plan (Reef 2050 WQIP) targets through the Reef water quality report card. Launched in 2009, the program unites more than 20 industry bodies, government agencies, Natural Resource Management bodies, landholders and research organisations—working together to measure and report on water quality factors that impact Reef health. It is jointly funded by the Australian and Queensland governments, and has continued to improve in terms of scope, methodology and application over the 10-year period of implementation.</p> <p>Monitoring and modelling occurs across a range of attributes, from paddock scale through to sub-catchment, catchment, regional and Great Barrier Reef-wide. In line with the Reef 2050 WQIP framework, the Paddock to Reef program evaluates management practice adoption and effectiveness, catchment condition, pollutant run-off and marine condition. The program areas are inter-linked and integrated through a common assessment and reporting framework.</p> <p>In the near future, the Paddock to Reef program will be integrated into the Reef 2050 Integrated Monitoring and Reporting Program (RIMReP). The program will provide a comprehensive understanding of how the broader Reef 2050 Plan is progressing and guide future management of the Reef.</p> <ul style="list-style-type: none"> The surface and groundwater monitoring network delivered by Department of Natural Resources, Mines and Energy (DNRME) provides timely and reliable flow and ambient water quality data that underpins modelling tools and loads reporting within the Paddock to Reef program. DNRME collects high resolution satellite imagery within Reef catchments that allows estimation of changes in land cover, land use change and changes in the extent of wetlands. DNRME continues to invest in high quality, high resolution satellite imagery for the state, which is instrumental in Great Barrier Reef catchment monitoring and disaster mapping. Models are being rebuilt with the most up-to-date data sets including new management practice adoption data, land use, ground cover and gully maps to provide improved confidence in the modelled load reduction estimates for the 2019 report card. This ensures the best estimate of modelled loads and associated reductions in loads using the latest science and input data sets. A targeted project to continue the Paddock to Reef Integrated Monitoring, Modelling and Reporting Program includes activities such as data collection, management and reporting, regional liaison and regional communications. This component includes funding for cross-regional Reef coordination. Achievements include: <ul style="list-style-type: none"> annual provision of management practice adoption data collection of annual fertiliser and pesticide use data for relevant regional industries support for the Reef wetlands condition monitoring program through on-ground assessment of wetlands lead annual synthesis workshops and regional workshops to review and evaluate the efficacy of on-ground Reef funded activities produce regional communication products to disseminate Paddock to Reef results with local stakeholders. Analysis of data for the Reef Water Quality Report Card 2019 has commenced. Sample design for intensification of the Wetland Condition Monitoring Program has been completed. This will enable future regional scale wetland condition reporting within the Reef water quality report card. 	
Effectiveness and efficiency of program and project design is analysed and the lessons are understood	7.2	Assess management of all industries through stewardship and management practice frameworks.	On track / Underway		<ul style="list-style-type: none"> Revised adoption benchmarks for grains, bananas, horticulture, grazing and sugarcane developed for inclusion in the Paddock to Reef program.
	7.3	Assess the water quality and human dimensions outcomes of projects within a	On track / Underway		<ul style="list-style-type: none"> The Department of Environment and Science has added, in consultation with a range of stakeholders, seven social indicator questions to the Paddock to Reef Integrated Monitoring, Modelling and Reporting Program.

Intermediate Outcomes	Id	Actions	Status	Australian Government	Queensland Government
		consistent evaluation framework.			
	7.4	Evaluate the effectiveness of programs, governance mechanisms and adaptations.	On track / Underway	<ul style="list-style-type: none"> Projects contributing towards the Reef 2050 Water Quality Improvement Plan continued to report through the Monitoring, Evaluation and Reporting Tool (MERIT). 	<ul style="list-style-type: none"> The Queensland Reef Water Quality Program evaluation was conducted and a report produced which identifies areas of improvement in terms of effectiveness, efficiency, appropriateness, program management, and legacy. The short-term recommendations have been actioned, and work is underway to action longer-term recommendations and begin the next evaluation.
Program and project designs are modified to build on lessons learned from implementation.	7.5	Report progress towards targets, objectives and outcomes.	On track / Underway	<ul style="list-style-type: none"> The Reef water quality outcomes publication was released in November 2018, highlighting major investments for the Reef. 	
	7.6	Communicate regionally relevant information for management decisions and local communities.	On track / Underway	<ul style="list-style-type: none"> Regional waterway health report cards released for Wet Tropics, Mackay Whitsunday, Gladstone and Fitzroy. Support provided for Regional Report Card Partnerships to produce regional report cards. A new Urban Stewardship Framework covering water management activities relating to greenfield and brownfield development, sewage treatment plants, and operating and maintaining sewage networks, that may contribute to sediment and nutrient loads entering the Great Barrier Reef lagoon, will begin local government trials in 2019. Dry Tropics Partnership for Healthy Waters established. The Queensland Government has continued monitoring regional ecosystems (ambient) health for Reef catchments for input into regional report cards. A comprehensive water quality data set was collected for Mackay, Wet Tropics and Dry Tropics (Black/Ross Basins only) estuaries. An estuary pesticide monitoring program was initiated in partnership with Reef Catchments. Arrangements are well advanced to start collecting water quality and other data in streams and estuaries in the Black Basin area north of Townsville. Modelling of freshwater fish species also continued with fish communities sampled at 26 sites in the Mulgrave-Russell River catchment. 	
	7.7	Make data and information publicly available through a range of communication products.	On track / Underway	<ul style="list-style-type: none"> A more refined and interactive version of the Reef water quality report card is being developed and will be published on Reef 2050 Water Quality Improvement Plan website. 	