



Australian Government



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6 September, 2018

Ms Christine McDonald
Secretary of the Senate Environment and Communications References Committee
Department of the Senate, Parliament House,
Canberra ACT 2600
E: ec.sen@aph.gov.au

Dear Ms McDonald

Re: QUESTIONS ON NOTICE FROM INQUIRY INTO GREAT BARRIER REEF 2050 PARTNERSHIP PROGRAM

The Australian Institute of Marine Science is pleased to respond to written questions on notice received from the Senate Environment and Communications References Committee on 14 and 15 August 2018 regarding the *Great Barrier Reef 2050 Partnership Program*.

1. What was the level of funding provided to AIMS by the Commonwealth for the Reef Restoration and Adaption Program (RRAP) over the last three financial years?

AIMS received \$5,967,000 in total from the Commonwealth for the Reef Restoration and Adaption Program (RRAP). This was delivered over two financial years:

- \$2,931,000 in FY2017-18 and
- \$3,036,000 in FY2018-19.

2. What research is currently being undertaken through the RRAP?

The RRAP program currently covers concept feasibility / possible program design activities. As such, undertaking research is not the primary focus, however in order to achieve current project objectives, significant research is being undertaken by a team of more than 100 persons spread across 17+ organisations. This research is designed to assist in addressing several key questions:

- How will the reef respond to climate change and existing management practices, and can this trajectory be adjusted through the deployment of a new class of restoration and adaptation tools. In both instances how will this impact on the social, environmental and economic values of the reef?
- What interventions might be possible, their risks, what R&D would be required to develop and deploy them, what might this cost?
- What is the design of an associated R&D program and how might this be delivered - governance, stakeholder engagement, government investment requirements, third party engagement opportunities (other countries, private sector and philanthropic)?

Townsville address: PMB No 3
Townsville MC, Qld 4810
Tel: (07) 4753 4444
Fax: (07) 4772 5852

Darwin address: PO Box 41775,
Casuarina, NT 0811
Tel: (08) 8920 9240
Fax: (08) 8920 9222

Perth address: Indian Ocean Marine Research Centre
The University of Western Australia, M096,
35 Stirling Highway, Crawley WA 6009 Australia
Tel: (08) 6369 4000 Fax: (08) 6488 4585

The research activities sit within the following broad areas of program activity:

Area	Research
Stakeholders and Future Partnering	<ul style="list-style-type: none"> • Identification of the key stakeholders, initial assessments of their perspectives on restoration and adaptation interventions, and planning of how they would participate in the R&D phase. • Assessing potential interventions against the existing regulatory and risk management context, and determining where further investment/development will be required to effectively regulate and risk manage future restoration and adaptation interventions. • Assessing existing related international efforts, and developing opportunities to grow future R&D partnerships.
Interventions	<ul style="list-style-type: none"> • Identifying and assessing existing methods, identification and of new potential methods. Assessing technology readiness levels (TRL's), research and development requirements and risk. • Currently twelve categories of interventions and many more delivery methods are under assessment.
Production & Deployment	<ul style="list-style-type: none"> • Assessing methods to deliver the interventions at the scales indicated as being required by the reef modelling. In some instances this includes developing production and deployment concept designs and assessing costs of implementation. • Identification of technology readiness and the research and development required progress production and deployment systems to at TRL status suitable for commercial transfer.
Reef and Values Modelling	<ul style="list-style-type: none"> • Quantitatively assessing how the reef might respond under different future climate and management scenarios (water quality management and crown of thorns starfish control) out to 2070. • Modelling where feasible (much of this modelling will continue into the R&D phase) the impact of deploying different intervention types at different scales. • Assessing the social, environmental and economic values of the GBR, how these might respond to the predicted reef changes and to what extent these changes can be mitigated using the restoration and adaptation interventions being assessed.

3. What funding has AIMS received from the Great Barrier Reef Foundation (the Foundation) over the last five financial years? Please provide a list of the research projects which were funded and the accountability requirements for the grants.

AIMS has undertaken a range of projects over the last five financial years that have included funding provided by the Great Barrier Reef Foundation. All projects had proposals (research plans and budgets) prepared by AIMS and, where relevant, collaborating organisations, addressing GBRF strategic science directions. These proposals were generally invited by the GBRF. The proposals were reviewed according to GBRF's governance systems and processes (e.g. the International Scientific Advisory Committee).

After approval, formal funding agreements were entered into, detailing project tasks, outputs, milestones and payment schedules. Reporting requirements generally included annual progress reports (for multi-year studies) and a final report. In addition, research outcomes were published as scientific journal articles and disseminated via other products such as webpages.

These projects are summarised below, and illustrate both the GBRF funding contribution and the AIMS co-investment.

AIMS task code & Project Name	Project lead (List Institution)	GBRF Funding	AIMS Co-investment
Project CReefs: 2105-Refining estimates of coral reef biodiversity	AIMS-led consortium of scientists from the Australian Museum, the Museum and Art Gallery of the Northern Territory, Museum Victoria, the Queensland Museum, the South Australian Museum and the Western Australian Museum, University of Adelaide, Murdoch University, the South Australian Herbarium and the Smithsonian Institution.	306,534	565,650
Project e Reefs Subprojects: 2418 - Coupled bio-physical modelling of the GBR shelf ecosystem 2658 - eReefs - Stream 5 Marine Monitoring and Modelling 2659 - eReefs - Stream 1 Visualisation and Reporting 2710 - eReefs Priority Observations-Glider Observations	Collaboration between GBRF, CSIRO, AIMS, BOM, and QLD Government.	1,095,157	942,946
2506 – Ocean acidification: Increasing the available carbonate chemistry data for the GBR	AIMS, CSIRO	805,000	696,992
2507 – Ocean acidification: Developing a Carbon Budget for the Great Barrier Reef	AIMS, Southern Cross Uni	270,000	240,970
2514 - Carbon dioxide seeps: A collaborative field study	AIMS	282,500	428,265
2798 - Cryo-conservation of high priority coral and Symbiodinium species from the Great Barrier Reef	AIMS, Taronga Western Plains Zoo	30,000	9,968
2801 - Prototype reef resilience mapping tool to support decision	Collaboration between GBRF, AIMS, UQ, CSIRO, GBRMPA	250,000	295,709
2804 - Ocean Acidification: Ecological response analysis, and cross- platform comparison of the available carbonate chemistry data for the Great Barrier Reef	CSIRO, AIMS	269,000	232,894
2837 - Using genetic connectivity to improve source reef model outputs and predictions of recovery	Collaboration between GBRF, AIMS, UQ, JCU	105,963	62,710

4. An email from CSIRO, dated 8 May 2018, tabled in the Senate on 13 August 2018, indicated that AIMS had concerns regarding the continued use of RRAP work. Could AIMS:

- **Provide details of these concerns?**
- **Have these concerns been raised with the Department of the Environment and Energy or the Minister? If so, what was the response?**

In all responses which follow regarding the reef restoration and adaptation program (RRAP), we use the following terminology to distinguish between the phases of the program, both current, and those which might occur in the future:

RRAP Feasibility Study (FS): The current \$ 6m feasibility study, funded by the Commonwealth government, led by AIMS with partners CSIRO, JCU, GBRMPA, UQ, QUT, and GBRF. The objective of the current study, due for completion in early 2019, is to investigate the technical feasibility of a range of reef restoration and adaptation techniques, understand the risks associated with their full scale deployment on the GBR, and the costs and benefits associated with such an effort. A business case for further investment in future R&D in reef restoration and adaptation will also be provided.

RRAP R&D Phase: Possible next phase of research and development of reef restoration and adaptation options, which would be informed and justified by the results of the RRAP Feasibility Study (above).

RRAP Implementation Phase: Would overlap with the RRAP R&D phase (above), and would involve the at-scale deployment of combinations of techniques developed and tested during the R&D phase.

AIMS CEO met with the Secretaries of both departments on May 11, 2018 to discuss how the funds would be managed and distributed by the GBRF. In the meeting, AIMS raised not “reinventing the wheel” with additional layers of governance in a space where several well established advisory bodies and plans are already in place (Reef 2050 plan, Reef Advisory Committee, Independent Expert Panel); details of how the funding would be managed; whether the \$100m earmarked for science would be guided by the current RRAP feasibility study (which the government had funded with \$6m earlier in the year) and to what extent; the ability of the GBRF funding to enable a coordinated, collaborative approach among the nation’s science agencies and universities; and whether the current RRAP feasibility study should be altered to accommodate the changed funding environment.

The points AIMS raised have been addressed in the funding agreement.

5. What do you consider the risks to managing the RRAP given that it appears that CSIRO and AIMS would not be leading the RRAP?

AIMS has in no way abdicated RRAP leadership. We are currently focused on delivering the best possible feasibility study to guide the next phase of RRAP, should it be funded.

Because no decisions have been made on leadership of the research science component of the GBRF grant, AIMS is mitigating risks associated with this uncertainty by focusing on delivering the current RRAP Feasibility study. The current study includes a deliverable on recommended governance and participation in executing the RRAP R&D phase, if it should eventuate, consistent with the funding agreement.

The objectives of the RRAP FS are incredibly challenging and, for this reason AIMS established a broad partnership with complementary skills to progress the concept feasibility and planning project. Risks to managing the RRAP R&D phase will be linked to the extent these recommendations are adopted and the amount of money that is actually released for research. The RRAP feasibility study will include both technical recommendations regarding R&D phase priorities and recommendations on how the program can best be delivered, including governance and program management. The GBRF is an existing RRAP participant and

therefore is involved in the development of these recommendations, in particular providing guidance as to their obligations under the Reef Trust Grant and their associated and emerging internal governance arrangements.

RRAP overall is an outcome driven R&D program that will require expertise based governance and program management. The GBRF governance arrangements including those established under the Reef Trust Granting arrangement are high level and not designed to provide the day-to-day governance and program management required for execution of the RRAP R&D phase, should it eventuate. There is therefore a risk that, without such arrangements, research organisations such as AIMS will find it difficult to invest. However, these needs can be adequately addressed at the RRAP program level.

6. Has AIMS been approached to provide seconded staff to the Foundation? If so, provide details including the number of staff and funding arrangements.

AIMS has not been asked, nor is it providing, seconded staff to the Great Barrier Reef Foundation.

7. What funding has AIMS received over the past five years from external partners? How much of that revenue was from (a) other levels of government, (b) private sector and (c) philanthropy or other sources

AIMS has earned revenue from external partners in each of the past five financial years. These are summarised in the following table by source: other level of Government; private sector; and philanthropic/other.

Year	2014	2015	2016	2017	2018
	\$'000	\$'000	\$'000	\$'000	\$'000
(a) Other Levels of Government	11,468	10,591	9,485	7,755	8,035
(b) Private Sector	5,259	6,769	5,867	6,868	11,689
(c) Philanthropic and Other Sources	182	36	972	1,695	1,702
Total	16,909	17,396	16,324	16,318	21,426

8. What support – both financial and in kind – has the AIMS provided to the Great Barrier Reef Foundation over the past five years?

AIMS has provided limited financial support to the Great Barrier Reef Foundation over the past five financial years. This is summarised in the following table:

Year	2014	2015	2016	2017	2018
	\$'000	\$'000	\$'000	\$'000	\$'000
Financial Support - Chairman's Panel	4	4	-	4	4
Financial Support - Donation	16	16	-	16	16
Financial Support - Other **	-	-	-	44	50
In-kind Support ***	-	-	-	-	-
Total	20	20	-	64	70

Note: * Donations are tax-deductible contributions to the GBRF, as part of their overall fundraising activities, associated with Chairman's Panel membership.
 ** The Reef Restoration and Adaptation Program engaged a contractor through the GBRF to work on the RRAP business case.
 *** There was no AIMS in-kind support provided through non-science processes. Please refer to the answer to Question 3 (above) which identifies the level of co-investment in science research projects.

9. What processes does the AIMS undertake to allocate funding to reef projects? Please provide details, and how this funding is delivered.

AIMS receives funding in two main ways: 1) as annual direct appropriation from government, as an Australian publically funded research agency (PFRA); and 2) as contracted research projects, delivered as commercial contracts with other government agencies (eg GBRMPA), industry (eg Woodside Energy), and philanthropic organisations (eg Paul Allen Foundation). In any of these contracting situations, AIMS may choose to co-invest.

AIMS allocates its government appropriation funding based on a several factors:

- AIMS strategy defines the high level (5 to 10yr) key research objectives and targeted impacts. These objectives have been developed in partnership with key stakeholders including government, the private sector and the broader community.
- Nested under this strategy are a number of progressive goals and associated R&D program designs that factor targeted outputs/impacts, current knowledge state and the new knowledge (R&D) requirements and their logical sequence.
- AIMS then prioritises its government appropriation funding into the identified R&D areas factoring their relative priority, collaboration opportunities and the availability/alignment of third party research funding.

AIMS funds base operating costs not covered by its government funding appropriation and an extension of the research/value it can deliver by delivering research services to third parties. The levels fluctuate, however on average 30% our annual revenue of approximately \$65m is externally sourced, and over 50% of our research is underpinned by third party revenue. This external revenue is not “donated” to AIMS, it is provided to deliver specific research of interest to third parties. From a Great Barrier Reef perspective, this means that AIMS prioritises research that is aligned with programs such as the relevant NESP hubs and GBRMPA needs. We partner widely with CSIRO and Australian universities. Research on Western Australian and NT reefs is similarly influenced by WA Government and offshore industry needs. AIMS has been working to characterise and monitor key West Australian reefs for over 25 years, funded in-part by significant industry contributions.

From a GBR perspective, the historical journey of understanding coral reefs also influences reef research investment decisions. When AIMS was originally established, very little was known about coral reefs and the initial GBR focus was on exploring and characterising the system. Over time our research has progressed along a trajectory of understanding how the reef functions, assessing how it is changing through time, determining what is driving this change and assessing management actions to minimise or reverse adverse changes. This process resulted in AIMS identifying several years ago the need for research into reef restoration and adaptation. With our partners, this initial work has now developed into the current RRAP (Reef Restoration and Adaptation Program) feasibility phase, and the planned R&D phase. Similarly, AIMS is co-leading the design phase of the Reef Integrated Monitoring Program for GBRMPA (RIMReP is another component of the GBRF \$443 m package) to enable more direct assessments of changing reef conditions and the efficacy of management activities.

Yours sincerely

Dr Paul Hardisty
Chief Executive Officer