The Auditor-General
Audit Report No.15 2008–09
Performance Audit

The Australian Institute of Marine Science's Management of its Co-investment Research Program

Australian Institute of Marine Science

Australian National Audit Office

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Australian National
Audit Office

Canberra ACT
18 December 2008

Dear Mr President
Dear Mr Speaker

The Australian National Audit Office has undertaken a performance audit in the *Australian Institute of Marine Science* in accordance with the authority contained in the *Auditor-General Act 1997*. Pursuant to Senate Standing Order 166 relating to the presentation of documents when the Senate is not sitting, I present the report of this audit and the accompanying brochure. The report is titled *The Australian Institute of Marine Science's Management of its Co-investment Research Program.*

Following its presentation and receipt, the report will be placed on the Australian National Audit Office's Homepage—http://www.anao.gov.au.

Yours sincerely

Ian McPhee
Auditor-General

The Honourable the President of the Senate
The Honourable the Speaker of the House of Representatives
Parliament House
Canberra ACT

AUDITING FOR AUSTRALIA

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Contents

Tables

Figures

Abbreviations

AIMS	Australian Institute of Marine Science
ANAO	Australian National Audit Office
ARC	Australian Research Council
CEO	Chief Executive Officer
CFO	Chief Finance Officer
CRC	Cooperative Research Centre
CSG	Commercial Services Group
CSIRO	Commonwealth Scientific and Industrial Research Organisation
FTE	Full Time Equivalent
GBRMPA	Great Barrier Reef Marine Park Authority
GBROOS	Great Barrier Reef Ocean Observation System
IMOS	Integrated Marine Observing System
IP	Intellectual Property
KRA	Key Result Area
MTSRF	Marine and Tropical Sciences Research Facility
PMIS	Project Management Information System
RWQPP	Reef Water Quality Protection Plan
SST	Strategic Science Team
WAMSI	Western Australian Marine Science Institution

Glossary

AIMS Council	Under the AIMS Act, the Council of AIMS comprises of a part-time chair, CEO and five part-time members. It is responsible for the overall performance of AIMS.
AIMS Management Group	A group including the CEO, General Manager, CFO and Research Director, who oversee the day to day management of AIMS.
AIMS Research Plan	A research program to assist AIMS to achieve its strategic science objectives.
AIMS strategic directions	Three broad directions in which AIMS directs its research efforts, designed to ensure that AIMS research efforts are meeting the challenges facing Australia's marine ecosystems and AIMS stakeholders.
Co-investment entities	Groups of research providers and users that have their own governance structures that design, manage and evaluate a portfolio of research tasks.
Co-investment partners	Organisations which contribute finances and resources with AIMS in order to deliver scientific research.
Co-investment projects	Research projects where the costs are shared between AIMS and its co-investment partners to deliver scientific research.
Commonwealth Statutory Authority	A body created by legislation that is a separate legal entity from the Commonwealth and which has the power to hold money on its own account.
Milestone	A scheduling event that signifies the completion of a major task or a set of related tasks.

National research priorities	Areas of social, economic and environmental importance to Australia, where a whole-of-government focus has the potential to improve research and broader policy outcomes. The priorities are broadly based, thematic and multi-disciplinary in nature.
Post project review	A review which confirms whether or not projects have met the expectations of partners and stakeholders.
Project objectives	A concise statement of what a project aims to achieve.
Project plan	Summary of a project's scope, schedule and budget against which project progress can be measured.
Project risk	A combination of the likelihood of an adverse event occurring and the consequence that such an event may have on a project.
Project support areas	AIMS groups or directorates which provide support to staff on commercial, procurement, IP, management and reporting issues.
Stakeholder	End-users or client groups (including the community) from whom requirements are drawn, that influence the design and, ultimately, who will reap the benefits of new knowledge about marine ecosystems.
Strategic science team	A group of AIMS scientific and non-scientific staff that consult with its partners and stakeholders and make recommendations to the Management Group about future AIMS research.

Summary and Recommendations

Summary

Introduction

1. Australia's marine assets are a source of national wealth, supporting key industries such as marine tourism, offshore oil and gas, aquaculture and fisheries. Australia's marine industries contributed around $38 billion to the Australian economy in 2006–07, a 42 per cent increase over the last five years. One of our most highly valued marine assets, the Great Barrier Reef, contributed over $5.4 billion. It has been estimated that Australia's marine industries employ over one million persons, earn almost $20 billion in exports each year and contribute $6 billion in taxes.[1]

Australian Institute of Marine Science

2. The Australian Institute of Marine Science (AIMS) was established in 1972 under the *Australian Institute of Marine Science Act 1972* in recognition of the importance of marine assets, especially the Great Barrier Reef, to Australia. AIMS mission is to conduct innovative research that advances understanding of our oceans and coastal ecosystems, facilitates good stewardship of marine resources and supports sustainable wealth creation opportunities from marine resources.[2]

3. AIMS research function is divided into five research teams. The total number of scientific and support staff employed by AIMS at 30 June 2008 was 180.

4. The Australian Government has committed to provide $110.6m in appropriation funding over the four year period 2007 to 2011. The AIMS research plan covers the same period.

5. The objective of AIMS research plan is to establish a research program to assist it achieve its strategic science objectives. AIMS sets its research priorities by analysing government, industry, community and science needs to identify where it can make the greatest difference.

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[1] Australian Institute of Marine Science, *Strategic Directions*, p. 5, available from <www.aims.gov.au/pages/strategic-directions.html> [accessed 7 February 2008].

[2] Australian Institute of Marine Science, *Annual Report 2006–07*, 17 September 2007, p. 3, available from <www.aims.gov.au/publications> [accessed 10 December 2008].

6. AIMS research projects are divided into two categories, 'appropriation funded projects' and 'co-investment projects.' The majority of AIMS projects are co-investment projects.

Co-investment research projects

7. Co-investment projects involve research where the costs are shared between AIMS and its co-investment partners in order to deliver scientific findings. Co-investment projects, together with their collaborative networks, have the potential to provide a greater impact due to the greater resources applied when AIMS works with partners. AIMS considers that co-investment provides the opportunity to access a broader base of scientific knowledge, and to conduct more scientific research than could be done on its own. In addition, co-investment generates additional revenue which assists AIMS to pursue further research.

8. At the time of the audit, AIMS had 67 contracts with external parties covering 96 separate co-investment projects. AIMS expects to receive more than $20 million in revenue from its co-investment partners in 2008–09 to supplement its $27.6 million in appropriation funding. AIMS objective over the forward estimates period is to maintain co-investment revenue at around 25 to 30 per cent of its budget.

Audit objective and scope

9. The objective of the audit was to assess the effectiveness of AIMS administration of its co-investment research program. The audit reviewed AIMS:

- policies and guidelines for the approval of its research;
- project management systems and structures; and
- reporting against its research objectives.

10. The audit assessed AIMS approval, management and reporting of its co-investment research program, and supporting administrative, financial and information systems. The audit examined a sample of 35 co-investment research projects. The audit did not assess the quality of scientific analysis or outcomes. However, it addressed AIMS assessment of its research task outcomes.

Overall conclusion

11. Since its establishment in 1972, AIMS research has contributed to maintaining healthy oceans, environmental protection and sustainable marine industries. AIMS contributions in these areas are influenced by its ability to leverage the Commonwealth's investment in order to achieve enhanced research outcomes in the national interest.

12. AIMS leverage of government investment is underpinned by AIMS collaborative research strategy, which includes co-investment relationships to enhance scientific outcomes. Currently, co-investment research projects represent more than 70 per cent of its projects, with the remaining projects funded solely through appropriation funding. Co-investment assists AIMS to enhance its capacity to address complex marine science questions by building relationships with organisations which have complementary capabilities.

13. Overall, the ANAO concluded that AIMS administration of its co-investment research program is effective. AIMS utilises a range of sound project management techniques to manage its co-investment research projects. This includes the implementation of project approval processes, project plans, financial controls and clear monitoring and reporting arrangements. However, there are areas for improvement. These include more clearly documenting the reasons for project approval, and project risk assessments.

14. In its administration of its co-investment research program, AIMS has developed a range of project management policies and guidelines. However, existing policy and guidance does not set out expectations regarding the ongoing management and reporting of projects. AIMS reduces the risk associated with not having documented guidelines by using templates for many of these processes which assists it to apply a consistent approach to these functions.

15. The basis for the approval of projects below $500 000 in value was not readily apparent because approval documentation did not summarise the benefits in terms of scientific impact, partner and stakeholder needs and value for money. Clearer documentation of the reasons for project approval would aid transparency and accountability.

16. Project approval documentation for research projects above $500 000 in value provides reasonable assurance that projects which represent the best value are being approved. Generally, project risk assessments are conducted for these projects, but are not clearly documented nor updated to assist in the

ongoing management of risks. Periodic reviews of project risks would better inform AIMS regular monitoring and review of projects by ensuring performance measures remained relevant.

17. Internal financial processes and controls are sound and payments made and revenue collected are in accordance with relevant legislation. Project performance is reported regularly, both internally to AIMS Management Group and Council, and externally to its partners, stakeholders, Government and Parliament. In addition, AIMS commissioning of external reviews which applied a consistent international methodology for scientific review, provided it with a sound basis to ascertain its performance against scientific research standards.

Key findings by chapter

Support for project management (Chapter 2)

18. AIMS has project management policies and guidelines on some aspects of its co-investment projects. Incorporating template guidelines into its existing project policy and guidance on the approval, management and reporting of projects, and maintaining a single reference point where this documentation could be more easily accessed would provide staff with additional practical assistance to manage research projects.

19. Two centralised project support areas assist project managers by providing support on commercial, procurement, intellectual property, management and reporting issues. AIMS does not have a specialised project management information system, although it has two systems that support the management of its projects. One system reports each project's finances, while the other tracks project milestones and reports project status. These systems help AIMS to track and assess its projects' progress in a consistent manner.

The approval of AIMS co-investment research projects (Chapter 3)

20. AIMS develops its strategic directions in close consultation with its partners and stakeholders. It has a Strategic Science Team to facilitate this consultation and make recommendations to the Management Group about future research. AIMS is represented on the management boards of four co-investment entities, which provides it with the opportunity to identity and consider its partners' and stakeholders' needs before approving co-investment projects. The Council documented the benefits to research users before

approving projects, however the benefits to research users were not as clearly documented for projects under $500 000 which are approved by the CEO.

21. The selection of projects examined included the following aspects in their approval documentation:

- measurable objectives which are agreed with partners and stakeholders and have a schedule for completion;
- project objectives which are linked to key result areas and strategic directions;
- a summary of the likely financial and resource impacts of research proposals; and
- assessments regarding the value and benefits of research to AIMS for projects over $500 000 in value.

22. For projects that were approved by the Chair or the Council, AIMS clearly and succinctly summarised its reasons for approving research proposals against pre-determined criteria. However, its reasons for approving research proposals under $500 000, which are approved by the CEO, were not as clear. AIMS would benefit from assessing projects approved by the CEO against the same criteria used by the Council to improve the transparency of the reasons for approving projects, and to provide greater assurance that projects which are likely to provide the greatest value are approved.

The management of AIMS co-investment research projects (Chapter 4)

23. AIMS had project plans for each of the co-investment projects examined. Project plans included task objectives or activities which described the major project deliverables. AIMS included project budgets in its plans which included its financial contributions and those of its co-investment partners. This assists AIMS in monitoring each project's progress against expectations.

24. AIMS has a risk management plan which sets out its key objectives and principles regarding the management of risk. Key risk areas have been identified in a risk register, which highlights the risk associated with maintaining and expanding its co-investment revenue as significant. Risk management guidelines are also included in its Budget Manual which requires project risks to be documented and the action taken to minimise them. However, except for one large project, AIMS had not documented its own risk

assessment for the projects examined, although, it did participate in the development of two documented risk assessments as part of its involvement in projects with co-investment entities. In addition, AIMS advised that discussions on risk took place for all its projects requiring Chair or Council approval. There would be benefits for AIMS if it documented project risk assessment for its co-investment projects where the scale, length, cost and/or complexity of projects warranted.

25. The projects in the audit sample each had a contract that included the responsibilities of AIMS and its partners. AIMS use standard form contracts to determine the terms and conditions of its relationships with its co-investment partners, and include its procedures for processing contract variations in its contracts. Of the projects examined, four projects were subject to a contract variation and each variation was made in accordance with the procedures outlined in contracts.

26. AIMS internal financial policy, processes and controls supporting the projects examined were sound, and there was adequate segregation of duties with regard to raising invoices and receipting monies. Payments made, revenue collected and costs recovered were in accordance with AIMS legislation, the CAC Act and AIMS procedures.

27. AIMS monitored and reviewed the progress of each project in the audit sample using its On-line Milestone Reporting System. AIMS also reports on the scientific activity in each of its research teams to the Management Group. In addition, it reports project activities against each of its key result areas and variances between project milestones and achievement to the Management Group and the Council.

28. AIMS and its partners' reporting requirements are outlined in project contracts. The form, level, detail and frequency of the reporting differs depending on the partner involved in each project. This reporting provided AIMS and its partners with a description of the status of each project and any issues impacting on project progress.

The reporting of AIMS co-investment research projects (Chapter 5)

29. AIMS and its co-investment partners report project progress and performance to each other on a regular basis. The terms of this reporting are in contracts. In addition, the review of seven completed projects in the audit sample revealed that AIMS provides its final project reports to its co-investment partners, and this includes information on its performance

against project objectives. Also, at the end of its 2003–06 funding agreement a lapsing program review was conducted which assessed the appropriateness, efficiency and effectiveness of its marine science. The ANAO considers that AIMS had sound mechanisms to report its research performance to its partners, stakeholders and Parliament.

30. At each project's completion, AIMS produces and distributes a final report to its Management Group, partners and stakeholders. The final project report includes information on each project's performance and outcomes. This allows AIMS to draw conclusions about the effectiveness of each project and whether projects met the expectations of its partners and stakeholders.

31. AIMS does not have a post project review policy which requires it to review each of its co-investment projects, although it does evaluate its research teams' performance. AIMS evaluation of research team performance includes an assessment of each project's performance. This helps AIMS to measure the effectiveness, outcomes and benefits of its projects and is an appropriate approach.

32. AIMS external expert reviews used a consistent international methodology for scientific review which provided it with a sound basis to ascertain its performance against scientific research standards. In addition to the expert reviews AIMS commissioned an assessment of the economic impact of its research. While acknowledging some limitations in quantifying economic benefits, the report demonstrated an economic impact.

Summary of AIMS response

33. AIMS provided the following response summary. The full text of the response is at Appendix 1.

> AIMS welcomes the ANAO performance audit and acknowledges the ANAO's overall conclusion that the AIMS administration of its co-investment research program is effective. AIMS accepts the two ANAO recommendations. AIMS strives to ensure a culture of continuous improvement and this report provides useful input to the improvement of the management systems that support AIMS research. The audit identified specific improvement opportunities, all of which can be implemented over the next twelve months. Some have already commenced and action plans, with clear implementation timelines, are currently being developed for the others.
>
> Over the last 10 years AIMS has undergone considerable change and more recently significant growth of its external sourced research funding. A direct result of these changes has been a significant increase in project complexity.

Aspects such as financial structures, collaboration partnerships, intellectual property ownership and others have all increased in complexity. Furthermore as AIMS leverages its government appropriation funding to increasing levels, it is important that it makes appropriate collaboration decisions to maximise the impact of its research. AIMS has been making significant changes to its systems and processes to keep them aligned with the changing needs of the organisation, however it does recognise that not all have kept pace. In some areas less formal processes may have historically been appropriate but now require a more formal and documented approach. Furthermore the complexity of the current operating environment does necessitate improved decision making risk management practices and AIMS will be adopting these as a matter of priority.

AIMS thank the ANAO for undertaking the audit which was completed in an inclusive and professional manner. The lessons learnt from the audit will greatly assist AIMS as it responds to the challenge of meeting its stakeholder's needs and achieving its mission to generate and transfer the knowledge to support the sustainable use and protection of the marine environment through innovative, world-class scientific and technological research.

Recommendations

Recommendation No. 1 Para 3.33

The ANAO recommends that, in order to improve the transparency of its reasons for approving projects, and to provide assurance that it is approving projects which are likely to provide the greatest value, AIMS assess projects approved by the CEO against the same criteria used by the Council.

AIMS response: *Agreed.*

Recommendation No. 2 Para 4.16

The ANAO recommends that, in order to effectively identify, assess, monitor and review project risks, AIMS document risk assessments where the scale, length, cost and/or complexity of co-investment projects warrants.

AIMS response: *Agreed.*

Audit Findings and Conclusions

1. Background and Context

This chapter includes background information on the Australian Institute of Marine Science, its co-investment research model and the audit approach, including the objective, criteria and scope.

Australian marine assets

1.1 Australia's marine assets are a source of national wealth, supporting key industries such as marine tourism, offshore oil and gas, aquaculture and fisheries. Some of Australia's most important marine assets include the Great Barrier, Ningaloo, Scott and Seringapatam Reefs. Australia's marine industries contributed around $38 billion to the Australian economy in 2006–07, a 42 per cent increase over the last five years. One of our most highly valued marine assets, the Great Barrier Reef, contributed over $5.4 billion. It has been estimated that Australia's marine industries employ over one million persons, earn almost $20 billion in exports each year and contribute $6 billion in taxes.[3]

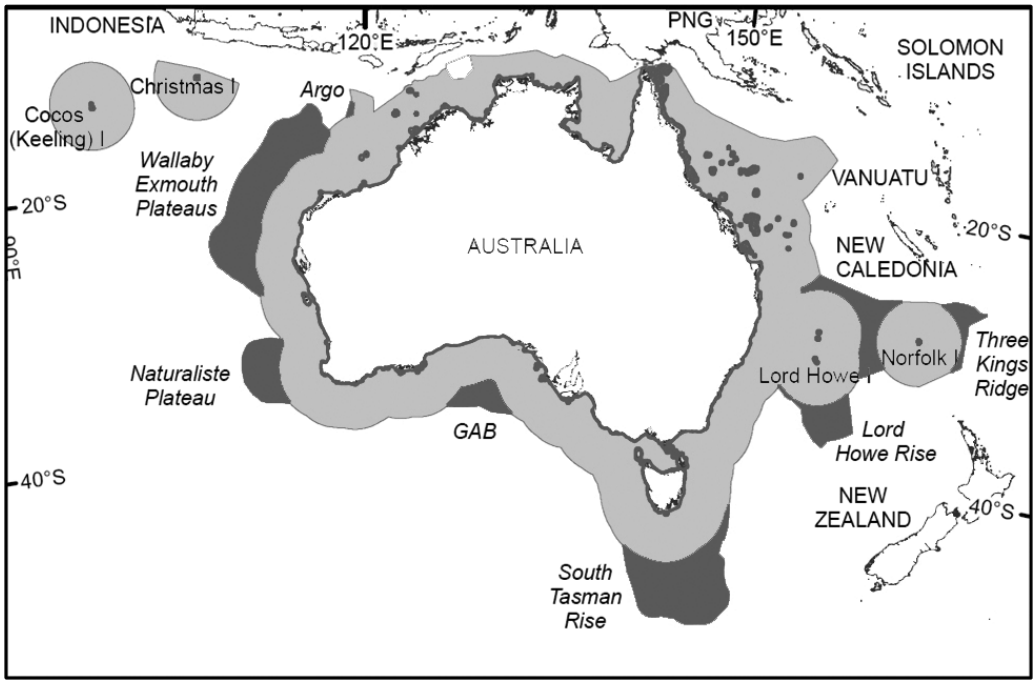
1.2 On 9 April 2008,[4] Australia's offshore resource potential and ability to preserve the marine environment on the seabed was boosted by the United Nations Commission on the Limits of the Continental Shelf which confirmed Australia's jurisdiction over an additional 2.5 million square kilometres of seabed. Because marine research is designed to support protection and sustainable use of these marine resources this expansion has the potential to influence AIMS research program. Figure 1.1 shows the seabed in light grey surrounding the Australian continent over which Australia previously presided. Australia's new areas of jurisdiction are shaded in dark grey.

[3] Australian Institute of Marine Science, *Strategic Directions*, p. 5, available from <www.aims.gov.au/pages/strategic-directions.html> [accessed 7 February 2008].

[4] See <http://www.un.org/Depts/los/clcs_new/submissions_files/submission_aus.htm> [accessed 8 December 2008].

Figure 1.1

Australia's jurisdiction of seabed



Source: Website of Minister for Resources and Energy.

Australian Institute of Marine Science

1.3 In recognition of the importance of Australia's marine assets, the Australian Institute of Marine Science (AIMS) was established in 1972 under the *Australian Institute of Marine Science Act 1972*. AIMS mission is to conduct innovative research that advances understanding of our oceans and coastal ecosystems, facilitates good stewardship of marine resources and supports sustainable wealth creation opportunities from marine resources.[5] AIMS is an Australian Government statutory authority within the Innovation, Industry, Science and Research portfolio.

Organisational arrangements

1.4 The total number of scientific and support staff employed by AIMS at 30 June 2008 was 180.[6] AIMS is governed by the AIMS Council which reports

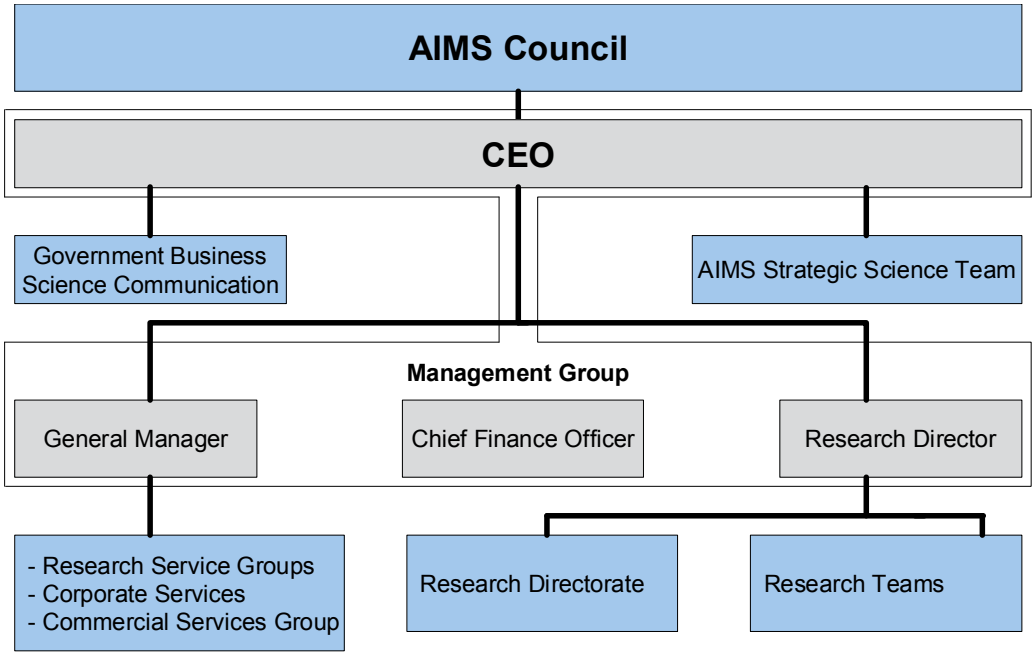
[5] Australian Institute of Marine Science, *Annual Report 2006–07*, 17 September 2007, p. 3, available from <www.aims.gov.au/publications> [accessed 10 December 2008].

[6] Australian Institute of Marine Science, *Annual Report 2007–08*, 22 September 2008, p. 4, available from <www.aims.gov.au/publications> [accessed 10 December 2008].

to the Minister for Innovation, Industry, Science and Research. The Council is responsible for the overall performance of AIMS, including financial control and strategic direction, providing advice and direction to management, and monitoring performance. The Council comprises a part-time Chair, AIMS Chief Executive Officer (CEO) and five part-time members. The day to day management of AIMS is the responsibility of the CEO, who is assisted by a Management Group, comprising the General Manager, Chief Finance Officer (CFO) and the Research Director. AIMS organisational structure at 30 June 2008 is set out in Figure 1.2.

Figure 1.2

AIMS organisational structure



Source: AIMS.

Funding

1.5 In 2007, the Australian Government changed from a three-year to a four-year funding cycle and budgeted to provide AIMS $110.6 million in appropriation funding over a four year period from 2007 to 2011. AIMS has budgeted for a three per cent increase in external earnings over the same period. Table 1.1 shows AIMS budgeted government appropriations over the period of its funding agreement. It also includes its co-investment and other revenue for 2007–08, in addition to estimates for out years.

Table 1.1

AIMS budgeted revenue from 2007–2011

Income	2007–2008 (a) $'000	2008–2009 $'000	2009–2010 $'000	2010–2011 $'000
Government	26.6	27.6	27.9	28.5
Co-investment	13.3	20.1	18.4	14.3
Other	5.7	1.2	1.2	1.1
Total	**45.6**	**48.9**	**47.5**	**43.9**

Source: Innovation, Industry, Science and Research, Portfolio Budget Statements 2008–09 and Australian Institute of Marine Science, *Annual Report 2007–08*.

Note: (a) The 2007–08 figures represent actual revenue.

1.6 The Cooperative Research Centres (CRC) Program was established in 1990 to strengthen collaborative research links between industry, research organisations, educational institutions and relevant government agencies. At various stages AIMS has utilised CRCs as a source of funding and a vehicle to increase collaboration. On 22 January 2008, the Minister for Innovation, Industry, Science and Research announced a review of the CRC Program as part of a wider review of Australia's national innovation system. The review recommended that the CRC program continue, but be refocused and modified with the emphasis more on the benefits for the users of research rather than commercialisation. The review also included a further recommendation for a selection round at least once a year to address urgent public good issues. On 22 September 2008, the Government's innovation review also supported the earlier recommendations. This has the potential to increase AIMS access to funding.

Research plan

1.7 AIMS current research plan covers the period 2007–2011 and was developed after a review of AIMS research portfolio in consultation with its partners and stakeholders.[7] The development of the plan included external peer reviews of the quality and impact of AIMS past research and a review of strategic directions based upon advice and comments from the users of its research.[8]

[7] Stakeholders are the end-users or client groups (including the community) from whom requirements are drawn, that influence the design and, ultimately, who will reap the benefits of new knowledge about marine ecosystems.

[8] Australian Institute of Marine Science, *Research Plan 2007–2011,* p. 3, available from <www.aims.gov.au> [accessed 10 December 2008].

1.8 The objective of AIMS research plan is to establish a research program to assist it achieve its strategic science objectives. AIMS sets its research priorities by analysing government, industry, community and science needs to identify where it can make the greatest difference.

1.9 AIMS research function is divided into five research teams. The research teams conduct research under AIMS 12 Key Result Areas (KRAs), which are aligned to its three strategic directions of:

- understanding marine tropical ecosystems and processes;
- understanding the effects of global environmental changes upon tropical marine systems; and
- supporting the sustainable development of tropical marine based industries.

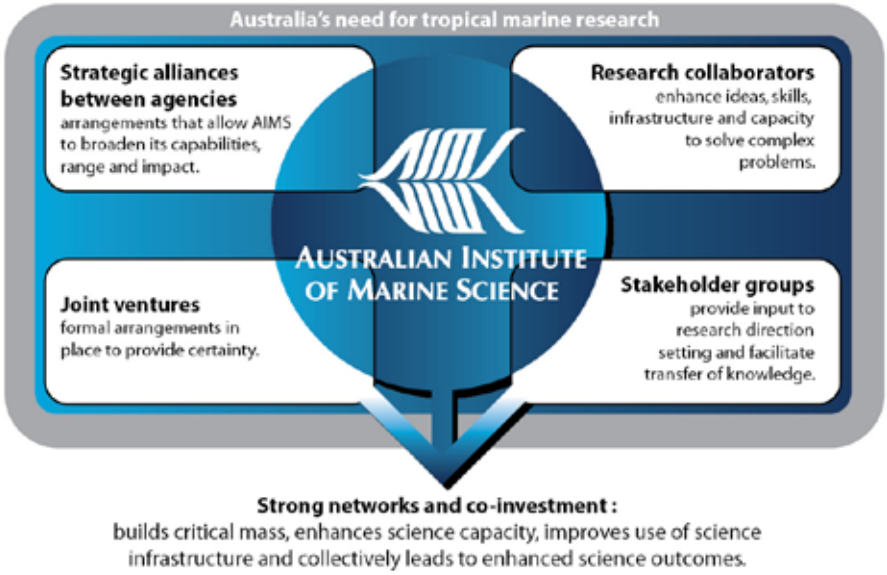
1.10 An illustration of the relationships between research teams, KRAs and strategic directions is included at Appendix 2.

Research relationships

1.11 AIMS research involves it establishing relationships with universities, industries, government, communities and international organisations. This assists AIMS to deliver more research than it could achieve on its own. An important element of AIMS research relationships is its co-investment research strategy. Figure 1.3 details AIMS collaborative research model which consists of networks and co-investment relationships to enhance science outcomes.

Figure 1.3

AIMS collaborative research model



Source: AIMS Strategic Directions.

Co-investment research

1.12 AIMS research projects are divided into two categories, 'appropriation funded projects' and 'co-investment projects'. The majority of AIMS projects are co-investment projects, where the costs are shared between AIMS and its co-investment partners. Currently, co-investment projects represent more than 70 per cent of AIMS research projects and, together with its collaborative networks, have the potential to provide a greater impact due to the greater resources applied when AIMS works with partners. Co-investment projects can also represent a greater risk to AIMS reputation due to their wider external exposure.

Examples of co-investment projects

1.13 AIMS was a partner in an industry led consortium supported by the Fisheries Research and Development Corporation to selectively breed and rear a new generation of domesticated tiger prawns. The prawns are now grown by industry partners on a commercial basis, and the project has been recognised by industry as adding significant value to Queensland's aquaculture.[9]

[9] Australian Institute of Marine Science, *Annual Report 2006–2007*, p. 39.

1.14 Consistent with AIMS increased focus on climate change research, a study is being conducted with partners on the effect of higher water temperatures and coral disease. The study continues, with results to date including the development of models to more accurately forecast risk and resilience to higher water temperatures in coral communities under threat.[10]

Benefits and funding for co-investment

1.15 The benefits to AIMS from co-investment include:

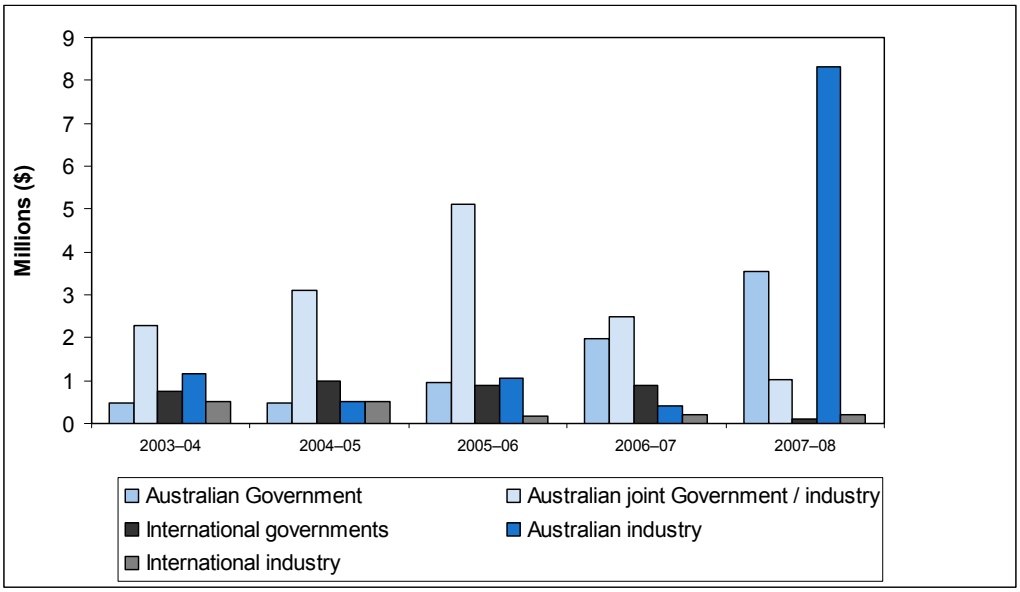
- increased revenue;
- increased capacity for scientific research by partnering with organisations which have complementary capabilities; and
- the opportunity to tap into a broader base of scientific knowledge.

1.16 AIMS co-investment research focus forms the basis of a strategy to increase its science capability and growth. AIMS strategy involves moving from small appropriation funded and co-investment research projects to much larger and more complex co-investment projects that are more likely to add value in terms of science quality and impact. Figure 1.4 shows the sources of AIMS co-investment revenue from 2003–04 to 2007–08.

[10] ibid., p. 40.

Figure 1.4

Sources of co-investment revenue 2003–04 to 2007–08



Source: AIMS Annual Report 2007–08.

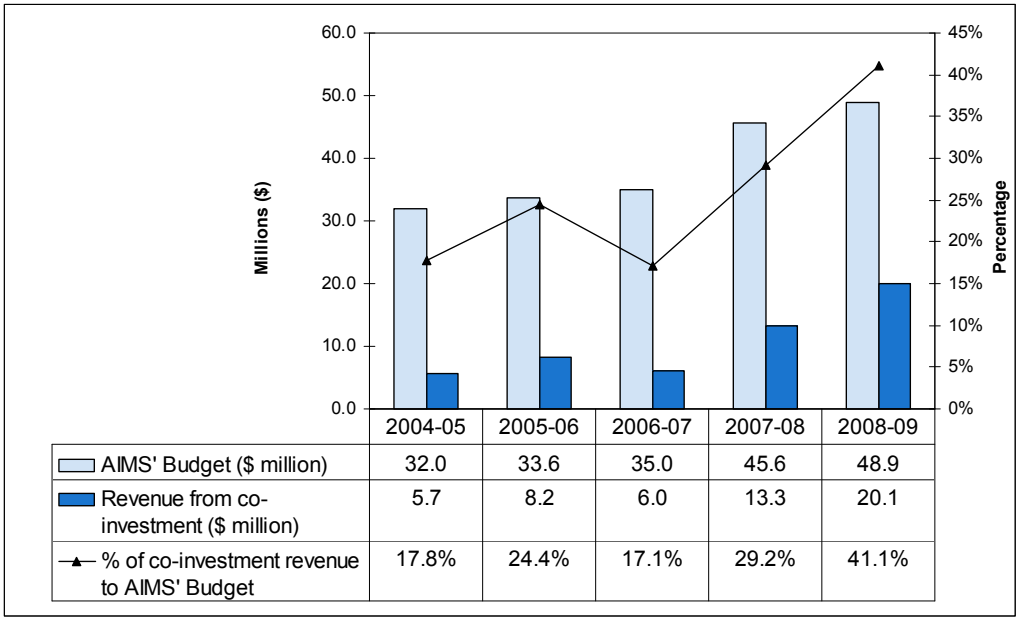
1.17 Currently AIMS has 67 contracts with external parties covering 96 separate co-investment projects.[11] AIMS objective is to limit its external earnings from co-investment to around 25 to 30 per cent of its budget. Figure 1.5 shows AIMS co-investment revenue as a proportion of its budget from 2004–05 to 2008–09. From 2004–05 to 2007–08, AIMS co-investment revenue was either lower or within its 25 to 30 per cent limit.

1.18 AIMS expects to receive more than $20 million in revenue from its co-investment partners in 2008–09 which will represent 41 per cent of its budget. This will be mainly due to a series of large commercial contracts. However, AIMS expects its rate of co-investment to return to its 25 to 30 per cent limit in the future as commercial contracts are completed. AIMS external funding business model is outlined at Appendix 3.

[11] Single contracts may cover multiple projects.

Figure 1.5

AIMS budget and co-investment revenue 2004–05 to 2008–09



	2004-05	2005-06	2006-07	2007-08	2008-09
AIMS' Budget ($ million)	32.0	33.6	35.0	45.6	48.9
Revenue from co-investment ($ million)	5.7	8.2	6.0	13.3	20.1
% of co-investment revenue to AIMS' Budget	17.8%	24.4%	17.1%	29.2%	41.1%

Source: AIMS 2004–05 to 2007–08 Annual Reports and the Innovation, Industry, Science and Research Portfolio Budget Statements 2008–09.

Previous ANAO publications

1.19 ANAO conducted an audit of external funds generation in AIMS in 1991–92.[12] The audit concluded that AIMS did not have a systematic, coordinated and concerted effort to obtain external funds and was not prepared for the increased commercial emphasis on its work. ANAO made 15 recommendations which focused on the development of policies, strategies, plans and procedures to support external funds generation.

1.20 In addition to the AIMS audit in 1991–92, the ANAO has conducted other performance audits into research management which have relevance for this audit. These included:

- An audit of research project management in CSIRO in 2001–02.[13] The audit noted that CSIRO had an international reputation for scientific excellence, with external reviews indicating it delivered results for the

[12] ANAO Audit Report No.48 1991–92, *The Australian Institute of Marine Science External Funds Generation.* ANAO reports from 1997–98 are available from <www.anao.gov.au>.

[13] ANAO Audit Report No.51 2001–02, *Research Project Management.*

community. However, the audit also found that further strengthening of several aspects of project management arrangements was required in order to provide assurance that research projects were conducted in a cost-effective manner.

- A follow-up audit in 2004–05 found that CSIRO's management of research projects had improved. However, full implementation of some recommendations was hampered by shortcomings in the quality of its management information.
- An audit of the management of research grants in the Australian Research Council (ARC) in 2005–06, concluded that ARC was meeting the requirements of the ARC Act in administering grants for basic and applied research.[14] However, shortcomings in ARC's administrative processes meant that ARC was not in a position to determine and inform government about whether all grants met their objectives, that funds were used as intended, and that ARC goals were being fully met.[15]

1.21 In addition to the above audit reports, in December 2003 the ANAO released a Better Practice Guide on the *Management of Scientific Research and Development Projects in Commonwealth Agencies* to provide practical assistance to senior managers in establishing processes and structures to support management of scientific research and development projects.[16]

1.22 The above reports and better practice guide were considered in developing the objective and criteria for this performance audit.

Audit approach

Audit objective and criteria

1.23 The audit objective was to assess the effectiveness of AIMS administration of its co-investment research program. The audit reviewed AIMS:

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[14] ANAO Audit Report No.38 2005–06, *The Australian Research Council's Management of Research Grants.*

[15] AIMS does not receive grants directly from ARC, although, it is a co-investment partner with many organisations (mostly universities) that receive ARC grants.

[16] ANAO *Better Practice Guide - Management of Scientific Research and Development Projects in Commonwealth Agencies*, December 2003, Canberra, p. 5. All ANAO Better Practice Guides are available from <www.anao.gov.au> [accessed 10 December 2008].

- policies and guidelines for the approval of its research;
- project management systems and structures; and
- reporting against its research objectives.

Audit scope

1.24 The audit assessed AIMS approval, management and reporting of its co-investment research program, and supporting administrative, financial and information systems. The audit did not assess the quality of scientific analysis or outcomes,[17] however, it addressed AIMS assessment of its research outcomes.

Audit methodology

1.25 The audit methodology comprised:

- examining policy documents, guidelines, procedures, operational documents and reports;
- interviews with senior administrative and divisional staff and project managers;
- interviews with AIMS key partner and stakeholder groups;
- reviewing files, records and publications; and
- evaluating AIMS financial management and internal control of its co-investment research program.

1.26 The audit examined a sample of 35 co-investment research projects. The sample was designed to cover:

- projects of medium to high monetary value;
- projects which included collaborations with AIMS major co-investment partners;
- a representation of projects from AIMS research teams; and
- 28 open (continuing) and seven recently closed (finalised) projects.

[17] While ANAO did not assess the quality of scientific analysis or outcomes, the results of external expert reviews which assessed these elements are reported.

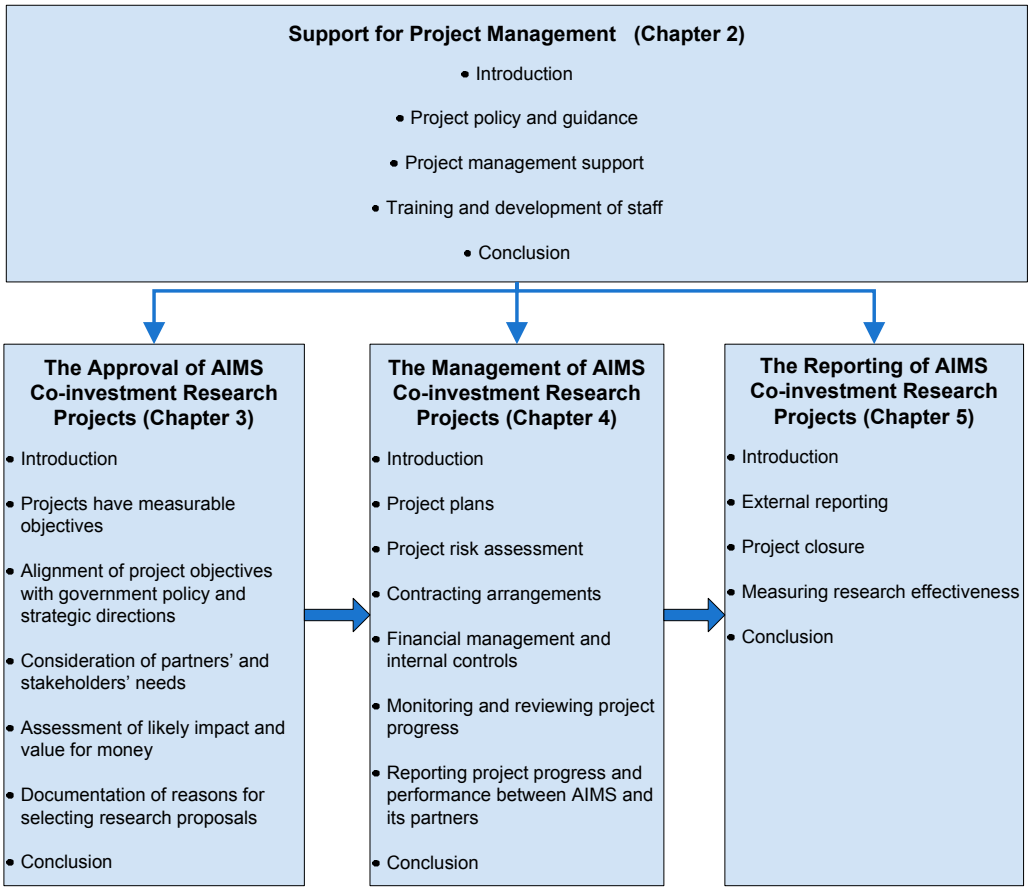
1.27 The audit was conducted in accordance with the ANAO's Auditing Standards at a cost of approximately $283 174.

Report structure

1.28 The audit findings are reported in the following chapters, as illustrated in Figure 1.6.

Figure 1.6

Structure of the remainder of the report



2. Support for Project Management

This chapter assesses the systems and structures which support the management of AIMS co-investment projects.

Introduction

2.1 AIMS co-investment projects involve collaborations with a wide range of public and private sector research providers and users. AIMS co-investment projects range in value from less than $20 000 to over $1 million, may be completed in a few months or take several years, and can have short and long term objectives.

2.2 Project success is more likely if there are clearly articulated organisational policies, guidelines and standards, project teams are supported by sound project management tools and staff have appropriate skills to manage projects.[18] The ANAO examined whether AIMS has:

- documented project management policy and guidance, including templates and checklists;
- support mechanisms to assist project managers to manage their projects; and
- training and development programs for staff to develop project management skills.

Project policy and guidelines

2.3 AIMS has developed project management policies and guidelines relating to the approval of its projects in foreign locations, which account for a small portion of its projects, and the financial management of its co-investment projects. AIMS also has guidance on aspects of contracting and project risk assessment. These policies and guidelines are included in a Management Group paper and the AIMS Budget Manual.

Policy on research in foreign locations

2.4 AIMS has overarching objectives and guiding principles for assessing the approval of its projects in foreign locations.[19] Objectives for undertaking

[18] ANAO, *Management of Scientific Research and Development Projects in Commonwealth Agencies*, p. 5.

[19] Foreign locations refers to research conducted outside Australia and its territories.

projects include raising AIMS international profile, cementing its role as a key information provider about tropical marine systems, and strengthening its funding opportunities. Guiding principles outline the criteria which projects should meet in the majority of circumstances before projects are approved. AIMS guidance is consolidated into a 'decision tree' for approving research proposals in foreign locations. The 'decision tree' includes such factors as possible science quality and capability, financial arrangements, strategic positioning and project risks. The 'decision tree' provides AIMS management with a sound checklist of the issues to consider before approving research proposals in foreign locations.

Financial management policy

2.5 AIMS Budget Manual includes AIMS financial policies and guidelines for the management of all its research projects. These include guidelines for pricing and submitting applications for external projects, financial delegations, charge out rates and budget principles. The guidelines for pricing and submitting applications for external projects includes: costing of projects; treatment of intellectual property; risk management requirements; client credit checks; and the use of AIMS capital and other equipment.

Project management templates and checklists

2.6 In addition to project policy and guidance, AIMS use of standard templates assists it to apply a consistent approach to project management functions. These include templates for the approval of its co-investment research proposals (referred to by AIMS as 'applications for external funding'), financial management, project management plans, contracts, monitoring and review of project progress and reporting against project objectives. A summary of AIMS existing project policy, guidance and templates is at Table 2.1.

Table 2.1

Project policy, guidance and templates

Project function	Policy and guidance	Templates
Project approval	× | ✓ (a)	✓
Financial management	✓	✓
Contents of project plans	×	✓
Contracting (including relationship management)	✓	✓
Project risk assessment	✓	×
Project monitoring and review of project progress	×	✓
Reporting against project objectives	×	✓
Post project review and evaluation	×	×

Source: ANAO analysis of AIMS documents.

Note: (a) Policy exists for projects conducted in foreign locations which represent a small portion of AIMS projects but not for projects conducted in Australia.

2.7 AIMS use of standard templates for the approval of its co-investment research proposals helps ensure that proposals are:

- approved by the required delegate;
- linked to existing projects where relevant;
- assessed against likely contractual issues (including the treatment of IP); and
- assessed against the project's staffing, finance and capital equipment requirements.

2.8 Additionally, AIMS use of contract templates ensures that its contract agreements are reviewed and signed by the required delegates and all relevant terms and conditions are included. Furthermore, report templates allow it to easily compare information which covers different periods, as the report information is presented in the same format.

2.9 Another method that AIMS uses to apply a consistent approach to project management is its use of checklists. For example, AIMS Finance section (hereafter Finance) use checklists to assist it to enter project records into AIMS financial management information system[20] accurately, and to check the

[20] Finance One.

accuracy of each project's billing and payment records. AIMS Commercial Services Group also use checklists to ensure that the terms and conditions of each project's contract are adequately addressed before signature. In addition, the Research Directorate use standard criteria for the reports it submits to the Management Group and the Council.

Consolidation of project policy and guidance

2.10 AIMS policy on the conduct of research in foreign locations outlines the process it uses before approving projects in these locations. The financial policies and guidelines in its Budget Manual provide guidance to staff on the management of the financial, contracting and risk management aspects of projects. However, AIMS does not have policies and guidelines for the approval of its projects conducted in Australia, where the majority of its co-investment projects are located. Nor does AIMS have policies and guidelines on the contents of project plans, monitoring and review of project progress, project reporting and post project review and evaluation.

2.11 Of note though, AIMS uses templates for many of these processes which assists it to apply a consistent approach to these functions. This reduces the risk associated with not having a documented policy. However, the ANAO suggests that incorporating template guidelines into its existing project policy and guidance on the approval, management and reporting of projects, and maintaining a single reference point where it could be more easily accessed would provide staff with additional practical assistance to manage research projects. In addition, this approach would better communicate AIMS expectations of its personnel and assist project managers to manage larger and more complex co-investment projects. Benefits would include AIMS more clearly outlining its:

- processes for approval of projects conducted in Australia;
- contents of project plans;
- requirements for project monitoring, review and reporting; and
- processes for post project reviews and evaluation.

2.12 The ANAO considers that AIMS policy on its approval of projects in foreign locations could also be used to communicate its processes for the approval of projects conducted in Australia. This would provide AIMS approving delegates with extra assurance that the major issues have been considered prior to the approval of projects within Australia.

Project management support

2.13 AIMS uses a variety of project management support mechanisms to assist its staff to manage projects. These include:

- project support areas; and
- management information systems which store project information.

Project support areas

2.14 AIMS has two centralised project management support areas called the Commercial Services Group (CSG) and the Research Directorate to support its project managers and teams.[21]

Commercial Services Group

2.15 CSG provide day to day guidance and advice to project managers on commercial issues. It provides support to AIMS research teams across five areas:

- intellectual assets;
- contract and agreement development and archiving;
- commercial business analysis and advice;
- document management and information systems; and
- strategic analysis.

2.16 CSG has established relationships with legal firms which specialise in commercial, procurement and intellectual property (IP) issues, and it utilises these firms to develop and review its co-investment contracts. CSG's commercial services are provided through a 'front desk' enquiry service and electronically through the AIMS intranet.

2.17 When a research contract is signed, CSG staff email project managers with a brief summary of those elements of the contract that the staff member is required to manage. This process assists staff who lack in-depth project management skills to better understand those elements of the contract requiring most attention. In addition, it allows them the freedom to concentrate on the scientific aspects of their project.

[21] CSG and the Research Directorate are not AIMS only support areas, but are the only ones which exist to provide direct support to project managers to manage their projects.

Research Directorate

2.18 AIMS Research Directorate assists project managers by providing advice on scientific leadership, IP management, commercial opportunities for AIMS technologies and the conduct of business and commercial affairs. It also provides assistance to staff in monitoring and reporting research team progress to the Management Group and external clients.

Management information systems

2.19 The principal benefits of a reliable project management information system (PMIS) are that it provides a common database of project information, helps to establish a common process for project management and assists in consistent tracking and reporting of project status.[22] AIMS does not have a specialised PMIS. Rather it records information about projects in its financial management information system (Finance One) and its On-line Milestone Reporting System.

2.20 AIMS stores the title and description of each research task[23] and links each task to one of its 12 KRAs in Finance One. AIMS also includes the budget, expenses and revenues for each project task and the name of the co-investment partner from which it is recovering funds. This information assists AIMS to track its expenditure and revenue against its project budgets.

2.21 AIMS records and monitors its project milestones in its On-line Milestone Reporting System. The milestone reporting system also includes the project's objectives, the project's relationship to relevant AIMS KRAs, partners, project personnel and the project's status. The On-line Milestone Reporting System provides information on whether project milestones are being met.

Training and development of staff

2.22 AIMS co-investment strategy has resulted in it making decisions to engage in larger and more complex co-investment projects in order to achieve the benefits outlined in its model. In this environment project management skills are vital, as the impact of not effectively managing projects could have a significant impact on the organisation. The ANAO examined whether AIMS had a clear and structured approach for the training and development of its project management staff.

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[22] ANAO, *Management of Scientific Research and Development Projects in Commonwealth Agencies*, p. 10.

[23] AIMS projects usually contain a number of research tasks.

2.23 AIMS does not provide any structured project management training for its staff.[24] However, AIMS project managers can attend seminars, conferences or training courses which deal with project management.[25] AIMS relies on on-the-job training, and the support provided by Finance, CSG and the Research Directorate to develop managers' project management skills and knowledge.

2.24 AIMS has appointed staff with project management skills for some of its largest and most complex projects, however, it generally appoints staff for their research skills. The ANAO considers that AIMS would benefit from implementing a more structured approach to project management training and development. The benefits of this would include:

- the opportunity to promulgate AIMS policy on project management;
- ensuring staff receive appropriate training as progression to positions requiring more project management skills occurs; and
- fostering a common approach to project management.

Conclusion

2.25 AIMS has broadly implemented support for project management, recognising there are some areas for improvement. It has policies and guidelines on some aspects of project management and uses templates, checklists and information systems which store project information to promote a consistent approach to its processes. In addition, it has two centralised support areas to assist staff in project management. However, there would be benefit in maintaining a single reference point where project policy and guidance could be easily accessed in order to provide further practical assistance to project managers.

[24] Structured training is a coordinated program of both internal and external training to meet identified needs.

[25] AIMS has established a Diploma of Business (Frontline Management) with the Barrier Reef TAFE to provide general management training for its staff. Currently, seven AIMS support staff are enrolled in the course. No AIMS research staff who manage research projects are enrolled due to the time commitment involved. The AIMS Diploma includes electives which cover project management.

3. The Approval of AIMS Co-investment Research Projects

This chapter examines the approval processes for AIMS co-investment research projects. This includes an examination of whether AIMS projects have measurable objectives, are linked to its strategic directions, and consider the needs of partners and stakeholders. It also examines whether the impact and value for money of research are considered before approval, and whether the reasons for selecting research proposals are clearly documented.

Introduction

3.1 AIMS co-investment research projects involve financial contributions from AIMS and its co-investment partners. AIMS capacity to enter into new co-investment research projects is limited by its ability to match its co-investment partner's financial contributions from its own appropriation funds. AIMS advised that its level of co-investment has now reached the limit of its capacity, resulting in it declining several research proposals. However, as AIMS completes several large commercial projects over the next few years, it expects its capacity to enter into new research projects will improve.

3.2 'Choosing which projects to undertake is one of the most important and difficult decisions facing research and development organisations.'[26] This is important as each year research organisations invariably receive more research proposals than can be funded. Therefore, establishing sound project approval processes is necessary in order to assure government, partners and stakeholders that the 'right' projects are approved.

The source of co-investment research proposals

Internal proposals from co-investment entities

3.3 Co-investment entities administer research programs by bringing together research providers and research users to conduct research. AIMS is represented on the management boards of four co-investment entities (refer Table 3.1). These co-investment entities have their own governance structures which includes a governing board responsible for strategy, financial management and research delivery. In addition, co-investment entities have

[26] ANAO, *Management of Scientific Research and Development Projects in Commonwealth Agencies*, p. 17.

advisory groups that design, manage, and evaluate a portfolio of research tasks. AIMS and other research providers and users identify research opportunities through their representation in co-investment entities. This usually results in AIMS and any potential partners developing research proposals which are approved as part of the co-investment entities' research plans.

3.4 The co-investment entities with which AIMS are partnered have resulted from major Commonwealth or State government funding initiatives. Table 3.1 outlines the co-investment entities where AIMS is represented.

Table 3.1

Co-investment entities

Government funding Initiative	AIMS Co-investment Entity
The Commonwealth Environment Research Facilities Program was a key election promise by the then Prime Minister in September 2004. Under this program $100 million was provided to support proposals that demonstrated strong public good outcomes. Announced at that time was $40 million (of the $100 million) for a Marine and Tropical Sciences Research Facility (MTSRF) to support research relating to the Great Barrier Reef and tropical rainforests in North Queensland. MTSRF is located within the Environment, Water, Heritage and the Arts portfolio.	Marine and Tropical Science Research Facility
The Western Australian Major Research Facility Program granted $21 million to form the Western Australian Marine Science Institution (WAMSI). The purpose of WAMSI is to bring together marine researchers with differing disciplines and backgrounds to pursue world class marine science, technology, education and training for the economic, social and environmental benefit of Western Australia.	West Australian Marine Science Institution
The National Collaborative Research Infrastructure Strategy (NCRIS) was announced by the Federal Government in 2004 as part of its *Backing Australia's Ability – Building our Future through Science and Innovation* policy. Under NCRIS, the Government provided researchers with major research facilities, supporting infrastructure and networks necessary for world-class research. One of the NCRIS initiatives was to provide $50 million to create an Integrated Marine Observing System (IMOS). The IMOS office operates out of the University of Tasmania. AIMS developed the Great Barrier Reef Ocean Observation System (GBROOS) as part of this initiative.	Integrated Marine Observing System Office
The Reef Water Quality Protection Plan (RWQPP) was jointly released by the Australian and Queensland Governments in October 2003. The Natural Heritage Trust approved a grant of financial	Great Barrier Reef Marine Park Authority

Government funding Initiative	AIMS Co-investment Entity
assistance to the Great Barrier Reef Marine Park Authority (GBRMPA) for the implementation of long-term water quality and ecosystem monitoring program in the Great Barrier Reef Lagoon. The GBRMPA contracted AIMS to monitor the water quality on the Great Barrier Reef on its behalf.	

Source: AIMS documentation.

Internal proposals from AIMS scientists

3.5 Research proposals can also be generated internally by AIMS scientists who identify opportunities in the course of their work. This may involve the extension of existing work or the identification of new opportunities as a result of attending conferences, seminars and workshops.

External proposals

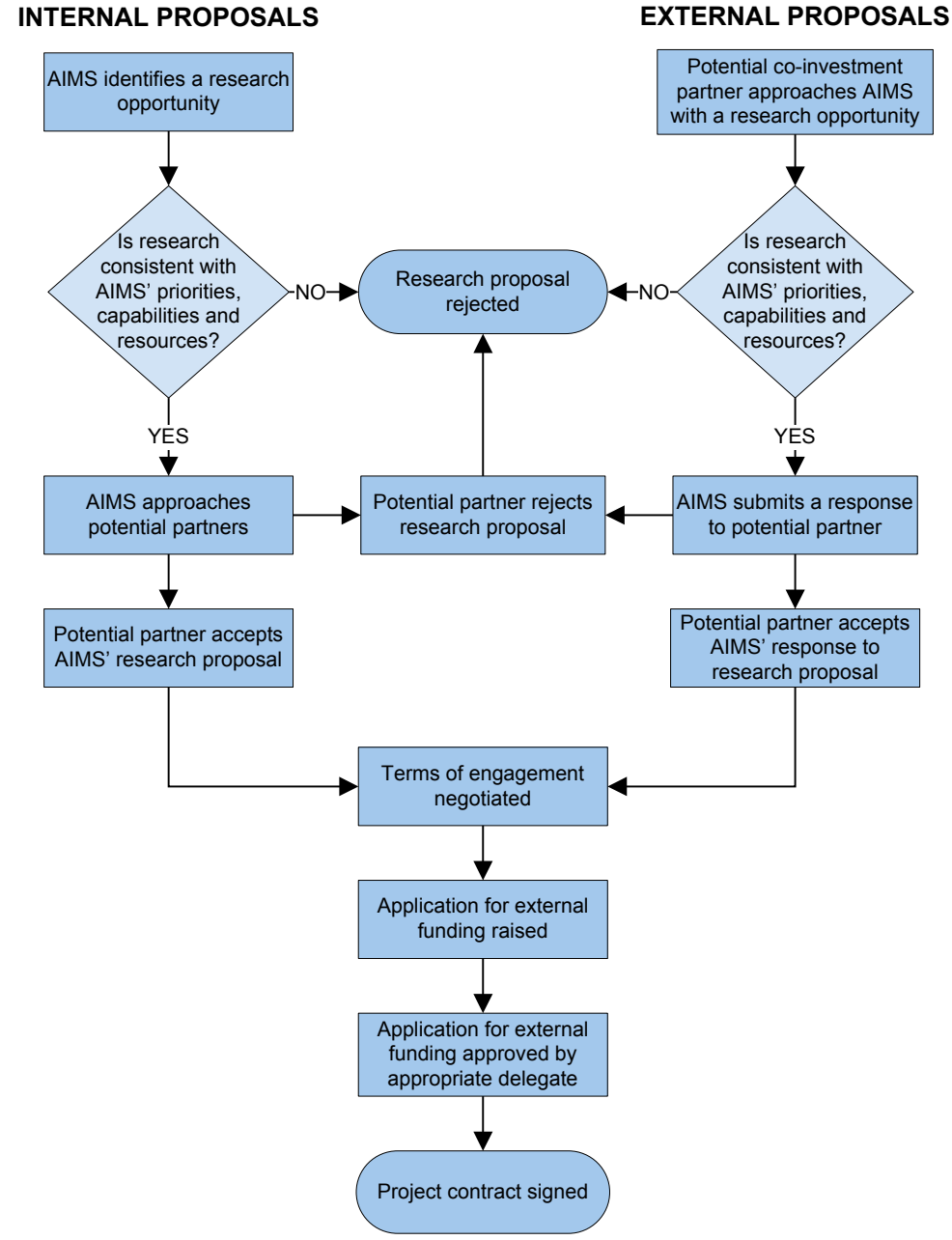
3.6 Research proposals are also generated when an organisation which is not a co-investment entity, or represented on a co-investment entity board, approaches AIMS with a proposal. AIMS considers these proposals on a case by case basis.

Approval processes

3.7 Figure 3.1 outlines AIMS approval processes for externally and internally generated co-investment research proposals.

Figure 3.1

Approval process for co-investment research proposals



Source: ANAO analysis of AIMS approval documentation.

3.8 Table 3.2 summarises the actions of each signatory in the approval process.

Table 3.2

Approval of co-investment research

Action	Actioning Officer
Recommendation of investment opportunity	Proponent
Confirmation of the availability of team resources	Research Team Leader
Assessment of strategic fit with organisation	Research Directorate
Assessment of level of co-investment	Chief Finance Officer
Committing AIMS to contractual obligations	Relevant delegate(s)

Source: AIMS approval documentation.

3.9 Against this background, the ANAO examined AIMS processes for the approval of its co-investment research projects. In particular, ANAO looked at whether AIMS:

- has measurable objectives for each research project;
- links project objectives with government policy and its strategic directions;
- considers the needs of its partners and stakeholders before approving research projects;
- assesses the likely impact and value for money of research proposals; and
- documents the reasons for approving research proposals.

Projects have measurable objectives

3.10 In order for management to be able to assess whether a project has or has not been successful, it is useful for each project to have a concise statement of what the project aims to achieve. Project objectives should be measurable, be agreed with partners and stakeholders, be realistic and have a timeline for completion.[27]

3.11 The ANAO examined whether the 35 projects in the audit sample had measurable objectives. The projects examined consistently included project objectives in approval documentation, project contracts and research team

[27] Dobie C, *A Handbook of Project Management,* Allen & Unwin, Crows Nest, July 2007, p. 51.

proposals. Project objectives were measurable, agreed with partners and stakeholders and had a schedule for completion. Examples of measurable project objectives included activities such as quantifying scientific data, identifying links between scientific data sets, identifying critical thresholds impacting on marine ecosystems and developing scientific indicators to inform further research. This allows AIMS to measure its achievement against its objectives during and at the completion of projects.

Alignment of project objectives with government policy and strategic directions

3.12 A key criterion in the selection of projects is how well the objectives of the proposed project align with the organisation's objectives and relevant government policy. Aligning project objectives with an organisation's goals reduces the risk of selecting the 'wrong' projects.[28] The ANAO examined whether AIMS aligned the objectives of its proposed projects to its strategic directions and relevant government policy.

3.13 In the six projects in the audit sample approved by the Chair or the Council, AIMS linked the objectives of the projects to its strategic directions in its approval documentation.[29] Also, the minutes of Council meetings discussed the relevance of these projects' objectives to AIMS strategic directions. For the 22 projects approved by the CEO, AIMS linked project objectives to existing AIMS research projects and its KRAs in its approval documentation. By establishing a link between each project's objectives and its KRAs, AIMS was able to align each project's objectives with one of its three strategic directions.

3.14 The link between individual project objectives, KRAs, AIMS strategic directions and the Government's National Research priorities is included in AIMS research team proposals which are consolidated into the AIMS Research Plan.

Consideration of partners' and stakeholders' needs

3.15 One of the key criteria in the selection of co-investment projects is the consideration of partners' and stakeholders' needs. The ANAO examined the

[28] ANAO, *Management of Scientific Research and Development Projects in Commonwealth Agencies*, p. 17.

[29] Approval documentation also included a brief summary of how the project fitted with the goals in AIMS Research Plan.

processes AIMS used to engage with its partners and stakeholders and how their needs are considered in the approval of research.

3.16 AIMS develops its strategic directions in close consultation with its partners and stakeholders. AIMS has a Strategic Science Team (SST)[30] to facilitate this consultation and make recommendations to its Management Group about future AIMS research. The AIMS SST employs an extensive consultation process which involves consideration of its partners' and stakeholders' comments before recommending AIMS direction for its future research. The consultation process is documented and involves AIMS forwarding its draft strategic direction to its partners and stakeholders for written comment. AIMS follows up written submissions with a discussion with each partner and stakeholder, where each party's views, ideas and concerns are communicated.

3.17 As mentioned in paragraph 3.3, AIMS is represented on the management boards of four co-investment entities, where it is involved in establishing the co-investment entities' priorities, research strategy and research program. This provides AIMS with an opportunity to identify its partners' and stakeholders' needs and consider them in the design, implementation, delivery, progress and evaluation of its co-investment research projects.

3.18 In addition, AIMS negotiates with its potential co-investment partners through its Commercial Services Group to establish the terms and conditions of its co-investment contracts. AIMS does this by outlining the terms and conditions it is seeking in its contract, and negotiating with the potential partner until agreement is reached.[31]

3.19 The projects in the audit sample which were approved by the Chair or Council outlined the benefits that would be delivered to the users of research as a result of each project. For projects approved by the CEO, the benefits to research users were not clearly documented in approval documentation. The ANAO considers that the documentation of benefits to research users in the projects approved by the Chair or the Council provided assurance that stakeholders' and partners' needs were considered before these research

[30] The AIMS CEO appoints both scientific and non-scientific staff to the SST.

[31] Issues considered included the project obligations of AIMS and its partner, IP ownership, commercialisation of research, confidentiality provisions, dispute resolution procedures and arrangements for project management committees/boards.

proposals progressed to contracts. However, the benefits were not as clear for projects approved by the CEO.

Assessment of likely impact and value for money

3.20 Identifying the likely impact and value for money of research proposals is an important consideration for research organisations when approving projects. Since research projects may have both positive and negative effects, these impacts need to be understood in order to assess the value for money of each research proposal. The ANAO examined whether AIMS identified and assessed the likely impacts and value for money of projects before approving them.

3.21 The detail included in approval documentation regarding the likely impact of projects on AIMS varied across the research proposals examined. AIMS projects with one co-investment entity, which had eight projects in the audit sample, included detailed information highlighting the value of the research to AIMS. Another six projects approved by the Chair or the Council outlined the benefits of the proposed research in approval documentation. However, the other projects in the sample did not set out the likely impact of projects, other than providing a brief summary of the relevance of the project to existing AIMS research and the impact on its finances and resources.

3.22 Approval documentation outlined the co-investment partner's financial contribution, AIMS financial contribution, and any costs AIMS expected to recover from its co-investment partners over the life of the project. This information provided the relevant delegate with a summary of the project's financial impact on AIMS, and whether the project represented a good investment opportunity.

3.23 AIMS approval documentation also included details of its staff, office, laboratory, ship charter and other services which would be required to complete the project. In addition, projects approved by the Council provided supporting information on the impact on resources, finances and financial strategies. This enabled delegates to assess the resource impacts of projects before approval. However, approval documentation did not include an outline of project risks which would assist in strengthening its assessment as to whether projects represented value for money of research proposals. Chapter 4 discusses AIMS framework for managing its risks, before and after project approval, and the processes it uses to conduct project risk assessments.

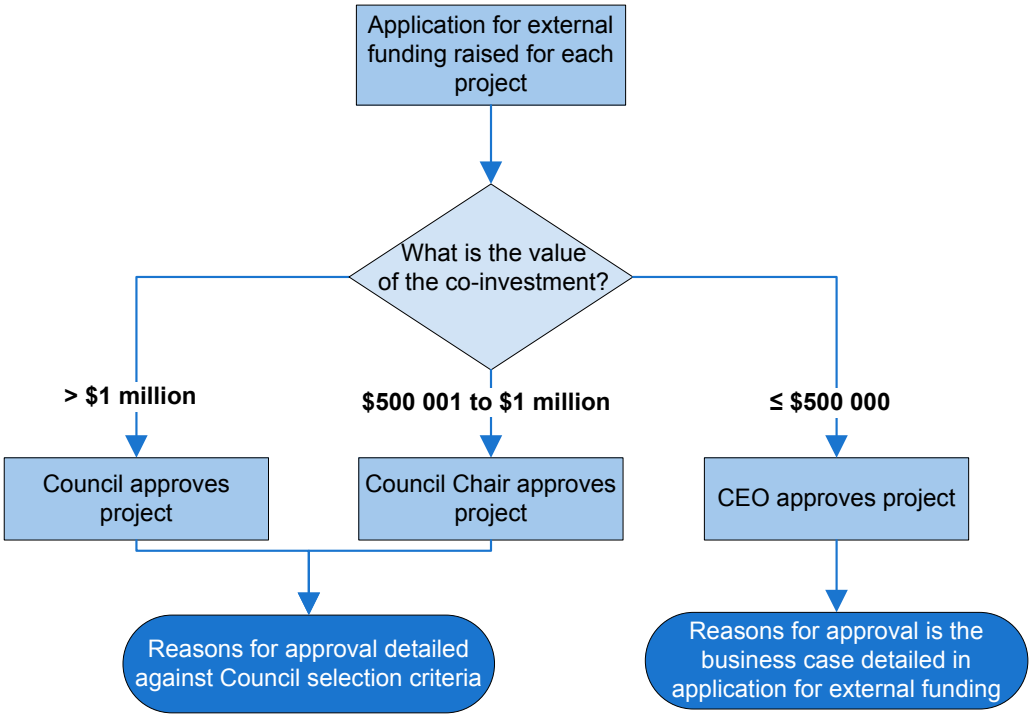
Documentation of reasons for selecting research proposals

3.24 'Approval of research proposals should be made in an accountable and visible manner in order to justify why an organisation should undertake a project. The approving delegate must be convinced that a project, if implemented, will increase value to the organisation. Therefore, reasons for selecting projects must be clear, convincing, well supported and factual.'[32] The ANAO examined whether AIMS had a consistent and clear process which outlined its reasons for selecting research proposals. Figure 3.2 outlines how AIMS documented its reasons for selecting proposals.

[32] Dobie C, *A Handbook of Project Management,* Allen & Unwin, Crows Nest, July 2007, p. 39.

Figure 3.2

Documentation of project approval



Source: ANAO analysis of AIMS data.

3.25 AIMS co-investment projects within the delegation of the CEO are approved using an application for external funding, which present the business case that includes amongst other elements, a research outline and the financial and resource impacts of the project.

3.26 AIMS projects which are approved by the Chair and the Council require an application for external funding to be raised, plus a minute requesting approval against five criteria. These criteria are:

- fits to AIMS goals as reflected in the AIMS Research Plan;
- impact on resources;
- impact on AIMS finances and financial strategies;
- whether further consideration is required by the Council; and
- the benefits of the research to the user.

3.27 Of the 28 continuing projects in the audit sample, 22 were approved by the CEO. Each project had an application for external funding, however they

did not include a succinct explanation of why the research proposal had been approved against approval criteria as was the case for projects approved by the Council.

3.28 Of the 22 projects approved by the CEO, three projects had values within the Chair's or Council's delegation. These three projects were conducted with the same co-investment entity and were the continuation of existing projects which were previously funded through a different entity. While the different sources of funding for these projects had resulted in a change to their administrative arrangements, the research focus of these projects remained the same.

3.29 AIMS approval documentation for these three projects indicated that the projects were approved for a four year period. The ANAO noted that the total value of each of these projects over the four year period required Council approval, but that the projects had been approved by the CEO.[33] During the audit, AIMS advised that these approvals were for a 12 month period, as the co-investment entity could only provide certainty of funding 12 months in advance. Project approval documentation for these projects included the annual cost of each of the projects, and as each project's 12 month expenditure was within the CEO's delegation, AIMS considered that Chair or Council approval was not required.

3.30 AIMS approval documentation for these projects did not communicate clearly that project approval was only for 12 months. This resulted in AIMS not clearly summarising the reasons for the approval of these projects against the Council's approval criteria. In such circumstances, it would be prudent for AIMS to agree to use the Council's criteria when assessing these projects.

3.31 The remaining six of the 28 continuing projects that were examined, were approved by the Chair or the Council in accordance with AIMS financial delegations. AIMS had clearly and succinctly summarised the reasons for the approval of these projects against the Council's five approval criteria.

3.32 AIMS would benefit from applying the same criteria it uses for projects approved by the Chair and Council to projects approved by the CEO. This would assist it in detailing its reasons for approving research proposals, and provide assurance that it is approving projects which are likely to provide the greatest value.

[33] Although the projects were approved by the CEO, the Council was still aware of their existence through AIMS involvement in the development of the entity's research investment strategy and annual research plan. AIMS reported this involvement to its Council on a regular basis.

Recommendation No.1

3.33 The ANAO recommends that, in order to improve the transparency of its reasons for approving projects, and to provide assurance that it is approving projects which are likely to provide the greatest value, AIMS assess projects approved by the CEO against the same criteria used by the Council.

AIMS response

3.34 Agreed. AIMS research plan and its strategic research directions provide the framework against which research projects are developed. This framework and information required in project proposals are part of the research culture within AIMS and provide a mechanism to judge the value of proposed research. However AIMS recognises that utilising a more formal summary of the approvals system will aid transparency and also provide a much improved historical record and retained corporate knowledge. AIMS is therefore currently implementing an improved approval system for all projects, including those that are approved by the AIMS Council. Furthermore co-investment is critical for AIMS to deliver its research outputs and the organisation needs to carefully consider co-funding opportunities in the context of its appropriation funding. This is a complex balance between securing funds versus retaining flexibility to respond to future opportunities. With its appropriation budget currently fully allocated optimising this balance will provide the maximum scientific outputs.

Conclusion

3.35 AIMS had implemented project approval processes which aligned its project objectives to its strategic directions and summarised the likely financial and resource impacts. Also for projects over $500 000 in value it outlined possible benefits to research users. Assessing CEO approved projects against the same criteria as those used by the Council would provide AIMS with assurance that projects that are likely to provide the greatest value are being approved.

4. The Management of AIMS Co-investment Research Projects

This chapter assesses the processes AIMS uses to manage its research projects. These include project management plans, risk assessments, contractual arrangements, financial management controls, project monitoring and review and reporting to co-investment partners.

Introduction

4.1 'Research projects can benefit from the use of standard project management techniques. Project management can support the achievement of project and organisational goals, as well as give greater assurance to stakeholders that resources are effectively managed.'[34] The ANAO examined AIMS project management of its co-investment research once research proposals are approved. In particular, the ANAO assessed whether AIMS:

- had project management plans;
- conducted project risk assessments;
- included the responsibilities of each party to its research projects in contracts;
- established financial policies and controls to manage its research projects which met its legal obligations;
- monitored and reviewed project progress on a regular basis and documented the results; and
- produced project progress and performance reports.

Project plans

4.2 The ANAO Better Practice Guide on the *Management of Scientific Research and Development Projects in Commonwealth Agencies* states:

> Clearly articulated and documented project plans are an important part of project management. Project plans provide a baseline in terms of scope, schedule and budget against which project progress can be measured.[35]

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[34] ANAO, *Management of Scientific Research and Development Projects in Commonwealth Agencies*, p. 3.

[35] ANAO, *Management of Scientific Research and Development Projects in Commonwealth Agencies*, p. 29.

4.3 All of the projects examined had project management plans. In 24 of the 28 continuing projects examined, AIMS developed project management plans after research proposals were approved. For the other four continuing projects, plans were attached to applications for external funding in order to support decisions by management to proceed with projects. The ANAO examined whether AIMS project plans included the project's tasks and resources.

Project tasks

4.4 A project's tasks is a description of the work that must be done to complete the project. It includes the major expected project deliverables that must be separately managed to achieve the project's objectives.[36] Each of the projects examined included task objectives or activities which described the projects' major deliverables. AIMS then divided project deliverables into a series of milestones which summarised the tasks to be completed to achieve project objectives.

Project costing

4.5 Accurate estimation of a project's costs assists managers to:

- determine whether the investment return is justified by the project;
- set the price to be charged to an external party;
- justify the organisation's entitlement to intellectual property in co-investment projects; and
- monitor cost outcomes against budget.[37]

4.6 AIMS included its financial contribution and that of its co-investment partners in its project plans. AIMS financial costing included the cost of the time committed to a project for each staff member, expressed as a percentage of the staff member's full time equivalent (FTE) salary.[38] In addition, the operating costs incurred by AIMS in conducting its business, capital equipment costs (including the use of AIMS ships, computer and laboratory equipment), travel for project fieldwork and management costs were included in project plans.

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[36] ibid., p. 30.

[37] ibid., p. 31.

[38] A member of staff's salary level at a particular time, expressed in terms of the amount which would be paid to them were they to have a full-time work contract for a full year. Excludes leave loadings and payments for overtime work.

Project risk assessment

4.7 Co-investment projects involve risks such as economic or financial loss, physical damage to assets and injury to staff. The identification, assessment, monitoring and review of these risks, and the development of risk management strategies, assists to manage their impact. The ANAO examined AIMS framework for managing its co-investment risks.

Risk management policy and plan

4.8 AIMS has a risk management policy which sets out its key objectives and principles regarding the management of risk. AIMS policy acknowledges that there is risk in its business, and that the effective management of its risks has the potential to allow it to take advantage of more challenging opportunities. In addition, it emphasises that all managers are responsible for managing risk within their span of control.

4.9 AIMS identified its key risk areas in a risk register. The risk register, which was prepared in 2005, details 35 key risk areas and outlines causes, effects, current situations and suggested improvement actions. One of the key risk areas AIMS identified was maintaining and expanding its external earnings under its co-investment research model. AIMS assessed the risk as high with significant scope for improvement of internal controls. The ANAO noted that the risk register had not been updated since 2005, although AIMS had taken actions to improve its internal controls around maintaining and expanding its external earnings. This included integrating its external funding strategy with its strategic and research plans, increasing resources in its contracts support area and developing guidance on the financial aspects to be included in research proposals. Also during the audit, AIMS advised that it was in the process of revising its risk register. This involved:

- reviewing its risks and opportunities;
- examining the main controls that were currently in place; and
- adding new risks using pre-determined criteria in order to assess their likely impact.

Project risk management

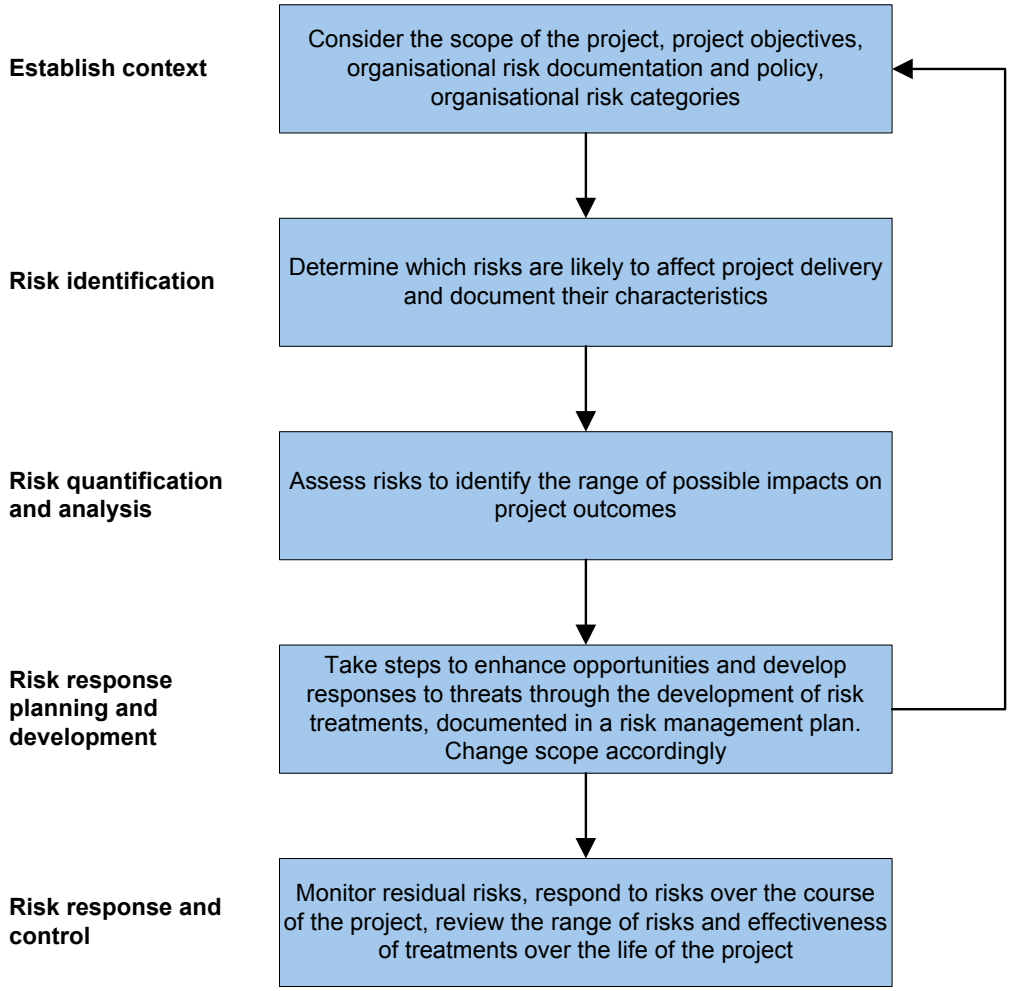
4.10 'Business risks are best managed and controlled as close as possible to their source.'[39] The risks associated with co-investment activity arise through

[39] J DeLoach, *Managing Risk, Managing Value*, Pearson Education Ltd, London, 2000, p. 22.

the conduct of individual co-investment projects. 'Project risk is a combination of the probability of an adverse event occurring and the consequence such an event may have on a project's objectives or particular success criteria.'[40] Figure 4.1 shows an overview of a generic project risk management process.

Figure 4.1

Generic project risk management process



Source: ANAO, *Management of Scientific Research and Development Projects in Commonwealth Agencies*, p.32.

4.11 As mentioned at paragraph 2.5, AIMS outlined risk management guidelines for its co-investment projects in its Budget Manual. This included a requirement for persons initiating or recommending projects to document all

[40] Dobie C, *A Handbook of Project Management,* Allen & Unwin, Crows Nest, July 2007, p. 135.

risks associated with a project and the action taken to minimise them. Risk treatment options included reducing the risk, transferring or accepting the risk, avoiding the risk or managing its consequences.

4.12 Of the 28 continuing projects in the audit sample, AIMS had only documented its own risk assessment for one project, and produced a risk management plan, although, it did participate in the development of two documented risk assessments as part of its involvement in projects with co-investment entities. AIMS own risk assessment was for a large scale project of high cost and complexity. In that risk assessment, AIMS identified, assessed and monitored the financial, reputation, scientific, environmental and safety risks of the project and proposed risk reduction measures. In addition, the risk assessment informed the development of the project's contract, with clauses included in the contract to reduce the impact of identified risks. The ANAO noted that the risk management plan was developed in December 2007 and the risk profile had been revised in February 2008. The risk assessment for this project represented an example of sound management practice.

4.13 AIMS did not document risk assessments for the other projects examined. However, during the audit, AIMS advised that discussions on risk took place between Council members for all its high cost projects requiring Chair or Council approval, but were not referred to or conducted as risk assessments.[41] The ANAO noted four project proposals which were outside the audit sample where discussions about the project's value and risk had resulted in AIMS declining the proposals. Reasons for not approving the project proposals included:

- confidentiality provisions that prevented AIMS from publicly releasing the results of its research;
- unacceptable licensing arrangements;
- insufficient funding;
- inability of AIMS to recover its costs; and
- questionable value of the quality of the science and its contribution to AIMS objectives.

4.14 Also, AIMS considered its representation on four co-investment entities' boards, committees and advisory groups, and its regular reporting

[41] AIMS advised risk assessments often involved assessments of the project's operational and science feasibility.

against project milestones assisted it to minimise the risks associated with its projects with co-investment entities.[42]

4.15 The cost of managing risks needs to be commensurate with the benefits obtained.[43] The Chair and Council considered the impact of risks for projects during the assessment of project proposals. This approach of conducting risk assessments on these relatively high cost projects was appropriate. However, AIMS did not do this in a consistent manner, nor was it clearly documented. There would also be benefits for AIMS if it documented project risk assessments for its co-investment projects where the scale, length, and/or complexity of projects warranted. Benefits would include the ability to:

- identify those factors which represent the greatest risk for AIMS;
- facilitate identification, assessment and control over those risks which AIMS has influence;
- identify contract clauses to reduce the impact of risks;
- identify and review the status of existing risks;
- identify emerging risks and develop risk reduction measures; and
- better target management effort to those areas which represent the highest risks.

Recommendation No.2

4.16 The ANAO recommends that, in order to effectively identify, assess, monitor and review project risks, AIMS document risk assessments where the scale, length, cost and/or complexity of co-investment projects warrants.

AIMS response

4.17 Agreed. AIMS agrees with the recommendation to improve how it assesses the risks for each project. AIMS has commenced adopting the approach it used to assess one of its large projects on all new projects. This approach is recognised by the ANAO as being best practice and it will be progressively applied commencing with new large projects and moving to small projects in 2009. At the same time processes to more formally assess risks during the implementation and completion phases will also be adopted.

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[42] Reporting included monthly project milestone reporting, and for most entities a mid-year and annual report.

[43] Standards Australia, *Risk Management AS/NZS 4360:2004*, Standards Australia International Limited, Sydney, 31 August 2004, p. 21.

Contracting arrangements

4.18 'A contract provides a baseline for management in terms of managing risk, managing relationships, managing resources, specifying responsibilities, behaving ethically and keeping records.'[44] AIMS co-investment projects require AIMS and its co-investment partners to work together to deliver project outcomes. It is critical that AIMS establishes its project responsibilities and those of its co-investment partners so that it can manage its co-investment projects in an efficient and effective manner. The ANAO examined whether AIMS had developed contracts for its co-investment projects which identified its responsibilities and those of its partners.

4.19 Each project examined had a contract that included the responsibilities of AIMS and its partners. These contracts included the staff positions responsible for individual tasks and the project milestones. AIMS uses standard form contracts to outline the terms and conditions of its relationships with its co-investment partners.[45] Generally, AIMS IP is freely available if the co-investment project only involves government bodies, or is the subject of a licensing agreement if research is funded by a non-government commercial entity. When AIMS invests in IP, it writes the expenditure off as a cost which cannot be recovered unless it can establish that the expenditure will result in financial returns from commercialising IP. This is consistent with the accounting treatment for intangible assets prescribed in *Accounting Standard AASB 138 Intangible Assets.*

4.20 The ANAO Better Practice Guide on *Developing and Managing Contracts* states:

> Provisions to allow and regulate variations should be a standard feature of all contracts. It is accepted practice for variation mechanisms to provide for variations to be agreed between the acquiring entity and the contractor in writing through an amendment of the contract.[46]

4.21 AIMS outlines its procedures for processing contract variations in its co-investment contracts. Generally, variations to AIMS contracts require a letter of variation to be agreed in writing by all parties. Of the 28 continuing

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[44] ANAO *Better Practice Guide - Developing and Managing Contracts*, February 2007, Canberra, p. 2.

[45] Contract clauses usually included such items as dispute resolution procedures, ownership of intellectual assets and property, conflicts of interest, disclosure of information to third parties and commercialisation of research outputs.

[46] ibid., p. 86.

projects examined, four projects had been subject to a contract variation. The ANAO's examination of the four contract variations confirmed that AIMS or its partners wrote letters to each other requesting the variations, and these requests were acknowledged by all parties in writing before acceptance.

Work commencing before contract approval

4.22 AIMS had commenced work against three co-investment contracts in the audit sample before the contract was agreed and signed. AIMS had commenced work against these contracts because of critical timelines and there had been either:

- delays in obtaining funding and resources from partners;
- key personnel unavailable to sign contracts;
- seasonal factors where delays could mean waiting for 12 months or more before work could commence; and/or
- situations where project completion was mandatory to progress other scientific research.

4.23 In one case, a contract had a start date of 1 July 2006, however, the first milestone report was completed in June 2006, indicating that work had begun before the commencement date for the contract. The contract was signed on 29 November 2006, almost five months after the start date. AIMS advised that work commenced on this project prior to signing the contract because it was seeking to meet a critical timeline, and there was a delay in approving the co-investment entity's annual research plan due to the unavailability of key personnel. AIMS considered that this practice did not represent a risk to it as the responsibilities of the parties to the contract were agreed in principle prior to AIMS commencing work.

4.24 In another case, AIMS commenced work before the contract was signed due to delays in obtaining funding and resources from research partners. AIMS had made significant commitments of scientific and operational resources in the expectation that the work would commence on time, and was under pressure to provide scientific baseline data to support the implementation of a management plan. In this instance, AIMS started work on a series of critical projects on 1 January 2006 through a special grant made by a state government. The contract was not signed until 12 March 2007 despite having a commencement date of 1 July 2006. AIMS advised that the advanced

state of contract negotiations, and the low risk associated with obtaining funds from the entity, justified commencing work before contract signature.

4.25 In another instance, a commercial entity requested AIMS to commence work on a project before the contract between the two organisations was signed, as it wanted AIMS work to coincide with the annual spawning of coral. A delay would have meant a 12 month postponement of the work. At the request of AIMS, the commercial entity raised a series of purchase orders, which provided AIMS with the authority for individual tasks to proceed and enabled it to invoice the entity to recover its costs.

4.26 AIMS considered its practice of commencing work against some contracts before signature was a low risk as these contracts were with long term partners, contract responsibilities had been agreed in principle, contract negotiations were well advanced, funding had been assured or purchase orders had been raised by its partner. In the three cases examined by the ANAO, AIMS had met its critical project timelines and there had not been any adverse consequences for it from commencing work before contract signature.

4.27 The ANAO encourages AIMS to continue to examine the risks of commencing work before contract terms and conditions have been finalised. Such risks may include disputation over: the scope of work to be delivered; the terms against which the work will be delivered; the quality standards of the work; the schedule for delivery; and financial arrangements. The ANAO suggests that in cases where project risks are likely to expose the Commonwealth to unnecessary risks, work should not commence against those contracts; however where work does commence ahead of contract signature due to special circumstances, there should be a clear understanding between the parties on the applicable arrangements.

Financial management and internal controls

4.28 The *Commonwealth Authorities and Companies Act 1997* (CAC Act) outlines the reporting and accountability requirements for Commonwealth authorities and Commonwealth companies and deals with other matters such as banking and investment, and the conduct of officers including directors. As a statutory authority, AIMS is subject to the requirements of the CAC Act. The ANAO examined whether AIMS managed its project finances in accordance with government policy and its legal obligations, and had appropriate financial controls in place.

Calculation of project costs

4.29 Once AIMS identifies and scopes a research project, a representative of Finance, in conjunction with the research team proposing the research project, calculates the cost using a project pricing model.[47] AIMS charges a percentage of the project cost to its co-investment partner, and contributes the remainder itself.[48] Guidelines setting out its preferred percentage contributions are included in its Budget Manual.

4.30 The CFO reviews each project's costing to determine the financial viability of the project. If the CFO assesses the project proposal as financially viable, and it is endorsed by research management,[49] proposals are forwarded to delegates for approval. The respective delegate(s) consider the CFO's decision regarding the project's financial viability in addition to other approval criteria. Once projects are approved, a contract is raised and Finance includes the financial details in the contract.[50] The ANAO reviewed the costings for the sample of 28 continuing projects. For each project there was an approved costing report which matched the project costing in the signed contract.

Creating the project finance record

4.31 Finance allocates an internally employed accountant to each research team. The team accountant creates a project record in AIMS financial management system when a co-investment contract is signed. Team accountants are the only personnel with the authority to create project tasks in the financial management system. AIMS records the milestones for the project on a separate system called the On-line Milestone Reporting System. The projects in the audit sample each had project finance and milestone records.

Billing of co-investment partners

4.32 Team accountants meet regularly with research staff to ascertain whether milestones are being met and to adjust forecasts. When a milestone is reached, Finance raises an invoice which is sent to the co-investment partner. Invoices can only be raised when a project task is created. In order to track

[47] AIMS costing model includes the number of project staff, annual salaries, travel, accommodation, overhead costs and the purchase of any specific specialist equipment.

[48] AIMS financial contribution is referred to as its 'in-kind contribution'.

[49] Each research proposal required endorsement from the Research Team Leader, Research Manager and Research Director.

[50] Finance retains a copy of the final signed contract.

payment records easily, AIMS invoices are sequentially numbered for each research project.

4.33 Co-investment partners usually pay AIMS electronically by direct deposit into AIMS bank account, which Finance identifies while performing bank reconciliations. The ANAO considers that the projects in the audit sample have adequate controls for the receipt and banking of payments, and the segregation of the invoicing and receipting functions established appropriate internal control of the billing and payment processes.

4.34 AIMS debtor collection is the responsibility of relevant team accountants. Finance produces a Monthly Aged Debtors Report which team accountants use to investigate 'bad' debts. The CFO reports to the AIMS Council each quarter on the action taken in regard to the collection of debts older than 30 days. AIMS does not have a policy for debt write-offs, although it advised during the audit that it intends to develop guidance on debt write-offs in the future.

4.35 The ANAO considers that the separation of AIMS project milestone and financial systems has the potential to result in instances where co-investment partners may not be billed by AIMS in a timely fashion when project milestones are reached. While there was no evidence of this occurring, the ANAO considers it an area for improvement. During the audit, AIMS advised that it has planned refinements during 2008–09. Refinements will include email notification by Research Teams to Finance when milestones are achieved which will generate a project invoice. The objective of AIMS upgrade is to improve the interaction between the systems.

Time recording

4.36 In 27 of the 28 continuing projects examined, AIMS tracked the time its staff spent on each project and this was updated monthly. This strengthened its understanding of the cost effectiveness of each of these co-investment projects and their impact on its budget. In the remaining project, which was with a non-government commercial entity and the subject of full cost recovery, AIMS used a time recording system to bill its staff time. This approach ensured that all AIMS staff costs were recovered for this project. The ANAO considers that AIMS approach to time recording for its projects was appropriate.

Revenue recognition

4.37 AIMS records its project revenue based on the percentage of the contract which was completed at the end of each month. Finance calculates this by comparing the proportion of the costs incurred with the estimated total project costs. The ANAO found that the revenue for the projects in the sample was recorded in AIMS financial management system accurately, and that payments made, revenue collected and costs recovered were in accordance with AIMS legislation, the CAC Act and AIMS procedures.

Monitoring and reviewing project progress

4.38 'Effective project monitoring enables senior management to assess each project's progress, identify and address problems, and reassess the project's relevance and priority.'[51] The ANAO examined whether AIMS monitored and reviewed each project's progress against its plans on a regular basis and documented the results.

4.39 AIMS uses four internal reporting mechanisms to monitor and review its projects. These are discussed in the following paragraphs.

On-line milestone reporting

4.40 AIMS uses an On-line Milestone Reporting System which is designed to provide it with current project information. The system includes each project's objective, title, owner[52], milestones, milestone due dates, progress and status. Project status is classified as either: completed; on-track; items due; or items overdue.

4.41 AIMS uses a colour coding system to enable system users to more easily identify project status. If system users require further information on project status, there is the capacity for project managers to provide additional descriptive text. Where projects were not on schedule, the reporting system did not provide reasons why. However, the ANAO noted that AIMS provides reasons for variations to project milestones in a separate report to the Management Group and the Council (refer paragraph 4.47).

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[51] ANAO, *Management of Scientific Research and Development Projects in Commonwealth Agencies*, p. 37.

[52] The owner is usually the project manager.

Research Director's reports

4.42 The AIMS Research Director produces performance reports regularly and the CEO presents the reports to the Management Group and the Council. Reports include monthly Science and Key Performance Goal reports to the Management Group, and quarterly Science and Key Performance Goal reports to the Management Group and the Council.

Science Report to the Management Group

4.43 The Science Report to the Management Group reports science activity against each of AIMS five research teams and includes a summary of research team highlights, involvement in external activities, transfer of information to research users and scientific papers completed and published.

4.44 The ANAO noted that the Science Report does not report progress against individual project objectives, however, it provides the Management Group with a summary of the scientific activity in each of its research teams.

Science Report to the Council

4.45 The Science Report to the Council reports against the 12 KRAs outlined in AIMS 2007–11 Research Plan. The report includes the resources applied by AIMS and its partners to each KRA, project progress, major scientific documents that had been published, and planned future activities. The Research Director also provides a copy of the report to the Management Group.

4.46 The Science report provides the Council and the Management Group with a detailed description of the project activities being progressed against each AIMS KRA. AIMS uses this information to report annually against its KRAs in its Annual Report.

Key performance goal report

4.47 The Key Performance Goal report provides a quick summary of performance against goals established each year and complements AIMS On-line Milestone Reporting system by explaining variances against project milestones to the Management Group and Council. The report includes a record of initial, adjusted and completed milestones for each of the projects in AIMS five research teams. Any variances against project milestones are displayed in numerical terms against the research team (for example, 'one publication overdue'). In all cases, the Key Performance Goal reports reviewed

by the ANAO included the reasons for project variances for each research team. These explanations for project milestone variances assist the Management Group and the Council to identify and address issues which are affecting project cost and timeliness.

Reporting project progress and performance between AIMS and its partners

4.48 Co-investment partners which were partnered with AIMS in delivering the projects in the audit sample reported project progress and performance to it on a regular basis. Project contracts and/or head agreements included arrangements on how and when project progress would be reported. However, the form, level, detail and frequency of the reporting differed depending on the partner involved in the project. For example, one partner which was partnered with AIMS in eight of the 28 continuing projects examined reported to AIMS annually and rated each project against three criteria: science quality, end-user relevance and milestone performance. Another partner involved in two of the projects in the audit sample reported project status at its board meetings where AIMS was represented.

4.49 Generally, AIMS and its partners included a requirement in all project contracts for a report after each field trip, and after each project milestone was reached. Usually, the party that initiated the project was responsible for outlining the reporting requirements in the contract.

4.50 AIMS also reported project progress in its annual reports to Government and its annual research team reports. Detail on these reporting mechanisms is included in Chapter 5.

Conclusion

4.51 AIMS uses a range of sound project processes to manage its research projects. These include project management plans, risk assessments, contractual arrangements which defined its and its partners' responsibilities, financial management controls, and monitoring, review and reporting mechanisms which reported against its project objectives. Where warranted by the scale, length, cost and/or complexity of projects, AIMS would benefit from documenting risk assessments for its co-investment projects.

5. The Reporting of AIMS Co-investment Research Projects

This chapter examines AIMS processes for reporting externally against its projects' objectives. It also assesses how AIMS reports against project objectives at project closure and provides assurance that its co-investment research is effective.

Introduction

5.1 The partners and stakeholders of government research agencies want to be assured that projects are achieving their objectives and project deliverables are to the standard detailed in research contracts, while Government holds agencies to account for the use of resources in achieving outcomes.

5.2 The ANAO examined the processes AIMS uses to report externally to partners, stakeholders, Government and Parliament during and at the completion of projects.

External reporting

Reports to partners and stakeholders

5.3 AIMS and its co-investment partners report project progress and performance to each other on a regular basis. As noted in Chapter 4, the ANAO examined the reporting between AIMS and its stakeholders and partners for the 28 ongoing projects in the audit sample and established that the terms for this reporting are in contracts. The reports examined by the audit team confirmed that the reports were produced in accordance with the terms detailed in contracts

5.4 In addition, the review of seven completed projects in the audit sample revealed that AIMS provides its final project reports to its co-investment partners, and this includes information on its performance against project objectives. AIMS also disseminates project information for the benefit of its partners and stakeholders on its website, its partners' websites, scientific papers, public conferences, and media releases.

Reporting to Government and Parliament

5.5 AIMS reports its performance against its research objectives to Government and Parliament in its annual reports against a range of

performance indicators including science quality, enhancing scientific relationships and effective use of resources. Also, under the previous Federal Government's guidelines, AIMS was subject to a review[53] at the completion of its funding agreement which measured its performance against its research plan.

Annual report

5.6 The 2007–08,[54] 2006–07[55] and 2005–06[56] annual reports outlined AIMS contribution to national research priority goals and included examples of individual research projects contribution to the Government's National Research Priorities. Table 5.1 includes two examples from the projects in the audit sample.

Table 5.1

Examples of co-investment projects contribution to Government's National Research Priorities

Example 1 **Great Barrier Reef Water Quality Protection Plan** **National Priority - Contribution to an environmentally sustainable Australia** 'The Great Barrier Reef Water Quality Protection Plan is a joint Commonwealth-Queensland initiative to halt and reverse the decline of water quality in inshore sections of the GBR Marine Park. In 2007–08, AIMS completed a third year of measuring water quality parameters and reef health along the far northern Queensland coast to support this 10-year program with a solid baseline against which to assess future change.'

[53] Lapsing program reviews are defined as policy measures which Cabinet has not specified if funding is ongoing or terminates.

[54] The Australian Institute of Marine Science, *Annual Report 2007–08,* 22 September 2008, p. 37, available at <www.aims.gov.au/publications> [accessed 10 December 2008].

[55] The Australian Institute of Marine Science, *Annual Report 2006–07, 17* September 2007, p. 35, available at <www.aims.gov.au/publications> [accessed 10 December 2008].

[56] The Australian Institute of Marine Science, *Annual Report 2005–06,* 25 September 2006, p. 29, available at <www.aims.gov.au/publications> [accessed 10 December 2008].

Example 2

Great Barrier Reef Ocean Observing System (GBROOS)

National Priority - Contribution to an environmentally sustainable Australia and frontier technologies for Australian industries

'In 2007–08, AIMS started to roll out major infrastructure along the Great Barrier Reef to create the backbone for the densest marine observing system in Australia. GBROOS will monitor interactions between marginal oceanic waters in the Coral Sea basin and shallow waters over the outer half of the continental shelf, making all of its observations freely available soon after collection. This will provide all researchers with a broad scale physical context for their studies.'

Source: Extracts from AIMS 2007–08 Annual Report.

5.7 AIMS also reported against performance indicators that were agreed between AIMS, the then Minister for Education, Science and Training and the Minister for Finance as part of its funding agreements.[57] Performance indicators are included at Appendix 4. AIMS reported against 16 indicators across three broad themes. These themes were:

- new knowledge and collaborative research and development;
- research services, specialised consulting; and
- licensing, patents and start-ups.

5.8 AIMS, reporting against its performance indicators in its funding agreement, described its project achievements and outlined the environmental, social and economic benefits of its research. In addition, in its 2006–07 Annual Report, AIMS described its achievement against its 2003–06 Research Plan, including achievements against its research goals and major highlights.

Lapsing program review

5.9 As mentioned earlier, at the end of each funding agreement AIMS performance was reviewed by the Government. AIMS 2003–06 funding agreement was reviewed by an interdepartmental committee under a Lapsing Program Review between July and September 2006 against terms of reference agreed by the Minister for Finance.[58] The review concluded that marine science research conducted by AIMS is operating appropriately, efficiently and effectively.

[57] ibid., p. 131.

[58] The Department of Finance and Deregulation discontinued Lapsing Program Reviews from 2007–08 and replaced them with Strategic Reviews of selected programs.

Project closure

Final project reports

5.10 At each project's completion, AIMS produces and distributes a final report to the Management Group, its partners and stakeholders. The ANAO reviewed seven final project reports. Four of these reports involved AIMS participation in CRC Reef projects. Final project reports for AIMS CRC Reef projects included the goals of each project, achievements, outcomes (that is, were the outcomes originally proposed produced), utilisation of findings (scientific, environmental, social and economic) and lessons learned.

5.11 The other three final project reports which the ANAO examined included the project's methodology, the scientific results and discussion of the scientific results. The ANAO noted that one final project report also outlined the significance of the project's findings for future AIMS research and detailed what tasks may follow from the current project.

Post project review and evaluation

5.12 Research organisations can benefit from post project reviews and evaluations. Benefits include assisting organisations to assess the:

- quality of project outputs;
- effectiveness of the management of the project; and
- outcomes achieved and/or benefits realised by the project.[59]

5.13 AIMS does not have a policy to conduct post project reviews of its co-investment projects. A post project review is not always appropriate for each project, particularly if projects are of low value and are unlikely to inform or influence future research directions. However, the ANAO suggests that AIMS consider providing guidance to its project managers on instances where post project reviews may be desirable.[60]

5.14 Although AIMS does not conduct post project reviews, it produces annual team reports which evaluate its research teams' performance and

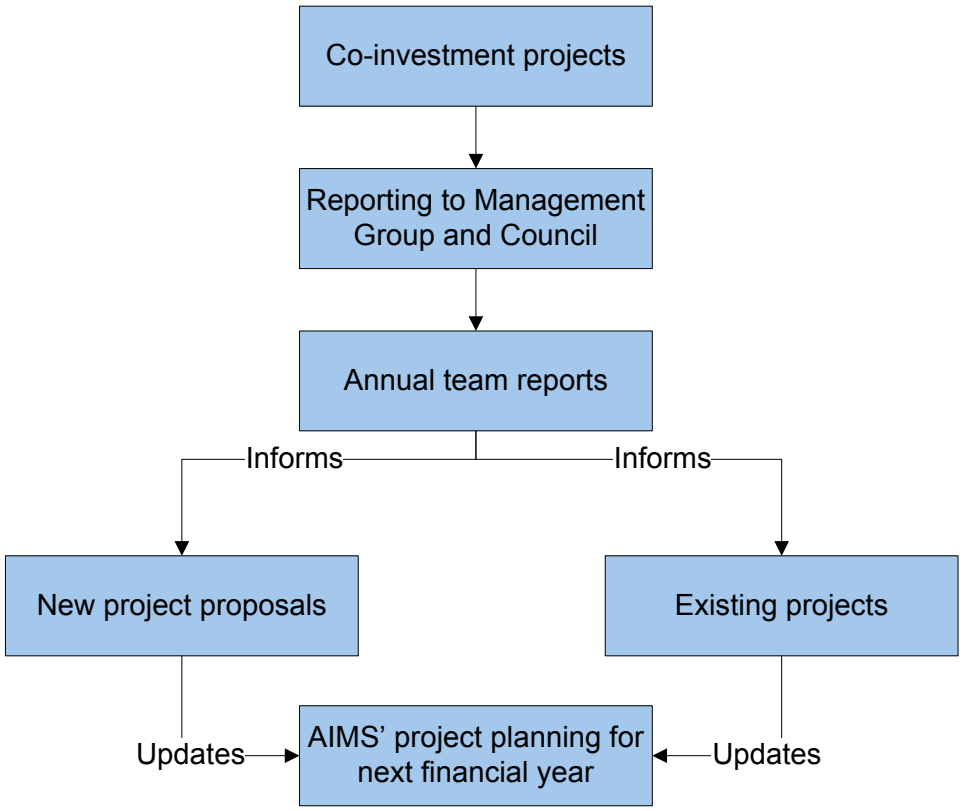
[59] ANAO, *Management of Scientific Research and Development Projects in Commonwealth Agencies*, p. 49.

[60] Such guidance could be included in AIMS project management guidance suggested at paragraph 2.11.

inform its strategy for future research.[61] Figure 5.1 details the role of annual team reports in evaluating AIMS project performance.

Figure 5.1

Role of annual team reports



Source: ANAO analysis of AIMS data.

5.15 Annual team reports provide AIMS management with a summary of each research team's performance and its contribution to the outcomes identified in the Research Team Plan. Annual team reports include:

- achievement against project goals (including comment on the quality of project outcomes);
- key factors influencing team performance; and

[61] Annual team reports evaluated the progress of continuing projects and the outcomes of completed projects.

- team highlights including the successful transfer of information to research users.[62]

5.16 The examination of AIMS 2007 annual team reports showed that in all cases the achievement against each project's milestones was summarised as well as assessments of the outcomes of completed projects compared to what was planned. The ANAO noted that in 2007–08, 92 per cent of AIMS project milestones and objectives were being met on time and to the standard required in contracts.[63]

Measuring research effectiveness

5.17 In order to continue to provide relevant, high quality research in support of the protection of the tropical marine environment and maintain its reputation at the forefront of marine science, AIMS must constantly measure the effectiveness of its research performance. One method AIMS uses to measure the effectiveness of its research is the reporting to Parliament against the Government's National Research Priorities described at paragraph 5.5. The ANAO reviewed AIMS other methods for providing assurance that its research is effective.

External expert reviews

5.18 AIMS commissioned external expert reviews of its research teams to provide it with an independent, discipline-relevant assessment of its research performance. Research performance was assessed by five separate external peer review panels[64] over a period of 18 months spanning 2005–07. Criteria for panel selection were:

- each panel had to include one international reviewer;
- reviewers were required to be independent from AIMS and its staff; and
- reviewers needed to have a record of achievement in either publication records, grant success or stakeholder engagement.

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62 Information transfer included techniques, new industry protocols, manuals, products, practices, instruments and processes that had been adopted by users in industry, government and the community.

63 The Australian Institute of Marine Science, *Annual Report 2007–08*, 22 September 2008, p. 63, available at <www.aims.gov.au/publications> [accessed 10 December 2008].

64 Each panel contained four reviewers.

5.19 The assessment was conducted across five of the then six AIMS research teams, and the panel assessed AIMS performance using an internationally recognised rating scale. The results of the reviews were favourable, with AIMS considered by the reviewers to have demonstrated a strong performance in the key areas of science quality and user impact. Table 5.2 displays the ratings of each AIMS research team.

Table 5.2

External review ratings of AIMS Research Teams

Research Team	Science Quality	User Impact
Water Quality in the Great Barrier Reef World Heritage Area	**3+**	**4**
Tropical Aquaculture	**4**	**4**
Environmental Change and Impacts	**3**	**3**
Biomolecular Resource and Innovation	**N/A (a)**	**N/A (a)**
Biodiversity Assessment and Trends	**5**	**4**

Ratings	**1** Weak	**2** Tenable
3 Favourable	**4** Strong	**5** Benchmark

Source: AIMS Research Performance Assessments.

Note: (a) A rating was not given to the Bimolecular Resource and Innovation team even though the expert panel commented favourably on its performance. The panel recommended the team be combined with another research team in order for AIMS to take advantage of economies of scale.

5.20 The ANAO's examination of each of the research team reports concluded that the expert reviews used a consistent internationally recognised methodology to assess each of AIMS research teams. This included terms of reference which examined research quality, scientific impact and team leadership of each team, and rated each project for science quality and user impact. The ANAO considers that the consistent application of an international methodology for scientific review provided AIMS with a sound basis to ascertain its performance against scientific research standards.

Economic impact assessment

5.21 AIMS commissioned an external consultant in August 2006 to conduct a study into the economic impacts of AIMS research. The study established that the impact of AIMS research was its contribution to the preservation of Australia's iconic tropical marine ecosystems, most significantly the Great Barrier Reef World Heritage Area (GBRWHA). The study found that even

though most of AIMS research was predominately public good research, AIMS did generate direct economic impacts. The key impacts identified in the study were:

- expenditure effects associated with AIMS operations;
- benefits from better informed GBRWHA management policy;
- contributions to the future of the tourism sector in the GBRWHA;
- contributions to the development of the Western Australian offshore gas industry;
- contributions to fisheries and aquaculture industry development;
- contributions to the mining sector performance;
- biomolecular research sector development; and
- direct commercialisation of AIMS technology.

5.22 The report estimated that by 2020 AIMS would be generating $53 million in real private consumption in Australia. The study concluded that:

> while the complete value of AIMS research could not be fully captured in purely economic terms, public good focused research such as that conducted by AIMS had the potential to generate dramatic regional economic benefits and, at the national level, economic benefits for Australia well in excess of its costs.[65]

5.23 The commissioning of the above report helped to inform AIMS, its partners and stakeholders about its economic impact. Two economic modelling scenarios were developed by the reviewers to draw conclusions regarding AIMS economic impact. Limitations associated with the modelling scenarios were declared in the report. The methodology underpinning the development of the scenarios was a recognised economic forecasting methodology. The reviewers included a major caveat in the report which was its inability to describe AIMS contribution to the preservation of tropical marine ecosystems in economic terms. Appropriately, AIMS acknowledged that these constraints restricted it in estimating all of its expenditure and investment effects.

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[65] Insight Economics Pty Ltd, *Marine Imprint: the crucial impact of 33 years of AIMS research in the public interest,* Melbourne, August 2006, p. 3, available from <www.aims.gov.au/source/about/corporate/aims-impact.pdf> [accessed 10 December 2008].

Conclusion

5.24 AIMS external reporting against its project's objectives to its partners, stakeholders Government and Parliament assists it to assess the quality, efficiency and effectiveness of its research. Also, at project closure, final project reports allow it to draw conclusions about the effectiveness of each project and whether it met the expectations of partners and stakeholders.

5.25 Another method AIMS uses to measure the effectiveness of its research is its engagement of expert panels to conduct reviews of its research. The consistent application of an international methodology for scientific review through this process provides AIMS with a sound basis to ascertain its performance against scientific research standards.

Ian McPhee

Auditor-General

Canberra ACT

18 December 2008

Appendices

Appendix 1: AIMS Full Response to this Audit

Australian Government | Australian Institute of Marine Science | TOWNSVILLE | DARWIN | PERTH

1 December 2008

Mr Matt Cahill
Group Executive Director
Performance Audit Services Group
Australian National Audit Office
GPO Box 707
Canberra ACT 2601

Re. ANAO performance audit - The Australian Institute of Marine Science's Management of its Co-investment Research Program

Dear Matt

Thankyou for the copy of the proposed ANAO audit report for the performance audit - *The Australian Institute of Marine Science's Management of its Co-investment Research Program*'.

AIMS welcomes the ANAO performance audit and acknowledge the ANAO's overall conclusion that the AIMS administration of its co-investment research program is effective. AIMS accepts the two ANAO recommendations. AIMS strives to ensure a culture of continuous improvement and this report provides useful input to help improve AIMS management systems.

AIMS thanks the ANAO for undertaking the audit as it has identified specific improvement opportunities that will be implemented over the next twelve months. Some have already commenced and action plans, with clear implementation timelines, are currently being developed for the other improvements identified in the report.

AIMS' response is provided at Attachment 1.

Yours sincerely,

Dr Ian Poiner
CEO

1. AIMS Summary

AIMS welcomes the ANAO performance audit and acknowledge the ANAO's overall conclusion that the AIMS administration of its co-investment research program is effective. AIMS accepts the two ANAO recommendations. AIMS strives to ensure a culture of continuous improvement and this report provides useful input to the improvement of the management systems that support AIMS research. The audit identified specific improvement opportunities, all of which can be implemented over the next twelve months. Some have already commenced and action plans, with clear implementation timelines, are currently being developed for the others.

Over the last 10 years AIMS has undergone considerable change and more recently significant growth of its external sourced research funding. A direct result of these changes has been a significant increase in project complexity. Aspects such as financial structures, collaboration partnerships, intellectual property ownership and others have all increased in complexity. Furthermore as AIMS leverages its government appropriation funding to increasing levels, it is important that it makes appropriate collaboration decisions to maximise the impact of its research. AIMS has been making significant changes to its systems and processes to keep them aligned with the changing needs of the organisation, however it does recognise that not all have kept pace. In some areas less formal processes may have historically been appropriate but now require a more formal and documented approach. Furthermore the complexity of the current operating environment does necessitate improved decision making risk management practices and AIMS will be adopting these as a matter of priority.

AIMS thank the ANAO for undertaking the audit which was completed in an inclusive and professional manner. The lessons learnt from the audit will greatly assist AIMS as it responds to the challenge of meeting its stakeholder's needs and achieving its mission to generate and transfer the knowledge to support the sustainable use and protection of the marine environment through innovative, world-class scientific and technological research.

2. AIMS Detailed Response

The following is AIMS response to the audit report and to the two ANAO recommendations.

Chapter 2. Support for Project Management

AIMS agrees that there would be benefits from creating improved project management guidelines that are more easily accessible to project managers. AIMS is moving from being a relatively small organisation where retained corporate knowledge is sufficient to achieving uniform outcomes to one with increasingly larger and more complex projects. We agree that there is now the need to move to more formal processes in this area and currently have two initiatives in progress to achieve this objective. AIMS is redesigning its project management processes (from idea to completion) and plans to upgrade its key corporate systems in 2009. Part of this upgrade will be to implement an intranet based project management methodology.

Chapter 3. The Approval of AIMS Co-investment Research Projects

AIMS accepts the ANAO recommendation No. 1:

Paragraph 3.33 *"The ANAO recommends that, in order to improve the transparency of its reasons for approving projects, and to provide assurance that it is approving projects which are likely to provide the greatest value, AIMS assess projects approved by the CEO against the same criteria used by the Council".*

AIMS research plan and its strategic research directions provide the framework against which research projects are developed. This framework and information required in project proposals are part of the research culture within AIMS and provide a mechanism to judge the value of proposed research. However AIMS recognises that utilising a more formal summary of the approvals system will aid transparency and also provide a much improved historical record and retained corporate knowledge. AIMS is therefore currently implementing an improved approval system for all projects, including those that are approved by the AIMS Council. Furthermore co-investment is critical for AIMS to deliver its research outputs and the organisation needs to carefully consider co-funding opportunities in the context of its appropriation funding. This is a complex balance between securing funds versus retaining flexibility to respond to future opportunities. With its appropriation budget currently fully allocated optimising this balance will provide the maximum scientific outputs.

Chapter 4. The Management of AIMS Co-investment Research Projects

AIMS accepts the ANAO recommendation No. 2:

Paragraph 4.16 *"The ANAO recommends that, in order to effectively identify, assess, monitor and review project risks, AIMS document risk assessments where the scale, length, costs and/or complexity of co-investment project warrants".*

AIMS agrees with the recommendation to improve how it assesses the risks for each project. AIMS has commenced adopting the approach it used to assess the Scott Reef Research Project on all new projects. This approach is recognised by the ANAO as being best practice and it will be progressively applied commencing with new large projects and moving to small projects in 2009. At the same time processes to more formally assess risks during the implementation and completion phases will also be adopted.

Chapter 5. The Reporting of AIMS Co-investment Research Projects

AIMS is committed to the communication and use of its research outputs and pleased to see that the ANAO views our processes as effective.

Appendix 2: Relationships between Research Teams, KRAs and Strategic Directions

	Strategic Direction 1	**Strategic Direction 2**	**Strategic Direction 3**
Key Result Area	*Understanding tropical marine ecosystems and processes*	*Understanding the effects of global environmental changes upon tropical marine systems*	*Supporting the sustainable development of tropical marine based industries*
1.1 Assessments of tropical marine biodiversity	1, 5		1, 5
1.2 Accurate and timely information on issues and threats to coral reefs	1, 5	1	1, 5
1.3 Sustainable tropical aquaculture			1
1.4 Sustainable supply of bioresources			1
2.1 Human impacts on tropical water quality and ecosystem health	2		2
2.2 Tropical marine ecosystem processes and land-sea interactions	2	2	
3.1 Marine climate history of northern Australia	3	3	
3.2 Resilience and risk mapping in space and time	3	3	3
3.3 Ecological responses to climate change	3	3	3
3.4 Ocean observing systems to monitor the physical environment	3	3	3
4.1 Understand and predict the responses of reef symbioses to environmental change	4	4	
4.2 Understand the role of microbes in the functioning of healthy and stressed reefs	4	4	

Research Team 1. Exploring Marine Biodiversity
Research Team 2. Measuring Water Quality and Ecosystem Health
Research Team 3. Responding to Climate Change
Research Team 4. Understanding Marine Microbes and Symbioses
Research Team 5. Supporting Sustainable Use of Marine Biodiversity

Appendix 3: AIMS External Funding Business Model

The following external funding model was endorsed by the AIMS Council in June 2005.

AIMS Business Environment

The key driver of AIMS business is providing the scientific underpinning to enable ecologically sustainable development of Australia's tropical marine resources, and terrestrial resources to the extent they are influenced by the ocean. The reasons for AIMS existence include:

- the commercial imperatives of marine-based industries (such as tourism, oil and gas, aquaculture) and ocean-influenced terrestrial industries (such as agriculture and mining); and
- marine policy and management requirements of local, state, and commonwealth and international government bodies.

Australia is the custodian of one of the largest marine jurisdictions in the world. Extending from the high tropics to the Antarctic, this unique territory offers us a plethora of economic and recreational opportunities. Australia also has obligations under a range of international conventions and agreements regarding global warming, and the use and conservation of marine and coastal environments and their biodiversity.

Against this background, AIMS current markets can be summarised as follows:

- Agriculture and Mining (and other terrestrial impacts)
- Aquaculture - Australian Domestic, Overseas Domestic, Services
- Climate change/Greenhouse
- Coastal Zone Management
- Defence & Maritime Operations
- New biochemicals from Australia's marine biodiversity.
- Oil & Gas – licence to operate
- Tourism – licence to operate
- Regional Marine Management including World Heritage Areas eg GBRWHA

Business Model

AIMS dominant business domain is co-investment. The strategy involves the formation of joint ventures with research partners and clients for the purpose of delivering science outputs into the markets in which AIMS operates. In this way AIMS can focus on the current and future needs of its customers and stakeholders as well as making contributions to science and to Australia's economic prospects.

The benefits to AIMS from co-investing include:

- Increased revenue – AIMS receives revenue from its partners and/or from its co-investment partnerships. The amount and nature of the revenue earned by AIMS may differ depending on the type of transaction or the level of services provided by AIMS to the partner or partnership.
- "Leverage" - invested AIMS resources promote AIMS brand and increase its market share. Through joint ventures, AIMS is able to do and develop more science than it would be able to do on its own.
- Increased capability by obtaining the participation of partners with capabilities AIMS does not have but wish to acquire. Partners are often knowledgeable and sophisticated in areas of science that AIMS wish to develop.
- Enhanced generation of knowledge/IP (intellectual assets) by being able to tap into a broader base of knowledge.
- Strategic science – AIMS is able to do strategic science that no one group is either willing or able to fund.

The benefits from co-investing with AIMS include the following:

- Strong alignment of interests – AIMS seeks to align the economic and strategic interests of the partners. AIMS accomplish this through careful selection of potential partners and areas of activity. Importantly, AIMS generally invests significant capability (people, infrastructure, dollars and networks) alongside its partners in a project.
- AIMS is a good partner – AIMS has a good record of open, fair and honest dealings with its partners, and encourages open lines of communication and benefit sharing from the science.

- AIMS is a Publicly Funded Research Agency (PFRA) and is subject to regulation governing its organisation and behaviour. This ensures it provides independent honest advice
- AIMS possesses the financial strength to honour its obligations.
- AIMS is an expert in what it offers to each of the markets in which it operates.

By continuing to develop a long term engagements with the clients in its markets and the funding agencies supporting them, AIMS will increase its ability to generate a higher percentage of external revenue to contribute to its growth. The most effective business model to achieve this is a co-investment funding model targeted at strategic science.

Appendix 4: AIMS Government Performance Indicators

	KEY PERFORMANCE GOALS	MEASURE/INDICATOR	Frequency
Science quality			
Scientific publications	Transfer new knowledge generated by AIMS and its collaborators through high quality scientific publications in high impact journals and relevant user-focused publications.	Number of peer reviewed scientific publications reported quarterly against previous year Trend in publication level	Annual
Citation analysis	Ongoing improvement in the quality and impact of AIMS journal publications	Retrospective citation analysis using Science Citation Index	5 yearly
Increase science capacity	Increase in number of post-doc positions. Target is annual average of 10 FTEs (by 2009)	Number of research scientists and postdocs	Annual
External assessment and review	Ongoing improvement of AIMS research performance.	Expert review of the quality and impact of AIMS Research Performance	Within quadrennium
Enhancing impact/ relationships			
Joint ventures	Enhance impact and research capacity through co-investment in research	Joint ventures and current status	Annual
Leverage through collaboration	Maintain and focus AIMS collaborative approach to research	Collaborations (collaborative research projects) and significant outputs Number of collaborations and percentage of research papers from collaborations	Annual
Enhance Australia's future capabilities in marine science	Contribution to teaching	Students, completions and significant outputs reported quarterly Number of jointly supervised postgraduate students (PhD and Masters, with trend)	Annual

	KEY PERFORMANCE GOALS	MEASURE/INDICATOR	Frequency
		Number of internships and undergraduates (with trend).	
Effective use of resources			
Project management	Timely delivery of project milestones	Percentage of milestones completed on time	Annual
Operational efficiency	Improve efficiency of (providing) key support	Number of continuous improvement projects completed	Annual
Strategic alliances	Enhance research delivery by the development and maintenance of alliances with organisations that complement AIMS skills and infrastructure.	Strategic alliances and current status	Annual
Organisational growth			
Increase revenue	Increase revenue to support investment in AIMS research.	Trend in total revenue reported annually.	Annual
Enhance core capabilities	Attract and retain key 'talent' through staff satisfaction.	Report examples of actions taken and improvements achieved.	Annual
Develop staff	Seek improvements to integration of staff training into organisations goals	Report examples of actions taken and improvements achieved.	Annual
Technology diffusion			
Transfer to users	Enhance user uptake of AIMS research	Practices, instruments and processes developed by AIMS that have been adopted by users in industry, government and the community.	Annual
Funding mix / Source of revenue	Enhance engagement with industry	External earnings reported against previous year Trend in external earnings and source of funds	Annual

	KEY PERFORMANCE GOALS	MEASURE/INDICATOR	Frequency
Health, Safety and Environmental Performance			
Safety index	Improved safety culture	Report against indicators and provide examples of improvements	Annual
Reduce environmental footprint	Ongoing improvements to AIMS operations to reduce our environmental footprint.	Report examples of actions taken and improvements achieved.	Annual

Index

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