



Australian Government



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Ms Christine McDonald
Secretary
Standing Committee on Environment & Communication Reference Committee
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Via Post and Email

Dear Ms McDonald

Submission to the Senate Inquiry into Management of the Great Barrier Reef

Thank you for your letter regarding the Senate inquiry into the management of the Great Barrier Reef (GBR). The Australian Institute of Marine Science (AIMS) welcomes the opportunity to contribute to the inquiry.

Today the GBR faces pressures from multiple sources, ranging from coral bleaching events, a series of severe cyclones, Crown of Thorns Starfish outbreaks, declining water quality from agriculture run-off and dredging operations. Understanding of the impact of these stressors on the Reef, especially their cumulative impacts and the Reef's capacity to respond to these stresses (its resilience) is critical for ongoing effective management.

AIMS is a key independent science provider and adviser to GBRMPA on a range of issues including impacts of agricultural run-off, port developments, Crown of Thorns Starfish and climate change. The widely reported 50% decline of coral cover on the GBR, documented in a recent publication by AIMS, was an outcome of a comprehensive long-term monitoring of the GBR lead by my Institute. GBRMPA uses AIMS' science and advice across a range of issues to develop improved monitoring programs and adaptive management solutions as part of a long-term sustainability plan for the Reef.

The Great Barrier Reef (the Reef) is the world's largest marine park and a World Heritage Area. The Reef is a multi-use area and its goods and services contribute around \$6 billion annually to the Australian economy. The Great Barrier Reef Marine Park Authority (GBRMPA) has been managing the Great Barrier Reef since its inception four decades ago giving consideration to its multiple uses and to the various local, regional and global stressors acting on the reef. The Authority has established an international reputation as a leader in marine park management. In the last GBR rezoning plan, it led the way in setting new international benchmarks for establishment of no-take areas that are comprehensive, adequate and representative. GBRMPA's international reputation is, in part, based on the emphasis it has placed on scientific information to manage the GBRWHA. This can be seen in the number research projects and publications that have been sponsored by the Authority or have been written by its staff (documented in GBRMPA annual reports).

We offer the following comments against some of the specific issues listed by the inquiry. Our input relates primarily to GBRMPA, as the main agency responsible for management of the marine sector of the GBRWHA and a key end-user of AIMS research.

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Nevertheless, it is clear that responsibility for protecting the health and integrity of the GBRWHA is not solely GBRMPA's. There is a pressing need to ensure that we have a coherent and active program of environmental management across all levels of Government, covering all of components of the "socio-ecological system" that impact on the GBR – from coastal development, to land management practices, to the multiple-use-management of the GBRMP.

The recent Queensland and Commonwealth Government Strategic Assessments comprehensively reviewed the multiple elements of the GBRWHA "system". These reviews were open for public comment/review and we have yet to see responses from the two level of Governments to what we understand was significant input from a wide range of interested parties.

The suggestion within the Commonwealth SA of adaptively managing the GBRWHA using a target based performance metrics, underpinned by an Integrated Monitoring Program designed to provide managers with a comprehensive and fit-for-purpose information base is a welcome innovation but a significant challenge given the complexity of the system.

Specific Comments

a) Management of the impacts of industrialisation

AIMS is not in a position to comment on the adequacy of any permit or management decisions for this issue. We note, however that GBRMPA has previously required detailed long-term and reactive monitoring of direct dredging impacts within the GBRMP and that this work has been carried out to a high scientific standard and with expert peer review. The less direct impacts of spoil dumping and long-term dispersal of spoil material, and the cumulative impact of repeated dredging or multiple dredging in the region has received less attention, but GBRMPA has sought professional advice and commissioned reviews on dredge spoil disposal options for recent proposals. In general the large-scale and long-term cumulative impacts of major dredging programs on tropical reef and benthic habitats is poorly described in the peer reviewed scientific literature. In recognition of this problem, GBRMPA and AIMS recently co-convened an expert Dredging Panel to review what is known about the impacts of dredging on the GBRWHA. The results of the Panel's work will be communicated later this year, however it is highly likely that work to address identified knowledge gaps will require a significant investment of resources over several years. This would be used to gather field data, conduct targeted laboratory and field experiments and to use these results to model cumulative impacts at relevant time and spatial scales.

b) Management of the impacts of agricultural runoff

This is a highly complex issue involving socio-economic as well as scientific issues, covering areas outside GBRMPA's core jurisdiction. GBRMPA played a leading role in the identification of catchment (agricultural and grazing) runoff as a key threat to the GBR and was a driving force behind the establishment of Reef Plan and Reef Rescue. As a result of these initiatives, we are now seeing early signs of reduction in the sediments and nutrients entering the GBR. Research is underway to determine whether the current efforts are likely to have the desired positive impacts on water quality over the time frames required. Depending on the outcomes of this research there may be a need to increase efforts and/or shift the geographic focus of terrestrial interventions in order to reach the targets set out in Reef Plan.

d) Ensuring the GBRMPA has independence, resourcing and capacity ...

The increasing number and complexity of issues facing management agencies responsible for the GBRWHA means that effective, balanced decision-making must draw on an exponentially increasing volume of information on the physical, ecological, social, economic and cultural settings, as well as their trends and interactions. Fully dealing with this complexity and information load requires both capability and capacity that may exceed GBRMPA's current resources, both in terms commissioning the acquisition or collation of empirical data and interpreting these in a policy, decision-making context. Additional resources would allow for significant improvements in the timeliness and quality of decisions and policies to protect the GBR. Further comments on the need to adequately resource the initiatives outlined in the Strategic Assessment Program Report are provided in section g).

e) Adequacy, timeliness and transparency of independent scientific work ...

GBRMPA has historically placed great emphasis on the acquisition and use of scientific information in effective management of the marine park. It has ensured that it includes relevant research experience and professional qualifications on its staff and has actively promoted and funded both short-term and strategic research to address key management issues. GBRMPA uses science evidence from multiple sources to support decision-making, including long-term baselines and an in-depth system-level understanding to predict environmental risk. GBRMPA regularly communicates with the scientific community both to seek advice on current management issues, to stay abreast of current scientific understanding of the status, threats, and vulnerabilities of the GBR and communicate its research priorities to the scientists.

Ideally, GBRMPA would be able to commission all scientific work that it needed for effective decision-making. For specific information needs related to regulatory decisions it is able to require the provision of information either prior to or during a permitted activity. In most cases this requirement would then be passed to the developer who would then commission the work (at its cost) and provide the results back to the Authority. While this mechanism allows for adequate resourcing of that scientific work, it does not guarantee independence. There is a clear potential for conflicts of interest since the oversight and quality control of the work is carried out by the developer, whose interests in controlling development costs could conflict with the Authority's interests in minimizing environmental and social impacts. A more effective mechanism to ensure independence, which has been successfully applied by GBRMPA in the past, would be for the Authority, or some other independent agency, to commission and oversee the work, while still requiring the developer to pay the costs.

While resourcing of specific scientific work associated with permit decisions can be sourced from permit applicants, the Authority has substantial additional science information needs relating to the development of policies and management plans and day to day management that cannot be funded this way. A significant amount of the scientific work of relevance to management of the GBRWHA (primarily environmental research and monitoring) is carried out by research institutions such as AIMS, CSIRO and universities with funding from research granting agencies such as the ARC, from specific government funded programs such as NERP, or from internal research budgets. GBRMPA is only able to influence the research agenda of these agencies indirectly, through publication of its research priorities and other forms of communication. In general, the information needs articulated by GBRMPA significantly exceed the resources available from all the above sources, so it is important that a careful prioritisation of research, taking which considers needs, feasibility and timescales for results is carried out. This could best be achieved through the development of a collaborative GBR Strategic Research Plan involving GBRMPA the Commonwealth and State Governments and key research providers.

g) Effectiveness of the strategic assessments in protecting the reef from further decline

AIMS has previously provided detailed input into the Strategic Assessment (SA) documents as part of the public submissions process. Our main comments are summarised below.

The Commonwealth and state governments have effectively synthesised a number of critical issues for the GBRWHA and proposes ways forward to enhance the management and protection of the GBRWHA. The initial sections of the documents provide a comprehensive compilation of information on indicators drivers, impacts and responses that will serve as a valuable information source for future reference. GBRMPA and the Qld Government are commended on their compilation of this resource in a relatively short time frame.

While the review of existing information is comprehensive, the depth of coverage across the many topics is variable with respect to the attention paid to, and quality of, knowledge synthesis. Scientific literature specific to the GBR is generally well referenced, however the international science related to our understanding of general drivers and impacts in tropical systems is not as comprehensively reviewed.

Almost all of the "bad news" regarding status and trend is contained somewhere within the chapters of the document, however the summaries of chapters tend to either downplay or leave the bad news until the end of the sections. For example, the statement that "at the scale of the GBR region, most of its habitats and species are assessed to be in good to very good condition." may be technically correct, but as most of

its KEY habitats and vulnerable species (corals, seagrasses, seabirds, dolphins, dugong, turtles) are in very poor to poor condition and declining in the southern GBR, it would seem appropriate to lead with this point.

The methods for the assessments of condition and trends of MNES and of management effectiveness and estimates of confidence in these assessments are not well explained. There is no indication of how subject matter experts, reef scientists, reef users and GBRMPA managers contributed to the assessments even though there is scope for bias in all of these groups (with the exception of subject matter experts). Details on how the condition and trend ratings were derived should be included.

Another concern about the trend and condition assessments is that it is based on indicators of MNES, with “biodiversity, including habitats and species” forming the only entry point into what is the key issue – whether the GBRWHA ecosystem is functioning effectively so as to maintain species, habitats, social and economic values etc. If this issue was addressed more explicitly then it would be possible to provide greater weight to certain attributes, such as keystone species/groups, critical habitats, energy and nutrient fluxes etc.

The treatment of cumulative impacts in the both assessment requires strengthening particularly its treatment on the definition, identification and quantification of cumulative impacts. It is positive, however, that both assessments strongly emphasise the need to develop a Cumulative Impacts policy and guidelines to assess cumulative impacts. There should be a critical discussion of the challenges to develop these instruments and realistic timeframes should be set, based on an adaptive management approach.

The need for effective monitoring to support management decisions is greater now than ever, and will increase as cumulative pressures on the GBRWHA grow under global and regional environmental change. The program report acknowledges this need for extended and more integrated monitoring in the presentation of new initiatives. The role of an Integrated Monitoring Program (IMP) needs to be broader than a program to measure the success of the plan. It needs to be a platform used to comprehensively link historical trends to present-day status and to risks under projected environmental conditions. AIMS believes that the proposed IMP should be developed as soon as possible and that significant resources will be needed to both fill gaps in the existing coverage of key indicators and to develop and monitor new indicators that will arise from the decision to adopt a target-based management approach for the GBRWHA.

Within the Program Reports, the structure and logic of the proposed response to the issues raised in the SA is generally very good. Overall we agree with the initiatives proposed in the Program Report. However, there is only limited assessment of the scope and scale of additional work and additional resources that may be required to fully implement these initiatives. This could lead to incorrect assumptions on the additional work needed and on the capacity of existing agencies and stakeholders to undertake the work. We suggest that a separate assessment of the cost and resource implications of the new initiatives that includes consultation with relevant stakeholders should be carried out before the Program scope and timelines are finalized. If the resources needed to carry out the various recommendations and initiatives set out in the Assessments and Program Reports are not fully scoped and provided within appropriate time scales, the ability of these documents to catalyse the protection of the Reef from further decline will be significantly compromised.

We trust that these comments are helpful to the work of the inquiry and would be happy to elaborate further on any issues if this would be of further assistance.

Yours sincerely

John Gunn
CEO