

# Torres Strait Tropical Rock Lobster Resource Assessment Group Meeting 29

Final Meeting Record

6 October 2020

Video Conference

Note all meeting papers and record available on  
the PZJA webpage: [www.pzja.gov.au](http://www.pzja.gov.au)



Australian Government

Australian Fisheries Management Authority

## Contents

Meeting participants .....	3
Members.....	3
Observers .....	4
1 Preliminaries.....	4
1.1 Welcome and apologies.....	4
1.2 Adoption of agenda .....	4
1.3 Declaration of interests .....	4
2 Updates from members .....	5
2.1 Industry members .....	5
2.2 Scientific members .....	5
2.3 Government agencies.....	6
3 TRL Fishery Research Priorities .....	7
4 Date and venue for next meeting .....	9

## Meeting participants

### Members

Name	Position	Declaration of interest
Ian Knuckey	Chair	<p>Chair/Director of Fishwell Consulting Pty Ltd and Olrac Australia (electronic logbooks). Chair/member of other RAGs and MACs. Conducts various AFMA and FRDC funded research projects including FRDC Indigenous Capacity Building project. Nil interests in TRL Fishery and no research projects in the Torres Strait.</p> <p>In 2019, delivered components of TSRA Induction Program for Traditional Inhabitant members on PZJA advisory committees.</p> <p>Full declaration of interests provided at <b>Attachment A</b>.</p>
Dr Andrew Penney	Scientific member	<p>Director of Pisces Australis Pty Ltd, an Australian registered marine/coastal research and management consultancy based in Canberra - interests in any opportunities in this regard.</p> <p>Currently Principal Investigator on FRDC Projects Nos 2017-180: Design and implementation of an Australian National Bycatch Report: Phase 1 – Scoping; and 2019-036: Implementation of dynamic reference points and harvest strategies to account for environmentally-driven changes in productivity in Australian fisheries, potentially red leg banana prawns or TRL.</p> <p>Independent scientific member on the AFMA Southeast RAG, the Tropical Rock Lobster RAG and the Small Pelagic Fishery RAG. Member of the AFMA ERA Technical Working Group.</p> <p>No shareholding and hold no positions relating to any other companies, including any fishing companies or industry associations.</p>
Dr Éva Plagányi	Scientific member	Lead scientist for PZJA funded TRL research projects conducted by CSIRO.
Aaron Tom	Traditional Inhabitant member	Traditional Inhabitant Gudumalulgal and TIB licence holder.
Dr Ray Moore	Industry member	Torres Strait Master Fisherman licence holder and East Coast TRL Fishery licence holder.
Selina Stoute	AFMA member	Nil.
Mark Anderson	TSRA member	Nil. Employee of TSRA. TSRA holds multiple TVH TRL fishing licences on behalf of Torres Strait Communities but does not benefit from them.

Name	Position	Declaration of interest
Tom Roberts <sup>1</sup>	QDAF member	Nil.
Georgia Langdon	AFMA Executive Officer	Nil.

## Observers

Name	Position	Declaration of interest
Judy Upston	CSIRO observer	Scientist for PZJA funded TRL research projects conducted by CSIRO.
Quinten Hirakawa	TSRA observer	TIB licence holder.

# 1 Preliminaries

## 1.1 Welcome and apologies

1. The meeting commenced at 2:10pm on Thursday 6 October 2020. Attendees were welcomed by the Chair, who made an Acknowledgement of Country on behalf of each participant joining the meeting.
2. Attendees at the RAG meeting are detailed in the meeting participant tables at the start of this meeting record.
3. Apologies were received from:
  - a) Brett Arlidge, Industry member
  - b) Harry Nona, Traditional inhabitant member, Kaiwalagal
  - c) Yen Loban, TSRA Fisheries Portfolio member, permanent observer
4. Members and permanent observers not in attendance were:
  - a) James Ahmat, Traditional Inhabitant member, Maluiligal
  - b) Les Pitt, Traditional Inhabitant member, Kemer Kemer Meriam
  - c) Malu Lamar RNTBC representative, permanent observer
  - d) Papua New Guinea National Fisheries Authority representative, permanent observer

## 1.2 Adoption of agenda

5. The draft agenda was adopted without change (**Attachment B**).

## 1.3 Declaration of interests

6. As provided in PZJA Fisheries Management Paper No. 1 (FMP1), all members of the RAG must declare all real or potential conflicts of interest in the Torres Strait TRL Fishery at the commencement of the meeting.
7. The Chair requested that members update the record of declarations by exception. These are detailed in the meeting participant tables at the start of this meeting record. The RAG accepted each member and observers' declared interests and agreed that all members could participate in each agenda item discussion. No members objected to this process.

<sup>1</sup> Joined the meeting at 2.30pm

8. Where it is determined that a direct conflict of interest exists, the RAG may allow the member to continue to participate in the discussions relating to the matter but may also determine that, having made their contribution to the discussions, the member should retire from the meeting for the remainder of the discussions on that issue.
9. The RAG followed a process whereby each group of members with similar interests was asked to leave the meeting to enable the remaining members to:
  - a) Freely comment on the declared interests;
  - b) Discuss if the interests precluded the members from participating in any discussions; and
  - c) Agree on any actions to manage declared conflicts of interests (e.g. the member may be allowed to participate in the discussions relating to the matter but not in the formulation of final advice).
10. Given the focussed discussion on research priorities, the RAG agreed that the scientific members and observers be permitted to participate in discussions under agenda item 3 but not in the formulation of RAG recommendations relating to research priorities.

## 2 Updates from members

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### 2.1 Industry members

11. The RAG noted verbal updates provided by industry members and observers on the performance of the TRL fishery during the 2019-20 season, with emphasis on the impacts of COVID-19, in particular that:
  - a) there had been very little fishing in the top western islands (Gudumalugal nation) and issues with finding crew had made it difficult to go out fishing.
  - b) During recent community visits, TSRA staff were advised that the 2019-20 season had been good until the last month (September) when the number of crays began to decrease.
  - c) Before the impacts of COVID-19 were felt significantly and prices dropped, there was low fishing effort earlier on in the season, however the full-time fishers continued throughout the COVID-19 period.
  - d) An increased uptake in the Job Seeker payments and participation in the Community Development Program (CDP) has reduced participation in the fishery, with bad weather and poor visibility also contributing.
  - e) An increase in new purchases of boats, and engines may be a by-product of either those continuing to receive a good income from fishing, or the COVID-19 income support provided by the Government i.e. access to superannuation and Job Seeker payments.
12. The AFMA member added that due to COVID-19 impacts, the PNG TRL industry had been limited by logistics and only shipping frozen, tailed product via Australia.
13. Noting that price can be a driver for fishing effort, the CSIRO scientific member queried whether price data would be available to support the analysis of fishing effort throughout the 2019-20 season. This was caveated by the fact that the data can be confounded, as larger lobsters later in the season would likely have attracted higher prices. Therefore, a timeline of prices at discrete intervals throughout the season would be useful.

**ACTION:** AFMA to approach known TRL buyers and request the sharing of price data to support CSIRO's catch and effort data analysis.

### 2.2 Scientific members

14. The RAG noted general scientific verbal updates provided by the scientific member from CSIRO Dr Éva Plagányi, in particular that:
  - a) Planning for the pre-season survey, scheduled for 1-14 November 2020 is underway, and despite the current circumstances, is likely to proceed. The survey team has developed

a series of COVID-safe plans to protect the communities of the Torres Strait, the survey team and the charter boat crew. The plans include a range of contingencies in the event that COVID-19 circumstances change or that one of the staff becomes infected. This includes having additional back up divers to reduce stress on the core dive team, and additional training to account for any variation in diver efficiencies.

- b) CSIRO has been given preliminary approval from the Fisheries Research Development Corporation (FRDC) to support the participation of PZJA Traditional Inhabitant members to attend fisheries-related conferences. CSIRO is also looking at other co-investment options to support more opportunities for Traditional Inhabitant engagement in the longer term.

## 2.3 Government agencies

- 15. The RAG noted verbal updates from each of the government agency members.

### **Australian Fisheries Management Authority**

- 16. AFMA has been preparing a report to the Department of Agriculture, Water and Environment (DAWE) to support further export approval for the TRL Fishery under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The current export approval is due to expire on 18 December 2020. The draft report was provided to both TRLRAG and TRLWG members for comment between 23 September and 6 October 2020. Following submission to DAWE, the report will be made available for public comment for a period of four weeks, before further assessment by DAWE, and final consideration by the Minister for approval.
- 17. 30 September 2020 marked the end of the first TRL season under the quota management system since quota was allocated. As at 5 October the reported catches against the TAC for the TIB and TVH sectors for the 2019-20 season were as follows:
  - a) TIB sector: 204.22 tonnes (70.99%) caught, with 83.51 tonnes remaining.
  - b) TVH sector: 142.50 tonnes (96.97%) caught, with 4.45 tonnes remaining.
- 18. The RAG noted that some catch disposal records (CDRs) were still outstanding. The RAG further noted that AFMA's compliance operations covering the fishery closure were positive with no compliance breaches detected across the fishery.
- 19. Reported catches from PNG were provided to AFMA by the PNG NFA in early September and included catches from January through to the end of August 2020. Total reported (whole weight) catch by PNG was 90.47 tonnes. The RAG noted this figure is the combined total of 43.2 tonnes inside the Torres Strait Protected Zone (TSPZ) and 47.2 tonnes outside the TSPZ.
- 20. The RAG acknowledged that the issue of clarifying the extent of PNG catch inside and/or outside the TSPZ is still outstanding, and is part of ongoing bilateral discussions between AFMA and PNG NFA.
- 21. The RAG noted that the draft amendment to the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* was out for public comment until 15 October 2020. The PZJA will then consider the outcomes of the public consultation period at their meeting scheduled for 23 November 2020.

### **Torres Strait Regional Authority**

- 22. Other than updates on advice from industry in relation to how the TRL season fared, no other updates were provided by TSRA.

### **Fisheries Queensland**

- 23. Queensland Cabinet recently passed the second regulatory reform package for Fisheries Queensland. The new regulations include changes to licensing arrangements and quota reporting but do not impose substantial change on the way the East Coast TRL Fishery operates.
- 24. Fisheries Queensland have been endorsed to pursue development of a harvest strategy for the East Coast Rock Lobster and Crayfish Fishery, commencing in 2021.

25. The East Coast Rock lobster and Crayfish Fishery has had a disruptive year under the impacts of COVID-19. Accessing the expanded area of the East Coast Rock lobster and Crayfish Fishery in response to the initial outbreak of COVID-19 proved challenging. Great Barrier Reef Marine Park Authority permitting processes and overlapping native title community grounds meant that the fishable area was restricted and very little catch was taken in the expanded area. Boats were tied up during all of February before additional Government subsidised flights were scheduled to help improve the movement of product. Total catch at the end of the season was 111 tonnes, 3 per cent of which comprised tailed product.

### 3 TRL Fishery Research Priorities

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26. The RAG discussed and provided advice on research priorities for the 2021/22 financial year and other research needs identified for the TRL Fishery under the Rolling Five Year Research Plan 2021/22 - 2025/26 (the Research Plan).

27. The RAG noted that approximately \$290,000 of the expected 2021/22 AFMA Research Budget is pre-committed to a multi-year TRL project (the annual pre-season survey over three years – AFMA research project 2019/0825). This means there is approximately \$120,000 of the AFMA research budget available for additional research priorities in the 2021/22 financial year across all Torres Strait fisheries, not just TRL.

28. Noting the latest TRLRAG (27) and TRLWG (10) advice and the draft Rolling Five Year Research Plan for 2021/22 to 2025/26 (refer to agenda item paper 3a), **the RAG agreed to not put forward any additional research priorities for the 2021/22 financial year for consideration by the Torres Strait Scientific Advisory Committee (TSSAC).**

29. When considering research priorities beyond 2021/22, the RAG considered and discussed the following:

a) **Fishery surveys, stock assessment, harvest control rule and RBC**

i. To retain as the highest “essential” priority to the fishery, noting the project is unfunded beyond 2021/22.

b) **Ecological Risk Assessment (ERA)**

i. To retain as an essential priority, noting that undertaking an ERA for the TRL fishery is currently listed as a medium priority fishery under a broader AFMA/CSIRO project<sup>2</sup>.

ii. The RAG agreed that because the Fishery is based on a single species, collected by hand, there is unlikely to be any significant change in the ecological risk factors relating to the TRL fishery since the last ERA was undertaken in 2007.

c) **Improvement of data collection**

i. To retain as an essential priority, noting that much of this work is to be pursued by the TRL RAG Data Sub-group, funded under the annual TRL fishery AFMA budget.

d) **Understanding fisher behaviour**

i. To retain as an essential priority.

ii. The RAG agreed that an element of this work should also include capturing information on the impacts of COVID-19 on the fishery to ensure that analysis of fishery data is accounting for potential ‘COVID noise’. Collecting data and information from this anomalous COVID period may provide an insight in to what could be expected if the fishery experiences more anomalous periods, referred to

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<sup>2</sup> Following the meeting, AFMA clarified with members that depending on available funding, and efficiencies gained through automated assessment processes, an updated ERA is likely to be scheduled in 2022. It has also been determined that an ERA is not required to achieve WTO export approval.

as “shocks to the system”. It will also help to better understand trends in CPUE if there are future conflicts between CPUE and the survey results.

- iii. The RAG noted that commencing initial conversations with industry now, to capture qualitative information on fishing activities, would be a useful approach. This would also assist in beginning to **Understand changes to fishing power through time**, which the RAG agreed to keep as a desirable priority for now. Following initial qualitative data collection, more specific resources can be dedicated towards the project to develop a representative and structured annual fishing power survey. This will be better facilitated when face-to-face stakeholder engagement is more feasible, allowing for trusted relationships with industry to be built up over time
- iv. The RAG supported incorporating such preliminary work, including development of a fishing power survey, into the scope of the TRL RAG Data Sub-group, supplemented by additional AFMA funding for additional meetings if required. The AFMA member added that AFMA staff could commence initial discussions with stakeholders on this issue during upcoming community visits around the Torres Strait in late October and early November 2020.

e) **Understanding connectivity, environmental drivers and adaptation strategies**

- i. The RAG noted comments from the CSIRO scientific member that with more frequent and intense El Niño weather patterns forecasted, it is likely the fishery will be subjected to more “shocks to the system”. Collecting more data during anomalous periods (e.g. COVID-19, or environmental change) will allow better forward predictions and data standardisation, particularly if trying to discern the impacts of a quota management system from the impacts of COVID-19 or other environmental changes.
- ii. The independent scientific member reiterated that understanding environmental drivers will become very important and that an explicit dot point on this should be included in the ‘detail’ column of the Research Plan. This work should start with the collection of information on temperature and other large-scale perturbations that may impact on lobster recruitment, availability and aggregations.
- iii. The RAG noted that the currently-funded climate project work led by CSIRO (Leo Dutra) will provide greater insights into the available environmental information, and advice on what information should be collected to develop downscaled climate effects models for Torres Strait fisheries.
- iv. An industry member expressed support for maintaining **Understanding connectivity** as an essential research priority (though not for the 2021/22 financial year), noting that the most recent tagging study is over 30 years old. He noted that any disparity between the pre-season survey data, and the fishery catch data is likely to stem from a lack of understanding on connectivity of Torres Strait with the East Coast fishery. He suggested that industry could be engaged to undertake a discrete tagging project of 0+ (recently settled) and 1+ (juvenile) lobsters to examine movement from the East Coast into the Torres Strait. Although there is some understanding of larval convection in the region, there are knowledge gaps in relation to East Coast spawning grounds. The RAG noted that while East Coast daily fishing logs do not capture information on berried female lobsters, a proposed industry-funded lobster survey on the Queensland East Coast could provide some useful information to help understand East Coast spawning grounds and their connection with Torres Strait. The RAG noted that the collaborative development of a harvest strategy or survey for the East Coast could yield benefits for the management of TRL in both jurisdictions.
- v. The CSIRO scientific member added that Papua New Guinea is also a good source of information when understanding connectivity, and other technologies including Remote Operated Vehicles (ROVs) may aid in reducing the cost of future connectivity studies.

f) **Science peer review**

- i. The RAG noted that the scope of the science peer review was to only cover the TRL Fishery survey design, which would make the review more cost effective. The RAG also noted that perhaps the original driver for this research need is now less important, and therefore could be moved down in terms of priority against other research needs.
- ii. The Chair and independent scientific member agreed to finalise the Terms of Reference for the review out-of-session.

30. Having regard to the RAGs discussion above, an updated Five-Year Rolling Research Plan for the TRL Fishery 2021/22 – 2025/26 is provided at **Attachment C**.

## **4 Date and venue for next meeting**

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2. The RAG noted that the next TRLRAG (30) is scheduled for 15-16 December 2020. Pending COVID-19 travel restrictions, AFMA will liaise with members on possible face to face meeting options over the coming weeks.
3. The 29<sup>th</sup> TRLRAG meeting was closed at 4:05pm on Thursday 6 October 2020.

**Declaration of interests**  
**Dr Ian Knuckey – October 2020**

**Positions:**

Director –	Fishwell Consulting Pty Ltd
Director –	Olrac Australia (Electronic logbooks)
Deputy Chair –	Victorian Marine and Coastal Council
Chair / Director –	Australian Seafood Co-products & ASCo Fertilisers (seafood waste)
Chair –	Northern Prawn Fishery Resource Assessment Group
Chair –	Tropical Rock Lobster Resource Assessment Group
Chair –	Victorian Rock Lobster and Giant Crab Assessment Group
Chair –	Victorian Central Zone Abalone Fisheries Resource Advisory Grou
Chair –	Gulf of St Vincent's Prawn Fishery MAC Research Scientific Committee
Scientific Member –	Northern Prawn Management Advisory Committee
Scientific Member –	SESSF Shark Resource Assessment Group
Scientific Member –	Great Australian Bight Resource Assessment Group
Scientific Member –	Gulf of St Vincent's Prawn Fishery Management Advisory Committee
Scientific Member –	Tropical Tuna Resource Assessment Group
Scientific participant –	SEMAC, SESSF Resource Assessment Group

**Current projects:**

AFMA 2020/0807	Bass Strait Scallop Fishery Survey – 2020-22
FRDC 2017/069	Indigenous Capacity Building
FRDC 2016/116	5-year RD&E Plan for NT fisheries and aquaculture
Traffic Project	Shark Product Traceability
FRDC 2018/021	Development and Évaluation of SESSF multi-species harvest strategies
FRDC 2017/014	Informing structural reform of South Australia's Marine Scalefish Fishery
NT Fisheries	Design and implementation of a tropical snapper trawl survey
Sea Cucumber Ass.	Design and implementation of a sea cucumber dive survey
FRDC 2019-072	A survey to detect change in Danish Seine catch rates of Flathead and School Whiting resulting from CGG seismic exploration.

**29<sup>th</sup> MEETING OF THE PZJA TORRES STRAIT TROPICAL  
ROCK LOBSTER RESOURCE ASSESSMENT  
GROUP (TRLRAG 29)**

**Tuesday 6 October 2020 | 2:00 PM – 4:00 PM**

**Video Conference**

**ADOPTED AGENDA**

**1 PRELIMINARIES**

**Welcome and apologies**

The Chair will welcome members and observers to the 29<sup>th</sup> meeting of the RAG.

**Adoption of agenda**

The RAG will be invited to adopt the draft agenda.

**Declaration of interests**

Members and observers will be invited to declare any real or potential conflicts of interest and determine whether a member may or may not be present during discussion of or decisions made on the matter which is the subject of the conflict.

**2 UPDATES FROM MEMBERS**

Industry, scientific and government agency members and observers will be invited to provide verbal updates on matters concerning the TRL Fishery.

**3 TRL FISHERY RESEARCH PRIORITIES**

The RAG will discuss and provide advice on research priorities for the 2021/22 – 2025/26 five year period.

**The Chair must approve the attendance of all observers at the meeting. Individuals wishing to join the meeting as an observer must contact the Executive Officer – Georgia Langdon ([georgia.langdon@afma.gov.au](mailto:georgia.langdon@afma.gov.au))**

# Rolling Five Year Research Plan

## 2021/22-2025/26

## Torres Strait Tropical Rock Lobster Fishery



Compiled by AFMA

Last updated October 2020

## **ABOUT THIS PLAN**

The Torres Strait Scientific Advisory Committee (TSSAC) seeks input from each fishery advisory body (Resource Assessment Group (RAG), Management Advisory Committee (MAC) or Working Group (WG)) to identify research priorities over five-year periods from 2021/2022 to 2025/26. This template is to be used by the relevant advisory body to complete their five-year plan. The plans are to be developed in conjunction with the TSSAC Five-year Strategic Research Plan (SRP) with a focus on the three research themes and associated strategies within the SRP.

All fishery five-year plans will be assessed by the TSSAC using a set of criteria, and used to produce an Annual Research Statement for all Torres Strait fisheries.

The TSSAC then develop scopes for the highest-ranking projects in order to publish its annual call for research proposals. There are likely to be more scopes that funding will provide for so TSSAC can consider a number of proposals before deciding where to commit funding.

The fishery five-year plans are to be reviewed and updated annually by the Torres Strait forums to add an additional year onto the end to ensure the plans maintain a five-year projection for priority research. Priorities may also change during the review if needed.

## RESEARCH PRIORITIES

**Table 1.** Five-year Torres Strait Tropical Rock Lobster Fishery research plan for 2021/22 to 2025/26.

Note: light blue shading indicates a project that has been funded under the AFMA Research Budget.

Proposed Project	Objectives and component tasks	Year project to be carried out and indicative cost*						Other funding bodies <sup>1</sup>	Evaluation		
		2021/22	2022/23	2023/24	2024/25	2025/26	Notes on project timings		Priority essential / desirable	Priority ranking (1-5 – 1 being highest priority)	Theme
Fishery surveys, stock assessment, harvest control rules and recommended biological catch (RBC)	<ul style="list-style-type: none"> <li>➤ Monitor ongoing changes in the fishery and update or develop fishery performance indicators as required.</li> <li>➤ Recommend a recommended biological catch (RBC) annually for each season.</li> <li>➤ Every third year, update and implement the long-term stock assessment.</li> <li>➤ Conduct a pre- season survey in November each year, including seabed habitat monitoring.</li> <li>➤ Continue development of a harvest strategy for the TRL Fishery including an empirical harvest control rule.</li> <li>➤ Facilitate data sharing with PNG.</li> <li>➤ Development of a tiered harvest strategy for the TRL Fishery.</li> </ul>	\$290,824 (funded under AFMA Research Project 2019/ 0825)	~\$240,000 (not yet funded)	~\$240,000 (not yet funded)	~\$240,000 (not yet funded)	~\$240,000 (not yet funded)	Nil	AFMA CSIRO PNG NFA Industry	Essential	1	1
Ecological risk assessment (ERA)	<ul style="list-style-type: none"> <li>➤ Conduct an update to the 2007 ERA for the TRL Fishery.</li> </ul>	0	\$20,000 (identified for potential assessment under broader AFMA Research Project)	0	0	0	Assessment dependent on remaining funding once high priority fisheries have been assessed.	AFMA CSIRO	Essential	1	1
Improvement of data collection	<ul style="list-style-type: none"> <li>➤ Improved monitoring of commercial catch and effort in all sectors of the fishery.</li> </ul>	Funding for sub-group meetings to be sourced from RAG		0	0	0	Sub-group of the RAG to progress	AFMA PNG NFA	Essential	1	1,3

	<ul style="list-style-type: none"> <li>➤ Estimate of non- commercial take of TRL.</li> <li>➤ Alternative monitoring techniques of effort, for example GPS tracking.</li> </ul>	budget				alongside RAG meetings				
Understanding fishing behaviour	<ul style="list-style-type: none"> <li>➤ Understanding impacts of COVID-19</li> <li>➤ Understanding the drivers and incentives in determining fishing behaviour in all sectors.</li> <li>➤ Understanding fishing behaviour under output controls: the impact of ITQs or competitive quota on the fishery (including social impacts); the extent and impact of discard mortality; the effect of changing market preferences on fishing behaviour under output controls; the extent of value adding e.g. moving to live product, targeting different sizes; the extent of high grading under output controls.</li> </ul>	Funding for sub-group meetings to be sourced from RAG budget	TBA	TBA	TBA	Sub-group to commence initial conversations with industry and collection of qualitative data, with a view to developing a structured quantitative survey over time.	AFMA	Essential	2	1
Understanding changes to fishing power through time	<ul style="list-style-type: none"> <li>➤ Understanding changes in fishing behaviour and power over time (e.g. changes to the size of engines, use of GPS, gear, areas fished, time fished, experience of divers), to inform the standardisation of CPUE data.</li> </ul>	funding for sub-group meetings to be sourced from RAG budget	TBA	TBA	TBA	Sub-group to commence initial conversations with industry and collection of qualitative data, with a view to developing a structured quantitative survey over time..	AFMA CSIRO	Desirable	2	1
Understanding connectivity, environmental drivers and adaptation strategies	<ul style="list-style-type: none"> <li>➤ Understanding of migration of different age classes of lobsters between, and within, jurisdictions (e.g. PNG, QLD East Coast and Torres Strait).</li> <li>➤ Understanding of recruitment connectivity between, and within, jurisdictions, including key areas of larval release within each jurisdiction.</li> <li>➤ Management implications of movement and recruitment connectivity between, and within,</li> </ul>	Possible use of industry boats, collaboration with QDAF on potential future QDAF lobster survey				Nil	AFMA PNG NFA CSIRO QDAF	Essential	2	1

	<p>jurisdictions.</p> <p>➤ Understanding large scale environmental perturbations and their impacts on lobster recruitment, availability and aggregations.</p>										
Science peer review	<p>➤ Consistent with best practice Guidelines for quality assurance of Australian fisheries research and science information (the Guidelines), a peer review be conducted of the TRL Fishery survey design.</p>	0	60,000-80,000 (dependent on final scope)	0	0	0	Terms of reference to be developed and considered by the TRLRAG in 2019/20	AFMA	Desirable	2	1
Mid-year survey Note: unless triggered under the Harvest Strategy for the TRL Fishery, this project is not a priority for the TRL Fishery.	<p>➤ Conduct mid- year survey, as required under the Harvest Strategy for the TRL Fishery.</p>	0	0	0	0	0	To be conducted only if requirement to undertake a mid-year survey is triggered under the Harvest Strategy – indicative cost \$110,000 with in-kind contribution from CSIRO	AFMA CSIRO PNG NFA Industry	Only if triggered under the Harvest Strategy, priority = essential	Only if triggered under the Harvest Strategy, priority ranking = 1	1