



*Addendum to  
the Mackay  
Whitsunday Isaac  
Natural Resource  
Management Plan  
2014 – 2024*

***Alignment with  
Regional Land  
Partnerships  
(RLP) Outcomes  
and Investment  
Priorities***





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## Chapter

# 01

## Introduction

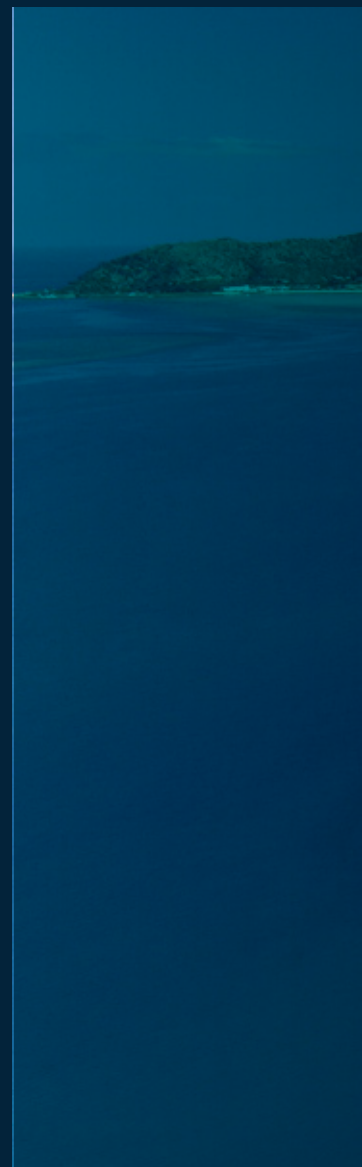
### ***Purpose***

***The purpose of this Addendum is to:***

***Maintain the currency of Natural Resource Management (NRM) Planning and the prioritisation of management actions in the Mackay Whitsunday Isaac (MWI) Region.***

As proposed in 2018, Reef Catchments (Mackay Whitsunday Isaac) Limited (Reef Catchments) commenced the review of the MWI NRM Plan 2014-2024 (Plan) in 2022. This Addendum to the Plan constitutes the first phase of the review. It focuses on key requirements of the Australian Government's Regional Land Partnerships<sup>1</sup> (RLP) program to align Natural Resource Management (NRM) planning with RLP outcomes and other Australian Government investment priorities; and provides a "stepping off" point to undertake fuller consultation and review of the Plan in 2023.

<sup>1</sup> The RLP is a key component of Phase 2 of Australia's National Landcare Program.





## Background

*The current Plan for the MWI Region was produced by Reef Catchments in consultation with key stakeholders in 2013. It provides a regional vision and broad strategic framework for managing natural resources for the 2014-2024 period.*

The Plan identifies six goals, 21 key outcomes, and 103 management actions for six regional systems: People, Terrestrial Environment, Coastal & Marine Environment, Agriculture, Industry, and Climate. It also develops community profiles for eight local landscapes.

Reef Catchments will develop an online “Living Plan” for the 2024-2029 period. This aims to ensure the next plan will feature a responsive, iterative process that maintains the currency of it over the longer term.

### **The development of the next Plan will feature:**

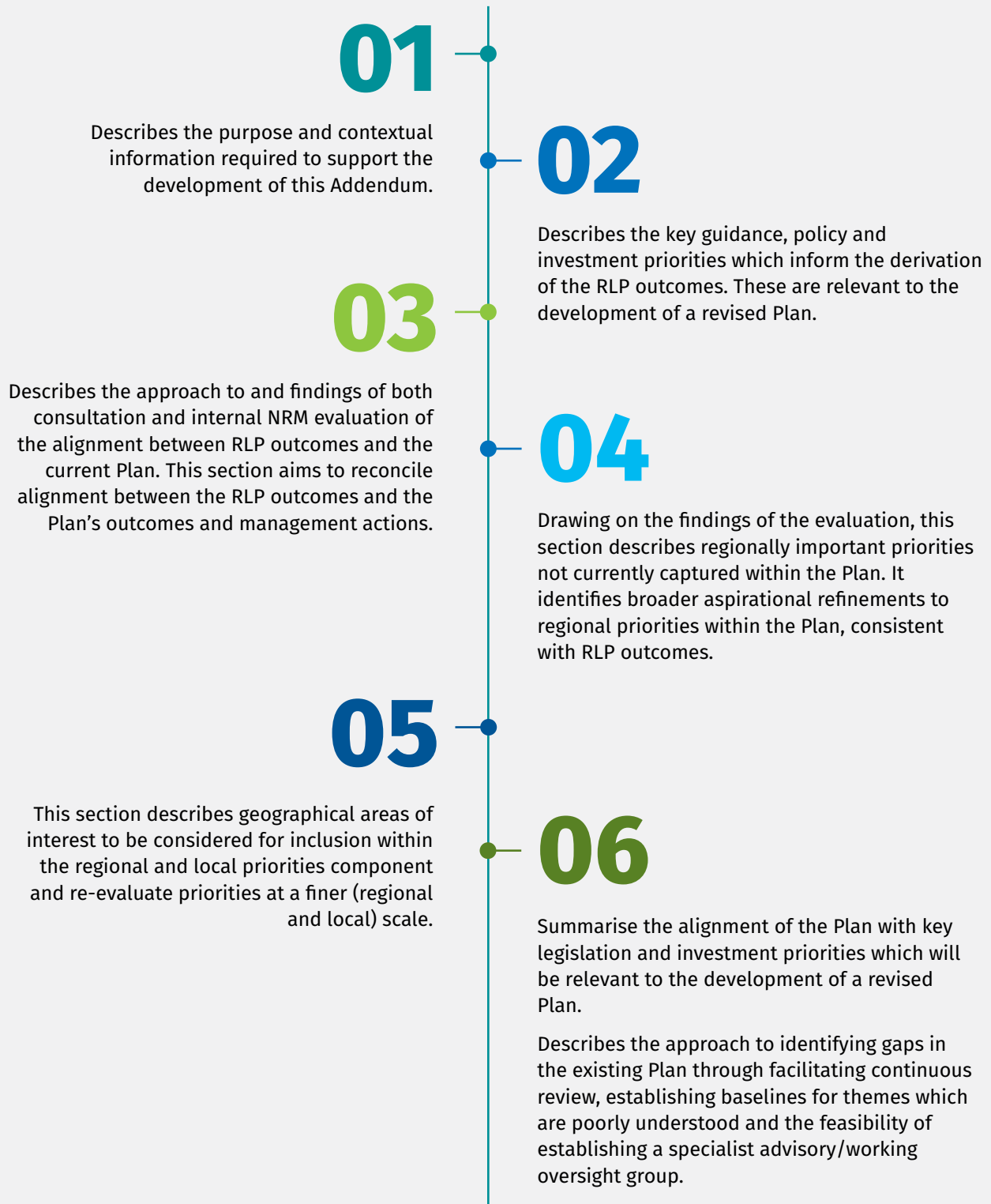
- Consultation with key stakeholders on the Plan’s scope, focus and content
- Formation of a working group that provides guidance on the scope and requirements of the Plan, its implementation, and on monitoring and assessment of the Plan’s implementation
- Developing and refining management themes, outcomes, and actions on an ongoing basis

- Publishing the Plan online in 2023 as a hierarchical set of documents complemented by user friendly outreach materials.


### **The final set of documents will include:**

- A core document on management outcomes and actions with an expected life of five years, complemented by a longer-term regional vision and strategy
- Assessments of the nature and status of natural resources
- Community engagement and capabilities
- Other supporting documentation including mapping
- An overview of the planning process
- Outreach materials.

# Chapter Structure







# Chapter 02

## Legislative Context and Investment Priorities

*This Addendum focuses on characterising the level of alignment between key RLP outcomes and the Plan and identifies measures through which the revised Plan can reconcile gaps between these frameworks to improve management of the region's natural resources.*

The evaluation of the alignment was undertaken with consideration to the Australian Government's investment priorities and relevant legislation.

**Consequently, the key requirements of this Addendum are to:**

- Identify and describe the investment priorities that are relevant to the MWI region
- Identify community aspirations aligned with the 5-year outcomes and other relevant Australian Governments priorities
- Clearly describe how the delivery of projects will contribute to RLP's 5-year outcomes and investment priorities in the MWI region
- Clearly describe key collaborations and how they relate to the delivery of RLP 5-year outcomes

Under the current Service Agreement for the RLP, Reef Catchments is required to either revise the current NRM Plan or develop a new Plan to meet the Government's requirements. The details of these requirements are contained in **Annexure I**.

## *Relevant Legislation and Regional Investment Priorities*

**RLP and other Australian Government investment priorities for the MWI region are primarily derived from the:**

- RLP outcomes
- Environment Protection and Biodiversity Conservation (EPBC) Act 1999
- Reef 2050 Long-term Sustainability Plan (Reef 2050 Plan).

These priorities are strongly interlinked with both the EPBC Act and the Reef 2050 Plan having direct links to three of the six RLP outcomes.

Also related to these investment priorities are several complementary investments<sup>2</sup> under the banner of the National Landcare Program.

- Bushfire Wildlife and Habitat Recovery<sup>3</sup>
- Environment Restoration Fund
- Communities Environment Program
- Agriculture Stewardship Package
- Future Drought Fund
- Environmental Stewardship Program
- Reef Trust
- Established Pest Animals and Weeds Management



## RLP Outcomes

### The RLP program logic identifies six long-term outcomes.

Each of these has its own logic and a mid-term (5-Year) outcome underpinned by a set of components that are supported by short-term outcomes. The short-term outcomes (3 years) are to be delivered by project and core services (RMCG, 2018)<sup>4</sup>. The RLP outcomes are comprised of the following four environmental and two agricultural outcomes.

Theme	Long-Term Outcomes	Medium-Term (5-year) Outcomes
Environment	The ecological character of Ramsar sites is maintained or improved	By 2023, there is restoration of, and reduction in the threats to, the ecological character of Ramsar sites, through the implementation of priority actions
	The trajectory of species targeted under the <i>Threatened Species Strategy</i> , and other EPBC Act priority species, is improved	By 2023, the trajectory of the species targeted under the <i>Threatened Species Strategy</i> , and other EPBC Act priority species, is stabilised or improved
	The natural heritage Outstanding Universal Value of World Heritage properties is maintained or improved	By 2023, invasive species management has reduced threats to the natural heritage Outstanding Universal Value of World Heritage Properties through the implementation of priority actions
	The condition of EPBC Act listed <i>Threatened Ecological Communities</i> is improved	By 2023, the implementation of priority actions is leading to an improvement in the condition of EPBC Act listed <i>Threatened Ecological Communities</i>
Agriculture	The conditions of soil, biodiversity and vegetation are improved	By 2023, there is an increase in the awareness and adoption of land management practices that improve and protect the condition of soil, biodiversity, and vegetation
	Agriculture systems have adapted to significant changes in climate and market demands	By 2023, there is an increase in the capacity of agricultural systems to adapt to significant changes in climate and market demands for information on provenance and sustainable production

All of these are relevant to the MWI Region. Although there is currently no Ramsar site in the region there is potential for one to be developed<sup>5</sup>.

<sup>2</sup> <http://www.nrm.gov.au/national/complementary-investment>

<sup>3</sup> The Australian Government has committed \$200 million to help native wildlife and their habitats recover from the devastating impacts of the 2019-20 bushfires. <https://www.awe.gov.au/environment/biodiversity/bushfire-recovery/activities-and-outcomes>

<sup>4</sup> Long- and medium-term outcomes are to be evaluated by the RLP while the short-term outcomes are to be measured by Reef Catchments.

<sup>5</sup> While there is no Ramsar site within the MWI Region, the region does include seven nationally important wetlands: Edgumbe Bay, Goorganga Plain, St Helens Bay Area, Sand Bay, Sandringham Bay – Bakers Creek Aggregation, Sarina Inlet – Ince Bay Aggregation, and Four Mile Beach.

# Environment Protection and Biodiversity Conservation (EPBC) Act 1999

*The EPBC Act enables the Australian Government to join with the states and territories in providing a truly national scheme of environment and heritage protection and biodiversity conservation.*

It focusses on the protection of **Matters of National Environmental Significance** (MNES) by making sure that 'nationally significant' animals, plants, habitats and places are identified, and any potential negative impacts on them are carefully considered before changes in land use or new developments are approved.

This means that landowners, developers, companies, individuals and governments must seek Commonwealth approval **in addition to state and local government approvals** if their plans might significantly impact on matters of national significance.

While the EPBC Act constitutes an investment priority it also informs the RLP outcomes. Two of the RLP environmental outcomes are specifically linked to the EPBC Act, that of listed threatened species and threatened ecological communities. A third outcome, on maintaining the Outstanding Universal Value of World Heritage Properties also encompasses these species and communities along with many others, and 138 sites within the Great Barrier Reef Marine National Park.

## **The EPBC Protected Matters Report for the MWI region lists the following MNES:**

- The Great Barrier Reef as both a World Heritage Property and a National Heritage Property:
  - Commonwealth Islands – five sites
  - Conservation Parks (IUCN IV) – 22 sites
  - General Use (VI) – three sites
  - Habitat Protection (VI) – 79 sites
  - Marine National Park (II) – 28 sites
  - Preservation (1A) – one site
- Commonwealth Marine Area – one area
- Wetlands of International Significance – None
- Threatened Ecological Communities – three have been mapped in the region though there are potentially two more in the region

- Threatened species – 21 birds, one amphibian, 13 mammals, nine reptiles, three sharks and 17 plants
- Migratory species – 11 marine birds, 24 marine species, seven terrestrial birds, 32 wetland species

## **It also lists other matters including:**

- Commonwealth lands – four Defence sites
- Commonwealth Heritage Places – one lighthouse
- Listed Marine Species – 60 birds (ten threatened), 36 fish, one mammal (dugong), 22 reptiles (six threatened)
- Whales and other cetaceans – 14 species
- Weeds of national significance – 20 species
- Invasive species – nine birds, two amphibians, 13 mammals, three reptiles





A large sea turtle, likely a Galapagos tortoise, is swimming towards the left of the frame. Its head and front flippers are visible, and it is positioned above a diverse coral reef. The water is clear and blue, with sunlight filtering through from the surface, creating a shimmering effect. The background shows the intricate structures of the coral reef and the deep blue of the open ocean.

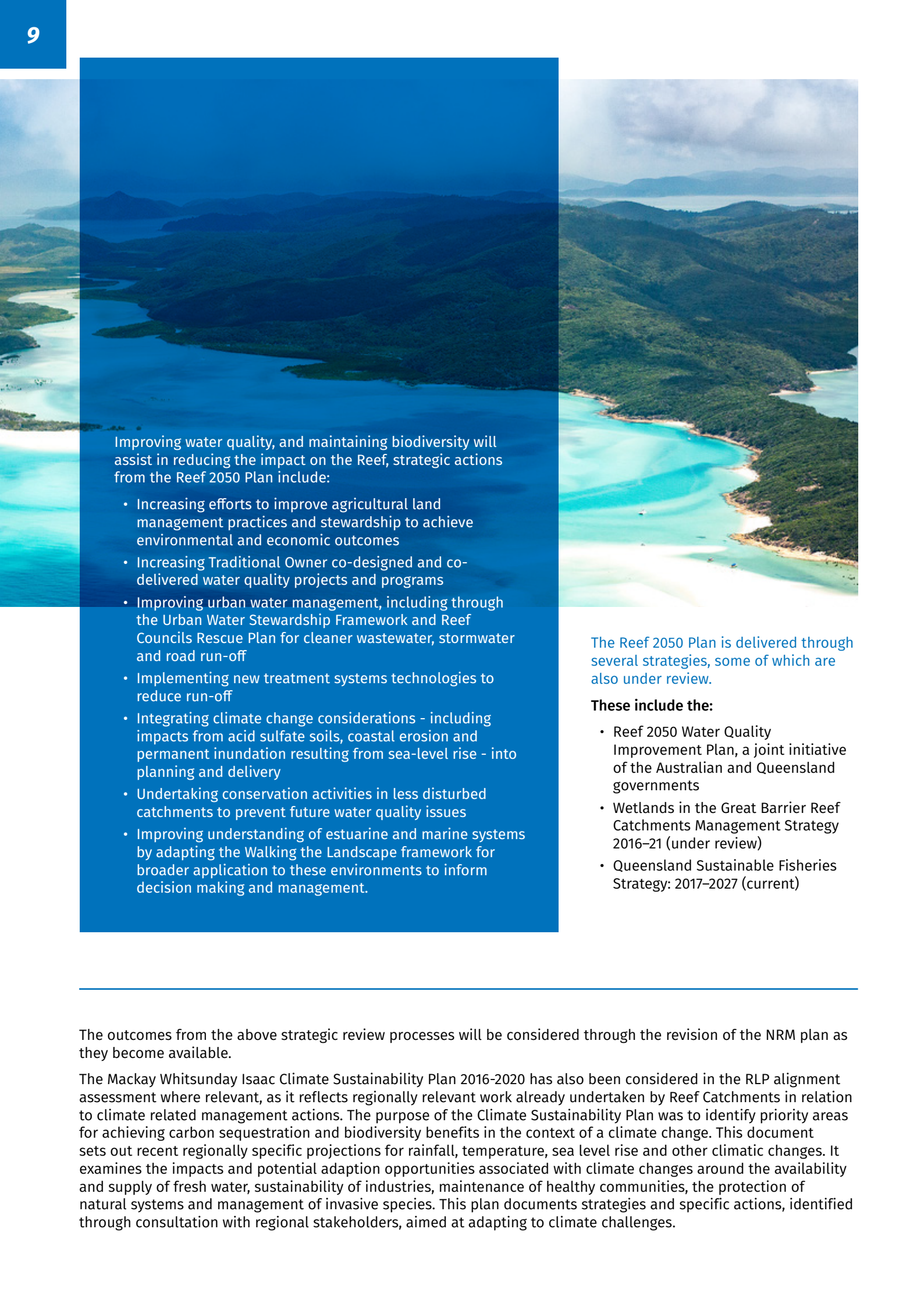
## Reef 2050 Long-term Sustainability Plan

***The Reef 2050 Long-term Sustainability Plan is the Australian and Queensland Government's overarching framework for protecting and managing the Great Barrier Reef to 2050<sup>6</sup>.***

It responds to the World Heritage Committee's recommendation that Australia develop a long-term plan for sustainable development that protects the Outstanding Universal Value of the reef. The Reef 2050 Plan sets goals, work areas, enablers and outlines how monitoring will be assessed to achieve the goals. The goals are set to drive and track management efforts under the Reef 2050 Plan over 5 years (to 2025). They guide action in areas in the 2019 Outlook Report that require strengthening. Work areas and four enablers describe what will be implemented to deliver the goals, and achieve the objectives and longer term outcomes and vision. Work areas are structured around efforts to address key threats to the Reef; reduce cumulative impacts and protect and conserve the Reef; and enable activities that underpin effective delivery.

<sup>6</sup> The Australian and Queensland governments updated the Reef 2050 Plan in late 2021 as part of the first five year comprehensive review.





Improving water quality, and maintaining biodiversity will assist in reducing the impact on the Reef, strategic actions from the Reef 2050 Plan include:

- Increasing efforts to improve agricultural land management practices and stewardship to achieve environmental and economic outcomes
- Increasing Traditional Owner co-designed and co-delivered water quality projects and programs
- Improving urban water management, including through the Urban Water Stewardship Framework and Reef Councils Rescue Plan for cleaner wastewater, stormwater and road run-off
- Implementing new treatment systems technologies to reduce run-off
- Integrating climate change considerations - including impacts from acid sulfate soils, coastal erosion and permanent inundation resulting from sea-level rise - into planning and delivery
- Undertaking conservation activities in less disturbed catchments to prevent future water quality issues
- Improving understanding of estuarine and marine systems by adapting the Walking the Landscape framework for broader application to these environments to inform decision making and management.

The Reef 2050 Plan is delivered through several strategies, some of which are also under review.

**These include the:**

- Reef 2050 Water Quality Improvement Plan, a joint initiative of the Australian and Queensland governments
- Wetlands in the Great Barrier Reef Catchments Management Strategy 2016–21 (under review)
- Queensland Sustainable Fisheries Strategy: 2017–2027 (current)

The outcomes from the above strategic review processes will be considered through the revision of the NRM plan as they become available.

The Mackay Whitsunday Isaac Climate Sustainability Plan 2016-2020 has also been considered in the RLP alignment assessment where relevant, as it reflects regionally relevant work already undertaken by Reef Catchments in relation to climate related management actions. The purpose of the Climate Sustainability Plan was to identify priority areas for achieving carbon sequestration and biodiversity benefits in the context of a climate change. This document sets out recent regionally specific projections for rainfall, temperature, sea level rise and other climatic changes. It examines the impacts and potential adaption opportunities associated with climate changes around the availability and supply of fresh water, sustainability of industries, maintenance of healthy communities, the protection of natural systems and management of invasive species. This plan documents strategies and specific actions, identified through consultation with regional stakeholders, aimed at adapting to climate challenges.



## Chapter

## 03

*Evaluation Of Alignment  
Between RLP Outcomes  
and the Plan*

## *Identify Gaps*

***The RLP program logic identifies long, medium and short-term outcomes for each of the six RLP outcomes.***

Alignment between the RLP medium term (5-year) and long-term (10 – 20 years) outcomes and the Plan was independently reviewed and characterised into one of three qualitative levels of alignment: moderately aligned, aligned and strongly aligned.

The 21 key outcomes and 103 management actions in the Plan were assessed for their alignment or potential to align (through amendment) with RLP outcomes.

Reef Catchments also undertook a consultation process with community stakeholders to ascertain their aspirations for the revised Plan.

# Stakeholder Consultation

*Reef Catchments engages with stakeholders from a range of backgrounds and interests including agriculture, community groups, industry, local Landcare groups, research institutions, Traditional Owners as well as local, State and Federal government agencies.*

19 Groups were consulted through:

- A series of scoping meetings with ten organisations considered to be key collaborators in the development of the Plan
- A workshop and follow up consultations on stakeholder alignments with 17 key organisations.

These consultations were supported, and followed by a series of thematic and GIS-based assessments of issues relating to RLP outcomes and other investment priorities.

Reef Catchments hosts the Traditional Owner Reference Group (TORG). The TORG is made up of representatives from Yuwibara, Koinmerburra, Barada Barna, Wiri, Ngaro, and Gia and Juru. The group plays a role in supporting Indigenous people and organisations to participate in the delivery of NRM activities.

The group regularly convenes meetings to provide an opportunity to work together with stakeholders and the broader community to improve knowledge of cultural heritage values and NRM issues within the region. Importantly, the group provides guidance on what projects they feel are important for investment.

The TORG was engaged in this review process through its TORG meetings, which at present are held every 4 to 6 months, depending on the availability of the TORG.



**The Traditional Owner Reference Group (TORG) Strategic Plan (2017 – 2027) contains a range of opportunities to link and connect to the Plan.**

- Participating as natural resource users and managers through engagement and employment
- Developing a wide-ranging and proactive communications plan and strategy to increase promotion of cultural heritage and conservation awareness throughout the region. Identifying, documenting, recording, protecting through appropriate management and preserving cultural heritage sites within the region
- Developing management plans and frameworks to generate long-term positive outcomes for cultural heritage values and the environment within the region
- Working with partners to integrate and implement management plan actions
- Establishing structured and measurable outcomes for cultural heritage and conservation management within the region
- Increasing Traditional Owner capacity to manage Country by delivering positive training and development opportunities
- Developing and implementing Indigenous land and sea management activities and skills into programs and projects
- Collaborating with partners to maintain and manage traditional and cultural use of land and sea resources
- Revisiting the potential to establish Indigenous Protected Areas (IPA) within the region
- Promoting best practice cultural heritage management through research, monitoring and adaptive management.





## Stakeholder Aspirations

***Community stakeholders remained generally supportive of the current scope and content.***

Community aspirations for NRM management are captured in the current Plan through its vision, values and guiding principles and are intended to be delivered through the implementation of key outcomes and management actions comprising six system goals.

## Approach to Address Gaps

***The Regional Land Evaluation Plan program logic indicator's have been examined in relation to the Plan's outcomes and management actions to create a framework to assess how future alignment with improved RLP outcomes can be improved.***

As the indicators are a measure of evidence-based performance or progress that is sought from decision-makers, they have are a useful measure to assist in reframing future outcomes and actions.

The Plan supports monitoring programs through management outcomes, although the Plan is not the monitoring mechanism. The RLP indicators provide a focus point from which to examine how the Plan and its associated actions can ensure RLP outcomes are achieved in the future.



# RLP Outcomes

## Outcome 1 - Ecological Character of Ramsar Sites

Currently, there is no Ramsar site in the MWI region, however stakeholders recommended that a site be nominated as a Ramsar site. This would require a scoping activity on the desirability, feasibility and utility of developing a nomination, as well as an agreement on the site or sites to be nominated. Candidate sites are most likely those listed in the Directory of Important Wetlands in Australia (DIWA), which include all inlet areas along the MWI region's coastline (**Annexure II**).

Numerous key outcomes support a nomination and would be aligned if a nomination were successful. Depending on the nature of the site(s) nominated and the nomination itself, key outcomes for each system that would potentially align with this RLP outcomes are identified in the adjoining table.

NRM System	Outcome Description
People	P3 -Traditional Owners have a role in decision making and action regarding stewardship of Country
Terrestrial	TE1 - Promote a collaborative multistakeholder approach to identify sustainable land use options
	TE3 - High biodiversity natural areas actively managed to maintain and improve their ecosystem function
	TE4 - Ecosystems Services delivered by natural areas are understood and valued by the broader community
Coastal and Marine Environment	CME2 - Coastal Communities' capacity is increased so they can take part in active management of coastal and marine environments
	CME3 - High priority coastal and marine areas are actively managed to ensure natural areas are maintained
Agriculture	A1 - Landholders have capacity and knowledge to move towards implementation of evolving best management practice activities



## Outcome 2 - Trajectory of Threatened Species

The MWI region includes a wide array of nationally threatened species including 21 birds, one amphibian, 13 mammals, nine reptiles, three sharks and 17 plants. The following is a list of the Plan's key outcomes that are aligned with RLP outcomes.

The extent of this alignment will vary according to the size and distribution of each threatened species population.



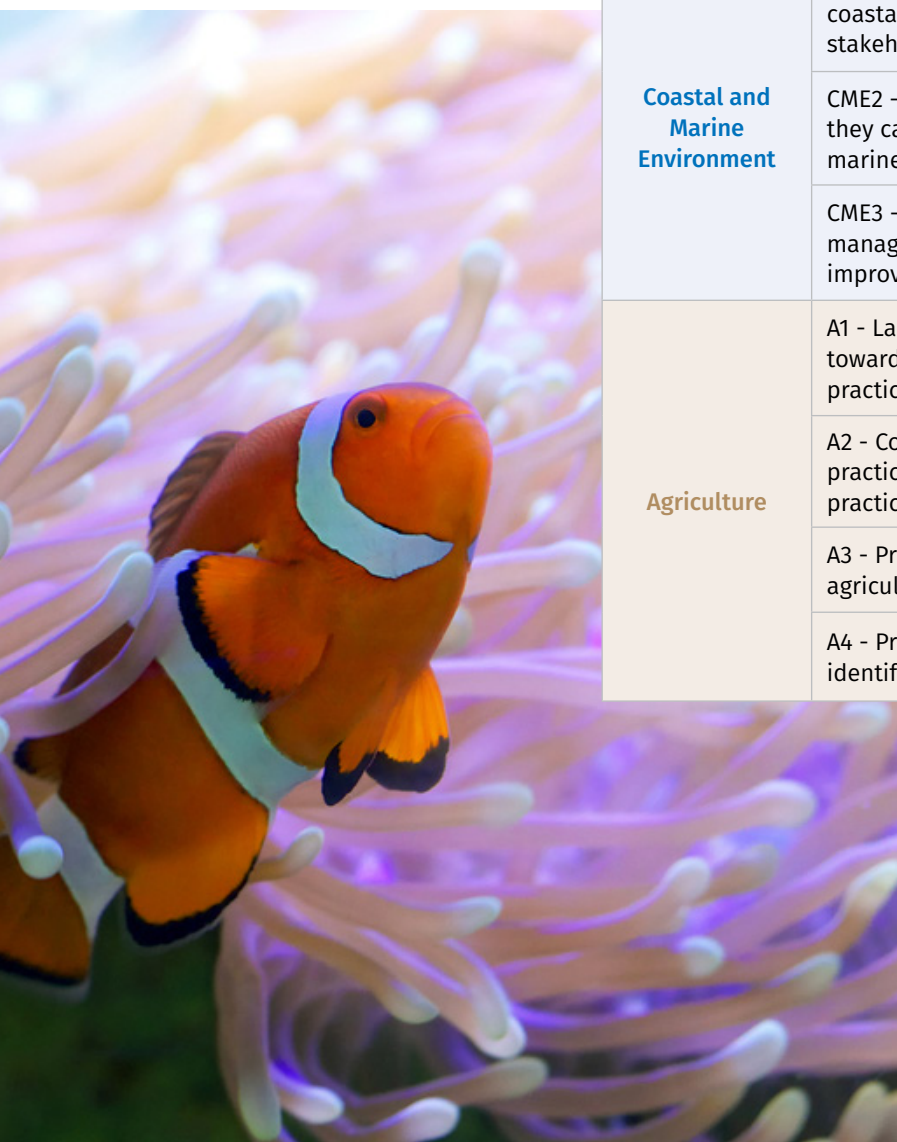
NRM System	Outcome Description
People	P1 - Rural and urban land users have capacity to make informed decisions about the land
	P3 - Traditional Owners have a role in decision making and action regarding stewardship of Country
Terrestrial	TE1 - Promote a collaborative multistakeholder approach to identify sustainable land use options
	TE2 - Regional land use planning and activities integrate maintenance and connection of valuable biodiversity areas
	TE3 - High biodiversity natural areas are actively managed to maintain and improve their ecosystem function
	TE4 - Ecosystem services delivered by natural areas are understood and valued by the broader community
Coastal and Marine Environment	CME1 - Integrated and multidisciplinary marine and coastal plans are developed and implemented by stakeholders
	CME2 - Coastal communities' capacity is increased so they can take part in active management of coastal and marine environments
	CME3 - High priority coastal and marine areas are actively managed to ensure natural areas are maintained or improved
Agriculture	A1 - Landholders have capacity and knowledge to move towards implementation of evolving best management practice activities
	A2 - Continuous improvement of best management practice to reflect innovative science, knowledge and practice
	A3 - Promote the vision and viability of a diverse range of agricultural options
	A4 - Protect highly productive agricultural land and identify areas for production
Industry	I1 - A more diverse profile of industries exist in the region
	I2- Industry has the capacity to be environmentally sustainable, and to promote this
	I3 - Industry sectors are integrated and land use planning considers environmental, economic, cultural and social elements
Climate	C1 - Assist communities to understand existing and projected future climate change using scientifically validated, easy to understand, regionally specific and up to date information
	C2 - Support stakeholders to plan and make decisions based on future climate change scenarios
	C3 - Promote and support emerging mitigation and adaptation opportunities and action.

## Outcome 3 - Outstanding Universal Value of World Heritage Area

The only World Heritage Area in the region is the Great Barrier Reef (GBR).

The Plan recognises the GBR as a World Heritage site and most of the key outcomes align with this RLP outcome, although the extent of the alignments may need to be strengthened.

NRM System	Outcome Description
People	P1 - Rural and urban land users have capacity to make informed decisions about the land
	P2 - Communities are more self-sufficient and as a result, more resilient
	P3 - Traditional Owners have a role in decision making and action regarding stewardship of Country
Terrestrial	TE1 - Promote a collaborative multistakeholder approach to identify sustainable land use options
	TE2 - Regional land use planning and activities integrate maintenance and connection of valuable biodiversity areas
	TE3 - High biodiversity natural areas are actively managed to maintain and improve their ecosystem function
	TE4 - Ecosystem services delivered by natural areas are understood and valued by the broader community
Coastal and Marine Environment	CME1 - Integrated and multidisciplinary marine and coastal plans are developed and implemented by stakeholders
	CME2 - Coastal communities' capacity is increased so they can take part in active management of coastal and marine environments
	CME3 - High priority coastal and marine areas are actively managed to ensure natural areas are maintained or improved
Agriculture	A1 - Landholders have capacity and knowledge to move towards implementation of evolving best management practice activities
	A2 - Continuous improvement of best management practice to reflect innovative science, knowledge and practice
	A3 - Promote the vision and viability of a diverse range of agricultural options
	A4 - Protect highly productive agricultural land and identify areas for production





## Outcome 4 - Threatened Ecological Communities

Three Threatened Ecological Communities (TECs) are mapped for the MWI region (**Annexure II**).

### They include:

1. Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland - of which 43.86% of the national distribution lies within the MWI region
2. Littoral Rainforest and Coastal Vine Thickets of Eastern Australia – of which 15.76% of the national distribution within the MWI region
3. Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions – of which only 0.11% of the national distribution lies within the Region.

The vine thickets lie along the coastal strandline while the remaining (remnant) *Melaleuca* forests and woodlands tend to occur in near-coastal localities (**Annexure II**) though they were once more widespread in lowland areas. Much of the latter lies on freehold land. Other listed TECs that may occur but have not yet been mapped in the MWI region are the natural grasslands of Central Queensland, and the poplar box grassy woodlands on alluvium.

Regional ecosystems with a biodiversity status of endangered or of concern<sup>7</sup> include the TECs described above and account for 10% (90,000 ha.) of the MWI region.

<sup>7</sup> In addition, Queensland's biodiversity status also assesses the condition of remnant vegetation as:  
• Endangered (E) • Of Concern (OC) • No Concern at Present (NC).

### These are concentrated in:

- Offshore islands
- Eastern eucalypt woodlands to Open Forest associated with:
  - the Whitsundays
  - slopes of the range west of Dittmer
  - between Calen and Marian
  - the Eton and Clairview areas
- Riparian areas of the Gregory, O'Connell and Proserpine Rivers
- The eucalypt dry woodlands on inland depositional plains south-west of Eton

- Mangroves associated with the Goorganga Plain, from Ball Bay to Alligator Creek, Rocky Dam Creek, and further south from Cape Palmerston to Clairview.

The following key outcomes in the current Plan are aligned with this RLP outcome, though the extent of this alignment will vary according to the location, size, distribution and threats to each TEC.

NRM System	Outcome Description
People	P1 - Rural and urban land users have capacity to make informed decisions about the land
	P3 - Traditional Owners have a role in decision making and action regarding stewardship of Country
Terrestrial	TE1 - Promote a collaborative multistakeholder approach to identify sustainable land use options
	TE2 - Regional land use planning and activities integrate maintenance and connection of valuable biodiversity areas
	TE3 - High biodiversity natural areas are actively managed to maintain and improve their ecosystem function
	TE4 - Ecosystem services delivered by natural areas are understood and valued by the broader community
Coastal and Marine Environment	CME1 - Integrated and multidisciplinary marine and coastal plans are developed and implemented by stakeholders
	CME3 - High priority coastal and marine areas are actively managed to ensure natural areas are maintained or improved
Agriculture	A1 - Landholders have capacity and knowledge to move towards implementation of evolving best management practice activities

## Outcome 5 - Land Management Practices

The MWI region comprises a diverse agricultural sector, with the most prominent commodities being grazing, sugarcane and horticulture. Many farmers and supporting agricultural industries are improving the profitability and long-term sustainability of their operations by adopting best management practices and increasing on-farm innovation. Through these measures, they are also improving the condition of soil, biodiversity and vegetation.

The RLP sets out specific outcomes and indicators through which the condition of soil, biodiversity and vegetation on agricultural land will be managed and improved. The key outcomes identified within the Plan, relevant to and which are aligned with the RLP outcomes, are summarised.

NRM System	Outcome Description
Terrestrial	TE1 - Promote a collaborative multistakeholder approach to identify sustainable land use options
	TE2 - Regional land use planning and activities integrate maintenance and connection of valuable biodiversity areas
Agriculture	A1 - Landholders have capacity and knowledge to move towards implementation of evolving best management practice activities
	A2 - Continuous improvement of best management practice to reflect innovative science, knowledge and practice
	A3 - Promote the vision and viability of a diverse range of agricultural options
	A4 - Protect highly productive agricultural land and identify areas for production
Climate	C1 - Assist communities to understand existing and projected future climate change using scientifically validated, easy to understand, regionally specific and up to date information
	C2 - Support stakeholders to plan and make decisions based on future climate change scenarios
	C3 - Promote and support emerging mitigation and adaptation opportunities and action





## Outcome 6 - Climate and Market Demands

Land modification associated with human land uses has resulted in extensive clearing and fragmentation of the MWI region's natural landscapes. As a result, the capacity of the region's natural systems to respond to disturbance or change, such as climate change, is significantly reduced (Hilbert et al. 2014). The additional pressures associated with ongoing human land uses (e.g. urbanisation, industrialisation, primary production) further reduce the ability of natural systems to adapt to a changing climate. Likewise, changes to frequency and intensity of climate variables such as temperature and rainfall and extreme weather events have the propensity to impact agricultural crops, reducing the footprint of viable land for primary production, yield, and profitability.

To this end, the RLP sets out specific outcomes and indicators relating to the adaptability of agricultural systems to changes in environmental and social (market) drivers, principally centered around sustainability and climate change. Long-term outcomes are assessed, in part, using an indicator relating specifically to water use efficiency in irrigated agriculture (owing to its importance in driving climate risk mitigation and adaptation).

The key outcomes identified within the Plan, relevant to and which are aligned with the RLP outcomes, are summarised in the next table.

NRM System	Outcome Description
Agriculture	A1 - Landholders have capacity and knowledge to move towards implementation of evolving best management practice activities
	A2 - Continuous improvement of best management practice to reflect innovative science, knowledge and practice
	A4 - Protect highly productive agricultural land and identify areas for production
Industry	I1 - A more diverse profile of industries exist in the region
	I2- Industry has the capacity to be environmentally sustainable, and to promote this
Climate	C1 - Assist communities to understand existing and projected future climate change using scientifically validated, easy to understand, regionally specific and up to date information
	C2 - Support stakeholders to plan and make decisions based on future climate change scenarios
	C3 - Promote and support emerging mitigation and adaptation opportunities and action.



# RLP Outcomes Assessment Results

## Outcome 1 - *Ecological Character of Ramsar Sites*

The following table depicts that there is no alignment between the RLP long-term and medium-term outcomes with the Plan's key outcomes as there is no Ramsar site. However, the table reflects which management actions in the Plan could support the identification and management of a Ramsar site should one be nominated for the region.

RLP and NRM Key Outcome Alignment	RLP & Management Action Alignment						Plan Alignment with Medium-Term Indicators from RLP Program Logic
People							
Currently not aligned (no Ramsar wetland in region)	1-2		3		4-19		Not aligned
Terrestrial Environment							
Not aligned	1	2-4	11-17	18-20	21	22	Not aligned
Agriculture							
Not aligned	1		4		6		Not aligned
Coastal and Marine							
Not aligned	1-2	4	6	7-8	9	10-12	Not aligned

Moderately aligned
  Aligned
  Strongly aligned





## *Alignment with Indicators*

There are no relevant indicators in the current Plan for Ramsar outcomes as there are no Ramsar sites within the MWI region. Future indicators relating to core services in the RLP logic would be added should a nomination be successful, however a nomination process is historically a longer-term endeavour.

Ramsar site nominations can be initiated by the Australian, state and territory governments, Non-Government Organisations (NGOs), community entities, trusts, Traditional Owners, individuals, private landowners or a company. Proposed nominations on state or private land require support from the relevant state government. Nominations for sites wholly within Commonwealth land require Australian Government support. In practice, most Ramsar site nominations are proposed and developed by the state or territory governments, which have priorities for new Ramsar sites and processes for reviewing and supporting Ramsar nominations. Nominations may also be made based on priorities agreed by the Australian, state and territory governments (DSEWPC, 2012).

At this stage in the Plan revision, commentary only is provided about the values of each and mapping of the Directory of Important Wetland in Australia (DIWA) sites in the region. The revised Plan may provide a framework to support new management actions around Ramsar wetlands to support high biodiverse values or high ecological values in the existing terrestrial and coastal and marine environment sections.

## Proposed Key Outcomes

These could include:

- Undertaking a collaborative approach to determine which DIWA sites should be put forward as a Ramsar site nomination
- Identify, confirm, engage with stakeholders and understand the commitments required to nominate and then maintain a Ramsar site
- Support Traditional Owners in their actions to seek legal rights or interests in land or sea stewardship options through a Ramsar nomination.

A focus on the role of wetlands in fresh and coastal water quality health could also provide substantive new context for the revised Plan. Stakeholders have noted the revised Plan would benefit from greater emphasis on water and wetlands.

**The Plan revision could raise wetland management as a regional goal with management actions around Ramsar wetland and stream health and include a new key outcome on wetlands and water like:**

- Promote a collaborative multi-stakeholder approach to nominating a site for Ramsar listing
- Raise awareness on wetland and water values in the region
- Develop a case study on how Traditional Owners understand and experience wetlands.



**The stakeholder engagement process also revealed the following concerns in relation to wetland and water management.**

“Water should be included amongst the regional goals.”

“The plan should provide for consideration for a Ramsar wetland listing in the region, possibly the Goorganga Wetland or one of the other sites listed in the DIWA.

“The greatest loss in biodiversity is in freshwater ecosystems. There is a need to find ways to identify and collect the data and monitor what is occurring in the waterways, including the use of fish DNA surveys. Citizen science has a role to play in the identification of field issues and responses to them.”

“Stream and landscape connectivity – particularly in relation to fish habitat and riparian habitats are high priority outcomes as they can be easily measured, deliver joint benefits

and provided the best return on investment value.”

“Irrigation and water use is missing (from the plan)”

**Conflicting issues will also need consideration in devising management actions as Reef Catchments stakeholders have different and valid viewpoints, such as those below:**

“The plan should prioritize actions, such as connectivity along waterways”.

“Many landholders do not want connectivity, as it brings pests”.

“Wetland management has not received much community exposure as they are generally managed by landowners. Land tenure, including Native Title, should be considered as the bulk of the land is private property. It is important to engage with landowners to discuss the future of wetlands”.





## ***Proposed Management Actions***

**Possible management actions could include:**

- Contribute to and coordinate a scoping exercise with key supporting stakeholders to identify a wetland site in the region with clear evidence that the site is internationally important (that it meets at least one Ramsar criteria)
- Promote awareness regarding the chosen wetland site regarding its values
- Undertake a collaborative consultative process to understand the implications of a Ramsar nomination with affected landholders
- Contribute to the development of the nomination requirements such as the Ramsar Information Sheet; boundary description and map(s); an ecological character description; a management plan or system; and a summary of consultative outcomes for the nomination.



## Outcome 2 - *Trajectory of Threatened Species*

The two tables below have characterised the alignment of the Plan firstly against with the medium-term RLP outcome with the key outcomes and secondly the management actions against the medium-term program indicators. Both tables show this alignment assessment across the range of system based or regional goals (i.e. people, terrestrial environment etc). This assessment has also evaluated (in a simplistic manner) how well terrestrial, aquatic and marine species fare (as a broad habitat grouping), reflecting on the broader biodiversity of threatened species found in the region.

RLP Outcome 2 (Threatened Species) – RLP Outcomes – Management Action Plan Alignment

NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcome											
	Terrestrial species						Aquatic species		Marine species			
Terrestrial Environment	2	3	4	7	12	20	-		-			
Coastal and Marine Environment	12						-		3	4	10	12
Agriculture	2						2		2			

RLP Outcome 2 (Threatened Species) – RLP Indicators – Management Plan Alignment

NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Indicators						
	Terrestrial species			Aquatic species		Marine species	
Terrestrial Environment	5	6	16	-		-	
Coastal and Marine Environment	-			-		4	
Agriculture	4			4		4	

Moderately aligned
  Aligned
  Strongly aligned



## Alignment with RLP Outcomes

There are a number of aligned NRM management actions with the overall medium-term program outcome for Outcome 2 of the RLP evaluation plan. Many of the aligned management actions provide for the improvement of species trajectories, however, there is a distinct lack of rationale for the assessment and election of key threatened species to monitor. Furthermore, the Management Actions do not specifically provide for aquatic species, instead there is a focus on terrestrial and marine species.

There are a small number of aligned management actions with the medium-term program-level indicators and the project-level indicators. Many of the management actions provide a vague mechanism to measure the project-level indicators but fail to consolidate the data and report on the indicators as required by the RLP evaluation plan. Furthermore, the NRM management actions poorly align with measuring or reporting on the program-level indicators.

## Alignment Proposed Management Actions with RLP Outcomes

### Climate Sustainability Plan 2016-2020

Priority action S4 A5 (Pg 66), of the MWI Climate Sustainability Plan, identifies implementing monitoring programs for species which are vulnerable to crossing resilience threshold. Data from these surveys may assist in satisfying the RLP indicators. It is possible that this priority action could strongly align with the RLP Evaluation Plan's project-level indicators if designed to monitor the relevant species indicators.

As mentioned above, alignment has been identified between the NRM management actions and the RLP Evaluation Plan's outcomes. Demonstrating that these outcomes have been achieved, requires more focus on measures and presenting the program and project-level indicators.

#### Suggested actions include:

- Implement a management action which identifies key threatened species and establishes targeted species surveys
- Identify potential strategies for managing threatened vegetation
- Review management actions and identify areas to expand existing actions to include freshwater aquatic species
- Prepare an annual report which tracks key threatened species population, distribution, abundance, reproductive rates, mortality rates, and status trajectory. This report would compile the survey results of any targeted species conducted by volunteers or other funded groups
- Provide for high-level analysis of the effectiveness and suitability of threatened species projects, importantly, this analysis should identify the proportion of projects showing positive indicators (by species), and the proportion of species population covered by projects.



**The stakeholder engagement process also revealed the following concerns in relation to threatened species.**

#### The plan's outcomes should include:

"Long term success for species in terms of decreased mortality rates, increased abundance/populations, and increased habitat connectivity"

"Land use management and property management of land that threatened vegetation occurs on"

"Protection of habitat more generally including monitoring of habitat status and threats"

"Discussions on threatened species focused on koalas and turtles"

"There is a need to ground truth and monitor koala populations and use of vegetation communities and corridors to ascertain if there is a reduction in reproduction rates"

"Medium to long term outcomes required for koalas (and other threatened fauna) are a decrease in mortality rates (road and rail kill), increased populations with more sightings reported, and revegetation"

"With respect to turtles there is a core need to facilitate collaboration between all stakeholders to ensure that key issues are addressed"

## Outcome 3 - Outstanding Universal Value of World Heritage Area

The two tables below have characterised the alignment of the Plan firstly with the medium-term RLP outcome with the management actions and secondly the Plan's management actions against the medium-term program and project indicators. Both tables show this alignment assessment across the range of system based or regional goals in the NRM Plan (i.e. people, terrestrial environment etc). These tables show as sub-elements, each indicator as discussed in the medium-term program logic.

RLP Outcome 3 (Outstanding Universal Values) – RLP Outcomes with NRM Plan Management Plan Alignment

NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcome									
	Proportion of projects showing positive indicators (By World Heritage property)	Proportion of World Heritage property (s) covered by project	Proportion of total area that is free from invasive species		Proportion of total area/ population that is free from disease or change of disease impact (e.g. fatality rates)	Proportion of the total area over which an appropriate fire management plan has been successfully implemented (with supporting data on fire frequencies)		Proportion of total area over which disturbance by visitors is negatively impacting on natural heritage OUV	Increase in the total area over which sustainable management (e.g. stocking rates, clearing rates etc.) has been implemented	Proportion of area (water bodies) where nutrient levels have been reduced to within safe limits
People	-	-	-		-	4	5	-	-	-
Terrestrial Environment	-	-	15	16	-	12		-	-	-
Coastal and Marine Environment	-	-	3		10	13	-		-	11
Agriculture	-	-	11		-		-		-	1247
Climate	-	-	-		-	2	6	11	-	-

RLP Outcome 3 (Outstanding Universal Values) – RLP Indicators NRM Plan Management Action Alignment

NRM Regional Goal	Alignment Rating of Relevant NRM Management Actions with RLP Indicators							
	Proportion of projects showing positive indicators (By World Heritage property)	Proportion of World Heritage property (s) covered by project	Proportion of total area that is free from invasive species	Proportion of total area/ population that is free from disease or change of disease impact (e.g. fatality rates)	Proportion of the total area over which an appropriate fire management plan has been successfully implemented (with supporting data on fire frequencies)	Proportion of total area over which disturbance by visitors is negatively impacting on natural heritage OUV	Increase in the total area over which sustainable management (e.g. stocking rates, clearing rates etc.) has been implemented	Proportion of area (water bodies) where nutrient levels have been reduced to within safe limits
Terrestrial Environment	-	-	16	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-	12

Moderately aligned
  Aligned
  Strongly aligned



## Alignment with Indicators

There are a number of the Outstanding Universal Value (OUV) program outcomes and project achievements and progress indicators that do not appear to be aligned to existing management actions and their likely embedded measures. Key amongst these relate to disease, fire management areas, disturbance by visitors, implementation of sustainable management as expressed by stocking rates or clearing rates, and water bodies where nutrient levels have been reduced to safe limits. It would assist with the alignment of this RLP outcome with current and future activities undertaken in the region if the world heritage area was used as one of the reporting units for a range of existing and new indicators.

For example, it may be appropriate to establish a measure of where invasive species have been controlled within the world heritage property and how successful this has been in collaboration with key stakeholders such as; crown of thorns by individual reefs; or key threatening invasive species within the Queensland Parks and Wildlife Service (QPWS) estate; or in proposed / existing environmental corridors.

Reef Catchments currently run programs relating to visitor experiences in tourism activities in the region, including the Great Barrier Reef, which could be reported on through a revised reporting framework.

## Proposed Key Outcomes

- Develop a dedicated fire management outcome in the Plan that focusses on a landscape level approach to fire management and works across the range of land tenure arrangements and stakeholders.

This outcome could also be tied into RLP outcome 3 (TEC).



**Stakeholder discussion indicated the merits of establishing a strategic approach to partnerships including around wildfire and introduced species.**

“Who is doing what and how to find them”- (as a major issue in relation to fire management in the region)

(There is a need to) “maximise the use of available resources by working together to achieve more specific and targeted partnerships through building relationships between stakeholders”.

“Synergies between groups can help counter staff limitations and restricted resources”.

“Introduced species and how we deal with new and existing introduced species needs to be a big part of the plan”



## Proposed Management Actions

From these concerns the following management actions are proposed.

- Develop a case study on a fire management regime that has been tailored according to vegetation types, land management use
- Establish a network of resources/people/agencies that can provide on-ground fire management resources for the area
- Investigate a mechanism to support a variety of stakeholders and others who want to burn at the right place and time
- Ensure that visitors have access to information about introduction of invasive weeds, and measures to minimize the impact of their visits
- Engage with the range of stakeholders whose actions and responsibilities affect the character and quality of the range of outstanding natural values of the Great Barrier Reef to facilitate information flow, collaboration and collection of data on change in OUV values
- Establish links between regional water quality improvement plan monitoring and OUV reporting.



**Outcome 4 - Threatened Ecological Communities**

The two tables below have characterised the alignment of the Plan firstly with the medium-term RLP outcome with the management actions and secondly the management actions against the medium-term program and project indicators. Both tables show this alignment assessment across the range of system based or regional goals in the Plan (i.e. people, terrestrial environment etc). As the Plan does not specifically discuss threatened ecological communities or indicators for TECs, an assessment against the sub measures has not been included.

RLP Outcome 4 (Threatened Ecological Communities) - Outcomes NRM Plan Alignment

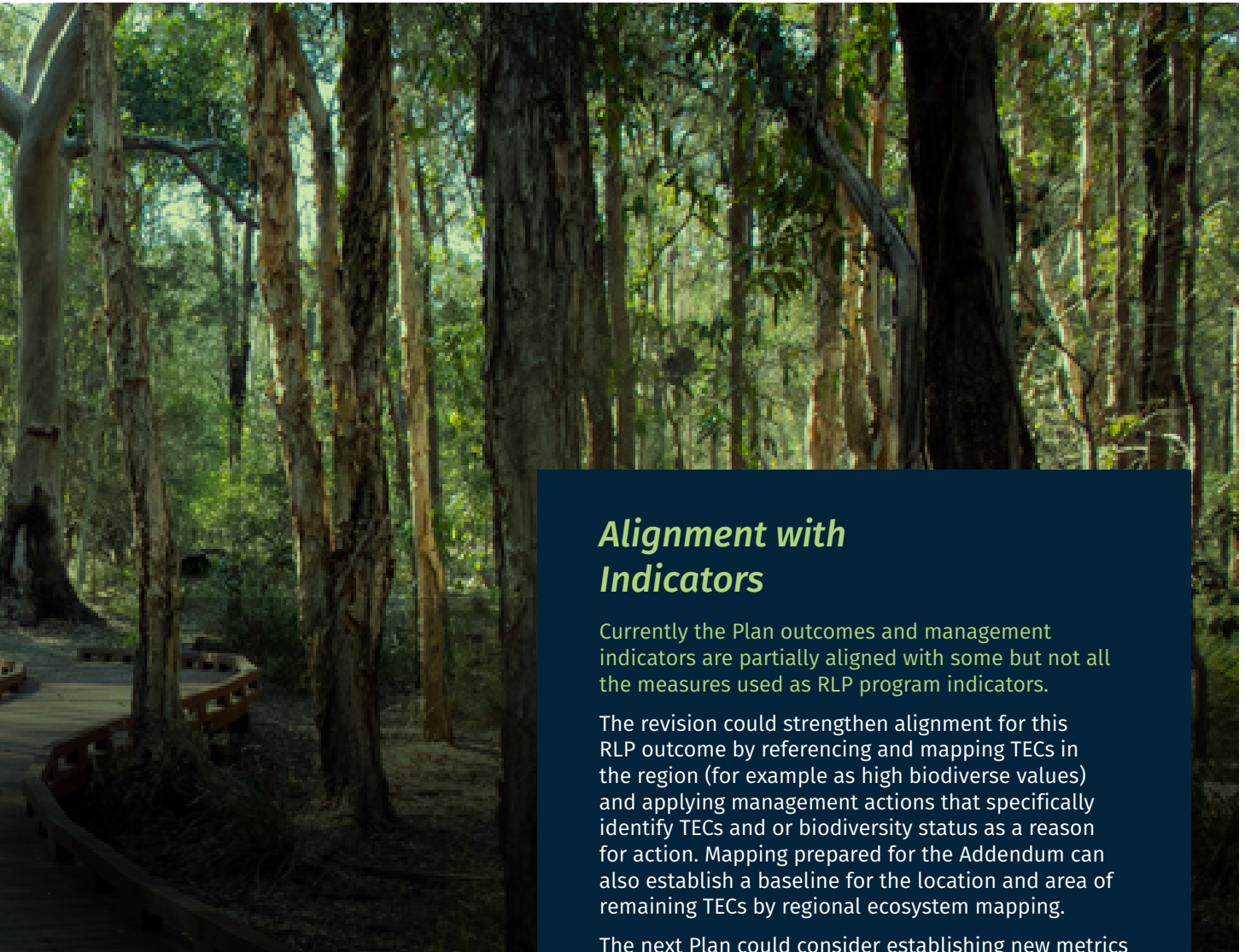
NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcomes Medium Term Outcomes					
Terrestrial Environment	11	12	13	14	16	22

RLP Outcome 4 (Threatened Ecological Communities) - Indicators NRM Plan Alignment

NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcomes Medium Term Indicators
Terrestrial Environment	16

Moderately aligned Aligned Strongly aligned





## Alignment with Indicators

Currently the Plan outcomes and management indicators are partially aligned with some but not all the measures used as RLP program indicators.

The revision could strengthen alignment for this RLP outcome by referencing and mapping TECs in the region (for example as high biodiverse values) and applying management actions that specifically identify TECs and or biodiversity status as a reason for action. Mapping prepared for the Addendum can also establish a baseline for the location and area of remaining TECs by regional ecosystem mapping.

The next Plan could consider establishing new metrics that link the RLP measures with current and future program indicators (as outlined in the short-term outcomes) to maximise baseline assessment and progress measures.

## Proposed Key Outcomes

Proposed key outcomes as suggested by stakeholder engagement include:

- Develop a key outcome on management of TECs and Queensland's endangered or of concern areas
- Clarify issues and opportunities and identify potential strategies for managing threatened vegetation including developing a map-based assessment of the intersection of these areas with tenure including forest reserve, freehold, leasehold, national park, state forest etc
- Develop a regional vegetation management framework which includes revegetation, rehabilitation, restoration, and 'renovating nature'.

## Proposed Management Actions

- Collaborate with key stakeholders to identify the best east-west or ridge to reef connectivity corridor(s) that also contain TECs and biodiversity status values as areas of concerted management focus.

The current Plan discusses connectivity and wildlife corridors (connectivity is one of the RLP measures for TEC) for the Clarke-Connors Range, a wildlife corridor of state significance. Strengthening habitat connectivity and increasing buffer areas, will address the fact that there is considerable north - south connectivity along the range, but east - west connectivity is limited and may pose issues for wildlife, including koalas.

Stakeholders also noted that road corridors provide some connectivity but are often under threat from required road upgrades. Strategies from the Climate Sustainability Plan 2016-2020 for the MWI region, may also be relevant to the revised Plan, particularly in relation to the treatment of higher altitude ecosystems, gullies and stream refugia in response to climate change; changing temperatures and impacts on plant and animal communities, changes in invasive species, fire behaviour and risk (refer to the mapping in the Plan of biodiversity planning assessment priority areas, regrowth benefit priorities of high biodiversity values, system repair and water quality management priority locations, and climate adaption priorities for vertebrates).

The Climate Sustainability Plan discussed a range of regional priorities such as identifying refugia for biodiversity for future protection and restoration and associated movement corridors and stepping-stones. The Climate Sustainability Plan also mapped a range of landscape scale priorities for biodiversity connectivity and resilience to climate change. During the Plan revision, Reef Catchment and stakeholders will review these maps, having consideration for TECs, and areas of regional and cultural values.

### Other relevant strategies that could be useful to consider to meet a range of the RLP outcomes include:

- Develop a central database of scientific work being carried out in the region and provide access to key information e.g. vegetation mapping
- Prepare for changed and potentially increased impacts from pests, weeds and diseases
- Improve biosecurity in the region
- Provide ongoing support to the Mackay Regional Pest Management Group to monitor and lead a regional approach to pest management
- Prioritise pest management into areas such as islands (where complete eradication is more achievable), critical seabird, turtle nesting sites or areas of high value for MNES
- Implement coastal planning laws based on the best available science (including sea level rise) to ensure recognition and protection of ecologically significant areas (e.g., wetlands), land for future conservation, maintenance of ecosystem services and buffering from climate extremes
- Add to the protected area estate
- Map refugia and plan for the protection of high value climate refugia. Target restoration activity based on current and future conditions. Secure protection for MNES
- Plan and implement a biodiversity corridor or stepping-stone program to improve landscape connectivity and promote migration of species. Consider both landward and southern shifts, with a preference for combined outcomes (carbon and biodiversity), where possible
- Identify and monitor species and habitats vulnerable to crossing resilience thresholds
- Consider species or ecosystems that may require active conservation to preserve a high value patch into the future with innovative conservation options (e.g. artificial microclimate simulation options) or through assisted translocation of species or communities. This may be required for ecosystems on the southern boundary of the wet tropics cluster to assist relocation of species over the dry tropics landscape to its next preferred climatic location in the MWI region.





**The stakeholder engagement raised a range of issues in relation to TECs and connectivity.**

“Peri urban expansion and reduction of lot sizes may have some impacts including run off, siltation in creeks, and possible reduction in available habitat for tTECs and threatened species such as the Proserpine rock wallaby. This requires balancing economic and environmental values and begs the question “What is the role of the NRM Plan in delivering the best possible outcome?” as solutions may not meet all stakeholders’ expectations”.

“The development of environmental corridors also faces a similar dilemma. While clearly an important component of NRM, especially in a fragmented landscape, agricultural stakeholders frequently feel that these exacerbate pest and weed problems and fire risk. This demonstrates the need to integrate biosecurity measures with corridor development and enhancement”.

“Habitat connectivity and buffer areas are key issues that are not being addressed. While figures on the status of threatened species and plant communities may clarify their status, it is the placement of these with respect to threats in the landscape that is critical. While there is considerable north-south connectivity along the ranges, east-west connectivity is limited and poses issues for wildlife including koalas”.

“While some stakeholders are revegetating, species planted are from further south where average temperatures are lower. This causes competition for local species undermining biological objectives of revegetation and may erode genetic diversity as local provenances are not being planted”.

The four tables show the alignment of both the long-term and medium-term RLP outcomes against management actions and indicators, as reflected in each of the Plan's system goals.

An assessment against the relevant outcomes and management actions showed an overall alignment, with key gaps generally associated with a lack of established long-term monitoring of (e.g. on-farm native vegetation and biodiversity) or measures to reconcile this in future works. Where monitoring may exist (e.g. Paddock to Reef program), few references to ongoing support, promotion or enhancement of these programs are made within the existing Plan.

Notably, strong alignment between the Plan and RLP indicators was considered to occur via management actions which promoted innovation beyond the existing Best Management Practice (BMP) framework/s or amendments to maintain its currency and through those which included reference to on-farm monitoring. This approach reflects the quantitative nature of the RLP indicators, which were consistent across medium and long-term outcomes.

Consolidating the linkage between land management practices and long-term monitoring in future iterations of the Plan's management actions may provide the foundation to build support at the regional and local scale. On-farm monitoring projects need to define baseline condition of selected RLP indicators (e.g. on-farm native vegetation and biodiversity) not currently captured within Reef-wide agricultural monitoring. In addition, formalising connections to existing long-term monitoring programs via amended management actions may clarify linkages between industry guidelines (e.g. best management practice adoption and water quality guidelines) and improved environmental outcomes.

Similarly, the evaluation highlighted existing management actions outlined within the Terrestrial Environment (TE) System which could be leveraged or further developed, including measures to support maintenance and restoration of native biodiversity. However, TE outcomes were explicitly defined as relevant to 'natural areas' and 'areas of conservation'. The proposed management actions to reconcile gaps in on-farm biodiversity monitoring and management represent an opportunity to identify overlap in geographical areas of interest and activities relevant to key stakeholders across both systems (**see Chapter 5**).

NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcomes Long Term Outcomes													
Terrestrial Environment	7					8					9			
Agriculture	1	2	3	4	6	8	9	10	11	12	14	17	18	19
Climate	2		4			9			10		11			

NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcomes Long Term Indicators								
Terrestrial Environment	7			8			9		
Agriculture	1	2	3	6	8	9	10	11	12
Climate	10								



NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcomes Medium Term Outcomes										
Agriculture	1	2	3	4	5	6	8	9	12	17	18

NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcomes Medium Term Indicators										
Agriculture	1	2	3	4	5	6	8	9	12	17	18

Moderately aligned
  Aligned
  Strongly aligned

## Proposed Management Actions

### Proposed management actions to reconcile alignment against the RLP outcomes include:

- Coordinate with stakeholders to deliver a regional native vegetation and biodiversity mapping exercise which establishes a baseline for extent and condition on which farmers and industry can improve
- Collaboratively identify regionally specific objectives/targets for on-farm native vegetation and biodiversity extent and condition
- Support existing agricultural working groups in identifying their capacity to progress projects which restore and monitor on-farm native vegetation and biodiversity
- Promote land management practices which have a positive impact on water resources, soil health, native biodiversity, climate resilience and profitability
- (Where they exist) Communicate the outcomes of long-term environmental monitoring programs and trends in the condition of on-farm water, soil and ecosystems in the region
- (If they don't exist) Support sustained on-farm monitoring programs to establish trends in the condition of water, soil and ecosystems within the region
- Support industry and landholders in identification and implementation of innovative practice and technologies to enable continual improvement of best management practice standards.

### Stakeholders identified:

“A general lack of environmental monitoring and feedback. It was also perceived that there was a lack of appropriate industry guidelines and, where they exist, they did not link to the relevant Water Quality outcomes.”

“Use of economic evaluations of practice change, including Return on Investment (ROI), as landholders and industry need to know if practice changes are worth it as well as how effective they are.”

“There is a need to look at a whole farming systems (soil, water, biodiversity, resilience, economic sustainability); at a farm scale and in terms of their collective use and impacts within broader landscapes.”

“Early identification of potential environmental downsides was critical to support planning and risk mitigation.”

“The Plan should not dictate practice but be looking at industry best practices to support adoption and be active and agile in adapting them over the short and longer timeframes. Above industry standard in 2013 should be industry standard now.”

“Clear messaging is needed to maintain confidence in changing practices, given the dynamic environment.”



## Outcome 6 - Climate and Market Demands

The four tables show the alignment of both the long term and medium term RLP outcomes against management actions and indicators, as depicted in each of the Plan's system goals.

## Alignment with Indicators

An assessment of alignment against the relevant outcomes and management actions of the Plan showed broad linkages to RLP medium-term and long-term outcomes for supporting agriculture systems to adapt to change services overall, with selected actions strongly aligned.

Key gaps in alignment were due to the strong focus on supporting landholders to achieve best management practice within the Plan, as opposed to increasing innovative practices which may be required to adapt to market demands for sustainability and climate change. Whilst 'above industry standard' measures are broadly identified within the BMP framework, these were not referenced in the Plan.

Importantly, only one management action relating to irrigation and water use within an agricultural setting was present despite the influence sustainable water management is projected to have on climate change adaptation at a farm and regional scale.

Similarly, no monitoring to support evaluation against several RLP indicators relating to changes in agricultural market trends or, green accreditation and export rates for sustainable agricultural products were identified. As a result, there were moderate alignment between RLP indicators and management actions within the Plan.

NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcomes Long Term Outcomes										
Agriculture	1	7	8	9	10	11	14	17	18	19	20
Industry	1					11					
Climate	1	2	4	5	6	7	8	9	11		

NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcomes Long Term Indicators										
Agriculture	1	7	8	9	10	11	14	17	18	19	20
Industry	1					11					
Climate	1	2	4	5	6	7	8	9	11		



NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcomes Medium Term Outcomes								
Agriculture	4	7	8	9	10	11	14	17	18
Industry	1					11			
Climate	1	2	4	5	6	7	8	11	

NRM System	Alignment Rating of Relevant NRM Management Actions with RLP Outcomes Medium Term Indicators								
Agriculture	4	7	8	9	10	11	14	17	18
Industry	1					11			
Climate	1	2	4	5	6	7	8	11	

Moderately aligned
  Aligned
  Strongly aligned

## Climate Sustainability Plan 2016-2020

Where relevant, existing management actions were also assessed for currency and alignment with the measures identified in the MWI Climate Sustainability Plan. Priority actions identify measures to investigate and implement sustainable water use, however, Reef Catchments is not currently listed as a key stakeholder for these actions. Accordingly, recommendations include a shift in priorities, whereby Reef Catchments would support, promote and deliver projects which progress sustainable use of water resources within the agricultural industry.

Proposed management actions to reconcile alignment against the RLP outcomes include:

- Assist communities to understand existing and projected future climate change using scientifically validated, easy to understand, regionally specific and up to date information
- Promote land management practices which have a positive impact on water resources, soil health, native biodiversity, climate resilience and profitability
- Deliver and promote peer to peer knowledge exchange and learning opportunities between farmers and within industry groups (e.g., sub-catchment scale pilot projects such as Sandy Creek project which involve a local working group that regularly interacts to discuss project outcomes and learnings)
- Support the development of an integrated and collaborative working group chartered with considering resource condition, environmental sustainability, innovation and strategic planning for the delivery of a balance of land uses under a changing climate
- Support land managers to increasingly adopt innovative practices to identify funding grants, accreditation and certification opportunities in a changing market

- Support industry and landholders in the identification of regionally relevant market opportunities related to certified sustainable agriculture through delivering pilot projects or research activities which evaluate the potential environmental and economic risks and benefits
- In collaboration with key stakeholders, support the development of a regionally relevant sustainable water use framework
- Provide opportunities to promote the importance of sustainable water use, allocation and irrigation in adapting to increasing environmental stressors under a changing climate (e.g. similar to the Healthy Soil Symposium, there could be a 'Water in Agriculture' seminar).



**Stakeholders identified a need to include sustainable water use, allocation and irrigation in the Plan.**

"In planning for the future, best practices for all primary industries should be developed and integrate appropriately with the Plan's Outcomes". For example, the aquaculture sector has recently expanded along coastal land within the region, however, there are no BMP guidelines in place and this land is particularly susceptible to climate hazards."

"Increase in the use of technology."

"Capacity building and its links to delivering Outcomes."

"Be proactive, with a focus on the future."

## Key Collaborations

A key component of the revision of the Plan was engagement and consultation. This was conducted through an inception workshop and stakeholder engagement meetings.

### Items discussed included:

- Review process and timelines
- RLP outcomes and Australian investment priorities
- Planning and action frameworks
- Vegetation, ecosystems and species
- Options for oversight of the revised Plan's development and implementation
- Climate variability and risk (wildfire, heat stress)
- And importantly stakeholder goals, outcomes and alignment with RLP outcomes.

Stakeholders were generally familiar and comfortable with the RLP's 5-year outcomes, and the related investment priorities associated with the EPBC Act and the Reef 2050 Long-term Sustainability Plan. Stakeholders noted the broad nature of RLP outcomes and stated that the short-term outcomes are well reflected in the current Plan.

### Regarding RLP outcomes, key points raised of particular importance include:

- Establishment of appropriate industry guidelines and linking these guidelines to water quality NRM outcomes
- Inclusion of water use, allocation, and irrigation in the revised Plan
- Identification of potential environmental downsides and planning for them through risk assessments
- Use of economic evaluations of practice change, including return on investment, as landholders and industry need to know if practice changes are worth it as well as how effective they are
- Outcomes need to be achievable and measurable, with available resources, and those with responsibilities for this clarified. Many outcomes in the current plan are not measurable nor is it easy to define who is responsible for them. All are critical but the outcome hasn't been expressed in a way that identifies how to measure it.



**Stakeholders also raised a range of short-term outcomes in specific areas (which lead to medium term outcomes) that they believed required focus in the Plan.**

### Discussion items at the workshop included:

"There is a need to ground truth and monitor koala populations to ascertain if there is a reduction in reproduction rates, and their use of vegetation communities and corridors.

- Short term outcomes include confirming their geographical extent (records of movement, location, improved mapping) and the status and use of rehabilitated corridors to improve planning and prioritisation of rehabilitation/ remediation activities".

"Medium to long term outcomes required for koalas (and other threatened fauna) are a decrease in mortality rates (road and rail kill), increased populations with more sightings reported, and revegetation.

- Short-term outcomes required also include pest control, community awareness on pet & pest management and on wildlife roadkill strikes during dusk and dawn, e.g. wildlife corridors on Peak Downs Highway".

These outcomes can be integrated across industries. For example, awareness can be adopted and enhanced on grazing properties.



### In agriculture, important short-term outcomes included:

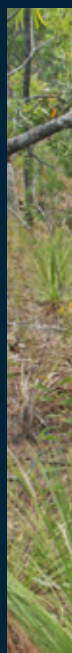
"Water and soil quality are key requirements in themselves and work on them will have flow-on benefits for vegetation and water quality".

"Increase in the use of technology".

"Capacity building and its links to delivering outcomes".

More information on RLP and Reef Trust projects being delivered by Reef Catchments can be found here:

<https://reefcatchments.com.au/projects>





## Gaps in the Plan and New Interests



### Key gaps in the current plan identified by stakeholders were:

“The Plan needs to clearly document how groups of stakeholders can collaborate, which stakeholders are responsible for what actions with an outline on what everyone’s role and responsibilities are, and how funding is sought. This has implications for agreements that are required”.

“There is a role for citizen science. For example, Seagrass Watch does a lot of seagrass monitoring and there is considerable scope for citizen science in work on pests and weeds”.

“There is a need for greater emphasis on soil in the agriculture sector and aquaculture, which is gaining significance in the region but requires good water quality”.

“Peri-urban impacts on water quality should be included in the plan”.

“Water quality frameworks and targets are being updated and will need to be incorporated into the revised Plan. Establishment of appropriate industry guidelines and linking these guidelines to water quality NRM outcomes should be considered in the plan revision”.

“Inclusion of water use, allocation, and irrigation in the revised Plan”.

“Introduced species and how to address both new and existing introduced species as a key component of the revised Plan”.

“There is a need for more basic information as portions of the region are a “research desert” with limited attention paid to most areas as they are far from educational centers that support this work. As a result, scientific research is limited so not all values and threats are identified. Some key endemic species were discovered very late so land management may not address them sufficiently. It would be good to identify scientific interest as an objective of the revised Plan”.

“There is a lack of monitoring and the provision of feedback through the duration of the Plan”.

“Alignment of different practices within the agriculture / industry outcomes”.

Of particular note, were the following new or more explicit themes, key outcomes and management actions:

- Case studies on climate – risk and variability with topics on:
  - Hydrological flows, groundwater reserves and soil moisture
  - Fire history and regime management and implications for biodiversity, weed management, water catchment function and carbon stocks
  - Overall carbon stock management policies and practises in natural and agricultural systems
  - Peri-urban development, lot size and establishment/retention and management of environmental corridors
  - Wetland protection and water management including groundwater and waterways and outcomes that result in improved water quality and riparian and fish habitat
  - Provision for target setting that guides project identification and design.



Chapter

# 04

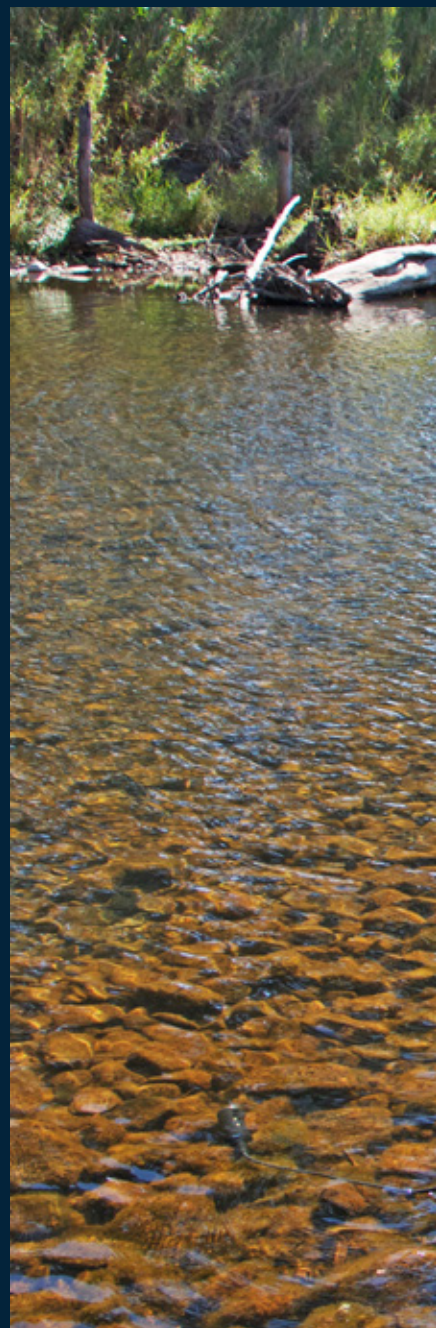
## *Refined Regional Priorities, Outcomes And Management Actions*

### ***Freshwater, Wetlands and Waterway Resources***

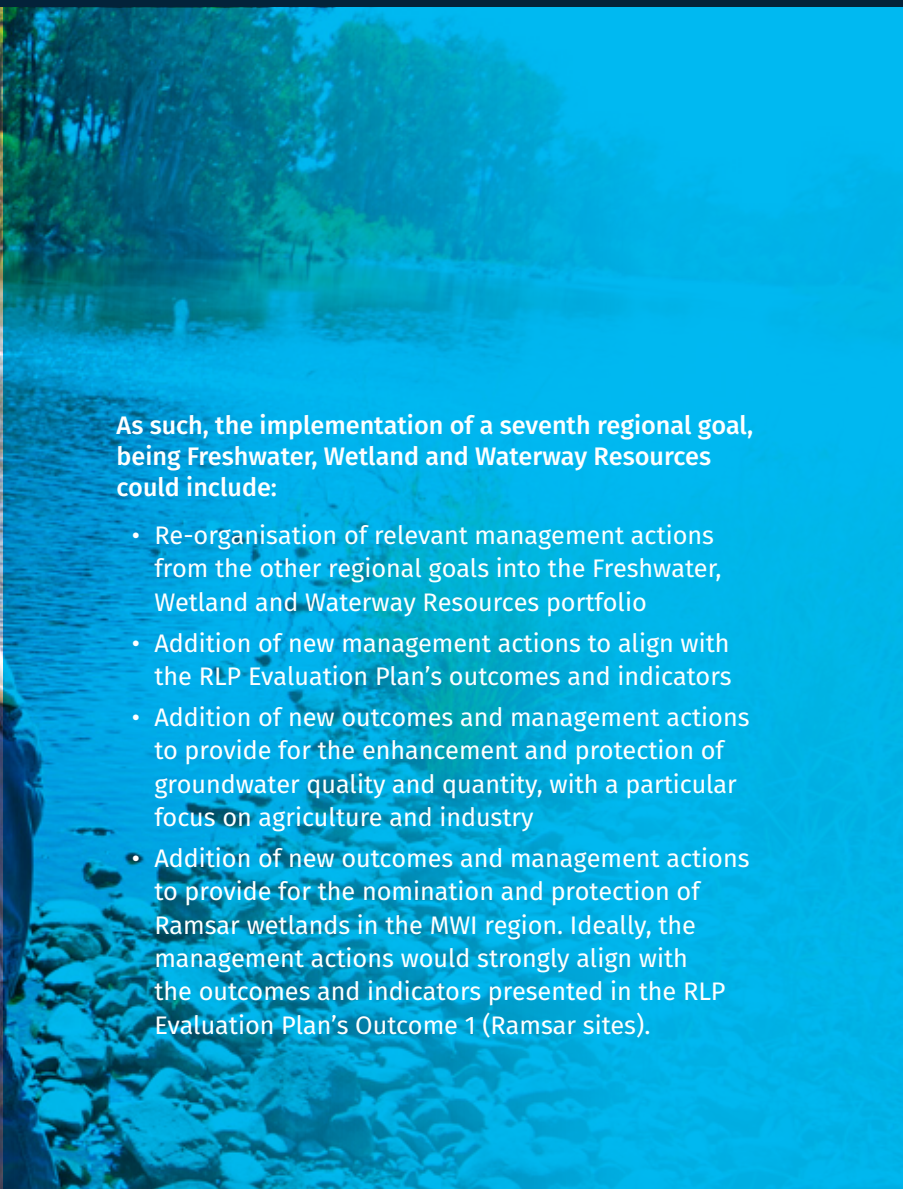
***Freshwater, wetlands and waterway resources lack a distinct regional goal, instead, aspects are addressed under other regional goals.***

Various stakeholder interests have identified the importance of protecting and improving the quality of freshwater systems, water quality and wetland health/connectivity.

Freshwater and wetland focussed projects are already being undertaken by Reef Catchments community and partners, however, the outcomes, goals, and indicators of these projects should be united under a single regional goal to ensure ongoing investment and to extend the reach of these projects.







As such, the implementation of a seventh regional goal, being Freshwater, Wetland and Waterway Resources could include:

- Re-organisation of relevant management actions from the other regional goals into the Freshwater, Wetland and Waterway Resources portfolio
- Addition of new management actions to align with the RLP Evaluation Plan's outcomes and indicators
- Addition of new outcomes and management actions to provide for the enhancement and protection of groundwater quality and quantity, with a particular focus on agriculture and industry
- Addition of new outcomes and management actions to provide for the nomination and protection of Ramsar wetlands in the MWI region. Ideally, the management actions would strongly align with the outcomes and indicators presented in the RLP Evaluation Plan's Outcome 1 (Ramsar sites).

# Vegetation Management Framework

## *Providing a regional vegetation management framework for the revised Plan.*

A component of this would be to develop a key outcome on management of TECs and Queensland's endangered or 'of concern' areas.

### **Some of the tasks could include:**

- Identify potential strategies for managing threatened vegetation in collaboration with key stakeholders to understand complexity and implementation issues by undertaking a map-based assessment of the intersection of these areas with tenure arrangements including forest reserve, freehold, leasehold, national park, state forest, etc
- Establish a regional vegetation management framework that considers opportunities for revegetation, rehabilitation, restoration, and renovating nature (under climate change adaption strategies)
- Identify opportunities to incorporate on-farm vegetation monitoring and management within the framework or where learnings from management of TECs within natural areas can be applied to maintenance of biodiversity on agricultural land.



## Fire Management – Climate Variability and Risk

Given the wildfire events in recent times, it is suggested that fire management should become a significant focus for the revised Plan. As a key outcome with associated management actions and indicators the focus on fire management will have implications across most of the regional goals.

**Fire history between 2014 and 2021 can be summarised as follows:**

- Virtually all the Clarke-Connors Ranges were burnt during the life of the current Plan
- Roughly half burnt in November 2018 as well as substantial fires in 2017
- Fires scars from different years are generally mutually exclusive in these ranges
- Previous fire boundaries act as firebreaks and have the potential to assist fire management

**Fire behaviour during the same period indicates that:**

- Fire is virtually ever present in the landscape and was well established in the western slopes of the ranges in the three to four years before the 2018 fires
- In most years, fires occur on the drier western fall of ranges, with the top of the ranges and the eastern slopes unburnt
- Ignition sources are varied but generally well-known including lightning, use of fire in land management, and arson
- Persistent, relatively small fires in the ranges occurred in the three months immediately prior to the November 2018 fires, in the headwaters of the Pioneer River, and further south
- Some fires travelled some distance across the landscape prior to the onset of the November heatwave that enabled the rapid expansion of intense fire

- The 2018 fires largely occurred in areas with high or very high bushfire potential (Climate Sustainability Plan 2016-2020)
- Severe fire years may have a relationship to the impacts of earlier cyclones that have opened forest canopies.

Measures to manage the fire risk is spread across a range of individuals and agencies, such as landholders, regional councils, regional fire brigades, Traditional Owners, the QPWS and fire wardens.



Discussions with stakeholders have revealed that a range of factors need to be considered in revising the Plan's actions in relation to fire management. These include:

"Tailoring and targeting fire management to vegetation type and land management use and landholder/lot size".

"The controlled burn window has reduced considerably and there are limited resources & personnel to implement any chosen fire regime".

"Investigating how the Plan can best support stakeholders that want to burn at the right time and place".

"Fires result in lost fodder and productivity for grazing pastoralists which adds complexity but may result in landowner incentives for greater involvement".

Recommendations for the revision of the Plan in relation to fire include developing a dedicated fire management outcome which applies a landscape level approach with consideration of the range of land tenure and stakeholders' involvement. Preparation of a map-based assessment of fire history, severity and dynamics across the landscape, vegetation types and tenure/stakeholders to interrogate the likely impacts on biodiversity, carbon stock and water resources would support the development of a management outcome and *possibly form a baseline from which the effectiveness of the outcome could be measured over time.*

Chapter

# 05

*Geographical  
Areas Of  
Interest*

## ***Localities of Regional Significance***

***Undertaking a high-level analysis of the locations, coverage, and distribution of programs and projects (designed to satisfy the outcomes and management actions of the RLP Evaluation Plan) provides an opportunity to identify regionally significant areas.***

The analysis and compilation of regionally significant areas would identify areas of overlap with multiple projects and programs and would allow for an index of program or project focus.

**Areas, and interests of regional significance may include:**

- Key locations of TECs
- Key threatened species essential habitat
- Areas of high agricultural value
- DIWA wetlands for a future nomination as a Ramsar wetland
- East-west connectivity corridor(s)
- Great Barrier Reef and other marine values
- Areas of climate refugia.

Proposed tasks in relation to the NRM Plan revision in this area would be to generate a series of maps showing alignment between the above areas of regional interests so that stakeholders can interrogate the best fit for a focus on significant localities that can feature in the revised Plan.



## Priority and Target Setting for the revised Plan

The main issues discussed by stakeholders have been grouped into themes below:

- Wetland management has not received much community exposure as they are generally managed by landowners. Land tenure, including Native Title, should be considered as the bulk of lands are on private property. It's important to engage with landowners to discuss the future of wetlands
- Water quality frameworks and targets are being updated and will need to be incorporated into the new Plan
- For primary industries, Best Management Practices (BMP) for sugar, grazing, etc. should be part of this framework despite not being regulatory instruments. The Plan should support updating management practice frameworks, targets and consider basin-based targets (particularly for smaller catchments). While reef regulations do have prescribed guidelines, primary industries should be included. There is not enough support for their implementation in some areas as BMP came in too late to be included in the current Plan. Smartcane BMP program is not included as the current 10-year timeframe does not serve this purpose, and a Grazing BMP is not included in the NRM region<sup>8</sup>
- Peri urban expansion and reduction of block size may have some impacts including runoff, siltation in creeks, and possibly impact threatened species habitats (eg. the Proserpine Rock Wallaby), and TECs in some locations. This requires balancing economic and environmental values and begs the question "What is the role of the Plan in delivering the best possible outcome?" as solutions may not meet all stakeholders' expectations.

The development of environmental corridors also faces a similar dilemma. While clearly an important component of natural resource management, especially in fragmented landscapes, agricultural stakeholders frequently feel that these exacerbate pest and weed problems and increase fire risk. This points to a need to integrate biosecurity measures and fire management with corridor development and enhancement.

<sup>8</sup> Noting that these are active project initiatives in the region.

Chapter

# 06

## *Moving Forward*

*Alignment with other programs*

*Ongoing review and gap identification*

*Establishing clear/new baselines*

*Hierarchy of documents*

*Oversight and Coordination*







## Alignment with other programs

### Environment Protection and Biodiversity Conservation (EPBC) Act 1999

*The Plan plays and can play a significant role in the implementation of key outcomes in relation to the matters protected under the EPBC Act most notably in the outreach and education function of the Plan.*

This alignment can continue to be strengthened through the revision process by the ongoing provision of information relevant to threatened species, communities, and values in the MWI region; building on collaboration between stakeholders; and the sharing of science and management techniques.

### Reef 2050 Long-term Sustainability Plan

*The Reef 2050 Long-term Sustainability Plan provides guidance to key sectors, such as NRM, on actions to improve the Reef's future.*

Although the development of the Plan precedes the Reef 2050 Long-term Sustainability Plan (published 2021) alignment between the key focus areas and management actions was evident.

Overall, key focus areas in both frameworks included improved agricultural land management and stewardship, regional capacity building, increased climate resilience within reef communities and collaborative management including a range of stakeholders, partners and managers together. These focus areas have been considered in the development of proposed management outcomes.

To strengthen alignment, the revision process should draw upon research, innovation, restoration and adaptation goals cited within Reef 2050 Long-term Sustainability Plan, particularly in the context of climate change response, threatened species management and building integrated ecosystem resilience.



## Ongoing Review and Gap Identification

*There was general agreement from the stakeholder workshop and stakeholder and community meetings on the timeframe for the revised Plan.*

Implications and priorities presented from these engagements included - the focus on the development of a hierarchy of documents, an online “Living Plan” and clearer link between investment and an action plan.

**The following key drivers for success were identified:**

- There is value in having both an overarching long-term strategic guidance and a shorter-term implementable plan that can be updated without having to change the long-term guidance
- A 10-year timeframe is appropriate for the long-term strategic guidance as it provides for long-term opportunities. For the current planning cycle, this should largely reflect the strategic guidance in the current Plan along with research needs such as those in the sugar industry that take time to develop, test and roll out
- The advantage of a short-term plan is that it can drive change and management in a manner that broader guidance can help identify but not shape. Having a short-term plan helps to roll out process by being more relevant and flexible. This will enhance the plan’s currency as it can be reviewed discretely, provide clearer linkages between investment and actions, and facilitate the short-term outcomes envisaged by funders and stakeholders alike without requiring changes to the broader 10-year strategic direction
- Additionally, some felt that a 10-year timeframe does not drive short-term outcomes. This is particularly true for Landcare and community groups as they generally have short-term funding so short-term goals, or outcomes would help with project identification and development.
- NRM needs to be flexible to change with the times as well as with Council, State and Australian government priorities particularly as human capital may, potentially, not always be available. The revision of the plan needs someone to be looking at the whole system instead of taking a reductionist approach focusing on specific outcomes or actions.

In summary, stakeholders do see value in having both an overarching long-term strategic view and a shorter-term implementable plan that can be updated without having to change the long-term guidance.



## Establishing Clear or New Baselines

*The RLP outcomes assessment results and stakeholder consultation process showed there are substantial information gaps and associated data needs to improve the effectiveness of existing and proposed management actions.*

For example, stakeholders perceived the region to be a 'research desert' when compared to other NRM regions which comprise leading universities and state of the art Government facilities.

Where monitoring and research does exist, there is a need to clarify and promote the linkages between this and regional key outcomes.

For example, numerous data gaps were identified with respect to water quality and resources, for which few corresponding management actions were identified. There is the potential that some of these data gaps, for example those relating to extractive use for irrigation, could be investigated and/or addressed in the development of the proposed regional water quality improvement plan revision and through future investment in the annual Regional Report Card on waterway health. However, concerns were raised that the previously large investment in water monitoring has subsided.

**Consequently, key information requirements and drivers for success include the following:**

- Baseline monitoring to understand long-term success for species as measured via:
  - Decreased mortality rates
  - Increased abundance/populations
  - Increased habitat connectivity
- Long-term on-farm native vegetation monitoring to understand baseline biodiversity, what can feasibly be conserved and restored
- Coordinated land use and property management where threatened vegetation (e.g., broad-leaf tea-tree and littoral rainforest) occurs on, e.g. council land and land used for camping
- Baseline monitoring of threatened habitats and increased protection
- Linkages between NRM Plan key outcomes and urban planning
- Climate change response (risk mitigation and adaptation) is key to the future of threatened species, including turtles and koalas. For example, increased ambient sand temperatures will impact the mortality rates and population dynamics of marine turtles who nest on beach sands due to temperature dependent sex-determination
- Increased pest species management activities, weeds and dogs are priorities across the region, with pigs and foxes being priorities in more remote portions of the region
- The integration of conservation outcomes with those on agriculture and fire in a manner that supports all outcomes, improves efficiencies, and addresses contradictions associated with fire and pests posed or exacerbated by corridors.

## Hierarchy of Documents

*Reef Catchments has discussed the potential format of a revised Plan with stakeholders, with suggestions that the single NRM Plan document be replaced with a set of shorter, user-friendly documents.*

In addition, core documents could be complemented with outreach documents and in some cases interactive material.

**A hierarchy of documents is envisaged as:**

- A short, visionary and aspirational piece that identifies the overarching goals and strategic direction of the plan; and has a 10-year lifespan
- Key contextual documents including separate documents describing the planning process
- The environmental and social contexts, and the environmental values that inform a framework for planning, prioritisation, and monitoring
- The core NRM Plan document will detail desired key outcomes and management actions and management of its implementation
- A marketing or resources plan will identify financial needs and investment opportunities
- Other supporting documentation as required including industry-based documents and interactive mapping resources
- Outreach materials on a wide array of issues and opportunities that are tailored to a range of specific audiences.







## Oversight and Coordination

***Discussions centred on the need for agreement for effective planning and implementation, and that management actions need to be connected to investment.***

It was felt that there is benefit in both an advisory committee to work at a collaborative level and the creation of partnerships of like-minded stakeholders that identify, design, and implement actions that deliver on short-term outcomes.

**For example:**

- Suggestions for an advisory committee included a reference to a Local Marine Advisory Committee (LMAC), utilising and strengthening existing groups, or the creation of a regional group that both brings together and complements existing groups
- The creation of smaller group partnerships of like-minded stakeholders working on issues of common interest enables these groups to be more focused and more efficient. This will enable clearer identification of projects and investment needs
- With respect to the idea of an annual forum, views varied. A forum can provide feedback on how things are working at the ground level; however, it was noted that funding for previous forums on water quality and healthy waterways was not sustainable and therefore some needs were not met. For example, while there were report cards there was not terrestrial ecological community reporting or outcomes. This raised concerns that an annual forum may not be able to be held consistently throughout the life of a new NRM Plan.

Stakeholders noted that NRM planning can be a top-down process so opportunities for effective participation

and collaboration are needed. Many existing structures can be engaged with to identify gaps and collaboration opportunities. NRM organisations can be caught in between top-down funder requirements and on-ground grassroots actions, requirements, and views. This requires NRM groups to address the common ground, otherwise, community groups are required to have a reactive approach rather than feel engaged in decisions and project development. Community groups have limited options for implementing works and require clear commitments and investment.

It was also noted that funders look at regional priorities and like to see applications which focus on delivering outcomes that ensure the region is working collectively.

The Reef Catchments team looks forward to the next stage of the NRM plan revision, which will build on community and stakeholder aspirations, priority management actions, gaps, Aboriginal and Torres Strait Islander peoples aspirations and traditional knowledge outlined throughout this Addendum. Traditional Owner engagement is already locked in with the TORG for March 2022 to explore further their aspirations.

The next stage of the Plan review will also have a significant focus on the monitoring and reporting processes to be put in place to measure the achievements and effectiveness of the new NRM Plan.

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## Annexures

Annexure I – Clause 3.2 of the Services Agreement  
Annexure II – Mapping

Annexure III - Matters of National Environmental Significance and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 within the Mackay Whitsunday Isaac Natural Resource Region

## Annexure I: Clause 3.2 of the Services Agreement

3.2 Maintain the currency of natural resource management planning and the prioritisation of management actions

(a) The Service Provider must ensure appropriate and accurate information to underpin prioritisation of long term action on natural resource management for the Management Unit is available to the Australian Government and the Community.

(b) As part of its obligations under clause 3.2(a) of the Statement of Work, the Service Provider must:

(i) maintain the currency of natural resource management planning and the prioritisation of management actions at the Management Unit scale to ensure:

(A) Projects can be identified and appropriately scaled and scoped, are based on best available scientific, economic and social information, take into account the Investment Priorities relevant to the Management Unit and consider emerging science and innovations, climate change impacts, and the views of the Community;

(B) Projects will effectively contribute to the 5-year Outcomes, including through identification and on-going prioritisation of management actions that support the delivery of the 5-year Outcomes;

(ii) within 12 months of the Commencement Date (unless the Department agrees in writing to an alternative timeframe):

(A) review any existing Natural Resource Management Plan(s) for the relevant Management Unit for their consistency with the requirements in clause 3.2(c) of the Statement of Work; and

(B) provide a report on the review to the Department.

(iii) within 36 months of the Commencement Date (unless the Department agrees in writing to an alternative timeframe), to ensure that the Natural Resource Management Plan(s) meets the requirements of clause 3.2(c) of the Statement of Work, either:

(A) revise the relevant existing Natural Resource Management Plans or material; or

(B) develop a new Natural Resource Management Plan for the Management Unit; and



(C) submit the revised or new Natural Resource Management Plan to the Department.

(iv) where the Service Provider has determined that it is necessary to develop a new Natural Resource Management Plan for the Management Unit:

(A) ensure that the new Natural Resource Management Plan complements, rather than duplicates, any existing Natural Resource Management Plans for the Management Unit; and

(B) address, in the new Natural Resource Management Plan, only those requirements under clause 3.2(c) of the Statement of Work that are not adequately addressed in an existing Natural Resource Management Plan for the Management Unit.

(c) The Natural Resource Management Plan(s) must:

(i) identify and describe the 5-year Outcomes and Investment Priorities that are relevant to the Management Unit;

(ii) describe stakeholder aspirations for natural resource management in the Management Unit, and where possible, how these align with the 5-year Outcomes and other relevant Australian Government priorities;

(iii) identify and prioritise natural resource management actions based on knowledge of:

(A) location and condition of natural resources, including the Investment Priorities;

(B) threats to, or impacts on, natural resources;

(C) prioritisation methods for determining the most cost-effective management actions, including decision support and spatial mapping tools; and

(D) methodologies for assessing the effectiveness of management actions;

(iv) identify how the delivery of Projects will contribute to 5-year Outcomes and Investment Priorities for the Management Unit;

(v) identify how the Natural Resource Management Plan(s) will be implemented with comprehensive Community participation;

(vi) identify Indigenous peoples' land and sea management aspirations for the relevant Management Unit, including how they relate to 5-year Outcomes, and strategies to prioritise and implement them;

(vii) incorporate traditional ecological knowledge, where appropriate, in accordance with agreed protocols and with prior approval of the Indigenous custodians of the knowledge;

(viii) describe key collaborations, for example between the Service Provider, industry and/or Community groups, for delivery of 5-year Outcomes;

(ix) identify the monitoring and reporting processes in place and how they are utilised to measure the achievements and the effectiveness of the Natural Resource Management Plan(s); and

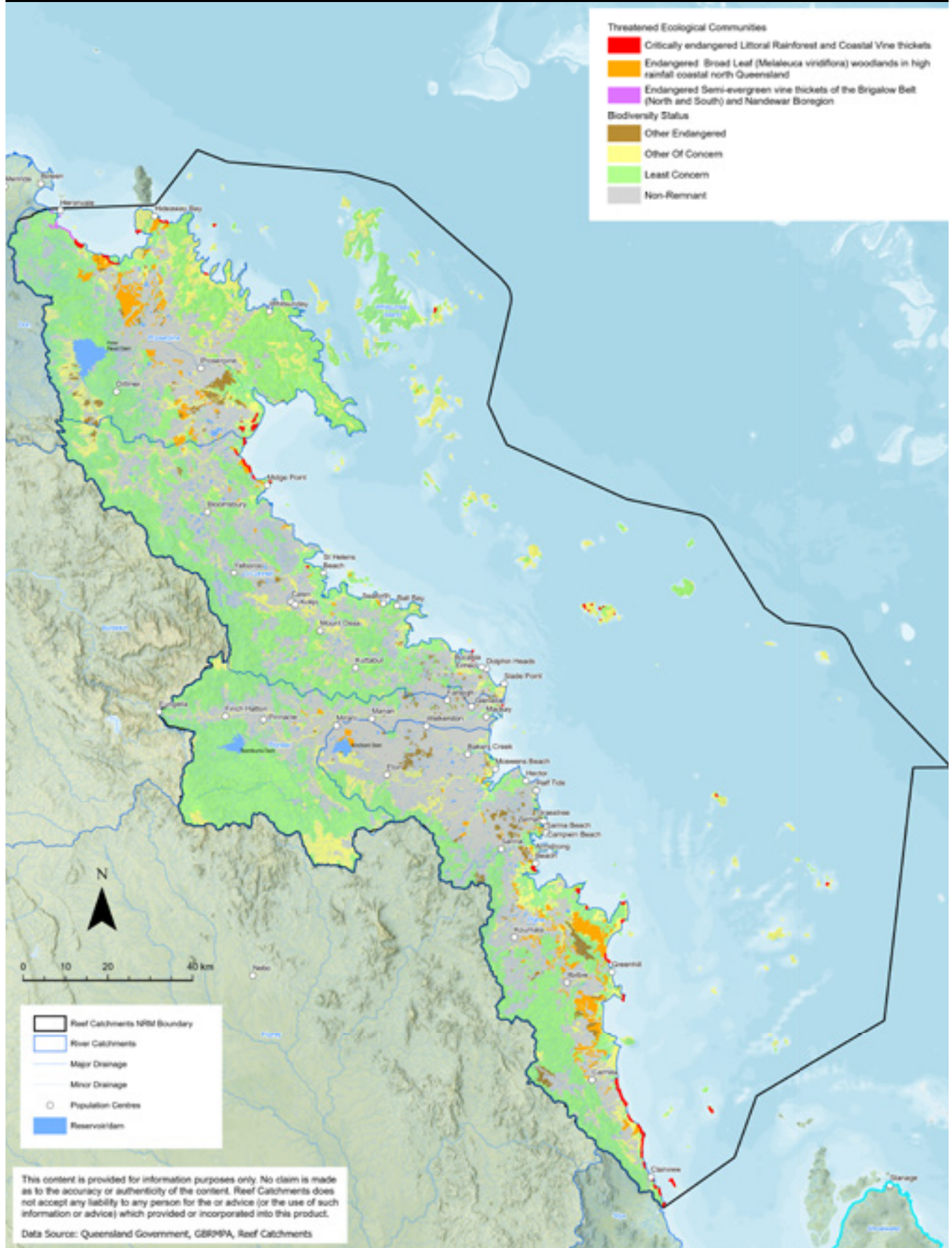
(x) include any other content relevant to the Service Provider's obligations under clause 3.2(a) of the Statement of Work.

(d) The Service Provider must involve the Community, including the Indigenous community, in the development of a new Natural Resource Management Plan or revision of an existing Natural Resource Management Plan.

(e) The Service Provider must make the new Natural Resource Management Plan, or revised Natural Resource Management Plan, publicly available at no cost to the Community, within 3 months of it being formally approved by the organisation's Board of Directors or equivalent.

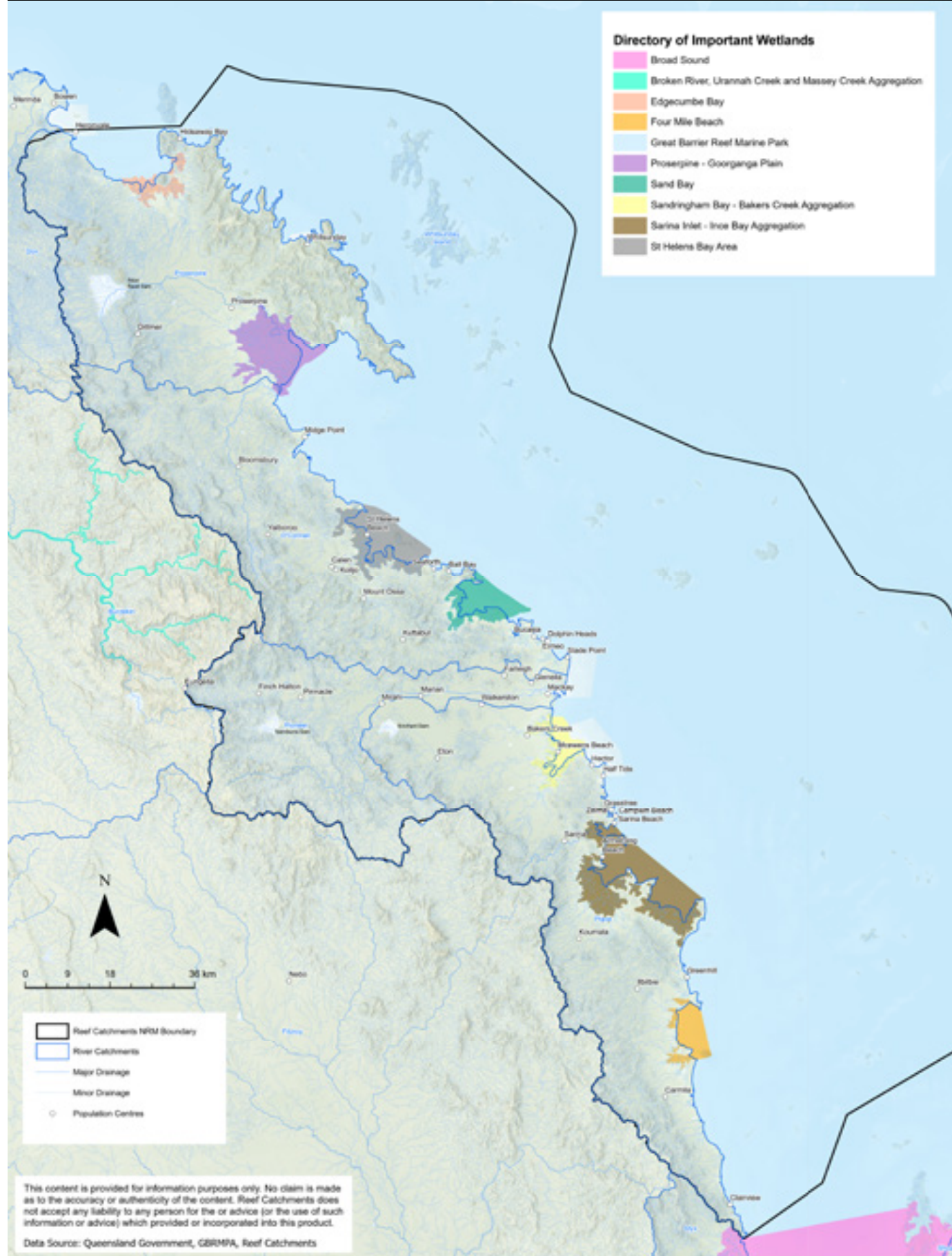
## Annexure II : Mapping

### Reef Catchment NRM Plan Review Biodiversity Status and TEC





## Reef Catchment NRM Plan DIWA wetland mapping



# Annexure III: Matters of National Environmental Significance

*and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 with the Mackay Whitsunday Isaac Natural Resource Region*

## Matters of National Environmental Significance

World Heritage Properties	1	Great Barrier Reef
National Heritage Places	1	Great Barrier Reef
Ramsar Wetlands	Nil	
Great Barrier Reef Marine Park	140	Great Barrier Reef Marine Park Refer to EPBC Act Protected Matters Report for details
Commonwealth Marine Area Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.	1	EEZ and Territorial Sea
Threatened Ecological Communities	5	See Table 1: Threatened Ecological Communities for more detail
Threatened Species	67	See Table 2: Threatened Species for more detail
Migratory Species	79	Refer to EPBC Act Protected Matters Report for details

## Other matters protected by the EPBC Act

Commonwealth Lands	7	Defence lands – AIRTC Mackay, Mackay TRG Depot, Komiatum Barracks, Mt Vince Rifle Range, Mackay Rifle Range x 4, Sarina Training Depot
Commonwealth Heritage Places	1	Dent Island Lightstation
Listed Marine Species	123	Refer to EPBC Act Protected Matters Report for details
Whales and other Cetaceans	15	Refer to EPBC Act Protected Matters Report for details
Critical Habitats	Nil	
Commonwealth Reserves Terrestrial	Nil	
Australian Marine Parks	Nil	



## Extra Information

State and Territory reserves	84	Refer to EPBC Act Protected Matters Report for details
Regional forest agreement	Nil	
Invasive species	46	See below table
Nationally important wetlands	10	See below table
Key ecological features (marine)	79	Refer to EPBC Act Protected Matters Report for details

**Table 1: Threatened Ecological Communities**

Name	Status	Confirmed presence within region
Broad leaf tea-tree ( <i>Melaleuca viridiflora</i> ) woodlands in high rainfall coastal north Queensland	Endangered	Yes
Littoral rainforest and coastal vine thickets of eastern Australia Confirmed Presence within area	Critically endangered	Yes
Natural grasslands of the Queensland central highlands and northern Fitzroy basin May occur	Endangered	No
Poplar box grassy woodland on alluvial plains	Endangered	No
Semi-evergreen vine thickets of the Brigalow Belt (north and south) and Nandewar bioregions	Endangered	No

**Table 2: Threatened Species**

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Name	Status	Type of Presence
<b>BIRD</b>		
<i>Calidris canutus</i> (red knot)	Endangered	Species or species habitat <b>known</b> to occur
<i>Calidris ferruginea</i> (curlew sandpiper)	Critically endangered	Species or species habitat <b>known</b> to occur
<i>Calidris tenuirostris</i> (great knot)	Critically endangered	Roosting known to occur
<i>Charadrius leschenaultii</i> (greater sand plover)	Vulnerable	Species or species habitat <b>known</b> to occur
<i>Charadrius mongolus</i> (lesser sand plover)	Endangered	Roosting known to occur
<i>Epthianura crocea macgregor</i> (Capricorn yellow chat)	Critically endangered	Species or species habitat <b>likely</b> to occur
<i>Erythrotriorchis radiatus</i> (red goshawk)	Vulnerable	Species or species habitat <b>known</b> to occur
<i>Falco hypoleucos</i> (grey falcon)	Vulnerable	Species or species habitat <b>likely</b> to occur
<i>Fregetta grallaria grallaria</i> (white-bellied storm petrel)	Vulnerable	Species or species habitat <b>likely</b> to occur

Name	Status	Type of Presence
<i>Geophaps scripta scripta</i> (squatter pigeon)	Vulnerable	Species or species habitat <b>known</b> to occur
<i>Hirundapus caudacutus</i> (white-throated needletail)	Vulnerable	Species or species habitat <b>known</b> to occur
<i>Limosa lapponica baueri</i> (Nunivak bar-tailed godwit)	Vulnerable	Species or species habitat <b>known</b> to occur
<i>Macronectes giganteus</i> (southern giant-petrel)	Endangered	Species or species habitat <b>may</b> occur
<i>Neochmia ruficauda ruficauda</i> (star finch)	Endangered	Species or species habitat <b>likely</b> to occur
<i>Numenius madagascariensis</i> (eastern curlew)	Critically endangered	Species or species habitat <b>known</b> to occur
<i>Poephila cincta cincta</i> (southern black-throated finch)	Endangered	Species or species habitat <b>may</b> occur
<i>Pterodroma neglecta neglecta</i> (Kermadec petrel)	Vulnerable	Foraging, feeding or related behaviour may occur within area
<i>Rostratula australis</i> (Australian painted snipe)	Endangered	Species or species habitat <b>known</b> to occur
<i>Thalassarche impavida</i> (Campbell albatross)	Vulnerable	Species or species habitat <b>may</b> occur
<i>Turnix olivii</i> (buff-breasted button-quail)	Endangered	Species or species habitat <b>may</b> occur
<i>Tyto novaehollandiae kimberlie</i> (masked owl)	Vulnerable	Species or species habitat <b>likely</b> to occur
<b>FROG</b>		
<i>Taudactylus eungellensis</i> (Eungella day frog)	Endangered	Species or species habitat <b>likely</b> to occur
<b>MAMMAL</b>		
<i>Balaenoptera borealis</i> (Sei whale)	Vulnerable	Species or species habitat <b>may</b> occur
<i>Balaenoptera musculus</i> (blue whale)	Endangered	Species or species habitat <b>may</b> occur
<i>Balaenoptera physalus</i> (fin whale)	Vulnerable	Species or species habitat <b>may</b> occur
<i>Chalinolobus dwyeri</i> (large-eared pied bat)	Vulnerable	Species or species habitat <b>likely</b> to occur
<i>Dasyurus hallucatus</i> (northern quoll)	Endangered	Species or species habitat <b>known</b> to occur
<i>Macroderma gigas</i> (ghost bat)	Vulnerable	Breeding known to occur
<i>Nyctophilus corbeni</i> (Corben's long-eared bat)	Vulnerable	Species or species habitat <b>may</b> occur
<i>Petauroides Volans</i> (greater glider)	Vulnerable	Species or species habitat <b>known</b> to occur
<i>Petaurus australis australis</i>	Vulnerable	Species or species habitat <b>may</b> occur
<i>Petrogale persephone</i> (Proserpine rock-wallaby)	Endangered	Species or species habitat <b>known</b> to occur
<i>Phascolarctos cinereus</i> (koala)	Endangered	Species or species habitat <b>known</b> to occur
<i>Pteropus poliocephalus</i> (grey-headed flying-fox)	Vulnerable	Roosting known to occur within area
<i>Xeromys myoides</i> (water mouse)	Vulnerable	Species or species habitat <b>known</b> to occur
<b>PLANT</b>		
<i>Arthraxon hispidus</i> (hairy-joint grass)	Vulnerable	Species or species habitat <b>likely</b> to occur
<i>Bosistoza transversa</i> (three-leaved bosistoa)	Vulnerable	Species or species habitat <b>likely</b> to occur



Cadellia pentastylis (ooline)	Vulnerable	Species or species habitat <b>likely</b> to occur
Cycas ophiolitica	Endangered	Species or species habitat <b>may</b> occur
Dichanthium setosum (Bluegrass)	Vulnerable	Species or species habitat <b>likely</b> to occur
Eucalyptus raveretiana (black ironbox)	Vulnerable	Species or species habitat <b>known</b> to occur
Euphorbia obliqua	Vulnerable	Species or species habitat <b>likely</b> to occur
Graptophyllum ilicifolium (holly-leaved graptophyllum)	Vulnerable	Species or species habitat <b>known</b> to occur
Medicosma obovate	Vulnerable	Species or species habitat <b>known</b> to occur
Neisosperma kilneri	Vulnerable	Species or species habitat <b>known</b> to occur
Omphalea celata	Vulnerable	Species or species habitat <b>likely</b> to occur
Ozothamnus eriocephalus	Vulnerable	Species or species habitat <b>known</b> to occur
Phaius australis (lesser swamp-orchid)	Endangered	Species or species habitat <b>may</b> occur
Phalaenopsis rosenstromii (native moth orchid)	Endangered	Species or species habitat <b>may</b> occur
Phlegmariurus tetrastichoides (square tassel fern)	Vulnerable	Species or species habitat <b>may</b> occur
Samadera bidwillii (quassia)	Vulnerable	Species or species habitat <b>known</b> to occur
Solanum graniticum (granite nightshade)	Endangered	Species or species habitat <b>known</b> to occur
<b>REPTILE</b>		
Caretta caretta (loggerhead turtle)	Endangered	Foraging, feeding or related behaviour known to occur
Chelonia mydas (green turtle)	Vulnerable	Breeding known to occur
Denisonia maculate (ornamental snake)	Vulnerable	Species or species habitat <b>known</b> to occur
Dermochelys coriacea (leatherback turtle)	Endangered	Breeding likely to occur
Egernia rugosa (yakka skink)	Vulnerable	Species or species habitat <b>may</b> occur
Elseya albagula (southern snapping turtle)	Critically endangered	Species or species habitat <b>likely</b> to occur
Eretmochelys imbricata (hawksbill turtle)	Vulnerable	Foraging, feeding or related behaviour known to occur
Lepidochelys olivacea (olive ridley turtle)	Endangered	Breeding likely to occur
Natator depressus (flatback turtle)	Vulnerable	Breeding known to occur
Rheodytes keukops (Fitzroy river turtle)	Vulnerable	Species or species habitat <b>likely</b> to occur
<b>SHARK</b>		
Carcharodon carcharias (white shark)	Vulnerable	Species or species habitat <b>likely</b> to occur
Pristis pristis (freshwater sawfish)	Vulnerable	Species of species habitat <b>may</b> occur
Pristis zijsron (green sawfish)	Vulnerable	Species of species habitat <b>known</b> to occur
Rhincodon typus (whale shark)	Vulnerable	Species of species habitat <b>may</b> occur
Sphyrna lewini (scalloped hammerhead)	Conservation dependent	Species of species habitat <b>known</b> to occur

**Table 3: Invasive Species**

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad

Name	Status	Type of Presence
<b>BIRD</b>		
Passer domesticus (house sparrow)	Feral	Species or species habitat <b>likely</b> to occur
Anas platyrhynchos (mallard)	Feral	Species or species habitat <b>likely</b> to occur
Streptopelia chinensis (spotted turtle-dove)	Feral	Species or species habitat <b>likely</b> to occur
Sturnus vulgaris (common starling)	Feral	Species or species habitat <b>likely</b> to occur
Acridotheres tristis (common myna)	Feral	Species or species habitat <b>likely</b> to occur
Gallus gallus (red junglefowl)	Feral	Species or species habitat <b>likely</b> to occur
Pycnonotus jocosus (red-whiskered bulbul)	Feral	Species or species habitat <b>likely</b> to occur
Columba livia (rock pigeon)	Feral	Species or species habitat <b>likely</b> to occur
Lonchura punctulate (nutmeg Mannikin)	Feral	Species or species habitat <b>likely</b> to occur
Frog		
Rhinella marina (cane toad)	Feral	Species or species habitat <b>known</b> to occur
<b>MAMMAL</b>		
Rattus rattus (black rat)	Feral	Species or species habitat <b>likely</b> to occur
Capra hircus (goat)	Feral	Species or species habitat <b>likely</b> to occur
Oryctolagus cuniculus (rabbit)	Feral	Species or species habitat <b>likely</b> to occur
Vulpes vulpes (red fox)	Feral	Species or species habitat <b>likely</b> to occur
Felis catus (cat)	Feral	Species or species habitat <b>likely</b> to occur
Bos taurus (domestic cattle)	Feral	Species or species habitat <b>likely</b> to occur
Canis familiaris (domestic dog)	Feral	Species or species habitat <b>likely</b> to occur
Equus caballus (horse)	Feral	Species or species habitat <b>likely</b> to occur
Sus scrofa (pig)	Feral	Species or species habitat <b>likely</b> to occur
Mus musculus (house mouse)	Feral	Species or species habitat <b>likely</b> to occur
Feral deer	Feral	Species or species habitat <b>likely</b> to occur
Lepus capensis (Brown hare)	Feral	Species or species habitat <b>likely</b> to occur
Rattus norvegicus (brown rat)	Feral	Species or species habitat <b>likely</b> to occur



PLANT		
Vachellia nilotica (prickly acacia)	WoNS	Species or species habitat <b>may</b> occur
Eichhornia crassipes (water hyacinth)	WoNS	Species or species habitat <b>likely</b> to occur
Lantana camara	WoNS	Species or species habitat <b>likely</b> to occur
Prosopis (mesquite)	WoNS	Species or species habitat <b>likely</b> to occur
Asparagus plumosus (climbing asparagus fern)	WoNS	Species or species habitat <b>likely</b> to occur
Andropogon gayanus (gamba grass)	WoNS	Species or species habitat <b>likely</b> to occur
Salvinia molesta	WoNS	Species or species habitat <b>likely</b> to occur
Dolichandra unguis-cati (cat's claw vine)	WoNS	Species or species habitat <b>likely</b> to occur
Vachellia nilotica (prickly acacia)	WoNS	Species or species habitat <b>likely</b> to occur
Cryptostegia grandiflora (rubbertree)	WoNS	Species or species habitat <b>likely</b> to occur
Anredera cordifolia (madeira vine)	WoNS	Species or species habitat <b>likely</b> to occur
Hymenachne amplexicaulis	WoNS	Species or species habitat <b>likely</b> to occur
Parthenium hysterophorus	WoNS	Species or species habitat <b>likely</b> to occur
Annona glabra (pond apple)	WoNS	Species or species habitat <b>likely</b> to occur
Parkinsonia aculeata	WoNS	Species or species habitat <b>likely</b> to occur
Jatropha gossypifolia (cotton-bellyache bush)	WoNS	Species or species habitat <b>likely</b> to occur
Mimosa pigra	WoNS	Species or species habitat <b>likely</b> to occur
Cabomba caroliniana	WoNS	Species or species habitat <b>likely</b> to occur
Opuntia (prickly pear)	WoNS	Species or species habitat <b>likely</b> to occur
Asparagus aethiopicus (basket fern))	WoNS	Species or species habitat <b>likely</b> to occur
REPTILE		
Lepidodactylus lugubris (mourning gecko)	Feral	Species or species habitat <b>likely</b> to occur
Hemidactylus frenatus (Asian house gecko)	Feral	Species or species habitat <b>likely</b> to occur
Indotyphlops braminus (flowerpot blind snake)	Feral	Species or species habitat <b>may</b> occur

Table 4: Nationally Important Wetlands

Name	Code/ Size/ Description
Broad Sound	<p>QLD003 211 765 ha</p> <p>A good example of a marine and estuarine wetland complex within a large sheltered embayment adjacent to a broad coastal plain. It plays a major ecological role, supporting substantial breeding activity by Anatidae, including Black Swans <i>Cygnus atratus</i> and the declining Radjah Shelduck <i>Tadorna radjah</i>, and by stilts and terns; also migration stop-over by substantial numbers of sandpipers and terns. A population of the Critically Endangered eastern Yellow Chat <i>Epthianura crocea macgregori</i> occurs and breeding by the Vulnerable Australian Painted Snipe <i>Rostratula benghalensis australis</i> has been documented. Numbers of several waterbirds, notably Straw-necked Ibis <i>Threskiornis spinicollis</i> and Royal Spoonbill <i>Platalea regia</i>, at times may exceed 1% of the estimated total population in Australia; large numbers of Plumed Whistling-Duck <i>Dendrocygna eytoni</i>, Magpie- Geese <i>Anseranas semipalmata</i> and Brolga <i>Grus rubicunda</i> also occur.</p>
Broken River, Urannah Creek and Massey Creek Aggregation	<p>QLD199 6,046ha</p> <p>This site contains some of the best and least disturbed examples of riverine wetland occurring in Central Queensland. This includes areas of high wilderness quality, Massey Gorge being the most prominent example of these. The site encompasses a relatively undisturbed gradient across the boundary zone between the northern Brigalow Belt and the Central Queensland Coast bioregions. The Broken River makes a major contribution to the quality and flow of water in the Bowen and lower Burdekin rivers. The streams of the site flow through vegetation types ranging from high altitude rainforest on the top of Clarke Range to vine thickets, open forest and woodland. This results in outstanding biological diversity. The area supports at least 11 species listed in international, federal and/or state lists of threatened species. Water is transported from the high rainfall upper catchment to the lower rainfall western side of the site providing a reliable source of water and refuge in times of drought.</p>
Edgecumbe Bay	<p>QLD045 4,581ha</p> <p>The wetland contains a complex of marine, estuarine and fresh or brackish water areas. It is drained by the Gregory River, Eden and Lassie creeks and other smaller streams, all of which are strongly seasonal and often dry out by mid year. Four species of seagrass and moderately dense population of dugongs exist within the bay.</p>
Four Mile Beach	<p>QLD047 7,158ha</p> <p>The site is a good example of a marine and estuarine wetland system of the Central Queensland Coast bioregion. The site has a diverse shoreline including a rocky shore and well-developed sand beach. It is recognised as an important fish habitat.</p>
Great Barrier Reef Marine Park	<p>QLD100 - 34 108 876 ha, which excludes wetlands extending into GBRMP but mapped individually, eg Bowling Green Bay QLD002.</p> <p>The Great Barrier Reef Marine Park contains a variety of habitats in a number of ecosystems. The area is recognised for its seagrass beds, estuarine wetlands, mangrove woodlands, island cays and coral atolls. The reef formations owe themselves to the ability of corals to produce substantial skeletons of calcium carbonate. Many of the corals have a variety of growth forms (branching corals, massive brain corals, plate-like corals, encrusting corals and mushroom corals) which relate not only to the genetic makeup of the corals but also, in part, to the hydrological regime and exposure of the location in which they develop. The great diversity of life forms, especially in the endemic species, makes it an area of enormous scientific importance. It is an area that is recognised as being of great natural beauty and wonder and as such is one of Australia's most recognisable natural features. The area is extensively used for tourism and recreation. The area contains many archaeological sites of Aboriginal and Torres Strait Islander origin. There are over 30 historic shipwrecks in the area, and on the islands there are ruins and operating lighthouses.</p>

Proserpine – Goorganga Plain	<p>QLD050 – 16,852ha</p> <p>The Goorganga Plain is the largest floodplain in the Central Queensland Coast bioregion. It is notable for the extensive areas of seasonally inundated grassland. The overall site is particularly significant for the continuity and quality of habitats from marine to freshwater environments and the diversity of the biota. The site receives fresh water from Billie, Thompson and Lethe Brook creeks and unnamed streams draining out of elevated country to the southwest and west, the Proserpine River draining out of the Clarke and Double Peak Ranges to the west, and Orchard, Rocky, and Saltwater creeks and several unnamed streams draining out of the Conway Range to the north. The major streams all empty into Repulse Bay.</p>
Sand Bay	<p>QLD051 – 10,192ha</p> <p>The site, which is a good example of a marine and estuarine wetland complex of the Central Queensland Coast, has a diverse shoreline, where extensive areas of intertidal mudflat are backed by mangrove forest. It is particularly important as a fish and shorebird habitat.</p>
Sandringham Bay – Bakers Creek Aggregation	<p>QLD052 – 7,367ha</p> <p>The site is part of a low coastal plain and adjacent marine waters with extensive shallow water, subtidal and intertidal mudflats, from the inlet at Far Beach to Dudgeon Point. The catchment for the site is that of several streams which drain eastwards out of the elevated country in the north (Bakers, Rocky and MacLennan creeks) and Connors Range in the south (Sandy, Bell, Alligator and Splitters creeks). The site is a good example of marine and estuarine wetlands of the Central Queensland Coast bioregion. It is significant because of the very extensive expanse of intertidal and shallow water habitat, the diversity of the shoreline and extent of the mangroves. It is recognised as a nationally important area for shorebirds.</p>
Sarina Inlet – Ince Bay Aggregation	<p>QLD053 – 27,934ha</p> <p>The site is part of a low coastal plain with adjacent small islets, inshore coral reef, extensive shallow water, subtidal and intertidal mudflats and associated marine waters from Sarina Inlet to Cape Palmerston. The catchment for Sarina Inlet is that of Plane Creek which drains out of Connors Range. The catchment for Llewellyn Bay is that of Elizabeth, Freddy, Tommy, Rubicon, Cherry Tree, Tedlands, Rocky Dam and a number of unnamed creeks, all draining out of Connors Range. The catchment for Ince Bay is Cape Creek and a number of unnamed streams draining out of the mount Funnel Range. The site is a good example of a diverse, hydrologically related aggregation of marine, estuarine and freshwater wetlands within the Central Queensland Coast bioregion. It is also recognised as a nationally important area for shorebirds.</p>
St Helens Bay Area	<p>QLD055 – 16,056ha</p> <p>The site, which is part of a low coastal plain with adjacent coastal islands, coral reefs, extensive shallow water, subtidal and intertidal mudflats and associated marine waters, extends from Dewars Beach to Finlayson Point. The catchment for the site is that of a number of creeks: Saunders, Station, Oyster, Reedy and Zamia draining out of the Tonga Range in the north; Alligator, Somerset, Black Rock, St. Helens, One Mile and Murray creeks draining out of the Clarke and Whiptail ranges to the west; and Conow, Cluny and Victor creeks draining out of low hills in the south. The site is a good example of marine and estuarine wetlands of the Central Queensland Coast, where extensive mangrove wetlands, intertidal and shallow water habitat and coastal islands with coral reef occur in close proximity. It is recognised as a nationally important area for shorebirds.</p>





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