Australian Government

Australian Fisheries Management Authority

Fisheries Management Paper 16

Fisheries Research and Science Quality Assurance Policy

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1 Introduction

Consistency and transparency in the commissioning, review and use of scientific information increases confidence and certainty in fisheries management decision making for AFMA and its stakeholders. Good decision making is based on good source information and use of such decision making processes, increased stakeholder confidence in outcomes and decisions reached.

This policy was developed to support a consistent approach to AFMA's evidence based decision making. It describes the approach and the contribution that AFMA's staff, committees and groups make towards gathering and using scientific results and information.

AFMA will also seek to apply this approach to any contracted scientific advice providers.

The need for quality assurance in science has many drivers and for AFMA a major driver was the 2014-2017 review of the Ecological Risk Management (ERM) framework under which Fishery Management Strategies (FMSs) are to be developed for all Commonwealth managed fisheries. The application of consistent quality assurance in science will set standards that increase the degree of rigor in the evidence used to inform management actions arrived at to address identified research, data and information gaps.

This policy describes the application of the principles, judgements and selection criteria used to assess AFMA commissioned, or supported research, as well as for assessing the quality of information used in AFMA decision making processes.

This policy is based principally on the Fisheries Research and Development Corporation (FRDC) funded *Development of guidelines for quality assurance of Australian fisheries research and science Information* (Penney *et al.* 2016) – the Guidelines. The Guidelines provide discussion and definitions of international and Australian science quality assurance best practice, key principles for maintaining information quality and an implementation plan for AFMA.

2 Objectives

This policy:

a) provides a framework to ensure the quality and integrity of research and scientific information used to inform AFMA's fisheries management and policy decision making processes; and
b) requires research procurers, providers and users, including AFMA, relevant advisory committees and groups to apply the Guidelines to assure the quality of scientific information used for management decision making.

3 Purpose

This policy details AFMA's practice and processes to ensure high quality and reliable

scientific information (encompassing biological, economic and social components) is available to support decision making. It provides guidance to AFMA staff, research/advice providers, committees and groups that are integral in ensuring commissioned research and scientific information is of a high quality, making sure that recognised best practice quality assurance is applied when commissioning research and scientific information, and when peer reviewing results of that research.

This policy should be read in conjunction with Appendix 1 -*Guidelines for quality assurance of Australian fisheries research and science Information* (Penney *et al.* 2016) – (The Guidelines), and the *Guide to AFMA's Ecological Risk Management.* In particular, chapters 5 and 6 of the Guidelines elaborate on science quality assurance principles and their implementation.

Additionally, this policy is consistent with other relevant AFMA policy papers that also provide guidance on the commissioning of, and reviewing of research and scientific information:

- *Fisheries Management Paper (FMP) No. 1 – Management Advisory Committee*
- *Fisheries Administration Paper No. 12 – Resource Assessment Groups*
- *Fisheries Management Paper 12 – Information Disclosure*
- AFMA Framework for Delivering Cost Effective Research Information
- *Acquiring scientific advice by the use of a Scientific Panel and Stakeholder Forums in the Small Pelagic Fishery.*

4 Need

This policy and the Guidelines were developed to ensure that research and scientific information used by AFMA is high quality (i.e. meets criteria pertaining to relevance, objectivity, accuracy, integrity and precision), lacks bias, is reliable, appropriately peer reviewed, transparent and accessible.

Research, scientific information and advice that meets these criteria is more likely to result in consistently robust decision making and maintain or increase trust in decision processes by participants, stakeholders, government and the public.

5 Principles for science information quality

The principles for science information quality in the Guidelines should underpin the assessment criteria for all stages of commissioning, delivery and use of AFMA's research and scientific information. These criteria also apply to the use of non-commissioned scientific information for decision making purposes i.e. users should ensure that referenced reports and journal articles etc. have undergone adequate peer review or quality assessment before they are used and relied upon.

The principles, along with the risk-cost-catch principle (Sainsbury 2005), should be applied at all stages in AFMA's science quality assurance cycle. AFMA's research assessment

forms (attached) apply these principles from the initial commissioning stage to the consideration of final reports and periodic research reviews.

The principles to be applied are summarised below, while Chapter 5. Information Quality: Key Principles and Best Practices of the Guidelines provides a more detailed explanation.

- **Relevance**

  Users should consider if the research or data gathering proposal has direct relevance to AFMA Corporate or Annual plans, as well as:

  - the AFMA Strategic Research Plan; and
  - the relevant Fishery Management Plan/Strategy and specifically within that, the fishery's Strategic Research Plan and/or Data Plan and separate Annual Research Statements, including in any of these the identified gaps or opportunities.

- **Objectivity**

  Any scientific or research based inputs to decision making processes should reduce bias; by the author(s), reviewers and the eventual users of the information and results.

- **Integrity**

  Maintaining the integrity, at all stages of the cycle, of data and information is fundamental to the provision of quality scientific information for evidence based decision making. Integrity refers to the security of information, and to the protection of information from inappropriate alteration, selective interpretation or selective presentation. Scientific information should remain complete throughout the science-to-decision process. It must be ensured that the information and associated uncertainty is not reported in a way that introduces bias into the interpretation of such information.

- **Reliability**

  All data and information used in decision making processes must be reliable and repeatable, where practicable. Users should have a high level of confidence in data and results that decisions are based on. Any limitations in data, information and results should be clearly stated acknowledging that methodologies are regularly updated and may influence the repeatability of results.

- **Peer review**

  The application of peer review, in AFMA's context, can range from the review of research proposals by fishery managers and MAC and RAG members, through to full formal independent peer review of draft final reports.

Selected key criteria for effective peer review:

- **Transparency and openness**

  Information used as the basis of decisions should be publicly available (noting confidentiality constraints), along with any identified limitations in the information, including assumptions made in subsequent decision making (scientific information is meant in this context but fisheries decision making is typically based on broader information sources).

- **Timeliness**

  Consideration of the time taken to complete research or obtain information is appropriate. In some circumstances end users may have to weigh up the increased certainty of results at a future time versus living with less certainty to meet an immediate need for advice. Decisions based on limited information, due to the projected timing of results, should be clearly articulated.

Additional criteria for effective peer review are described in the Guidelines. AFMA peer review processes will be constituted and designed to meet these other requirements for effective peer review.

6 Application of the Guidelines

6.1 Who the Guidelines apply to

The Guidelines provide specific advice for the providers and users of research including:

- the AFMA Commission;
- the AFMA Research Committee (ARC);
- Management Advisory Committees (MACs);
- Resource Assessment Groups (RAGs);
- fishery managers;
- research providers; and
- any other relevant stakeholders.

This policy defines their roles and functions relevant to science quality assurance including identification of research and information gaps, information and analyses, and peer review of scientific data.

Appendix 2 describes the responsibilities of different participants in the science quality assurance chain.

6.2 Exceptional circumstances

Any use of preliminary scientific results in decision making processes must be disclosed, with assumptions and uncertainties documented.

7 Implementation and reporting

As detailed in the Guidelines, Chapter 6. Implementation Plans, AFMA will document the peer review processes that have been applied to key information used to inform important fisheries policy or management decisions and will specifically:

- require that scientific information be submitted for peer review (where it has not already been subject to appropriate peer review process);
- provide for establishment of scientific working groups or peer review panels or other appropriate peer review process;
- provide for additional scrutiny and external, independent expert peer review (external to AFMA's peer review processes) where uncertainty in results remains and external review is considered necessary, ensuring that such review is cost-effective and appropriate to the potential risk associated with use of the information under review. AFMA will document the circumstances under which this would occur;
- require documentation and reporting on the deliberations and outcomes of peer review processes relating to quality of scientific information reviewed by them; and
- provide supporting documentation, including terms of reference for peer review processes.

AFMA will maintain records pertaining to the establishment, composition and functioning of all peer review processes including:

- RAGs – via RAG minutes and peer review reporting templates; and
- independent peer review panels or experts – via associated reporting templates.

Terms of Reference (TOR) will be documented for all peer review processes (e.g. FAP 12 for RAGs and specific TOR for independent reviewers). All RAGs and independent peer reviewers will be required to document, in peer review reports (RAG minutes and independent review reports), what fisheries research and scientific information was reviewed by them and their evidence-based evaluations regarding the quality of such information.

AFMA will prepare and make publicly available an annual summary on implementation of science quality assurance and peer review processes under this policy. This will specify:

- measures taken to implement processes relating to scientific quality assurance and peer review under this policy;
- details of peer review processes implemented, including composition of any scientific working groups, peer review panels or independent expert peer review processes used;

- a summary of scientific information submitted to these peer review processes for review, and outcomes of peer review relating to evaluation of the quality of this information; and

- an overview of how the outcomes of peer review processes were taken into consideration during the development of fisheries policy and fisheries management decisions.

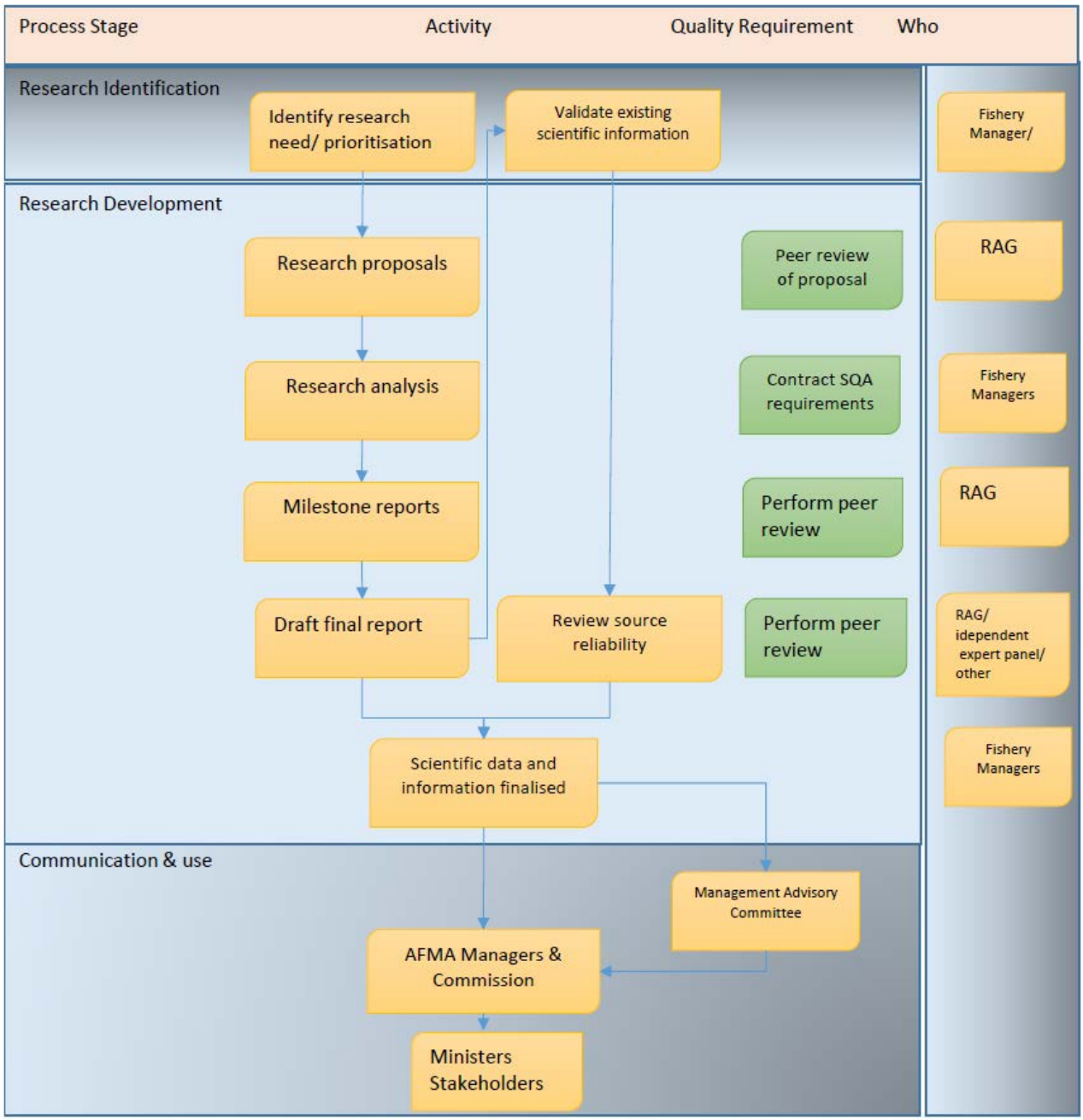

Figure 1 describes the stages of AFMA's research cycle and the application of the Guidelines for fisheries management decision making.

8 Review

A review of this policy will be undertaken after two years of implementation.

The review should consider development of trigger points for peer review, document the level of peer review that occurred (including the cost) and the effectiveness of uses of the reporting templates (**Attachments** A, B and C).

This is to be completed in addition to the annual reporting summary, as discussed above, in Chapter 7 Implementation and reporting.

9 Appendices to this policy

From time to time the AFMA Commission may approve appendices to this policy to assist MACs, RAGs and Committees in their duties or otherwise vary them.

10 Appendix 1 – The Guidelines

FRDC Project 2014-009 - Development of guidelines for quality assurance of Australian fisheries research and science information.

http://www.frdc.com.au/Archived-Reports/FRDC%20Projects/2014-009%20-%20B.pdf

The chapters of the Guidelines considered to be most relevant to the application of this policy are:

Chapter 5. Information Quality: Key Principles and Best Practices and

Chapter 6. Implementation Plans.

11 Appendix 2 – Responsibilities in AFMA processes

Role/Process	Annual Research Prioritisation	ARC Proposals	ARC EOI review	ARC Approval	Other research processes (e.g. COMRAC)	Peer Review	Information use or providing advice
AFMA Fishery Managers	*Identify gaps and determine relevant research Determine if research is only avenue to address identified gap	Procure relevant research	Request appropriate level of peer review Evaluate if research is relevant Ensure peer review processes are included in the proposal			AFMA Fishery Managers may participate in peer review when requested	Confirm peer review conducted when making decisions Document any cases of non-peer reviewed information
Industry	*Identify gaps and determine relevant research Determine if research is only avenue to address identified gap	Procure relevant research			Procure relevant research Participate in MACs/RAGs/groups and other committees	Industry may participate in peer review when requested	
RAG Chair (generally in consultation with RAG members)	*Identify gaps and determine relevant research Determine if research is only avenue to address identified gap	Procure relevant research	Request appropriate level of peer review				Confirm peer review conducted when making decisions Document any cases of non-peer reviewed information
RAG/MAC/ group or other committee member	*Identify gaps and determine relevant research Determine if research is only avenue to address identified gap					RAG/MAC/ group or other committee member may participate/perform peer reviews	Confirm peer review conducted when making decisions
MAC, group or other committee chair	*Identify gaps and determine relevant research	Procure relevant research				MAC, group or other committee chair may participate/perform peer reviews	Confirm peer review conducted when making decisions Document any cases of non-peer reviewed information

Role/Process	Annual Research Prioritisation	ARC Proposals	ARC EOI review	ARC Approval	Other research processes (e.g. COMRAC)	Peer Review	Information use or providing advice
	Determine if research is only avenue to address identified gap						
AFMA Commission						Request appropriate level of peer review AFMA Commission may conduct peer review where they have appropriate skills and capacity	Confirm peer review conducted when making decisions
AFMA ARC			Ensure peer review process are included in the proposal	ARC ensures research priorities are being met ARC ensure peer review process is adequate for the science being undertaken			Confirm peer review conducted when making decisions Document any cases of non-peer reviewed information
Research provider		Ensure peer review process are included in the proposal			Procure relevant research	Organise peer reviews to be conducted	Only use research that has been peer reviewed Document any cases of non-peer reviewed information
Other research user or stakeholder	Determine relevant research when requested					Other research user or stakeholder may participate in peer review when requested	Confirm peer review conducted, or document cases otherwise Document any cases of non-peer reviewed information
AFMA Research Manager	Determine relevant research Determine if research is only avenue to address identified gap	Provide policy information as part of EOI processes Develop research scopes	Ensure peer review process are included in the proposal	ARC ensures research priorities are being met ARC ensures peer review process is adequate for the	Ensure research priorities are being met Ensure peer review process is adequate for the science being undertaken Document any cases of non-peer reviewed information	Ensure peer review process is adequate for the science being undertaken	Confirm peer review conducted, or document cases otherwise Document any cases of non-peer reviewed information

Role/Process	Annual Research Prioritisation	ARC Proposals	ARC EOI review	ARC Approval	Other research processes (e.g. COMRAC)	Peer Review	Information use or providing advice
		Ensure peer review process are included in the proposal		science being undertaken		Organise peer reviews to be conducted	

*Apply to stock assessments methodology which should be reviewed every 5 years

12 Attachment A

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RAG/Scientific Panel research proposal review form

Project Title/Number			
Principal Investigator		**RAG/Scientific Panel Evaluation & meeting date**	
Fishery			
Research Provider			

Please evaluate the relevance and methodology of the proposed research EOI against the key Scientific Information Quality criteria below for inclusion in the RAG Meeting Minutes and provide to the AFMA Research Section for AFMA Research Committee consideration.

Assessment criteria	**Please describe how the assessment criteria are addressed**
Does the project align with the call for research?	
Does the application address a priority identified in the relevant fishery's research plan?	
Are the need and the planned outputs/benefits well-defined and relevant? If not, please recommend changes.	
Are the objectives clearly specified and are they consistent with the planned project outputs/benefits? If not, please recommend changes.	
Is the proposed methodology appropriate?	
What is the likelihood that the outputs will be adopted? Is the pathway for uptake and extension described?	
Are the project cost and expected outputs good value for money? Is it using other sources to leverage additional funds?	

Where there is an increase in the project cost compared to preceding work, are the reasons clearly identified and justified?	
Has the applicant consulted with relevant MACs, RAGs, other researchers, fisheries managers and the fishing industry?	
Is there a strategy for storing and managing data arising from the project so that it will be easily accessible by others in the future?	
Describe at what stages peer review will required for this project: • early in the process of producing scientific information? • at critical stages of data evaluation? during development of the methodology? • evaluation of results?	
Overall comments	

RAG Chair Signature: …….. Date: …….

13 Attachment B

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ARC research proposal assessment form

Title			
Principal Investigator		**Evaluation/meeting date**	
Research Fishery(ies)			
Research Provider			

Please assess the performance of the proposal against the criteria below using a score of 1-5 (1 to indicate weak performance against the criteria and 5 a strong performance).

Assessment criteria	**Score (1-5)**	**Please describe how the assessment criteria are addressed**
Does the project align with the call for research?		
Does the proposal address priorities identified in the relevant fishery's research plan?		
Is the need and the planned outputs/benefits well-defined and relevant?		
Are the objectives clearly specified and are they consistent with the planned project outputs/benefits?		
Is the proposed methodology appropriate?		
What is the likelihood that the outputs will be adopted? Is the pathway for uptake and extension described?		
Is the project cost effective/value for money? Is it using other sources to leverage additional funds?		
Where there is an increase in the project cost compared to preceding work, are the reasons clearly identified and justified?		

Has the applicant consulted with relevant MACs, RAGs, other researchers, fisheries managers and the fishing industry?		
Is there a strategy for managing data arising from the project so that it will be easily accessible by others in the future?		
Describe at what stages peer review will be required for this project: • early in the process of producing scientific information? • at critical stages of data evaluation? • during development of the methodology? • evaluation of results?		
Overall Comments		

Chair Signature: …….. Date: …….

Secretariat Signature: …….. Date: …….

14 Attachment C

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RAG/Scientific Panel milestone/draft/final report review form

Title / Project Number			
Principal Investigator		**RAG/Scientific Panel Evaluation/meeting date**	
Fishery			
Research Provider			

Please document (via this template) the RAG/Scientific Panel's evaluation of the quality of the research findings in the draft and final report against the peer review criteria below:

1. Relevance	**Please describe how the assessment criteria are addressed**
Do the research findings address the management objectives and associated key questions or issues for the fishery concerned? This must be assessed and documented in the RAG/SP meeting minutes. Are these scientific reports written in a way that can be understood by fishers in the industry?	
2. Objectivity	
Is the information included in the report unbiased and impartial, accurately and clearly presented and evidence-based? This includes whether the information is presented within a proper context. The sources of information need to be declared to the extent possible, consistent with confidentiality requirements, together with the description, the supporting data and models so the objectivity of the data sources can be assessed. Adoption, uptake and extension – Is there an appropriate level of collaboration between the applicant and other researchers, fisheries management and the fishing industry?	

What is the likelihood that the outputs will be adopted? Is the pathway for uptake described?		
3. Integrity		
Have the results been presented completely and in a way that is impartial and unbiased? Have uncertainties been adequately addressed without over or under emphasis in a way that biases conclusions?		
Has the proposal addressed previous ARC comments appropriately? (If applicable)		
Have the principal investigators consulted with relevant Management Advisory Committees (MACs) and Resource Assessment Groups (RAGs)?		
Overall		
4. Outcomes	**Score (1-5)**	**Please describe how the assessment criteria are addressed**
Has the researcher delivered on all components of the milestone/final report? Are the specified contract timeframes expected to be met?		
Are the objectives clearly specified and are they consistent with the planned project outputs/benefits?		
Is the project design/method well described and does it remain consistent with the project objectives?		
Applicant's experience/expertise – does the research team continue to have the ability, capacity and track record to deliver the outputs?		
Is there a strategy for managing data arising from the project?		
Overall		

Other Comments

Chair Signature: …….. Date: …….

Secretariat Signature: …….. Date: …….

15 AFMA Research Committee (ARC) terms of reference

AFMA RESEARCH COMMITTEE TERMS OF REFERENCE

Purpose

To advise the AFMA Commission on the strategic directions, priorities and funding for monitoring and research relevant to AFMA's information needs and review finalised research projects in terms of delivery of outputs, and outcomes, adoption/impacts and required adjustment to AFMA processes.

Membership

Members

- At least two non executive AFMA Commissioners, one of whom will Chair the Committee. The Chair of the Committee will be agreed by the AFMA Commission
- Chief Executive Officer, AFMA
- Executive Manager, Fisheries, AFMA
- Secretary to the Committee

Permanent advisers (AFMA staff)

- Senior Manager, Policy, Environment, Economics & Research
- Manager, Research & RAGs/MACs

Regular observers

- Representative, Fisheries Research and Development Corporation
- Representative, Fisheries Branch, Department of Agriculture and Water Resources
- Representative, Commonwealth Fisheries Association
- Representative, CSIRO
- Representative, Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)
- Persons associated with Indigenous fisheries
- Persons associated with Recreational fisheries

The ARC will have a standing invitation to observers unless otherwise decided by the Chair

Terms of Reference

The AFMA Research Committee will advise the AFMA Commission on research, monitoring and assessment requirements for Commonwealth fisheries. In doing so it will:

1. Review and advise on research, monitoring and assessment priorities for Commonwealth fisheries, developed by management in conjunction with the management advisory committees and resource assessment groups.
2. Develop, maintain and approve AFMA's Five Year Strategic Research Plan. This includes balancing tactical short term needs and strategic long term needs to identify research gaps and priorities.
3. Review five (5) year research plans for Commonwealth fisheries managed by AFMA
4. Provide advice to the AFMA Commission on allocation of AFMA research funds
5. Provide advice to FRDC on priorities for COMRAC consideration for potential FRDC funding
6. Assess research and monitoring investments for the Commonwealth fisheries to ensure that they fit with management needs. This includes the assessment of final research project outcomes, to ensure the research conducted achieved intended objectives and meaningful outcomes.
7. Work with AFMA management to identify research providers, collaborators and funding agencies in pursuit of AFMA's priority research, monitoring and assessment needs
8. Provide advice to the AFMA Commission on fisheries research in a risk management context, and

9. Provide recommendations to the AFMA Commission based on the outcomes from ARC meetings and the outcomes from COMRAC meetings. The ARC will hold at least two meetings annually; one meeting prior to ComRAC and the AFMA Commission's July meetings and another alongside the October ComRAC meeting.

COMRAC

The Commonwealth Research Advisory Committee (COMRAC) is a separate committee established by FRDC as part of a network of Research Advisory Committees (RACs) located in each state and the Northern Territory. COMRAC is comprised of members with science, commercial, recreational, indigenous, aquaculture, fisheries management and marine conservation expertise. COMRAC was established to facilitate the delivery of efficient and effective research, and is the primary planning and entry point for research proposals for Commonwealth fisheries for funding by FRDC. AFMA has membership on the Committee.

August 2017

16 References

AFMA, Canberra, Fisheries Administration Paper 12 Resource Assessment Groups October 2015, http://www.afma.gov.au/wp-content/uploads/2014/09/FAP-12-Oct-15.pdf

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