



Australian Government

Great Barrier Reef
Marine Park Authority

Independent assessment of
management effectiveness for the

Great Barrier Reef
Outlook Report
2019

Report prepared by:

Andrea Leverington¹, Marc Hockings¹, Fiona Leverington¹, Colin Trinder² and John Polglaze²

for the

Great Barrier Reef Marine Park Authority



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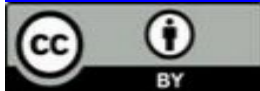


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The assessment and associated text in the report relating to management of defence activities, ports and shipping were prepared by Ground Zero Pty Ltd. All other sections of the report were prepared by Protected Area Solutions Pty Ltd.

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Executive Summary

Framework for the report

The Great Barrier Reef Outlook Report (Outlook Report) is required under the *Great Barrier Reef Marine Park Act 1975* (section 54) and provides an assessment of Reef health and management every five years. This assessment of the Great Barrier Reef Region (the Region) includes a consideration of existing protection and management and forms the basis for Chapter 7 of the Outlook Report.

Management effectiveness evaluation is defined as the assessment of how well protected areas are being managed – primarily the extent to which they are protecting values and achieving goals and objectives (Hockings et al. 2015). This report has used a management effectiveness evaluation framework, known as the IUCN-WCPA Framework¹, which has been widely applied around the world. This framework focuses on six management *elements* (context, planning, inputs, processes, outputs, outcomes) and the links between them, to provide a comprehensive picture of management effectiveness for the Region.

This assessment uses the same methodology as that used in the *Great Barrier Reef Outlook Report 2009* (Outlook Report 2009) and *Great Barrier Reef Outlook Report 2014* (Outlook Report 2014) (GBRMPA 2009, 2014a). It examines 14 priority management *topics*. The management topics range in scale from localised issues that affect only a small proportion of the Region (e.g. Defence activities) to others which have implications across all or most of the Region (e.g. Climate change, Recreation, Coastal development).

Each management topic is assessed against a common set of *indicators* distributed across each of the six evaluation elements with the individual indicator assessments being combined to provide an overall grading for each element.

Key findings

This assessment has found that there are improvements in the management effectiveness of a number of topics since the Outlook Report 2014. Many of the improvements are a result of the *Reef 2050 Long-Term Sustainability Plan* (Reef 2050 Plan) (Commonwealth of Australia 2018). This plan was developed in response to the 2011 World Heritage Committee request for a coordinated and long-term plan to address concerns on the risks to the Outstanding Universal Value of the Great Barrier Reef World Heritage Area. The Reef 2050 Plan documents actions, targets and objectives to address the key threats to the Region identified through the *Great Barrier Reef Strategic Assessment Report 2013* (Great Barrier Reef Strategic Assessment) (GRMPA 2014b) and the *Great Barrier Reef Coastal Zone Strategic Assessment Report 2013* (Great Barrier Reef Coastal Zone Strategic Assessment) (Department of State Development 2014a). The impact of this work has resulted in significant improvement in knowledge and planning in a number of management topics, especially of Community benefits, Land-based run-off and Port development. The overall assessment results are shown in Table 1.

¹ The Framework has been devised through the International Union for Conservation of Nature (IUCN) World Commission on Protected Areas (WCPA)

The scale of threats to the Region means that despite management efforts, it is difficult to achieve positive outcomes in some areas. For example, while targeted actions have reduced sediment and nutrient loads entering the Great Barrier Reef lagoon, targets outlined in the Reef 2050 Plan are unlikely to be achieved in the stated timeframes. The impact of climate change on the Region's ecosystems is of serious concern. The extensive coral bleaching episodes in 2016 and 2017 are evidence of the fragility of the system, and the need to actively address climate change globally as well as through more local mitigation and adaptation actions.

Management effectiveness remains strongest for topics that are limited in scale or complexity. For example, Defence is managed effectively across all indicators. Some topics, such as Recreation, are considered low threat to the Region and scheduled reviews for these have not been undertaken. Complex, high threat topics such as Land-based run-off have received greater priority. Significant work has also been achieved in recognising the less tangible Community benefits of the Region.

Positive management effectiveness outcomes remain elusive for broad scale and complex topics such as Biodiversity, Climate change, Land-based run-off, Fishing and Coastal development.

Trends

In general, most indicators were either improving or stable. However, the decline in planning, outcomes and outputs associated with Climate change are of great concern.

Table 1 Summary of assessment results

	Topic	Context	Planning	Inputs	Processes	Outputs	Outcomes
Managing direct use of the Region	Commercial marine tourism	↔	↔	↗	↔	↔	↔
	Defence activities	↔	↔	↑	↔	↔	↔
	Fishing	↔	↑	↑	↔	↔	↔
	Ports	↑	↑	↔	↗	↑	↑
	Recreation	↔	↘	↔	↔	↓	↔
	Research activities	↔	↑	↑	↑	↔	↔
	Shipping	↑	↑	↑	↑	↗	↔
	Traditional use of marine resources	↓	↔	↔	↔	↑	↔
Managing external factors influencing the Region	Climate change	↔	↘	↓	↘	↓	↘
	Coastal development	↔	↑	↑	↑	↑	↗
	Land-based run-off	↔	↔	↑	↔	↗	↔
Managing to protect the Region's values	Biodiversity values	↓	↔	↔	↔	↔	↓
	Heritage values	↔	↔	↔	↔	↔	↗
	Community benefits of the environment	↗	↗	↑	↑	↔	↔

Management effective assessment is colour coded:

Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

Trends are indicated by arrows:

- ↑ Trend since 2014 has been an upwards change in grade
- ↗ Trend since 2014 is increasing but has not caused an upwards grade change
- ↔ Grade has remained stable compared to 2014, with no major trends
- ↘ Trend since 2014 is decreasing but has not caused a downwards grade change
- ↓ Trend since 2014 has been a downwards change in grade

Managing direct use

Commercial marine tourism

The value visitors place on the Region is indicative of its national and international importance. Commercial marine tourism remains well managed. A comprehensive suite of management tools, complemented by strong industry partnerships, contribute to the sustainable management of tourism activities. Major achievements over the past five years include a review of the *Whitsundays Plan of Management 1998*, development of guidelines for superyacht management, and a cruise ship policy.

A review of the *Great Barrier Reef Marine Park Regulations 1983* and permit assessment processes were undertaken in 2017, with a view to improve consistency and transparency in decision-making through clear guidelines. Risks to the Region from commercial marine tourism activities have been reduced through additional management and education, including implementation of new assessment guidelines and policies under a *strengthening permissions systems* project.

Management agencies work in close cooperation with the tourism industry and use an industry-based ecotourism certification program to ensure an ecologically sustainable and high-quality experience for visitors to the Region. The number of high standard tourism operators has steadily increased from 19 operators in 2004 to 69 in 2017.

The impact of external factors such as climate change, coral bleaching and cyclones on particular sites in the Region means that some previously popular tourism sites have currently lost their appeal. To accommodate situations such as this, the Great Barrier Reef Marine Park Authority's (Marine Park Authority) *Marine Tourism Contingency Plan 2014* provides flexibility where the operator may need to relocate.

Defence activities

Management of Defence activities in the Region continues to be effective, with close cooperation clearly evident between the Marine Park Authority, the Australian Department of Defence and other agencies. This conclusion supports the findings of previous reports (Outlook Report 2009 and Outlook Report 2014, and GBR Strategic Assessment Report). Defence's internal environmental management procedures are mature, regularly reviewed, and have been demonstrably effective in managing most environmental risk issues. The management framework for Defence activities continues to deliver effective environmental monitoring and management, commensurate with the low level of evident risks. Defence's in-house environmental expertise is relied on to support impact assessments and other evaluations relevant to defence activities in the Region. The cooperative framework established under the Memorandum of Understanding promotes active engagement between the Marine Park Authority and Defence, providing a sound platform for sharing information, particularly in relation to the major exercise program Talisman Sabre. As foreshadowed in the Outlook Report 2014, use of military training areas in and adjacent to the Region is intensifying as a result of the introduction of significant new military equipment. Future use of military training areas will need to ensure risk assessments consider the condition of habitats under a changing climate. Minor shortcomings are still evident relating to the management of ordnance contamination (UXO), particularly at legacy sites outside of Defence training areas.

Fishing (Commercial and Recreational)

Fishing continues to be the principal extractive use of the Region. Viable commercial fishing industries and recreational fishing depend on a healthy ecosystem. While the economic and social values of fishing are understood, the impacts of ecosystem degradation on fisheries productivity are less well understood. The most significant change in the management of fishing in the Region is the development of the *Queensland Sustainable Fisheries Strategy 2017-2027* (Fisheries Queensland 2017). This strategy covers both commercial and recreational fishing and commits to 10 major reform areas, including improved monitoring, research, environmental risk assessments and fish stock management. Illegal fishing is considered one of the greatest risks to biodiversity and the sustainability of legal fishing. Compliance measures have been increased, with vessel monitoring systems to be operational on all commercial vessels by 2020. New legislation enables the Marine Park Authority to prohibit entry to repeat offenders. Further work has also been undertaken to identify why recreational fishers fish illegally, and a compliance program that uses this information has been developed.

Actions associated with the Queensland Sustainable Fisheries Strategy are being implemented, but it has only been in place a short time. The strategy provides a clear program of work, and the reforms under the strategy provide an opportunity to introduce best practice standards. It is expected that outcomes for Fishing will improve with implementation of the strategy.

Ports

Ports within the Region are well managed. Coordinated and holistic planning for future port developments is now being undertaken through legislation and processes, including the *Master Planning Processes for Priority Ports* (Department of State Development 2016) and the associated *Queensland Sustainable Ports Development Act 2015*. New controls and procedures are being developed for the planning and conduct of dredging activities. Implementation of these new processes was in its initial stages at the time of preparation of this report, and these are expected to result in a reduction in potential impacts of port activities, particularly port developments and expansions. A number of actions regarding Ports are included in the Reef 2050 Plan. It is anticipated that with time, port monitoring data will contribute to the *Reef Integrated Monitoring and Reporting Program* (RIMReP) which is in development.

Research activities

The Marine Park Authority and the main Queensland Government management bodies within the Department of Environment and Science are not research institutions *per se*. However, they work closely with research institutions such as Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australian Institute of Marine Science (AIMS), universities and other research bodies. Managing agencies, liaise with research institutions to focus research on key management issues for the Region and apply existing research knowledge to management. Management of Research activities in the Region aims to minimise any adverse impacts of research through a risk-based permits process. An accreditation process for research institutions is also in place to minimise permit complexity for low risk activities. As for Outlook Report 2009 and Outlook Report 2014, there is limited compliance auditing of research permits.

Timeframes for assessment of permits have been lengthy since 2015, with priority given to assessment of new applications so that researchers are able to commence their work. A new online permits system has been developed and has been operational since October 2017. This should provide for more timely assessment of permits and enhanced capacity for monitoring of permit compliance although it is still too early to judge the impact of this on overall management of research permits in practice.

Identification of research priorities is becoming a more important component of research management within government, especially as managers and researchers respond to the research needs generated by the decline in the condition of the Reef. The Marine Park Authority's summary of scientific information needs was updated for the period 2014-2019 and identifies key information needed to better inform management of the area and the *Guidelines on Managing Scientific Research* (GBRMPA 2017b) were updated in late 2017.

Research is key to addressing the more significant threats arising from broader environmental stressors. Promoting and applying research to address these larger threats is a key role for management agencies. The science of responding to impacts from stressors such as climate change is only in its infancy. Similarly, there is a major research gap around reef restoration and methods of enhancing the resilience of systems within the Region. New Reef Intervention Guidelines, developed by the Marine Park Authority in 2018 will assist with this research growth area, by providing information on the permit process for intervention activities and what types of activities are very high risk and unlikely to be considered.

Recreational use (excluding fishing)

Recreation is primarily managed through zoning and partnerships. The *Recreation Management Strategy* (RMS) (GBRMPA 2012a), was developed in 2012 to provide an overarching framework for coordinated management of recreation and to inform the public. The RMS was scheduled to be assessed and updated in 2017, but this has not yet occurred. The IUCN Outlook Report for the Great Barrier Reef World Heritage Area (IUCN 2017) supports the view that the direct impact of recreation is a low threat to the Outstanding Universal Values of the area.

A major undertaking in Recreation since 2014 has been the review of the Whitsundays Plan of Management. The Plan of Management provides, among other things, no-anchoring sites to protect coral reefs, and flight height restrictions over significant bird sites. The revised plan also provides increased access for super yachts to approved locations, increased provision for water sport activities, a greater recognition of the importance of the area to Traditional Owners and increased flexibility to accommodate low-impact activities.

Significant increases in funding for the Field Management Program announced in 2017 are expected to improve compliance through increased on-park presence, vessel monitoring, public contact and education, maintain essential field management capabilities, and support island and Reef restoration that contribute to the positive management of recreation, among other activities. Over \$2.3M has also been allocated by the Queensland Government to expand public moorings and reef protection markers between 2016-2019. This will assist with better protection of fragile reefs.

Stakeholder engagement remains strong, with Marine Park Authority and Queensland Parks and Wildlife Service (QPWS) staff in regional offices continuing to interact with recreational

users, particularly through Community Access Points and engagement for the Reef Guardian program.

While Recreation is considered a low risk activity to the values of the Region, a review of the risk assessment in the RMS to consider new information concerning the cumulative impacts would be appropriate.

Shipping

Shipping is well regulated and managed within the Region. An extensive suite of control, risk reduction and risk response measures, which compare favourably with management programs elsewhere in the world, are used to manage shipping activity. The Australian Maritime Safety Authority (AMSA), Maritime Safety Queensland (MSQ) and the Marine Park Authority, collectively manage different aspects of shipping within the Region. Planning for and continual improvement of shipping management in the Region is guided by the multi-jurisdictional *North East Shipping Management Plan (North East Shipping Management Group 2014)*.

Although shipping incidents will inevitably occur, both the rate of incidents and the potential consequences have been attenuated to a significant extent in comparison with the historical record. These improvements are the result of initiatives at the international, national and regional level, reflected by continual improvements in technology, advances in ship design, more expansive marine environment protection and safety regulations, controls such as REEFVTS (Great Barrier Reef and Torres Strait Vessel Traffic Service) and associated enforcement and compliance mechanisms. The likelihood of single, catastrophic events is effectively risk-managed, but persistent, chronic, low-level effects are of potential concern. Examples of these include the cumulative effects of leaching and loss of biocidal anti-fouling paints, wake and turbulence effects, and possibly altered light and underwater noise regimes. Some research projects are being undertaken to better characterise and understand these potential risks.

Traditional use of marine resources

The program to develop and implement agreements about the Traditional use of marine resources remains one of the success stories in management of the Region. Traditional use of marine resources is managed primarily through Traditional Use of Marine Resources Agreements (TUMRAs) and Indigenous Land Use Agreements, which promote sustainable use of marine resources and incorporate management of other species and habitats such as seagrass, oyster beds and shellfish. Nine TUMRAs and one Indigenous Land Use Agreement now apply, covering an estimated 25 per cent of the Region's coastline. This is an increase of three agreements since 2014. In those communities where TUMRAs are established, they have formed a major focus for activities related to management of Sea Country and Indigenous Heritage.

Researchers have estimated that the traditional use of marine resources has only a minor and localised impact on the targeted species, compared to factors such as climate change and extreme climatic events, marine debris especially abandoned fishing nets, boat strike, pollution, sedimentation, and hunting outside the Region (Marsh and Hamman 2016, Commonwealth of Australia 2017). However, given the low numbers of dugongs, some

Traditional Owner groups have decided to forego their traditional rights and not take any at present.

There has been strong engagement by both the Marine Park Authority and Field Management Program staff with Traditional Owner groups in relation to traditional use of marine resources. Compliance training has been delivered to more than 500 Traditional Owners over 2016-17, strengthening their ability to enforce their TUMRA both within their communities and where people from outside hunt within their sea country.

Managing external factors influencing the Region

Climate change

Widespread bleaching events across much of the Region over 2016 and 2017 have focussed even more attention on climate change as the principal threat to the Reef. Primary responsibility for national responses to climate change rests with the Commonwealth Department of Environment and Energy. The impacts of climate change and ocean acidification on the Great Barrier Reef arise from global greenhouse gas emissions. The Paris Agreement under the United Nations Framework Convention on Climate Change provides the international framework under which actions to mitigate global climate change impacts are occurring. Effective global actions to mitigate climate change are necessary to manage climate change impacts on the Great Barrier Reef. The Marine Park Authority has an advisory role to other agencies in relation to mitigation and adaptation to climate change and extreme weather events affecting the Region. While at a Queensland Government level, climate change programs and staffing have increased, and new climate transition and adaptation strategies have been released, governments at all levels continue to exhibit considerable “policy dissonance” around climate change responses and economic and development strategies being pursued by governments as indicated by Dale et al. (2016).

The Marine Park Authority has limited jurisdictional responsibility for addressing climate change in the broad sense but has contributed significantly to the development of international best practice for managing responses to climate change and extreme weather issues as they relate to Reef ecosystems. This has been completed through research and monitoring, partnerships with research institutions, government agencies and stakeholder groups as well as education, community awareness and stakeholder engagement programs.

The Marine Park Authority has, in the past, been very active in this area. It prepared a strategic plan to address climate change in 2009 and updated that plan in 2012. However, the updated plan was defunded early in its life. Many actions in that plan remain unaddressed or only partially implemented, although a number of them have been incorporated into annual operational plans or are now included in the sectoral adaptation programs being developed at Queensland Government level. Changes in staffing and organisational structures within the Marine Park Authority have lowered the visibility of the organisation in addressing climate change. While the Marine Park Authority staff as a whole remains very aware of climate change and factor it into their work, there is no longer an identifiable unit or staff within the Marine Park Authority focussed on climate change responses.

The Reef 2050 Plan aims to address key threats and boost the health and resilience of the Reef so that it can better cope with the impacts of climate change. However, the Reef 2050

Plan does not directly address the threat of climate change by establishing objectives, targets and actions relating to climate change. This shortcoming was identified by the Reef 2050 Plan Independent Expert Panel and Reef 2050 Advisory Committee who recommended that they be explicitly included in the Reef 2050 Plan. Climate change has been more directly considered in the midterm review of the plan which was brought forward to commence in 2017 in recognition of the impact of back-to-back bleaching events in 2016/17. The revised Reef 2050 Plan does include an improved narrative about climate change as well as local climate resilience and climate adaptation actions.

Coastal development

Values of the Region relevant to Coastal development are clearly articulated in *Informing the Outlook for Great Barrier Reef coastal ecosystems* (GBRMPA 2012b), the Great Barrier Reef Strategic Assessment, and the *Scientific Consensus Statement* (Waterhouse et al. 2017). The Scientific Consensus Statement identified coastal development as one of the activities contributing to the poor condition of the Region's inshore ecosystems.

Planning systems to effectively address coastal development have continued to evolve and improve over the past five years. The *Planning Act 2016* and associated legislation established ecological sustainability as a core principle and included reinstatement of coastal land surrender provisions under the *Coastal Protection and Management Act 1995* to ensure areas at high risk of coastal erosion remain free of development. A number of councils in the Region have integrated the state interest coastal environment guideline supporting the Queensland Government *State Planning Policy* into their planning schemes.

Stakeholder engagement on coastal ecosystem management continues to play an important role in protecting the values, although feedback from local councils suggest greater engagement about the implications of new science on coastal development would be appreciated.

The Reef 2050 Plan highlighted that the long-term future condition and trend of coastal ecosystems are very poor if joint management action is not taken to halt and reverse the decline in inshore and coastal ecosystems. Improvement in planning, inputs, processes and outputs is a positive sign that the major issues are starting to be addressed. However, the impact of these improvements on the attainment of desired outcomes for coastal development has yet to be demonstrated.

Land-based run-off

While Climate change is recognised as the highest long-term, system-wide threat to the values of the Great Barrier Reef Region, Land-based run-off associated with agricultural practices is considered to be the most immediate system-wide threat (Reef 2050 Plan, Waterhouse 2017). The *Reef 2050 Water Quality Improvement Plan 2017-2022* (Reef 2050 WQIP) (Commonwealth of Australia 2018) sets out a number of actions and targets associated with land-based run-off, and now aligns with the Reef 2050 Plan. It has been expanded to cover all land-based sources of water pollution, including those from urban and industrial lands, as well as considering social and economic values.

The values that underpin the matters relevant to water quality continue to be well understood by managers. The implementation of the Reef 2050 WQIP prioritises funding to reduce land-based run-off through improved land management practices. In addition, it emphasises

research and monitoring programs to assess the effectiveness of the programs and assist with targeting geographical areas and actions.

The context, planning, inputs, processes and outputs of the program continue to improve, however the Scientific Consensus Statement (Waterhouse, 2017) highlights that poor water quality is continuing to have a detrimental effect on Reef health. With voluntary implementation of improved management practices in place, change is likely to be slow, and the significant time-lag between actions on the ground and results in better water quality will be exacerbated.

Managing to protect the Region's values

Biodiversity values

Protection of Biodiversity within the Region is the primary objective for many of the management actions undertaken within the Region. The Outlook process, UNESCO World Heritage Monitoring driven by the possibility of placing the World Heritage Area on the "danger list", and the Great Barrier Reef Strategic Assessment and Great Barrier Reef Coastal Zone Strategic Assessments have focussed attention on the biodiversity values and threats to values in the Region. This increased attention has resulted in studies undertaken in collaboration with research and academic institutions that have increased documentation and understanding of this issue, particularly in response to coral bleaching. Back-to-back bleaching events in 2016 and 2017 have dramatically changed the situation in relation to outcomes for biodiversity in the Region. Monitoring and assessment work undertaken by researchers in 2016 and 2017 have provided some information on the extent of bleaching and some estimates of coral death, but the flow-on impacts on other elements of biodiversity are currently less well understood.

Management is undertaken using an array of measures, principally zoning plans and associated compliance. Other measures include management plans, permit assessments, site management, education, and implementation of best practices. A potentially complex and confusing management regime that operates across jurisdictions has long been addressed through inter-governmental coordination, for example, complementary zoning plans and work programs. Major risks and threats to biodiversity protection are well documented and risk assessment and management procedures are in place.

The extensive degradation across the Region highlights the importance of considering cumulative and consequential impacts, which are currently less well understood by managers. Work on development of an integrated monitoring framework *Reef 2050 Integrated Monitoring and Reporting Program* and on assessment of cumulative impacts have been very slow over the past two years but offer the promise of addressing this deficiency (as also indicated by Gooch et al. (2017) and Collier et al. (2016)). The capacity of the Field Management Program to address biodiversity management and natural resource management issues in marine and island environments is likely to improve with the allocation of additional staffing and vessels, following a period of declining capacity over the Outlook 2014 reporting timeframe.

Heritage values

Recognition of the Heritage values of the Region has improved over the last four years, especially in relation to Indigenous heritage. The Reef 2050 Plan includes a heritage theme,

and this has stimulated action in planning for heritage and in engagement with Traditional Owners. Major developments in planning include development of an updated draft heritage plan '*Heritage in the Great Barrier Reef Marine Park*', and more specific nested strategies: the *Aboriginal and Torres Strait Islander Heritage Strategy 2018-2022*; and the *Great Barrier Reef Marine Park Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018-2021*. New protocols are being developed to enable appropriate negotiation, storage and handling of culturally sensitive material. New impact assessment guidelines relating to historic and Indigenous heritage values have been finalised.

The Marine Park Authority has developed a heritage register that will store information about all values relevant to heritage in Commonwealth listed sites within the Region. With the exception of listed and priority sites, management of most historic sites in the Region receive little attention and are vulnerable to inadvertent damage. However, progress has been made in legislative protection, with a specific type of Special Management Area created in 2015 to increase the capacity to protect maritime cultural sites around two World War II submerged aircraft.

Indigenous Rangers and Traditional Owners have been very active in the field, working with the Field Management Program, other Indigenous Ranger initiatives and Traditional Owner groups to manage their own Sea Country and associated heritage. In spite of this progress, the current state of engagement with Traditional Owners in the Region still requires some improvements, with some people feeling that there is still a lack of engagement of Traditional Owners as real partners in the long-term management of sea country (Great Barrier Reef Traditional Owner Workshop, 2018, Dale et al., 2016).

Community benefits of the environment

Significant work has been undertaken to understand the range of community benefits across the Region and to incorporate community benefits into planning, policy and assessment processes. This has required a better understanding of benefits to the community and the consequential and cumulative impacts of activities on Community benefits of the environment. Human-dimension targets are being developed for incorporation in future plans and monitoring programs. Community benefits are now included in many of the policy and decision-making guidelines such as the Reef 2050 Plan. Stakeholder and Traditional Owner engagement through the Reef Advisory Committees, Local Marine Advisory Committees and volunteer programs enable managers to gain a better understanding of community values and issues of concern. The Field Management Program, managed by the Marine Park Authority and the Queensland Government, has a strong commitment to ensuring public access to the Reef and islands. A significant body of work has been undertaken to provide guidelines and benchmarks (Marshall et al; 2017a).

Management of elements within the management framework

Context is the highest scoring management effectiveness element across the topics, with all assessed as either effective (8 topics) or mostly effective (6 topics). These ratings have mostly been stable since the Outlook Report 2014 (GBRMPA 2014a), with an improvement for Shipping and Heritage and a decline for Biodiversity. This decline is primarily due to the increased uncertainty around the condition and trend of Biodiversity following the bleaching events of 2016 and 2017.

Significant efforts have been made since the Outlook Report 2009 in **planning** for a number of issues such as Coastal development, Heritage, Shipping, Fishing and Research. Lack of plans and systems to ensure that adequate monitoring is undertaken is the weakest aspect of planning overall.

Adequacy of **inputs** is variable across management issues, being least *effective* for Climate change, Historic heritage and Fishing. Secure resourcing (both funding and staff resources) is a continuing problem for many management issues. The adequacy of staff numbers to address issues was the second weakest indicator overall, and inputs generally (apart from availability of non-government inputs such as volunteers) fell in the lower half of the distribution of indicator scores across topics. Loss of experienced staff with extensive corporate knowledge and expertise has been an issue at both Queensland and Australian government level. The allocation of significant funding across a number of topics in 2018 is recognised.

Management **processes** are particularly strong for Defence activities, management of Land-based run-off, Shipping and Research. They are weakest for Climate change, Coastal development, Heritage and Fishing. Stakeholder and community engagement and application of biophysical information are the highest rated processes across all issues. Governance is generally strong, but weak for Climate change. The application of socio-economic and heritage knowledge, and setting of targets to benchmark performance are problematic for many issues.

Delivery of desired **outputs** was rated as *effective* or *mostly effective* for all issues except Climate change (*ineffective*) and Recreation (*partially effective*). Outputs are strongest in relation to Defence, Commercial marine tourism, and Traditional use of marine resources. The most highly rated Output indicator related to formation of effective partnerships with stakeholders and communities, reflecting strengths in stakeholder and community relations across the assessment.

Achievement of desired **outcomes** (values protected, threats reduced, long-term environmental and economic sustainability) is highly variable across issues. Overall, the greatest concerns in relation to achievement of desired outcomes are for Climate change and Biodiversity, both of which are rated as *ineffective* in relation to environmental sustainability.

Management approaches

Environmental regulation

Statutory instruments used to assist the management of the Region are generally contemporary and appropriate. Commonwealth legislation has been reviewed to keep pace with emerging issues, and to align the *Environmental Protection and Biodiversity Conservation Act 1990* (EPBC) and the *Great Barrier Reef Marine Park Act 1975* (GBRMP Act). A 2014 review of institutional and legal arrangements found that gaps exist in regulation of climate change and agriculture but expressed caution about the practicality of additional regulation of these complex issues. The relevant Queensland legislation is not necessarily consistent with the Commonwealth, often due to differences in objectives between the two governments.

The Great Barrier Reef Marine Park Zoning Plan 2003 (Zoning Plan) continues to be very effective for issues such as fishing, resulting in positive biodiversity protection outcomes. However, zoning (spatial planning) is not designed to comprehensively address other issues (e.g. recreation) which are handled in detail through permits and Plans of Management. The only Plan of Management to be updated recently is the Whitsundays Plan of Management. Higher levels of zoning protection in Marine National Park and Preservation Zones have not offered protection against coral bleaching.

Compliance systems are very sophisticated and are focussed on issues of risk to the Region such as illegal fishing. Changes to Vessel Monitoring System requirements for commercial fishing vessels are indicated in the Sustainable Fisheries Strategy, with a requirement that these devices be fitted to all commercial fishing vessels including dories by 2020, and a priority to install units on net, line and crab commercial fishing vessels by the end of 2018.

A number of policies and strategies were prepared or updated in the lead-up to the Outlook Report 2014 – (e.g. Climate change, Recreation, Biodiversity, TUMRAs, Reef Water Quality Protection Plan (now Reef 2050 WQIP)) but some of these, such as the *Recreation Management Strategy* and *Biodiversity Conservation Strategy*, have either not been actively implemented or, in the case of the *Climate Change Strategy* were defunded, discontinued or integrated into other programs. To some extent the Reef 2050 Plan has overtaken some of these strategies as an overarching plan for the Region, although it lacks a focus on addressing climate change.

Engagement

Partnership and collaborative arrangements between the Marine Park Authority, the Queensland Government and other Australian government agencies in field management and on-ground works continue to be positive and work well. Further positive collaboration among government departments within and across levels of government is through programs such as the Reef 2050 Plan and Reef 2050 WQIP.

Research collaboration between the managing agencies and research providers are also generally positive. However, some researchers report that engagement of Marine Park Authority staff in planning related to research and monitoring has declined in recent times. While this view was expressed by a number of researchers, the Marine Park Authority continues to have representation on all of the major Boards and Committees relating to research in the Region. It may be, in part, a consequence of diversified sources of funding for the Region's research with significant research funds being managed through the Department of Environment and Energy and the Office of the Great Barrier Reef.

Governance arrangements for the Region have become much more complex following the Great Barrier Reef Strategic Assessment, and Dale (2016) identified 11 high-risk sub-domains of governance requiring transformational change to address declining outcomes in the Region. Even though these areas might fall outside of the direct mandates of the Great Barrier Reef Marine Park Authority and other relevant management agencies for management within the Region, any disengagement by agencies on these issues is likely to heighten risks for the Reef. For example, many human activities in the catchment of the Region impact directly or indirectly on ecosystem health in the Region, and understanding and addressing all these impacts will be crucial to the Region's future prospects. The impression that the voice of management agencies, and especially that of the Marine Park

Authority, has been diminished was a common message in discussions with stakeholders during the preparation of this assessment.

Managing agencies continue to work closely with Traditional Owners across the Region to include their knowledge and input into management issues. Indigenous employment has been strongly supported by both governments, especially through the Field Management Program and Commonwealth and State Indigenous Ranger programs. The development of partnerships and stewardship arrangements has been one of the strongest aspects of management of the Region.

Knowledge, innovation and integration

The Outlook process, the Great Barrier Reef Coastal Zone Strategic Assessment, Great Barrier Reef Strategic Assessment and the preparation of the Reef 2050 Plan and the *Great Barrier Reef blueprint for resilience* (GBRMPA 2017a) have accumulated and consolidated knowledge relevant to the management of the Region, and have made this knowledge available to managers, stakeholders and the general public. In addition, these processes have identified key knowledge gaps and stimulated programs and projects to fill these knowledge gaps. However, the coral bleaching events in 2016 and 2017 have resulted in considerable environmental changes. Knowledge of condition and trend for many species and ecosystems has thus declined, and it will take some time for researchers to update this knowledge.

Management agencies have developed strong and extensive partnerships with research providers such as Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Australian Institute of Marine Science (AIMS) and universities. These partnerships have become more targeted as key knowledge gaps have been identified through processes such as the Outlook Report 2009 and 2014, Reef 2050 Plan, the *Science Strategy and Information Needs 2014-2019* and in response to key environmental and socio-economic challenges.

Combined with the strong stewardship programs, these research partnerships have led to an expansion of monitoring both in scope and scale. The AIMS long-term monitoring program and the Social and Economic Long-term monitoring program have demonstrated the value of maintaining consistent monitoring over an extended time period.

Much hope has been placed in the development of the Reef 2050 Integrated Monitoring and Reporting Program (RIMReP) as a positive initiative that will help to address some of the deficiencies in past monitoring efforts, especially in relation to cumulative impacts and overall ecosystem health. However, RIMReP has been very slow to develop with only modest progress made to date.

Resourcing of management arrangements

Management Inputs (staffing and funding) have declined or been reprioritised in some areas since the Outlook Report 2009, and again since Outlook Report 2014. This appears to be largely a result of competing requirements for management of other high priority issues. Following the release of the *Reef 2050 Plan Investment Framework* (Commonwealth of Australia 2016), there has been a significant increase in resources by the Australian and Queensland Governments targeting particular actions and governance. Funding since 2016 has also resulted in a stabilisation of staffing levels and budget for the Marine Park Authority.

Funding for the Field Management Program was static since 2008 and declining in real terms, however in April 2018 a significant funding boost was announced that included an increase in staff and funding, with compliance, maintenance of facilities and work on threatened species identified as the highest priorities for the program.

1. Management effectiveness evaluation methodology

Protection and management of the Great Barrier Reef Region (the Region) is undertaken by a partnership of many government agencies, Traditional Owners, stakeholders and community members. Managers undertake a wide range of management activities both on the water and in the catchment. A broad assessment of the effectiveness of this management is an important component in determining the likely resilience of the Region's ecosystem and heritage values, in assessing the major risks to the Great Barrier Reef, and in predicting its likely future.

The effectiveness of existing measures to protect and manage the Region's ecosystem was independently assessed in the Outlook Report 2009 and again in the Outlook Report 2014. A similar independent assessment has been undertaken for this report.

The Outlook assessments consider all the aspects of management of particular topics within the Region undertaken by the Marine Park Authority as well as other Australian and Queensland government agencies, Traditional Owners and other groups involved in management. Management of topics extending outside the boundary of the Region are considered where the activities affect the values of the Region, especially for Land-based run-off and Climate change.

1.1 Management effectiveness evaluation framework

Management effectiveness evaluation is defined as the assessment of how well protected areas are being managed – primarily the extent to which they are protecting values and achieving goals and objectives. IUCN has developed a framework (Figure 1 and Table 2) for assessing management effectiveness (Hockings et al., 2006). This framework has been widely applied around the world as a basis for specific assessment systems designed to meet the need to evaluate management effectiveness in different circumstances.

Good management needs to be rooted in a thorough understanding of the individual conditions related to protected areas, be carefully planned and implemented and include regular monitoring, leading to changes in management as required. Effective management:

- begins with understanding the *context* of the protected area, including its values, the threats that it faces and opportunities available, its stakeholders, and the management and political environment;
- progresses through *planning*: establishing vision, goals, objectives and strategies to conserve values and reduce threats;
- allocates *inputs* (resources) of staff, money and equipment to work towards the objectives;
- implements management actions according to accepted *processes*; and
- eventually produces *outputs* (goods and services, which should usually be outlined in management plans and work plans)
- that result in impacts or *outcomes*, hopefully achieving defined goals and objectives.

These six important elements within the management cycle should all be assessed if effectiveness of management is to be fully understood and appropriate management responses developed and implemented. For example, assessing only outcomes may indicate the objectives have been achieved but leaves it unclear whether it was due to

good luck or good management; conversely if an outcome is not achieved then unless all six elements are assessed, it is hard to know if it was due to insufficient resources (inputs), poor planning or a problem with the tools and approaches used to manage the issue.

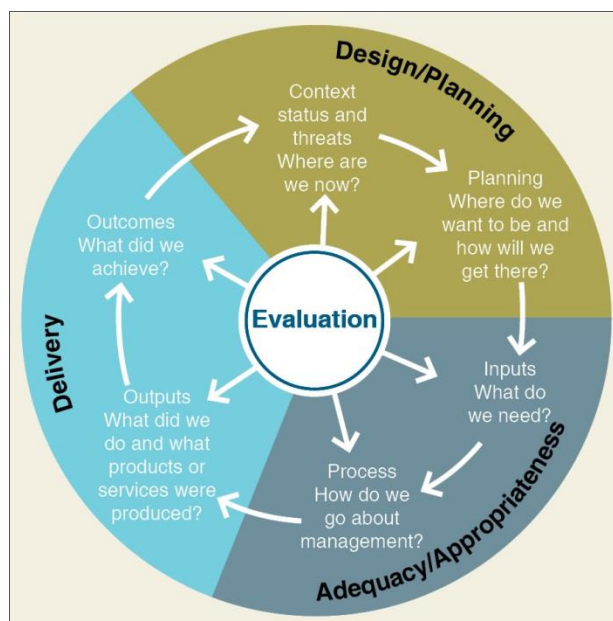


Figure 1. The Framework for assessing management effectiveness of protected areas (from Hockings et al., 2006)

Table 2 IUCN-WCPA Framework for assessing management effectiveness of protected areas and protected area systems

Elements of management cycle	Design		Appropriateness / Adequacy		Delivery	
	Context	Planning	Inputs	Process	Outputs	Outcomes
Focus of evaluation	Assessment of importance, threats and policy environment	Assessment of protected area design and planning	Assessment of resources needed to carry out management	Assessment of the way in which management is conducted	Assessment of the implementation of management programmes and actions; delivery of products and services	Assessment of the outcomes and the extent to which they achieved objectives
Criteria that are assessed	Significance / values Threats Vulnerability Stakeholders National context	Protected area legislation and policy Protected area system design Protected area design Management planning	Resources available to the agency Resources available to the protected area	Suitability of management processes and the extent to which established or accepted processes are being implemented	Results of management actions Services and products	Impacts: effects of management in relation to objectives

The Great Barrier Reef Outlook Report is required to assess *the existing measures to protect and manage the ecosystem within the Region*. The evaluation methodology for the first report Outlook Report 2009 was developed using the IUCN framework and assessed all six elements. This methodology was adapted slightly for Outlook Report 2014, and has remained consistent for this report.

1.2 Management topics

The 14 management topics addressed in this report are the same as in Outlook Report 2014. The management topics are grouped into three clusters:

1. Managing direct use

- Commercial marine tourism
- Defence activities
- Fishing (commercial and recreational)
- Ports
- Recreation (not including fishing)
- Research activities
- Shipping
- Traditional Use of Marine Resources.

2. Managing external factors

- Climate change
- Coastal development
- Land-based run-off

3. Managing to protect the Region's values

- Biodiversity values
- Heritage values
- Community benefits of the environment

The assessment and associated text in the report relating to management of defence activities, Ports and Shipping were prepared by Ground Zero Environmental Pty Ltd (Trinder and Polglaze). All other sections of the report were prepared by Protected Area Solutions (Leverington, Hockings and Leverington).

Each **topic** was assessed under each framework **element**, resulting in a total of 49 **indicators** (Table 3).

Table 3 Indicators used to assess effectiveness of management topics

CONTEXT
CO1 The values of the Great Barrier Reef relevant to *** are understood by managers
CO2 The current condition and trend of values relevant to *** are known by managers
CO3 Impacts (direct, indirect and cumulative) associated with *** are understood by managers.
CO4 The broader (national and international) level influences relevant to *** are understood by managers.
CO5 The stakeholders relevant to *** are well known by managers.
PLANNING
PL1 There is a planning system in place that effectively addresses ***
PL2 The planning system for *** addresses the major factors influencing the Great Barrier Reef Region's values.
PL3 Actions for implementation regarding *** are clearly identified within the plan
PL4 Clear, measurable and appropriate objectives for management of *** have been documented
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to ***
PL6 The main stakeholders and/or the local community are effectively engaged in planning to address ***
PL7 Sufficient policy currently exists to effectively address ***
PL8 There is consistency across jurisdictions when planning for ***
PL9 Plans relevant to *** provide certainty regarding where uses may occur, the type of activities allowed or specifically disallowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.
INPUTS
IN1 Financial resources are adequate and prioritised to meet management objectives to address ***
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address ***
IN3 The right skill sets and expertise are currently available to the managing organisations to address ***
IN4 The necessary biophysical information is currently available to address ***
IN5 The necessary socio-economic information is currently available to address ***
IN6 The necessary Indigenous heritage information is currently available to address ***
IN7 The necessary historic heritage information is currently available to address ***
IN8 There are additional sources of non-government input (for example volunteers) contributing to address ***
PROCESSES
PR1 The main stakeholders and/or industry(ies) are effectively engaged in the ongoing management of ***
PR2 The local community is effectively engaged in the ongoing management of ***
PR3 There is a sound governance system in place to address ***
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for ***
PR5 Appropriate training is available to the managing agencies to address ***
PR6 Management of *** is consistently implemented across the relevant jurisdictions
PR7 There are effective processes applied to resolve differing views/ conflicts regarding ***
PR8 Impacts (direct, indirect and cumulative) of activities associated with *** are appropriately considered.
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding ***
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding ***
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding ***
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding ***
PR13 Relevant standards are identified and being met regarding ***
PR14 Targets have been established to benchmark management performance for ***
OUTPUTS
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for ***
OP2 Implementation of management documents and/or programs relevant to *** have progressed in accordance with timeframes specified in those documents
OP3 The results (in OP1 above) have achieved their stated management objectives for ***
OP4 To date, products or services have been produced in accordance with the stated management objectives for ***
OP5 Effective knowledge management systems regarding *** are in place within agencies
OP6 Effective systems are in place to share knowledge on *** with the community
OUTCOMES
OC1 The relevant managing agencies are to date effectively addressing *** and moving towards the attainment of the desired outcomes.
OC2 The outputs relating to *** are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)
OC3 the outputs (refer OP1 and 3) for *** are reducing the major risks and the threats to the Great Barrier Reef

OC4 Use of the Great Barrier Reef relating to *** is demonstrably environmentally sustainable
OC5 Use of the Great Barrier Reef relating to *** is demonstrably economically sustainable
OC6 Use of the Great Barrier Reef relating to *** is demonstrably socially sustainable enhancing, in terms of understanding and/or enjoyment
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address ***

1.3 Assessment ratings, grades and trends

Ratings and grading

A four-point rating scale commonly used in management effectiveness evaluation systems was adopted. The rating scale for each indicator was 1 = 0-20 per cent of optimal condition, 2 = 21-50 per cent of optimal condition, 3 = 51-80 per cent of optimal condition, 4 = 81-100 per cent of optimal condition.

Scores for each element of the IUCN framework were scaled to provide a total score out of 40 and a rating system was developed to convert scores to a rating of management as follows:

- If the total score is between 35–40, then the overall grading statement for that element is *effective*.
- If the total score is between 27–34, then the overall grading statement for that element is *mostly effective*.
- If the total score is between 16–26, then the overall grading statement for that element is *partially effective*.
- If the total score is between 0–15, then the overall grading statement for that element is *ineffective*.

Confidence

For each indicator, the trend and confidence with which the scores were given was also provided. For confidence the categories were: adequate high-quality evidence and high level of consensus, limited evidence or limited consensus, or very limited evidence—assessment based on anecdotal knowledge. The following ratings for confidence were adopted:

- adequate high-quality evidence
- limited evidence.

Trend

Trend was also calculated in relation to the overall grade for each element (context, planning, inputs, process, outputs and outcomes) for each management topic (Table 1). The trend categories included: improving, deteriorating, or stable. When there was no change in overall grade for an element within a topic, the trend is shown as declining or improving when the percentage change in overall score for the element equals or exceeds 7.5 percent. The following symbols for trend were adopted:

- ↑ Trend since 2014 has been an upwards change in grade
- ↗ Trend since 2014 is increasing but has not caused an upwards grade change
- ↔ Grade has remained stable compared to 2014, with no major trends
- ↘ Trend since 2014 is decreasing but has not caused a downwards grade change
- ↓ Trend since 2014 has been a downwards change in grade

Note that Ratings for the management topics were not weighted when means were calculated, and the performance assessments need to be interpreted in the context of differences in scale and complexity (Table 4).

Table 4. Scale and complexity of issues addressed in the management effectiveness assessment

Topics	Scale	Complexity			Increasing complexity →
		Social	Biophysical	Jurisdictional	
Climate change	Region-wide	major	major	major	
Coastal development	Region-wide and limited to coastal areas and mainly inshore waters	major	major	major	
Land-based run-off	Great Barrier Reef catchment and mainly inshore waters	major	major	major	
Ports	Concentrated around 12 ports from Lockhart River in the north to Gladstone in the south	major	moderate	major	
Fishing	Region-wide but variable in intensity	major	major	moderate	
Heritage values	Region-wide	major	moderate	moderate	
Commercial Tourism	Region-wide but variable in intensity	major	moderate	moderate	
Recreation (non-extractive)	Region-wide but variable in intensity	major	moderate	moderate	
Traditional use of marine resources	Region-wide but variable in intensity	major	moderate	moderate	
Biodiversity values	Region-wide	minor	major	moderate	
Community benefits of the environment	Region-wide	major	moderate	minor	
Shipping	Concentrated around shipping lanes	moderate	moderate	moderate	
Research activities	Region-wide but limited in intensity	minor	moderate	minor	
Defence activities	Limited in area and duration	minor	minor	minor	

1.4 Assessment process

The Australian and Queensland governments compiled evidence, data sources and lists of information sources relevant to each of the 49 indicators for each topic. Staff were provided with suggested means of verification, which included examples of evidence commonly used to justify whether an indicator had been addressed such as reports, plans, published papers and statistics. The independent assessors then reviewed evidence, checked source documentation, sought additional information from relevant research papers and reports, and assigned an initial rating, confidence and trend to each of the indicators.

All findings and means of verification were recorded in a standard proforma. These judgements were agreed by consensus of the assessors and subsequently discussed with managing agencies. Based on this iterative process of discussion and review, the assessors adjusted a number of assessments where improved knowledge and understanding indicated that the original ratings were either too high or too low, as supported by evidence. For each indicator, the most pertinent supporting evidence used as a means of verification for the score is listed (Appendix 4).

A number of semi-structured interviews were undertaken with stakeholders to understand their independent perceptions of management effectiveness. Stakeholders covered a range of sectors, including: researchers from universities (10), CSIRO (1), local government (2); directors of research station (1); non-government conservation organisations (2); members

of Reef Advisory Committees (2); tourism sectors (2); and Natural Resource Management bodies (2). The stakeholders were asked the following questions:

- What have been the significant changes in the **management** of this topic since the last outlook report?
- What has influenced this change?
- Do you think there have been any significant changes that have impacted on the **capacity** of managing agencies to manage this topic?
- Do you think there have been any significant changes to the **outcomes** that have been achieved?
- What evidence do you have to support these claims?
- What would need to happen to improve the desired outcomes?
- What impact has the threat of the Great Barrier Reef World Heritage Area being included on the “in danger” list had on the management of the Region?

Information from the interviews was considered, and where appropriate, was incorporated into the assessment of relevant topics where evidence supported the stakeholders’ views. Following the assessment of the indicators for the topics, gradings and trends for each element and topic were calculated, and a summary of the effectiveness of the six elements of the management cycle across all the topics was developed. This allows the identification of strengths and weaknesses of current management (Section 5).

Since 2014, the Reef 2050 Plan has been a key driver of actions. The Reef 2050 Plan is referred to throughout this report where relevant. A separate but related Reef 2050 Insights Report considers the Reef 2050 Plan’s strength and weaknesses and its contribution to the effective management of the Region (Leverington et al.; 2018).

1.5 Management effectiveness of management tools and approaches

In addition, information gathered through the process above was used to summarise management effectiveness in relation to the three main management approaches used to protect and manage the Region:

- Environmental regulation — management tools such as regulations, zoning plans, management plans, permits and licences, and compliance are used to establish the statutory arrangements and environmental standards necessary to protect and manage the Reef.
- Engagement — managing agencies work with Traditional Owners, the community, business, industry and local government to influence best practice and encourage actions that will help secure the future health of the Region.
- Knowledge, integration and innovation — management is based on the best available science as well as drawing on traditional ecological knowledge and information from the wider community and is informed by the results of ongoing monitoring.

A wide range of tools are employed to implement these approaches:

- Acts and Regulations
- zoning plans
- management plans
- permits and licences (including environmental impact assessment)

- Traditional Owner agreements
- compliance
- site infrastructure
- fees and charges
- policy (including strategies, policies, position statements, site management arrangements and guidelines)
- partnerships
- stewardship and best practice
- education and community awareness
- research and monitoring
- reporting

A summary of the assessment of each topic is set out in Sections 2, 3 and 4. Section 5 considers the six elements of *context, planning, inputs, processes, outputs, outcomes* and *outcomes* with the management effectiveness framework for the Region. The assessors then considered how effective the main management tools were in delivering outcomes for each of the 14 topics (Section 6). The grades are based on the grading statements in Appendix 2 and the summarised details given in Appendix 3. Further details of the program areas and management tools are provided in Appendix 4. Detailed results of the assessment of each management topic against the 49 indicators are provided in Appendix 5.

2. Assessment of managing direct use of the Region

2.1 Commercial marine tourism

The Marine Park Authority and the Queensland Parks and Wildlife Service (QPWS) jointly manage marine tourism activities in the Region including processing administrative permits and compliance operations. Rating of effectiveness for all six assessment elements remained the same as in the Outlook Report 2014 (*effective* and *mostly effective*), although Inputs improved within the *mostly effective* range.

Managers have a sound understanding of the values of the Region relevant to commercial marine tourism. Tourism is recognised as the most significant direct use in the Region, in terms of both economic value and employment (Deloitte Access Economics 2017). Tourists value the Reef for its biodiversity values, its aesthetic beauty and world heritage status (in that order of priority) (Marshall et al. 2017a). Tourism activities are considered to be a comparatively low risk to the Reef, with key issues related to over-crowding at particular high use sites.

Local-scale issues such as anchor damage to coral and disturbance of marine wildlife have been reduced through regulation, communication of responsible reef practices, and increased public moorings and reef protection markers which preclude anchoring in high coral areas. Stakeholders are well known by managers and are proactively engaged with Reef issues. What is less clearly understood is the impact to the tourism industry of multiple stressors (such as coral bleaching and severe, regular cyclones) on the enjoyment and accessibility of the Reef to visitors, and the resultant impact on the reef-based tourism industry.

The Zoning Plans, Plans of Management, partnerships, policies and permits are key tools used to manage commercial marine tourism. Plans of Management are in place for the areas that receive more than 80 per cent of visitors, although they cover less than 10 per cent of the total Great Barrier Reef area. In 2015-16, the Whitsundays Plan of Management was reviewed, with the amended Plan completed in 2017. This amended plan has increased protection of seabird nesting areas from vessels and aircraft (tourism and recreational) during key nesting periods; identified areas for superyacht anchorages that has minimal coral habitat; and provided greater flexibility for some tourism activities such as motorised water sports. The *Cairns Area Plan of Management 2008* and *Hinchinbrook Plan of Management 2004* are both overdue for review.

The development of management arrangements for superyachts and the implementation of a policy for cruise ships reflects the increased demand for these activities in the Region. Assessment processes, service level standards and routine permits for low risk/routine activities been introduced to improve efficiency. Latent tourism permit use identified in the Outlook Reports 2009 and 2014 has yet to be addressed, though a policy review has commenced. Although there is long-term zoning monitoring that can provide information about the relative health of areas in the Whitsundays, there is no systematic monitoring system in place to assess the effectiveness of Plans of Management.

Maintenance of tourism structures was identified as an issue in Outlook Report 2014, as reduced profitability across the industry increased the risks associated with the upkeep of tourism-related structures in the Region, such as pontoons, jetties, underwater observatories

and moorings. Cyclones since 2014, particularly in the Whitsundays, have affected many island resorts and coastal structures such as jetties. To address these issues, the Marine Park Authority has invested in permit compliance, to ensure permitted structures are maintained in good condition to reduce risks to values. In 2016-17, all nine tourism pontoons were audited, and no significant issues were found. Damaged infrastructure in the Whitsundays following Cyclone Debbie, particularly on islands, remains an ongoing management concern. Water quality impacting on the clarity of water for scuba diving and snorkelling has also been raised by tourism stakeholders as an issue of concern.

A review of the regulations and permit assessment processes was undertaken in 2017, with a view to improve consistency and transparency by providing a range of guidelines for decision making. The Marine Park Authority is meeting the service level standards for permit processing.

Partnerships with accredited tour operators continue to be constructive. For example, the Eye on the Reef Program involves the tourism industry in monitoring Reef health. Since 2014, participation in the program has expanded to include a number of operators using the Eye on the Reef Rapid Monitoring Survey as a saleable product, with guests now completing monitoring forms as part of their visit to the Region. A number of operators provide weekly data, which is essential to determine changes over time and provide a robust early warning system. The Marine Park Authority delivers in-water training days every year in Port Douglas, Cairns and the Whitsundays to ensure participants remain qualified and to maximise the quality of data collection under the Eye on the Reef program.

The High Standard Tourism program encourages best practice operations by awarding operators who are independently ECO-certified as high standard. Prior to 2014, only one certification body was approved by the Marine Park Authority to assess and certify tourism operators under this program. Two certification bodies are now recognised, increasing the capacity for certification and auditing of performance. The number of operators involved has steadily increased from 19 operators in 2004 to 69 in 2017. These operators carry approximately 63 percent of tourists visiting the Reef.

Lack of compliance with certification standards has previously been raised as a concern. In 2015, an independent audit of high standard operators was undertaken to determine the level of compliance with the requirements of their certification. Fifteen were pre-announced audits involving the auditor visiting the office and the vessel, but not participating in the tour. All 15 operators passed the announced audits relating to environmental, social and economic standards required of the Certification Program. Seven unannounced audits focused on three key areas of Certification being minimal disturbance to wildlife, opportunities for interpretation and credibility of information and education, especially in relation to presenting the World Heritage values. These three areas are taken from a total of fifty-one subsections required by the ECO Certification. The overall results reveal some fundamental strengths and positive experiences, but there were significant interpretive content and education gaps.

This issue is being addressed in partnership with the Association of Marine Park Tourism Operators and Tourism and Events Queensland through the creation of a 'Master Reef Guides' program for the Region. In order to present contemporary and accurate information to Reef visitors, marine tourism staff require access to up-to-date information and training on how best to interpret information on the values of the World Heritage Area to guests. In

addition to the Master Reef Guides program, the Marine Park Authority launched a comprehensive online Reef Discovery training course, in June 2018, which encompasses biology, ecology, geology, heritage and management.

Joint permitting between the Marine Park Authority and QPWS is underpinned by appropriate policy, risk assessments and systems. The relationship between the governments through the Field Management Program continues to be strong. Queensland Government recognises the importance of the Region to tourism, as reflected in its *Ecotourism Plan 2016-2020* (QPWS 2016).

Within the Marine Park Authority, high levels of skills related to marine tourism management and impact assessment have been retained. The new organisational design resulting from the operational review maintains resources in the Environmental Assessment and Protection section, strengthens a focus on contemporary policy within a new dedicated policy and planning section, and maintains some tourism engagement in the Engagement, Stewardship and Partnerships section.

The Field Management Program staff, responsible for on-water compliance, comprise a highly skilled and motivated workforce. In addition to on-water compliance, management of tourism activities are strengthened through strong engagement. For example, expert advice continues to be sought through the Tourism Reef Advisory Committee, which advises the Great Barrier Reef Marine Park Authority Board. In 2017, the Marine Park Authority addressed concerns of advisory committee members about the number of meetings per year by trialling a third workshop-style meeting. Representatives from the tourism industry are also members of Local Marine Advisory Committees.

Risks to the Region from tourism activities have been reduced through additional management and education, including the implementation of new assessment guidelines, policy and regulations from the strengthening permissions system project. It is hoped that this will result in a pre-emptive reduction in permit applications that propose activities that are inconsistent with policies of the managing agencies. It is also expected to increase the quality of applications, by making it clear to applicants what information is required to support a comprehensive permit assessment (e.g. maintenance certificates supplied at the time of application continuation).

The impact of external factors such as climate change, coral bleaching, poor water quality and severe weather on particular tourism sites means the industry and the managing agencies need to be flexible to ensure the “best” sites are not overcrowded as other sites become unviable for tourism purposes. From the Marine Park Authority perspective, the Marine Tourism Contingency Plan provides flexibility where the operator is prepared to move to other locations. The Contingency Plan also acknowledges that where the impact is widespread or on multiple operators, the Marine Park Authority may need to consider other options including review of general planning arrangements. Operators can also assist by planning for changes to their sites and build in their own contingency, such as by incorporating a combination of island and reef experiences, and by having flexibility in their activities.

The value that tourism visitors put on the Region is indicative of its national and international importance. The effective management of marine tourism in the Region based on strong partnerships with the industry and community supports this importance.

Table 5 Assessment results for Commercial Marine Tourism

Commercial marine tourism	2009	2014	2019
Context		↔	↔
Planning		↓	↔
Inputs		↗	↗
Processes		↓	↔
Outputs		↔	↔
Outcomes		↔	↔

Management effective assessment is colour coded:

Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

↗ Trend since 2009, 2014 is increasing but has not caused an upwards grade change

↔ Grade has remained stable compared to 2009, 2014, with no major trends

↓ Trend since 2009, 2014 has been a downwards change in grade

2.2 Defence activities

This review has considered the management of activities undertaken by the Australian Department of Defence (Defence) in the Region and has drawn similar conclusions to the Outlook Report 2009 and Outlook Report 2014. Defence activities continue to be well managed, with continuing close cooperation between Defence, the Marine Park Authority and the Queensland Parks and Wildlife Service evident, particularly relating to the management cycles for major exercises using Shoalwater Bay Training Area. For example, the two managing agencies participate in exercise planning meetings and assists with advice about locations for discharges from ships and monitoring of activities such as amphibious landings. Ratings for all six assessment elements are *effective*. The rating for Inputs improved from *mostly effective* in 2014 to *effective* in 2019.

The environmental management system that Defence has in place is mature and has operated very effectively for many years. The management agreement and Memorandum of Understanding (MOU) between Defence and the Marine Park Authority have been regularly reviewed and updated since the Outlook Report 2014. This MOU continues to underpin the close working relationship between the two agencies.

Defence continues to demonstrate a strong commitment to minimising its impacts including implementing more strict controls on some activities in sensitive habitats, for example related to the amphibious landing activities that occurred at Stanage Bay as part of the Talisman Sabre exercise in 2017. This is in recognition of the pressures facing the Region from other threats, particularly the bleaching effects and more frequent storm events that are associated with climate change.

Resources supporting Defence environmental management remain adequate to deliver these positive outcomes. The nature of Defence activities undertaken in the Great Barrier Reef is well understood by Defence environmental staff who consider environmental impacts and risks associated with the different types of Defence activities. The high level of in-house expertise in Defence complements the Marine Park Authority's own management expertise. Working together and sharing information through the Memorandum of Understanding helps ensure a high level of confidence that Defence activities in the Region are environmentally sustainable. The high standard of management would not be possible if Defence expertise or resourcing were to decline or be lost altogether.

The potential for intensification of use in and around Shoalwater Bay for amphibious lodgement training remains a potential emerging risk – with new areas outside of Defence-owned training facilities, such as Stanage Bay, now being used. Shoalwater Bay remains a relatively large and intact natural area that is an increasingly important refuge for species (for example dugong and birdlife) whose ranges are contracting in response to other pressures, such as coastal development and climate change. Balancing the Defence requirements for training with conservation of critical environmental values will remain a significant challenge for managing agencies and Defence to manage.

Since the Outlook Report 2014, some improvements to the publicly available information relating to management of Unexploded Ordnance (UXO), explosive ordnance waste, and a wide range of dumped war materials have been implemented. Web-based mapping tools now cover some of the known marine areas where contamination is likely to exist outside the existing Defence training areas. This information is useful for managers making decisions about permitted uses in areas that might be affected by discarded or misfired ordnance.

Defence's role in response to reports about the presence of legacy UXO continues to be effective. Commonwealth policy on the *Management of Land Affected by Unexploded Ordnance* is clear that outside of responding to incidents, legacy UXO contamination is not a Defence responsibility. There is almost no available information regarding the presence or effects of ordnance contamination on the Reef. An exception is the WWII dump site at John Brewer Reef offshore from Townsville where more extensive surveys have been undertaken since the discovery of dumped ordnance from WWII in 1988. As noted in the Outlook Report 2014 the overall approach continues to treat hazards arising from UXO contamination completely differently to all other forms of hazardous material contamination of the environment. It is a specific shortcoming that the Commonwealth UXO policy does not clearly consider environmental contamination risks. Many of the observations made by the Australian National Audit Office more than 20 years ago in their 'Review of Contamination of Commonwealth Land' remain relevant to the current state of management of this issue².

Legacy UXO contaminated sites, particularly from WWII, are not all known or accurately recorded. It is understood that the Commonwealth Policy for management of UXO (dating from 1999) is still in place and states that the Commonwealth is generally under no legal obligation to commit resources to reduce known hazards associated with UXO contamination (Commonwealth of Australia, 1999).

² Audit Report No. 31 1995-96 - *Environmental Management of Commonwealth Land: Site Contamination and Pollution Prevention* - March 1997
https://www.aph.gov.au/Parliamentary_Business/Committees/House_of_Representatives_Committees?url=environ/landing/landrpt/contents.htm

Table 6 Assessment results for Defence

Defence	2009	2014	2019
Context		↔	↔
Planning		↘	↔
Inputs		↓	↑
Processes		↔	↔
Outputs		↔	↔
Outcomes		↔	↔

Management effective assessment is colour coded:

Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

- ↑ Trend since 2009, 2014 has been an upwards change in grade
- ↔ Grade has remained stable compared to 2009, 2014 with no major trends
- ↘ Trend since 2009, 2014 is decreasing but has not caused a downwards grade change
- ↓ Trend since 2009, 2014 has been a downwards change in grade

2.3 Fishing

Fishing continues to be the principal extractive use of the Great Barrier Reef. Viable commercial fishing industries and recreational fishing depend on a healthy ecosystem. Commercial fishing targets a range of species including fish, sharks, crabs, lobsters, scallops and prawns. In addition, commercial harvest fisheries target a range of species including coral and live rock, marine aquarium fish, sea cucumber and tropical rock lobster. The main target species for recreational fishing are coral trout and other cod, emperor, tropical snapper, barramundi, bream, mackerel, whiting, crabs, tropical rock lobster and bait fish.

Rating of effectiveness for two of the six assessment elements has improved: Planning from *mostly effective* to *effective*, and Inputs from *partially effective* to *mostly effective* respectively. Context, Processes, Outputs and Outcomes remained the same as in the Outlook Report 2014.

Management of fishing, and the aquatic environment on which the uses depend, is shared between the Australian and Queensland governments. Managers have a good understanding about the values of the Region with respect to fishing, and knowledge about the condition and trend of these values is improving. The economic and social value of fishing are well understood, although the effect of ecosystem stress or degradation on fisheries productivity is less well understood. In particular, the flow-on effects of the recent coral bleaching in the Region to fisheries is of concern. For example, coral trout have been shown to be sensitive to changes in habitat and environmental conditions (Pratchett et al. 2013, 2017). The national and international influences on fishing are well known, and stakeholders are also well known, and engaged.

The primary management tool with respect to fishing is the *Queensland Fisheries Act 1994* and associated fisheries regulations that require licencing of commercial fishing; and establish fishing gear limitations, size and possession limits, spatial and temporal fishery closures and total allowable commercial catch limits. Additionally, there is a comprehensive compliance program undertaken by Queensland Boating and Fisheries Patrol and the Field Management Program. This program has been strengthened over the past five years, particularly in relation to recreational fishing. Further details are provided below. Stewardship

approaches, such as Reef Guardian fishers, and joint Marine Parks permits for a small number of harvest and developmental fisheries also play significant roles in managing the impacts of fishing

The most significant change in the management of fishing in the Region is the development of the Queensland Sustainable Fisheries Strategy 2017-2027. This comprehensive planning document clearly articulates objectives and actions and includes an implementation and monitoring plan. It addresses 10 major reform areas around sustainability limits, research and monitoring, community engagement, harvest strategies and decision rules about when to act. The strategy sets a target for fish stocks *to achieve a biomass of 60 per cent of the original unfished populations (or maximum economic yield) by 2027*. The strategy, through its implementation and resourcing, is expected to improve the management effectiveness for the Fisheries topic over the next five years.

There is a good understanding of commercial fisheries' effort and harvest information. The Queensland Department of Agriculture and Fisheries assesses the stock status of important Queensland fish species each year. These assessments follow a weight-of-evidence approach, where an expert panel determines the status of each stock and assesses the biological sustainability of key wild-caught fish stocks. While some of the cumulative impacts associated with commercial fishing are known, information gaps exist, especially with respect to the coral bleaching events and the impact of fishing activities on Reef ecosystems. In the Outlook Report 2014, the highest risks associated with fishing included incidental catch of species of conservation concern, extraction of predators, discarded catch and extraction from spawning aggregations.

Sustainability concerns are present for pearl perch which has been classified as transitional depleting. There are also concerns with large declines in spawning aggregation and catch rates for Spanish mackerel (Buckley et al. 2017, Tobin et al. 2014), as well as evidence indicating the Queensland component of the snapper stock has suffered large declines in catch rates (Thurstan et al. 2016).

Estimated statewide recreational fishing effort surveyed in 2013-2014 showed a decline compared to 2000-2001. The Queensland Government has rolled out additional recreational fishing monitoring since 2015 and now undertakes surveys at more than 47 boat ramps across Queensland four times a month and collects information on how many fish were caught, details of the fishing trip and size of the fish retained. Ecosystem effects and cumulative impacts of recreational fishing are likely to be concentrated in inshore areas close to major population centres. Increasing numbers of seasonal recreational fishers may increase the pressure on specific species and locations, but these impacts are largely unquantified.

Infofish Australia have created recreational fisher citizen science tools for predictive forecasting of fisher experience and have developed a 'Track my fish' application that provides near real-time catch and effort information as well as providing instantaneous feedback to users. While not yet peer reviewed or considered a robust monitoring method, this is a useful community engagement tool. Accessibility to affordable high-functioning navigation and sonar technology may be enhancing the effective catch of recreational fishers but may also have the detrimental effect of concentrating fishing in particular sites.

In response to the introduction of net-free fishing zones, the Rockhampton, Mackay and Cairns Councils have developed draft recreational fishing strategies aimed at identifying priority actions to increase the recreational fishing through improved infrastructure and marketing while ensuring the health of fish and their habitat. These strategies are valuable stakeholder and community engagement tools.

Illegal fishing and poaching were rated a very high risk to the Region's ecosystem and heritage values in the Outlook Report 2014. Recreational fishing in green (no take) zones continues to be the most common offence in the Marine Park, contributing to undermining Reef resilience. Each year since 2014-2015, the Field Management Compliance Program has recorded more than 500 offences involving recreational fishing in the Marine Parks. This is due to increased and improved surveillance effort but is also likely to reflect increased illegal activity. Recent social science research to understand why people fish in no-take zones has determined that the primary drivers are fishers' perceptions of better fishing, a belief they won't get caught, and that others are doing the same (Bergseth et al 2017, Bergseth et al 2018). This information is being used to inform and refine compliance plans and strategies targeting recreational fishing - a current key focus of compliance management in the Marine Park. Notably, the research also found that illegal fishers are a minority: most fishers have high perceptions of the legitimacy of management and believe that illegal fishing is socially unacceptable.

To address illegal commercial fishing, Vessel Monitoring Systems will be required on all commercial vessels by 2020, with a priority to install units on net, line and crab commercial fishing vessels by the end of 2018. It is expected that implementation of these requirements will significantly reduce the number of illegal commercial fishing incidents. Enforcement has also been strengthened through the Marine Park Authority using legislative provisions to prohibit fishing activity in the Marine Park by recidivist offenders.

Commercial fisheries in the Region are accredited against national sustainability guidelines under the Environment Protection and Biodiversity Conservation Act and are regularly benchmarked against other Australian jurisdictions to ensure consistency in management approach.

The Marine Park Authority, QPWS and Fisheries Queensland endeavour to engage with key stakeholders. However, membership of commercial fishers in the Marine Park Authority's Local Marine Advisory Committees is currently lacking. Public consultation with stakeholders associated with the development of the Queensland Sustainable Fisheries Strategy was undertaken, and one of the major reforms outlined in the strategy is for improved stakeholder engagement. A sustainable Fisheries Expert Panel has been established, and stakeholder-based fishery working groups have also been established for example: Coral Reef Fin Fish; Trawl; crab; tropical rock lobster; and East Coast Inshore Fisheries.

Management staff engage with key recreational fishing stakeholders to promote stewardship and to seek to influence opinion on issues that affect management goals. Local Marine Advisory Committees host community events with an aim to improve the understanding of marine park management and fisheries management and to promote stewardship by recreational fishers.

Resources dedicated to fisheries issues in Queensland Department of Agriculture and Fisheries have been focussed on the development of the fisheries strategy. An additional 16

Great Barrier Reef compliance officers and 11 other full-time equivalent staff were recruited in 2017/18 to support implementation of the strategy. The Field Management Program has had a significant increase in funding in 2018, after a number of years of static funding.

While actions associated with the strategy have been on track to date, it has been in place for only a short time. The strategy provides a clear program of work and the reforms under the strategy provide an opportunity to introduce best practice standards. It is responsible for the improved management effectiveness scores for Fishing. The implementation of the strategy, in conjunction with the improved compliance measures, provides the opportunity for greater effective management in the future.

Table 7 Assessment results for Fishing

Fishing	2009	2014	2019
Context		↔	↔
Planning		↔	↑
Inputs		↔	↑
Processes		↔	↔
Outputs		↔	↔
Outcomes		↔	↔

Management effective assessment is colour coded:
 Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

↑ Trend since 2009, 2014 has been an upwards change in grade

↔ Grade has remained stable compared to 2009, 2014, with no major trends

2.4 Ports

There are 12 Great Barrier Reef trading ports, managed by four individual port authorities, all of which are Queensland Government-owned corporations. Of these, only the minor ports of Cooktown and Quintell Beach are actually located within the Marine Park, with the remainder wholly or partly in the Great Barrier Reef Region. Nevertheless, ports can and do have an effect upon the management of the processes and conservation of values. Accordingly, the scope of the Outlook assessments in relation to Ports is to evaluate how the ports are planned, developed and operated so that due recognition is given to the actual and potential effects upon the Region, and the interactions between port regulatory agencies (Commonwealth and Queensland), port operating authorities, port users and the Marine Park Authority. This assessment does not evaluate or critique operations or management of the Great Barrier Reef ports themselves, except to the extent of matters relevant to their interactions and linkages with the Region.

Ratings of effectiveness (Table 8) for four of the six assessment elements (Context, Planning, Outcomes,) improved since the Outlook Report 2014 from *mostly effective* to *effective*. Outputs improved from *partially effective* to *mostly effective*, and Inputs and Processes remained the same although the underlying scores for Processes have increased.

The Marine Park Authority's interest in matters relating to ports adjacent to the Region is facilitated through a Memorandum of Understanding (MoU) with the Queensland Ports Association, which has been in place since 2009. This MoU allows for a cooperative and communicative approach when it comes to Reef-related policy and regulatory matters

relevant to Great Barrier Reef ports. Regular Port Forum meetings, which include representatives of all relevant Port Corporations as well as relevant Queensland and Australian government environmental regulators, allow for discussions on policy and regulatory matters.

Environmental risks and effects associated with 'port developments' include: dredging for the creation (capital dredging) and upkeep (maintenance dredging) of channels and basins; land reclamation; creation of artificial structures (e.g. rock walls, sheet pile walls, piles); placement of navigation and other markers (e.g. buoys, spars, pylons); siting and designation of anchorages; and development of land-side infrastructure.

Since the Outlook Report 2014, port planning and development in the Region has been reinvigorated, with the benefit of significant reforms. Reforms include new regulations limiting the spatial extent of port developments and restricting ports to existing sites, as well as new controls on dredging and the disposal of dredge spoil. The Queensland and Great Barrier Reef Ports Strategies, and the associated statutory ports master planning processes being implemented by the Queensland Government, have improved this situation markedly. Implementation of the port master planning processes was in its infancy at the time of this management effectiveness review, and thus its full effect was not able to be observed or assessed. Nevertheless, the new, mandatory and coordinated approach to port development in the Region is intended to ensure effective recognition and protection of the area's Outstanding Universal Value, which will likely be reflected in future management effectiveness evaluations.

In general terms, ports within the Region continue to be well managed. While ports conduct a diverse range and number of monitoring programs, there are gaps in the range, quality and consistency of data gathered across ports generally. This also applies to the presentation and availability of collected data, based upon a review of the publicly accessible ports monitoring data. This situation has improved since 2014 and continues to improve. Expanded monitoring and reporting programs, focused upon known and potential risks, has the potential to provide indications of new or emerging threats to the Marine Park, such as significant deterioration in sediment quality or the incidence of invasive marine species, or demonstrate the absence of such threats.

Table 8 Assessment results for Ports

Ports	2009*	2014	2019
Context		-	↑
Planning		-	↑
Inputs		-	↔
Processes		-	↗
Outputs		-	↑
Outcomes		-	↑

Management effective assessment is colour coded:

Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

- ↑ Trend since 2014 has been an upwards change in grade
- ↗ Trend since 2014 is increasing but has not caused an upwards grade change
- ↔ Grade has remained stable compared to 2014, with no major trends
- The topic was not assessed in 2009

2.5 Recreation (not including fishing)

Responsibility for management of non-extractive recreation is spread across a variety of Australian and Queensland Government agencies. Principal among these are the Marine Park Authority, the Queensland Parks and Wildlife Service and Maritime Safety Queensland. The Marine Park Authority defines recreation as an independent visit for enjoyment that is not part of a commercial tourism operation (GBRMPA 2012a). It includes locals recreating and a portion of traditional tourists under international definitions (for example, free and independent tourists). Fishing for recreational purposes is considered under the Fishing topic.

Ratings for effectiveness (Table 9) for five of the six assessment elements (Context, Planning, Inputs, Processes and Outcomes) have remained the same as in the Outlook Report 2014. Outputs has declined from *mostly effective* to *partially effective*.

The Marine Park Authority prepared a *Recreation Management Strategy* (RMS) (GBRMPA 2012a) in 2012 in response to concerns outlined in the Outlook Report 2009. The RMS was designed to provide an overarching framework to manage recreation in a coordinated manner and to inform the public of the management approach. The RMS also identified which management tools are in place for each recreation activity. The RMS provides information concerning the risk-based approach adopted by the Marine Park Authority and identifies the major risks and threats associated with recreation, and avenues to reduce those risks. The review of the RMS anticipated for 2017 has not occurred.

The values that attract large numbers of visitors outlined in the RMS are still relevant, but the threats and risks to those values require reviewing to assess their current impact. The risk analysis assessment in the RMS determined there were no threats from recreational use that posed a very high or high risk to the values. While the IUCN Outlook Report for the Great Barrier Reef (IUCN 2017) supports the conclusion that the direct impact of recreation is a low threat to the Outstanding Universal Value of the Region, it would be appropriate to conduct a review of the risk assessment in the RMS to consider new information concerning cumulative impacts.

Work undertaken on the aesthetic values of the Region reported that the cumulative use of recreational users at popular sites had a localised, medium risk of affecting naturalness, solitude and tranquillity (Johnstone et al 2013). The condition and trend of recreation is discussed in the RMS, but information about impacts of recreation on condition and trend of values as a whole is still lacking. Key risks identified in the risk-based compliance and enforcement plan relevant to recreation include vessels approaching whales, disposal of garbage, island national park offences, misuse of public moorings and Plan of Management offences (motorised water sports, anchoring in no-anchoring areas, and speed of vessels).

Recreation in the Great Barrier Reef is managed through legislation, the Zoning Plan, Plans of Management, site management, partnerships, education and community awareness. In addition, the expanded network of public moorings and no-anchoring areas specifically help to reduce the impact of recreational use in heavily accessed areas, while providing easier access for recreational users to enjoy the Region. The management tools are supported by a risk-based compliance and enforcement plan mentioned above. Coordination between relevant agencies (the Marine Park Authority, QPWS, Queensland Boating and Fisheries

Patrol, Maritime Safety Queensland, Queensland Water Police) to enforce Marine Park Acts, Regulations, Zoning Plans and Plans of Management continues to be high.

The *Responsible Reef Practices* program provides advice to recreational users about how to undertake activities in a “reef friendly way” and cover a wide range of recreational activities from anchoring and mooring, to bird watching, how to interact with marine species such as whales, turtles and dolphins, and visiting islands and coral cays.

A major undertaking in Recreation since 2014 has been the review of the Whitsundays Plan of Management. The Plan provides, among other things, no-anchoring sites to protect coral reefs, and flight height restrictions over significant bird sites. The revised Plan provides increased access for super yachts to approved locations, increased provision for water sport activities, a greater recognition of the importance of the area to Traditional owners and increased flexibility to accommodate low-impact activities. The changes to the Plan of Management also considered the impacts of Cyclone Debbie in March 2017 and the resulting pressure on popular sites. Work on public moorings, new no-anchoring areas and improved access to Whitsunday National Parks also demonstrated the ability for management to respond to environmental changes after Cyclone Debbie and support sustainable recreational use.

Since the development of the RMS, limited Marine Park Authority resources have been directly allocated to managing recreation apart from the Whitsunday Plan of Management review. While there was a decrease in funding in real terms for the Field Management Program over the past ten years, a substantial increase in funding for the Field Management Program was announced in April 2018. The Field Management Strategy for 2018-2023 includes targets associated with maintaining capital investment and ensuring the maintenance and safety of existing infrastructure. The Queensland Government has also invested over \$2.3 million to expand the public moorings and reef protection markers between 2016-2019.

Stakeholder engagement remains strong. Marine Park Authority and QPWS staff across the Region continue to interact with recreational users, particularly through Community Access Points and engagement for the Reef Guardian program which includes schools, councils, farmers and fishers. However, the diversity and informality inherent in the sector continue to present challenges to engage with the majority of recreational users and to spatially document their values and activities. The lack of an implementation plan or review of the RMS since it was finalised reflects the low risk recreation has on the Reef values.

Table 9 Assessment results for Recreation (not including fishing)

Recreation (not including fishing)	2009	2014	2019
Context		↔	↔
Planning		↔	↘
Inputs		↘	↔
Processes		↘	↔
Outputs		↔	↓
Outcomes		↔	↔

Management effective assessment is colour coded:
 Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

- ↔ Grade has remained stable compared to 2009, 2014 with no major trends
- ↘ Trend since 2009, 2014 is decreasing but has not caused a downwards grade change
- ↓ Trend since 2009, 2014 has been a downwards change in grade

2.6 Research activities

This section addresses issues of the management of research by management agencies and, to a lesser extent, the interactions between the agencies and research/education institutions and researchers. The Marine Park Authority and the main Queensland Government management agencies are not research institutions *per se*, but they work closely with research institutions such as CSIRO, AIMS, universities and other research bodies to help focus research on key management issues for the Region, to apply existing research knowledge to management and to manage the research process and minimise any adverse impacts of research activity.

All six assessment elements (Table 10) are rated as *effectively* managed. Planning, Inputs and Processes all improved one grade from the 2014 assessment, largely as a result of improved systems and processes relating to research permit management. This restores the situation seen in the assessment of Research and educational activities in the Outlook Report 2009, which had declined in the Outlook Report 2014.

Management of research priorities is becoming a more important component of research management within the Marine Park Authority, especially as managers and researchers respond to the research needs generated by the declining condition of the Reef. Following the Great Barrier Reef Strategic Assessment and Outlook Report 2014, the Marine Park Authority's *Science Strategy and Information Needs* (GBRMPA 2014d) was updated for the period 2014-2019. It identifies key information needed to better inform management of the area and provides a searchable database of research questions. This document, along with partnership agreements with key research institutions, provides the basis for research alignment that should deliver valuable outcomes for improved management.

However, a number of researchers interviewed for this current management effectiveness assessment indicated that they have experienced a decline in engagement with the Marine Park Authority staff regarding research priorities, which they attribute to a loss of key staff members from the Marine Park Authority. They report that management agencies are frequently not represented at important meetings relating to research priorities and partnerships. While this view was expressed by a number of researchers, the Marine Park Authority continues to have representation on all of the major Boards and Committees relating to research on the Great Barrier Reef. It may be, in part, a consequence of diversified sources of funding for the Region's research, with significant research funds

being managed through the Department of Environment and Energy and the Office of the Great Barrier Reef.

The Great Barrier Reef is known internationally as a premier site in which to conduct scientific studies. The majority of research occurs at the four major research stations at Lizard Island, Orpheus Island, One Tree Island and Heron Island. A wide range of low intensity research is conducted at other locations.

The Marine Park Authority and QPWS have a lead role in relation to the management of research activities (that is, access to the Marine Parks and islands to undertake research) within and adjacent to the Region. Guidelines on Managing Scientific Research (GBRMPA 2017b) and the Great Barrier Reef Marine Park Regulations 1983 (the Regulations) were updated in late 2017 as part of strengthening the permissions system work. A mix of management tools are used, principally permits for specific research projects and accreditation of partner research institutions to manage potential impacts from this activity. These mechanisms cross-reference to the Zoning Plans and Plans of Management for specific geographic areas, as well as specific policies.

However, there is limited compliance auditing of research permits. Timeframes for assessment of permits can be lengthy, with priority given to assessment of new applications so that researchers are able to commence their work. This means that some renewals can be significantly delayed as researchers are able to continue activities during the assessment period. In some cases, these delays can extend for more than 12 months, due to either a lack of staff within the Marine Park Authority to process the application or delays in provision of information by the applicant. While specific impact studies have not been undertaken, research is not considered to have a large or detrimental impact on the Reef ecosystem, and research activities were generally considered to be environmentally sustainable given the nature and limited extent and intensity of research.

However, confidence that research is environmentally sustainable is reduced by the limited knowledge of cumulative impacts of collection undertaken for research. Researchers are required to submit reports detailing what they collect throughout the permit's duration with data provided on what species are collected and from where. These reports are not always analysed or used by managing agencies in future decision-making, limiting the capacity to identify cumulative impacts of research, particularly in high use areas around research stations.

A new online permits system has been developed and has been operational since late 2017. This should provide for more timely assessment of permits and monitoring of permit compliance. Use of electronic data returns will improve collection and analysis of research collection returns from late 2018 onwards. But it is still too early to judge the impact of this on management of research permits in practice.

In the first Outlook Report in 2009, the development of environmental management plans was judged to be slow, with only one plan completed and another two in draft. While little progress has been made since then, other management arrangements are in place to assist with the effective management of these zones. For example, permit conditions require consultation and negotiation between researchers and research station staff regarding the location and timing of permitted research activities. The Marine Park Authority places

reliance on research station directors to assist with monitoring and managing the activities of researchers that use those facilities.

While research itself is considered to only have a minor impact on the Region's values, it is key to addressing the more significant threats arising from broader environmental and anthropogenic stressors. Significant research funding has been provided for research on the Reef through successive government programs such as the National Environmental Research Program, National Environmental Science Program, as well as funding to AIMS, CSIRO and universities. Promoting and applying research to understand and address these larger environmental stressors is a key role for management agencies.

The science of responding to impacts from stressors such as climate change is only in its infancy. Similarly, a major research effort is needed around reef restoration and methods of enhancing the resilience of ecosystems within the Great Barrier Reef to ensure that such efforts are based upon solid evidence of effectiveness. The Reef Restoration and Adaptation Program, involving a partnership between the Marine Park Authority, AIMS, CSIRO and a number of universities, provides the basis for such research.

Historically, research has been focused on biophysical systems but there has been more recent interest in socio-economic drivers. While more biophysical information is available to support the management of the Great Barrier Reef, there is limited traditional knowledge. More extensive socio-economic information is only now becoming available through the RIMReP-funded social and economic long-term monitoring program.

Research permit applications with the potential to impact Indigenous values are referred to the relevant Indigenous liaison staff for guidance. While Traditional Owner participation in research within their sea country, and dissemination of research results to them, is limited across the Great Barrier Reef, there are promising examples of what can be done to address this situation. For example, the protocol between the Wuthathi Aboriginal Corporation and the QPWS to manage permits for research in the Shelburne Bay area in Cape York, and the guidelines developed for Woppaburra Traditional Owner Heritage Assessments in the Keppel Islands region. The objectives of these agreements are to provide management agency staff and applicants with guidance on research activities that may impact on Aboriginal heritage values within land and sea country. They also provide Traditional Owners with a framework for informing the assessment process. Similarly, Traditional Owners have been extensively involved in the development and implementation of plans for research, monitoring and restoration at Raine Island in the far northern part of the Region.

Table 10 Assessment results for Research

Research	2009	2014	2019
Context		↗	↔
Planning		↓	↑
Inputs		↓	↑
Processes		↓	↑
Outputs		↔	↔
Outcomes		↔	↔

Management effective assessment is colour coded:
 Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

- ↑ Trend since 2009, 2014 has been an upwards change in grade
- ↗ Trend since 2009, 2014 is increasing but has not caused an upwards grade change
- ↔ Grade has remained stable compared to 2009, 2014 with no major trends
- ↓ Trend since 2009, 2014 has been a downwards change in grade

2.7 Shipping

In this report, Shipping is considered to include all aspects of the movement and operations of ships within the Region, including ships sailing to and from or between ports in the Region, or transiting through the Region's waters while *en route* to other locations³. The distinction between Ports and Shipping is the same as that used for the Outlook Report 2014.

A ship is considered to be a vessel greater than 50 metres in length. Commercial ships sailing within the Region include bulk carriers, container carriers, vehicle carriers, general cargo ships, tankers, and cruise ships. Fishing vessels, tourist charters and recreational vessels are not considered as Shipping for the purposes of this review, as they are covered in other topics.

Five assessment elements (Table 11) are rated as *effectively* managed, while Outputs is considered to be *mostly effective*. Context, Planning, Inputs and Processes all improved one grade from the 2014 assessment.

In comparison with other areas of significance to world shipping, shipping in the Region is well regulated and effectively managed and employs an extensive suite of control, risk reduction and risk response measures. Shipping activity levels in the Region are relatively modest by comparison with many other areas, albeit over a much larger area of interest and within an environment of unique significance. Although shipping incidents such as loss of propulsion and navigation errors inevitably occur at times, both the rate of such incidents and the potential consequences are attenuated to a significant extent by improvements in technology, constantly advancing ship design and marine environment protection and safety requirements (e.g. protected fuel tanks and electronic aids to navigation), other controls (e.g. the vessel tracking system REEFVTS, Designated Shipping Areas) and enforcement and

³ The delineation between the topics of Shipping and Ports requires some clarification. The topic of Ports is considered to encompass all aspects of the development, operations and maintenance of ports, with the exception of ship movements within ports. Ship loading/ unloading is a Shipping activity while the cargo is within or over the ship, and a Port activity when not in or over the ship. Under these terms, Ports are taken to include the declaration and siting of anchorages but not the actual anchoring of ships within those anchorages or the activities of ships while at anchor (e.g.. ballast water discharge, treated effluent discharge), as these effects from ships in anchorages are essentially controlled by ship-based marine environment protection measures derived from international agreements.

compliance mechanisms (e.g. Port State Control inspections, ship vetting). These measures prevent increased shipping numbers from resulting in a commensurate linear increase in ship environmental incidents.

Within this context, it is critical that control and emergency response arrangements effectively anticipate, and respond pre-emptively to, changes in shipping activity levels and risk profiles. Further work is also needed in relation to matters such as policy and procedures for restoration and rehabilitation of damaged areas following groundings, and control, surveillance and monitoring for introduced marine species, particularly in relation to ship biofouling.

Although the likelihood of single, catastrophic events is controlled, chronic, low-level effects also need to be considered. There is particular concern about cumulative effects of aspects such as leaching and loss of biocidal anti-fouling paints, wake and turbulence effects, animal strikes, and possibly also altered light and underwater noise regimes. There is also some interest in assessing aesthetic issues related to shipping in remote areas, but the need for such evaluations in designated port and anchorage areas is less obvious. While there has been some progress on the study and management of these issues in recent years, further work remains to be done.

It is evident that since 2012 the coordinated management of Shipping has improved markedly. Testament to this is the development and progressive implementation of the 2014 North East Shipping Management Plan (NESMP) and its foundation of multi-party coordination, management and advisory groups. Implementation of the NESMP has included (among other things) an increased number of marine surveyors at ports to ensure effective inspection of ships and the upgrade of emergency towage capacity in the Region. It has also identified emergent risks, improved multi-agency coordination, and refined existing management practices, and is enhanced by the parallel implementation of elements of the Reef 2050 Plan related to Shipping.

While the public has previously perceived Shipping as one of the major threats to the Region, recent data (Marshall et al 2017) indicates that concerns about shipping are lessening compared to pollution, climate change, cyclones, tropical storms and agricultural run-off. Empirical evidence has also demonstrated a reduction in the occurrence of ship groundings when compared with historical records. While shipping has the potential to cause significant damage in the Region, these risks are recognised and contained.

Agencies with responsibility for managing shipping in the Region (AMSA, MSQ and the Marine Park Authority) are considered to be generally well equipped to undertake the required tasks, with evidence of effective methods and procedures for planning and implementation of appropriate measures to manage shipping activity. It is recognised that the Marine Park Authority is not a primary shipping management agency, but its input and influence are nevertheless critical to ensure that shipping is managed in a sustainable manner and consistent with management objectives for the Region. The Outlook Report 2014 considered it important that the Marine Park Authority develop a more cogent, informed set of management objectives and implementation plans with regard to shipping.

Table 11 Assessment results for Shipping

Shipping	2009	2014	2019
Context			↑
Planning			↑
Inputs			↑
Processes			↑
Outputs			↗
Outcomes			↔

Management effective assessment is colour coded:
 Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

- ↑ Trend since 2014 has been an upwards change in grade
- ↗ Trend since 2014 is increasing but has not caused an upwards grade change
- ↔ Grade has remained stable compared to 2014, with no major trends
 The topic was not assessed in 2009

2.8 Traditional Use of Marine Resources

The program to develop and implement agreements regarding the Traditional Use of Marine Resources remains one of the success stories in management of the Region.

Under the *Native Title Act 1993*, Aboriginal and Torres Strait Islander people from more than 70 Traditional Owner clan groups along the Reef have rights in relation to the harvest and use of marine resources for traditional uses within their land and sea country. Traditional use of marine resources is the undertaking of activities as part of Aboriginal and Torres Strait Islander people's cultures, customs or traditions for the purpose of satisfying personal, domestic or communal needs.

Most of the ratings for effectiveness of the Traditional Use of Marine Resources Agreements (TUMRA) program have remained the same since the Outlook Report 2014 (Table 12). Context has declined from *effective* to *mostly effective*, due to the challenges of understanding threats, impacts and current status of the relevant values in times of rapid change, especially due to the impacts of coral bleaching, cyclones and climate change. Outputs have increased from *mostly effective* to *effective*, with new TUMRAs being developed and targets being met.

Traditional use of marine resources is primarily managed through TUMRAs, which are statutory agreements under the Great Barrier Reef Marine Park Regulations (and mirrored in state legislation). The framework for TUMRAs complements existing community-based measures developed by some Traditional Owner groups to manage their use of some of these resources. TUMRAs promote sustainable use of marine resources, notably threatened species such as dugongs and green turtles. They also incorporate monitoring and management of other species and ecosystems such as seagrass, oyster beds and shellfish. The Marine Park Authority and Queensland Government jointly accredit TUMRAs. Nine TUMRAs (Mandubarra, Giringun region, Woppaburra, Wuthathi, Port Curtis Coral Coast, Lama Lama, Yuku-Baja-Muliku, Gunggandji, and Yirriganydji) and one marine Indigenous Land Use Agreement (Kuuku Ya'u People's Indigenous Land Use Agreement) are accredited, covering about 25 per cent of the Region's coastline. This is an increase of two agreements since 2014. Another TUMRA is currently in development.

TUMRA Frameworks also provide mechanisms and support for many other activities conducted by Traditional Owner groups, including monitoring, education, community activities and management within their land and sea country. Indigenous Rangers employed under both Australian and Queensland government arrangements, as well as within the Field Management Program, help to uphold compliance across the Region and undertake natural resource management activities. This may also include supporting TUMRAs in conjunction with Traditional Owners. Some 15 Reef 2050 actions involve or are supported by the TUMRA program. This section of the report thus overlaps with the section on Heritage, which includes actions to sustain and protect Indigenous Heritage. Aspiration statements, clear objectives and implementation plans are part of the TUMRA package, although the agreements, implementation plans and reporting on outcomes are not available to the public. The TUMRA program has been successful in meeting all its milestones and objectives.

Information about the status of dugong, turtles, and other marine species is fairly reliable and is based on recent scientific surveys of dugongs, adult turtles, though rapid changes due to climate change and events such as cyclones and floods can influence the status of these species. As these are high-profile and culturally important species, the information is communicated to and understood by managers within Traditional Owner groups and Marine Park Authority/QPWS. Managers also have a good understanding of the legislation at Queensland and Australian government level, and national and international obligations in relation to biodiversity conservation and the rights of Indigenous peoples.

Research has estimated the impact of traditional use on marine resources and supports an informed statement that this is a minor and localised impact compared to factors such as climate change and extreme climatic events, marine debris (especially abandoned fishing nets), boat strike, pollution, sedimentation, and hunting outside the Region (Marsh and Hamman, 2016, Commonwealth of Australia, 2017). However, given the low numbers of dugongs, some Traditional Owner groups have decided to forego their traditional rights and not take any for cultural purposes until numbers recover. The cumulative impacts of all other threats, and the ability of species to recover, are less well understood. It is clear that impacts from the range of other major threats to the Reef, including those listed above, have affected Traditional Owners' use of the marine environment and thus their ability to continue important cultural practices.

The effectiveness of engagement of broader stakeholders and local communities is highly variable. There have been some examples (2015-16) of disputes in multiple-use areas where the activities of tourism operators and visitors conflict with Traditional Owner use of marine resources in the sea country areas where they express their native title rights. Some of these tensions were relieved by the Gunggandji Traditional Use of Marine Resources Agreement signed in June 2016.

There has been strong engagement by both Marine Park Authority and Field Management staff with Traditional Owner groups in relation to traditional use of marine resources. There was some concern about the capacity of the Marine Park Authority to engage on a continuing basis. While securing TUMRAs over the remaining areas of the Region is important, the process cannot be rushed, and continuing dedicated resources are needed to build and maintain relationships and support existing TUMRA groups, as well as supporting the development of new agreements. Funding announced in 2018 secured resourcing for the TUMRA program, meaning that appropriate levels of engagement should be possible.

Compliance training was delivered to more than 500 Traditional Owners over 2016-17, strengthening their ability to enforce their TUMRA both within their communities and in cases where people from outside hunt within their sea country.

In those communities where TUMRAs are established, this has formed a major focus for activities related to management of Sea Country and Indigenous Heritage. Outcomes include better management of marine resources and have benefitted Traditional Owners through employment and training. Social, economic and health outcomes have not been formally assessed, but are likely to also be substantial, as are outcomes from Indigenous Ranger program generally (van Bueren et al., 2015).

Table 12 Assessment results for Traditional Use of Marine Resources

Traditional use of marine resources	2009	2014	2019
Context		↗	↓
Planning		↑	↔
Inputs		↑	↔
Processes		↗	↔
Outputs		↔	↑
Outcomes		↑	↔

Management effective assessment is colour coded:
 Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

- ↑ Trend since 2009, 2014 has been an upwards change in grade
- ↗ Trend since 2009, 2014 is increasing but has not caused an upwards grade change
- ↔ Grade has remained stable compared to 2009, 2014, with no major trends
- ↓ Trend since 2009, 2014 has been a downwards change in grade

3. Assessment of managing external factors influencing the Region

3.1 Climate change

Primary responsibility for national responses to climate change rests with the Commonwealth Department of the Environment and Energy. Globally, the Paris Agreement under the United Nations Framework Convention on Climate Change provides the international framework under which actions to mitigate climate change are occurring. Nationally Determined Contributions, which set out countries actions to limit climate change to well below 2° C, are not yet sufficient to achieve this goal (Comstock and Hackmann, 2018). The effectiveness of global actions to mitigate climate change will be the primary determinant to climate impacts on the Great Barrier Reef.

The Marine Park Authority has an advisory role to other agencies in relation to mitigation and adaptation to climate change and extreme weather in the Region as well as a “hands-on” role in relation to adaptation responses to build the resilience of Reef ecosystems to climate impacts. Climate policy and resultant mitigation and adaptation programs remain in a state of flux at national level as made clear in the report of the Senate Enquiry on impacts of climate change on marine fisheries and biodiversity (Australian Senate, 2017). At the time of the last Outlook Report in 2014, Queensland’s specific government focus and action on climate change had diminished with the disbanding of the Office of Climate Change and significant

reductions in staffing and expertise relevant to climate change within the Queensland Government. Since that time, climate change programs and staffing are being rebuilt and new climate transition and adaptation strategies have been released. These include specific sectoral strategies and programs for local government, such as QCoast ²¹⁰⁰, which supports local government to prepare coastal hazard adaptation measures. However, governments at all levels continue to exhibit considerable “policy dissonance” relating to climate change responses and economic and development strategies being pursued by governments as indicated by Dale et al. (2016).

Rating of effectiveness for four of the six assessment elements (Table 13) remained the same as in the Outlook Report 2014. The rating of Inputs dropped one grade to *partially effective* while Outputs dropped two grades from *mostly effective* to *ineffective*. Outcomes remain *ineffective*.

While the Marine Park Authority has no jurisdictional responsibility for addressing climate change in the broad sense, it has contributed significantly to the development of international best practice for managing responses to climate change and extreme weather issues as they relate to Reef ecosystems. This has been achieved through research, monitoring, and partnerships with research institutions, government agencies and stakeholder groups as well as education, community awareness and stakeholder engagement programs. Assessing the effectiveness of the Marine Park Authority and other Reef management agencies in addressing this issue is challenging, as so much depends on the actions of others, especially in regard to the effectiveness of mitigation measures taken at national and international levels and the mitigation and adaptation measures undertaken in adjacent coastal areas by local governments and others.

In the past, the Marine Park Authority has played a lead role in facilitating awareness of the impacts from climate change and extreme weather on the Region, and it continues to emphasise that climate change is the principal long-term threat to the condition of the ecosystem. It prepared a vulnerability assessment for the Reef in relation to climate change in 2007 and a strategic plan to address climate change in 2009. The *Climate Change Strategy and Action Plan 2012–2017* (Climate Change Action Plan) (GBRMPA 2012d) was an update to the 2009 plan. This acknowledged the important role the Marine Park Authority plays in informing national and international climate policy and providing knowledge to support effective management of inshore areas. However, implementation of the plan was de-funded early in its life and many actions in that plan remain unaddressed or only partially implemented, though a number of them have been incorporated into annual operational plans or are now included in the sectoral adaptation programs being developed at Queensland government level. Changes in staffing and organisational structures within Marine Park Authority have lowered its visibility in addressing climate change. There is no longer an identifiable unit within the Marine Park Authority focussed on climate change responses although a number of staff across the Marine Park Authority have responsibility for climate policy and responses.

Work continues on identifying the gaps in available biophysical information. This job has been made larger and more consequential as a result of back-to-back bleaching events and as our knowledge of the resultant condition of Reef biota has declined. The Reef Integrated Monitoring and Reporting Program (RIMReP), when operational, will help to provide critical knowledge within a structured framework. The need to clarify socio-economic implications is

being addressed in collaboration with CSIRO through the Social and Economic Long-Term Monitoring Program (Marshall et al. 2017) that was established with National Environmental Research Funding in 2011.

Climate change policy and research was instrumental in the consideration of consequential and cumulative impacts on the Region's values. Critical elements of current condition and trend cannot be confidently determined and monitored by managers and this knowledge gap has been exacerbated by the back-to-back bleaching events. Efforts continue, including work with Traditional Owners, to apply available traditional knowledge to consider climate change implications, particularly through Traditional Use of Marine Resources Agreements.

Community engagement relating to climate change continues through initiatives such as Eye on the Reef and the Reef Guardian program which includes schools, councils, fishers and farmers. Work under the Climate Change Action Plan contributed to substantially strengthened partnerships with key sectors of the commercial fishing industry and the marine tourism industry and sector awareness and engagement remains high. A reef health incident response framework was developed in 2011, in consultation with stakeholders, and continues to be updated as needed. It includes:

- coral bleaching response plan
- cyclone response plan
- coral disease response plan
- crown-of-thorns starfish response plan.

While the Reef 2050 Plan aims to address key threats and boost the health and resilience of the Reef so that it can better cope with the impacts of climate change, the Plan does not directly address the threat of climate change or establish objectives, targets and actions relating to climate change. This shortcoming was pointed out by the Reef 2050 Advisory Bodies which recommended that objectives, targets and actions relating to climate change be explicitly included in the Reef 2050 Plan.

On 28 July 2017, the Great Barrier Reef Ministerial Forum recognised that in light of the impacts of coral bleaching and future climate projections, the mid-term review is critical to identify and accelerate priority actions to support the Reef's health and resilience. The Ministerial Forum agreed to bring forward the commencement of the mid-term review to address this issue. A report on options for the mid-term review recommended that it incorporate 'no regrets' climate change adaptations into the Reef 2050 Plan. It also recommended that the Reef 2050 Plan:

“...pursue greater policy influence and coordination of areas that sit outside of the Reef 2050 Plan but threaten to undermine efforts to sustain the values of the Region. Priority policy areas include emissions reduction, agricultural and land use intensification and major development project assessments. Greater capacity to assess cumulative impacts can underpin Reef 2050 Plan and inform related policy arenas.”

The mid-term review of the Reef 2050 Plan focussed on additional actions within the Region to address climate change impacts. However, the review of targets and objectives will be predominantly addressed in the review of the Plan in 2020. The Reef 2050 Plan is a collaborative program across governments with common goals and objectives across

jurisdictions. Its remit therefore includes actions that address impacts on the Reef from beyond the Great Barrier Reef World Heritage Area. However, it does not address the impacts of potentially conflicting policies in other sectors, such as mining development in the Galilee Basin or agricultural intensification in the Great Barrier Reef catchment.

Policy dissonance exists within government and society whereby conflicting policies relating to environmental protection and development sit side-by-side. Many of these cannot be directly addressed by most Reef 2050 partners as they lie outside the direct management roles of agencies which are limited by statute.

The Marine Park Authority is just one voice in what is an increasingly crowded policy and management space, with strategies being developed at national, state and local levels. However, the significant withdrawal of the Marine Park Authority from a very visible role in planning for and leading work on addressing climate change relating to the Region has, to some extent, shifted its role from being a “consequence maker” advocating for effective climate mitigation to being a “consequence taker”, responding to climate change impacts with actions to improve Reef resilience as part of an adaptation strategy.

Documents such as the Reef 2050 Plan and *Great Barrier Reef Blueprint for Resilience* (Reef Blueprint) (GBRMPA 2017) make it clear that restricting the global temperature increase to 1.5°C or lower is critical to ensure that the Reef remains a functioning ecosystem. The Reef Blueprint, released in late 2017, may mark a resurgence of a more active role of managing agencies in this space, with a focus on building a resilience network within the Region. While the proposed activities within the Region such as dramatically enhancing compliance, expanded crown-of-thorns starfish control, protection of key species and locations, and active localised restoration are all desirable ‘no-regrets’ actions, the extent to which they are able to achieve broader objectives of fostering change at a wider policy, societal and geographic level, will be critical to the success of the Reef Blueprint.

Table 13 Assessment results for Climate Change

Climate change	2009	2014	2019
Context		↓	↔
Planning		↓	↘
Inputs		↘	↓
Processes		↓	↘
Outputs		↔	↓
Outcomes		↓	↘

Management effective assessment is colour coded:
 Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

- ↔ Grade has remained stable compared to 2009, 2014, with no major trends
- ↘ Trend since 2009, 2014 is decreasing but has not caused a downwards grade change
- ↓ Trend since 2009, 2014 has been a downwards change in grade

3.2 Coastal development

Coastal ecosystems adjacent to the Great Barrier Reef provide ecological processes critical to the health of the Reef. Protecting, maintaining and restoring these coastal ecosystems adjacent to the Great Barrier Reef are essential components of halting and reversing declines in inshore ecosystem health and maintaining the Outstanding Universal Value of the World Heritage Area.

Ratings of effectiveness for four of the six assessment elements (Table 14) have improved from *partially effective* to *mostly effective* since the Outlook Report 2014. The rating for Context has remained as *mostly effective*, while Outputs has remained as *partially effective*.

Values of the Region relevant to coastal development and the impact of development on coastal ecosystems are clearly articulated in the 2012 *Informing the Outlook for Great Barrier Reef coastal ecosystems* (GBRMPA 2012b), *Coastal Ecosystems Assessment Framework* (GBRMPA 2012c), the Great Barrier Reef Strategic Assessment and the Scientific Consensus Statement (Waterhouse et al. 2017). The Scientific Consensus Statement (Waterhouse et al. 2017) identifies coastal development as one of the activities contributing to the poor condition of the Region's ecosystems.

Planning systems to effectively address coastal development have continued to evolve and improve over the past five years. The *Planning Act 2016* and associated legislation established ecological sustainability as a core principle and included reinstatement of coastal land surrender provisions under the *Coastal Protection and Management Act 1995* to ensure areas at high risk of coastal erosion remain free of development.

The 2014 *State Planning Policy* (SPP) introduced a coordinated approach to all State Interests as well as a suite of State development assessment provisions (SDAP) to guide the Queensland's assessment of development applications, where impact on a State interest is likely. The SPP and SDAP were reviewed in 2017 (DILGP, 2017) in association with the introduction of the *Planning Act 2016*. In early 2018, twelve of the twenty-two coastal local governments in the Region had planning schemes which integrate the coastal state interests of the SPP.

In 2015, the Queensland government introduced new erosion prone areas in Coastal Hazard maps. Planning scheme reviews have rezoned privately owned land in the erosion prone area to the Limited Development Zone, a zone which identifies land affected by development constraints. Local government must consider how the relevant parts of the SPP apply in their local area and appropriately integrate these into local planning instruments. This includes identifying zones where development cannot occur or is limited. This means protection of values associated with coastal development is strengthened in undeveloped rural and natural areas. Pressure for coastal development appears to be less than in previous years following the downturn of the mining sector.

Earthworks over a specified scale (including earthworks for agricultural activities) in wetlands were regulated in 2014 and there has been a reduction in the loss of these wetlands in the Great Barrier Reef catchment since that time (Schaffelke, et al.; 2017).

Development regulations (largely focussed on urban areas) regarding coastal development, water quality and protection of wetlands have improved as local governments progressively update their planning schemes. The provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and, in some cases, the *Great Barrier Reef Marine Park Act 1975* also serve to address the environmental impacts of some coastal works. Other strategies in place to assist with coastal development include the *Wetlands in the Great Barrier Reef Catchments Management Strategy 2016-2021* (Wetlands Team 2016). This strategy outlines an integrated approach to catchment and coastal environment management that considers the multiple values of wetlands and the role they play in ecosystem health of the Region. It provides a whole-of-system framework for catchment

management and the protection, maintenance and restoration of wetland systems. The implementation of Regional Water Quality Improvement Plans also improves ecosystem function (e.g. *Wet Tropics Water Quality Improvement Plan 2015-2020* (Terrain Natural Resource Management 2015)).

There are legacy issues in coastal areas, such as retaining dams that hold significant amounts of toxic water. The financial collapse of the operator of the Yabulu refinery in 2016 highlighted a limit to the Queensland Government's power to enforce the Environmentally Relevant Activity conditions of operation. This issue has recently been addressed by the *Environmental Protection (Chain of Responsibility) Amendment Act 2016* that allows the state to enforce environmental and rehabilitation obligations against 'related persons' of companies in financial difficulty.

Under the Reef 2050 Plan, poor coastal planning to manage for impacts of climate change is recognised as a threat. The Reef 2050 Plan also contains actions associated with avoiding adverse impacts on coastal ecosystems, including protecting remnant and high value regrowth vegetation. A 45 per cent increase in the rate of clearing of woody vegetation occurred in the Reef catchments between 2014–15 and 2015-16 (Department of Science, Information Technology and Innovation 2017). Legislation to give effect to reinstating stricter tree clearing legislation was passed in 2018 and is expected to reduce the clearing rate, and thus the adverse impacts on coastal ecosystems, in the future.

Inputs have improved over the past five years, with better financial resources to address coastal development. The Queensland Local Government Coastal Hazard Adaptation Program (QCoast₂₁₀₀) was launched in June 2016. This \$12 million investment partnership delivered by the Local Government Association of Queensland provides funding, tools and technical support to enable coastal local governments, including Reef councils, to develop adaptation strategies to address climate change related coastal hazard risks over the long-term.

Stakeholder engagement relating to coastal ecosystem management continues to play an important role. Coastal ecosystems management is a focus of coastal Reef Guardian Councils and Schools and is regularly discussed at Local Marine Advisory Committees and Reef Advisory Committees. Feedback from local councils suggests greater engagement about the implications of new science on coastal development would be appreciated.

The long-term future condition and trend for coastal ecosystems is very poor if strong cooperative management action is not taken to halt and reverse the decline in inshore and coastal ecosystems. The impact of inappropriate coastal development has been highlighted in the Reef 2050 Plan and the Scientific Consensus Statement (Waterhouse et al. 2017, Schaffelke et al. 2017). Improvement in Planning, Inputs, Processes and Outputs to *mostly effective* is a positive sign that the major issues are starting to be addressed. However, the impact of these improvements on the attainment of desired outcomes for coastal development has yet to be demonstrated.

Table 14 Assessment results for Coastal development

Coastal development	2009	2014	2019
Context		↗	↔
Planning		↗	↑
Inputs		↔	↑
Processes		↔	↑
Outputs		↔	↑
Outcomes		↔	↗

Management effective assessment is colour coded:

Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

↑ Trend since 2009, 2014 has been an upwards change in grade

↗ Trend since 2009, 2014 is increasing but has not caused an upwards grade change

↔ Grade has remained stable compared to 2009, 2014, with no major trends

3.3 Land-based run-off

Land-based run-off has been recognised as having a significant impact on the values of the Region (Waterhouse et al. 2017, GBRMPA 2014a,b, Reef 2050 Plan). Five of the six assessment elements (Table 15) are *effective*, with Inputs and Outputs improving from *mostly effective*. The rating of Outcomes remains *partially effective*. This is due to combination of factors, including the area of improved land management, the adequacy of the actions, and the time lag between actions on the ground and evidence of change in Reef values.

Nutrients, fine sediments and pesticides are the primary pollutants that pose a risk to Great Barrier Reef coastal and marine ecosystems and increased risks to freshwater ecosystems and coastal habitats. Increased nutrients may also exacerbate the success of crown-of-thorns starfish outbreaks once they are established. The relationship between land-based activities, such as agriculture, urban diffuse and point source discharges, and industrial discharge and the levels of nutrients, sediments and pesticides are known and understood. The understanding of human dimensions in achieving improved water quality outcomes is increasing. The values that underpin the matters relevant to water quality continue to be well understood by managers, with significant progress made since Outlook Report 2014 in understanding sediment, nutrient and pesticide delivery from the Great Barrier Reef catchments and their mitigation through improved land management (Waterhouse et al. 2017). Knowledge concerning the cumulative impacts of water quality, including the combined impacts of extreme weather, climate change and historical developments are better understood than they were in 2014.

Planning systems to address Land-based run-off have continued to improve. The Reef 2050 Plan includes actions to protect the values, health and resilience of the Region while allowing for ecologically sustainable use. The *Reef 2050 Water Quality Improvement Plan 2017-2022* directly aligns with and is nested within the Reef 2050 Plan.

Measurable targets, improved accountability, and coordinated monitoring, evaluation and reporting are clearly articulated in the Reef 2050 Water Quality Improvement Plan. The plan includes a diverse set of actions and builds on almost 15 years of efforts by governments at all levels working in partnership with landholders, natural resource managers, industry, and research and conservation groups. This includes addressing all land-based sources of water

pollution, including from agricultural, urban, industrial and public lands. It also recognises the importance of people in creating change and includes social, cultural and economic values. The plan sets targets for improving water quality for the 35 major river basins flowing to the Reef, for the six regions and for the whole Reef. This is an increased level of specificity compared to previous targets, and the planning process used sophisticated modelling and other scientific information to ensure these targets are based on what is needed for a healthy Reef.

The Paddock to Reef Integrated Monitoring, Modelling and Reporting Program (Paddock to Reef program) and the associated Report Cards have been continually improved to provide a succinct snap-shot of improvements and changes in land management and pollutant loads across the Reef catchments. The report cards identify changes and improvements in farm management practices, catchment condition indicators (ground cover, riparian extent, wetland extent and condition) as well as changes in sediment, nutrients and pesticides entering the Reef. Marine inshore condition is also reported.

The annual Reef Report Cards have reported that the estimated average pollutant loads in land-based run-off have declined since 2014. These reductions have been attributed to landholders improving their land management practices with support from significant investment through Australian and Queensland Government programs including grants, extension and education activities and industry Best Management Practice programs. Participation in on-ground monitoring activities and Reef related research through the Paddock to Reef program, Queensland Reef Water Quality Program and Australian Government, helps support landholders to improve practices. However, there continues to be slow progress with the adoption of changed land management practices, and significant time lags between changes to land management practice and improved condition of the Reef.

The overall legislative mandate for the management of land-based run-off affecting water quality in the Great Barrier Reef catchment falls to the Queensland Government, with the current government committing to broadening Reef regulations to reduce nutrients and sediment pollution. Stricter vegetation clearing requirements in Reef catchments were re-introduced in 2018. Healthy Waters Management Plans are additional legislative tools under the *Environmental Protection (Water) Policy 2009*. These plans identify management goals and water quality objectives to protect identified environmental values of waterways.

The *Reef 2050 Plan Investment Framework* (Investment Framework) was developed to encourage investment in priority actions, and to provide a baseline of funding commitments from 2015. Funding is now in place to reduce land-based run-off through improved land management practices, as well as research and monitoring programs to assess the effectiveness of the programs and assist with targeting areas and actions. These on-ground activities, extension, education and community awareness, stewardship and best practice activities associated with reducing Land-based run-off are managed through partnerships between the Queensland Government, the Marine Park Authority, the Commonwealth Department of the Environment and Energy, regional Natural Resource Management organisations, landholders and industry groups.

Examples of specific projects in place to assist with improvements in Land-based run-off include two major integrated projects (MIPs). These projects are aimed at reducing nutrient, sediment and pesticide loads into waterways in the Wet Tropics and Burdekin Dry Tropics

regions through Terrain NRM and NQ Dry Tropics respectively. Both groups have been engaged on behalf of a broader consortium of partners, including industry groups, science institutions, and non-government organisations. On-ground delivery of these projects will run from mid-2017 until June 2020. The MIPs will concentrate effort in areas identified as having the highest risk for sediment (Burdekin) and nutrient run-off (Wet Tropics), and will pilot a mix of actions including landscape restoration and habitat repair. They aim to work with farming communities and provide timely feedback from the monitoring to enable adaptive management to occur within the projects. The projects demonstrate strong stakeholder engagement, good understanding of impacts and use of biophysical knowledge.

The work being undertaken by the Australian and State Governments, in addition to Natural Resource Management groups, industry and stakeholders in the implementation of reducing land-based run-off has taken a further step forward following the Great Barrier Reef Strategic Assessment and the Great Barrier Reef Coastal Zone Assessment and international scrutiny from the World Heritage Committee. However, while improvement of management practices remains voluntary, change is likely to be slow, and the significant time-lag between actions on the ground and better water quality results will be exacerbated.

Significant increases in financial inputs have been made over the past five years. Planning has expanded and continues to be effective. The processes and outputs of the Reef 2050 Water Quality Improvement Plan continue to improve, however Waterhouse et al. (2017) highlighted that poor water quality is continuing to have a detrimental effect on Reef health. Slow progress is being made towards the attainment of the desired outcomes and in reducing the risks and threats to the Reef's values.

Table 15 Assessment results for Land-based Run-off

Land-based run-off	2009	2014	2019
Context		↔	↔
Planning		↑	↔
Inputs		↗	↑
Processes		↑	↔
Outputs		↑	↑
Outcomes		↔	↔

Management effective assessment is colour coded:
 Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

- ↑ Trend since 2009, 2014 has been an upwards change in grade
- ↗ Trend since 2009, 2014 is increasing but has not caused an upwards grade change
- ↔ Grade has remained stable compared to 2009, 2014 with no major trends

4. Assessment of managing to protect the Region's values

4.1 Biodiversity values

Protection of biodiversity on the Great Barrier Reef is the primary objective for much of the management action undertaken within the Region. The Outlook process, UNESCO World Heritage Monitoring driven by the possibility of placing the World Heritage Area on the List of World Heritage in Danger and the Great Barrier Reef Strategic Assessment have focussed attention on the biodiversity values and threats on the Great Barrier Reef. This increased

attention resulted in studies undertaken in collaboration with research and academic institutions, which have increased documentation and understanding of the state of biodiversity in the Region.

Back-to-back bleaching events in 2016 and 2017 have dramatically changed the situation in relation to management of biodiversity in the Region. Monitoring and assessment work undertaken in 2017 provided some information on the extent of bleaching and mortality estimates, but the flow-on impacts on other elements of biodiversity are less understood. The combined impact of coral bleaching, the ten severe cyclones that have crossed the Region since 2005 and the impacts of crown-of-thorns starfish outbreaks are also not well understood.

Rating of effectiveness for four of the six assessment elements (Table 16) remained the same as in the Outlook Report 2014. While the grades remained the same, the underlying scores declined for each element, except for Inputs which showed a small increase. The rating of Outcomes dropped one grade to *partially effective* although consideration of environmental outcomes alone (indicators OC3, OC4 and OC5) is rated as *ineffective*.

Key stakeholders in biodiversity protection have been identified and are generally well known to managers especially through Reef Advisory Committees, Local Marine Advisory Committees and other consultative mechanisms.

Management of biodiversity is undertaken using an array of measures, principally the Zoning Plans, but also incorporates a comprehensive compliance program, management plans, permit assessments, site management, education and best practices. A potentially complex and confusing management regime has long been addressed through inter-governmental coordination, for example, through complementary zoning plans that effectively reduce complexity from the perspective of Reef users.

The extensive degradation across the Region highlights the importance of considering cumulative and consequential impacts which are currently less well understood by managers. Work on development of an integrated monitoring framework (RIMReP) and cumulative impact management policy (approved in July 2018) have been very slow over the past two years but offer the promise of addressing this deficiency once implemented (Gooch et al. 2017; Collier et al. 2016).

A range of plans including Threat Abatement Plans, Annual Operational and Field Management Program plans as well as specific on-ground actions (for example reef protection markers, public moorings, crown-of-thorns starfish control and Special Management Areas) are in place to protect habitats and species and support biodiversity protection. With regard to threatened and protected species, such as marine turtles and dugong, these plans and actions have had some effect in stabilising populations although recovery remains weak. Status and trend assessments for other species indicate that more populations and groups of species are continuing to decline than have stabilised or are increasing (for example, corals, sharks and rays, dolphins – see Chapter 2 of the Outlook Report). For some species and ecosystem processes, confidence around condition status is limited due to lack of long-term data over a broad area. A complete understanding of flow on effects to species, habitats and processes following the back-to-back bleaching event, together with the cumulative impact of other stressors on the system, remains an issue for management.

The information base for biodiversity management continues to slowly improve through both scientific research in universities and research organisations. This is also complemented by monitoring information from the Field Management Program and citizen science. At the same time, there is now greater uncertainty around biodiversity condition for some elements of biodiversity due to lack of information on the impacts of back-to-back bleaching. Some stakeholders consider that the lack of comprehensive habitat mapping across the Great Barrier Reef is an impediment to better planning for biodiversity management.

Considerable financial resources are allocated to improving biodiversity knowledge and increasing understanding of factors impacting on biodiversity and ecosystem processes through research institutions, Regional NRM bodies, the Great Barrier Reef Foundation and other Commonwealth and Queensland Government programs. Implementation of the Reef 2050 Plan and associated programs to address a decline in the condition of the Great Barrier Reef has seen an increase in financial resources for biodiversity management. However, in the views of many stakeholders, staff changes and the Australian Government-wide staffing cap have diluted the capacity of Marine Park Authority staff to engage fully in the various processes relating to biodiversity management.

Gaps in knowledge, for example for some specific plant and animal groups, habitats and ecosystems, are well recognised. Relevant Traditional Owner knowledge that is available or accessible to managers has improved considerably in recent years as a result of Indigenous Ranger programs and strengthened communications between managers and Indigenous people through the Land and Sea Country Partnership Program.

Planning for biodiversity management was advanced through preparation of the *Great Barrier Reef Biodiversity Conservation Strategy* (GBRMPA 2013), although targets in the plan tended to be focussed on processes and outputs rather than outcomes. The strategy has been overtaken by the Reef 2050 Plan, with most of the actions being incorporated. More recently, the Reef Blueprint represented a change in approach with greater emphasis on climate change adaptation and promoting actions through a 'resilience network' of sites that have the best chance of supporting system-wide resilience and recovery following disturbances. This approach is yet to be fully tested. While some scientists question its validity given the widespread extent of coral bleaching across the Reef, others believe it would be a mistake not to pursue this approach and related initiatives such as the Reef Restoration and Adaptation Program.

At a Region-wide scale, the amalgamated Zoning Plan, which came into effect in 2004, and is matched in the adjacent Great Barrier Reef Coast Marine Park, is the most significant action taken to enhance biodiversity protection. To be effective, zoning provisions need to be enforced. Enforcement has significantly improved over recent years with the extension of vessel monitoring across the commercial fishing fleet, better targeting of compliance actions based on risk assessment that give priority to impacts on protected species, and improved compliance monitoring technology. Zoning has provided a robust framework for reef-wide management and is already demonstrating positive results.

However, the zoning provisions only address biodiversity protection at a broad level. Some threats such as crown-of-thorns starfish outbreaks are addressed by other measures, but major threats to biodiversity, such as climate change, coastal development and catchment runoff, are not directly addressed by either the zoning provisions or individual biodiversity protection measures. Enhanced consideration of the potential impacts of planning and

management decisions on Great Barrier Reef biodiversity and ecosystem restoration across all sectors within and adjacent to the Great Barrier Reef Region will be required if these major threats are to be mitigated. There is a gap in understanding what changes to cross-jurisdictional mechanisms such as regional and development planning, coastal development and fisheries management, would be required to better address biodiversity protection measures and restore ecosystem health to the Great Barrier Reef inshore zone.

Zoning may have a role in addressing some of these broad-scale stressors if research was to show that, for example, more highly protected zones were more resilient to impacts from climate change and/or recovered more quickly from such impacts. The current Zoning Plan has been in place for almost 15 years and was based on the best available knowledge at the time. Today more is known about the dynamic state of the ecosystem, so targeted research should be able to determine whether zoning contributes to resilience and Reef recovery from frequent and intense bleaching events. Findings of such research could inform future zoning revisions.

Major risks and threats to biodiversity protection are well documented and risk assessment and management procedures are in place for the major threats. Vulnerability assessments have been prepared for key species and habitats, and these provide comprehensive documentation of risks to biodiversity values and mitigation measures within the Region. A few vulnerability assessments remain to be completed. There remains little capacity to track either the resource allocations specifically targeting biodiversity objectives or the outputs and outcomes resulting from management actions in this area. The capacity of the Field Management Program to address biodiversity management and natural resource management issues in marine and island environments is likely to improve with additional staffing and vessels after a period of declining capacity over the previous Outlook reporting timeframe.

Table 16 Assessment results for Biodiversity values

Biodiversity	2009	2014	2019
Context		↔	↓
Planning		↔	↔
Inputs		↔	↔
Processes		↔	↔
Outputs		↔	↔
Outcomes		↘	↓

1. Management effective assessment is colour coded:

Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

↔ Grade has remained stable compared to 2009, 2014, with no major trends

↘ Trend since 2009, 2014 is decreasing but has not caused a downwards grade change

↓ Trend since 2009, 2014 has been a downwards change in grade

4.2 Heritage values

As defined in the *Great Barrier Reef Marine Park Act 1975* (the Act), for the purposes of the Outlook Report, the heritage values of the Region include: Commonwealth Heritage List values (four light stations and one island); Indigenous heritage values; National Heritage

values; World Heritage values; and 'other heritage values': which include a place's natural and cultural environment having aesthetic, historic, scientific or social significance, or other significance. In this assessment, the topic of Heritage encompasses all of the above mentioned heritage values. Natural heritage values were considered under the assessment of biodiversity protection. The areas of heritage were considered separately, and the scores then combined to reach a summarised assessment for heritage. Indigenous heritage has a higher profile for this assessment. Traditional Use of Marine Resources is considered under a separate topic.

Ratings for all elements of Heritage have remained *mostly effective* - the same as in the 2014 assessment (Table 17), with an increase in score for Outcomes that was not sufficiently large to increase the rating.

The recognition of Indigenous heritage in the management of the Region has progressively increased, and this recognition is included in all documents produced by the Marine Park Authority and QPWS. The 2015 Intergovernmental agreement includes a commitment to "ensure that Indigenous traditional cultural practices continue to be recognised in the conservation and management of the Great Barrier Reef".

Knowledge of Indigenous heritage is held by the Traditional Owners, who decide what knowledge should be shared. In some places, initiatives such as the TUMRA agreements and Indigenous Land and Sea Ranger programs are assisting more Traditional Owners to access their sea country and to pass on knowledge from Elders to younger people. There is concern that some places of special cultural importance as well as Indigenous structures, technology, tools and archaeology have not been systematically identified, and some are deteriorating. Actions are underway to assist with documentation and decision-making:

- The RIMReP data management project is developing a cultural protocol and a data sharing agreement template that could progress understanding of Aboriginal heritage while respecting the privacy of information. This project also explores options for the storage of cultural heritage information in a culturally appropriate way.
- Another RIMReP project is also working to identify Indigenous heritage indicators and thresholds, but progress on this is limited to date.

A good example of Traditional Owner approved knowledge gathering, storage and application is demonstrated by the Woppaburra Guidelines. The guidelines, adopted in July 2017, map important cultural heritage values in the Keppel Islands region. This work has helped inform permit assessments, and Traditional Owners can also use the values mapping for other purposes as they choose. The intention is to develop similar guidelines with other Traditional Owners as resources allow.

Knowledge of historic heritage remains uneven, with thorough understanding of Commonwealth listed heritage places and priority shipwrecks, good understanding of some other sites, and less thorough knowledge of the remainder, including many shipwrecks and aircraft wrecks. It is not clear to what extent historical knowledge, such as of the history of conservation and science in the Region, has been documented. The Marine Park Authority has developed a heritage register that will capture all values for each of the Commonwealth Heritage listed places within the Marine Park. The Australian National Shipwreck Database (ANSDB), established under the Australian Government's *Historic Shipwrecks Act 1976*,

documents known historic shipwrecks, aircraft and maritime heritage sites in Australian waters.

As part of RIMReP, social and economic monitoring is being boosted under the Social and Economic Long-Term Monitoring Program (SELTMP) (Marshall et al. 2017a). New questions were inserted into the SELTMP in 2017 to improve knowledge of the wider community's perceptions and understanding of the Region's heritage, including Indigenous and historic heritage (Marshall et al. 2017a). Aesthetic values were assessed through the Great Barrier Reef Strategic Assessment and detailed reports relating to aesthetic values (Johnson and Smith, 2014). A RIMReP project has been undertaken to identify and articulate aesthetic value; develop a tool to measure aesthetic indicators; prepare guidelines to benchmark, assess and monitor aesthetics; trial a monitoring program; and to develop an integrated citizen-science platform that can be used to monitor aesthetics in the Marine Park (Marshall et al., 2017b).

Legislative changes have increased the ability to protect historic sites. In 2015 a specific type of Special Management Area (SMA), the Maritime Cultural Heritage Protection SMA, was created under the *Great Barrier Reef Marine Park Regulations 1983* to protect maritime cultural sites. Two Catalina aeroplane wrecks dating from World War II are now protected under a Maritime Cultural Heritage Protection SMA. Twenty-five men were lost on the two Catalinas and their bodies were never recovered. There are no SMAs relating to Indigenous sites.

The Australian Government's *Underwater Cultural Heritage Act 2018* extends protections currently conferred to historic shipwrecks in Australian waters to historic aircraft wrecks and other forms of underwater cultural heritage in Commonwealth waters. This is intended to enable Australia to ratify the *United Nations Educational, Scientific and Cultural Organisation's (UNESCO) Convention for the Protection of the Underwater Cultural Heritage*.

The Reef 2050 Plan includes a heritage theme, and this has stimulated further action in planning for heritage and in engagement with Traditional Owners. In addition, the Reef 2050 Traditional Owner Aspirations Project beginning in 2018 is led by Traditional Owners to better understand and reflect their aspirations for the protection and management of the Great Barrier Reef. This information will inform future reviews of the Reef 2050 Plan. One key action from the Reef 2050 Plan was to update the 2005 Heritage Strategy. A new overarching strategy '*Heritage in the Great Barrier Reef Marine Park*' has been drafted and includes a thorough overview of the national and international context, guiding principles and some broad directions but there are doubts about whether this document will be completed, and it does not yet include clear targets and actions. Two other heritage documents are nested within this. The *Great Barrier Reef Marine Park Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018-2021* has been completed but is much more limited in its scope. The draft *Aboriginal and Torres Strait Islander Heritage Strategy 2018-2022* sets out outcomes, objectives and actions for gaining more information and protecting and managing Indigenous heritage. There was extensive involvement of engagement with more than 20 Traditional Owner groups during its development phase as well as a program of public consultation.

Planning for Indigenous heritage matters in the Region is very complex, involving an array of agency strategic plans, zoning plans, management plans for island national parks, and more specific topic-based plans. All are improving in their recognition of the central role and rights of Indigenous people, but specific and timebound actions are less common. As with other matters, separating heritage plans for state-owned islands and coasts from the adjacent reefs makes little sense to Traditional Owners or the public, especially within the World Heritage Area. It has been proposed that more Sea Plans or Land and Sea Plans covering traditional sea country of groups should be produced to specifically focus on Indigenous matters across tenures (Dale et al., 2016).

Plans of Management have not in the past addressed Indigenous and historic heritage in detail. However, the Whitsundays Plan of Management was updated in 2017 and more thoroughly addresses the three types of heritage values (natural, Indigenous and historic). The QPWS values-based planning framework also recognises indigenous cultural values as a significant focus of national park planning. For example, the 2017 Hinchinbrook Island National Park Management Plan identifies Traditional Owner connection to country as a 'key value' and provides desired outcomes and strategic management directions to enhance the island's indigenous heritage values

In 2016-17, several guidelines and policies were developed to improve protection of Indigenous and historic heritage values. These new policies put in place guidance and rules for internal agency assessors (assessing permit applications) and proponents who apply for permits to ensure everything is done to consider impacts on Indigenous heritage and pre-emptively avoid or mitigate those. The historic heritage guidelines consider three components of the Region: World War II features and sites, historic voyages and shipwrecks, and other places of historic significance. Traditional Owner heritage assessment guidelines provide a list of hazards and the potential impacts on Indigenous heritage values.

Advances have been made in the employment of Indigenous people across the Region in a number of ways, including as core staff with the Marine Park Authority and QPWS (Indigenous staff comprise 7 per cent of the Field Management Program) and as Indigenous Rangers funded by the Queensland and Australian Government programs. Australian Government funding for the programs has been uncertain at times, making it difficult for organisations and individuals to plan for their future. However, it appears that recent commitments by governments will allow for an increase in the number of Indigenous Rangers and more sustainable funding, delivering benefits to both environment and community (van Bueren et al., 2015).

Traditional Owners also play a vital role in managing their sea country through their own organisations. There has been an increased presence of Traditional Owners on boats through the Field Management Program. For example, Traditional Owners spent 420 days on field management vessels in 2016-17 and 574 in 2015-16; a significant increase compared to 143 days in 2013-14. This has many benefits, including the informal field training of non-Indigenous staff in Indigenous culture as well as increasing management capacity of Traditional Owners and enabling them to visit country that is difficult to access without an appropriate vessel.

Staff and financial resourcing of historic heritage management could never be considered adequate if the target is to survey, assess and manage all sites of potential historic importance. The Region is better resourced in this regard than many other places, though

there is limited ability to proactively protect sites including shipwrecks and plane wrecks that have not been documented. Resourcing for Commonwealth listed places remains good.

Some training in maritime heritage conservation has been undertaken by staff from the Marine Park Authority and Field Management Program. QPWS staff in the Field Management Program have undergone cultural capability training, but the Marine Park Authority lacks a comprehensive cultural competency program.

An informal interdepartmental working group has been formed to increase alignment and consistency between Indigenous Ranger programs, the Field Management Program and the TUMRA program. Field Management Program Annual Business Plans now recognise Indigenous engagement as a standalone high-level strategy with specific targets, performance indicators and activities that promote indigenous partnerships in heritage management (see Field Management Program 5-year business strategy). The program focuses on the implementation and field delivery of agreements, and mentoring, training and empowering of Land and Sea Rangers and Indigenous Compliance Officers. It is responsible for protecting both Indigenous and historic heritage values on island national parks and Commonwealth islands, including story places and other locations of ceremonial and spiritual significance. This is typically through education or compliance with legislation. If active maintenance or restoration works are necessary, they are undertaken in partnership with Aboriginal and Torres Strait Islander people.

Indigenous Reef Advisory Committee (IRAC) membership was updated in 2017 and is based on expertise in Indigenous land and sea management, conservation and cultural heritage management.

The Raine Island Recovery project is a partnership with Traditional Owners and park managers to monitor the values and restore the Island where the values are under threat. A comprehensive Raine Island Cultural Heritage Management Plan commenced development in mid-2017 to inform collaborative management decision-making.

As part of the Land and Sea Country Partnerships program, an analysis of the effectiveness of the program was conducted in partnership with Traditional Owners in 2017. Some weaknesses raised by Traditional Owners included:

- Researchers and government agencies accessing Traditional Owner sea country without informing or engaging Traditional Owners
- Damage to areas from tourism, development and incremental damage
- Tourism infringing on native title rights (and thus cultural practices) without compensation
- Lack of access, resources and funding to access and care for sites
- Information management – passing on of knowledge, electronic storage of knowledge
- Lack of recognition of the interconnectedness of the environment, culture and people
- Difficulty in knowing how to report damage to authorities, especially with the different jurisdictions involved.
- Native title notification process inadequate to provide feedback into Marine Park Authority decision making.
- The current state of engagement with Traditional Owners in the Region still requires some improvement.

Though some obvious progress has been made since Outlook 2014, one recent study concluded that “*Despite these wins, and good engagement by Commonwealth and State governments on occasions, there has been no lasting, continuously improving Region-wide approach to engaging Traditional Owners.... At this point, the mechanisms for cohesive and coordinated implementation of the Reef 2050 do not yet fundamentally engage Traditional Owners as real partners in the long-term management of sea country, consistent with international guidelines for their engagement in protected area management, which emphasise the requirement for prior informed consent and ongoing equity.*” (Dale et al., 2016, p.1). The updated Reef 2050 Plan (July 2018) specifically addresses this issue, and highlights the importance of engaging Traditional Owners. The results of this focus and of increased funding for real engagement of Traditional Owners as partners in management may be demonstrated by the next Outlook assessment. However, in a May 2018 meeting, Traditional Owners still requested better recognition of their inherent rights. They recommended the development of a representative alliance of Reef Traditional Owners to support existing traditional decision-making structures, and requested control over how additional funding for Traditional Owner engagement is allocated (Great Barrier Reef Traditional Owner Workshop, 2018).

Table 17 Assessment results for Heritage Values

Heritage Values	2009	2014	2019
Context		↓	↔
Planning		↓	↔
Inputs		↔	↔
Processes		↘	↔
Outputs		↘	↔
Outcomes		↘	↗

Management effective assessment is colour coded:
 Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

- ↗ Trend since 2009, 2014 is increasing but has not caused an upwards grade change
- ↔ Grade has remained stable compared to 2009, 2014, with no major trends
- ↘ Trend since 2009, 2014 is decreasing but has not caused a downwards grade change
- ↓ Trend since 2009, 2014 has been a downwards change in grade

4.3 Community benefits of the environment

Community benefits of the environment was a new topic for consideration in the Outlook Report 2014 as a result of the Great Barrier Reef Region Strategic Assessment. This inclusion explicitly recognises the community benefits that are derived from the environment. Community benefits of the Region encompass socio-economic aspects such as employment and income, in addition to less tangible attributes such as understanding, appreciation, enjoyment, personal connection, health benefits and access to the Reef. Many of these attributes are values-based.

Rating of effectiveness for two of the six assessment elements (Inputs and Processes) improved from *partially effective* to *mostly effective* (**Error! Not a valid bookmark self-reference.**). Context, Planning, Outputs and Outcomes remained the same as in the Outlook Report 2014, although Context and Planning improved within the *mostly effective* range.

Significant work has been undertaken over the past five years to understand the range of community benefits, and to incorporate community benefits into policy and assessment processes. Community benefits are now captured in the Marine Park Authority's statement of purpose, reflecting a high-level understanding by managers that the Reef provides substantial and diverse community benefit.

Recognition that the most significant threats to the long-term health of the Reef are outside the Marine Park Authority's jurisdiction (e.g. Climate change, Land-based run-off) has encouraged managing agencies to increase efforts to work with and influence the broader community. More effective engagement with the wider community requires a better understanding of the diverse values and benefits of the Reef to the community and the perceptions about the Reef and its associated threats within the community. Strategies in the Marine Park Authority's Corporate Plan reflect current understanding, recognised gaps and actions to improve the effectiveness and strategic value of future engagement efforts.

To understand community benefits, it is recognised that the Region is a multiple-use marine protected area and that people and their environment are inter-connected, as reflected in the definition of the environment in both the *Great Barrier Reef Marine Park Act* and the EPBC Act: *'Environment includes ecosystems and their constituent parts, including people and communities; natural and physical resources; the qualities and characteristics of locations, places and areas; heritage values of places; and the social, economic and cultural aspects of the above'*

The Marine Park Authority, together with the Australian and Queensland Governments, has worked to adopt an integrated approach to the management of social, economic and environmental aspects of the Region. This is evident through recognition of community benefits in the Reef 2050 Plan and a number of policies that have been developed or re-drafted, such as the Permissions System Policy and the draft Cumulative Impact Management Policy. The consequential and cumulative impacts on community benefits are now well recognised and are being considered in policy development. The Reef 2050 Plan includes a number of actions and targets relating to Community benefits. (e.g. CBT2 *"Community benefit values have been identified and are considered in decision making"*). The Reef 2050 Water Quality Improvement Plan explicitly includes a human dimensions target *"active engagement of communities and land managers in programs to improve water quality outcomes is increased"*. The target will be refined to become more quantitative in future plans.

The Social and Economic Long-Term Monitoring Program is assisting managers to understand human dimensions of the Region and to incorporate such considerations into their planning and management (Marshall et al 2017a). Projects under the National Environmental Science Program are developing cost effective indicators and metrics for human dimension outcomes, objectives and targets in the Reef 2050 Plan, while other projects are investigating the aesthetic value of the Region. The report *Management for the aesthetic values in the Great Barrier Reef* (Marshall et al 2017b) identified that managers increasingly need *"reliable and objective measures for aesthetic values above the water, and at the water line, such as for beaches, islands and cays, in order to ensure those values are adequately protected"* and recommends trialling methods to include aesthetics ratings as part of established monitoring programs, and developing standardised approaches to include aesthetics into policy and decision making process.

Many of the issues associated with community benefits, such as population change, economic growth and climate change, are recognised as global issues and are difficult for a single planning system to encompass. However, significant progress has been made in incorporating values associated with community benefits into policy and assessment processes, reflected by the improved scores for Inputs and Processes.

Stakeholder engagement through the Reef Advisory Committees and Local Marine Advisory Committees better inform management regarding community values and issues of concern. Volunteer programs, such as components of the Marine Monitoring Program and Eye on the Reef Program, also provide avenues for community involvement in protecting the Region. The Reef Guardian program aims to engage the community in management of the environment and associated community benefits. The Field Management Program also has a strong commitment to ensuring public access to the Reef and islands which helps to maintain community benefits and connections.

The Outlook Report 2014 identified that many of the community benefit issues were considered under programs and policies developed for other purposes such as access to resources, conservation and multiple use, and there were no guidelines or benchmarks for social or economic impact assessments for the Region. Since then, a significant body of work has been undertaken to provide such guidelines and benchmarks. However, much of this work is still in development and further progress will be expected in the near future.

Table 18 Assessment results for Community Benefits of the environment

Community benefits	2009	2014	2019
Context			↗
Planning			↗
Inputs			↑
Processes			↑
Outputs			↔
Outcomes			↔

Management effective assessment is colour coded:
 Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

- ↑ Trend since 2009, 2014 has been an upwards change in grade
- ↗ Trend since 2009, 2014 is increasing but has not caused an upwards grade change
- ↔ Grade has remained stable compared to 2009, 2014, with no major trends
 The topic was not assessed in 2009

5. Assessment of the six elements within the management effectiveness framework

The six elements of the IUCN management effectiveness framework can be examined across the 14 assessment topics to reveal strengths and weaknesses in management of the Region. This analysis can demonstrate where aspects of management are working effectively and where a change in management approach could lead to improved performance. The grades for each of the six elements of the IUCN management effectiveness framework (context, planning, inputs, processes, outputs and outcomes) for each of the topics (Table 19) provide the basis for this analysis. These results were compared with those from the Outlook Report 2014.

When the variations in complexity of the topics in social, biophysical and jurisdictional terms (Table 4) are considered, it is clear that performance across the six elements tends to be better for the less complex topics. This is not surprising as less complex topics are likely to be more tractable. However, a number of topics do not fall in line with this general pattern. Land-based run-off is one of the more complex topics and yet is generally effectively managed (although Outcomes remain only *partially effective*). This demonstrates the impact of extensive research to inform management responses, extensive planning and a significant commitment of resources for management. The lagging response in desired outcomes is largely a result of the scale of the problem with voluntary implementation of improved management practices in place, change is likely to be slow, the limited voluntary update of BMP across a wider areas and the time needed to effect change in the system. Coastal development and Ports are also complex topics that have shown broad improvement since the Outlook Report 2014.

Where Outcomes have declined since 2014 (Biodiversity), the back-to-back bleaching in 2016 and 2017 has been the primary cause.

Table 19 Assessment results for elements of the management cycle ordered by complexity (most complex to least complex)

	Context	Planning	Inputs	Processes	Outputs	Outcomes	Complexity
Climate change	↔	↘	↓	↘	↓	↘	↑ Increasing complexity
Coastal development	↔	↑	↑	↑	↑	↗	
Land-based run-off	↔	↔	↑	↔	↗	↔	
Ports	↑	↑	↔	↗	↑	↑	
Fishing	↔	↑	↑	↔	↔	↔	
Heritage values	↔	↔	↔	↔	↔	↗	
Commercial marine tourism	↔	↔	↗	↔	↔	↔	
Recreation	↔	↘	↔	↔	↓	↔	
Traditional use of marine resources	↓	↔	↔	↔	↑	↔	
Biodiversity values	↓	↔	↔	↔	↔	↓	
Community benefits of the environment	↗	↗	↑	↑	↔	↔	
Shipping	↑	↑	↑	↑	↗	↔	
Research activities	↔	↑	↑	↑	↔	↔	
Defence activities	↔	↔	↑	↔	↔	↔	

Management effective assessment is colour coded:

Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

Trends are indicated by arrows:

- ↑ Trend since 2014 has been an upwards change in grade
- ↗ Trend since 2014 is increasing but has not caused an upwards grade change
- ↔ Grade has remained stable compared to 2014, with no major trends
- ↘ Trend since 2014 is decreasing but has not caused a downwards grade change
- ↓ Trend since 2014 has been a downwards change in grade

5.1 Context

Context is the strongest management effectiveness element across the topics, with all assessed as either *effective* (eight topics) or *mostly effective* (six topics). This element has mostly been stable since the Outlook Report 2014 but has improved in relation to management of Ports and Shipping. Context has declined for Biodiversity primarily because of the increased uncertainty about condition and trend of biodiversity values following the back-to-back bleaching events of 2016 and 2017. Context for TUMRs has also declined due to the challenges of understanding threats, impacts and current status of the relevant values in times of rapid change, especially due to the impacts of coral bleaching, cyclones and climate change.

Understanding of values, direct and indirect threats, and stakeholders is generally strong. Understanding of cumulative and consequential impacts has been affected for those aspects relating to biodiversity, ecosystem health and environmental conditions. These aspects had been effectively documented through the Outlook process and the strategic assessment reports but are now less well understood as a consequence of the bleaching events and other cumulative pressures such as cyclones and starfish predation.

Tourism, Defence activities, Shipping, Recreation, Research activities, and Land-based run-off are well understood. In general, the strong scores for Context reflect a solid information and research base and a very mature understanding of the key values of the Region in a national and international context, and of the direct and indirect threats to those values. Understanding of stakeholders, a specific element of context, was consistently strong (*effective*) across all 14 topics.

5.2 Planning

Significant efforts have been made in planning since the Outlook Report 2014 and 2009 for a number of topics such as Ports, Fishing, Shipping and Coastal development. The *Great Barrier Reef Region Strategic Assessment: Program report*, (GBRMPA 2014e), that accompanied the Great Barrier Reef Strategic Assessment, and the Reef 2050 Plan provide overarching strategies for management of the Region in the face of the serious challenges facing the system. The Reef 2050 Plan is a cross-jurisdictional plan endorsed at Australian and Queensland government level. It has, however been criticised for not explicitly addressing climate change through setting objectives and targets for this pressure. This deficiency was partially addressed through fast-tracking the mid-term review of the Reef 2050 Plan with a revised version of the Reef 2050 Plan completed in July 2018 (Commonwealth of Australia 2018). Planning effectiveness has continued to decline in relation to Climate change. This is principally as a result of de-funding of the Climate Change Action Plan as well as changing policy and a lack of clarity about future directions in climate change policy, although recent climate change planning in Queensland and inclusion of climate change considerations in the Reef 2050 Plan will likely improve this in future. In the case of Coastal development, the Coastal Ecosystems Assessment Framework continues to be effective and useful given it continues to inform natural resource management actions on-ground. Recent refinement and development of the State Planning Policy and guidelines relating to coastal development has been very positive. Although progress has been made, the lack of systems to ensure adequate monitoring is the weakest aspect of planning overall.

5.3 Inputs

Adequacy of inputs is variable across management topics, being least effective for Climate Change. The adequacy and application of Indigenous heritage and historic heritage knowledge in the Region is a problem for most topics. Secure resourcing (both funding and staff resources) was a significant problem for many management topics in the early part of the Outlook reporting period. However significant increases in funding were provided in 2018 for the Field Management Program and the stabilisation of resources for the Marine Park Authority has occurred. The adequacy of staff numbers to address topics was the third weakest indicator overall, and inputs generally (apart from availability of non-government inputs such as volunteers) were in the lower half of the distribution of indicator scores across topics. Loss of experienced staff and their corporate knowledge and expertise has been an issue both in the Marine Park Authority and the Queensland Government. Just prior to the Outlook Report 2014, the Queensland Government had substantially reduced positions in the public service. While staffing numbers in the Queensland Government have increased overall, especially in relation to the implementation of the Reef 2050 Plan, there is now a cap on staff numbers. Staffing caps within the Australian Government have also impacted on management of the Marine Park with a round of voluntary redundancies in 2014 leading to 17 staff departing; 13 at Manager and Director level (Executive Levels 1 and 2) resulting in a loss of corporate knowledge. Overall staff inputs at Marine Park Authority have declined most sharply for Climate change, Fishing, Coastal ecosystems, Indigenous heritage through redundancies, staff departures and redeployments within Marine Park Authority. Staff inputs have risen most strongly since 2014 for Biodiversity management and Community benefits.

5.4 Process

Management processes are particularly strong for Defence activities, management of Land-based run-off, Shipping and Research activities. They are weakest for Climate change. Stakeholder and community engagement and application of biophysical information are the strongest aspects of management across all topics. Governance is generally strong, but weak for Climate change. The application of socio-economic and heritage knowledge, and setting of targets to benchmark performance are problematic for many topics.

5.5 Outputs

Delivery of desired outputs was rated as *effective* or *mostly effective* for all topics except Climate change (*ineffective*) and Recreation (*partially effective*). They are strongest in relation to Defence, Commercial marine tourism, Research activities and Traditional Use of Marine Resources. The knowledge base of the management agencies and community has consistently improved. While most management programs are progressing satisfactorily, it is not yet clear that the programs are achieving all their desired objectives.

5.6 Outcomes

Achievement of desired outcomes (values protected, threats reduced, long-term environmental and economic sustainability) is highly variable across topics. Overall, outcomes are strong for Commercial marine tourism, Defence, Ports, Research activities, Shipping and Traditional Use of Marine Resources and weakest for Climate change. Biodiversity outcomes have declined markedly from *mostly effective* to *ineffective*, principally as a result of bleaching events in 2016 and 2017. Objectives in relation to community

understanding of topics and development of effective partnerships are being achieved. Overall, the greatest concerns in relation to achievement of desired outcomes are for Climate change and Biodiversity, both of which are rated as *ineffective* in relation to environmental sustainability.

5.7 Overall Summary

The table below (Table 20) summarises performance across the six elements of World Commission on Protected Areas management effectiveness framework, based on consideration of individual performance in each of the management topics. The grades are based on the grading statements in Appendix 2.

Table 20 Summary for the six elements of the management effectiveness framework, averaged over the 14 topics

Element	Grade and trend	Justification of grade
Context	↓	Understanding of values, threats, regional/global influences and stakeholders is good for most thematic areas but declined for Climate change and Biodiversity
Planning	↔	Effective planning systems that engage stakeholders are in place for many significant issues. Policy and consistency across jurisdictions are generally acceptable.
Input	↑	Financial and staffing resources were unable to meet management needs in some important thematic areas, however the stabilisation and increases in resources has occurred recently. Biophysical, socio-economic and traditional (Indigenous) knowledge is variably available to inform management decisions and there are significant deficiencies in some areas
Processes	↔	The majority of management processes are appropriate and effective in addressing management but there are deficiencies in relation to a small number of thematic areas or processes
Outputs	↔	Management programs are mostly progressing in accordance with planned programs and are achieving their desired objectives but there are problems in some topics. The knowledge base is generally improving.
Outcomes	↑	While outcomes in some areas have improved, desired outcomes for protection of values and abatement of threats are not being achieved at desirable levels in some critical thematic areas with likely eventual flow-on effects across the Great Barrier Reef.

Grades are colour coded:

Effective (E) ■ Mostly effective (ME) ■ Partially effective (PE) ■ Ineffective (I) ■

Trends are indicated by arrows:

- ↑ Trend since 2014 has been an upwards change in grade
- ↔ Grade has remained stable compared to 2014, with no major trends
- ↓ Trend since 2014 has been a downwards change in grade

6. Assessment of management approaches

In protecting and managing the Region, three main management approaches are used:

Environmental regulation — management tools such as regulations, Zoning Plan, management plans, permits and licences, and compliance are used to establish the statutory arrangements and environmental standards necessary to protect and manage the Reef

Engagement — managing agencies work with Traditional Owners, the community, business, industry and local government to influence best practice and encourage actions that will help secure the future health of the Reef

Knowledge, integration and innovation — management is based on the best available science as well as drawing on traditional ecological knowledge and information from the wider community and is informed by the results of ongoing monitoring.

The assessors considered how effective these management tools were in delivering outcomes for each of the 14 topics from the data gained using the information assembled to justify for the management effectiveness ratings.

6.1 Environmental regulation

Statutory instruments for the Region and Marine Park include Acts and regulations, Zoning Plans (both State and Commonwealth), Plans of Management, permits, fees and charges and compliance and enforcement programs. Statutory instruments used to assist the management of the Region are generally contemporary and appropriate. A 2014 Review (Jacobs 2014) of institutional and legal arrangements confirmed this view, and although finding that gaps exist in regulation of climate change and agriculture, this review expressed caution about the practicality of additional regulation of these complex issues. Reviews of Commonwealth legislation have occurred to keep pace with emerging issues and have aligned the EPBC Act and the GBRMPA Act as appropriate. The relevant Queensland legislation is not necessarily consistent with the Australian government, often due to differences in objectives of the governments. Joint permits between both governments have been undertaken for some time, and policies and processes relating to assessment and issue of permits, and new target timeframes have been set for these activities.

The Zoning Plan has been very effective for topics such as Fishing, resulting in some positive biodiversity protection outcomes. Plans of Management complement the Zoning Plan and address issues specific to intensively used areas or species and ecosystems that are vulnerable. The Whitsundays Plan of Management was updated in 2017 but the Cairns Area Plan of Management has not been updated since 2008 nor the Hinchinbrook Plan of Management since 2004. Higher levels of zoning protection in Marine National Park and Preservation Zones have not offered protection against coral bleaching. Some studies have indicated that closing areas to fishing does reduce the likelihood of crown-of-thorns starfish outbreaks.

Compliance systems are very sophisticated and focus on issues of risk to the Region such as illegal fishing. Changes to Vessel Monitoring System requirements for commercial fishing vessels are included in the Sustainable Fisheries Strategy, with a requirement that these devices be fitted to all commercial fishing vessels including dories by 2020 and a priority to install units on net, line and crab commercial fishing vessels by the end of 2018. Compliance

in the recreational fishing sector remains an issue and incidents of illegal fishing have been increasing since 2010. However, it is not clear if this represents a real increase in illegal activity or more effective detection of incidents. Additional funding allocated to the Field Management Program in 2018, will strengthen compliance activities.

Non-statutory mechanisms include policies, strategies, position statements and guidelines. A number of policies and strategies were prepared or updated in the lead-up to the Outlook Report 2014 (e.g. Climate change, Recreation, Biodiversity), but some of these, such as the Recreation Management Strategy, have not been actively implemented. More concerning, the Climate Change Action Plan ended in 2017 and has not been re-funded or updated. Some of these policies and strategies would benefit from more outcome-oriented targets, with clear objectives, actions and milestones. To some extent the Reef 2050 Plan has overtaken some of these strategies as an overarching plan for the Region, although it lacks a focus on addressing Climate change. It is recognised that the Reef 2050 midterm review does take climate change into consideration.

6.2 Engagement

Partnership and collaborative arrangements with Queensland and other Australian government agencies include joint field management and on-ground works. The Intergovernmental Agreement between the Commonwealth and Queensland Governments, which has been in place since 1979, articulates the management arrangements for the Region between the two governments and is world leading. This agreement was updated in 2009 to ensure that contemporary issues and challenges were suitably addressed, and again in 2015 to align with the Reef 2050 Plan. Positive collaboration with government departments within and across levels of government has been specifically encouraged and mandated through the Reef 2050 Plan.

The Field Management Program works well for cooperative engagement between two levels of government (Australian and Queensland) and requires the two governments to jointly develop priorities for activities and allocation of funding. The greatest concern with the collaborative program is resourcing to enable staff to undertake required management across all necessary activities in the Region. Despite record funding to address issues such as water quality and crown-of-thorns starfish outbreaks and recent increases in the Field Management Program staffing and resources, adequate resourcing remains a major concern. The Investment Framework developed alongside the Reef 2050 Plan recognises a substantial funding gap of between \$143 and \$408 million.

Engagement of Traditional Owners as partners in management remains vital in the Region. Traditional Owners are involved through the TUMRA program and other Reef management initiatives and play a vital role in managing their sea country through their own organisations. The number of Traditional Owners gaining access to their sea country on Field Management Program vessels has increased since 2014. This has many benefits, including the informal field training of non-Indigenous staff in Indigenous culture as well as increasing management capacity of Traditional Owners and enabling them to visit country more often.

Research collaborations between managing agencies and research bodies is generally positive, although some researchers report that engagement of Marine Park Authority staff in planning relating to research and monitoring has declined in recent times. This has been, in part attributed to loss of senior staff from the Marine Park Authority in recent years as well as

a perceived withdrawal of the Marine Park Authority from this work. However, the Commonwealth Department of Environment and Energy has become more prominent in funding and policy matters relating to the Great Barrier Reef in general and through research funding programs such as National Environmental Research Program and National Environmental Science Program.

Although the issues are outside its area of responsibility, the Marine Park Authority is perceived by many stakeholders to have become less engaged in discussions about management of Land-based run-off and Coastal development. Governance arrangements for the Great Barrier Reef World Heritage Area have become much more complex and Dale et al. (2016) identified 11 high-risk sub-domains of governance requiring transformational change to address declining outcomes in the Region. They identified that a number of these sub-domains (which relate to areas outside the Region but nevertheless present significant risks to the Reef) were routinely ignored in Great Barrier Reef-specific governance. Any disengagement by the Marine Park Authority and other management agencies in these areas that fall outside of the formal mandates for management of the Region, but that are already impacting on outcomes in the Region, are likely to heighten risks for the Reef. This impression that the voice of management agencies, and especially the Marine Park Authority, has been diminished was a common message in discussions held during the preparation of this assessment.

One of the strongest aspects of management of the Great Barrier Reef Marine Park has been the partnership and stewardship arrangements. An example is the Reef Guardians programs for schools and local governments which have been particularly successful. Another example is the Reef 2050 WQIP that depends on forming partnerships with Natural Resource Management bodies and through them, with land managers within the Region's catchments. Partnerships and stewardship programs are also key elements of management with the tourism and fishing industries, with prominent aspects including climate change planning and Reef Health Monitoring via the Eye on the Reef program.

The partnership and stewardship programs are underpinned by long-standing consultation arrangements with key sectors and regions via the Reef Advisory Committees and Local Marine Advisory Committee structure. Advisory bodies have also been established under the Reef 2050 Plan to provide independent expert advice and stakeholder views in relation to the implementation of the Reef 2050 Plan.

6.3 Knowledge, innovation and integration

6.3.1 Research and monitoring

The Outlook Report process, the Great Barrier Reef Strategic Assessment, the Great Barrier Reef Coastal Zone Assessment and the Scientific Consensus Statements (Waterhouse et al. 2017) have consolidated extensive knowledge relevant to the management of the Region. In most cases, this information has been made available to managers, stakeholders and the general public. In addition, these processes have identified key knowledge gaps, and programs and projects to fill these knowledge gaps have been developed. However, the coral bleaching events in 2016 and 2017 have meant that knowledge of condition and trend for many species and ecosystems has declined and it will take some time to update this knowledge.

Strong partnerships with research providers such as CSIRO, AIMS and universities have become more targeted as key knowledge gaps have been identified through processes such as the Outlook Report 2009, the Outlook Report 2014 and the Science Strategy and Information Needs Report, and in response to key environmental and socio-economic challenges.

The AIMS long term monitoring program represents the longest continuous record of change in Reef communities and has provided critical data in understanding the extent of degradation of the Reef. The Social and Economic Long-Term Monitoring program recognises the inter-dependencies of people within the Region and assists with long-term planning and evaluation of management decisions. These programs have demonstrated the value of maintaining consistent monitoring over an extended time period.

Much hope has been placed in the development of the RIMReP as a positive initiative that will help to address some of the deficiencies in past monitoring efforts, especially in relation to cumulative impacts and overall ecosystem health that will inform assessment of the Reef 2050 Plan. However, RIMReP has been very slow to develop with only very modest progress made over the past two years.

6.3.2 Reporting and evaluation

The five-yearly Great Barrier Reef Outlook Report process provides a comprehensive, regular basis for evaluation and reporting on management of the Great Barrier Reef. The Reef 2050 Plan provides an overarching strategy for the management of the Region includes clear monitoring and reporting requirements. The Reef 2050 Plan was updated in July 2018, with a full review due in 2020, after the release of the Outlook Report 2019. While the development of the RIMReP has been delayed, a full prototype is expected to be delivered in June 2019.

The Paddock to Reef Program and its associated annual report cards have been continually improved to provide a succinct snap shot of improvements and changes in land management practices, catchment indicators (ground cover, riparian extent, wetland extent and condition), catchment water quality (sediment, nutrients and pesticides) and the health of the inshore ecosystems.

With the exception of RIMReP, the reporting and evaluation frameworks for the management of the region are generally on track.

6.4 Resourcing of management arrangements

There has been a significant increase in funding with the development of the Reef 2050 Plan, with additional resources in the Commonwealth and Queensland Governments targeting particular actions and governance. In addition, there has been a stabilisation of funds received by the Marine Park Authority to undertake its core business, and a significant increase in funding for the Field Management Program that had been static since 2008. Requirements for management of high priority topics has resulted in a decline in staffing and resourcing in some areas.

7. Conclusion

The Region continues to be managed effectively in most areas of activity. There are improvements in many of the topics since the Outlook Report 2014. Many of the improvements are a result of the *Reef 2050 Plan*, which was developed as a result of 2011 World Heritage Committee request for a coordinated and long-term plan to address issues concerning the risks to the Outstanding Universal Value of the Great Barrier Reef World Heritage Area. The Reef 2050 Plan documents a range of actions, targets and objectives to address the key threats to the Region, identified through the Great Barrier Reef Strategic Assessment and the Great Barrier Reef Coastal Zone Strategic Assessment (refer Reef 2050 Insights Report). The impact of this work has resulted in significant improvement in knowledge and planning in a number of areas, especially in the sphere of Community benefits, Land-based run-off and Port development. The overall assessment results are shown in Table 1.

An understanding of cumulative impacts and the consideration of these impacts has been incorporated into a number of assessment processes, policies and guidelines. This is also the case for Community benefits. The international focus of the World Heritage Committee and work undertaken for the strategic assessments have contributed to a better articulation of the threats to the Region, and prioritisation of actions to reduce the threats.

There continue to be difficulties in achieving outcomes on the ground, due to spatial and temporal scales of the threats to the Region. For example, while targeted actions have been achieved to reduce sediment and nutrient loads entering the Reef lagoon, it is recognised that the targets outlined in the Reef 2050 Plan are unlikely to be achieved in the stated timeframes. Of considerable concern is the impact of climate change on the Region's ecosystems. The extensive coral bleaching episodes in 2016 and again in 2017 are evidence of the fragility of the system, and the need to actively address climate change.

Management effectiveness remains strongest for topics that are limited in scale or complexity. For example, Defence is managed effectively cross all indicators. Priority has been given to complex issues such as Land-based run-off. Significant work has also been achieved in recognising the less tangible Community benefits and Heritage values of the Region.

Management effectiveness challenges remain evident for broad scale, complex topics such as Biodiversity, Climate change, Land-based run-off, Fishing and Coastal development. While policy and legislation changes have improved for Coastal development and Ports since the Outlook Report 2014, concerns remain about developments that are incompatible with improving the condition of the Reef, such as coal mining and legacy issues associated with industries such as tailings dams. A sound planning system has been in place since 2017 for Fishing, but the results from implementation of this plan are yet to seen.

7.1 Overall strengths and weakness in management effectiveness

Detailed information on the grading, justification for grading and evidence used for each indicator is given in Appendix 5.

The strongest performance was evident for indicators relating to aspects of Context (CO5 knowledge and understanding of stakeholders, CO4 understanding of national and international influences, and CO1 (knowledge and understanding of values), and stakeholder

engagement (PR1 stakeholders engaged in management, PL6, stakeholder engaged in planning IN8, volunteer inputs and OC7, effective partnerships). Other indicators where performance was generally strong across the management topics were the social sustainability of management (OC6), the planning systems (PL1), local community engagement (PR2) sound governance (PR3) and the use of biophysical information in management (PR9).

The weakest aspect of performance across the assessment related to the adequacy of inputs (IN2 adequacy of human resources to meet management objectives, IN7 availability of heritage information, IN6, availability of indigenous information), as well as the use of indigenous information in management (PR11). Targets for benchmarking (PR14) and training of management staff (PR5) were also consistently weak. Results for social sustainability were much higher than those for environmental or economic sustainability.

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9. Appendices

9.1 Appendix 1 Grading statements for elements in the management cycle

Assessment criteria	Grade	Grading statements
Context – understanding of values, threats, regional/global influences and stakeholders	Effective	Understanding of values, threats, regional/global influences and stakeholders is good for most thematic areas
	Mostly effective	Understanding is generally good but there is some variability across themes or components of the assessment criteria
	Partially effective	Understanding of values, threats, regional and global influences and relevant stakeholders is only fair for most thematic areas
	Ineffective	Understanding of values, threats, regional and global influences and relevant stakeholders is poor for most thematic areas
Planning – adequacy of planning systems and practices	Effective	Effective planning systems that engage stakeholders are in place for all/most significant issues. There is adequate policy to manage issues that is consistent across jurisdictions.
	Mostly effective	Effective planning systems that engage stakeholders are in place for many significant issues. Policy and consistency across jurisdictions are generally ok.
	Partially effective	Planning systems that engage stakeholders are deficient for a number of significant issues. Policy and consistency across jurisdictions are a problem for some issues
	Ineffective	Planning systems that engage stakeholders are deficient for many significant issues. Policy and consistency across jurisdictions are a problem for some issues.
Inputs – adequacy of financial, staffing and information resources	Effective	Financial and staffing resources are largely adequate to meet management needs, biophysical, socio-economic and traditional (Indigenous) knowledge is available to inform management decision making
	Mostly effective	Financial and staffing resources are mostly adequate to meet management needs, biophysical, socio-economic and traditional (Indigenous) knowledge is mostly available to inform management decision making although there may be deficiencies in some areas
	Partially effective	Financial and staffing resources are unable to meet management needs in some important thematic areas, biophysical, socio-economic and traditional (Indigenous) knowledge is variably available to inform management decision making and there are significant deficiencies in some areas
	Ineffective	Financial and staffing resources are unable to meet management needs in many thematic areas, biophysical, socio-economic and traditional (Indigenous) knowledge to support decision making is frequently deficiencies in some areas
Processes – adequacy of management systems and processes	Effective	The majority of management processes are appropriate and effective in addressing the management of the various thematic areas
	Mostly effective	The majority of management processes are appropriate and effective in addressing management although there are deficiencies in relation to a small number of thematic areas or processes
	Partially effective	A minority of critical management processes show significant deficiencies across most thematic areas
	Ineffective	A majority of management processes show significant deficiencies across most thematic areas
Outputs – delivery of products and services and implementation of plans	Effective	Management programs are mostly progressing in accordance with planned programs and are achieving their desired objectives. The agency and community knowledge base is improving.
	Mostly effective	Management programs are mostly progressing in accordance with planned programs and are achieving their desired objectives but there are problems in some thematic areas. The agency and community knowledge base is generally improving.
	Partially effective	Many management programs are not progressing in accordance with planned programs (significant delays or incomplete actions) or actions undertaken are not achieving objectives. The knowledge base is only growing slowly.
	Ineffective	Most management programs are not progressing in accordance with planned programs (significant delays or incomplete actions) or actions undertaken are not achieving objectives. The knowledge base is only growing slowly.
Outcomes – results of management actions in achieving goals, maintaining values	Effective	Desired outcomes are mostly being achieved, values protected and threats abated for most thematic areas, use of the Great Barrier Reef is largely environmentally and economically sustainable with good community engagement, understanding and enjoyment.
	Mostly effective	Desired outcomes are being achieved in many thematic areas, values protected and threats abated for many thematic areas, use of the Great Barrier Reef is largely environmentally and economically sustainable with good community engagement, understanding and enjoyment.
	Partially effective	Desired outcomes, protection of values and abatement of threats are not being achieved at desirable levels in some critical thematic areas with likely eventual flow-on effects across the Great Barrier Reef. Critical aspects of the use of the Great Barrier Reef are not environmentally or economically sustainable.
	Ineffective	Desired outcomes, protection of values and abatement of threats are not being achieved at desirable levels in most thematic areas including critical areas with likely eventual flow-on effects across the

		Great Barrier Reef. Critical aspects of the use of the Great Barrier Reef are not environmentally or economically sustainable.
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9.2 Appendix 2 Matrix of grades for each topic

	Topics	Biodiversity	Climate Change	Coastal Development	Commercial marine	Community benefits	Defence	Fishing	Heritage	Land-based run-off	Ports	Recreation	Research	Shipping	Traditional Use	Mean	Standard Deviation
CO1	Values	4	4	3	4	3	4	3	3	4	3	4	4	4	3	3.43	0.60
CO2	Condition and trend	2	2	3	3	3	4	3	2.5	4	3	3	4	4	4	3.25	0.60
CO3	Impacts	3	3	3	4	3	3	3	3	4	4	4	3	3	3	3.36	0.46
CO4	National and international influences	4	3	4	4	4	4	4	4	4	4	4	4	3	4	3.86	0.34
CO5	Stakeholders	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3.96	0.15
CO	Overall grade																
PL1	Planning system	4	2	3	3	3	4	4	3.5	4	4	3	3	4	4	3.39	0.58
PL2	PS addresses factors influencing	3	2	3	4	3	3	4	2.5	4	4	4	4	4	3	3.39	0.64
PL3	Actions clear	3	2	3	4	3	4	4	2.5	4	4	3	4	4	4	3.46	0.64
PL4	Objectives measurable	3	2	3	3	3	4	4	3	4	3	3	4	3	4	3.29	0.57
PL5	Monitoring	3	3	3	3	3	3	4	3	4	3	2	3	3	3	3.14	0.50
PL6	Stakeholders engaged	4	2	3	4	4	4	3	3	4	3	4	3	4	4	3.50	0.61
PL7	Sufficient policy	3	1	3	3	3	3	3	3	4	4	3	4	4	3	3.21	0.75
PL8	Consistency jurisdictions	4	1	3	4	3	4	3	3	4	3	3	4	4	4	3.29	0.77
PL9	Certainty	3	2	3	3	3	4	4	2.5	3	4	2	4	4	4	3.27	0.70
PL	Overall grade																

	Topics	Biodiversity	Climate Change	Coastal Development	Commercial marine	Community benefits	Defence	Fishing	Heritage	Land-based run-off	Ports	Recreation	Research	Shipping	Traditional Use	Mean	Standard Deviation
IN1	Adequate finances	3	2	2	4	3	3	3	2.5	4	3	3	4	3	3	3.04	0.59
IN2	Adequate staff	3	1	2	3	3	3	3	2.5	4	3	2	3	3	3	2.75	0.65
IN3	Right skills	3	2	2	3	3	3	3	3	4	3	3	4	3	3	3.00	0.52
IN4	Biophysical information	3	3	3	4	3	3	3	3	4	3	3	4	4	3	3.29	0.44
IN5	Socioeconomic information	3	3	3	3	3	3	3	2	3	4	3	3	4	2	3.00	0.52
IN6	Indigenous information	3	2	2	3	2	4	2	2.5	3	3	2	3	3	3	2.65	0.58
IN7	Heritage information		1	3	3	2	4		3		3	2	3	3		2.82	0.80
IN8	Volunteer inputs	4	4	3	4	3	4	3	2.5	4	3	4	4	4	3	3.47	0.52
IN	Overall grade																
PR1	Stakeholders engaged	4	3	3	4	4	4	3	3	4	4	3	4	4	4	3.64	0.46
PR2	Local community engaged	4	2	3	4	4	4	3	2.5	4	4	3	3	4	4	3.39	0.64
PR3	Sound governance	3	2	3	4	4	4	4	3	4	4	4	4	4	3	3.64	0.59
PR4	Performance monitoring	4	2	3	3	3	3	4	3	4	3	2	3	3	3	3.00	0.52
PR5	Training	3	2	3	3	3	3	3	2.5	4	3	2	4	3	3	2.96	0.53
PR6	Consistent implementation	3	2	3	3	3	4	3	3	4	3	4	4	4	4	3.36	0.59
PR7	Conflict resolution	3	2	3	4	3	4	3	2	4	2	3	4	4	3	3.14	0.72
PR8	Impacts considered	3	2	3	3	3	4	3	3	3	3	3	4	3	3	3.14	0.50
PR9	Biophysical info applied	4	3	3	4	3	4	3	3	4	2	3	4	3	4	3.29	0.57
PR10	Socioeconomic info applied	3	2	3	3	3	4	3	2.5	3	3	2	3	4		2.88	0.60
PR11	Indigenous info applied	2	2	2	3	2	4	2	3	3	3	3	3	3	2	2.69	0.58
PR12	Heritage info applied		2	2	3	2	4		3		3	3	3	3		2.82	0.55
PR13	Standards	3	1	3	3	3	4	3	2.5	4	3	3	4	4	3	3.18	0.77

	Topics	Biodiversity	Climate Change	Coastal Development	Commercial marine	Community benefits	Defence	Fishing	Heritage	Land-based run-off	Ports	Recreation	Research	Shipping	Traditional Use	Mean	Standard Deviation
PR1 4	Targets for benchmarking	4	1	3	3	3	3	3	2.5	4	3	1	3	3	3	2.77	0.76
PR	Overall grade																
OP1	Work program progress	3	1	3	3	3	4	3	3	4	3	3	4	4	4	3.21	0.75
OP2	Timeframes met	3	1	3	3	3	4	3	3	3	3	2	4	4	4	2.93	0.93
OP3	Results achieved objectives	1	1	2	3	3	4	3	3	3	3	2	4	3	4	2.93	0.77
OP4	Products delivered	3	2	3	4	3	4	3	3	4	3	2	4	4	4	3.36	0.69
OP5	Agency knowledge management systems	4	2	3	4	3	4	3	3	4	2	3	4	3	2	3.07	0.68
OP6	Community knowledge management systems	3	2	3	4	3	4	3	2.5	4	3	3	4	2	3	3.10	0.64
OP	Overall grade																
OC1	Outcomes being achieved	2	1	3	4	3	4	3	3	3	3	3	4	4	4	3.07	0.93
OC2	Values protected	1	1	3	3	3	4	3	2.5	2	3	3	4	4	3	2.89	0.78
OC3	Threats reduced	2	1	2	4	3	4	2	2.5	3	4	3	4	4	3	2.89	1.00
OC4	Environmentally sustainable	1	1	2	3	3	3	2	3.5	2	4	3	4	4	4	2.89	0.90
OC5	Economically sustainable	2	1	2	3	4	4	2	2.5	2	4	3		4	3	2.88	0.89
OC6	Socially sustainable	3		3	4	4	4	3	2	2	3	4	4	4	4	3.46	0.72
OC7	Effective partnerships	4	2	3	4	3	4	3	3.5	4	4	3	4	4	4	3.40	0.67
OC	Overall grade																

9.3 Appendix 3 Program approaches and management tools

Management tool	Purpose	Current components and activities
Reef 2050 Plan	The Reef 2050 Plan responds to the World Heritage Committee's recommendation that Australia develop a long-term plan for sustainable development to protect the Outstanding Universal Value of the Reef.	Reef 2050 Long-Term Sustainability Plan Reef 2050 Long-Term Sustainability Plan Mid-term review
Acts and Regulations	The <i>Great Barrier Reef Marine Park Act 1975</i> and Regulations govern the protection and management of the Great Barrier Reef Marine Park. They provide for the Zoning Plan and plans of management, and govern permitting decisions. The provisions are matched in areas of Queensland jurisdiction by the <i>Marine Parks Act 2004</i> and Regulations. Other Commonwealth and Queensland legislation also applies in the Region, for example the <i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i> and the <i>Environmental Protection Act 1994 (Qld)</i> .	<ul style="list-style-type: none"> • <i>Great Barrier Reef Marine Park Act 1975</i> • Great Barrier Reef Marine Park Regulations 1993 • Providing advice, for example on projects assessed under <i>the Environment Protection and Biodiversity Conservation Act 1999</i> • Coordinating application of the Queensland <i>Marine Parks Act 2004</i> and Regulations, for example in relation to joint marine parks permits
Zoning Plan	Provides spatial control of use and, to a lesser extent, access within the Great Barrier Reef Marine Park. Establishes the framework for extractive use and the need for permits for some uses, such as tourism, infrastructure and research. Zoning plans are developed under Part 5 Division 2 of the <i>Great Barrier Reef Marine Park Act 1975</i> . Complementary arrangements are in place in adjacent areas under Queensland jurisdiction.	<ul style="list-style-type: none"> • Great Barrier Reef Marine Park Zoning Plan 2003
Plans of management	Set out specific arrangements for activities, areas, species or ecological communities. They complement zoning and permitting arrangements. Some components are legally binding. Plans of management are developed under Part VB of the <i>Great Barrier Reef Marine Park Act 1975</i> . There is the capacity for the GBRMPA to enter into agreements or arrangements for management of an area, species or ecological community with a community group having a special interest in an area, including some form of native title.	<ul style="list-style-type: none"> • Cairns Area Plan of Management 1998 • Hinchinbrook Area Plan of Management 2004 • Whitsundays Plan of Management 1998 (recently amended in 2017) • Shoalwater Bay (Dugong) Plan of Management 1997
Permits (including environmental impact assessment)	Facilitate opportunities for sustainable use of the Marine Park. Permits are issued mainly for tourism, research, harvest fisheries, dredging and infrastructure (for example jetties and marinas) and include detailed risk-based environmental impact assessment. Matched in adjacent areas of Queensland jurisdiction,	<ul style="list-style-type: none"> • Permits granted under Part 2A of the Great Barrier Reef Marine Park Regulations 1983 and under Queensland Marine Parks Regulations 2006

Management tool	Purpose	Current components and activities
	generally providing a joint permit. Fisheries licences are issued and managed by the Queensland Government.	
Traditional Owner agreements	Traditional Use of Marine Resources Agreements are formal agreements describing how Traditional Owner groups work with Australian and Queensland governments to manage traditional activities in sea country. They are made in accordance with Part 2B of the Regulations. They do not affect the operation of section 211 of the <i>Native Title Act 1993</i> and are not intended to extinguish native title rights and interests. Indigenous Land Use Agreements are between one or more native title groups and other people or parties about the use and management of land and waters.	<ul style="list-style-type: none"> • Kuuku Ya'u People's Indigenous Land Use Agreement • Traditional Use of Marine Resources Agreements for Gunggandji region, Giringun region; Yirrganydji region, Woppaburra section; Wuthathi region; Port Curtis Coral Coast; Lama Lama region; Yuku-Baja-Muliku region; Mandubarra
Compliance	Activities that encourage adherence with legal requirements, both through education and enforcement.	<ul style="list-style-type: none"> • Eyes and Ears Incident Reporting program • Field Management Program jointly undertaken between the Great Barrier Reef Marine Park Authority and the Queensland Parks and Wildlife Service
Site infrastructure	On-ground infrastructure is installed to manage use and protect the values of individual sites. Implemented and maintained by the GBRMPA and the Queensland Government through the Field Management Program.	<ul style="list-style-type: none"> • No-anchoring areas • Public moorings • Reef protection markers • Signs • Transit lanes
Fees and charges	Three main fees and charges apply in the Marine Park: The cost of assessing an application for a permit for commercial activities is partly recovered through payment of a permit application assessment fee. The environmental management charge applies to some commercial activities operating under a permit issued by the GBRMPA. The revenue is applied to Marine Park management. Bonds (usually as a bank guarantee) may be held by the GBRMPA to cover the risks associated with a proposed activity.	<ul style="list-style-type: none"> • Permit application assessment fees are currently charged for activities of a commercial nature including tourist programs; vessel chartering; construction or maintenance of a facility; operation of a land-based sewage outfall; and the construction and operation of a mooring. • Most tourism visitors to the Marine Park pay the environmental management charge. For operations involving the hire of equipment, installation and operation of tourist facilities, and sewage outfalls, quarterly charges are paid by the operator. • Bonds are generally secured as part of a deed of agreement between the permittee and the GBRMPA.
Policy	Developed by the GBRMPA, under section 7(4) of the <i>Great Barrier Reef Marine Park Act 1975</i> , detailing the way in which the GBRMPA intends to manage the Marine Park or perform its other functions. Policy documents are not legislative instruments. They are specific arrangements that guide decision makers and the public. Types of policy documents include: strategies, policies, site management	<p>Strategies</p> <ul style="list-style-type: none"> • Great Barrier Reef Blueprint • Great Barrier Reef Biodiversity Conservation Strategy 2013 • Great Barrier Reef Heritage Strategy 2005 • Recreation Management Strategy for the Great Barrier Reef Marine Park 2012 • Crown-of-thorns Starfish Strategic Management and Contingency Plan (draft) <p>Policies</p>

Management tool	Purpose	Current components and activities
	arrangements, position statements and guidelines.	<ul style="list-style-type: none"> • Cruise shipping policy for the Great Barrier Reef Marine Park • Managing tourism permission to operate in the Great Barrier Reef Marine Park (including Allocation, Latency and Tenure) • Policy on moorings in the Great Barrier Reef • Policy on managing bareboat operations in the Great Barrier Reef Marine Park • Dredging and spoil disposal policy • Dredging coral reef habitats policy • Environmental impact management • Policy on managing activities that include the direct take of a protected species from the Great Barrier Reef Marine Park • Marine tourism contingency plan • Operational policy on whale and dolphin conservation in the Great Barrier Reef Marine Park • Sewage discharges from marine outfalls to the Great Barrier Reef Marine Park <p>Site management arrangements</p> <ul style="list-style-type: none"> • Site plans for Raine Island, Moulter Cay and Maclennan Cay; Clump Point, Mission Beach; Low Isles, offshore from Port Douglas; Michaelmas Cay locality; Upolu Cay Reef; Bauer Bay, South Molle Island; Blue Pearl Bay, Hayman Island; Whitsundays Plan of Management setting 5 site plans; Tongue Bay; Hill Inlet, Whitehaven Beach and Whitsunday Island; Fitzroy Reef; Keppel Bay and islands; Lady Elliot Island Reef; Lady Musgrave Island Reef <p>Position statements</p> <ul style="list-style-type: none"> • Aquaculture within the Great Barrier Reef Marine Park • Conservation of dugongs in the Great Barrier Reef Marine Park • Indigenous participation in tourism and its management • Management of commercial jet ski operations around Magnetic Island • Management of tourist flights in the vicinity of Magnetic Island • Management of memorials within the Great Barrier Reef Marine Park • Managing access to the Restricted Access Special Management Areas surrounding Raine Island, Moulter Cay and Maclennan Cay • No structures sub-zones • Translocation of species in the Great Barrier Reef Marine Park <p>Guidelines</p> <ul style="list-style-type: none"> • Applications for joint permissions

Management tool	Purpose	Current components and activities
		<ul style="list-style-type: none"> • Permission assessment and decision • Historic heritage assessment: WWII features and sites, and voyages and shipwrecks • Historic heritage assessment: other places of historic and social significance • Historic heritage assessment: maritime cultural heritage protection special management area • Social value assessment • Traditional Owner heritage assessment • Woppaburra Traditional Owner heritage assessment • Managing research in the Great Barrier Reef Marine Park • Activity assessment: photography, filming and sound recording • Activity assessment: tourism program involving whale watching or swimming with whales • Water quality guidelines for the Great Barrier Reef Marine Park • Commercial dugong watching • Coral transplantation • Emergency disposal of foreign fishing vessels • Management of artificial reefs in the Great Barrier Reef Marine Park • Managing visitation to seabird breeding islands • Permits Information Bulletin — no structure sub-zones • Use of hydrodynamic numerical modelling for dredging projects in the Great Barrier Reef Marine Park
Partnerships	Formal arrangements, often executed through a memorandum of understanding or an agreement, to enable a partnership approach to management of the Marine Park.	<ul style="list-style-type: none"> • Great Barrier Reef Intergovernmental Agreement 2009 between the Australian and Queensland governments • Reef Water Quality Protection Plan 2009 and 2013 (Reef Plan) now • High Standard Tourism program • Management agreement with the Department of Defence on the implementation of the strategic environmental assessment of defence activities in the Marine Park. • Marine Stranding's Hotline • Memorandum of understanding with the Department of the Environment and Energy relating to the integration and application of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the <i>Great Barrier Reef Marine Park Act 1975</i> • Memorandum of understanding with Queensland ports on port activities in or

Management tool	Purpose	Current components and activities
		<p>adjacent to the Great Barrier Reef Marine Park (2009)</p> <ul style="list-style-type: none"> • Local Marine Advisory Committees • Reef Advisory Committees • Targeted control of crown-of-thorns starfish
Stewardship and best practice	Voluntary arrangements with stakeholders that provide the opportunity for contributions to protection and management. Provision of expertise and advice to stakeholders and natural resource management bodies.	<ul style="list-style-type: none"> • High Standard Tourism program with marine park operators • Eyes and Ears Incident Reporting program • Eye on the Reef monitoring program • Low Isles Preservation Society • Marine Contingency Coordination Framework for Environmental Incidents • Marine Monitoring Program pesticide monitoring volunteers • Pro-vision Reef Stewardship Action Plan • Reef Guardian program, including schools, councils, fishers, and tourism (in development) • Responsible Reef Practices (for tourism and recreational users) • Great Barrier Reef Blueprint for resilience
Education and community awareness	Programs to inform and motivate members of the community about the Great Barrier Reef and its protection and management, including ways they can contribute.	<ul style="list-style-type: none"> • Community Access Points which distribute zoning maps and educational material • On-board website for tourism operators • Reef Guardian Schools • Reef HQ Aquarium • The GBRMPA's publications including Reef in Brief and fact sheets • The GBRMPA's websites and social media channels
Research and monitoring	Undertaken, commissioned or partnered by the GBRMPA to better inform decisions on protection and management of the Great Barrier Reef, guided by the GBRMPA's Science Strategy and Information Needs 2014 – 2019.	<ul style="list-style-type: none"> • Commissioned research projects to address specific management issues (e.g. RIMREP) • Eye on the Reef monitoring program • Independent and partnered research by research institutions and the Great Barrier Reef Foundation • Marine Monitoring Program • National Environmental Science Programme, Tropical Ecosystems Hub, 2015–2021 • Reef Guardians Research Grants 2018
Reporting	Undertaken by the GBRMPA to meet statutory, national and international obligations, and to provide direction for strategic planning within the agency.	<ul style="list-style-type: none"> • Field Management business strategy (annual) • Great Barrier Reef Marine Park Authority Corporate Plan and annual reports • Great Barrier Reef Outlook Report (five-yearly) • World Heritage periodic reporting (six-yearly) • Annual reporting under the Reef 2050 Plan

9.4 Appendix 4 Grades for each element for management topic

Table 21 Calculation of grades for biodiversity

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to biodiversity are understood by managers	4	<ul style="list-style-type: none"> The biodiversity and associated values of the Great Barrier Reef (GBR) are well understood and documented as would be expected for one of the best-studied coral reef ecosystems in the world. Biodiversity (habitats and species) and Ecosystem Processes underpin the following MNES: Natural beauty and aesthetics, Ecological and biological processes, habitat for conservation of biodiversity, wholeness and intactness, Bioregions, habitats and species and listed threatened species and habitats (see Supporting evidence – values and attributes table underpinning MNES). Biodiversity (habitats and species) for aquatic and terrestrial systems underpin Matters of State Environmental Significance which are used in planning decisions by managers in Queensland. Some habitats (e.g. soft bottom communities) and most invertebrate species groups (bryozoans, cryptic habitat-associated species, plankton and others) are less well studied. Knowledge is better for commercially important species and species of conservation or management concern (marine turtles, crown-of-thorns starfish). Broad regionalisation of ecosystems and habitats is known but fine scale knowledge of the spatial distribution of values and our ability to map values is an identified gap that is becoming more significant as finer scale planning and management is being applied to manage parts of the GBR Wetland extent, types and values associated with the GBR are known and information is available to managers through the on-line website <i>Wetlandinfo</i> Continued monitoring through the AIMS LTMP, monitoring of shorebirds (Qld Waders), seabirds, marine turtle rookeries 	<ul style="list-style-type: none"> Whiteway et al. (2013) <i>Geological and Geomorphological features of Outstanding Universal Value in the Great Barrier Reef World Heritage Area</i>. Technical Report Prepared for the Department of Sustainability, Environment, Water, Population and Communities. Great Barrier Reef Biodiversity Conservation Strategy 2013 GBR Vulnerability Assessments GBR Area Plans of Management (Cairns, Hinchinbrook, Whitsundays) Site Specific Management Plans (Raine Island and Moulter Cay, Low Isles, Clump Point etc) Values and attributes table underpinning MNES Flora and fauna of the Great Barrier Reef World Heritage Area Reef 2050 Progress Update to World Heritage Centre Great Barrier Reef Outlook Report 2014 Chapter 2 Draft EPBC Act referral guidelines for the Outstanding Universal Value of the GBRWHA Raine Island Recovery Project Nest to Ocean Turtle Protection Program WetlandInfo information on wetlands and aquatic ecosystems https://wetlandinfo.ehp.qld.gov.au/wetlands/ AquaBamm – aquatic ecosystem conservation assessments for wetlands in the GBR 	Adequate	Stable

		<p>(QPWS), and mangroves/saltmarshes etc is providing finer scale data on distribution and abundances and some species.</p> <ul style="list-style-type: none"> • Report on Defining the aesthetic values of the Great Barrier Reef World Heritage Area: indicates the importance of biodiversity and natural habitats in underpinning aesthetic values of the GBR • Wetlands in the GBR catchments, Management Strategy 2016-21. This strategy promotes an integrated approach to catchment management that considers the multiple values of wetlands in a whole-of-catchment context. https://wetlandinfo.ehp.qld.gov.au/wetlands/management/policy-legislation/gbr.html • Information on the biodiversity values of the Wetlands of International Significance (Ramsar) in the GBR is available to managers. Information on the sites is presently being updated • No comprehensive map of all the vast and diverse habitats on the whole Great Barrier Reef currently exists. The 'Live' Habitat Mapping pilot study is a step towards creating one. Queensland has developed and published an Intertidal and Subtidal habitat classification scheme to allow for integrated habitat mapping. 	<ul style="list-style-type: none"> • including biodiversity values https://wetlandinfo.ehp.qld.gov.au/wetlands/assessment/assessment-methods/aca/great-barrier-reef.html • Matters of State Environmental Significance https://www.ehp.qld.gov.au/management/planning-guidelines/method-mapping-mses.html • Intertidal and Subtidal Habitat Classification scheme https://wetlandinfo.ehp.qld.gov.au/wetlands/wh-are-wetlands/definitions-classification/classification-systems-background/intertidal-subtidal/ • Ramsar site information https://wetlandinfo.ehp.qld.gov.au/wetlands/management/national-international-important-wetlands/ • Intertidal and subtidal habitat mapping is underway for lower part of inshore GBR https://wetlandinfo.ehp.qld.gov.au/resources/static/pdf/resources/fact-sheets/fs-inter-sub-tidal-class-map-aca-cq-31-05-2017.pdf 		
CO2 The current condition and trend of values relevant to biodiversity are known by managers	2	<ul style="list-style-type: none"> • Back to back bleaching events in 2016-17 has prompted large-scale surveys of bleaching extent and coral mortality. It is known that large-scale bleaching will change relative composition of coral species but the flow-on consequences for other reef biota are largely unknown but likely to be significant. • The sheer scale of the ecosystem means monitoring has focused on a few key habitats and species or groups of species, generally those that are iconic (such as coral reefs, seabirds), commercially important (such as seagrass meadows, coral trout) or threatened (such as dugongs, marine turtles). Therefore, current condition and trend is relatively unknown for the majority of species. 	<ul style="list-style-type: none"> • Hughes, T. P., Kerry, J. T. and Simpson, T. Large-scale bleaching of corals on the Great Barrier Reef. <i>Ecology</i>: DOI: 10.1002/ecy.2092 • De'ath, G., Fabricius, K.E., Sweatman, H. and Puotinen, M. 2012, The 27-year decline of coral cover on the Great Barrier Reef and its causes, <i>Proceedings of the National Academy of Sciences</i> 109(44): 17995-17999. • Marine Monitoring Program publications including annual technical reports, report cards, summary and synthesis reports • Eye on the Reef program 	Adequate	Declining

		<ul style="list-style-type: none"> • There is little comprehensive information on the status of connectivity from catchments to the reef for biodiversity which require these connections • Long term monitoring programs exist for some species (e.g. marine turtles, dugong, seagrass, coral). • AIMS long term monitoring program has provided consistent data on coral cover, coral bleaching, Crown-Of-Thorns starfish numbers, major fish species and benthic organisms but is only conducted on 50 reefs with none in the Far Northern part of the GBR. • Marine Monitoring Program has provided long-term data on the condition and trend of inshore water quality, coral and seagrass and the land-based run-off pressures that impact on them but does not cover other elements of biodiversity • Eye on the Reef program captures spatial status information but spatial and taxonomic coverage is limited • Summary of Reef Health Impacts 2016-17 provides useful summary of available data • There is little detailed information about the status and trends of many habitat types within the Great Barrier Reef (for example the lagoon floor, shoals, Halimeda banks and the continental slope). • Queensland has developed and published an Intertidal and Subtidal habitat classification scheme and should allow for condition and trend of these habitats to be considered in future. • Change in wetland extent information is available • Change in wetland condition is available for the first time • The majority of vulnerability assessment actions were translated into the Reef 2050 Plan and/or are delivered through the Field Management Program. None of the Vulnerability Assessments from 2013 have been updated and there has been no formal process or mapping to determine which actions are complete outside of the annual Reef 2050 annual reporting. • Since 2013 two new vulnerability assessments were completed for Seagrass, estuaries and freshwater wetlands under the Biodiversity Conservation Strategy. 	<ul style="list-style-type: none"> • State of the Environment Report 2016 https://soe.environment.gov.au/download/reports • State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 • Australia State of the Environment 2016 – Biodiversity • GBRMPA Vulnerability Assessments • Final report: 2016 coral bleaching event on the Great Barrier Reef • Draft report: 2017-2017 summary of environmental impacts on the GBR • Beasley 2016, Evaluating Inshore dolphin status in Halifax and Cleveland bays, Project Report • Beasley 2016, Evaluating Inshore dolphin status along the North Queensland Coast, Project Report • Beasley 2016, Evaluating Inshore dolphin status In Girringun Managed Sea Country North Queensland Coast, Project Report • Coastal Bird Monitoring and Information Strategy 2015 2020 • Queensland islands (within WHA but not the Region) • 2013 NPSR Capricornia Cays Seabird Survey Report • 2014, 2015, 2016 NPSR Noddy and Shearwater Survey Reports • Scale ants and <i>Pisonia grandis</i> in the Capricornia Cays • Addison et al. (2017) Towards quantitative assessment of biodiversity outcomes: Insights from Australian marine protected areas. <i>Journal of Environmental Management</i> 198:183-191. 		
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		<ul style="list-style-type: none"> Major barrier to maintenance of quantitative knowledge on condition and trend of values is lack of agency capacity (Addison et al., 2017) 	<ul style="list-style-type: none"> Intertidal and Subtidal Habitat Classification scheme https://wetlandinfo.ehp.qld.gov.au/wetlands/wh-are-wetlands/definitions-classification/classification-systems-background/intertidal-subtidal/ Change in wetland extent information is available https://wetlandinfo.ehp.qld.gov.au/wetlands/facts-maps/study-area-great-barrier-reef/ Change in wetland condition https://www.reefplan.qld.gov.au/measuring-success/report-cards/2014/assets/wetlands-case-study.pdf 		
CO3 Impacts (direct, indirect and cumulative) associated with biodiversity are understood by managers.	3	<ul style="list-style-type: none"> Direct impacts on the GBR are of major concern (declining, water quality, climate change, impacts of extractive use, COTS) and have been well studied for a considerable time Direct and indirect impacts have been well documented through the Outlook and Strategic Assessment process The sheer scale of the ecosystem means monitoring has focused on a few key habitats and species or groups of species, generally those that are iconic (such as coral reefs, seabirds), commercially important (such as seagrass meadows, coral trout) or threatened (such as dugongs, marine turtles). There are few long-term monitoring programs established and the baseline from which to make comparisons is different for each group studied. Delays in reporting of AIMS long term monitoring results (2 years) means that information is not available at the time when response strategies need to be developed (e.g. survey of post-Cyclone Debbie impacts won't be done until 2019) Cumulative impacts are particularly challenging to quantify, assess and manage. These impacts are beginning to be better understood through descriptive qualitative models and spatial mapping tools. To date, understanding of cumulative impacts in the Region has been limited 	<ul style="list-style-type: none"> Great Barrier Reef Strategic Assessment Report, Chapter 6 Strategic Assessment Demonstration case studies Chapter 9 and Technical Reports Informing the Outlook for Great Barrier Reef coastal ecosystems Draft report: 2016-2017 summary of environmental impacts on the GBR Trawl Ecological Risk Assessments from the East Coast Trawl Fishery Structures Policy Dredging and Dredge Spoil Material Disposal Policy GBRMPA policies and position statements National Assessment Guidelines for Dredging 2009 EAM Risk assessment framework 2009 If an action triggers EPBC for the GBRMP or WHA, the GBRMPA will undertake an assessment with DoEE under the MOU. Climate Change and the Great Barrier Reef: A vulnerability Assessment 	Adequate	Stable

		<ul style="list-style-type: none"> • Impacts on freshwater wetlands of various pressures are available to managers but much has not been validated https://wetlandinfo.ehp.qld.gov.au/wetlands/management/pressures/lacustrine-palustrine-threats/ • Draft report "Summary of Reef Health Impacts 2016-17: provides a useful summary of available data and considers cumulative impacts but synergistic effects of multiple impacts on reefs are not well understood. • A broad list of impacts has been consolidated into 40 separate impacts, grouped into four categories: climate change; catchment run-off; degradation of coastal ecosystems; and direct use. • The direct and indirect impacts of climate change over the past few years (back to back thermal stress events, severe cyclones and consequent loss in coral habitat) have likely impacted many species, particularly habitat-associated or those with narrow thermal tolerance. Inshore species and their habitats adjacent to the developed coast are under more pressure compared to mid-shelf and offshore reefs. • Declines in species or groups of species have been caused by a range of factors, some of which have been addressed with evidence of recovery of some affected species (e.g. humpback whales, the southern Great Barrier Reef green turtle stock). • More known about inshore and mid-shelf than offshore and north • Virtually nothing known about deep water habitats and their biodiversity • There is little comprehensive information on the status of connectivity from catchments to the reef for biodiversity which require these connections • The probable extinction of the Bramble Cay melomys (<i>Melomys rubicola</i>), the GBR's only endemic mammal, from its only known island home in Torres Strait because of climate change was reported in 2016 (Gynther et al. 2016) • After three years of increasing average coral cover on the Great Barrier Reef, from 2013 to 2015, coral cover declined by about 25 per cent in 2016 due to the severe mass coral bleaching event. The Reef-wide average coral cover at the end of 2016 was about 	<ul style="list-style-type: none"> • Great Barrier Reef Vulnerability Assessment • Great Barrier Reef Biodiversity Conservation Strategy 2013 • The effects of line fishing on the Great Barrier Reef and Evaluations of alternative potential management strategies • Grech, Alana (2009) Spatial models and risk assessments to inform marine planning at ecosystem-scales: seagrasses and dugongs as a case study • <i>Acanthaster planci</i> invasions: applying biosecurity practices to manage a native boom and bust coral pest in Australia. Jessica Hoey, Marnie L. Campbell, Chad L. Hewitt, Brendan Gould and Rosemary Bird. (2016) Management of Biological Invasions (2016) Volume 7, Issue 3: 213–220. • Pratchett, M., Caballes, C., Wilmes, J., Matthews, S., Mellin, C., Sweatman, H., Nadler, L., Brodie, J., Thompson, C., Hoey, J., Bos, A., Byrne, M., Messmer, V., Fortunato, S., Chen, C., Buck, A., Babcock, R. and Uthicke, S. (2017). Thirty Years of Research on Crown-of-Thorns Starfish (1986–2016): Scientific Advances and Emerging Opportunities. Diversity 9(4): 41. • Great Barrier Reef Blueprint for Resilience • Great Barrier Reef Summit paper and workbook • COTS Strategy and Contingency Plan • Gynther et al. 2016 X??? • AIMS long term monitoring results • 2017 Scientific Consensus Statement • Landscape Hazard Assessment for GBR https://wetlandinfo.ehp.qld.gov.au/wetlands/assessment/monitoring/ 		
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		<p>18 per cent. The lowest recorded Reef-wide average coral cover is still from 2012, at about 11 per cent.</p> <ul style="list-style-type: none"> • Populations of a number of ecologically significant species, particularly predators (such as sharks, seabirds) and large herbivores (dugongs), are known to have seriously declined. • Disease (including coral disease) threats not well known and/or understood (eg. Qld Grouper) • The 2017 Scientific Consensus Statement Update provides an assessment of pressure from nutrients, sediments and pesticides on the Reef's coral and seagrass habitats, mangroves and freshwater wetlands. • Crown-of-thorns starfish (COTS) – the GBR is experiencing another COTS outbreak, which initiated in 2010. Several review articles (published since 2015 see Hoey et al. 2016 and Pratchett et al. 2017) have analysed research gaps and current management approaches and recommend changes if managing agencies are to ever have any change of being proactive rather than reactive. GBRMPA has drafted a COTS Strategy and Contingency Plan – to respond to the current outbreak and prepare for future outbreaks in a more proactive manner • GBRMPA Summit and Blueprint identify the urgent need to delivery on ground actions to enhance resilience of the GBR including expand and extend COTS control and protecting key species for reef recovery 	<ul style="list-style-type: none"> • Pressure conceptual models for freshwater wetlands https://wetlandinfo.ehp.qld.gov.au/wetlands/management/pressures/lacustrine-palustrine-threats/ 		
CO4 The broader (national and international) level influences relevant to biodiversity are understood by managers.	4	<ul style="list-style-type: none"> • Strategic Assessment Process and UNESCO World Heritage Committee and Advisory Body processes relating to the GBR have focussed attention on the elaboration of attributes underpinning the Outstanding Universal Value of the GBR and MNES. • Current and potential impacts of global and regional changes to climate are well understood by managers • State Party reports to World Heritage Committee reflects thorough understanding of national and international influences • Information on the biodiversity values of the Wetlands of International Significance (Ramsar) in the GBR is available to managers. Information on the sites is presently being updated 	<ul style="list-style-type: none"> • Great Barrier Reef Region Strategic Assessment Report • State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 • The Greenhouse 2013 website provides summaries of the current state of knowledge (IPCC AR5) on global climate • Reef 2050 Long-Term Sustainability Plan • Ramsar requirements https://wetlandinfo.ehp.qld.gov.au/wetlands/resources/training/13-ramsar-qld/ 	Adequate	Stable

		<ul style="list-style-type: none"> The responsibilities and requirements of international requirements relevant for Ramsar and waterbirds are now available for managers. Sustainable limits to growth/limits of acceptable change and carrying capacity of the GBR Region have not been established Reef 2050 Long-term Sustainability Plan is intended to guide governments, community and industry in their work to achieve clear targets for improving the condition of the Reef. It sets out desired outcomes, objectives, targets and actions for protecting the property's outstanding universal value 	<ul style="list-style-type: none"> Waterbird requirements (JAMBA, CAMBA, RoKAMBA) https://wetlandinfo.ehp.qld.gov.au/wetlands/management/bird-management/bird-legislation/ 		
CO5 The stakeholders relevant to biodiversity are well known by managers.	4	<ul style="list-style-type: none"> GBRMPA has two Reef Advisory Committees (RACs): Indigenous; and Tourism. The Catchment and Coastal RAC and Ecosystem RAC that previously existed have been disbanded but a number of new committees have been established in relation to the Reef 2050 Plan (advisory committees (RIMREP, Reef Advisory Committee, the Independent Expert Panel). A key role for the RACs is to advise the GBRMPA in relation to actions that can be taken to address the risks to the Great Barrier Reef Marine Park identified in the Great Barrier Reef Outlook Reports and other relevant studies. Major extensions in stewardship and Reef Guardian programs since 2009 but these do not directly address biodiversity issues Local Marine Advisory Committees provide contact with stakeholder groups at regional level A Queensland Wetlands Governance Group and GBR Wetlands Network link key managers and practitioners and meet and collaborate on wetlands issues Stakeholder engagement has been one of the strongest aspects of the GBRMPA's management. - see engagement undertaken for the strategic assessments. The Region's values considered important by the community were explored in a series of workshops and surveys with stakeholders and Traditional Owners in the latter half of 2012, as well as through discussions with the Authority's advisory committees and through one-on-one talks. The range of information, views and experiences greatly assisted in determining the full set of values for the Region. In addition, the 	<ul style="list-style-type: none"> Strategic Assessment stakeholder engagement report Reef Check Seagrass Watch Marine Monitoring Program Queensland Wetlands program Whitsunday Plan of Management consultation Increased involvement with Great Barrier Reef Foundation projects <ul style="list-style-type: none"> Lady Elliot Island Ecosystem Resilience Plan Raine Island Recovery Project Resilience Hot Spot Mapping 	Adequate	Stable

		<p>process strengthened a common understanding of the broad range of values that the Region supports and their current condition and trend.</p> <ul style="list-style-type: none"> • Eye on Reef program, seagrass watch and Reef Check directly address biodiversity issues • Over 70 regional, national and international delegates representing marine park managers, Traditional Owners, government agencies, research institutions, industry groups, Reef users and other stakeholders participated in Great Barrier Reef Summit – Managing for Resilience • Reef 2050 Independent Expert Panel provides scientific input to implementation of Reef 2050 plan 			
PLANNING					
PL1 There is a planning system in place that effectively addresses biodiversity	4	<ul style="list-style-type: none"> • The planning environment for the GBR is becoming more complex with plans being developed in rapid succession in response to the challenges facing the conservation of the GBR. Recent plans relevant to biodiversity include: <ul style="list-style-type: none"> - 25 year Strategic Plan for the GBR; - Great Barrier Reef Biodiversity Conservation Strategy 2013; - Great Barrier Reef Region Strategic Assessment: Program report; - Reef 2050 LTSP Plan - Reef Blueprint <p>While significant efforts have been made to align the provisions of plans, it seems that more effort is going into the development of plans at the expense of implementation</p> <ul style="list-style-type: none"> • The Great Barrier Reef Biodiversity Conservation Strategy 2013 provided a framework for how the biodiversity of the Great Barrier Reef will be managed – this has now been replaced by Reef 2050 Report. • GBRMPA Plans of Management (PoM) address biodiversity issues in high tourism areas identifying specific biodiversity values, associated issues and management strategies • In 2008 a Code of Practice for dwarf minke whale interactions in the Great Barrier Reef World Heritage Area was completed and remains in force. 	<ul style="list-style-type: none"> • The 25-Year Strategic Plan for the Great Barrier Reef World Heritage Area • Great Barrier Reef Strategic Assessment Report, Chapter 5 • There are a broad range of Queensland planning and legislative arrangements for biodiversity https://wetlandinfo.ehp.qld.gov.au/wetlands/management/policy-legislation/ • Coastal Protection State Planning Regulatory Provision 2013 • Great Barrier Reef Biodiversity Conservation Strategy 2013 • Bos, M., Pressey, R. L. and Stoeckl, N. (2014). Effective marine offsets for the Great Barrier Reef World Heritage Area. <i>Environmental Science & Policy</i> 42: 1-15. • Shumway, N., Watson, J. E. M., Saunders, M. I. and Maron, M. (2018). The Risks and Opportunities of Translating Terrestrial Biodiversity Offsets to the Marine Realm. <i>BioScience</i>: bix150-bix150. • Lady Elliot Island Ecosystem Resilience Plan • Reef 2050 LTSP Plan • Reef Blueprint 	Adequate	Declining

		<ul style="list-style-type: none"> Wetlands in the GBR catchments, Management Strategy 2016-21. This strategy promotes an integrated approach to catchment management that considers the multiple values of wetlands in a whole-of-catchment context. Strategic Assessment Program Reports promote the concept of net benefits required to maintain and restore biodiversity condition and halt declining trends although there are different views on the appropriateness of a net benefits strategy and offsetting in an MPA context Draft Marine Debris TAP developed at national level 2015 amendments to the Great Barrier Reef Marine Park Act 1975 to provide additional protection for dugong and turtle populations from the threats of poaching, illegal trade and illegal transportation. Efforts to reduce the impact COTS predation on coral have become increasingly critical given the impacts to coral cover from coral bleaching and tropical cyclones Lady Elliot Island Ecosystem Resilience Plan – aims to maximise resilience to climate change and other stresses The Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004 was amended in February 2016 to adopt complementary commercial net fishing restrictions already in place under Commonwealth marine park legislation to support dugong conservation. Biodiversity (habitats and species) underpin Matters of State Environmental Significance which are used in planning decisions by managers in Queensland. There is little comprehensive information on the status of connectivity from catchments to the reef for biodiversity which require these connections 	<ul style="list-style-type: none"> GBRMPA Plans of Management Draft Marine Debris TAP 		
PL2 The planning system for biodiversity addresses the major factors influencing the Great Barrier Reef Region's values.	3	<ul style="list-style-type: none"> Outlook reports and Strategic Assessment clearly identify major threats to the GBR biodiversity values In conjunction with the Biodiversity Conservation Strategy, comprehensive Vulnerability Assessments (VAs) have been developed identifying those elements of biodiversity that need specific attention as well as actions to address them. 17 assessments completed with 3 under development. 	<ul style="list-style-type: none"> GBR Outlook Report 2009 and 2014 Great Barrier Reef Strategic Assessment Report, Kearney, B. and Farebrother, G. (2014). Inadequate evaluation and management of threats in Australia Marine Parks, including the Great Barrier Reef, misdirect Marine conservation. <i>Advances in Marine Biology</i> 69: 253. 	Adequate	Improving

		<ul style="list-style-type: none"> • Some plans are silent on specific actions necessary to protect biodiversity (for example the Zoning Plan only really manages extractive uses e.g. fishing). Certainty around where large developments may go (a major pressure) is not provided for in the Zoning Plan. • Reef 2050 – biodiversity is specifically addressed in Reef 2050 but biggest impact on biodiversity (climate change) is not well addressed in the plan • 2017 Reef 2050 Water Quality Improvement Plan (Reef Plan) addresses impacts on Reef habitats from catchment and coastal run-off. • Kearney and Farebrother 2014, The continuing decline in the health of the Great Barrier Reef and other Australian coastal areas confirms the limitations of current management for combating threats to marine ecosystems arising from outside the MPA • Planning systems address individual threats but does not adequately address consequential or cumulative risks. • Agricultural practices are accelerating the health decline of the GBR, affecting marine and terrestrial ecosystems. Recently new legislation by the Qld government that would have protected the Reef's catchment areas from land clearing was blocked in Parliament, but it is expected that the new Queensland Government will re-instate clearing controls in 2018. • Whitsundays Plan of Management - Seabirds such as black naped and bridled terns protected by extending the time vessels and aircraft cannot access nesting areas during key nesting periods • Biodiversity (habitats and species) underpin Matters of State Environmental Significance which are used in planning decisions by managers in Queensland. • There is little comprehensive information on the status of connectivity from catchments to the reef for biodiversity which require these connections 	<ul style="list-style-type: none"> • vulnerability assessments • Great Barrier Reef Biodiversity Conservation Strategy 2013 • Reef 2050 Long-term sustainability plan • Reef 2050 Plan – Implementation Strategy • Whitsundays Plan of Management • Reef 2050 Water Quality Improvement Plan 		
PL3 Actions for implementation regarding biodiversity are clearly identified within the plan	3	<ul style="list-style-type: none"> • GBR Biodiversity Conservation Strategy, 2013 identifies actions at broad level. Tangible, on-ground actions from vulnerability assessments need to be built into relevant plans. 	<ul style="list-style-type: none"> • Great Barrier Reef Biodiversity Conservation Strategy 2013 • GBR Strategic Assessment and Program Report 	Adequate	Stable

		<ul style="list-style-type: none"> • Actions in the Reef 2050 plan relating to biodiversity vary from specific to very general. The broader the threat the less specific the actions are (e.g “Implement ecosystem health initiatives through the Reef Trust Investment Strategy”). • Objectives, strategies and actions across various plans relevant to biodiversity generally align well • The blueprint for resilience identifies a number of initiatives including: <ul style="list-style-type: none"> ○ Identifying and protecting resilience bright-spots ○ Expand and extend of COTS control ○ Protecting key species for reef recovery • Pest & Weed Management Strategies developed by QPWS at various islands in the WHA • The Joint Field Management Program has clearly identified actions and targets for protection of biodiversity values • Biodiversity (habitats and species) underpin Matters of State Environmental Significance which are used in planning decisions by managers in Queensland. • Wetlands in the GBR catchments, Management Strategy 2016-21. This strategy promotes an integrated approach to catchment management that considers the multiple values of wetlands in a whole-of-catchment context and specifically addresses biodiversity. • Information on the biodiversity values of the Wetlands of International Significance (Ramsar) in the GBR and actions to implement specific issues relating to biodiversity are articulated • There is little comprehensive information on the status of connectivity from catchments to the reef for biodiversity which require these connections 	<ul style="list-style-type: none"> • Reef 2050 Long-Term Sustainability Plan • Reef Summit: Managing for resilience. • vulnerability assessments • Reef 2050 Long-term sustainability plan • Reef 2050 Plan – Implementation Strategy • Whitsundays Plan of Management • Pest & Weed Management Strategies • Wetlands in the GBR catchments, Management Strategy 2016-21. • Ramsar wetlands https://wetlandinfo.ehp.qld.gov.au/wetlands/management/national-international-important-wetlands/ 		
PL4 Clear, measurable and appropriate objectives for management of biodiversity have been documented	3	<ul style="list-style-type: none"> • GBR Biodiversity Conservation Strategy, 2013 identifies actions at broad level. Tangible, on-ground actions from vulnerability assessments need to be built into relevant plans. • Actions in the Reef 2050 plan relating to biodiversity vary from specific to very general. The broader the threat the less specific the actions are (e.g “Implement ecosystem health initiatives through the Reef Trust Investment Strategy”). 	<ul style="list-style-type: none"> • Great Barrier Reef Biodiversity Conservation Strategy 2013 • GBR Strategic Assessment and Program Report • Reef 2050 Long-Term Sustainability Plan • Reef Summit: Managing for resilience. • Pest & Weed Management Strategies under the joint Field management Program and the wider 	Adequate	Declining

		<ul style="list-style-type: none"> • Objectives, strategies and actions across various plans relevant to biodiversity generally align well <p>The blueprint for resilience identifies a number of initiatives including:</p> <ul style="list-style-type: none"> ○ Identifying and protecting resilience bright-spots ○ Expand and extend of COTS control ○ Protecting key species for reef recovery <p>but these are very broad and non-specific and their appropriateness is yet to be determined – for example whether the concept of resilience bright spots is ecologically credible and useful in terms of reef recovery.</p> <ul style="list-style-type: none"> • The challenge to overall ecosystem health resulting from back-to-back bleaching combined with COTS makes setting realistic and appropriate objectives to recover biodiversity condition extremely challenging • Pest & Weed Management Strategies developed by QPWS at various islands in the WHA • The Joint Field Management Program has clearly identified actions and targets for protection of biodiversity values • Biodiversity (habitats and species) underpin Matters of State Environmental Significance which are used in planning decisions by managers in Queensland and specific objectives are clearly articulated. • Wetlands in the GBR catchments, Management Strategy 2016-21. This strategy promotes an integrated approach to catchment management that considers the multiple values of wetlands in a whole-of-catchment context and specifically addresses biodiversity objectives. • Information on the biodiversity values of the Wetlands of International Significance (Ramsar) in the GBR and actions to implement specific issues relating to biodiversity are articulated • There is little comprehensive information on the status of connectivity from catchments to the reef for biodiversity which require these connections • No comprehensive map of all the vast and diverse habitats on the whole Great Barrier Reef currently exists. The 'Live' Habitat Mapping pilot study is a step towards creating one. Queensland has developed and published an Intertidal and Subtidal habitat classification 	<p>Biosecurity Queensland Program associated with Reef 2050.</p> <ul style="list-style-type: none"> • Wetlands in the GBR catchments, Management Strategy 2016-21. • Ramsar wetlands https://wetlandinfo.ehp.qld.gov.au/wetlands/management/national-international-important-wetlands/ 		
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		<ul style="list-style-type: none"> Wetland extent, types and values associated with the GBR are known and information is available to managers through the on-line website <i>Wetlandinfo</i> 			
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to biodiversity	3	<ul style="list-style-type: none"> AIMS long term monitoring program (LTMP) for the GBR has been maintained at 47 reefs since 1993 but delays in reporting of AIMS long term monitoring results (2 years) means that information is not available at the time when response strategies need to be developed (e.g. survey of post-Cyclone Debbie impacts won't be done until 2019) Rate of change of GBR ecosystems presents new challenges for monitoring – in the absence of good information of changes apart from coral cover, extent of bleaching and extent and location of COTS infestations, little is known of likely changes to other elements of biodiversity Reef 2050 WQIP through the Paddock to Reef program and other individual activities. Regional Report Cards The Reef 2050 Integrated Monitoring and Reporting Program (RIMREP) is intended to provide an adequate and appropriate monitoring system but it is still in development phase and the realisation of the program will be dependent upon multiple factors including funding and human resourcing MERIT is used as tool for reporting on projects funded through Reef Trust but is likely to be of limited use in tracking biodiversity condition Addison et al (2015) report that The GBRWHA is a busy space for environmental monitoring, with 80 monitoring programs associated with the marine environment. Among these, few have a demonstrated capability to detect and measure change in key attributes of the GBRWHA, such as important habitats (e.g. coral reefs and seagrasses), species of conservation concern (megafauna) and important environmental drivers, particularly water quality. They also report that there are gaps in current monitoring. None of the 80 programs have as their primary purpose the monitoring of deeper (>30 m) coral reefs, the lagoon 	<ul style="list-style-type: none"> Reef 2050 Integrated Monitoring and Reporting Program Reef 2050 WQIP through the Paddock to Reef program Water Quality Improvement Plans 2017 Scientific Consensus Statement Addison et al. Towards an integrated monitoring program: Identifying indicators and existing monitoring programs to effectively evaluate the Long Term Sustainability Plan, 2015 MERIT Reef 2050 LTSP vulnerability assessments Reef 2050 Long-term sustainability plan Reef 2050 Plan – Implementation Strategy Whitsundays Plan of Management Regional Report Cards Reef 2050 Integrated Monitoring and Reporting Program (RIMREP) Addison et al (2015) Are we missing the boat? Current uses of long-term biological monitoring data in the evaluation and management of marine protected areas. <i>Journal of Environmental Management</i>. 149, 148–156. Reef 2050 WQIP through the Paddock to Reef program 	Adequate	Declining

		<p>floor, shoals, <i>Halimeda</i> banks, the continental slope, benthic microalgae, plankton and microbes, or sea snakes.</p> <ul style="list-style-type: none"> There is little comprehensive information on the status of connectivity from catchments to the reef for biodiversity which require these connections 			
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address biodiversity	4	<ul style="list-style-type: none"> AIMS, CSIRO and university-based researchers are significantly engaged in research, monitoring and planning for management of biodiversity in the GBR Some stakeholders report that levels of cooperation between main research bodies has declined in the last few years Strategic Assessment and Outlook processes have brought researchers and stakeholders together to review knowledge and understanding of GBR issues, risks and condition Reef Summit brought key stakeholders together to plan strategy in response to back-to-back bleaching and other impacts on GBR biodiversity Some stakeholders report that staff declines in GBRMPA especially in biodiversity specialists has impacts in extent of engagement with other scientists and stakeholders The Raine Island Recovery Project has two formal groups now established by the Queensland Minister for National Parks. The Raine Island Reference Group and Raine Island Scientific Advisory Group. Walking the landscape involves a number of stakeholders including scientists, farmers, extension officers, governments to determine how water moves in the landscape and how it may affect biodiversity. The process has been run for most catchments of the GBR. A Queensland Wetlands Governance Group and GBR Wetlands Network link key managers and practitioners and meet and collaborate. Whitsunday Plan of Management underwent a consultation period for the WPOM amendments in 2017 and was developed in consultation with Traditional Owners, local stakeholders, community members and tourism operators 	<ul style="list-style-type: none"> Reef 2050 Integrated Monitoring and Reporting Program Reef 2050 Water Quality Improvement Plan Whitsunday Plan of Management amendment Science Strategy and Information Needs 2014-2019 Managing for a resilience GBRMP – Reef Summit May 2017 Reef Trust Major Integrated Programs – Burdekin and Wet Tropics Walking the landscape process National Environmental Science Program (NESP) projects of particular relevance include: <ul style="list-style-type: none"> Tropical Water Quality Hub 3.8 Towards an integrated monitoring program: identifying indicators and existing monitoring programs to cost effectively evaluate the Long Term Sustainability Plan 3.11 Monitoring and adaptively reducing system-wide governance risks facing the GBR. The Raine Island Reference Group Raine Island Scientific Advisory Group Whitsunday Plan of Management Queensland Wetlands Program Walking the Landscape https://wetlandinfo.ehp.qld.gov.au/resources/static/pdf/ecology/connectivity/walking-the-landscape-15-02-13.pdf 	Adequate	Declining

		<ul style="list-style-type: none"> The Indigenous Land Use Agreement is between Queensland QPWS and two traditional owner parties. The ILUA is between Queensland QPWS and two traditional owner parties. One is Wuthathi and the other is Kemer Kemer Meriam Nation (Erubam Le and Meriam Le and Ugarem Le). As long as the ILUA has been in place there has been at least an annual meeting with the groups regarding Raine Island management. 	<ul style="list-style-type: none"> Catchment stories https://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/processes-systems/water/catchment-stories/ 		
PL7 Sufficient policy currently exists to effectively address biodiversity	3	<ul style="list-style-type: none"> EPBC and GBRMPA Acts combined provide adequate mandate for Biodiversity protection. Statutory requirements for public consultation are met by managing agencies. High level of policy integration across levels of government through mechanisms such as Intergovernmental Agreement, Ministerial Forum, joint business plans, Reef Trust etc GBRMPA has a number of policies, position statements, strategies and guidelines to address biodiversity protection including vulnerability statements. The review completed by Jacobs found that legislation for the protection and management of the Great Barrier Reef is generally comprehensive. They found that gaps exist in the areas of climate change and agriculture. However these are precisely the areas that are having greatest impact on the condition of the GBR. Many stakeholders argue that these areas still lack effective policy response at whole of government level and in the absence of this, impacts on the GBR will continue to exacerbate. Reef 2050 plan addresses impacts from agriculture but did not address climate change. Reef Summit/Resilience report (2017) has made a start in addressing climate change impacts but action at GBRMP level will have limited impact in the absence of effective whole of government policy and action. Biodiversity (habitats and species) underpin Matters of State Environmental Significance which are used in planning decisions by managers in Queensland and specific objectives are clearly articulated. 	<ul style="list-style-type: none"> Jacobs (2014) Institutional and legal mechanisms that provide coordinated planning, protection and management of the Great Barrier Reef World Heritage Area. Report to the Department of Environment. GBRMPA's policies: http://www.gbrmpa.gov.au/about-us/legislation-regulations-and-policies/policies-and-position-statements) EBPC Act 1999 GBRMP Act 1973 Net Benefit Policy Cumulative impact management policy Managing cumulative impacts and achieving no net loss and net benefit outcomes for the Great Barrier Reef: A review of current understanding and application for management Reef 2050 Case Studies Planning for priority ports Marine park permission system Traditional use of marine resources Plans of management stewardship Day, J.C. (in press), How effective is the management of the Great Barrier Reef? ICES Journal of Marine Science Agardy T (in press) Counterpoint to Day ICES Journal of Marine Science 	Adequate	Improving

			<ul style="list-style-type: none"> There are a broad range of Queensland planning and legislative arrangements for biodiversity https://wetlandinfo.ehp.qld.gov.au/wetlands/management/policy-legislation/ 		
PL8 There is consistency across jurisdictions when planning for biodiversity	4	<ul style="list-style-type: none"> High level of policy integration across levels of government through mechanisms such as Intergovernmental agreement, Ministerial Forum, joint business plans, Reef Trust etc Zoning and management plans mostly consistent IGA for field management provides for joint actions irrespective of jurisdiction Comprehensive strategic assessment provided strong alignment for planning over the next 25 years. There are many examples of consistency (eg. complementary zoning, joint permitting, plans of management, port management plans, defence environmental planning, shipping planning) but examples also exist of a lack of consistency (eg. Qld Fish Habitat Zone & GBRMPA Habitat Protection Zone; coordinated offsets policies (or lack thereof) Reef 2050 Plan – presents actions to protect the values, health and resilience, while allowing ecological sustainable use. RIMREP will help track progress towards targets and objectives under the plan’s seven themes: ecosystem health, biodiversity, heritage, water quality, community benefits, economic benefits, governance and reporting Improvements to the way we manage all new Marine Parks permission applications, including continuations of existing permissions, came into effect October 2017 	<ul style="list-style-type: none"> Plans of management GBRMPA Zoning Plan Reef 2050 Water Quality Improvement Plan RIMREP Joint permits Australian National Guidelines for Whale and Dolphin Watching 2017 Intergovernmental Agreement for the Great Barrier Reef (revised in 2015) http://www.environment.gov.au/marine/gbr/protecting-the-reef/intergovernmental-agreement Jacobs (2014) Institutional and legal mechanisms that provide coordinated planning, protection and management of the Great Barrier Reef World Heritage Area. Report to the Department of Environment. 	Adequate	Stable
PL9 Plans relevant to biodiversity provide certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.	3	<ul style="list-style-type: none"> Improving certainty is one of the proposed measures to strengthen foundational management in the draft GBR Region Strategic Direction Program Report The Zoning Plans (GBRMPA and GBRCMP) provide certainty for what activities can occur in what zones but do not provide a plan or certainty as to where activities can occur, which may proceed (with the exception of limited impact research covered under the accreditation scheme in the GBRMP Regulations – r19-20) and circumstances where impacts are likely to be acceptable. 	<ul style="list-style-type: none"> Permits Great Barrier Reef Marine Park Zoning Plan 2003 Research permits Reef 2050 LTSP vulnerability assessments Reef 2050 Long-term sustainability plan Reef 2050 Plan – Implementation Strategy Whitsundays Plan of Management 	Adequate	Improving

		<ul style="list-style-type: none"> Activities that require a permit (e.g. ports, dredging, pontoons, tourism programs) are assessed on a case by case basis. Therefore 'caps' on certain types of activities are only ever enforced through an assessment where a site plan/plan of management exists. In those cases the main type of activity managed in any 'cumulative manner' is tourism visitor numbers, vessel size and pontoons in high tourism areas. Scientific research, especially around research stations is also managed on a case by case basis. Therefore, a number of researchers acting under different permits, could in essence cause localised depletion of popular study species. Research station managers in some cases do attempt to play a site management role, requesting collection data from each researcher, however this is usually after the fact, and not pre-emptive. GBRMPA also requests research collection reports. This data is sometimes checked against permits for compliance purposes but resources for data entry and database systems to enable the capture of actual cumulative take from an area is not in place. Therefore, an understanding of actual cumulative take from research is unknown. Compared to other activities, the permitted take limits by researchers is low risk and minimal. Preservation zones, dugong protection areas provide restrictions on activities that may impact on areas of particular biodiversity significance Biodiversity (habitats and species) underpin Matters of State Environmental Significance which are used in planning decisions by managers in Queensland and specific objectives are clearly articulated. 			
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address biodiversity	3	<ul style="list-style-type: none"> From July 2012 through to June 2019, the Australian Government had provided \$20.1 million to fund the COTS control program. As at October 2017, there were two vessels operating and over 570,000 COTS have been culled. On 17 August 2017, the Minister for DoEE announced additional \$14.4 million funding for COTS program. An additional \$14.4 million from Reef Trust and 	<ul style="list-style-type: none"> Reef Trust Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef Field Management Plans Field Management Program Annual Report Summary Documents 	Limited	Increasing

		<p>Reef 2050 has been made available from Sept 2017 until June 2020.</p> <ul style="list-style-type: none"> • Significant additional funding (\$10.4 million) to include expanded COTS control announced in January 2018 • Resources significant for water quality improvement through Reef 2050 WQIP, management of COTS, but scale and scope of these impacts is whole-of-Region and very large • A \$225 million Reef Trust - delivered by the federal government in collaboration with Queensland Government - to manage the Great Barrier Reef – Reef 2050 • \$104.5 million available through the Australian Government Reef 2050 budget for prioritised Reef 2050 Plan actions. • Significant financial resources being allocated to addressing major threatening processes impacting on biodiversity such as water quality, COTs and coral bleaching • Considerable financial resources are allocated to improving biodiversity knowledge and increasing understanding of factors impacting on biodiversity and ecosystem processes through institutions such as AIMS, National Ecosystem Research Program, Regional NRM bodies, Great Barrier Reef Foundation and other Commonwealth and Queensland Government programs • However, some stakeholders consider that despite these significant sums being allocated for management of the GBR are inadequate to address the problems faced by the GBR and out of balance with the financial benefits arising from use of the GBR that are at risk from continuing decline in GBR condition • Review of Field Management in 2016 reported static funding representing an 18% decline since 2008 in effective funding. It concludes that field management capability is declining as management challenges are increasing with escalating threats, rising population, increased direct use pressures and the growing requirement and community expectation for intense management intervention everywhere and anywhere across the entire Reef. 	<ul style="list-style-type: none"> • COTS Strategic Management and Contingency Plan • Australian Government Reef Program • Reef 2050 Plan investment framework • TerraForm Design Review of the FMP 2016 		
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<p>IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address biodiversity</p>	<p>3</p>	<ul style="list-style-type: none"> • Current resource levels in the Environment Assessment and Protection and Planning area are not adequate to address the increase in coastal development/marine development and changes to the EBPC/GBRMP/Coastal Planning (i.e. more high level assessments have arisen for GBRMPA (since 2009) with the GBRMP being made a matter of MNES) and more recently with a growth in restoration and intervention activities. • 2017 Addison et al. research paper on Marine Protected Area management noted 'increase agency capacity' was identified by management agency interviewees most commonly as a top three most important changes necessary to implement quantitative condition assessment of biodiversity outcomes. GBRMPA an agency represented in sample. "Management agencies around the world are commonly under-resourced, even in relatively wealthy countries...Therefore, it is not surprising that a lack of agency capacity (staff numbers and money) was the most frequently cited challenge to implementing quantitative condition assessment... Informants also expressed concerns that the absence of frameworks to guide the development of quantitative condition assessments was impeding progress" • Since 2017, this capacity was spread throughout the GBRMPA and there is no longer a team that is dedicated to solely to biodiversity protection. Rather, following the operational review, efforts have been refocussed to priority management areas (which encapsulate aspects of biodiversity e.g. fisheries management, a larger and stronger planning and regulation section (increased from 3 to ~10), strategic advice (policy and position statements), reef intervention and restoration but staff with expertise in biodiversity management or on main drivers affecting GBR condition are now spread across agency rather than in distinct organisational units 	<ul style="list-style-type: none"> • Addison et al. 2017 Towards quantitative condition assessment of biodiversity outcomes: Insights from Australian marine protected areas • Workshop discussions and stakeholder interviews 	<p>Limited</p>	<p>Declining</p>
<p>IN3 The right skill sets and expertise are currently available to the managing organisations to address biodiversity</p>	<p>3</p>	<ul style="list-style-type: none"> • Limitations arising from overall staffing cap have impacted whole of government capacity and skill sets in relation to biodiversity management • Skill set limitations are partly addressed by collaboration with relevant scientists in AIMS, universities and CSIRO 	<ul style="list-style-type: none"> • Workshop discussions and stakeholder interviews • Staff charts • TerraForm Design Report on FMP 2016 	<p>limited</p>	<p>declining</p>

		<ul style="list-style-type: none"> • Research and monitoring skill sets are mostly secured through contractual arrangements with universities, AIMS, CSIRO, and consultants but specialist skills are required and available for project design, monitoring, evaluation, improvement and reporting • Field Management Program - Training programs, Foundational Course, Oiled Wildlife response, oiled shoreline clean up, seabird counting • Lost specialist skills (eg. Taxonomy, ports and shipping) not being readily replaced. • Fisheries has an Annual Secondment to GBRMPA 			
IN4 The necessary biophysical information is currently available to address biodiversity	3	<ul style="list-style-type: none"> • GBR is one of the best studied marine ecosystems in the world and extensive information is available. Nevertheless the Strategic Assessment reports noted that information gaps were identified e.g. for snubfin dolphins, mesophotic reefs, deep water habitats, non-charismatic fauna and flora, ecological processes etc. Other identified information gaps are connectivity, trophic interactions, deep water, far north GBR), non-charismatic or taxa of no apparent economic value are poorly known, poor knowledge of ecological processes, eg. groundwater inflows, sink/source, implications of deepwater upwellings, planktonic/larval movements. • Back-to-back bleaching events means that many aspects of biophysical condition will have changed and many aspects of biophysical environment have not been examined to document these changes • 2017 Scientific Consensus Statement • GBRMPA updated its 'Scientific Information Needs for Management of the GBRMP' following the 2014 Outlook Report. The Science Strategy and Information Needs 2014-2019 sets out future scientific information needs. It aims to ensure scientific activities are relevant, targeted to address critical management issues, and that scientific outputs are easily accessible. The strategy draws on the Great Barrier Reef Outlook Report 2014 and strategic assessment that outline the Reef's health, management and likely future, and is supported by a searchable register of detailed questions. The strategy and register have been a key input to the development of an integrated monitoring 	<ul style="list-style-type: none"> ○ Great Barrier Reef Strategic Assessment Report, Chapter 7, noting that information gaps are identified in Section 7 ○ Sustainable Regional Development Program reports - ○ A framework for understanding cumulative impacts, supporting environmental decisions and informing resilience based management of the Great Barrier Reef World Heritage Area. Information is available in numerous reports such as: <ul style="list-style-type: none"> ○ Defining the aesthetic values of the Great Barrier Reef World Heritage Area: ○ Geological and geomorphological features of outstanding universal value in the Great Barrier Reef World Heritage Area: ○ Improved dredge material management for the Great Barrier Reef Region: ○ Identification of impacts and proposed management strategies associated with offshore ship anchorages in the Great Barrier Reef World Heritage Area: 	limited	declining

		<p>framework for the GBRWHA (RIMReP program). The purpose of the information needs documents is to facilitate discussion between scientists and Marine Park managers about research and monitoring that will help inform Marine Park management, especially high priorities. It is a framework for integrating science into the management of the Marine Park.</p> <ul style="list-style-type: none"> • Poor knowledge of ecosystem functioning and functional redundancy in the GBR ecosystem (exceptions exist for some herbivores) • Comprehensive map of GBR habitats does not exist but if available would support biodiversity management. Pilot mapping exercise is being supported by GBR Foundation and mapping underway by Qld for the Central Queensland Coast area. • QPWS leads or contributes to most seabird related monitoring and management actions in Reef 2050. • Walking the landscape involves a number of stakeholders including scientists, farmers, extension officers, and governments to determine how water moves in the landscape and how it may affect biodiversity. The process has been run for most catchments in the GBR. • Biodiversity (habitats and species) underpin Matters of State Environmental Significance which are used in planning decisions by managers in Queensland and specific objectives are clearly articulated. • Wetlands in the GBR catchments, Management Strategy 2016-21. This strategy promotes an integrated approach to catchment management that considers the multiple values of wetlands in a whole-of-catchment context and specifically addresses biodiversity objectives. • Information on the biodiversity values of the Wetlands of International Significance (Ramsar) in the GBR and actions to implement specific issues relating to biodiversity are articulated • There is little comprehensive information on the status of connectivity from catchments to the reef for biodiversity which require these connections 	<ul style="list-style-type: none"> ○ Coastal Ecosystems Assessment Framework http://www.gbrmpa.gov.au/_data/assets/pdf_file/0003/28254/Coastal-Ecosystems-Assessment-Framework.pdf: • State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 • Great Barrier Reef Outlook Report 2014 Chapter 2 • 2017 Scientific Consensus Statement • AIMS LTMP Reef Monitoring - AIMS • Science Strategy and Information Needs 2014-2019 • Significant Impact Guidelines 1.1 - Matters of National Environmental Significance • Walking the Landscape https://wetlandinfo.ehp.qld.gov.au/resources/static/pdf/ecology/connectivity/walking-the-landscape-15-02-13.pdf • Catchment stories https://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/processes-systems/water/catchment-stories/ • WetlandInfo information on wetlands and aquatic ecosystems https://wetlandinfo.ehp.qld.gov.au/wetlands/ • Intertidal and Subtidal Mapping and Classification and Conservation Assessment for central Queensland State Waters https://wetlandinfo.ehp.qld.gov.au/resources/static/pdf/resources/fact-sheets/fs-inter-sub-tidal-class-map-aca-cq-31-05-2017.pdf 		
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<p>IN5 The necessary socio-economic information is currently available to address biodiversity</p>	<p>3</p>	<ul style="list-style-type: none"> • Social & Economic Long Term Monitoring Program (SELTMP) analysis of social survey data collected in 2017 is underway; results anticipated in a report in December 2017, followed by an online dashboard in early 2018. SELTMP data include relative importance of biodiversity among other GBR values, perceptions of ecosystem health, and dependence on different Reef values by different stakeholder groups. • GBRMPA updated its 'Scientific Information Needs for Management of the GBRMP' following the 2014 Outlook Report. The Science Strategy and Information Needs 2014-2019 sets out future scientific information needs. It aims to ensure scientific activities are relevant, targeted to address critical management issues, and that scientific outputs are easily accessible. The strategy draws on the Great Barrier Reef Outlook Report 2014 and strategic assessment that outline the Reef's health, management and likely future, and is supported by a searchable register of detailed questions. The strategy and register have been a key input to the development of an integrated monitoring framework for the GBRWHA (RIMRep program). The purpose of the information needs documents is to facilitate discussion between scientists and Marine Park managers about research and monitoring that will help inform Marine Park management, especially high priorities. It is a framework for integrating science into the management of the Marine Park. • RIMREP will include themes on heritage, community benefits, economic benefits. • GBRMPA has maintained a manager for socio-economic sciences, and coordinates current and planned projects • The ecosystem services of wetlands has been established and information is available https://wetlandinfo.ehp.qld.gov.au/wetlands/management/wetland-values/ 	<ul style="list-style-type: none"> • Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef • Deloitte Access Economics Report Economic contribution of the Great Barrier Reef • Science Strategy and Information Needs 2014-2019 • The economic and social impacts of protecting the environmental values of the waters of the Capricorn and Curtis Coasts • Butler et al 2014 An analysis of trade-offs between multiple ecosystem services and stakeholders linked to land use and water quality management in the Great Barrier Reef, Australia • Stoeckl et al 2011 The economic value of ecosystem services in the Great Barrier Reef: our state of knowledge • Gooch et al. 2017 Assessment and Promotion of the Great Barrier Reef's Human Dimensions through Collaboration. Coastal Management, DOI: 10.1080/08920753.2017.1373455 • Marshall et al. 2016. Advances in in monitoring the human dimension of natural resource systems: an example from the Great Barrier Reef. Environ. Res. Lett. 11 (2016) 114020. • Values of wetlands https://wetlandinfo.ehp.qld.gov.au/wetlands/management/wetland-values/ 	<p>limited</p>	<p>improving</p>
<p>IN6 The necessary Indigenous heritage information is currently available to address biodiversity</p>	<p>3</p>	<ul style="list-style-type: none"> • Land and Sea Country Indigenous Partnerships Program and TUMRAs provide the mechanism for Traditional Owners to apply their knowledge to biodiversity management in their land and sea country 	<ul style="list-style-type: none"> • Traditional Use of Marine Resources Agreements • 2015-16 Land and Sea Country Partnerships program annual report summary 	<p>limited</p>	<p>improving</p>

		<ul style="list-style-type: none"> • The Land and Sea Country Partnership Program has strengthened communications across the community to build a better understanding of Traditional Owner issues on the management of the GBR Marine Park. • Indigenous heritage information is not available but GBRMPA is progressing an indigenous heritage strategy that will address this • Great Barrier Reef Marine Park Authority board membership includes an Indigenous person with knowledge of or experience concerning indigenous issues relating to the Marine Park. • The Indigenous Reef Advisory Committee is the key body that advises the Great Barrier Reef Marine Park Authority on its management, programs and policies. Advice from the Committee ensures its management; programs and policies consider and include Traditional Owner aspirations and recommendations. • GBRMPA are developing mechanisms to apply indigenous heritage information to management decisions through the indigenous and Traditional Owner heritage strategy a successful pilot has successfully resulted in Impact Assessment Guidelines for the Woppaburra Heritage • Cultural heritage strategy is being developed for Raine Island • Indigenous rangers – working on country which began in 2007, supports Indigenous people to combine traditional knowledge with conservation training to protect and manage their land, sea and culture. 	<ul style="list-style-type: none"> • Aboriginal and Torres Strait islander heritage strategy • Impact Assessment Guidelines for the Woppaburra Heritage 		
IN7 The necessary historic heritage information is currently available to address biodiversity	N/A				
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address biodiversity	4	<ul style="list-style-type: none"> • Great Barrier Reef Foundation projects significantly add to GBRMPA's and QPWS ability to manage and protect biodiversity. • Seagrass watch, Landcare, Coastcare • Major input from university monitoring and research programs, CSIRO, AIMS etc • Eco Barge – based in the Whitsundays is a volunteer service which aims to reduce debris in the Marine Parks to help protect biodiversity. <ul style="list-style-type: none"> ○ Volunteer groups and events include: ○ Reefwatch 	<ul style="list-style-type: none"> • Volunteer groups and events • Research stations • Eco Barge – based in the Whitsundays is a volunteer service which aims to reduce debris in the Marine Parks to help protect biodiversity. • our partners section on the GBRMPA website. • Burnett Mary Regional Group • Cape York NRM • Fitzroy Basin Association • NQ Dry Tropics 	adequate	stable

		<ul style="list-style-type: none"> ○ CapReef ○ Reef Guardian Schools ○ NGO's on RACs ○ LMACs ○ fisheries working groups ○ Mackay turtle watch ○ OUCH ○ Beach clean up days ○ Seagrass Watch <ul style="list-style-type: none"> ● Much of the information on biodiversity comes from researchers outside GBRMPA (e.g. AIMS, universities, UQ, CSIRO) ● Partnerships and collaborative Investments through the Reef Trust 	<ul style="list-style-type: none"> ● Reef Catchments (Mackay Whitsunday Isaac) ● Terrain NRM ● GBR Blueprint for resilience 		
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of biodiversity	4	<ul style="list-style-type: none"> ● EPA, Queensland Boating and Fisheries patrol (QBFP) and GBRMPA have regional-based staff for engaging with local communities. ● Six additional Queensland Boating and Fisheries Patrol (QBFP) officers to North Queensland. ● Local communities are involved in biodiversity protection generally through the Local Marine Advisory Committees (LMACs) and through planning processes for areas/specific places. ● Community groups are engaged widely in monitoring and field management activities in the Region ● GBRMPA Regional Offices provide a point of contact. ● Tourism industry extensively engaged through programs such as Eye on the Reef ● Whitsundays Plan of Management underwent a consultation period for the WPOM amendments in 2017 and was developed in consultation with Traditional Owners, local stakeholders, community members and tourism operators ● In May 2017, GBRMPA held a Reef Summit in Townsville, together with government, community, Traditional Owners, industry and science sectors to develop a blueprint for resilience for coral reefs. 	<ul style="list-style-type: none"> ● Reef Guardians program ● Expert advice sought on biodiversity matters through the Conservation, Heritage and Indigenous Partnerships Reef Advisory Committee (CRAC), Fisheries RAC, Water Quality and Coastal Development RAC, and the Tourism and Recreation RAC. ● All appropriate managing agencies are involved in biodiversity protection management for the GBR, e.g. DES, DEWHA, DPI&F, AMSA, etc. ● Reef Summit: Managing for resilience. Summary of proceedings and outputs, 24-25 May 2017, Townsville LMACs ● Eye on the Reef 	adequate	stable

		<ul style="list-style-type: none"> • The Raine Island Recovery Project has two formal groups now established by the Queensland Minister for National Parks. The Raine Island Reference Group and Raine Island Scientific Advisory Group. • Walking the landscape involves a number of stakeholders including scientists, farmers, extension officers, and governments to determine how water moves in the landscape and how it may affect biodiversity. The process has been run for most catchments in the catchments of the GBR. 			
PR2 The local community is effectively engaged in the ongoing management of biodiversity	4	<ul style="list-style-type: none"> • QPWS, Queensland Boating and Fisheries patrol (QBFP) and GBRMPA have regional-based staff for engaging with local communities. • Six additional Queensland Boating and Fisheries Patrol (QBFP) officers to North Queensland. • Local communities are involved in biodiversity protection generally through the Local Marine Advisory Committees (LMACs) and through planning processes for areas/specific places. (Document mapping LMAC actions to the Blueprint for resilience is also being discussed) • Community groups are engaged widely in monitoring and field management activities in the Region • GBRMPA Regional Offices provide a point of contact. • Refer also to management of fishing, tourism and recreation • Reef Guardian updates for schools and councils • Tools for the engagement of broader community in management of biodiversity are being improved. <ul style="list-style-type: none"> ○ Eye on the Reef program ○ Sightings network ○ Reef Guardians - schools, councils, fishers and farmers • In 2016, Reef 2050 LTSP completed a roadshow up and down the Great Barrier Reef catchment which involved a number of stakeholders including NRM, farmers, and councils • Each year, the MMP team conduct a Monitoring, Evaluation, Reporting and Improvement workshop which is structured around presentations outlining the latest information on the condition and trend of water quality, coral and seagrass and the pressures that have affected them 	<ul style="list-style-type: none"> • Eye on the Reef Program • Reef Guardian Farmers and Graziers • Reef Guardian Schools • Reef Guardian Councils • Eye on the Reef program - GBRMPA • Sightings network - GBRMPA • Reef Guardians • GBRMPA regional offices (EPA and DPI&F) • Community groups • Reef Plan roadshow • MMP MERI Workshops • Nest to Ocean Turtle Protection Program • Reef Summit: Managing for resilience. 	adequate	stable

		<p>in 2016-17, ahead of the publications of these annual reports. Stakeholders include universities, OGBR, CSIRO, GBRMPA, DOEE, NRM groups, RRRRC, DAF)</p> <ul style="list-style-type: none"> Walking the landscape involves a number of stakeholders including scientists, farmers, extension officers, and governments to determine how water moves in the landscape and how it may affect biodiversity. The process has been run for most catchments in the catchments of the GBR. 			
PR3 There is a sound governance system in place to address biodiversity	3	<ul style="list-style-type: none"> EPBC Act and GBRMP Act provide strong legislative basis for biodiversity management and control of potential impacts on MNES The Great Barrier Reef Intergovernmental Agreement 2015 provides the framework for the Australian and Queensland governments to work together to protect the Great Barrier Reef Permits are issued jointly Great Barrier Reef Ministerial Forum Governance arrangements have been the subject of a number of recent reports MOU with the Great Barrier Reef Foundation sets the framework for collaborative research project selection and implementation. Engagement with industry (QSIA, AMPTO) and through RACs and LMACs Reef 2050 WQIP governance arrangements RIMREP governance arrangements A Queensland Wetlands Governance Group and GBR Wetlands Network link key managers and practitioners and meet and collaborate on wetlands issues Paddock to Reef Technical working groups Regional report card steering groups The Wetlands and Aquatic Ecosystem Sub Committee, managed by the Australian Government, assists with linking jurisdictions in the management of Ramsar sites. 	<ul style="list-style-type: none"> EPBC Act, GBRMPA Act, NCA Act etc provide legislative basis IGA provides framework for joint management arrangements Reef 2050 WQIP governance RIMREP governance Reef 2050 governance Cvitanovic, C., A.J. Hobday, L. van Kerkhoff, S.K. Wilson, K. Dobbs, and N.A. Marshall. 2015. "Review: Improving knowledge exchange among scientists and decision-makers to facilitate the adaptive governance of marine resources: A review of knowledge and research needs." Ocean And Coastal Management 112, 25-35. ScienceDirect, EBSCOhost (accessed October 11, 2017 Dale et al 2013 A method for risk analysis across governance systems: a Great Barrier Reef case study Grech et al 2013 Guiding principles for the improved governance of port and shipping impacts in the Great Barrier Reef Day and Dobbs 2013 Effective governance of a large and complex cross-jurisdictional marine protected area: Australia's Great Barrier Reef Independent Review of the Port of Gladstone - Report on findings July 2013 Queensland Assessment Bilateral Agreement - 	adequate	improving

			http://www.environment.gov.au/protection/environment-assessments/bilateral-agreements/qld		
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for biodiversity	4	<ul style="list-style-type: none"> Undertaken in 2013 in response to UNESCO's concerns – an assessment of management effectiveness was undertaken as a central component of the strategic assessment reports, and the independent review(s) were made publically available Feedback on appropriateness and effectiveness of GBRMPA tools was sought from stakeholders during consultation on the strategic assessment, and formed part of the assessment of management effectiveness. Undertaken regularly through 5-year Outlook Report cycle Reef 2050 LTSP is undertaking mid-term review due June 2018 Strategic Assessment and Outlook Reports in a number of significant initiatives and studies that will support monitoring and performance review related to biodiversity management i.e. Reef Summit, Reef 2050 Monitoring, Evaluation, Reporting and Improvement Plan are required six monthly under the Australian Government Reef Programme Reef 2050 Plan – presents actions to protect the values, health and resilience, while allowing ecological sustainable use. The Reef 2050 Integrated Monitoring and Reporting Program (RIMREP) is intended to be used to track the progress of outcomes outlined in the Reef 2050 Plan but development of RIMREP has been slow The activities and direction of the Queensland Wetlands Program has undergone several assessments https://wetlandinfo.ehp.qld.gov.au/wetlands/about-us/qld-wetland-program.html 	<ul style="list-style-type: none"> Great Barrier Reef Coastal Zone Strategic Assessment: Independent Review Report (PDF - 2.84 MB) Hockings et al 2013 Assessment of Management Effectiveness for the Strategic Assessment of the Great Barrier Reef Region Reef 2050 Plan Annual Report and Implementation Strategy Australian Government Reef Programme Reef WQIP Reef 2050 Long-Term Sustainability Plan Reef 2050 Plan – Implementation Strategy Reef 2050 Long-Term Sustainability Plan RIMREP Queensland Wetlands Program 	adequate	stable
PR5 Appropriate training is available to the managing agencies to address biodiversity	3	<ul style="list-style-type: none"> Base training of staff is good Limited on-the-job training for field staff in biodiversity management issues (restricted to a few staff which go into the field regularly) Some staff participate in workshops, conferences, steering committee meetings at GBRMPA. Processes involved in 	<ul style="list-style-type: none"> TerraForma Report on FMP 2016 Workshops and stakeholder interviews 	limited	improving

		<p>developing programs such as cumulative impact assessment and integrated monitoring will help build staff capacity</p> <ul style="list-style-type: none"> • Field Management Program - Training programs, Foundational Course, Oiled Wildlife response, oiled shoreline clean up, seabird counting, incident response • TerraForma Report on FMP indicates that training for incident response is considered by some FMP officers to be inadequate but overall the report concluded that FMP delivers high quality formal training and development opportunities especially for operational staff • FMP has developed and delivered range of training including a five-day intensive “Foundations of Field Management” course • Fisheries has an Annual Secondment to GBRMPA 			
PR6 Management of biodiversity is consistently implemented across the relevant jurisdictions	3	<ul style="list-style-type: none"> • Limited – the world heritage committees concerns around coastal development in the GBRWHA provide an example of concerns around management of community benefits in the Region and impacts on biodiversity • As for the Outlook 2009 and 2014 assessment there are still many examples of consistency (eg. Joint permitting under the IGA), complementary zoning between state and commonwealth Marine Parks, port management plans, defence environmental planning, shipping planning) but examples also exist of a lack of consistency (eg. Qld Fish Habitat Zone & GBRMPA Habitat Protection Zone) • Queensland Assessment Bilateral Agreement – Amended in December 2014, the Assessment Bilateral Agreement between the Commonwealth and Queensland governments aims to reduce duplication of environmental assessment processes, strengthen intergovernmental cooperation and promote a partnership approach to environmental protection and biodiversity conservation. The agreement provides for the accreditation of certain Queensland environmental assessment processes, which means that project proposals that require both state and Commonwealth approval can be assessed using a single set of project documentation. • Reef 2050 Plan is an attempt to align policies, strategies and management actions across jurisdictions. 	<ul style="list-style-type: none"> • Imbeau L.M. (2009) Dissonance in Policy Processes: An Introduction. In: Imbeau L. (eds) Do They Walk Like They Talk?. Studies in Public Choice, vol 15. Springer, New York, NY • Workshops and stakeholder consultations. • Queensland Assessment Bilateral Agreement 	limited	declining

		<ul style="list-style-type: none"> Major issue of policy dissonance or disconnect within governments at State and Federal level so that stated policy objectives and consequent management activities relating to development options are at odds with policy statements relating to GBR protection. This has led to a number of economic development decisions that have been seen to run counter to the requirement to reduce stressors on the GBR as well as failure to take sufficient actions to reduce these stressors. As condition of the GBR declines these inconsistencies in policy positions are becoming more apparent and more significant. 			
PR7 There are effective processes applied to resolve differing views/ conflicts regarding biodiversity	3	<ul style="list-style-type: none"> Major issue of policy dissonance or disconnect within governments at State and Federal level so that stated policy objectives and consequent management activities relating to development options are at odds with policy statements relating to GBR protection. This has led to a number of economic development decisions that have been seen to run counter to the requirement to reduce stressors on the GBR as well as failure to take sufficient actions to reduce these stressors. As condition of the GBR declines these inconsistencies in policy positions are becoming more apparent and more significant. Within the sphere of GBR management, governance arrangements between State and Commonwealth provide mechanism for conflict resolution RIMREP will help track progress towards targets and objectives under the plan's seven themes: ecosystem health, biodiversity, heritage, water quality, community benefits, economic benefits, governance and reporting Public comment processes for permit applications expected to impact on other users. The number of applications open for public comment has increased since 2009 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	limited	declining
PR8 Impacts (direct, indirect and cumulative) of activities associated with biodiversity are appropriately considered.	3	<ul style="list-style-type: none"> Direct impacts generally well considered for developments within the GBRMP requiring a permit or other approval Plans of Management and Special Management Areas identify and address issues of biodiversity management Cumulative impacts on biodiversity (spatial, temporal and interactive) are not well considered, but awareness of importance 	<ul style="list-style-type: none"> GBRMP Regulations In particular sections 88Q, 88R and 88S Great Barrier Reef Strategic Assessment Report, GBR coastal zone strategic assessment Hinchinbrook Plan of Management 2004 	adequate	improving

		<p>of cumulative impacts and shifting baselines is now well established.</p> <ul style="list-style-type: none"> • Thresholds for key elements of biodiversity are not defined or monitored in an explicit way • Regulations 88Q and 88R of the GBRMP Regulations stipulate assessment criteria that must be considered for permit applications. These criteria aim to address direct and indirect impacts from proposed activities. • The draft cumulative impact management policy was released for public comment. In May 2017 but is not yet finalised • Queensland has a range of legislation and policies which ensures that impacts of developments and activities on biodiversity are considered in decision making • eReefs is delivering Reef water quality information online in near real time, enabling anyone to track the effects of storms, cyclones, floods, and other impacts on the Reef • NESP projects <ul style="list-style-type: none"> ○ Project 1.6 - Multiple and cumulative impacts on the GBR: assessment of current status and development of improved approaches for management ○ Project 2.1 - Assessing the cumulative impacts of climatic disturbances on inshore GBR coral reefs, identifying key refuges and testing the viability of manipulative reef restoration ○ Project 2.1.6 - From exposure to risk: novel experimental approaches to analyse cumulative impacts and determine thresholds in the GBRWHA ○ Project 2.3.1 - Benthic light as ecologically validated GBR wide indicator for water quality: drivers, thresholds and cumulative risks 	<ul style="list-style-type: none"> • Cairns Plan of Management 2008 • Whitsunday Plan of Management (including the 2017 amendments) • List of Policy documents being developed/updated following the Strategic Assessment • Net Benefit Policy • Cumulative impact management policy • Managing cumulative impacts and achieving no net loss and net benefit outcomes for the Great Barrier Reef: A review of current understanding and application for management • NESP projects • Wetlands programs policy and legislation. https://wetlandinfo.ehp.qld.gov.au/wetlands/management/policy-legislation/ 		
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding biodiversity	4	<ul style="list-style-type: none"> • Vulnerability Assessments apply research and monitoring information to management decisions regarding biodiversity conservation. • Extensive research is available through AIMS, CSIRO and universities and GBRMPA staff have maintain good linkages to this research community. 	<ul style="list-style-type: none"> • Reef Plan • Eye on the Reef Program • vulnerability assessments • Reef 2050 Long-term sustainability plan • Reef 2050 Plan – Implementation Strategy • 2017 Scientific Consensus Statement • Current NESP projects 	adequate	stable

		<ul style="list-style-type: none"> Information from this work has been integrated into various GBRMPA planning and strategy documents relating to biodiversity management Outlook Report 2009 and ongoing Outlook reporting processes and the Strategic assessment depend on this information. AIMS LTMP, Eye on the Reef, MMP and e-reefs provide extensive monitoring information to GBRMPA Back-to-back bleaching event means that there is greater uncertainty around the condition and trend in many aspects of biodiversity NESP program is providing significant, management relevant research Biosecurity of the islands aims to limit the spread of weeds, invertebrates and other animal pests from the mainland to islands, and between islands. QPWS leads or contributes to mot seabird related monitoring and management actions in Reef 2050. Queensland has a range of legislation and policies which ensures that impacts of developments and activities on biodiversity are considered in decision making 	<ul style="list-style-type: none"> National Environmental Research Program 2017 Scientific Consensus Statement eReefs Coastal Bird Monitoring and Information Strategy 2015- 2020 Best management Practice guidelines for wetlands management https://wetlandinfo.ehp.qld.gov.au/wetlands/management/wetland-management/ 		
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding biodiversity	3	<ul style="list-style-type: none"> SELTMP info will be provided through RIMREP Human Dimensions program, RIMREP slow to develop but design should be completed in 2018 and information will flow after this One permanent GBRMPA position to address social and economic matters (but strong partnerships with CSIRO – with two researchers working in-house at GBRMPA on social values) Socio-economic issues are taken account of in permit decisions and available information was used in the RAP process 	<ul style="list-style-type: none"> Socio-economic data from NESP projects and Reef 2050 Integrated Monitoring and Reporting Program Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). RIMREP Human Dimensions design documents Butler etal 2014 An analysis of trade-offs between multiple ecosystem services and stakeholders linked to land use and water quality management in the Great Barrier Reef, Australia 	limited	improving

			<ul style="list-style-type: none"> • Stoeckl et al 2011 The economic value of ecosystem services in the Great Barrier Reef: our state of knowledge • Gooch et al. 2017 Assessment and Promotion of the Great Barrier Reef's Human Dimensions through Collaboration. Coastal Management, DOI: 10.1080/08920753.2017.1373455 • Marshall et al. 2016. Advances in monitoring the human dimension of natural resource systems: an example from the Great Barrier Reef. Environ. Res. Lett. 11 (2016) 114020. 		
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding biodiversity	2	<ul style="list-style-type: none"> • Land and Sea Country Indigenous Partnerships Program and TUMRAs provide the mechanism for Traditional Owners to apply their knowledge to biodiversity management in their land and sea country • Integration of Traditional Ecological Knowledge is a recognised gap. There is no appropriate consultation process with Traditional Owners to re-establish the permissions relating to access and use of information (for example intellectual property) and there is no cultural heritage information management system. GBRMPA/RIMREP have commissioned a consultancy to develop cultural protocols and data sharing agreement templates for this. • Indigenous heritage information is not available but GBRMPA is progressing an indigenous heritage strategy that will address this • developing mechanisms to apply indigenous heritage information to management decisions through the indigenous and Traditional Owner heritage strategy a successful pilot has successfully resulted in Impact Assessment Guidelines for the Woppaburra Heritage 	<ul style="list-style-type: none"> • Traditional owner heritage strategy • Impact Assessment Guidelines for the Woppaburra Heritage • National Environmental Science Program (NESP) projects of particular relevance include: <ul style="list-style-type: none"> • Tropical Water Quality Hub • Project 3.9 Indigenous capacity building and increased participation in management of Queensland sea country 	limited	improving
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding biodiversity	N/A				

PR13 Relevant standards are identified and being met regarding biodiversity	3	<ul style="list-style-type: none"> Standards and thresholds being developed through RIMREP but this has been very slow in coming to fruition Wetlands GBR Management Strategy outlines a number of objectives, targets and standards Reef 2050 WQIP has clear water quality targets, and catchment and land management targets. Reef 2050 Plan sets clear actions, targets, objectives and outcomes to drive and guide management of the Reef. Matters of state environmental significance (MSES) are a component of the biodiversity state interest that is defined under the State Planning Policy (SPP) and defined under the Environmental Offsets Regulation 2014 (Offset Regulation). MSES includes certain environmental values that are protected under Queensland legislation including the: <ul style="list-style-type: none"> Nature Conservation Act 1992 Marine Parks Act 2004 Fisheries Act 1994 Environmental Protection Act 1994 Regional Interests Planning Act 2014 Vegetation Management Act 1999 Environmental Offsets Act 2014. 	<ul style="list-style-type: none"> RIMREP Wetlands in the GBR catchments, Management Strategy 2016-21. Reef 2050 WQIP Reef 2050 Plan Matters of state environmental significance https://www.ehp.qld.gov.au/management/planning-guidelines/method-mapping-mses.html 	limited	improving
PR14 Targets have been established to benchmark management performance for biodiversity	4	<ul style="list-style-type: none"> Wetlands GBR Management Strategy outlines a number of objectives, targets and standards Reef 2050 WQIP has clear water quality targets, and catchment and land management targets. Reef 2050 Plan sets clear actions, targets, objectives and Water quality improvement plans and healthy waters management plans are in place to investigate ways to protect the environmental values, and monitor and assess the effectiveness of the protection 	<ul style="list-style-type: none"> Wetlands in the GBR catchments, Management Strategy 2016-21. Reef 2050 WQIP Reef 2050 Plan 	adequate	improving
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for biodiversity	3	<ul style="list-style-type: none"> Reef 2050 WQIP work program progressing but timeframes lagging in some areas As at October 2017, there were two vessels operating and over 570,000 COTS have been culled. To date, coral cover has been protected on 21 priority reefs offshore Cairns and Port Douglas 	<ul style="list-style-type: none"> Workshops and stakeholder interviews http://www.gbmpa.gov.au/about-the-reef/biodiversity/biodiversity-conservation-strategy-2013/vulnerability-assessments RIMREP Marine Monitoring Program outputs 	adequate	stable

		<ul style="list-style-type: none"> • Staff limitations in GBRMPA have reduced capacity to implement biodiversity related actions and to collaborate with researchers at previous levels, staff in Biodiversity Section have been spread across agency • Slow progress in development of RIMREP • GBR Biodiversity Strategy and Climate Change Strategies not recently updated but to some extent overtaken by Reef 2050 • Marine Monitoring Program outputs are published, including: <ul style="list-style-type: none"> ○ annual Marine Results reports which provide the marine information in the Report Cards. ○ annual Summary Report, which provide a short overview of the key findings. ○ Annual technical reports provide detailed scientific information on the condition and trend of inshore water quality, coral reefs and seagrass meadows. ○ Regional Report Cards are published, including: <ul style="list-style-type: none"> ○ Gladstone Healthy Partnerships Report Card ○ Mackay Whitsunday Report Card ○ Wet Tropics Report card 	<ul style="list-style-type: none"> • Regional Report Cards 		
<p>OP2 Implementation of management documents and/or programs relevant to biodiversity have progressed in accordance with timeframes specified in those documents</p>	<p>3</p>	<ul style="list-style-type: none"> ○ Difficult to assess because: <ul style="list-style-type: none"> ○ No specific plans for biodiversity protection ○ No specific timelines for biodiversity protection • Biodiversity Conservation Strategy and Climate now beyond indicated timeframe and not updated and continued as current strategies although a number of actions have been carried forward into Reef 2050 and Reef Blueprint or are likely to be address in mid-term review of Reef 2050. These strategies still inform permit assessments and policy development • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 not continued and funding withdrawn although a number of actions carried forward into Reef 2050 Plan • Reef 2050 WQIP and the Marine Monitoring Program is progressing as per planned • COTS control program implemented as planned and being expanded with additional funding but concerns about the adequacy of this program from some stakeholders 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Reef Summit: Managing for resilience. Summary of proceedings and outputs, 24-25 May 2017, Townsville • Reef Blueprint for resilience 	<p>limited</p>	<p>stable</p>

<p>OP3 The results (in OP1 above) have achieved their stated management objectives for biodiversity</p>	<p>1</p>	<ul style="list-style-type: none"> • Biodiversity condition of the GBR has substantially declined as a result of back-to-back bleaching events, COTS infestations and other pressures on the GBR so management actions taken to maintain biodiversity have not achieved desired outcomes although short term outputs are mostly being delivered. • Scientific Consensus Statement 2017 concluded: Key Great Barrier Reef ecosystems continue to be in poor condition. This is largely due to the collective impact of land run-off associated with past and ongoing catchment development, coastal development activities, extreme weather events and climate change impacts such as the recent coral bleaching events. • The first annual report of the Reef 2050 shows that 19 per cent of the actions are completed or in place and over 65 per cent are underway. • Progress is slow in achieving water quality improvements and in addressing the underlying causes of water quality problems arising from land-based activities • There is an effective Raine Island Management Plan which specifies desired outcomes and actions. These are being met and achieved. In 2016-17, seven working trips and two delegates' trips were undertaken to Raine Island. The focus of these trips was to monitor the reproductive success of turtles in the section of beach previously re-profiled to increase hatching success. Research activities included geomorphological investigations on sand budgets and changes to the island to inform future sand re-profiling works, autonomous seabird monitoring via 'listening stations', and the tagging of three turtles with satellite trackers. Adaptive management actions included the installation of an additional 100 metre of cliff top fencing (bringing the total to 1,100 metres) to further reduce adult turtle mortality from cliff falls, and a trial of artificial nesting boxes for red-tailed tropicbirds. The project facilitated the employment of Traditional Owners for 140 trip days to assist in delivering on-ground works. The project team also developed the Raine Island Recovery Project Traditional Owner Engagement Plan and undertook engagement activities with schools in Torres Strait and Lockhart River communities 	<ul style="list-style-type: none"> • Workshops and stakeholder consultations • Draft Reef 2050 water quality improvement plan • 2017 Scientific Consensus Statement • Reef report Card 2016 • Progress implementing the Reef 2050 Plan • Final Report: 2016 coral bleaching event on the Great Barrier Reef 	<p>limited</p>	<p>declining</p>
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<p>OP4 To date, products or services have been produced in accordance with the stated management objectives for biodiversity</p>	<p>3</p>	<ul style="list-style-type: none"> • Vulnerability assessments - GBRMPA associated with the Great Barrier Reef Biodiversity Conservation Strategy 2013 mostly completed • The Ecological Risk Assessment of the East Coast Otter Trawl Fishery in the Great Barrier Reef Marine Park published • Sustainable Regional Development Program research reports, NERP research reports, AIMS LTMP project outcomes • Many position statements and guidelines relevant to biodiversity prepared and available • Reef Plan Report Cards (baseline, 2010 to 2016), Paddock to Reef and Marine Monitoring Reports. Progressing towards targets but not on track • RIMREP being developed but slow to progress • Cumulative impact report from the combined 2016/17 bleaching and cyclone event has not been released. This limits the capacity of the GBRMPA to understand coral reef condition, report through Outlook and guide management actions. 	<ul style="list-style-type: none"> • Workshops and stakeholder consultations • NESP Projects • AIMS LTMP Reef Monitoring - AIMS • Reef Summit: Managing for resilience. • vulnerability assessments • Reef 2050 Long-term sustainability plan • Reef 2050 Plan – Implementation Strategy 	<p>adequate</p>	<p>stable</p>
<p>OP5 Effective knowledge management systems regarding biodiversity are in place within agencies</p>	<p>4</p>	<ul style="list-style-type: none"> • Management of scientific information procedures are in place and are delivered at whole-of-GBRMPA using RefWorks as its database and citation management tool • Tools to disseminate information about values and impacts on them are available, and undergoing development to improve service delivery – e.g. the integrated Eye on the Reef program to provide a centralised database for Reef health information, Reef Explorer is an interactive tool for displaying spatial information • Spatial information and datasets arising from research conducted on in the Marine Park are housed and managed by the GBRMPA Spatial Data Centre and other spatial platforms. Scientific programs are becoming increasingly spatial in focus and output, generating a variety of spatial datasets about the Region's values, its use and impacts. As a consequence, the process of gathering, synthesising, interpreting and delivering these datasets is becoming increasingly important. Continued collaboration between the Authority and its partners will help to identify and address gaps in spatial data and opportunities to share data and make it more 'discoverable' by others (i.e. RIMREP). 	<ul style="list-style-type: none"> • Workshops and stakeholder consultation • Integrated Eye on the Reef database • Reef Explorer tool • Wetland<i>Info</i> wetlandinfo.ehp.qld.gov.au/wetlands/https:// 	<p>adequate</p>	<p>improving</p>

		<ul style="list-style-type: none"> • Development of RIMREP –decision support tool – expected completion June 2018 • Qld DAFF maintains eResearch archive of scientific and research publications and datasets including many items of relevance to biodiversity in the GBR • Department of Environment and Heritage Protection maintains database of biodiversity records from protected areas including islands within the GBR and adjacent coastal areas • E-reefs operating well • Cumulative impact report from the combined 2016/17 bleaching and cyclone event has not been released. This limits the capacity of the GBRMPA to understand coral reef condition, report through Outlook and guide management actions. • All relevant information on wetlands including extent, condition, types, management, etc are in place and updated through <i>WetlandInfo</i> 			
OP6 Effective systems are in place to share knowledge on biodiversity with the community	3	<ul style="list-style-type: none"> • Communication through plain-English products summarising outcomes of scientific research is undertaken to some extent, but not systematically • e-Library (GBRMPA external website) provides access to publications • The scientific community is engaged in issues-specific workshops and forums and RACs by GBRMPA • NESP research outcomes are shared via The CHIRP weekly e-newsletter, through hub newsletters, and are made available on Hub websites. Events for communities adjacent to the Reef are also held regularly, for example, the NESP Tropical Water Quality Hub is holding a Science Day in Townsville on 20 November 2017 http://nesptropical.edu.au/index.php/2017/10/27/nesp-science-day/ which is free to attend. • NESP researchers are required to make all NESP research outputs publicly available on websites with a persistent and enduring link. Providing open-access to the data and information products derived under the NESP will provide up-to-date, high quality data and information to decision-makers, environmental managers, other scientists, and to the community. 	<ul style="list-style-type: none"> • COTS updates • TRAC minutes • Coral bleaching updates • Reef 2050 WQIP • RIMREP • Whitsunday Plan of Management • Final report: 2016 coral bleaching event on the Great Barrier Reef • CHIRP • NESP Science day • vulnerability assessments • Reef 2050 Long-term sustainability plan • <i>WetlandInfo</i> wetlandinfo.ehp.qld.gov.au/wetlands/https:// 	adequate	stable

		<ul style="list-style-type: none"> • Reef knowledge and RIMREP are expected to meet some of this need, however this is inadequately resourced for this purpose • All relevant information on wetlands including extent, condition, types, management, etc are in place and updated through <i>WetlandInfo</i> 			
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing biodiversity and moving towards the attainment of the desired outcomes.	2	<ul style="list-style-type: none"> • Back-to-back bleaching events, COTS infestations mean that condition of reefal areas is declining • Information on many aspects of biodiversity condition are now more uncertain • Evaluation of the AIMS long-term monitoring program results demonstrates that no-take protections in the GBRMPA support the resistance and consequently recovery rates of fish and coral communities (Mellin et al. 2016) • Sustainable Fisheries Strategy will have positive influence on biodiversity condition for exploited fisheries with clear actions and implementation plan • COTS infestation and associates impacts extending (e.g. Swains) • Minimal loss in the extent of natural wetlands 	<ul style="list-style-type: none"> • Workshops and stakeholder consultation • Hughes, T. P., Kerry, J. T. and Simpson, T. (2018), Large-scale bleaching of corals on the Great Barrier Reef. <i>Ecology</i>, 99: 501. doi:10.1002/ecy.2092 • Tarte, Diane, Hart, Barry, Hughes, Terry and Hussey, Karen (2017) Reef 2050 long-term sustainability plan: progress on implementation- review by Great Barrier Reef independent review group : • Hughes, T. P., Day, J. C. and Brodie, J. (2015). Securing the future of the Great Barrier Reef. <i>Nature Climate Change</i> 5: 508. • Sustainable Fisheries Strategy • Reef Plan Report Card https://www.reefplan.qld.gov.au/measuring-success/report-cards/2014/ 	limited	declining
OC2 The outputs relating to biodiversity are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	1	<ul style="list-style-type: none"> • Recent research shows declines in hard coral cover– at present the suite of management actions do not appear to be ensuring these values. • Recent research shows dugongs and large turtles are improving in numbers just south of Ingham to Bundaberg • New strategies being developed to address biodiversity decline and improve resilience (RRAP) but only at planning stage so practicality and effectiveness cannot be assessed • Increased impact from COTS infestations 	<ul style="list-style-type: none"> • Workshops and stakeholder consultation • Hughes, T. P., Kerry, J. T. and Simpson, T. (2018), Large-scale bleaching of corals on the Great Barrier Reef. <i>Ecology</i>, 99: 501. doi:10.1002/ecy.2092 • Tarte, Diane, Hart, Barry, Hughes, Terry and Hussey, Karen (2017) Reef 2050 long-term sustainability plan: progress on implementation- review by Great Barrier Reef independent review group : 	limited	declining

			<ul style="list-style-type: none"> Hughes, T. P., Day, J. C. and Brodie, J. (2015). Securing the future of the Great Barrier Reef. Nature Climate Change 5: 508. 		
OC3 the outputs (refer OP1 and 3) for biodiversity are reducing the major risks and the threats to the Great Barrier Reef	2	<ul style="list-style-type: none"> 2017 Scientific Consensus Statement - Key Great Barrier Reef ecosystems continue to be in poor condition. This is largely due to the collective impact of land based run-off associated with past and ongoing catchment development, coastal development activities, extreme weather events and climate change impacts such as the 2016 and 2017 coral bleaching events. Actions need to be taken outside the GBR to address the major threats to the Reef – major problem of policy dissonance in this regard as all level of governments pursue mutually incompatible policies The funding of Australian Government Reef Program and ongoing funding of Reef Trust will support ongoing reductions in the amount of nutrients and sediments entering the Reef from the catchment will assist continued improvement in the Region's water quality. other pressures from coastal development, ports and shipping climate change, are increasing so overall impact on biodiversity conservation is uncertain COTS control program has been significantly expanded but there remains a question of whether this will be sufficient to have an impact on overall damage from COTS Kearney and Farebrother 2014, The continuing decline in the health of the Great Barrier Reef and other Australian coastal areas confirms the limitations of current area management for combating threats to marine ecosystems 	<ul style="list-style-type: none"> Workshops and stakeholder consultation 2017 Scientific Consensus Statement Kearney and Farebrother 2014, Chapter Seven – Inadequate Evaluation and Management of Threats in Australia's Marine parks, Including the Great Barrier Reef, Misdirect Marine Conservation, Advances in Marine Biology Biosecurity for QPWS islands 	limited	declining
OC4 Use of the Great Barrier Reef relating to biodiversity is demonstrably environmentally sustainable	1	<ul style="list-style-type: none"> The health of the Great Barrier Reef is declining, and management is not keeping pace with the cumulative impacts that are acting on the system. The causes of decline are known and the potential for restoration is strong provided we avoid a 'business as usual' approach. Without urgent and effective additional management intervention the Region's biodiversity values are likely to continue to deteriorate. 	<ul style="list-style-type: none"> Workshops and stakeholder consultation Hughes, T. P., Kerry, J. T. and Simpson, T. (2018), Large-scale bleaching of corals on the Great Barrier Reef. Ecology, 99: 501. doi:10.1002/ecy.2092 Tarte, Diane, Hart, Barry, Hughes, Terry and Hussey, Karen (2017) Reef 2050 long-term 	limited	declining

		<ul style="list-style-type: none"> • The past decade of extreme weather events has taken its toll on the Reef. The frequency of cyclones and floods has reduced the capacity of the Reef ecosystem to recover from these and other disturbances such as outbreaks of crown-of-thorns starfish and the recent coral bleaching events. Legacy issues, such as broadscale catchment clearing and commercial harvesting of iconic species, are still affecting the Reef. Some of these issues go back decades, even to the 1800s, and their impacts are likely to continue long into the future. • The impacts do not operate in isolation, but overlap and interact with each other. Their accumulation through time and over an ever-increasing area is diminishing the ecosystem's ability to bounce back. There is increasing evidence that both the ecosystem's resistance and its capacity to recover is being lost, although the extent of that loss varies considerably between ecosystem components (for example, dugong compared to some fishes) and between localities (for example, the inshore southern two-thirds of the Region compared to places offshore and further north). • Surveys undertaken in 2017 indicate that dugongs and large turtles are in better condition since 2014. These changes coincide with improvements in the condition of intertidal seagrass percentage cover. • Reef 2050 WQIP shows small improvements and will not achieve its targets. • Inshore seagrass meadows showed slight improvements in condition for some indicators, but remained poor overall. Seagrass cover continued to improve in the Cape York, Wet Tropics, Mackay, Whitsundays, Fitzroy and Burnett Mary regions, and has declined slightly in the Burdekin region. • Inshore coral reefs south of the Wet Tropics region were in moderate condition in 2015-16. The 2016 bleaching event severely impacted the far northern and northern regions of the Reef from the tip of Cape York to Port Douglas. The full extent of 2017 bleaching impacts is being studied. • A loss of resilience in key habitats implies that development on a global, national, regional and local scale is not sustainable. 	<p>sustainability plan: progress on implementation- review by Great Barrier Reef independent review group :</p> <ul style="list-style-type: none"> • Hughes, T. P., Day, J. C. and Brodie, J. (2015). Securing the future of the Great Barrier Reef. Nature Climate Change 5: 508. • 2016 coral bleaching event on the Great Barrier Reef • 2017 Scientific Consensus Statement • COTS • Reef 2050 WQIP 		
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		<ul style="list-style-type: none"> • Cyclone Debbie effects - Cyclone damage is one of several factors contributing to major losses in coral and seagrass across the Great Barrier Reef. The Whitsundays was particularly devastated by Debbie but full assessments of damage are not available. Cyclone Debbie was the tenth severe category cyclone to affect the Great Barrier Reef since 2005. 			
OC5 Use of the Great Barrier Reef relating to biodiversity is demonstrably economically sustainable	2	<ul style="list-style-type: none"> • Decline in condition in southern inshore GBR may have long term effect on value of tourism and recreational use of GBR • Tourism is major industry underpinned by biodiversity of Great Barrier Reef • Fisheries is major industry also underpinned by biodiversity • Water quality in the Region has declined markedly, especially in inshore areas adjacent to the developed coast, which impacts negatively on tourism and recreation. 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef • Deloitte Access Economics Report Economic contribution of the Great Barrier Reef • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef. Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). • Whitsundays Plan of Management 	limited	declining
OC6 Use of the Great Barrier Reef relating to biodiversity is demonstrably socially sustainable in terms of understanding and/or enjoyment	3	<ul style="list-style-type: none"> • Climate change remains the most serious long-term risk facing the Reef and is likely to have far reaching consequences for the Region's environment. • Recreational fishing and boating remain as major uses • Increased compliance action by GBRMPA and State agencies will lead to a more sustainable recreational fishing sector and hence maintain social sustainability • Uptake of Reef Guardian program within community is indicative of community interest in and concern for the GBR • An increased public mooring and reef protection program was initiated through the Field Management Program making a significant contribution to protecting marine ecosystems from anchor damage by the installation of additional reef protection markers and public moorings at popular reef and island locations. 	<p>Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef</p> <p>Deloitte Access Economics Report Economic contribution of the Great Barrier Reef SELTMP</p> <p>Whitsundays Plan of Management</p> <p>Reef Guardian program</p>	limited	declining
OC7 The relevant managing agencies have developed effective partnerships with local communities	4	<ul style="list-style-type: none"> • Reef Guardian School curriculum resources are designed to fit the Australian Curriculum, and reflect the key risks as outlined in Outlook 2009 	<p>Workshops and stakeholder interviews</p> <p>Reef Guardian Schools</p> <p>Reef Check</p>	adequate	stable

<p>and/or stakeholders to address biodiversity</p>		<ul style="list-style-type: none"> • Partnerships with industry (AMPTO, QSIA) and research providers (AIMS, JCU, UQ, CSIRO, NOAA, BoM) are both formal and ad hoc • GBRMPA Community Partnerships Group • CapReef • LMACs • Reef Guardian Schools • Lots of informal partnerships but the effectiveness of these partnerships is not easily measured (Seagrass Watch is an exception with regular performance assessment and continuous improvement) • Blueprint for Resilience (Partnerships for local action initiative) • The National Environmental Science Program (NESP) is based on partnerships and collaboration. The NESP Tropical Water Quality Hub connects Reef managing agencies, scientists, Indigenous people and communities. 	<p>Seagrass Watch Marine Monitoring Program RAC's: http://www.gbrmpa.gov.au/about-us/reef-advisory-committee Our Partners: http://www.gbrmpa.gov.au/our-partners Local Marine Advisory Committees Reef Summit: Managing for resilience. Summary of proceedings and outputs, 24-25 May 2017, Townsville Draft - Great Barrier Reef Blueprint for Resilience NESP</p>		
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Table 22 Calculation of grades for climate change

CONTEXT					
CO1 The values of the Great Barrier Reef relevant to climate change are understood by managers	4	<ul style="list-style-type: none"> • Managers understand that Reef-dependent values and activities are vulnerable to the negative effects on Reef condition of ocean acidification, sea level rise, more frequent extreme weather and warming sea temperatures. Associated impacts such as mass coral bleaching are already having significant impacts on the Reef, and the frequency and severity of impacts is predicted to increase, with even more serious consequences for the Reef likely before mid-century. • GBR ecosystems are very vulnerable to most changes that climate change will bring. In 2016 and 2017, back to back mass coral bleaching events, caused by sustained high water temperatures, caused an estimated 50 per cent coral loss Reef wide. Corals and other calcifying organisms are also expected to be seriously affected by ocean acidification driven by increased levels of CO2 entering the oceans from the atmosphere • The Reef Summit and resulting Blueprint for Resilience identify the urgent need to address climate change through mitigation and to build resilience of the system by every sensible means available. • Climate change risks to the values of the GBR are recognised in the Queensland Climate Adaptation Strategy and the Queensland Climate Transition Strategy. • All elements of the Reef ecosystem are exposed to, and at risk from, the impacts of climate change, the effects of which are already being seen. There is expected to be flow-on impacts for communities and industries, some of which are occurring already. • The future of many key species is also under threat (eg. the sex ratio of turtle hatchlings is temperature dependent, and warming conditions could see a significant bias toward females in future populations). 	<ul style="list-style-type: none"> • Outlook Report 2014 • Great Barrier Reef Strategic Assessment Report 2014 • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 • Biodiversity Conservation Strategy 2013 • Informing the Outlook for Great Barrier Reef coastal ecosystems • Queensland Climate Adaptation Strategy 2017-2030 • Queensland Climate Transition Strategy • State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 • Final report: 2016 coral bleaching event on the Great Barrier Reef • Hughes et al 2017 Global warming and recurrent mass bleaching of corals • Heron et al 2017 Impacts of Climate Change on World Heritage Coral Reefs: A First Global Scientific Assessment: http://whc.unesco.org/document/158688 • 2017 coral bleaching event on the Great Barrier Reef • Climate change and the Great Barrier Reef: A vulnerability assessment 	adequate	stable

		<ul style="list-style-type: none"> • Similarly human communities and GBR-dependent industries are also affected by the impacts of climate change on the Reef (eg. commercially important species, such as many fish and prawns, rely on corals, seagrasses or mangroves for some part of their life cycle which are projected to decline under climate change, suggesting that many fisheries may also be significantly affected). • Coral cover for the GBR is declining • Predictions arising from the Vulnerability Assessment regarding climate change impacts to Reef values have proven to be correct since its publication in 2007. The Vulnerability assessment has not been updated since 2007 and back-to-back bleaching events will have impacted on this assessment 			
CO2 The current condition and trend of values relevant to climate change are known by managers	2	<ul style="list-style-type: none"> • Since the Outlook Report 2014 assessment, the Reef has been subjected to several large-scale disturbances (listed below). The individual and cumulative impacts of these disturbances have negatively affected values, but effects are not fully known. <ul style="list-style-type: none"> ○ 2014- Tropical Cyclone Ita (category 5) severely affected reefs around the Lizard Island area ○ 2015-TC Marcia (5) affected reefs in the southern GBR and TC Nathan (4) affected reefs around the Lizard Island area ○ 2016 - Mass bleaching event affected the northern GBR with an estimated 29 % coral loss ○ 2017 – Mass bleaching event affect the central section of the GBR. Coral loss has not been estimated. TC Debbie (4) severely affected the Whitsundays area and an estimated 28 % of total Reef area. • The cumulative effects of these Reef health impacts will have hastened the decline in overall condition of the Great Barrier Reef but many elements of biodiversity 	<ul style="list-style-type: none"> • Outlook Report 2014 • Final report: 2016 coral bleaching event on the Great Barrier Reef • 2017 coral bleaching event on the Great Barrier Reef • AIMS Long-term Reef Monitoring Program-Annual summary report on coral reef condition for 2016/17 (AIMS update 2017) • Integrated Eye on the Reef program • Informing the Outlook for Great Barrier Reef coastal ecosystems • Marine Monitoring Program - Inshore coral reef monitoring • Marine Monitoring Program - Inshore seagrass monitoring • Marine Monitoring Program - Inshore water quality monitoring • Reef 2050 Integrated Monitoring and Reporting Program • Climate change and the Great Barrier Reef : A vulnerability assessment 	adequate	declining

		<p>and habitat condition and functioning have not yet been examined in detail, especially in the wake of back-to-back bleaching</p> <ul style="list-style-type: none"> • AIMS Long-term monitoring program revealed that over the past 12 months hard coral cover on the Great Barrier Reef declined by about a quarter, bringing average reef-wide coral cover down to 18% (does not include the impact of Tropical Cyclone Debbie or the further intense coral bleaching in 2017 which have not yet been fully assessed. • Integrated Eye on the Reef program and data contained within the platform (now able to view Reef health and Impact survey (and other) data spatially in a way that assists assessment of impacts, trends, risks, and management options. • The Great Barrier Reef's world and national heritage values are underpinned by the ecosystem and directly affected by changes to it. Climate change is likely to affect the way people interact with the Great Barrier Reef and the economic, social and cultural benefits they derive from it. • The Vulnerability assessment has not been updated since 2007 and back-to-back bleaching events will have impacted on this assessment 			
CO3 Impacts (direct, indirect and cumulative) associated with climate change are understood by managers.	3	<ul style="list-style-type: none"> • Reef 2050 Plan does not explicitly consider the main threat to the Reef (Climate Change), therefore scientific effort (through actions, targets) is not focused on delivering outcomes that would address climate pressures to the reef. • Progress in understanding has slowed considerably since the cessation of the Climate Change group within GBRMPA • In the period since the last assessment, climate change has severely impacted the Reef, however the condition of some species groups and some ecosystem effects are largely unknown. 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Outlook Report 2014 http://hdl.handle.net/11017/2855 • Great Barrier Reef Strategic Assessment Report, • Great Barrier Reef Coastal Zone Strategic Assessment 2014 • Hughes et al. (2017a) Global warming and recurrent mass bleaching of corals • Hughes et al. (2017b) coral reefs in the Anthropocene. • Biodiversity Conservation Strategy 2013 • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 • Reef 2050 Long-Term Sustainability Plan 	adequate	declining

		<ul style="list-style-type: none"> • Reef-wide mass coral bleaching events in 2016 and 2017 affected ~65 % of GBR reefs respectively, with estimates of up to 50% coral loss from both events. (see Hughes et al. 2017 x 2 papers) • Climate change is already having serious impacts on the Reef's values and this will only get worse with committed climate change even under the most optimistic emissions reduction pathways. Effects include: <ul style="list-style-type: none"> ○ increased storm and cyclone severity ○ ocean acidification ○ rising sea temperature. Successive bleaching events are likely to diminish the ability of corals to recover and adapt, seriously threatening the Great Barrier Reef ecosystems. ○ sea level rise ○ changing ocean currents • The implementation of the Queensland Climate Adaptation Strategy includes the development of a Sector Adaptation Plan for biodiversity and ecosystems that will address climate-related issues for the GBR in addition to other marine, freshwater and terrestrial ecosystems but these plans in relation to biodiversity and ecosystems are yet to be developed • In 2017 high incidence of coral diseases affected parts of the Great Barrier Reef. This was anticipated in GBRMPA's pre-summer risk assessments, given the heat stress affecting Reef waters and the growing body of evidence that warmer ocean temperatures promote the prevalence of some coral diseases. • NERP/NESP and other work is increasing our rudimentary knowledge of cumulative impacts. NESP research is also studying the linkages between water quality and the thermal tolerance of GBR coral reefs. However, consequential and cumulative impacts associated with climate change are not well understood. 	<ul style="list-style-type: none"> • Final report: 2016 coral bleaching event on the Great Barrier Reef • Hughes, T.P. and Kerry, J. 2017. Back-to-back bleaching has now hit two-thirds of the Great Barrier Reef, The Conversation April 12, 2017 • Climate change and the Great Barrier Reef : A vulnerability assessment (2007) • Welch, D.J., Saunders, T., Robins, J., Harry, A., Johnson, J., Maynard, J., Saunders, R., Pecl, G., Sawynok, B. and Tobin, A., 2014. Implications of climate change impacts on fisheries resources of northern Australia. Part 1: Vulnerability assessment and adaptation options. • Assessment of the ecological vulnerability of the East Coast Otter Trawl Fishery to climate change http://hdl.handle.net/11017/522 • Osborne, K., Thompson, A.A., Cheal, A.J., Emslie, M.J., Johns, K.A., Jonker, M.J., Logan, M., Miller, I.R. and Sweatman, H.P.A. (2017), Delayed coral recovery in a warming ocean, Global Change Biology doi: 10.1111/gcb.13707. • Vulnerability Assessments • Queensland Climate Adaptation Strategy 2017-2030 • Queensland Climate Transition Strategy 		
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		<p>New policy work is designed to increase the consideration of cumulative effects by managers.</p> <ul style="list-style-type: none"> • Concerns for the tourism industry include degradation of reef sites, poor recovery of bleached sites as a result of other stresses, and a loss of marketing appeal as a high-quality reef destination. A healthy and resilient Reef is fundamental to the success of many tourism operations and deteriorating Reef conditions may reduce tourism opportunities and visitor satisfaction, with significant economic repercussions for regional Australia. • Fishing activities are likely to be highly sensitive to climate change, including as a result of projected changes in fish abundance, survivorship, size and distribution, disruptions to shallow-water nurseries and loss of coral reef habitats, as well as changes in cyclone and storm activity. Vulnerability assessments have identified high risks from climate change for Queensland fishery species and their habitats, and several documents provide insights into the associated concerns relating to Queensland’s fisheries and regional Australia. • Foreshores and coastal infrastructure such as ports, and the benefits communities derive from them, will also be influenced by climate change impacts on the catchment and the Great Barrier Reef Region. QCoast 2100 funding program is assisting local government in understanding and planning for these impacts. • Another important value of coral reefs is the physical protection they provide against natural hazards from coastal storms, flooding and rising sea level. In this sense the Great Barrier Reef can be thought of as a living, self-repairing “breakwater” that protects Queensland coastal communities and industries. Combined results across studies show that coral reefs dissipate 97 per cent of the wave energy that would otherwise impact shorelines. This valuable coastal 			
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		protection could be lost if reefs become heavily degraded and unable to keep up with rising sea levels			
CO4 The broader (national and international) level influences relevant to climate change are understood by managers.	3	<ul style="list-style-type: none"> Strategic Assessment Reports make it clear that managers understand the international and national level influences on climate change relevant to the GBR AIMS has provided GBR scale projections for climate but assessment of likely environmental, social and economic impacts at this scale is limited Climate policy and resultant mitigation and adaptation programs remain in a state of flux at national level as is clear in the report of the Senate Enquiry on impacts of climate change on marine fisheries and biodiversity (Australian Senate, 2017) Knowledge is focussed more on adaptation rather than mitigation Concern that despite awareness and knowledge amongst some staff there is a general reduction in understanding and capacity at GBRMPA since the cessation of the Climate Change Action Plan (CCAP) 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Great Barrier Reef Strategic Assessment Report 2014 Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 2017 Pollinate Report Australian Academy of Science report The Science of Climate Change: Questions and Answers Paris Agreement Fact sheet: The Australian Government's action on climate change - 2016 The Great Barrier Reef Marine Park Authority's submission to DoEE CSIRO climate change website Senate Enquiry (2017) In hot water: the impacts of climate change on marine fisheries and biodiversity 	adequate	stable
CO5 The stakeholders relevant to climate change are well known by managers.	4	<ul style="list-style-type: none"> Great Barrier Reef Marine Park Authority community surveys show broad level of awareness of climate change issues Tourism operators have workshopped risks and adaptation options to address threats including increasing sea temperatures, sea level rise, ocean acidification, increasing storm intensity, and changes to freshwater inputs, currents and connectivity. Local Marine Advisory Committees provide contact with local stakeholders Concern expressed by some stakeholders that GBRMPAs voice on this issue has become too quiet. 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Great Barrier Reef Strategic Assessment Report 2014 Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 2017 Pollinate Report 	adequate	stable
PLANNING					
PL1 There is a planning system in place that effectively addresses climate change	2	<ul style="list-style-type: none"> The Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded early in the implementation phase and as a result many targets were not met. 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 	adequate	declining

		<ul style="list-style-type: none"> • The approach by the Great Barrier Reef Marine Park Authority going forward is to integrate climate change-related actions into corporate and operational plans, and the Authority recognises the objectives in the plan remain relevant. • Climate change was not addressed by the original Reef 2050 Plan. The revised Reef 2050 Plan considers Climate change • Current and future risks of climate change are not being appropriately considered in planning processes in part because of the retrospective nature of most established adaptive management processes. • Great Barrier Reef Marine Park Authority's (GBRMPA's) Reef Health Incident Response System is a strategic framework for responses to reef health incidents. However, contemporary knowledge has not been incorporated into the plans since 2013. Some actions based on the implementation of the plans have occurred but have been limited in scope. • The Department of Environment and Energy's Australia's Biodiversity Conservation Strategy 2010-2030 (the Strategy) was released in 2010 as a cross-jurisdictional strategy for Australia. It identified climate change as one of the greatest threats to biodiversity and aimed to manage the impacts of climate change to the extent that the threat to the environment is minimised and any damage is reversed. The Strategy was reviewed in 2016 with the support of three independent experts. Some key findings of the review were: <ul style="list-style-type: none"> ○ The Strategy includes few outcomes designed to specifically improve the health and resilience of biodiversity in marine and aquatic environments. ○ The Strategy has not effectively influenced biodiversity conservation activities • Queensland Government has established a climate response strategy including a Transition strategy and 	<ul style="list-style-type: none"> • Reef Health Incident Response System second edition 2013 and associated plans: • Tropical Cyclone Risk and Impact Assessment Plan second edition 2013 • Coral Bleaching Risk and Impact Assessment Plan second edition 2013 • Coral Disease Risk and Impact Assessment Plan second edition 2013 • Australian National Biodiversity Strategy and Report on the Review of the first five years of Australia's Biodiversity Conservation Strategy • National Climate Resilience and Adaptation Strategy • Reef 2050 Long-Term Sustainability Plan • State Planning Policy • Department of the Environment and Energy - Planning for Climate Change in Natural Resource Management • NCCARF online tool CoastAdapt • Queensland Climate Response https://www.qld.gov.au/environment/climate/response 		
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		<p>Adaptation strategy which is in early stages of implementation.</p> <ul style="list-style-type: none"> • The 2017-18 GBRMPA Corporate Plan highlights that responding to the threat of climate change is a key priority but specific targets and actions addressing climate change are lacking. • Reef Blueprint released in Dec 2017. It is a broad statement of direction and lacks specific details of targets and strategies but may form the basis for a more useful plan to address climate change as it is elaborated into more concrete plans and actions. 			
PL2 The planning system for climate change addresses the major factors influencing the Great Barrier Reef Region's values.	2	<ul style="list-style-type: none"> • The Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded early in the implementation phase and as a result many targets were not met. • Climate change was not directly addressed by the Reef 2050 Plan when first released. It has been incorporated in the revision of the plan released in mid 2018. • Current and future risks of climate change are not being appropriately considered in planning processes in part because of the retrospective nature of most established adaptive management processes. • Considerable efforts are being made under the Reef 2050 Plan to reduce the impacts of other pressures to help reefs cope with or recover from disturbances. • Resilience-based management is necessary however the Reef 2050 actions do not adequately aid the assessment of the climate change risk or establish a set of actions that would actually build resilience. • While these actions to reduce pressures and build resilience remain crucial, environmental management efforts can only compensate for reduced coral reef resilience in the face of climate change to a limited extent and over a limited timeframe. Scientific modelling shows that preserving 10 per cent of coral reefs worldwide would require limiting global warming to 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 • State of the climate 2016 • Reef 2050 Long-Term Sustainability Plan • State Planning Policy • Frieler K., Meinshausen M., Golly A., Mengel M., Lebek K., Donner S. D. & Hoegh-Guldberg O., 2013. Limiting global warming to 2 °C is unlikely to save most coral reefs. Nature Climate Change. doi: 10.1038/nclimate1674. http://www.nature.com/nclimate/journal/v3/n2/abs/nclimate1674.html. 	adequate	declining

		<p>below 1.5 degrees Celsius relative to pre-industrial levels.</p> <ul style="list-style-type: none"> • The Queensland Government has incorporated climate change risk and impacts into the State Planning Policy 2017. • Reef Blueprint released in Dec 2017. It is a broad statement of direction and lacks specific details of targets and strategies but may form the basis for a more useful plan to address climate change as it is elaborated into more concrete plans and actions. 			
PL3 Actions for implementation regarding climate change are clearly identified within the plan	2	<ul style="list-style-type: none"> • The Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded early in the implementation phase and as a result many targets were not met. • Considering climate change as an external threat to the system is limiting manager's ability to adapt management to a changing climate. • A recent review by the Reef 2050 Independent Expert Panel indicated that climate change adaptation and mitigation actions are currently lacking in the Reef 2050 Plan and recommended explicitly including them. The 2018 review and update of the Reef 2050 Plan will be one of the avenues for the implementation of local and regional climate change actions. However, climate change risk cannot be adequately addressed without it being incorporated into the structure of the plan at all levels as it poses a catastrophic risk to the outcomes of the plan. • Reef Blueprint released in Dec 2017. It is a broad statement of direction and lacks specific details of targets and strategies but may form the basis for a more useful plan to address climate change as it is elaborated into more concrete plans and actions. • The Queensland Government has made three key climate change commitments: • Powering Queensland with 50% renewable energy by 2030 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 • Reef Blueprint • Advancing Climate Action in Queensland Making the transition to a low carbon future 2016 • Pathways to a clean growth economy: Queensland Climate Transition Strategy • Pathways to a climate resilient Queensland: Queensland Climate Adaptation Strategy 2017–2030 	adequate	declining

		<ul style="list-style-type: none"> • Doing our fair share in the global effort to arrest damaging climate change by achieving zero net emissions by 2050 • Demonstrating our commitment to reducing carbon pollution by setting an interim emissions reductions target of at least 30% below 2005 levels by 2030. 			
PL4 Clear, measurable and appropriate objectives for management of climate change have been documented	2	<ul style="list-style-type: none"> • The Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded early in the implementation phase and as a result many targets were not met. • The high-level objectives in the plan remain relevant to future work. • Climate change is not currently addressed by the Reef 2050 plan • The 2017-18 GBRMPA Corporate Plan highlights that responding to the threat of climate change is a key priority but specific targets and actions addressing climate change are lacking. • Reef Blueprint released in Dec 2017. It is a broad statement of direction and lacks specific details of targets and strategies but may form the basis for a more useful plan to address climate change as it is elaborated into more concrete plans and actions. • Considering climate change as an external threat to the system is limiting manager's ability to adapt management to a changing climate. 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 • Reef Blueprint • GBRMPA Corporate Plan 2017-18 	adequate	declining
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to climate change	3	<ul style="list-style-type: none"> • The Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded early in the implementation phase and as a result many targets were not met. • Tracking Australia's Greenhouse Gas Emissions - Australia's National Greenhouse Accounts are published, which track national emissions from 1990 onwards. Australia's greenhouse gas emissions are estimated as a nation, by state and by industry. The Department of Environment and Energy's Emissions 	<ul style="list-style-type: none"> • GBRMPA Annual operating plans • Reef 2050 Long-Term Sustainability Plan • State Planning Policy • Reef 2050 Integrated Monitoring and Reporting Program • Draft - Great Barrier Reef Blueprint for Resilience – internal document • Reef Health Incident Response System • Annual GBRMPA Pre-Summer Workshop • Final report: 2016 coral bleaching event on the Great Barrier Reef 	adequate	improving

		<p>projections will incorporate mangroves and saltmarshes in GHG calculations per the IPCC recommendations</p> <ul style="list-style-type: none"> • GBRMPA monitors and in partnership with QPWS surveys impacts of cyclones, coral bleaching, coral disease and crown-of-thorns predation • GBRMPA partners with the Bureau of Meteorology (BOM) and the US National Oceanic and Atmospheric Administration (NOAA) to monitor environmental conditions that may increase the risk of an impact to the GBR and discuss these risks with science/management/tourism partners to ensure adequate information is gathered. • The Bureau of Meteorology and CSIRO play an important role in monitoring, analysing and communicating observed changes in Australia's climate in the State of the Climate report • The National Environmental Research Programme (2011-2015) • The National Environmental Science Program (NESP) projects deliver collaborative, practical and applied research to inform decision making and on-ground action. NESP funding of \$145 million over the six years from 2015 to 2021 supports six themed research hubs, along with projects to address emerging environmental research needs. • eReefs is a collaboration between the Great Barrier Reef Foundation, Bureau of Meteorology, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australian Institute of Marine Science and the Queensland Government. • The Marine Water Quality Dashboard which provides real-time information about water quality, sea temperature and the effects of floods and storms on the Reef and is accessible publicly on the Bureau of Meteorology website. • There is an aspiration for RIMReP to draw together relevant information to inform management however the 	<ul style="list-style-type: none"> • Australia's emissions projections 2016 • BOM/CSIRO State of the Climate 2016 • National Environmental Research Program • National Environmental Science Programme • Marine Water Quality Dashboard • Queensland Climate Adaptation Strategy 2017-2030 		
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		<p>realisation of that program will be dependent upon multiple factors including funding and human resourcing.</p> <ul style="list-style-type: none"> • A comprehensive monitoring, evaluation and reporting framework for the Queensland Climate Change Response is in development. 			
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address climate change	2	<ul style="list-style-type: none"> • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 included several projects designed to engage local stakeholders in plan to adapt to a changing climate. This plan was defunded in 2014 and has significantly reduced engagement capability. • Capacity to engage has declined significantly since the cessation of the Climate Change group within GBRMPA • A climate change partnership was developed between the Queensland Seafood Industry Association and GBRMPA, and progressed adaptation work with the commercial fishing industry, however this is no longer funded • The development of regional plans and local government planning schemes includes statutory consultation requirements to engage stakeholders and the local community. Submissions regarding these plans must be considered prior to finalisation. • The Reef-based tourism industry is very concerned about the impacts of climate change on its businesses and livelihoods, including degradation of reef sites, poor recovery of bleached sites as a result of other stresses, and a loss of marketing appeal as a high-quality reef destination • There is a diversity of views • Reef Summit held in May 2017 with the key objective of developing a blueprint for action in response to mass bleaching and cumulative impacts on the Great Barrier Reef. The Summit brought together over 70 regional, national and international delegates, representing marine park managers, government agencies, Traditional Owners, research institutions, Reef users and other stakeholders. 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 • GBR Blueprint for Resilience • Queensland Climate Adaptation Strategy 2017-2030 	adequate	stable

		<ul style="list-style-type: none"> A number of stakeholder interviews across a range of sources indicate that some stakeholders consider that GBRMPA's "voice" on this issue is absent or too small and that GBRMPA staff have dis-engaged from key processes related to planning to address climate change. The Queensland Climate Change Response includes extensive community engagement and education activities. 			
PL7 Sufficient policy currently exists to effectively address climate change	1	<ul style="list-style-type: none"> Reef 2050 Plan does not explicitly consider the main threat to the Reef (Climate Change), therefore scientific effort (through actions, targets) is not focused on delivering outcomes that would address climate pressures to the reef. Climate policy and resultant mitigation and adaptation programs remain in a state of flux at national level as is clear in the report of the Senate Enquiry on impacts of climate change on marine fisheries and biodiversity (Australian Senate, 2017) Climate change policies at national and state level have fluctuated asynchronously and Australia has not had a settled climate change policy over the long term needed to achieve meaningful mitigation outcomes Fraser et al (2017) conclude that policy settings are inadequate or have not been properly implemented Morrison (2017) notes impact of changing climate policy on governance of the GBR 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Baranzini, A., van den Bergh, J. C. J. M., Carattini, S., Howarth, R. B., Padilla, E. and Roca, J. (2017), Carbon pricing in climate policy: seven reasons, complementary instruments, and political economy considerations. WIREs Clim Change, 8: n/a, e462. doi:10.1002/wcc.462 Pickering, J. & Mitchell, P. Int Environ Agreements (2017) 17: 107. https://doi.org/10.1007/s10784-016-9346-5 Crowley, K. (2017), Up and down with climate politics 2013–2016: the repeal of carbon pricing in Australia. WIREs Clim Change, 8: n/a, e458. doi:10.1002/wcc.458 Morrison, T. H. (2017). Evolving polycentric governance of the Great Barrier Reef. Proceedings of the National Academy of Sciences. 	adequate	stable
PL8 There is consistency across jurisdictions when planning for climate change	1	<ul style="list-style-type: none"> There are many examples of consistency (eg. complementary zoning, port management plans, defence environmental planning, shipping planning) but examples also exist of a lack of consistency (eg. Qld Fish Habitat Zone & GBRMPA Habitat Protection Zone). Queensland and Federal government are at odds with regards to renewable energy targets and supporting the recommendations of the Finkel Review. Nationally, the focus is on incentives without a regulatory foundation (dale, 2016) 	<ul style="list-style-type: none"> Advancing Climate Action in Queensland Making the transition to a low carbon future 2016 Pathways to a clean growth economy Queensland Climate Transition Strategy 2017 Pathways to a climate resilient Queensland: Queensland Climate Adaptation Strategy 2017–2030 Dale, A. P., Vella, K., Pressey, R. L., Brodie, J., Gooch, M., Potts, R. and Eberhard, R. (2016). Risk analysis of the governance system affecting 	limited	stable

		<ul style="list-style-type: none"> • Inconsistent in part because Reef 2050 does not explicitly address climate risks, yet it is the greatest threat to the reef. • Major inconsistency is between policies across sectors at Federal, State and local level. This inconsistency primarily relates to the requirement for effective mitigation action to ensure that global temperature increase remains below 1.5 °C. Adaptation efforts within the GBR will be ineffective unless this can be achieved (Dale et al (2016)) 	outcomes in the Great Barrier Reef. Journal of Environmental Management 183, Part 3: 712-721.		
PL9 Plans relevant to climate change provide certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.	2	<ul style="list-style-type: none"> • Regressed since the cessation of funding for the Climate Change Adaptation Strategy and Action Plan. • Local government planning schemes identify areas where development may and may not occur, or occur under certain circumstances. The development applications are assessed according to intent for the area/zone, codes of assessment relevant to the area/zone and, if submissions have been made about the proposed development, the issues raised in the submissions. Development applications may have conditions applied by the assessment manager (or concurrence agency if relevant) which have to be met by the applicant before proceeding. However consideration of impacts on the GBR from agricultural and urban development are very limited. • GBR Zoning Plans are in place but are relatively fixed and not easily adapted to address immediate climate mediated impacts (e.g. should zoning plans be re-configured in light of severe bleaching, should heavily bleached reefs be closed to fishing or other uses • The Guidelines: Managing research in the Great Barrier Reef Marine Park express GBRMPA's expectations regarding the consideration of Reef health and disturbances (e.g. bleaching) in research activities, including where research occurs. Additional or more specific requirements may be included in permission conditions. 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews 	limited	declining

INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address climate change	2	<ul style="list-style-type: none"> Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded in 2014. Significant funding is going into addressing impacts from water quality and COTS that interact with CC impacts but relatively little is going to more CC specific actions The Clean Energy Finance Corporation's Reef Funding Program is a \$1 billion investment program targeting clean energy projects in the Reef catchment area. The program makes finance available for clean energy businesses and projects which support the delivery of the Government's Reef 2050 plan, aiming to bring the benefits of clean energy to support the long-term health of the Great Barrier Reef. To date, \$345 million in investment commitments to more than 280 projects have been made under this program. The Queensland Office of Climate Change was disbanded in 2012 with considerable loss of staff and expertise. The Climate Change Policy Branch in the Department of Environment and Science leads climate policy development in Queensland. 	<ul style="list-style-type: none"> Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 Planning for Climate Change in Natural Resource Management Clean Energy Finance Corp-Reef Funding Program The Great Barrier Reef Foundation's Annual Report 2015 	adequate	stable
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address climate change	1	<ul style="list-style-type: none"> There was an identified climate change section within GBRMPA coordinating implementation of the Great Barrier Reef Climate Change Action Plan. Through restructuring in 2013 this section no longer exists. This capacity was spread throughout the GBRMPA however there are no longer any staff dedicated to climate change understanding, resilience or adaptation. Some stakeholders report that GBRMPA staff are frequently not present at relevant meetings and discussions relating to climate change management and response 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	limited	declining
IN3 The right skill sets and expertise are currently available to the managing organisations to address climate change	2	<ul style="list-style-type: none"> Contemporary knowledge about climate change, its risks and actions to address these risks is limited within GBRMPA and is not a clear priority for the organisation / workforce planning. 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	limited	declining

		<ul style="list-style-type: none"> • Skill sets/ aging workforce means some areas of skill/knowledge not being transferred to new staff. • Management skills required are becoming increasingly sophisticated. • Government agencies are increasingly working together to enhance resources and expertise (e.g. the Climate Change Policy Branch works closely with the Department of Science, Information Technology and Innovation to develop improved climate projection data and information products). 			
IN4 The necessary biophysical information is currently available to address climate change	3	<ul style="list-style-type: none"> • Much of the GBR-specific information is available however this is often in disparate datasets. Work is underway as part of RIMReP and through some Great Barrier Reef Foundation funded project work to centralise the necessary data, particularly the consistent long term gathering of environmental exposure as well as ecological information. • GBRMPA updated its 'Scientific Information Needs for Management of the GBRMP' following the 2014 Outlook Report. The Science Strategy and Information Needs 2014-2019 sets out future scientific information needs. It aims to ensure scientific activities are relevant, targeted to address critical management issues, and that scientific outputs are easily accessible. • ReefTemp Next Generation is an example of an operational tool, developed at the Bureau of Meteorology, monitoring bleaching conditions, and these tools can be used to trigger bleaching response plans and support appropriate management decisions. • The early warning system has become more sophisticated and incorporated new technologies to support improved situational awareness by managers. Further collaborative work is underway to refine tools, develop new tools, and to re-evaluate the thresholds used to determine the risk of bleaching or mortality. 	<ul style="list-style-type: none"> • Great Barrier Reef Marine Park Authority Scientific strategy and information needs 2014-2019 • ReefTemp Next Generation • BOM/CSIRO State of the Climate 2016 • QLD Regional climate change impact summaries • Outlook Report 2014 • Climate Change in Queensland map application • High Resolution Climate Change Projection Data for Queensland • Coral bleaching 2016 and 2017 	adequate	increasing

		<ul style="list-style-type: none"> • The Bureau of Meteorology and CSIRO play an important role in monitoring, analysing and communicating observed changes in Australia's climate. • Note that relevant information is frequently evolving as new models or better understanding and data is developed - this means management agencies need to continue to keep in touch with emerging findings so that management decisions are based on the most relevant and recent biophysical information relating to climate change. • The QLD Government's Regional climate change impact summaries aim to help Queenslanders understand and adapt to our changing climate by providing a snapshot of the climate risks, impacts and responses in each region. They show climate change projections for the years 2030 and 2070 at a statewide level and for 13 Queensland regions. • Much information is available but key gaps exist (eg. connectivity, trophic interactions, deep water, far north GBR) • Non-charismatic or taxa of no apparent economic value are poorly known but it is reasonable to expect that back-to-back bleaching will have had flow on consequences for most species 			
IN5 The necessary socio-economic information is currently available to address climate change	3	<ul style="list-style-type: none"> • Socio-economic information is available via SELTMP and updated valuation of the Reef. NCCARF funded projects have also contributed. • The changing picture of Reef health has been expanded to include the social and economic changes in the area. GBRMPA partnered with CSIRO to establish the Social and Economic Long Term Monitoring Program (SELTMP) to study social and economic conditions and trends, especially in relation to changing ecological conditions in the Marine Park • Lack of information on recreational use of the marine park and relationships to CC and its effects on 	<ul style="list-style-type: none"> • SELTMP project information • Evans et al. 2013. Limits to climate change adaptation in the Great Barrier Reef: scoping ecological and social limits • Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef 	limited	increasing

		<p>ecosystem and social and economic factors for Reef communities.</p> <ul style="list-style-type: none"> • Access Economics Report on valuing the Reef published in 2017 (Great Barrier Reef Foundation funded). • Study in the Capricorn coast area examined marine environmental stewardship potential within the local community, with relevance to climate change and Reef resilience. Generally has been an area lacking data, but activities are underway to reduce this deficit to some degree. Awareness within management agencies of the value of relevant S&E information is more visible than it once was. • Gaps and reliability issues continue to surround data on extractive use, eg. spatial precision of log books, data on recreational extraction • Inconsistency in spatial information eg. differing grid sizes and mixture of modelled and factual map data 			
IN6 The necessary Indigenous heritage information is currently available to address climate change	2	<ul style="list-style-type: none"> • TOs involved in coral bleaching reporting in the Far Northern GBR during the 2016 mass bleaching event • Raine Island CC adaptation has very high engagement and information sharing with Traditional Owners. • Wuthathi TUMRA CC considerations. Extent to which 'traditional knowledge' was drawn on in this not clear. • Some traditional knowledge used in development of TUMRA's and QDPIF work • Assigning protected area boundaries based on traditional knowledge is rare. • RIMReP DMS4 project is establishing options to share Indigenous knowledge relevant to climate change and other pressure on the Reef. • 2016 Giringun Sea Country Forum (funded through the GBRMPA TUMRA program) had a focussed session on the impacts of CC to indigenous heritage 	<ul style="list-style-type: none"> • Reef 2050 Long Term Sustainability Plan: Indigenous Implementation Plan • Giringun Sea Country Forum FINAL REPORT 	limited	improving
IN7 The necessary historic heritage information is currently available to address climate change	1	<ul style="list-style-type: none"> • Knowledge of many historic places or events is limited • Information on the current condition is virtually unknown 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews 	limited	stable

		<ul style="list-style-type: none"> • Outlook Report 2014 identified that some historic values (e.g. shipwrecks) had been damaged by cyclones. 			
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address climate change	4	<ul style="list-style-type: none"> • The Great Barrier Reef Foundation is major funder of work • GBRMPA, in conjunction with the QPWS, run the Eye on the Reef Program, an umbrella project which includes several monitoring and assessment methods. This information is gathered in partnership with a range of stakeholders, such as Marine Park rangers, tourism operators, reef visitors, fishers and the broader community. The program was vital in understanding the temporal and spatial distributions of coral bleaching observations during the 2016 and 2017 mass bleaching events. The Eye on the Reef Program collects information through various methods including: <ul style="list-style-type: none"> ○ Sightings Network ○ Eyes and Ears Incident Reporting Network ○ Rapid Monitoring ○ Reef Health and Impact Surveys ○ Tourism Weekly Monitoring • The information collected is combined in a data management system to produce a Reef-wide picture of ecosystem health. GBRMPA uses this information to map and assess the impacts of incidents on the Marine Park such as cyclones, flood plumes, coral bleaching, and disease and crown-of-thorns starfish outbreaks under the Reef Health Incident Response System. The data improves our knowledge of Reef ecosystem resilience and the risks to that resilience. A better long-term understanding of Reef impacts and ecosystem function aids the development of actions to support Reef resilience under a changing climate. • Other volunteer groups and events include: <ul style="list-style-type: none"> ○ Reef Guardian Schools ○ NGO's on RACs ○ LMACs ○ fisheries working groups 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Stewardship Action Plan 2013 Mitigating Ecological Risk in a Changing Climate • Provision Reef Stewardship Action Plan h • Eye on the Reef http://www.gbrmpa.gov.au/our-partners/tourism-industry/eye-on-the-reef • Reef Guardians program - fishers, farmers, graziers, schools, councils • GBR foundation – climate change • GBR Blueprint for Resilience 	adequate	stable

		<ul style="list-style-type: none"> ○ Mackay and district turtle watch ○ O.U.C.H. volunteers ○ Beach clean-up days <ul style="list-style-type: none"> ● Research stations are diligent in reporting observations of coral bleaching, disease or cyclone impacts ● One of the key initiatives in the Blueprint for Resilience is 'Accelerating actions to address global climate change' which aims to see the Great Barrier Reef and coral reefs globally as a focus of policy discourse and programs to reduce carbon emissions, and Great Barrier Reef communities and industries demonstrate leadership in emission reduction efforts and climate change adaptation 			
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of climate change	3	<ul style="list-style-type: none"> ● GBRMPA no longer has staff specifically addressing climate change and hence engagement with stakeholders has declined ● Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 did include several activities designed to engage local stakeholders in plan to adapt to a changing climate and support ecosystem resilience, but was not fully implemented due to withdrawal of funding early in the implementation phase. This is limited since the cessation of the CCAP. ● The SELTMP engages with stakeholders and monitors human use of and dependency on the GBR, human and community well-being (as they relate to the GBR), as well as a range of socio-cultural drivers such as perceptions, values, attitudes and behaviours. ● For the marine aquarium industry, this is through their peak body (Pro-vision Reef) Stewardship Action Plan - which articulates climate change response strategies and stewardship activities. This included a self-imposed moratorium on coral collection in areas heavily impacted by bleaching in 2016. 	<ul style="list-style-type: none"> ● Workshops and stakeholder interviews ● Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 ● The Social and Economic Long Term Monitoring Program (SELTMP) 2014 Commercial Fishing in the Great Barrier Reef ● Marine Aquarium Collectors Reef Stewardship Action Plan ● Eye on the Reef: http://www.gbrmpa.gov.au/about-the-reef/how-the-reefs-managed/our-monitoring-and-assessment-programs/eye-on-the-reef ● GBRMPA Pre-summer workshop ● Reef 2050 Water Quality Improvement Plan 2017-2022 ● Q-CAS Partners 	adequate	declining

		<ul style="list-style-type: none"> • Eye on the Reef Program: GBRMPA, in conjunction with the QPWS, run the Eye on the Reef Program, an umbrella project which includes several monitoring and assessment methods. The Eye on the Reef Program provides status snapshots and early warning information on water quality, the presence of protected and iconic species and the health of the Reef. This information is gathered in partnership with a range of stakeholders, such as Marine Park rangers, tourism operators, reef visitors, fishers and the broader community. • GBRMPA holds annual pre-summer workshops to bring together key researchers and stakeholders to discuss the outlook for the summer, especially around bleaching risk etc. 			
PR2 The local community is effectively engaged in the ongoing management of climate change	2	<ul style="list-style-type: none"> • Engagement has been limited since the cessation of the CCAP and loss of staff in the climate change section of GBRMPA • Reef Guardian schools program highlights impact of climate change. There are 297 schools involved in Reef Guardian Schools • Other Reef Guardian programs have been less active and not made substantial progress (e.g. 24 fishers, 29 farmers and graziers) • Local government participates widely in Reef Guardians but some Councils report that their involvement makes limited difference on the ground. Limited resources flow to Councils to assist them to meet responsibilities under Reef 2050 and in general in relation to the GBR 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 	limited	declining
PR3 There is a sound governance system in place to address climate change	2	<ul style="list-style-type: none"> • A number of studies highlight the impacts of governance changes and their impact on capacity and effectiveness of Reef Management, especially in relation to climate change (Morrison, 2017) • Dale et al. (2016) found that three primary governance failures present significant risks for GBR outcomes: <ul style="list-style-type: none"> ○ Internal governance challenges to Long-term sustainability plan 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 • Morrison (2017) Evolving polycentric governance of the Great Barrier Reef, PNAS, www.pnas.org/cgi/doi/10.1073/pnas.1620830114 • Dale et al. (2016) Risk analysis of the governance system affecting outcomes in the Great Barrier Reef. 	adequate	declining

		<ul style="list-style-type: none"> ○ Implementation failure in relation to water quality ○ Failure of long term sustainability plan to address greenhouse gas emissions ● Concern expressed by many stakeholders that DOEE-centric policy concerns have dominated policy development and reduced more reef-centric voices and impacts on policies and programs to address climate change impacts on the GBR. ● Reef 2050 does not explicitly consider or address climate change risks or provide clear guidance on how to mitigate them. ● The governance of climate change risks within GBRMPA has been depleted since the cessation of CCAP. ● Governance arrangements for the Queensland Climate Change Response include the Queensland Climate Advisory Council, The Climate Interdepartmental Committee and the Q-CAS Partners group. 	<p><i>Journal of Environmental Management</i> 183 (2016) 712e721</p>		
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for climate change	2	<ul style="list-style-type: none"> ● Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded in 2014 and staff allocated to specifically address climate change have reduced to zero. This has impacted on GBRMPAs capacity and focus on this issue and has meant that the actions and their effectiveness in addressing CC risks to the Reef has diminished across the GBRMPA. ● Climate change is not explicitly considered in Reef 2050 plan. Hence the RIMREP and other performance monitoring around Reef 2050 do not currently address climate change explicitly ● Other more general monitoring processes exist at State and Commonwealth level around climate change mitigation and adaptation ● A comprehensive monitoring, evaluation and reporting framework for the Queensland Climate Change Response is in development. 	<ul style="list-style-type: none"> ● Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 ● See GBRMPA Corporate Plan 2017-18 ● Final report: 2016 coral bleaching event on the Great Barrier Reef ● 2017 coral bleaching event on the Great Barrier Reef ● AIMS Long-term Reef Monitoring Program-Annual summary report on coral reef condition for 2016/17 (AIMS update 2017) ● Integrated Eye on the Reef program 	adequate	stable

		<ul style="list-style-type: none"> In partnership with research agencies and researchers, there is monitoring of impacts of climate change on some aspects of the GBR (extent of bleaching) but many biological and socio-economic aspects are not monitored or reported in a timely way 			
PR5 Appropriate training is available to the managing agencies to address climate change	2	<ul style="list-style-type: none"> Eye on the Reef training program in place (face to face plus online materials) as a tool to consistently detect impacts to the Reef Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded in 2014 and staff allocated to specifically address climate change have reduced to zero. This has impacted on GBRMPAs capacity and focus on this issue and has meant that the actions and their effectiveness in addressing CC risks to the Reef has diminished across the GBRMPA. Capacity for informal training and awareness raising would have therefore diminished Some stakeholders report that management agency staff are missing from key research planning meetings regarding climate change impacts and responses 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Queensland Climate Adaptation Strategy 2017-2030 	limited	declining
PR6 Management of climate change is consistently implemented across the relevant jurisdictions	2	<ul style="list-style-type: none"> The management of climate change has varied as government priorities have changed at State and Federal level Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded in 2014 and staff allocated to specifically address climate change have reduced to zero. This has impacted on GBRMPAs capacity and focus on this issue and has meant that the actions and their effectiveness in addressing CC risks to the Reef has diminished across the GBRMPA. Climate change is not explicitly considered in Reef 2050 plan which is currently directing much of the response of governments to management of the GBR 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 Reef 2050 plan 	adequate	declining
PR7 There are effective processes applied to resolve differing views/ conflicts regarding climate change	2	<ul style="list-style-type: none"> Lack of clear policy and programs at national level make this difficult to assess 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Senate Enquiry (2017) In hot water: the impacts of climate change on marine fisheries and biodiversity 	limited	declining

		<ul style="list-style-type: none"> Nationally, government attention addressing climate change has declined as focus has shifted to energy security and affordability Climate policy and resultant mitigation and adaptation programs remain in a state of flux at national level as is clear in the report of the Senate Enquiry on impacts of climate change on marine fisheries and biodiversity (Australian Senate, 2017) Considerable disagreement politically and in community concerning Australia's efforts to address climate change Processes to manage the issue within a Reef context are likely to be overwhelmed by risks that fall outside these processes (Dale et al, 2016) "Greenhouse Gas Emission Management: This subdomain is significant in that there is currently no assurance that the unfolding global approach to managing emissions will sufficiently curb global temperature rises and ocean acidification to levels that will prevent continuing declines in the ecological health of the GBR, regardless of other initiatives" 	<ul style="list-style-type: none"> "Australia's greenhouse gas emissions soar in latest figures" - https://www.theguardian.com/australia-news/2017/aug/04/australias-greenhouse-gas-emissions-soar-in-latest-figures Dale et al. (2016) Risk analysis of the governance system affecting outcomes in the Great Barrier Reef. <i>Journal of Environmental Management</i> 183 (2016) 712e721 		
PR8 Impacts (direct, indirect and cumulative) of activities associated with climate change are appropriately considered.	2	<ul style="list-style-type: none"> Climate change is recognised as the most significant risk to the GBR and direct impacts are monitored by management and research agencies and others Extent to which climate change impacts (both direct and indirect) are "appropriately considered" is debateable. They are not considered explicitly in the Reef 2050 plan and the Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 has been defunded and staff devoted to addressing this issue have been reduced to zero – all impacting on capacity to consider climate change in decisions and actions. Federal Government policy on climate change is heavily contested with many scientists and others concerned that current national climate policy is inadequate (Mackenzie, 2018, Kumarasiri, 2016, Downie and Bamsey, 2016) and hence not appropriately considered in decision making 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 Final report: 2016 coral bleaching event on the Great Barrier Reef 2017 coral bleaching event on the Great Barrier Reef AIMS Long-term Reef Monitoring Program-Annual summary report on coral reef condition for 2016/17 (AIMS update 2017) Integrated Eye on the Reef program MacKenzie, I (2018) Australia's Emissions Reduction Fund is almost empty. It shouldn't be refilled <i>The Conversation</i> 26th Feb 2018 https://theconversation.com/australias-emissions-reduction-fund-is-almost-empty-it-shouldnt-be-refilled-92283 	adequate	declining

		<ul style="list-style-type: none"> Cumulative impacts assessment is attempted through EIA processes, but is still done on a case by case basis (i.e. as applications are received) - otherwise are not generally well considered 	<ul style="list-style-type: none"> Kumarasiri, J (2016) Policy uncertainty continues to hamper carbon emissions management. The Conversation 14 November 2016 https://theconversation.com/policy-uncertainty-continues-to-hamper-carbon-emissions-management-68565 Dwney, C and Bamsey, H (2016) Election 2016: do we need to re-establish a department of climate change? The Conversation 23 May, 2016. https://theconversation.com/election-2016-do-we-need-to-re-establish-a-department-of-climate-change-59679 		
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding climate change	3	<ul style="list-style-type: none"> BoM, CSIRO and NOAA provide a range of relevant climate information Information from ReefTemp and NOAA Coral Reef Watch is used to inform the annual planning Considerable research from research institutions and researchers but mostly focussed on coral The Blueprint for Resilience was developed in response to the declining condition of the Reef including from bleaching. High-resolution climate datasets for Queensland are publicly available via the Terrestrial Ecosystem Research Network (TERN) portal. Loss of climate change specialist staff in GBRMPA has diminished capacity to take account of relevant information in decision making 	<ul style="list-style-type: none"> Workshops and stakeholder interviews ReefTemp project NOAA Coral Reef Watch Great Barrier Reef Blueprint for Resilience High Resolution Climate Change Projection Data for Queensland 	adequate	stable
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding climate change	2	<ul style="list-style-type: none"> In 2017 GBRMPA commissioned a socio-economic long-term monitoring program (SELTMP) to collect and interpret socio-economic data Loss of climate change specialist staff in GBRMPA has diminished capacity to take account of relevant information in decision making 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Marshall, N.A., Bohensky, E., Curnock, M., Goldberg, J., Gooch, M., Pert, P.L., Scherl, L., Stone-Jovicich, S., Tobin, R.C. (2013) A Social and Economic Long Term Monitoring Program for the Great Barrier Reef. Key Findings 2013. Report to the National 	limited	stable

		<ul style="list-style-type: none"> Back-to-back bleaching events are likely to have had significant impacts on social and economic factors but are less researched than biophysical aspects 	Environmental Research Program. Reef and Rainforest Research Centre Limited, Cairns		
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding climate change	2	<ul style="list-style-type: none"> Limited TOs involved in coral bleaching reporting in the Far Northern GBR during the 2016 mass bleaching event Raine Island CC adaptation has very high engagement and information sharing with Traditional Owners. Wuthathi TUMRA CC considerations. Extent to which 'traditional knowledge' was drawn on in this not clear. Some traditional knowledge used in development of TUMRA's and QDPIF work 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Reef 2050 Long Term Sustainability Plan: Indigenous Implementation Plan 	limited	stable
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding climate change	2	<ul style="list-style-type: none"> Knowledge of many historic places or events is limited Information on the current condition is virtually unknown 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	limited	stable
PR13 Relevant standards are identified and being met regarding climate change	1	<ul style="list-style-type: none"> Climate change is not considered in Reef 2050 plan Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded in 2014 GBRMPA Corporate plan targets relating to Climate change are more about identification and planning (i.e a position statement) rather than explicit standards in relation to climate change mitigation or adaptation Many stakeholders have expressed view that management agencies, especially GBRMPA have withdrawn significantly from work on this topic Tourism eco-certification includes a CC mitigation component 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 GBRMPA Corporate Plan 2017-18 Reef 2050 Plan https://www.ecotourism.org.au/our-certification-programs/eco-certification-3/ 	adequate	declining
PR14 Targets have been established to benchmark management performance for climate change	1	<ul style="list-style-type: none"> Nationally greenhouse gas emissions continue to rise (Belot, 2017) with considerable contention around whether Australia will meet its emissions targets under the Paris Agreement Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded in 2014 Reef 2050 plan does not set objectives and targets relating to climate change 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Belot (2017) Australia's greenhouse gas emissions increase for third consecutive year http://www.abc.net.au/news/2017-12-19/greenhouse-gas-emissions-increase-third-consecutive-year/9271176 	adequate	declining

OUTPUTS					
<p>OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for climate change</p>	1	<ul style="list-style-type: none"> • The Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded early in the implementation phase and as a result many targets were not met. • GBRMPA staff focussed on climate change reduced to zero • Reef 2050 plan does not set objectives and targets relating to climate change • Many stakeholders have expressed view that management agencies, especially GBRMPA have withdrawn significantly from work on this topic 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews 	adequate	declining
<p>OP2 Implementation of management documents and/or programs relevant to climate change have progressed in accordance with timeframes specified in those documents</p>	1	<ul style="list-style-type: none"> • The Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 was defunded early in the implementation phase and as a result many targets were not met. • GBRMPA staff focussed on climate change reduced to zero • The approach by the Authority going forward is to integrate climate change-related actions into corporate and operational plans. • Reef 2050 plan does not set objectives and targets relating to climate change • Resilience work is progressing under other plans including Reef 2050 Plan and the Joint Field management Program (Raine Island project, COTS surveillance). 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 	adequate	declining
<p>OP3 The results (in OP1 above) have achieved their stated management objectives for climate change</p>	1	<ul style="list-style-type: none"> • Climate change remains the principal threat to the GBR • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 objectives of reducing climate risk and building resilience have not been achieved – risk has increased and resilience declined • While ultimately the fate of the world's reef will be determined by the global community's actions to reduce greenhouse gas emissions, the future for coral reefs is 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 	adequate	declining

		<p>also dependent upon actions to enhance the resilience of coral reefs.</p> <ul style="list-style-type: none"> • Current condition of GBR is poor and continues to decline 			
OP4 To date, products or services have been produced in accordance with the stated management objectives for climate change	2	<ul style="list-style-type: none"> • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 objectives of reducing climate risk and building resilience have not been achieved – risk has increased and resilience declined • Reef Health Impact Surveys (RHIS) conducted by GBRMPA staff, stakeholders and the Joint Field management Program. In 2015-16 the Joint Field management Program conducted 1982 RHIS Surveys across 183 reefs, including 655 RHIS assessments associated with crown-of-thorns starfish (COTS) response and 561 associated with 2016 coral bleaching response and response plans. In 14-15, 1,392 RHIS assessments were conducted. • The Crown-of-thorns control program eventuated out of the CCAP and is extending its capability through increased funding • Drafted Reef Health impact summary report: 2016-2017 cumulative impacts has not been released. This limits the capacity of the GBRMPA to understand coral reef condition, report through Outlook and guide management actions. 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 	limited	declining
OP5 Effective knowledge management systems regarding climate change are in place within agencies	2	<ul style="list-style-type: none"> • Progress and new initiatives have regressed since the cessation of the CCAP and team. • Reef 2050 Integrated Monitoring and Reporting Program is expected to meet some of this need, however this is inadequately resourced and has been very slow to become operational 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 	limited	declining
OP6 Effective systems are in place to share knowledge on climate change with the community	2	<ul style="list-style-type: none"> • LMAC/RAC updates on coral bleaching events • GBRMPA media releases, web pages, reports on mass coral bleaching • Reef 2050 Integrated Monitoring and Reporting Program is expected to meet some of this need, however this is 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • GBRMPA website 	Limited	declining

		<p>inadequately resourced and has been very slow to become operational</p> <ul style="list-style-type: none"> 2017 GBRMPA report on coral bleaching and on impacts of Cyclone Debbie are yet to be released 			
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing climate change and moving towards the attainment of the desired outcomes.	1	<ul style="list-style-type: none"> Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 objectives of reducing climate risk and building resilience have not been achieved – risk has increased and resilience declined Governmental focus on climate change risks and adaptation shifted to strengthening ecosystem resilience. This does not proactively adequately address the risks posed by climate change to the Reef. Nationally greenhouse gas emissions continue to rise (Belot, 2017) with considerable contention around whether Australia will meet its emissions targets under the Paris Agreement Dale et al (2016) conclude that potential governance failures relating to climate change heighten the risk of catastrophic impact on the Reef 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Belot (2017) Australia's greenhouse gas emissions increase for third consecutive year http://www.abc.net.au/news/2017-12-19/greenhouse-gas-emissions-increase-third-consecutive-year/9271176 Dale et al. (2016) Risk analysis of the governance system affecting outcomes in the Great Barrier Reef. Journal of Environmental Management 183 (2016) 712e721 	limited	declining
OC2 The outputs relating to climate change are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	1	<ul style="list-style-type: none"> Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 defunded and actions have not proceeded Nationally greenhouse gas emissions continue to rise (Belot, 2017) with considerable contention around whether Australia will meet its emissions targets under the Paris Agreement Back-to-back bleaching events have impacted on values across almost the entire extent of the Reef While progress has been made reducing local pressures, until global emissions start to decrease the major risk to the Great Barrier Reef ecosystem will continue to be climate change impacts. Under current scenarios these impacts are forecast become more frequent and severe and eclipse all other pressures affecting the GBRWHA 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Belot (2017) Australia's greenhouse gas emissions increase for third consecutive year http://www.abc.net.au/news/2017-12-19/greenhouse-gas-emissions-increase-third-consecutive-year/9271176 Hughes, T.P. and Kerry, J. 2017. Back-to-back bleaching has now hit two-thirds of the Great Barrier Reef, The Conversation April 12, 2017 	limited	declining

<p>OC3 the outputs (refer OP1 and 3) for climate change are reducing the major risks and the threats to the Great Barrier Reef</p>	<p>1</p>	<ul style="list-style-type: none"> • Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 objectives of reducing climate risk and building resilience have not been achieved – risk has increased and resilience declined • Governmental focus on climate change risks and adaptation shifted to strengthening ecosystem resilience. This does not proactively adequately address the risks posed by climate change to the Reef. • While actions to reduce pressures and build resilience remain crucial, environmental management efforts can only compensate for reduced coral reef resilience in the face of climate change to a limited extent and over a limited timeframe. 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Hughes, T.P. and Kerry, J. 2017. Back-to-back bleaching has now hit two-thirds of the Great Barrier Reef, The Conversation April 12, 2017 	<p>limited</p>	<p>declining</p>
<p>OC4 Use of the Great Barrier Reef relating to climate change is demonstrably environmentally sustainable</p>	<p>1</p>	<ul style="list-style-type: none"> • Back-to-back coral bleaching events • Continued frequency of cyclonic weather • Unknown impacts of bleaching on other species and ecosystems within the Reef • Evidence of climate change impacts on other coral reefs worldwide 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Hughes, T.P. and Kerry, J. 2017. Back-to-back bleaching has now hit two-thirds of the Great Barrier Reef, The Conversation April 12, 2017 • Hughes et al. (2017a) Global warming and recurrent mass bleaching of corals • Hughes et al. (2017b) coral reefs in the Anthropocene. 	<p>adequate</p>	<p>declining</p>
<p>OC5 Use of the Great Barrier Reef relating to climate change is demonstrably economically sustainable</p>	<p>1</p>	<ul style="list-style-type: none"> • Climate change impacts are already having an impact on fisheries and tourism • Continued frequent bleaching events across much of the reef will likely have major social and economic impacts in the region and for Australia 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Hughes, T.P. and Kerry, J. 2017. Back-to-back bleaching has now hit two-thirds of the Great Barrier Reef, The Conversation April 12, 2017 • Hughes et al. (2017a) Global warming and recurrent mass bleaching of corals • Hughes et al. (2017b) coral reefs in the Anthropocene. • Welch, D.J., Saunders, T., Robins, J., Harry, A., Johnson, J., Maynard, J., Saunders, R., Pecl, G., Sawynok, B. and Tobin, A., 2014. Implications of climate change impacts on fisheries resources of 	<p>limited</p>	<p>declining</p>

			<p>northern Australia. Part 1: Vulnerability assessment and adaptation options.</p> <ul style="list-style-type: none"> • Assessment of the ecological vulnerability of the East Coast Otter Trawl Fishery to climate change http://hdl.handle.net/11017/522 • Osborne, K., Thompson, A.A., Cheal, A.J., Emslie, M.J., Johns, K.A., Jonker, M.J., Logan, M., Miller, I.R. and Sweatman, H.P.A. (2017), Delayed coral recovery in a warming ocean, Global Change Biology doi: 10.1111/gcb.13707. 		
OC6 Use of the Great Barrier Reef relating to climate change is demonstrably socially sustainable understanding and/or enjoyment	N/A				
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address climate change	2	<ul style="list-style-type: none"> • Overall ability to engage has decreased since cessation of Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017 and the loss of staff in this area • GBRMPA Science Teaching Units (available online) specifically focus on this threat through multiple year levels. These education documents are available publically. • Annual events such as the Future Leaders Eco Challenge focus on this threat. • Reefbeat education series refers to this threat. • Reef Guardian Schools action plans specify projects in schools in relation to this threat. • Eye on the Reef 	<ul style="list-style-type: none"> • Online resources, reporting documents (Reef Guardians) • Reef beat education series • Reef Guardian Schools 	Limited	declining

Table 23 Calculation of grades for coastal development

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to coastal development are understood by managers	3	<ul style="list-style-type: none"> Values of the GBR relevant to coastal development are clearly articulated in the <i>Informing the Outlook for Great Barrier Reef coastal ecosystems</i> document, the Great Barrier Reef Strategic Assessment, and the Scientific Consensus Statement The coastal ecosystem position statement identifies significant environmental values and functions of coastal ecosystems The Reef Water Quality Improvement Plan and Healthy Waters Management Plans (HWMPs) specified in section 24 of the Environmental Protection (Water) Policy 2009 (EPP (Water)). The 2017 Scientific Consensus Statement summarises that poor water quality is continuing to have a detrimental effect on reef health. Chapter 4 assesses the likelihood of exposure to pollutant pressures on floodplains and wetlands Storymaps by wetlands program and NRM groups tell the story of how smaller catchments work Assessments and prioritisations for waterway barrier removal have been done for many areas for barrier removal including in the Burdekin and Mackay Whitsunday 	<ul style="list-style-type: none"> Draft Reef 2050 WQIP Report Cards 2017 Scientific Consensus Statement Reef 2050 Water Quality Improvement Plan Draft Coastal Ecosystem – position statement public consultation Storymaps by wetlands program and NRM groups tell the story of how smaller catchments work <i>Informing the Outlook for Great Barrier Reef coastal ecosystems</i> 	Adequate	Stable
CO2 The current condition and trend of values relevant to coastal development are known by managers	3	<ul style="list-style-type: none"> The <i>Informing the Outlook for Great Barrier Reef coastal ecosystems</i> is a technical report on the current status of the catchment and the threats it faces. The Scientific Consensus statement also looks at the trends of values associated with coastal ecosystems The Report cards provides data on condition and trend of wetlands The SLATS report provides data on the rates of clearing. 	<ul style="list-style-type: none"> Draft Reef 2050 WQIP Report Cards 2017 Scientific Consensus Statement Reef Water Quality Improvement Plan Queensland Department of Science, Information Technology and Innovation. 2017. Land cover change in Queensland 2015–16: a Statewide Landcover and Trees Study (SLATS) report. DSITI, Brisbane. 	Adequate	Improving
CO3 Impacts (direct, indirect and cumulative) associated with coastal development are understood by managers.	3	<ul style="list-style-type: none"> Cumulative impacts are not well understood, but are considered in depth in the <i>Informing the Outlook for Great Barrier Reef coastal ecosystems</i> document Vulnerability assessments have also been developed for at-risk coastal ecosystems to identify priority areas and ways to reduce threats. 	<ul style="list-style-type: none"> The Coastal Ecosystems Assessment Framework http://www.gbrmpa.gov.au/__data/assets/pdf_file/0003/28254/Coastal-Ecosystems-Assessment-Framework.pdf <i>Informing the Outlook for Great Barrier Reef coastal ecosystems</i> 	Adequate	improving

		<ul style="list-style-type: none"> The coastal ecosystem position statement outlines the impacts coastal development has had on coastal ecosystems and provides guidelines for managing and restoring them. The 2017 Scientific Consensus Statement is a synthesis of current knowledge pertaining to the water quality issues (including coastal development) in the Great Barrier Reef to inform a common understanding amongst managers of key ecosystems, associated values, condition, risks and status of efforts to protect values impacted by water quality. 			
CO4 The broader (national and international) level influences relevant to coastal development are understood by managers.	4	<ul style="list-style-type: none"> The State Party report to World Heritage Committee reflects thorough understanding of national and international influences There are a range of conventions, partnerships, agreements, legislation and strategies that relate to the protection and management of waterbirds and their habitats, such as Bonn, JAMBA, CAMBA., RAMSAR 	<ul style="list-style-type: none"> The State Party report to World Heritage Committee http://www.environment.gov.au/system/files/resources/dc76d91a-938d-4b4a-86d7-78bdc90f3a41/files/gbr-state-party-report-2014-hi.pdf Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment http://www.austlii.edu.au/au/other/dfat/treaties/1981/6.html Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment http://www.environment.gov.au/water/wetlands/ramsar Convention on the Conservation of Migratory Species of Wild Animals 	Adequate	Stable
CO5 The stakeholders relevant to coastal development are well known by managers.	4	<ul style="list-style-type: none"> The Reef 2050 Advisory Committee meets regularly to provide strategic advice on the implementation of Reef 2050 actions, stakeholder priorities, and highlight any emerging cross sectoral issues that need to be addressed. Local Marine Advisory Committees provide contact with stakeholder groups at regional level Extensive ongoing engagement with industry (fisheries, defence, tourism, etc) Reef Guardian Schools Reef Check 	<ul style="list-style-type: none"> Reef 2050 Advisory Committee Reef Advisory Committees Local Marine Advisory Committees Reef Guardians Our partners Reef 2050 Integrated Monitoring and Reporting Program Coastal management plans and strategies Draft Coastal Ecosystem – position statement public consultation 	Adequate	Stable

		<ul style="list-style-type: none"> • Seagrass watch • Regional Offices (GBRMPA CPG) • GBR Ministerial Council • Local government 	<ul style="list-style-type: none"> • GBR NRM groups • Burnett Mary Regional Group • Cape York NRM • Fitzroy Basin Association • NQ Dry Tropics • Reef Catchments (Mackay Whitsunday Isaac) • Terrain NRM 		
PLANNING					
PL1 There is a planning system in place that effectively addresses coastal development	3	<ul style="list-style-type: none"> • Since 2014, a number of local governments in the Region have drafted and adopted new planning schemes. • The <i>Planning Act 2016</i> (Qld) sets a statutory policy framework for land-based development in the GBR catchment. • The adopted planning reform package included a review of the State Planning Policy July 2017 (SPP) and State development assessment provisions (SDAP). GBRMPA were part of the industry review team providing meaningful input to the reform. • SDAP are statutory State codes. It is noted since 2014, the State Planning Regulatory Provisions (SPRP) have been superseded by the SDAP or incorporated into the Planning Regulations 2016. Relevant SDAP to coastal development management include State Code 8 Coastal Development and tidal works State Code 7 Maritime Safety and State Code 12 Development in a declared fish habitat area. • The Qld planning department has an extensive suite of State codes aimed at controlling coastal development. Implementation from an environmental best practice point of you is on a case by case basis. DILGP v2.1 link to SDAP Codes: <ul style="list-style-type: none"> ○ 9 - Great Barrier Reef wetland protection areas. ○ Aquaculture state code ○ Constructing or raising waterway barrier works in fish habitats state code ○ Development in a declared fish habitat area state code 	<ul style="list-style-type: none"> • State Development Assessment Provisions version 2.1 (effective 11 August 2017) • Guideline: State Development Assessment Provisions, State Code 12: Development in a declared fish habitat area • Wetlands in the GBR catchments, Management Strategy 2016-21 • <i>Planning Act 2016</i> (Qld) 	Adequate	Improving

		<ul style="list-style-type: none"> ○ Particular development on strategic cropping land state code ○ Queensland vegetation management state code ○ Queensland vegetation management state code ○ Referrable dams state code ○ Removal, destruction or damage of marine plants state code ○ Stormwater and drainage impacts on state transport infrastructure state code ○ Tidal works, or development in the coastal management district state code ○ Wetland protection area state code ● The State Planning Policy July 2017 (SPP) commenced on 3 July 2017 and replaces State Planning Policy April 2016. The SPP is applied only to regional planning or local government planning scheme making, and in the main not relevant to individual development applications. ● Many of the planning schemes in the GBR coastline comply with the State Planning policy in that they include coastal management overlays and codes. In addition, the State assesses coastal development in a declared Coastal Management District as a concurrence agency, considering the impact of development on coastal environment and coastal processes. ● Six regional planning areas under the Planning Act affect the Region, of which only the North Queensland region has not adopted a regional plan. The North Queensland regional plan is anticipated to be publically advertised by the end of 2017. No major revisions have been made or are proposed for the other regional plans. ● The <i>Wetlands in the Great Barrier Reef Catchments Management Strategy 2016-2021</i> outlines an integrated approach to catchment and coastal environment management that considers the multiple values of wetlands and the role they play in ecosystem health of the World Heritage Area. ● The Reef 2050 Plan includes a number of actions that are relevant to coastal development. 			
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<p>PL2 The planning system for coastal development addresses the major factors influencing the Great Barrier Reef Region's values.</p>	<p>3</p>	<ul style="list-style-type: none"> • The State Planning Policy July 2017 (SPP) commenced on 3 July 2017 and replaces State Planning Policy April 2016. The SPP is applied only to regional planning or local government planning scheme making, and in the main not relevant to individual development applications. This includes fisheries species protection • The Coastal Ecosystems position statement prioritises areas for protection and restoration to improve ecosystem services • The 2016 Reef 2050 Policy Guideline for Decision Makers is for all government, community and industry decision makers who are updating or creating policies, plans, strategies, program or partnerships that affect the Great Barrier Reef. The purpose of the Guideline is to provide assistance to these decision makers to understand the Reef 2050 Plan and consider its targets and objectives in their decisions. 	<ul style="list-style-type: none"> • State Planning Policy July 2017 • Planning Act 2016 (Qld) • Reef 2050 Long-Term Sustainability Plan • Draft Coastal Ecosystem – position statement public consultation • Reef 2050 Policy Guideline for Decision Makers • Wetlands in the GBR catchments, Management Strategy 2016-21 	<p>Adequate</p>	<p>Improving</p>
<p>PL3 Actions for implementation regarding coastal development are clearly identified within the plan</p>	<p>3</p>	<ul style="list-style-type: none"> • The State Planning policy clearly identifies actions for implementation regarding coastal development. • State development area development schemes do not clearly identify actions for implementation but plan for management of impacts and have assessment processes in place that manage impacts that arise from coastal development. Pursuant to the <i>State Development and Public Works Organisation Act 1971</i> (Qld) declared state development area establishes a framework of compliance and management in accordance with conditions of approval. • Coastal Ecosystems Assessment Framework defines each coastal ecosystem and document the vulnerabilities to known pressures identify present management tools and appropriate and practical management actions that could be taken to mitigate risk and enhance coastal ecosystem resilience • Reef 2050 Plan – presents actions to protect the values, health and resilience, while allowing ecological sustainable use. • Coastal ecosystems position statement outlines specific principles and actions that protect, restore and manage functions of coastal ecosystems 	<ul style="list-style-type: none"> • State Progress report on government election commitments 2016-2017 • Reef 2050 Long-Term Sustainability Plan • Informing the Outlook for Great Barrier Reef coastal ecosystems • State Planning Policy July 2017 • Reef 2050 Long-Term Sustainability Plan • Draft Coastal Ecosystem – position statement public consultation • Wetlands in the GBR catchments, Management Strategy 2016-21 • Draft Reef 2050 Water Quality Improvement Plan 2017-2022 	<p>Adequate</p>	<p>Improving</p>

		<ul style="list-style-type: none"> The Wetlands in the Great Barrier Reef Catchments Management Strategy 2016-2021 identifies actions and assist in decision making, on-ground activities and monitoring and evaluation 			
PL4 Clear, measurable and appropriate objectives for management of coastal development have been documented	3	<ul style="list-style-type: none"> Through the Reef 2050 Plan and the GBR Coastal Zone Strategic Assessment the QLD government committed to ensuring the development in the GBR coastal zones occurs in an ecologically sustainable manner and that negative impacts are avoided. Reef 2050 outlines a number of clear, measurable and appropriate objectives. Qld Environment Protection (Water) Policy provides environmental values and water quality objectives for Queensland waters to guide development and decision making. The State Planning Policy and its associated SDAPs outline objectives for sustainable development and protection of coastal ecosystems 	<ul style="list-style-type: none"> Reef 2050 Long-Term Sustainability Plan Great Barrier Reef Coastal Zone Strategic Assessment 2014 Reef 2050 WQIP Informing the Outlook for Great Barrier Reef coastal ecosystems Environmental Protection Policy (Water) State Planning Policy July 2017 	Adequate	Improving
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to coastal development	3	<ul style="list-style-type: none"> Paddock to Reef integrated monitoring and reporting program provides regular assessments of changes in paddocks and catchment water quality. Regional ecosystem, essential habitat and wetland mapping is regularly reviewed and updated, which is used to measure the change in extent of these environmental values Reef 2050 Plan has a regular reporting program in place 	<ul style="list-style-type: none"> Paddock to Reef Integrated Monitoring and Reporting program Reef 2050 Plan reporting 	Adequate	Improving
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address coastal development	3	<ul style="list-style-type: none"> Protection and management of the Great Barrier Reef is a partnership between many government agencies, stakeholders and community members, with activities both on the water and in the catchment. GBRMPA works with local governments through the Reef Guardian Councils to effectively manage Great Barrier Reef coastal ecosystems. Primary audience of the coastal ecosystem position statement is natural resource managers, decision makers (Commonwealth, Queensland and local governments). Secondary audience is Traditional Owners, private and public industry, landholders and land managers, research and educational institutions and members of the community. 	<ul style="list-style-type: none"> Reef Guardians Reef 2050 WQIP Reef 2050 Integrated Monitoring and Reporting Program Register of management arrangements Draft Coastal Ecosystem – position statement public consultation 	Adequate	Stable

		<ul style="list-style-type: none"> RIMREP have established a number of expert working groups under the program design. These groups are working to understand the links between environmental drivers, external impacts. Stakeholders involved in these groups include GBRF, BOM, CSIRO, research institutions, universities, GBRMPA. Internal document can be provided. 			
PL7 Sufficient policy currently exists to effectively address coastal development	3	<ul style="list-style-type: none"> Queensland's State Planning Policy has a wide range of planning and development policies that have statutory support under SPA that aim to minimise impacts on the natural environment in the GBR coastal zone region. GBRMPA also has a number of policies and draft policies that address coastal development. 	<ul style="list-style-type: none"> Cumulative impact management policy: Draft for public consultation, GBRMPA, Townsville. State Planning Policy July 2017 Reef 2050 Long-Term Sustainability Plan Draft Coastal Ecosystem – position statement public consultation Wetlands in the GBR catchments, Management Strategy 2016-21 Draft Reef 2050 Water Quality Improvement Plan 2017-2022 	Adequate	Improving
PL8 There is consistency across jurisdictions when planning for coastal development	3	<ul style="list-style-type: none"> Poor linkage between major programs (e.g. Queensland Wetland Program) and key management agencies (e.g. Department of Mining and Energy, Department of Tourism, Regional Development and Industry) exists. Jurisdictional limitation across territories creates a complexity and add to potential uncertainty of minimising impacts to the Reef. Great Barrier Reef Intergovernmental Agreement 2009, signed by the Prime Minister and Queensland Premier (June 2009), provides a framework for the Australian and Queensland governments to work together to protect the Great Barrier Reef. The MOU is currently under review and is anticipated to be settled by mid-2018. Australian and Queensland governments development outcome policies aligned, significant impacts to be avoided, or minimised and offset 	<ul style="list-style-type: none"> GBRMPA and Qld Government workshops and discussions 	Adequate	Improving
PL9 Plans relevant to coastal development provide certainty regarding where uses may occur, the type of	3	<ul style="list-style-type: none"> State Development and Public Works Organisation Act 1971 (Qld) – State development area development schemes provide guidance (through maps) and supporting text about suitable 	<ul style="list-style-type: none"> <i>State Development and Public Works Organisation Act 1971 (Qld)</i> 	Adequate	Improving

activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.		<p>locations for different activities and policies to support their assessment. Prohibited development is prescribed.</p> <ul style="list-style-type: none"> • Planning Act – governs coastal development in accordance with the SPP. Coastal hazard areas that are considered not appropriate for development are incorporated into local government planning schemes via overlays. Prohibited development is generally not prescribed planning schemes; applications are assessed on merit at discretion of assessment managers. Assessment of appropriate uses is often coupled with ecological assessments given the sensitive nature of coastal and tidal areas. 	<ul style="list-style-type: none"> • <i>Planning Act 2016 (Qld)</i> 		
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address coastal development	3	<ul style="list-style-type: none"> • Queensland has the primary legislative responsibility for management of coastal ecosystems. • Resources have been reallocated within the Agency based on the fact that: GBRMPA now has a position statement on coastal ecosystems (public consultation); BlueMaps has been adopted and operationalised by the Qld Govt through Qspatial and Aquatic Biodiversity Assessment Mapping Method • Queensland Government has committed to \$12 million investment partnership delivered by the Local Government Association of Queensland (LGAQ), providing funding, tools and technical support to enable coastal local governments, including Reef councils, to develop adaptation strategies to address climate change related coastal hazard risks over the long-term 	<ul style="list-style-type: none"> • http://www.qcoast2100.com.au/ • Workshop discussions 	Adequate	Stable
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address coastal development	3	<ul style="list-style-type: none"> • Qld Government reports it has limited but adequate resources to address coastal development. • Local Government has responsibility in many areas, and is resourced to address planning issues • Current resource levels in the GBRMPA Environment Assessment and Protection area and planning in the Agency are limited when address the increase in coastal development/marine development and changes to the EBPC/GBRMP/Coastal Planning (i.e. more high level 	<ul style="list-style-type: none"> • Workshop discussions • GBRMPA Annual Operating Plan 2017-2018 	Adequate	Stable

		assessments have arisen for GBRMPA (since 2009) with the GBRMP being made a matter of NES).			
IN3 The right skill sets and expertise are currently available to the managing organisations to address coastal development	3	<ul style="list-style-type: none"> Qld government has good knowledge and expertise in coastal erosion and wetland management 	<ul style="list-style-type: none"> Workshop discussions 	Adequate	Stable
IN4 The necessary biophysical information is currently available to address coastal development	3	<ul style="list-style-type: none"> The Strategic Assessments, Scientific Consensus Statement 2017, Outlook Report 09, 14, vulnerability assessments, basin assessments, informing the Outlook for the GBR Coastal ecosystems, have all complied latest information and made it accessible to managers. Mapping of terrestrial habitats exists and regional ecosystem and wetlands data is of high reliability. Groundwater Dependant Ecosystem conceptual models and interactive mapping has been completed for large parts of the catchment Walking the landscape processes have been run with GBRMPA, EHP and NRM groups to understand the influence of geology and land use on hydrological flows and prioritisation of actions in line with the Queensland Wetlands Strategy are being developed by many NRM groups Paddock to Reef program is dedicated to monitoring catchment loads, paddock monitoring and modelling, marine monitoring, wetlands and ground cover and provides an opportunity for adaptive management. 	<ul style="list-style-type: none"> 2017 Scientific Consensus Statement Chapter 4 of the Consensus Statement considers management of the risks Great Barrier Reef Strategic Assessment Report, Great Barrier Reef Coastal Zone Strategic Assessment 2014 Coastal Ecosystem – position statement Walthm and Sheaves, Expanding coastal urban and industrial seascape in the Great Barrier Reef World Heritage Area: Critical need for coordinated planning and policy, Marine Policy Wetlandinfo and NRM group catchment story maps https://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/processes-systems/water/catchment-stories/ Groundwater Dependant Ecosystems conceptual models https://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/aquatic-ecosystems-natural/groundwater-dependent/ 	Adequate	Improving
IN5 The necessary socio-economic information is currently available to address coastal development	3	<ul style="list-style-type: none"> Government Statistician, Queensland Treasury and Trade, provides population, projections and other demographic and socio-economic data over time for regional areas of Queensland, enabling measurement of socio-economic implications of coastal development. SELTMP 2014 Coastal Communities report depicts the current state of coastal community characteristics and relationships with the GBR, and drivers of change. 	<ul style="list-style-type: none"> Bohensky, E., Marshall, N., Currnock, M., Gillet, S., Goldberg, J., Gooch, M., Pert, P., Scherl, L., Stone-Jovicich, S., Tobin, R. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2013, Coastal Communities in the Great Barrier Reef. Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited, Cairns (35pp.). 	Adequate	Improving
IN6 The necessary Indigenous heritage	2	<ul style="list-style-type: none"> Coastal planning processes have included engagement with Traditional Owners 	<ul style="list-style-type: none"> Workshop discussions 	Adequate	Improving

information is currently available to address coastal development					
IN7 The necessary historic heritage information is currently available to address coastal development	3	<ul style="list-style-type: none"> Coastal planning takes historic heritage into consideration 	<ul style="list-style-type: none"> Workshop discussion 	Adequate	Stable
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address coastal development	3	<ul style="list-style-type: none"> There are a number of volunteer organisations that input in various ways to address coastal development. These include: <ul style="list-style-type: none"> Landcare Australia Conservation Volunteers Australia Seagrass Watch Wildlife Preservation Society of Queensland Coastcare Queensland Conservation Council Queensland Water and Land Carers Greening Australia Sunfish Clean Up Australia Day Reef Guardian Program includes schools, councils, farmers and fishers. There are mechanisms into planning legislation (i.e. EPBC Act and State legislation) which allows third parties intervention i.e. Adani and Australian Conservation Society 	<ul style="list-style-type: none"> GBRMPA webpage Join a community organisation includes several links: <ul style="list-style-type: none"> ReefCheck Australia Landcare Australia Conservation Volunteers Australia Seagrass Watch Wildlife Preservation Society of Queensland Coastcare Queensland Conservation Council Queensland Water and Land Carers Greening Australia Sunfish Clean Up Australia Day Reef Guardian Program 	Adequate	Stable
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of coastal development	3	<ul style="list-style-type: none"> There is good engagement of stakeholders through Reef Guardian Famers, Schools and Councils, Qld Wetlands Program, Reef Advisory Committees, the Authority's regional offices, NRM bodies 	<ul style="list-style-type: none"> Australian Government Reef Trust IV – Gully and Stream Bank Erosion Control Program. regional natural resource management investment program Regional Natural Resource Management Investment Program progress report 2016 Grazing Best Management Practice Program Reef Guardian Program Qld Wetlands Program 	Adequate	Stable
PR2 The local community is effectively engaged in the	3	<ul style="list-style-type: none"> There are several WQIPs in place and local NRM regions and/or Council (in the Townsville urban example) have ongoing 	<ul style="list-style-type: none"> Water quality Improvement Plans (WQIPs) and Healthy Waters Management Plans (HWMPs) 	Adequate	Stable

ongoing management of coastal development		programs reporting to community and holding various forums for example, Major Integrated Projects	<ul style="list-style-type: none"> • Wet Tropics WQIP • FBA WQIP • Eastern Cape York Water Quality Improvement Plan • Townsville WQIP • Burdekin Dry Tropics WQIP 		
PR3 There is a sound governance system in place to address coastal development	3	<ul style="list-style-type: none"> • Reef 2050 WQIP and the Reef 2050 Plan provides an integrated approach to water quality improvement and has developed efficient institutional arrangements that will ensure actions are implemented in a timely and coordinated manner across agencies and programs • Governance of coastal development domain is highlighted as an issue by Dale et al 2006 	<ul style="list-style-type: none"> • Reef 2050 Plan and draft Reef 2050 WQIP • Dale et al, 2016 <i>Avoiding implementation failure in catchment landscapes: A case study in Governance of the GBR</i>, Environmental Management 	Adequate	improving
PR4 There is effective performance monitoring, including, regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for coastal development	3	<ul style="list-style-type: none"> • Reef 2050 WQIP and Reef 2050 Plan have clear water quality targets, and catchment and land management targets. Lead organisations are responsible for coordinating implementation and reporting progress to ensure actions are completed and milestones met. • State Land and Trees Report monitors the extent of vegetation clearing in GBR catchments 	<ul style="list-style-type: none"> • Reef 2050 Plan • Reef 2050 WQIP 	Adequate	Improving
PR5 Appropriate training is available to the managing agencies to address coastal development	3	<ul style="list-style-type: none"> • Although there is no specifically targeted program of training for staff, opportunities are available for staff to participate in general training as well as attending workshops, seminars and conferences related to land based run-off and coastal development in the GBR • There are training opportunities for water sensitive design and planning 	<ul style="list-style-type: none"> • Workshop discussions 	Adequate	Stable
PR6 Management of coastal development is consistently implemented across the relevant jurisdictions	3	<ul style="list-style-type: none"> • There is good cooperation between jurisdictions with the Reef 2050 Plan, 	<ul style="list-style-type: none"> • Reef 2050 WQIP • Great Barrier Reef Gully and Streambank Joint Program • Great Barrier Reef Intergovernmental Agreement 	Adequate	Stable
PR7 There are effective processes applied to resolve differing views/ conflicts regarding coastal development	3	<ul style="list-style-type: none"> • All policies have to go through a Regulatory Impact Statement where appropriate • Administrative Appeal Tribunal open to applicants wanting to request review of all Authority's permit decision 	<ul style="list-style-type: none"> • joint Marine Parks permit process • <i>Regional Planning Interests Act 2014</i> • <i>State Development and Public Works Organisation Act 1971 (Qld)</i>, 	Adequate	Stable

		<ul style="list-style-type: none"> There are mechanisms in planning legislation (i.e. EPBC Act and State legislation) which allows third parties intervention i.e. Adani and Australian Conservation Society 	<ul style="list-style-type: none"> <i>Environmental Protection Act 1994,</i> 		
PR8 Impacts (direct, indirect and cumulative) of activities associated with coastal development are appropriately considered.	3	<ul style="list-style-type: none"> At a development assessment level (external to major projects that trigger EIS), the practicality to impose cumulative impacts and net benefit assessment exists under Qld legislation. GBRMP Regulations 88Q and 88R (assessment criteria for identifying and analysing impacts) provides the head of power to assess all potential impacts which would include cumulative. The State Planning Policy, the <i>Wetlands in the Great Barrier Reef Catchments Management Strategy 2016-2021</i> consider impacts associated with coastal development 	<ul style="list-style-type: none"> State Planning Policy <i>Wetlands in the Great Barrier Reef Catchments Management Strategy 2016-2021</i> 	Adequate	Improving
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding coastal development	3	<ul style="list-style-type: none"> Information is available however it could be consolidated better The 2017 Scientific Consensus Statement is a synthesis of current knowledge pertaining to the water quality issues (including coastal development) in the Great Barrier Reef to inform a common understanding amongst managers of key ecosystems, associated values, condition, risks and status of efforts to protect values impacted by water quality. The Paddock to Reef program provides data that has been used to adaptively improve the management decisions. 	<ul style="list-style-type: none"> Reef 2050 WQIP Queensland Wetlands program Queensland Herbarium NESP 2017 Scientific Consensus Statement Paddock to Reef Program 	Adequate	Improving
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding coastal development	3	<ul style="list-style-type: none"> Socio-economic issues are taken account of permit decisions and available information was used in RAP process Socio and economic research is being brought into the RIMREP Human Dimensions expert working group to inform the RIMREP Program design SELTMP 2014 Coastal Communities report depicts the current state of coastal community characteristics and relationships with the GBR, and drivers of change. Linkage to socio-economic data to management of coastal ecosystems is less developed then for issues such as tourism and fishing 	<ul style="list-style-type: none"> Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef Gooch et al. 2017 Assessment and Promotion of the Great Barrier Reef's Human Dimensions through Collaboration. <i>Coastal Management</i>, DOI: 10.1080/08920753.2017.1373455 Bohensky, E., Marshall, N., Currnock, M., Gillet, S., Goldberg, J., Gooch, M., Pert, P., Scherl, L., Stone-Jovicich, S., Tobin, R. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2013, Coastal Communities in the Great Barrier Reef. Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited, Cairns (35pp.). 	Adequate	Improving

PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding coastal development	2	<ul style="list-style-type: none"> • There is a need to better develop and integrate Traditional ecological knowledge and stakeholder knowledge into management of coastal ecosystems. • Indigenous knowledge is taken account of in permit decisions where relevance is obvious but not routinely addressed in planning and management of coastal ecosystems 	<ul style="list-style-type: none"> • Workshop discussions 	Adequate	Improving
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding coastal development	2	<ul style="list-style-type: none"> • There is a need to better develop and integrate historic heritage into the management of coastal ecosystems 	<ul style="list-style-type: none"> • Workshop discussions 	Adequate	Stable
PR13 Relevant standards are identified and being met regarding coastal development	3	<ul style="list-style-type: none"> • GBRMPA water quality guidelines and their role in reporting on progress towards Reef 2050 WQIP goal and targets and links to additional WQIP. There has also been substantial work with DEHP in scheduling these as Water Quality Objectives and Environmental Values in a number of Regions since 2009 under the EP Water Policy. These EVs and WQOs must be met in further decision making processes including the development of Stormwater Management Plan. Sewage Management Plans etc. 	<ul style="list-style-type: none"> • State Planning Policy July 2017 • Draft Coastal Ecosystem – position statement public consultation • Reef 2050 Plan Annual Report and implementation Strategy 	Adequate	Improving
PR14 Targets have been established to benchmark management performance for coastal development	3	<ul style="list-style-type: none"> • State Planning policy provides an overall benchmark (i.e. health and resilience of biodiversity is maintained or enhanced to support ecological integrity • Reef 2050 plan sets clear actions, targets, objectives and outcomes to drive and guide the short, medium and long-term management of the Reef. The Plan firmly responds to the pressures facing the Reef and will address cumulative impacts and increase the Reef's resilience to longer term threats such as climate change. 	<ul style="list-style-type: none"> • State Planning Policy July 2017 • Reef 2050 Long-Term Sustainability Plan • Reef 2050 WQIP • Chapter 4 – Scientific Consensus Statement 2017 • DRAFT Cumulative impact management • Reef 2050 Plan Annual Report and implementation Strategy 	Adequate	Improving
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for coastal development	3	<ul style="list-style-type: none"> • Reef 2050 WQIP as per Report Cards • State Planning Policy and supporting material/mapping provides adequate policy and decision support tools to ensure effective management of coastal development • Great Barrier Reef Water Science Taskforce Report and the 2015 Report Card assessment clearly show, progress with 	<ul style="list-style-type: none"> • Reef 2050 WQIP • State Planning Policy • Scientific Consensus Statement 2017 	Adequate	Stable

		<p>water quality load targets is not 'on-track' and it is highly likely that most 2018 targets will not be met.</p> <ul style="list-style-type: none"> • There has been progress made towards implementing the 151 actions under the Reef 2050 Plan. The first annual report shows that 19 per cent of the actions are completed or in place and over 65 per cent are underway. 			
OP2 Implementation of management documents and/or programs relevant to coastal development have progressed in accordance with timeframes specified in those documents	3	<ul style="list-style-type: none"> • Reef 2050 Plan • Reef 2050 WQIP • State Planning policy 	<ul style="list-style-type: none"> • Reef 2050 Plan • Reef 2050 WQIP • State Planning Policy 	Adequate	Stable
OP3 The results (in OP1 above) have achieved their stated management objectives for coastal development	2	<ul style="list-style-type: none"> • Key Great Barrier Reef ecosystems continue to be in poor condition. This is largely due to the collective impact of land run-off associated with past and ongoing catchment development, coastal development activities, extreme weather events and climate change impacts such as the 2016 and 2017 coral bleaching events. 	<ul style="list-style-type: none"> • Scientific Consensus Statement 2017. 	Adequate	Stable
OP4 To date, products or services have been produced in accordance with the stated management objectives for coastal development	3	<ul style="list-style-type: none"> • Products and services have been produced in accordance with Reef 2050 WQIP objectives • Associated guidelines and mapping are available for State Planning Policy' • Whole of systems management framework as detailed in the Queensland Wetlands strategy (incorporating the walking the landscape process) 	<ul style="list-style-type: none"> • Reef 2050 WQIP • State Planning Policy • Wetlands Strategy • Walking in the Landscape 	Adequate	Stable
OP5 Effective knowledge management systems regarding coastal development are in place within agencies	3	<ul style="list-style-type: none"> • All Reef 2050 WQIP data is saved on SSIMR database (DARTS/SKIP) • The changes, which are based on two rounds of consultation with permit holders and other key stakeholders, include: <ul style="list-style-type: none"> ○ Permits Online - a new online portal to submit applications and manage all permissions and contact details ○ Longer permit terms up to 20 years ○ Improved assessment guidelines ○ A checklist of information required at the time of application ○ Updated permission system policy and new guidance documents. ○ GBRMPA spatial data center 	<ul style="list-style-type: none"> • AIMS eAtlas • SSIMR • Reef 2050 Integrated Monitoring and Reporting Program • Queensland Wetlands Mapping • Land use summary data • Queensland Herbarium vegetation data 	Adequate	Improving

		<ul style="list-style-type: none"> ○ Queensland Wetlands Mapping ○ Land use summary data 			
OP6 Effective systems are in place to share knowledge on coastal development with the community	3	<ul style="list-style-type: none"> ● Paddock to Reef Monitoring Program and the Reef 2050 WQIP Report Card are designed to be user friendly ● Wetlandinfo is a central repository for catchment related information including wetlands, groundwater dependant ecosystems, policy, projects and conceptual models. Story maps show the 'whole of systems' understanding developed by the Queensland Wetlands Programme 	<ul style="list-style-type: none"> ● Reef 2050 WQIP ● Reef 2050 WQIP Report Cards ● Wetlandinfo 	Adequate	Stable
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing coastal development and moving towards the attainment of the desired outcomes.	3	<ul style="list-style-type: none"> ● Reef 2050 WQIP as per Report Cards ● State Planning Policy and supporting material/mapping provides adequate policy and decision support tools to ensure effective management of coastal development 	<ul style="list-style-type: none"> ● Reef 2050 WQIP ● State Planning Policy 	Adequate	Improving
OC2 The outputs relating to coastal development are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	3	<ul style="list-style-type: none"> ● The implementation of the Planning Act and SPP and associated guidelines are on track. ● The Reef 2050 Plan is currently being assessed 	<ul style="list-style-type: none"> ● Reef 2050 Plan ● State Planning Policy 	Adequate	Improving
OC3 the outputs (refer OP1 and 3) for coastal development are reducing the major risks and the threats to the Great Barrier Reef	2	<ul style="list-style-type: none"> ● Key Great Barrier Reef ecosystems continue to be in poor condition. This is largely due to the collective impact of land run-off associated with past and ongoing catchment development, coastal development activities, extreme weather events and climate change impacts such as the 2016 and 2017 coral bleaching events. ● Current initiatives will not meet the water quality targets. To accelerate the change in on-ground management, improvements to governance, program design, delivery and evaluation systems are urgently needed. This will require greater incorporation of social and economic factors, better targeting and prioritisation, exploration of alternative management options and increased support and resources. 	<ul style="list-style-type: none"> ● Chapter 4 – Scientific Consensus Statement 2017 ● Reef 2050 Plan Annual Report and Implementation Strategy ● Great Barrier Reef Strategic Assessment Report, ● Great Barrier Reef Coastal Zone Strategic Assessment 2014 ● Great Barrier Reef Outlook Report 2014 	Adequate	Stable
OC4 Use of the Great Barrier Reef relating to coastal development is demonstrably environmentally sustainable	2	<ul style="list-style-type: none"> ● Past development and land use practices, primarily agricultural development, have led to degradation of coastal ecosystems and water quality, and very markedly declines in inshore biodiversity 	<ul style="list-style-type: none"> ● State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 ● 2017 Scientific Consensus Statement 	Adequate	Stable

		<ul style="list-style-type: none"> Decline in water quality, coral cover suggest that agricultural land management practices associated with coastal development is not environmentally sustainable There continues to be a history of failed developments along the coast with negative implications for the Region (e.g. Queensland Nickel) Tree clearing that has occurred since the changes to the Vegetation Management Act may lead to further decline in Reef values 	<ul style="list-style-type: none"> Brodie, Grech, McCook, 2017, The new Great Barrier Reef pollution plan is better, but still not good enough, The Conversation Marine Monitoring Program Extreme Weather Waltham and Sheaves, Expanding coastal urban and industrial seascape in the Great Barrier Reef World Heritage Area: Critical need for coordinated planning and policy, Marine Policy 		
OC5 Use of the Great Barrier Reef relating to coastal development is demonstrably economically sustainable	2	<ul style="list-style-type: none"> Population growth is driven by national and international economic cycles (resource and tourism sectors primarily) There continues to be a history of failed developments along the coast with negative implications for the Region (e.g. Queensland Nickel) 	<ul style="list-style-type: none"> Workshop discussions 	Adequate	Stable
OC6 Use of the Great Barrier Reef relating to coastal development is demonstrably socially sustainable understanding and/or enjoyment	3	<ul style="list-style-type: none"> High level of volunteer activity and community understanding of monitoring and education activities through Reef Guardian programs and GBRMPA education and communication products 	<ul style="list-style-type: none"> Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef Bohensky, E., Marshall, N., Currnock, M., Gillet, S., Goldberg, J., Gooch, M., Pert, P., Scherl, L., Stone-Jovicich, S., Tobin, R. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2013, Coastal Communities in the Great Barrier Reef. Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited, Cairns (35pp.). 	Adequate	Stable
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address coastal development	3	<ul style="list-style-type: none"> Many examples of partnerships <ul style="list-style-type: none"> Reef Guardian program LMACs and RACs Eye on the Reef program Existing liaison arrangements and specialist staff within the Authority to manage these relationships 	<ul style="list-style-type: none"> GBRMPA web site 	Adequate	Stable

Table 24 Calculation of grades for commercial marine tourism

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to commercial marine tourism are understood by managers	4	<ul style="list-style-type: none"> Values relevant to tourism are similar to values that underpin MNES including OUV and are therefore very well understood by managers. Tourism is the most significant direct use of the Region — both in terms of economic value and employment. In 2017, tourism in the Reef catchment and World Heritage Area generated approximately \$5.7 billion to the Australian Economy. For the Region, its long-term attractiveness as a tourism destination is largely based on the Great Barrier Reef's reputation as the world's largest and best known coral reef — one that has spectacular and diverse species — combined with a high standard of tourism operations and protected area management. The Region's tourism industry is almost exclusively nature-based, with coral reefs and islands as the focus. The industry offers a wide range of tourism experiences, from cruise ships and live-aboard vessels to day trips on high speed catamarans, fishing charters and kayaking tours. While tourism visitation occurs across most of the Great Barrier Reef, activity is consistently focused on a small portion of the Marine Park, with more than 85 per cent of all tourism activity management occurring in about seven per cent of the Region. The strongest values of the GBR among tourists have been documented. 	<ul style="list-style-type: none"> Deloitte Access Economics, 2017, The economic, social and icon value of the GBR https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-great-barrier-reef-230617.pdf Access Economics, 2008, <i>Measuring the Economic and Financial Value of the Great Barrier Reef Marine Park, 2005-2006</i> http://www.gbrmpa.gov.au/_data/assets/pdf_file/0004/29272/AE_GBR_MP_19MAR08.pdf Strategic Assessment, Outlook Report 2009 and 2014 	Adequate	Stable
CO2 The current condition and trend of values relevant to commercial marine tourism are known by managers	3	<ul style="list-style-type: none"> The current condition and trend of biophysical and ecological values relevant to commercial tourism are well known by managers, particularly in the more heavily used parts of the Region. Attitudes towards interacting with wildlife have changed over the decades. Whereas visitors may have previously interacted with wildlife, are now much more 	<ul style="list-style-type: none"> Hughes et al (2017) Global warming and recurrent mass bleaching of corals, <i>Nature</i> 543, 373 (REF 1). Whitsunday Plan of Management 2016 Post bleaching report – GBRMPA (http://hdl.handle.net/11017/3206) interactive sightings portal: http://www.gbrmpa.gov.au/sightings-network/ 	Adequate	Stable

		<p>aware of their activities (see new guidelines for emerging technology e.g. drones in new section) and the best environmental practices for viewing these animals. At the same time, management arrangements have addressed many interactions (such as approaching whales, visiting important seabird rookeries or approaching critical migratory shorebird roosts).</p> <ul style="list-style-type: none"> • Since 2014 the Great Barrier Reef has experienced significant and unprecedented impacts from cyclones, coral bleaching and a crown-of-thorns starfish outbreak – which is still underway. The 2016–17 coral bleaching affected the northern Great Barrier Reef including to varying degrees the tourism region comprising offshore Cairns and Port Douglas. In addition in 2017, the Whitsundays experienced Tropical Cyclone Debbie impacting many of the fringing reefs in this area. • The Eye on the Reef database at GBRMPA contains information on the trend of coral cover, COTS and other environmental values, particularly around tourism sites. In 2016-17 > 4500 surveys of reef health and 2859 sightings of protected species and significant events were received. 			
CO3 Impacts (direct, indirect and cumulative) associated with commercial marine tourism are understood by managers.	4	<ul style="list-style-type: none"> • Compared to other activities and pressures which impact the reef, tourism is considered to be low risk in most cases. The cumulative impact of tourism in high use locations in addition to other uses can be high risk. This is managed through a combination of permits, Plans of Management and site management arrangements. • At a local scale tourism can cause impacts through anchor damage to coral reefs and seagrass meadows, poorly supervised activities, such as diving and snorkelling, and disturbance to wildlife including whales, marine turtles and seabirds, some of which are MNES. These impacts have been largely reduced by regulation (for example, whale approach distances and no- 	<ul style="list-style-type: none"> • <i>Moorings Policy 2014</i>: http://www.gbrmpa.gov.au/about-us/legislation-regulations-and-policies/policies-and-position-statements • UN report - Impacts of climate change on World Heritage coral reefs: a first global scientific assessment, Heron, S.F., Eakin, C.M. and Douvère, F. 2017, Impacts of climate change on World Heritage coral reefs: a first global scientific assessment, UNESCO World Heritage Centre, Paris, <http://edocs.gbrmpa.gov.au/RefWorks/2011-2020/2017/Heron_etal_2017_Impact-CC-WHAs.pdf • Environmental impact management - permission system Policy (Oct 2017) • Activity assessment guidelines - fixed facilities (in development) • Activity assessment guidelines - tourist pontoons (in development) 	Adequate	Improving

		<p>anchoring areas), site management arrangements (such as group size limits at locations, use of moorings, seasonal seabird closure areas); permit arrangements (for example, fish feeding guidelines); education; compliance action (e.g. prosecution of masters of tourism vessels that impact the Reef \$4000 fine in 2017, \$7500 fine in 2017 for damage to Reef) and the adoption of best practices for activities (such as diving and snorkelling).</p> <ul style="list-style-type: none"> • Tourism use of the Region also has the potential to impact on or displace other users, such as commercial fishers and recreational users, particularly in high use areas (e.g. Vlassof Cay). There have been some recent examples of conflict between the activities of tourism operations and those of Traditional Owners exercising their traditional hunting rights around Green Island. • To minimise impacts on biodiversity, sewage discharge standards for all users, including tourism operations, have been improved. Discharge at sea (more than one nautical mile from any reef or island and the mainland) remains necessary for many tourism operations as there are insufficient land-based facilities to service the fleet's pump-out requirements. • A number of compliance incidents involving the tourism industry are reported annually, particularly from the more intensively used Cairns and Whitsunday areas. Reports are typically about breaches of Marine Park permits, unpermitted activity, Plan of Management offences (such as undertaking activities not in accordance with group and vessel size limits), issues around payment of the environmental management charge, groundings and moorings offences. • As structures such as pontoons, jetties, underwater observatories and moorings age, they require more investment in maintenance to ensure they are not a threat to the surrounding environment and do not impact on amenity and presentation values of a 			
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		<p>location. Since 2014 the GBRMPA has invested heavily in permit compliance particularly around marine tourism structures (in particular tourism pontoons) to ensure permitted structures are maintained in good condition to reduce risks to values.</p> <ul style="list-style-type: none"> • Several policies have also been updated to manage potential impacts from tourism. As well as strengthening of the permission system since October 4th with new Regulations and assessment guidelines. 			
CO4 The broader (national and international) level influences relevant to commercial marine tourism are understood by managers.	4	<ul style="list-style-type: none"> • Reef-dependent activities including tourism are vulnerable to the negative effects that ocean acidification, sea level rise, more frequent extreme weather and warming sea temperatures may have on Reef condition. • The Reef-based tourism industry is very concerned about the impacts of climate change on its businesses and livelihoods, including degradation of reef sites, poor recovery of bleached sites, crown-of-thorns starfish predation and sediment exposure. A future predicted increase of two degrees Celsius in the average sea temperature will likely lead to annual bleaching. 	<ul style="list-style-type: none"> • Visitation trends at: http://www.gbrmpa.gov.au/visit-the-reef/visitor-contributions/gbr_visitation/numbers • Stakeholders and workshops 	Adequate	Stable
CO5 The stakeholders relevant to commercial marine tourism are well known by managers.	4	<ul style="list-style-type: none"> • GBR tourism is managed by a range of government agencies including the GBRMPA, the Queensland Department of Environment and Science (DES), Sport and Racing (NPSR), Queensland Department of the Environment and Heritage and Protection, Australian Maritime Safety Authority (AMSA), Queensland Department of Tourism, Major Events, Small Business and the Commonwealth Games (DTESSB), Maritime Safety Queensland (MSQ), Queensland Boating and Fisheries Patrol (QBFP), and Queensland Water Police. • Other agencies involved with tourism include Australian Government Department of Industry, Tourism Australia, Tourism Queensland (TQ) and industry associations such as the Queensland Tourism Industry Council (QTIC), Ecotourism Australia (EA), EarthCheck and the 	<ul style="list-style-type: none"> • Tourism partners webpage: http://www.gbrmpa.gov.au/our-partners/tourism-industry • TRAC - http://www.gbrmpa.gov.au/corp_site/management/who_participates/consultation_community_involvement/rac_tourism_advisory_committee • LMACs - http://www.gbrmpa.gov.au/corp_site/management/who_participates/lmac • Managing agencies - http://www.gbrmpa.gov.au/onboard/home/marine_park/management_arrangements/whos_who_of_management 	Adequate	Stable

		<p>Association of Marine Park Tourism Operators (AMPTO).</p> <ul style="list-style-type: none"> GBRMPA works in partnership with the tourism industry to improve standards for the protection and presentation of the Great Barrier Reef. Operators who are independently certified with Ecotourism Australia or EarthCheck must meet best practice standards when undertaking their tourism operations and are recognised as high standard operators by GBRMPA. The GBRMPA has a strong focus on ensuring tourism stakeholders are well known and engaged in the management of the Reef 			
PLANNING					
PL1 There is a planning system in place that effectively addresses commercial marine tourism	3	<ul style="list-style-type: none"> Zoning Plans, Plans of Management, policies and permits provide a comprehensive planning system for tourism activities. The Marine tourism contingency plan focuses on assisting tourism operators to temporarily relocate to an alternative site following a severe environmental incident. This Policy document was used during the recent bleaching and cyclone events to prioritise permits and relocate operators where tourism sites were significantly affected. The Queensland Government recognises tourism as a pillar of the state's economy and has identified a number of actions as catalysts and drivers for tourism investment, infrastructure and access. The Coastal Protection State Planning Regulatory Provision (SPRP) contains policies for coastal-dependent land uses and developments, which includes commercial marine tourism. The Whitsunday Plan of Management (WPoM) was reviewed in 2015-17. An overarching strategy for the management of tourism has not been progressed due to competing Authority priorities of amending the Whitsundays Plan of 	<ul style="list-style-type: none"> Great Barrier Reef Marine Park Zoning Plan 2003 Cairns Area Plan of Management 1998 Hinchinbrook Area Plan of Management 2004 Whitsundays Plan of Management 1998 Shoalwater Bay (Dugong) Plan of Management 1997 Site plans http://www.gbrmpa.gov.au/zoning-permits-and-plans/site-specific-management Marine Tourism Coordination Framework http://www.gbrmpa.gov.au/data/assets/pdf_file/0018/29421/Marine_Tourism_Framework_A4-Access.pdf Marine Tourism Contingency Plan http://www.gbrmpa.gov.au/data/assets/word_doc/0018/144135/Marine-Tourism-Contingency-Plan.docx Coastal Protection State Planning Regulatory Provision 2013, is available online: http://www.dsdp.qld.gov.au/resources/factsheet/planning/coastal-protection-sprp.pdf 	Adequate	Stable

		Management and managing the crown-of-thorns starfish control program. With the new operational structure in place for the Authority in late 2017, there will be a dedicated resources to focus on tourism policy.			
PL2 The planning system for commercial marine tourism addresses the major factors influencing the Great Barrier Reef Region's values.	4	<ul style="list-style-type: none"> The Zoning Plan provides spatial control of use and, to a lesser extent, access within the Great Barrier Reef Marine Park. It establishes the framework for extractive use and the need for permits for some uses, such as tourism, associated infrastructure and tourism activities. Zoning plans are developed under Part 5 Division 2 of the Great Barrier Reef Marine Park Act 1975. Complementary arrangements are in place in adjacent areas under Queensland jurisdiction. Plans of Management set out specific arrangements for activities, areas, species or ecological communities. They complement zoning and permitting arrangements. Some components are legally binding. Plans of management are developed under Part VB of the Great Barrier Reef Marine Park Act 1975. The Statement of Management Arrangements in the Great Barrier Reef Marine Park for Superyacht Operations summarises the current management arrangements for superyachts. The major risks of tourism to Reef values such as overcrowding, displacement of users, loss of amenity, impacts on species and environmental impacts are largely addressed through permitting arrangements, plans of management, site management arrangements and supporting infrastructure. The revised WPOM identified sites that may require future site planning due to congestion at those sites. Sites are being reprioritised following cyclone Debbie. Site planning will form part of implementation of the WPOM 	<ul style="list-style-type: none"> Great Barrier Reef Marine Park Zoning Plan 2003 Cairns Area Plan of Management 1998 Hinchinbrook Area Plan of Management 2004 Whitsundays Plan of Management 1998 Great Barrier Reef Tourism Climate Change Action Strategy 2009-2012 http://www.gbrmpa.gov.au/_data/assets/pdf_file/0009/3987/gbrmpa_CCActionStrategyFull_2011.pdf Targeted COTS control program http://www.gbrmpa.gov.au/about-the-reef/animals/crown-of-thorns-starfish A Statement of Management Arrangements in the Great Barrier Reef Marine Park for Super-yacht Operations: http://www.gbrmpa.gov.au/_data/assets/pdf_file/0017/3392/GBRMPA-ManagementArrangements-SuperyachtsMay-2011.pdf 	Adequate	Stable
PL3 Actions for implementation regarding commercial marine tourism	4	<ul style="list-style-type: none"> The Zoning Plan and Plans of Management. Plans of Management set out specific arrangements for 	<ul style="list-style-type: none"> Queensland Ecotourism Plan 2013 – 2020 Great Barrier Reef Summit Blueprint 	Adequate	Stable

are clearly identified within the plan		<p>activities, areas, species or ecological communities. They complement zoning and permitting arrangements.</p> <ul style="list-style-type: none"> • The Queensland Ecotourism Plan 2013 - 2020 (PDF, 1.9MB). also includes a three-year action plan. This action plan includes 43 initiatives and details the government agencies and industry partners that are responsible for delivering them. • Tourism management arrangements have been largely implemented within the high use areas of the Reef with implementation strategies and amendment processes to address these arrangements clearly defined including the engagement of the industry, local communities and other stakeholders • Great Barrier Reef Summit Blueprint – 2017 details ten focus areas for strengthening. Several of these focus areas include actions regarding better management of commercial marine tourism (e.g. strengthened compliance) as well as greater protection of values important to tourism (e.g. coral cover, reef restoration, COTS control). 			
PL4 Clear, measurable and appropriate objectives for management of commercial marine tourism have been documented	3	<ul style="list-style-type: none"> • Plans of Management, which are generally prepared for intensively used, or particularly vulnerable groups of islands and reefs, and for the protection of vulnerable species or ecological communities, provide clear, measurable and appropriate objectives for the management of tourism in these areas. There are currently three tourism related Plans of Management within the Great Barrier Reef Marine Park. • On 4 October 2017 first tranche of improving the permission systems were released, New Regulations have come into effect and a suite of policy documents including new guidance materials and training modules. These initiatives will increase transparency and consistency of permit assessment and decision making. • A new online portal, Permits Online, accompanied improvements to the permission system. Permits Online allows applicants to submit Marine Parks permit 	<ul style="list-style-type: none"> • Corporate Plan GBRMPA website: http://hdl.handle.net/11017/3246 • Corporate Plan 17-18 • The objectives of plans of management are set out in the Great Barrier Reef Marine Park Act 1975. • Plans of Management: http://www.gbrmpa.gov.au/zoning-permits-and-plans/plans-of-management 	Adequate	Stable

		<p>applications and to manage their applications, existing permits and contact details</p> <ul style="list-style-type: none"> The 2017-18 GBRMPA Corporate Plan specifies specific, measurable and appropriate objectives to manage commercial marine tourism across three of its four program areas: <ul style="list-style-type: none"> Regulating and ensuring Marine Park user compliance Educating and fostering stewardship to enhance protection of the Reef Enhancing Reef resilience through continuous improvement and new initiatives across all aspects of management 			
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to commercial marine tourism	3	<ul style="list-style-type: none"> Information is collected over time to assist with the review of key planning and policy documents. <ul style="list-style-type: none"> Using the Reef Management System to monitor the number of special tourism permissions as part of implementing and reviewing the allocation aspect of the policy on managing tourism permissions Eye on the Reef information – condition of the Reef in certain locations. AIMS Long-term Monitoring Program data – condition of Reef in certain locations. Reef Health and Impact Surveys assist with informing condition of the reef which can be used to inform planning. There is no provision in the PoMs to ensure appropriate, adequate and systematic monitoring information (of the values) is gathered to assess the efficacy of the planning arrangements to protect the underlying values of the area. There are a few examples where GBRMPA has implemented trigger limits that would lead to a review of the plan or to adaptive management responses to address cumulative impacts 	<ul style="list-style-type: none"> AIMS Long-term Monitoring Program Eye on the Reef 	Adequate	Stable

PL6 The main stakeholders &/or the local community are effectively engaged in planning to address commercial marine tourism	4	<ul style="list-style-type: none"> • Reef HQ Great Barrier Reef Aquarium, the Authority's national education centre for the Great Barrier Reef also fosters community and stakeholder behaviour change and participation in actions to address threats to the Reef by ensuring they have a clear understanding of the value of the Great Barrier Reef, the threats to its sustainable future and the actions they can take to protect it • Stakeholders continue to be highly engaged in planning processes through the Tourism Reef Advisory Committee (TRAC), Local Marine Advisory Committees (LMACs) and other consultative mechanisms including public consultation processes. • There is a high level regulatory requirement for stakeholder engagement and education through Zoning Plans, policy and Plans of Management. E.g. Public submission requirements exist for policy development and public meetings for site planning. Since the last management effectiveness there have been three public consultations for tourism policies (Moorings, Cruise ship, Marine Tourism Contingency Plan) • The 2015-2017 review of the Whitsundays Plan of Management included significant consultation prior to developing the draft plan of formal public consultation. 	<ul style="list-style-type: none"> • Reef HQ Great Barrier Reef Aquarium • Tourism Reef Advisory Committee • Local marine advisory committees • 2017-18 GBRMPA Corporate Plan 	Adequate	Stable
PL7 Sufficient policy currently exists to effectively address commercial marine tourism	3	<ul style="list-style-type: none"> • The Authority has a suite of policy initiatives relating to commercial marine tourism, many were developed in the early to mid-2000s and the Authority is methodically working to update these. Since the last management effectiveness review, the following policies have been updated: • The Marine Tourism Contingency Plan. • The policy on Moorings in the Great Barrier Reef. • The majority of permit related environmental impact policies were updated in a review in 2017. • In addition: 	<ul style="list-style-type: none"> • Responsible Reef Practices • Tourism on the GBR – how it is managed • Regulation of sewage discharge • Marine Tourism Coordination Framework • A Statement of Management Arrangements in the Great Barrier Reef Marine Park for Super-yacht Operations: • Position Statement on the management of tourism flights in the vicinity of Magnetic Island • Policies http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/management/policies • Managing Tourism Permissions • Managing Bareboat Operations 	Adequate	Improving

		<ul style="list-style-type: none"> • The Cruise ship policy has been through public consultation and been to MPA in September 2017 with only minor amendments needed to finalise it. • A review has commenced for the policy on Managing Tourism Permissions (including Allocation, Latency and Tenure). • Following the coral bleaching in the north in 2016-17 and cyclone Debbie in the Whitsundays in 2017, the Marine tourism coordination framework for environmental incidents and the Marine Tourism Contingency Plan were enacted. The Framework sets out a mechanism for the coordination and facilitation of responses to an environmental incident relevant to the marine tourism industry. The Contingency Plan focuses on assisting tourism operators to temporarily relocate to an alternative site following a severe environmental incident. The Framework and the contingency policy were enacted recently. 	<ul style="list-style-type: none"> • Department of Tourism, Regional 		
PL8 There is consistency across jurisdictions when planning for commercial marine tourism	4	<ul style="list-style-type: none"> • Intergovernmental Agreement (updated in 2014 see below) continues joint arrangements for permits, policies, compliance – all of which plan for and manage commercial marine tourism. • Currently there is no overarching planning strategy in place for tourism management across all government agencies engaged in tourism. • Where possible duplication has been minimised between jurisdictions, eg. Joint permit system, joint policy. • Plans of Management are GBRMPA only, not currently accredited by Queensland. This raises some administrative inconsistency in particular through the joint permit process where state only conditions need to be added (which significantly increases the length and complexity of permits). If the Plans of Management were accredited by Queensland, permits would be simpler and shorter. 	<ul style="list-style-type: none"> • Great Barrier Reef Intergovernmental Agreement 2015 • Permits Online - 2017 • Bookings Online Manual 	Adequate	Stable

		<ul style="list-style-type: none"> • Joint Field Management Program for the Great Barrier Reef is ongoing and supported through the Intergovernmental Agreement. • Joint permits (between GBRMPA and QPWS) have been maintained and streamlined through an online permit system and bookings database for commercial marine operators in high use areas. • Bookings Online system covers bookings for both the GBRMP and the Qld Great Barrier Reef Coast Marine Park. 			
PL9 Plans relevant to commercial marine tourism provide certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.	3	<ul style="list-style-type: none"> • The Zoning Plan provides spatial control of use and, to a lesser extent, access within the Great Barrier Reef Marine Park. It establishes the framework for extractive use and the need for permits for some uses, such as tourism, which delivers certainty. • Plans of Management provide certainty through specific arrangements for activities, areas, species or ecological communities. They complement zoning and permitting arrangements. Some components are legally binding. Plans of Management are developed under Part VB of the Great Barrier Reef Marine Park Act 1975. There is the capacity for the Authority to enter into agreements or arrangements for management of an area, species or ecological community. With a community group having a special interest in an area, including some form of native title. • Best environmental practices for diving and snorkelling do not specifically provide certainty, but do communicate preferred behaviours and are available for tourists and recreational users. • In 2017 GBRMPA undertook a comprehensive review of its regulations and permit assessment processes to streamline processes while maintaining high levels of environmental protection. The proposed changes will strengthen the system by improving consistency and transparency through a range of guidelines so the process and the basis for decisions is clearer 	<ul style="list-style-type: none"> • 2017 Cost Recovery Implementation Statement: cost recovery for managing the permission system under the Great Barrier Reef Marine Park Act 1975 • Bookings Online Manual • See Press Release – Permit System Improvement Process • GBR Zoning Plan • https://www.reefplan.qld.gov.au/implementation/research-development/ 	Adequate	Stable

INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address commercial marine tourism	4	<ul style="list-style-type: none"> • GBRMPA, Australian Government Department of the Environment, DNPSR, AMSA, MSQ, QBFP, EA, Tourism Qld, Queensland Tourism Industry Council, Association of Marine Park Tourism Operators (AMPTO), CSIRO, JCU, contribute, in some cases quite significantly, financial resources to tourism monitoring and management. • GBRMPA tourism management is funded largely through the Tourism and Stewardship Group, but Reef HQ, Reef Guardians, Environmental Assessment and Protection (permits area) and Field Management also contribute significantly, with activities prioritised in the Annual Operating Plan. • Some financial resources from all managing agencies, most notably QPWS, to educate tourism operators through a variety of mediums (e.g. welcoming people on the water, on park education, public moorings and no-anchoring areas, maintenance of website, publications) • Whitsunday Plan of Management (WPOM) – As one of Queensland’s iconic national parks the Whitsunday Islands will receive over \$7 million in additional funding across two years for island infrastructure projects to enhance ecotourism opportunities. The combination of Australian and Queensland funding will provide a new lookout and walking trail at Southern Whitehaven Beach, a multiday walking track connecting Whitehaven Beach to Tongue Point, an expansion of day and overnight visitor facilities at Whitehaven Beach, three new short walks and an expansion to the Hill Inlet lookout. The Whitsundays already has the largest concentration of public moorings and reef protection markers in the World Heritage Area. In 2017-18 this will be expanded further with 55 new public moorings and 40 new reef protection markers to be installed to protect remaining fringing reef, enable reef recovery and 	<ul style="list-style-type: none"> • Environmental Management Charge - GBRMPA • DTEsb corporate publications at http://www.dtesb.qld.gov.au/about-us/publications 	Adequate	Improving

		<p>provide opportunities for sustainable visitor access to the surviving areas of fringing reef.</p> <ul style="list-style-type: none"> • EMC: With few exceptions, every tourist carried by a commercial operator visiting the Marine Park contributes to management through an Environmental Management Charge (EMC) – currently set at \$6.50 from each visitor per day (current as of Oct 2017). On behalf of the Authority, the industry collects the EMC from tourists. Due to the increase in tourism visitation and increase in the charge due to CPI, the amount has grown from \$5.7 million in 2014–15 to \$12.1 million in 2016–17. These funds directly contribute to management of the Great Barrier Reef Marine Park. 			
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address commercial marine tourism	3	<ul style="list-style-type: none"> • Crown-of-thorns starfish management program (3x FTE within GBRMPA) • Increased focus of GBRMPA regional office staff on tourism liaison in high use areas • The new organisational design resulting from GBRMPA's operational review maintains resources in the Environmental Assessment and Protection section, retains a focus on tourism policy within a new dedicated policy and planning section and maintains some tourism engagement in the Engagement, Stewardship and Partnerships section. • Permits Compliance Team: Since July 2014, a small team of approximately 2.5 Full Time Equivalent (FTE) respond to allegations of permission non-compliance via a risk based annual compliance plan. From July 2015 three (3) FTE in the Environmental Assessment and Protection Section were allocated to implement the <i>Strengthening Permission Compliance action plan</i> in conjunction with existing foundational tasks undertaken for the agency • The Joint Field Management Program presently funds around 115 staff — 20 with the Great Barrier Reef Marine Park Authority and 95 with Queensland Parks 	<ul style="list-style-type: none"> • GBRMPA Nous Operational Review final Report • Strengthening Permissions Compliance Action Plan 2015-2020 • FMP Periodic Review Report (performance 11-17 and Future priorities 2017-2022) 	Adequate	Stable

		and Wildlife Service. This is an 11 per cent reduction from 128 staff in 2008 — a direct result of static funding			
IN3 The right skill sets and expertise are currently available to the managing organisations to address commercial marine tourism	3	<ul style="list-style-type: none"> The new organisational design resulting from GBRMPA's operational review maintains resources in the Environmental Assessment and Protection section, retains a focus on tourism policy within a new dedicated policy and planning section and maintains some tourism engagement in the Engagement, Stewardship and Partnerships section. Field Management Program (QPWS and GBRMPA staff): The highly skilled and motivated workforce is maintained through targeted strategic training, including a specialised Foundations of Field Management five-day course developed to combine contemporary theory and protected area management practice with personal motivation to deliver excellence in Reef and island management. 	<ul style="list-style-type: none"> Foundations of Field Management Stakeholders and workshops 	Adequate	Stable
IN4 The necessary biophysical information is currently available to address commercial marine tourism	4	<ul style="list-style-type: none"> Extensive biophysical information relating to tourism use and impacts is considered to be readily available Eye on the Reef data collected post Cyclone Debbie in Whitsundays. This mapping and consolidation of information sources assisted understanding of the extent of damage and identified surviving coral areas. It was used to inform the placement of No Anchoring areas and the expansion of existing Reef Protection areas. In 2015 GBRMPA developed a spatial mapping tool to help managers spatially map important data layers relevant to management. This includes biophysical information to help address commercial marine tourism (e.g. location of high standard tourism operators, Marine Monitoring Program sites, coral bleaching survey sites). The Reef Explorer tool is used internally and certain data layers are also available externally to the public. 	<ul style="list-style-type: none"> Eye on the Reef Reef Explorer 	Adequate	Stable
IN5 The necessary socio-economic information is	3	<ul style="list-style-type: none"> Information on values and satisfaction from surveys of tourists, and an understanding of community benefits 	<ul style="list-style-type: none"> Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) 	Adequate	Improving

currently available to address commercial marine tourism		<p>and well-being have been developed through SELTMP - Social and Economic Long Term Monitoring Program. SELTMP was established in 2011 with the first surveys in 2013. The program questioned 8,300 people (commercial fishers, tourism operators, tourists, and coastal and national residents) about their dependence, usage and affinity with the Reef, as well as their perceptions, values, experiences, attitudes and behaviours. Another study was completed in 2017.</p> <ul style="list-style-type: none"> • GBRMPA is involved in the Social and Economic Long Term Monitoring Project (a NESP project that is designed to capture social and economic information from Great Barrier Reef industries and coastal communities - NESP Tropical Ecosystems Hub Theme 3, Program 10). GBRMPA funded a second round of SELTMP surveys in 2017 and results are anticipated in a final report and online dashboard in March 2018 • Information on economic benefits was produced by Access Economics in 2013. A further economic review of the Great Barrier Reef was commissioned by the Great Barrier Reef Foundation in 2017. This report assessed the economic, social, icon and brand value of the Great Barrier Reef to gauge the Great Barrier Reef's value to Australians and understand how the international community values it. The report has calculated the total asset value of the Great Barrier Reef to be \$56 billion, assessing the World Heritage site's economic, social and iconic brand value together in one study for the first time. • Expert advice sought on tourism issues through the Tourism Reef Advisory Committee (TRAC) 	<p>for the Great Barrier Reef. Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.).</p> <ul style="list-style-type: none"> • Tourism Reef Advisory Committee • Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef • Deloitte Access Economics Report Economic contribution of the Great Barrier Reef 		
IN6 The necessary Indigenous heritage information is currently available to address commercial marine tourism	3	<ul style="list-style-type: none"> • Increased interaction by the GBRMPA with Traditional Owners post 2014 has occurred with new TUMRAs, a continued and strengthen Indigenous Reef Advisory Committee (re-formed in 2015) and the connection of some LMACs with Traditional Owner groups has increased the Agency's access to traditional knowledge. 	<ul style="list-style-type: none"> • Indigenous Reef Advisory Committee • TUMRA • LMAC • Stakeholders and workshops 	Adequate	Stable

		<ul style="list-style-type: none"> • However, information on significant sites, cultural activities, cultural mapping can be difficult to obtain. Some Traditional Owners are not comfortable releasing this information to government agencies due to trust and cultural reasons. GBRMPAs ability to protect indigenous heritage from potential impacts and conflict with commercial tourism is affected by this. The development and implementation of a Cultural Protocol and data sharing agreements should assist. 			
IN7 The necessary historic heritage information is currently available to address commercial marine tourism	3	<ul style="list-style-type: none"> • In May 2015, the Great Barrier Reef Marine Park Regulations 1983 (the Regulations) were amended to introduce a new Special Management Area (SMA) to protect specific maritime cultural heritage sites. Maritime Cultural Heritage Protection SMAs are declared under regulation 66 to protect fragile and irreplaceable heritage places. Two nationally significant World War II Catalina plane wrecks with potential human remains have been declared as Maritime Cultural Heritage Protection SMAs. • In 2017, as part of the Permissions Improvement Program GBRMPA developed Guidelines for Historic heritage impact assessment in the permissions system. These guidelines consider three historic heritage values of the Marine Park: <ul style="list-style-type: none"> ○ World War II features and sites ○ Historic voyages and shipwrecks ○ Other places of historic significance. • However access to this information is difficult to obtain. 	<ul style="list-style-type: none"> • Special Management Area • Guidelines for Historic heritage impact 	Adequate	Stable
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address commercial marine tourism	4	<ul style="list-style-type: none"> • Operators (via the Association of Marine Park Tourism Operators - AMPTO) deliver a COTS control program at high value tourism sites and train tourism operators and community groups in COTS control. • Tourism operators significantly contribute to Reef management largely based around the 'Healthy Reef Healthy Industry' ideal and actively engage in the development of management arrangements and monitoring programs. 	<ul style="list-style-type: none"> • High Standard Tourism Program http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/how_to_choose_a_tour/certification • Eyes and Ears http://www.gbrmpa.gov.au/onboard/stewardship-and-best-practice/responsible-reef-practices/reporting 	Adequate	Stable

		<ul style="list-style-type: none"> • Contribution from tourism operators to be involved in partnership programs (i.e. High Standard Operators, Eye on the Reef Monitoring, Sightings Network, Eyes and Ears Program, Crown-of-thorns Starfish control program • Community groups such as OUCH (Association of Underwater Coral Heroes) provide voluntary assistance with management of the GBR. • Industry organisations such as AMPTO, CHARROA, WCBIA, WBOA, LIPS, CVA provide input to GBR management. Since 2014 there has been an unprecedented increase in the number of organisations and community groups involved in reef protection, including partnerships with tourism operators to address impacts to the reef. <ul style="list-style-type: none"> ○ Citizens of the Great Barrier Reef (est 2016) ○ Cape York Catchments – COTS control community group (est 2015) ○ Great Barrier Reef Citizen Science Alliance (est 2017) ○ Great Barrier Reef Legacy (est 2017 - independent research vessel run in partnership with tourism) ○ Tourism Operators and Businesses Magnetic Island (TOBMI)– snorkel trial at Geoffrey Bay and algal removal project (est 2015) • The partnership between OUCH volunteers and the tourism industry and the Authority enabled Eye on the Reef data to be collected post TC Debbie in Whitsundays. 	<ul style="list-style-type: none"> • Sightings network http://www.gbrmpa.gov.au/_data/assets/pdf_file/0013/4612/GBRMPA-sightings-information-sheet-A4-web.pdf • Order of Underwater Coral Heroes - http://www.landcareonline.com/case_study.asp?cid=32 • Eye on the Reef App and Sightings network • Citizens of the Great Barrier Reef • Great Barrier Reef Foundation • Great Barrier Reef Citizen Science Alliance • Great Barrier Reef Legacy • TOBMI 		
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of commercial marine tourism	4	<ul style="list-style-type: none"> • Tourism operators are actively involved as stewards of the Reef. Through the High Standard Tourism program, operators are increasingly working to voluntary best practice standards in their activities. 	<ul style="list-style-type: none"> • TRRAC - http://www.gbrmpa.gov.au/our-partners/reef-advisory-committee/tourism-and-recreation-reef-advisory-committee • RACs - http://www.gbrmpa.gov.au/about-us/reef-advisory-committee 	Adequate	Stable

		<ul style="list-style-type: none"> • The Association of Marine Park Tourism Operators, in partnership with the Authority and the Reef and Rainforest Research Centre (RRRC) are undertaking targeted control of crown-of-thorns starfish on the GBR. All these actions improve the sustainability of the industry and the health and resilience of the Reef. • Many operators also participate in research and monitoring programs, such as the Eye on the Reef environmental monitoring program, the Sightings Network and visitor surveys. Currently 25 tourism operators continue to actively gather reef health data. • The Marine Park Authority Board continues to be advised by a Tourism Reef Advisory Committee – which includes a number of marine tourism operators and industry organisations. The advice received assists the GBRMPA in the ongoing management of commercial marine tourism. • Ongoing tourism industry and community engagement is comprehensive with significant consultation on policy and planning required. • Ongoing tourism industry engagement through partnership programs (i.e. High Standard Operators, Eye on the Reef Monitoring, Sightings Network) • Ongoing tourism liaison through the National Landscape Program – opportunity to operators’ understanding and value for this World Heritage Area. • Regular liaison with industry on site relating to policy implementation and Marine Park permits. 	<ul style="list-style-type: none"> • LMACs - http://www.gbrmpa.gov.au/our-partners/local-marine-advisory-committees • Managing agencies - http://www.gbrmpa.gov.au/our-partners/queensland-government-agencies • http://www.gbrmpa.gov.au/our-partners/australian-government-agencies • Industry engagement • High Standard Tourism Program http://www.gbrmpa.gov.au/visit-the-reef/choose-a-high-standard-operator • Eye on the Reef Monitoring http://www.gbrmpa.gov.au/about-the-reef/how-the-reefs-managed/our-monitoring-and-assessment-programs/eye-on-the-reef • National Landscapes http://www.australia.com/campaigns/nationallandscapes/GreatBarrierReef.htm • High Standard Tourism program 		
PR2 The local community is effectively engaged in the ongoing management of commercial marine tourism	4	<ul style="list-style-type: none"> • There is a high level of engagement with local communities including representation at forums/TRAC/Public meetings /LMACs. • There are statutory requirements for engaging with the local community in the development of management plans, zoning plans, reviews and for some permit application assessments. • Following Cyclone Debbie in the Whitsundays area in 2017, there has been extensive community 	<ul style="list-style-type: none"> • LMAC Communiques: http://www.gbrmpa.gov.au/about-us/local-marine-advisory-committees 	Adequate	Improving

		engagement in the ongoing management of commercial marine tourism, with the Queensland Government investing in recovery of natural systems and rebuilding and building new tourism infrastructure.			
PR3 There is a sound governance system in place to address commercial marine tourism	4	<ul style="list-style-type: none"> GBRMPA is the key management agency responsible for ensuring the Great Barrier Reef Region is protected for the future. GBRMPA manages tourism in partnership with the QPWS through complimentary Zoning Plans, permits, some policy. This is captured under the Intergovernmental agreement and the Reef 2050 Plan. Other management agencies and tourism bodies also contribute to the governance system in differing ways e.g. through Protected Areas Management Forum (PAM), intergovernmental meetings under an MOU (Parks Australia), MOU between GBRMPA and the Great Barrier Reef Foundation. 	<ul style="list-style-type: none"> Reef 2050 Plan Intergovernmental agreement 	Adequate	Stable
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for commercial marine tourism	3	<ul style="list-style-type: none"> Performance monitoring is achieved through Annual Reports and Annual Operating Plan reporting mechanisms. One KPI relates to visitors to the Great Barrier Reef using tourism operators accredited as "High Standard Operators" Two recognised indicators of performance are visitor numbers and visitor satisfaction. Visitor numbers has been consistent in recent years and visitor satisfaction remains high. In Plan of Management areas there is no explicit performance monitoring of reef values (e.g. is the coral cover in better condition in a low use area vs a high use area). Performance of management tools is monitored through monitoring trends in compliance records, booking systems, etc. Compliance management by the Joint Field Management Program includes tourism in identified risk areas to ensure that operators comply with management requirements (e.g. zoning, permits, POMs) 	<ul style="list-style-type: none"> High Standard Operator graph: Link to Annual Report Strategic Plan 2012-2016 EMC - http://www.gbrmpa.gov.au/onboard/home/emc GBRMPA public interface of the permits database: http://www.gbrmpa.gov.au/corp_site/permits/pems_public/dsp_index.cfm Permission system service charter 	Adequate	Stable

		<ul style="list-style-type: none"> The permission systems has a service charter outlining commitments to implementing the permission system under the Great Barrier Reef Marine Park Act 1975 (the Marine Park Act) 			
PR5 Appropriate training is available to the managing agencies to address commercial marine tourism	3	<ul style="list-style-type: none"> Although there is no specifically targeted program of training for GBRMPA staff, opportunities are available for staff to participate in general training as well as attending workshops, seminars and conferences related to tourism in the GBR 	<ul style="list-style-type: none"> workshops 	Limited	Stable
PR6 Management of commercial marine tourism is consistently implemented across the relevant jurisdictions	3	<ul style="list-style-type: none"> Coordination between relevant agencies (GBRMPA, QPWS, QBFP, AMSA, MSQ, Queensland Water Police) to enforce Marine Park Acts, Regulations, Zoning Plans and Plans of Management is high Strong complementary legislative and governance base in place with State Joint permitting and assessment process in place Intergovernmental Agreement (updated in 2014) continues joint arrangements for permits, policies, compliance – all of which plan for and manage commercial marine tourism. An appendix was added in 2015 to incorporate the Reef 2050 Plan to further strengthen cross-jurisdictional management across the Reef. 	<ul style="list-style-type: none"> Joint permitting system http://www.gbrmpa.gov.au/zoning-permits-and-plans/permits Compliance and enforcement http://www.gbrmpa.gov.au/about-the-reef/how-the-reefs-managed/field-management-of-the-great-barrier-reef-marine-park Intergovernmental Agreement 	Adequate	Stable
PR7 There are effective processes applied to resolve differing views/ conflicts regarding commercial marine tourism	4	<ul style="list-style-type: none"> Statutory processes are in place for appealing tourism permit decisions (reconsideration - internal review and then AAT – Cwth, QCAT - QLD) Regular meetings of Government agencies, industry groups (AMPTO, etc) and advisory committees (TRAC, LMAC) are used as a forum to resolve differing views Consultation for site arrangements also provide opportunities to resolve differing views or conflicts. 	<ul style="list-style-type: none"> Stakeholders and workshops TRAC LMACs 	Adequate	Stable
PR8 Impacts (direct, indirect and cumulative) of activities associated with commercial marine tourism are appropriately considered.	3	<ul style="list-style-type: none"> Research on tourism impacts has previously been well documented, and current research has focussed on better understanding the industry and its social and economic values including the value of certain species and activities to the industry 	<ul style="list-style-type: none"> Site management arrangements - http://www.gbrmpa.gov.au/corp_site/management/site_management Policies – Managing tourism permissions– http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/management/policies/permits_policy Updated Permission System and Guidelines 	Limited	Stable

		<ul style="list-style-type: none"> • Cumulative impacts from tourism are generally dealt with through statutory instruments such as Plans of Management or policy such as site management plans. • Marine Park permissions include provisions to limit cumulative impacts including 2 visits in any 7 day period, 50 days to a location with a booking in high use areas within the Plans of Management? • GBRMP Regulations provide the ability to review/change tourism permit conditions as necessary – this would include as cumulative impacts become obvious. Similar provisions apply under State Marine Park legislation. • The GBRMPA policy “Managing Tourism Permissions” limits the latency associated with unused permits, and thereby potential cumulative impacts, by implementing use it or lose it principles. • In 2016-17 GBRMPA reviewed and improved its permissions system, creating numerous assessment guidelines to assist with the consistent and comprehensive assessment of impacts from activities including marine tourism. • The review of tourism policies also take into consideration impacts of tourism. <ul style="list-style-type: none"> ○ The policy on Moorings in the Great Barrier Reef. ○ The draft Cruise ship policy has been through public consultation and been to MPA in September 2017 with only minor amendments needed to finalise it. ○ A review has commenced for the policy on Managing Tourism Permissions (including Allocation, Latency and Tenure). 	<ul style="list-style-type: none"> • Permissions System Policy 		
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management	4	<ul style="list-style-type: none"> • The Authority endeavours to build on best available biophysical and monitoring research information to make relevant management decisions, including monitoring information provided by tourism operators themselves through the Eye on the Reef Program. 	<ul style="list-style-type: none"> • Eye on the Reef Program (see PR1) • Economic value - (see Key Document 1: Access Economics) • Satisfaction - (see Key Document 3: Young & Temperton) • Management of tourism impacts management (See Key Document 2: Harriott) 	Adequate	Stable

decisions regarding commercial marine tourism		<ul style="list-style-type: none"> The Great Barrier Reef is currently experiencing a crown of thorns starfish outbreak (which initiated in ~2011). The Queensland Parks and Wildlife Service (QPWS), through the jointly funded State and Commonwealth Field Management Program, undertake extensive broad scale surveillance of crown-of-thorns starfish populations on individual reefs. Researchers, tourism operators and the public also provide sightings of crown-of-thorns starfish and general reef condition through the GBRMPA's Eye on the Reef program 	<ul style="list-style-type: none"> Hughes et al (2017) Global warming and recurrent mass bleaching of corals, Nature 543, 373. Marine Tourism Contingency Policy: http://hdl.handle.net/11017/827 		
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding commercial marine tourism	3	<ul style="list-style-type: none"> The GBRMPA monitors emerging socio-economic issues to make relevant management decisions including information provided by the SELTMP, Bureau of Statistics, Tourism data provided by Tourism Australia and Tourism Queensland and GBRMPA's own socio-economic program. SELTMP is designed to capture social and economic information from Great Barrier Reef industries and coastal communities. Research on tourism impacts has previously been well documented, and current research has focussed on better understanding the industry and its social and economic values including the value of certain species and activities to the industry. Contemporary knowledge is sourced and used in the development of tourism related plans, policies and permit assessments. 	<ul style="list-style-type: none"> Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) <i>The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report</i>. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Adequate	Stable
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding commercial marine tourism	3	<ul style="list-style-type: none"> Re-formation of an Indigenous Reef Advisory Committee in 2015 has increased access to the best available indigenous heritage information to make management decisions regarding tourism. An Indigenous representative forms part of the TRAC. Any large tourism operations that are likely to impact on indigenous heritage are referred internally to GBRMPAs planning and policy section 	<ul style="list-style-type: none"> Indigenous Reef Advisory Committee http://www.gbrmpa.gov.au/our-partners/reef-advisory-committee/indigenous-reef-advisory-committee Reef Facts for Traditional Owners http://www.gbrmpa.gov.au/data/assets/pdf_file/0016/11257/4-Traditional-Owners-of-the-GBR.pdf Woppaburra heritage assessment Guidelines 	Adequate	Stable

		<ul style="list-style-type: none"> GBRMPA worked with Woppaburra Traditional Owners to complete a heritage assessment for their country in the Keppel island Group. As a result, GBRMPA now has a heritage assessment for the area (with identified sensitive locations) and guidelines to ensure activities that apply for a permit do not impact on indigenous heritage values. 			
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding commercial marine tourism	3	<ul style="list-style-type: none"> Historic shipwrecks are protected, and access is permitted by Museum of Tropical Queensland A heritage management plan is in place for Lady Elliot Island, and draft plans for Dent Island and Low Isles Commonwealth islands with lighthouses and tourism program and or resorts This information was incorporated into the revised WPOM for Dent Island. 	<ul style="list-style-type: none"> Heritage management plan is in place for Lady Elliot Island Draft plans for Dent Island and Low Isles Commonwealth islands 	Limited	Stable
PR13 Relevant standards are identified and being met regarding commercial marine tourism	3	<ul style="list-style-type: none"> The GBRMPA is widely regarded as a world leader in tourism management and consistently applies relevant national standards as the minimum basis for management. Eco certification is used to recognise high performing tourism operations. These operators can also apply for longer-duration permits. The 2015-2020 Strengthening Permission Compliance Action Plan (for GBRMPA) purpose is to facilitate the sustainable delivery of an enhanced permission compliance program and is consistent with the following: <ul style="list-style-type: none"> the Australian Government Guide to Regulation and associated deregulation policy objectives; the Reef 2050 Long-Term Sustainability Plan; the Great Barrier Reef Region Strategic Assessment Program Report; the agency's Compliance Policy; 	<ul style="list-style-type: none"> High standard operators: http://www.gbrmpa.gov.au/visit-the-reef/choose-a-high-standard-operator/high-standard-tourism-operation International recognition Tourism for Tomorrow Award http://www.tourismfortomorrow.com/prevwinners/2007winners.htm Strengthening Permission Compliance Action Plan Responsible Reef Practices: http://www.gbrmpa.gov.au/onboard/stewardship-and-best-practice/responsible-reef-practices 	Adequate	Stable

		<ul style="list-style-type: none"> ○ recommendations made via the ANAO's performance audit of the agency's permission system; ○ the Australian National Audit Office's Better Practice Guide, Administering Regulation2; and ○ AS/NZS ISO/IEC 17020:2013 Conformity assessment - Requirements for the operation of various types of bodies performing inspection. 			
PR14 Targets have been established to benchmark management performance for commercial marine tourism	3	<ul style="list-style-type: none"> • Sixty-three per cent of visitors to the Great Barrier Reef Marine Park travel with High Standard Tourism Operations • Permission/compliance targets are being met 	<ul style="list-style-type: none"> • High standard operators: • http://www.gbrmpa.gov.au/visit-the-reef/choose-a-high-standard-operator/high-standard-tourism-operation 	Adequate	Stable
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for commercial marine tourism	3	<ul style="list-style-type: none"> • Generally management programs are delivered on time however some delays inevitably are outside the GBRMPA's control, eg. POM amendments slow due to legislative impediments and available resources/priority • Since 2014, a significant amount of work has been dedicated to producing outputs related to streamlined permitting processes (which heavily impact on and manage commercial marine tourism) and some tourism policy. • The Whitsundays Plan of Management was reviewed in 2015-17 and implemented progressively from when it came into effect on 2 August 2017 • An overarching strategy for the management of tourism has not been progressed due to competing Authority priorities of amending the Whitsundays Plan of Management and managing the crown-of-thorns starfish control program. With the new operational structure in place for the Authority in late 2017, there will be a dedicated focus on tourism policy 	<ul style="list-style-type: none"> • Stakeholders and workshops • Whitsunday Plan of Management 	Limited	Stable
OP2 Implementation of management documents	3	<ul style="list-style-type: none"> • While many programs are ongoing, in general programs are delivered within timeframes (e.g. High Standard 	<ul style="list-style-type: none"> • High Standard Tourism program • Eye on the Reef program 	Limited	Stable

and/or programs relevant to commercial marine tourism have progressed in accordance with timeframes specified in those documents		Tourism program, Eye on the Reef program, COTS program).	<ul style="list-style-type: none"> COTS program 		
OP3 The results (in OP1 above) have achieved their stated management objectives for commercial marine tourism	3	<ul style="list-style-type: none"> In general, work plans do meet specific objectives For example, in 2015–16, marine facilities were serviced to a high standard, with 98 per cent of 123 public moorings and 94 per cent of 144 reef protection markers operational in the World Heritage Area to protect coral and seagrass habitats from anchor damage and facilitate visitor use. Reducing the loss of coral cover at high value tourism sites (through removal of crown-of-thorns starfish) to less than what would have occurred without control is a successful outcome. Growth of the High Standard Tourism program was achieved in this successful partnership, the number of operators involved has steadily increased to 69 in 2017. These operators carry approximately 63 per cent of tourists visiting the Reef which is above the Portfolio Budget Statement performance indicator of 55 per cent. Auditing ensures that the standards are maintained. WPoM was amended after taking into consideration all of the values of the areas, the likely impact of any of the proposed changes and public submissions that were made on the proposed changes. 	<ul style="list-style-type: none"> High Standard Tourism program Eye on the Reef program COTS program Whitsunday Plan of Management 	Adequate	Stable
OP4 To date, products or services have been produced in accordance with the stated management objectives for commercial marine tourism	4	<ul style="list-style-type: none"> Products and services related to tourism implemented in accordance with objectives identified in GBRMPA Strategic Plan, Agency Annual Operating Plan Tourism policies have been developed and implemented. Tourism engagement regime has been maintained, however by 2017, the high turnover of Authority staff, long timeframes for permit assessments and policy changes and the inflexibility of some of the managing 	<ul style="list-style-type: none"> Eye on the Reef program http://www.gbrmpa.gov.au/about-the-reef/how-the-reefs-managed/our-monitoring-and-assessment-programs/eye-on-the-reef High Standard Tourism Program http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/how_to_choose_a_tour/certification Stakeholders and workshops 	Adequate	Stable

		tools has resulted in strained relations with some of the industry.			
OP5 Effective knowledge management systems regarding commercial marine tourism are in place within agencies	4	<ul style="list-style-type: none"> • EMC online in place to manage Environmental Management Charge (EMC) payments and visitation data • Bookings can also be made online to plan of management areas. • As of 4 October 2017 Permits Online allows applicants to submit Marine Parks permit applications, manage their applications, existing permits and contact details online. • Management of scientific information procedures are in place and are delivered at whole-of-GBRMPA using RefWorks as its database and citation management tool • Tools to disseminate information about values and impacts on them are available, and undergoing development to improve service delivery – e.g. the Eye on the Reef program to provide a centralised database for Reef health information, Reef Explorer is an interactive tool for displaying spatial information • Spatial information and datasets arising from research conducted in the Marine Park are housed and managed by the GBRMPA Spatial Data Centre 	<ul style="list-style-type: none"> • Eye on the Reef • Reef Explorer • EMC online 	Adequate	Stable
OP6 Effective systems are in place to share knowledge on commercial marine tourism with the community	4	<ul style="list-style-type: none"> • Communication through plain-English products summarising outcomes of scientific research is undertaken to some extent, but not systematically • e-Library (GBRMPA external website) provides access to publications and all policies, guidelines etc • eResearch Archive is a digital repository of scientific and research publications, and datasets authored by DAFF staff, including journal articles, book chapters, conference papers, thesis and raw data collected in the course of research • The wider community is engaged via the GBRMPA's LMACs, social media channels and media releases 	<ul style="list-style-type: none"> • Tourism on the Great Barrier Reef • Onboard-Tourism Operator's Handbook • GBRMPA public interface of the permits database: http://www.gbrmpa.gov.au/corp_site/permits/pems_public/dsp_index.cfm 	Adequate	Stable

		<ul style="list-style-type: none"> The tourism community is engaged in issues-specific workshops and forums and the Tourism Reef Advisory Committee by GBRMPA 			
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing commercial marine tourism and moving towards the attainment of the desired outcomes.	4	<ul style="list-style-type: none"> Concern about tourism impacts in the Great Barrier Reef arose during the 1980s and 1990s because of rapidly increasing tourism visitor numbers, forecasts of exponential future growth and widely reported damage to popular reefs and adjacent islands. With the introduction of more intensive management of popular areas, limits on the number of vessels and group sizes, an increase in supporting infrastructure and the adoption of best practices by operators, many of these concerns have been avoided or mitigated. As a result, the impacts associated with tourism activities today are generally regarded as low risk and are concentrated in a few intensively managed areas. Management of tourism in the GBRMP is being effectively addressed through: <ul style="list-style-type: none"> regular consultation with industry, other management agencies and the general public management plans and policies developed and implemented to manage the potential impacts of tourism and to ensure tourism is a sustainable use into the future 	<ul style="list-style-type: none"> Workshop Discussions 	Adequate	Stable
OC2 The outputs relating to commercial marine tourism are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	3	<ul style="list-style-type: none"> Outputs are largely on track with values protected including: Natural and cultural protected values through the Plans of Management, policies and Marine Parks permits Some iconic and endangered species that are important to tourism protected through legislation Coral protection through use of public moorings and no-anchoring areas. 	<ul style="list-style-type: none"> Whitsunday Plan of Management COTS program 	Adequate	Stable

		<ul style="list-style-type: none"> The COTS control program is one of the Authority's key actions to protect coral cover and enhance the capacity of the Reef to recover from impacts such as coral bleaching and tropical cyclones. The outcomes of the COTS program are on track – with 66% of the priority reefs showing COTS numbers being successfully suppressed below outbreak levels. The number of areas protected by reef protection markers installed in the marine park has increased since 2014. Under the Queensland Government SRIPP Reef Protection Program 80 new public moorings have been installed as of November 2017 			
OC3 the outputs (refer OP1 and 3) for commercial marine tourism are reducing the major risks and the threats to the Great Barrier Reef	4	<ul style="list-style-type: none"> Management to protect coral and habitats from tourism (and other uses) and for tourism is in place, however factors outside managing agencies direct control (climate change, coral bleaching, extreme weather) are affecting the condition of values. Threats associated with extreme weather events and environmental incidents are addressed to some degree with additional outputs (permits revised under the Marine Tourism Coordination Framework and Marine Tourism Contingency Plan) Risks to the GBR from tourism activity has been significantly reduced through management and education including: <ul style="list-style-type: none"> Improved management of potential tourism impacts through permit assessments Compliance reporting from tourism operators Reduced conflict of use through the ongoing management under the Zoning Plan, Plans of Management and Site Plans Accreditation of tourism operators for high environmental standards, reduces risk 	<ul style="list-style-type: none"> Coral bleaching events 2016 and 2017 Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) <i>The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef. Final Report.</i> Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Adequate	Stable
OC4 Use of the Great Barrier Reef relating to commercial marine tourism is demonstrably environmentally sustainable	3	<ul style="list-style-type: none"> Growth of the High Standard Tourism program since 2014 achieved with 67 operators recognised as high standard and who carry over 63 per cent of visitors to the Reef. These operators are independently certified 	<ul style="list-style-type: none"> High Standard Tourism Program http://www.gbmpa.gov.au/corp_site/key_issues/tourism/how_to_choose_a_tour/certification 	Adequate	Stable

		<p>as operating to high standards relating to protection of the environment, presentation of the Great Barrier Reef to visitors and working in partnership with protected area managers and local communities.</p> <ul style="list-style-type: none"> • There are no indicators to suggest that tourism is not being sustainably managed • GBRMPA resources are directed at ensuring tourism is sustainable by; reviewing tourism management arrangements (e.g. plans of management), managing tourism permits, streamlining environmental impact assessments (to be more risk-based and publicly transparent), planning, compliance and enforcement, maintenance of supporting infrastructure, research (RIMReP and SELTMP), collection of EMC and reporting. 	<ul style="list-style-type: none"> • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) <i>The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report</i>. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 		
OC5 Use of the Great Barrier Reef relating to commercial marine tourism is demonstrably economically sustainable	3	<ul style="list-style-type: none"> • Visitation to the Great Barrier Reef is very buoyant. The influence of the 2007 Global Financial Crisis had a delayed effect to visitation to the Great Barrier Reef and hit a low point in 2011–12. Visitation began to rise in 2012–13 from 1.8 million to over 2.3 million in 2016–17 (These figures don't include coral viewing or scenic flights.) 	<ul style="list-style-type: none"> • Visitation numbers: http://www.gbrmpa.gov.au/visit-the-reef/visitor-contributions/gbr_visitation/numbers 	Adequate	Improving
OC6 Use of the Great Barrier Reef relating to commercial marine tourism is demonstrably socially sustainable understanding and/or enjoyment	4	<ul style="list-style-type: none"> • Visitor numbers have increased over the past five years. • The Reef HQ Aquarium provides an avenue to enhance community understanding of the GBR. It has consistently met visitor expectations and contributes to promoting World Heritage values of the GBR to a wide range of visitors. • 80% of visitors to the Reef are either satisfied or very satisfied with the experience (SELTMP) 	<ul style="list-style-type: none"> • http://www.gbrmpa.gov.au/visit-the-reef/visitor-contributions/gbr_visitation/numbers • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) <i>The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report</i>. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Adequate	Stable
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address commercial marine tourism	4	<ul style="list-style-type: none"> • A strong and active partnership with the tourism industry has been maintained with tourism actively engaged and generally supportive of the management of the Reef and the GBRMPA. • During the 2016/17 coral bleaching event there was some contention between some tourism 	<ul style="list-style-type: none"> • LMAC • RAC • Workshop discussions • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) <i>The Social and Economic Long Term Monitoring Program (SELTMP) for the Great</i> 	Adequate	Stable

		<p>operators/association and researchers/managers who were conducting coral bleaching surveys.</p> <ul style="list-style-type: none"> • Tourism engagement regime has been maintained, however by 2017, the high turnover of Authority staff, long timeframes for permit assessments and policy changes and the inflexibility of some of the managing tools has resulted in strained relations with some of the industry. • Reduced administrative burden on tourism operators through simplification and increased flexibility of tourism management arrangements (Permits Online 2017) • Continued engagement through LMACs and RACs, 	<p>Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.).</p>		
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Table 25 Calculation of grades for community benefits of the environment

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to community benefits of the environment are understood by managers	3	<ul style="list-style-type: none"> Protection of the Reef and associated community benefit is captured in the Agency's statement of purpose and reflects high level understanding by managers that the Reef has community benefit (Ref. Corporate Plan) Recognition that the most significant threats to the long-term health of the Reef now being outside the Authority's direct control has driven the need for the Authority to step up efforts to work with and influence the broader community. To effectively do this has presented managers with the need to better understand values of and benefits to the community. Strategies in the Corporate Plan and projects in the linked Annual Operating Plan's reflect current understanding, recognised gaps and actions to address these 	<ul style="list-style-type: none"> Great Barrier Reef Marine Park Authority, science strategy and information needs, 2014-19 Great Barrier Reef Marine Park Authority Corporate Plan, 2017-18 Reef 2050 Long-Term Sustainability Plan Reef 2050 WQIP 	Adequate	Improving
CO2 The current condition and trend of values relevant community benefits of the environment are known by managers	3	<ul style="list-style-type: none"> Social & Economic Long Term Monitoring Program (SELTMP) provided baseline data relevant to community perceptions of condition and trend of values relevant to them. The inclusion of management of community benefits in the Outlook Report for the first time in 2014, has contributed to a suite of management activities to improve knowledge of which values have the greatest relevance to community benefit. This work includes research to improve understanding of indicators and develop processes for assessing condition and monitoring trend of community benefits 	<ul style="list-style-type: none"> Draft Reef 2050 Plan Cumulative Impact Management Policy Draft Reef 2050 Plan Net benefit Policy Experimental Environmental-Economic Accounts for the Great Barrier Reef, 2017 Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef Marshall NA, Curnock MI, Goldberg J, Gooch M, Marshall PA, Pert PL, & Tobin RC. (2017): The Dependency of People on the Great Barrier Reef, Australia, <i>Coastal Management</i>, DOI: 10.1080/08920753.2017.1373454 NESP project 3.2.2 The IMS 2050 Human Dimensions Project: cost-effective Indicators and metrics for key GBRWHA human dimensions Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program 	Limited	Improving

			(SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.).		
CO3 Impacts (direct, indirect and cumulative) associated with community benefits of the environment are understood by managers.	3	<ul style="list-style-type: none"> Impacts associated with community benefits are summarised in the Strategic Assessments and Outlook Reports The update and extension of the social and economic long-term monitoring program (SELTMP) for the Great Barrier Reef (previously funded through the NERP/NESP) to undertake effective monitoring and reporting on progress of the four Human Dimensions theme outcomes under the Reef 2050 plan, to provide the necessary data and interpretation to understand changes that are occurring within the region, and to make plans for the future. The market research commissioned by the Agency in 2016 to inform brand positioning gave insight to impacts of management on community perceptions and beliefs and is informing elements of future management strategy. 	<ul style="list-style-type: none"> Developing a brand strategy for the Great Barrier Reef Marine Park Authority (Pollinate, 2016) Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Adequate	Improving
CO4 The broader (national and international) level influences relevant to community benefits of the environment are understood by managers.	4	<ul style="list-style-type: none"> The State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area to the World Heritage Committee and the 2016 State of the Environment Report, reflect a good understanding of national and international influences relevant to community benefits associated with the Reef. 	<ul style="list-style-type: none"> Reef 2050 Long-Term Sustainability Plan State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 	Adequate	Improving
CO5 The stakeholders relevant to community benefits of the environment are well known by managers.	4	<ul style="list-style-type: none"> The stakeholders are well known by management as an outcome of many forums and activities that provide for stakeholder and community engagement and/or participation in caring for the Reef and connected environment. Depending on their function, these forums and activities have stakeholders representing 	<ul style="list-style-type: none"> Reef 2050 Integrated Monitoring and Reporting Program Reef 2050 Long-Term Sustainability Plan State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 State of the Environment Report 2016 https://soe.environment.gov.au/download/reports 	Adequate	Improving

		various sectors of the community with knowledge of impacts/benefits relevant to their sector/region.	<ul style="list-style-type: none"> Reef Trust: http://www.environment.gov.au/marine/gbr/reef-trust 		
PLANNING					
PL1 There is a planning system in place that effectively addresses community benefits of the environment	3	<ul style="list-style-type: none"> The Reef 2050 Plan outlines strategies for managing and preserving the Great Barrier Reef World Heritage Area, and provides the basis to ensure wise use and protection of the Great Barrier Reef World Heritage Area for the future. The Reef 2050 Plan aims to develop a shared understanding of community benefits derived from the Reef. An important step is further developing a long-term social and economic monitoring program. Zoning plans, Recreation Management Strategy and Plans of Management, as well as protected area management plans (undertaken by QPWS) segregate conflicting uses to ensure access to resources, support enjoyment and encourage personal attachment to the Reef 	<ul style="list-style-type: none"> Reef 2050 Long Term Sustainability Plan GBRMP Act: http://www.comlaw.gov.au/Details/C2011C00149 Zoning Plan: http://www.gbrmpa.gov.au/zoning-permits-and-plans/zoning Managing Multiple Uses: http://www.gbrmpa.gov.au/about-the-reef/Managing-multiple-uses 	Adequate	Improving
PL2 The planning system for community benefits of the environment addresses the major factors influencing the Great Barrier Reef Region's values.	3	<ul style="list-style-type: none"> The Guidelines for social impact assessment in the permission system (2017) which provides guidance on assessing impacts to social values within the permission system as well as including on-going monitoring of impacts associated with new developments. Permits – managed tourism pressures, some scientific research pressures, harvest fisheries The draft Cumulative impact policy provides a systematic and consistent approach to managing and reducing cumulative impacts on the GBR. Community attitudes can directly affect decisions that are made about the Great Barrier Reef's health by governments, communities, industry and others. 	<ul style="list-style-type: none"> Reef 2050 Long Term Sustainability Plan GBRMP Act: http://www.comlaw.gov.au/Details/C2011C00149 Zoning Plan: http://www.gbrmpa.gov.au/zoning-permits-and-plans/zoning 	Adequate	Improving

<p>PL3 Actions for implementation regarding community benefits of the environment are clearly identified within the plan</p>	<p>3</p>	<ul style="list-style-type: none"> NESP human dimensions Project is developing indicators which will be critical to set a Great Barrier Reef (GBR) wide benchmark for the state of the human dimensions of the GBR, which will be enabled through the Reef 2050 Plan. The NESP project will build on work from RIMREP and develop cost-effective indicators and metrics for human dimension outcomes, objectives and targets in the Reef 2050 Plan consistent with DPSIR framework Human dimension target included in the Reef 2050 Water Quality Improvement Plan 	<ul style="list-style-type: none"> Great Barrier Reef Marine Park Zoning Plan 2003 NESP project 3.2.2 The IMS 2050 Human Dimensions Project: cost-effective Indicators and metrics for key GBRWHA human dimensions. Portal document Commonwealth II (002) Reef 2050 Long-Term Sustainability Plan Reef 2050 Water Quality Improvement Plan 	<p>Limited</p>	<p>Improving</p>
<p>PL4 Clear, measurable and appropriate objectives for management of community benefits of the environment have been documented</p>	<p>3</p>	<ul style="list-style-type: none"> The NESP project will build on work from RIMREP and develop cost-effective indicators and metrics for human dimension outcomes, objectives and targets in the Reef 2050 Plan. Human dimension target included in the Reef 2050 Water Quality Improvement Plan 	<ul style="list-style-type: none"> NESP project 3.2.2 The IMS 2050 Human Dimensions Project: cost-effective Indicators and metrics for key GBRWHA human dimensions. Portal document Commonwealth II (002) Reef 2050 Long-Term Sustainability Plan Reef 2050 Water Quality Improvement Plan 	<p>Limited</p>	<p>Improving</p>
<p>PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to community benefits of the environment</p>	<p>3</p>	<ul style="list-style-type: none"> SELTMP is assisting Reef managers and other decision-makers within the Great Barrier Reef region to incorporate human dimension into their planning and management The NESP project 3.2.2 are developing indicators for monitoring and modelling the human dimension outcomes, objectives and targets from the Reef 2050 Long-Term Sustainability Plan (Reef 2050 Plan). This work is fully embedded within the within Reef Integrated Monitoring and Reporting Program (RIMReP). The NESP project 3.2.4 will work across social and ecological disciplines to identify, for the first time, indicators that will enable managers to measure and monitor aesthetic values for the GBRWHA 	<ul style="list-style-type: none"> NESP project 3.2.2 The IMS 2050 Human Dimensions Project: cost-effective Indicators and metrics for key GBRWHA human dimensions. Portal document Commonwealth II (002) Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). Reef 2050 Long-Term Sustainability Plan RIMREP NESP project 2.2.4 	<p>Limited</p>	<p>Improving</p>

<p>PL6 The main stakeholders &/or the local community are effectively engaged in planning to address community benefits of the environment</p>	<p>4</p>	<ul style="list-style-type: none"> • GBRMPA consults with the public on a range of matters that concern the Marine Park, including permit applications and proposed developments. People interested in the management of the Great Barrier Reef and World Heritage Area, including proposed developments, have valuable knowledge that contributes to the assessment process. A list of current plans, applications and assessments for public consultation are available online, along with details on the process • Established committees such as the LMACs and RACs play an important role. • Reef Guardians Program: The Reef Guardian program is a successful stewardship program that began with schools in 2003 to encourage the community to take action for a healthier Reef. The program has since expanded to include councils, famers and fishers. • The Regional Report Cards involve industry, the Australian Government, Queensland Government, local government, universities and research institutions in the provision of streamlined monitoring, targeted management and expert science advice to maintain and continuously improve healthy ecosystems. 	<ul style="list-style-type: none"> • Reef Guardians • LMACS • RACS • Reef 2050 Long-Term Sustainability Plan • 	<p>Limited</p>	<p>Improving</p>
<p>PL7 Sufficient policy currently exists to effectively address community benefits of the environment</p>	<p>3</p>	<ul style="list-style-type: none"> • Several policies are in place that contain aspects to effectively address community benefits including: <ul style="list-style-type: none"> ○ Recreation Management Strategy (more broadly covers enjoyment and appreciation, access, personal connections, income) although this hasn't been updated since 2012. ○ Responsible Reef Practices ○ Policy on Managing Tourism Permissions to Operate in the Great Barrier Reef Marine 	<ul style="list-style-type: none"> • Reef 2050 Integrated Monitoring and Reporting Program • Reef 2050 Long-Term Sustainability Plan • Draft Reef 2050 Plan Cumulative Impact Management Policy • Draft Reef 2050 Plan Net benefit Policy • Reef 2050 WQIP • 	<p>Adequate</p>	<p>Improving</p>

		<p>Park (including Allocation, Latency & Tenure)</p> <ul style="list-style-type: none"> ○ Cruise Shipping Policy for the Great Barrier Reef Marine Park ○ Policy on Moorings in the Great Barrier Reef Marine Park ○ Policy on Managing Bareboat Operations in the Great Barrier Reef Marine Park ○ Position Statement - Management of tourist flights in the vicinity of Magnetic Island ○ Position Statement on Indigenous Participation in Tourism and its Management ○ Position Statement on Management of Commercial Jet Ski Operations around Magnetic Island ○ Site-specific management arrangements ● The Reef 2050 outlines strategies for managing and preserving the Great Barrier Reef World Heritage Area, and provides the basis to ensure wise use and protection of the Great Barrier Reef World Heritage Area for the future. The Reef 2050 Plan aims to develop a shared understanding of community benefits derived from the Reef. An important step is further developing a long-term social and economic monitoring program. ● Socio and economic research is being brought into the RIMREP Human Dimensions expert working group ● Human dimension target included in the Reef 2050 Water Quality Improvement Plan (Reef 2050 WQIP) ● Human dimensions research is part of the new Reef 2050 Water Quality Research Development and Innovation Strategy to 			
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		<p>continue informing the Queensland Reef Water Quality Program and others</p> <ul style="list-style-type: none"> • Environmental Stewardship monitoring is introduced in all Queensland Reef Water Quality Program agricultural practice change projects to guide their engagement with producers and provide early indication of practice change 			
PL8 There is consistency across jurisdictions when planning for community benefits of the environment	3	<ul style="list-style-type: none"> • The Intergovernmental Agreement on the Environment for the Great Barrier Reef provides the 'head of power' for aspects of community benefits through the joint permitting system between the Authority and QPWS. This joint system allows for consistent consideration and management of access to resources through permits, Zoning Plans and Plans of Management. • The Reef 2050 Plan outlines strategies for managing and preserving the Great Barrier Reef World Heritage Area, and provides the basis to ensure wise use and protection of the Great Barrier Reef World Heritage Area for the future. The Reef 2050 Plan aims to develop a shared understanding of community benefits derived from the Reef. 	<ul style="list-style-type: none"> • Intergovernmental Agreement on the Environment • Heads of Agreement on Commonwealth/State Roles and Responsibilities for the Environment • Information Sheet - Joint Marine Parks permissions with Queensland • 	Adequate	Improving
PL9 Plans relevant to community benefits of the environment provide certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.	3	<ul style="list-style-type: none"> • Plans regarding access to resources and extractive activities are clear and provide certainty for tourism, fishing and recreation. • The Authority and QPWS have a joint-permit working group (JPWG) to streamline plans and improve certainty and consistent management. 	<ul style="list-style-type: none"> • Great Barrier Reef Marine Park Zoning Plan 2003 • GBRMPA Plans of Management • GBRMPA policies and position statements • Site Specific Management • Reef 2050 Integrated Monitoring and Reporting Program • Reef 2050 Long-Term Sustainability Plan • Information Sheet - Joint Marine Parks permissions with Queensland 	Adequate	Improving
INPUTS					

IN1 Financial resources are adequate and prioritised to meet management objectives to address community benefits of the environment	3	<ul style="list-style-type: none"> • Social and economic research is undertaken by JCU and CSIRO, including projects under NESP • The RIMREP has recently funded the update and extension of the social and economic long-term monitoring program (SELTMP) for the Great Barrier Reef 	<ul style="list-style-type: none"> • RIMREP • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). • Workshops and stakeholder interviews 	Limited	Improving
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address community benefits of the environment	3	<ul style="list-style-type: none"> • GBRMPA has one FTE as a dedicated position as Manager, Social and Economic Science. • Other staff consider community benefits (e.g. EAP permit staff) in relation to their positions, as guided by the GBRMPA Act • GBRMPA has recently contracted CSIRO to provide a staff member to collect, analyse and present secondary data and other information for RIMReP that can provide a key line of evidence for benchmarking the Reef 2050 Plan's progress towards meeting its human dimensions targets, actions objectives and outcomes. • Queensland Reef Water Quality Program has two resources dedicated to driving human dimensions actions from the Reef 2050 Water Quality Improvement Plan 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Annual Operating Plan 	Limited	Stable
IN3 The right skill sets and expertise are currently available to the managing organisations to address community benefits of the environment	3	<ul style="list-style-type: none"> • The GBRMPA employs one dedicated Social Scientist and engages regularly with social-ecological scientists at numerous institutions (e.g. JCU, CSIRO, UQ, Griffith) through NESP projects and RIMReP. • Relevant expertise and skills can be outsourced through consultation with Industry and/or other Government and research agencies. • Queensland Reef Water Quality Program has two resources dedicated to driving human dimensions actions from the Reef 2050 Water Quality Improvement Plan 	<ul style="list-style-type: none"> • RIMReP • Workshops and stakeholder interviews 	Limited	Stable

IN4 The necessary biophysical information is currently available to address community benefits of the environment	3	<ul style="list-style-type: none"> • The Reef 2050 Plan aims to develop a shared understanding of community benefits derived from the Reef. An important step is further developing a long-term social and economic monitoring program • SELTMP 2017 survey includes new questions of community perceptions of water quality and inshore environments. • Reef 2050 Water Quality Research Development and Innovation Strategy highlights key research gaps with specific focus across sediment, nutrient, pesticide, marine and human dimensions topics to target research investment where it can provide most value to Reef managers • The 2017 Scientific Consensus Statement for the Great Barrier Reef – a review of the significant advances in scientific knowledge of water quality issues in the Great Barrier Reef provides a consensus on the current understanding of the system. The Statement is the foundational document that provides the scientific understanding underpinning the Reef 2050 Water Quality Improvement Plan 2017–2022 and it informs the Queensland Reef Water Quality Program and other investments. 	<ul style="list-style-type: none"> • Draft Reef 2050 Cumulative Impact Management Policy • Net benefit Policy • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). • Reef 2050 Long-Term Sustainability Plan • Reef 2050 Integrated Monitoring and Reporting Program • Cost-effective indicators and metrics for monitoring the human dimensions of the Great Barrier Reef: current NESP project underway. • New papers on human dimensions such as Marshall et al (in press) <i>The dependency of people on the Great Barrier Reef, Australia</i> and Gooch et al (in press) <i>Assessment and promotion of the Great Barrier Reef's human dimensions through collaboration</i>. • https://www.reefplan.qld.gov.au/implementation/research-development/ (• https://www.reefplan.qld.gov.au/about/reef-science/scientific-consensus-statement/ 	Adequate	Improving
IN5 The necessary socio-economic information is currently available to address community benefits of the environment	3	<ul style="list-style-type: none"> • The NESP project is developing indicators for monitoring and modelling the human dimension outcomes, objectives and targets from the Reef 2050 Plan • Socio and economic research is being brought into the RIMREP Human Dimensions expert working group to inform the RIMREP Program design • The economic and social impacts of protecting the environmental values of the waters of the 	<ul style="list-style-type: none"> • NESP Project 3.2.3 Monitoring aesthetic value of the Great Barrier Reef by using artificial intelligence to score photos and videos • NESP Project 3.2.4 - Defining, assessing and monitoring Great Barrier Reef aesthetics • Gooch et al., Draft Report: Assessing the human dimensions of the GBR: A Wet Tropics Region focus – portal • Experimental Environmental-Economic Accounts for the Great Barrier Reef, 2017 	Adequate	Improving

		<p>Capricorn and Curtis Coasts (Oct 2014) DEHP, Qld.</p> <ul style="list-style-type: none"> Gooch report aims to ensure GBR policy makers and managers better consider the needs of GBR-dependent communities and industries. Includes information on aspirations, capacities and stewardship, community vitality, culture and heritage, economic viability and governance Access Economic Study has determined the value of the reef (income, employment etc) to various reef users. Human dimensions target and actions included in the Reef 2050 Water Quality Improvement Plan Environmental Stewardship monitoring is introduced in all Queensland Reef Water Quality Program agricultural practice change projects to guide their engagement with producers and provide early indication of practice change 	<ul style="list-style-type: none"> Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef Reef 2050 Integrated Monitoring and Reporting Program 2017 Scientific Consensus Statement Gooch et al., Draft Report: Assessing the human dimensions of the GBR: A Wet Tropics Region focus – portal 		
IN6 The necessary Indigenous heritage information is currently available to address community benefits of the environment	2	<ul style="list-style-type: none"> The Indigenous partnerships expertise at the GBRMPA has good connections and relationships with Traditional Owners through Caring for our Country projects, Story Place, Indigenous Reef Advisory committee and liaison and consultation. The \$11M per annum program, administered by the Department of Environment and Science (DES), assists Aboriginal and Torres Strait Islander organisations with grants to employ Indigenous Land and Sea ranger teams 	<ul style="list-style-type: none"> Traditional Owner heritage assessment 	Limited	Improving
IN7 The necessary historic heritage information is currently available to address community benefits of the environment	2	<ul style="list-style-type: none"> In 2017, as part of the Permissions Improvement Program GBRMPA developed Guidelines for Historic heritage impact assessment in the permissions system. These 	<ul style="list-style-type: none"> Guidelines – Historic heritage assessment 2017 Historic heritage assessment: maritime cultural heritage protection special management area Historic heritage assessment: other places of historic and social significance (Document No. 100437) 	Limited	Improving

		<p>guidelines consider three historic heritage values of the Marine Park:</p> <ul style="list-style-type: none"> ○ World War II features and sites ○ Historic voyages and shipwrecks ○ Other places of historic significance. 	<ul style="list-style-type: none"> • Historic heritage assessment: WWII features and sites, and voyages and shipwrecks (Document No. 100435) 		
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address community benefits of the environment	3	<ul style="list-style-type: none"> • There are a number of volunteering groups that contribute. • The Reef Guardian program has the objective of engaging the community in environmental stewardship. The process of doing so and the outcome leverages non-government input (cash and in-kind) to addressing community benefit. Examples include resources (\$, materials, skills, labour) to support stewardship actions, community effort raising awareness and promoting environmental stewardship. • Local Marine Advisory Committees (LMACs) • Citizens of the Great Barrier Reef • The Queensland Government, through the Queensland Indigenous Land and Sea Ranger Program, currently provides a total of over \$3.2M per annum to 6 non-government organisations operating in Great Barrier Reef catchments to employ 28 Indigenous Land and Sea Rangers. Rangers provide environment and cultural heritage conservation services & engage young people in Junior ranger programs • Natural resource management bodies are supported to deliver strategic projects to implement activities that protect, improve and restore waterways and rangelands by improving soil, vegetation and water quality at a river catchment or landscape scale, and addressing priority weeds and pests 	<ul style="list-style-type: none"> • Reef HQ • Integrated Eye on the Reef • Reef Guardians • LMACs • Clean up Australia • Landcare • Coastcare • Seagrass-Watch • https://www.qld.gov.au/environment/agriculture/sustainable-farming/nrm-investment-program 	Adequate	Stable
PROCESSES					

<p>PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of community benefits of the environment</p>	<p>4</p>	<ul style="list-style-type: none"> • Achieving the goals and targets of the Reef 2050 Water Quality Improvement Plan (formerly the Reef Water Quality Protection Plan) relies on partnerships across all levels of government, industry, community groups, research organisations and land managers. • The Reef Guardian program strategy aims to engage the community in ongoing management of the environment and associated community benefits. Through direct engagement with program participants, the strategy strives to indirectly increase engagement via connecting, empowering and building capacity of Reef Guardians to influence and engage their communities. Participation by 300 schools, councils representing 60% of the GBR catchment and over 60 fishers and farmers and demand for participation exceeding our current ability to 'supply' is evidence of the extent of effectiveness of this engagement process. • Increase in protected areas and Indigenous owned land managed for conservation purposes within GBR catchment on east coast of Cape York Peninsula. • Range of research has been done (or in progress) developing new approaches to inform improvement of engagement of community, industry etc in management of community benefits 	<ul style="list-style-type: none"> • NESP 2.3.3 - Building Indigenous livelihood and co-management opportunities in the Northern GBR – ecosystem services and conservation governance for water quality • NESP 2.3.4 - Working with Traditional Owners and local citizens to better manage GBR estuarine wetlands • Reef 2050 Water Quality Improvement Plan • Workshops and stakeholder interviews 	<p>Adequate</p>	<p>Stable</p>
<p>PR2 The local community is effectively engaged in the ongoing management of community benefits of the environment</p>	<p>4</p>	<ul style="list-style-type: none"> • The Authority works collaboratively with communication and engagement professionals from other government, industry and community organisations to promote consistency of messaging and leverage its reach to broader audiences. • Zoning maps and tools to help Marine Park users comply with zoning rules and permitted 	<ul style="list-style-type: none"> • Reef Guardians, schools, fishers, farmers and councils 	<p>Adequate</p>	<p>Stable</p>

		activities. These are supplied to recreational users and community access points — a network of marine outlets and visitor information centres along the central and north Queensland coast			
PR3 There is a sound governance system in place to address community benefits of the environment	4	<ul style="list-style-type: none"> Encourage and invest in core natural resource management activities such as local partnerships, planning and community engagement to strengthen the regional, catchment and property-scale delivery network. Longer term funding commitments tied to performance outcomes will provide flexibility to tailor approaches to local contexts. Governance indicators are being brought into the RIMREP Human Dimensions expert working group Queensland Reef Water Quality Program (QRWQP) Human Dimensions Working Group guides the direction and actions to be delivered under the Reef 2050 Water Quality Improvement Plan 	<ul style="list-style-type: none"> 2017 Scientific Consensus Statement Reef 2050 Integrated Monitoring and Reporting Program Reef 2050 Long-Term Sustainability Plan 	Adequate	Stable
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for community benefits of the environment	3	<ul style="list-style-type: none"> Still in development, but the studies into economic values of the Reef can be interpreted as performance monitoring for this aspect. SELTMP and other RIMReP human dimensions indicators of community benefits 	<ul style="list-style-type: none"> GBRMPA Annual Report 2016-17 ‘Human sensors’ for monitoring Great Barrier Reef environmental changes and quality of marine waters through harnessing Big Data analysis Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Limited	Improving
PR5 Appropriate training is available to the managing agencies to address community benefits of the environment	3	<ul style="list-style-type: none"> Training in ‘Communicating with influence’ has been done by 50 stewardship leaders across the GBR catchment in 2016 and 2017. Participants included: Reef Guardians, High Standard Tourism operators and representatives from Local Marine Advisory 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	Limited	Improving

		<p>committees- many of whom have some role in environmental management</p> <ul style="list-style-type: none"> Agency staff have participated in a range of training, workshops and attended seminars to increase their awareness of and ability to manage for community benefits – e.g. Thematic Communication, Social-based marketing 			
PR6 Management of community benefits of the environment is consistently implemented across the relevant jurisdictions	3	<ul style="list-style-type: none"> There are some inconsistencies within management of the coastal zone and developments on Islands under the jurisdiction of Queensland where the head of power to consider impacts on community benefits and social and heritage matters is not as clear. There is no clear intergovernmental agreement or arrangement when planning community benefits, however community benefits is included in the Reef 2050 Plan which has cross-jurisdictional support 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	Limited	Improving
PR7 There are effective processes applied to resolve differing views/ conflicts regarding community benefits of the environment	3	<ul style="list-style-type: none"> There are clearly specified processes to resolve differing views in relation to community benefits that may be impacted by permitted developments and activities Given monitoring of community benefits is in its infancy, our level of awareness of differing views and conflict is limited to specific issues/incidences, media monitoring and anecdotal evidence. 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	Limited	Stable
PR8 Impacts (direct, indirect and cumulative) of activities associated with community benefits of the environment are appropriately considered.	3	<ul style="list-style-type: none"> Cumulative Impacts Policy has been drafted and has gone through a public consultation process. The draft policy has been revised following public consultation and is expected to be finalised in 2018. Net Benefit Policy has been drafted and has gone through public consultation process. The draft policy has been revised following the public consultation and is expected to be finalised in 2018. 	<ul style="list-style-type: none"> Experimental Environmental-Economic Accounts for the Great Barrier Reef, 2017 State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 Draft Reef 2050 Cumulative Impact Management Policy Draft Reef 2050 Net benefit Policy 	Limited	Improving

PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding community benefits of the environment	3	<ul style="list-style-type: none"> • Biophysical knowledge and monitoring are used when making decisions about community benefit – see biodiversity section • Scientific Consensus Statement 	<ul style="list-style-type: none"> • Scientific Consensus Statement 	Adequate	Stable
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding community benefits of the environment	3	<ul style="list-style-type: none"> • The draft guidelines for social impact assessment in the permission system which provides guidance on assessing impacts to social values within the permission system as well as including on-going monitoring of impacts associated with new developments. • SELTMP is assisting Reef managers and other decision-makers within the Great Barrier Reef region to incorporate the human dimension into their planning and management. • RIMReP human dimension indicators encompass four themes of Reef 2050 Plan 	<ul style="list-style-type: none"> • Social impacts assessment in the permission system Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). • RIMReP 	Limited	Improving
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding community benefits of the environment	2	<ul style="list-style-type: none"> • Australian Government Reef Program – Land and Sea Country Partnerships component Continues to strengthen communications between local communities, Great Barrier Reef managers and stakeholders and build a better understanding of Traditional Owner use of the Great Barrier Reef Marine Park 	<ul style="list-style-type: none"> • Australian Government Reef Program 	Limited	Improving
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding community benefits of the environment	2	<ul style="list-style-type: none"> • Not well covered • In 2017, as part of the Permissions Improvement Program GBRMPA developed Guidelines for Historic heritage impact assessment in the permissions system. These guidelines consider three historic heritage values of the Marine Park: <ul style="list-style-type: none"> ○ World War II features and sites ○ Historic voyages and shipwrecks ○ Other places of historic significance. 	<ul style="list-style-type: none"> • Guidelines for Historic heritage impact assessment 	Limited	Stable

PR13 Relevant standards are identified and being met regarding community benefits of the environment	3	<ul style="list-style-type: none"> • SELTMP is assisting Reef managers and other decision-makers within the Great Barrier Reef region to incorporate human dimensions into their planning and management • The High Standard Tourism Program is 'eco-certification' (administered and audited, by bodies independent of Reef managers) of standards identified to be important to environmental health and associated community benefits. 69 tourism business operating in the GBRWHA are certified. • The marine aquarium collector's fishery has developed a stewardship action plan in direct response to requirement to manage environmental and community benefits associated with reefs. This plan is a voluntary code of management standards for the fishery 	<ul style="list-style-type: none"> • Social impacts assessment in the permission system • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). • Responsible Reef Practices • Reef Guardians • High Standard Tourism Programs 	Adequate	Improving
PR14 Targets have been established to benchmark management performance for community benefits of the environment	3	<ul style="list-style-type: none"> • Specific and measureable targets are an identified need (not yet achieved) that can be developed once the indicators for monitoring and modelling the human dimension outcomes, objectives and targets are developed as an outcome of NESP Project 3.2.2. • Human dimensions target and actions included in the Reef 2050 Water Quality Improvement Plan 	<ul style="list-style-type: none"> • NESP Project 3.2.2. 	Limited	Improving
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for community benefits of the environment	3	<ul style="list-style-type: none"> • Reef HQ Aquarium: 70% of visitors to Reef HQ Aquarium participate in talks and tours that deliver key messages about risks to the Great Barrier Reef. • Reef HQ Aquarium ensures that the community and stakeholders have a clear understanding of the value of the Great Barrier Reef, the threats to its sustainable future and their role in protecting it. 	<ul style="list-style-type: none"> • Eye on the Reef • High Standard Tourism Program • Reef HQ • (Reef 2050 Integrated Monitoring and Reporting Program • Reef 2050 Long-Term Sustainability Plan • GBRMPA Annual Report • Reef 2050 WQIP • https://www.smartcane.com.au/home.aspx • https://www.cms.bmpgrazing.com.au/ 	Limited	No clear trend

		<ul style="list-style-type: none"> • Reef HQ Aquarium has strong links to the community and continues to support a volunteer program that has contributed more than 406,000 hours since being established in 1987. • The Reef Guardian program is a successful stewardship program achieving its mission 'to build a (growing) network...influencing community stewardship of the Reef.' That network has grown from a small number of schools participating in 2003 to a much larger and more diverse network of participants (see PR1). • High Standard Tourism Program: More than 55 per cent of visitors to the Reef were carried by high standard operators in 2016-17. • Eye on the Reef - More than 400 tourism staff have been trained in Eye on the Reef monitoring protocol. • Human dimensions research is being brought into the RIMREP Human Dimensions expert working group to inform the RIMREP Program design • Results from SELTMP 2017 survey includes new questions about community perception. • The agricultural sector is taking positive steps to support progress towards the Reef water quality targets. Amongst others, the Smartcane Best Management Practice (BMP), Grazing BMP and Banana BMP programs for farm management are examples of strong partnerships involving the agricultural industry, natural resource management bodies, land managers and governments to improve productivity, profitability and sustainability of farm enterprises. 	<ul style="list-style-type: none"> • https://abgc.org.au/projects-resources/best-management-practices-bmp/ • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp). 		
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OP2 Implementation of management documents and/or programs relevant to community benefits of the environment have progressed in accordance with timeframes specified in those documents	3	<ul style="list-style-type: none"> This is variable across the programs, with many of the programs progressing in accordance with timeframes 	<ul style="list-style-type: none"> Reef 2050 Plan 	Limited	No clear trend
OP3 The results (in OP1 above) have achieved their stated management objectives for community benefits of the environment	3	<ul style="list-style-type: none"> Many of the programs (Reef 2050 Plan, Reef 2050 WQIP) meeting their objectives 	<ul style="list-style-type: none"> Reef 2050 Plan 	Limited	No clear trend
OP4 To date, products or services have been produced in accordance with the stated management objectives for community benefits of the environment	3	<ul style="list-style-type: none"> Products under Reef 2050 Plan are on track. 	<ul style="list-style-type: none"> Reef 2050 Plan 	Limited	No clear trend
OP5 Effective knowledge management systems regarding community benefits of the environment are in place within agencies	3	<ul style="list-style-type: none"> Management of scientific information procedures are in place and are delivered at whole-of-GBRMPA using RefWorks as its database and citation management tool Tools to disseminate information about values and impacts on them are available, and undergoing development to improve service delivery – e.g. the integrated Eye on the Reef program to provide a centralised database for Reef health information, Reef Explorer is an interactive tool for displaying spatial information A significant amount of monitoring data will be strongly embedded within RIMReP and will have multiple representatives involved in the technical working groups currently responsible for designing reef-wide monitoring programs. Information for communities are available through various mediums (e.g. TV community announcements, billboards, boat shows, publications, websites) The Cultural Knowledge Management System Database, which is used to record on country meeting and events, for further information please refer to TUMR evidence table. The existence of effective environmental knowledge management systems and sharing 	<ul style="list-style-type: none"> Permits search Bookings Online EMC Online Eye on the Reef Reef Explorer Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Limited	Improving

		of them with the community, is in itself a community benefit.			
OP6 Effective systems are in place to share knowledge on community benefits of the environment with the community	3	<ul style="list-style-type: none"> • Many knowledge management systems are also the system through which knowledge is shared. • Community benefits associated with effective knowledge systems relate to community desire to have access to information about the environment and its management and to contribute knowledge. Effective systems are in place within agencies to provide: <ul style="list-style-type: none"> • Information about the environment – educational resources (e.g. GBRMPA website 'About the Reef', resources on other government agencies, NRM groups, industry bodies), scientific information (e.g. Refworks, research institutes systems to access research information), condition (e.g. various report cards), spatial information (e.g. Reef Explorer, QLD Globe) • Management information – about specific permits and planning/use decisions (e.g. Permit search, EPBC Act Notices database), grants and funding programs to assist community environmental action (e.g. NQ Grants hub.); industry 'best practice' information resources (e.g. see PR3). • Access to the environment – booking use (e.g. Reef bookings online, systems for booking visits to State and National parks), zoning maps (e.g. Marine Park zones being incorporated into navigation and fisheries app). • Gathering of community knowledge – citizen science data platforms (e.g. Eye on the Reef, Sightings network); advisory groups (e.g. LMAC 	<ul style="list-style-type: none"> • Facebook, Instagram, Twitter, LinkedIn • About the Reef & Learn about the Reef • FLOW • Water Quality Improvement Plan report cards • Reef Explorer • Queensland Globe • Permits online • EPBC Act Notices database • North Queensland Grants hub • Bookings online • Queensland National Parks Booking Service • Eye on the Reef Survey activity • LMAC communiques • https://preservethewonder.initiatives.qld.gov.au/ • https://www.smartcane.com.au/home.aspx https://www.cms.bmpgrazing.com.au/ • https://abgc.org.au/projects-resources/best-management-practices-bmp/ 	Adequate	Improving

		<p>communiques), Cultural Knowledge Management System Database.</p> <ul style="list-style-type: none"> • Regional based staff provide stakeholders and local communities with easier access to managers • Communication platforms raise awareness of the above and associated information/knowledge (e.g. e-newsletters, social media channels, mainstream media, stalls at relevant community events) • Communication through plain-English products summarising outcomes of scientific research is undertaken to some extent, but not systematically • e-Library (GBRMPA external website) provides access to publications • eResearch Archive is a digital repository of scientific and research publications, and datasets authored by DAFF staff, including journal articles, book chapters, conference papers, theses and raw data collected in the course of research • The non-scientific community is engaged via the GBRMPA's LMACs, magazines – e.g. Reef Beat, media releases etc • QRWIQP created a Preserve the Wonder campaign to share the beauty of the Reef with the general public and promote the good work that is being done to manage Reef water quality outcomes • The agricultural sector is taking positive steps to support progress towards the Reef water quality targets. Amongst others, the Smartcane Best Management Practice (BMP), Grazing BMP and Banana BMP programs for farm management are examples of strong partnerships involving the agricultural industry, 			
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		natural resource management bodies, land managers and governments to improve productivity, profitability and sustainability of farm enterprises.			
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing community benefits of the environment and moving towards the attainment of the desired outcomes.	3	<ul style="list-style-type: none"> The GBRMPA's recognition of the range of community benefits is shown through the Recreational Management Strategy, the Reef Guardian programs, Reef HQ, High Standard Tourism program, and support for the tourism industry. The Reef 2050 Plan's economic benefits theme focuses on improving and maintaining the ecological, social and economic sustainability of Reef-dependent and Reef-associated industries. The Reef 2050 Water Quality Improvement Plan also considers human dimensions 	<ul style="list-style-type: none"> Recreational Management Strategy the Reef Guardian programs Reef HQ High Standard Tourism program Reef 2050 Plan Reef 2050 Water Quality Improvement Plan 	Adequate	Improving
OC2 The outputs relating to community benefits of the environment are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	3	<ul style="list-style-type: none"> Programs such as the Reef HQ aquarium, the Reef Guardians and High Standard Tourism program engender positive community attitudes to protect the values of the reef 	<ul style="list-style-type: none"> Reef HQ aquarium the Reef Guardians High Standard Tourism program 	Adequate	Improving
OC3 the outputs (refer OP1 and 3) for community benefits of the environment are reducing the major risks and the threats to the Great Barrier Reef	3	<ul style="list-style-type: none"> Positive community attitudes gained through the community engagement programs can reduce risks of negative decisions being made. This assists in reducing there major risks and threats to the Reef. SELTMP 2017 survey includes new questions of community perceptions of water quality and inshore environments Prioritisation of Reef Trust investments involves a collaborative approach with scientific institutions, community and management agencies to ensure a robust scientific and economic process to identify the high priority actions to reduce major threats to the Reef. 	<ul style="list-style-type: none"> Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Limited	No clear Trend

OC4 Use of the Great Barrier Reef relating to community benefits of the environment is demonstrably environmentally sustainable	3	<ul style="list-style-type: none"> The health of the Great Barrier Reef is declining, and management is not keeping pace with the cumulative impacts that are acting on the system. The causes of decline are known and the potential for restoration is there provided we avoid a 'business as usual' approach. Without urgent and effective additional management intervention the Region's biodiversity values are likely to continue to deteriorate. Given community benefits are intricately linked with the health of the reef and its ecosystem processes (e.g. fishing, traditional values, health and wellbeing), it is likely that the condition of community benefits is also declining. 	<ul style="list-style-type: none"> Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef Deloitte Access Economics Report Economic contribution of the Great Barrier Reef Experimental Environmental-Economic Accounts for the Great Barrier Reef, 2017 	Adequate	Improving
OC5 Use of the Great Barrier Reef relating to community benefits of the environment is demonstrably economically sustainable	4	<ul style="list-style-type: none"> Economic sustainability is shown through reports such as Deloitte Access Economics East Coast Otter Trawl Fishery SELTMP 2017 report to provide new insights into recreational Reef uses, tourists, tourism operators and commercial fishers. 	<ul style="list-style-type: none"> Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef Deloitte Access Economics Report Economic contribution of the Great Barrier Reef Experimental Environmental-Economic Accounts for the Great Barrier Reef, 2017 Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp). 	Limited	Stable
OC6 Use of the Great Barrier Reef relating to community benefits of the environment is demonstrably socially sustainable understanding and/or enjoyment	4	<ul style="list-style-type: none"> Surveys show 80% of Australians and 70% of Queensland visitors satisfied with their Great Barrier Reef experience Uptake of Reef Guardian program within community is indicative of community interest in and concern for the GBR A significant move forward since Outlook 2009 has been a stronger focus on embedding the Authority's key communication messages as part of exhibition development in the GBR 	<ul style="list-style-type: none"> Regional Offices/Industry Engagement Officer (Tourism) Accredited Research Institutions Reef HQ Volunteer Program and Members Programs Public Information Unit Volunteer Program Interpretive services ReefED Website https://preservethewonder.initiatives.qld.gov.au/ 	Adequate	Stable

		<p>Aquarium. This provides a community engagement / education opportunity that helps to distil often quite complex and scientific based information into thematic formats that are more easily understood</p> <ul style="list-style-type: none"> • The following show contributions to personal connection, enjoyment and understanding: <ul style="list-style-type: none"> ○ Reef HQ ○ Reef Videoconferencing Outreach: Reef Video conferencing is breaking down geographical barriers to the latest in reef education. ○ Volunteer Program ○ Interpretive services ○ ReefED Website ○ Visiting the Reef website: information and tips on access and enhancing the reef experience • QRWQP created a Preserve the Wonder campaign to share the beauty of the Reef with the general public and promote the good work that is being done to manage Reef water quality outcomes 			
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address community benefits of the environment	3	<ul style="list-style-type: none"> • In general, stakeholder engagement is one of the strongest aspects of the Authority's management. The agency uses a suite of communication tools to reach the community and encourage stakeholders to become stewards of the Reef. Communication and Education officers liaise with stakeholders via all means (face to face, phone, social media, public workshops, etc) • The agricultural sector is taking positive steps to support progress towards the Reef water quality targets. Amongst others, the Smartcane Best Management Practice (BMP), Grazing BMP and Banana BMP programs for farm 	<ul style="list-style-type: none"> • Reef Guardians Programs • Regional Offices/Industry Engagement Officer (Tourism) • Accredited Research Institutions • Reef HQ Volunteer Program and Members Programs • Public Information Unit • Reef Guardians • https://www.smartcane.com.au/home.aspx • https://www.cms.bmpgrazing.com.au/ • https://abgc.org.au/projects-resources/best-management-practices-bmp/ 	Adequate	Stable

		management are examples of strong partnerships involving the agricultural industry, natural resource management bodies, land managers and governments to improve productivity, profitability and sustainability of farm enterprises.			
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Table 26 Calculation of grades for defence activities

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to defence activities are understood by managers	4	<ul style="list-style-type: none"> The values for which the Great Barrier Reef has been protected are well understood by GBRMPA and Defence environmental managers, with close cooperation evident between the two agencies extending back many years. There is a GBRMPA-Defence Memorandum of Understanding (updated for 2016/20) which facilitates sharing of information between the agencies enabling: <ul style="list-style-type: none"> GBRMPA to appreciate the scale and nature of Defence activities; Defence to understand GBR priorities and management requirements; Timely input by each agency to policy development and management of new technology and upcoming activities; GBRMPA attendance at Defence key activities such as the biennial Talisman Saber series of exercises. Managers are aware that the Great Barrier Reef is a multiple use area that accommodates routine training for the Australian defence forces (and some foreign forces) for over 100 years. Defence training at Shoalwater Bay Training Area (SWBTA) began before the Great Barrier Reef Marine Park Act was proclaimed in 1975. Defence use of SWBTA includes land and sea based exercises involving live fire from air, land and sea, manoeuvre, amphibious operations, mine hunting and a range of supporting operations all of which have some potential to impact on the values of the GBR. Defence is also responsible for a range of activities that contribute to management information essential for managing and understanding the values of the GBR including hydrographic, border protection/ quarantine and 	<ul style="list-style-type: none"> Strategic environmental assessment of Defence activities in the GBRWHA 2006 GBRMPA/Defence Management Agreement 2012-2016 State of the Environment Report for Shoalwater Bay Training Area 2008 Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area, Queensland, Australia, <i>Chinese Journal of Oceanology and Limnology</i> 28(3): 667-676. Defence Environment Policy GBRMPA and Defence work strategically on environmental management p9 The Environmental Practitioner Strategic environmental assessment of defence activities in the Great Barrier Reef World Heritage Area, 2014 Great Barrier Reef Strategic Assessment Report, Chapter 4 Great Barrier Reef Coastal Zone Strategic Assessment 2014 Outlook Report 2014, Ch5 Talisman Saber exercise series: TS15 PER and associated documentation (<i>Defence (DEPA) can provide copies of relevant documentation if required</i>) TS17 PER, technical reports, videos and post exercise report TS19 will be conducted around June-August 2019, the environmental assessment for this exercise is likely to be published late in 2018/ early 2019 and will be further 'new' information relevant to the TS series of exercises Defence activities on QPWS managed areas 2015 GBRMPA website on Defence 2016-2036 Defence Environmental Strategy Environment and Heritage Management in Defence – internal Defence document only (don't have access) Defence's Environmental Policy 2016 and strategy Defence Estate Heritage Strategy 	Adequate	Stable

		<p>other monitoring/ surveillance/ security related services that to management.</p> <ul style="list-style-type: none"> • Defence has also supported research and monitoring (see CO2) that has contributed to knowledge about important GBR values including for species such as whales, seagrass, turtles and dugongs. • There are three major Defence training areas in, or adjacent to, the GBR (Shoalwater Bay/Cowley Beach/Halifax Bay). Defence's Tully, and Townsville Field Training Areas are in catchments which drain into GBR (as does RAAF Base Townsville). A number of other marine locations are gazetted Defence practice areas where live firing of weapons is permitted (refer to Figure 5.9 in 2014 Outlook Report). • The importance of Shoalwater Bay for dugongs and turtles and other species is also well recognised by Defence and GBRMPA managers • Shoalwater Bay Training Area has been recognised for its important environmental significance and is managed by Defence to deliver training and environmental outcomes in equal measure • There are few references addressing what is known about aesthetic and social values of the GBR and their intersection/interaction with Defence activities. • Since the 2014 assessment the following management initiatives have been implemented: <ul style="list-style-type: none"> ○ Defence funded video production for environmental awareness of GBR world heritage values for Exercise Talisman Saber 2017 participants ○ All training conducted on QPWS managed areas may have conditions placed on the activity if necessary to protect cultural and use values ○ Increasing focus on heritage in the GBR by Defence ○ GBRMPA/Defence MOU has been updated and continues to recognise the importance 	<ul style="list-style-type: none"> • MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region • Commonwealth of Australia, Resource Assessment Commission, Inquiry into Shoalwater Bay, Capricornia Coast, Queensland, 1993-94 		
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		<p>of reducing environmental impacts on the Great Barrier Reef</p> <ul style="list-style-type: none"> ○ Defence environmental management doctrine applicable to the GBR is being routinely updated and is implemented by Defence managers. 			
CO2 The current condition and trend of values relevant to defence activities are known by managers	4	<ul style="list-style-type: none"> • Managers are aware of the condition of the GBR which is being monitored by GBRMPA. Regarding Defence activities most knowledge is evident for the areas most commonly used by Defence such as SWBTA. • Knowledge is not perfect and there are still some gaps. For example GBRMPA has noted that there has been no evaluation or regular monitoring of the aesthetic values relevant to Defence use undertaken in the World Heritage Area. However, most Defence-related infrastructure is generally discretely located and Defence assesses all its works proposals internally. These assessments take account of the potential for adverse impacts on the range of World Heritage Values. In addition, Defence activities are typically undertaken in locations with minimal public visitation or interaction. • QPWS also undertake some monitoring in Shoalwater Bay, with patrols, dealing with marine mammal and turtle strandings, undertaking a range of natural resource management actions (see Field Management Program documents etc.), often in concert with Defence. • This assessment makes the following observations regarding knowledge associated with the condition of the reef relevant to Defence use: <ul style="list-style-type: none"> ○ The current condition and trend of some species in defence areas are well known (e.g. foraging turtles, dugongs, seagrass) however in general there is still a paucity of information on the current condition and trend of ecosystem values in defence areas ○ Turtle nesting survey data is required for the eastern Shoalwater Bay defence military 	<ul style="list-style-type: none"> • State of the Environment Report for Shoalwater Bay Training Area 2008 • Soltzick, S., Hagihara, R., Grech, A. and Marsh, H. 2012, Aerial survey of the urban coast of Queensland to evaluate the response of the dugong population to the widespread effects of the extreme weather events of the summer of 2010-11. Final report to the Australian Marine Mammal Centre and the National Environmental Research Program, James Cook University • Defining the aesthetic values of the Great Barrier Reef World Heritage Area: 2013. Identified and mapped aesthetic values of outstanding universal value and analyse the sensitivity of those values to particular impacts. • Outlook Report 2014, Ch5 defence section and Ch 2,3 etc • Great Barrier Reef Coastal Zone Strategic Assessment: Independent Review Report • Great Barrier Reef Strategic Assessment Report, Chapter 7 • Talisman Saber exercise series: <ul style="list-style-type: none"> ○ TS15 PER and associated documentation ○ TS17 PER, technical reports, videos and post exercise report • Defence activities on QPWS managed areas 2015 • Soltzick, S., Cleguer, C., Hagihara, R., and Marsh, H. 2017. Distribution and abundance of dugong and large marine turtles in Moreton Bay, Hervey Bay and the southern Great Barrier Reef, A report to the Great Barrier Reef Marine Park Authority. Centre for Tropical Water & Aquatic Ecosystem Research (TropWATER) Publication 17/21, James Cook University, • MMP seagrass monitoring program • Defining, assessing and monitoring Great Barrier Reef aesthetics: a current NESP project underway. • GBRMPA Annual Report 2014-15, p27 	Adequate	Stable

		<p>training area, including Townsend Island, and islands immediately to the north. (i.e. this is a gap in the east coast Qld coverage). It is noted however, that the eastern beaches of Townshend Island, being adjacent to an impact area, may have a significant UXO risk that ultimately may compromise the achievement of this Reef 2050 objective (see BA10).</p> <ul style="list-style-type: none"> ○ Only limited telemetry data is available to define inter-nesting habitat requirements adjacent to the beaches for all species and stocks for Shoalwater Bay training area. ○ Managers acknowledge that there is minimal information available regarding the presence, activities or habitat requirements of inshore dolphins in Shoalwater Bay (and more generally elsewhere). ○ Marine turtle species foraging surveys have been undertaken in the key index foraging areas supporting GBR breeding turtles including Shoalwater Bay. <ul style="list-style-type: none"> ● Defence has funded research projects providing valuable information to GBR managers: <ul style="list-style-type: none"> ○ Dugong and satellite tagging study within Shoalwater Bay in 2014 ○ Dugong and large marine turtle aerial surveys at Shoalwater Bay in 2016. Sobotzick et al present results showing Shoalwater Bay is a hotspot for dugongs and turtles ○ GBRMPA worked with the Department of Defence and the Queensland Department of Environment and Heritage Protection to explore the use of satellite tagging to detect potential behavioural responses of turtles to defence activities in Shoalwater Bay 			
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		<ul style="list-style-type: none"> ○ Efforts are underway by researchers to provide frameworks and indicators for monitoring aesthetic values of the GBR generally 			
CO3 Impacts (direct, indirect and cumulative) associated with defence activities are understood by managers.	3	<ul style="list-style-type: none"> • From an environmental management perspective defence activities continue to be well planned, managed and resourced. The risk of incidents causing lasting environmental harm to the GBR remains low. Standard operating procedures and contingency plans cover the range of defence activities, and any incidents are promptly reported and closely investigated. However, by their nature, defence activities do pose some unique risks which must be continually monitored and managed. • The Defence Risk Assessment on GBR Website – indicates that risks well known and addressed – specific management actions have been developed to manage each of these risks down to a low level • Defence managers (in consultation with GBRMPA staff), consider new activities, deployment of equipment, and all major exercises, through environmental impact and risk assessment processes • Defence activities that occur within the GBR are effectively managed under the framework established under the Strategic Environmental Assessment that Defence developed in collaboration with the GBRMPA. This document identifies the direct and indirect impact associated with a specific suite of defence activities and details how they will be mitigated. For example, it is noted that all RAN vessels (except HMAS <i>Sirius</i>) now run on diesel fuel (i.e. no heavy fuel oil on board) which reduces the risks of serious pollution incidents. • Managers consider that social perceptions and risks are not always well understood (e.g. as demonstrated by public response to UXO incidents although it is recognised that initial 2013 Defence / USN UXO incident public releases possibly reinforced negative public reactions. 	<ul style="list-style-type: none"> • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area, Queensland, Australia, <i>Chinese Journal of Oceanology and Limnology</i> 	Adequate	Stable

		<ul style="list-style-type: none"> • In 2012 Defence funded the GBRMPA research project: <i>Assessing aspects of the health of the seagrass meadows and green turtle population in Shoalwater Bay</i> included quantifying the type and amount of impacts on them (e.g. number with propeller damage etc). • It is noted that Defence is obliged to notify GBRMPA of activities in the GBRMP however it does not require permission to enter or conduct most 'defence activities' that fall within the scope of the Strategic Assessment. The Authority may apply further management controls by issuing directions that Defence must comply with. There is no specific requirement for a Part 5 direction. Managers from GBRMPA and Defence cooperate in the development of mitigation measures and exercise design and for TS17 this included close collaboration on all relevant aspects of the exercise. It is understood that the collaboration and concurrence on measures for mitigation/management planning and working together on environmental aspects of exercise design generally avoids the need for a Part 5 direction. Any directions that are issued by GBRMPA take into account the potential impacts of the activities (direct and indirect). GBRMPA also require reporting and evaluation of the effectiveness of environmental controls post-activity. Historically this approach has proven robust and has been effective in managing the foreseeable risks arising from Defence activities. • Improved understanding and cooperation between agencies considering environmental management of Defence activities is evidenced by the TS17 Post Exercise Report documents where it describes how the conduct of TS17 met the pre-exercise commitments made by Defence to manage and mitigate environmental impacts that it had documented in the Public Environment Report (PER). • It is noted that there are specific environmental risk management procedures in place that focus on dugongs and turtles. Managers accept that further research is required for dolphins however it is expected that they will be given similar 			
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		<p>level of protection as dugongs and turtles when decisions are made about Defence use.</p> <ul style="list-style-type: none"> • Defence and GBRMPA managers also understand that underwater explosions can affect or cause adverse behavioural effects on marine fauna (turtles, dugongs and dolphins). • Defence has evaluated potential risks of noise and adheres to a comprehensive suite of environmental mitigation controls (for all forms of sonar, underwater telephones, acoustic influence minesweeping gear etc), supported by research to better understand and characterise underwater acoustic propagation and the possible effects upon sensitive marine fauna • Defence undertakes extensive consultation at the local and regional level to identify potential external influences – e.g. undertakes NGOs & community consultation. Defence managers have established an Environmental Advisory Committee (EAC) for each Training area. • It is recognised that managers have considered that there is very low potential for nuclear-powered vessel accident and the risk is encompassed in existing risk assessments. • The potential impact of greatest concern is the introduction of marine pests. Defence advises that it employs stringent quarantine measures to reduce this risk. Australia also has a number of guidelines for ballast water management for international and domestic vessels and Defence complies with recent legislative changes concerning ballast water management. • The Defence estate organisation also has an Energy Strategy (2014-2019) in place which looks to reduce climate change impacts and minimise other environmental consequences arising from fossil fuel use. • UXO, other than what might have been located or generated during conduct of the exercise, is referenced on a Defence webpage. There is a paucity of knowledge about the legacy aspects of this issue which means that the information is not sufficiently detailed by itself to guide reef planning and 			
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		<p>management decisions at the site level. It is not clear exactly how GBRMPA managers can address the somewhat diffuse risk that UXO may present where it could potentially effect day-to-day decisions about use of the marine park.</p> <ul style="list-style-type: none"> • Sonar systems in use and in particular those brought into service since finalisation of the 2014 Outlook report are generally consistent with descriptions provided by pages on the Department of Environment and Energy (http://www.environment.gov.au/marine/marine-species/cetaceans/sonar-seismic-impacts) and the Royal Australian Navy (http://www.navy.gov.au/about/organisation/environment) websites. In some instances these systems do not represent new capability, only an upgrade on previous systems however can be summarised as follows: <ul style="list-style-type: none"> • aircraft deployable sonobuoys • sonar suite of the Hobart Class DDG • helicopter active dipping sonar • The response of the RAN to an ABC radio interview relating to underwater noise (30 August 2016) provides clarity around the nature of the process of ongoing review and update of the Maritime Activities Environment Management Plan (MAEMP) (http://www.abc.net.au/radionational/programs/lawreport/sea-noise-pollution/7793280). 			
CO4 The broader (national and international) level influences relevant to defence activities are understood by managers.	4	<ul style="list-style-type: none"> • The GBRMPA/Defence MOU provides a forum for the sharing of information about trends and influences that might drive changes in Defence use of the GBR over time. • Defence has made it known that since around 2012 the USA has shifted its global military focus to enhance its capabilities in the Asia-Pacific region (Defence, 2013). As a result, Defence expects combined training exercises between Australian and U.S. forces to increase in frequency and intensity. Shoalwater Bay and other sites in the GBR will therefore increase in importance for major exercises such as Talisman Saber. While U.S. forces operate under instructions during combined training exercises, any visiting foreign force 	<ul style="list-style-type: none"> • URS Australia Pty Ltd 2006, Strategic Environmental Assessment of Defence Activities in the Great Barrier Reef World Heritage Area • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area • Outlook Report 2014 • Department of Defence 2016, Defence White Paper, Commonwealth of Australia, Canberra. • Talisman Saber exercise series: • TS15 PER and associated documentation • TS17 PER, technical reports, videos and post exercise report 	Adequate	Stable

		<p>increases the complexity of the policy environment and communications with participants which have some level of risk of unforeseen impacts. Defence and GBRMPA managers cooperate to develop management plans for major exercises such as Talisman Saber, to address the ramp up of activity when large exercises occur.</p> <ul style="list-style-type: none"> • Management challenges are also arising from the activities of other international forces training in Australia (US, Singapore, others) and the complexities of working with a foreign force (to which the GBRMPA Act may not apply) – in addition to Australian Defence activities. It is considered that given the other controls on the activities of foreign forces operating in the Australia jurisdiction, any risk would be low. • The Region has a relatively sporadic Defence vessel presence on the east coast at the moment, which could shift in frequency if more patrols are required (e.g. PNG, Darwin in response to illegal fishing, or arrival of asylum seekers by boat). • The extent to which future defence activities require port expansions (channel access – relating to dredging etc) are unknown but it is recognised that these vessels are can operate in more shallow waters than the bulk carriers and that port works proposals would likely also be considered under other legislation (e.g. EPBC Act). • Increased ‘whole of government’ engagement by Defence concerning its activities particularly in relation to the Talisman Saber series has included other Commonwealth agencies such as DFAT, DoEE and GBRMPA in addition to State regulators who contribute to management of the GBR region such as DEHP and DAF • While Australian domestic level policy influences are well known, e.g. climate change policy (footprints, targets, govt organisation energy efficiency) the policy shifts of the US Government and how these might effect operational aspects of US forces engagement with the ADF in activities in the region are uncertain (e.g. the consequences of US military 			
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		response to changes in policy on energy, environmental protection and climate change issues).			
CO5 The stakeholders relevant to defence activities are well known by managers.	4	<ul style="list-style-type: none"> Defence hold a number of forums (e.g. an 'Annual Forum') where stakeholders are engaged about Defence intentions, e.g. at Cairns, Halifax Bay and throughout the Region Engagement occurs on an ad-hoc basis and to a lesser extent through cooperation with GBRMPA in forums like RACs and LMACs Depending upon the nature and scale of the specific training activity, Defence routinely liaises at the local level with GBRMPA and QPWS about its planned activities. Defence produces Public Environment Reports for comment prior to major exercises. Liaison with stakeholders is now routine throughout the planning cycle for activities (and has been for many years). Uptake of social media technology has also enabled Defence to engage more widely with the community about major exercises. For most activities within Shoalwater Bay Training Area, consultation and communication occurs routinely with GBRMPA, DEE, QEHP, SWBTA Environmental Advisory Committee, residents and the local community. For new activities proposed outside existing training areas e.g. in relation to use of Stanage Bay for amphibious activities during Talisman Saber 17 consultation with GBRMPA and QLD occurred once Defence's internal concept approval processes had concluded. Defence advise that they take an increasingly 'whole of government' approach to the planning and management of essential Defence training activities such as the Talisman Saber series. 	<ul style="list-style-type: none"> Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area Talisman Saber exercise series: <ul style="list-style-type: none"> TS15 PER and associated documentation TS17 PER, technical reports, videos and post exercise report Defence webpage for Talisman Saber exercise 	Adequate	Stable
PLANNING					
PL1 There is a planning system in place that effectively addresses defence activities	4	<ul style="list-style-type: none"> The planning framework for management of Defence activities in the GBR is extensive and is implemented by the responsible managers. It has been noted above (see CO1) that Defence is currently enhancing its amphibious capabilities, including the 	<ul style="list-style-type: none"> Department of Defence 2010, Defence Environmental Strategic Plan 2010-2014, Department of Defence, Canberra. GBRMPA/Defence Management Agreement 2012-2016 Defence environmental impact assessment guidance and factsheets Defence doctrine, e.g. Defence Instructions General 	Adequate	Stable

		<p>acquisition of new landing vessels (LHD's and attendant landing craft). The key amphibious training areas in or adjacent to the Region are Shoalwater Bay and Cowley Beach.</p> <ul style="list-style-type: none"> • The Army's major deployable force is now based in Townsville. Defence environmental managers are expecting more frequent and intensive amphibious training exercises in the Region. Defence has flagged with GBRMPA that additional areas for training may also be required to develop and maintain this new amphibious capability. An increase in near-shore vessel movements may increase the risk of vessel groundings, oil spills, seabed scouring, foreshore erosion, wildlife disturbance and sediment mobilisation (which can affect seagrasses or corals). • Defence has an Environmental Management System (EMS) in place to assist military environmental management. GBRMPA is consulted to seek advice and concurrence concerning variations to maritime activities management procedures. The Maritime Activities EMP provides the framework for (in particular) Navy operations and compliance with this avoids the requirement for GBRMPA to issue Part 5 directions for standard day-to-day activities • Defence doctrine outlines responsibilities for the planning and implementation of environmental protection measures during the planning and conduct of exercises, in terms of protecting areas for future use, maintaining public confidence and compliance with statutory requirements including the <i>Great Barrier Reef Marine Park Act 1975</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i>. • The 2014 Strategic Assessment of Defence activities (which is understood to be subject to a review and updating process) addressed the previously identified gap regarding lack of a masterplan with Defence for the Region. Defence is also considering the implementation of environmental controls such as routine Environmental Assessment Reports and Environmental Clearance Certificates which underpin 	<ul style="list-style-type: none"> • Outlook Report 2014 • Great Barrier Reef Strategic Assessment Report, Chapter 6 • Great Barrier Reef Coastal Zone Strategic Assessment: Independent Review Report) Chapter 5 & 6 • MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region • Strategic Environmental Assessment of defence activities in the Great Barrier Reef World Heritage Area, 2014 • Department of Defence 2016, Defence White Paper, Commonwealth of Australia, Canberra. • Defence Environment Strategy and Policy 2016-2036 • Reef 2050 Long-term sustainability plan • GBRMPA Annual Report 2015-16, p 61 		
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		<p>many operational environmental management approaches used in training areas in/ adjacent to the GBR). Additionally, training areas are subject to Range Standing Orders which include many environmental controls and specify what may occur, how frequently, and where. Any activities that occur outside of formal Defence areas are subject to further assessment and review in addition to consultation with relevant external stakeholders/regulators.</p> <ul style="list-style-type: none"> • The ADF Maritime Activities EMP provides a framework for conduct of all training activities in the marine environment. This document is being reviewed and updated with a particular focus on measures to address the day-to-day management of activities in the GBR region. • Defence has agreed to implement a moratorium on the use of high explosives in the Great Barrier Reef World Heritage Area except at the underwater demolitions training facility at Triangular Island in the Shoalwater Bay Training Area. The arrangement is formalised through a document describing terms of use for Triangular Island which was developed following consultation with GBRMPA and other stakeholders. Part 5 Direction from GBRMPA requires conduct of activities to be in accordance with the Triangular Island Maritime Warfare Facility Construction: Environmental Review and Management Framework (ERMF) • There are numerous other acts examples that influence planning for Defence activities e.g. <i>Protection of the Sea (prevention of pollution from ships) Act 1983</i>, and <i>Environment Protection (sea dumping) Act 1981</i>. • Defence personnel (as 'maritime officers') are also delegated under the <i>Maritime Powers Act 2013</i> for powers of detention and monitoring in relation to the EPBC Act among other legislation. The MP Act includes provisions for consideration of the environment in the exercise of powers enabling the disposal of things taken under that Act. • The MOU between GBRMPA and Defence states: To assist Defence in meeting its strategic and national security interests, GBRMPA will proactively consider Defence's use 			
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		<p>of the GBRR and adjacent areas when making decisions about Great Barrier Reef management matters. As a general principle, where management controls need to be applied they will be implemented in a way that protects the environment and balances competing pressures, aiming to minimise the effect on Defence use to the greatest practicable extent.</p> <ul style="list-style-type: none"> • Defence has a centralised environmental management assessment and approval system within the Directorate of Environment Protection and Assessments (DEPA). DEPA coordinates environmental assessment and approval of developments, activities and capability in order to meet environmental legislative obligations. • All Defence activities are subject to some form of environmental assessment and approval, and are conducted under the guidance of standard controls including but not limited to: <ul style="list-style-type: none"> ○ Maritime Activities EMP (e.g. for naval activities anywhere in the GBR region and beyond) ○ Range Standing Orders (e.g. site-specific order for activities such as at Shoalwater Bay Training Area, Halifax Bay Training Area, etc.) ○ Standard Operating Procedures (e.g. measures to protect the environment form part of the training of personnel for different equipment) 			
PL2 The planning system for defence activities addresses the major factors influencing the Great Barrier Reef Region's values.	3	<ul style="list-style-type: none"> • The evidence available points to a comprehensive planning framework which is well understood and implemented by the responsible managers in Defence and GBRMPA. • Defence training areas within the GBRMP have undergone numerous rigorous environmental assessments. These training areas have comprehensive Environmental Management Plans that place strict environmental controls that aim to protect environmentally sensitive features within or adjacent to training areas, mitigating the potential for 	<ul style="list-style-type: none"> • Great Barrier Reef Coastal Zone Strategic Assessment: Independent Review Report (PDF - 2.84 MB) Chapter 5 and 6 • Great Barrier Reef Strategic Assessment Report, • Part 5 direction for Triangular Island Maritime Warfare Facility Construction (included Part 5 direction, letter to Defence, Environmental Clearance Certificate and the Environmental Review and Management framework – like an EMP) – <i>available on request</i> • Maritime Activities Environmental Management Plan • Defence webpages on UXO 	Adequate	Stable

		<p>detrimental physical impact in the course of conducting training all-year-round.</p> <ul style="list-style-type: none"> Defence activities with a high risk of impact are confined to specific localised areas and are limited to specific activities (such as live fire) or that occur for just a few weeks per year. Many defence activities are conducted with dedicated shipboard and aerial observers who can collect data on marine wildlife sightings, and ensure activities that might pose a risk to wildlife are delayed or relocated if required It is noted that the planning system is not able to address legacy UXO contamination issues (except with generic warnings). Confirmed information about the location of UXO, particularly from WWII, is sparse and often records from the period are unreliable. As such UXO risks, including environmental contamination, is not systematically addressed in a way that other forms of contamination might be prioritised (which contrasts to the approach taken with anti fouling paint following a ship grounding). However, outside of specific impact sites in training areas, the risk is generally accepted to be low The updated GBRMPA/Defence MoU (section 5) specifically recognises two of the key threats to the GBR outlined by the 2014 Outlook Report – climate change and water quality. 	<ul style="list-style-type: none"> Defence webpage for Talisman Saber exercise Defence Estate Energy Strategy 2014-2019 Defence Estate Water Strategy 2014-2019 DEQMS MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region 		
PL3 Actions for implementation regarding defence activities are clearly identified within the plan	4	<ul style="list-style-type: none"> The range of management doctrine available to Defence managers and GBRMPA is extensive. The consultative process identifies the actions required by those responsible to implement their obligations. It is noted that Defence activities are managed through a comprehensive planning framework with elements at the strategic, regional and activity specific level. This includes procedures to control possible environmental impacts. These are supplemented by Standard Operating Procedures and site-specific environmental controls that apply to all ongoing training activities held by Defence. The Maritime Activities Environmental Management Plan details environmental mitigation and reporting procedures for all activities occurring at sea 	<ul style="list-style-type: none"> See PL2 Maritime Activities Environmental Management Plan Great Barrier Reef Marine Park Zoning Plan 2003 Strategic Environmental Assessment of defence activities in the Great Barrier Reef World Heritage Area, 2014 Talisman Saber exercise series: TS15 PER and associated documentation TS17 PER, technical reports, videos and post exercise report Defence webpage for Talisman Saber exercise Defence Estate Energy Strategy 2014-2019 Defence Estate Water Strategy 2014-2019 	Adequate	Stable

		<ul style="list-style-type: none"> • GBR Zoning Plan – notification when using Training Areas (including “Notice to Mariners” etc NOTAM, “Notice to Airmen”) • EMPs are prepared for development of infrastructure, activities and for Training Areas • ECCs (Environmental Clearance Certificates) provide site level operational controls where these do not exist in Range Standing Orders • A Strategic Environmental Assessment of Defence Activities – provides the overarching planning framework • Environmental Management System – hierarchy of plans aligned to ISO standards • Major exercises all have specific, comprehensive planning arrangements with mandated lead-in timeframes. These correspond to the overall complexity and size of the exercise (e.g. 18 month (+) lead time for Talisman Saber). 			
PL4 Clear, measurable and appropriate objectives for management of defence activities have been documented	4	<ul style="list-style-type: none"> • GBRMPA objectives to protect the values of the GBR WHA are defined and where these intersect with Defence the planning priorities are identified in a range of tools and documents – for example in the Defence Risk Assessment – ERT (Environmental Risk Tool) • Since 2002 Defence has had an Environment Strategy document which outlines its objectives for management of environmental performance 	<ul style="list-style-type: none"> • See PL2 • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area • DEQMS – Environmental Management (Environmental Impact Assessment and Approval) • Defence Environment Strategy and Policy 2016-2036 • Defence Estate Energy Strategy 2014-2019 • Defence Estate Water Strategy 2014-2019 	Adequate	Stable
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to defence activities	3	<ul style="list-style-type: none"> • Monitoring and reporting is part of the internal approval process for all Defence activities. This is usually documented in an Environmental Assessment Report (EAR) and is implemented on the ground through an Environmental Clearance Certificate (ECC) which includes a requirement for a post-activity report (PAR). These PAR’s provide a feedback loop into the next planning and assessment cycle to ensure environmental effects are evaluated and understood, protection measures are continually refined, and these are routinely reviewed for effectiveness, appropriateness and 	<ul style="list-style-type: none"> • Defence Environment Strategy and Policy 2016-2036 • Defence Estate Energy Strategy 2014-2019 • Talisman Saber exercise series: <ul style="list-style-type: none"> ○ TS15 PER and associated documentation ○ TS17 PER, technical reports, videos and post exercise report • Defence webpage of Talisman Saber exercise 	Adequate	Stable

		<p>adequacy (e.g. Defence/GBRMPA research program on turtle, seagrass and dugong research).</p> <ul style="list-style-type: none"> • Environmental post-exercise reporting is also conducted following Talisman Saber exercises, with identification of “lessons learned” (most recently in 2017) forming an input to subsequent exercise planning. • A policy statement and a plan with actions and accountabilities for implementation accompany defence Environment Strategy 2016-2036. A Defence working group maintains oversight of the implementation and monitors progress towards achieving the Strategic Aims of the strategy 			
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address defence activities	4	<ul style="list-style-type: none"> • Defence undertakes extensive consultation at the local and regional level to identify potential external influences – e.g. undertakes consultation interest groups and local communities. Defence managers have established an Environmental Advisory Committee (EAC) for each Training area and site management decisions with the potential to impact on GBR values are raised with GBRMPA. • There is good evidence that a range of consultation methods are employed for defence activities that have the potential to effect the community and that these vary according to the scale and nature of the activity. For example, the Talisman Saber series of exercises includes the following consultation methods (See also CO5): <ul style="list-style-type: none"> ○ Community information sessions in Rockhampton and Yeppoon ○ Advertisements in local and state newspapers ○ Information provided on a dedicated website ○ A free-call number for queries ○ Library displays throughout the consultation period • Defence exercise planning doctrine identifies key requirements which include environment and community engagement. The process of EIA in Defence includes guidance that directs planners to consider community 	<ul style="list-style-type: none"> • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area • DEQMS – Environmental Management (Environmental Impact Assessment and Approval) • Defence Estate Strategy 2016-2036 • Talisman Saber exercise series: • TS15 PER and associated documentation • TS17 PER, technical reports, videos and post exercise report • Defence webpage for Talisman Saber exercise • Senate Inquiry: Impact of Defence training activities and facilities on rural and regional communities 	Adequate	Stable

		<p>stakeholders. The requirement for consultation and which external stakeholders need to be approached will be determined through implementation of the Defence EIA process.</p> <ul style="list-style-type: none"> • There has been extensive consultation between Defence and the GBRMPA, past and continuing, to identify and minimise impacts on that marine environment as associated with Talisman Saber Exercises and with military activities more broadly. • Public consultation for Talisman Saber exercises comprehensive – Public Environment Report out for public comment (complies with EPBC requirements) – EMS at local level • A Senate Inquiry in 2017 considered the Impact of Defence training activities and facilities on rural and regional communities. Submissions were made by GBRMPA, Defence and other organisations associated with the GBR Region. 			
PL7 Sufficient policy currently exists to effectively address defence activities	3	<ul style="list-style-type: none"> • There are few policy gaps in relation to risks associated with Defence activities. Those that do exist generally relate to the management of legacy issues around the use of explosives, management of hazardous material contamination, legacy ordnance dump sites, and management of UXO arising from training: <ul style="list-style-type: none"> ○ GBRMPA policy on UXO arising from Defence activities is not formalised e.g. the policy for a moratorium on high explosive use outside of Shoalwater Bay is voluntary. However, any proposal contrary to this policy would be subject to review, assessment and approval through the existing management channels. ○ The dedicated Defence website referencing UXO outside training areas provides a good general overview but the information is not sufficiently detailed to be of great assistance 	<ul style="list-style-type: none"> • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area • GBRMPA/Defence Management Agreement 2012-2016 • Defence webpages on UXO • MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region • Defence Estate Water Strategy 2014-2019 	Adequate	Stable

		<p>to GBR managers making site-level decisions on a day to day basis.</p> <ul style="list-style-type: none"> There are reviews planned or currently underway to update the SWBTA State of the Environment Report and the Marine Activities EMP. The latter will result in the production of a planning handbook for Defence activities in the Great Barrier Reef. 			
PL8 There is consistency across jurisdictions when planning for defence activities	4	<ul style="list-style-type: none"> It is generally true that due to the cross-jurisdictional nature of Defence activities (often involving sea, land and air – including across maritime and national boundaries) Defence takes overall responsibility for supervision of its activities from inception to conclusion and engages with responsible managers on relevant aspects of an overall activity. In the case of the GBR managers are involved in the planning stages of major activities to ensure consistent information and approaches are applied in managing potential risks. The approach has been proven to be effective and has been well tested over the years, particularly in relation to major exercises. 	<ul style="list-style-type: none"> Memorandum of Understanding 2012-2016 MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region 	Adequate	Stable
PL9 Plans relevant to defence activities provide certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.	4	<ul style="list-style-type: none"> Managers follow strict protocols in relation to defence actions that may involve some measured element of risk. For example, Defence has a voluntary moratorium on the use of high explosives in the GBR World Heritage Area (except in SWBTA where explosives are still used at for underwater demolitions training at Triangular Island and at the air weapons range on Townshend Island). Stringent environmental procedures are followed when high explosives are used, including a requirement to maintain a safety zones for marine fauna particularly whales, dolphins, dugongs and turtles. When high explosives are being detonated in the water there are dedicated shipboard and aerial observers who communicate any marine wildlife sightings to exercise and other participants. GBRMPA managers have visibility of the internal Defence processes applied to consider environmental assessments for the activities described in Defence environmental policies and strategies. There is also good awareness in GBRMPA of 	<ul style="list-style-type: none"> GBRMPA/Defence Management Agreement 2012-2016 Strategic Environmental Assessment of defence activities in the Great Barrier Reef World Heritage Area, 2014 GBRMPA and QLD Strategic Assessment Program Reports MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region 	Adequate	Stable

		<p>the Defence Maritime Activities EMP which provides guidance for Defence planners and operators to ensure that the need for protection of environmental values in the Marine environment, including the GBR, are recognised avoided where practicable.</p> <ul style="list-style-type: none"> Defence Range Standing Orders for training areas within (or adjacent to) the GBR specify what activities may or may not occur and where such limitations may exist. GBRMPA and QLD Program Reports from the comprehensive strategic assessment 			
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address defence activities	4	<ul style="list-style-type: none"> It is noted that GBRMPA does not specifically allocate financial resources to manage Defence activities <i>per se</i>. Defence activities are considered comparatively low risk and are regarded as well managed by the environmental management expertise available within Defence. Defence activities routinely receive some funding to undertake environmental assessments and to ensure approvals are in place. These internal processes are known to GBRMPA managers and are the mechanism used to implement environmental controls to ensure all necessary environmental protection measures are in place when activities are undertaken. The Government has committed to the Defence budget growing by 'to two per cent of GDP by 2020–21...' It is reasonable to assume that the Defence environmental management budget will keep in step with this undertaking to deal with emerging issues arising from any new priorities. Significant financial resources are referred to in the Defence 2017/18 PBS for contamination remediation works – particularly associated with Per-and Poly-Fluorinated Alkyl substances arising from the use of firefighting foam from the 1970's. Sites such as RAAF Base Townsville that drain to the GBR have been the subject of assessments for contamination. The 2018/19 Federal Budget also announced \$34.1 million over five years from 2017-18 for research and 	<ul style="list-style-type: none"> PER (2004) – National Defence Defence Annual Reports GBRMPA Annual Reports Talisman Saber exercise series: TS15 PER and associated documentation TS17 PER, technical reports, videos and post exercise report Defence webpage for Talisman Saber exercise Minister statement on Defence budget overview Defence Portfolio Budget Statements 2017/18 (table 50 page 111) /2017-18 Defence PBS 00 Complete.pdf Defence Portfolio Budget Statement 2018-19 https://budget.gov.au/2018-19/content/bp2/download/bp2_combined.pdf 	Adequate	Stable

		<p>associated activities related to per- and poly-fluorinated alkyl substances (PFAS).</p> <ul style="list-style-type: none"> Defence allocates resources to address the need to comply with the EPBC and GBRMPA Acts. 			
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address defence activities	3	<ul style="list-style-type: none"> It is noted that GBRMPA is reliant on Defence to continue the high level of self-management and monitoring of their environmental effects. Given the acknowledged low risk, and nature of the activities this is considered appropriate. For GBRMPA the effectiveness of a self-managed approach will inevitably depend on Defence ensuring that there are adequate resources available (currently 6-10 FTE) for its own environmental managers to maintain the existing standards. It is considered that GBRMPA's main management priorities are rightly in areas other than the limited risks associated with Defence training. Consequently, there is strong competition for resources for monitoring Defence compliance and it can be foreseen that in future these may be inadequate if there is increased levels of training activity. Defence/GBR Field Management do undertake some joint patrols especially when training areas are closed to the public for safety and security reasons. Defence has a specialist environmental impact assessment unit (the Directorate of Environmental Protection and Assessments - DEPA) to ensure compliance with regulatory and internal Defence requirements such as Environmental Clearance Certificates, Environmental Assessment Reports and Environmental Reports. Resourcing in Defence includes APS and contracted specialist staff. This includes approximately 0.5 FTE focussed on GBRMPA strategic level matters within Estate & Infrastructure Group in addition to other APS and contracted resources in Navy HQ and Fleet. Defence regional environmental staff are responsible for Defence estate within the GBR catchment are also focussed on management of Defence activities with respect to GBR values. 	<ul style="list-style-type: none"> Defence Annual Reports GBRMPA Annual Reports 	Adequate	Stable

IN3 The right skill sets and expertise are currently available to the managing organisations to address defence activities	3	<ul style="list-style-type: none"> It is noted that within GBRMPA the right skill set and expertise exists within an admitted small number of staff (2 maximum) to undertake the tasks necessary to manage defence activities. With a small number of individuals when those staff are on leave or seconded to another section the corporate knowledge is displaced and often inaccessible until the staff return to the Environment Assessment and Protection or Field Management Unit. Defence's own environmental personnel are also limited in number but are generally very experienced with a strong understanding of the obligations on Defence in relation to GBR regulation under the GBRMP Act and EPBC Act. Defence's directly employed regional staff are few in number but are supported by contractors who undertake some environmental management tasks. 	<ul style="list-style-type: none"> 	Adequate	Stable
IN4 The necessary biophysical information is currently available to address defence activities	3	<ul style="list-style-type: none"> Biophysical information is available to GBRMPA from Defence on some aspects, e.g. hydrographic surveys. Training areas also undertake a suite of routine environmental monitoring evaluations relating to a range of issues (e.g. groundcover, contamination, water quality etc). Some of the best available biophysical information is used by GBRMPA managers e.g. seagrass mapping 	<ul style="list-style-type: none"> State of the Environment Report for Shoalwater Bay Training Area 2008 Tier 3 Marine Monitoring Program inshore seagrass Seagrass Watch – Shoalwater Bay 	Adequate	Stable
IN5 The necessary socio-economic information is currently available to address defence activities	3	<ul style="list-style-type: none"> It is difficult to compare total economic value of defence use of the GBR with, for example, tourism, fishing, or shipping – because most of the economic data is either not collected or the Defence economic effect is diffuse across the wider regional or national economy. There are no alternative areas for the type of combined defence training that occurs at Shoalwater Bay which retains significant strategic, social and economic value particularly if considered against the costs of acquiring and establishing a new training area. Data regarding defence use of the GBR (which is sometimes on an exclusive basis e.g. for security or safety reasons), and which may affect other activities and the uses of the marine park is very limited with fishing and tourism activities the most likely to be displaced. 	<ul style="list-style-type: none"> Talisman Saber exercise series: TS15 PER and associated documentation TS17 PER, technical reports, videos and post exercise report Defence webpage for Talisman Saber exercise Townsville North Queensland Destination Tourism Plan Senate Inquiry: Impact of Defence training activities and facilities on rural and regional communities ASMTI SEIA report and factsheets (Shoalwater Bay, Townsville, Qld regions) ASTMI overview webpage 	Adequate	Stable

		<ul style="list-style-type: none"> • Some effort is made to describe the social impacts of the large scale Talisman Saber exercise which is assessed in the planning stages of the exercise. • Social and economic benefits derive from Defence presence and training activities for the entire Australian community. Defence bases at Cairns and Townsville also support these regional economies. The economic benefits of small-scale defence training activities at other locations adjacent to the Region is difficult to evaluate, although Talisman Saber 2017 was predicted to contribute \$4 million to the Rockhampton economy and \$200,000 to the Townsville economy. Periodic visits from U.S., New Zealand and Singapore naval ships to ports at Townsville and Cairns also generate short-term economic benefits, related to increased visitation and tourism • KPMG conducted a socio-economic impact assessment for the Australia-Singapore Military Training Initiative (ASMTI), report released in 2017. Australia-Singapore “Memorandum of Understanding” delivers a framework to implement increased Singapore Armed Forces unilateral training in Australia. It sets the conditions for upgrading Central and North Queensland to deliver enhanced training outcomes for both the Singapore Armed Forces and the Australian Defence Force. Under the Initiative, up to 14,000 Singapore Armed Forces personnel will conduct unilateral training in Australia for up to 18 weeks per year.” • A Senate Inquiry interim report – “Impact of Defence training activities and facilities on rural and regional communities” and submissions by GBRMPA, Defence and other organisations associated with the GBR Region document some aspects of the socio-economic effects of defence presence and use 			
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IN6 The necessary Indigenous heritage information is currently available to address defence activities	4	<ul style="list-style-type: none"> Managers advise GBRMPA and Defence generally apply a precautionary approach that promotes avoidance of indigenous heritage sites in the first place. In the event that avoidance is not possible then it is understood that formal notification protocols are implemented e.g. in event that a possible indigenous artefact is found. On Defence managed property recognised sites and buffer areas are specified as 'no go' areas. It is considered that there is a good understanding of indigenous heritage for Shoalwater Bay, and some for Cowley Bay/Halifax Bay Defence has extensive resources that guide, encourage and require engagement with traditional owners, indigenous communities and Native Title holders. These include a specific 'Defence Heritage Toolkit' for managers (<i>currently under revision</i>), the adoption of the Burra Charter and implementation of the Australian Heritage Commission's 'Ask First' policy. Traditional Owners are able to access Defence training areas subject to safety, security and operational requirements. There is extensive consultation and engagement with Indigenous communities on a day-to-day basis and also specifically in relation to individual activities; e.g. engagement with Darumbal at Shoalwater Bay and Stanage Bay for TS17 and on an ongoing basis through the Shoalwater Bay Training Area Environmental Advisory Committee and also as required; engagement with Juru Traditional Owners at Upstart Bay for TS17 rehearsals 	<ul style="list-style-type: none"> Ask First: a guide to respecting Indigenous heritage places and values Burra Charter Defence Heritage Toolkit Talisman Saber exercise series: <ul style="list-style-type: none"> TS15 PER and associated documentation TS17 PER, technical reports, videos and post exercise report Defence webpage for Talisman Saber exercise Defence Estate Heritage Strategy 	Adequate	Stable
IN7 The necessary historic heritage information is currently available to address defence activities	4	<p>GBRMPA advises that it maintains an internal Heritage database which is considered effective. Limits are sometimes needed in relation to access to information on some sites/events. For example the identification of the WWII seaplane Catalina offshore from Bowen raised a number of issues at the time – e.g. who was responsible, was the site to be treated as a war graves area etc.</p> <ul style="list-style-type: none"> The legacy from UXOs and other sea-dumped war material, which may be impacting on heritage values is poorly documented with the historic reports now accepted as being 	<ul style="list-style-type: none"> GBRMPA Heritage database (internal document) Australian National Shipwreck database Outlook Report 2014, Ch4 Defence Estate Heritage Strategy 	Adequate	Stable

		<p>commonly unreliable – e.g. historical sea dumping of munitions – see PR8</p> <ul style="list-style-type: none"> Defence also maintains a record of heritage values on Defence estate with accompanying Heritage Management Plans (HMP). The HMP relate to historical and indigenous heritage with the Traditional Owners being consulted and approving the management actions that relate to indigenous heritage on the Defence estate. Defence has implemented a new integrated database 'Garrison and Estate Management System' (GEMS) which provides a greater level of fidelity on the heritage (and other) values of areas within the Defence estate. This system also allows improved knowledge and tracking of values on non-Defence training areas utilised on an ad hoc basis (e.g. Stanage Bay during TS17) 			
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address defence activities	4	<ul style="list-style-type: none"> It is encouraging that Defence does have a network of volunteers who do provide assistance at some defence establishments with maintaining the heritage values of, for example, museum collections, historic buildings and artefacts. There may be examples that apply to Defence sites adjacent to the GBR. It is known that Defence routinely cooperates with its neighbours and volunteers on environmental management and conservation initiatives such as weed, feral animal and bushfire controls – all of which may indirectly contribute to the overall conservation of important WH values e.g. such as those dependent upon maintaining water quality Research and baseline environmental studies and surveys are also permitted on many Defence training areas subject to routine safety and operational requirements. Defence also makes extensive use of contracted expertise. Defence enables access to Shoalwater Bay, (and other parts of the Defence estate) to facilitate research which accords with the findings of the Commonwealth Commission of Inquiry into Shoalwater Bay from 1995. Shoalwater Bay Training Area Environmental Advisory Committee (EAC) provides a forum for feedback to Defence 		Adequate	Stable

		by the community and key stakeholders in relation to Defence activities on Shoalwater Bay Training Area. The Environmental Advisory Committee was established in response to the Commission of Inquiry in the mid 1990's and has operated ever since.			
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of defence activities	4	<ul style="list-style-type: none"> Defence and GBRMPA have in place processes that ensure key stakeholders are engaged in the processes applied to approve defence use of the GBR (See PL6) 	<ul style="list-style-type: none"> MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region GBRMPA/Defence Annual Forum Relevant Legislation and regulations 	Adequate	Stable
PR2 The local community is effectively engaged in the ongoing management of defence activities	4	<ul style="list-style-type: none"> Defence managers have established an Environmental Advisory Committee (EAC) for each Training area – e.g. Shoalwater Bay Training Area Environmental Advisory Committee (EAC). For GBRMPA, engagement is through RACs and LMACs, but this is issues-driven and ad-hoc in relation to defence activities Managers consider that stakeholders are effectively engaged through the various advisory committees convened by Defence and GBRMPA. Major exercises also publicise activities, impact assessments and have a public presence on social media 	<ul style="list-style-type: none"> Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area Talisman Saber 2013 Public Environment Report (final report) Talisman Saber exercise series: TS15 PER and associated documentation TS17 PER, technical reports, videos and post exercise report Defence webpage for Talisman Saber exercise Defence community consultation web pages Senate Inquiry: Impact of Defence training activities and facilities on rural and regional communities 	Adequate	Stable
PR3 There is a sound governance system in place to address defence activities	4	<ul style="list-style-type: none"> GBRMPA is notified about defence activities in the Region and can issue directions to Defence to minimise risks to the Great Barrier Reef - Part 5 of GBRMP Zoning Plan Defence complies with GBRMP Zone Plan and all relevant legislation to the extent practicable Defence's system of planning, environmental assessment and approvals is designed to ensure compliance with relevant legislation. This is guided by the ISO9001 certified Defence Environmental and Quality Management System (DEQMS) 	<ul style="list-style-type: none"> DEQMS MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region Strategic environmental assessment of defence activities in the Great Barrier Reef World Heritage Area, 2014 	Adequate	Stable

		<ul style="list-style-type: none"> • Routine Defence activities are managed through the strategic environmental assessment. Activities deemed to be low risk are managed by standard Defence procedures. • Defence also supports border protection activities such as environment and fisheries protection, immigration controls, and biosecurity. • GBRMPA and the QPWS work collaboratively with Defence to manage activities within the Marine Park. 			
PR4 There is effective performance monitoring, including, regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for defence activities	3	<ul style="list-style-type: none"> • Most systems GBRMPA and Defence have put in place include the important monitoring and feedback mechanisms that enhance overall effectiveness for management. • Some monitoring and evaluation of potential cumulative impacts is also occurring e.g. seagrass cover in SWBTA and water quality inputs to GBR • Evaluation of activities and forward planning is conducted annually at each GBRMPA/Defence forum e.g. climate change, ecologically sustainable use and communication (Ref 23) • Reporting is required where GBRMPA issues a Part 5 direction - which also provides for performance monitoring • Monitoring for compliance is comprehensive for major exercises like Talisman Sabre • All internal Defence approvals have a requirement for some degree of post activity reporting • GBRMPA, Defence and Queensland agencies cooperate to monitor compliance particularly for major exercises • Talisman Saber produces a post exercise environmental report. 	<ul style="list-style-type: none"> • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area • MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region 	Adequate	Stable
PR5 Appropriate training is available to the managing agencies to address defence activities	3	<ul style="list-style-type: none"> • It is noted that Defence do undertake induction training, produce information DVD's and awareness cards for all visitors to Defence training areas including participants in training exercises. Induction training is tailored to the areas that the 'visitor' will be accessing and the tasks they will be undertaking. Briefings include consideration of terrestrial and marine environments and also address compliance requirements, points of contact in the event of an incident and associated immediate actions. It is considered that 	<ul style="list-style-type: none"> • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area • Talisman Saber exercise series: • TS15 PER and associated documentation • TS17 PER, technical reports, videos and post exercise report • Defence webpage for Talisman Saber exercise • GBRMPA Annual Report 2015-16, p61 	Adequate	Stable

		<p>overall these messages are well received by users and compliance is effective.</p> <ul style="list-style-type: none"> • Maintaining the expertise and number of Defence staff engaged in environmental management on training ranges and in policy areas is important to ensure Defence has capacity to undertake compliance monitoring and enforcement of conditions attached to exercise approvals within the Great Barrier Reef Region. • See also IN3, CO2 • In June-July 2015 a GBRMPA staff member undertook a 10-day secondment to Talisman Saber to work with Defence environment team in Shoalwater Bay (GBR) and Fog Bay (NT). • GBRMPA (with assistance from Defence) has provided opportunities for relevant staff to gain an understanding of Defence exercises in the GBRMP (including recently). Defence has historically reciprocated. Ongoing staff exchanges and training promote shared knowledge of procedures, requirements, issues etc. and ensure this is maintained over time – especially where personnel are changings. 			
PR6 Management of defence activities is consistently implemented across the relevant jurisdictions	4	<ul style="list-style-type: none"> • The partnership approach between Defence/GBRMPA has developed at the regional and national levels points to a high level of consistency in approach, with a formal annual meetings of Defence/GBRMPA officials as well as ad hoc consultation on a range of issues of mutual importance. • The cooperative process for considering risks also provides an opportunity for addresses differing views (if any) • Managers advise that Defence activities are managed relatively consistently across all areas of operation including in the GBR. Where site specific management of activities is needed this is guided by Range Standing Orders (RSO (e.g. SWBTA) and/or other management tools such as the Marine Activities EMP. Compliance with Qld and GBRMPA regulations by Defence is consistent to the extent required within the GBR 	<ul style="list-style-type: none"> • MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region 	Adequate	Stable

		<ul style="list-style-type: none"> All activities undertaken by Defence within the GBR are notified to GBRMPA with an invitation to comment on the adequacy of environmental management controls Status of Forces Agreements (SoFA) for activities involving international military requires compliance with environmental and maritime laws 			
PR7 There are effective processes applied to resolve differing views/ conflicts regarding defence activities	4	<ul style="list-style-type: none"> The evidence points to effective processes being in place guiding a range of decisions about Defence activities. Historical conflict about the use of Defence training areas in Shoalwater Bay in the late 1980's and Halifax Bay a decade later lead to the development of improved collaborative management approaches between Defence and GBRMPA. The processes in place have ensured that management decisions about Defence activities have been based on understanding and consensus. Defence recognises that has a 'social licence' to continue to operate, as long as potential environmental concerns are effectively addressed in the GBRWHA (e.g. retrieval of jettisoned live ordnance following a training exercise in 2013) The partnership between Defence/GBRMPA at all levels e.g. annual meeting of Defence/GBRMPA officers provides a forum for sharing information and discussing potential areas of conflict. Risk assessment processes for individual projects/activities also provide opportunities to address differing views. There is routine communication and discussion means that issues are resolved through agreement and consensus All activities undertaken by Defence within the GBR are notified to GBRMPA with an invitation to comment on the adequacy of environmental management controls 	<ul style="list-style-type: none"> MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region 	Adequate	Improving
PR8 Impacts (direct, indirect and cumulative) of activities associated with defence activities are appropriately considered.	4	<ul style="list-style-type: none"> It is considered that there would be very few, if any, exceptions where the impacts of a planned Defence activity was not well understood and well managed. Major incidents causing harm are also very rare There are a few legacy issues associated with historical events (e.g. WWII) and defence training activities. Most significant is the presence of UXO (such as artillery shells, 	<ul style="list-style-type: none"> Sea dumping in Australia: historical and contemporary aspects (Geoff Plunkett) - NB. This document is being reviewed for reissue. Sydney Morning Herald 1947, Dangerous tasks for men of the navy, 18 June edn, Fairfax Media, Sydney. The Cairns Post 1948, Mine sweeping ends, 7 August edn, News Ltd, Cairns. Royal Australian Navy 2013, HMAS Bungaree, Royal Australian Navy 	Adequate	Stable

		<p>mortars, mines and bombs) dating from WWII. The largest post-war dumpsites were recorded as located offshore from Cairns and Townsville, however these locations have never been validated. The presence of dumped munitions at other unrecorded sites in the Region suggests that post war records are not reliable. Small quantities of chemical warfare agents were also dumped off Bowen and Proserpine in the late 1940s. While some records were kept about the location of this dumping the precise locations, quantities and types of materials dumped are unknown</p> <ul style="list-style-type: none"> • There is some evidence that these legacy issues are being treated with increased importance to Defence. A pilot study was undertaken at John Brewer Reef offshore Townsville to evaluate the risks posed by unexploded ordnance at an unofficial dumping site there. GBRMPA and Defence continue to work to address the risks posed by both historic and contemporary defence activities. • Further evidence is available to support this conclusion e.g. four bombs jettisoned in July 2013 in a habitat protection zone near Shoalwater Bay in the marine park were recovered with planning and recovery actions involving GBRMPA, Australian and US Defence Forces working together on the recover response. • High impact activities are confined to specific, localised areas and are generally confined to a few weeks per year. • Many defence activities are conducted with dedicated shipboard and aerial observers who can collect data on marine wildlife sightings, and ensure activities are adapted to avoid impacts or otherwise delayed if required. • Defence has new energy, water, heritage and overarching strategies for the Defence Estate • An accident resulting in the sinking and recovery of an Osprey aircraft in 2017 did not result in significant environmental impacts. • Presence of contamination from fire fighting foam (PFAS) is being examined in groundwater and freshwater and marine 	<ul style="list-style-type: none"> • Department of Defence 2002, Royal Australian Navy detonates World War II mine on Great Barrier Reef, Department of Defence, Brisbane • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area • Strategic environmental assessment of defence activities in the Great Barrier Reef World Heritage Area, 2014 • Talisman Saber exercise series: • TS15 PER and associated documentation • TS17 PER, technical reports, videos and post exercise report • Defence webpage for Talisman Saber exercise • Defence Estate Energy Strategy 2014-2019 • Defence Estate Water Strategy 2014-2019 • Defence Estate Heritage Strategy • Defence Estate Strategy 2016-2036 • Reef 2050 Long-term sustainability plan • GBRMPA Annual Report 2015-16, p61 • Defence PFAS and RAAF base Townsville investigation webpages 		
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		<p>systems for several Defence operation locations, one of which is adjacent to the Reef (RAAF Base Townsville).</p> <ul style="list-style-type: none"> • The 2013 ordnance jettisoning incident has since facilitated further strategic planning for response to future events which are unlikely, unpredictable but which may have adverse impacts on either environmental values, social aspects or Defence's reputation. This has resulted in significantly increased collaboration across Australian state and Commonwealth government agencies • The acquisition of new equipment and platforms such as LHD's means that the cumulative impacts of increased training activity in the littoral zone around SWBTA may pose a possible risk in future. 			
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding defence activities	4	<ul style="list-style-type: none"> • It is considered that the information available to Defence for planning its activities is some of the most comprehensive available. • Validation of historic records regarding WWII sea dumping sites is absent, as is knowledge of any potential pollution/contamination risks. 	<ul style="list-style-type: none"> • Talisman Saber 2013 Public Environment Report (final report) • Contaminated site assessments of Defence sites in Queensland – details can be viewed online • Strategic environmental assessment of defence activities in the Great Barrier Reef World Heritage Area, 2014 • Talisman Saber exercise series: • TS15 PER and associated documentation • TS17 PER, technical reports, videos and post exercise report • Defence webpage for Talisman Saber exercise • Sobotzick, S., Cleguer, C., Hagihara, R., and Marsh, H. 2017. Distribution and abundance of dugong and large marine turtles in Moreton Bay, Hervey Bay and the southern Great Barrier Reef. • Reef 2050 Long-term sustainability plan • GBRMPA Annual Report 2015-16 	Adequate	Stable
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding defence activities	4	<ul style="list-style-type: none"> • Some socio-economic data is available pertaining to the value of a Defence presence to local communities (e.g. KPMG Ref 202). Managers may find it challenging to compare socio-economic data such as the total economic value of defence use of the GBR with, for example, tourism, fishing, or shipping – because most of the economic data is either not collected or the Defence economic effect is diffuse across the wider Australian economy. To the extent that it is relevant to making decisions about Defence activities it is 	<ul style="list-style-type: none"> • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). • Senate Inquiry: Impact of Defence training activities and facilities on rural and regional communities • ASTMI overview webpage 	Adequate	Stable

		<p>considered that the information available (such as it is) remains adequate and relevant. (See also IN5 above).</p> <ul style="list-style-type: none"> • A Senate Inquiry interim report – “Impact of Defence training activities and facilities on rural and regional communities” and submissions by GBRMPA, Defence and other organisations associated with the GBR Region document some aspects of socio-economic issues arising from the Defence presence and use of the GBR 			
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding defence activities	4	<ul style="list-style-type: none"> • Managers advise that where information is available about indigenous heritage it is used to guide management decisions – but information is sometimes limited. • Defence also advises that it routinely engages with indigenous communities, native title holders and traditional owners on matters relating to the Defence estate with further consultation in advance of larger scale activities such as the Talisman Saber series of exercises or facilities development projects on training areas. • Defence follows a comprehensive suite of guidance documents in order to ensure heritage values are respected in decision making. • Some new strategies have been developed for Defence estate management 	<ul style="list-style-type: none"> • Ask First: a guide to respecting Indigenous heritage places and values • Burra Charter • Defence Heritage Toolkit • Defence Estate Heritage Strategy • Defence Estate Strategy 2016-2036 	Adequate	Stable
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding defence activities	4	<ul style="list-style-type: none"> • Where information is available about historic heritage it is used to guide management decisions but information is sometimes limited • Defence has follows a comprehensive suite of guidance documents in order to ensure heritage values are respected in decision making 	<ul style="list-style-type: none"> • Burra Charter • Defence Heritage Toolkit • Defence Estate Heritage Strategy • Defence Estate Strategy 2016-2036 	Adequate	Stable
PR13 Relevant standards are identified and being met regarding defence activities	4	<ul style="list-style-type: none"> • Objectives for performance are outlined in various doctrine including the GBRMPA/Defence MOU. At the higher levels e.g. the major exercise program, it has comprehensive environmental monitoring in place with very few incidents reported pointing to high standards continuing to be met for environmental management. • Some monitoring and evaluation of potential cumulative impacts is also occurring e.g. seagrass cover in SWBTA and water quality inputs to GBR 	<ul style="list-style-type: none"> • GBRMPA/Defence Management Agreement 2012-2016 • Southall et al 2009, US Interagency Task Force Study on Anthropogenic Sound and the Marine Environment 	Adequate	Stable

		<ul style="list-style-type: none"> • Range Standing Orders and the Defence environmental impact assessment and management framework are consistently applied. • The Authority considers Defence activities within the GBRMP as/when required in accordance with regulations and the zoning plan. Managers advise that any directions issued are complied with which suggests an effective approach. • Underwater explosions can cause adverse behavioural effects on sensitive marine fauna (e.g. turtles, dugongs and dolphins) (Ref 32). Studies have been conducted and specific environmental risk management procedures are in place to manage underwater demolitions training at Triangular Island. • Specific environmental risk management procedures are in place with a particular focus on dugongs and turtles. A need for further research has been identified for inshore dolphins however it is expected that they will be given similar level of protection as dugongs and turtles. • Defence has evaluated potential risks of noise and adheres to a comprehensive suite of environmental mitigation controls (for all acoustic sources including explosives, sonar, underwater communications, acoustic influence minesweeping gear etc), supported by research to better understand and characterise underwater acoustic propagation and the possible effects upon sensitive marine fauna. 			
PR14 Targets have been established to benchmark management performance for defence activities	3	<ul style="list-style-type: none"> • Managers advise that GBRMPA evaluation of Defence performance is generally issues-driven rather than formally measured against specific targets. This is considered appropriate for the majority of activities defence might undertake though consideration of some objectives and targets for addressing potential cumulative impacts might enhance overall effectiveness. • The Environmental Clearance Certificates for Defence activities generally set some performance indicators and outline reporting responsibilities. GBRMPA does not have an ecosystem wide approach to target setting within areas 	<ul style="list-style-type: none"> • MOU 2016-2020 between Defence and GBRMPA on Management of Defence Activities in the GBRMP Region, e.g. section 7 • Defence Estate Water Strategy 2014-2019 	Adequate	Improving

		<p>managed for Defence use (e.g. seagrass cover maintained at X% by 2020).</p> <ul style="list-style-type: none"> • Updated GBRMPA/Defence MOU refers to environmental performance reporting, but there are no specific targets mentioned • Notwithstanding the potential management benefit of ecosystem-based targets (such as seagrass % cover), the distribution of seagrass in Shoalwater Bay is subject to natural fluctuation in distribution in response to events such as floods and cyclones. Defence activities are usually very geographically restricted but potentially of high intensity at those locations where they do occur. Range Standing Orders seek to mitigate the impact of these activities by prescribing times, locations and the nature of activities that can be undertaken. Many of the environmental impacts that may occur within Shoalwater Bay marine environments are buffered by the good quality catchment of the training area but still subject to external influences caused by agricultural runoff from adjacent catchments in addition to other external influences such as water temperature and extreme weather events. • Practicable targets for Defence activities would most appropriately relate to compliance with Range Standing Orders (RSO) and the maximum footprint of disturbance for locations where activities are permitted under RSO • The defence estate water strategy contains broad goals for water use efficiency 			
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for defence activities	4	<ul style="list-style-type: none"> • GBRMPA managers advise that there have been some measures of effectiveness in past exercises through the reporting framework. These reports are generally qualitative and adverse effects are reported as exceptions, usually where an incident has occurred. Cumulative impacts are difficult to quantify as no KPIs have been identified and agreed. 	<ul style="list-style-type: none"> • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area • Talisman Saber exercise series: • TS15 PER and associated documentation • TS17 PER, technical reports, videos and post exercise report • Defence webpage for Talisman Saber exercise 	Adequate	Improving

	<ul style="list-style-type: none"> • The management 'program' effectively revolves around the major exercise planning cycle which serves as a major driver for management. • Environment outputs attributable to Defence use are good/excellent and overall show minimal pressure on marine environment, e.g. in catchments. • Defence is generally perceived as a good steward of the environment although there are some local concerns e.g. regarding exclusive use of areas • Defence has historically been responsive to community concerns and scientific evidence, e.g. aerial bombardment no longer occurs at Halifax Bay close to Townsville. Munitions used in training have lower explosive yields and are use of explosive ordnance is directed to locations where they will land in water or on the shore. Activities are being less disruptive to shorebirds and the marine environment. Refer to 2016 Defence-GBRMPA annual meeting (Ref 86): • Army took over management of Halifax Bay training range from RAAF in 2015 and will use the islands and beaches for: <ul style="list-style-type: none"> ○ Army watercraft and small boat training ○ Amphibious ready group procedural training ○ Pre-landing force training ○ Amphibious beach assault • Defence equipment and training is being used 'smarter' to reduce environmental risks e.g. LHD Landing Craft (LLC) can modify beach profiles and use adaptive management and prohibition of use in certain locations. • Talisman Saber 17 post exercise report addresses the effectiveness of management and mitigation measures employed during the exercise. This will identify the evolution of procedures from preceding exercises on the basis of lessons learned and also in response to feedback by GBRMPA, examples: <ul style="list-style-type: none"> ○ blackwater discharge locations and provisions ○ ordnance jettison procedures ○ ordnance recovery procedures 	<ul style="list-style-type: none"> • 2016 Defence-GBRMPA Annual meeting minutes (<i>available on request</i>) 		
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		<ul style="list-style-type: none"> ○ communications strategy and ○ major incident response procedures 			
OP2 Implementation of management documents and/or programs relevant to defence activities have progressed in accordance with timeframes specified in those documents	4	<ul style="list-style-type: none"> • As previously mentioned, Defence training activities tend to be cyclic (such as the major exercise planning program for Talisman Sabre) so this planning process reviews management documents and/or programs regularly. 		Adequate	Stable
OP3 The results (in OP1 above) have achieved their stated management objectives for defence activities	4	<ul style="list-style-type: none"> • Defence advises that all Defence training doctrine that applies to management of environmental risks to the GBR are taken seriously and implemented effectively. Doctrine is predicated on not causing any significant impacts. This outcome appears to be supported by the Defence record. • Effective planning and incident response is evidenced by response to the MV22 Osprey crash after the conclusion of Talisman Saber 17. which resulted in no significant environmental harm. 	<ul style="list-style-type: none"> • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area. • Talisman Saber 2013 Public Environment Report (final report) • Talisman Saber exercise series: • TS15 PER and associated documentation • TS17 PER, technical reports, videos and post exercise report • Defence webpage for Talisman Saber exercise 	Adequate	Stable
OP4 To date, products or services have been produced in accordance with the stated management objectives for defence activities	4	<ul style="list-style-type: none"> • Defence has routinely produced various management planning documents e.g. Talisman Sabre 17, Range Standing Orders etc. and provided GBRMPA with opportunities for input. The available evidence supports Defence's contention that the obligations to protect the values of the GBRWHA are taken seriously and executed effectively. 	<ul style="list-style-type: none"> • http://www.defence.gov.au/Exercises/TS17/EnvironmentalPlanning.asp 	Adequate	Stable
OP5 Effective knowledge management systems regarding defence activities are in place within agencies	4	<ul style="list-style-type: none"> • Defence and GBRMPA have a variety of systems are in place for managers to record and update data relevant to managing Defence activities. Defence uses a database (known as GEMS) that consolidates information regarding environmental and heritage values across the entire Defence estate including owned and leased properties in addition to non-Defence training areas (e.g. Stanage Bay). The data in the GEMS system enables early identification of potential constraints to activities in addition to the tracking of environmental risks and mitigation. 	<ul style="list-style-type: none"> • Defence Garrison and Estate Management System (GEMS), Restricted Defence database/management system 	Adequate	Stable
OP6 Effective systems are in place to share knowledge on	4	<ul style="list-style-type: none"> • The main avenues managers are using for sharing information with the community include websites and now social media with and more traditional forms of engagement 	<ul style="list-style-type: none"> • Defence website. Among others, key pages are: • News and media • Media releases 	Adequate	Stable

defence activities with the community		<p>including formation of consultative groups and project-based information programs (e.g. Talisman Sabre PER). This is considered to be effective.</p> <ul style="list-style-type: none"> The Shoalwater Bay Training Area Environmental Advisory Committee is an example of a forum for feedback and interaction with the community around Shoalwater Bay especially regarding the conduct of major Defence exercises e.g. Talisman Saber Defence website provides links to a range of information and updates about the conduct of Defence activities. 	<ul style="list-style-type: none"> Exercises Publications 		
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing defence activities and moving towards the attainment of the desired outcomes.	4	<ul style="list-style-type: none"> GBRMPA and Defence managers advise that there is a good compliance and enforcement record for the conduct of Defence activities, particularly for the 3 major training areas. Routine operations report by exception but where incidents occur GBRMPA is routinely informed. Where performance outcomes are agreed – such as in relation to Part 5 directions, these are taken seriously and strictly applied. There have been some impacts that have occurred from time to time, however the effects are considered to be localised, transient and short term. Defence does make an effort to minimise or mitigate these where this is possible. 	<ul style="list-style-type: none"> Workshops and discussions 	Adequate	Stable
OC2 The outputs relating to defence activities are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	4	<ul style="list-style-type: none"> It is noted that there is an ongoing dialog between Defence and GBRMPA with both agencies engaging to improve performance and modify activities where necessary e.g. such as in response to extreme weather to ensure the values of the GBR are protected while Defence training outcomes are delivered. Defence personnel are aware of their obligations under GBMP and EPBC Acts and of GBRMPA's national and international responsibilities. Cooperation in management of Defence activities also improves understanding how these obligations interact with Defence's responsibilities Significant advancement of the integrated nature of planning, assessment and consultation by Defence across other Aus. Govt agencies was evidenced through the TS17 planning 	<ul style="list-style-type: none"> GBRMP Act Talisman Saber exercise series: TS15 PER and associated documentation TS17 PER, technical reports, videos and post exercise report Defence webpage for Talisman Saber exercise 	Adequate	Stable

		process which included regular interaction with GBRMPA, DoEE and DFAT in relation to the domestic and international sensitivities surrounding the GBR. Defence and GBRMPA point to the effectiveness of this planning in the coordination of the recovery response to MV22 Osprey crash			
OC3 the outputs (refer OP1 and 3) for defence activities are reducing the major risks and the threats to the Great Barrier Reef	4	<ul style="list-style-type: none"> GBRMPA managers advise that incidents involving Defence activities are very uncommon and the impacts usually minor and temporary. This suggests a high level of compliance with an effective management regime in place. Defence and GBRMPA routinely review risks/threats as part of the cycle of major exercise planning and through the review of other environmental and heritage doctrine relevant to the GBR. 	<ul style="list-style-type: none"> Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area Talisman Saber 2013 Public Environment Report (final report) Talisman Saber exercise series: <ul style="list-style-type: none"> TS15 PER and associated documentation TS17 PER, technical reports, videos and post exercise report Defence webpage for Talisman Saber exercise 	Adequate	Stable
OC4 Use of the Great Barrier Reef relating to defence activities is demonstrably environmentally sustainable	3	<ul style="list-style-type: none"> As previously mentioned, incidents involving Defence activities are very uncommon and the impacts usually minor and temporary. Training activities are regularly undertaken in designated areas of the Region, covering less than four per cent of the area. While most of the designated defence training areas within or adjacent to the Region are small, the Shoalwater Bay Defence Training Area near Rockhampton is one of Australia's largest and is regularly used. Defence activities in the Region directly contribute to the training and operation of Australia's defence services. In addition, the acquisition of Shoalwater Bay in 1965 has provided environmental benefits. The land component remains largely undisturbed and is able to maintain natural environmental processes. It also supports high biodiversity, including internationally significant migratory species and wetlands, and has stunning landscape features. Environmental monitoring has shown activities, such as low-flying aircraft, are not posing significant biological threats to the wetland and the species which rely upon it (for example roosting seabirds). Shoalwater Bay remains largely undisturbed and is able to maintain natural environmental processes. It also supports 	<ul style="list-style-type: none"> State of the Environment Report for Shoalwater Bay Training Area 2008 Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area Monitoring green turtle population dynamics in Shoalwater Bay: 2000-2004 Research Publication No. 83 Defence information on MNES (seagrasses, saltmarshes and mangroves): O'Neill, P. 2009b, Marine fauna, in State of the Environment report for Shoalwater Bay Training Area 2008 Department of Defence, Canberra. http://www.defence.gov.au/environment/swbta/Defence%20SOE%20report_chapter%209f.pdf Marsh, H. 2000, Evaluating management initiatives aimed at reducing the mortality of dugongs in gill and mesh nets in the Great Barrier Reef World Heritage Area, Marine Mammal Science 16(3): 684-694. Marsh, H. and Lawler, I.R. 2001, Dugong distribution and abundance in the southern Great Barrier Reef Marine Park and Hervey Bay: results of an aerial survey in October-December 1999, Great Barrier Reef Marine Park Authority, Townsville. Marsh, H. et al. 2006, Dugong distribution and abundance on the urban coast of Queensland: a basis for management: final report to Marine and Tropical Research Sciences Facility interim projects 2005-6, James Cook University, Townsville. 	Adequate	Stable

		<p>high biodiversity, including internationally significant migratory species and wetlands, and has stunning landscape features.</p> <ul style="list-style-type: none"> • Good outcomes have been demonstrated for seagrass, dugongs and turtles in Shoalwater Bay. Aerial surveys have confirmed that Shoalwater Bay is the very important for dugong on the Queensland coast south of Cooktown, supporting more than a quarter of the dugong in the region. Compared to most other areas in the region it has less tourism, recreational boating or commercial fishing, and impacts from upstream land uses are minimal because only small creeks run into the Bay from adjacent coastal lands. • While defence training activities are well-managed and have negligible impacts on the Great Barrier Reef, the predicted intensification of defence activities in the Region coincides with a decline in the Region's ecosystem health caused by a range of other pressures. Defence advises that it is working with GBRMPA to review the risks posed by defence activities in light of new information about the Region's declining ecosystem resilience and cumulative impacts. 	<ul style="list-style-type: none"> • Marsh, H., Corkeron, P., Lawler, I.R., Lanyon, J. and Preen, A.R. 1996, The status of the dugong in the Southern Great Barrier Reef Marine Park, Research publication no. 41 edn, Great Barrier Reef Marine Park Authority, Townsville. • Sobotzick, S., Hagihara, R., Grech, A. and Marsh, H. 2012, Aerial survey of the urban coast of Queensland to evaluate the response of the dugong population to the widespread effects of the extreme weather events of the summer of 2010-11. Final report to the Australian Marine Mammal Centre and the National Environmental Research Program, James Cook University 		
OC5 Use of the Great Barrier Reef relating to defence activities is demonstrably economically sustainable	4	<ul style="list-style-type: none"> • GBRMPA and Defence managers appreciate that Defence use of the GBR is driven by national security and not economic drivers expressed in government policy e.g. Defence White Paper • Defence bases at Cairns and Townsville support these regional economies. Little is known of the economic benefits of small-scale defence training activities to the coastal communities adjacent to the Region, although Talisman Saber 2017 was predicted to contribute \$4 million to the Rockhampton economy and \$200,000 to the Townsville economy. • Periodic visits from U.S., New Zealand and Singapore naval ships to ports at Townsville and Cairns also generate short-term economic benefits, related to increased visitation and tourism. 	<ul style="list-style-type: none"> • Department of Defence 2016, Defence White Paper, Commonwealth of Australia, Canberra. 	Adequate	Stable
OC6 Use of the Great Barrier Reef relating to defence	4	<ul style="list-style-type: none"> • GBRMPA and Defence managers appreciate that Defence use of the GBR is driven by national security. While social 	<ul style="list-style-type: none"> • Talisman Saber exercise series: • TS15 PER and associated documentation 	Adequate	Stable

<p>activities is demonstrably socially sustainable understanding and/or enjoyment</p>		<p>values are acknowledged the is also recognition that Defence training is essential to provide for national security and that a presence at Shoalwater Bay, in particular, is critical to maintaining Defence's capability. While some elements of the community object to a Defence presence it would seem that Defence retains the support of the majority of the community as an environmental steward of the GBR.</p> <ul style="list-style-type: none"> • A defence presence and the associated operational activities can also help, directly and indirectly, to achieve management objectives for the Region e.g. hydrographic surveys, fisheries and border protection patrols and UXO remediation. • Public access to Defence areas is usually restricted, therefore defence activities are unlikely to significantly affect people's understanding and enjoyment of the area. Though it is recognised that the necessity for exclusive use does the limit other opportunities for enjoyment, appreciation and pursuit of economic activities. Defence use can enhance the Aboriginal and Torres Strait Islander communities' enjoyment and understanding as the controlled access, remoteness and conservation ethos is consistent with many aspects of traditional use and protection of values. • Increased use of non-Defence training areas (NDTA) such as Stanage Bay and Upstart Bay during Talisman Saber 17 anticipated potential concerns of local communities. Extensive consultation was undertaken before, during and after the exercise which sought to ensure the activities were conducted in a socially responsible manner. All incidents were promptly followed up to address concerns of any stakeholder affected and rectify where possible. • It is reasonable that Defence consult widely and justify why training activities need to occur outside of the existing large areas that Government have specifically set aside for Defence to train. 	<ul style="list-style-type: none"> • TS17 PER, technical reports, videos and post exercise report 		
<p>OC7 The relevant managing agencies have developed effective partnerships with local communities and/or</p>	<p>4</p>	<ul style="list-style-type: none"> • GBRMPA, Defence and Queensland agencies are all involved in the Defence Training Area Environmental Advisory Committees (EAC's – e.g. Shoalwater Bay) which are considered to provide effective forums for feedback to 	<ul style="list-style-type: none"> • Wu, W., Wang, X., Paull, D. and Kesby, J. 2010, Defence force activities in marine protected areas: environmental management of Shoalwater Bay Training Area • Talisman Saber 2013 Public Environment Report (final report) 	<p>Adequate</p>	<p>Stable</p>

<p>stakeholders to address defence activities</p>		<p>Defence by the community and key stakeholders in relation to Defence activities</p> <ul style="list-style-type: none"> • The major Defence exercise program e.g. Talisman Saber also provides opportunities for Defence to consult with stakeholders about its use of the GBR and its record of environmental management performance. • Defence has developed good partnerships with local communities/other stakeholders and regulators that support the observation that its use of areas for training has become less contentious over the past 15 - 20 years. 	<ul style="list-style-type: none"> • Bowett, J. Davidson, A. Danvers, T. (2012) Innovation in Management: Shoalwater Bay Training Area: capability, conservation and collaboration; The Nature Conservancy • Talisman Saber exercise series: • TS15 PER and associated documentation • TS17 PER, technical reports, videos and post exercise report • Defence webpage for Talisman Saber exercise 		
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Table 27 Calculation of grades for fishing (commercial)

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to commercial fishing are understood by managers	3	<ul style="list-style-type: none"> The economic and social value of commercial fisheries in the Region are understood. The ecosystems that underpin commercial fishing are known but precise effect from ecosystem degradation on fisheries productivity is not understood the impacts of the net and line East Coast Inshore Fin Fish Fishery on the seabed communities and ecosystem structures are considered negligible The Queensland Sustainable Fisheries Strategy 2017-2027 commits to 10 major reform areas, including improved monitoring and research and environmental risk assessments, which will improve understanding of GBR values. ERA guideline was published in early 2018 and will guide the work on ERAs An example of understanding is an assessment of the Queensland East Coast Inshore Fin Fish Fishery and other fisheries assessments outline gear used for commercial fishing, commercial harvest for 2011-2015, and the value of the harvest The impact of net fishing on values was recognised, with three net-free fishing zones introduced in Cairns, Mackey and Rockhampton. Stock assessments for 45 species of fish was undertaken I 2016. The impact of specific commercial fishing activities on the values of the Reef is also summarised in the FMP Strategic Compliance Risk Management Plan 2017-2018 	<ul style="list-style-type: none"> GBR Outlook Report 2014 Great Barrier Reef Region Strategic Assessment: Strategic assessment report 2014 Queensland's commercial fisheries Queensland managed fisheries assessments under the EPBC Act Queensland Sustainable Fisheries Strategy 2017-2027 QDAF sustainability reporting on Queensland's fisheries Queensland East Coast Inshore Fin Fish Fishery 2016 Summary of Stock Status for Queensland Species 2016 FMP Strategic Compliance Risk Management Plan 2017-2018 ERA guideline: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/ecological-risk-assessment-guidelines 	Adequate	Improving
CO2 The current condition and trend of values relevant to	3	<ul style="list-style-type: none"> Queensland Department of Agriculture and Fisheries undertake annual stock status Sustainability reporting on Queensland's 	<ul style="list-style-type: none"> Queensland's commercial fisheries Queensland managed fisheries assessments under the EPBC Act 	Adequate	Improving

<p>commercial fishing are known by managers</p>		<p>fisheries against national guidelines and publishes them online</p> <ul style="list-style-type: none"> • Little independent data is available. Knowledge of condition and trends would be greatly enhanced by fisheries independent data, including recruitment indices. • Stock status reporting is often state-wide and may not identify trends in the GBR or localised depletion. • In 2016, Fisheries Queensland completed the stock status assessment of 45 important species comprising of 65 individual stocks or management units. However stock status reporting is often statewide and may not identify trends in the Region or localised depletion. • The current condition and trend and importance of Fish Spawning Aggregation Sites (FSAS) is unknown. The location and timing of Reef-associated FSAS is known across only a limited number of reefs in the Region. • Examples of species with declining current catch rates include snapper (roughly one-ninth of historic catch rates) pearl perch (classified as transitional-depleting). Large declines in Spanish mackerel spawning aggregation and catch rates for this specie have also been reported. • Pratchett et.al. (2013) shows that coral trout are sensitive to changes in habitat and environmental conditions which are expected to occur as a consequence of sustained and ongoing climate change. These changes include degradation of coral reef habitats and increasing temperature which have occurred during the 2016-17 GBR mass bleaching event. Though considered high risk to the future sustainability of coral trout, how recent 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • QDAF sustainability reporting on Queensland's fisheries • Summary of Stock Status for Queensland Species 2016 • QDAF fish stock assessment reports • Thurstan et.al. 2016 Nineteenth century narratives reveal historic catch rates for Australian snapper (Pagrus auratus). • Tobin et.al. (2014) Utilising innovative technology to better understand Spanish mackerel spawning aggregations and the protection offered by marine protected areas • Pratchett et.al. (2013) Effects of climate change on reproduction, larval development, and adult health of coral trout (Plectropomus spp.) • Buckley, S.M., Thurstan, R.H., Tobin, A. and Pandolfi, J.M. 2017, Historical spatial reconstruction of a spawning-aggregation fishery, <i>Conservation Biology</i> • Advance Queensland SBIR project: https://advance.qld.gov.au/small-business/sbir/challenges.aspx#_past 		
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		bleaching events and further climate change impacts will affect these species into future is uncertain			
CO3 Impacts (direct, indirect and cumulative) associated with commercial fishing are understood by managers.	3	<ul style="list-style-type: none"> While fishing related risks are known the direct, indirect and cumulative impacts of fishing of a range of fisheries operating in the GBR are not well understood and large information gaps and risks to GBR ecosystem are still widely unknown. The GBR Outlook Report 2014 identifies the following very high and high fishing related risks: <ul style="list-style-type: none"> Incidental catch of species of conservation concern Illegal fishing and poaching Extraction of predators Discarded catch Extraction from spawning aggregations Vulnerability assessment indicate that dugong, sawfish, inshore dolphins, marine turtles and sea snakes are at risk as fisheries bycatch species, while threadfin salmon, grey mackerel and snapper are target species vulnerable to fishing pressure. The impacts of the net and line East Coast Inshore Fin Fish Fishery on the seabed communities and ecosystem structures are considered negligible As an example of impacts, the Australian Government Assessment indicates that impact of the East Coast Fin Fish Fishery on the values of the Region are considered unlikely due to the marine park zoning, gear size, harvest restrictions and harvesting methods. Assessments have been undertaken for other Qld fisheries including Queensland East Coast 	<ul style="list-style-type: none"> GBR Outlook Report 2014 Great Barrier Reef Region Strategic Assessment: Strategic assessment report 2014 Queensland Sustainable Fisheries Strategy 2017-2027 Buckley et.al. (2017) Historical spatial reconstruction of a spawning-aggregation fishery. Tobin et.al. (2014) Utilising innovative technology to better understand Spanish mackerel spawning aggregations and the protection offered by marine protected areas QDAF Ecological risk assessments GBRMPA ecological risk assessment of trawling Assessment of the Queensland East Coast Inshore Fin Fish Fishery September 2016 GBRMPA Vulnerability Assessments FRDC - Estimating fishing mortality of major target species and species of conservation interest in the Queensland east coast shark fishery. Fish spawning aggregations: where well-placed management actions can yield big benefits for fisheries and conservation Discussion papers on fisheries reform: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/fisheries-reforms 	Limited	Improving

		<p>Otter Trawl Fishery. There is an argument that impacts are not properly considered through this assessment process.</p> <ul style="list-style-type: none"> • Fisheries Queensland have indicated harvest strategies planned for all Queensland fisheries will consider broader impacts such as climate change, habitat modification, catchment runoff etc. and the whole stock, which may cross into other boundaries. However this work has yet to be completed. • A guideline for undertaking Ecological risk assessments has been developed as part of the QSFS 2017-2022 and further investment in this area will improve the situation where limited ERAs have been conducted or acted upon in recent years. • Independent validation of Species of Conservation Concern (SOC) reporting does not presently occur and most interactions are likely unreported. The effect of such interactions and associated mortality on populations is not known, but considered unsustainable for most SOC species. • Except for species of conservation interest, commercial fishers are not required to report discards of targeted and bycatch species, and there are no contemporary estimates of the quantum of bycatch and discards across all fisheries • Discussion papers on fisheries reforms were released in March 2018 and identified key issues for trawl, inshore, crab and reef line fisheries and options to address them. This included risks to target, by-product, bycatch and protected species. Preferred options are to be implemented in 2019. 			
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<p>CO4 The broader (national and international) level influences relevant to commercial fishing are understood by managers.</p>	<p>4</p>	<ul style="list-style-type: none"> • There is acknowledgment that fisheries management in the GBR World Heritage Area (WHA) (declared because of its outstanding universal value based on natural values) needs to be more precautionary than that which exists for fisheries outside marine protected areas in Australia (where the trigger reference point for “overfishing” is widely accepted as the stock biomass being less than 40% of the virgin biomass). • The Queensland Sustainable Fisheries Strategy 20017-2027 explicitly recognises the GBRWHA and sets a target reference point of Maximum Economic Yield or 60% biomass to, amongst other things, improve stock resilience • Fisheries management is undertaken to a high level within the bounds of standards set by the FAO and the Australian Fisheries Management Forum. • Fisheries Queensland has cross jurisdictional communication with NSW and the NT around the joint stocks of recreational interest (e.g. Snapper, Spanish Mackerel). • Managers also understand the implications and range requirements under the EPBC; for example the Plans of Management concerning Queensland Mud Crab and Queensland Blue Swimmer Crab Fishery • Reef-dependent activities including fishing are vulnerable to the negative effects of ocean acidification, sea level rise, more frequent extreme weather and warming sea temperatures may have on Reef condition. • It is likely fishing activities will be highly sensitive to climate change, including projected changes in fish abundance, survivorship , size and distribution, disruptions to shallow water 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • EPBC Act • Australian Fisheries Management Forum • Queensland Department of Agriculture and Fishing • Queensland managed fisheries assessments under the EPBC Act • Hammerhead sharks - Assessment of Eligibility for Threatened Species Listing • Great Barrier Reef Region Strategic Assessment: Strategic assessment report 2014. 	<p>Adequate</p>	<p>Stable</p>
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		nurseries and loss of coral reef habitats, as well as changes in cyclone and storm activity.			
CO5 The stakeholders relevant to commercial fishing are well known by managers.	4	<ul style="list-style-type: none"> Stakeholders are well known. A Sustainable Fisheries Expert Panel was appointed in July 2017. The Panel has met multiple times and communiqués are published online. Stakeholder-based fishery working groups in place for Coral Reef Fin Fish, Trawl, Crab and East Coast inshore tropical rock lobsters and marine aquarium / coral / BDM. Includes commercial, recreational and charter fishers, marketers/processors, conservation groups and science representatives. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Reef Guardian Fishers program MRAG Fisheries management review Green paper on fisheries management reform in Queensland Working groups and communiqués: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/fishery-working-groups Expert panel: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/sustainable-fisheries-expert-panel 	Adequate	Stable
PLANNING					
PL1 There is a planning system in place that effectively addresses commercial fishing	3	<ul style="list-style-type: none"> The Queensland Sustainable Fisheries Strategy: 2017-2027 outlines a set of actions to provide policy direction and reforms to ensure fishing is managed sustainably. The reforms outlined in this strategy provide a unique opportunity to effectively manage commercial fishing. The <i>Great Barrier Reef Marine Park Zoning Plan 2003</i> and the <i>Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004</i> define what activities (including fishing) can occur in which zones. The Field Management Program has a strategic program to address compliance issues in the Marine Park. The Reef 2050 Plan also considers commercial fishing, and includes actions concerning the population and stock assessment of fisheries species 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 GBRMP Zoning Plan Great Barrier Reef Coast Marine Park Reef 2050 Plan FMP Compliance Planning Fisheries Act amendments: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/changes-to-queenslands-fisheries-legislation 	Adequate	Improving

		<ul style="list-style-type: none"> Compliance plans are in place, including specific action plans to address key compliance risks. The Queensland Boating and Fisheries Patrol has moved to an intelligence based approach to compliance, using intel to guide compliance action plans. Vessel tracking that is being rolled out across all commercial and charter boats will assist with targeted compliance. 			
PL2 The planning system for commercial fishing addresses the major factors influencing the Great Barrier Reef Region's values.	3	<ul style="list-style-type: none"> Up until the introduction of the Sustainable Fisheries Strategy, commercial fishing activities influencing the GBR Region's values have been addressed on an ad-hoc basis. This strategy explicitly recognises the importance of ensuring fisheries are managed in a sustainable way in the GBRWHA and recognises the major values impacted by fishing GBR Marine Park legislative options exist to control fishing activities (e.g. declaration of Special Management Areas) but these are not regularly used because agencies generally cooperate and direct fisheries management in the GBRMP is managed by the state of Queensland under the Offshore Constitutional Settlement. EPBC Act assessments influence Queensland management of fisheries and related planning. 	<ul style="list-style-type: none"> Queensland managed fisheries assessments under the EPBC Act Queensland Sustainable Fisheries Strategy 2017-2027 QDAF Fisheries Legislation GBRMP Park Zoning Plan Harrison, H.B., Williamson, D.H., Evans, R.D., Almany, G.R., Thorrold, S.R., Russ, G.R., Feldheim, K.A., van Herwerden, L., Planes, S., Srinivasan, M., Berumen, M.L., and Jones, G.P. (2012) Larval export from marine reserves and the recruitment benefit for fish and fisheries. <i>Current Biology</i>, 22 (11). pp. 1023-1028. 	Adequate	Improving
PL3 Actions for implementation regarding commercial fishing are clearly identified within the plan	3	<ul style="list-style-type: none"> The Queensland Sustainable Fisheries Strategy: 2017-2027 and the reforms outlined within provide an important opportunity to implement appropriate planning systems for commercial fishing. Thirty three actions are clearly outlined in the strategy, with an implementation section included in the strategy. Fisheries Harvest Strategies are proposed to include specific fisheries management 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Reef 2050 Plan Guideline for harvest strategies: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/harvest-strategy https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/fisheries-reforms 	Adequate	Improving

		<p>objectives, decision rules, monitoring and appropriate management responses.</p> <ul style="list-style-type: none"> The Reef 2050 Plan also includes clear actions for implementation 	<ul style="list-style-type: none"> 		
PL4 Clear, measurable and appropriate objectives for management of commercial fishing have been documented	3	<ul style="list-style-type: none"> There are a range of clear and measurable targets set out in the Sustainable Fisheries Strategy, for 2020 and 2027. Under the QSFS, it is proposed that Fishery Harvest Strategies being developed within Fishery Working Groups will include specific fisheries management objectives, decision rules, monitoring and appropriate management responses. The strategy aims to set sustainable catch limits at Maximum Economic Yield or 60% of virgin biomass to, amongst other things, improve stock resilience (This explicit objective is critical in ensuring not only sustainable fisheries stocks in the GBR but also ecosystem health and resilience of the GBR in a changing climate). The Regulations and the Zoning Plan specify what activities and actions can occur, including types of commercial fishing within the GBRMP. The Field Management Program's Strategic Compliance Risk Management Plan for the Region (based on the international standard framework for risk management) sets out the major compliance risks to the Reef and specifies clear, measurable and appropriate treatments to achieve objectives, including for Reef health. Service Delivery Statements specify targets / KPIs for the Department of Agriculture and Fisheries, including fisheries compliance, export approvals etc. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 GBRMPA website on Zoning: http://www.gbrmpa.gov.au/zoning-permits-and-plans <i>Fisheries Act 1994</i> (Qld) and subordinate legislation Queensland Sustainable Fisheries Strategy 2017-2027 Queensland Harvest Strategy Policy and Guidelines Field Management of the Great Barrier Reef Marine Park FMP Strategic Compliance Risk Management Plan Guideline for harvest strategies: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/harvest-strategy SDS: https://www.daf.qld.gov.au/corporate-publications 		
PL5 There are plans and systems in place to ensure appropriate and	3	<ul style="list-style-type: none"> The Queensland Sustainable Fisheries Strategy indicated 'One of the strongest messages from 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Reef 2050 Plan 	Adequate	Improving

adequate monitoring information is gathered in relation to commercial fishing		<p>stakeholders was that improvements to fisheries management are not possible with the information currently available'</p> <ul style="list-style-type: none"> • First foundational reform commits to improved monitoring and research. • Monitoring and Research Plan published, including a description of existing and planned monitoring programs and research priorities 2017/18 • The Sustainable Fisheries Strategy also commits to rolling out vessel tracking on all boats by 2020, with a focus on line, crab and net by end of 2018. • The Reef 2050 Plan has regular monitoring and reporting of its actions • Annual through to monthly planning and other compliance systems are in place through the joint FMP to ensure appropriate surveillance of commercial fishing. 	<ul style="list-style-type: none"> • Monitoring and Research Plan: https://www.daf.qld.gov.au/corporate-publications • Current monitoring: https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-our-fisheries/monitoring-interactive-map • Vessel tracking: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/vessel-tracking 		
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address commercial fishing	4	<ul style="list-style-type: none"> • Under the QSFS the third foundational reform in the strategy commits to improved stakeholder engagement. This includes the formation establishment of working groups. • There was significant stakeholder engagement in the development of the QSFS • Stakeholder-based fishery working groups have recently commenced for Coral Reef Fin Fish, Trawl, Crab and East Coast inshore fisheries tropical rock lobster, coral/aquarium and BDM. These include membership from commercial, recreational and charter fishers, GBRMPA, marketers/processors, conservation groups and science areas. • Discussion papers were released in March 2018 for key fisheries outlining reform options. More than 340 fishers were engaged in face to face meetings. More than 600 fishers participated in 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • GBRMPA Reef Guardians Program • GBRMPA LMACs • Working groups: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/fishery-working-groups • https://www.facebook.com/FisheriesQueensland 	Adequate	Improving

		<p>social media polls and responses to online surveys.</p> <ul style="list-style-type: none"> • Fisheries Queensland has an active social media following with more than 35,000 followers. This is used to regularly engage with fishers on rules and regulations, proposed reforms etc. 			
PL7 Sufficient policy currently exists to effectively address commercial fishing	3	<ul style="list-style-type: none"> • QDAF commercial fishing related policy documents include a limited entry policy, fishing history policy, and policy guidelines on the term of authorities • Except for the Multiple-Hook Line Fishing in the Great Barrier Reef Marine Park policy, GBRMPA does not have commercial fishing specific policy but is planning to publish a comprehensive fishing position statement in 2018-19. • Policy development under the QSFS has begun. A Harvest Strategy Policy and Guideline has been published and ERA guideline and reallocation policy has been published. • The Authority has a strong compliance program, which includes the use of legislative provisions to restrict or prohibit repeat offenders entering into the GBRMP for fishing purposes 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 - QDAF Fishery policies • Queensland Harvest Strategy Policy and Guidelines • Field Management Program 	Adequate	Improving
PL8 There is consistency across jurisdictions when planning for commercial fishing	3	<ul style="list-style-type: none"> • The different legislative responsibilities and objectives of respective Fisheries and Marine Park Acts are outlined in the Fisheries schedule of the Great Barrier Reef Intergovernmental Agreement between the Commonwealth of Australia and the State of Queensland relating to the protection and management of the Great Barrier Reef Marine Park. • Multiple agencies and governments are involved in fishing management, namely: QDAF, DoEE and GBRMPA. Given the nature of their Acts, each has responsibilities to ensure 	<ul style="list-style-type: none"> • Great Barrier Reef Intergovernmental Agreement • Queensland Sustainable Fisheries Strategy 2017-2027 	Adequate	Improving

		<p>sustainable use of fisheries resources, for different reasons (for example, biodiversity protection and sustainable harvest)</p> <ul style="list-style-type: none"> • The Australian Fisheries Management Forum (AFMF) provides opportunity to improve consistency when planning for commercial fishing. • The Great Barrier Reef Marine Park and Great Barrier Reef Coast Marine Park generally adopt complementary zoning • The Joint Field Management Program is highly successful at ensuring consistency across jurisdictions. This strong multi-agency collaboration and coordination is underpinned by a sound governance system that equally apportions financial support. The culture of the JFMP is collaborative and consistent. • The QSFS explicitly recognises the GBRWHA. • The 60% biomass target for fisheries resources by 2027 is consistent with GBR Marine Park biodiversity conservation and ecosystem resilience goals. • The establishment of fishery working groups with membership of GBRMPA staff and observers from other jurisdictions (e.g. NT observes on Gulf fisheries & NSW observes on South East, Northern Rivers fisheries) should improve consistency across jurisdictions. 			
PL9 Plans relevant to commercial fishing provide certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.	4	<ul style="list-style-type: none"> • The GBRCMP Zoning Plans provide clear certainty about where fishing activities may or may not occur. • Queensland Fisheries Regulation is the main vehicle for managing fisheries and where actions are put in place (e.g. quota, closures, gear restrictions, size and possession limits etc.). 	<ul style="list-style-type: none"> • GBRMPA Interpreting zones • QDAF Fisheries Legislation • Queensland Sustainable Fisheries Strategy 2017-2027 	Adequate	Stable

		<ul style="list-style-type: none"> • QSFS Harvest Strategies will provide greater certainty based on the performance of fish stock, however this is not finalised as yet 			
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address commercial fishing	3	<ul style="list-style-type: none"> • In 2017 an additional \$20m over three years in funding has been provided to support the implementation of the Queensland Sustainable Fisheries Strategy. The funding is primarily going to additional monitoring, compliance, better engagement and more responsive decision making. This funding is on top of Fisheries Queensland's core budget of around 35M/year • Additional funding has also been allocated to the Field Management Program, including funding for additional compliance in the Region • This includes funding to support roll out of vessel tracking which is being co-funded by Qld Gov and GBRMPA. 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • Field Management Program 	Adequate	Improving
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address commercial fishing	3	<ul style="list-style-type: none"> • Fisheries Queensland have recruited 31 additional staff for compliance and delivery of the QSFS. In addition to the 31 FTE in FQ a number of contractors (at least another 10-20) have been contracted to assist with project implementation. Of the 20 new compliance officers recruited, 16 are based in the GBR region. • Field Management resources associated with monitoring and addressing commercial fishing non-compliance have recently increased • GBRMPA has two full time equivalent staff working on sustainable commercial and to a lesser extent recreational fishing. Some work is also done to promote sustainable commercial fishing by other staff in GBRMPA, as part of the 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • Periodic review of the Joint Field Management (2016 report available on request) • GBRMPA Annual Report 2016-17 	Adequate	No clear trend

		Reef Guardian program and Regional Engagement.			
IN3 The right skill sets and expertise are currently available to the managing organisations to address commercial fishing	3	<ul style="list-style-type: none"> The skill set within the GBRMPA and QDAF is of a high quality and experience with most staff having marine or fisheries management training at tertiary level. Fisheries Queensland employs fisheries science, fisheries biology, fisheries policy, analytics, media, compliance and monitoring professions. Queensland is one of the only states with the capacity to undertake in-house stock assessments 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-our-fisheries/data-reports/sustainability-reporting/stock-assessment-reports 	Limited	Stable
IN4 The necessary biophysical information is currently available to address commercial fishing	3	<ul style="list-style-type: none"> There is an understanding of how some large scale events (i.e. cyclones or floods) influence the biophysical conditions and productivity of Queensland fish stocks. This abiotic information is regularly incorporated into stock assessments. The cumulative impacts of the 2016-17 mass bleaching have affected most of the Great Barrier Reef Marine Park especially the far north, and it is likely the resilience of the majority of reefs north of Mackay has been severely diminished. The effect of this unprecedented disturbance on commercially important species is uncertain. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Summary of Stock Status for Queensland Species 2016 Welch et.al. 2014 Implications of climate change on fisheries resources of northern Australia 	Adequate	Improving
IN5 The necessary socio-economic information is currently available to address commercial fishing	3	<ul style="list-style-type: none"> The Deloitte Access Economics 2017 report shows the Great Barrier Reef contributed \$6.4 billion in value added and over 64,000 jobs to the Australian economy in 2015–16 (direct and indirect). Most of these jobs came from tourism activities generated by the Great Barrier Reef, but there were also important economic contributions from fishing, recreational and scientific activities 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Deloitte Access Economics 2017 - The economic, social and icon value SELTMP Commercial Fishers of the Great Barrier Reef FRDC Beyond GVP: The value of inshore commercial fisheries to fishers and consumers in regional communities on Queensland's east coast FRDC Beyond GVP: The value of inshore commercial fisheries to fishers and consumers in regional communities on Queensland's east coast 	Adequate	Improving

		<ul style="list-style-type: none"> • One of the key user groups the SELTMP monitors is the commercial fishing industry operating the Great Barrier Reef (GBR) region. • Action 1.5 of the QSFS is to develop and implement a practical and cost-effective system for collection of economic and social data. • Social and economic experts are on the Sustainable Fisheries Expert Panel. • The potential economic benefits to regional communities from the Queensland inshore fisheries (pot, net and line fisheries) have been examined. Results of the analysis indicate that the inshore fisheries produce substantial local benefits well in excess of their own gross value product. • The Fisheries Research and Development corporation undertake a range of projects that consider the ecological, social and economic objectives for Coral Reef line and Trawl Fisheries and the potential economic benefits to regional communities from the Queensland inshore fisheries (pot, net and line fisheries). Results of the analysis indicate that the inshore fisheries produce substantial local benefits well in excess of their own gross value product (GVP) • Monitoring strategy evaluation, including socio-economic data appropriateness, has been undertaken for the Coral Reef Fin-Fish Fishery (CRFFF) • A spatial econometric model of fishing location choice using non-confidential data from the Great Barrier Reef coral trout commercial fishery has been developed 	<ul style="list-style-type: none"> • FRDC Evaluating candidate monitoring strategies, assessment procedures and harvest control rules in the spatially complex Queensland Coral Reef Fin-fish Fishery • Micro-economic drivers of profitability in an ITQ-managed fishery: An analysis of the Queensland Coral Reef Fin-Fish Fishery • Sampson 2018 Economic spillovers in spatial harvest behaviour. Ecological Economics 145, 57-74 • 		
IN6 The necessary Indigenous heritage information is currently available to address commercial fishing	2	<ul style="list-style-type: none"> • There are no programs or mechanisms which link Indigenous heritage information with commercial fishing or visa-versa. 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 	Adequate	Improving

		<ul style="list-style-type: none"> • Detailed and widespread understanding of traditional (Indigenous) knowledge and cultural heritage is limited and strategy and resourcing to address this gap is needed. • Traditional Owner Groups are very concerned about commercial fisheries bycatch of valued megafauna. Most concerns relate to the East Inshore Fin Fish Fishery right along GBR coast. • The GBRMPA liaises with Traditional Owners or other Aboriginal or Torres Strait Islander people as users of the Marine Park through TUMRA projects, Indigenous Reef Advisory Committee ranger training and meetings, conferences and workshops. • The QSFS recognises the need to better engage with Traditional Owners or other Aboriginal or Torres Strait Islander people regarding fishing. • Five new cultural liaison officers have been set up in the QBFP as part of the Sustainable Fisheries Strategy to improve engagement, work with ranger groups and improve education around traditional fishing. 			
IN7 The necessary historic heritage information is currently available to address commercial fishing	3	<ul style="list-style-type: none"> • Special management areas (SMAs), each one kilometre square, are now in place around a Catalina wreck off Bowen and a Catalina that crashed near the Frankland Islands south of Cairns. On 14 May 2015 the <i>Great Barrier Reef Marine Park Regulations 1983</i> were amended to add a new type of Special Management Area, the Maritime Cultural Heritage Protection Special Management Area. The regulation includes specific management provisions for the Maritime Cultural Heritage Protection Special Management Area regulating entering and approaching the wrecks, operating and anchoring vessels, fishing and collecting. 	<ul style="list-style-type: none"> • Historic Shipwreck Protected Zones under the Historic Shipwrecks Act 1976 • Protecting our maritime cultural heritage http://www.gbrmpa.gov.au/zoning-permits-and-plans/special-management-areas/protecting-our-maritime-cultural-heritage 	Adequate	Improving

		<ul style="list-style-type: none"> The permit conditions to enter Historic Shipwreck Protected Zones under the <i>Historic Shipwrecks Act 1976</i> have recently been change to disallow fishing on wrecks such as the Llewellyn 			
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address commercial fishing	3	<ul style="list-style-type: none"> GBRMPA continues to maintain positive working relationships with numerous active fishers and also higher profile commercial fisher participants operating throughout the GBRMP and WHA. A number of proactive commercial fishers contribute their own time and resources to actively engage in commercial fisheries matters, including through fishery working groups or LMACs. They do this to try and ensure that ecologically sustainable fisheries comprise commercial fisheries. They do this independently or through organisations such as the QSIA or the Fishermen's Portal 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 QSIA Reef Guardian Fishers 	Adequate	Stable
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of commercial fishing	3	<ul style="list-style-type: none"> GBRMPA does not have adequate engagement forums or mechanisms to engage responsibly on commercial fishing matters. This is particularly pertinent given the high and very high fishing related risks in the GBR Outlook Report 2014. The Green paper on fisheries management reform in Queensland (2016) included public consultation processes. A total of 11,800 responses were received and 230 people attended face to face meetings with Fisheries Queensland (126 meetings). A range of engagement mechanisms conducted by QDAF are in place (e.g. regional face-to-face meetings, QBFP meetings.) 	<ul style="list-style-type: none"> Green paper on fisheries management reform in Queensland Queensland Sustainable Fisheries Strategy 2017-2027 https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/fishery-working-groups 	Adequate	Stable

		<ul style="list-style-type: none"> • Fisheries Queensland maintains a range of active social media channels, including 35,000 facebook followers • Fishery working groups have been set up for main fisheries, including reef line, trawl, inshore, crab and harvest fisheries. These include commercial fishers 			
PR2 The local community is effectively engaged in the ongoing management of commercial fishing	3	<ul style="list-style-type: none"> • GBRMPA seeks to promote sustainable fishing amongst commercial fishers through the Reef Guardian Program • The QSFS has established a number of working groups to advise on fisheries management. 	<ul style="list-style-type: none"> • Reef Guardian Fishers • QSFS 	Limited	Stable
PR3 There is a sound governance system in place to address commercial fishing	3	<ul style="list-style-type: none"> • Multiple agencies are involved in commercial fisheries management, namely: Fisheries Queensland, DoEE and the GBRMPA. GBRMPA is tasked with managing the GBRMP primarily for conservation of biodiversity including through zoning. • The GBRMPA, DoEE, Fisheries Qld work together to deal with EPBC assessments however this is through informal arrangements. This relationship and jurisdictional consistency could be secured by a more formal means. • The Queensland Sustainable Fisheries Strategy 2017-2027 aims to modernise fisheries management in Queensland and it sets out the Government's reform agenda for the next 10 years. This includes new governance arrangements including fishery working groups and Sustainable Fisheries Expert Panel. 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • Great Barrier Reef Intergovernmental Agreement • QDAF Fisheries Legislation • GBRMP Act 1975 s 61EA and s 61ADA – provide provisions for enforceable directions and three strikes • https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/changes-to-queenslands-fisheries-legislation 	Adequate	Improving
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for commercial fishing	3	<ul style="list-style-type: none"> • While there are programs to collect fisheries information for many species (biological monitoring, stock status process, commercial logbooks) significant improvements are required to address deficiencies • It is anticipated that performance monitoring will improve significantly with the implementation of 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • Micro-economic drivers of profitability in an ITQ-managed fishery: An analysis of the Queensland Coral Reef Fin-Fish Fishery • Compliance program and risk assessments • Data validation plan: https://publications.qld.gov.au/dataset/queensland- 	Adequate	Improving

		<p>the QSFS. It is proposed that Fishery Harvest Strategies being developed will include specific fisheries management objectives, decision rules, monitoring and appropriate management responses.</p> <ul style="list-style-type: none"> • Clear targets have been set in the Sustainable Fisheries Strategy to measure performance over time. • A data validation plan has been published, which includes a number of actions to improve quality of data, cross checking between data sets and auditing. • Long-Term Monitoring and survey data are used in conjunction with commercial data and research to regularly assess the impacts of fishing on target stocks. • In addition, compliance with the zoning plan and fisheries management rules (zone infringements, possession limits etc.) is used as another source of information to measure commercial effort, impact and related trends 	<p>sustainable-fisheries-strategy/resource/dfbddd3-f0e4-47a2-ba25-644b999734d8</p>		
PR5 Appropriate training is available to the managing agencies to address commercial fishing	3	<ul style="list-style-type: none"> • Fisheries Queensland, within the broader QDAF portfolio, has a staff capability and training program which ensure appropriate training is available to fishery managers. This includes technical and policy training as well as relevant conferences (eg ASFB, Seafood directions etc) • GBRMPA sustainable fisheries group managers are recruited on the basis that they have satisfactory fisheries management technical expertise. There is little opportunity for further technical and scientific training after initial recruitment. • Participation in commercial fishing and fisheries management training/workshops / conferences are available to staff. 	<ul style="list-style-type: none"> • GBRMPA workshops and DAF discussions 	Limited	Stable

PR6 Management of commercial fishing is consistently implemented across the relevant jurisdictions	3	<ul style="list-style-type: none"> • There are inconsistencies in the management arrangements for fishing in Marine Parks and fisheries management. For example, some areas closed to fishing under one regulation may be open in another. • Biannual meetings between GBRMPA and QDAF and involvement in various workshops between the two agencies facilitate information exchange and opportunity to align marine parks and fisheries management where possible. • The 60% biomass target for fisheries resources by 2027 under the SFS is consistent with GBR Marine Park biodiversity conservation and ecosystem resilience goals. • Reef 2050 Plan provides a consistent framework for actions relevant to commercial fishing 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • Intergovernmental Agreement 2015 • Reef 2050 Plan 	Limited	Improving
PR7 There are effective processes applied to resolve differing views/ conflicts regarding commercial fishing	3	<ul style="list-style-type: none"> • The fifth major reform area of the QSFS is fisheries resource allocation. It aims to reduce frequency of conflicts and provide guidance to help resolve them. • The reallocation policy is complete and available online. It sets out transparent process for addressing requests to reallocate from one sector to another. • A number of working groups have been established under the QSFS to provide advice on operational aspects of the QSFS. • Good relationships exist between officers at agency level. • Statutory consultation processes identify issues and views which are considered by responsible Governments before a decision is made. • GBRMPA Regional Liaison Officers and Queensland Boating and Fisheries Patrol staff are on the ground to ensure issues and conflicts 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • Coral Reef fin fish fisheries working group • Trawl fishery working group • East Cost inshore Fin fishery working group • Reallocation policy: https://publications.qld.gov.au/dataset/queensland-sustainable-fisheries-strategy/resource/7cd8820c-9a43-41cf-b572-bbaff96197c 	Adequate	Stable

		are identified early so they can be discussed and resolved.			
PR8 Impacts (direct, indirect and cumulative) of activities associated with commercial fishing are appropriately considered.	3	<ul style="list-style-type: none"> Annual stock status process considers the take of harvested species Impacts (direct, indirect and cumulative) of activities associated with commercial fishing have been comprehensively assessed for few fisheries. The Ecological Risk Assessment for the East Coast Otter Trawl Fishery is the best example but the majority of the risks identified through this assessment have not yet been addressed through the implementation of appropriate control measures. An Ecological Risk Assessment for other species in the CRFFF was undertaken over a decade ago but there have been no actions to mitigate high risk species The implementation of ERAs under the QSFS could provide adequate information on commercial fishing impacts so they may be appropriately considered. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 QDAF Ecological risk assessments GBRMPA ecological risk assessment of trawling https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/ecological-risk-assessment-guidelines 	Adequate	Stable
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding commercial fishing	3	<ul style="list-style-type: none"> Best available information is used to undertake stock assessments and/or make stock status determinations (not GBR specific, whole stock or management unit). Qualitative ecological risk assessments (ERAs) have been completed for a number of Queensland fisheries (e.g. East Coast Otter Trawl Fishery, Coral Reef Fin Fish Fishery) which are largely Great Barrier Reef-specific The development of Fishery Harvest Strategies under the QSES should enable the use of biophysical research and/or monitoring information to make relevant management decisions. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Summary of Stock Status for Queensland Species 2016 QDAF fish stock assessment reports QDAF Ecological risk assessments Strategic Compliance Risk Management Plan 2017-2018 https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/ecological-risk-assessment-guidelines 	Adequate	Improving

		<ul style="list-style-type: none"> The Strategic Compliance Risk Management Plan 2017-2018 uses the most recent biological information to inform and assess risk from illegal commercial fishing activities. 			
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding commercial fishing	3	<ul style="list-style-type: none"> Limited socio-economic information provided through SELTMP and FRDC projects. The extent to which this socio-economic data is incorporated into management decisions appears limited. Action 1.5 of the QSFS is to develop and implement a practical and cost-effective system for collection of economic and social data. Social and economic experts area on the Sustainable Fisheries Expert Panel. Harvest strategies will define agreed ecological, economic and/ or social objectives 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). FRDC projects e.g. Beyond GVP: The value of inshore commercial fisheries to fishers and consumers in regional communities on Queensland's east coast 	Adequate	Stable
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding commercial fishing	2	<ul style="list-style-type: none"> Detailed and widespread understanding of traditional (Indigenous) knowledge and cultural heritage is limited DAFF Indigenous Fishing policy to be developed as part of the SFS. This will clarify traditional fishing rights, as well as options to develop commercial indigenous fishing businesses. 	<ul style="list-style-type: none"> Workshops and stakeholder consultation Queensland Sustainable Fisheries Strategy 2017-2027 	Limited	Stable
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding commercial fishing	3	<ul style="list-style-type: none"> Special management areas (SMAs), each one kilometre square, are now in place around a Catalina wreck off Bowen and a Catalina that crashed near the Frankland Islands south of Cairns. In 2015 the <i>Great Barrier Reef Marine Park Regulations 1983</i> were amended to add a new type of Special Management Area, the Maritime Cultural Heritage Protection Special Management Area. The regulation includes specific management provisions for the Maritime Cultural Heritage Protection Special Management Area regulating entering and approaching the wrecks, operating and 	<ul style="list-style-type: none"> Historic Shipwreck Protected Zones under the Historic Shipwrecks Act 1976 Protecting our maritime cultural heritage 	Adequate	Improving

		<p>anchoring vessels, fishing and collecting (Ref 58).</p> <ul style="list-style-type: none"> The permit conditions to enter Historic Shipwreck Protected Zones under the <i>Historic Shipwrecks Act 1976</i> have recently been change to disallow fishing on wrecks such as the Llewellyn. 			
PR13 Relevant standards are identified and being met regarding commercial fishing	3	<ul style="list-style-type: none"> Environment Protection and Biodiversity Conservation Act fisheries assessment are conducted against Guidelines for the Ecologically Sustainable Management of Fisheries. Conditions and recommendations on the Environment Protection and Biodiversity Conservation Act accreditation are being conditionally/progressively met. Natural Resource Management Ministerial Council and Australian Fisheries Management Forum policies and guidelines are followed. The Zoning Plan sets a level of protection (a standard) to be achieved to ensure a representative proportion of different habitats are protected. The greatest risk to these standards being met is illegal fishing. The Field Management Program's compliance program has specific risk-based strategies for Zoning Plan compliance and utilizing the available resources based upon formal risk management standards. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and Convention on the Conservation of Migratory Species of Wild Animals (CMS) 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 EPBC ACT Australian Fisheries Management Forum CITES Convention Field Management Program 	Adequate	Stable
PR14 Targets have been established to benchmark management performance for commercial fishing	3	<ul style="list-style-type: none"> Commercial fisheries management is regularly benchmarked against other Australian Jurisdictions to ensure consistency in management approach. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 	Adequate	Stable

		<ul style="list-style-type: none"> Sustainable Fisheries Strategy includes specific targets for 2020 and 2027, including biomass targets. Harvest strategies will specific operational objectives, target and limit reference points and decision rules. 	<ul style="list-style-type: none"> https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/harvest-strategy 		
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for commercial fishing	3	<ul style="list-style-type: none"> Evaluating management effectiveness against stated goals / objectives has been limited to focussing on species stocks status where this has been determined. Stock status evaluation and stock assessments have progressed, although there are a large number of species that remain undefined. Compliance programs have progressed. In recognition of sustainability issues with fisheries in Queensland QDAF have undertaken a planned review process that has delivered the Queensland Sustainable Fisheries Strategy: 2017-2027. The QSFS has delivered its actions on time Progress has been made on implementation, with 11 of the 33 actions in the QSFS have been delivered in the first 12 months. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/_nocache Summary of Stock Status for Queensland Species 2016 QDAF fish stock assessment reports Reef 2050 Long-Term Sustainability Plan 	Limited	Improving
OP2 Implementation of management documents and/or programs relevant to commercial fishing have progressed in accordance with timeframes specified in those documents	3	<ul style="list-style-type: none"> Sustainable Fisheries Strategy is on track with identified actions being implemented (e.g. harvest strategy guideline, additional compliance, additional monitoring programs rolled out, new engagement mechanisms established). Reef Plan actions relevant to commercial fishing are also progressing 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Reef 2050 Plan 	Adequate	Improving
OP3 The results (in OP1 above) have achieved their stated management objectives for commercial fishing	2	<ul style="list-style-type: none"> The five high and very-high direct fishing related risks identified in the Outlook Report 2014 have not been specifically addressed. 	<ul style="list-style-type: none"> QDAF - Performance measurement systems Summary of Stock Status for Queensland Species 2016 	Adequate	Improving

		<ul style="list-style-type: none"> It is too early to assess whether the QSFS objectives have been met. 			
OP4 To date, products or services have been produced in accordance with the stated management objectives for commercial fishing	3	<ul style="list-style-type: none"> QDAF produces or in the past has produced: <ul style="list-style-type: none"> Fishery reports as per EPBC approval requirements. Stock status assessments. Fish stock assessment reports Fishery summary reports Commercial catch data Marine Park zoning information is provided publicly Fisheries assessments under the EPBC Act are published online Strong communication push in second half of 2017 on Sustainable Fisheries Strategy and key initiatives (e.g. rolling out vessel tracking on commercial fishing vessels, fishery reform discussion papers). A draft vessel tracking policy and a consultative draft of the vessel tracking guidelines are available for review. Public consultation on the policy and guideline is open until 13 February 2018 Consistent with SFS, discussion papers on reef line, trawl, crab and inshore were released in March 2018. Discussion paper also released on proposed Act amendments, particularly to address black marketing. 	<ul style="list-style-type: none"> Queensland managed fisheries assessments under the EPBC Act Queensland Sustainable Fisheries Strategy 2017-2027 GBRMPA Interpreting zones QDAF - Fisheries data and reports QDAF - Satellite tracking on all boats https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/fisheries-reforms https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/changes-to-queenslands-fisheries-legislation 	Adequate	Stable
OP5 Effective knowledge management systems regarding commercial fishing are in place within agencies	3	<ul style="list-style-type: none"> Data on commercial fishing is maintained and stored securely by Queensland Government Data is shared between agencies and with the community but improvements are required. Vessel tracking data is recorded and stored on a secure database and private data is protected. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 QDAF - Satellite tracking on all boats 	Adequate	Stable

		<ul style="list-style-type: none"> Logbook reporting is stored and only displayed or provided publically at five boat level or greater. 			
OP6 Effective systems are in place to share knowledge on commercial fishing with the community	3	<ul style="list-style-type: none"> Relevant information is available on website. Fisheries Queensland maintains a range of active social media channels, including 35,000 facebook followers. QDAF direct engagement with commercial fishers through email / SMS and face to face meetings Sustainable Fisheries Strategy also commits to improving communication of fisheries data – e.g. dashboard, upgraded apps 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 	Limited	Stable
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing commercial fishing and moving towards the attainment of the desired outcomes.	2	<ul style="list-style-type: none"> The Queensland Sustainable Fisheries Strategy states – ‘The current arrangements governing fisheries are problematic, costly to administer, inflexible and increasingly ineffective in ensuring the sustainability of fisheries resources and the economic viability of fishing sector’s’. There is progress so far, however, it is too early to determine if the implementation of the QSFS will improve the attainment of desired outcomes. Targets have been set up to measure progress. Although on a declining trend in recent years, illegal commercial fishing activities continue to undermine the attainment of the desired outcomes. The introduction of compulsory VMS across all commercial fisheries by 2020 is expected to greatly enhance compliance and attainment of desired outcomes. Concerns is raised that controls over legal activities are insufficient to ensure fisheries resource and broader ecosystem sustainability. Examples include, overfished snapper and 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Strategic Compliance Risk Management Plan 2017-2018 Erikson and Byrne 2013 https://onlinelibrary.wiley.com/doi/abs/10.1111/faf.12059 https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/changes-to-queenslands-fisheries-legislation 	Limited	Deteriorating

		saucer scallop, transitional depleting pearl perch, disappearance of Spanish mackerel spawning aggregations and risks to SOCI populations. Research also indicates potential sustainability issues with the sea cucumber fishery			
OC2 The outputs relating to commercial fishing are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	2	<ul style="list-style-type: none"> • A number of outputs have been achieved under the SFS: <ul style="list-style-type: none"> ○ 16 new compliance officers ○ Trial of new vessel tracking units ○ New monitoring programs rolled out ○ New engagement mechanisms set up (working groups and expert panel) ○ Guidelines released for ERAs and harvest strategies ○ Discussion papers released on amendments to Act and fishery reform options ○ Reallocation policy completed ○ Novel technologies being rolled out (apps, cameras on boats) • Fishing related risks <ul style="list-style-type: none"> ○ Incidental catch of species of conservation concern ○ Illegal fishing and poaching ○ Extraction of predators ○ Discarded catch ○ Extraction from spawning aggregations ○ directly impact the values of the Great Barrier Reef. ○ While there have been significant efforts in the Field Management Program and Queensland Boating and Fishing Patrols, to mitigate illegal 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • Spanish Mackerel Fishery: Buckely et al. 2017 • See for progress: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/ nocache 	Limited	Deteriorating

		<p>fishing and poaching, there has been no program to date to mitigate the other very high and high fishing related risks.</p> <ul style="list-style-type: none"> ○ QBFP has moved to an intel based compliance approach addressing key risk areas. Better compliance outcomes through specific action plans 			
OC3 the outputs (refer OP1 and 3) for commercial fishing are reducing the major risks and the threats to the Great Barrier Reef	2	<ul style="list-style-type: none"> • Except for compliance efforts in the Field Management Program, Qld boating and Fisheries Patrol and advances in VMS to mitigate illegal fishing and poaching, the outputs for commercial fishing have not reduced the major risks and the threats to the Great Barrier Reef. A new state-of-the-art high-speed compliance patrol vessel will join efforts to protect the Great Barrier Reef. The \$735,000 custom-built Reef Sentinel will employ night detection technology to continue to target illegal activity in protected marine areas off Townsville and the Whitsundays. The 11.5-metre Reef Sentinel is funded by the Australian and Queensland Governments' joint Field Management Program 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • https://www.daf.qld.gov.au/business-priorities/fisheries/consultations-and-legislation/reviews-surveys-and-consultations/scallop-fishing-closures • https://www.daf.qld.gov.au/our-organisation/news-and-updates/fisheries/news/new-rules-commence-for-hammerhead-sharks 	Limited	Improving
OC4 Use of the Great Barrier Reef relating to commercial fishing is demonstrably environmentally sustainable	2	<ul style="list-style-type: none"> • Reforms proposed in the QSFS provide an opportunity to demonstrate commercial fishing in the GBR is environmentally sustainable. • This cannot be demonstrated at present • Stock status reporting shows that there are two species overfished – scallop and snapper. However, there is still a need to better constrain catch and reduce protected species interactions across a number of fisheries. • A significant impediment to demonstrating environmentally sustainable fishing is ongoing illegal fishing, and in some sectors increasing illegal fishing activities. 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • Great Barrier Reef Region Strategic Assessment: Strategic assessment report 2014 • GBRMPA ecological risk assessment of trawling • https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-our-fisheries/data-reports/sustainability-reporting 	Limited	Stable

		<ul style="list-style-type: none"> • There are particular concerns about non-compliance in the commercial mesh net fishery leading to risks to species of conservation concern (which are also matters of national environmental significance) such as dugongs and the Australian snubfin dolphin. • The need to continue to reduce the bycatch of species of conservation concern such as sawfish, dugongs, marine turtles and inshore dolphins (most being matters of national environmental significance) is recognised and is a high priority for industry and management. • Bycatch, target stock and broader ecosystem sustainability are yet to be demonstrated. 			
OC5 Use of the Great Barrier Reef relating to commercial fishing is demonstrably economically sustainable	2	<ul style="list-style-type: none"> • Current management arrangement and industry marketing are not maximising economic benefits, but under the Queensland Fisheries Sustainability Strategy there are targets in place to move to maximum economic yield (MEY). • The reduction in inshore netting effort through the implementation of net free zones that has occurred in addition to previous effort removal through licence buy back (120 licences removed) may promote improved economic returns for remaining net fishers. Further reforms are needed to some key fisheries to make it more profitable. This includes the crab, trawl and net fisheries. 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • GBRMPA workshop discussions 	Limited	Stable
OC6 Use of the Great Barrier Reef relating to commercial fishing is demonstrably socially sustainable understanding and/or enjoyment	3	<ul style="list-style-type: none"> • There are significant concerns within the community related to commercial fishing often related to perceptions rather than being based on evidence of ecological risks. • Many concerns related to social and economic issues but often couched in ecological terms. The “social licence”, i.e. community confidence, in the industry is at low levels due to many factors including misinformation, 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • GBRMPA Workshop discussions 	Limited	Stable

		<p>misunderstanding, global fishing practices which are illegal in Australia (for example shark finning) and the illegal actions of a minority of operators in the Great Barrier Reef</p> <ul style="list-style-type: none"> • Reforms proposed in the QSFS provide an opportunity to deliver economically sustainable commercial fisheries which in turn will deliver social / community benefits to commercial fishers and dependent seafood and commercial fishing industries 			
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address commercial fishing	3	<ul style="list-style-type: none"> • Dedicated forum to engage communities / commercial fishing stakeholders have not existed in recent years and industry representation has not been strong. • Working groups have been established. Expert panel also established and met multiple times. • Regional face to face meetings is now more regular (two series of consultation meetings in 2017/18 – vessel tracking and fisheries reform discussion papers) • Satisfaction survey about stakeholder engagement was completed in early 2018 and will be published online in mid-2018. It sets a baseline to measure improved stakeholder engagement satisfaction against, which is one of the targets of SFS. 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 	Limited	Deteriorating

Table 28 Calculation of grades for fishing (recreational)

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to recreational fishing are understood by managers	3	<ul style="list-style-type: none"> The Statewide fishing surveys provide information on where recreational fishing occurs, how they fish and what they catch (e.g.the most common recreational fishing method (80 per cent) is line fishing (including the use of hooks and lures), followed by fishing with pots (13 per cent). Together, fishing with cast nets, hand collection, pumps and spades, diving using spears, and hand collection comprised only seven per cent of all fishing effort. In the Great Barrier Reef Region, coral trout, red throat emperor, tropical snapper, morwong and sweetlip are commonly targeted by recreational fishers. Hundreds of other species of bony fish, sharks and other animals are also caught). A number of scientific papers have summarised issues concerning spawning aggregation and the influence of climate change of some species of fish popular with recreational fishing There is a good understanding and knowledge about the social values of recreational fishing (e.g. recreational fishing provides economic and social benefits to Queensland's communities. Fishing on the Great Barrier Reef has been an important recreational activity for coastal residents and visitors. Most people indicate that relaxation, socialising, catching fish and excitement are their reasons for fishing recreationally. The Queensland Sustainable Fisheries Strategy identifies that there is a gap in the knowledge about the economic contribution of recreational fishing, although the Deloitte Access economic report provides some information relevant to the Region. 	<ul style="list-style-type: none"> https://www.daf.qld.gov.au/fisheries/monitoring-our-fisheries/recreational-fisheries/statewide-and-regional-recreational-fishing-survey Queensland Sustainable Fisheries Strategy 2017-2027 Deloitte Access Economics. (2017) At what Price? The economic, social and icon value of the Great Barrier Reef Tobin et.al. (2014) Utilising innovative technology to better understand Spanish mackerel spawning aggregations and the protection offered by marine protected areas Thurstan et.al. 2016 Nineteenth century narratives reveal historic catch rates for Australian snapper (Pagrus auratus). Pratchett et.al. (2013) Effects of climate change on reproduction, larval development, and adult health of coral trout (Plectropomus spp.) Szczecinski 2012 - Catch susceptibility and life history of barred javelin (Pomadasys kaakan) in north eastern Queensland, Australia. Buckley et.al. 2017 Historical spatial reconstruction of a spawning-aggregation fishery 	Adequate	Improving
CO2 The current condition and trend of values relevant to recreational fishing are known by managers	3	<ul style="list-style-type: none"> Fisheries Queensland collects information on recreational fishing including catch, release and size by species group and catch by region and undertake sustainability reporting on Queensland's fisheries In 2016, Fisheries Queensland completed the stock status assessment of 45 important species comprising of 65 individual stocks or management units. However stock status reporting is often statewide and may not identify trends in the Region or localised depletion. 	<ul style="list-style-type: none"> Queensland managed fisheries assessments under the EPBC Act Queensland Sustainable Fisheries Strategy 2017-2027 QDAF sustainability reporting on Queensland's fisheries Summary of Stock Status for Queensland Species 2016 QDAF fish stock assessment reports https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-our-fisheries/recreational-fisheries/get-involved-in-fisheries-monitoring/let-us-measure-your-catch 	Adequate	Improving

		<ul style="list-style-type: none"> The current condition and trend and importance of Fish Spawning Aggregation Sites (FSAS) is unknown. The location and timing of Reef-associated FSAS is known across only a limited number of reefs in the Region. Examples of species with declining current catch rates include snapper (roughly one-ninth of historic catch rates) pearl perch (classified as transitional-depleting). Large declines in Spanish mackerel spawning aggregation and catch rates for this species have also been reported. 	<ul style="list-style-type: none"> https://publications.qld.gov.au/dataset/baseline-report-for-fisheries-qld-recreational-boat-based-fishing-survey Stock assessment of the Queensland and New South Wales pearl perch (<i>Glaucosoma scapulare</i>) fishery 2017 Thurstan et.al. 2016 Nineteenth century narratives reveal historic catch rates for Australian snapper (<i>Pagrus auratus</i>). Buckley et.al. (2017) Historical spatial reconstruction of a spawning-aggregation fishery. Tobin et.al. (2014) Utilising innovative technology to better understand Spanish mackerel spawning aggregations and the protection offered by marine protected areas 		
CO3 Impacts (direct, indirect and cumulative) associated with recreational fishing are understood by managers.	3	<ul style="list-style-type: none"> The ecosystem effects and cumulative impacts of recreational fishing are poorly understood but are likely to be most concentrated in inshore areas close to major population centres and a relatively small number of offshore reefs. Increasing numbers of seasonal recreational fishers may increase the pressure on specific species and locations, but these impacts are also largely unquantified. Bow mounted electric motors are reported to being used by recreational fishers fishing reef areas. GPS "Spot lock" technology allows these electric motors to "anchor" a boat in one location using GPS guidance eliminating the need for the use of an actual anchor and chain and the associated physical impact to coral when fishing reef areas. Sonar technology may also enhance the effectiveness of recreational fishers. Vulnerability of recreational fishing species to climate change is also of concern. E.g. Pratchett et.al. (2013) shows that coral trout are sensitive to changes in habitat and environmental conditions expected to occur as a consequence of sustained and ongoing climate change. These changes include degradation of coral reef habitats and increasing temperature which have occurred during the 2016-17 mass bleaching event. 	<ul style="list-style-type: none"> https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-our-fisheries/recreational-fisheries/get-involved-in-fisheries-monitoring/let-us-measure-your-catch https://publications.qld.gov.au/dataset/baseline-report-for-fisheries-qld-recreational-boat-based-fishing-survey Pratchett et.al. (2013) Effects of climate change on reproduction, larval development, and adult health of coral trout (<i>Plectropomus</i> spp.) https://www.daf.qld.gov.au/fisheries/monitoring-our-fisheries/data-reports/sustainability-reporting/stock-status-assessments/summary-2016 Szczecinski 2012 - Catch susceptibility and life history of barred javelin (<i>Pomadasys kaakan</i>) in north eastern Queensland, Australia. 	Adequate	Improving
CO4 The broader (national and international) level influences relevant to	4	<ul style="list-style-type: none"> Fisheries management is undertaken to a high level within the bounds of standards set by the FAO and the Australian Fisheries Management Forum. 	<ul style="list-style-type: none"> Recreational Fisheries. FAO. Guidelines for responsible fisheries (www.fao.org/docrep/016/i2708e/i2708e00.pdf) Australian Fisheries Management Forum and subcommittees EPBC Act 2009 	Adequate	Stable

recreational fishing are understood by managers.		<ul style="list-style-type: none"> • Fisheries Queensland has cross jurisdictional communication with NSW and the NT around the joint stocks of recreational interest (e.g. Snapper, Spanish Mackerel). • External influences on recreational fishing such as habitat modification, climate change and resource sharing are understood by managers. • Reef-dependent activities including fishing are vulnerable to the negative effects of ocean acidification, sea level rise, more frequent extreme weather and warming sea temperatures may have on Reef condition. • It is likely fishing activities will be highly sensitive to climate change, including projected changes in fish abundance, survivorship, size and distribution, disruptions to shallow water nurseries and loss of coral reef habitats, as well as changes in cyclone and storm activity. • There is increasing acknowledgment that fisheries management of fishing in the World Heritage Area (declared because of its outstanding universal value based on natural values) could be more precautionary than that which exists for fisheries outside marine protected areas in Australia. 	<ul style="list-style-type: none"> • Convention on the Conservation of Migratory Species of Wild Animals 		
CO5 The stakeholders relevant to recreational fishing are well known by managers.	4	<ul style="list-style-type: none"> • Queensland government statewide recreational surveys provide some information on recreational fisher demographics. The latest survey report is for 2013-14. • A Sustainable Fisheries Expert Panel was appointed in July 2017. The panel met on 29 August 2017. Stakeholder-based fishery working groups in place for Coral Reef Fin Fish, Trawl, Crab and East Coast inshore. Includes commercial, recreational and charter fishers, marketers/processors, conservation groups and science representatives. • There are several hundred thousand recreational fishers that access the GBRMP and WHA. There is no centralised register of recreational fishers (such as exists with a recreational fisheries licence) and Fisheries QLD is unable to utilise the private boat registration database for fisheries communication matters because of privacy restrictions. • The Marine Park Authority works closely with fishing clubs and Community Access Points (e.g. BCF) to share information about 	<ul style="list-style-type: none"> • https://www.daf.qld.gov.au/fisheries/monitoring-our-fisheries/recreational-fisheries/statewide-and-regional-recreational-fishing-survey • LMAC Committees • Queensland Sustainable Fisheries Strategy 	Adequate	Stable

		<p>the importance of maintaining biodiversity and ecosystem function through sustainable and responsible fishing practices.</p> <ul style="list-style-type: none"> • The agency is engaged with local networks associated with the stakeholders in the three Net Free Zones (Cairns, Mackay and Rockhampton) to promote stewardship and to seek to influence opinion on issue that affect agency management goals. • Regional Liaison staff and the Reef Guardian Fisher manager engage with key recreation fishing stakeholders to promote stewardship and to seek to influence opinion on issues that affect agency management goals. Key events such as fishing competitions and fishing and boating focused expo's are attended by regional liaison staff to achieve the same outcomes. • Local Marine Advisory Committees host community events where improving recreational fishers understanding of Marine Park management and fisheries management outcomes along with the promotion of stewardship by recreational fishers have been a goal. 			
PLANNING					
PL1 There is a planning system in place that effectively addresses recreational fishing	4	<ul style="list-style-type: none"> • The Great Barrier Reef Marine Park Zoning Plan 2003 and the Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004 define what activities (including fishing) can occur in which zones'. • The Queensland Sustainable Fisheries Strategy: 2017-2027 outlines a set of actions to provide policy direction and reforms to ensure fishing is managed sustainably. Recreational fishing is included in this strategy. • Some limited fishing and collecting by recreational users is managed via Regulation 15 of the Great Barrier Reef Marine Park Regulations 1983 • Bag and Size limits apply to most fish in the GBR and anglers are limited in the apparatus they are permitted to use. • The Field Management Program has a strategic risk-based compliance program (recreational fishing is assessed as a very high risk), and an ongoing priority project <i>Addressing recreational fishing non-compliance</i> based on situational crime prevention theory to address recreational fishing compliance issues in the Marine Park 	<ul style="list-style-type: none"> • GBRMPA website on Zoning: http://www.gbrmpa.gov.au/zoning-permits-and-plans • Granek et al 2008 is an international peer reviewed case study paper with one of the case studies being the zoning of the GBR and their recreational fishers involvement in the conservation and management of the GBR. • Queensland Sustainable Fisheries Strategy 2017-2027 • Fisheries Act 1994 (Qld) and subordinate legislation • Mackay Regional Recreational Fishing Strategy 2017-2022 • Rockhampton recreational fishing development strategy • Reef 2050 Plan • The Field Management Program's annual <i>Strategic Compliance Risk Management Plan</i> • Situational crime prevention framework applied to recreational fishing through the <i>Addressing recreational fishing non-compliance</i> priority project. 	Adequate	Stable

		<ul style="list-style-type: none"> The Reef 2050 Plan also considers tourism -related recreational fishing, and includes actions concerning the development of mechanisms to ensure charter boat fishing is sustainable. Under the Reef 2050 Plan, three net-free fishing zones have also been introduced in Cairns, Rockhampton and Mackay that restricts commercial gill-nets, but allows recreational fishing. Two of these councils have developed recreational fishing strategies. While these strategies are aimed at improving tourism and economic benefit for their regions, they also outline compliance as a key issue 			
PL2 The planning system for recreational fishing addresses the major factors influencing the Great Barrier Reef Region's values.	4	<ul style="list-style-type: none"> The Queensland Sustainable Fisheries Strategy: 2017-2027 ten areas of reform that address the many factors influencing the Region's values associated with better understanding of fish stocks, sustainable harvest and community engagement.. Regulations can be made for recreational fishers to limit catch, equipment and areas open to fishing to ensure sustainable limits are in place. 	<ul style="list-style-type: none"> Harrison, H.B., Williamson, D.H., Evans, R.D., Almany, G.R., Thorrold, S.R., Russ, G.R., Feldheim, K.A., van Herwerden, L., Planes, S., Srinivasan, M., Berumen, M.L., and Jones, G.P. (2012) Larval export from marine reserves and the recruitment benefit for fish and fisheries. <i>Current Biology</i>, 22 (11). pp. 1023-1028. Fisheries Act 1994 (Qld) and subordinate legislation 	Adequate	Improving
PL3 Actions for implementation regarding recreational fishing are clearly identified within the plan	4	<ul style="list-style-type: none"> The planning process for Marine Park zoning and fisheries management clearly identifies actions that are relevant to recreational fishing. The Queensland Sustainable Fisheries Strategy: 2017-2027 clearly articulates actions for improving the sustainability of fishing. The Reef 2050 Plan also include actions for improving the sustainability of recreational fishing. 	<ul style="list-style-type: none"> Vulnerability Assessments - More information at: http://www.gbrmpa.gov.au/about-the-reef/biodiversity/biodiversity-conservation-strategy-for-public-consultation/vulnerability-assessments <i>Fisheries Act 1994</i> (Qld) and subordinate legislation <i>Reef 2050 Plan</i> 	Adequate	Stable
PL4 Clear, measurable and appropriate objectives for management of recreational fishing have been documented	4	<ul style="list-style-type: none"> Fishing in the GBRMP is managed by the State of Queensland under the Offshore Constitutional Settlement. Generally the GBRMP regulations point to Fisheries regulations regarding how fishing activities may be conducted. The Queensland Sustainable Fisheries Strategy: 2017-2027 and the reforms outlined within provide an opportunity to implement appropriate planning systems for recreational fishing. This strategy has a target to increased satisfaction of recreational fishers (compared to 2017 figures) by 2020. The Field Management Program's Strategic Compliance Risk Management Plan for the Region (based on the international standard framework for risk management) sets out the major compliance risks to the Reef and specifies clear, measurable and 	<ul style="list-style-type: none"> GBRMPA website on Zoning: http://www.gbrmpa.gov.au/zoning-permits-and-plans <i>Fisheries Act 1994</i> (Qld) and subordinate legislation Queensland Sustainable Fisheries Strategy 2017-2027 Queensland Harvest Strategy Policy and Guidelines Field Management of the Great Barrier Reef Marine Park FMP Strategic Compliance Risk Management Plan 	Adequate	Stable

		appropriate treatments to achieve objectives, including for Reef health. Specific objectives (e.g. small vessel patrols, increased helicopter surveillance) are set to enforce compliance for recreational fishing			
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to recreational fishing	3	<ul style="list-style-type: none"> Annual through to monthly planning and other compliance systems are in place through the joint FMP to ensure appropriate surveillance of recreational fishing. The Queensland Fisheries strategy includes a number of action to improve monitoring of fisheries data such as biological stocks, and the economic contribution of recreational fishing 	<ul style="list-style-type: none"> Field Management program https://www.daf.qld.gov.au/fisheries/monitoring-our-fisheries/recreational-fisheries/statewide-and-regional-recreational-fishing-survey Queensland Sustainable Fisheries Strategy 2017-2027 Reef 2050 Plan 	Adequate	Improving
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address recreational fishing	3	<ul style="list-style-type: none"> Fisheries Queensland has undertaken significant public consultation on the development of the Queensland Fisheries Strategy. Formal processes for engaging with recreational fishers by GBRMPA have been absent in recent years with no Marine Park Authority advisory or technical groups being established. Local Marine Advisory Committees play an important role in maintaining an ongoing dialog between the agency and regional recreational fishing stakeholders. Through the Reef Guardians Program GBRMPA has been involved in promoting recreational fishing stewardship through the Rockhampton Recreational Fishing Development Strategy. Similar recreational stewardship work is also being developed in the Mackay and Cairns area. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Fishery working groups Rockhampton Recreational Fishing Development Strategy. GBRMPA Reef Guardians GBRMPA LMACs 	Adequate	Deteriorating
PL7 Sufficient policy currently exists to effectively address recreational fishing	3	<ul style="list-style-type: none"> Fishing is a highly regulated activity with both Commonwealth and State Acts and subordinate legislation in place with the intent of controlling recreational fishing so it is sustainable. The Fisheries Act and Regulations are being amended in recognition they need to be improved and strengthened to ensure sustainability ERA guidelines have been published. A Fisheries Queensland Harvest Strategy policy has been recently developed that specifically recognises the need to consider recreational fishing in the development of harvest strategies. Responsible Reef Practices (GBRMPA website) covers a number of activities that are associated with recreational fishing (e.g. boating, fishing, anchoring and mooring, collecting) 	<ul style="list-style-type: none"> <i>Fisheries Act 1994</i> (Qld) and subordinate legislation <i>Responsible Reef Practices</i>: http://www.gbrmpa.gov.au/visit-the-reef/responsible-reef-practices Recreational Fisheries. FAO. Guidelines for responsible fisheries (www.fao.org/docrep/016/i2708e/i2708e00.pdf) Queensland Harvest Strategy Policy (no date) https://publications.qld.gov.au/dataset/queensland-fisheries-harvest-strategy/resource/1a6d9dc6-73ac-4d32-9422-065649c34bba https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/changes-to-queenslands-fisheries-legislation. 	Adequate	Stable

<p>PL8 There is consistency across jurisdictions when planning for recreational fishing</p>	<p>3</p>	<ul style="list-style-type: none"> • The different legislative responsibilities and objectives of respective Fisheries and Marine Park Acts are outlined in the Fisheries schedule of the Great Barrier Reef Intergovernmental Agreement between the Commonwealth of Australia and the State of Queensland relating to the protection and management of the Great Barrier Reef Marine Park. • Multiple agencies and governments are involved in fishing management, namely: QDAF, DoEE and GBRMPA. Given the nature of their Acts, each has responsibilities to ensure sustainable use of fisheries resources, for different reasons (for example, biodiversity protection and sustainable harvest) • The Australian Fisheries Management Forum (AFMF) provides opportunity to improve consistency when planning for commercial fishing. • The Great Barrier Reef Marine Park and Great Barrier Reef Coast Marine Park generally adopt complementary zoning • The Joint Field Management Program is highly successful at ensuring consistency across jurisdictions. This strong multi-agency collaboration and coordination is underpinned by a sound governance system that equally apportions financial support. The culture of the JFMP is collaborative and consistent. • The QSFS explicitly recognises the GBRWHA. • The 60% biomass target for fisheries resources by 2027 is consistent with GBR Marine Park biodiversity conservation and ecosystem resilience goals. • The Field Management Program supports cross jurisdictional management of recreational fishing. 	<ul style="list-style-type: none"> • Queensland Sustainable Fisheries Strategy 2017-2027 • Great Barrier Reef Intergovernmental Agreement • Queensland Harvest Strategy Policy and Guidelines • Reef 2050 Plan • FMP Program and Intergovernmental Agreement 	<p>Adequate</p>	<p>Stable</p>
<p>PL9 Plans relevant to recreational fishing provide certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.</p>	<p>4</p>	<ul style="list-style-type: none"> • Zoning and management arrangements at all levels of Government provides certainty regarding where uses may occur and the type of activities allowed. The zoning plan does not prescriptive detail. • Queensland Fisheries Regulation is the main vehicle for managing fisheries and where actions are put in place (e.g. quota, closures, gear restrictions, size and possession limits etc.). • Recreational fishers do not require a licence or permit in any Queensland tidal waters. • The QSFS explicitly incorporates management of recreational fishing. This includes a commitment that by 2020 that priority 	<ul style="list-style-type: none"> • GBRMPA website on Zoning: http://www.gbrmpa.gov.au/zoning-permits-and-plans • https://www.daf.qld.gov.au/fisheries/monitoring-our-fisheries/recreational-fisheries/statewide-and-regional-recreational-fishing-survey • Queensland Sustainable Fisheries Strategy 2017-2027 	<p>Adequate</p>	<p>Stable</p>

		fisheries will be managed by the harvest strategy which will provide greater certainty and predictability about changes to fishing rules (e.g. quota or bag limits) based on the performance of the stock.			
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address recreational fishing	3	<ul style="list-style-type: none"> Recreational fishing surveys are financed, most recently in 2014 An additional \$20m over three years in funding has been provided to support the implementation of the Queensland Sustainable Fisheries Strategy for both commercial and recreational fishers' management. The FMP program has also had its budget significantly increased. This program has a strong focus on compliance, including recreational fishing 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 FMP 	Adequate	Improving
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address recreational fishing	3	<ul style="list-style-type: none"> Fisheries Queensland have recruited additional staff for compliance and delivery of the QSFS. Of the total 760 compliance patrol days planned for 2017-18, a sub-target of 100 days dedicated to recreational fishing compliance during periods of highest risk (e.g. when winds are <10 knots on weekends) has been included in the Field Management Program's 2017-18 Annual Business Plan. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Periodic review of the Joint Field Management GBRMPA Annual Report 2016-17 Field Management Annual Business Plan 2017-2018 	Adequate	Stable
IN3 The right skill sets and expertise are currently available to the managing organisations to address recreational fishing	3	<ul style="list-style-type: none"> The skill set within the GBRMPA and QDAF is of a high quality and experience with most staff having marine or fisheries management training at tertiary level. However, staff dedicated to managing fishing issues is reduced from what it was 5 to 10 years ago. Fisheries Queensland employs fisheries science, fisheries biology, fisheries policy, analytics, media, compliance and monitoring professions. Queensland is one of the only states with the capacity to undertake in-house stock assessments 	<ul style="list-style-type: none"> Workshop discussions with GBRMPA and Fisheries Queensland 	Limited	Stable
IN4 The necessary biophysical information is currently available to address recreational fishing	3	<ul style="list-style-type: none"> There is an understanding of how some large scale events (i.e. cyclones or floods) influence the biophysical conditions and productivity of Queensland fish stocks. This abiotic information is regularly incorporated into stock assessments. The cumulative impacts of the 2016-17 mass bleaching have affected most of the Great Barrier Reef Marine Park, and it is likely the resilience of the majority of reefs north of Mackay has been 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Summary of Stock Status for Queensland Species 2016 Welch et.al. 2014 Implications of climate change on fisheries resources of northern Australia 	Adequate	Improving

		severely diminished. The effect of this unprecedented disturbance on commercially important species is uncertain.			
IN5 The necessary socio-economic information is currently available to address recreational fishing	3	<ul style="list-style-type: none"> While work continues on identifying gaps in biophysical information, and socio-economic implications are being addressed through the Social and Economic Long-term Monitoring Program There can be considerable health and wellbeing benefits for individuals who fish for recreation. There is also some contribution to management costs, with \$17.75 from each vessel registration in Queensland going to Fisheries Queensland for enhancing recreational fishing. The Deloitte Access Economics 2017 report shows the Great Barrier Reef contributed \$6.4 billion in value added and over 64,000 jobs to the Australian economy in 2015–16 (direct and indirect). Most of these jobs came from tourism activities generated by the Great Barrier Reef, but there were also important economic contributions from fishing, recreational and scientific activities Recreational fishing provides economic and social benefits to Queensland's communities. Fishing on the Great Barrier Reef has been an important recreational activity for coastal residents and visitors. Most people indicate that relaxation, socialising, catching fish and excitement are their reasons for fishing recreationally. In 2008, more than half of all people visiting the Great Barrier Reef for recreational purposes went fishing. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Deloitte Access Economics 2017 - The economic, social and icon value 	Adequate	Improving
IN6 The necessary Indigenous heritage information is currently available to address recreational fishing	2	<ul style="list-style-type: none"> Detailed and widespread understanding of traditional (Indigenous) knowledge and cultural heritage is limited and strategy and resourcing to address this gap is needed. Management of recreational fishing has not been raised as a high priority but is occasionally raised for consideration by Traditional Owners or other Aboriginal or Torres Strait Islander people. QDAF has limited engagement with Traditional Owners or other Aboriginal or Torres Strait Islander people and there is currently no forums for sharing of information and communicating interests. The GBRMPA liaises with Traditional Owners or other Aboriginal or Torres Strait Islander people as users of the Marine Park through TUMRA projects, ranger training and meetings, conferences and workshops. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 GBRMPA workshops 	Limited	No clear trend

		<ul style="list-style-type: none"> The QSFS recognises the need to better engage with Traditional Owners or other Aboriginal or Torres Strait Islander people regarding fishing. Five new cultural liaison officers have been set up in the QBFP as part of the Sustainable Fisheries Strategy to improve engagement, work with ranger groups and improve education around traditional fishing. 			
IN7 The necessary historic heritage information is currently available to address recreational fishing	3	<ul style="list-style-type: none"> The permit conditions to enter Historic Shipwreck Protected Zones under the Historic Shipwrecks Act 1976 have recently been change to disallow fishing on wrecks such as the Llewellyn On 14 May 2015 the Great Barrier Reef Marine Park Regulations 1983 were amended to add a new type of Special Management Area, the Maritime Cultural Heritage Protection Special Management Area. The regulation includes specific management provisions for the Maritime Cultural Heritage Protection Special Management Area regulating entering and approaching the wrecks, operating and anchoring vessels, fishing and collecting. These SMAs were created largely to manage impact from recreational fishing on these airplanes 	<ul style="list-style-type: none"> Historic Shipwreck Protected Zones under the Historic Shipwrecks Act 1976 Protecting our maritime cultural heritage http://www.gbrmpa.gov.au/zoning-permits-and-plans/special-management-areas/protecting-our-maritime-cultural-heritage 	Adequate	Improving
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address recreational fishing	3	<ul style="list-style-type: none"> Recreational fishers contribute by providing fish frames to QDAF for measurement at more than 45 boat ramps across Queensland. Many recreational fishing groups, individuals and conservation groups volunteer significant amounts of time to ensure their issues are represented and where possible addressed 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 	Limited	Stable
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of recreational fishing	3	<ul style="list-style-type: none"> There is a lack of recreational fisher engagement at present. The proposed investment in engagement within the Queensland Sustainable Fishing Strategy is designed to address this. Fisheries Queensland maintains a range of active social media channels, including 35,000 facebook followers. This network allows them to communicate and keep stakeholders up to date with management The Green paper on fisheries management reform in Queensland (2016) included public consultation processes. A total of 11,800 responses were received and 230 people attended face to face meetings with Fisheries Queensland (126 meetings). 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027 Green paper on fisheries management reform in Queensland 	Limited	Deteriorating

PR2 The local community is effectively engaged in the ongoing management of recreational fishing	3	<ul style="list-style-type: none"> The local community has been involved in the development of the Queensland Fisheries Strategy. There are fishery independent avenues developing for discussion around recreational fishing primarily facilitated by Infofish. Two fisheries forums were held in 2016 Mackay and 2017 Rockhampton associated with the development of the Rockhampton recreational fishing strategy by the Rockhampton Regional council and an equivalent recreational fishing strategy being developed by Mackay Council. These strategies, encouraging responsible and sustainable regional fishing associated tourism opportunity development have been developed as a response to the 1 November 2015 creation of adjacent net free zones by the Queensland Government. GBRMPA has had consistent input to the development of these strategies. As above as well re social media, regional engagement etc 	<ul style="list-style-type: none"> Rockhampton Recreational Fishing Strategy 	Limited	No clear Trend
PR3 There is a sound governance system in place to address recreational fishing	3	<ul style="list-style-type: none"> The GBRMP Act, Regulations, Zoning Plan are in place to manage some aspects of the recreational fisheries from an ecosystem perspective The <i>Fisheries Act 1994</i> and subordinate legislation is in place to govern sustainable harvest and ensure the principles of Ecologically Sustainable Development (ESD) are upheld. The Queensland Sustainable Fisheries Strategy 2017-2027 has a goal of modernising fisheries management in Queensland and it sets out the Government's reform agenda for the next 10 years A fisheries annex to the Great Barrier Reef Intergovernmental Agreement between the Queensland Government and the Australian Government sets out the roles and responsibilities of each agency. 	<ul style="list-style-type: none"> Fisheries Legislation GBRMPA website on Zoning: Fisheries Annex to the Great Barrier Reef intergovernmental agreement between the Queensland Government and the Australian Government. 	Adequate	Stable
PR4 There is effective performance monitoring, including, regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for recreational fishing	3	<ul style="list-style-type: none"> While there are deficiencies, the management agencies work closely with research and monitoring providers to monitor the performance outcomes from the Zoning Plan 2003 and fisheries management arrangements. Long-Term Monitoring and survey data are used in conjunction with commercial data and research to regularly assess the impacts of fishing on target stocks. In addition, compliance with the zoning plan and fisheries management rules (zone infringements, possession limits etc) is 	<ul style="list-style-type: none"> Dept Agriculture and Fisheries Annual Report 2016-17 Queensland Fisheries Strategy 	Adequate	Stable

		<p>used as another source of information to measure recreational fishing effort, impact and related trends</p> <ul style="list-style-type: none"> • There has been an increase in boat ramp surveys in 16/17 plus the now agreed (October 2017) incorporation and integration of Infofish data, and data collection methods including 'track my fish' app. • It is anticipated that performance monitoring will improve significantly with the implementation of the QSFS. It is proposed that Fishery Harvest Strategies being developed will include specific fisheries management objectives, decision rules, monitoring and appropriate management responses. It is anticipated that performance monitoring will improve significantly with the implementation of the QSFS. It is proposed that Fishery Harvest Strategies being developed will include specific fisheries management objectives, decision rules, monitoring and appropriate management responses. 			
PR5 Appropriate training is available to the managing agencies to address recreational fishing	3	<ul style="list-style-type: none"> • Fisheries Queensland, within the broader QDAF portfolio, has a staff capability and training program which ensure appropriate training is available to fishery managers. • GBRMPA sustainable fisheries group managers are recruited on the basis that they have satisfactory fisheries management technical expertise. • Participation in fishing and fisheries management workshops / conferences are available to managers. 	<ul style="list-style-type: none"> • Queensland Department of Agriculture, Fisheries and Forestry • Great Barrier Reef Marine Park Authority • Australian Fisheries Management Forum and subcommittees 	Limited	stable
PR6 Management of recreational fishing is consistently implemented across the relevant jurisdictions	3	<ul style="list-style-type: none"> • There are inconsistencies in the management arrangements for recreational fishing in Marine Parks and Fisheries Management. For example, some areas closed to fishing under one regulation may be open in another, the apparatus able to be used in one regulation may be different from another. • Multi-agency cross decking on compliance vessels patrols enables multiple pieces of legislation to be enforced at once. • The 60% biomass target for fisheries resources by 2027 under the SFS is consistent with GBR Marine Park biodiversity conservation and ecosystem resilience goals. 	<ul style="list-style-type: none"> • Queensland Department of Agriculture, Fisheries and Forestry • Great Barrier Reef Marine Park Authority • Reef 2050 Plan 	Adequate	Improving
PR7 There are effective processes applied to resolve	3	<ul style="list-style-type: none"> • Good relationships exist between staff at agency level. 	<ul style="list-style-type: none"> • http://www.gbrmpa.gov.au/zoning-permits-and-plans/plans-of-management • Queensland Department of Agriculture, Fisheries and Forestry 	Limited	Stable

differing views/ conflicts regarding recreational fishing		<ul style="list-style-type: none"> Statutory consultation processes identify issues and views which are considered by responsible Governments before a decision is made. Regional Liaison Officers and Queensland Boating and Fisheries Patrol staff are on the ground to ensure issues and conflicts are identified early so they can be discussed and resolved. The fifth major reform area of the QSFS is fisheries resource allocation. It aims to reduce frequency of conflicts and provide guidance to help resolve them. 	<ul style="list-style-type: none"> Great Barrier Reef Marine Park Authority 		
PR8 Impacts (direct, indirect and cumulative) of activities associated with recreational fishing are appropriately considered.	3	<ul style="list-style-type: none"> Impacts (direct, indirect and cumulative) of activities associated with recreational fishing have not been comprehensively assessed. The implementation of ERAs under the QSFS could provide adequate information on recreational fishing impacts so they may be appropriately considered. 	<ul style="list-style-type: none"> <i>Fisheries Act 1994</i> (Qld) and subordinate legislation Queensland Department of Agriculture, Fisheries and Forestry Great Barrier Reef Marine Park Authority 	Limited	Stable
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding recreational fishing	3	<ul style="list-style-type: none"> Best available information is used to undertake stock assessments and/or make stock status determinations (not GBR specific, whole stock or management unit). Qualitative ecological risk assessments (ERAs) have been completed for Coral Reef Fin Fish Fishery which includes a large recreational component. The development of Fishery Harvest Strategies under the QSES should enable the use of biophysical research and/or monitoring information to make relevant management decisions. 	<ul style="list-style-type: none"> Vulnerability Assessments - More information at: http://www.gbrmpa.gov.au/about-the-reef/biodiversity/biodiversity-conservation-strategy-for-public-consultation/vulnerability-assessments Summary of Stock Status for Queensland Species 2016 QDAF fish stock assessment reports QDAF Ecological risk assessments Queensland Department of Agriculture, Fisheries and Forestry 	Limited	Stable
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding recreational fishing	3	<ul style="list-style-type: none"> The contribution that recreational fishing makes to the Region is recognised 	<ul style="list-style-type: none"> Deloitte Access Economics. (2017) <i>At what Price? The economic, social and icon value of the Great Barrier Reef</i> Workshop discussions Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) <i>The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.)</i>. 	Limited	Improving
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding recreational fishing	2	<ul style="list-style-type: none"> Agencies liaise with traditional users of the GBRMP via a number of means and this results in information sharing which assists in the management of fishing. Detailed and widespread understanding of traditional (indigenous) knowledge and cultural heritage is limited 	<ul style="list-style-type: none"> Workshop discussions 	Limited	Stable

PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding recreational fishing	3	<ul style="list-style-type: none"> The permit conditions to enter Historic Shipwreck Protected Zones under the Historic Shipwrecks Act 1976 have recently been change to disallow fishing on wrecks such as the Llewellyn Special Management Area were created largely to manage impact from recreational fishing 	<ul style="list-style-type: none"> Historic Shipwreck Protected Zones under the Historic Shipwrecks Act 1976 Protecting our maritime cultural heritage http://www.gbrmpa.gov.au/zoning-permits-and-plans/special-management-areas/protecting-our-maritime-cultural-heritage 	Adequate	Improving
PR13 Relevant standards are identified and being met regarding recreational fishing	3	<ul style="list-style-type: none"> Recreational fishing is managed in accordance with the FAO guidelines for responsible fishing. Fisheries management arrangements are readily comparable to other jurisdictions and regularly discussed at the Australian Fisheries Management Forum. Gear restrictions, areas available to fishing and bag and size limits effectively control recreational fishing. However Snapper is an example of where this is arguably not the case. Pearl perch is transitional depleting and there concerns for localised depletion of species such as grunter (javelin fish) and king threadfin salmon which all have high recreational harvest. The greatest risk to these standards being met is illegal fishing. Voluntary best practice standards for fishing (Responsible Reef Practices) Where EPBC Act fisheries assessment are conducted of fisheries with recognised impact from recreational fishing (e.g. ECIFFF, Mud Crab) these impact are considered. 	<ul style="list-style-type: none"> Recreational Fisheries. FAO. Guidelines for responsible fisheries (www.fao.org/docrep/016/i2708e/i2708e00.pdf) Australian Fisheries Management Forum GBRMPA website on Zoning: http://www.gbrmpa.gov.au/zoning-permits-and-plans Queensland managed fisheries assessments under the EPBC Act 	Adequate	Stable
PR14 Targets have been established to benchmark management performance for recreational fishing	3	<ul style="list-style-type: none"> Recreational fisheries management is regularly benchmarked against other Australian Jurisdictions to ensure consistency in management approach. 	<ul style="list-style-type: none"> Australian Fisheries Management Forum 	Adequate	Stable
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for recreational fishing	3	<ul style="list-style-type: none"> Gear restrictions, areas available to fishing and bag and size limits effectively control recreational fishing. Although there are some examples, e.g. snapper and pearl perch, where this is not the case. Conservative arrangements (eg 33% no fishing zones in the GBR) provide a significant level of precautionary management against the impacts of fishing. Actions under Reef 2050 Plan with respect to recreational fishing are on track. 	<ul style="list-style-type: none"> Queensland Department of Agriculture, Fisheries and Forestry Great Barrier Reef Marine Park Authority <i>Fisheries Act 1994</i> (Qld) and regulations Recreational Management Strategy (RMS) http://www.gbrmpa.gov.au/about-the-reef/how-the-reefs-managed/recreation-in-the-great-barrier-reef-marine-park Reef 2050 Plan Field Management Program 	Adequate	Stable

		<ul style="list-style-type: none"> • Programs around stock status evaluation and stock assessments and the surveying recreational fishing activity have progressed as have the compliance programs. • Actions in the QSFS are on track. • A targeted education and compliance strategy, undertaken through the FMP priority project <i>Addressing recreational fishing non-compliance</i>, has been implemented to help give effect to the zoning plans, with particular focus on high-risk areas 			
OP2 Implementation of management documents and/or programs relevant to recreational fishing have progressed in accordance with timeframes specified in those documents	3	<ul style="list-style-type: none"> • The main programs for recreational fishing are associated with the zoning compliance, and through Fisheries Qld limits on catch. • A targeted recreational fishing-focused education and compliance strategy, undertaken through the FMP priority project <i>Addressing recreational fishing non-compliance</i>, has been implemented to help give effect to the zoning plans, with particular focus on high-risk threats areas • Voluntary groups such as Mackay Recreational Fishers Alliance (take a kid fishing day) and the work of InfoFish 	<ul style="list-style-type: none"> • Fisheries Queensland • Great Barrier Reef Marine Park Authority • Fisheries Act 1994 (Qld) and regulations • Mackay Recreational Fishers Alliance • Field Management Program 	Adequate	Stable
OP3 The results (in OP1 above) have achieved their stated management objectives for recreational fishing	3	<ul style="list-style-type: none"> • In the absence of contemporary performance measurement systems for most fisheries or any harvest strategies, there have been no stated management objectives. • Recreational fishing is deemed a sustainable activity in the GBR, although there are concerns about the stock status for some species. Insufficient data also exists. On-going assessment is required in this area. • The issue of illegal recreational fishing is undermining management efforts. A concerted program and priority FMP project to address illegal recreational fishing non-compliance is underway. However the cumulative impact of the ongoing large numbers of recreational fishing offences is likely to also be undermining the health, recovery and resilience of the Reef. • More work is required to reduce risks and impacts for species vulnerable to overfishing, to mitigate protected species interactions; and to reduce bycatch. 	<ul style="list-style-type: none"> • GBRMPA Annual Reports • FMP Compliance quarterly/annual report • Compliance review • FMP Annual Business Plan 2017-18 	Adequate	Stable
OP4 To date, products or services have been produced in accordance with the stated	3	<ul style="list-style-type: none"> • Public information has been produced and disseminated in line with objectives for recreational fishing (i.e. to support compliance and other programs 	<ul style="list-style-type: none"> • Periodic review of the Joint Field Management Program – 2017 • QPWS/GBRMPA's flyer Spearfishing in the Whitsundays • GBRMPA media releases 19/9/2017 and 5/7/2017 • QDAF - Fisheries data and reports 	Limited	improving

management objectives for recreational fishing		<ul style="list-style-type: none"> • Between 2011 and 2017 the Joint Field Management Program delivered over 2480 vessel and 162 land-based targeted compliance days, educating World Heritage Area visitors about rules relating to their activities and ensuring they abide by them. Over 335,000 zoning maps have been distributed to assist marine park users understand the rules. • Recreational fishers generally access the GBR by private vessel and anchor, troll or use public moorings. In 2016-17, to reduce impact to coral and seagrass habitats from recreational use, the Joint Field Management Program installed 20 new public moorings and 25 new reef protection markers. This takes the recreational infrastructure to 147 public moorings and 170 reef protection markers. This was a 2.3 million dollar investment, and use of these mooring facilities is free to recreational users • QDAF produces or in the past has produced: <ul style="list-style-type: none"> ○ Fishery reports as per EPBC approval requirements. ○ Stock status assessments. ○ Fish stock assessment reports ○ Fishery summary reports ○ Commercial catch data • Marine Park zoning information is provided publicly • Fisheries assessments under the EPBC Act are published online • Strong communication push in second half of 2017 on Sustainable Fisheries Strategy and key initiatives (e.g. rolling out vessel tracking on commercial fishing vessels). 			
OP5 Effective knowledge management systems regarding recreational fishing are in place within agencies	3	<ul style="list-style-type: none"> • Data on recreational fishing incidents/alleged non-compliance is maintained and stored securely by the GBRMPA Compliance section. Separate to compliance matters, GBRMPA stores little data. • Fisheries Queensland Provides reports on recreational fishers from boat ramps. • Data is shared between agencies and with the community, e.g. Qfish database 	<ul style="list-style-type: none"> • https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-our-fisheries/recreational-fisheries/get-involved-in-fisheries-monitoring/let-us-measure-your-catch • https://publications.qld.gov.au/dataset/baseline-report-for-fisheries-qld-recreational-boat-based-fishing-survey 	Limited	Stable
OP6 Effective systems are in place to share knowledge on recreational fishing with the community	3	<ul style="list-style-type: none"> • Results of recreational fishing surveys are available online and status reports are also publically available. 	<ul style="list-style-type: none"> • Queensland Department of Agriculture and Fisheries website – data and reports • Queensland Department of Agriculture and Fisheries website – Recreational fishing 	Limited	Stable

		<ul style="list-style-type: none"> An education program for recreational fishers is maintained by DAF with an annual cycle of information and education materials available through media, online and distribution by staff. The Marine Park Zoning is now available on the Qld Fisheries App and on GBRMPA's Eye on the Reef app. This has met a major technological deficiency in the information that was previously available to recreational fishers. The Marine Park Authority and Queensland Fisheries issue proactive media releases Fisheries Queensland maintains a range of active social media channels, including 35,000 facebook followers. 	<ul style="list-style-type: none"> QPWS/GBRMPA's flyer Spearfishing in the Whitsundays GBRMPA media releases 19/9/2017 and 5/7/2017 Queensland Fisheries app Eye on the Reef app 		
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing recreational fishing and moving towards the attainment of the desired outcomes.	3	<ul style="list-style-type: none"> The Queensland Sustainable Fisheries Strategy states – 'The current arrangements governing fisheries are problematic, costly to administer, inflexible and increasingly ineffective in ensuring the sustainability of fisheries resources and the economic viability of fishing sector's'. Illegal fishing activities undermine the attainment of the desired outcomes. The most recent Recreational Fishing survey estimates approximately 175,000 regular fishers in the GBRWHA catchment area. Although the rate of recreational fishing non-compliance has been estimated at only around 10% of fishers (with a range of 3-18% using different social science methods), this suggests that the number of people actually illegally fishing in no-take zones is substantially higher than the number detected through compliance enforcement efforts. 	<ul style="list-style-type: none"> Queensland Sustainable Fisheries Strategy 2017-2027, pg 13 Bergseth, Brock J., Russ, Garry R., and Cinner, Joshua E. (2015) Measuring and monitoring compliance in no-take marine reserves. Fish and Fisheries, 16 (2). pp. 240-258) 	Limited	Stable
OC2 The outputs relating to recreational fishing are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	3	<ul style="list-style-type: none"> Stock status assessments indicate fish stocks are in generally good shape. Snapper is the only species taken by recreational fishers in the GBR is considered to be overfished. However both pearl perch (classed as transitional depleting) and Spanish mackerel (significantly reduced spawning aggregations and catch rate) as heavily targeted by recreational fishers. Localised depletion may be occurring in some high use areas due to the cumulative effects of recreational fishing activity. However, 	<ul style="list-style-type: none"> https://www.daf.qld.gov.au/fisheries/monitoring-our-fisheries/data-reports/sustainability-reporting/stock-status-assessments/summary-2016 	Limited	Stable

		<p>concern has been raised that controls over legal activities are insufficient to ensure fisheries resource and broader ecosystem sustainability.</p> <ul style="list-style-type: none"> • Outputs related to the QSFS have not yet been realised • Fishing related risks <ul style="list-style-type: none"> ○ Incidental catch of species of conservation concern ○ Illegal fishing and poaching ○ Extraction of predators ○ Discarded catch ○ Extraction from spawning aggregations <p>directly impact the values of the Great Barrier Reef. Whilst there have been efforts in the Field Management Program to mitigate illegal fishing and poaching, there has been no program to date to mitigate the other very high and high fishing related risks.</p>			
OC3 the outputs (refer OP1 and 3) for recreational fishing are reducing the major risks and the threats to the Great Barrier Reef	3	<ul style="list-style-type: none"> • Recreational fishing is poorly quantified and increasing trends are likely to pose a management challenge to attain sustainability • There are increasing concerns regarding the levels of non-compliance with marine no-take areas in the GBRMP over recent years. However the strategic compliance program delivered through the FMP is actively targeting recreational fishing in green (no-take) zones. 	<ul style="list-style-type: none"> • Strategic Compliance Plan (FMP) 	Limited	Improving
OC4 Use of the Great Barrier Reef relating to recreational fishing is demonstrably environmentally sustainable	2	<ul style="list-style-type: none"> • One of the key impediments to demonstrating environmentally sustainable fishing is ongoing illegal fishing activities, but there are other issues as well including stock sustainability concerns, extraction from spawning aggregations and localised depletion. • Some fish spawning is protected by Queensland legislation, for example through the Coral Reef Fin Fish Fishery spawning closures and the protection of barramundi during its main spawning season. • There are some localised stock concerns (e.g. grey mackerel in the Port Douglas region) but arguable that this is a social / resource sharing issue, rather than a sustainability issue. • Independent monitoring to assess environmental sustainability is limited 	<ul style="list-style-type: none"> • Tobin et.al. (2014) Utilising innovative technology to better understand Spanish mackerel spawning aggregations and the protection offered by marine protected areas • Workshop discussions 	Limited	Improving

		<ul style="list-style-type: none"> Recreational fishing is poorly quantified and increasing trends are likely to require a management challenge to ensure attainment of sustainability 			
OC5 Use of the Great Barrier Reef relating to recreational fishing is demonstrably economically sustainable	3	<ul style="list-style-type: none"> Recreational fishing is an important contributor to economic sustainability of regional communities. 	<ul style="list-style-type: none"> Deloitte Economics (2013) <i>Economic Contribution of the Great Barrier Reef</i>, Great Barrier Reef Marine Park Authority Deloitte Access Economics: At what price? The economic, social and icon values of the Great Barrier Reef 	Adequate	Improving
OC6 Use of the Great Barrier Reef relating to recreational fishing is demonstrably socially sustainable in terms of understanding and/or enjoyment	3	<ul style="list-style-type: none"> Surveys of recreational fishing and boat ownership details indicate the recreational participation in the GBR has decreased in the past five years Recreational fishing has large community benefits, not just in supporting ancillary industries but in the health and wellbeing of those that participate. 	<ul style="list-style-type: none"> https://www.daf.qld.gov.au/fisheries/monitoring-our-fisheries/recreational-fisheries/statewide-and-regional-recreational-fishing-survey SELTMP total recreational fishing days in Qld within a year 2013 Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) <i>The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef</i>. Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Limited	No Clear Trend
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address recreational fishing	3	<ul style="list-style-type: none"> Recreational fishing is a highly dispersed activity with most stakeholders having a view based on personal/local experiences. This can cause partnership difficulties where information being provided by agencies is inconsistent with particular community or individual views. All agencies conduct local and regional consultation. This can be somewhat fragmented at times. Partnerships involving local communities having a strong voice in management at a local level are rare. In part this is because management is undertaken at a State or Marine Park wide scale. 	<ul style="list-style-type: none"> GBRMPA discussions and workshops Reef Guardian Fishers program See information above regarding GBRMPA involvement with Infofish. 	Adequate	Stable

Table 29 Calculation of grades for heritage (historic)

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to historic heritage are understood by managers	3	<ul style="list-style-type: none"> • Historic heritage of value, according to GBMPA relates to the “occupation and use of the Marine Park since the arrival of Europeans and other migrants” (Great Barrier Reef Marine Park Authority, 2017). • Managers have a very good understanding of heritage values of sites listed under Commonwealth Heritage legislation (referred to here as ‘listed places’. These places and property are: <ul style="list-style-type: none"> ○ Dent Island Lightstation, ○ Lady Elliot Island Lightstation, and ○ Low Islets Lightstation and Low Island. • Historic Shipwrecks database includes data on plane wrecks too. • Non-listed places are not as well understood. However, considerable work has been undertaken to document the heritage values in the Great Barrier Reef and this is included in an internal heritage register that includes: <ul style="list-style-type: none"> ○ An inventory with heritage information for islands and reefs; ○ An in-house database for Commonwealth Islands; ○ A list of aircraft wrecks within the Great Barrier Reef; and ○ Historic heritage assessment guidelines have been prepared for the first time. • Historic heritage assessment guidelines have been published as part of the improvements to the permission system. The guidelines include WWII features and sites and voyages and shipwrecks, other places of historic and social significance, and maritime cultural heritage protection special management area. Other guidelines such as Traditional Owner assessment guidelines and Woppaburra assessment guidelines also consider relevance to historic heritage values. • Knowledge of the known history of the reef, including Indigenous knowledge and uses, European exploration, contact stories, past uses, and the efforts to conserve the Reef are all important aspects of historic heritage and provide a human context for current reef management, but there is little information to indicate how well 	<ul style="list-style-type: none"> • Statement of Outstanding Universal Value for the Great Barrier Reef http://www.environment.gov.au/heritage/places/world/great-barrierreef/values.html • Strategic Assessment Report (chap 7) • Reef 2050 Plan • Gidarjil 2016, Reef 2050 Long Term Sustainability Plan Indigenous Implementation Plan • Johnston, C., Smith, A., and Dyke, J., 2013, Defining the aesthetic values of the Great Barrier Reef, Context Pty Ltd, Melbourne • Marshall, N.A., Marshall, P. and Smith, A.K. 2017. Managing for aesthetic values in the Great Barrier Reef-Identifying indicators and linking reef aesthetics to reef health. Report to the National Environmental Science Programme. Reef and Rainforest Research Centre Limited, Cairns. • Great Barrier Reef Marine Park Authority (2017) Heritage in the Great Barrier Reef Marine Park (draft), • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). • Australian Heritage Database • Review of Commonwealth Heritage List • Queensland Heritage Register 	Adequate	Improving

		<p>managers, both within GBRMPA and in the Field Management Program (FMP) understand this history.</p> <ul style="list-style-type: none"> • Wrecks are a significant part of the underwater historic heritage. There are potentially over 800 shipwrecks, but only 40 of these have been mapped. Over 100 plane wrecks. There is a good understanding of the values of some shipwrecks that have been targeted for conservation management plans: The Australian National Shipwreck Database is a living, public database that is periodically updated to provide the latest known site data and information. However, only 15% of wrecks within the GBR are accurately located. GBRMPA and Queensland Government undertook three discrete survey projects to identify and record historic shipwrecks in key areas. This includes: <ul style="list-style-type: none"> ○ magnetometer survey in the Whitsunday area ○ St Bees Island, Keswick Island and Carlisle Island wreck surveys; and ○ Valetta survey on Long Island. • GBRMPA in collaboration with the Australian National Maritime Museum and the Silentworld Foundation located and inspected the following sites: <ul style="list-style-type: none"> • HMS <i>Pandora</i>, <i>Yongala</i>, <i>Foam</i> and <i>Warmambool</i>. • Three WWII plane wrecks on Cape Grenville • Six shipwrecks on Great Detached • The Field Management Program manages historic heritage on islands including both Commonwealth and Queensland protected areas. In many cases, the tangible traces of historic heritage are centred on islands, which are not part of this report. The Field Management Program manages across these boundaries. • As part of RIMReP, the Authority has funded social and economic monitoring under SELTMP (CSIRO's Social and Economic Long Term Monitoring Program). New questions were inserted into the Survey in 2017 to improve knowledge of the wider community's perceptions and understanding of GBR heritage (including cultural heritage). • History of conservation and management of the GBR has been compiled through the 40th anniversary of GBRMPA and the 50th anniversary of the struggle for protection, but the extent to which field managers understand this history is not known. 	<ul style="list-style-type: none"> • Shipwrecks database • Statement of Outstanding Universal Value for the Great Barrier Reef: DOEE • Dent Island Lightstation Heritage Register • Lady Elliot Island Lightstation Heritage Register • Low Island and Low Islets Lightstation Heritage Register • Great Barrier Reef Marine Park Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018–21 • Guideline: Historic heritage assessment: maritime cultural heritage protection special management area (2017) GBRMPA. • Guideline: Historic heritage assessment: other places of historic and social significance (2017) GBRMPA. • Guideline: Historic heritage assessment: WWII features and sites, and voyages and shipwrecks (2017) GBRMPA 		
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CO2 The current condition and trend of values relevant historic heritage are known by managers	3	<ul style="list-style-type: none"> • Knowledge of the condition of the listed places is good, but for most of the historic places managers have little coordinated information. • The RIMReP project is establishing attributes and indicators for human dimensions of the GBR that include condition and trend of historic heritage and aesthetic beauty. • The Strategic Assessment (Table 7.7) presents a summary of condition and trend for historic heritage values. There is good understanding and recording of some aspects of historic heritage, for example historic shipwrecks and lightstations. Heritage values are being maintained or restored at some lightstations. However, most places of historic significance are poorly recorded and their condition is not well understood. • The Queensland Government has commenced desktop research into the wreck of HMAS Warrnambool, which is located within the GBR and has attracted some public interest. • 31 WWII era aircraft wrecks within the GBRMP have been entered into the Australian National Shipwreck Database. Physical and desktop research has been undertaken collaboratively between the GBRMPA and the Queensland Government. However, most aircraft wrecks do not have accurate coordinates and have not been surveyed. • Aesthetic values: Table 7.12 of the 2013 Strategic Assessment presents a summary of condition and trend of aesthetic values. The significant loss of coral cover, especially in areas south of about Cooktown, has reduced underwater aesthetic value, as has increasing turbidity in inshore areas. The recent aesthetics report underlines the importance of reef health to public appreciation. 	<ul style="list-style-type: none"> • GBR Region Strategic Assessment Report (2014), Chapter 5 Drivers and Activities • GBR Region Strategic Assessment Report (2014), Chapter 7 Current conditions and Trends; s 7.3. • GBR Region Strategic Assessment Report (2014), Chapter 6 Impacts on the Values • Johnston, Chris and Smith, Anita. Beautiful one day: Assessing the world heritage aesthetic values of the Great Barrier Reef [online]. Historic Environment, Vol. 26, No. 2, 2014: 54-71. • Marshall, N.A., Marshall, P. and Smith, A.K. 2017. Managing for aesthetic values in the Great Barrier Reef-Identifying indicators and linking reef aesthetics to reef health. Report to the National Environmental Science Programme. Reef and Rainforest Research Centre Limited, Cairns. • FMP Annual Report 2014-15 and 2015-16 • FMP Annual Business Plan • GBRMPA Building Audits on Commonwealth Islands – see 2010-2011 Annual Report (Available upon request) 	Adequate	Stable
CO3 Impacts (direct, indirect and cumulative) associated with historic heritage are understood by managers.	3	<ul style="list-style-type: none"> • A structured assessment of the effects of past and present impacts on heritage was presented in the 2013 Strategic Assessment. Of the impacts considered to be affecting historic heritage, the effects were assessed as either minor or localised. • Cyclones have been assessed as the key risk factor to many of the historic shipwrecks. The impacts of cyclones on the <i>Lady Bowen</i> and <i>Yongala</i> have been assessed. • Inshore wrecks are also vulnerable due to increased extreme weather events – including inshore erosion leading to exposure of previously buried wrecks. • A thorough risk assessment was included in the 2013 report on aesthetic values (Johnson et al 2013). This report concluded there were a number of high to very high risks, including climate change, urban and industrial development, and agriculture. 	<ul style="list-style-type: none"> • GBR Region Strategic Assessment Report (2014), Chapter 5 Drivers and Activities • GBR Region Strategic Assessment Report (2014), Chapter 7 Current conditions and Trends; s 7.3. • GBR Region Strategic Assessment Report (2014), Chapter 6 Impacts on the Values • Johnston, Chris and Smith, Anita. Beautiful one day: Assessing the world heritage aesthetic values of the Great Barrier Reef [online]. Historic Environment, Vol. 26, No. 2, 2014: 54-71. • FMP Annual Reports • FMP Annual Business Plans 	Adequate	Stable

CO4 The broader (national and international) level influences relevant to historic heritage are understood by managers.	4	<ul style="list-style-type: none"> • GBRMPA has very good understanding of the national and international obligations in relation to defined heritage values. These are outlined in the draft strategy: 'Heritage in Great Barrier Reef Marine Park'. The extent to which field managers share this understanding is not known. • The first stage to develop this strategy was extensive desktop research of current best practice, national and state government policies, initiatives and legislation, Australia's responsibilities under the World Heritage Convention, and relevant Authority strategies. 	<ul style="list-style-type: none"> • State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2013 • State of the Environment Report Cth webpage • Commonwealth of Australia 2015, Australian Heritage Strategy, Commonwealth of Australia, Canberra. • Professor Richard Mackay, A. 2017, Australia State of the Environment 2016: Heritage, Department of the Environment and Energy, Canberra, • Landcare Illawarra 2017, Cultural heritage • International Union for Conservation of Nature 2017, World Heritage Outlook • Mackay, R. 2017, Australia state of the environment 2016: heritage: independent report to the Australian Government Minister for the Environment and Energy, Department of the Environment and Energy, Commonwealth of Australia, Canberra • Department of the Environment and Heritage Protection., 2015, Queensland Heritage Strategy: protecting, investing in and connecting Queensland's story, Department of the Environment and Heritage Protection, Brisbane 	Adequate	Improving
CO5 The stakeholders relevant to historic heritage are well known by managers.	4	<ul style="list-style-type: none"> • Heritage managers within GBRMPA have established good relationships with external managers and stakeholders in related State and Commonwealth agencies. GBRMPA heritage guidelines and strategy have been a collaboration of stakeholders. • Managers continue to engage with external stakeholder groups through the Community Partnerships programme and the LMAC and RAC processes to minimise future conflict. • The Queensland Government maintains a relationship with commercial dive operators who access shipwrecks. 	<ul style="list-style-type: none"> • Stakeholders and workshops 	Adequate	Stable
PLANNING					

<p>PL1 There is a planning system in place that effectively addresses historic heritage</p>	<p>4</p>	<ul style="list-style-type: none"> • Reef 2050 has general actions relating to cultural heritage: however, this is defined in the Plan as place-based values only. • A new strategy to cover all heritage in the GBRMP 'Heritage in Great Barrier Reef Marine Park' has been drafted and should be released in 2018. This strategy has been thoroughly researched and represents best practice, but does not yet have clear actions attached. • Nested under this overall strategy is the new 'GBRMP Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018-2021'. This plan only considers the four properties on the Commonwealth Heritage List (listed places). • All QPWS management plans consider historic heritage values in planning, through there is a risk that the new focus on key values could mean that places considered of lower importance are not given attention. • Plans of Management (Zoning Plans) in the past have not addressed cultural values comprehensively, but the recent Whitsunday Plan of Management gives a lot more emphasis to cultural heritage. • Conservation Management Plans (CMPs) are an international best practice tool to document why a place is significant, based on internationally validated criteria, and how that significance will be sustained in any new use, alteration, repair or management. CMPs have been prepared for listed properties. • Heritage management plans for Lady Elliot Island Lightstation (2012) and Dent Island Lightstation (2013) are registered. • Non statutory conservation plans exist for the Yongala, Gothenburg and Llewellyn shipwrecks within protected zones. Conservation plans are also being prepared for the three remaining shipwrecks within protected zones (HMS Pandora, HMCS Mermaid and Foam). • There is a risk that planning overall addresses place-based, tangible cultural heritage such as wrecks, but does not include less tangible heritage. 	<ul style="list-style-type: none"> • Reef 2050 Plan • Great Barrier Reef Marine Park Authority (2017) Heritage in the Great Barrier Reef Marine Park (draft) • Guideline: Historic heritage assessment: lightstations and aids to navigation (2017) • GBRMPA • GBRMP Act 1975 • GBRMP Regulations 1983 • Plans of Management • Lady Elliot Island Lightstation Heritage Management Plan • Supporting information for the Whitsundays Plan of Management (WPOM) 2015-18 review – internal document only • Media Release: New underwater heritage law will protect even more of our history • Historic Shipwrecks Act 1976 • GBR Intergovernmental Agreement 2015 • Australian Underwater cultural heritage Intergovernmental Agreement • Review of the Historic Shipwrecks Act 1976 	<p>Adequate</p>	<p>Improving</p>
<p>PL2 The planning system for historic heritage addresses the major factors influencing the Great Barrier Reef Region's values.</p>	<p>2</p>	<ul style="list-style-type: none"> • Plans address the need to maintain or restore sites and can help avoid deliberate damage to historic and aesthetic values through inappropriate activities or development of tourist facilities. • Plans cannot protect historic heritage or aesthetic values against some of the major impacts, such as natural deterioration, sea level change, cyclones and increased turbidity. • Heritage issues must be considered when assessing permits and approvals. 	<ul style="list-style-type: none"> • Lady Elliot Island Lightstation Heritage Management Plan • Great Barrier Reef Strategic Assessment Report, • Great Barrier Reef Coastal Zone Strategic Assessment 2014 	<p>Adequate</p>	<p>Stable</p>

PL3 Actions for implementation regarding historic heritage are clearly identified within the plan	2	<ul style="list-style-type: none"> • Actions in the Reef 2050 Plan relate to planning, monitoring, capacity building and activity assessments but are quite general in nature. • The Heritage Strategy contains quite general actions and consolidates existing activities. No new specific actions are identified. • Specific actions are spelt out for conservation of listed places in their conservation management plans. • Joint Field Management Business Plans and Strategies clearly outline how they will support maritime heritage over the planning period. 	<ul style="list-style-type: none"> • Reef 2050 Plan • Great Barrier Reef Marine Park Authority (2017) Heritage in the Great Barrier Reef Marine Park (draft) • Dent Island Lightstation Heritage Register • Lady Elliot Island Lightstation Heritage Register • Low Island and Low Islets Lightstation Heritage Register • Great Barrier Reef Marine Park Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018–21 	Adequate	Stable
PL4 Clear, measurable and appropriate objectives for management of historic heritage have been documented	3	<ul style="list-style-type: none"> • Clear objectives have been set only for listed places. • Joint Field Management Business Plans and Strategies clearly outline how they will support maritime heritage over the planning period. 	<ul style="list-style-type: none"> • Joint Field Management Business Plans and Strategies 	Adequate	Stable
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to historic heritage	3	<ul style="list-style-type: none"> • The RIMReP program is setting attributes and indicators for monitoring historic heritage and aesthetic values in a holistic manner. This will include the human dimension of cultural heritage. • Listed places are carefully monitored and their status is reported upon regularly. • Many other places of historic importance are not monitored at present, but new technology including drone and compilation of community photography provides opportunities to do this more economically and thoroughly in the future. • A program to use citizen science to monitor aesthetic values is being conducted by a team of academics under the National Environmental Science Program. 	<ul style="list-style-type: none"> • Reef 2050 Integrated Monitoring and Reporting Program Strategy http://www.gbrmpa.gov.au/managing-the-reef/reef-integrated-monitoring-and-reporting-program • http://elibrary.gbrmpa.gov.au/jspui/bitstream/11017/3385/5/RIMREP-Strategy-Update-2018.pdf • http://nesptropical.edu.au/index.php/round-3-projects/project-3-2-3/ • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Adequate	Improving
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address historic heritage	3	<ul style="list-style-type: none"> • Stakeholders have been involved in the development of the draft Heritage Strategy. • Stakeholders are also involved in production of management plans. (QPWS) and Plans of Management (GBRMPA) but public involvement is not mandated in development of QPWS management statements. 	<ul style="list-style-type: none"> • Great Barrier Reef Marine Park Authority (2017) Heritage in the Great Barrier Reef Marine Park (draft) • https://www.npsr.qld.gov.au/managing/plans-strategies/statements/ 	Adequate	Stable
PL7 Sufficient policy currently exists to effectively address historic heritage	3	<ul style="list-style-type: none"> • The draft Heritage Strategy provides a very thorough and up to date review of principles and general practices relating to heritage protection. • QPWS has an updated Cultural Heritage Policy and manual. 	<ul style="list-style-type: none"> • Great Barrier Reef Marine Park Authority (2017) Heritage in the Great Barrier Reef Marine Park (draft) 	Adequate	Improving

		<ul style="list-style-type: none"> • Policies exist for management of the listed places. • Consideration of historic heritage is built into the assessment process. • There remains a lack of clarity about how to prioritise the expensive and time-consuming work of protection and especially restoration of historic heritage places and objects. 	<ul style="list-style-type: none"> • Joint Field Management Business Plans and Strategies • GBRMP Heritage Strategy 2005 • Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018-2021 • Report reviewing the Implementation of the Great Barrier Reef Marine Park Heritage Strategy 2005 • Draft Heritage Register - Dent Island Lightstation • Draft Heritage Register - Lady Elliot Island Lightstation • Draft Heritage Register - Low Island and Low Islet Lightstation 		
PL8 There is consistency across jurisdictions when planning for historic heritage	3	<ul style="list-style-type: none"> • The Great Barrier Reef Marine Park Act and Regulations provide the legislative power for the protection of all historic heritage values and consideration of potential impacts to heritage through the permitting process. There are also strong drivers for heritage management under the Commonwealth EPBC Act and World Heritage obligations. The <i>Queensland Heritage Act 1992</i> protects sites of cultural heritage, including shipwrecks and lighthouses under Queensland jurisdiction. The <i>Nature Conservation Act 1992</i> includes cultural heritage under all its sections so sites under QPWS control are also protected. These obligations also drive consistency of implementation of historic heritage management across agencies. • Resources tend to be directed to places on the Commonwealth Heritage List or areas of current popular focus rather than consistently allocated across the region. • Permits are issued jointly by GBRMPA and QPWS so impacts to cultural heritage are jointly considered. • Other managers such as leaseholders are subject to leases and other agreements, which can include specific arrangements in relation to cultural heritage, such as maintenance of the light station at Lady Elliot Island. • Management of shipwrecks is coordinated under the Queensland Heritage Act and the Historic Shipwrecks Act (Cth). 	<ul style="list-style-type: none"> • Media Release: New underwater heritage law will protect even more of our history • Historic Shipwrecks Act 1976 • Review of the Historic Shipwrecks Act 1976 • GBR Intergovernmental Agreement 2015 • Australian Underwater cultural heritage Intergovernmental Agreement • Australian National Shipwrecks Database • Guideline: Historic heritage assessment: maritime cultural heritage protection special management area (2017) GBRMPA. • Guideline: Historic heritage assessment: other places of historic and social significance (2017) GBRMPA. • Guideline: Historic heritage assessment: WWII features and sites, and voyages and shipwrecks (2017) GBRMPA 	Adequate	Improving
PL9 Plans relevant to historic heritage provide certainty regarding where uses may occur, the type of activities allowed or specifically disallowed,, conditions under which activities may proceed and circumstances	2	<ul style="list-style-type: none"> • This certainty is limited by the lack of knowledge about many historic heritage sites, including location of shipwrecks and plane wrecks. • Special Management Areas in Zoning Plans clearly restrict activities in the zone relevant to maritime cultural heritage. 	<ul style="list-style-type: none"> • Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018-2021 • Dent Island Lightstation Heritage Register • Lady Elliot Island Lightstation Heritage Register • Low Island and Low Islets Lightstation Heritage Register 	Adequate	Stable

where impacts are likely to be acceptable.					
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address historic heritage	2	<ul style="list-style-type: none"> Historic heritage places and objects could consume as many financial resources as were available, and it will always be the case that some sites are left to natural deterioration. In comparison to many other areas, especially in Queensland, resources are quite good. Maintenance and long-term costs of listed places are within GBRMPA allocation and also assisted through lease agreements. However, many other sites of high historic interest have no allocated funding. No management effort is being put into field work such as searching for new sites, assessment of known or new sites, monitoring, or conservation of most non-listed sites. As a result of the 2017 agency-wide operational review, historic heritage resources were refocussed onto other priority projects. Resources allocated to management objectives for historic heritage values within the Region are shared across the Policy and Planning section in GBRMPA and DES (Qld). 	<ul style="list-style-type: none"> Workshop discussions 	Adequate	Stable
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address historic heritage	2	<ul style="list-style-type: none"> Field staff through the Field Management Program are responsible for management on the islands and water, including compliance and in some cases specific restoration works. Within the FMP, a Project Manager has the responsibility to protect the Commonwealth Heritage listed lightstations. This position works closely with staff from the Queensland Parks and Wildlife Service as well as the Australian Maritime Safety Authority. Expert advice is available on heritage matters through the Conservation, Heritage and Indigenous Reef Advisory Committees. 	<ul style="list-style-type: none"> Workshop discussions 	Adequate	Improving
IN3 The right skill sets and expertise are currently available to the managing organisations to address historic heritage	3	<ul style="list-style-type: none"> GBRMPA and State Government staff have been provided with specialist training in underwater cultural heritage – which was delivered in collaboration by Queensland Government and GBRMPA. 	<ul style="list-style-type: none"> Workshop discussions 	Limited	Improving
IN4 The necessary biophysical information is currently available to address historic heritage	3	<ul style="list-style-type: none"> Information on physical location and values of many historic heritage sites are not well documented, except for listed sites and those of particular public interest. Use of drones to identify maritime historic heritage including wreck holds great promise. 	<ul style="list-style-type: none"> Stakeholders and workshops 	Adequate	Stable
IN5 The necessary socio-economic information is currently	2	<ul style="list-style-type: none"> SELTMP is assisting Reef managers and other decision-makers within the Great Barrier Reef region to incorporate the human 	<ul style="list-style-type: none"> Department of the Environment. 2014, The Social and Economic Long Term Monitoring Program for 	Adequate	Improving

available to address historic heritage		<p>dimension into their planning and management. SELTMP is not specific to historic heritage values, but rather considers the broader human interaction with the Reef.</p> <ul style="list-style-type: none"> • However, useful information is not yet available in relation to historic heritage. 	<p>the Great Barrier Reef (SELTMP) 2014, Marshall. N.A., Bohensky. E., Curnock. M., Goldberg. J., Gooch. M., Nicotra. B., Pert. P.L., Scherl. L., Stone-Jovicich. S., and Tobin. R.C., Townsville</p>		
IN6 The necessary Indigenous heritage information is currently available to address historic heritage	2	<ul style="list-style-type: none"> • For listed places and some other priority maritime sites, good information supports management • Knowledge and documentation of contact history and the roles of Indigenous people in the history of the region is limited. Older people with knowledge and oral history (for example of early conflicts) are passing away, but knowledge of some events is more openly discussed and documented than in the past. 	<ul style="list-style-type: none"> • Workshops 	Adequate	Stable
IN7 The necessary historic heritage information is currently available to address historic heritage	3	<ul style="list-style-type: none"> • See CO1 for more detail. • Historic heritage information about listed places and certain other maritime history is available for managers to apply, while information about non-listed sites and non-tangible heritage is more difficult to obtain. History of conservation and management of the GBR has been compiled through the 40th anniversary of GBRMPA and the 50th anniversary of the struggle for protection. 	<ul style="list-style-type: none"> • Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018-2021 • http://www.abc.net.au/news/2017-10-15/great-barrier-reef-50-years-on-campaigners-return-ellison-reef/9050106 	Adequate	Stable
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address historic heritage	2	<ul style="list-style-type: none"> • Leaseholders on Commonwealth islands play an important role in maintenance of light stations. • The SELTMP project has harnessed external expertise to advise on the human dimensions of reef management. • The citizen 'Eye on the Reef' monitoring and assessment program protects heritage values as it enables anyone who visits the GBRMP to collect and submit valuable information about reef health, marine animals and incidents. • Tourist operators also play a key role in promoting heritage values and appropriate behaviour by tourists around heritage sites. • Some of the WWII site information is compiled by volunteers. • Information relating to the struggle to conserve the reef was compiled but volunteers/ non-government organisations as part of the 50th anniversary celebrations 	<ul style="list-style-type: none"> • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). • Eye on the Reef' documentation • https://www.ninneyrise.com/audios-and-photos.html • Workshop discussions 	Adequate	Stable
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of historic heritage	3	<ul style="list-style-type: none"> • Formal advice is sought from the Australian Heritage Council for the Heritage Strategy and heritage management plans. • Industries (largely the tourism industry) are engaged in planning processes for heritage management throughout the GBR. • Local communities are informed in heritage management generally through the Local Marine Advisory Committees (LMACs) and through planning processes for specific places. 	<ul style="list-style-type: none"> • Staff and stakeholder information 	Adequate	Stable

PR2 The local community is effectively engaged in the ongoing management of historic heritage	2	<ul style="list-style-type: none"> • Webpages, videos and brochures have been prepared to increase the general understanding of the World Heritage Area and outstanding universal value. • During Heritage Week each year, public talks are given in Townsville on historic as well as Indigenous heritage. • The Authority works closely with community and partners that wish to act to protect the Reef's heritage they value, such as lighthouse enthusiasts and scuba divers searching for shipwrecks. • Signage at the places, the Authority's website and social media are the tools that the Authority employs to raise the awareness of people visiting the Commonwealth Heritage listed places. • The Reef Guardian Program is an important tool for transmitting (communicating) heritage values. • The Authority transmits heritage values with communication tools including pull-up banners, the Authority's website, videos on YouTube and posters, presentations during National Heritage Week and the online <i>Reef Discovery Course</i> for tourism operators that enables tourist operators to educate visitors to the Reef. Staff training and through annual staff forums dedicated to heritage, and presentations to Local Marine Advisory Committees also contribute to educating stakeholders 	<ul style="list-style-type: none"> • http://www.gbrmpa.gov.au/media-room/latest-news/heritage/2017/celebrating-great-barrier-reef-heritage • (https://www.youtube.com/watch?v=QpM8lk6U-pk&feature=player_embedded • https://www.youtube.com/watch?v=vPsKxFXqU0g&feature=player_embedded), • https://www.ninneyrise.com/audios-and-photos.html 	Adequate	Stable
PR3 There is a sound governance system in place to address historic heritage	3	<ul style="list-style-type: none"> • The protection of the Marine Park's historic heritage is a strong collaborative partnership between GBRMPA, Queensland's Department of Environment and Science, the Joint Field Management Program (JFMP), Queensland Parks and Wildlife Service and the Australian Maritime Safety Authority. Stakeholders play an important role. • However, the split between Commonwealth and State responsibilities, and the fact that a few sites are listed while others are not, makes little sense in the real world or to stakeholders. • There is legal protection for historic sites and objects throughout the region, and the Field Management Program delivers compliance and maintenance services across the boundaries. 	<ul style="list-style-type: none"> • GBR Intergovernmental Agreement 2015 • Field Management Program Business Plans and Annual Reports 	Adequate	Stable
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for historic heritage	2	<ul style="list-style-type: none"> • Both GBRMPA and the Field Management Program have regular process of performance monitoring and reporting, including against the Reef 2050 actions. • Listed places have regular monitoring requirements. 	<ul style="list-style-type: none"> • Progress reports against Reef 2050 targets • Field Management Program annual reports 	Adequate	Stable

PR5 Appropriate training is available to the managing agencies to address historic heritage	2	<ul style="list-style-type: none"> Since 2014, internal programs to increase staff understanding of heritage include: Presentations during National Heritage Week include: world heritage listing, historic heritage values and Indigenous heritage values; Public talks; Staff forums dedicated to instructing on heritage; and presentations to the Senior Management Team. Field Management Fact Files are prepared for the rangers with heritage key messaging which keeps them informed and updated. The rangers are then able to transmit this knowledge when meeting with users of the Marine Park. 	<ul style="list-style-type: none"> Workshop discussions 	Adequate	Stable
PR6 Management of historic heritage is consistently implemented across the relevant jurisdictions	3	<ul style="list-style-type: none"> The Joint Field Management Program works closely with partners including the Queensland Police Service, Maritime Safety Queensland and the Australian Federal Police. Consideration of potential impacts to historic heritage is consistently considered for joint Marine Park permits under the Intergovernmental Agreement. Inconsistency is seen in the resourcing of listed vs non-listed places. 	<ul style="list-style-type: none"> GBR Intergovernmental Agreement 2015 Workshop discussions 	Adequate	Stable
PR7 There are effective processes applied to resolve differing views/ conflicts regarding historic heritage	2	<ul style="list-style-type: none"> The draft GBRMPA draft Heritage Strategy 2017 outlines a conflict resolution process consistent with the Agency's corporate protocols. A conflict resolutions strategy for listed places in the Commonwealth Heritage Listed Places and Properties Heritage Strategy Information is not available about its implementation or the effectiveness of the processes 	<ul style="list-style-type: none"> Draft Heritage Strategy 2017 	Limited	Stable
PR8 Impacts (direct, indirect and cumulative) of activities associated with historic heritage are appropriately considered.	3	<ul style="list-style-type: none"> Refer CO3 and PL9 Impact assessment guidelines have been developed (action HA5 in the Reef 2050 Plan) to provide guidance on assessing possible impacts within the Marine Park. Three assessment guidelines (including risk matrices) have been developed for use when permit applications are received these include: <ul style="list-style-type: none"> Historic heritage assessment: maritime cultural heritage protection special management area Historic heritage assessment: other places of historic and social significance Historic heritage assessment: WWII features and sites, and voyages and shipwrecks. Risk assessments in relation to the issue have not been undertaken. However the new guidelines that were developed through the permission system will assist to address impacts. 	<ul style="list-style-type: none"> Historic impact assessment guidelines http://www.gbrmpa.gov.au/_data/assets/pdf_file/0004/248980/Historic-heritage-value-assessment-guidelines.pdf Queensland heritage impacts assessment guidelines (including protected areas) https://www.qld.gov.au/environment/assets/documents/land/heritage/heritage-impact-statement.pdf 	Adequate	improving

PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding historic heritage	3	<ul style="list-style-type: none"> Where major planning and works are undertaken, the best available information is used to ensure good management decisions. See PR8 for list of impact guidelines 	<ul style="list-style-type: none"> As above 	Adequate	Improving
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding historic heritage	3	<ul style="list-style-type: none"> Where major planning and works are undertaken, the best available information is used to ensure good management decisions. 	<ul style="list-style-type: none"> Social and Economic Longterm Monitoring Project Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). Marshall, N.A., Marshall, P. and Smith, A.K. 2017. Managing for aesthetic values in the Great Barrier Reef-Identifying indicators and linking reef aesthetics to reef health. Report to the National Environmental Science Programme. Reef and Rainforest Research Centre Limited, Cairns. 	Adequate	Improving
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding historic heritage	NA				
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding historic heritage	3	<ul style="list-style-type: none"> Where detailed information is available about heritage values, this is taken into account in management decisions, using planning and permissions processes. Problems arise where there is no recorded information: integration of cultural heritage assessments or searches by experts is needed before decisions are made. See impact assessment guidelines above. 	<ul style="list-style-type: none"> Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Adequate	Improving
PR13 Relevant standards are identified and being met regarding historic heritage	2	<ul style="list-style-type: none"> Guiding principles for historic heritage management have been updated and defined in the Heritage Strategy and in the plans and strategies relating to listed places. Resources are not available to provide a high level of documentation and protection to many of the historic sites. 	<ul style="list-style-type: none"> Dent Island Lightstation Heritage Register Lady Elliot Island Lightstation Heritage Register Low Island and Low Islets Lightstation Heritage Register Great Barrier Reef Marine Park Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018–21 	Adequate	Improving

PR14 Targets have been established to benchmark management performance for historic heritage	2	<ul style="list-style-type: none"> Targets are established in the Field Management Program. The Reef 2050 Plan has set high-level targets but these are mostly focussed on planning and impact assessments rather than implementation of actions. 	<ul style="list-style-type: none"> Joint Field Management Business Plans and Strategies 	Adequate	Improving
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for historic heritage	3	<ul style="list-style-type: none"> Actions relating to cultural heritage in the Reef 2050 Plan have been achieved as follows: <ul style="list-style-type: none"> (HA4) Updated Heritage Strategy is underway and should be released in 2018 (HA5) Guidelines to inform Marine Park permittees and assessors about requirements when assessing places with heritage value have been finalised. HA6 The State planning policy for Cultural heritage establishes requirements for local government planning instruments to identify local heritage places and areas and facilitate their conservation (operations in July 2017). 18 new State Planning Policy compliant local government planning schemes have commenced in the basin boundary area including local heritage provisions. 9 schemes are yet to be finalised. HA7 Considerable work has been undertaken to document the heritage values in the Great Barrier Reef and this is included in an internal heritage register that includes: <ul style="list-style-type: none"> An inventory with heritage information for islands and reefs; An in-house database for Commonwealth Islands; A list of aircraft wrecks within the Great Barrier Reef; and Heritage impact assessment guidelines from Woppaburra Traditional Owners. HA8: Complete heritage management plans for Low Isles and North Reef light stations: A draft heritage management plan for Low Islet Lightstation and Low Isles to achieve is currently being prepared to satisfy the Reef 2050 HA8 action. It will be a joint plan between the Great Barrier Reef Marine Park Authority and AMSA. North Reef Light station heritage management plan has not yet commenced. HA9/ HA10 relate to development, updating and implementation of six shipwreck conservation plans (See PL1 for details). These are underway and should all be complete and up to date by 2020. 	<ul style="list-style-type: none"> Woppaburra Traditional Owners Joint Field Management Business Plans and Strategies GBRMPA draft Heritage Strategy 2017 GBR Intergovernmental Agreement 2015 Dent Island Lightstation Heritage Register Lady Elliot Island Lightstation Heritage Register Low Island and Low Islets Lightstation Heritage Register Great Barrier Reef Marine Park Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018–21 	Adequate	Improving

		<ul style="list-style-type: none"> HA11 Desktop research has commenced and been finalized for the Whitsunday priority area. Fieldwork has been conducted and the report is being drafted. 			
OP2 Implementation of management documents and/or programs relevant to historic heritage have progressed in accordance with timeframes specified in those documents	3	<ul style="list-style-type: none"> See OP1: progress is good according to timeframes. 	<ul style="list-style-type: none"> FMP Annual Business Plan FMP Annual Reports 	Adequate	Stable
OP3 The results (in OP1 above) have achieved their stated management objectives for historic heritage	3	<ul style="list-style-type: none"> Progress towards achieving objectives is good, but limited by resources and the ability to document and understand many of the historic heritage places and objects. 	<ul style="list-style-type: none"> Woppaburra Traditional Owners Joint Field Management Business Plans and Strategies GBRMPA draft Heritage Strategy 2017 GBR Intergovernmental Agreement 2015 Dent Island Lightstation Heritage Register Lady Elliot Island Lightstation Heritage Register Low Island and Low Islets Lightstation Heritage Register Great Barrier Reef Marine Park Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018–21 	Adequate	Stable
OP4 To date, products or services have been produced in accordance with the stated management objectives for historic heritage	3	<ul style="list-style-type: none"> See OP1: progress is good according to timeframes. 	<ul style="list-style-type: none"> Woppaburra Traditional Owners Joint Field Management Business Plans and Strategies GBRMPA draft Heritage Strategy 2017 GBR Intergovernmental Agreement 2015 Dent Island Lightstation Heritage Register Lady Elliot Island Lightstation Heritage Register Low Island and Low Islets Lightstation Heritage Register Great Barrier Reef Marine Park Commonwealth Heritage Listed Places and Properties Heritage Strategy 2018–21 	Adequate	Stable

OP5 Effective knowledge management systems regarding historic heritage are in place within agencies	3	<ul style="list-style-type: none"> • There do not appear to be significant efforts to research and record living cultural heritage (including through interviews and photographic collections of older people with knowledge and experience of the reef). • Knowledge management systems are outlined in CO1 • Commonwealth Heritage List - GBR Heritage Register • All Commonwealth agencies must produce a statutory register of listed places, available to the public, that sets out, for each place it owns or controls, the heritage values (if any) of that place. • Australian historic shipwrecks database ran by DoEE. GBRMPA has provided data on maritime cultural heritage in the GBR, • Draft GBRMP heritage register entries for Dent Island Lighthouse, Lady Elliott Island Lighthouse, and Low Island and Low Islet Lighthouse were finalised in October 2017. • The GBR Heritage Register is aimed to identify whether the heritage item is within the GBR Marine Park, the Region or the GBWHA, via spatial mapping/ GPS coordinates and be able to subsequently be linked to spatial layers by either a centroid or polygon. Register is under development. • Islands register – available within GBRMPA only. • Management of scientific information procedures are in place and are delivered at whole-of-GBRMPA using RefWorks as its database and citation management tool. • Spatial information and datasets arising from research conducted on in the Marine Park are housed and managed by the GBRMPA Spatial Data Centre. 	<ul style="list-style-type: none"> • Commonwealth Heritage List - GBR Heritage Register 	Adequate	Improving
OP6 Effective systems are in place to share knowledge on historic heritage with the community	3	<ul style="list-style-type: none"> • Within limitations of funds and staff, information is shared through many media outlets. See PR 2 	<ul style="list-style-type: none"> • http://www.gbrmpa.gov.au/media-room/latest-news/heritage/2017/celebrating-great-barrier-reef-heritage • (https://www.youtube.com/watch?v=QpM8Ik6U-pk&feature=player_embedded • https://www.youtube.com/watch?v=vPsKxFXqU0g&feature=player_embedded), • https://www.ninneyrise.com/audios-and-photos.html 	Adequate	Improving
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing historic heritage and	3	<ul style="list-style-type: none"> • There has been progress in planning for and documenting historic values, but there are still many significant sites without full documentation, mapping or protection. 	<ul style="list-style-type: none"> • Staff discussions and documents referenced above 	Adequate	Improving

moving towards the attainment of the desired outcomes.		<ul style="list-style-type: none"> • A substantial gap in the GBRMPA's current practice for protecting heritage is integration of heritage into all decision making, especially relating to development approvals. • Special Management Areas have been declared for two Catalina wrecks • Assessment guidelines have been produced. • Draft Heritage Strategy has been developed. 			
OC2 The outputs relating to historic heritage are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	2	<ul style="list-style-type: none"> • Outputs listed in OP1 show progress but relate mainly to planning and documentation, and there remain some gaps in protection. • Maritime cultural heritage sites, including some that contain human remains, remain under threat, and many have not been documented or mapped. • The development approval process may not yet give full protection to historic sites. 	<ul style="list-style-type: none"> • Staff discussions and documents referenced above 	Adequate	Stable
OC3 The outputs (refer OP1 and 3) for historic heritage are reducing the major risks and the threats to the Great Barrier Reef	2	<ul style="list-style-type: none"> • Major risks to historic cultural heritage and aesthetic values include climate change, cyclones, turbidity and sedimentation. These major threats are not being effectively reduced. In addition, historic sites will naturally deteriorate over time without specific restoration measures. • Aircraft and vessel patrols include the two WWII Catalina seaplane wrecks and historic shipwreck sites to deter and detect illegal fishing and unpermitted access to exclusion zones. In addition to their Marine Park Inspector powers, several joint Field Management Program (FMP) staff also have enforcement powers under the Historic Shipwrecks Act 1976, and undertake investigations of breaches of this legislation – such as scuba divers illegally entering the Yongala shipwreck. 	<ul style="list-style-type: none"> • Staff discussions 	Limited	Stable
OC4 Use of the Great Barrier Reef relating to historic heritage is demonstrably environmentally sustainable	4	<ul style="list-style-type: none"> • Use/access of heritage sites such as shipwrecks, Low Isles, Endeavour Reef and the tourism ventures at Low Isles and Lady Elliot Island are considered environmentally sustainable. • Few impacts have been recorded from human use in relation to historic heritage. 	<ul style="list-style-type: none"> • Staff discussions 	Limited	Stable
OC5 Use of the Great Barrier Reef relating to historic heritage is demonstrably economically sustainable	3	<ul style="list-style-type: none"> • The SELTMP program may be of assistance to understand the economic sustainability of historic heritage values within the GBRMP. • Use relating to historic heritage is usually part of more general use of the GBR, except where people are specifically visiting historic shipwrecks • The Yongala wreck is visited regularly by tourists and recreational users, and is a good example of economic sustainability. The site is Australia's largest and most intact historic shipwreck and is considered one of the top ten wrecks dives in the world. 	<ul style="list-style-type: none"> • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	Limited	Stable

<p>OC6 Use of the Great Barrier Reef relating to historic heritage is demonstrably socially sustainable, in terms of understanding and/or enjoyment</p>	<p>3</p>	<ul style="list-style-type: none"> • The Reef's environment contributes to the community's wellbeing, both locally and more indirectly throughout Australia and the world. The Reef's biodiversity, geomorphological features, heritage values and natural beauty supports people economically, provides them with food and enriches their lives. • Benefits vary according to people's cultural connections, experiences, personal perspectives, and dependence upon and familiarity with the Region 	<ul style="list-style-type: none"> • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). • Marshall, N.A., Marshall, P. and Smith, A.K. 2017. Managing for aesthetic values in the Great Barrier Reef-Identifying indicators and linking reef aesthetics to reef health. Report to the National Environmental Science Programme. Reef and Rainforest Research Centre Limited, Cairns. 	<p>Limited</p>	<p>Stable</p>
<p>OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address historic heritage</p>	<p>4</p>	<ul style="list-style-type: none"> • Partnerships are essential in management of historic sites, as the amount of work required would be beyond the resources of any management agency. This especially applies to sites where restoration works are needed. • Leaseholders on Commonwealth islands play an important role in maintenance of light stations. • The Raine Island Recovery Project is a five year, \$7.95M collaboration between the Authority, BHP Billiton, the Queensland Government, the Great Barrier Reef Foundation and the Traditional Owners; the Wuthathi and Kemer Kemer Meriam Nation (Ugar, Mer, Erub). • The Field Management Program works closely with partners including the Queensland Police Service, Maritime Safety Queensland and the Australian Federal Police in compliance and protection of all heritage values. • The SELTMP project has harnessed external expertise to advise on the human dimensions of reef management. • The citizen 'Eye on the Reef' monitoring and assessment program protects heritage values as it enables anyone who visits the GBRMP to collect and submit valuable information about reef health, marine animals and incidents. This could include any damage or threats to historic sites. • Low Isles Preservation Society (LIPS) play a role in management of the Low Isles Lighthouse. They have set up and operate a small museum for day visitors using one of the lightstation's buildings, which is viewed by up to 50,000 people each year. • Tourist operators also play a key role in promoting heritage values and appropriate behaviour by tourists around heritage sites. 	<ul style="list-style-type: none"> • http://www.npsr.qld.gov.au/raineisland/ • LMAC • Low Isles Preservation Society • GBRMPA Heritage website • Marshall, N.A. Curnock, M., Pert, P.L., Williams, G. (2017) The Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef . Final Report. Report to the Great Barrier Reef Marine Park Authority. Townsville, Australia (220pp.). 	<p>Adequate</p>	<p>Stable -or improving</p>

Table 30 Calculation of grades for heritage (Indigenous)

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to Indigenous heritage are understood by managers	3	<ul style="list-style-type: none"> In all of this table, it is noted that Aboriginal and Torres Strait Islanders are important as managers of their own sea country, as well as partners in management with government agencies. Many of the values understood by these communities are not documented in written form and may not be shared with other people. Indigenous heritage includes tangible and intangible components of Aboriginal and Torres Strait Islander peoples' land and sea country in accordance with their practices, observances, customs, traditions, beliefs or history. GBRMPA considers Indigenous heritage components in four groups: <ul style="list-style-type: none"> Sacred sites, sites of particular significance and places important for cultural tradition; Aboriginal and Torres Strait Islander structures, technology, tools and archaeology; Stories, songlines, totems and languages; Cultural practices, observances, customs and lore. The 2014 Strategic Assessment noted that there is a lack of information recorded or known about the location, condition and trend of most Indigenous heritage values, and this is still the case. However, there are efforts being made to improve the situation. Within GBRMPA, increasing emphasis has been placed on understanding Indigenous cultural heritage, with the development of the draft Aboriginal and Torres Strait Islander Heritage Strategy a major milestone. Internal engagement and a survey informed the development of a Reconciliation Action Plan. Generally staff felt the agency had an above average understanding of Indigenous culture. Involvement in the development of the Aboriginal and Torres Strait Islander Heritage Strategy included more than 80 Traditional Owners in discussions on their heritage. Consultations supported 2014 assessment findings that 	<ul style="list-style-type: none"> Strategic Assessment Report Draft Aboriginal & Torres Strait Islander Heritage Strategy Guidelines: Woppaburra Traditional Owner Heritage Assessment Outlook Report 2014 Guidelines: Traditional Owner Heritage Assessment Workshop and staff consultation https://www.npsr.qld.gov.au/raineisland/ Field Management Program annual report (2016-17 summary) Websites for some of the Aboriginal and Torres Strait Islander communities demonstrate understanding of Indigenous culture relating to the Reef, as well as some of the activities to pass this understanding to others. For examples, see GIRRIGUN and YUKU BAJA MULIKU Video about TUMRA also shows knowledge of Indigenous heritage Reef Integrated Monitoring and Reporting Program (RIMReP) 	Adequate	Improving

		<p>Traditional Owners hold knowledge on values, but managing agencies do not.</p> <ul style="list-style-type: none"> • Understanding of culture by managers in the Field Management Program has been enhanced in recent years with better opportunities to work alongside Indigenous Rangers and Traditional Owners, through their inclusion on vessel trips. Many QPWS staff in the GBR region have also undergone training in cultural capability. • Pilot work in a few sites shows good promise. Woppaburra Guidelines, developed with Woppaburra Traditional Owners and adopted in July 2017, map the important cultural heritage values in the Keppel Islands region. Intention is to develop similar guidelines with other Traditional Owner groups within the GBR Region to better protect Indigenous heritage values. • Raine Island Recovery project is a partnership with Traditional Owners and park managers to monitor and restore the values. This has resulted in increased understanding of all values, including Indigenous culture. • Curtis Island NP Indigenous Engagement and Cultural Heritage Strategy has been developed in partnership with Gidarjil Aboriginal Corporation, covering four Traditional Owner groups. • By the end of 2017 a total of nine jointly managed island national parks (Cape York Peninsula Aboriginal land) have been dedicated under four separate Indigenous Management Agreements. These agreements have a strong focus on protection and management of cultural values, but there is still a lot of work to do in documenting values and making sure all managers understand them. • Indigenous structures, technology, tools and archaeology: Indigenous structures (for example fish traps), tools, technologies and archaeology have not been systematically identified throughout the Region. • As part of RIMReP, social and economic monitoring is being developed under SELTMP (CSIRO's Social and Economic Long Term Monitoring Program), new questions were inserted into the Survey in 2017 to improve knowledge of the wider community's perceptions and understanding of GBR heritage (including cultural heritage). 			
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		<ul style="list-style-type: none"> GBRMPA recognises gaps in its knowledge of the following specific aspects of Indigenous heritage values and their appropriate management: <ul style="list-style-type: none"> places of significance for Traditional Owners, including sacred sites, spiritual sites, burial sites, songlines and ceremonial sites — some of which may not be at all obvious tangible places of importance for Indigenous people, including middens, fish traps, scarred trees, camp sites and rock art sites archaeological sites or Indigenous places recognised as being of national significance (for example, the axe quarry on South Molle Island and the 'contact' rock art of Flinders Island) intangible story places and songlines and their connections to biodiversity values and ecological processes places or totems and the reasons they are of contemporary value to Indigenous people. Indigenous place names and language relevant to the Region. Some have been recorded (for example, Bandjin Reefs or Woopaburra place names) but many more need to be before this knowledge is lost. 			
CO2 The current condition and trend of values relevant Indigenous heritage are known by managers	2	<ul style="list-style-type: none"> QPWS has formally established a program to regularly report on the state of values of protected areas, including the condition of Indigenous heritage values. However, this has not been fully applied yet. The most recently updated Whitsundays Plan of Management contains a far more detailed coverage of Indigenous values, and their protection, than was contained in earlier versions of the Plan. Most Indigenous Heritage values are related to the natural environment, so knowledge of the condition of natural values is also highly relevant to this criteria. Monitoring of culturally significant (cultural keystone) species and their habitats is undertaken by numerous Traditional Owner Groups along the GBRR (see also TUMRA table). Under the Reef 2050 RIMReP, an Expert Indigenous Heritage Working Group has formed and is developing Indigenous heritage indicators which can then be used for measuring condition and trend. 	<ul style="list-style-type: none"> Whitsunday Islands Plan of Management Report on the Social and Economic Long Term Monitoring Program Draft Aboriginal and Islander Heritage Strategy 	Adequate	Improving

CO3 Impacts (direct, indirect and cumulative) associated with Indigenous heritage are understood by managers.	3	<ul style="list-style-type: none"> • See information in CO2 • Impacts relate to impacts on natural values with Heritage significance, deterioration of significant sites and the loss of cultural knowledge or links. • Increasing emphasis on heritage values in the draft Strategic Assessment Reports and the draft Outlook Report have led to an improved understanding of the impacts on Indigenous heritage values of the Region. • There remains a knowledge gap within GBRMPA where managers' understanding of impacts to Indigenous heritage are not as well developed as for biophysical values. • In the development of the Woppaburra Traditional Owner Assessment Guidelines, GBRMPA undertook a comprehensive risk assessment of potential impacts to indigenous heritage (see Table 2 in the Guidelines). This is a useful model to apply in other areas. • Improvements to the permission system also require public consultation, including targeted Traditional Owner consultation for proposed higher risk activities (i.e. assessment approaches Public Information Package, Environmental Impact Statement and Public Environmental Report). This has not yet been widely applied. • In 2017 GBRMPA developed a draft cumulative impact management policy (Reef 2050 Plan action EHA19). 	<ul style="list-style-type: none"> • Guidelines: Traditional Owner Heritage Assessment • Guidelines: Woppaburra Traditional Owner Heritage Assessment • Traditional Owner Heritage Assessment Guidelines • Draft Aboriginal and Islander Heritage Strategy • Workshop and staff consultation • https://www.npsr.qld.gov.au/raineisland/ • Field Management Program annual report (2016-17 summary) • Draft Cumulative Impact Management Policy – note TUMRA case study 	Adequate	stable
CO4 The broader (national and international) level influences relevant to Indigenous heritage are understood by managers.	4	<ul style="list-style-type: none"> • National and international obligations to protect Indigenous heritage are well understood by managers in GMRMPA and the Field Management Program. Increasing emphasis on heritage values in the Strategic Assessment Reports and the 2014 Outlook Report have led to an improved understanding of the broader influences on Indigenous heritage values of the Region. • A good summary of these agreements is included in the draft GBRMPA Heritage Strategy, but it is uncertain when this will be finalised or available to the public. • Traditional Owner groups have a high degree of awareness of the International context, with people attending a number of International gatherings. For example, 12 Traditional Owners attended the IUCN World Conservation Congress in Hawaii in September 2016 and several attended the International Marine Protected Areas Congress in 2017. 	<ul style="list-style-type: none"> • Draft Aboriginal and Islander Heritage Strategy • Draft GBRMPA Heritage Strategy • International Union for Conservation of Nature 2017, World Heritage Outlook • Strategic Assessment Report • Mackay, R. 2017, Australia state of the environment 2016: heritage: independent report to the Australian Government Minister for the Environment and Energy, Department of the Environment and Energy, Commonwealth of Australia, Canberra • Department of the Environment and Heritage Protection., 2015, Queensland Heritage Strategy: protecting, investing in and connecting Queensland's story, Department of the Environment and Heritage Protection, Brisbane 	Adequate	Improving

		<ul style="list-style-type: none"> • Management Plans for protected areas in the region recognise national and international obligations including protection of cultural values under the <i>Nature Conservation Act 1992 and The World Heritage Convention 1972</i>. • Managers' awareness of obligations under other multi-national agreements such as the Convention on Biological Diversity and the Declaration of Rights of Indigenous Peoples are more limited, but the intent of these obligations is reflected in relevant plans and strategies for the Region. 			
CO5 The stakeholders relevant to Indigenous heritage are well known by managers.	4	<ul style="list-style-type: none"> • There is a clear list of Traditional Owners groups for the Great Barrier Reef Region. • Traditional Owners within the Region have been identified and are in regular contact with managers both at GBRMPA and within the Field Management Program. In some cases, there is uncertainty about who has the right to speak for country. • The Indigenous Reef Advisory Committee meets three times a year and is a conduit of information between GBRMPA and Traditional Owner groups. How effective is this at present? • As part of the implementation of the Woppaburra pilot project, a consultation process is being trailed whereby Woppaburra key contacts are consulted on location-specific proposed permitted activities within their TUMRA area. • GBRMPA has strong engagement with Traditional Owners through the Land and Sea Country Partnerships program and the joint Field Management Program, which has a specific work strategy on Indigenous engagement. • In 2015-16 the Indigenous Partnerships team at GBRMPA engaged 569 Traditional Owners (see CO1 - LSCP report for 15-16 link in evidence). This is equivalent to a meeting with Traditional Owners every 3.5 days. The distance travelled by the 19 GBRMPA staff to meet with Traditional Owners in 15-16 amounted to 181,000km. 87 Traditional Owners also travelled to meet with us – travelling an equivalent of 127,900 km. • Traditional Owners spent 420 days on field management vessels in 2016-17 and 574 in 2015-16; a significant increase from 143 days in 2013-14. 	<ul style="list-style-type: none"> • Website information (GBRMPA) includes list of Traditional Owner groups • Guidelines: Woppaburra Traditional Owner Heritage Assessment • Field management Program Annual Reports reflect good knowledge of the Traditional Owner groups Field Management Program annual report (2016-17 summary) • Information about the Indigenous Reef Advisory Committee • Video about TUMRA demonstrates Traditional Owners and other managers working together 	Adequate	Stable

		<ul style="list-style-type: none"> In 2016-17 GBRMPA worked with its strong network of Traditional Owners/TUMRA partners to undertake a series of engagement workshops to better understand and protect heritage. 			
PLANNING					
PL1 There is a planning system in place that effectively addresses Indigenous heritage	3	<ul style="list-style-type: none"> A number of overlapping planning systems relate Indigenous heritage in the Region. The Reef 2050 Plan raised the profile of Indigenous heritage. 23 Reef 2050 Plan actions specifically relate to Traditional Owners. The Reef 2050 Indigenous Implementation Plan proposes pathways for implementing the Traditional Owner- specific Reef 2050 Plan actions as a group. The Reef 2050 Plan Investment Framework identifies Traditional Owner actions as one of six priority areas for future investment stating that: “a key priority for investment is to improve involvement of Traditional Owners in the delivery of Reef 2050 actions”. A draft Aboriginal and Torres Strait Islander Heritage Strategy is currently available for public comment. In addition, the planning system for Indigenous Heritage includes Plans of Management for different sections of the Region, Management Plans for protected areas under the <i>Nature Conservation Act 1992</i> and for Indigenous Protected Areas, Sea Country Plans compiled by Indigenous groups and Corporations. The most recently updated Plan of Management for the Whitsundays section of the Reef contains a far more detailed coverage of Indigenous values, and their protection, than was contained in earlier versions of the Plan, and all strategies in the Plan recognised the involvement and aspirations of Indigenous people. Special Management Areas (SMAs) could be used to protect isolated/known tangible indigenous heritage e.g. fish traps, middens, underwater burial grounds from all or certain types of activities e.g. anchoring Currently there are no SMAs in place specifically for the purpose of Traditional Use activities or Indigenous heritage protection. Sea Country Plans (and Land and Sea plans) help Indigenous communities describe their objectives for the use, conservation and management of sea country and to 	<ul style="list-style-type: none"> Reef 2050 Plan Draft Aboriginal and Islander Heritage Strategy Whitsunday Plan of Management Yirrganydji Sea Country Plan List of IPA plans in Queensland Queensland protected area management plans 	Adequate	Improving

		<p>work with others to achieve them. Sea Country Plans seeks to marry Indigenous community priorities and aspirations with those of others with an interest in sea country, including government. They have been developed for some Indigenous Protected Areas, but can potentially be developed for sea country of any Traditional Owner group.</p> <ul style="list-style-type: none"> The QPWS Values Based Planning Framework provides a planning and resourcing platform that clearly recognises Indigenous cultural values as a significant focus of protected area planning. For example, the 2017 Hinchinbrook Island National Park Management Plan identifies Traditional Owner connection to country as a 'key value' and, accordingly, provides desired outcomes and strategic management directions to protect the island's Indigenous heritage values. 			
PL2 The planning system for Indigenous heritage addresses the major factors influencing the Great Barrier Reef Region's values.	3	<ul style="list-style-type: none"> The planning system outlined in PL1 above addresses many of the factors influencing Indigenous Heritage values, including recreation and tourism use and commercial extraction activities, but the root causes of the two of the main impacts on the values – climate change and the loss of traditional knowledge – are complex and difficult to address through such plans. The Great Barrier Reef Zoning Plans expressly acknowledge the rights and interests of Aboriginal and Torres Strait Islanders in the Marine Parks by providing for the management of the Traditional Use of Marine Resources, including traditional hunting, in accordance with Aboriginal and Torres Strait Islander custom and tradition. 	<ul style="list-style-type: none"> Reef 2050 Plan Draft Aboriginal and Islander Heritage Strategy Whitsunday Plan of Management Yirrganydji Sea Country Plan List of IPA plans in Queensland Queensland protected area management plans 	Adequate	Stable
PL3 Actions for implementation regarding Indigenous heritage are clearly identified within the plan	3	<ul style="list-style-type: none"> Actions regarding Indigenous Heritage values and the aspirations of Indigenous people are now clearly stated in the hierarchy of plans including the Reef 2050 Plan (23 actions), the draft Indigenous Heritage Strategy, Sea Country Plans and the more recently completed or revised area-based plans (see PL1 for list). Other area-based plans to be revised in the future will also pay greater attention to these aspects, but some current management plans are still lacking in their relevant detail. Revised Plans of Management identify the need to work with Traditional Owners to address issues and define 	<ul style="list-style-type: none"> Managing Traditional Use Draft Aboriginal and Islander Heritage Strategy Indigenous partnerships section plan Field Management Business Plans Reef 2050 Plan has 17 specific actions that relate to Traditional Owners. Queensland protected area management plans Whitsunday Plan of Management 	Adequate	Improving

		<p>aspirations, rather than providing a prescriptive list of issues.</p> <ul style="list-style-type: none"> Field Management Annual Business Plans now recognise Indigenous engagement as a standalone high-level strategy with specific targets, performance indicators and activities that promote indigenous partnerships in heritage management 			
PL4 Clear, measurable and appropriate objectives for management of Indigenous heritage have been documented	3	<ul style="list-style-type: none"> Clear and appropriate objectives relating to Indigenous Heritage protection are stated in the hierarchy of plans discussed in PL1. The Field Management Program sets clear and measurable objectives in its business planning. 	<ul style="list-style-type: none"> Field Management Business Plan Reef 2050 Plan Draft Aboriginal and Islander Heritage Strategy Whitsunday Plan of Management List of IPA plans in Queensland Queensland protected area management plans 	Adequate	Improving
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to Indigenous heritage	3	<ul style="list-style-type: none"> Actions in Indigenous partnerships are monitored and reported upon with adequate systems through the Land and Sea Country Partnerships Program(LSCPP) reporting. Monitoring information in relation to Indigenous Heritage values is very limited except for those related to TUMRA programs and key natural values. RimREP has an Indigenous Heritage theme expert Working Group which will develop list of Indicators to be monitored, but this system is not yet operational 	<ul style="list-style-type: none"> LSCPP progress/annual reports and MERI Plan Independent assessment of Land and Sea Country Partnerships Program 2017 by Knott and Associates 	Limited	Improving
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address Indigenous heritage	3	<ul style="list-style-type: none"> Advisory committees include the Indigenous Reef Advisory Committee (IRAC), Indigenous representation in the Tourism Reef Advisory Committee and the Reef Advisory Committees. There has been extensive engagement of Indigenous people in the drafting of the Indigenous Heritage Strategy. Development of the GBRMP Blueprint (2017) involved intensive engagement with Traditional Owners through the IRAC. All permit holders with permissions in the Woppaburra TUMRA area were informed of the Woppaburra heritage assessment guidelines when they took effect in June 2017. An Indigenous Heritage Theme Expert Working Group was established as part of RIMReP. All on the group identify as Aboriginal or Torres Strait Islander people. 	<ul style="list-style-type: none"> Indigenous Advisory Committee records Records of meetings to discuss the Draft Aboriginal and Islander Heritage Strategy 	Adequate	improving
PL7 Sufficient policy currently exists to effectively address Indigenous heritage	3	<ul style="list-style-type: none"> The new Indigenous Heritage Strategy will effectively address the broad picture of Indigenous policy issues for GBRMPA, in conjunction with other policies in the organisation including those relating to permissions. 	<ul style="list-style-type: none"> Draft Aboriginal and Islander Heritage Strategy Draft Policy on Traditional Use of Marine Resources (GBRMPA/NPSR) 	Adequate	improving

		<ul style="list-style-type: none"> • Gaps remain in the policy settings for other organisations affecting Indigenous issues, including QPWS and local governments. • The NPSR Cultural Capability Action Plan 2017-2021 provides a blueprint for how QPWS is to meet its obligations under Queensland's public sector-wide Cultural Capability Framework. Principles and activities promote the recognition, respect and valuing of indigenous culture which should be reflected in national park service delivery. • Range of policies in are in place in management agencies relation to Indigenous employment and engagement, cultural data access and storage, use of Traditional Marine Resources. 	<ul style="list-style-type: none"> • Guidelines: Woppaburra Traditional Owner Heritage Assessment • Traditional Owner Heritage Assessment Guidelines • DMS4 Cultural Protocol/Guidelines/Data Sharing Agreement Template 		
PL8 There is consistency across jurisdictions when planning for Indigenous heritage	3	<ul style="list-style-type: none"> • The Great Barrier Reef Intergovernmental Agreement was updated in 2015 and commits to "ensure that Indigenous traditional cultural practices continue to be recognised in the conservation and management of the Great Barrier Reef (IGA p. 7). • Overlaps in planning, and the separation of islands from the adjacent sea country in agency plans, can be confusing for Indigenous people and for the general public. • There is close cooperation and consistency between the Field Management Program (QPWS) and GBRMPA in relation to Indigenous Heritage planning, and a consistent approach with a joint strategy for Indigenous engagement. TUMRAs are jointly approved, and Reef 2050 Plan is a joint product. • The Draft Policy on Traditional Use of Marine Resources is a joint policy for consistency (GBRMPA/NPSR) • There is strong alignment between the GBRMPA and QPWS under the joint Field Management Program, which includes a strategy for Indigenous Engagement. In 2016-17 an interdepartmental informal working group was formed to increase alignment and consistency between Indigenous Ranger programs (run by EHP and -PM&C), the joint field management program and the TUMRA program. 	<ul style="list-style-type: none"> • Great Barrier Reef Intergovernmental Agreement 2015 	Adequate	Improving
PL9 Plans relevant to Indigenous heritage provide certainty regarding where uses may occur, the type of activities allowed or	3	<ul style="list-style-type: none"> • Plans of Management in high use areas clearly articulate and manage conflicting uses which may affect indigenous heritage values in Cairns, Whitsundays and Hinchinbrook. Plans of Management however they do not explicitly identify actions to manage indigenous heritage. 	<ul style="list-style-type: none"> • Guidelines: Woppaburra Traditional Owner Heritage Assessment • Traditional Owner Heritage Assessment Guidelines • Media release: http://www.gbrmpa.gov.au/media-room/latest-news/sea-country-partnerships/2017/woppaburra-traditional-owner-values-protected-under-new-guidelines 	Adequate	Stable

specifically disallowed,, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.		<ul style="list-style-type: none"> • Woppaburra Guidelines developed with Woppaburra Traditional Owners map the important cultural values in the Keppel Islands region to help inform permit assessments by GBRMPA. Intention is to develop similar guidelines with other Traditional Owner groups within the GBR Region to better protect indigenous heritage. • Traditional Owner Heritage Assessment guidelines provide important information for consideration when assessing the potential impacts from hazards derived from proposed activities. In consultation with Traditional Owners (particularly through targeted consultation with assessment approaches) appropriate avoidance and mitigation measures should be identified. • The permission system provides avenues for protecting Indigenous heritage values permitted activities only when the activity is location specific and when the activity is of higher risk. The Native Title Notification process which applies to all permission applications, does not currently assist in protecting Indigenous heritage values. • For 'lower risk activities' (such as tourism activities and some research activities) the planning framework can protect Indigenous heritage values. 	<ul style="list-style-type: none"> • Whitsunday Plan of Management • Queensland protected area management plans 		
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address Indigenous heritage	3	<ul style="list-style-type: none"> • The 2017 Queensland Budget provided a funding boost for Indigenous Land and Sea Rangers, to bring them to a total of 100 positions across Queensland over the next four years. This program funds 28 Indigenous Rangers in the Great Barrier Reef Catchment area. • The Land and Sea Country Partnerships Program allocates ~\$2 million per year to facilitate the expansion of the TUMRA program, IRAC, and Indigenous Engagement led by GBRMPA. This now forms part of GBRMPA's stabilised budget. • In 2016 the Working on Country Program (coordinated through Department of Prime Minister and Cabinet) funded 109 Indigenous Ranger Groups and 777 Rangers, 28 of these in the Great Barrier Reef Region). • \$2 million dollar injection into Indigenous Partnerships (under an MOU with Prime Minister & Cabinet) to deliver a Specialised Indigenous Ranger Program from 2015-2017. 	<ul style="list-style-type: none"> • Working On Country – Indigenous Rangers – see link to interactive map of Ranger groups and their activities here: https://www.pmc.gov.au/indigenous-affairs/environment/indigenous-land-and-sea-management-projects • Indigenous Land and Sea Rangers: https://environment.ehp.qld.gov.au/land-sea-rangers/ 	Adequate	Improving

		<ul style="list-style-type: none"> • \$440,000 from RIMReP is enabling the development of the cultural protocol and data negotiation template, testing of these products, and storage of any information collected (DMS4). • Lack of consistent and long-term funding limits Traditional Owner involvement in managing sea country in some parts of the Region. 			
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address Indigenous heritage	3	<ul style="list-style-type: none"> • While more capacity would assist in developing Indigenous Heritage guidelines across the Regions, GBRMPA has been well resourced to build relationships and support heritage protection, The Field Management Program and Indigenous Ranger Programs are also well resourced for this aspect of their work. • Representation of Indigenous interests in senior staff fora in GBRMPA has declined. • Advice from advisory committees and other Traditional Owner forums are also critical human resources feeding into management agencies. • The ability to contract Traditional Owners groups for particular tasks and to 'cross-deck' with Traditional Owners on vessels has also increased capacity, though this capacity declined in 2016-17 due to other demands on field management staff, particularly from Cyclone Debbie response. 420 days of Traditional Owner presence on field management vessels was recorded in 2016-17, down from 574 days in 2015-16, but a sharp increase from 143 days in 2013-14. 	<ul style="list-style-type: none"> • FMP Business Plan and Annual Reports • Operational Review final report 	Adequate	Improving
IN3 The right skill sets and expertise are currently available to the managing organisations to address Indigenous heritage	3	<ul style="list-style-type: none"> • <i>Advisory services see IN2. Also see CO1</i> • Indigenous staff in GBRMPA, QPWS and other management agencies in the GBR Region provide a vital core of skill and expertise in Indigenous heritage knowledge and management. • There is no overall skill set and consistent training of GBRMPA staff in addressing Indigenous Heritage and cultural awareness. Staff from GBRMPA's former Indigenous Partnerships Unit are now dispersed through the Agency and the effect of this organisation change on capacity is not yet known. • A comprehensive Cultural Capability Framework is recognised as a gap within GBRMPA. • Over 100 QPWS staff have been trained in cultural capacity as part of the Cultural Capability Framework 	<ul style="list-style-type: none"> • See also CO1 • Operational Review final report • Staff Survey Reconciliation Action Plan – identifies areas for skill and expertise improvement • Information from workshops and discussions 	Adequate	Improving

		<ul style="list-style-type: none"> Land and Sea Ranger Programs and Indigenous Ranger Program continue to employ and train Indigenous Rangers to work in the Region. There will be a continuing need to close the gaps in education and employment, especially in Indigenous people gaining higher level positions. In 2015-2017 GBRMPA developed and delivered a contextualised Specialised Indigenous Ranger Program in partnership with Indigenous Ranger Groups and PM&C (see IN1). This involved guiding over 20 Indigenous rangers (external to GBRMPA) to achieve a Certificate IV in Government (Statutory Compliance). 			
IN4 The necessary biophysical information is currently available to address Indigenous heritage	3	<ul style="list-style-type: none"> Information about physical location of specific Indigenous Heritage values is improving but remains limited and some remains confidential. Indigenous heritage includes natural heritage values (such as biodiversity and ecosystem health). Therefore, any biophysical information relevant to species or habitats is important to Indigenous Heritage. Mapping of values of the Woppaburra people provides a useful model 	<ul style="list-style-type: none"> See CO1 Guidelines: Woppaburra Traditional Owner Heritage Assessment 	Limited	Improving
IN5 The necessary socio-economic information is currently available to address Indigenous heritage	2	<ul style="list-style-type: none"> As part of RIMReP, the Authority has funded social and economic monitoring under SELTMP (CSIRO's Social and Economic Long Term Monitoring Program). New questions were inserted in 2017 to improve our knowledge of the wider community's perceptions and understanding of GBR heritage (including cultural heritage). Results from SELTMP 2017 are due to be reported in December, and will include an online dashboard for exploring the data. 	<ul style="list-style-type: none"> RIMREP: DMS4 – formalised culturally appropriate methodology to manage Indigenous heritage RIMREP: Indigenous Heritage Expert Working Group (Indicators for Indigenous heritage) 	Adequate	Improving
IN6 The necessary Indigenous heritage information is currently available to address Indigenous heritage	3	<ul style="list-style-type: none"> See Co1 This has been improved since 2014, however much Indigenous Heritage information is retained and shared by Traditional Owners with their family group. Not all knowledge needs to be shared widely, GBRMPA now has a fully functioning Cultural Knowledge Management System, which will enable GBRMPA and Traditional Owners (with password access) to store culturally sensitive information relevant to different Traditional Owner groups (e.g. story lines, voice recordings, sensitive locations). GBRMPA is developing a Cultural Protocol for use by staff and Data Sharing Agreement template to negotiate the sharing of Indigenous heritage values by Traditional Owner groups. 	<ul style="list-style-type: none"> Woppaburra Guidelines: http://elibrary.gbrmpa.gov.au/jspui/handle/11017/3215 Cultural Knowledge Management System implementation and upgrade 	Limited	Improving

		<ul style="list-style-type: none"> Woppaburra heritage assessment guidelines and case study provide location specific information about their heritage values. 			
IN7 The necessary historic heritage information is currently available to address Indigenous heritage		n/a			
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address Indigenous heritage	3	<ul style="list-style-type: none"> Traditional Owners contribute many efforts to protect their sea country through their own organisations and also including participating in Eyes and Ears compliance network, beach clean-ups and restoration. In 2015-16 and 16-17 GBRMPA partnered with Tangaroa Blue to deliver marine debris clean up training to several TUMRA groups and Indigenous Ranger groups. Non-government organisations support some Indigenous rangers and other efforts towards people working on and caring for their country. 	<ul style="list-style-type: none"> Land and sea Country Partnerships Annual Reports Tangaroa Blue Report – Marine Debris Training 	Limited	Improving
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of Indigenous heritage	3	<ul style="list-style-type: none"> <i>TUMRAs are dealt with in separate table</i> Most importantly, through their own organisations and in partnership with management agencies, Traditional Owners are working to look after sea country and wildlife as well as managing their own cultural heritage. Filed management staff work with many Traditional Owner groups in the field: ‘cross-decking’ inclusion of Traditional Owners on Field Management Program vessels has been a useful initiative in helping more people get onto the sea country. The Indigenous Reef Advisory Council and other fora are opportunities for Traditional Owners to provide strategic guidance on partnership matters, on sea country planning and implementation, and on capacity building. In 15-16 the GBRMPA Indigenous Partnerships section engaged with 569 Traditional Owners, equivalent to a meeting every 3.5 days. One issue is that with tight timelines and targets, there is not sufficient leeway for GBRMPA staff to work on less formal projects, so the foundational relationship-building activities are not being maintained. 	<ul style="list-style-type: none"> Dale, A., George, M., Hill, R. & Fraser, D. (2016) <i>Traditional Owners and Sea Country in the Southern Great Barrier Reef – Which Way Forward?</i>, Report to the National Environmental Science Programme, Cairns FMP Annual reports LSCP reports Indigenous Reef Advisory Committee IRAC paper - consultation on Indigenous Heritage Guidelines to guide permit assessments. IRAC Paper on Aboriginal and Torres Strait Islander Heritage Strategy Workshop discussions Yirrganydji Indigenous Land and Sea Rangers 	Adequate	Improving

		<ul style="list-style-type: none"> Improvements to the permission system recommend that Marine Parks permission applicants to consult directly with the relevant Traditional Owners prior to submitting their application. It is not yet known if this system will be effective. In spite of this progress, one recent study concluded that “Despite these wins, and good engagement by Commonwealth and State governments on occasions, there has been no lasting, continuously improving GBR-wide approach to engaging TOs. (Dale et I 2016, p. 1). 			
PR2 The local community is effectively engaged in the ongoing management of Indigenous heritage	3	<ul style="list-style-type: none"> See PR1 – the local community is predominantly the Traditional Owners in the local communities. As discussed above, the IRAC is a primary vehicle for communication. In 2016-17 GBRMPA completed workshops to discuss Traditional Owner issues and aspirations with caring for Indigenous heritage with Woppaburra, IRAC and the Queensland Senior Ranger Forum (SEE CO5). Issues raised by Traditional Owners to date include: <ul style="list-style-type: none"> Researchers and government agencies accessing Traditional Owner sea country without informing or engaging Traditional Owners Damage to areas from tourism, development and incremental damage Tourism infringing on native title rights (and thus cultural practices) without compensation Lack of access, resources and funding to access and care for sites Information management – passing on of knowledge, electronic storage of knowledge Lack of recognition of the interconnectedness of the environment, culture and people Difficulty in knowing how to report damage to authorities, especially with the different jurisdictions involved. Native title notification process inadequate to provide feedback into GBRMPA decision making In 2016-17 - GBRMPA has held six cross agency meetings and two cross agency workshops to discuss GBRMPA’s responsibilities, tools and projects for Indigenous heritage protection and Traditional use. 12 Traditional Owners were supported by GBRMPA under the sponsorship program to attend the IUCN World 	<ul style="list-style-type: none"> As for PR1 	Adequate	Stable

		<p>Conservation Congress in Hawaii in September 2016 and several attended IMPAC 2017.</p> <ul style="list-style-type: none"> It will take time to determine if the improvements to the permission system by which recommend Marine Parks permission applicants to consult directly with the relevant Traditional Owners prior to submitting their application, is effective. 			
PR3 There is a sound governance system in place to address Indigenous heritage	3	<ul style="list-style-type: none"> There are comments that there is no overarching system of governance in the Region in relation to Indigenous heritage, so people often find it difficult to know what is going on. Progress and relationships are often reliant on individuals and stalls if they move on. The governance and legislative system, like the planning system relating to indigenous Heritage in the Region, is highly complex, with distinction between State and Commonwealth jurisdiction of islands and waters quite confusing. Key organisations include GBRMPA, QPWS, Traditional Owner Organisations, local government, other government departments focusing on related issues such as fisheries, shipping, defence, education and Aboriginal and Torres Strait Islander Partnerships. In addition, joint management arrangements on Cape York Peninsula are different from arrangements in all other parts of the Region, and Indigenous Rangers are employed under a number of different schemes and systems. The Field Management Program, and GBRMPA staff working in Indigenous Partnerships, attempt to coordinate and cooperate to minimise stress and confusion for Traditional Owners working and living in sea country. The funding and support models for traditional Owners working on their country) (e.g. through Land and Sea Ranger programs) have been often short-term and unreliable, and this aspect of governance could be improved. In terms of governance of funding and administration of relevant programs within the Agencies, standards are high and both activity and financial reports are available. 	<ul style="list-style-type: none"> Workshop discussions LSCP reports Dale, A., George, M., Hill, R. & Fraser, D. (2016) <i>Traditional Owners and Sea Country in the Southern Great Barrier Reef – Which Way Forward?</i>, Report to the National Environmental Science Programme, Cairns 	Adequate	Stable
PR4 There is effective performance monitoring, including regular assessment of appropriateness and	4	<ul style="list-style-type: none"> Performance monitoring and reporting is given high priority in GBRMPA and the Field Management Program, and in all programs reliant on external or project funding. Duplication and onerous reporting could be an issue. 	<ul style="list-style-type: none"> Field Management Program Annual Reports Land and Sea Partnership Program reports Van Bueren, M., Worland, T., Svanberg, A. & Lassen, J. (2015) <i>Working for our country: a review of the economic and social</i> 	Adequate	Improving

effectiveness of tools, to gauge progress towards the objective(s) for Indigenous heritage		<ul style="list-style-type: none"> On a national level, studies have assessed the effectiveness of the Indigenous Ranger programs and Indigenous Protected Areas. 	<p>benefits of Indigenous land and sea management, Pew Charitable Trusts, Synergies Economic Consulting,</p> <ul style="list-style-type: none"> Outlook Reports Indigenous Heritage Strategy Program Logic diagram 		
PR5 Appropriate training is available to the managing agencies to address Indigenous heritage	3	<ul style="list-style-type: none"> See also IN3 – skills and training closely related A cultural competency training program is not currently available to management staff at GBRMPA. QPWS has a cultural capability framework and related training. Joint Field Management Program has coordinated and run training for joint field management staff in basic aspects of the work program and cultural competency (which includes TUMR). A few GBRMPA staff have attended this training course. In 15-16 and 16-17 the Indigenous Compliance team at GBRMPA delivered a series of contextualised compliance education and training programs during the reporting term to Indigenous Ranger Groups, Traditional Owners, and other management staff. This resulted in 81 Aboriginal and Torres Strait Islander people receiving training across the program. GBRMPA regularly hosts legislation training (held twice in 2017) for all staff. 	<ul style="list-style-type: none"> Land and Sea ranger websites and training materials Workshop discussions 	Limited	Improving
PR6 Management of Indigenous heritage is consistently implemented across the relevant jurisdictions	3	<ul style="list-style-type: none"> See PR4– the governance arrangements are very complex. The Field Management Program involves Indigenous rangers employed through a number of different organisations and programs – all rangers work together to protect Indigenous heritage as well as other Reef values. A joint working group now ensures that GBRMPA and the Field Management Program coordinate their work and approach in relation to Indigenous heritage. Potential impacts to cultural heritage are consistently considered for joint Marine Park permits and under the Inter-governmental Agreement (IGA), but this only covers Marine Parks and not Queensland Islands. Reef 2050 Plan details coordination of actions to better address indigenous heritage and Traditional Owner involvement in management and protection of the Reef. This is a first of its kind for the Great Barrier Reef. 	<ul style="list-style-type: none"> Workshop discussions Meeting notes 	Adequate	Improving
PR7 There are effective processes applied to resolve	2	<ul style="list-style-type: none"> TUMRA/ILUA process – see TUMR table 	<ul style="list-style-type: none"> Dale, A., George, M., Hill, R. & Fraser, D. (2016) <i>Traditional Owners and Sea Country in the Southern Great Barrier Reef</i> – 	Limited	Stable

differing views/ conflicts regarding Indigenous heritage		<p>The introduction of a new suite of guidelines and regulation changes will improve GBRMPA/QPWS ability to better consider possible impacts on Indigenous Heritage.</p> <ul style="list-style-type: none"> • However, given the lack of cultural heritage knowledge (location, type of heritage, who speaks for country in some areas of the Region) the ability to pre-emptively avoid conflicts of interest and protect Indigenous Heritage will remain limited. Not all Traditional Owner groups are able to coordinate their opinions; and differing views within and between groups are difficult for management agencies to resolve. • Workshop reports show a high level of dissatisfaction within Traditional Owner groups towards management in the GBR Region. 	<p><i>Which Way Forward?</i>, Report to the National Environmental Science Programme, Cairns,</p> <ul style="list-style-type: none"> • Traditional Owner Heritage Assessment Guidelines 		
PR8 Impacts (direct, indirect and cumulative) of activities associated with Indigenous heritage are appropriately considered.	3	<ul style="list-style-type: none"> • Traditional Owner heritage assessment guidelines provide a list of hazards and the potential impacts on Indigenous heritage values. • Impacts on Indigenous Heritage are considered before any permissions are granted, and applicants are encouraged to contact Traditional Owners directly. • All levels of policy and legislation contain requirements to consider both material and non-material aspects of Indigenous Heritage in the management of the Region. • Impacts of traditional harvesting of dugong and turtle are thoroughly considered in TUMRAs. • The Woppaburra assessment guidelines provide a good model for how impacts could be better assessed. 	<ul style="list-style-type: none"> • Guidelines: Traditional Owner Heritage Assessment • Draft Policy on Traditional use of Marine Resources – which summarises some impacts). • Cumulative impact policy • Guidelines: Woppaburra Traditional Owner Heritage Assessment 	Adequate	Improving
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding Indigenous heritage	3	<ul style="list-style-type: none"> • See <i>TUMR table for application of research to management of relevant marine resources</i>. • All levels of planning also use the best available information including location of special places and landscapes. However, relevant information is frequently not available and this may lead to deterioration of places of species Indigenous heritage importance. • Improvements to the permission system include the mandatory requirement to consider monitoring and managing relevant impacts. In some cases, biophysical research and monitoring will be required. (as described in the Assessment Guidelines). 	<ul style="list-style-type: none"> • Guidelines: Traditional Owner Heritage Assessment • Guidelines: Woppaburra Traditional Owner Heritage Assessment 	Adequate	Improving
PR10 The best available socio-economic research and/or monitoring	2	<ul style="list-style-type: none"> • GBRMPA works closely with 70 Traditional Owner clan groups within the Great Barrier Reef - best information from these relationships is used. 	<ul style="list-style-type: none"> • Cultural Knowledge Management System implementation and upgrade • Guidelines: Traditional Owner Heritage Assessment 	Limited	Improving

information is applied appropriately to make relevant management decisions regarding Indigenous heritage		<ul style="list-style-type: none"> • Cultural protocols and data sharing agreement templates are being developed. Until these are in place and being implemented this indicator will remain a gap. • See PR1 – As part of the consultation process for the Aboriginal and Torres Strait Islander Heritage Strategy, workshops were held to discuss Traditional Owner issues and aspirations with caring for Indigenous heritage. • Social value assessment guidelines have been developed to help ensure socio-economic implications of a proposed activity are understood. • Improvements to the permission system- in some cases socio-economic research and monitoring will be required to understand the implications of the proposed activity. 			
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding Indigenous heritage	3	<ul style="list-style-type: none"> • Managers in GBRMPA and QPWS often struggle to make decisions relating to indigenous Heritage where there is an absence of available information to guide them (see CO1), and do not wish to cause offence or harm through their lack of understanding. This remains an issue, in spite of efforts to widely involve Traditional Owners in management. • However, the application of knowledge has greatly improved over the last decade, especially through direct involvement of Traditional Owners in management of sea country. • Land and Sea Rangers work within cultural systems to discuss issues with their elders and use collaborative decision-making. • A positive new development is the Woppaburra heritage assessment guidelines and case study, which provide location specific information about their heritage values. However, this will not replace the need to consult directly with Traditional Owners about matters and proposed activities in their land and sea country. 	<ul style="list-style-type: none"> • Guidelines: Woppaburra Traditional Owner Heritage Assessment • Workshop discussions 	Limited	Improving
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding Indigenous heritage	n/a				

PR13 Relevant standards are identified and being met regarding Indigenous heritage	3	<ul style="list-style-type: none"> The sets draft Indigenous Heritage Strategy out guidelines and standards for Indigenous heritage conservation, but this has not yet been implemented. Prior to 2016 the GBRMPA had no documented standards for the capture and handling of culturally sensitive material (exception with regard to photographs and permission to use these). Development of Cultural protocol and a data sharing agreement standard will be a major advance. RIMREP DMS4 and RIMREP Indigenous Heritage Expert Working Group are working to address this. Queensland Government has a Cultural Capability Framework, but the protocols for consultation on the website are 20 years old and may not be relevant. 	<ul style="list-style-type: none"> Draft Aboriginal and Islander Heritage Strategy Queensland Government Cultural Capability Framework 	Adequate	Improving
PR14 Targets have been established to benchmark management performance for Indigenous heritage	3	<ul style="list-style-type: none"> Targets and actions are set in the Reef 2050 Plan (across all themes) – see appendix to the Indigenous Partnerships section plan which lists all ‘traditional owner’ actions in the Reef 2050 Plan. <ul style="list-style-type: none"> Internal process in GBRMPA and the joint Field management Program include Indigenous engagement with established targets to benchmark performance (e.g. set number of TUMRA meetings attended, target to increase the number of Traditional Owners on Marine Parks vessels over time). Targets are set in the draft Indigenous Heritage Strategy. 	<ul style="list-style-type: none"> Draft Aboriginal and Islander Heritage Strategy Reef 2050 Plan Field Management Plan Business Strategies LSCP plans 	Adequate	Improving
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for Indigenous heritage	3	<ul style="list-style-type: none"> GBRMPA is now in the fifth and final year of the second formal round of the Land and Sea Country Partnerships program implementation with 100 percent completion against all milestone requirements to date. Compliance Training has been delivered to over 500 Traditional Owners, which has exceeded the five year target of training 200 Traditional Owners by 250%. Reef 2050 activities have progressed satisfactorily e.g. The Aboriginal and Torres Strait Islander Heritage Strategy has progressed in accordance with the work program and is now available for comment. Protocol for managing culturally sensitive information is in development. Cultural knowledge management system (database) to hold negotiated and agreed information has been developed. 	<ul style="list-style-type: none"> Annual reports for the Land and Sea Country Partnerships program Draft Aboriginal and Islander Heritage Strategy Reef 2050 Plan Action reporting 	Adequate	Improving

		<ul style="list-style-type: none"> Improvements to the permission system relevant to Indigenous heritage are in line with the Reef 2050 Plan. A stand alone Aboriginal and Torres Strait Islander Heritage Strategy has been endorsed by the MPA Board and went out for public consultation in 2018. It is still to be finalised. A program to clarify Traditional Owner Aspirations for Reef management has been funded beginning in 2018 but outputs from this have not yet been seen. 			
OP2 Implementation of management documents and/or programs relevant to Indigenous heritage have progressed in accordance with timeframes specified in those documents	3	<ul style="list-style-type: none"> Reef 20150 activities have progressed satisfactorily e.g. The Aboriginal and Torres Strait Islander Heritage Strategy has progressed in accordance with the work program and is now available for comment. Protocol for managing culturally sensitive information is in development. Cultural knowledge management system (database) to hold negotiated and agreed information has been developed. Improvements to the permission system relevant to Indigenous heritage are in line with the Reef 2050 Plan. 	<ul style="list-style-type: none"> Annual reports for the Land and Sea Country Partnerships program Draft Aboriginal and Islander Heritage Strategy Reef 2050 Plan Action reporting 	Adequate	Improving
OP3 The results (in OP1 above) have achieved their stated management objectives for Indigenous heritage	3	<ul style="list-style-type: none"> Results have been achieved for the Land and Sea Country Program. 420 days of Traditional Owner presence on field management vessels was recorded in 2016-17, down from 574 days in 2015-16, but a sharp increase from 143 days in 2013-14. Guidance material for the permission system - Woppaburra are the only location specific guidelines currently developed so far but are a good pilot process. Broader Traditional Owner heritage assessment guidelines) have been developed. In spite of much activity, there are still gaps from the viewpoint of Traditional Owners, who feel progress towards a Reef-wide engagement process is still limited. This was confirmed at a 2018 meeting in regard to the Traditional Owner Aspirations project. 	<ul style="list-style-type: none"> Annual report brochure, 2017 Independent review of the TUMRA program, Woppaburra Guidelines, Lama Lama Research Strategy KPI in Annual reports of increase in Traditional Owner presence on Marine Parks vessels. Dale, A., George, M., Hill, R. & Fraser, D. (2016) Traditional Owners and Sea Country in the Southern Great Barrier Reef – Which Way Forward?, Report to the National Environmental Science Programme, Cairns, 	Adequate	Improving
OP4 To date, products or services have been produced in accordance with the stated management	3	<ul style="list-style-type: none"> The Aboriginal and Torres Strait Islander Heritage Strategy has progressed in accordance with the work program and is now available for comment. Protocol for managing culturally sensitive information is in development. 	<ul style="list-style-type: none"> Annual reports for the Land and Sea Country Partnerships program Draft Aboriginal and Islander Heritage Strategy 	Adequate	Improving

objectives for Indigenous heritage		<ul style="list-style-type: none"> • Cultural knowledge management system (database) to hold negotiated and agreed information has been developed. • Improvements to the permission system relevant to Indigenous heritage are in line with the Reef 2050 Plan 			
OP5 Effective knowledge management systems regarding Indigenous heritage are in place within agencies	3	<ul style="list-style-type: none"> • Cultural Knowledge Management System (CKMS) has been designed and implemented. • The CKMS has a module which will enable GBRMPA to hold culturally sensitive information relevant to different Traditional Owner groups (e.g. story lines, voice recordings, sensitive locations). Guidance materials are publicly available through the GBRMPA e-library system, but this can be very hard to find. • DMS4/ RIMREP Indigenous Expert working group. 	<ul style="list-style-type: none"> • Cultural Knowledge Management System 	Adequate	Improving
OP6 Effective systems are in place to share knowledge on Indigenous heritage with the community	2	<ul style="list-style-type: none"> • Some Traditional Owner groups host community education programs, including junior ranger activities on country. • Guidance materials are publicly available through the GBRMPA e-library system but are difficult to find. • Story Place - Information on traditional connections to sea – is a reference database that shares information and knowledge about Traditional Owners and their relationship with land and sea country in the Great Barrier Reef. • In 2016 GBRMPA hosted the 40 Year Anniversary of the Reef event – open to the public. A specific stall focused on partnerships with Traditional Owners. • An information sheet on Traditional Owner connections to country and the GBRMPAs work with Traditional Owners was produced in 2016. • Information Sheets produced by Traditional Owner groups (in partnership with QPWS) advise visitors and researchers on how to conduct their activities within their land and sea country. • 12 Traditional Owners attended the IUCN World Conservation Congress in Hawaii in September 2016. They presented on the TUMRA program and shared knowledge of traditional use with the international community. 	<ul style="list-style-type: none"> • http://www.gbrmpa.gov.au/our-partners/traditional-owners/story-place • Media and communications outputs in the 15-16 and 16-17 Land and Sea Country Partnerships reports. • Yirrganydji Indigenous Land and Sea Rangers 	Limited	Stable
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing	3	<ul style="list-style-type: none"> • Many efforts are being made by Traditional Owner groups and other managers to effectively address Indigenous 	<ul style="list-style-type: none"> • Workshop outputs and discussions • Yirrganydji Indigenous Land and Sea Rangers 	Adequate	Improving

<p>Indigenous heritage and moving towards the attainment of the desired outcomes.</p>		<p>heritage. However, desired outcomes are not yet being met.</p> <ul style="list-style-type: none"> • Issues raised by Traditional Owners in 2017 workshops include: <ul style="list-style-type: none"> ○ Researchers and government agencies accessing Traditional Owner sea country without informing or engaging Traditional Owners ○ Damage to areas from tourism, development and incremental damage ○ Tourism infringing on native title rights (and thus cultural practices) without compensation ○ Lack of access, resources and funding to access and care for sites ○ Information management – passing on of knowledge, electronic storage of knowledge ○ Lack of recognition of the interconnectedness of the environment, culture and people ○ Difficulty in knowing how to report damage to authorities, especially with the different jurisdictions involved. ○ Native title notification process inadequate to provide feedback into GBRMPA decision making • Traditional Owners were unhappy about the Australian Government’s decision to allocate major funding for the Reef in 2018 without involving them in discussions about this. 			
<p>OC2 The outputs relating to Indigenous heritage are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)</p>	<p>3</p>	<ul style="list-style-type: none"> • In spite of efforts and outputs to maintain and protect indigenous Heritage values, these are still declining. • This is due partly to the effects of climate change and the passing on of elders, but it offset by greater opportunities for people to re-connect with country. • “Traditional Owners with connections to the Region maintain their cultural practices and customs. However, because Indigenous heritage values are closely tied to land and sea country, values have deteriorated with deterioration of the environment:” (Strategic Assessment 2014). It is unlikely that this situation has turned around in the last five years. • There is some doubt that Reef 2050 targets in relation to Indigenous heritage will be met: 	<ul style="list-style-type: none"> • Workshops • Strategic Assessment Report 	<p>Adequate</p>	<p>Declining</p>

OC3 the outputs (refer OP1 and 3) for Indigenous heritage are reducing the major risks and the threats to the Great Barrier Reef	3	<ul style="list-style-type: none"> • Outputs are reducing some of the risks, including risks from inappropriate developments and recreation; and are striving to support Traditional Owners to maintain their vibrant cultures in spite of many threats and socio-economic changes. • However, threats originating from climate change and from widespread social change are not being reduced. 	<ul style="list-style-type: none"> • Workshops • Strategic Assessment Report 	Adequate	Declining
OC4 Use of the Great Barrier Reef relating to Indigenous heritage is demonstrably environmentally sustainable	3	<ul style="list-style-type: none"> • While for many cultural practices remain strong, other Indigenous heritage values have deteriorated with changes in the environment and condition of tangible heritage. • The health of Aboriginal and Torres Strait Islander heritage components is heavily dependent on the state of the environment, which is currently in good condition but declining. The recent Great Barrier Reef Summit found urgent action is needed to address the deterioration of the reef. • More details about the values of marine resources are contained in the TUMRA section. 	<ul style="list-style-type: none"> • Workshops 	Adequate	Stable
OC5 Use of the Great Barrier Reef relating to Indigenous heritage is demonstrably economically sustainable	2	<ul style="list-style-type: none"> • While there is limited Indigenous tourism established within the Reef, several TUMRA groups are developing partnerships with tourism operators. to run on-country cultural activities (for example Junior Ranger field trips), develop Traditional Owner cultural interpretation materials and to develop career pathways for Traditional Owners on tourist vessels. • Land and Sea Ranger and Indigenous Ranger Programs provided many social and economic benefits • Yirriganydji have developed an educational video showcasing their Land and Sea Ranger program 	<ul style="list-style-type: none"> • Yirriganydji Indigenous Land and Sea Rangers 	Adequate	Stable
OC6 Use of the Great Barrier Reef relating to Indigenous heritage is demonstrably socially sustainable, in terms of understanding and/or enjoyment	2	<p>Consultation for development of the Aboriginal and Torres Strait Islander Heritage Strategy identified the following issues:</p> <ul style="list-style-type: none"> • Loss of Indigenous knowledge is a major risk to heritage in the Reef. The passing of elders loses knowledge irretrievably. Difficulty in exercising cultural rights and responsibilities, such as loss of access and lack of resources, since the disruption of the traditional lifestyle creates challenges in transferring knowledge to the younger generation. Without the systemic passing on of cultural knowledge that occurred prior to European 	<ul style="list-style-type: none"> • Consultation feedback 	Limited	Stable

		<p>disruption, heritage is at risk of not being passed on to the next generations, and thus lost forever.</p> <ul style="list-style-type: none"> • A further risk to heritage is a lack of on-ground management capacity and opportunities for Traditional Owners. Limited access to marine areas due to not having suitable boats, and limited resources to conduct protection and rehabilitation activities prevent active management. On-ground management requires competent organisations with strong governance in place that have cultural authority to make decisions, and resources such as boats and rangers to implement management activities. Without on-ground management, cultural and legislative rules and responsibilities cannot be implemented or enforced. • The lack of knowledge of Indigenous heritage by other Reef managers and users, including GBRMPA, puts heritage at risk of being impacted unintentionally. 			
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address Indigenous heritage	3	<ul style="list-style-type: none"> • There are many examples of positive and effective partnerships with Indigenous communities and Corporations, though further progress will depend of maintaining sufficient skilled staff with enough time to develop relationships and not just formal agreements. • Woppaburra Guidelines have been a result of a close partnership between GBRMPA staff and the Woppaburra Traditional Use of Marine Resources Agreement (TUMRA) Steering Committee, The TUMRA program continues, and has established strong partnerships with over 17 Traditional Owner clan groups (via 10 TUMRAs). • Giringun Ranger Fee for service arrangement – strong partnerships have now led to 12 month contracts with the FMP. Due to strong partnerships and extensive capacity on the ground in 2016 Giringun Rangers supported the Cape Upstart oil spill response with other government agencies. • Raine Island Recovery Project has established effective partnerships with several Traditional Owner Groups. • ‘Cross-decking’ and Indigenous Ranger Programs have increased presence of Traditional Owners and Indigenous rangers in the GBR. • Under the CYPAL, QPWS follows a ‘Permits to take, use, keep or interfere with Natural Resources Protocol’ (PTUKI) 	<ul style="list-style-type: none"> • Giringun Corporation website • Video about TUMRA demonstrates Traditional Owners and other managers working together with positive outcomes • Yirrgandyji Indigenous Land and Sea Rangers • Raine Island Project • Guidelines: Woppaburra Traditional Owner Heritage Assessment • Working on Country Rangers (Aust Govt) program • Indigenous Reef Advisory Committee • Draft Aboriginal and Islander Heritage Strategy • Workshop outputs and discussions 	Adequate	Stable

		<p>where researchers want to take things within a Traditional Owners land/sea country. This protocol implements a respectful governance arrangement where there is formal notification, involvement and data sharing between western science and Traditional owners. The Shelburne Bay agreement was put in place in 2016 with the Wuthathi Traditional Owners.</p> <ul style="list-style-type: none">• There is to date limited progress in the full engagement of Traditional Owners as partners in management across the whole Reef.			
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Table 31 Calculation of grades for land-based run-off

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to land-based run-off are understood by managers	4	<ul style="list-style-type: none"> The values of the GBR relevant to land-based run-off continue to be well understood and documented. The 2017 Scientific Consensus Statement is a synthesis of current knowledge relevant to the land-based run-off in the Great Barrier Reef to inform a common understanding amongst managers of key ecosystems, associated values, condition, risks and status of efforts to protect values impacted by water quality. The Reef 2050 Water Quality Improvement Plan 2018 (Reef WQIP) aligns with the Great Barrier Reef 2050 Long-Term Sustainability Plan (Reef 2050 Plan). It has expanded in scope and now includes all land-based sources of water pollution, including from urban, industrial and public lands as well as social, cultural and economic values. Catchment profiles were developed for each of the 35 catchments in the Region to provide information on the targets, land uses, pollutant sources and priorities for water quality improvement based on risks to coastal and marine ecosystems. The Reef Water Quality Protection Plan Report Cards document the management practices for major agricultural industries, with the Paddock to Reef modelling estimating mean annual pollutant load reductions based on these management systems The Paddock to Reef program also provides information on trails concerning changes to water quality from different land use management practices, reporting on ground cover, extent of wetlands and long term trends in water quality entering the reef lagoon from priority catchments. Information from the Marine Monitoring Program which monitors water quality and the health of key marine ecosystems such as coral reefs and seagrass in the inshore Great Barrier Reef lagoon, is integrated into metrics that describe inshore marine water quality, seagrass and coral condition and trends in condition assessments are used to evaluate progress towards the Reef Plan 2020 goal for the marine environment as part of the Report Card. 	<ul style="list-style-type: none"> Draft Reef 2050 Water Quality Improvement Plan 2017-2022 2017 Scientific Consensus Statement Reef WQIP Report Cards Paddock to Reef Integrated Monitoring, Modelling and Reporting Program Marine Monitoring Program 	Adequate	improving

CO2 The current condition and trend of values relevant land-based run-off are known by managers	4	<ul style="list-style-type: none"> • The Scientific Consensus Statement 2017 reviewed the scientific knowledge of water quality issues in the Great Barrier Reef from the 2013 statement. It outlines: <ul style="list-style-type: none"> ○ the GBR marine and coastal aquatic ecosystem status and condition, identifies the primary drivers, pressures and threats to these systems and the known effects of land-based pollutants based on the understanding derived through monitoring and modelling. ○ The sources of land-based pollutants considered hazards to the GBR ecosystems (including fine sediment, nutrients and pesticides). ○ The risk assessment (likelihood, consequences and quantified risk) to the GBR coastal aquatic and marine ecosystems, particular from different nutrient species, suspended sediment (including different size fractions) and pesticides. ○ The management of the risks. ○ Overall synthesis and knowledge gaps. • The Paddock to Reef Integrated Monitoring, Modelling and Reporting Program (Paddock to Reef program) assesses the progress towards the land management, catchment indicators (groundcover, riparian extent and wetland condition), catchment water quality targets and marine ecosystem condition and trend of the Reef 2050 Water Quality Improvement Plan 2018 (formerly the Reef Water Quality Protection Plan). This is reported through the Great Barrier Reef Report Card and includes assessments of reductions in sediment, nutrients and pesticides entering the GBR as a result of improved land management efforts. • The Marine component of the Program is delivered by the Marine Monitoring Program reports on the condition and trend of inshore water quality, seagrass and coral reefs and any changes in their condition. The program is one of the 10 components of the Paddock to Reef Integrated Monitoring, Modelling and Reporting Program, linking the health of the Reef with information on agricultural management practices, groundcover, catchment run-off and pollution loads. 	<ul style="list-style-type: none"> • Draft Reef 2050 Water Quality Improvement Plan 2017-2022 • 2017 Scientific Consensus Statement • Reef WQIP Report Cards • Paddock to Reef Integrated Monitoring, Modelling and Reporting Program • Reef Globe • Marine Monitoring Program • MMP Tier 3 technical reports, summary reports and synthesis reports • eReefs • AIMS LTMP website 	Adequate	improving
CO3 Impacts (direct, indirect and cumulative)	4	<ul style="list-style-type: none"> • The direct impacts of land-based run-off on the GBR are well understood, and are summarised in the Strategic Assessment, 	<ul style="list-style-type: none"> • Great Barrier Reef Strategic Assessment Report, • Great Barrier Reef Coastal Zone Strategic Assessment 2014 • Draft Reef 2050 Water Quality Improvement Plan 2017-2022 	Adequate	Improving

associated with land-based run-off are understood by managers.		<p>Outlook reports, Scientific Consensus Statement, Report cards and Reef 2050 WQIP.</p> <ul style="list-style-type: none"> The Scientific Consensus Statement (2017) describes the status and condition of the GBR and the drivers, pressures and threats (DPSIR) and the known effects of land-based pollutants. Chapter 3 describes the risk to the GBR coastal aquatic and marine ecosystems, including nutrient species, suspended sediment and pesticides. The Paddock to Reef Program integrates information on management practices, catchment indicators, catchment water quality and the ecological health of the GBR. 	<ul style="list-style-type: none"> 2017 Scientific Consensus Statement Reef WQIP Report Cards Paddock to Reef Integrated Monitoring, Modelling and Reporting Program 		
CO4 The broader (national and international) level influences relevant to land-based run-off are understood by managers.	4	<ul style="list-style-type: none"> The Strategic Assessment Process and UNESCO World Heritage Committee and Advisory Body processes relating to the GBR have focussed attention on the elaboration of attributes underpinning the Outstanding Universal Value of the GBR and MNES, and consider (among other things) the impact of land-based run-off on the OUV. The State Party report to World Heritage Committee (2015) reflects thorough understanding of national and international influences 	<ul style="list-style-type: none"> Great Barrier Reef Strategic Assessment Report, Great Barrier Reef Coastal Zone Strategic Assessment 2014 State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 	Adequate	Improving
CO5 The stakeholders relevant to land-based run-off are well known by managers.	4	<ul style="list-style-type: none"> The GBR Intergovernmental Agreement provides a framework for the Australian and Queensland governments to work together to protect the Great Barrier Reef. Achieving the goals and targets of the Reef 2050 Water Quality Improvement Plan (formerly the Reef Water Quality Protection Plan) relies on partnerships across all levels of government, industry, community groups, research organisations and land managers. The Partnership Committee Reef 2050 Plan Partnership Committee consists of stakeholders, including industry groups, conservation organisations, regional NRM bodies and government officials, and has with an independent chair. Reef 2050 Reef Advisory Committee The Paddock to Reef program (see contributors), funded jointly by the Australian and Queensland Governments, is a collaboration involving industry, regional natural resource management organisations, research organisations and government. The Paddock to Reef Program integrates information on management practices, catchment indicators, catchment water quality and the ecological health of the GBR. 	<ul style="list-style-type: none"> Reef 2050 Reef Advisory Committee Reef 2050 Plan Paddock to reef program 	Adequate	Improving

		<ul style="list-style-type: none"> • There is also a Reef WQIP Independent Science Panel, Executive Steering Committee and a number of smaller advisory groups that support specific parts of the Paddock to Reef Integrated Monitoring, Modelling and Reporting Program. • Paddock to Reef Integrated Monitoring, Modelling and Reporting Program also conducts road shows to communicate results 			
PLANNING					
PL1 There is a planning system in place that effectively addresses land-based run-off	4	<ul style="list-style-type: none"> • The Reef 2050 Water Quality Improvement Plan (Reef 2050 WQIP) 2017 is a collaborative program of coordinated projects and partnerships designed to improve the quality of water in the Great Barrier Reef through improved land management in reef catchments: <ul style="list-style-type: none"> ○ Joint Australian and Queensland Government initiative that specifically focuses on non-point-source pollution. ○ Sets targets for water quality and land management improvement, and identifies actions to improve the quality of water entering the reef. ○ was updated in 2017 and details specific actions and deliverables to be completed by 2022. • Reef 2050 Plan – presents actions to protect the values, health and resilience, while allowing ecological sustainable use. 	<ul style="list-style-type: none"> • The Reef 2050 Water Quality Improvement Plan (Reef WQIP) 2017 • Reef 2050 Plan 	Adequate	Improving
PL2 The planning system for land-based run-off addresses the major factors influencing the Great Barrier Reef Region's values.	4	<ul style="list-style-type: none"> • Reef 2050 Water Quality Improvement Plan 2018 (Reef WQIP) now directly aligns with the Great Barrier Reef 2050 Long-Term Sustainability Plan. It has expanded in scope and now includes all land-based sources of water pollution, including from urban, industrial and public lands as well as social, cultural and economic values. As part of this Plan, individual targets have been set for reducing water pollution from the catchments, enabling better prioritising where the most management action is needed. This is a new level of specificity from previous targets and utilised sophisticated modelling and other scientific information to ensure these targets are based on what the Reef needs to be healthy 	<ul style="list-style-type: none"> • Reef 2050 Plan • Reef 2050 WQIP 	Adequate	Improving
PL3 Actions for implementation regarding land-based run-off are	4	<ul style="list-style-type: none"> • Reef 2050 Plan clearly articulates actions for implementation of the plan and presents actions to protect the values, health and resilience, while allowing ecological sustainable use. • Healthy Water Management Plans are a legislative tool that implements water quality actions. Environmental Values and Water 	<ul style="list-style-type: none"> • Reef 2050 Plan • Water quality Improvement Plans (WQIPs) and Healthy Waters Management Plans (HWMPs) 	Adequate	Improving

clearly identified within the plan		<p>Quality Objectives have been developed. Regional NRM Water quality improvement plans outline actions and priorities for investment and will assist in the prioritisation of on-ground funding within the regions in the future.</p> <ul style="list-style-type: none"> • Reef WQIP describes clear objectives, targets and actions 			
PL4 Clear, measurable and appropriate objectives for management of land-based run-off have been documented	4	<ul style="list-style-type: none"> • Objectives for land-based runoff are outlined in the Reef 2050 Plan 	<ul style="list-style-type: none"> • Reef 2050 Plan • Water quality Improvement Plans (WQIPs) 	Adequate	Improving
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to land-based run-off	4	<ul style="list-style-type: none"> • Progress towards the Plan's targets is evaluated through the Paddock to Reef Integrated Monitoring, Modelling and Reporting Program (Paddock to Reef program) and reported through the Reef Report Card. There are 10 components of the Paddock to Reef Program • A revised water quality metric was developed in 2015-16 as an initial step towards integrating multiple streams of data to measure and report water quality conditions. The previous metric relied exclusively on satellite data. The new metric is underpinned by the eReefs biogeochemical model integrated with satellite images for improved accuracy in what is commonly referred to as a data assimilation process. • The Marine Monitoring Program has a MERI plan that ensures activities are appropriate and adequate. Information from the Marine Monitoring Program is integrated into metrics that describe inshore marine water quality, seagrass and coral condition and trends in condition assessments are used to evaluate progress • As part of this Reef WQIP, individual targets have been set for reducing water pollution from the catchments, enabling better prioritising where the most management action is needed. This is a new level of specificity from previous targets and utilised sophisticated modelling and other scientific information to ensure these targets are based on what the Reef needs to be healthy. Evaluated through Paddock to Reef program and reported through the Reef Report Card. • The Reef 2050 Integrated Monitoring and Reporting Program (RIMREP), including the Paddock to Reef program will used to 	<ul style="list-style-type: none"> • Reef 2050 Plan • Water quality Improvement Plans (WQIPs) • Paddock to Reef Integrated Monitoring, Modelling and Reporting Program • RIMReP 	Adequate	Improving

		track the progress of targets specified in the Reef 2050 Plan . This is still in development phase.			
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address land-based run-off	4	<ul style="list-style-type: none"> • Stakeholders are engaged in a number of forums including: <ul style="list-style-type: none"> ○ Reef WQIP partnership committee, WQ Reef Advisory Committee ○ developing the Reef WQIP (Reef Plan) & regional WQIPs, which involved extensive public consultation ○ MIPS, Project Uplift (MSF Sugar) are projects designed from the ground up. ○ OGBR annual science synthesis forums instigated as recommendation from Queensland Government Water Quality Taskforce ○ Reef Trust public consultation and stakeholder engagement ○ Participation in the industry BMP programs (Smartcane, Grazing, Banana) is effectively engaging increasing numbers of farmers in planning (and managing) to address land-based run-off. 	<ul style="list-style-type: none"> • Reef WQIP • Reef 2050 Plan • Qld water quality taskforce 	Adequate	Improving
PL7 Sufficient policy currently exists to effectively address land-based run-off	4	<ul style="list-style-type: none"> • Sewage treatment is regulated in Queensland under the Environmental Protection Regulation 2008 as an Environmentally Relevant Activity (ERA 63 - Sewage treatment) https://www.legislation.qld.gov.au/view/html/inforce/current/sl-2008-0370#sch.2 Reef water quality guidelines • Reef WQIP • Position Statement on Aquaculture within the Great Barrier Reef Marine Park (which includes water quality aspects) • Qld draft environmental values and water quality objectives under the Environmental Protection (Water) Policy (EPP Water). Draft consultation materials (reports, mapping) - Burdekin-Don Haughton; Cape York, Fitzroy Capricorn Curtis coast; Fitzroy Basin, Keppel Bay and coastal waters; Wet Tropics coastal and marine waters - Waters of the Capricorn and Curtis Coast and Wet Tropics were added to other scheduled basins. • Australia's Biodiversity Conservation Strategy 2010–2030 • The Queensland Wetlands program established by the Australian and Queensland governments, aims to better protect and manage wetlands throughout the state. 	<ul style="list-style-type: none"> • https://www.legislation.qld.gov.au/view/html/inforce/current/sl-2008-0370#sch.2 • Reef WQIP • EPP Water 	Adequate	Improving

PL8 There is consistency across jurisdictions when planning for land-based run-off	4	<ul style="list-style-type: none"> The Reef 2050 Plan was released by the Australian and Queensland governments in March 2015 and is the overarching framework for protecting and managing the Reef until 2050. Reef WQIP is implemented by both Queensland and Commonwealth governments 	<ul style="list-style-type: none"> Reef 2050 Plan Reef WQIP 	Adequate	Improving
PL9 Plans relevant to land-based run-off provide certainty regarding where uses may occur, the type of activities allowed or specifically disallowed,, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.	3	<ul style="list-style-type: none"> There is no integrated policy/strategy to provide certainty about what uses may occur along the GBR coast. Within the GBRR the Zoning Plan provides some guidance on what activities can occur where – some of these activities have associated water quality aspects to them e.g. structures with an allowance for the discharge of waste with a permit. This is allowed in all zones except Preservation Zones (which are a very small part of the Marine Park). Situations where cumulative impacts are likely to be unacceptable are not well managed. For example individual outfalls may be required to report on their discharge quality, but cumulative water quality impacts are not measured. Any overall decrease in water quality (from a number of stressors) is not measured and therefore not incorporated into reactive management where systems and conditions are evaluated and adapted to achieve the best environmental outcomes. However, a Reef Cumulative Impact Management Policy has been drafted and is undergoing public consultation and revision. 	<ul style="list-style-type: none"> GBRMPA Zoning Plan 	Adequate	improving
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address land-based run-off	4	<ul style="list-style-type: none"> The development of the Reef 2050 Plan Investment framework was developed to encourage investment to be spent on priorities, and to provide a baseline of funding commitments from 2015. There is an identified funding shortfall to deliver the Reef 2050 Plan. However, significant investment from both the Australian and Queensland Governments has been provided in past 12 months. 	<ul style="list-style-type: none"> Reef 2050 Plan Reef 2050 Investment strategy 	Adequate	Improving
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to	4	<ul style="list-style-type: none"> Human resources have increased across Government supporting Reef WQIP and the Reef 2050 Plan through the Secretariat at Office of the Great Barrier Reef, Great Barrier Reef Marine Park Authority and Department of Energy and Environment. 	<ul style="list-style-type: none"> Reef 2050 Plan Reef 2050 Investment strategy 	Adequate	Improving

address land-based run-off					
IN3 The right skill sets and expertise are currently available to the managing organisations to address land-based run-off	4	<ul style="list-style-type: none"> • Across the Reef WQIP program and Reef 2050 Plan there are high levels of in-house skills in land-based run-off, with low staff turnover. • Relevant expertise and skills is also outsourced through consultation with Industry and/or other Government and research agencies. • Advice on water quality management is also sought from advisory groups to government, including IEP, Reef WQIP ISP, sediment working group, NUE working group, pesticide working group, human dimensions working group, Paddock to Reef Coordination & Advisory Group, Regional Technical Working Group 	<ul style="list-style-type: none"> • Evidence from GBRMPA and Office of the GBR • Governance program 	Limited	Stable
IN4 The necessary biophysical information is currently available to address land-based run-off	4	<ul style="list-style-type: none"> • The Scientific Consensus Statement for the GBR provides a review of significant advances in scientific knowledge of water quality issues in the GBR. They also describe a number of improvements and recommendations to further our understanding e.g. there is still appreciable uncertainty in our knowledge of the responses of coastal and marine ecosystems to the cumulative impacts of multiple pressures. • Through Paddock to Reef Integrated Monitoring, Modelling and Reporting Program scenarios of management practice improvement impacts on pollutant loads can be made and these load reductions can be modelled for marine WQ and ecosystem health impacts through eReefs/WQ guidelines. 	<ul style="list-style-type: none"> • 2017 Scientific Consensus Statement • Paddock to Reef Integrated Monitoring, Modelling and Reporting Program • Reef 2050 Plan • Reef WQIP 	Adequate	Improving
IN5 The necessary socio-economic information is currently available to address land-based run-off	3	<ul style="list-style-type: none"> • Available social and economic information is available through Scientific Consensus Statement 2017 • Socio and economic research is being brought into the RIMREP Human Dimensions expert working group to inform the RIMREP Program design. • The economic and social impacts of protecting the environmental values of the waters of the Capricorn and Curtis Coasts (Oct 2014) DEHP, Qld. • NESP funds socioeconomic and behavioural change research • Socioeconomic expertise is on the Independent Expert Panel • SELTMP 2018 survey includes new questions of community perceptions of water quality and inshore environments. • Land-based stewardship monitoring and reporting is occurring under the Paddock to Reef Integrated Monitoring, Modelling and 	<ul style="list-style-type: none"> • Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef • Deloitte Access Economics Report Economic contribution of the Great Barrier Reef • Experimental Environmental-Economic Accounts for the Great Barrier Reef, 2017 • Reef 2050 Integrated Monitoring and Reporting Program • Marsden Jacob Associates 2014 The economic and social impacts of protecting the environmental values of the water of the Capricorn and Curtis Coasts. • Reef Scientific Consensus Statement • Regional Water Quality Improvement Plans 	Adequate	Improving

		<p>Reporting Program and Regional Partnerships for Regional Report Cards</p> <ul style="list-style-type: none"> Reef WQIP now incorporates human dimensions target, social cultural and economic values. 	<ul style="list-style-type: none"> Human Dimensions Working Group 		
IN6 The necessary Indigenous heritage information is currently available to address land-based run-off	3	<ul style="list-style-type: none"> Woppaburra has been working with the Environmental Assessment and Permitting (EAP) Section of GBRMPA to develop ways of increasing Traditional Owner input into permitting decisions, and to prevent impacts to traditional use and heritage values (Before applications are accepted and assessed). Following an approach to market in 2016, GBRMPA has engaged consultants to develop a Cultural Protocol and Data Sharing Agreement templates to develop best practice protocols for managing cultural information and legally binding Data Sharing Agreements for use with Traditional Owner groups to share information as necessary. This is scheduled to be completed May 2018 and is part of the Reef 2050 Plan. Outputs from this project will allow managers to work with Traditional Owners in a culturally appropriate way to address IN6. 	<ul style="list-style-type: none"> Reef 2050 Plan 	Limited	improving
IN7 The necessary historic heritage information is currently available to address land-based run-off	NA				
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address land-based run-off	4	<ul style="list-style-type: none"> Under Reef Programme, land managers contribute approx. \$1.50 per \$1 of Australian Government funding received (as cash and in-kind) for project implementation. Land manager co-investment also required for Reef Trust projects, but not for gully and streambank remediation where private benefits are low. The Marine Monitoring Program is a collaborative effort across government and 4 partner organisations. The Marine Monitoring Program relies on local community members to conduct pesticide sampling. In addition, the monitoring provider organisations contribute a significant proportion of in-kind funds to the Program. The Reef Guardian program strives to engage the community in stewardship of the Reef – addressing land-based run-off is part of this. Many of the program activities facilitate and/or promote 	<ul style="list-style-type: none"> Reef Guardian Programs. Great Barrier Reef Gully and Streambank Joint Program Local Marine Advisory Committees GBR Citizen Science Alliance: http://greatbarrierreefcitizenscience.org.au/ 	Adequate	Stable

		<p>voluntary action by individuals, businesses and community groups to address land-based run-off</p> <ul style="list-style-type: none"> Local Marine Advisory Groups sometimes provide input towards addressing land-based run-off. For example the Douglas LMAC has been involved in monitoring water quality. Individual landholders must contribute at least the same amount as the grant they receive to support practice change. The GBR Gully and streambank joint program includes Australian and Queensland governments, in partnership with the private sector, conservation groups, research institutions, regional natural resource management bodies and industry groups 			
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of land-based run-off	4	<ul style="list-style-type: none"> NRMs and industry organisations play major role in program delivery for both Governments. NRMs, industry and NGO represented through Reef 2050 Partnership Committee. Stakeholder engagement is fundamental to project scoping and development under Reef Trust and MIPs 	<ul style="list-style-type: none"> Reef 2050 Reef Advisory Committees Reef 2050 Communication Network 	Adequate	stable
PR2 The local community is effectively engaged in the ongoing management of land-based run-off	4	<ul style="list-style-type: none"> MIPS effectively/extensively engaged local community in their development. The Marine Monitoring Program relies on local community members to conduct pesticide sampling. The Marine Monitoring Program providers are engaged in promoting the implications of the monitoring results for management efforts and the local community. There are several WQIPs in place and local NRM regions and/or Council (in the Townsville urban example) have ongoing programs reporting to community and holding various forums. 	<ul style="list-style-type: none"> Reef 2050 Plan Reef WQIP Marine Monitoring Program 	Adequate	Improving
PR3 There is a sound governance system in place to address land-based run-off	4	<ul style="list-style-type: none"> Reef WQIP provides an integrated approach to water quality improvement and has developed efficient institutional arrangements that will ensure actions are implemented in a timely and coordinated manner across agencies and programs The Paddock to Reef Integrated Monitoring, Modelling and Reporting Program is a collaborative program involving approximately 20 organisations. Sound governance and coordination arrangements are critical to the success of such a complex and interdisciplinary program. 	<ul style="list-style-type: none"> Reef WQIP Reef 2050 Plan Paddock to Reef Integrated Monitoring, Modelling and Reporting Program Independent review of the Institutional and Legal Mechanisms that provide Coordinated Planning, Protection and Management of the Great Barrier Reef World Heritage Area RIMREP program governance 	Adequate	Improving

		<ul style="list-style-type: none"> • 2017 Scientific Consensus Statement finds that intergovernmental coordination and policy alignment must be improved as they affect all aspects of program design and delivery. • A number of committees have been established to help ensure a coordinated and cohesive approach to implementation, and appropriate commitment of resources to actions. Governance structure is available on portal. 			
PR4 There is effective performance monitoring, including, regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for land-based run-off	4	<ul style="list-style-type: none"> • There is a dedicated team to post permit compliance and enforcement. A sewage audit was completed in 2015. • Reef WQIP has clear water quality targets, and catchment and land management targets. Lead organisations are responsible for coordinating implementation and reporting progress to ensure actions are completed and milestones met. • Formal annual evaluation workshops are funded e.g. Qld government pays regional bodies to organise annual evaluation workshops with the Management Practice Adoption Team and modellers where relevant to review their annual programs for water quality and effectiveness of investments. Likewise evaluation feedback meetings are held with DOEE & Qld Government. • As part of this Reef 2050 WQIP, individual targets have been set for reducing water pollution from the 35 major river basins draining into the Reef, enabling better prioritising where the most management action is needed. This is a new level of specificity from previous targets and utilised sophisticated modelling and other scientific information to ensure these targets are based on what the Reef needs to be healthy • Progress towards the Plan's targets is evaluated through the Paddock to Reef Integrated Monitoring, Modelling and Reporting Program (Paddock to Reef program) and reported through the Reef Report Card and is formally linked to the Queensland Reef Water Quality Program Evaluation Framework. Capacity to information adaptive management is limited by current inability to attribute improvements to specific programs. • Office of the Great Barrier Reef are responsible for coordinating regular performance monitoring and assessment, including the recent Reef WQIP review process for 2017. Annual evaluation feedback workshops held with each Regional NRM body regarding effectiveness of their investments (led by DAF Management 	<ul style="list-style-type: none"> • Reef 2050 Plan • RIMReP • Paddock to Reef Integrated Monitoring, Modelling and Reporting Program (Paddock to Reef program) • Reef 2050 WQIP • Qld Reef Water Quality Evaluation Framework (draft) & assessments funded over next few years. 	Adequate	Improving

		<p>Practice leader under P2R). Similar feedback also provided to Queensland and Australian governments</p> <ul style="list-style-type: none"> • For Reef 2050 Plan, RIMReP is the evaluation program & reported through the Great Barrier Reef Report Card 			
PR5 Appropriate training is available to the managing agencies to address land-based run-off	4	<ul style="list-style-type: none"> • Workshops, seminars and conferences related to land-based run-off in the GBR are run at GBRMPA • GBRMPA seminar series completed a MMP medley involving talks from AIMS and JCU on water quality, coral, seagrass and the recently released Scientific Consensus Statement • Managing agencies coordinate field visits/checks for staff to visit projects and learn from delivery partners. • Queensland Government annual science synthesis workshops, other ad-hoc workshops, conferences and working groups for on-the-job training. • Authors from the Scientific Consensus Statement presented findings to staff, Reef Water Quality Partnership Committee had briefings from lead author, Annual Synthesis workshop held in Townsville (110 people including policy, onground managers, science, stakeholders, industry). • New staff are provided with the Paddock to Reef videos and explanations • Regional bodies are provided with new starter briefings • Formal Performance Development Plans (PDPs) for State Government staff identify training needs with funding available annual for training (e.g. many different types of training provided e.g. Grazing land management training, for BMP staff). • OGBR webinar series • There is coordinated training for Queensland government Compliance staff. There is a training program for new Qld Reef Water Quality Evaluation Framework 	<ul style="list-style-type: none"> • GBRMAP and Qld Government information 	Limited	Stable
PR6 Management of land-based run-off is consistently implemented across the relevant jurisdictions	4	<ul style="list-style-type: none"> • The GBR intergovernmental agreement provides a framework for the Australian and Queensland governments to work together to protect the GBR. • The Reef 2050 Plan was released by the Australian and Queensland governments in March 2015 and is the overarching framework for protecting and managing the Reef until 2050. The Plan sets clear actions, targets, objectives and outcomes to drive and guide the short, medium and long-term management of the 	<ul style="list-style-type: none"> • GBR Intergovernmental Agreement • Reef 2050 Plan 	Adequate	Improving

		<p>Reef. The Plan firmly responds to the pressures facing the Reef and will address cumulative impacts and increase the Reef's resilience to longer term threats such as climate change.</p> <ul style="list-style-type: none"> • ESC, SCO and MinFo are forums to enable co-ordination of investments across jurisdictions under Reef 2050 plan. 			
PR7 There are effective processes applied to resolve differing views/ conflicts regarding land-based run-off	4	<ul style="list-style-type: none"> • Public consultation for guidelines and Draft Reef 2050 Water Quality Improvement Plan 2017-2022 • Public consultation of the new Qld Reef Regulations • Scientific Consensus Statement development • Science synthesis forums (annual, QG funded) • Partnership Committee under Reef 2050, WQIP + RAC for Reef 2050 Plan • Review rights exist for all permit applications, and there are public comment periods for applications and policy. 	<ul style="list-style-type: none"> • Reef 2050 Committees • Scientific consensus statement • Reef 2050 WQIP committees • Public consultation on plans and new regulations 	Adequate	Stable
PR8 Impacts (direct, indirect and cumulative) of activities associated with land-based run-off are appropriately considered.	3	<ul style="list-style-type: none"> • The Paddock to Reef Program integrates information on management practices, catchment indicators, catchment water quality and the ecological health of the GBR. Condition and trend of values such as annual average sediment load, particulate nitrogen and phosphorus load, dissolved inorganic nitrogen and pesticide loads to land-based runoff are measured through the Paddock to Reef Monitoring, Modelling and Reporting program, which includes the Marine Monitoring Program and measuring the actions of land managers aimed at reducing land-based runoff • The Marine Monitoring Program monitors and reports on water quality and the health of key marine ecosystems such as coral reefs and seagrass in the inshore Great Barrier Reef lagoon. The Marine Monitoring Program has a Monitoring, Evaluation, Reporting and Improvement Plan that ensures activities are appropriate and adequate. Information from the Marine Monitoring Program is integrated into metrics that describe inshore marine water quality, seagrass and coral condition and trends in condition assessments are used to evaluate progress towards the Reef WQIP goal for the marine environment as part of the Report Card. • Cumulative impacts Management Policy (public consultation) provides a systematic and consistent approach to managing and reducing cumulative impacts on the GBR • Scientific Consensus Statement has been utilised to make management decisions. 	<ul style="list-style-type: none"> • Cumulative impact management Policy • 2017 Scientific Consensus Statement • Reef 2050 Long-Term Sustainability Plan • Paddock to Reef Integrated Monitoring, Modelling and Reporting Program • Reef 2050 Water Quality Improvement Plan 	Adequate	Improving

		<ul style="list-style-type: none"> • Outcomes from NESP projects delivering information on cumulative and interactive effects are incorporated into policy and reports where relevant • eReefs to model WQ and ecosystem health impacts 			
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding land-based run-off	4	<ul style="list-style-type: none"> • Scientific Consensus Statement 2017 is the synthesis of all available information on biophysical research and monitoring information and provided information for the review of Reef WQIP. • Reef WQIP, Paddock to Reef Integrated Monitoring, Modelling And Reporting Program and the Marine Monitoring Program are reviewed as part of the adaptive management cycle to ensure the best available information is generated and applied appropriately to make management decisions. • Management scenario modelling under Paddock to Reef Integrated Monitoring, Modelling and Reporting Program, eReefs • Outcomes from NESP projects delivering information on cumulative and interactive effects are incorporated into policy and reports where appropriate. • There are currently over 90 monitoring programs operating in the Great Barrier Reef World Heritage Area and adjacent catchment. Development of RIMREP will include an analysis of existing monitoring against Reef 2050 Plan deliverables. This will inform decisions on where there may be duplication or gaps in current monitoring, as well as areas where data management, analysis, synthesis and reporting may be improved. This is still in development phase. 	<ul style="list-style-type: none"> • Scientific Consensus Statement • Paddock to Reef Integrated Monitoring, Modelling and Reporting Program • Reef 2050 Plan • Reef 2050 WQIP 	Adequate	Improving
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding land-based run-off	3	<ul style="list-style-type: none"> • Regional WQIPs looking at socio-economic drivers • Reef 2050 Water Quality Improvement will be incorporating human dimensions including our social, cultural and economic values and how they drive our adoption of actions to improve water quality • The GBR blueprint for resilience is working with Individuals, industries and communities to ensure they are aware of the challenges facing the Reef, are actively engaged in efforts to protect it, and are inspiring intergenerational change • The Human Dimensions expert working group to inform the RIMREP Program design. • SELTMP 2014 report on coastal communities in the GBR depicts the current state of coastal community characteristics and relationships with the GBR, and drivers of change. 	<ul style="list-style-type: none"> • RIMReP • SELTMP 2014, 2018 • Reef 2050 WQIP inc human dimensions target, actions, deliverables – establishing Human Dimensions baseline • Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef • Gooch et al. 2017 Assessment and Promotion of the Great Barrier Reef's Human Dimensions through Collaboration. Coastal Management, • Regional Water Quality Improvement Plans 	Adequate	Improving

		<ul style="list-style-type: none"> Scientific Consensus Statement 2017 Chapter 5 covers the synthesis of socio-economic information 			
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding land-based run-off	3	<ul style="list-style-type: none"> The Reef Water Quality Protection Plan (reviewed in 2017) has increased involvement and recognition of Indigenous ranger programs to improve the quality of water entering the Reef - now Reef 2050 WQIP 	<ul style="list-style-type: none"> IRAC papers 	Limited	Improving
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding land-based run-off	NA				
PR13 Relevant standards are identified and being met regarding land-based run-off	4	<ul style="list-style-type: none"> Reef WQIP has clear water quality targets, and catchment and land management targets. Great Barrier Reef Water Science Taskforce Report and the 2015 Report Card assessment clearly show, progress with water quality load targets is not 'on-track' and it is highly likely that most 2018 targets will not be met. 2016 Report Card results show progress in some areas; however, faster uptake of improved land management practices is required to meet the water quality targets. In 2017 Reef Plan went under review. The plan has an expanded scope and addresses all land-based sources of water pollution including run-off from urban, industrial and public lands; while recognising the majority of pollution comes from agricultural activities. It includes social, cultural and economic values for the first time. 	<ul style="list-style-type: none"> Water quality guidelines for the Great Barrier Reef Chapter 4 – Scientific Consensus Statement 2017 Queensland Government response Great Barrier Reef Water Science Taskforce – Final Report, August 2016 Great Barrier Reef Water Science Taskforce May 2016 – Final Report Reef WQIP Draft Reef 2050 Water Quality Improvement Plan Reef WQIP Report Cards 	Adequate	Improving

		<ul style="list-style-type: none"> • Water quality targets have been set for the catchments adjacent to the Great Barrier Reef, based on modelling and other scientific information. The targets define the reduction in nutrients and fine sediment required by 2025. This provides a new level of specificity from the Reef 2050 targets that commit to achieving reductions of up to 80% in dissolved inorganic nitrogen and up to 50% in sediment in priority areas. • The Marine Monitoring Program monitors and reports on water quality and the health of key marine ecosystems such as coral reefs and seagrass in the inshore Great Barrier Reef lagoon. The Marine Monitoring Program results are assessed against the Water Quality Guidelines for the Great Barrier Reef Marine Park. Information from the Marine Monitoring Program is integrated into metrics that describe inshore marine water quality, seagrass and coral condition and trends in condition assessments are used to evaluate progress towards the Reef WQIP goal for the marine environment as part of the Report Card. • GBRMPA water quality guidelines and their role in reporting on progress towards Reef WQIP's goal and targets and links to additional WQIP. There has also been substantial work with DEHP in scheduling these as Water Quality Objectives and Environmental Values in a number of Regions since 2009 under the EP Water Policy. These EVs and WQOs must be met in further decision making processes including the development of Stormwater Management Plan. Sewage Management Plans etc. • The guidelines focus on sediments, nutrients and pesticides – the main catchment run-off pollutants that affect water quality reaching the Great Barrier Reef. The current condition of the Great Barrier Reef waters show that it meets the guidelines most of the time in most areas. • Regional WQIP have regionally based water quality targets. These targets currently pre-date the new Reef WQIP target and the regional bodies will be updating the regional planes with the new targets. 			
PR14 Targets have been established to benchmark management	4	<ul style="list-style-type: none"> • Targets have been established under the Reef 2050 Plan and Reef WQIP. 	<ul style="list-style-type: none"> • Reef 2050 Plan 	Adequate	Improving

performance for land-based run-off					
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for land-based run-off	4	<ul style="list-style-type: none"> There has been progress made towards implementing the 151 actions under the Reef 2050 Plan. The first annual report shows that 19 per cent of the actions are completed or in place and over 65 per cent are underway. The Reef 2050 WQIP are on track 	<ul style="list-style-type: none"> Reef 2050 Plan Paddock to Reef Annual Reports 	Adequate	Stable
OP2 Implementation of management documents and/or programs relevant to land-based run-off have progressed in accordance with timeframes specified in those documents	3	<ul style="list-style-type: none"> Great Barrier Reef Water Science Taskforce Report and the 2015 Report Card assessment clearly show, progress with water quality load targets is not 'on-track' and it is highly likely that most 2018 targets will not be met. 2016 Report Card results shows progress in some areas; however, faster uptake of improved land management practices is required to meet the water quality targets. 	<ul style="list-style-type: none"> Great Barrier Reef Water Science Taskforce Report and the 2016 Report Card 	Adequate	Improving
OP3 The results (in OP1 above) have achieved their stated management objectives for land-based run-off	3	<ul style="list-style-type: none"> Great Barrier Reef Water Science Taskforce Report and the 2015 Report Card assessment clearly show, progress with water quality load targets is not 'on-track' and it is highly likely that most 2018 targets will not be met. 2016 Report Card results show progress in some areas; however, faster uptake of improved land management practices is required to meet the water quality targets. Improvements are being made to the quality of water entering the Reef, however there are significant time lags between land management practice change and seeing improved condition of the Reef. 	<ul style="list-style-type: none"> Great Barrier Reef Water Science Taskforce Report and the 2016 Report Card 	Adequate	Improving
OP4 To date, products or services have been produced in accordance with	4	<ul style="list-style-type: none"> Annual Reef WQIP report cards, the Scientific Consensus statement, the annual Marine Monitoring Program Science Reports and Synthesis Reports have all been produced. 	<ul style="list-style-type: none"> Reef 2050 WQIP Regional WQIPs 	Adequate	Improving

the stated management objectives for land-based run-off		<ul style="list-style-type: none"> Other products and services have been produced in accordance with Reef WQIP objectives Regional report cards and water quality improvement plans have been developed 	<ul style="list-style-type: none"> Scientific Consensus statement and supporting technical reports https://www.reefplan.qld.gov.au/about/reef-science/scientific-consensus-statement/ Catchment Profiles for each of the 35 basins (identify targets, key sources of pollutants and management priorities) https://www.reefplan.qld.gov.au/about/catchment-targets/ Annual Great Barrier Reef report cards https://www.reefplan.qld.gov.au/measuring-success/report-cards/ Regional Report Cards Newsletters – RWQPP + many others Case studies Conceptual models/sediment story 		
OP5 Effective knowledge management systems regarding land-based run-off are in place within agencies	4	<ul style="list-style-type: none"> All Reef WQIP data is saved on SSIMR database (DARTS/SKIP) Scientific Consensus statement eReefs, eAtlas provide data Synthesis workshops are held regularly 	<ul style="list-style-type: none"> AIMS water quality chlorophyll and turbidity time series data AIMS eAtlas Reef 2050 Integrated Monitoring and Reporting Program Reef Globe https://www.reefplan.qld.gov.au/resources/reef-globe/ eReefs SSIMR annual snapshots of MMP data 	Adequate	Improving
OP6 Effective systems are in place to share knowledge on land-based run-off with the community	4	<ul style="list-style-type: none"> A number of website have monitoring data available to the general public 	<ul style="list-style-type: none"> Reef 2050 Integrated Monitoring and Reporting Program Reef Globe https://www.reefplan.qld.gov.au/resources/reef-globe/ eReefs AIMS LTMP website Marine Monitoring Program Office of the Great Barrier Reef Department of Environment and Energy 	Adequate	Improving
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing land-based run-off and moving towards the attainment of	3	<ul style="list-style-type: none"> Great Barrier Reef Water Science Taskforce Report and the 2015 Report Card assessment clearly show, progress with water quality load targets is not 'on-track' and it is highly likely that most 2018 targets will not be met. Water quality targets have now been set for the catchments adjacent to the Great Barrier Reef, based on modelling and other scientific information. The targets define the reduction in nutrients 	<ul style="list-style-type: none"> Chapter 4 – Scientific Consensus Statement 2017 Great Barrier Reef Water Science Taskforce Report Reef WQIP Reef 2050 Plan Annual Report and Implementation Strategy New Qld Reef Regulations 	Adequate	Improving

the desired outcomes.		and fine sediment required by 2025. This provides a new level of specificity from the Reef 2050 targets.			
OC2 The outputs relating to land-based run-off are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	2	<ul style="list-style-type: none"> Great Barrier Reef Water Science Taskforce Report and the 2015 Report Card assessment clearly show, progress with water quality load targets is not 'on-track' and it is highly likely that most 2018 targets will not be met. Water quality targets have now been set for the catchments adjacent to the Great Barrier Reef, based on modelling and other scientific information. The targets define the reduction in nutrients and fine sediment required by 2025. This provides a new level of specificity from the Reef 2050 targets. 	<ul style="list-style-type: none"> Chapter 4 – Scientific Consensus Statement 2017 Great Barrier Reef Water Science Taskforce Report Reef WQIP Reef 2050 Plan Annual Report and Implementation Strategy 	Adequate	Improving
OC3 the outputs (refer OP1 and 3) for land-based run-off are reducing the major risks and the threats to the Great Barrier Reef	3	<ul style="list-style-type: none"> Key Great Barrier Reef ecosystems continue to be in poor condition. This is largely due to the collective impact of land run-off associated with past and ongoing catchment development, coastal development activities, extreme weather events and climate change impacts such as the 2016 and 2017 coral bleaching events. Current initiatives will not meet the water quality targets. To accelerate the change in on-ground management, improvements to governance, program design, delivery and evaluation systems are urgently needed. This will require greater incorporation of social and economic factors, better targeting and prioritisation, exploration of alternative management options and increased support and resources. 	<ul style="list-style-type: none"> Chapter 4 – Scientific Consensus Statement 2017 Great Barrier Reef Water Science Taskforce Report Reef WQIP Reef 2050 Plan Annual Report and Implementation Strategy 	Adequate	Improving
OC4 Use of the Great Barrier Reef relating to land-based run-off is demonstrably environmentally sustainable	2	<ul style="list-style-type: none"> Key Great Barrier Reef ecosystems continue to be in poor condition. This is largely due to the collective impact of land run-off associated with past and ongoing catchment development, coastal development activities, extreme weather events and climate change impacts such as the 2016 and 2017 coral bleaching events. Current initiatives will not meet the water quality targets. To accelerate the change in on-ground management, improvements to governance, program design, delivery and evaluation systems are urgently needed. This will require greater incorporation of social and economic factors, better targeting and prioritisation, exploration of alternative management options and increased support and resources. Land clearing in Qld has accelerated in recent years, although the Qld Government has re-introduced tougher clearing legislation 	<ul style="list-style-type: none"> State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 2017 Scientific Consensus Statement Brodie, Grech, McCook, 2017, The new Great Barrier Reef pollution plan is better, but still not good enough, The Conversation 	Limited	Stable

		<ul style="list-style-type: none"> • Conflicting policies around increased agricultural development/production • Some loss of wetlands and riparian areas continues 			
OC5 Use of the Great Barrier Reef relating to land-based run-off is demonstrably economically sustainable	2	<ul style="list-style-type: none"> • The Reef contributes \$6.4 billion to the Australian economy and supports significant regional employment through tourism, fishing and other industries. • Values are jeopardised by poor water quality • Rising water tables threaten production in some areas (e.g. lower Burdekin) • Poor management practices threaten sustainability of grazing and cane industries in marginal lands • Yield decline in cropping due to poor soil health 	<ul style="list-style-type: none"> • Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef • State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 • Draft Reef 2050 Water Quality Improvement Plan 2017-2022 	Adequate	Stable
OC6 Use of the Great Barrier Reef relating to land-based run-off is demonstrably socially sustainable, in terms of understanding and/or enjoyment	2	<ul style="list-style-type: none"> • High level of volunteer activity and community understanding of monitoring and education activities through Reef Guardian programs and GBRMPA education and communication products • Community enjoyment may have decreased due to decline in water quality 	<ul style="list-style-type: none"> • Deloitte Access Economics Report 2017 – At what price? The economic, social and icon value of the Great Barrier Reef • State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 • Reef 2050 WQIP 	Adequate	Improving
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address land-based run-off	4	<ul style="list-style-type: none"> • GBRMPA, Australian and Queensland Government have strong relationships with stakeholders involved in managing land-based run off, developed through the Reef 2050 Plan • These partnerships are effective and ensure that all are focused on the best possible outcomes for the reef. There has been significant progress in the past 15 years and this will continue to be built upon going forward. • The Paddock to Reef program, an integral component of Reef WQIP, is a collaboration involving industry, regional natural resource management organisations, research organisations and government. The Paddock to Reef Program integrates information on management practices, catchment indicators, catchment water quality and the ecological health of the GBR 	<ul style="list-style-type: none"> • Reef 2050 Plan and committees • Reef 2050 WQIP and committees • RAC • Partnership committee 	Adequate	Improving

Table 32 Calculation of grades for ports

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to ports are understood by managers	3	<ul style="list-style-type: none"> • There are 12 trading ports in the World Heritage Area, managed by four port authorities — all Queensland Government-owned corporations: <ul style="list-style-type: none"> ○ Port of Quintell Beach ○ Port of Cape Flattery ○ Port of Cooktown ○ Port of Cairns ○ Port of Mourilyan ○ Port of Lucinda ○ Port of Townsville ○ Port of Abbot Point ○ Port of Mackay ○ Port of Hay Point ○ Port of Rockhampton ○ Port of Gladstone • Only the minor ports of Cooktown and Quintell Beach in Cape York are located within the Marine Park. • Queensland port limits are defined in the Transport Infrastructure (Ports) Regulation 2016. • There are also a number of smaller non-commercial 'ports / marinas ' such as Port Douglas north of Cairns, Airlie Beach and Shute Harbour on the Whitsunday's coast, Nelly Bay on Magnetic Island and Rosslyn Bay near Yeppoon, which do not have declared Port Limits nor designated Port Authorities under the <i>Transport Infrastructure (Ports) Regulation 2016</i> (Qld)The Queensland Ports Association has a Memorandum of Understanding (MoU) with GBRMPA concerning the management of GBR ports. • The partnerships established in Mackay-Whitsunday, Townsville, Cairns and Gladstone involve monitoring of water and sediment quality, seagrass habitats, coral habitats, fish (breem recruitment), social, culture and 	<ul style="list-style-type: none"> • Great Barrier Reef Strategic Assessment Report, 2014 • Great Barrier Reef Coastal Zone Strategic Assessment 2014 • Sustainable Ports Development Act 2015 • Queensland Ports Seagrass Monitoring • Reef 2050 Long Term Sustainability Plan • '30-Year Vision And Action Plan' (2014) DNRM • 'Synthesis Report on Effects of Dredging on the Great Barrier Reef by Independent Expert Panel' (2015) GBRMPA, • Abbot Point Cumulative Impact Assessment • AIMS Factsheet, 'Dredging - what is the impact on the Great Barrier Reef?' • Bulk Ports Corporation monitoring reports • Guidelines for the development of Port Master Plans • Queensland Maintenance Dredging Strategy 2016 • The Gladstone Healthy Harbour Partnership Technical Report monitors water and sediment quality, seagrass habitats, turtle coral habitats, fish (breem recruitment), social, culture and economic components, indigenous culture, and connectivity • Gladstone Annual Report 2015-2016 • Australian Government <i>State Party Report on the State of Conservation of the Great Barrier Reef World Heritage Area (Australia) (Property ID N154), for submission by 31 January 2014.</i> • Australian Government <i>State Party Report on the State of Conservation of the Great Barrier Reef World Heritage Area (Australia) (Property ID N154), for submission by 30 January 2015.</i> • National Strategy for Mitigating Vessel Strike of Marine Megafauna • Reef Trust Offsets Calculator developed (public launch 2/11/17) 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>economic components, indigenous culture, and connectivity.</p> <ul style="list-style-type: none"> Port Authorities have been an active participant in the Reef 2050 Long Term Sustainability Plan Port related actions are clearly identified in Reef 2050. 			
CO2 The current condition and trend of values relevant to ports are known by managers	3	<ul style="list-style-type: none"> Great Barrier Reef ports present as being well managed in terms of minimising potential adverse influences upon the Marine Park and WHA. Ports used their knowledge and familiarity with the values of the GBR to contribute to the development of the Great Barrier Reef Strategic Assessment Report (2014), Great Barrier Reef Coastal Zone Strategic Assessment (2014), Reef 2050 Plan, Sustainable Ports Act, GBR Maintenance dredging Strategy, Port Master Planning, GBR policies (including reef Trust, Offset Policy and similar). Ports contribute as partners in the Reef 2050 Long Term Sustainability Plan working with GBR managers. Ports have input into the development and implementation of most GBR related policies that have been developed under Reef 2050 to ensure that the environmental values within ports and the interaction of ports with the GBR are appropriately understood and described. All ports have long term ambient environmental monitoring programs dating back several decades. These monitoring programs examine key environmental values including seagrass, coral, benthic sediment and water quality. In most cases these monitoring programs are not a 'statutory' requirement and are in place irrespective of whether there is development occurring. These long-term programs are used by ports to determine condition and trend of environmental values within ports. Available monitoring data are strongly embedded within the development of the Reef Integrated Monitoring, Modelling and Reporting Program (RIMReP) and ports have multiple representatives involved in the technical working groups responsible for designing reef-wide monitoring programs. Ports are key partners in several regional monitoring 	<ul style="list-style-type: none"> 'Synthesis Report on Effects of Dredging on the Great Barrier Reef by Independent Expert Panel' (2015) GBRMPA '30-Year Vision And Action Plan' (2014) DNRM. Bulk Ports Corporation monitoring reports Deloitte Access Economics Report Economic contribution of the Great Barrier Reef GBR Region Strategic Assessment Report (2014). McKenna, S, Jarvis, J, Sankey, T, Reason, C, Coles, R, & Rasheed, M 2015, 'Declines of seagrasses in a tropical harbour, North Queensland, Australia, are not the result of a single event', Journal Of Biosciences, 40, 2, pp. 389-398, Academic Search Index, EBSCO host, viewed 17 October 2017. Sustainable Sediment management (WQA16). Port authorities are leading Reef2050 action to understand port sediment characteristics at the four major ports and how sediment interacts and contributes to broader catchment contributions within the WHA. Queensland Ports Seagrass Monitoring Reef 2050 Integrated Monitoring and Reporting Program Master Plans Gladstone Annual Report 2015-2016 Gladstone Healthy Harbour Partnership Mackay-Whitsunday Healthy Rivers to Reef Partnership Healthy Rivers to Reef Partnership Mackay Whitsunday Report Card Regional partnerships in Cairns and Townsville. Regional Report cards: Fitzroy Basin Report Card Gladstone Harbour Report Card Wet Tropics Report Card 	Limited	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>programs at Gladstone, Mackay-Whitsunday, Townsville (under development) and Cairns that provide information for managers on the condition and trend of values.</p> <ul style="list-style-type: none"> • Access to any relevant port monitoring data is considered to be important for other GBR management agencies, and data sharing arrangements are currently being negotiated through the RIMReP data management and systems working group, noting that implementation of RIMReP is primarily the responsibility of GBRMPA. • Port master plans are intended to be informed by a baseline evidence report of the social, economic and biological environment within and adjacent to the master plan area including potential temporal variation issues at each port. Port authorities provide substantial input into these evidence reports. 	<ul style="list-style-type: none"> • Water Quality Improvement Plans (WQIPs) and Healthy Waters Management Plans (HWMPs) 		
CO3 Impacts (direct, indirect and cumulative) associated with ports are understood by managers.	4	<ul style="list-style-type: none"> • The land and ocean-based activities associated with ports include, <i>inter alia</i>: <ul style="list-style-type: none"> ▪ terminals, loading and unloading facilities ▪ land reclamation ▪ trestle structures ▪ dredging and sea dumping of dredge material ▪ storage and waste facilities, cargo holding facilities, stockpiles ▪ safety and navigational aids and lighting ▪ monitoring buoys ▪ port services vessels and ship berths ▪ ship departure channels and anchorages. • Port activities and port developments are amongst the most tightly regulated activities, especially in the GBR region. • Port developers, assessment/approval regulators and operating authorities have an effective understanding of the impacts (direct, indirect and cumulative) associated with ports. • It is reasonable to consider, however, that GBRMPA has not articulated a succinct, clear understanding of the environmental implications of the development and operation of ports, or how these may affect processes and values of the Marine Park and World Heritage Area. Consequently, GBRMPA efforts to 	<ul style="list-style-type: none"> • GBR Region Strategic Assessment Report (2014) • EPBC Act development proposals • State Planning Policy • Final (scheduled) materials under the EPP Water are on the EHP • Sustainable Ports Development Act 2015 • Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef: report of an independent panel of experts • Dredge and dredge spoil material disposal policy • Dredging coral reef habitats • Improved Dredge Material Management for the GBR Region • Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging • Deemed applications under the EPBC Act • Net Benefits Policy – draft for consultation • Offset Guidelines for the GBR – internal document, uploaded to Portal • Cumulative Impact management policy • Abbot Point Cumulative Impact Assessment • Dredging and Australian Ports – tropical and subtropical ports • Environmental Code of Practice for Dredging and Dredge Material Management 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>contribute to the management of these effects themselves, or influence their management by others, is compromised and arguably results in inefficient allocation of available resources. For example, some key issues related to port development and operations not readily apparent in GBRMPA deliberations are related to issues such as status and habitat requirements of inshore dolphins, management of actual (as opposed to perceived) risks from underwater noise, and the possible effects of altered light regimes, although some work to improve understanding of these and similar matters has been implemented since 2013.</p> <ul style="list-style-type: none"> • There remains a key focus within GBRMPA upon dredging. Given the development and implementation of new regulations and policies for dredging and spoil disposal within the GBR since 2013, it may be anticipated that GBRMPA will have latitude to gain a broader appreciation of port activities and implications for management of the WHA. • Port Authorities have implemented actions to understand the port sediment characteristics at the four major ports and how sediment interacts and contributes to broader catchment contributions within the WHA. • Port actions within the Reef 2050 Plan are well documented 	<ul style="list-style-type: none"> • McRae, M 2014, 'Turtle tagging to help assess Gladstone dredging risks', Ecos, no. 193, pp. 17-18. • Email sent on 13 Dec 17 by Sonia Gorgula detailing study. • Queensland Biosecurity Capability Review - Final Report, September 2015. • Queensland Biosecurity Capability Review Interim Response, Department of Agriculture and Fisheries, 2016. • Reef Trust Offsets Calculator 		
CO4 The broader (national and international) level influences relevant to ports are understood by managers.	4	<ul style="list-style-type: none"> • These influences are well understood by port operators and managers. • GBR Port Authorities are active members of Ports Australia fora and regularly attend international workshops and participate in international working groups such as the World Association for Waterborne Transport Infrastructure (PIANC). Information gained from these working groups is routinely shared with regulators, including GBRMPA. • Port Authorities are active members of Ports Australia forums and PIANC working groups that are involved in global exchanges of information, development of papers and guidelines. Australian ports are considered highly for their technical 	<ul style="list-style-type: none"> • Chapter 5 Drivers and Activities • Great Barrier Reef Coastal Zone Strategic Assessment 2014 • Environmental best practice port development: an analysis of international approaches (2013) DOEE. • State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 • Environmental Code of Practice for Dredging and Dredge Material Management – Aug 16 • Deloitte Access Economics Report Economic contribution of the Great Barrier Reef • Great Barrier Reef Strategic Assessment Report, Chapter 5 • Improved dredge material management in the Great Barrier Reef Region 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>knowledge and involvement with global port community.</p> <ul style="list-style-type: none"> The draft of ships is a significant factor limiting navigable waterways, and the worldwide trend towards longer, deeper draft ships affects port access requirements. In order to accommodate deeper draft ships, some ports may require more capital and ongoing maintenance dredging into the future. Larger ships, can however, offer net environmental performance benefits in comparison with a greater number of smaller ships moving the same volume of cargo. Australia is a comparatively small trading nation on the world scale and has minimal influence upon global shipping trends driven by much larger ports with significantly higher trade volumes. Ports are active members of the Reef 2050 Advisory Committee and routinely engage with GBRMPA in relation to how they are managing their obligations under Reef 2050. The Committee provides an opportunity for GBRMPA managers to liaise with port representatives on national and international trends in ports and shipping. 	<ul style="list-style-type: none"> Environmental best practice port development: an analysis of international approaches PIANC Ports Australi 		
CO5 The stakeholders relevant to ports are well known by managers.	4	<ul style="list-style-type: none"> Port operators and management authorities have extensive stakeholder engagement processes. It is considered that management objectives would be improved if clear policy for controlling/optimising time that ships spent waiting in anchorages was developed and implemented, noting that time at anchor influences other factors such as aesthetic effects, leaching of anti-fouling paint biocides, reliance upon waste reception services, and similar. In accordance with current MoU, Ports and GBRMPA managers hold six-monthly meetings to discuss new policies, management approaches and development issues as they arise. GBRMPA and port managers are members of Technical Advisory Consultative Committees (TACCs) at most GBRWHA Ports. Ports also 	<ul style="list-style-type: none"> Sustainable Ports Development Act 2015 Reef 2050 Integrated Monitoring and Reporting Program Reef Advisory Committee North East Water Space Management Group (run by AMSA) Gladstone Healthy Harbour Partnership and Mackay-Whitsunday Healthy Rivers to Reef Partnership and regional partnerships in Cairns and Townsville. 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>participate in many GBRMPA Local Marine Advisory Committees (LMACs). These provide an opportunity for managers to liaise with port representatives on national and international trends in ports and shipping, as well as discuss local sit specific issues and management approaches.</p> <ul style="list-style-type: none"> • GBR Ports (often through the Queensland Ports Association) and other relevant stakeholders are members of: <ul style="list-style-type: none"> ○ Reef Advisory Committee ○ North East Water Space Management Group ○ RIMReP ○ Gladstone Healthy Harbour Partnership and Mackay-Whitsunday Healthy Rivers to Reef Partnership and regional partnerships in Cairns and Townsville. • A wide range of stakeholders are recognised by Ports in addition to State and Commonwealth agencies, including environmental non-government organisations, • The Queensland <i>Sustainable Ports Development Act 2015</i> requires <u>statutory consultation periods</u> with stakeholders and the community on the future direction of priority ports. 			
PLANNING					
PL1 There is a planning system in place that effectively addresses ports	4	<ul style="list-style-type: none"> • Planning for individual ports has been effective, but coordinated development of the GBR ports previously lacked rigour and transparency. This situation has changed significantly since 2013. • Port activities and port developments are amongst the most tightly regulated activities, especially in the GBR region 	<ul style="list-style-type: none"> • <u>Sustainable Ports Development Act 2015 (Qld)</u> enacted on 20 November 2015 addressed a number of actions within the Reef 2050 Plan. • Queensland ports are governed by the <u>Department of Transport and Main Roads</u> under the <i>Transport Infrastructure Act 1994</i> (Qld). • MSQ regulate <u>marine pollution</u> in Queensland waters; AMSA in Commonwealth waters. • <u>Transport Operations (Marine Pollution) Act 1995</u> (Qld) and regulations protect Queensland's marine and coastal environment by minimising deliberate and negligent discharges of ship-sourced pollutants 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<ul style="list-style-type: none"> Plans and procedures to minimise the risk of introduction, and the timely detection of and response to marine pests in the GBR, are generally deficient. There is a Response Plan for Introduced Pests, but plans and procedures for surveillance, management and prevention are deficient. This situation is improving with the implementation of new international and Australian controls on ballast water, as well as the intended implementation of the Queensland Marine Pest Preparedness Project. The Queensland <i>Sustainable Ports Development Act 2015</i> was enacted on 20 November 2015 has a key policy objective to provide for the protection of the GBRWHA through managing port-related development in and adjacent to the area. The Act only applies to 'priority ports'; ie. Brisbane, Gladstone, Hay Point/Mackay, Abbott Point and Townsville. The Queensland Government commenced development and consultation on priority port master plans, but as of January 2018 this process is behind the nominated schedule. It is understood that this is reflective of an appreciation that the master planning process is more complicated than had been anticipated. Planning and approvals for the development of GBR ports not categorised as 'priority ports' continues to be controlled by existing Commonwealth and Queensland legislative instruments. 	<p>into coastal waters. Guide for prevention of ship-sourced pollution and for the safe transfer of bunkers in Queensland waters.</p> <ul style="list-style-type: none"> Queensland Coastal Contingency Action Plan (QCCAP). GBRMP Site Management Plans GBRMP Plans of Management QLD Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef: report of an independent panel of experts Dredge and dredge spoilt material disposal policy Dredging coral reef habitats Reef Trust Offsets Calculator developed (public launch 2/11/17) Reef 2050 Long Term Sustainability Plan 		
PL2 The planning system for ports addresses the major factors influencing the Great Barrier Reef Region's values.	4	<ul style="list-style-type: none"> The initiation of the <i>Sustainable Ports Development Act 2015</i> and associated ports master planning processes, as well as new policies and regulations for dredging within the GBR significantly improve the effectiveness of systems and processes for addressing the major factors influencing the GBR's values in relation to the development and maintenance of ports. 	<ul style="list-style-type: none"> SPD Act MDS Code of Practice Reef 2050 New polices Great Barrier Reef Marine Park Zoning Plan 2003 Dredging and Dredge Spoilt Material Disposal Policy Great Barrier Reef Marine Park Zoning Plan 2003 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<ul style="list-style-type: none"> • State Development Assessment Provisions (SDAP) have been adopted for ports. • Dredging and Dredge Spoilt Material Disposal Policy provide for a consistent and contemporary approach to environmental impact management of dredging and disposal of dredge spoil material in the Marine Park. • While some elements are effectively addressed (e.g. management of dredge spoil), some gaps in knowledge of applicable aspects of port developments and operations, are evident and hence some elements appear to have a sub-optimal basis from which to influence the development and operation of ports to address the major factors influencing the Great Barrier Reef Region's values. 	<ul style="list-style-type: none"> • The Schedule for State-wide Maintenance Dredging of Queensland Ports (Qld) (Qld Port Association; March 2017) describes the schedule for maintenance dredging of Queensland ports in 2017. The schedule is based on information provided by individual ports and the dredge operator. • Gladstone Port Environmental Reports & Documents. Master Plan has been released for public comment • Hay Point Port Environmental Reports & Documents and Ambient Air, Noise and Weather Monitoring Reports. North Queensland Bulk Ports, the draft master plan for Abbot Point is expected to be released in 2017 and the draft master plan for Hay Point/Mackay is due for release in 2018. Trade and port development application list • Abbott Point Port Environmental Reports & Documents <ul style="list-style-type: none"> ○ Thompson A, Costello P, Davidson J (2016) Port of Abbot Point Ambient Monitoring Program: Baseline Report 2016. Report prepared for North Queensland Bulk Ports. Australian Institute of Marine Science, Townsville. ○ Port of Abbot Point Ambient Coral Monitoring Program: Monitoring plan (August 2016) AIMS. ○ NQPB, Environment and Planning Policy Tasks – 2016-17 ○ NQBP, Sustainability Plan 2015+ A Targeted Plan For Our Business • Townsville Port Environmental Reports & Documents. Approvals. Port expansion project to start early 2018. Air monitoring. Dredge monitoring. Seagrass Report and JCU TropWATER. Master planning process underway • Cairns Port Environmental Reports & Documents. Cairns Shipping Development Project - Revised Draft Environmental Impact Statement - Fact Sheet July 2017. • 'Environmental Code of Practice for Dredging and Dredged Material Management' (August 2016) Ports Australia 		
PL3 Actions for implementation regarding ports are clearly identified within the plan	4	<ul style="list-style-type: none"> • Port related actions are clearly identified in Reef 2050. • The suite of policies and guidelines pertaining to port developments is extensive. • The Queensland GBR priority ports master planning process has been initiated, but has not kept up with the indicative timing (as announced by Minister for State Development in November 2015) - <i>Master planning is underway at Gladstone and starts in the first quarter of 2016 at Abbot Point, in the second quarter of 2016 in Townsville and in 2017 at Hay</i> 	<ul style="list-style-type: none"> • Reef 2050 Long-Term Sustainability Plan 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p><i>Point/Mackay</i>. As of April 2018, priority port master planning development status is:</p> <ul style="list-style-type: none"> ▪ Gladstone – draft master plan released for public comment in August 2017. Note that the draft 'master plan' details the need for a number of subordinate plans and guidelines required to implement the master plan; it is understood that these subordinate plans and guidelines have yet to be developed. ▪ Townsville – government announced commencement of master planning process in February 2017, but no draft master plan yet available. ▪ Abbot Point – no information available. ▪ Hay Point / Mackay – no information available. 			
<p>PL4 Clear, measurable and appropriate objectives for management of ports have been documented</p>	<p>3</p>	<ul style="list-style-type: none"> • Queensland has articulated four guiding principles for the development of (priority) ports, as follow: <ul style="list-style-type: none"> ○ the Outstanding Universal Value of the GBRWHA is an intrinsic consideration in future port development, management and governance ○ optimisation of the use of infrastructure at the long-established major ports ○ transparent decision making ○ meaningful engagement with stakeholders.. • The <i>Great Barrier Reef Marine Park Act 1975</i> applies to any port related activities undertaken within the marine park. Ports are subject to the permissions system, compliance and regulatory provisions of the Act for relevant activities undertaken in the Marine Park, but objectives for the management of ports, particularly in relation to their operations, are not 'clearly' articulated within this Act. • The <i>Great Barrier Reef Marine Park Zoning Plan 2003</i> is the primary planning instrument for the conservation and management in the Marine Park, and has limited to nil effect for adjacent jurisdictions. This zoning plan specifically identifies areas where 	<ul style="list-style-type: none"> • <u>Ban on capital dredge material disposal'</u> • <u>Great Barrier Reef Marine Park Regulations 1983</u> • <u>Dredge and dredge spoil material disposal policy</u> • <u>Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports</u> • <u>Sustainable Ports Development Act 2015 (Qld)</u> • <u>Great Barrier Reef Marine Park Zoning Plan 2003</u> • <i>Environment Protection and Biodiversity Conservation Act 1999</i> • <i>Transport Infrastructure Act 1994</i> • <i>State Development and Public Works and Organisations Act 1971</i> • <i>Planning Act 2016 (Qld) repeals the Sustainable Planning Act 2009</i> • <i>Environment Protection Act 1994</i> • <i>Sustainable Ports Development Act 2015</i> • <u>Master Plans at Priority Ports</u> • <u>Environmental Code of Practice for Dredging and Dredge Material Management</u> • <u>Queensland Maintenance Dredging Strategy.</u> • Net benefit • Offsets x3 • Cumulative impacts • Dredging and Dredge Spoilt Material Disposal Policy • NAGD 	<p>Adequate</p>	<p>Improving</p>

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>port activities may/may not occur. Similar zoning principles are adopted for State Marine Parks and Fish Habitat Reserves. Objectives for the management of ports, particularly in relation to their operations, are not 'clearly' articulated within this Plan.</p> <ul style="list-style-type: none"> • The Australian Government has established a new regulation that ends the disposal of dredge material in the Great Barrier Reef Marine Park from capital dredging projects such as port developments. • The <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) applies to port activities (primarily development) that may result in a significant impact to a Matter of National Environmental Significance, this includes the: <ul style="list-style-type: none"> ○ GBRWHA ○ GBR National Heritage Place ○ GBRMP ○ Relevant listed threatened species, ecological communities and migratory species. • <i>Environmental Code of Practice for Dredging and Dredge Material Management</i> prepared by Ports Australia outlines a series of environmental principles that Australian ports follow when undertaking dredging and when reusing, relocating or disposing of dredged material. • The Queensland Maintenance Dredging Strategy requires ports to: <ul style="list-style-type: none"> ▪ Develop a Long-Term Maintenance Dredge Management Plan by the end of 2018. ▪ Publish the maintenance dredge schedule for Queensland ports on an annual basis and show how environmental values have been considered in the development of the schedule. • Ports have initiated a study which contextualises port sediment management with a range of other inputs, and examines opportunities for ports to sustainably manage the build-up of sediment in navigational areas. The outcomes of the study will support ports in their implementation of the <u>Queensland Maintenance Dredging Strategy</u>. 			

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<ul style="list-style-type: none"> Ports are the only 'non-government' partner responsible for leading an action in the Reef 2050 Long Term Sustainability Plan – Water Quality Action 17 (WQA17). WQA 17 requires ports to “Understand the port sediment characteristics and risks at the four major ports and how they interact and contribute to broader catchment contributions within the World Heritage Area.” 			
<p>PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to ports</p>	3	<ul style="list-style-type: none"> RIMRep is being developed Ports have the following in place: <ul style="list-style-type: none"> Environmental Management Systems (especially ISO 14001) at all ports, providing processes to identify and manage environmental risk. Quality Assurance processes (e.g. ISO 9001) with third party accreditation at all GBR ports. Long term ambient environmental monitoring programs, of varying span and quality, intended to understand environmental values including seagrass, coral, dust, water and sediment quality, and marine pests. All ports have EMPs, EMS and monitoring plans in place. Environmental Management Plans designed to manage interactions with port environmental values. There is a role for agencies other than port authorities to gather and disseminate data related to ports. Some ports monitoring data are collected and available (eg. no of ship visits, some aspects of water quality, etc.). Additional data which could be collected/monitored and made publicly available, but not necessarily by the port management authorities, include, <i>inter alia</i>: <ul style="list-style-type: none"> vessel/marine fauna strikes (eg. dolphins, dugongs, turtles); cargo losses/spillages during loading/unloading; water and sediment quality, including anchorages; port run-off water quality. Ports advise that work has commenced to initiate a marine pest monitoring program. 	<ul style="list-style-type: none"> Guidelines for the Use of Hydrodynamic Numerical Modelling (2012) GBRMPA Reef 2050 Integrated Monitoring and Reporting Program National Vessel Strike Strategy. Bulk Ports Corporation monitoring reports 	Limited evidence	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<ul style="list-style-type: none"> All ports have long term ambient environmental monitoring programs dating back several decades. These monitoring programs examine environmental values including seagrass, coral, benthic sediment and water quality. These monitoring programs are not necessarily a 'statutory' requirement and are in place irrespective of whether there is development occurring. These long-term programs are used by ports to determine condition and trend of port environmental values. Ports work with regional Partnerships (e.g. Gladstone, Mackay-Whitsunday, Townsville and Cairns) to initiate and co-ordinate regional monitoring which includes assessment of port related influences. Ports are participating in the development of GBR wide programs such as RIMReP and monitoring information will be integrated into RIMReP once operational. GBRMPA has the regulatory ability to set appropriate and adequate monitoring requirements for developmental and operational port works as part of approvals process, restricted to development in the GBRMP only, or can make recommendations where a referral for an EPBC application purpose. 			
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address ports	3	<ul style="list-style-type: none"> Engagement of the community on port management issues is mainly through Port Authorities and Qld Government. GBRMPA undertakes some project specific engagement through LMACs. All Ports along the GBR coast work and liaise closely with the community Ports may also have several additional stakeholder groups including – Community Reference Groups (CRGs), Community Liaison Groups (CLGs), Management Reference Groups (MRGs) and similar. For example, Port of Townville has been running community sessions as part of their capital expansion program. The CLG comprises community members and community groups with an interest in the operations of the port, port sustainability and future port development plans. Ports work with regional Partnerships (e.g. Gladstone, Mackay-Whitsunday, Townsville and 	<ul style="list-style-type: none"> Port of Townsville Community Liaison Group Regional Report cards: <ul style="list-style-type: none"> Healthy Rivers to Reef partnership Mackay Whitsunday Report Card Fitzroy Basin Report Card Gladstone Harbour report card Wet Tropics Report Card Master Plans Reef 2050 Long-Term Sustainability Plan 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>Cairns) to initiate and co-ordinate regional monitoring which includes assessment of port related influences.</p> <ul style="list-style-type: none"> • Technical Advisory Consultative Committees (TACCs) are in place at all GBR ports. These typically include representatives from GBRMPA, Commonwealth and State Government agencies, tourism, fishing, local conservation groups, Indigenous representatives, local communities and scientific experts. • The Regional Report Cards involve industry, the Australian Government, Queensland Government, local government, universities and research institutions in the provision of streamlined monitoring, targeted management and expert science advice to maintain and continuously improve harbour health. • The process for management of engagement of stakeholders would appear to be effective. 			
PL7 Sufficient policy currently exists to effectively address ports	4	<ul style="list-style-type: none"> • Port operations and port developments are regulated by a wide range of Commonwealth and Queensland regulations. • Wider Queensland policy for port master planning has been developed in is in the process of being implemented. This incorporates strong linkages addressing ports and their relationship with GBR Marine Park and World Heritage Area values. • The GBRMPA Dredge and Dredge Spoil Material Disposal Policy (2016) is an essential element in guiding managers in the management and mitigation of environmental impacts associated with dredging activities in the Great Barrier Reef Marine Park. The policy places dredging and dredge material disposal in context and provides key principles for managers to address related impacts as part of assessing applications for permissions to conduct dredging or to dispose dredged material in the Marine Park. • Some policy/guidance gaps have been or are being addressed, such as planning for and siting of anchorages. • Ports corporations pursuant to the <i>Government Owned Corporations Act 1993</i> (Qld) are required to 	<ul style="list-style-type: none"> • <u>Dredging and removal of quarry material from under tidal water</u> • <u>Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef: report of an independent panel of experts</u> • <u>Dredge and dredge spoilt material disposal policy</u> • <u>Dredging coral reef habitats</u> • <u>Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports</u> • Updated <u>permission system policy</u> and <u>new guidance documents</u>. • National Ports Strategy • National Land Freight Strategy • Moving Freight • 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Protocol) • International Convention for the Prevention of Pollution from Ships (MARPOL) • National Assessment Guidelines for Dredging • <u>Reef 2050 Long-Term Sustainability Plan</u> • Environment Protection (Sea Dumping) Act 1981 • Environment Protection and Biodiversity Conservation Act 1999 • Great Barrier Reef Marine Park Act 1975, • National Assessment Guidelines for Dredging 2009 	Uncertain	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>publish an environmental management and monitoring statement/ report annually.</p> <ul style="list-style-type: none"> • In 2017, GBRMPA Environmental Assessment and Protection section updated their permission system policies and guidance documents. • Port related State legislation: Transport Infrastructure Act 1994, Marine Parks Act 2004, Sustainable Ports Development Act 2015, Coastal Protection and Management Act 1995, Biosecurity Act 2014, Planning Act 2016, and State Development and Public Works Act 1971. • The <i>Sustainable Ports Development Act 2015</i> provides a planning framework for ports that: <ul style="list-style-type: none"> • Restricts new port development in and adjoining the GBRWHA to within current port limits and outside Commonwealth and state marine parks. • Prohibits major capital dredging for the development of new or expansion of existing port facilities in the GBRWHA outside the Priority Ports of Gladstone, Abbot Point, Townsville and Hay Point/Mackay. • Prohibits the sea-based disposal of port-related capital dredge material within the GBRWHA. • The Queensland Maintenance Dredging Strategy (2016) provides a framework for sustainable, leading practice management of maintenance dredging at ports in the GBRWHA and builds on the current strong regulatory requirements and ensure the ongoing protection of the Reef's values and the continued operating efficiency of ports within the GBRWHA. 	<ul style="list-style-type: none"> • Queensland Maintenance Dredging Strategy • GBRMPA Dredge and Dredge Spoil Material Disposal Policy • <i>Dredging Coral Reef Habitat Policy</i> 		
PL8 There is consistency across jurisdictions when planning for ports	3	<ul style="list-style-type: none"> • There had been some lack of consistency across jurisdictions, particularly in the context of the linkages between individual ports and potential cumulative effects, but this situation has changed significantly since 2013 in terms of port developments and the optimisation of existing port facilities. • The broad regulatory framework that relates to both planning and development/impact assessment for ports and their environmental management has 	<ul style="list-style-type: none"> • <u>Dredge and dredge spoilt material disposal policy</u> • <u>Dredging coral reef habitats</u> • <u>Improved Dredge Material Management for the GBR Region</u> • <u>Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging</u> • <u>Sustainable Ports Development Act 2015 (Qld)</u> • <u>Master planning for ports</u> • <u>Reef 2050 Long-Term Sustainability Plan</u> • Maintenance Dredging Strategy 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>refined and enhanced by new policies and regulations. Port master plans add another layer and provide greater clarity and transparency.</p> <ul style="list-style-type: none"> • Guidance from GBRMPA for ports, derived from a clearer, more comprehensive knowledge and understanding of port operational activities, and implications for the Marine Park and World Heritage Area would enhance management effectiveness. • The MoU between GBRMPA and Queensland Ports Association <u>aims to improve coordination between port management and GBRMPA management associated with port activity within or adjacent to the Great Barrier Reef Marine Park.</u> • The Reef 2050 Long Term Sustainability Plan seeks jurisdictional consistency in implementing actions to manage impacts to the GBRWHA. The Reef 2050 Secretariat includes GBRMPA, DoEE and DEHP. • The Master Planning process for Priority Ports considers planning issues across Commonwealth, State and Local Government jurisdictions and clearly identifies the responsibilities of relevant agencies in managing impacts to the values of the GBRWHA. • Some inconsistencies remain in practice, including: <ul style="list-style-type: none"> ▪ Lack of recognition of planning schemes and outcomes by other jurisdictions (i.e. State level master plans not accredited by Commonwealth). ▪ Separate assessment pathways ▪ Duplicated/ non-bilateral approvals with non-aligned conditions and approval timelines. There is no EPBC Act approval bilateral assessment agreement in place in Queensland and the Commonwealth. ▪ Differing environmental management standards ▪ Differing data needs (e.g. modelling standards) ▪ Different offset policies, calculators and delivery standards. 	<ul style="list-style-type: none"> • Long Term Maintenance Dredge Management Plans • <u>Ship anchorage management in the Great Barrier Reef World Heritage Area (2013) DOEE.</u> 		
PL9 Plans relevant to ports provide certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.	4	<ul style="list-style-type: none"> • Significant advancements have been achieved, with further work underway, by a number of agencies in terms of robust plans for the development and operations of ports in the GBR region. • MSQ publishes a Port Procedure Manual for each port, each of which is reviewed and updated 	<ul style="list-style-type: none"> • <u>GBRMP Zoning Plan 2003</u> • <u>GBRMP Site Management Plans</u> • <u>GBRMP Plans of Management</u> • <u>Master Plans</u> 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>annually. This contains information and guidelines to assist masters, owners and agents of vessels arriving at and traversing the area. The manual provides details of services, regulations and procedures to be observed.</p> <ul style="list-style-type: none"> MSQ is preparing a guideline on anchorage management and design. 	<ul style="list-style-type: none"> State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 Queensland Ports Strategy 2014 Great Barrier Reef Coastal Zone Strategic Assessment 2014 Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging Sustainable Ports Development Act 2015 (Qld) Updated permission system policy and new guidance documents. 		
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address ports	3	<ul style="list-style-type: none"> Resources of the port authorities themselves and overseeing Queensland Government agencies are reported to be adequate. New port and/or dredging activities within the GBRMP require a permit. A permit application assessment fee (PAAF) is applied. Applications of this magnitude usually attract a Public Environment Report or Environmental Impact Statement fee (\$38,000-\$100,000). 	<ul style="list-style-type: none"> Port Authority charter and role is clear through legislation and Ministerial instructions. Appropriate resources supplied to ensure ports remain open and operate effectively to service community and customers. Charter includes protection of social, cultural and environment values. State Party Report on the State of Conservation of the Great Barrier Reef World Heritage Area (Australia) 2015 Queensland Ports Strategy 2014 Great Barrier Reef Coastal Zone Strategic Assessment 2014 Sustainable Ports Development Act 2015 GBRMPA cost recovery implementation statement for permission system fees 	Uncertain	Improving
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address ports	3	<ul style="list-style-type: none"> Human resources of the ports themselves and overseeing Queensland Government agencies are reported to be adequate. The assessment and approval process for port related activities is reported to represent a relatively small proportion of the overall number of project approvals assessed by GBRMPA staff. 	<ul style="list-style-type: none"> National Plan for Maritime Environmental Emergencies Improved dredge material management in the Great Barrier Reef Region. Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef: report of an independent panel of experts. Reported that 'significant additional resources and capabilities' employed in the Queensland Government to progress actions stemming from Reef2050. 	Uncertain	No clear trend
IN3 The right skill sets and expertise are currently available to the managing organisations to address ports	3	<ul style="list-style-type: none"> Skill sets and expertise of the ports themselves and the oversight by Queensland Government agencies are reported to be adequate. 	<ul style="list-style-type: none"> Submissions provided by QPA. Submissions provided by GBRMPA. Reef 2050 Long Term Sustainability Plan 	Adequate	No Clear Trend

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<ul style="list-style-type: none"> Anecdotal evidence to suggest that effective knowledge and understanding of port developments and operations could be improved in Commonwealth agencies. This should improve outcomes for port-related assessment and approvals and monitoring. Staff in GBRMPA manage dredging applications and are understood to have requisite skills to update policy and inform policy development. Ports and GBRMPA uses consultants with appropriate expertise for specialist activities 			
IN4 The necessary biophysical information is currently available to address ports	3	<ul style="list-style-type: none"> A significant amount of information is available. For example, limited information is available on population status and habitat requirements of some key species, such as inshore dolphins. Information of this type will inform and influence decisions regarding elements such as dredging, siting of anchorages, pile driving noise management, etc. Methodologies and procedures to collect, collate and analyse vessel/fauna strikes in ports are of uncertain effectiveness. Molecular methods for introduced marine pest surveillance are being trialled by Department of Agriculture and Water Resources at a number of ports around Australia, including Gladstone. This testing is focused upon ballast water as a risk vector. Introduced marine species surveillance and monitoring is disjointed to some extent, although a Queensland plan is under development to address this matter. 	<ul style="list-style-type: none"> Improved dredge material management in the Great Barrier Reef Region Environmental best practice port development: an analysis of international approaches Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef: report of an independent panel of experts Master Plans at Priority Ports Queensland Ports Seagrass Monitoring – Michael Rasheed Reef 2050 Integrated Monitoring and Reporting Program Reef Plan annual report cards Regional Report cards: Healthy Rivers to Reef partnership Mackay Whitsunday Report Card Fitzroy Basin Report Card Gladstone Harbour report card Wet Tropics Report Card Ship anchorage management in the Great Barrier Reef World Heritage Area (2013) DOEE. Queensland Biosecurity Capability Review - Final Report, September 2015. Queensland Biosecurity Capability Review Interim Response, Department of Agriculture and Fisheries, 2016. 	Adequate	Improving
IN5 The necessary socio-economic information is currently available to address ports	4	<ul style="list-style-type: none"> Extensive information is available regarding economic value of ports e.g. volumes and value of cargoes and commodities, jobs etc. The report <i>Social and Economic Long-Term Monitoring Program - Ports and Shipping in the Great Barrier Reef 2014</i> (SELTMP) provides a summary of secondary data encompassing ports and shipping in the Great Barrier Reef, as well as survey results on community perceptions of the 	<ul style="list-style-type: none"> ‘The economic and social impacts of protecting the environmental values of the waters of the Capricorn and Curtis Coasts’ (Oct 2014) DEHP Qld. Port trade statistics - the Trade Statistics for Queensland Ports—30 June 2016. Report provides statistics related to imports, exports and throughput handled by Queensland's ports for the five years ending 30 June 2016. Individual Ports annual reports Social and Economic Long-Term Monitoring Program - Ports and Shipping in the Great Barrier Reef (2014). 	Adequate	Stable

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>relative threat posed by ports and shipping to the Reef. SELTMP is an ongoing program.</p> <ul style="list-style-type: none"> Socio-economic information will also be captured through RIMReP and a draft monitoring program has been developed by the 'Human Dimensions' working group, of which ports is a member. 			
IN6 The necessary Indigenous heritage information is currently available to address ports	3	<ul style="list-style-type: none"> Possibly applicable to some Ports – limited information available and usually gathered and assessed on the basis of specific needs. Assume generally adequate for requirements. Indigenous representation in GBRMPA's permission system effected via LMACs. Indigenous <u>Reef Advisory Committees (IRAC)</u> have been initiated, which can assist in addressing required information needs. Native Title notifications, public comments, Traditional Use of Marine Resources Agreements, <u>Cultural Heritage Management Plans and similar also assist in addressing information needs.</u> Information is available through Indigenous heritage databases, Indigenous Land Use Agreements, and Historic heritage databases. All ports have formal liaison and/or management arrangements with indigenous groups, including Gladstone Ports Corporation, North Queensland Bulk Ports and Ports North <u>Reconciliation Action Plans and Indigenous Land Use Agreements (ILUA).</u> 	<ul style="list-style-type: none"> <u>Traditional owner heritage assessment guidelines</u> <u>Woppaburra Traditional Owner heritage assessment (Document No. 100428)</u> <u>Reef 2050 Integrated Monitoring and Reporting Program</u> <u>Reconciliation Action Plan 2015-2018</u> Indigenous Land Use Agreement between Gladstone Ports Corporation and the Port Curtis Coral Coast Native Title Claim Group <u>Reconciliation Action Plan 2015-2018</u> <u>Indigenous Land Use Agreement between Gladstone Ports Corporation and the Port Curtis Coral Coast Native Title Claim Group</u> <u>Port Curtis Coral Coast Regional TUMRA</u> <u>http://www.gidarjil.com.au/news/muendem-gaanqu</u> 	Uncertain	Stable
IN7 The necessary historic heritage information is currently available to address ports	3	<ul style="list-style-type: none"> Some gaps evident e.g. wartime relics, but understand usually gathered and assessed on the basis of specific needs. Assume generally adequate for requirements. In 2017, as part of the Permissions Improvement Program, GBRMPA developed Guidelines for historic heritage impact assessment in the permissions system. These guidelines consider three historic heritage values of the Marine Park: <ul style="list-style-type: none"> World War II features and sites Historic voyages and shipwrecks Other places of historic significance. Information is available through: 	<ul style="list-style-type: none"> <u>Historic heritage assessment: maritime cultural heritage protection special management area (Document No. 100436).</u> <u>Historic heritage assessment: other places of historic and social significance (Document No. 100437).</u> <u>Historic heritage assessment: WWII features and sites, and voyages and shipwrecks (Document No. 100435).</u> Port Corporations have recognised and recorded maritime heritage items and values given the longevity of some of the ports e.g. Ports North - cruise ship terminal (heritage protection). 	Adequate	Stable

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<ul style="list-style-type: none"> ○ Socio-economic databases ○ Cultural Heritage Management Plans ○ Historic heritage databases ○ The Priority Port Master Planning process and associated baseline reports ○ Studies to support approval applications including EIS for major projects. 			
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address ports	3	<ul style="list-style-type: none"> • Port operations involve industrial activity, internationally-mandated security requirements and regimes for strict legal liabilities where safety and security issues limit latitude for extensive involvement of volunteers. • Ports often work closely with community groups involved in activities that may have linkages to port activities such as Seagrass Watch, Mangrove Watch, Turtle Watch, Clean up Australia, and similar. 	<ul style="list-style-type: none"> • Seagrass watch http://www.seagrasswatch.org/about.html • Mangrove watch http://greatbarrierreefcitizenscience.org.au/organisations/mangrovewatch • Clean up Australia https://www.cleanup.org.au/ 	Uncertain	Stable
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of ports	4	<ul style="list-style-type: none"> • Key stakeholders directly involved in the development and operation of ports are considered to be effectively engaged by industry and other regulators but not directly by GBRMPA. • Technical Advisory Consultative Committees (TACCs) established by ports under the National Assessment Guidelines for Dredging. • All ports have active community engagement programs. • Stakeholders are routinely engaged by ports as part of development and operational approvals applications. Port projects with potential for significant impacts are required by regulators to undertake public consultation as part of EISs. • Master Planning for Priority Ports currently underway involves comprehensive and meaningful engagement with stakeholders. 	<ul style="list-style-type: none"> • <u>Reef Advisory Committees</u> • Gladstone Healthy Harbour Partnership http://www.ehp.qld.gov.au/gladstone/healthy-harbour/ • Ports Forum meetings with Regulators • DoEE <u>Reef 2050 Plan</u> webpage and documents • <u>North-East Shipping Management Plan</u> • Technical Advisory Consultative Committees • Community Reference Groups (CRGs), • Community Liaison Groups (CLGs), • Management Reference Groups (MRGs) 	Adequate	Improving
PR2 The local community is effectively engaged in the ongoing management of ports	4	<ul style="list-style-type: none"> • Ports have active community engagement programs, focused through several stakeholder groups including – Community Reference Groups (CRGs), Community Liaison Groups (CLGs), Management Reference Groups (MRGs) etc. 	<ul style="list-style-type: none"> • <u>Local Marine Advisory Committees</u> • <u>LMAC Terms of Reference</u> • Technical Advisory Consultative Committees • Community Reference Groups (CRGs), • Community Liaison Groups (CLGs), 	Uncertain	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<ul style="list-style-type: none"> • Ports participate in regional Partnerships (e.g. Gladstone, Mackay-Whitsunday, Townsville and Cairns) that contain a range of stakeholders and community members to discuss port management issues • Stakeholders are routinely engaged by ports as part of development and operational approvals applications. Port projects with potential for significant impacts are required by regulators to undertake public consultation as part of EISs. • It is understood that ports are active in community engagement. Within this context, community involvement in the management of Port issues is, however, likely to be most valuable at the strategic level with regards to the location and siting of port infrastructure rather than the general day to day issues with Port management. • Wider community understanding of ports in relation to the maintenance of GBR values suggests latitude for improvement in the collation, assimilation and distribution of information relating to the sustainable operations of GBR ports. • Lankester et al (2015) identifies different perceptions of risk portrayed by local, regional, interstate and national print media in relation to the GBR dredge spoil issue from January 2013 until February 2014. 	<ul style="list-style-type: none"> • Management Reference Groups (MRGs) • Reef 2050 Reef Advisory Committee • Lankester, AJ, Bohensky, E, & Newlands, M 2015, 'Media representations of risk: The reporting of dredge spoil disposal in the Great Barrier Reef Marine Park at Abbot Point', Marine Policy, vol. 60, p. 149 		
PR3 There is a sound governance system in place to address ports	4	<ul style="list-style-type: none"> • The governance system for GBR ports in relation to achieving desired outcomes in relation to the Marine Park and World Heritage Area has improved substantially since 2013. • Ports are subject to a range of governance systems, both voluntary and mandatory, including: <ul style="list-style-type: none"> ○ Commonwealth and state legislation. ○ Environmental Management Systems (especially ISO 14001) which are in place at all ports and provide processes to identify and manage environmental risk ○ Quality Assurance processes (e.g. ISO 9001) with third party accreditation at all GBR ports ○ All major GBR ports are Government Owned Corporations with associated 	<ul style="list-style-type: none"> • Grech, A., et al. Guiding principles for the improved governance of port and shipping impacts in the Great Barrier Reef. Mar. Pollut. Bull. (2013), http://dx.doi.org/10.1016/j.marpolbul.2013.07.013 • Sustainable Ports Development Act 2015 (Qld) • Environmental Code of Practice for Dredging and Dredge Material Management – Aug 16 • Ports Forum meetings • Existing MoU with Ports Association currently being updated • Reef Trust Offsets Calculator developed (public launch 2/11/17) • Queensland Assessment Bilateral Agreement – http://www.environment.gov.au/protection/environment-assessments/bilateral-agreements/qld 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>detailed and compulsory State Government reporting processes</p> <ul style="list-style-type: none"> ○ The GBRMPA permissions system and zoning plan which define what activities can occur where. 			
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for ports	3	<ul style="list-style-type: none"> • All ports have long term ambient environmental monitoring programs dating back several decades. These monitoring programs examine environmental values including seagrass, coral, benthic sediment and water quality. These monitoring programs are not a 'statutory' requirement and are in place irrespective of whether there is development occurring. These long-term programs are used by ports to determine condition and trend of port environmental values. • Such monitoring has been hampered in the past by the apparent absence of comprehensive assessment frameworks and performance targets for ports in relation to protection of the values of the Marine Park and the World Heritage Area, although this situation should be rectified to some extent by RIMReP and the nascent port master planning processes. • As part of the assessment of port stewardship for regional report cards (e.g. Gladstone Healthy Harbours Partnership, Mackay-Whitsundays Healthy Rivers to Reef) ports have been determined to be managed effectively. • RIMReP is intended to provide an integrated approach to monitoring in the GBRWHA that will allow the assessment of management tools and progress towards objectives. 	<ul style="list-style-type: none"> • Queensland Ports Seagrass Monitoring • Reef 2050 Integrated Monitoring and Reporting Program • Master Plans 	Uncertain	No Clear Trend
PR5 Appropriate training is available to the managing agencies to address ports	3	<ul style="list-style-type: none"> • Reasonable to assume that appropriate training is available to the staff of ports and terminal operators. • General training of GBRMPA staff is available in relation to impact assessment, oil spill response, biosecurity, dredging assessments, etc., but the relevance and coherence of training specific to improved understanding and oversight of port issues, particularly port operations, is not clear. • PIANC Australia provides a series of seminars, guest speakers and similar on port related issues that GBRMPA staff can attend. 	<ul style="list-style-type: none"> • Training modules for new GBRMP permission system. 	Uncertain	No Clear Trend

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<ul style="list-style-type: none"> The Queensland Ports Association Planning and Environment Committee invites GBRMPA staff to meetings. Training modules developed for new GBRMP permission system changes. 			
PR6 Management of ports is consistently implemented across the relevant jurisdictions	3	<ul style="list-style-type: none"> Management of port operational activities is assessed as sufficiently effective across relevant jurisdictions, but GBRMPA contribution could be improved via promulgation of targets for ports in relation to identification of potential threats by ports to GBR Marine Park and World Heritage Area values. Management of port development proposals is consistent within the current construct of management responsibilities for regulatory agencies and particularly noteworthy that the strategic level overview and governance of new port developments have been greatly improved since 2013. The Master Planning process for Priority Ports is intended to consider planning issues across Commonwealth, State and Local Government jurisdictions and clearly identifies the responsibilities of relevant agencies in managing impacts to the values of the GBRWHA. Once fully implemented, these should allay some of the previous shortcomings identified in this arena. The Reef 2050 Sustainability Plan seeks jurisdictional consistency in implementing actions to manage impacts to the GBRWHA. 	<ul style="list-style-type: none"> Master planning for ports Queensland Ports Strategy 2014 Great Barrier Reef Coastal Zone Strategic Assessment 2014 Sustainable Ports Development Act 2015 (Qld) Great Barrier Reef Marine Park Regulations 1983 Dredge and dredge spoil material disposal policy Dredging coral reef habitats Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports Master planning for ports Reef 2050 Long-Term Sustainability Plan Master Plans National Assessment Guidelines for Dredging 	Adequate	Improving
PR7 There are effective processes applied to resolve differing views/ conflicts regarding ports	2	<ul style="list-style-type: none"> There is a range of processes and instruments available to achieve resolution. These include periodic meetings with Port Authorities, the GBRMPA / Queensland Ports Association MoU, and similar. Ports representatives can display reluctance to engage in effective dialogue for the purposes of clarifying and resolving points of difference. Queensland ports strategies and master planning processes should lead to improved conflict <u>avoidance</u> and improved conflict resolution. 	<ul style="list-style-type: none"> Master planning for ports Queensland Ports Strategy 2014 GBRMPA Management Effectiveness Review processes 	Adequate	No Clear Trend

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<ul style="list-style-type: none"> Legislation allows for reconsideration of decisions including via Administrative Appeals Tribunal and Federal Court. The approvals process is designed to ensure that stakeholder feedback is incorporated into project management and delivery. 			
PR8 Impacts (direct, indirect and cumulative) of activities associated with ports are appropriately considered.	3	<ul style="list-style-type: none"> Commonwealth and Queensland agencies demonstrate generally adequate consideration of the direct, indirect and cumulative potential impacts of ports. Ports have worked with GBRMPA in the development of Net Benefit and Cumulative Impact Assessment Guidelines prepared under the Reef 2050 Long Term Sustainability Plan, including the development of a master planning case study which shows how GBRMPA's principles of cumulative impact and net benefit can be applied in practice. 	<ul style="list-style-type: none"> Great Barrier Reef Marine Park Zoning Plan 2003 State Development and Public Works Organisation Act 1971 Environment Protection and Biodiversity Conservation Act 1999 Zoning Plan Great Barrier Reef Ports Strategy 2012-2022 http://www.dsdp.qld.gov.au/infrastructure-and-planning/queensland-ports-strategy.html Updated permission system policy and new guidance documents The Sustainable Ports Development Bill 2015 Gladstone Healthy Harbour Partnership Cumulative Impact Management policy Net Benefit Policy 	Adequate	Improving
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding ports	2	<ul style="list-style-type: none"> All ports have long term ambient environmental monitoring programs. These monitoring programs examine key environmental values including seagrass, coral, benthic sediment and water quality. These monitoring programs are not a 'statutory' requirement and are in place irrespective of whether there is development occurring. These long-term programs are used by ports to determine condition and trend of port environmental values. In relation to ports, either directly or indirectly, Reef 2050 Long Term Sustainability Plan documents actions as follow: <ul style="list-style-type: none"> Identify the risk and any necessary mitigation measures to deal with impacts of coal dust on the Reef. Implement commitments for best-practice commercial vessel operation including those aimed at reducing collisions with marine fauna. Identify, protect and manage key habitat for inshore dolphins. Develop a guideline specific to the Great Barrier Reef on assessing and managing impacts of 	<ul style="list-style-type: none"> Gladstone environmental monitoring (last updated 2016). Gladstone Healthy Harbour Partnership http://www.ehp.qld.gov.au/gladstone/healthy-harbour/ Marine Monitoring Program - Inshore seagrass monitoring Reef Plan Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef: report of an independent panel of experts Bulk Ports Corporation monitoring reports 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>underwater noise, particularly for at-risk and inshore species.</p> <ul style="list-style-type: none"> • Another recognised gap in available research and monitoring data is that associated with introduced marine pests. • There remains a lack of coherent and collated monitoring and reporting of biophysical indicators within and between GBR ports, although this is situation is being improved to some extent via programs such as RIMReP, report cards, and some targeted research projects. • See also IN4. 			
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding ports	3	<ul style="list-style-type: none"> • See also IN5. • Significant information available regarding economic value of ports e.g. volumes and value of cargoes and commodities, jobs etc. • Socio-economic information is intended to be applied to port master planning processes. • Socio and economic research data considered by the RIMReP Human Dimensions expert working group. • Compliance and stewardship data (publicly available secondary data) is being compiled under RIMReP human dimensions indicators. • The SELTMP Ports and Shipping in the Great Barrier Reef 2014 <u>technical report</u> presents socio-economic data and indicators relevant to the current state of ports and shipping in the Great Barrier Reef region. This report shows community perceptions of ports and shipping in the GBR. It represents more than 8000 respondents from sectors including GBR coastal residents, tourists visiting the GBR region, commercial fishers and marine tourism operators in the GBR, and Australian residents nation-wide. 	<ul style="list-style-type: none"> • Social value assessment • Reef 2050 Integrated Monitoring and Reporting Program • SELTMP 2014 report on ports and shipping. • RIMReP internal scoping document • Gooch et al. 2017 Assessment and Promotion of the Great Barrier Reef's Human Dimensions through Collaboration. <i>Coastal Management</i>, DOI: 10.1080/08920753.2017.1373455 	Adequate	Stable
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding ports	3	<ul style="list-style-type: none"> • Reasonable to assume information is applied to decision making about infrastructure siting as a component of environmental impact assessment processes. • Less clear about how any information might be applied to operations or other aspects of port activity. 	<ul style="list-style-type: none"> • Register of Indigenous Land Use Agreements, National Native Title Tribunal (Cth) • Aboriginal and Torres Strait islander heritage strategy • Traditional owner heritage strategy • Traditional Owner heritage assessment • Historic heritage assessment: maritime cultural heritage protection special management area (Document No. 100436) 	Uncertain	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
			<ul style="list-style-type: none"> • Historic heritage assessment: other places of historic and social significance (Document No. 100437) • Traditional Owner heritage assessment (Document No. 100434) • Woppaburra Traditional Owner heritage assessment (Document No. 100428) • Reef 2050 also has indigenous representation 		
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding ports	3	<ul style="list-style-type: none"> • Reasonable to assume information is applied to decision making about infrastructure siting. Less clear about how any information might be applied to operations or other aspects of port activity. • Historic heritage assessed as a component of Environmental Impact Statements. • See IN7 	<ul style="list-style-type: none"> • Historic heritage assessment: maritime cultural heritage protection special management area (Document No. 100436). • Historic heritage assessment: other places of historic and social significance (Document No. 100437). • Historic heritage assessment: WWII features and sites, and voyages and shipwrecks (Document No. 100435). • Port Corporations have recognised and recorded maritime heritage items, some of which are subject to heritage protection requirements. 	Uncertain	Stable
PR13 Relevant standards are identified and being met regarding ports	3	<ul style="list-style-type: none"> • There is no globally agreed suite of measures or standards for 'best practice' in the context of port development and operation, and to seek such from overseas and apply without appropriate adaptation to GBR ports may be to overlook the merit and opportunity to develop tailored and focused measures for the GBR. • Standards are to be set under master plans, and via other mechanisms such as the capital dredge disposal ban, maintenance dredging, cumulative impacts, net benefits, water quality improvement plans. • Scope exists for further development of a suite of meaningful policy objectives and performance indicators relevant to GBR ports and their interactions with, and potential influences upon, the Marine Park and World Heritage Area. This could possibly be achieved or augmented via intended priority ports master planning processes. • There are some aspects of accredited standards particularly in coastal engineering disciplines that are effectively implemented through impact assessment and approval processes. • RIMReP is being used to track the progress of outcomes outlined in the Reef 2050 Plan. RIMReP 	<ul style="list-style-type: none"> • Sustainable Ports Development Act 2015 • Reef 2050 Integrated Monitoring and Reporting Program • Master Plans • Water quality Improvement Plans (WQIPs) and Healthy Waters Management Plans (HWMPs) • Wet Tropics WQIP • FBA WQIP • Eastern Cape York Water Quality Improvement Plan • Townsville WQIP • Burdekin Dry Tropics WQIP • Offsets • Sediment management, • Cumulative Impact Management policy • Net Benefit Policy • Dredge and dredge spoilt material disposal policy • Improved Dredge Material Management for the GBR Region • Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging • Environmental Code of Practice for Dredging and Dredge Material Management 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>will help track progress towards targets and objectives under the plan's seven themes: ecosystem health, biodiversity, heritage, water quality, community benefits, economic benefits, governance and reporting.</p>			
<p>PR14 Targets have been established to benchmark management performance for ports</p>	<p>3</p>	<ul style="list-style-type: none"> • Environmental Management Systems (especially ISO 14001) are in place at all GBR ports and provide processes to identify and manage environmental risk. • Quality Assurance processes (e.g. ISO 9001) with third party accreditation are established at all GBR ports. • The port industry has established industry standards in certain operational areas. One example is the Environmental Code of Practice for Dredging and Dredge Material Management prepared by Ports Australia. The code sets out a series of environmental principles that Australian ports follow when undertaking dredging and when reusing, relocating or disposing of dredged material. • Targets have been set or are being developed under master plans, capital dredge disposal ban, maintenance dredging, cumulative impacts, net benefits, water quality improvement plans, and similar. • While targets have been developed for port developments and dredging, few, if any, are apparent, for matters related to routine port operations. Examples of appropriate targets might include rate of risk assessing visiting ships for marine pests, and comprehensive marine pest monitoring of ports in accordance with Australian guidelines. • RIMReP is being used to track the progress of outcomes outlined in the Reef 2050 Plan. RIMReP will help track progress towards targets and objectives under the plan's seven themes: ecosystem health, biodiversity, heritage, water quality, community benefits, economic benefits, governance and reporting. • Reef 2050 Long Term Sustainability Plan (WQA23) calls for expanded 'nested' integrated water quality 	<ul style="list-style-type: none"> • Environmental best practice port development: an analysis of international approaches • Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports • Master planning for ports • Reef 2050 Integrated Monitoring and Reporting Program • Bulk Ports Corporation monitoring reports • Water quality Improvement Plans (WQIPs) and Healthy Waters Management Plans (HWMPs) • Cumulative Impact Management policy • Net Benefit Policy • Offsets • Sediment management, • Dredge and dredge spoilt material disposal policy • Improved Dredge Material Management for the GBR Region • Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging • Environmental Code of Practice for Dredging and Dredge Material Management • Dredging and Australian Ports – tropical and subtropical ports • Reef 2050 Long-Term Sustainability Plan 	<p>Uncertain</p>	<p>No Clear Trend</p>

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		monitoring and report card programs at major ports and activity centres (e.g. Gladstone), in priority catchments (e.g. Mackay Whitsundays) and Reef-wide, to guide local adaptive management frameworks and actions.			
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for ports	3	<ul style="list-style-type: none"> Work on the development of the Queensland ports strategy is complete, with associated legislation proclaimed. Work on the development and implementation of the port master planning frameworks has commenced, but has not progressed in accordance with the indicative schedule. Other achievements in terms of port management have included new policies and procedures concerning dredging and spoil disposal, review of arrangements for the management of anchorages, and the development of a strategy for the management of marine pest risks in Queensland. There is no indication to suggest that the activities in ports related to their development and operations have not been managed effectively, or in a manner not consistent with effective management of risks to Marine Park and World Heritage Area values and processes. 	<ul style="list-style-type: none"> GBRMPA and Queensland Program Reports Master planning for ports Queensland Ports Strategy 2014 Great Barrier Reef Coastal Zone Strategic Assessment 2014 Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging Reef 2050 Integrated Monitoring and Reporting Program Queensland Biosecurity Capability Review - Final Report, September 2015. Queensland Biosecurity Capability Review Interim Response, Department of Agriculture and Fisheries, 2016. 	Adequate	Improving
OP2 Implementation of management documents and/or programs relevant to ports have progressed in accordance with timeframes specified in those documents	3	<ul style="list-style-type: none"> New regulations on the conduct of dredging (capital and maintenance) and spoil disposal have been implemented. Many of the other actions related to Ports under Reef 2050 have been progressed or completed, including, <i>inter alia</i>: <ul style="list-style-type: none"> establishment of Priority Ports establishment of Sustainable Ports Development Act GBR Wide Sediment Study - Substantially complete. Port master planning Maintenance Dredging Strategy Long Term Maintenance Dredge Management Guidelines 	<ul style="list-style-type: none"> Great Barrier Reef Coastal Zone Strategic Assessment 2014 GBRMPA Annual report Sustainable Ports Development Act 2015 (Qld) Master planning for ports Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports North Queensland Bulk Ports Corporation Annual Report 2015-16 Port of Townsville Limited Annual Report 15/16 Gladstone Port Corporation Annual Report 15/16 Ports North Annual Report 15/16 Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging 	Adequate	Stable

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<ul style="list-style-type: none"> ▪ Dredging Code of Practice. • Other programs are in initial stages (eg. Queensland marine pest strategy), although nominated targets for the progress and completion of some have not been met (eg. port master planning documents). 	<ul style="list-style-type: none"> • <u>Master planning for ports</u> • <u>Reef 2050 Integrated Monitoring and Reporting Program</u> <ul style="list-style-type: none"> • <u>Water quality Improvement Plans (WQIPs) and Healthy Waters Management Plans (HWMPs)</u> • <u>Wet Tropics WQIP</u> • <u>FBA WQIP</u> • <u>Eastern Cape York Water Quality Improvement Plan</u> • <u>Townsville WQIP</u> • <u>Burdekin Dry Tropics WQIP</u> • <u>Cumulative Impact Management policy</u> • <u>Net Benefit Policy</u> • <u>Offsets</u> • <u>Dredge and dredge spoilt material disposal policy</u> • <u>Improved Dredge Material Management for the GBR Region</u> • <u>Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging</u> • <u>Environmental Code of Practice for Dredging and Dredge Material Management</u> 		
OP3 The results (in OP1 above) have achieved their stated management objectives for ports	3	<ul style="list-style-type: none"> • The new controls on dredging and spoil disposal have achieved their stated objectives. • It may be assumed that the embryonic port master planning processes are already exerting a positive effect upon port development and expansion processes. 	<ul style="list-style-type: none"> • <u>Great Barrier Reef Coastal Zone Strategic Assessment 2014</u> • <u>GBRMPA and QLD Program Reports</u> • <u>Master planning for ports</u> • <u>Sustainable Ports Development Act 2015 (Qld)</u> • <u>Master planning for ports</u> • <u>Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports</u> • <u>Master planning for ports</u> • <u>Reef 2050 Integrated Monitoring and Reporting Program</u> • <u>Water quality Improvement Plans (WQIPs) and Healthy Waters Management Plans (HWMPs)</u> <ul style="list-style-type: none"> • <u>Wet Tropics WQIP</u> • <u>FBA WQIP</u> • <u>Eastern Cape York Water Quality Improvement Plan</u> • <u>Townsville WQIP</u> • <u>Burdekin Dry Tropics WQIP</u> • <u>Cumulative Impact Management policy</u> • <u>Net Benefit Policy</u> 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
			<ul style="list-style-type: none"> • Offsets • Dredge and dredge spoilt material disposal policy • Improved Dredge Material Management for the GBR Region • Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging 		
OP4 To date, products or services have been produced in accordance with the stated management objectives for ports	3	<ul style="list-style-type: none"> • New policies and regulations for dredging and spoil disposal have been developed and are being applied. • Dredging and port expansions/developments are addressed adequately by GBRMPA, • Work is in progress to better understand the framework for management of GBR anchorages. • Other Commonwealth and Queensland authorities are progressing a program via the Queensland ports strategies and master planning. 	<ul style="list-style-type: none"> • GBRMPA and QLD Program Reports • Master planning for ports • Queensland Ports Strategy 2014 • Great Barrier Reef Coastal Zone Strategic Assessment 2014 • Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef: report of an independent panel of experts • GBRMP Dredging and spoil disposal policy • Master planning for ports • Reef 2050 Integrated Monitoring and Reporting Program • Water quality Improvement Plans (WQIPs) and Healthy Waters Management Plans (HWMPs) • Wet Tropics WQIP • FBA WQIP • Eastern Cape York Water Quality Improvement Plan • Townsville WQIP • Burdekin Dry Tropics WQIP • Cumulative Impact Management policy • Net Benefit Policy • Offsets • Dredge and dredge spoilt material disposal policy • Improved Dredge Material Management for the GBR Region • Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging 	Adequate	Stable
OP5 Effective knowledge management systems regarding ports are in place within agencies	2	<ul style="list-style-type: none"> • GBRMPA staff have expressed difficulty in gaining access to some datasets, given that these are located in several different agencies. The implementation of RIMReP should be expected to alleviate this situation. • Ports gather a significant amount of monitoring data and are embedded within RIMReP. Ports also report having multiple representatives involved in the 	<ul style="list-style-type: none"> • Bulk Ports Corporation monitoring reports • Reef 2050 Integrated Monitoring and Reporting Program 	Uncertain	No Clear Trend

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
		<p>technical working groups responsible for designing reef-wide monitoring programs. Ports are also key partners in several regional monitoring programs at Gladstone, Mackay-Whitsunday, Townsville and Cairns that provide information for managers on the condition and trend of values.</p> <ul style="list-style-type: none"> Assumed to be reasonably effective overall with the expectation of further improvement in collation and utility of access. 			
OP6 Effective systems are in place to share knowledge on ports with the community	3	<ul style="list-style-type: none"> Port master planning programs, impact assessment processes for specific proposals and individual port annual reporting. Ports make some monitoring and performance data available via annual reports and websites. Ports have implemented a system of periodic reporting via report cards, although this is only a modest extent. Ports maintain links with the community through various for a, such as Technical Advisory Consultative Committees (TACCs), Community Reference Groups (CRGs), Community Liaison Groups (CLGs), Management Reference Groups (MRGs) and similar. 	<ul style="list-style-type: none"> Marine Monitoring Program - <u>Inshore seagrass monitoring Reef Plan</u> <u>Bulk Ports Corporation</u> monitoring reports <u>Annual Reports for:</u> <u>North Queensland Bulk Ports Corporation</u> <u>Port of Townsville Limited</u> <u>Ports North</u> <u>Gladstone Annual Report 2015-2016</u> Technical Advisory Consultative Committees Community Reference Groups (CRGs) Community Liaison Groups (CLGs) Management Reference Groups (MRGs) <u>Reef 2050 Long-Term Sustainability Plan</u> 	Uncertain	Improving
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing ports and moving towards the attainment of the desired outcomes.	3	<ul style="list-style-type: none"> Evidence indicates that ports, including their development and operations, are being effectively managed. It is evident that coordination between GBRMPA and regulatory agencies and port operators and developers has improved since 2013. It is evident that more coordination between regulatory agencies and port operators (eg. terminal operators and exporters) would be beneficial. 	<ul style="list-style-type: none"> <u>Great Barrier Reef Marine Park Regulations 1983 Regulation 88RA – ban on capital dredging</u> <u>Dredge and dredge spoilt material disposal policy</u> <u>Dredging coral reef habitats</u> <u>Queensland Maintenance Dredging Strategy</u> Sustainable Ports Development Act <u>Dredge and dredge spoilt material disposal policy</u> <u>Dredging coral reef habitats</u> <u>Improved Dredge Material Management for the GBR Region</u> <u>Updated permission system policy and new guidance documents.</u> <u>Bulk Ports Corporation</u> monitoring reports <u>Reef 2050 Long-Term Sustainability Plan</u> 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
OC2 The outputs relating to ports are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	3	<ul style="list-style-type: none"> The values that exist within ports have generally been maintained; ongoing management is required. A clear strategic development and management plan has been developed specifically for Ports in the GBR region, incorporating the specific objective of protecting GBR World Heritage Values. Delineation of clear objectives for the ongoing operations of ports would be beneficial to ensure effective management of matters which may have implications for the protection of the GBR World Heritage Area. 	<ul style="list-style-type: none"> <u>Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef: report of an independent panel of experts</u> <u>GBRMP Dredging and spoil disposal policy</u> <u>Updating MoU between QPA & GBRMPA</u> <u>Reef 2050 Integrated Monitoring and Reporting Program</u> 	Adequate	Improving
OC3 the outputs (refer OP1 and 3) for ports are reducing the major risks and the threats to the Great Barrier Reef	4	<ul style="list-style-type: none"> The outputs from the port master planning processes aim to reduce the major risks and threats from port developments, particularly in relation to the prohibition of the establishment of new ports, controls on the expansion of existing ports and banning offshore disposal of capital dredging. See comment in OC2 – steps for managing potential risks to the GBR from port operations need to be clearly articulated. 		Adequate	Improving
OC4 Use of the Great Barrier Reef relating to ports is demonstrably environmentally sustainable	4	<ul style="list-style-type: none"> On the basis of available data and anecdotal evidence, it is reasonable to conclude that any effects are localised, and hence likely to be sustainable, at current levels of port activity, in the context of the GBR Region. The need remains to improve baseline knowledge and data monitoring and analyses, and improve the coordination in the synthesis and dissemination of this information. The Reef 2050 Plan is implementing actions to limit the impact of ports and dredging. The Sustainable Ports Development Act 2015 have significantly strengthened standards and practices at GBR Ports. The legislation has restricted capital dredging to the four major existing ports in the Region (which excludes Cairns where exemptions apply), banned the disposal of capital dredge spoil within the Great Barrier Reef World Heritage Area, and mandated the development of master plans for all four priority ports. 	<ul style="list-style-type: none"> <u>GBR Region Strategic Assessment Report (2014), Chapter 5 Drivers and Activities</u> <u>GBR Region Strategic Assessment Report (2014), Chapter 6 Impacts on the Values</u> <u>GBR Region Strategic Assessment Report (2014), Chapter 7 Current conditions and Trends.</u> <u>Ecologically sustainable development of ports and shipping</u> <u>Gladstone Healthy Harbour Partnership</u> http://www.ehp.qld.gov.au/gladstone/healthy-harbour/ <u>Gladstone environmental monitoring (</u> http://www.ehp.qld.gov.au/gladstone/index.html) <u>Independent Review of the Port of Gladstone - Report on findings</u> <u>State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) 2015</u> <u>Reef 2050 Integrated Monitoring and Reporting Program</u> <u>Dredging and Australian Ports – tropical and subtropical ports</u> <u>Environmental Code of Practice for Dredging and Dredge Material Management</u> <u>Reef 2050 Integrated Monitoring and Reporting Program</u> <u>Sustainable Ports Development Act 2015</u> 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
			<ul style="list-style-type: none"> • Reef 2050 Plan Investment Framework • Reef 2050 Long-Term Sustainability Plan 		
OC5 Use of the Great Barrier Reef relating to ports is demonstrably economically sustainable	4	<ul style="list-style-type: none"> • Significant data are available which indicate the regional and national economic value of GBR ports, indicating their economic sustainability in current and reasonably foreseeable market and trade conditions. • Benefits accrue from ports across the linked, broader transport networks, with enhanced outcomes for regional economies. • Additional benefits accrue to reef-dependent industries (e.g. marine tourism, cruise ships) from the ports (as a non-reef dependent industry) being able to accommodate their visits. • The economic costs associated with the ban on disposal of capital dredge material in the GBRWHA has meant significant increased costs to Ports Corporations and governments. 	<ul style="list-style-type: none"> • Resources and Energy Quarterly, DIIS (Cth) • State of the Environment Report 2016 • Deloitte Access Economics Report Economic contribution of the Great Barrier Reef • SELTMP 2014 report on ports and shipping. • North Queensland Bulk Ports Corporation Annual Report 2015-16 • Port of Townsville Limited Annual Report 15/16 • Gladstone Port Corporation Annual Report 15/16 • Ports North Annual Report 15/16 • Dredging and Australia Ports – Subtropical and Tropical Ports – 2014 • Reef 2050 Plan Investment Framework • Reef 2050 Long-Term Sustainability Plan 	Adequate	Stable
OC6 Use of the Great Barrier Reef relating to ports is demonstrably socially sustainable understanding and/or enjoyment	3	<ul style="list-style-type: none"> • The GBR ports sustain a large number of communities in the Queensland east coast area and interior. • There remain elements of community concern about port development, not necessarily valid. This is intended to be addressed through port master planning process and community engagement practices. • All but two port areas are outside the Great Barrier Reef Marine Park. • When the GBRWHA was established at the mean low water mark in 1981 it was acknowledged that ports would be located within the World Heritage Area. This was seen as appropriate and manageable because the World Heritage Convention does not exclude human activities or industrial activities from operating within World Heritage properties. This remains the case. • Master planning for Priority Ports is required to identify measures to be implemented within each port to support consistency with the principles of ecologically sustainable development (ESD) which includes environmental, economic and social aspects. 	<ul style="list-style-type: none"> • Master Plans • Bulk Ports Corporation monitoring reports • SELTMP reports 2013, 2017 	Adequate	Improving

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address ports	4	<ul style="list-style-type: none"> • Ports have a Memorandum of Understanding (MoU) with GBRMPA. Under this MoU, ports and GBRMPA meet every six months, with relevant Commonwealth and state government agencies in attendance. • Ports and GBRMPA convene meetings to discuss issues as they may arise. • GBRMPA staff participate in regional Partnerships (e.g. Gladstone, Mackay-Whitsunday, Townsville and Cairns) with a range of stakeholders and community members to discuss port management issues. • Stakeholders are routinely engaged by GBRMPA staff in relation to ports development and operational approvals applications. • Community considerations are an intrinsic element of new ports master planning strategy. • Ports have established a range of various stakeholder and community fora, some including GBRMPA staff. • GBRMPA's Local Marine Advisory Committees (LMACs) often contain port representatives. • Considering the jurisdictional management arrangements for ports in relation to GBRMPA powers and responsibilities, GBRMPA's main role in this domain is considered to lay at the strategic level rather than routine port operational management issues. 	<ul style="list-style-type: none"> • MoU between Ports and GBRMPA • Community Reference Groups (CRGs) • Community Liaison Groups (CLGs) 	Adequate	Improving

Table 33 Calculation of grades for recreational use (excluding fishing)

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to recreational use are understood by managers	4	<ul style="list-style-type: none"> The Recreation Management Strategy outlines the values of the Great Barrier Reef that are to be considered SELTMP technical report on recreation presents a snapshot of socio-economic data and indicators in the GBR region. It details how people use and depend on the GBR, human and community wellbeing and drivers of change. Input is received through Reef 2050 RAC, regional office liaison, GBRMPA staff presence at public events and through LMACs The Deloitte Access Economics report considers the economic contribution of recreation in the GBR 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) A statement of Management Arrangements in the GBRMP for Super-yacht Operations. Supporting information for the Whitsundays Plan of Management (WPOM) 2015-18 review – (internal GBRMPA document only). Deloitte Access Economics, At what price? The economic, social and icon value of the Great Barrier Reef (2017) Tobin, R., Bohenshy, E., Curnock, m> Goldberg, J>, Gooch, M. Marshall, N., Nicotra, B. Pert, P., Scherl, L., Stone-Jovicich, S. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2014 Recreation in the Great Barrier Reef . Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited CSIRO. 	Adequate	Improving
CO2 The current condition and trend of values relevant recreational use are known by managers	3	<ul style="list-style-type: none"> Condition and trend of recreational use are identified in the Recreation Management Strategy and summarised in the Strategic Assessment and 2014 Outlook Report. Risks associated with recreation and their trends are identified in the Recreation Management Strategy, however this has not been updated since the 2014 Outlook report. SELTMP recreational users (2014 report) - provided information on who is accessing the GBR (from the beach to the eastern edge of the GBR Marine Park) for recreation, what they doing, how they accessing it, and why. Recreational use, user values and perceptions to be addressed in forthcoming SELTMP 2017 report (expected in February 2017) Vessel registration details provide an indication of the number and type of vessels registered in the GBR catchment area, which is used to inform management of potential impacts accumulative impacts, signage and development of Plans of Management.. 	<ul style="list-style-type: none"> Outlook Report 2014 Defining the aesthetic values of the Great Barrier Reef: Report 1 Methodology (March 2013) Context Pty Ltd for DSEWPaC (now DoEE) Vessel Registrations Tobin, R., Bohenshy, E., Curnock, m> Goldberg, J>, Gooch, M. Marshall, N., Nicotra, B. Pert, P., Scherl, L., Stone-Jovicich, S. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2014 Recreation in the Great Barrier Reef . Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited CSIRO.. Project 10.1 Result Factsheet: SELTMP 2013: Recreation in the Great Barrier Reef Qld DEHP, Factsheet Healthy waters for Queensland: Environmental values, management goals and water quality objectives Qld DEHP, The economic and social impacts of protecting the environmental values of the waters of the Capricorn and Curtis Coasts (2014) 	Adequate	Improving

		<ul style="list-style-type: none"> As the key recreational activities include snorkelling and island visitation, the condition and trend of the values relevant to recreational users are covered under biodiversity 	<ul style="list-style-type: none"> Qld DEHP, Draft report on the economic and social impacts of protecting environmental values in Great Barrier Reef catchment waterways and the reef lagoon (March 2013) GBRMPA Guidelines: Social Value Assessment (2017) Supporting information for the Whitsundays Plan of Management (WPOM) 2015-18 review – (internal GBRMPA document only). 		
CO3 Impacts (direct, indirect and cumulative) associated with recreational use are understood by managers.	4	<ul style="list-style-type: none"> The impacts of recreation are articulated in the Recreation Management Strategy and are summarised in the Strategic Assessment; however this has not been up-dated since the 2014 Outlook Report. Recreational Responsible Reef Practices identify key impacts and ways to address them. The increasing number of people living close to the Great Barrier Reef means increasing recreational use of the marine area. Boat ownership is increasing steadily within the catchment. This has driven an increased demand for boating facilities such as marinas, moorings and boat ramps, often located within the Great Barrier Reef World Heritage Area or adjacent coastal habitats. 	<ul style="list-style-type: none"> Great Barrier Reef Region Strategic Assessment Report Chapter 5 Recreational Management Strategy (RMS) http://www.gbrmpa.gov.au/about-the-reef/how-the-reefs-managed/recreation-in-the-great-barrier-reef-marine-park 	Adequate	Stable
CO4 The broader (national and international) level influences relevant to recreational use are understood by managers.	4	<ul style="list-style-type: none"> National and international influences relevant to recreation include environmental issues (sea level rise, ocean acidification, sea level rise, more frequent extreme weather and warming sea temperatures), are well recognised (if not understood) as seen through the development of the Reef 2050 plan and the engagement with WHC concerning the threat of putting the GBR on the “in danger” list. With regard to direct use of the Region, recreational vessel registration has slightly declined over the past five years (about 2.5% decline) The project defining the aesthetic values of the GBR also considers the risks of recreational use on the OUV for the Region with respect to Criterion vii 	<ul style="list-style-type: none"> Defining the aesthetic values of the Great Barrier Reef: Report 1 Methodology (March 2013) Context Pty Ltd for DSEWPac (now DoEE) Reef 2050 Long-Term Sustainability Plan http://www.gbrmpa.gov.au/about-us/local-marine-advisory-committees Vessel Registrations 	Adequate	Stable
CO5 The stakeholders relevant to recreational use are well known by managers.	4	<ul style="list-style-type: none"> Recreation stakeholders are not as easily identifiable as industry stakeholders. Sectors, such as sailing and dive clubs, are known but not necessarily accessed. 	<ul style="list-style-type: none"> Tobin, R., Bohensky, E., Curnock, m> Goldberg, J>, Gooch, M. Marshall, N., Nicotra, B. Pert, P., Scherl, L., Stone-Jovicich, S. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2014 Recreation in the Great Barrier Reef . Report to the National Environmental 	Adequate	Stable

		<ul style="list-style-type: none"> The Super yacht fraternity has increased and were heavily involved in commenting on the Whitsunday Plan of Management review in 2017 The GBRMPA regularly interacts with key recreation stakeholders through its three Regional Officers, Reef Advisory Committees and through its 12 Local Marine Advisory Committees (LMACs). SELTMP technical report on recreation presents a snapshot of socio-economic data and indicators in the GBR region. It details how people use and depend on the GBR, human and community wellbeing and drivers of change, SELTMP will provide an updated report in December 2017. 	<p>Research Program. Reef and Rainforest Research Centre Limited CSIRO.</p> <ul style="list-style-type: none"> Reef 2050 Long-Term Sustainability Plan http://www.gbrmpa.gov.au/about-us/local-marine-advisory-committees Supporting information for the Whitsundays Plan of Management (WPOM) 2015-18 review – internal document only. Available on portal 		
PLANNING					
PL1 There is a planning system in place that effectively addresses recreational use	3	<ul style="list-style-type: none"> Zoning Plan 2003 - allows certain recreational uses without permission in most zones – low impact activities, photography, education programs, spearfishing. The Recreation Management Strategy consolidates the management arrangements of the Authority, with a strong emphasis on maintaining, applying and enhancing the suite of management tools that can be applied to emerging recreation issues. However this document has not been updated since its development in 2012. The Statement of Management Arrangements in the Great Barrier Reef Marine Park for Super-yacht Operations summarises the current management arrangements for super-yachts All three Plans of Management include aspects of recreational management. 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) A statement of Management Arrangements in the GBRMP for Super-yacht Operations. Responsible Reef Practices Plans of Management. 	Adequate	Stable/declining
PL2 The planning system for recreational use addresses the major factors influencing the Great Barrier Reef Region's values.	4	<ul style="list-style-type: none"> The Recreation Management Strategy identifies and addresses the major pressures and drivers impacting on the GBR, however this has not been updated since 2012. Mechanisms for addressing major factors influencing the Region's values are captured to some extent by the Zoning Plan, plans of management and the intergovernmental agreement with QPWS permitting and licencing on islands. The Reef 2050 Plan includes a number of actions concerning recreation 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) http://www.gbrmpa.gov.au/about-the-reef/how-the-reefs-managed/recreation-in-the-great-barrier-reef-marine-park Whitsundays Plan of Management Reef 2050 Long-Term Sustainability Plan 	Adequate	declining

PL3 Actions for implementation regarding recreational use are clearly identified within the plan	3	<ul style="list-style-type: none"> Changes to the Whitsunday Plan of Management clearly identify and implement changes relevant to recreations such as identifying areas available for motorised water sports, providing coordinate-based boundaries allowing users to better follow the rules in the POM (e.g. settings, locations, and significant bird sites) providing for 21 new superyacht anchorages at carefully-selected locations with no corals or other sensitive habitats, The Recreation Management Strategy identifies and addresses the major pressures and drivers impacting on the GBR, but an implementation plan has not been developed. 	<ul style="list-style-type: none"> Reef 2050 Long-Term Sustainability Plan Whitsundays Plan of Management Recreational Management Strategy (RMS) GBRMPA (2012) - 	Adequate	Stable
PL4 Clear, measurable and appropriate objectives for management of recreational use have been documented	3	<ul style="list-style-type: none"> The Recreation Management Strategy defines three objectives for the management of recreation: <ul style="list-style-type: none"> A range of recreational opportunities is provided for The major potential threats associated with recreation are minimised Other managing agencies and the community are working with the Authority to manage recreational use and the factors that affect it. <p>However, the RMS does not include information about how these objectives are measured, and no assessment of their success has been undertaken.</p> <p>Actions under the Reef 2050 include clear objectives</p>	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) – is due to be updated in 2017 Reef 2050 Long-Term Sustainability Plan 	Adequate	Stable
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to recreational use	2	<ul style="list-style-type: none"> The SELTMP group are regularly monitoring recreational use. 	<ul style="list-style-type: none"> Tobin, R., Bohenshy, E., Curnock, m> Goldberg, J>, Gooch, M. Marshall, N., Nicotra, B. Pert, P., Scherl, L., Stone-Jovicich, S. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2014 Recreation in the Great Barrier Reef . Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited CSIRO. 	Adequate	Improving
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address recreational use	4	<ul style="list-style-type: none"> High level of engagement for legislative changes (Regulations, Zoning Plans, Plans of Management) with formal submissions received LMACS, regional based staff and community access points 	<ul style="list-style-type: none"> Reef Advisory Committee LMACS http://www.gbrmpa.gov.au/about-us/local-marine-advisory-committees 	Adequate	Stable

		<ul style="list-style-type: none"> Legislative requirements for public advertisements for amendments to statutory plans Reef protection markers 			
PL7 Sufficient policy currently exists to effectively address recreational use	3	<ul style="list-style-type: none"> Policies contribute to addressing recreational use: <ul style="list-style-type: none"> Position Statement on the Conservation of Dugongs (2007) Policy on sewage discharge from marine outfalls (2005) Structures Policy (2017) - policies briefly refers to potential impacts from recreational uses A number of these policies have not been updated or reviewed in over 10 years. 	<ul style="list-style-type: none"> Whale and dolphin policy 2007 – Position Statement of No Structure Sub Zones (2006) – Position Statement on the Translocation of Species (2007) – policies refers to potential impacts from recreational vessels Recreational Management Strategy (RMS) GBRMPA 	Adequate	Stable
PL8 There is consistency across jurisdictions when planning for recreational use	3	<ul style="list-style-type: none"> The Recreation Management Strategy identifies that “many agencies play a significant role in managing recreation in the Marine Park” (see Appendix 2, page 35). Collaborating with other agencies to ensure management of recreation in the Marine Park is coordinated and consistently applied is one of the key management components identified in the RMS The Authority and the Queensland Government have a long history of collaboration to ensure consistency particularly to deliver their field management program, which ensures compliance with management tools that are highly relevant to recreation such as Plans of Management 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) 	Adequate	Stable
PL9 Plans relevant to recreational use provide certainty regarding where uses may occur, the type of activities allowed or specifically disallowed,, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.	3	<ul style="list-style-type: none"> Zoning plans, planning areas and site planning identify where use may occur In 2017, Whitsunday Plan of Management has been amended to more specifically identify where some recreational activities are allowed or disallowed. Similar updates to the Cairns and Hinchinbrook Plans of Management have not occurred as yet. A new flyer was created called ‘Going spearfishing in the Whitsundays’ and included a map that summarised the complex information relating to areas that recreational users can go spearfishing. 	<ul style="list-style-type: none"> Great Barrier Reef Marine Park Zoning Plan 2003 Whitsundays Plan of Management Cairns Area Plan of Management 2008,GBRMPA Hinchinbrook Plan of Management (2004) GBRMPA http://elibrary.gbrmpa.gov.au/jspui/bitstream/11017/3252/1/Spearfishing-map.pdf 	Adequate	Improving
INPUTS					

IN1 Financial resources are adequate and prioritised to meet management objectives to address recreational use	3	<ul style="list-style-type: none"> • Due to other priorities, limited resources were allocated to managing recreation beyond the WPOM amendment • Through the Significant Regional Infrastructure Projects Program (SKIPP) the Queensland government invested \$2.375 million to expand the public mooring and reef protection program across the GBR over 2016-19. To date, 13 new moorings installed in Cairns, 7 new moorings and 20 reef protection markers installed near Keppel Island and 60 new moorings and 45 reef protection markers in the Whitsundays, 	<ul style="list-style-type: none"> • GBRMPA discussions and workshops 	Limited	Improving
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address recreational use	2	<ul style="list-style-type: none"> • Corresponding to the financial resources, there are limited human resources directly assigned to recreation. The Tourism and Recreation section within GBRMPA has been disbanded. 	<ul style="list-style-type: none"> • GBRMPA discussions and workshops 	Limited	Deteriorating
IN3 The right skill sets and expertise are currently available to the managing organisations to address recreational use	3	<ul style="list-style-type: none"> • There are in-house skills and expertise, principally built from corporate knowledge, that can potentially be used to address recreation 	<ul style="list-style-type: none"> • GBRMPA discussions and workshops 	Limited	Stable
IN4 The necessary biophysical information is currently available to address recreational use	3	<ul style="list-style-type: none"> • Information in GBR Biodiversity Conservation Strategy, previous Outlook Reports and Strategic Assessments can be used to inform management actions for recreation. • The technical report entitled: Informing the Outlook for Great Barrier Reef coastal ecosystems includes information on the current status of the catchment and the threats it faces which can be useful to address recreation 	<ul style="list-style-type: none"> • Great Barrier Reef Biodiversity Conservation Strategy 2013 • Great Barrier Reef Strategic Assessment Report, • Great Barrier Reef Coastal Zone Strategic Assessment 2014 • Outlook Report 2014 • Informing the Outlook for Great Barrier Reef coastal ecosystems 	Adequate	Stable
IN5 The necessary socio-economic information is currently available to address recreational use	3	<ul style="list-style-type: none"> • Many of the residents that live in the GBR region use the GBR for recreational activities such as visiting an island, snorkelling, diving, sailing, boating and fishing. The economic contribution of the GBR to recreation is captured by the expenditure on these types of recreational activities in the GBR region. • Recreational expenditure on the GBR region by types of expenditure is presented for 2015-16. • Recreational use, user values and perceptions were included in the SELTMP 2014 Report 	<ul style="list-style-type: none"> • Deloitte Access Economics, At what price? The economic, social and icon value of the Great Barrier Reef (2017) • Deloitte Access Economics, Confidently Queensland Liveable communities, Diversified economy, Inclusive growth (2017) • Tobin, R., Bohenshy, E., Cummock, m> Goldberg, J>, Gooch, M. Marshall, N., Nicotra, B. Pert, P., Scherl, L., Stone-Jovicich, S. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2014 Recreation in the Great Barrier Reef . Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited CSIRO. 	Adequate	Improving

IN6 The necessary Indigenous heritage information is currently available to address recreational use	2	<ul style="list-style-type: none"> Quality information would assist in the interpretation of heritage to recreational users and managers. The heritage value, Other Values, is poorly recorded and so not easily available to recreational users or managers. Some recreational vessels continue to use destructive methods of accessing maritime heritage sites; such as tying the vessel off to sites. 	<ul style="list-style-type: none"> GBRMPA discussions and workshops 	Limited	Declining
IN7 The necessary historic heritage information is currently available to address recreational use	2	<ul style="list-style-type: none"> Of the ~800 shipwrecks in Queensland less than 9% have been located and less have been positively identified Little information has been gathered on the historic heritage of islands. Quality information would assist in the interpretation of heritage to recreational users and managers. The heritage value, Other Values, is poorly recorded and so not easily available to recreational users or managers. Some recreational vessels continue to use destructive methods of accessing maritime heritage sites; such as tying the vessel off to sites. 	<ul style="list-style-type: none"> GBRMPA discussions and workshops 	Limited	Stable
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address recreational use	4	<ul style="list-style-type: none"> Community groups are involved with activities such as coral surveys, monitoring seagrass, clean-up of marine debris and conduct surveys following cyclone Debbie in 2017. Their contribution to addressing recreation is through assisting with protecting the natural environment and providing community awareness of the values the reef, and impacts of activities. The number of these groups is increasing. 	<ul style="list-style-type: none"> Order of Underwater Coral Heroes - (OUCH) e.g. monitoring corals, foreshore mangroves, maintenance of moorings Reef Guardian Schools Seagrass-Watch - monitoring program collecting data about near-shore seagrasses ReefCheck - coral monitoring group Coral Watch TRRAC and LMACs, community associations, Reef Advisory Committee http://www.gbrmpa.gov.au/about-us/local-marine-advisory-committees Marine Debris Project 	Adequate	Improving
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of recreational use	3	<ul style="list-style-type: none"> The Tourism Reef Advisory Committee (TRAC) is regularly consulted as part of the recreation planning for the Reef and includes representatives of Marine Park recreation Reef 2050 Reef Advisory Committee also have some consideration of their use. 	<ul style="list-style-type: none"> http://www.gbrmpa.gov.au/about-us/reef-advisory-committee/tourism-and-recreation-reef-advisory-committee http://www.gbrmpa.gov.au/zoning-permits-and-plans/plans-of-management LMACS http://www.gbrmpa.gov.au/about-us/local-marine-advisory-committees 	Adequate	Stable

		<ul style="list-style-type: none"> Recreation representatives are also included in the 12 LMAs and participate in the ongoing management of Recreation Recreational users are also reached through communications campaigns and social media (i.e. Love the Reef # logo) Stakeholders can also provide input during public consultation processes relevant to them (e.g. RMS development, site management arrangements, Plans of Management amendments) 			
PR2 The local community is effectively engaged in the ongoing management of recreational use	3	<ul style="list-style-type: none"> GBRMPA staff in Regional offices (Cairns, Mackay, Rockhampton) interact with recreational users particularly through Community Access Points (CAPs) Consultation with the community has occurred in the development of the Whitsunday Plan of Management 	<ul style="list-style-type: none"> GBRMPA discussions and workshops http://www.gbrmpa.gov.au/zoning-permits-and-plans/plans-of-management 	Adequate	Stable
PR3 There is a sound governance system in place to address recreational use	4	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) - has not been reviewed or updated since adoption Queensland Assessment Bilateral Agreement – Amended in December 2014, the Assessment Bilateral Agreement between the Commonwealth and Queensland governments aims to reduce duplication of effort between the two governments Legislative requirements to publicly advertise amendments to POMs and MPA policy to have public consultation on all Great Barrier Reef policies. 	<ul style="list-style-type: none"> Reef 2050 Long-Term Sustainability Plan Recreational Management Strategy (RMS) GBRMPA (2012) Queensland Assessment Bilateral Agreement – http://www.environment.gov.au/protection/environment-assessments/bilateral-agreements/qld 	Adequate	Stable
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for recreational use	2	<ul style="list-style-type: none"> Reviews of Recreational Management Strategy due every five years however this has not been a resource priority There is no regular performance monitoring Performance monitoring achieved through Annual Reports and AOP reporting mechanisms. There are no specific Key Performance Indicators on recreation in GBRMPA Strategic Plan 2012-2016 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) GBRMPA Strategic Plan 2012-2016 	Adequate	Declining
PR5 Appropriate training is available to the managing agencies to address recreational use	2	<ul style="list-style-type: none"> No specific training was identified by GBRMPA, apart from on the job work experience. This has not been identified as a major capacity gap. 	<ul style="list-style-type: none"> GBRMPA discussions and workshops 	Limited	Declining
PR6 Management of recreational use is consistently implemented across the relevant jurisdictions	4	<ul style="list-style-type: none"> The Joint Field Management Program provides management and compliance relevant to recreation, including recreation on islands in the Region. 	<ul style="list-style-type: none"> Field Management Program 	Limited	Stable

		<ul style="list-style-type: none"> • Coordination between relevant agencies (GBRMPA, MSQ, Australian Water Police) to enforce Marine Park Acts, Regulations, Zoning Plans and Plans of Management is high although compliance of recreational use has an overall low priority • Some products and services jointly prepared/presented (e.g. maps, brochures) • Some data sharing across jurisdictions (e.g. vessel registration) 			
PR7 There are effective processes applied to resolve differing views/ conflicts regarding recreational use	3	<ul style="list-style-type: none"> • Regular interaction with recreational stakeholders through TRAC, LMACs and regional offices staff, as well as public consultation processes and communication campaigns, help minimise conflicts and misunderstandings • However, as some recreation stakeholders groups are only broadly known (e.g. cruising yachts and grey nomads) the range of conflicts is not fully identified 	<ul style="list-style-type: none"> • TRRAC and LMACs, community associations, Reef Advisory Committee http://www.gbrmpa.gov.au/about-us/local-marine-advisory-committees 	Adequate	Stable
PR8 Impacts (direct, indirect and cumulative) of activities associated with recreational use are appropriately considered.	3	<ul style="list-style-type: none"> • Plans of Management consider all impacts, including those for recreation • A statement of Management Arrangements in the GBRMP for Super-yacht Operations. It summarises the current management arrangements and explains where super-yachts can go. • Impacts area clearly articulated in Recreation Management Strategy, but little evidence of implementation 	<ul style="list-style-type: none"> • A statement of Management Arrangements in the GBRMP for Super-yacht Operations • Recreational Management Strategy (RMS) GBRMPA (2012) • Spearfishing in the Whitsundays 	Adequate	Stable
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding recreational use	3	<ul style="list-style-type: none"> • The Recreation Management Strategy was based on latest biophysical research and monitoring information relevant to recreation, however this has not been up-dated since 2012 • Contemporary Biophysical data on Maritime Cultural Heritage sites is non-existent. 	<ul style="list-style-type: none"> • Recreational Management Strategy (RMS) http://www.gbrmpa.gov.au/about-the-reef/how-the-reefs-managed/recreation-in-the-great-barrier-reef-marine-park 	Adequate	Declining? ?
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding recreational use	3	<ul style="list-style-type: none"> • The Recreation Management Strategy was based on the latest socio-economic research and monitoring information relevant to recreation available at the time, but has not been updated with new information. • Deloitte Access Economics recently estimated the economic contribution of Reef-related recreation to the national economy. Regular monitoring of this economic contribution will help managers' respond appropriately to changes in recreational use, and enable the Authority to promote the importance of a healthy Reef ecosystem for recreation 	<ul style="list-style-type: none"> • Deloitte Access Economics, At what price? The economic, social and icon value of the Great Barrier Reef (2017) • Deloitte Access Economics, Confidently Queensland Liveable communities, Diversified economy, Inclusive growth (2017) • Recreational Management Strategy (RMS) http://www.gbrmpa.gov.au/about-the-reef/how-the-reefs-managed/recreation-in-the-great-barrier-reef-marine-park • 	Adequate	Improving

PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding recreational use	3	<ul style="list-style-type: none"> The Recreation Management Strategy clearly identified the need to improve Traditional Owners engagement and knowledge, but it does not indicate if this has occurred 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) http://www.gbrmpa.gov.au/about-the-reef/how-the-reefs-managed/recreation-in-the-great-barrier-reef-marine-park 	Limited	Stable
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding recreational use	3	<ul style="list-style-type: none"> Managers uses existing knowledge especially of Commonwealth heritage listed properties 	<ul style="list-style-type: none"> GBRMPA workshop discussions 	Adequate	Improving
PR13 Relevant standards are identified and being met regarding recreational use	3	<ul style="list-style-type: none"> Responsible Reef Practices provide best practice guidelines for a range of recreational activities on the Reef including anchoring and mooring, bird watching, motorised water sports, visiting islands and cays and boating and yachting. In 2017, key aspects of Responsible Reef Practices have been converted into visual icons that are being promoted by the agency. Whale watching guidelines (national). These are compulsory OH&S standards Vessel standards (MSQ) 	<ul style="list-style-type: none"> Whale and Dolphin Watching Safety Qld MSQ Vessel standards GBRMPA Responsible Reef Practice http://www.gbrmpa.gov.au/visit-the-reef/responsible-reef-practices 	Adequate	Stable
PR14 Targets have been established to benchmark management performance for recreational use	1	<ul style="list-style-type: none"> No targets have been established 	<ul style="list-style-type: none"> GBRMPA discussions and workshops 	Adequate	Stable
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for recreational use	3	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) - was due to be updated in 2017. This has not occurred. The Field Management Program continues to ensure that public moorings are in good order and operational. The fine-tuning of reef protection marker locations continues to raise awareness of and protect coral communities under threat from coral damage. The Whitsundays Plan of Management has occurred Cairns and Hinchinbrook POMs and site planning applied 	<ul style="list-style-type: none"> GBRMPA discussions and workshops FMP annual report GBRMPA Annual Reports 2014-2017 Recreational Management Strategy (RMS) GBRMPA (2012) Whitsundays Plan of Management Cairns Area Plan of Management Hinchinbrook Plan of Management 	Adequate	declining
OP2 Implementation of management documents and/or programs relevant to recreational use have progressed in accordance with timeframes specified in those documents	2	<ul style="list-style-type: none"> The Recreation Management Strategy does not include specific timeframes for implementation of the key management components listed, and has not been reviewed 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) Whitsunday Plan of Management 	Adequate	Declining

		<ul style="list-style-type: none"> The Whitsunday Plan of Management has been reviewed, but Plans of Management for the Cairns area and Hinchinbrook have not been reviewed 			
OP3 The results (in OP1 above) have achieved their stated management objectives for recreational use	2	<ul style="list-style-type: none"> 13 new moorings have been installed in Cairns, 7 new moorings and 20 reef protection markers have been installed near Keppel Island and 60 new moorings and 45 reef protection markers have been installed in the Whitsundays, It is not possible to determine if the management objective of the RMS have been achieved as there has been no review. 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) GBRMPA discussions 	Limited	Declining
OP4 To date, products or services have been produced in accordance with the stated management objectives for recreational use	2	<ul style="list-style-type: none"> Field Management Program maintain asset register and monitoring program. The Field Management Program maintains a visitor facilities asset base for public moorings, reef protection markers, island campgrounds. Maintenance of visitor facilities is carried out but the capital funding requirements for new or replacement visitor facilities and cultural heritage protection have not been accommodated within the current five year Business Strategy. New mooring and protection markers have been installed 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) GBRMPA Annual Reports 2014-2017 Field Management Program annual report (2016-17 summary) Qld Significant Regional Infrastructure Projects Program 	Limited	Stable
OP5 Effective knowledge management systems regarding recreational use are in place within agencies	3	<ul style="list-style-type: none"> SELTMP technical report on recreation presents a snapshot of socio-economic data and indicators in the GBR region. It details how people use and depend on the GBR, human and community wellbeing and drivers of change. 	<ul style="list-style-type: none"> Tobin, R., Bohensky, E., Curnock, m> Goldberg, J>, Gooch, M. Marshall, N., Nicotra, B. Pert, P., Scherl, L., Stone-Jovicich, S. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2014 Recreation in the Great Barrier Reef . Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited CSIRO. GBRMPA discussions and workshops 	Limited	Improving
OP6 Effective systems are in place to share knowledge on recreational use with the community	3	<ul style="list-style-type: none"> More information for recreational users developed and available through various mediums (e.g. TV community announcements, billboards, boat shows, publications, websites, hashtags, social media) LMACs informed about recreational issues for their region Regional based staff have provided stakeholders and local communities with easier access to management issues. The GBRMPA web site includes details about how to manage bilge, greywater, litter and chemicals Spearfishing in the Whitsundays web site details where spearfishing in the Whitsunday planning area is permitted 	<ul style="list-style-type: none"> GBRMPA Visit the Reef webpage Qld QPWS Protecting the Great Barrier Reef; Great Barrier Reef Coast Marine Park; Marine park activities GBRMPA Newsletters - http://www.gbrmpa.gov.au/corp_site/info_services/publications/newsletters/searead2 QPWS fact sheet - Be pest-free! when you visit the Great Barrier Reef islands Great Barrier Reef camping Waste (including sewage), chemicals and litter 	Adequate	Improving

		<ul style="list-style-type: none"> The Eye on the Reef program enables anyone who visits the Great Barrier Reef to contribute to its long-term protection by collecting valuable information about reef health, marine animals and incidents especially through Sightings Network Responsible Reef Practices 	<ul style="list-style-type: none"> Spearfishing in the Whitsundays Webpages providing detailed guidance to recreational users visiting the Cairns and Whitsundays Planning Areas Eye on the Reef Order of Underwater Coral Heroes Marine Debris Project 		
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing recreational use and moving towards the attainment of the desired outcomes.	3	<ul style="list-style-type: none"> The implementation of the Recreation Management Strategy was expected to ensure progress towards attainment of outcomes identified in the document. Actions in the Reef 2050 Plan include <i>ensuring recreational activities are ecologically sustainable</i> 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) Reef 2050 Long-Term Sustainability Plan 	Limited	Stable/declining
OC2 The outputs relating to recreational use are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	3	<ul style="list-style-type: none"> The implementation of the Recreation Management Strategy was expected to ensure progress towards attainment of outcomes identified in the document. Actions in the Reef 2050 Plan include <i>ensuring recreational activities are ecologically sustainable</i> are on track. 	<ul style="list-style-type: none"> Recreational Management Strategy (RMS) GBRMPA (2012) Reef 2050 Long-Term Sustainability Plan 	Limited	Stable/declining
OC3 the outputs (refer OP1 and 3) for recreational use are reducing the major risks and the threats to the Great Barrier Reef	3	<ul style="list-style-type: none"> Most of the identified impacts are likely to only have minor effects; and be concentrated close to the coast, in popular areas For activities such as snorkelling and diving, the impacts are most likely to be minor localised damage to corals and disturbance to wildlife. These issues are addressed in Responsible Reef Practices The investment in new moorings and reef protection markers have contributed to reducing threats to the reef from recreational users Actions in the Reef 2050 Plan include <i>ensuring recreational activities are ecologically sustainable</i> 	<ul style="list-style-type: none"> Responsible Reef Practices Significant Regional Infrastructure Projects Program (SKIPP) Recreational Management Strategy (RMS) GBRMPA (2012) 	Limited	Improving
OC4 Use of the Great Barrier Reef relating to recreational use is demonstrably environmentally sustainable	3	<ul style="list-style-type: none"> Recreational users contribute to protection and management of the Region's values through programs such as Clean Up Australia Day, Order of Underwater Coral Heroes Volunteers (OUCH), Tangaroa Blue, Eco-Barge, the Strandings Hotline and the Sightings Network There has been limited monitoring and published papers on the sustainability of recreational use 	<ul style="list-style-type: none"> GBRMPA discussions and workshops 	Limited	Stable

OC5 Use of the Great Barrier Reef relating to recreational use is demonstrably economically sustainable	3	<ul style="list-style-type: none"> Deloitte Access Economics recently estimated the economic contribution of Reef-related recreation to the national economy. 	<ul style="list-style-type: none"> Deloitte Access Economics, At what price? The economic, social and icon value of the Great Barrier Reef (2017) 	Adequate	Stable
OC6 Use of the Great Barrier Reef relating to recreational use is demonstrably socially sustainable, in terms of understanding and/or enjoyment	4	<ul style="list-style-type: none"> SELTMP technical report on recreation presents a snapshot of socio-economic data and indicators in the GBR region. It details how people use and depend on the GBR, human and community wellbeing and drivers of change. 	<ul style="list-style-type: none"> Tobin, R., Bohensy, E., Curnock, m> Goldberg, J>, Gooch, M. Marshall, N., Nicotra, B. Pert, P., Scherl, L., Stone-Jovicich, S. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2014 Recreation in the Great Barrier Reef . Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited CSIRO. 	Adequate	Improving
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address recreational use	3	<ul style="list-style-type: none"> Partnerships are maintained in various ways including through TRAC and LMACs but also via specific partnership programs. Effective partnerships need to be maintained and further developed with recreational stakeholders groups that are not well known (e.g. grey nomads) Reef Guardians Program often involves people who are also recreational users of the Reef 	<ul style="list-style-type: none"> http://www.gbrmpa.gov.au/about-us/reef-advisory-committee/tourism-and-recreation-reef-advisory-committee http://www.gbrmpa.gov.au/about-us/local-marine-advisory-committees 	Adequate	Stable

Table 34 Calculation of grades for research activities

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to research activities are understood by managers	4	<ul style="list-style-type: none"> Scientific research has made a substantial contribution to the way the Reef is understood, managed and used. Monitoring by AIMS and other researchers also plays a key role in tracking trends in the Region's values and effects on those values managers are well connected to this work The importance of research to better understand the values of the GBR and inform management to protect these values is well understood by managers Most research has focused on coral reefs and high profile species (e.g. protected, threatened, commercially important). Modelling is being sought and used by management agencies to begin to systematically understand the effects of cumulative impacts at a range of spatial scales in the GBR Region There continues to be an increase in focus on research relating to social/economic drivers of various activities associated with the GBR The Science Strategy and Information Needs 2014-2019 sets out future scientific information needs. It aims to ensure scientific activities are relevant, targeted to address critical management issues, and that scientific outputs are easily accessible. Recognition of the importance of research and conducting it in ways that limit impacts on values of the Reef is noted in GBRMPA's Guidelines: Management of research in the Great Barrier Reef Marine Park released in 	<ul style="list-style-type: none"> Social & Economic Long-Term Monitoring Program (SELTMP) analysis of social survey data collected in 2017 2017 Scientific Consensus Statement (http://www.reefplan.qld.gov.au/about/scientific-consensus-statement.aspx) Science Strategy and Information Needs 2014-2019 and searchable register of detailed questions Guidelines: Management of research in the Great Barrier Reef Marine Park Science for management page on GBRMPA website 	adequate	stable

		<p>October 2017 (replaced the 2004 policy on managing scientific research)</p> <ul style="list-style-type: none"> • A synthesis of the most recent research (since 2013) relating to the condition of coastal and marine ecosystems of the Great Barrier Reef and their responses to water quality and disturbances was undertaken in 2017 as a chapter (Chapter 1) of the 2017 Scientific Consensus Statement. The chapter also presented the existing research gaps for marine and coastal ecosystems in relation to water quality. 			
CO2 The current condition and trend of values relevant to research activities are known by managers	4	<ul style="list-style-type: none"> • There is a strong history of research programs which inform and help improve management of the Region. • Although past research focused primarily on studying the biophysical environment, there is also a history of social and economic studies. This recognises that effective natural resource management requires an understanding of social and economic systems as well as natural systems. • eReefs is very well regarded by users • The Science Strategy and Information Needs 2014-2019 sets out future scientific information needs. It aims to ensure scientific activities are relevant, targeted to address critical management issues, and that scientific outputs are easily accessible. • A Reef Integrated Monitoring and Reporting Program (RIMReP) is currently being developed and aims to provide a coordinated monitoring program for many Reef values. RIMReP has commenced but has been slow to develop and deliver products 	<ul style="list-style-type: none"> • Science Strategy and Information Needs 2014-2019 and searchable register of detailed questions • Reef 2050 Integrated Monitoring and reporting program (RIMReP) GBRMPA webpage and RIMReP Strategy • E-Reefs http://ereefs.org.au/ereefs • http://www.bom.gov.au/environment/activities/coastal-info.shtml 	adequate	stable
CO3 Impacts (direct, indirect and cumulative) associated	3	<ul style="list-style-type: none"> • The majority of research occurs at the four major research stations located at: Lizard 	<ul style="list-style-type: none"> • Workshops and interviews 	limited	improving

<p>with research activities are understood by managers.</p>		<p>Island, Orpheus Island, One Tree Island and Heron Island. There is diffuse research conducted at other locations throughout the GBRMP however this is much lower than the four research stations</p> <ul style="list-style-type: none"> • The concentration of research activities, such as sampling, around research stations, has the potential to contribute to local depletion of some species and some minor, localised impacts on habitats but this is managed in conjunction with research station staff. Any impacts have been dwarfed by bleaching and cyclone related impacts. • Little is known about the cumulative impacts of research activities at any particular location, however, given the scale of activities, overall impacts are likely to have only localised effects. • GBRMPA's Guidelines: Management of research in the Great Barrier Reef Marine Park (released in October 2017 to replace the 2004 policy on managing scientific research) incorporate recognition of impacts associated with research activities. • Assessment of research permit applications are often referred to the relevant Research Station for site specific advice on the current status of species proposed for collection in that Scientific Research Zone. Permit conditions require researchers to discuss study sites for collections and equipment installation with the Research Station directors and abide by any site selection advice given by the Station directors. Lizard Island Research Station have developed a spatially referenced collections database which helps them understand what is taken from where and influence the location of future research projects. 	<ul style="list-style-type: none"> • Guidelines: Management of research in the Great Barrier Reef Marine Park • Permission System – Risk Assessment Procedure 		
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		<ul style="list-style-type: none"> • Permissions System has adopted a new risk assessment procedure, effective 4 October 2017 • Increased awareness among managers of need for focus on managing for a resilient Reef, i.e. particularly given climate change context, recent mass coral bleaching • Single project research permits generally have a permit term of 3-4 years with a requirement to submit a specimen collection form and map detailing collection sites prior to expiry of the permit. Certain long-term monitoring programs have 6-10 year permit terms. Several 'umbrella' permits have been granted that cover many smaller research projects conducted within a Lab or Supervisor's Group. These applications are assessed relative to the approximate number of projects and students/staff covered by the application. These broader permits are generally for 6 years and require annual reporting of specimen collection and sites. 			
CO4 The broader (national and international) level influences relevant to research activities are understood by managers.	4	<ul style="list-style-type: none"> • The amount of research conducted in the Region and the focus of that research is determined by a number of variables including: the priorities of funding bodies such as the National Environmental Science Programme (NESP) and the Australian Research Council; the priorities of research end-users such as government agencies; and the interests and capacities of researchers in universities and other research institutions. • Targeted and effective research and monitoring programs for addressing management needs require strong partnerships between research providers and the relevant management agencies 	<ul style="list-style-type: none"> • http://www.environment.gov.au/marine/gbr/publications/factsheet-science-and-great-barrier-reef • The National Environmental Science Programme • NERP Fact sheet - Science informing environmental policy • Cost-effective indicators and metrics for monitoring the human dimensions of the Great Barrier Reef: current NESP project underway. • Monitoring and adaptively reducing system-wide governance risks facing the GBR • Reef 2050 Plan Annual Report and Implementation Strategy – 2016 • Reef Trust Supporting Science and Evidence-Base - 2016 	adequate	stable

		<ul style="list-style-type: none"> • International and National concern about condition and trends of values in GBR, climate change and its impacts on marine and coastal ecosystems and related matters has been driving a significant increase in research activity in the GBR, especially applied research relevant to policy and management responses • Link between research and on-going monitoring has strengthened, as has concern for understanding and addressing cumulative impacts • Concerns over the condition of the GBR and Australia's responsibilities under the World Heritage Convention and EPBC Act have led to a greater research, monitoring and educational focus on MNES and the information needed to support management of MNES • Increasing global attention to social and economic aspects of environmental management reflected in development of the SELMTP • Decline in overall condition of the GBR is directing research towards possible approaches to restoration and more interventionist approaches (i.e. Blueprint for Reef Resilience). International and national concern for the GBR is, in part, driving this change in research direction. 			
CO5 The stakeholders relevant to research activities are well known by managers.	4	<ul style="list-style-type: none"> • Research providers include research institutions where research and monitoring is carried out by scientists and technicians highly trained in the relevant fields. Major institutions include the Australian Institute of Marine Sciences, James Cook University, University of Sydney, the University of Queensland, the University of Central Queensland, the University of the Sunshine Coast, CSIRO, and 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Science Strategy and Information Needs 2014-2019 and searchable register of detailed questions • Reef 2050 Integrated Monitoring and reporting program (RIMReP) GBRMPA webpage and RIMReP Strategy • Great Barrier Reef – 'RD&I Strategy' and 'Supporting science and dependencies' summary text https://www.ehp.qld.gov.au/management/science-priorities/statements.html 	adequate	stable

		<p>government agencies such as the Authority and Queensland Government departments</p> <ul style="list-style-type: none"> • Officer-to-officer engagement is widespread between GBRMPA and AIMS and JCU in Townsville on research activities and outcomes, and is facilitated through conference attendances, workshops, forums and seminars • Some researchers indicated that the level of engagement between GBRMPA staff and researchers has declined in recent times, primarily as a result of loss of staff from GBRMPA and pressures of other work • GBRMPA's new Research Guidelines recognise researchers and also management agencies as users of research findings (both stakeholders in research activities) • RIMReP 2017 stakeholder survey/analysis report 	<ul style="list-style-type: none"> • RIMReP 2017 stakeholder survey/analysis report – Identifying management information needs: informing the program design of the Reef 2050 Reef Integrated Monitoring program. 		
PLANNING					
PL1 There is a planning system in place that effectively addresses research activities	3	<ul style="list-style-type: none"> • The Science Strategy and Information Needs 2014-2019 sets out future scientific information needs. The strategy draws on the Great Barrier Reef Outlook Report 2014 and strategic assessment that outline the Reef's health, management and likely future, and is supported by a searchable register of detailed questions. The strategy and register have been a key input to the development of an integrated monitoring framework and program for the GBRWHA (RIMReP). • GBRMPA has increased attention to research priorities through SELTEMP and RIMREP programs. • RIMREP has been slow to develop as operational program and stakeholders have 	<ul style="list-style-type: none"> • Guidelines: Managing research in the Great Barrier Reef Marine Park • Explanatory statement section for limited impact research related to permissions system GBRMP Regulations amendments 2017 • Reef 2050 Integrated Monitoring and reporting program (RIMReP) GBRMPA webpage and RIMReP Strategy • New or updated documents via the GBRMPA's permissions system webpage • NESP research Priorities, • Reef Plan Research Development and Innovation Strategy, • Sustainable Fisheries Monitoring and Research Plan 2017-18 	adequate	improving

		<p>mixed views about its development – some consider it overly complex and ambitious</p> <ul style="list-style-type: none"> • Divided views on GBRMPAs influence on research directions with some stakeholders seeing an improvement and others indicating declining engagement and influence • Additional research priorities for the Great Barrier Reef include: NESP research Priorities, Reef Plan Research Development and Innovation Strategy, Sustainable Fisheries Monitoring and Research Plan 2017-18. • GBRMPA's Guidelines: Management of research in the Great Barrier Reef Marine Park (released in October 2017 to replace the 2004 policy on managing scientific research) outlines expectations for researchers to meet certain environmental best practices. The guidelines provide clearer and more comprehensive information than previously publically available on what is allowed where and some considerations for researchers and GBRMPA permissions application assessors to be aware of. This includes reference to cumulative impacts and levels of local environmental stress. The Guidelines complement amendments to the GBRMPA Regulations that (a) allows the use of some extra (commonly used, low risk) minor research aids and (b) removed details better addressed in policy and placed them into the Guidelines. • From 4 October 2017 improvements to the way GBRMPA manage all new Marine Parks permission applications, including continuations of existing permissions, come into effect. The changes, which are based on two rounds of consultation with permit holders and other key stakeholders, include: 			
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		<ul style="list-style-type: none"> Permits Online - a new online portal to submit applications and manage all permissions and contact details Improved assessment guidelines A checklist of information required at the time of application Updated permission system policy and new guidance documents. 			
PL2 The planning system for research activities addresses the major factors influencing the Great Barrier Reef Region's values.	4	<ul style="list-style-type: none"> The Great Barrier Reef Marine Park Zoning Plan came into effect on the 1 July 2004 and specific provisions for research activities are incorporated. The Guidelines: Managing research in the Great Barrier Reef Marine Park (which replace the 2004 policy) provides a good summary of the GBRMPA's support for, and management of, research. Some consideration of climate change impacts (e.g. coral bleaching) and other stressors and cumulative impacts is included. Best environmental practices and standards form part of the Memorandum of Understanding (MOU) between the GBRMPA and accredited educational and research institutions. A summary of best environmental practices have been prepared for a range of activities including Anchoring, Bird watching, Boating, Diving and snorkelling. In 2015 an EMP was approved for the management of the Scientific Research Zone (SRZ) associated with Heron Island Research Station. Resources are not dedicated to negotiating and approving SRZ EMPs, however, this was done in conjunction with an assessment process for the permit renewal of the facilities associated with the operation of the Research Station. The EMP covers both 	<ul style="list-style-type: none"> Workshops and stakeholder interviews GBRMP Zoning Plan & Maps of Scientific Research Zones Guidelines: Managing research in the Great Barrier Reef Marine Park 2017 Scientific Consensus Statement (the previous edition was 2013) 	adequate	stable

		<p>the ongoing maintenance of these permitted facilities as well as management of the SRZ.</p> <ul style="list-style-type: none"> Although Lizard Island Research Station does not have a single approved MOU for operation of its SRZ, the Station Directors manage the area comprehensively with documented procedures for best practice, mandatory collection reports for all researchers staying at the station, which is maintained in a searchable electronic database, an approved EMP for operation of the open system aquaria with seawater intake and discharge pipelines both within the SRZ, and active consultation and direction given to all researchers by the Station Director with respect to collection types, quantities and sites. Discussions with the Research Station Directors and a site visit conducted in 2016 concluded that duplication of the management of the SRZ into a single EMP was unnecessary at this time given the management strategies and procedures were already documented albeit in various separate forms. 			
PL3 Actions for implementation regarding research activities are clearly identified within the plan	4	<ul style="list-style-type: none"> From 4 October 2017 improvements to the way GBRMPA manage all new Marine Parks permission applications, including continuations of existing permissions, come into effect. The changes include: <ul style="list-style-type: none"> Permits Online - a new online portal to submit applications and manage all permissions and contact details Improved assessment guidelines A checklist of information required at the time of application 	<ul style="list-style-type: none"> Science Strategy and Information Needs 2014-2019 and searchable register of detailed questions Reef 2050 Integrated Monitoring and reporting program (RIMReP) GBRMPA webpage and RIMReP Strategy Great Barrier Reef – 'RD&I Strategy' and 'Supporting science and dependencies' summary text https://www.ehp.qld.gov.au/management/science-priorities/statements.html Reef 2050 Plan 	adequate	improving

		<ul style="list-style-type: none"> ○ Updated permission system policy and new guidance documents. • Science information needs document developed provides a more structured approach to identifying and planning for research. • Reef 2050 Plan includes a number of actions relevant to research directions and management (e.g. EHA15, EHA16, EHA29, EHA30, BA17-21, GT5) 			
PL4 Clear, measurable and appropriate objectives for management of research activities have been documented	4	<ul style="list-style-type: none"> • Reef 2050 plan targets and actions relevant to research • Science information needs document developed provides a more structured approach to identifying and planning for research. • Other sources of research priorities and objectives include: NESP research Priorities, Reef Plan Research Development and Innovation Strategy, Sustainable Fisheries Monitoring and Research Plan 2017-18. • New GBRMPA permissions policy – has objective overarching for managing activities in the Marine Park • Service level standards for tailored assessments apply to research permit applications although there are only apply to applications received after 4 October 2017 • QPWS has a prioritised research prospectus which is prioritised and mapped across all NPSR projects. This assists with performance monitoring and gap analysis for national parks 	<ul style="list-style-type: none"> • Reef 2050 Plan • Permission System Service Charter Oct 2017 	adequate	improving
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is	3	<ul style="list-style-type: none"> • There is no monitoring of the actual effort or impact associated with research activity in the GBR 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Permits online system 	adequate	stable

gathered in relation to research activities		<ul style="list-style-type: none"> • Researchers should submit to the GBRMPA a species collection form at the cessation of their permit which is usually after a 3 year period although this has not always happened. Approximately 70 per cent non-compliance • Accredited institutions must, each and every 12 months forward to GBRMPA a report detailing the research projects conducted under the relevant MOU, including specimen collection records. • Some research stations collect information on what is taken by each researcher. • There remains no mechanism for recording specimen collection numbers in electronic form that is searchable or able to inform cumulative impact monitoring/assessment. • Development and implementation of RMS upgrades and new Permits Online system include researchers. • The Authority has in place a dedicated permission compliance plan that is reviewed annual and addresses the risk of compliance against all permission types. • Planned enhancements in 2018 to Reef Management System database will allow researchers to submit their research reports online in a manner that will allow for considerations of cumulative use on a location and or species bases. 			
PL6 The main stakeholders &/or the local community are effectively engaged in planning to address research activities	3	<ul style="list-style-type: none"> • The GBRMPA's Science Strategy and Information Needs 2014-2019 aims to facilitate discussion between scientists and Marine Park managers about scientific projects that will help inform Marine Park management, especially high priorities. It guides the research priorities for the agency. 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Science Strategy and Information Needs 2014-2019' 	adequate	declining

		<ul style="list-style-type: none"> • The Guidelines: Managing research in the Great Barrier Reef Marine Park express GBRMPA's expectations regarding communication between researchers and other Reef users, research stations and Traditional Owners. Additional or more specific requirements may be included in permission conditions. • There is no longer a GBRMPA Ecological Reef Advisory Committee • Some stakeholders report that GBRMPA is less engaged in research discussions and priority setting, which they attribute to loss of relevant staff within GBRMPA. They report that GBRMPA staff are not present at many relevant meetings whereas in the past they would have been there • Some researchers report feeling more dis-engaged from GBRMPA and decision making around management of the GBRMP than ever before 			
PL7 Sufficient policy currently exists to effectively address research activities	4	<ul style="list-style-type: none"> • A permission (permit) is not required in some zones if the activity falls under limited impact research and the researcher is associated with an research institution accredited by the GBRMPA. • Universities have Codes of Conduct for conducting research and require comprehensive animal and human ethics approval for all research involving animals and people • Best environmental practices and legal requirements for limited impact research in the Marine Park are outlined in the GBRMPA's Guidelines: Management of research in the Great Barrier Reef Marine Park ('Research Guidelines' released in October 2017 to 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Science Strategy and Information Needs 2014-2019' 	Adequate	Stable

		<p>replace the 2004 policy on managing scientific research).</p> <ul style="list-style-type: none"> • A draft position statement is being developed on reef interventions, particularly focussing on the assessment of permit applications with respect to coral reef intervention proposals. 			
PL8 There is consistency across jurisdictions when planning for research activities	4	<ul style="list-style-type: none"> • Research activities that require a permit in the Marine Park may also require a similar permit under Queensland Marine Parks Legislation. The GBRMPA and the relevant Queensland agency, the Queensland Parks and Wildlife Service (QPWS), cooperate to assess and issue joint permits, where necessary. • Researchers also generally need Queensland Fisheries permits for collections. • Note that Queensland legislation may require a permit where the GBRMPA does not. Permits required under the Queensland Biodiscovery Act 2004 are issued by the Department of Environment and Heritage Protection (EHP). • Researchers that intend to use marine products collected within the GBRMP for biodiscovery purposes are also required to contact both the State and Commonwealth departments as a 'benefits sharing agreement' may be required. http://www.gbrmpa.gov.au/zoning-permits-and-plans/permits/research-permissions • In 2005 Queensland co-accredited the 8 research institutions that are currently accredited by the GBRMPA. This removes the need for researchers to get an additional Qld permit when they are conducting limited research' as per the GBRMP Regulations (see Gazette notice in evidence). • If researchers plan to export/take out of the country certain specimens then they may also 	<ul style="list-style-type: none"> • Guidelines: Managing research in the Great Barrier Reef Marine Park (2017) • GBRMPA webpage on research permissions http://www.gbrmpa.gov.au/zoning-permits-and-plans/permits/research-permissions • Monitoring and adaptively reducing system-wide governance risks facing the GBR • Co-accreditation Gazette – Research institutions 	adequate	stable

		require an export permit from the Department of Environment and Energy.			
PL9 Plans relevant to research activities provide certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.	4	<ul style="list-style-type: none"> • Research sites are clearly defined and zoning controls permissible activities • Understanding of cumulative impacts of research is limited but given the scale of activities and limited number of sites, overall impacts are likely to have only localised effects although some permits do involve larger scale collection and should be more carefully assessed and monitored 	<ul style="list-style-type: none"> • Workshop discussions • Permits available through permits online 	adequate	stable
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address research activities	4	<ul style="list-style-type: none"> • Investment around research activities occurs in two ways. (1) Investment in the management of how research activities occur in the GBR, and (2) investment in facilitating research relevant to the GBR. • Investment in Great Barrier Reef science is delivered through a range of programs and government initiatives, as well as through co-investment from the private sector. Apart from the ongoing funding of the Australian Institute of Marine Science, none of the major monitoring programs for the Great Barrier Reef currently have secure ongoing funding. Most rely, at least partly, on time-limited funding programs such as the National Environmental Science Program (NESP) and the Australian Government Reef Programme and Reef Trust for their continuation. • GBRMPA also recognises scientific research undertaken by postgraduate students that addresses management information gaps through funding for Science for Management Awards (now Reef Guardians Research Grants) 	<ul style="list-style-type: none"> • GBRMPA Science for management awards • GBRMPA Annual Reports • Reef 2050 Plan: Investment framework and 2016 Annual Report and Implementation Strategy and Addendum document (prioritisation of actions) • RIMRep project management documents • 2015 State Party Report 	adequate	improving

		<ul style="list-style-type: none"> • After the initial pilot project in 2013, the Social & Economic Long Term Monitoring Program (SELTMP) implemented by CSIRO received funding for a second iteration of data collection (2017, \$314,777) under the auspices of the Reef 2050 Plan Integrated Monitoring and Reporting Program (RIMReP). However, no long-term funding commitment has yet been established. • The RIMReP is investing \$3.6 million (March 2016 to June 2019) to directly address monitoring gaps. This includes the 2017 SELTMP work, zoning plan monitoring, dugong population monitoring, shoals monitoring and integration work for the Marine Monitoring Program. • GBRMPA also contracted CSIRO to provide expert advice and undertake social and economic-related tasks (\$194,000) • The Great Barrier Reef Foundation spent \$22M on science and conservation activities for the Great Barrier Reef between January 2014 and the end of Dec 2018 (calculated using actual figures to end of 2017 and contracted amounts for 2018). • Science of how to address climate change impacts in the GBR is in its infancy and could be supported by further targeted funding 			
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address research activities	3	<ul style="list-style-type: none"> • Staff and Senior Management are represented on a number of steering committees (e.g. NESP projects and high level bodies such as the Intergovernmental Operational Committee and Partnership Committee, Reef 2050 Plan Independent Expert Panel, Reef 2050 Plan Reef Advisory Committee, Reef 2050 Water Quality Improvement Plan Partnership Committee etc) 	<ul style="list-style-type: none"> • GBRMPA Annual Reports • Addison et al. 2017 Towards quantitative condition assessment of biodiversity outcomes: Insights from Australian marine protected areas • Guidelines: Management of research in the Great Barrier Reef Marine Park 	adequate	stable

		<ul style="list-style-type: none"> • There is little capacity within the Authority to assist institutions monitor their MOUs or develop their Environmental Management Plans for the Scientific Research Zones. • Permit renewals for research can be very slow (Lizard Island >1 year, AIMS >1 year) • Within the GBRMPA there is 1 APS5 FTE, 2 APS4 FTE and 0.3 APS6 FTE allocated to assess all research activities permits, including any infrastructure within the Marine Parks needed for operation of the research stations. • Within GBRMPA staff in a range of sections contribute to activities regarding activities related to managing research activities and using the outputs of research. Commonly contributing areas (and the FTE in them from which contributions can come) include Science Coordination (1 FTE); Library/Resource Centre (2 FTE); MMP Coordination (1.5 FTE); Permits (3 FTE); Reef Guardians Schools (1 FTE); and activities involving reef health surveys and the Eye on the Reef program. Staffing requirements of high priority activities within the GBRMPA and reduced overall number of total staff since 2013 means there is slightly less FTE available overall for research activities management than in the past. • A number of staff with strong scientific credentials and connections to the research community have left the agency and not been replaced. This has reduced capacity for engagement with the research community. While some stakeholders report that this has had a negative impact on GBRMPA engagement in this area GBRMPA continues to be represented on all major reef related research bodies. 			
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IN3 The right skill sets and expertise are currently available to the managing organisations to address research activities	4	<ul style="list-style-type: none"> • A number of staff with string scientific credentials and connections to the research community have left the agency and not been replaced. This has reduced capacity for engagement with the research community and some stakeholders report that this has had a negative impact on GBRMPA engagement in this area • Nevertheless, science capacity within GBRMPA remains relatively high given that their role is to engage with science rather than to do science • 2017 Addison et al. research paper on Marine Protected Area management noted 'increase agency capacity' was identified by management agency interviewees most commonly as a top three most important changes necessary to implement quantitative condition assessment of biodiversity outcomes. GBRMPA represented in the sample. "Management agencies around the world are commonly under-resourced, even in relatively wealthy countries...Therefore, it is not surprising that a lack of agency capacity (staff numbers and money) was the most frequently cited challenge to implementing quantitative condition assessment 	<ul style="list-style-type: none"> • Addison et al. 2017 Towards quantitative condition assessment of biodiversity outcomes: Insights from Australian marine protected areas • Guidelines: Management of research in the Great Barrier Reef Marine Park • Workshops and stakeholder interviews 	adequate	stable
IN4 The necessary biophysical information is currently available to address research activities	4	<ul style="list-style-type: none"> • Vulnerability assessments, Science Information Needs documents and Strategic Assessment Reports identify critical information gaps • Collaborative research program design with major research institutions ensures that the best available biophysical knowledge is used in research planning and design • At times there are gaps in knowledge about local abundance/density levels of particular species and hence knowledge about how a 	<ul style="list-style-type: none"> • Vulnerability assessments • Research station research plans • Workshops and stakeholder consultations 	adequate	stable

		<p>proposed research activity might impact upon the local area. A precautionary approach is generally applied in line with the limits in the GBRMP Regulations for limited impact research.</p> <ul style="list-style-type: none"> • Lack of comprehensive habitat map for the GBR is seen by some stakeholders as an important gap that is not being effectively addressed 			
IN5 The necessary socio-economic information is currently available to address research activities	3	<ul style="list-style-type: none"> • There is little socio-economic information available upon which address management of research, although social and economic research in general is becoming more available (e.g. SELTMP, ABS Environmental-Economic Accounts). Research projects funded under programs such as NERP (and now NESP) are helping to address this gap • The most recent economic valuation of the Reef's goods and services includes consideration of research jobs etc., as did the 2013 analysis. (Deloitte Access Economics) • Human dimensions RIMReP group including a NESP project to determine social and economic indicators and monitoring for the Reef. • SELTMP sampling continued in 2017 • In June 2017 Guidelines were approved by the MPA Board for Woppaburra Traditional Owner Heritage Assessment. The objectives of the guidelines are to provide agency staff and applicants with guidance on permission applications that may impact on Aboriginal heritage values within the Woppaburra Traditional Use of Marine Resources Agreement (TUMRA) boundaries and to provide Woppaburra Traditional Owners with a 	<ul style="list-style-type: none"> • Outlook Report 2014 section 5.7 'Research and education' • Deloitte Access Economics (2017) At what price? The economic, social and icon values of the Great Barrier Reef (e.g. Appendix B, Table B.1, B.4, B.5 and B.7) • Australian Bureau of Statistics EE-EA info page and Experimental Environmental-Economic Accounts for the Great Barrier Reef, 2017 • The SELTMP 2017 community surveys work funded short term under RIMReP program in 2017 • Cost-effective indicators and metrics for monitoring the human dimensions of the Great Barrier Reef: current NESP project underway. • New papers on human dimensions such as Marshall et al (in press) The dependency of people on the Great Barrier Reef, Australia and Gooch et al (in press) Assessment and promotion of the Great Barrier Reef's human dimensions through collaboration. • Reef 2050 Integrated Monitoring and Reporting Program (RIMReP) GBRMPA webpage and RIMReP Strategy • Science Strategy and Information Needs 2014-2019 and searchable register of detailed questions • New or updated documents via the GBRMPA's permissions system webpage for example the new 'value assessment guidelines' around social value assessment • Guidelines - Historic heritage assessment: other places of historic and social significance • Guidelines - Woppaburra Traditional Owner heritage assessment 	adequate	improving

		<p>framework for informing assessments that may impact on their values.</p> <ul style="list-style-type: none"> As part of the Enhancing Permissions System project, new guidelines have been developed to provide guidance on assessing impacts to other places of historic and social significance within the permission system 			
IN6 The necessary Indigenous heritage information is currently available to address research activities	3	<ul style="list-style-type: none"> There is little traditional knowledge available upon which to address management of research. GBRMPA's improved policy guidance around conduct of research activities (released in 2017) includes encouragement for researchers and managers to seek Indigenous heritage information when planning research and applying for permissions GBRMPA's Woppaburra Traditional Owner heritage guidelines provide information pertaining to a specific area of the GBR. Research Permits applications specifically requesting access to Woppaburra sea country undergo additional tailored consultation with the TUMRA body. GBRMPA has engaged a consultant to help develop a protocol for approaching indigenous groups and data sharing agreements for culturally sensitive information. RIMReP Indigenous Heritage Expert Group convened in November 2017 to develop indicators for RIMReP long term monitoring 	<ul style="list-style-type: none"> GBRMPA's Guidelines: Management of research in the Great Barrier Reef Marine Park New papers on human dimensions such as Marshall et al (in press) The dependency of people on the Great Barrier Reef, Australia and Gooch et al (in press) Assessment and promotion of the Great Barrier Reef's human dimensions through collaboration. Reef 2050 Integrated Monitoring and Reporting Program (RIMReP) GBRMPA webpage and RIMReP Strategy Science Strategy and Information Needs 2014-2019 and searchable register of detailed questions Guidelines - Woppaburra Traditional Owner heritage assessment 	limited	improving
IN7 The necessary historic heritage information is currently available to address research activities	3	<ul style="list-style-type: none"> Significant improvement in guidelines in this area. On 14 May 2015 the Great Barrier Reef Marine Park Regulations 1983 were amended to add a new type of Special Management Area, the Maritime Cultural Heritage Protection Special Management Area. The purpose of the 	<ul style="list-style-type: none"> Guidelines: Management of research in the Great Barrier Reef Marine Park Guidelines Historic heritage assessment: Maritime cultural heritage protection special management area Guidelines Historic heritage assessment: WWII features, sites, and voyages and shipwrecks 	adequate	improving

		<p>regulation is to protect cultural heritage in general, and in particular, the heritage value of two Royal Australian Air Force (RAAF) Catalina air wrecks (RAAF Catalina A24-24 and RAAF A24-25) located in the Marine Park. The regulation includes specific management provisions for the Maritime Cultural Heritage Protection Special Management Area regulating entering and approaching the wrecks, operating and anchoring vessels, fishing and collecting.</p> <ul style="list-style-type: none"> • Sufficient information was available to establish two Special Management Areas to protect the two WWII Catalina aircraft wrecks. • The new GBRMPA Research Guidelines and other permissions policy documents contain informative and helpful guidance on the need to consider historic heritage and some suggestions for where to get further information • As part of the Enhancing Permissions System project, new guidelines have been developed to provide guidance on assessing impacts to other places of historic and social significance within the permission system 	<ul style="list-style-type: none"> • Guidelines: Historic heritage assessment: other places of historic and social significance 		
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address research activities	4	<ul style="list-style-type: none"> • Accredited research/educational institutions contribute to the management of research as part of their MOU requirements. • Research stations also manage local use of the Scientific Research Zones • Volunteers and community members are involved in a range of monitoring activities (e.g. reef health surveys, seagrass monitoring, water quality monitoring). E.g. in 2016-17 GBRMPA received more than 4500 surveys of reef health and 2859 sightings of protected species and reports of significant events. 	<ul style="list-style-type: none"> • Outlook Report 2014 – e.g. case study on Eye on the Reef p216 • GBRMPA Annual Report 2016-17 – Reef HQ and Eye on the Reef • GBRF website – ship of opportunity • Reef citizen science alliance website 	adequate	stable

		<ul style="list-style-type: none"> GBRMPA participated in pilot internship program over August-December 2017, with two JCU interns; this program is expected to be established nationally in 2018. The Great Barrier Reef Foundation has arrangements such as their partnership with Rio Tinto to use the vessel the RTM Wakmatha as a 'ship of opportunity' for collecting water quality data via mounted sensors 			
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of research activities	4	<ul style="list-style-type: none"> Researchers/ universities/ research stations are regularly consulted with respect to research, particularly the management of the Accreditation Program. Accreditation of research institutions is managed through the Regulations. The NESP Tropical Water Quality Hub Steering Committee includes representation from GBR management, Industry and community. The Great Barrier Reef Foundation governance committees have representation from GBR management, research and industry. Reef Guardians http://www.gbrmpa.gov.au/our-partners/reef-guardians Collaborative arrangements in place with major research institutions and programs such as NERP 	<ul style="list-style-type: none"> GBRMPA workshop discussions MoU and agreements with CSIRO, Universities 	adequate	stable
PR2 The local community is effectively engaged in the ongoing management of research activities	3	<ul style="list-style-type: none"> Local communities are engaged through public awareness and education programs as well as through consultative processes of LMACs etc. There are a number of 'Citizen Science' programs operating in the GBR mostly monitoring aspects of coral reefs, seagrass beds, mangroves, birds and turtles. General and targeted stakeholder consultation was undertaken during development of the 	<ul style="list-style-type: none"> Guidelines: Managing research in the Great Barrier Reef Marine Park GBRMPA's permissions system webpage Reef Guardians, schools, fishers, farmers and councils 	adequate	stable

		GBRMPA's regulation amendments regarding limited impact research and new Research Guidelines			
PR3 There is a sound governance system in place to address research activities	4	<ul style="list-style-type: none"> Each research application is assessed against a set of criteria listed in the GBRMP Regulations 88Q and R. Accreditation of research institutions is managed through the Regulations. The GBRMP Zoning Plan provides for permitted research and limited impact research (without a permit) provided the research institution is accredited and the researchers carry a letter of authorisation from their institution (for compliance purposes). A MOU and code of conduct agreed with the GBRMPA underpins this accreditation program. Staff and Senior Management are represented on a number of steering committees (e.g. NERP NESP projects, Australian Government Reef Programme – Intergovernmental Operational Committee and Partnership Committee etc) 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Great Barrier Reef Foundation governance REF 1 - NESP Agenda and meeting minutes 	adequate	stable
PR4 There is effective performance monitoring, including. regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for research activities	4	<ul style="list-style-type: none"> Limited monitoring of performance of researchers in terms of permit conditions Regular and intensive interaction between Agency staff and researchers in relation to planning of major research means that there is generally good basis for assessing research activity Annual reporting requirements are included in MOUs with research institutions Major programs, such as the NESP, undergo evaluation assessments against their stated objectives. SELTMP will provide one means to track community perceptions but targeted monitoring 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	adequate	stable

		<p>and performance assessment of educational programs is limited</p> <ul style="list-style-type: none"> Upgrades to RMS include a post-permit section that allows due dates to be entered for requirements that are due after the permit is granted, including annual research reports. This is then used by Permits Compliance team to prompt follow up requests for overdue deliverables. Some institutional research permits are expired and slow to be renewed Research permits can be slow to issue – meaning that many researchers especially students have uncertainty about planning research although recent changes have improved permit processing times 			
PR5 Appropriate training is available to the managing agencies to address research activities	4	<ul style="list-style-type: none"> No training programs are established specifically for managing research. Rather, GBRMPA permit assessors are trained in understanding the requirements of the Zoning Plan and associated regulations. They seek additional assistance from other internal and external experts as required. No overall training needs assessment has been completed by GBRMPA. 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	limited	stable
PR6 Management of research activities is consistently implemented across the relevant jurisdictions	4	<ul style="list-style-type: none"> Research activities that require a permit in the Marine Park may also require a similar permit under Queensland Marine Parks Legislation. The GBRMPA and the relevant Queensland agency, the Queensland Parks and Wildlife Service (QPWS), cooperate to assess and issue joint permits, where necessary, whereby the research assessor at the GBRMPA undertakes one assessment process in consultation with the QPWS. Note that Queensland legislation may require a permit where the GBRMPA does not. Also 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	Adequate	stable

		<p>there may be other Queensland Government approvals (e.g. from Fisheries Qld) required before researchers can conduct their activities in the GBRMP.</p> <ul style="list-style-type: none"> • QPWS is involved in the assessment of applications through joint permitting process with the GBRMPA. • The GBRMPA and DoEE have an agreement that research involving access to biological resources will only require a permit from the GBRMPA, whilst benefit sharing agreements required under the EPBC Act will be dealt with by DoEE. • Updated Great Barrier Reef Intergovernmental agreement 2015 supports joint-permit management 			
PR7 There are effective processes applied to resolve differing views/ conflicts regarding research activities	4	<ul style="list-style-type: none"> • Upgrades to RMS include a post-permit section that allows due dates to be entered for requirements that are due after the permit is granted, including annual research reports. This is then used by Permits Compliance team to prompt follow up requests for overdue deliverables. • All permit decisions are subject to review rights. An applicant has the right to request a reconsideration of any decision made about a permit application. Third parties can also seek a reconsideration. 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • GBRMPA Service Charter for the permissions system (see also performance framework) • Permit review rights 	limited	stable
PR8 Impacts (direct, indirect and cumulative) of activities associated with research activities are appropriately considered.	4	<ul style="list-style-type: none"> • The cumulative impacts of scientific research activities cannot be currently assessed in detail. • Environmental Management Plans for high use Scientific Research Zones can assist in cumulative impact assessments in certain locations. • Direct and indirect impacts are well considered at the permit application assessment stage, but 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Environmental Management Plans • Cumulative Impact Management Policy 	limited	stable

		<p>there is limited follow up on performance reporting</p> <ul style="list-style-type: none"> • A Reef Cumulative Impact Management Policy has been drafted and is undergoing public consultation and revision. • New Permit Risk Assessment Procedure implemented post 4 October 2017 			
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding research activities	4	<ul style="list-style-type: none"> • Generally there is enough known about the biophysical requirements associated with species proposed to be studied and this information is applied in permit assessment decisions. • At times there are gaps in knowledge about local abundance/density levels of particular species and hence knowledge about how the proposed research activity might impact upon the local area. A precautionary approach is generally applied in line with the limits in the GBRMP Regulations for limited impact research. • Development and implementation of new Assessment Guidelines and location specific and activity specific assessment guidelines • Science information needs document provides a more structured approach to identifying and planning for research – primarily relating to biophysical aspects of the Reef. 	<ul style="list-style-type: none"> • Assessment guidelines • location specific assessment guidelines • activity specific guidelines • Science Strategy and Information needs 2014-2019 	limited	improving
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding research activities	3	<ul style="list-style-type: none"> • There is little socio-economic information available upon which address management of research; however, RIMREP human dimensions program design includes prioritisation of research and monitoring needs for management. • The GBRMPA's 2017 Guidelines on social value assessment provides some suggestions on sources of relevant information and 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Guidelines: Social value assessment 	limited	improving

		considerations for activities conducted in the Marine Park.			
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding research activities	3	<ul style="list-style-type: none"> • There is little traditional knowledge available upon which to address management of scientific research. • The GBRMPA's guidance on Indigenous heritage value assessment provides some suggestions on sources of relevant information and considerations for activities conducted in the Marine Park. • RIMREP project DMS4 - Cultural Protocol and Guidelines 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Guidelines: Woppaburra Traditional Owner heritage assessment • DMS4 – Cultural Protocol/Guidelines and Data Sharing Agreements 	Limited	improving
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding research activities	3	<ul style="list-style-type: none"> • The GBRMPA's 2017 Guidelines on historic heritage value assessment provides some suggestions on sources of relevant information and considerations for activities conducted in the Marine Park. 	<ul style="list-style-type: none"> • Guidelines Historic heritage assessment: Maritime cultural heritage protection special management area • Guidelines Historic heritage assessment: WWII features, sites, and voyages and shipwrecks • Guidelines: Historic heritage assessment: other places of historic and social significance 	limited	improving
PR13 Relevant standards are identified and being met regarding research activities	4	<ul style="list-style-type: none"> • The Australian Government adheres to Convention on Biological Diversity requirements in relation to access to biological resources. • Ethical approval requirements are considered in permit applications. • GBRMPA's new Service Charter for the permissions system provides information on expected standards and processes. • The GBRMPA Research Guidelines provide a range of information on standards and expectations. • Relevant international conventions are mentioned in a range of GBRMPA permissions-related policy guidance documents 	<ul style="list-style-type: none"> • Permits service charter • GBRMPA research guidelines • GBRMPA permissions-related policy guidance documents 	adequate	stable
PR14 Targets have been established to benchmark	3	<ul style="list-style-type: none"> • Service charter standards set for permit • No other formal benchmarks and targets for management of research have not been set. 	<ul style="list-style-type: none"> • Permits service charter • Environmental Management Plan 	limited	stable

management performance for research activities		<ul style="list-style-type: none"> Performance indicators, reporting mechanisms and review processes specified in the Orpheus Island Environmental Management Plan 	<ul style="list-style-type: none"> stakeholder interviews 		
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for research activities	4	<ul style="list-style-type: none"> Development and implementation of the Permissions System Enhancement Project Development and implementation of RMS upgrades and new Permits Online system. Assessment timeframes for permit applications average 16 weeks for standard activities. As of 4 October 2017, a Permission System Service Charter has been adopted. Uptake from research programs into management is limited and could be improved A number of researchers report that GBPMPA is more disconnected from research planning than in the past 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Permission System Service Charter 	Limited	stable
OP2 Implementation of management documents and/or programs relevant to research activities have progressed in accordance with timeframes specified in those documents	4	<ul style="list-style-type: none"> Some research permit approvals and renewals are taking longer than expected or is reasonable The GBRMPA Research Guidelines resulting from the review of the original 2004 policy on managing research were completed on time for the Oct 2017 coming into force of amended GBRMPA regulations and updated GBRMPA permissions system. A number of researchers report that GBPMPA is more disconnected from research planning than in the past Collaborative research programs where GBRMPA is providing advice and participating in steering committees are generally proceeding in accordance with planned timeframes but some are considerably delayed (RIMREP) 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Permission System Service Charter 	limited	declining

<p>OP3 The results (in OP1 above) have achieved their stated management objectives for research activities</p>	<p>4</p>	<ul style="list-style-type: none"> • Research and monitoring of the Great Barrier Reef environment continues to contribute to global knowledge about individual species, coral reef systems and tropical marine ecology. • Research to guide responses to climate change and current challenges facing the GBR are not yet well developed according to many researchers in the field • A number of researchers report that GBPMPA is more disconnected from research planning than in the past however GBRMPA continues to be represented on all major reef research advisory bodies and committees • There is an improved GBRMPA online system for researchers to submit applications for research permits and manage their existing permits and contact details – Permits Online • In 2015 an EMP was approved for the management of the Scientific Research Zone (SRZ) associated with Heron Island Research Station. Resources are not dedicated to negotiating and approving SRZ EMPs, however, this was done in conjunction with an assessment process for the permit renewal of the facilities associated with the operation of the Research Station. The EMP covers both the ongoing maintenance of these permitted facilities as well as management of the SRZ. 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews 	<p>limited</p>	<p>stable</p>
<p>OP4 To date, products or services have been produced in accordance with the stated management objectives for research activities</p>	<p>4</p>	<ul style="list-style-type: none"> • Research is playing its role in informing management of the GBRMP • RIMREP has been slow to develop and it seems uncertain in the mind of many researchers whether it will deliver the many expectations that have been set for it. • The GBRMPA's Research Guidelines were produced and approved in time for the 4 Oct 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Permits available through permits online 	<p>Limited</p>	<p>stable</p>

		<p>2017 coming into force of amended GBRMP Regulations.</p> <ul style="list-style-type: none"> • SELTMP is continuing to provide relevant social information for management • A number of researchers report that GBPMPA is more disconnected from research planning than in the past 			
OP5 Effective knowledge management systems regarding research activities are in place within agencies	4	<ul style="list-style-type: none"> • Tools to disseminate information about values and impacts on them are available within GBRMPA – e.g. the integrated Eye on the Reef program provides a centralised database for Reef health information, and Reef Explorer is an interactive tool for displaying spatial information. • Management of scientific information procedures are in place and are delivered at whole-of-GBRMPA using RefWorks as its database and citation management tool • The National Environmental Science Programme commenced in 2015. It built on its predecessors — the National Environmental Research Program and the Australian Climate Change Science Programme — to support decision-makers to understand, manage and conserve Australia’s environment with the best available information, based on world-class science. • GBRMPA and other agencies are involved in directing priority research areas through the NESP hubs. • Management agencies would benefit from research outcomes to a much greater extent if the pathway to adoption was explicit in all of the NESP projects, and fully costed within it. While precise in-water management activities may not be known at the start of the project, it is potentially feasible that as a minimum, each 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Eye on the Reef database • Reef Explorer • Reef Management System permits database • Permits system 	adequate	improving

		<p>proposal include the cost of an end-of-project workshop with management agencies, and complete a project planning template which specifically scopes the pathway to adoption by management of the research findings. To facilitate this, GBRMPA has initiated a process whereby at the end of each NESP research project, it will ask researchers to complete a future project plan to articulate how the research can be integrated and used by management. While this is embryonic at this stage, it demonstrates an effective system to support use of the research by management.</p> <ul style="list-style-type: none"> • Permits Online (public) and the permission system's Reef Management System permits database (internal) are useful tools that have been significantly improved in recent years. • Spatial information and datasets arising from research conducted on in the Marine Park continue to be housed and managed by the GBRMPA Spatial Data Centre. Over time more of these datasets are becoming readily accessible to GBRMPA staff, however assistance from SDC staff is still generally required to view them spatially. • It is currently not possible to quickly extract and display spatial information on research permits and activities from the Reef Management System (permits database). 			
OP6 Effective systems are in place to share knowledge on research activities with the community	4	<ul style="list-style-type: none"> • Communication through plain-English products summarising outcomes of scientific research is undertaken to some extent, but not systematically • GBRMPA makes its publications available publically via its e-Library • eResearch Archive is a digital repository of scientific and research publications, and 	<ul style="list-style-type: none"> • GBRMPA e-Library • Qld DAFF eResearch Archive • Science seminar series • Eye on the Reef • ReefHQ education • Reef Guardians • Reef Beat (last issued in 2016) 	adequate	stable

		<p>datasets authored by Qld DAFF staff, including journal articles, book chapters, conference papers, theses and raw data collected in the course of research.</p> <ul style="list-style-type: none"> • The non-scientific community is engaged via the GBRMPA's LMACs, magazines – e.g. Reef Beat, media releases etc • The scientific community is engaged in issues-specific workshops and forums and RACs by GBRMPA • Eye on the Reef is a monitoring program that enables anyone who visits the Great Barrier Reef to contribute to its long-term protection. Eye on the Reef self-guided online and interactive training packages completed and available to the public. The information collected is combined in a single data management and reporting system which enables participants to access their own data and reporting online. This data contributes to Marine Park managers and researchers' understanding of reef health status and trends, the distribution of protected and iconic species, and early warnings of environmental impacts. The Eye on the Reef program is run by the Great Barrier Reef Marine Park Authority. The Reef Health and Impact Survey sub-program is run in partnership with the Queensland Parks and Wildlife Service. • GBRMPA runs education programs at its Reef HQ Aquarium and through mechanisms such as the Reef Guardians program (Reef videoconferencing, schools, councils, Reef Beat etc.) • The GBRMPA maintains a searchable database accessible on the website of recent 	<ul style="list-style-type: none"> • GBRMPA Permit enquiry database 		
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		decisions, current and expired permissions and current applications.			
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing research activities and moving towards the attainment of the desired outcomes.	4	<ul style="list-style-type: none"> • Researchers are able to gain access to the GBRMP through a structured permit process. This process aims to manage the impact of the research via permit conditions. • Currently there is emphasis on understanding cumulative impacts and integrated monitoring to support and inform management • Much of the research conducted in the GBRMP provides information that is important to the management of the GBRMP. • Various significant research projects have been undertaken on the GBR, including those supported by funding programs such as NESP. • The new Research Guidelines were released in October 2017 – it is too soon to tell how useful and effective they are in practice • Some stakeholders have raised concerns about the impact of what they see as a decline in the influence of GBRMPA in the research planning space. Some see the extent of influence as having dipped but now increasing again. 	<ul style="list-style-type: none"> • Workshops and stakeholder discussions • Guidelines: Managing research in the Great Barrier Reef Marine Park 	adequate	stable
OC2 The outputs relating to research activities are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	4	<ul style="list-style-type: none"> • The system of accreditation, codes of conduct and environmental management plans has reduced the number of research projects requiring a specific permit, thereby reducing administrative workloads for scientists and Marine Park managers. • Research is increasingly targeted on addressing issues of key management concern and the publication of GBR Research Needs is likely to continue this trend 	<ul style="list-style-type: none"> • Workshop discussions and stakeholder interviews • Marine Monitoring Program reports • GBRMPA's new Research Guidelines • National Bleaching Taskforce 	adequate	improving

		<ul style="list-style-type: none"> • More research is being undertaken through partnerships between management agencies and researchers and research institutions although some concerns have been raised about the need to ensure the extent/speed of translation of this research into management • Marine Monitoring Program reports continue to provide valuable information for management agencies and others. • A wide range of Vulnerability Assessments are available on GBRMPA's website, including several new ones • GBRMPA's new Research Guidelines provide clearer and additional guidance for researchers and permissions assessors regarding expectations and requirements regarding research and impact management, .e.g. when considering research locations and activities being cognisant of awareness of recent environmental disturbances such as coral bleaching. • 2016-17 saw mass coral bleaching across large sections of the Reef and there is current focus among researchers and management agencies on exploring reef restoration and resilience techniques. • A National Bleaching Taskforce (GBRMPA, JCU, AIMS) was formed to coordinate research in relation to the bleaching event. • During 2016 and 2017 the Zoning Plan Part 5(4) provisions were used by GBRMPA to enable research by AIMS/JCU/GBRMPA as part of the coral bleaching response and work by other research institution on coral larval re-seeding technique development. • In 2017 GBRMPA issued a research permission for trial of regrowing coral 			
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		fragments on artificial tree structures at Fitzroy Island. In 2018 a permit was issued for a coral gardening pilot study at Opal Reef. This is a collaboration between researchers and a tourism operator.			
OC3 the outputs (refer OP1 and 3) for research activities are reducing the major risks and the threats to the Great Barrier Reef	4	<ul style="list-style-type: none"> In general, research is not seen to have a large and detrimental impact on the reef ecosystem. However around research stations – cumulative use should be understood – even if it is potentially a low risk. Much of the research that occur in the Region makes a positive contribution to managers' understanding of ecosystems, process and impacts. Online research permit collection reports are being scoped in the new RMS. Research on its own has limited impact on major risks and threats 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	adequate	improving
OC4 Use of the Great Barrier Reef relating to research activities is demonstrably environmentally sustainable	4	<ul style="list-style-type: none"> In general, research is not seen to have a large and detrimental impact on the reef ecosystem. Collaboration between management agencies and researcher organisations means that there is greater awareness of potential research impacts. Following the 2016-17 bleaching events, the Permits section at GBRMPA wrote to every researchers which had a permit to collect coral – asking them to minimise coral collection 	<ul style="list-style-type: none"> Workshops and stakeholder interviews 	adequate	stable
OC5 Use of the Great Barrier Reef relating to research activities is demonstrably economically sustainable	N/A				
OC6 Use of the Great Barrier Reef relating to research activities is demonstrably socially	4	<ul style="list-style-type: none"> The GBRMPA does very little of its own research, however it uses published research to inform its management decisions and to help educate the public. The GBRMPA works 	<ul style="list-style-type: none"> Workshops and stakeholder interviews Outlook Online, GBRMPA website 	adequate	stable

sustainable understanding and/or enjoyment		<p>closely with research institutions such as the ARC Centre of Excellence for Coral Reef Studies, AIMS, etc. which publish research results, provide public fora about their research and disseminate it through the media so that it enhances community understanding and/or enjoyment.</p> <ul style="list-style-type: none"> • Dissemination of research through a variety of channels (Outlook Online, GBRMPA website etc) improves community understanding of GBR issues • The Scientific Research (Orange) Zone makes up less than one per cent of the Marine Park so exclusion of other use for scientific research has minimal impact on other reef users 	<ul style="list-style-type: none"> • ARC Centre of Excellence for Coral Reef Studies, AIMS 		
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address research activities	4	<ul style="list-style-type: none"> • GBRMPA, DoEE and others (such as the Great Barrier Reef Foundation) help facilitate the delivery of the science needed to protect and manage the World Heritage Area through strategic funding programs and close working relationships with researchers from organisations such as AIMS, CSIRO, JCU, UQ etc. (e.g. NESP and Science for Management Awards). • Eye on the Reef program has established effective research and monitoring partnership with stakeholders and the reef users • GBRMPA has a close relationship with the key research/educational institutions in relation to how scientific research is managed in the GBR. • GBRMPA is represented on the JCU Centre of Excellence for Coral Reef Studies' Advisory Board and its Science Management Committee • Under the CYPAL the QPWS follow a 'Permits to take, use, keep or interfere with Natural Resources Protocol' (PTUKI) where researchers want to take things within a 	<ul style="list-style-type: none"> • Workshops and stakeholder interviews • Eye on the Reef • Information Sheets produced by Traditional Owner groups • Woppaburra Guidelines • Raine Island Management Plan 	adequate	improving

		<p>Traditional Owners land/sea country. This protocol implements a respectful governance arrangements where there is formal notification, involvement and data sharing between western science and Traditional owners. – the Shelburne Bay agreement was put in place in 2016 with the Wuthathi Traditional Owners.</p> <ul style="list-style-type: none"> • Information Sheets produced by Traditional Owner groups (in partnership with QPWS) advice visitors and researchers on how to conduct their activities within their land and sea country (See REF 4 – Stanley Islands). • Woppaburra Guidelines is the first of its kind and was built form developing effective partnerships with Woppaburra Traditional Owners. It is currently being implemented throughout the permit system for any activities that meet the trigger points for referral in the Keppel Island group. • Raine Island Management Plan sets out governance arrangements, partnerships and is leading to collaborative outcomes regarding science, monitoring and restoration. 			
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Table 35 Calculation of grades for shipping

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to shipping are understood by managers	4	<ul style="list-style-type: none"> Development and implementation of North East Shipping Management Plan is considered to provide robust foundation for effective, ongoing, coordinated management of shipping in the GBR Region. In general terms the values of the Great Barrier Reef relevant to shipping are understood by managers (primarily AMSA and MSQ). While the specific knowledge of GBRMPA staff concerning shipping and ship operations has improved since 2013, it is considered that this could be further enhanced, in order to ensure appropriate prioritisation and allocation of management resources. GBRMPA considers EIS /PER port development proposals (that are in its jurisdiction) to assess the impacts of increased shipping under EPBC Act GBRMPA guidelines. Such assessments consider individual port development proposals which in the absence of a strategic focus would result in <i>ad hoc</i>, potentially disconnected assessments of resultant shipping risks. Accordingly, it is better to undertake periodic, umbrella reviews of shipping traffic densities and associated risks and management in GBR Region, and to keep these up-to-date by regular review, and then link individual port assessments to these over-arching assessments. MSQ/AMSA undertake this work in the Region. Australia's state party reports to the World Heritage Committee in 2014 and 2015 include sections on shipping. The <u>North-East Shipping Management Plan</u> (NESMP) was released on October 2014 and explicitly considers the Outstanding Universal Value and integrity of the GBRWHA. 	<ul style="list-style-type: none"> Carter, A.B., Chartrand, K.M. and Rasheed, M.A. 2012, <i>Critical marine habitats in high risk areas, Princess Charlotte Bay region - 2011 Atlas.</i>, The State of Queensland, Department of Agriculture, Fisheries and Forestry, Northern Fisheries Centre, Cairns. AMSA webpage on <u>Particularly Sensitive Sea Areas</u>, including the GBR/TorresStrait/CoralSea PSSA and <u>PSSA factsheet</u> AMSA <u>legislation</u> webpage <u>Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area 2013</u> Chapter 4 <u>Great Barrier Reef Region Strategic Assessment Report</u>, and <u>Great Barrier Reef Coastal Zone Strategic Assessment Report</u>, noting information gaps were identified. <u>Outlook Report 2014</u> sections 5.8 and 6.6 etc. State Party Reports on the state of conservation of the Great Barrier Reef World Heritage Area (Australia) <u>2013, 2014, 2015</u>. The reports demonstrate Australia's progress on a wide range of work including the Great Barrier Reef comprehensive strategic assessment, development of the North-East shipping plan as well as important research projects and ongoing adaptive management activities. <u>North-East Shipping Management Plan</u> AMSA <u>North East Shipping Management webpage</u> Permissions system sections of the GBRMPA <u>website</u> and associated policy documents. The 2017 changes include improved <u>assessment guidelines</u>, <u>a checklist of information</u> required at the time of application and updated <u>permission system policy</u> and <u>new guidance documents</u>. AMSA <u>annual report 2014-15</u> p 59 Australian Government <i>State Party Report on the State of Conservation of the Great Barrier Reef World Heritage Area (Australia) (Property ID N154), for submission by 31 January 2014.</i> Australian Government <i>State Party Report on the State of Conservation of the Great Barrier Reef World Heritage Area (Australia) (Property ID N154), for submission by 30 January 2015.</i> 	Adequate	Improving

		<ul style="list-style-type: none"> • Within the GBR's Designated Shipping Area, anchoring a ship does not require a permit from the Authority. Maritime Safety Queensland has designated ship anchorages adjacent to some of the ports along the Region's coast. All but a few are within the Marine Park. Including swing room, the anchorages cover about 940 square kilometres. Use of designated anchorages confine the impacts arising from anchoring to these port areas, such as disturbance to wildlife, physical damage to benthos, light pollution, waste discharges, introduced marine species, noise effects, user conflict and aesthetic effects. 	<ul style="list-style-type: none"> • Kegler, P., Baum, G., Indriana, L.F., Wild, C. and Kunzmann, A., 2015. Physiological response of the hard coral Pocillopora verrucosa from Lombok, Indonesia, to two common pollutants in combination with high temperature. PloS one, 10(11), p.e0142744. 		
CO2 The current condition and trend of values relevant to shipping are known by managers	4	<ul style="list-style-type: none"> • From 2015-25 the Great Barrier Reef is forecast to see a 5.5% consolidated annual growth rate in ship movements, primarily driven by bulk carriers visiting North Queensland coal ports. • The 2014 Outlook Report anticipated a significant increase in the volume of shipping plying the GBR in the short to medium term, with implications for effective forecasting of demands on shipping support and safety services. While the forecast increase since the 2014 Outlook Report has not been fully realised, the need to gather and collate better records of actual ship movements within the GBR Region and to tie these with forecasts for future levels of activity, as the basis for pre-emptive management, remains. Notwithstanding any inherent difficulties in the collation of such data, this is necessary to ensure that control, response and regulatory capacities are commensurate with ship traffic levels for the effective management of shipping in the GBR Region (eg. REEFVTS monitoring capacity, navigation aids, availability of pilots, oil/chemical spill response capabilities, and similar). Recent experience with assessment work in this domain 	<ul style="list-style-type: none"> • Defining the aesthetic values of the Great Barrier Reef World Heritage Area: 2013. Identified and mapped aesthetic values of outstanding universal value and analysed the sensitivity of those values to particular impacts. Further work on this matter underway. • Outlook Report 2014 chapters 2 & 3, section 5.8 etc. • Chapter 7 Great Barrier Reef Region Strategic Assessment Report, and Great Barrier Reef Coastal Zone Strategic Assessment Report, noting information gaps were identified. • AMSA Corporate Plan 2017-18 	Adequate	Stable

		<p>has indicated the difficulty of gathering such records, and the disparate results gained when comparing various available records and forecasts.</p> <ul style="list-style-type: none"> • Whilst outside the GBR Region and World Heritage Area, the <u>Bundaberg State Development Area</u> (SDA), declared on 10 February 2017, will likely result in an increase in ship traffic transiting the GBR Region. • Some concern exists about the status and trend of the aesthetic value of the GBRWHA in relation to shipping activities. Aesthetic considerations, however, need to be taken in the context that ships within and anchored off a port will be visible and that this is an inevitable effect of the approval of a port development or expansion. Where evaluation of aesthetic issues may have some merit would be in isolated areas of the Reef where shipping sails through with some frequency. • Maintenance of appropriate standards of crew training and competency, as well as adequate fatigue management processes, continue to underpin safe shipping within the GBR Region. It is critical that these issues remain adequately addressed at the international level through the IMO, and at a regional level by effective, comprehensive Australian Port State Control procedures. 			
CO3 Impacts (direct, indirect and cumulative) associated with shipping are understood by managers.	3	<ul style="list-style-type: none"> • Effective management of shipping in the GBR requires a good understanding of types and numbers of ships plying its waters, in order that effort and resources may be appropriately allocated. In particular, indications of increased shipping traffic need to be thoroughly understood so that pre-emptive action can be taken to ensure that the level and capacity of management services remains commensurate with traffic levels 	<ul style="list-style-type: none"> • AMSA webpage on <u>Particularly Sensitive Sea Areas</u>, including the GBR/TorresStrait/CoralSea PSSA and <u>PSSA factsheet</u> • 2013 <u>Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area</u> • As part of the Australian Government's Sustainable Regional Development program, the GBRMPA managed a targeted research project to identify the impacts and effective management strategies associated with offshore ship anchorages in the World Heritage Area (see ref 16). It informed the Strategic Assessment. 	Adequate	Improving

		<p>(eg. REEFVTS monitoring capacity, navigation aids, availability of pilots, oil/chemical spill response capabilities, and similar). This indicates the need to collate effective records of actual ship movements within the GBR Region and to tie these with forecasts for future levels of activity, although the difficulty of gathering such records is recognised.</p> <ul style="list-style-type: none"> • Work has commenced to examine the status and trend of the aesthetic value of the GBRWHA in relation to shipping activities, noting that previously there has been no regular monitoring of the aesthetic value undertaken in the World Heritage Area. Aesthetic considerations, however, need to be taken in the context that ships within and anchored off a port will be visible and that this is an inevitable effect of the approval of a port development or expansion. Where evaluation of aesthetic issues may have particular merit would be in isolated areas of the Reef where shipping sails through with some frequency. • Continued maintenance of appropriate standards of crew training and competency, for ships' staff and pilots, as well as adequate fatigue management processes, underpin safe shipping within the GBR Region. It is important that these issues are adequately addressed at the international level through the IMO, and at a regional level by effective, comprehensive Australian Port State Control procedures. • The potential risks associated with groundings, oil and chemical spills, collisions, marine pest introductions, and similar are widely recognised. • The cumulative effects of potential impacts associated with shipping need to be further examined in the context of the GBR. This includes potential for damage to benthos from anchoring, wake wash, leaching of anti-fouling 	<ul style="list-style-type: none"> • PGM Environment (2012), <u>Great Barrier Reef Shipping: Review of Environmental Implications</u> • Statements regarding risks to habitats and species from Ports & Shipping are included in the <u>Great Barrier Reef Biodiversity Conservation Strategy 2013</u> • <u>Shen Neng 1 Grounding Impact Assessment</u> • Great Barrier Reef Shipping Review Steering Committee 2001. Review of Ship Safety and Pollution Prevention measures in the Great Barrier Reef. • Australian Maritime Safety Authority 2010. Improving Safe Navigation in the Great Barrier Reef. • Australian Maritime Safety Authority 2011. Strengthening the protection of the Great Barrier Reef. • North East Shipping Risk Assessment (prepared by Det Norske Veritas) [<i>can't find an online version of this anymore</i>] • Report by Det Norske Veritas 2011: <u>Assessment of the Risk of Pollution from Marine Oil Spills in Australian Ports and Waters</u> • <u>Report on the 2011/12 Review of the National Plan to Combat Pollution of the Sea by Oil and Other Hazardous and Noxious Substances and the National Maritime Emergency Response Arrangements</u> • <u>Cumulative Impacts Assessment (Abbot Point)</u> • Qld Dept Agriculture and Fisheries' <u>marine pests</u> webpages and <u>National system for the prevention and management of marine pest incursions</u> website • Queensland Biosecurity Capability Review - Final Report, September 2015. • Queensland Biosecurity Capability Review Interim Response, Department of Agriculture and Fisheries, 2016. • Grech et al 2013 <u>Guiding principles for the improved governance of port and shipping impacts for the Great Barrier Reef</u> • <u>North-East Shipping Management Plan</u> • Chapter 6 <u>Great Barrier Reef Region Strategic Assessment Report</u>, and <u>Great Barrier Reef Coastal Zone Strategic Assessment Report</u>, noting information gaps were identified. • <u>Outlook Report 2014</u> sections 5.8 and 6.6 etc. 		
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		<p>biocides, underwater noise effects, and similar. Some evaluation work is underway, but this is mostly in its formative stages.</p> <ul style="list-style-type: none"> • Since September 2017, new legislation and requirements apply to ballast water management in Australian waters. • Interest in the impacts and management of underwater noise is increasing. GBRMPA commissioned a discussion and options paper on the topic and there is also a NESP project on shipping risk underway whose researchers have intentions to look at shipping noise aspects further. There is a research action on underwater noise in the North East Shipping Management Plan and an action to produce guidelines on underwater noise for the GBR in the Reef 2050 Plan. It is considered to be essential that ship-generated noise be properly understood in the context of the GBR before any premature or precipitate controls are imposed. • Vessel strike on fauna is an area of growing interest. NESP project C5 explores ship strike analysis for large marine fauna – particularly cetaceans. To reduce the risk of vessel strikes and the impacts they may have on marine fauna, the Australian government has developed a National Strategy for Mitigating Vessel Strike of Marine Mega-fauna. • In 2014 the revised National Plan for Marine Environmental Emergencies was endorsed, and was updated and approved for implementation in November 2016. It recognises and deals with pollution, potential pollution of the sea, or harm to the marine environment by oil or hazardous and noxious substances. It does not deal with ballast water, marine pests, or marine pollutants other than oil and hazardous and noxious substances, general marine debris and rubbish. These areas are managed under other regimes and agreements. • Research funded under the NESP Tropical Water Quality Hub is addressing cumulative 	<ul style="list-style-type: none"> • Abbot Point Growth Gateway project assessment documents. In 2015, the Minister for the Environment approved the project with 29 strict environmental conditions. • North-East Shipping Management Plan and AMSA North East Shipping Management webpage. Plan identifies additional or enhanced needed actions (in light of cumulative impacts), focusses on issues directly related to the safety of shipping such as navigation, routeing, water space management, and issues that prevent or mitigate ship-sourced pollution. • GBRMPA's Great Barrier Reef underwater noise guidelines: discussion and options paper • NESP Marine Biodiversity Hub C5 quantification of national shipping risk project (David Peel), see also marine vessel activity section in the national State of the Environment Report 2016 • Research and review papers such as 2015 Grech & McCook Shipping in the Great Barrier Reef: the miner's highway and a 2014 conference paper Modelling underwater shipping noise in the Great Barrier Reef using AIS vessel track data – as examples • Draft National Strategy for Mitigating Vessel Strike of Marine Mega-fauna • National Plan for Marine Environmental Emergencies • Maritime Safety Qld webpage on marine pollution and Queensland Coastal Contingency Action Plan • Dept Agriculture and Water Resources webpages on ballast water and Australian Ballast Water Management Requirements 2017 • Biosecurity (Ballast Water and Sediment) Determination 2017 (including Explanatory Statement) • GBRMPA Annual Report 2015-16, p73 • Anchors away? The impacts of anchor scour by ocean-going vessels and potential response options, Marine Policy 73: 1-7 (Nov 2016) • Environment: Curb anchor scour for green shipping, Nature 533: 36 (05 May 2016) • NESP project 1.10 Identification, impacts, and prioritization of emerging contaminants present in the Great Barrier Reef and Torres Strait marine environments and Final Report 		
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		<p>impacts, which includes impacts from shipping related activities. Projects with direct relevance include:</p> <ul style="list-style-type: none"> ○ Project 1.6—Multiple and cumulative impacts on the GBR: assessment of current status and development of improved approaches for management; ○ Project 1.10—Identification, impacts, and prioritization of emerging contaminants present in the Great Barrier Reef and Torres Strait marine environments; ○ Project 2.1.6—From exposure to risk: novel experimental approaches to analyse cumulative impacts and determine thresholds in the GBRWHA. 	<ul style="list-style-type: none"> • IALA website 		
CO4 The broader (national and international) level influences relevant to shipping are understood by managers.	3	<ul style="list-style-type: none"> • It is clearly recognised that the environmental risk profile of shipping within the GBR Region, and its overall management, is fundamentally controlled by an international regime, encompassing ship safety and marine environment protection, coordinated through the IMO, of which Australia is a Member. Consequently, incremental improvements in shipping risk profiles are realised via IMO mechanisms. By extension GBRMPA needs to continue to leverage its effective links with AMSA, as the primary Australian representative body in the IMO (although other Commonwealth agencies also have representative roles on certain issues). • Australian agencies have a good understanding of the relevance of international agreements and guidance relevant to shipping. Australia is an 	<ul style="list-style-type: none"> • North Queensland Ship Traffic Growth Study - Supplementary Report (prepared by Braemar Seascope) <i>[can't find online anymore]</i> • 2013 Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area • PGM Environment (2012), Great Barrier Reef Shipping: Review of Environmental Implications • Review of Maritime Transport series • Waterline series • Chapter 5 Great Barrier Reef Region Strategic Assessment Report, and Great Barrier Reef Coastal Zone Strategic Assessment Report, noting information gaps were identified. • GBRMPA's Great Barrier Reef underwater noise guidelines: discussion and options paper • Dept Agriculture and Water Resources marine pests webpage. Review of National Marine Pest Biosecurity page, including effectiveness and cost report, and review of the national strategy report Monitoring for marine pests 2015. • Dept Agriculture and Water Resources webpages on ballast water and Australian Ballast Water Management Requirements 2017 	Adequate	Stable

		<p>active participant in IMO processes, particular in terms of marine environment protection.</p> <ul style="list-style-type: none"> • There is a global trend towards longer, deeper draught ships, and the profile of the world fleet has changed, with ship size increasing and average carrying capacity rising by 4% per annum. Although requiring deeper channels and basins, larger individual ships can also lead to an improvement in the overall environmental risk profile of a given volume of shipping cargo when compared with smaller individual ships moving the same total volume of cargo. • As a result of market and regulatory forces, there has been a significant turnover in the fleet of ships visiting GBR ports. This is largely due to the high number of new ships launched worldwide in recent years and the scrapping of older ships, such that the average age of ships has fallen from 9.5 years in 2008-09 to 7.8 years in 2012-13. This represents a clear improvement in ship safety, as ship age is statistically important in respect of the risk of ships being detained when inspected, and also indicates greater presence of more recent IMO-mandated ship safety and marine environment protection fittings and design features. • Australia has a robust system of Port State Control in place to deter and eliminate substandard ships from traversing the GBR. This is supplemented by strategies and systems to improve maritime domain awareness and compliance of shipping standards in the Reef. • By international standards, Australia has a high rate and high standard of Port State inspections. Ships with defects are detained in port until rectified, and detentions result in significant cost to ship owners and charterers. Consequently, 	<ul style="list-style-type: none"> • <u>Biosecurity (Ballast Water and Sediment) Determination 2017 (including Explanatory Statement)</u> • <u>AMSA annual report 2015-16 p 137</u> • <u>Vessel/Whale collisions – national ship strike database</u> • <u>IMO convention on limitation of liability</u> 		
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		<p>Australian ports are typically visited by newer and better ships in comparison with ports in other nations.</p> <ul style="list-style-type: none"> • Review of national marine pest biosecurity and then national strategy conducted in 2014. Updates to Australia's National System for the Prevention and Management of Marine Pest Incursions including series of technical manuals such as rapid response manuals under the Emergency Marine Pest Plan. Relevant to ballast water, shipping ports etc. • In 2015 the IMO adopted two new two-way routes and an associated Area to be Avoided in the Coral Sea. These measures came into effect on 1 January 2016. The routing systems serve as associated protective measures for the Great Barrier Reef and the Torres Strait Particularly Sensitive Sea Area in the Coral Sea. The ships' routing systems and the Area to be Avoided are recommended for use by all SOLAS ships. • The international growth in cruise ship activities is replicated in the GBR, with growth in the number ship visits as well as demands to access new areas of the GBR. 			
CO5 The stakeholders relevant to shipping are well known by managers.	4	<ul style="list-style-type: none"> • The Australian Maritime Safety Authority (AMSA), the Great Barrier Reef Marine Park Authority (GBRMPA) and Maritime Safety Queensland (MSQ) work closely together to protect the marine environment from adverse consequences of shipping operations and providing for the safety of life of ships' crew, passengers and other users of the Great Barrier Reef. • Other shipping management stakeholders include the Commonwealth Department of Agriculture and Water Resources (DAWR: particularly in relation to introduced marine pests 	<ul style="list-style-type: none"> • GBRMPA webpage on Defence activities and 2016-20 MoU and other documents attached on right side of page. http://www.gbrmpa.gov.au/managing-the-reef/how-the-reefs-managed/Managing-multiple-uses/defence • Australian Marine Conservation Society presentation at AMSA's Natship12 conference 2012 'What environmentalists expect from the shipping industry' • IFAW Australia 2011 Breaking the Silence: how our noise pollution is harming whales • North-East Shipping Management Plan • AMSA North East Shipping Management webpage 	Adequate	Stable

		<p>and ballast water issues), and the Australian Border Force (in regard to surveillance and enforcement measures); the Queensland Department of Environment and Heritage Protection and Department of National Parks, Sport and Racing (in relation to marine pollution in GBR Coast Marine Park waters and wildlife response); and Queensland Department of Agriculture and Fisheries (in relation to marine pests; and port industry representatives).</p> <ul style="list-style-type: none"> • There are annual GBRMPA/Defence meetings under the joint MoU providing opportunity to discuss with Defence any matters related to the operation of ships and vessels in the GBR region. Note Defence activities, including use of ships, are covered under a separate evidence table. • Environmental NGOs have an interest in shipping and its impacts, and are able to contribute via GBRMPA and GBR ports consultative groups. • The North East Water Space Management Working Group is an advisement body under the North East Shipping Management Group. This working group provides a forum for members to discuss and resolve complex or difficult issues of common interest and concern in relation to the use of water space in the GBR, Torres Strait and the Coral Sea. The group meets bi-annually to consider and implement activities under the plan. 			
PLANNING					
PL1 There is a planning system in place that effectively addresses shipping	4	<ul style="list-style-type: none"> • The Region is one of the world's most regulated shipping areas. The Authority, together with the Australian Maritime Safety Authority and Maritime Safety Queensland, works closely to protect the marine environment from the 	<ul style="list-style-type: none"> • The GBRMPA website provides information on the <u>designated shipping areas within the GBR</u>. • AMSA webpage on <u>Particularly Sensitive Sea Areas</u>, including the GBR/Torres Strait/Coral Sea PSSA and <u>PSSA factsheet</u> • <u>Queensland Coastal Passage Plan</u> 	Adequate	Improving

		<p>potential adverse consequences of shipping operations.</p> <ul style="list-style-type: none"> • The Reef was designated a Particularly Sensitive Sea Area by the IMO in 1990, with this area (effectively) extended to include the Torres Strait (2005) and Coral Sea (2015). • The GBR Zoning Plan regulates where ships can transit, with shipping traffic confined to Designated Shipping Areas unless otherwise permitted by GBRMPA. • In 2011 REEFVTS coverage was extended to the southern boundary of GBR PSSA. • Compulsory pilotage has also been introduced. • Maritime Safety Queensland has a range of controls in place to ensure safe ship movements in Queensland ports. These include the provision of physical and electronic aids to navigation, a pilotage regime, Vessel Traffic Services and detailed port procedure manuals for ship operations. • Planning and management appear generally to be well in-hand, but it remains important for these efforts to be effective into the future that good records and forecasts are maintained of actual and projected future ship movements through the GBR Region, so that management controls may anticipate, and respond, in advance of any new or accentuated risks. • The North-East Shipping Management Plan (NESMP) sets out the Australian Government's intentions to enhance ship safety in the Great Barrier Reef, Torres Strait and Coral Sea regions. It establishes a multi-agency cooperative implementation plan for the effective management of shipping in the GBR and nearby waters. • The Plan outlines the safety and environmental standards that need maintaining or improving, and identifies a number of measures to reduce risks from shipping, including: <ul style="list-style-type: none"> ○ additional areas for consideration of pilotage requirements; 	<ul style="list-style-type: none"> • Maritime Safety Qld and GBRMPA websites outline requirements and restrictions in relation to sewage discharge and the GBR Marine Park. • Fatigue management plans • Coastal Protection State Planning Regulatory Provisions 2013 • Automatic Identification System (AIS) – see carriage requirements • Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area 2013 • Outputs from Regional Sustainability anchorage <i>study see CO3</i> • GBR Zoning Plan 2003 • MSQ and AMSA REEFVTS webpages • AMSA annual report 2015-16 p 56 • (46) AMSA webpage on new two-way routing in GBR and TS and on PSSA • AMSA annual report 2015-16 p 137 • North-East Shipping Management Plan • AMSA North East Shipping Management webpage • AMSA annual report 2014-15 p 63 and p 64 • National Plan for Marine Environmental Emergencies • Report on the 2011/12 Review of the National Plan to Combat Pollution of the Sea by Oil and Other Hazardous and Noxious Substances and the National Maritime Emergency Response Arrangements • Maritime Safety Qld webpage on marine pollution and Queensland Coastal Contingency Action Plan • AMSA Pilot Advisory Note 10/2017 Vessel-sourced discharge restrictions in the Great Barrier Reef Marine Park and Torres Strait • Dept Agriculture and Water Resources marine pests webpage. Review of National Marine Pest Biosecurity page, including effectiveness and cost report, and review of the national strategy report Monitoring for marine pests 2015. • Dept Agriculture and Water Resources webpages on ballast water and Australian Ballast Water Management Requirements 2017 • Marine Order 63 (Vessel reporting systems) 2015 • Under Keel Clearance Management System webpages and factsheet 		
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		<ul style="list-style-type: none"> ○ increased resources for Port State Control inspections to ensure all ships meet the applicable standards; ○ increased focus on areas related to navigational risk (such as fatigue, passage planning and navigational equipment); ○ additional protection for the Coral Sea through seeking categorisation as a PSSA with Associated Protective Measures; ○ using emerging ship tracking technology to improve awareness of shipping movements in the Coral Sea and to provide early alert of ship breakdowns; ○ more active management of traffic such as a 'traffic organisation service' to minimise collision risk, particularly in confined waters such as Hydrographers Passage; ○ further adoption of Electronic Chart Display and Information Systems (ECDIS); ○ promoting the design and use of protected fuel tanks in ships; ○ ongoing review, test, update and support of the National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances (National Plan), with subsidiary linkages with the Queensland Plan; ○ Emergency Towing Vessel (ETV) capability in the GBR; and ○ a response plan for introduced marine pests (but not for surveillance, management, prevention). <ul style="list-style-type: none"> ● Current marine pest management arrangements for the GBR Region are considered inadequate. This is due to absence of coordinated, routine surveillance, and lack of comprehensive biofouling risk management framework management for vessels operating within GBR Region. These matters are being addressed. 	<ul style="list-style-type: none"> ● <u>Qld Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports 2016</u> ● <u>Sustainable Ports Development Act 2015</u> and Qld Dept State Development <u>sustainable ports</u> webpage and subpages (e.g. Master planning for priority ports) ● GBRMPA <u>Dredging and dredge material disposal</u> webpage ● AMSA <u>Marine Notices</u> webpage ● QEHP <u>public consultation</u> page and <u>proposed policy</u> ● <u>2015 State Party Report addendum</u> ● DoEE <u>Reef 2050 Plan</u> webpage and documents ● <u>Anchorage – Jurisdictional responsibility for anchorages in Queensland</u> ● Queensland Biosecurity Capability Review - Final Report, September 2015. ● Queensland Biosecurity Capability Review Interim Response, Department of Agriculture and Fisheries, 2016. 		
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		<ul style="list-style-type: none"> • 2017 version of the Queensland Coastal Contingency Action Plan released by Maritime Safety Qld recognises risks of marine pollution events such as oil spills. • MSQ is finalising a guideline on anchorage management and design. Jurisdictional issues to consider when designating and managing anchorages in Queensland are outlined in the paper 'Anchorage – Jurisdictional Responsibility for Anchorages in Queensland'. • In 2014-15 AMSA and MSQ revised the governance and operational arrangements for REEFVTS. A new memorandum of understanding commenced on 1 July 2015. Under this new arrangement, AMSA are the Competent Authority, and MSQ is the day-to-day operator of the service. In 2015-16 AMSA released two policy documents: a VTS Compliance and Enforcement Framework and Guidance on the qualifications and training of Vessel Traffic Service Operators. • In 2014 the IMO adopted a new two-way route in the Great Barrier Reef and Torres Strait. The ship routing measure, arguably the world's longest, aims to reduce the risk of collisions and groundings by encouraging ships to follow well-defined lanes. It will help ensure ships keep clear of shoals, reefs and islands that lie close outside the two-way route. The route will also provide greater certainty to small vessels as to where they can expect to encounter large vessels. • Introduction of new Under Keel Clearance Management (UKCM) System for large ships in the Torres Strait. UKCM is an advanced web-based system for enhancing the safety of those large vessels whose keel is close to the seabed in the shallow Torres Strait region. The requirements affect ships that approach Torres Strait through the shipping routes passing through the GBR or adjacent to the northern GBR and has the consequential benefit of also reducing risk in the GBR. The requirement to use the UKCM system was included in Marine Order 			
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		<p>54 (Coastal Pilotage), which came into effect on 1 July 2014.</p> <ul style="list-style-type: none"> • In 2014 a revised National Plan for Marine Environmental Emergencies was endorsed, and was updated and approved for implementation in November 2016. New GBR aspects include GBRMPA now responsible for non-SOLAS groundings (i.e. management of incident). • The 2017 version of the Queensland Coastal Contingency Action Plan was released by MSQ. This version is a result of a review of previous versions of the plan and addresses recommendations arising from the Cape Upstart oil spill in 2015. It also reflects the changes to the Queensland State Disaster Management Plan. In line with the National Plan, the scope of QCCAP has been extended to include arrangements for dealing with maritime casualties. • MSQ run an annual pollution response training program for responders and conducts regular exercises to test response capability. • 2017 updated guidance for Great Barrier Reef coastal pilots on restrictions on vessel-sourced discharge in the GBR & Torres Strait -- reflects MARPOL. The Pilot Advisory Note (PAN) provides more detailed guidance for coastal pilots given they receive queries from both masters and crew regarding the relevant discharge restrictions. • AMSA continually updates Marine Notices, providing advice and guidance to ships. Examples of new/updated Marine Notices. <ul style="list-style-type: none"> ○ 2017/05 Regulations for air emissions from ships. This confirmed the reduction in the sulphur content of fuel oil to come into effect 1 January 2020. ○ 2017/04 MARPOL Annex V discharges. This provided updated information and links to further information on the amendments to MARPOL Annex V which came into force 1 March 2018 (related to the management 			
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		<p>of cargo residues; and the new format of the Garbage Record Book).</p> <ul style="list-style-type: none"> ○ 2015/10 Coastal pilotage. These updated requirements facilitate consistency in the quality and integrity of service-delivery, the ongoing management of relevant information systems and interaction with coastal pilotage customers, stakeholders and end-users. ○ 2016/15 Minimising the risk of ships colliding with cetaceans ○ 2016/03 Under keel clearance management system ○ 2015/11 Measures to reduce greenhouse gas emissions from international shipping ○ 2015/05 quick guide: navigation through the Great Barrier Reef and Torres Strait <ul style="list-style-type: none"> ● REEFVTS protocols involve the broadcast of information during the cetacean migration season to create awareness and advise actions requested of ships to minimise risks, eg. take action to avoid collision. ● In 2017, the Queensland draft trans-shipping policy was released for public comment (closed October 2017). Amendments are proposed to the Queensland <i>Environmental Protection Act 1994</i> and its associated regulations to ensure that trans-shipping activities are: subject to consistent environmental assessment and oversight where they are carried out in Queensland Waters and the Great Barrier Reef region; not permitted in the Great Barrier Reef region unless the activity occurs in association with a declared port. In the Reef 2050 Long-term Sustainability Plan, the Queensland Government committed to not supporting trans-shipping operations which adversely affect the GBRMP. This commitment is due to be reviewed after nine years and complements the policy delivered in the Queensland <i>Sustainable Ports Development Act 2015</i>, which confines port development in the Great Barrier Reef Region to declared port areas. 			
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		<ul style="list-style-type: none"> • Australia is considering the development of a new classification for bulk vessels travelling through the GBR World Heritage Area. The value of such pursuit is unclear, and whether this is a realistic goal is questionable. Investigations to date indicate the limited benefit in developing a new vessel class given that the IMO has already implemented significant safety standards via existing IMO Conventions. There may be potential for an incremental increase in safety by adopting ship vetting practices that target newer ships with good ship management practices. Investigations are continuing. • Reef 2050 Plan was released in 2015 and has various associated prioritisation and investment strategy documents. Several of the actions in the plan are directly related to shipping and there are also some related to ports (and associated industry). 			
PL2 The planning system for shipping addresses the major factors influencing the Great Barrier Reef Region's values.	4	<ul style="list-style-type: none"> • At a whole-of-Government level, the planning system is considered to be effective. • Not clear how well climate change may be factored into future planning (eg. consideration of climate change effects on the activity of shipping and on the values that shipping may also affect). • The North-East Shipping Management Plan (NESMP) addresses 'direct use' of the Region by shipping activities, e.g. grounding and collision impacts, operational impacts and the potential secondary and cumulative impacts. • Reef 2050 Plan was released in 2015, includes acknowledgements of the major threats to the Reef, and has various associated prioritisation and investment strategy documents. Several of the actions in the plan are directly related to shipping. 	<ul style="list-style-type: none"> • North-East Shipping Management Plan section 5.3 etc • DoEE Reef 2050 Plan webpage and documents 	Adequate	Stable
PL3 Actions for implementation regarding shipping are clearly identified within the plan	4	<ul style="list-style-type: none"> • At a whole-of-Government level, actions for implementation regarding shipping are considered to effective. 	<ul style="list-style-type: none"> • North-East Shipping Management Plan chapter 13 • Draft National Strategy for Mitigating Vessel Strike of Marine Mega-fauna 	Adequate	Improving

		<ul style="list-style-type: none"> • The NESMP outlines actions and includes a work program. • Reef 2050 Plan includes several shipping specific actions. 	<ul style="list-style-type: none"> • DoEE Reef 2050 Plan webpage and documents 		
PL4 Clear, measurable and appropriate objectives for management of shipping have been documented	3	<ul style="list-style-type: none"> • Shipping within the Great Barrier Reef is well managed, • The key management agencies – AMSA and MSQ –have clear objectives which are developed and implemented in cooperation with GBRMPA. • MSQ Vessel Traffic Quality Management System lists the following objectives for managing ship movements with the GBRMP: <ul style="list-style-type: none"> - Manage and operate the VTS to ensure safe and efficient vessel movements in coastal waterways. - Enhance navigational safety by interacting with shipping to provide improved information on potential traffic conflicts and other navigational safety information. - Minimise the risk of a maritime accident and consequential ship-sourced pollution and damage to the marine environment (nil marine pollution incidents). • Consider that management objectives would be improved if clear policy for controlling/optimising time that ships spent waiting in anchorages was developed and implemented, noting that time at anchor influences other factors such as aesthetic effects, leaching of anti-fouling paint biocides, reliance upon waste reception services, and similar. 	<ul style="list-style-type: none"> • VTS webpage 	Adequate	Improving
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to shipping	3	<ul style="list-style-type: none"> • Noting that effective management of shipping pivots upon having adequate capacity in management and regulatory arrangements, there is considered to be the need to develop a shipping volumes monitoring and forecasting tool, collecting data on ship numbers and sizes, to support ongoing and periodic management and risk reviews of shipping in the Great Barrier Reef. 	<ul style="list-style-type: none"> • Vessel/Whale collisions – national ship strike database • AMSA collision with cetaceans section in GBR webpage • Douglas Shoal Preliminary Site Assessment Report 	Adequate	Improving

	<ul style="list-style-type: none"> • REEFVTS monitors all ship movements within the bounds of the service area, including 'near-misses'. • There is no structured or strategic monitoring of underwater noise associated with shipping within the GBR, so no valid basis upon which to determine if/where such noise may be a problem in the GBR and whether or not any management intervention may be required. • No monitoring of turbidity caused by ship wake and turbulence or its effects on coral and other habitats. • AMSA and MSQ mandate reporting of designated maritime incidents. • Department of Environment and Energy mandates reporting of ship interactions with cetaceans, although limited confidence that all interactions are reported. • No monitoring of ship air emissions in the GBR is undertaken, although the need to do so is not clear. • No monitoring of areas used by super-yachts or their activities. • Generally <i>ad hoc</i> monitoring of vessel grounding impacts and no ongoing monitoring of recovery from known groundings, e.g. <i>Doric Chariot</i>, <i>Bunga Teratai Satu</i>. However, a structured long-term monitoring program is proposed as part of the <i>Shen Neng 1</i> grounding remediation project in order to monitor the operations and to determine the success of the remediation and nature/extent of recovery of Douglas Shoal. This environmental monitoring plan (EMP) will consider the ecological viability of the site during and after remediation and nature of the contaminants (hazardous antifouling chemicals) including its fate, mobility, transport and toxicity 			
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		<p>characteristics. The EMP would also consider the appropriate assessment of changes in flora and fauna of the site and changes in water quality over time. For example, the structure, function, diversity, distribution and viability of benthic communities and habitats on Douglas Shoal as well as the quality of water, sediment and biota on site over time. The Douglas Shoal study is being funded by reparations obtained from the ship owners. It should be considered as critical, however, that the planned studies realise the most cost-effective use of these funds in relation to the management of shipping in the GBR.</p>			
<p>PL6 The main stakeholders &/or the local community are effectively engaged in planning to address shipping</p>	4	<ul style="list-style-type: none"> • The main stakeholders with regard to regulation of shipping are effectively engaged. • For any port expansions and associated shipping anchorage areas in the GBRMP, stakeholders and the public are engaged if the activity triggers an EPBC Act assessment process that requires public advertising. • Planning undertaken to review the National Plan and National Maritime Emergency Response Arrangements (NEMERA) involved: government authorities, the shipping industry, the offshore petroleum industry, port authorities and harbour masters, emergency towage/salvage contractors, oil spill response service providers, wildlife response agencies, associated service providers. • The comprehensive Strategic Assessment for the Great Barrier Reef region included an extensive community consultation process. • Stakeholders and community are engaged in some planning processes (e.g. Abbot Point consultation). Community involvement in planning for other shipping issues is generally limited. General community involvements has greater relevance with regard to the management of ports, rather than 'shipping' as a distinct entity. 	<ul style="list-style-type: none"> • r88D of GBRMP Regulations 1983 • s98 and 103 of EBPC Act 1999 	Adequate	Improving

		<ul style="list-style-type: none"> In 2015, Maritime Safety Queensland engaged maritime stakeholders, including the North East Water Space Management Working Group, in the design and location for designated anchorages for the ports of Townsville and Abbot Point. NESMP under review during 2018. GBRMPA's Reef Advisory Committees and LMACs are available for community to raise shipping issues and for GBRMPA to provide community with updates on relevant information. For example, in 2017 MSQ requested feedback from the public on the location of shipping lanes and impacts from shipping. GBRMPA facilitated a session at the Cape York Local Marine Advisory Committee meeting with locals to gather their observations and feedback on impacts from shipping in their area. 			
PL7 Sufficient policy currently exists to effectively address shipping	4	<ul style="list-style-type: none"> GBRMPA does not have its own general policy on shipping (other than cruise shipping), but cooperated with AMSA and MSQ, with the NESMP reflecting GBRMPA's agreed policy positions. Overall, at the whole-of-Government level, it is considered that there does exist sufficient policy to effectively address shipping. There has been consideration about action to address the impacts of noise on marine life, particularly shipping noise. However, the perceived risk is minimal on the available evidence. It would be more prudent to characterise and assess any such risks as a precursor to determining if such policy was warranted, and if so, its content and objectives. Furthermore, Australia would have limited latitude to effect any outcomes, noting that shipping noise profiles are inherent to design and build, and thus regulated through the IMO. On current information there is no justification for a shipping noise policy; although some research has been undertaken, this has been general in nature and provides limited illumination of the matter in terms specific to the 	<ul style="list-style-type: none"> Cruise Shipping Policy for the Great Barrier Reef Marine Park (1999) Superyacht Management Arrangements (2011) Compliance and Enforcement Policy and protocols the Compliance and Enforcement Protocol. GBRMPA compulsory pilotage webpage GBRMPA webpage on superyacht anchorages Whitsundays Plan of Management Detailed Overview map and GBRMPA Whitsundays Plan of Management webpage GBRMPA's Guidelines: Applications for joint permissions p 27 & 28 GBRMPA news item on consultation for the review of the cruise ship policy Report on Jurisdictional Responsibility for Anchorages in Queensland 	Adequate	Improving

		<p>GBR. More, better focused research and evaluation is required before valid decisions can be made regarding real risks and appropriate management responses.</p> <ul style="list-style-type: none"> • Illumination from ships at anchor and alongside may also pose a risk to nesting and hatching sea turtles in some locations. This potential risk needs further evaluation, with management measures instituted if deemed to be warranted. • Policy and procedures need to be implemented regarding restoration/rehabilitation of the marine environment from pollution or grounding incidents. This has been flagged as a work item by North East Shipping Management Group. • The GBRMPA cruise shipping policy (2018) has been reviewed and finalised • In 2016 Maritime Safety Queensland published a report on <i>Jurisdictional Responsibility for Anchorages in Queensland</i>. • MSQ is finalising a guideline on anchorage management and design 			
PL8 There is consistency across jurisdictions when planning for shipping	4	<ul style="list-style-type: none"> • Consistency across jurisdictions appears to be good. • From 1 July 2012, the Navigation Act 2012 extended AMSA's jurisdiction to include all foreign ships visiting Australian ports regardless of the nature of the voyages involved. • The North East Shipping Management Group generally meets annually to discuss maritime safety and protection of the Great Barrier Reef. The group also assesses the risk posed by future traffic growth and recommends mitigation measures to deal with those risks. Note, however, that there was no meeting in 2016-17. • The multi-agency nature of the North East Shipping Management Plan encourages communication and cooperative strategic planning. • A few practical jurisdictional complications remain regarding implementation of the National 	<ul style="list-style-type: none"> • North-East Shipping Management Plan • AMSA North East Shipping Management webpage • Oil spill training --- AMSA Annual Report 2016-17 p29 • Exercise Pallarenda 2016 (internal document) 	Adequate	Improving

		<p>Plan for Maritime Environmental Emergencies; Queensland Coastal Contingency Action Plan and other cross jurisdictional arrangements. For example:</p> <ul style="list-style-type: none"> ○ Complications around responsibility for leading coordination and action when ships that ground come to rest partly in the GBR Marine Park and partly in state waters or on land (e.g. on the edge of state islands). The jurisdictions and powers that each agency have are complicated – sometimes overlapping, sometimes with slight gaps that were not contemplated at the time of drafting. In practice every agency strives to protect the Reef with the powers they have; however it is sometimes difficult to get an answer that actually addresses the question. ● Pollution response arrangement and preparedness (training) is managed effectively across jurisdictions. Training is undertaken every year. The AMSA training using <i>Coral Knight</i> is ongoing. A State exercise -- such as Exercise Pallarenda -- rotate along the Queensland coast, sometimes in the GBR Region sometimes not, but GBR Region staff participate in all., In 2016-17 activities were conducted under QCCAP and NPMEE. 			
<p>PL9 Plans relevant to shipping provide certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be acceptable.</p>	4	<ul style="list-style-type: none"> ● Overall, shipping in GBR Region is considered to be effectively regulated. ● There is clear information available on the Designated Shipping Area inside the Great Barrier Reef Marine Park, coastal pilotage requirements, ship passages, ship reporting, safety requirements, pollution controls, and similar. 	<ul style="list-style-type: none"> ● Quick guide – navigation through the GBR and Torres Strait ● GBRMPA webpage on DSA ● North-East Shipping Management Plan ● AMSA North East Shipping Management webpage ● GBRMPA's Guidelines: Applications for joint permissions p 27 & 28 ● MSQ port procedures webpage 	Adequate	Stable

		<ul style="list-style-type: none"> In addition to the existing legislative requirements and policies of AMSA, MSQ, GBRMP, the North East Shipping Management Plan facilitates actions that provide additional or improved guidance and more certainty for regulatory agencies, industry, other stakeholders and the general community. MSQ manages the allocation of ship anchorages for ports through its Vessel Traffic Service (VTS) operations. MSQ publish a Port Procedure Manual for each port, which are reviewed and updated annually. It contains information and guidelines to assist masters, owners and agents of vessels arriving at and traversing the area. The manual provides details of services, regulations and procedures to be observed. Some limited coordination around the management of ship anchorage areas across jurisdictions. MSQ is preparing a guideline on anchorage management and design. 			
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address shipping	3	<ul style="list-style-type: none"> Changes in the level of shipping activity influence degree of risk. There needs to be ongoing review of risks in relation to available resources, to ensure sufficient funding is available. AMSA has well-established arrangements for the collection of levies to prepare for response to pollution events. The capacity of the Program to guarantee a response to incidents in an effective and timely manner is predicated upon the availability of suitable vessels, especially long range vessels, and the number and availability of staff trained in specialist fields. The replacement of <i>Reef Heron</i> 	<ul style="list-style-type: none"> GBRMPA's Permit Application Assessment Fees Shen Neng 1 Grounding Impact Assessment Field Management Program 5-year Business Strategy 2018-2022 (<i>draft, internal document</i>) and FMP Annual Business Plan 2017-18 (<i>draft, internal document</i>) FMP Annual report 2015-16 GBRMPA Statement on out-of-court settlement with owners of Shen Neng 1 GBRMPA Annual Report 2016-17 DoEE Reef 2050 Plan webpage and documents 	Adequate	Stable

		<p>at Gladstone with an open ocean vessel means that field management will have a rapid response capability at either end of the World Heritage Area.</p> <ul style="list-style-type: none"> • There is a continuing need to review and augment Emergency Towing Vessel arrangements, as warranted by forecast changes in shipping activity. • Only modest funds available for invasive marine species prevention measures and port monitoring in GBR Ports. • Considerable resources expended upon assessing and restoring damage to Douglas Shoal arising from <i>Shen Neng 1</i> grounding. It is considered to be imperative that these studies be effectively delivered in order to represent the most cost-effective use of the available money. • Costs for detection and monitoring for introduced marine pests are expensive. Effective implementation may require more coordination/agreement between affected and involved parties. • Ongoing funding of REEF VTS is provided under an MOU between AMSA and MSQ. • It is reported that AMSA expends approximately \$32 million on ship safety measures in the Great Barrier Reef. These relate to aids-to-navigation; vessel traffic and pilotage services; emergency towage contracts; pollution preparedness and response; and Port State Control ship inspections. • MSQ's budget for all VTS operations managing the safe movement of ships was \$14 million in 2016-17. • GBRMPA contributes financially to shipping management activities through travel costs for staff to attend meetings and training events and incident response support under the Joint Field Management Program (and where necessary GBRMPA's legal section). 			
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<p>IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address shipping</p>	<p>3</p>	<ul style="list-style-type: none"> • Human resources available within AMSA and MSQ appear to be adequate, although the capacity of management agencies to deal with the growth in shipping activity is continually tested. • It is understood that there exists a sufficient availability of pilots with appropriate skills and experience is critical to safe and effective management of shipping within the GBR. • It is not clear whether GBRMPA staff have optimal capacity and availability in order to be best advance GBRMPA objectives, although this situation has improved since 2013. For example, resourcing for strategic planning within GBRMPA for shipping management is reported by stakeholders to be inadequate. • MSQ has agreements in place with all port authorities for the provision of first strike pollution response within ports. • MSQ operates an annual pollution response training and exercise program. • Successful response for the Cape Upstart (in Region) and Fraser Island (out of Region) oil spills suggest adequate resources are available. • Queensland is able to call upon national resources. • MSQ trained 151 people in incident response in 2016/17 and held two significant exercises. • In 2015-16 ten new vessel traffic services (VTS) were authorised, including Gladstone, Hay Point, Mackay, Abbot Point, Townsville, Cairns and the Great Barrier Reef and Torres Strait. MSQ operates five VTS centres, four of which manage shipping in or near the GBRMP utilising 46 FTE. 	<ul style="list-style-type: none"> • AMSA annual report 2015-16 p 56 	<p>Adequate</p>	<p>Stable</p>
<p>IN3 The right skill sets and expertise are currently available to the managing organisations to address shipping</p>	<p>3</p>	<ul style="list-style-type: none"> • In wider Government, sufficient expertise is available to adequately manage shipping. 	<ul style="list-style-type: none"> • Oil spill training --- AMSA Annual Report 2016-17 p29 	<p>Adequate</p>	<p>Stable</p>

		<ul style="list-style-type: none"> • It is not clear whether GBRMPA staff have optimal knowledge of shipping in order to be best advance GBRMPA objectives. • All MSQ VTS operators are trained in accordance with the IMO's competency based training standard. • Training for a major oil spill on the Great Barrier Reef was conducted in 2016-17 by the National Response team and by agencies under QCCAP. • The 2014 National Plan for Marine Environmental Emergencies has generated more cooperative training between GBRMPA, AMSA, MSQ and QPWS. • AMSA has arrangements with CSIRO, AIMS and NSW Fire & Rescue that provide the ability to draw technical advice during a maritime incident. This is part of the Environment, Science and Technical Network under the National Plan for Marine Environmental Emergencies. 			
IN4 The necessary biophysical information is currently available to address shipping	4	<ul style="list-style-type: none"> • Various projects under the old National Environmental Research Program (NERP) (esp. Tropical Ecosystems Hub) and current National Environmental Science Program (NESP) have/will provide useful information, with projects instigated to address identified gaps. • More information needed on species distributions and habitat requirements of some taxa, particularly inshore dolphins. • Although some studies initiated, expressed concerns regarding the possible adverse effects of ship-sourced noise need better focused studies in order to better understand the GBR context, if any risks actually exist, and appropriate means of management. • Some information is reasonably available (e.g. on location and state of seagrass and coral reef habitats and connectivity), but less information is 	<ul style="list-style-type: none"> • Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area 2013 • Chapter 4 Great Barrier Reef Region Strategic Assessment Report • Outlook Report 2014 • North-East Shipping Management Plan • Science Strategy and Information Needs 2014-2019 and searchable register of detailed questions • NESP and NERP outputs and NESP current projects – especially from the Tropical Water Quality Hub and Marine Biodiversity Hub (e.g. project C5 on ship strike) • 2017 Scientific Consensus Statement p 22, 23 antifouling, polycyclic aromatics • GBRMPA Reef 2050 Integrated Monitoring and reporting program webpage and RIMReP Strategy 	Adequate	Stable

		<p>available on things such as shoal and other seabed habitats, natural and anthropogenic underwater soundscapes, acoustic communication of GBR species, underwater noise impacts, ship lighting, ship-related turbidity and turbulence impacts on species and habitats etc.</p> <ul style="list-style-type: none"> • There can be issues with lack of biophysical information at an appropriate scale for a shipping incident or planning. Available shipping risk assessments also quite broad. • Updated biophysical and shipping impact related information needs noted in the GBRMPA's science strategy and information needs documents. • The Reef Integrated Monitoring and Reporting Program (RIMReP) is intended to provide a coordinated monitoring program for many Reef values. 			
IN5 The necessary socio-economic information is currently available to address shipping	4	<ul style="list-style-type: none"> • Ships that transit the waters of the Great Barrier Reef provide a service to communities adjacent to the Region, and to the national economy, transporting export and import goods as well as cruise ship passengers. The economic activity generated by this shipping traffic provides a range of social and economic benefits to catchment communities and beyond, as well as national economic benefit to Australia. • Community and stakeholder consultation identifies shipping as an issue of lesser concern compared to that of climate change. This is a change since 2014, with the perceived risk of shipping decreasing. • Data on the economic significance of shipping in the GBR region is generally available from a variety of sources. 	<ul style="list-style-type: none"> • Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area 2013 • Deloitte Access Economics: Economic contribution of the Great Barrier Reef 2013 • Defining the aesthetic values of the Great Barrier Reef World Heritage Area: 2013. Identified and mapped aesthetic values of outstanding universal value and analyse the sensitivity of those values to particular impacts. • Outlook Report 2014 section 5.8 'Shipping' • Great Barrier Reef Region Strategic Assessment Report • Deloitte Access Economics: At what price? The economic, social and icon values of the Great Barrier Reef • Various sources listed in the RIMReP Human Dimensions database of social and economic 'secondary data' sources for the GBR (internal document). E.g. Ports Australia and MSQ information such as number of coastal shipping visits, registered Queensland regulated ships 	Adequate	Stable

		<ul style="list-style-type: none"> Data on the social significance of shipping in the GBR are less readily available, although studies have been conducted within the realms of aesthetics and community perceptions. GBRMPA's 2017 Guidelines on social value assessment provides some suggestions on sources of relevant information and considerations for activities conducted in the Marine Park. Assessment in 2014 indicated shipping was continuing to provide benefits to local communities. 	<ul style="list-style-type: none"> Cost-effective indicators and metrics for monitoring the human dimensions of the Great Barrier Reef: current NESP project underway. Guidelines: Social value assessment The Social and Economic Long Term Monitoring Program (SELTMP) 2014: Ports and shipping in the Great Barrier Reef 		
IN6 The necessary Indigenous heritage information is currently available to address shipping	3	<ul style="list-style-type: none"> Difficult to assess, but assume generally adequate, noting, however, that understanding of traditional knowledge and cultural heritage is poor in relation to how shipping is perceived and may affect those values. Available knowledge is understood to be confined to a limited number of specific locations. Traditional owners are engaged in pollution response planning and implementation. 	<ul style="list-style-type: none"> Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area 2013 Guidelines: Woppaburra Traditional Owner heritage assessment 	Adequate	Stable
IN7 The necessary historic heritage information is currently available to address shipping	3	<ul style="list-style-type: none"> Difficult to assess, but assume generally adequate. On 14 May 2015 the Great Barrier Reef Marine Park Regulations 1983 were amended to add a new type of Special Management Area, the Maritime Cultural Heritage Protection Special Management Area. The purpose of the regulation is to protect cultural heritage in general, and in particular, the heritage value of two Royal Australian Air Force (RAAF) Catalina air wrecks (RAAF Catalina A24-24 and RAAF A24-25) located in the Marine Park. The regulation includes specific management provisions for the Maritime Cultural Heritage Protection Special Management Area regulating 	<ul style="list-style-type: none"> Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area 2013 Australian National Shipwreck Database Guidelines: Management of research in the Great Barrier Reef Marine Park; Guidelines Historic heritage assessment: lightstations and aids to navigation (not yet published); Guidelines Historic heritage assessment: Maritime cultural heritage protection special management area; Guidelines Historic heritage assessment: WWII features, sites, and voyages and shipwrecks; Guidelines: Historic heritage assessment: other places of historic and social significance GBRMPA Annual Report 2014-15, page 4 Aids to navigation webpage and Dent Island Lightstation Heritage Management Plan Interactive map of AMSA historic heritage lighthouses 	Adequate	Stable

		<p>entering and approaching the wrecks, operating and anchoring vessels, fishing and collecting.</p> <ul style="list-style-type: none"> • AMSA has worked with GBRMPA to develop a heritage management plan to protect and manage the Dent Island lightstation, which was established in 1879. A heritage register and management plans for other sites are being developed. 			
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address shipping	4	<ul style="list-style-type: none"> • Considered to be minimal need, given framework within which shipping is regulated, so assume other sources are adequate. 	<ul style="list-style-type: none"> • Workshop discussion 	Adequate	Stable
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of shipping	4	<ul style="list-style-type: none"> • Generally considered as adequate, although there may be merit in better engagement with terminal operators and exporters in order to seek improvements to the scheduling of ship movements, with the objective of shortening, as practicable, periods spent by ships at anchor awaiting port access. • GBRMPA, MSQ and AMSA frequently liaise for shipping management and operational arrangements, including incident management. • The North East Shipping Management Group is a forum for formal development and review of management arrangements and emerging issues. • The North East Shipping Management Group is supported by the North-East Water Space. Management Working Group, a multi-party consultative forum. • High level arrangements are in place for the coordination of shipping incident response. • The GBRMPA Chairman is a member of the AMSA Board. • Cruise ship stakeholders were consulted during the review of GBRMPA's cruise ship policy. • Superyacht stakeholders were engaged as part of the Whitsundays Plan of Management review. 	<ul style="list-style-type: none"> • GBRMPA Whitsundays Plan of Management webpage • GBRMPA news item on consultation for the review of the cruise ship policy 	Adequate	Stable

		<ul style="list-style-type: none"> • See PL6 			
PR2 The local community is effectively engaged in the ongoing management of shipping	4	<ul style="list-style-type: none"> • Local communities are engaged in relation to anchorages and ports, less so specifically for shipping, noting limited practicable role for community in relation to the management of shipping. • GBRMPA's Reef Advisory Committees and LMACs are available for community to raise shipping issues and for GBRMPA to provide community with updates on relevant information. See PL6 also. 	<ul style="list-style-type: none"> • LMACS, RACs 	Adequate	Improving
PR3 There is a sound governance system in place to address shipping	4	<ul style="list-style-type: none"> • A sound governance system is considered to be in place, but this needs to be properly resourced to remain current and keep pace with, and ideally anticipate, changing shipping risk profiles. • When the National Plan for Marine Environmental Emergencies and NNERA were combined the new arrangements provided a new governance structure, with oversight by a National Plan Strategic Coordination Committee comprising Commonwealth and state/NT governments, with a National Plan Strategic Industry Advisory Forum responsible for providing industry-focused advice on strategic issues. • The North East Shipping Management Group provides advice and oversight for the North East Shipping Management Plan. • Queensland Assessment Bilateral Agreement – Amended in December 2014, the Assessment Bilateral Agreement between the Commonwealth and Queensland governments aims to reduce duplication of environmental assessment processes, strengthen intergovernmental cooperation and promote a partnership approach to environmental protection and biodiversity conservation. The agreement provides for the 	<ul style="list-style-type: none"> • Grech et al 2013 <u>Guiding principles for the improved governance of port and shipping impacts for the Great Barrier Reef</u> New since 2014 • <u>National Plan for Marine Environmental Emergencies</u> • Queensland Assessment Bilateral Agreement – http://www.environment.gov.au/protection/environmental-assessments/bilateral-agreements/qld 	Adequate	Stable

		accreditation of certain Queensland environmental assessment processes, which means that project proposals that require both state and Commonwealth approval can be assessed using a single set of project documentation.			
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for shipping	3	<ul style="list-style-type: none"> The key regulatory agencies have effective performance monitoring systems in place. REEFVTS provide ongoing monitoring of performance effectiveness. Incident reporting and performance monitoring generally occurs within individual management agencies, rather than as overarching or aggregated processes. Since commencing preparation of the North East Shipping Management Plan Shipping Plan in 2012, substantial progress has been made on the 63 actions it contains. 	<ul style="list-style-type: none"> NESMP work program progress report February 2016 NESMP work program status report January 2018 	Adequate	Stable
PR5 Appropriate training is available to the managing agencies to address shipping	3	<ul style="list-style-type: none"> The key regulatory agencies would appear to have appropriate training schemes in place. This includes ongoing in incident and pollution response. GBRMPA staff have participated in various courses to improve knowledge and understanding of shipping. There exists a gap in relation to training in relation to introduced pests prevention measures, and monitoring and response. The Environment, Science and Technical Network (under the National Plan for Marine Environmental Emergencies) meets annually. GBRMPA sends two staff, with the second attendee rotated to spread exposure and awareness across more staff. 	<ul style="list-style-type: none"> Oil spill training --- AMSA Annual Report 2016-17 p29 	Adequate	Stable
PR6 Management of shipping is consistently implemented across the relevant jurisdictions	4	<ul style="list-style-type: none"> Yes, under the tutelage of AMSA and MSQ, with contributions from other applicable agencies such as GBRMPA and DAWR. 	<ul style="list-style-type: none"> Queensland Biosecurity Capability Review - Final Report, September 2015. 	Adequate	Stable

		<ul style="list-style-type: none"> • Coordination for introduced marine pest management is in its formative stages but will require further refinement; in particular, monitoring. • However, there are inconsistencies in: <ul style="list-style-type: none"> ○ the definition of an incident across MSQ, AMSA, GBRMPA ○ There are three incident databases for ships and vessels which aren't linked. There is good communication, but it would be highly useful for management and reporting (particularly outlook reporting) if there was consistent treatment and capture of incidents from both a safety and environmental harm perspective 	<ul style="list-style-type: none"> • Queensland Biosecurity Capability Review Interim Response, Department of Agriculture and Fisheries, 2016. 		
PR7 There are effective processes applied to resolve differing views/ conflicts regarding shipping	4	<ul style="list-style-type: none"> • Yes, principally via the North East Shipping Management Group and its subordinate North East Water Space Management Working Group. • Annual meetings are conducted between GBRMPA, MSQ and AMSA. 	North East Shipping Management Group	Adequate	Stable
PR8 Impacts (direct, indirect and cumulative) of activities associated with shipping are appropriately considered.	3	<ul style="list-style-type: none"> • Potential impacts on the Great Barrier Reef are typically considered as a component of environmental impact assessment processes. In the past this has been somewhat piecemeal, with assessments occurring via individual port development proposals. A more over-arching view of shipping in the GBR has been achieved. • To remain effective, it is considered necessary to undertake continuing, umbrella reviews of shipping risks and management in the GBR Region, in concert with shipping capacity constraints analyses, and to keep these up-to-date by periodic review. These reviews should 	<ul style="list-style-type: none"> • North-East Shipping Management Plan • GBRMPA's Cumulative Impacts Management Policy webpage • Queensland Biosecurity Capability Review - Final Report, September 2015. • Queensland Biosecurity Capability Review Interim Response, Department of Agriculture and Fisheries, 2016. 	Adequate	Improving

		<p>be linked to individual port development and capacity assessments.</p> <ul style="list-style-type: none"> • Coordination for introduced marine pest response is in place but will require further refinement. Limited coordination exists with regard to routine monitoring and surveillance, although this is expected to improve as a result of both Commonwealth and Queensland State actions. • Some cumulative and/or synergistic impacts (eg. water quality, turbidity from wake) not well addressed, although this situation has improved since 2013, and plans are in place to further evaluate and improve management as may be warranted. For example, a Reef Cumulative Impact Management Policy has been drafted by GBRMPA in collaboration with other agencies. 			
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make relevant management decisions regarding shipping	3	<ul style="list-style-type: none"> • There are a number of information gaps identified in knowledge of shipping practices. For example, only limited information is available/collated on ship/fauna strikes, noise effects and wake/turbulence. Limited information available at present concerning ship strikes may indicate that little is reported, but may also indicate that incidence is uncommon. • Rapid access to GIS information (visualisation and layering of info) is an area of weakness for agencies where incident response staff must rely on other agencies to provide assistance. For example, some spatial data are not available quickly enough for small incidents. AMSA and MSQ have sophisticated GIS and Spatial mapping resources. GBRMPA's Spatial Data Centre has only limited capacity to service the Authority's spatial mapping and analysis needs across all activities. 	Workshops and discussions	Adequate	Stable

PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding shipping	4	<ul style="list-style-type: none"> Studies conducted regularly by Commonwealth and Queensland Government agencies, and by ports. These consider economic factors, with some focused upon social factors. GBRMPA has supported studies intended to quantify risks and identify management measures to reduce risks to the environment from shipping. This includes socio-economic studies. SELTMP examined community understanding and level of concern for GBR indicated exaggerated concerns for shipping. However there is less concern about shipping than previous studies indicated. More effective articulation actual risks from shipping in GBR would be helpful, so that the allocation of finite management resources is not skewed by unfounded public concerns or misapprehensions. For example, GBRMPA incident reports typically refer to generic 'vessel' incidents, such as groundings and sinkings, when in reality these incidents are small pleasure and commercial fishing vessels, and not 'ships' as per the accepted definitions. 	<ul style="list-style-type: none"> Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area 2013 GBRMPA / Queensland Government Field Management Program Annual Report 2014–15. GBRMPA / Queensland Government Field Management Program Annual Report 2015–16. SELTMP 2017. 	Adequate	Stable
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding shipping	3	<ul style="list-style-type: none"> This is considered to be most relevant in relation to shipping movements in some specific nearshore and/or remote locations where items of significance may be vulnerable to damage from shipping. Uncertain as to how much information of potential relevance to shipping is available. 	<ul style="list-style-type: none"> Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area 2013 Guidelines: Woppaburra Traditional Owner heritage assessment 	Uncertain	Stable
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding shipping	3	<ul style="list-style-type: none"> Relevant in relation to shipping movements in some specific locations where recognised items of historic significance may be vulnerable to damage from anchoring or wake effects. AMSA has worked with GBRMPA to develop a heritage management plan to protect and manage the Dent Island lightstation, which was established in 1879. A heritage register and 	<ul style="list-style-type: none"> Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area 2013 Aids to navigation webpage and Dent Island Lightstation Heritage Management Plan Interactive map of AMSA historic heritage lighthouses Guidelines: Management of research in the Great Barrier Reef Marine Park; Guidelines Historic heritage assessment: lightstations and aids to navigation (not yet published); Guidelines Historic 	Uncertain	Improving

		<p>management plans for other sites are being developed.</p> <ul style="list-style-type: none"> GBRMPA has established value assessment guidelines for <u>historic heritage values</u>. 	<p><u>heritage assessment: Maritime cultural heritage protection special management area; Guidelines Historic heritage assessment: WWII features, sites, and voyages and shipwrecks; Guidelines: Historic heritage assessment: other places of historic and social significance.</u></p>		
PR13 Relevant standards are identified and being met regarding shipping	4	<ul style="list-style-type: none"> The relevant standards are those set via IMO processes, including the Associated Protective Measures applying in the GBR, Torres Strait and Coral Sea as PSSAs. These are regulated in Australia by a range of measures, including Port State Control inspections. Furthermore, many ship charterers apply ship vetting practices when contracting ships to visit GBR ports. Although relevant standards are being met, there is a need for constant vigilance and also a need to anticipate future risk trends in order to manage pre-emptively. There is a very high compliance by ships to REEFVTS reporting requirements. 	<ul style="list-style-type: none"> AMSA webpage on <u>environmental legislation and standards</u> AMSA <u>Marine Notices</u> webpage AMSA <u>annual report 2015-16</u> p 33 	Adequate	Stable
PR14 Targets have been established to benchmark management performance for shipping	3	<ul style="list-style-type: none"> Although the overall objectives of managing to achieve safe shipping within the GBR Region are self-evident, it is difficult to discern where these may have been distinctly articulated as concise targets, including key indicators. Suggest that this may need to be rectified if this finding is indeed valid. MSQ does have clearly articulated objectives, with some measurement criteria, for the implementation of REEFVTS. 	<ul style="list-style-type: none"> https://www.msq.qld.gov.au/Shipping/Reefvts.aspx 	Adequate	Improving
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for shipping	4	<ul style="list-style-type: none"> There is a planned work program developed by the North East Shipping Management Group, with periodic reporting against the attainment of objectives. The 'planned work program' in relation to shipping and how it relates to their management 	<ul style="list-style-type: none"> <u>NESMP work program progress report</u> February 2016 <u>NESMP work program status report</u> January 2018 AMSA <u>annual report 2014-15</u> page 65 and 57 	Adequate	Improving

		objectives for the Marine Park is summarised by the Reef 2050 Plan, and a number of other initiatives, including the NESMP.			
OP2 Implementation of management documents and/or programs relevant to shipping have progressed in accordance with timeframes specified in those documents	4	<ul style="list-style-type: none"> Implementation appears to be generally sufficient and in accordance with planned schedule. Progress on addressing introduced marine pests is underway but slow, especially in relation to biofouling. Incident related actions in the NESMP progressing in a timely way – e.g. national shipping incident investigation guidelines have been developed. Updated REEFVT.S user guide for shipping published in 2017 	<ul style="list-style-type: none"> NESMP work program progress report February 2016 NESMP work program status report January 2018 Queensland Biosecurity Capability Review - Final Report, September 2015. Queensland Biosecurity Capability Review Interim Response, Department of Agriculture and Fisheries, 2016. 	Adequate	Improving
OP3 The results (in OP1 above) have achieved their stated management objectives for shipping	3	<ul style="list-style-type: none"> REEFVTS achieved 100% safe vessel movements in 2016/17. Difficult to assess in the absence of clearly measurable objectives, noting that success is generally characterised by the absence of incidents. Nevertheless, shipping within the GBR in general terms continues to be conducted safely and with minimal long-term deleterious environmental outcomes. 	<ul style="list-style-type: none"> NESMP work program progress report February 2016 NESMP work program status report January 2018 	Adequate	Improving
OP4 To date, products or services have been produced in accordance with the stated management objectives for shipping	4	<ul style="list-style-type: none"> Implementation appears to be sufficient, with a number of actions of both the NESMP and Reef 2050 LTMP implemented effectively. 	<ul style="list-style-type: none"> NESMP work program progress report February 2016 NESMP work program status report January 2018 	Adequate	Improving
OP5 Effective knowledge management systems regarding shipping are in place within agencies	3	<ul style="list-style-type: none"> Effective knowledge management system understood to be available within shipping regulatory agencies, MSQ's and AMSA's AIS monitoring systems allow real-time monitoring and intervention in relation to vessel traffic in the GBR. AMSA, MSQ and GBRMPA have their own database of shipping incidents. Lack of central or shared databases, and no shared situational awareness type database across AMSA / 	<ul style="list-style-type: none"> MSQ publication 'Maritime Matters' 	Uncertain	No clear trend

		<p>GBRMPA / MSQ may be counter-productive to the interests of management effectiveness.</p> <ul style="list-style-type: none"> • Rapid access to GIS information (visualisation and layering of info) is an area of weakness for agencies where incident response staff must rely upon other agencies to provide assistance. • National ship strike database for cetaceans possibly not being actively used by management and industry in the GBR. 			
OP6 Effective systems are in place to share knowledge on shipping with the community	2	<ul style="list-style-type: none"> • While community disquiet regarding shipping remains (although at a lower level), it is often misplaced, and it may be considered that current systems are inadequate in this regards. • AMSA and MSQ have useful public webpages in relation to shipping, • GBRMPA's LMACs are available as a two-way information conduit. 	<ul style="list-style-type: none"> • https://www.amsa.gov.au/marine-environment/marine-pollution/shipping-management-plans • https://www.msq.qld.gov.au/ 	Uncertain	Stable
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing shipping and moving towards the attainment of the desired outcomes.	4	<ul style="list-style-type: none"> • The Region is one of the world's most regulated shipping areas. The Authority, together with AMSA and MSQ, works closely to protect the marine environment from the potential adverse consequences of shipping operations. • Measures to increase navigational safety and reduce the risk of ship groundings and collisions have included, compulsory pilotage, recommended pilotage, an automatic identification system and mandatory vessel reporting and monitoring (REEFVTS). These management arrangements mean there have been few shipping incidents relative to the large number of ship movements in the Region. Nevertheless, it is critical to ensure that these processes and their capacity keep in step with forecast increases in shipping activities. 	<ul style="list-style-type: none"> • <u>Outlook Report 2014</u> sections 5.8 and 6.6, Ch 9, and Appendix 7 etc. • Chapters 4,5,6 <u>Great Barrier Reef Region Strategic Assessment Report</u>, and <u>Great Barrier Reef Coastal Zone Strategic Assessment Report</u>, noting information gaps were identified. • <u>AMSA Annual Report 2015-16</u> p 4 • <u>AMSA annual report 2014-15</u> p 74 • <u>NESMP work program progress report</u> February 2016 • <u>NESMP work program status report</u> January 2018 	Adequate	Improving

		<ul style="list-style-type: none"> • Invasive marine species risks from ships, particularly in relation to biofouling, are not effectively managed. • The capacity of key GBR channels and passages (eg. Hydrographers) will possibly be limiting factors in relation to peak shipping capacity of GBR Region, particularly in relation to need to 'surge' ships to sea in narrow timeframes (eg. period of cyclone warning). These issues and potential limitations need to be recognised and effectively managed. • Since the introduction of REEFVTS in 2004, the average number of groundings by 'ships' in the Great Barrier Reef and Torres Strait per year has declined from 1.42 per 10,000 transits to 0.15 per 10,000 transits in 2013, a reduction of 89%. Furthermore, there have been no such groundings since 2013. This reduction in groundings is attributed to REEFVTS providing timely and accurate information to assist onboard decision making by ships' bridge teams. • In December 2014 a new IMO-adopted recommended two-way route in the BR and Torres Strait came into effect. Automatic Identification System data from early 2015 shows that its implementation has been a success, with most ships following the new route. 			
OC2 The outputs relating to shipping are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	4	<ul style="list-style-type: none"> • The Zoning Plan regulates where ships can transit. This management tool, in combination with the REEF VTS contributes to ensuring the values of the GBR are protected. • Other actions implemented by AMSA and/or MSQ, as well as via the NESMP, have the collective effect of managing potential risks of shipping in the GBR region, such that incidents are rare, their significance generally minimal, and responses timely and effective. 	<ul style="list-style-type: none"> • NESMP • Zoning Plan 	Adequate	Stable

		<ul style="list-style-type: none"> There remains a need for continual vigilance to ensure that controls, management processes and their functional capacities keep in step with changes in shipping risk profiles. 			
OC3 The outputs (refer OP1 and 3) for shipping are reducing the major risks and the threats to the Great Barrier Reef	4	<ul style="list-style-type: none"> The current Great Barrier Reef and Torres Strait vessel traffic service is considered effective at preventing shipping incidents. ReefVTS achieved 100% safe vessel movements in 2016/17. AMSA undertook numerous initiatives across its functions in the five years before 2014 aimed at improving the safety of ship operations in the region in and around the GBR. These covered a range of operational areas, such as the oversight of ship and cargo safety, improvements to aids to navigation and provision of much greater levels of response equipment and consumables at key regional storage facilities in relation to possible pollution of the sea. AMSA commissioned analyses of shipping industry risks in the region to identify growth trends in terms of vessel traffic levels, major routes, ship types and sizes and risk profiles over time. 	<ul style="list-style-type: none"> Grech et al 2013 <u>Guiding principles for the improved governance of port and shipping impacts for the Great Barrier Reef</u> 	Adequate	Stable
OC4 Use of the Great Barrier Reef relating to shipping is demonstrably environmentally sustainable	4	<ul style="list-style-type: none"> This is agreed, at current and short to mid-term forecast levels of shipping. The capacity of key GBR channels and passages (eg. Hydrographers) will possibly be limiting factors in relation to peak shipping capacity of GBR Region, particularly in relation to need to 'surge' ships to sea in narrow timeframes. Turbidity and wake effects in shallow/narrow passages and channels may also be a limiting factor, for which more research and evaluation is required. Turbidity effects may be exacerbated in locations where UKCM employed. 	<ul style="list-style-type: none"> <u>Outlook Report 2014</u> sections 5.8 and 6.6, Ch 9, and Appendix 7 etc. Chapter 4,5,6 <u>Great Barrier Reef Region Strategic Assessment Report</u>, and <u>Great Barrier Reef Coastal Zone Strategic Assessment Report</u>, noting information gaps were identified. 	Adequate	Stable
OC5 Use of the Great Barrier Reef relating to shipping is demonstrably economically sustainable	4	<ul style="list-style-type: none"> The value of shipping to regional and national economies is well documented. Earnings would 	<ul style="list-style-type: none"> <u>Outlook Report 2014</u> sections 5.8 and 6.6 	Adequate	Stable

		seem to exceed costs, hence suggesting economic sustainability	<ul style="list-style-type: none"> Chapter 5 <u>Great Barrier Reef Region Strategic Assessment Report</u>, and <u>Great Barrier Reef Coastal Zone Strategic Assessment Report</u>, noting information gaps were identified. 		
OC6 Use of the Great Barrier Reef relating to shipping is demonstrably socially sustainable understanding and/or enjoyment	4	<ul style="list-style-type: none"> The Zoning Plan provides for a multi-use Marine Park that allows for a range of both commercial and recreational activities for the benefit and enjoyment of the community, intended to be consistent with conservation objectives. Risks associated with potential user-conflict may arise as a result of increases in shipping activity and/or recreational and other activity, although should be manageable if preceded by effective planning. Coastal communities and those in the hinterland are reliant to varying extents on ports and shipping for the import/export of goods and services and local/regional economic activity. 	<ul style="list-style-type: none"> <u>Ship Anchorage Management Report in the Great Barrier Reef World Heritage Area 2013</u> <u>Outlook Report 2014</u> sections 5.8 and 6.6 Chapter 5 <u>Great Barrier Reef Region Strategic Assessment Report</u>, and <u>Great Barrier Reef Coastal Zone Strategic Assessment Report</u>, noting information gaps were identified 	Adequate	Stable
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address shipping	4	<ul style="list-style-type: none"> There are effective partnerships among AMSA, MSQ and GBRMPA -- the key shipping management stakeholders. North East Shipping Management Group and its working groups provide for project/issue level consultation and engagement between key stakeholders. MoU exists between Queensland Ports Corporation and GBRMPA. The need for community engagement re shipping, <i>cf</i> management of other aspects of GBR Region, is considered to be modest. Nevertheless, effective partnerships are valuable and would appear to be being nurtured by North East Shipping Management Group and GBRMPA. 	<ul style="list-style-type: none"> GBRMPA <u>WPOM</u> webpage 	Adequate	Stable

Table 36 Calculation of grades for Traditional Use of Marine Resources

Component of Management	Rating	Justification	Evidence/sources	Confidence	Trend
CONTEXT					
CO1 The values of the Great Barrier Reef relevant to Traditional Use of Marine Resources are understood by managers	4	<ul style="list-style-type: none"> • Eight Traditional Use of Marine Resources Agreements and one marine Indigenous Land Use Agreement apply to approximately 24 per cent of the Great Barrier Reef Marine Park and include. <ul style="list-style-type: none"> ○ Kuuku Ya'u People's Indigenous Land Use Agreement ○ Traditional Use of Marine Resources Agreements for Giringun region; Woppaburra; Wuthathi; Port Curtis Coral Coast; Lama Lama; Yuku-Baja-Muliku, Gunggandji (Cairns area), Yirriganydji (Cairns-Port Douglas). • Information about the values relevant to the Traditional Use of Marine Resources includes biodiversity information about dugong, turtles, and other marine species. As spelt out in draft TUMRA policy, this information is quite good and is improving, based on recent scientific surveys, and is understood by managers both within GBRMPA/ QPWS and Traditional Owner groups. • However, knowledge of some places where there are no formal TUMRAs is weaker, and knowledge is focussed on dugong and turtles with some other species little understood. 	<ul style="list-style-type: none"> • Woppaburra Traditional Owner heritage assessment guidelines. • Traditional Owner heritage assessment guidelines • Independent assessment of Land and Sea Country Partnerships Program 2017 by Knott and Associates • TUMRA video 2015 	Adequate	Stable
CO2 The current condition and trend of values relevant Traditional Use of Marine Resources are known by managers	3	<ul style="list-style-type: none"> • While knowledge of the condition and trend of dugong and turtles is still good, rapid changes due to climate change and bleaching mean that conditions can change very rapidly. 	<ul style="list-style-type: none"> • TUMRA video 2016/17 – monitoring programs being undertaken by TUMRA groups to monitor condition and trend: https://www.youtube.com/watch?v=Y2Y_qHuklyc • Cape York NRM 2016 fact sheet: • Australian Coral Reef Society TUMRA contribution about science and monitoring: • Independent assessment of Land and Sea Country Partnerships Program 2017 by Knott and Associates (available 16 October 2017). • FMP Annual Business Plan 2016-17; FMP Business Strategy 2017-2021 	Adequate	Declining
CO3 Impacts (direct, indirect and cumulative) associated with	3	<ul style="list-style-type: none"> • Impacts attributable to Traditional Use of Marine Resources undertaken according to customs and traditions are considered to have only minor or localised effects. This is distinct from illegal poaching of species of 	<ul style="list-style-type: none"> • Dugong and turtle surveys show traditional hunting is not the greatest threat to turtle and dugongs: • Animal care and protection and traditional hunting FACT SHEET 2016 	Adequate	Stable

Traditional Use of Marine Resources are understood by managers.		<p>conservation concern undertaken without the customary approval of the relevant Traditional Owners.</p> <ul style="list-style-type: none"> • Some direct impacts to the capacity for Traditional Owners to use the Reef (such as conflicting use and disturbance to cultural sites) are known and some can be managed through existing planning tools and permits. • Impacts such as coastal development, habitat degradation, boat strikes, pollution, netting and sedimentation as well as legacy impacts have affected Traditional Owners' use of the marine environment. • Reassessment of TUMRA take limits informed by the latest science has put in place sustainable hunting limits • There have been some recent examples (2015-16) of disputes in multiple-use areas where the activities of tourism operators and visitors conflicts with Traditional Owner cultural use of marine resources in the sea country areas where they express their native title rights. Some of these tensions have been relieved by the Gunggandji TUMRA signed in June 2016. • In the four years to 2016, four cases of alleged cruelty to turtles and dugongs were reported, but there was insufficient evidence in all cases to mount any investigation. 	<ul style="list-style-type: none"> • Workshops 		
CO4 The broader (national and international) level influences relevant to Traditional Use of Marine Resources are understood by managers.	4	<ul style="list-style-type: none"> • There is a good understanding by managers in GBRMPA, the Field Management Program and Traditional Owner groups of the legislation and policies relating to both Native Title Rights and the conservation of the threatened species, and to international obligations in this regard. • Traditional Owners have attended significant international meetings such as the 2016 World Conservation Congress and the 2017 International Marine Protected Areas Congress, and have reported back to GBRMPA and to their communities. • There is increased awareness of biosecurity and animal welfare issues. 	<ul style="list-style-type: none"> • Notes from meetings and conferences • Draft Aboriginal and Islander Heritage Strategy • Reef 2050 Plan 	Adequate	Stable
CO5 The stakeholders relevant to Traditional Use of Marine Resources are well known by managers.	4	<ul style="list-style-type: none"> • There is strong engagement by both GBRMPA and field management staff with Traditional Owner groups in relation to Traditional Use of Marine Resources. However, there has been some concern that the capacity of GBRMPA to engage on a continuing basis, rather than being focussed on meeting targets for new agreements, is declining. New funding announced in 2018 should boost capacity to engage. • Traditional Owners have spent an increased time on field vessels, increasing the level of communication and understanding between them and other field management staff. • Traditional Owners have also been heavily involved in planning such as for Reef 2050, the Aboriginal and Torres Strait Islander Heritage Strategy and Blueprint for the Reef as well as more local initiatives 	<ul style="list-style-type: none"> • Land and Sea Country Partnerships Program annual report • Draft Aboriginal and Islander Heritage Strategy • Joint Field management program annual Reports • Workshop discussions 	Adequate	Stable

		such as the Woppaburra guidelines and TUMRA agreements and contracts.			
PLANNING					
PL1 There is a planning system in place that effectively addresses Traditional Use of Marine Resources	4	<ul style="list-style-type: none"> TUMRAs (Traditional Use of marine resources agreements) can be regarded as the key planning product for local Traditional Owner groups. There are now eight accredited TUMRAs in the GBRMP with a further two in development. This is an increase of two since 2014. These cover 24% of the GBR. Since 2014, reef-wide planning products have included Reef 2050, which has a theme dedicated to Heritage and 23 actions specific to Traditional Owners. A draft Aboriginal and Torres Strait Islander Heritage Strategy has been developed. The 2017 Whitsundays Plan of Management gives more specific attention to Traditional Use of Marine Resources than has been the case in previous plans. A draft Policy on Traditional Use of Marine Resources has been developed Plans for the conservation of dugongs and turtles are also applicable: the National Dugong and Turtles Protection Plan 2014-17 is now out of date. This plan includes programs and activities to help understand the risks posed by traditional use (both legal and illegal poaching). A recovery plan for marine turtles was released in 2017. This includes a target 'The sustainable management of marine turtles by Aboriginal and Torres Strait Islander communities and ranger groups to maintain long-term cultural, spiritual and economic associations with marine turtles is supported' The new Queensland Sustainable Fisheries Strategy also concerns Traditional Use of Marine Resources and may not yet be understood by mant managers. See notes in the Heritage Table about the many confusing layers and types of planning facing Traditional Owners of the Reef. 	<ul style="list-style-type: none"> GBRMPA website list the current TUMRAs Draft Aboriginal and Islander Heritage Strategy Reef 2050 Plan Whitsunday Plan of Management 2017 Recovery Plan for Marine Turtles in Australia 2017-2027, Draft Aboriginal and Islander Heritage Strategy Queensland Sustainable Fisheries Strategy 2017-2027 Land and Sea Country Partnerships Program MERI Plan and Program Logic 2013-2018 	Adequate	Improving
PL2 The planning system for Traditional Use of Marine Resources addresses the major factors influencing the Great Barrier Reef Region's values.	3	<ul style="list-style-type: none"> Planning does address the major factors relating to traditional use. However, significant impacts to some species of turtle are caused by hunting outside the jurisdiction of Australia, and cannot be covered in the plans discussed in PL1. Other significant risks currently affecting dugong and turtle populations include sea level rise, abandoned fishing nets, increased temperatures, sedimentation and damage from floods and cyclones. 	<ul style="list-style-type: none"> GBRMPA website list the current TUMRAs Draft Aboriginal and Islander Heritage Strategy Reef 2050 Plan Whitsunday Plan of Management 2017 Recovery Plan for Marine Turtles in Australia 2017-2027, Queensland Sustainable Fisheries Strategy 2017-2027 Draft Traditional Use of Marine Resources policy 	Adequate	Declining

PL3 Actions for implementation regarding Traditional Use of Marine Resources are clearly identified within the plan	4	<ul style="list-style-type: none"> Each TUMRA contract involves deliverables and an attached implementation plan that sets out actions. TUMRA implementation involves a partnership of managers working with Traditional Owners to implement their sea country management activities. In 2015 new TUMRA contracts were negotiated and signed for three years (previously they had been annual contracts) to facilitate longer-term planning around actions on country. Plans of Management in high use areas clearly articulate and manage conflicting uses which may affect cultural heritage in Cairns, Whitsundays and Hinchinbrook. The Joint Field Management Program (GBRMPA/NPSR) has a specific strategy on Indigenous Engagement which includes actions for management of Traditional Use of Marine Resources. Its annual Business Plans set clear implementation actions for field activities. The Lama Lama Hunting Strategy was developed under the TUMRA to set in place rules for how authorised Traditional Owners should sustainably hunt within the TUMRA area. This is the first of its kind. 	<ul style="list-style-type: none"> Workshop discussions Reef 2050 Plan TUMRA plans are not available for public review Land and Sea Country Partnerships Program MERI Plan and Program Logic 2013-2018 	Limited	Improving
PL4 Clear, measurable and appropriate objectives for management of Traditional Use of Marine Resources have been documented	4	<ul style="list-style-type: none"> Objectives for TUMRAs are clearly spelt out to include sustainable use and protection of Indigenous heritage. Other plans mentioned in PL1 also have specific and appropriate objectives. 	<ul style="list-style-type: none"> Workshop discussions Draft Aboriginal and Islander Heritage Strategy Reef 2050 Plan Whitsunday Plan of Management 2017 Recovery Plan for Marine Turtles in Australia 2017-2027 Queensland Sustainable Fisheries Strategy 2017-2027 	Limited	Stable
PL5 There are plans and systems in place to ensure appropriate and adequate monitoring information is gathered in relation to Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> Mechanisms are in place for TUMRA groups to report on their take under a TUMRA, however this is not formally followed up. In 2016-17 the GBRMPA's Cultural Knowledge Management System (a database) was upgraded to enable Key Performance Indicators to be built to enable TUMR contracts and deliverables to be monitored. In 2017 aspects of the Land and Sea Country Partnerships were audited by GBRMPA's internal auditor to determine amongst other things, if there was appropriate and adequate monitoring information gathered in relation to Traditional Use of Marine Resources. The study concluded that output and outcome reporting of TUMRA activities could be improved to ensure that both tangible and intangible outcomes are being monitored and reported. 	<ul style="list-style-type: none"> Draft Aboriginal and Torres Strait Islander Heritage Strategy Land and Sea Country Partnerships Program MERI Plan and Program Logic 2013-2018 Indigenous partnerships section plan FMP 5 year Business Strategy and Annual Business Plan (see Strategy on Indigenous Engagement for specific actions) 	Limited	Stable
PL6 The main stakeholders &/or the	4	<ul style="list-style-type: none"> TUMRAs can only be developed with effective engagement with Traditional Owners. A new TUMRA takes at least 1-2 years to develop 	<ul style="list-style-type: none"> TUMRA video 2015 The Yirriganydji TUMRA 	Adequate	Stable

local community are effectively engaged in planning to address Traditional Use of Marine Resources		<p>before it can be submitted for accreditation. This bulk of this period is spent on effectively engaging with communities.</p> <ul style="list-style-type: none"> For evaluation of engagement in other planning processes, see the Indigenous Heritage table. 	<ul style="list-style-type: none"> Websites of Indigenous groups LSCPP progress/annual reports Independent assessment of Land and Sea Country Partnerships Program 2017 by Knott and Associates (available 16 October 2017). Internal audit report of the TUMRA program. Cultural Knowledge Management System database 		
PL7 Sufficient policy currently exists to effectively address Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> Policy on Traditional Use of Marine Resources is under development. The draft Aboriginal and Torres Strait Islander Heritage Policy and the draft 'Heritage in the Great Barrier Reef Marine Park' also contain relevant guidelines and policy statements. Changes to the GBR permissions systems implemented in 2017 provide more policy for assessment of permit applications including those that could affect Traditional Use of Marine Resources (including application for activities that could interfere with traditional activities). 	<ul style="list-style-type: none"> Permission System policy Draft Policy on Traditional Use of Marine Resources Draft Aboriginal and Islander Heritage Strategy Guidelines: Woppaburra Traditional Owner Heritage Assessment Traditional Owner Heritage Assessment Guidelines 	Adequate	Improving
PL8 There is consistency across jurisdictions when planning for Traditional Use of Marine Resources	4	<ul style="list-style-type: none"> TUMRAs are jointly accredited by GBRMPA and Queensland The Queensland Great Barrier Reef Coast Zoning Plan and the Commonwealth Great Barrier Reef Marine Park Zoning Plan has complimentary zoning. The Field Management Program works in cooperation with Traditional Owner groups, including TUMRA groups. An informal interdepartmental working group has been formed to increase alignment and consistency between Indigenous Ranger programs (run by EHP and DOEE), the joint field management program and the TUMRA program. The number of different plans in the Region (see PL1) can be confusing, but where TUMRAs exist, these are the clear guiding documents for Traditional use. 	<ul style="list-style-type: none"> TUMRAs Draft Aboriginal and Islander Heritage Strategy Reef 2050 Plan Whitsunday Plan of Management 2017 Recovery Plan for Marine Turtles in Australia 2017-2027 Queensland Sustainable Fisheries Strategy 2017-2027 	Adequate	Stable
PL9 Plans relevant to Traditional Use of Marine Resources provide certainty regarding where uses may occur, the type of activities allowed or specifically disallowed, conditions under which activities may proceed and circumstances where	4	<ul style="list-style-type: none"> Each TUMRA has a publicly available map showing the boundary of the TUMRA (these were updated and made available in 2016). Rules within each TUMRA differ, depending on what was negotiated and accredited, but these are clear about where and how activities may occur. The TUMRAs identify the number of each species that may be taken within the clearly identified sea country boundaries. This information is not available to the public. Within TUMRA areas, plans regarding access to resources and extractive activities are clear and provide certainty, and Zoning Plan provides certainty for activities that may compete with Traditional Use. 	<ul style="list-style-type: none"> TUMRAs 	Adequate	Stable

impacts are likely to be acceptable.					
INPUTS					
IN1 Financial resources are adequate and prioritised to meet management objectives to address Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> Funding has been stable to increasing, but the demands on the funding are increasing rapidly. Each TUMRA requires inputs for maintenance of the agreement, there are a number of TUMRAs in development, and other Indigenous groups would also like to move towards having TUMRAs. Compliance work is also involved and requires continual resourcing, including for training of Indigenous compliance officers. The Land and Sea Country Partnerships Program allocates ~\$2 million per year to facilitate the expansion of the TUMRA program, IRAC, and Indigenous Engagement. The National Dugong and Turtle Protection Plan (2014-2017) also allocated specific funds for Indigenous Rangers. See Indigenous Heritage table. 	<ul style="list-style-type: none"> Joint Field Management Business Plans and Annual Reports 	Adequate	Stable
IN2 Human resources within the managing organisations are adequate to meet specific management objectives to address Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> As the demand for more TUMRAs increases, there is more pressure on GBRMPA and QPWS staff who must take enough time to build relationships and negotiate agreements. This is also a time demand on leaders within Traditional Owner organisations (both paid and unpaid time). It is not known whether the re-organisation of GBRMPA's Indigenous Partnerships Section will affect their ability to deliver in this area. There has not been a decrease in any staff numbers. See Indigenous Heritage table for more general comments on staffing and expertise in the field management program and Indigenous Ranger programs. 	<ul style="list-style-type: none"> Joint Field Management Business Plans and Annual Reports Workshop discussions 	Adequate	Stable
IN3 The right skill sets and expertise are currently available to the managing organisations to address Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> Many GBRMPA and QPWS staff involved in this program are Aboriginal and Torres Strait Islander people with knowledge and expertise in this topic. In 2016–17, seven per cent of joint Field Management Program positions were Indigenous-identified and held by Aboriginal or Torres Strait Islander people. Much expertise is also contributed by the Traditional Owner groups. Most people working in this field are well trained and suited to their work Specialist scientists provide expertise in the assessment of turtle and dugong populations and other marine life. 	<ul style="list-style-type: none"> Operational Review final report Workshop discussion 	Adequate	Stable

		<ul style="list-style-type: none"> In 2015-2017 GBRMPA developed and delivered a contextualised Specialised Indigenous Ranger Program. This involved guiding over 20 Indigenous rangers (external to GBRMPA) to achieve a Certificate IV in Government (Statutory Compliance), increasing their skills and confidence to complete compliance activities. 			
IN4 The necessary biophysical information is currently available to address Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> Traditional Use of Marine Resources may include: fishing, collecting (for example shellfish) and hunting. Therefore any biophysical information relevant to species or habitats that support Traditional Use activities is important. Primarily, the focus is on dugongs, turtles and habitats and conditions that support those species. The population model for northern Great Barrier Reef green turtles developed in 2011–12 was updated in 2015-16. Information of current condition and trend of dugong populations is available with regular surveys, but as noted in CO2, this can rapidly change after event such as cyclones and floods. The turtle nesting beaches of GBR are mostly known and key sites are monitored each year for nesting success. The Joint Field Management Program is assisting the Marine Monitoring Program in improving the assessment of seagrass condition in the subtidal areas since 2015. Compliance records indicate the extent of reported illegal take. 	<ul style="list-style-type: none"> Recovery Plan for Marine Turtles in Australia 2017-2027, Cumulative impact policy/Net Benefit Policy Raine Island Recovery Project Aerial Dugong Surveys results Regular turtle monitoring 	Adequate	Stable
IN5 The necessary socio-economic information is currently available to address Traditional Use of Marine Resources	2	<ul style="list-style-type: none"> Improved understanding of Traditional Owner needs is a specific target of the Reef 2050 Integrated Monitoring, Modelling and Reporting Program (RIMReP) and indicators for the 'human dimensions' of the GBR are currently being developed. However, little information have yet been yielded from this study. When developing TUMRAs, Traditional Owners have extensive discussions within their communities and make informed decisions about their aspirations and directions. Extensive consultation and workshops during planning processes in 2016-17 has increase understanding of Traditional Owners' positions on traditional use and other topics. 	<ul style="list-style-type: none"> Heritage monitoring and reporting information (GBMRPA website) The Yirriganydji TUMR 	Limited	Improving
IN6 The necessary Indigenous heritage information is currently available to address Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> Much of the Indigenous Heritage information is retained and shared by Traditional Owners with their group, but it is used by them in developing TUMRAs. When developing TUMRAs, Traditional Owners have extensive discussions within their communities and make informed decisions about their aspirations and directions. See also Indigenous Heritage table. 	<ul style="list-style-type: none"> Guidelines: Woppaburra Traditional Owner Heritage Assessment The Yirriganydji TUMR TUMRA video 2015 	Limited	Improving

IN7 The necessary historic heritage information is currently available to address Traditional Use of Marine Resources	NA				
IN8 There are additional sources of non-government input (e.g. volunteers) contributing to address Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> Traditional Owners are working on country, usually on a voluntary basis. Participation in broad volunteer activities in the Region include Eyes and Ears, monitoring, beach clean ups, and restoration. Some Traditional Owner groups coordinate community activities including Junior Ranger Programs. 	<ul style="list-style-type: none"> See Land and sea Country Partnerships Annual Reports – in particular, seagrass monitoring, junior ranger programs. Tangaroa Blue Report – Marine Debris Training 	Limited	Improving
PROCESSES					
PR1 The main stakeholders &/or industry(ies) are effectively engaged in the ongoing management of Traditional Use of Marine Resources	4	<ul style="list-style-type: none"> See PL6 and Indigenous Heritage table. Traditional Owners are involved in managing their access to marine resources, especially through TUMRAs. This can be further improved as more TUMRAs are developed 	<ul style="list-style-type: none"> 15-16 and 16-17 Land and sea Country Partnerships Annual Report. TUMRA video 2015 The Yirriganydji TUMR Raine Island Recovery Project Guidelines: Woppaburra Traditional Owner Heritage Assessment Websites of Traditional Owners groups 	Adequate	Stable
PR2 The local community is effectively engaged in the ongoing management of Traditional Use of Marine Resources	4	<ul style="list-style-type: none"> See PR1 - the local community with regard to Traditional Use is predominantly the Traditional Owners in the local communities 	<ul style="list-style-type: none"> 15-16 and 16-17 Land and sea Country Partnerships Annual Report. TUMRA video 2015 The Yirriganydji TUMR Raine Island Recovery Project Guidelines: Woppaburra Traditional Owner Heritage Assessment Websites of Traditional Owners groups 	Adequate	Stable
PR3 There is a sound governance system in place to address	3	<ul style="list-style-type: none"> Where TUMRAs have been accredited, the governance system is well set up. In other areas there may be gaps such as clarity about sustainable take, equity and good management processes. 	<ul style="list-style-type: none"> Great Barrier Reef Marine Park Act 1975 (s2A – protection of cultural values) Great Barrier Reef Marine Park Regulations (part 2B TUMRA's and r 88Q and 88R) Native Title Act 1993 	Limited	Stable

Traditional Use of Marine Resources			<ul style="list-style-type: none"> • CBD - Article 8 (j) • IRAC Charter of Operations for Reef Advisory Committees 		
PR4 There is effective performance monitoring, including regular assessment of appropriateness and effectiveness of tools, to gauge progress towards the objective(s) for Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> • Performance planning protocols within the GBRMPA internally evaluate effectiveness of GBRMPA staff. • Traditional Owner meetings in 2016-17 also evaluated the current status of engagement. • In 2017, the GBRMPA contracted an independent assessor to review the effectiveness of the TUMRA program. • In 2017, the internal audit committee of the agency undertook an audit of TUMRA contracts and associated project and financial management. • Reporting back on the TUMRA implementation is not always effective. 	<ul style="list-style-type: none"> • Reef Rescue Indigenous Land and Sea Country Partnerships Program reports. • Independent TUMRA review report • Internal Audit Report (TUMRA program) 	Adequate	Stable
PR5 Appropriate training is available to the managing agencies to address Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> • See IN3 and the Indigenous Heritage table. • From 2015 to September 2017 the Joint Field Management Program delivered a Foundational Management Course aimed at training joint field management staff in basic aspects of the work program and cultural competency (which includes TUMR). Some GBRMPA staff attended this training course. • In 15-16 and 16-17 the Indigenous Compliance team at GBRMPA delivered a series of compliance education and training programs to Indigenous Ranger Groups, Traditional Owners, and other management staff. This resulted in 81 Aboriginal and Torres Strait Islander people receiving training. • There is a lack of cultural capability training within GBRMPA, but this has been delivered to Joint Field Management Staff • The presence of Indigenous staff and of Traditional Owners on vessels is an effective mechanism for other staff to learn about Traditional Use of Marine Resources, while also providing valuable learning opportunities for Traditional Owners. (see videos for examples) 	<ul style="list-style-type: none"> • TUMRA video 2015 • The Yirriganydji TUMR • Field Management Program reports 	Adequate	Improving
PR6 Management of Traditional Use of Marine Resources is consistently implemented across	4	<ul style="list-style-type: none"> • See PL8 – TUMRAs are endorsed by both State and Commonwealth governments and are developed and implemented by and with Traditional Owners, so there is a high degree of consistency and cooperation. • The Draft Policy on Traditional Use of Marine Resources is a joint policy for consistency (GBRMPA/QPWS). 	<ul style="list-style-type: none"> • Draft Policy on Traditional Use of Marine Resources 	Adequate	Stable

the relevant jurisdictions		<ul style="list-style-type: none"> An interdepartmental informal working group has been formed to increase alignment and consistency between Indigenous Ranger programs, the joint field management program and the TUMRA program. 			
PR7 There are effective processes applied to resolve differing views/ conflicts regarding Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> A checklist has been developed to ensure all concerns are considered in developing TUMRAs. This includes engaging with neighbouring Traditional Owner Groups and getting their written endorsement before a TUMRA boundary is set. Within each TUMRA contract is a dispute resolution clause and process. In the past, some conflicts have arisen between Traditional Owners and tourist industry regarding take of marine species. These issues have been generally resolved. Illegal take of turtle and dugong by non-traditional owners and outside groups 	<ul style="list-style-type: none"> TUMRA checklist 	Limited	Stable
PR8 Impacts (direct, indirect and cumulative) of activities associated with Traditional Use of Marine Resources are appropriately considered.	3	<ul style="list-style-type: none"> See CO 3 Most Traditional Owner groups in the GBR continue to exercise their Native Title rights and hunt or collect marine resources. Many of the groups with a TUMRA have placed a voluntary moratorium on the take of turtle and dugong. TUMRA groups manage sustainably set hunting limits through a permitting process. Hunting permit systems perform many functions including permission, monitoring, recording and facilitating compliance actions. Green turtles and dugong are vulnerable to a range of impacts including boat strike, habitat degradation, by-catch, pollutants, marine debris and disease. Current known legal hunting by Traditional Owners is considered to be sustainable, provided other threats are addressed. Illegal hunting of threatened species by people who are not Traditional Owners (known as poaching) is a concern of Traditional Owners and managing agencies Cumulative impacts remain difficult to understand, especially with effects of climate change, sea level rise, coral bleaching and extreme climate events. 	<ul style="list-style-type: none"> Cumulative impact policy Guidelines: Woppaburra Traditional Owner Heritage Assessment Traditional Owner Heritage Assessment Guidelines Raine Island Recovery Project Recovery Plan for Marine Turtles in Australia 2017-2027. 	Limited	Stable
PR9 The best available biophysical research and/or monitoring information is applied appropriately to make	4	<ul style="list-style-type: none"> Information applied to the development of TUMRAs and other permits includes regular surveys and population estimates of both turtles and dugongs. In some cases, Traditional Owners have chosen to forego any take of these species due to concerns about their populations. 	<ul style="list-style-type: none"> Regular dugong surveys Turtle surveys and monitoring Seagrass monitoring Dugong report 2017 	Adequate	Stable

relevant management decisions regarding Traditional Use of Marine Resources					
PR10 The best available socio-economic research and/or monitoring information is applied appropriately to make relevant management decisions regarding Traditional Use of Marine Resources	n/a				
PR11 The best available Indigenous heritage information is applied appropriately to make relevant management decisions regarding Traditional Use of Marine Resources	2	<ul style="list-style-type: none"> • See IN5 • As part of the consultation process for the development of an Aboriginal and Torres Strait Islander Heritage Strategy, workshops in 2017 discussed Traditional Owner issues and aspirations with Woppaburra, IRAC and the Queensland Senior Ranger Forum. This included socio-economic values relevant to TUMR. 	<ul style="list-style-type: none"> • Draft Aboriginal and Torres Strait Islander Heritage Strategy consultation 	Limited	Improving
PR12 The best available historic heritage information is applied appropriately to make relevant management decisions regarding Traditional Use of Marine Resources	n/a				
PR13 Relevant standards are identified and being met regarding	3	<ul style="list-style-type: none"> • Standards have been set for TUMRAs, both in terms of process and content, and these are being met. TUMRAs cannot be hurried and must be acceptable to all concerned. 	<ul style="list-style-type: none"> • The Draft Policy on Traditional Use of Marine Resources is a joint policy for consistency (GBRMPA/QPWS). 	Adequate	Stable

Traditional Use of Marine Resources					
PR14 Targets have been established to benchmark management performance for Traditional Use of Marine Resources	3	<ul style="list-style-type: none"> The joint Field Management Program has a specific 5 year business strategy which includes targets to benchmark performance (e.g. set number of TUMRA meetings attended, target to increase the number of Traditional Owners on Marine Parks vessels over time). The Land and Sea Country Partnership Program also has targets set through its MERI planning process. 	<ul style="list-style-type: none"> Field Management Program business strategy 	Adequate	Stable
OUTPUTS					
OP1 To date, the actual management program (or activities) have progressed in accordance with the planned work program for Traditional Use of Marine Resources	4	<ul style="list-style-type: none"> GBRMPA's Land and Sea Country Program, achieved 100 percent completion against all milestone requirements. Compliance Training has been delivered to over 500 Traditional Owners, which has exceeded the five-year target of training 200 Traditional Owners by 250%. Since Outlook 2014, the target of 10 TUMRAs in development or implementation has been met. There are standardised contracts for all TUMRAs. Enhanced compliance has occurred through the development and delivery of a two year specialised Indigenous Ranger program. Implementation of other planning and management tools for Traditional Use of Marine Areas (i.e. 39ZA agreement, site management plan, special management area, data sharing agreements and a formal Traditional Use reporting system) have not occurred. The TUMRA program contributes substantially to 13 Reef 2050 actions, and good progress is being made on all of these. 	<ul style="list-style-type: none"> 2017 Progress Report on the Land and Sea Country Program FMP annual reports 	Adequate	Improving
OP2 Implementation of management documents and/or programs relevant to Traditional Use of Marine Resources have progressed in accordance with timeframes specified in those documents	4	<ul style="list-style-type: none"> See OP1. All actions are on track. 	<ul style="list-style-type: none"> 2017 Progress Report on the Land and Sea Country Program 	Adequate	Improving
OP3 The results (in OP1 above) have	4	<ul style="list-style-type: none"> See OP1 	<ul style="list-style-type: none"> See Land and Sea Country Program Progress reports GBRMPA annual Reports since 2014 	Limited	Stable

achieved their stated management objectives for Traditional Use of Marine Resources		<ul style="list-style-type: none"> In those communities where TUMRAs are established, this has formed a major focus for activities related to management of Sea Country and Indigenous Heritage. Outcomes include better management of marine resources. Social, economic and health outcomes are not known, but are likely to also be substantial, as are outcomes from Indigenous Ranger program generally (van Bueren et al., 2015). 			
OP4 To date, products or services have been produced in accordance with the stated management objectives for Traditional Use of Marine Resources	4	<ul style="list-style-type: none"> See OP1. Work has been in accordance with stated objectives. 	<ul style="list-style-type: none"> Land and Sea Country Program Progress reports GBRMPA Annual Reports 	Adequate	Stable
OP5 Effective knowledge management systems regarding Traditional Use of Marine Resources are in place within agencies	2	<ul style="list-style-type: none"> Cultural Knowledge Management System (CKMS) designed and implemented. TUMRA staff can use it to record on country meetings and events and will be using it to manage TUMRA contracts and deliverables – however is not being used at present The CKMS has a module to hold culturally sensitive information relevant to different Traditional Owner groups (e.g. story lines, voice recordings, sensitive locations). This database can be accessed externally so Traditional Owners with a login and password can enter their own information and manage it. This component of the system is not being used until the separate project – Cultural Protocol and data sharing agreement template is complete. GBRMPA is using a precautionary approach to ensure the right permission and systems are in place to hold and protect culturally sensitive material. 	<ul style="list-style-type: none"> Cultural Knowledge Management System implementation and upgrade. 	Adequate	Improving
OP6 Effective systems are in place to share knowledge on Traditional Use of Marine Resources with the community	3	<ul style="list-style-type: none"> Traditional Owners accessing their country share information with other staff, their communities and the wider community, and this is supported through the TUMRA program. Activities including Junior Ranger programs involve young people. Not all information can be shared with the wider community. TUMRAs are confidential, but maps showing TUMRA areas are available on the internet. Not all sections of the community and industry understand the rights and protocols around Traditional Use of Marine Resources A greater understanding of how much traditional use occurs and where is needed to support evidence based statements about traditional use, inform spatial management under TUMRAs and understand its role relative to other pressures such as entanglement, habitat loss, and climate change. 	<ul style="list-style-type: none"> http://www.gbrmpa.gov.au/our-partners/traditional-owners/story-place The Yirriganydji TUMRA 	Adequate	Improving

		<ul style="list-style-type: none"> Some TUMRA groups are active in promoting community activities. In 2016 GBRMPA hosted the 40 Year Anniversary of the Reef event open to the public. A specific stall focused on partnerships with Traditional Owners and TUMRAs. A 4 page information sheet on Traditional Owner connections to country has been produced 12 Traditional Owners were supported by GBRMPA under the sponsorship program to attend the IUCN World Conservation Congress in Hawaii in September 2016. They presented on the TUMRA program and shared knowledge of traditional use with the international community 			
OUTCOMES					
OC1 The relevant managing agencies are to date effectively addressing Traditional Use of Marine Resources and moving towards the attainment of the desired outcomes.	4	<ul style="list-style-type: none"> The TUMRA program is a very effective initiative and is moving towards desired outcomes. Under the program, the GBRMPA is moving towards more TUMRAs across the Great Barrier Reef. Sustained resourcing of the program will be needed, with an understanding that all TUMRAs will require continuing support after contracts are signed and renewed. Compliance has focussed on continuing education and training, in particular compliance and investigations training (a first of its kind in Australia). 	<ul style="list-style-type: none"> Independent review of the TUMRA program – Oct 2017 	Adequate	Improving
OC2 The outputs relating to Traditional Use of Marine Resources are on track to ensure the values of the Great Barrier Reef are protected (refer CO1)	3	<ul style="list-style-type: none"> An aerial survey for dugongs and large juvenile and adult marine turtles that was conducted in October-November 2016 (Sobstzick et al. 2017) add to the evidence that dugongs in the survey region are in much better condition than at the time of the last such survey in 2011. The improvement is especially evident in the southern Great Barrier Reef (GBR) region. 	<ul style="list-style-type: none"> Sobstzick et al. 2017 report on dugong and turtle monitoring – showing signs of recovery in the south for dugong. Marine Turtle Recovery Plan 2017 – traditional use is not a major pressure. 	Adequate	Improving
OC3 the outputs (refer OP1 and 3) for Traditional Use of Marine Resources are reducing the major risks and the threats to the Great Barrier Reef	3	<ul style="list-style-type: none"> Scientists believe that Traditional Use of Marine Resources in the GBR is not a significant threat to turtle or dugong. Agreements under the TUMRAs ensure that any take of these species is under strict agreed guidelines. TUMRAs with remaining Traditional Owner groups would help to ensure this outcome in the future. More significant threats to turtles and dugongs are from climate change, cyclones, sedimentation, use outside the Region, pollution and rubbish, and boat strike. 	<ul style="list-style-type: none"> Marsh and Hamman (2016) article "Traditional Hunting gets the headlines but is not the greatest threat": 	Adequate	Stable

OC4 Use of the Great Barrier Reef relating to Traditional Use of Marine Resources is demonstrably environmentally sustainable	4	<ul style="list-style-type: none"> • See OC2 and OC3 • Scientists believe that Traditional Use of Marine Resources in the GBR is not a significant threat to turtle or dugong. Agreements under the TUMRAs ensure that any take of these species is under strict agreed guidelines. • TUMRAs with remaining Traditional Owner groups would help to ensure this outcome in the future 	<ul style="list-style-type: none"> • Marsh and Hamman (2016) article "Traditional Hunting gets the headlines but is not the greatest threat": 	Adequate	Stable
OC5 Use of the Great Barrier Reef relating to Traditional Use of Marine Resources is demonstrably economically sustainable	3	<ul style="list-style-type: none"> • TUMRAs assist by helping people to get back into the country and through employment. Capacity building enables better opportunities for employment and engagement in other processes. 	<ul style="list-style-type: none"> • Working for our country report illustrates general benefits from Indigenous Ranger program • TUMRA video 2015 • The Yirriganydji TUMRA 	Adequate	Stable
OC6 Use of the Great Barrier Reef relating to Traditional Use of Marine Resources is demonstrably socially sustainable, in terms of understanding and/or enjoyment	4	<ul style="list-style-type: none"> • TUMRAs recognise the responsibilities and management roles for country of Traditional Owners, and enables agreed access to traditional foods on country meeting their customary responsibilities. • Green Island has been an area of intermittent conflicts of use between tourism, Traditional Owners and on occasion the public. The issues have been associated with Traditional Use in this area (some real and some alleged and unfounded through lack of evidence or reporting). 	<ul style="list-style-type: none"> • Working for our country report illustrates general benefits from Indigenous Ranger program • TUMRA video 2015 • The Yirriganydji TUMRA 	Adequate	Stable
OC7 The relevant managing agencies have developed effective partnerships with local communities and/or stakeholders to address Traditional Use of Marine Resources	4	<ul style="list-style-type: none"> • The TUMRA program has established strong partnerships with over 17 Traditional Owner clan groups (through 10 TUMRAs) • Giringun Ranger Fee for service arrangement – strong partnerships have now led to 12 month contracts with the FMP. Due to strong partnerships and extensive capacity on the ground, in 2016 Giringun Rangers supported the Cape Upstart oil spill response with other government agencies. • Raine Island Recovery Project has established effective partnerships with several Traditional Owner Groups. • Partnerships developed through TUMRAs are strong and productive, but will take continuing communication to maintain. 	<ul style="list-style-type: none"> • Joint Field Management reports • The Yirriganydji TUMRA • TUMRA video 2015 	Adequate	Stable