

Torres Strait Tropical Rock Lobster Working Group Meeting 9

Meeting Record

19 February 2019

Thursday Island

Note all meeting papers and record available on
the PZJA webpage: www.pzja.gov.au



Australian Government

Australian Fisheries Management Authority

Contents

Meeting participants	3
Members.....	3
Observers	3
1 Preliminaries	5
1.1 Welcome and apologies	5
1.2 Adoption of agenda	5
1.3 Declaration of interests	5
1.4 Action items from previous meetings.....	6
1.5 Out-of-session correspondence	6
2 Updates from members	6
2.1 Industry members.....	6
2.2 Scientific members.....	8
2.3 Government agencies	8
2.4 PNG NFA	11
2.5 Native Title	12
3 Total allowable catch for the 2018-19 fishing season	12
4 Finalising the draft Harvest Strategy for the TRL Fishery.....	14
5 Future management priorities.....	15
6 TRL Fishery budget report for 2019/20	16
7 Other business	17
8 Date and venue for next meeting	17

Meeting participants

Members

Name	Position	Declaration of interest
Mr John Pollock	Chairperson	Nil
Ms Selina Stoute	AFMA member	Nil
Ms Allison Runck	TSRA member	Nil. TSRA holds multiple TVH TRL fishing licences on behalf of Torres Strait Communities but does not benefit from them
Mr Darren Dennis	Scientific member	Nil. Member of other RAGs and research consultant
Mr Aaron Tom	Industry member	Traditional Inhabitant Gudumalulgal and TIB licence holder
Mr Mark David	Industry member	Traditional Inhabitant Kulgalgal and TIB licence holder
Mr Les Pitt	Industry member	Traditional Inhabitant Kemer Kemer Meriam, TIB licence holder and independent freezer operator
Mr James Ahmat	Industry member	Traditional Inhabitant Maluialgal and TIB licence holder
Mr Mark Dean	Industry member	TVH operator
Mr Daniel Takai	Industry member	Pearl Island Seafoods (seafood buyer), Tanala Seafoods (seafood buyer) and TIB licence holder
Mr Brett Arlidge	Industry member	General Manager MG Kailis Pty Ltd. MG Kailis Pty Ltd is a holder of 5 TVH licences. Seafood buyer from Torres Strait, QLD and PNG TRL fisheries
Ms Natalie Couchman	AFMA executive officer	Nil

Observers

Name	Position	Declaration of interest
Mr Jerry Stephen	TSRA Deputy Chair, TSRA Member for Ugar and TSRA Portfolio Member for Fisheries	TIB licence holder and Native Title holder
Mr Joseph Posu	PNG National Fisheries Authority	Nil
Mr Thomas Fujii~	Industry observer	TIB licence holder
Mr Graham Hirakawa~	Industry observer	TIB licence holder

Name	Position	Declaration of interest
Mr Phil Hughes*	Industry observer	TIB licence holder
Mr Phillip Ketchell	Industry observer	TIB licence holder
Seri Stephen	Industry observer	TIB licence holder
John Jones*	AFMA	Nil

Notes:

* Departed the meeting at 12:30 pm on Tuesday 19 February 2019, at end of Agenda Item 2.5.

~ Departed the meeting at 3:00 pm on Tuesday 19 February 2019, at end of Agenda Item 6.

1 Preliminaries

1.1 Welcome and apologies

1. The meeting was opened in prayer at 9:10 am on Tuesday 19 February 2019.
2. The Chair acknowledged the Traditional Owners of the land on which the meeting was held and paid respect to Elders past and present. The Chairperson welcomed attendees to the 9th meeting of the Torres Strait Tropical Rock Lobster Working Group (TRLWG 9), including a welcome for new member, Mr James Ahmat.
3. The Chair advised that the Working Group is an advisory committee to the PZJA. The Working Group will seek to reach consensus on issues, but where this is not possible, the different views of members will be recorded in the meeting record.
4. Attendees at the Working Group are detailed in the meeting participant tables at the start of this meeting record. The Chair approved the attendance of those observers present at the meeting.
5. Apologies were received from:
 - a. Mr Sandy Morison, Chairperson;
 - b. Ms Danielle Stewart, Queensland Department of Agriculture and Fisheries (QDAF) member;
 - c. Ms Sevaly Sen, Fishery Economist member; and
 - d. Mr Maluwap Nona, invited observer and Chairperson for Malu Lamar (Torres Strait Islanders) Corporation RNTBC (Malu Lamar).

1.2 Adoption of agenda

6. The draft agenda was adopted (**Attachment A**), with the addition of a matter concerning developmental permits to be covered under Agenda Item 2.3.

1.3 Declaration of interests

7. The Chairperson advised members and observers, that as provided in PZJA Fisheries Management Paper No. 1 (FMP1), all members of the Working Group must declare all real or potential conflicts of interest in the Torres Strait TRL Fishery at the commencement of the meeting. Where it is determined that a direct conflict of interest exists, the Working Group may allow the member to continue to participate in the discussions relating to the matter but not in any decision making process. The Working Group may also determine that, having made their contribution to the discussions, the member should retire from the meeting for the remainder of discussions on that issue.
8. Declarations of interests were provided by each meeting participant. These are detailed in the meeting participant tables at the start of this meeting record.
9. Those members and observers holding a fishing licence were asked to leave the room. The remaining members agreed that although the excused members have a conflicts of interest, their expertise is critical in the development of advice. It was also noted that there was no agenda item that favoured one licence holder over another. On this basis, it was agreed that the excused members be permitted to participate in discussions under all agenda items and the formulation of recommendations.
10. The TSRA member and observer were asked to leave the room. The remaining members agreed that although the TSRA member has a potential conflict of interest, as a PZJA agency and service provider in the region, their expertise is important in the development of advice. On this basis, it was agreed that the TSRA member be permitted to participate in discussions under all agenda items and the formulation of recommendations.

11. The AFMA member, observer and executive officer were asked to leave the room. The remaining members agreed the AFMA member, observer and executive officer have no conflicts of interest and so the member should be permitted to participate in discussions under all agenda items and the formulation of recommendations.

1.4 Action items from previous meetings

12. The Working Group noted the status of actions arising from previous Working Group, and where relevant, TRL Resource Assessment Group (TRLRAG) meetings (**Attachment B**).
13. The Working Group noted the final meeting record for TRLWG 8 held on 8 November 2018 was finalised out of session.

1.5 Out-of-session correspondence

14. The Working Group noted out of session correspondence on Working Group matters since the previous meeting.

2 Updates from members

2.1 Industry members

15. The Working Group noted updates provided by industry members and observers regarding the performance of the Torres Strait TRL Fishery during the 2018-19 fishing season to date:
- Two Traditional Inhabitant industry members advised that they had nothing to add to the updates they provided at the TRLRAG meeting held on 5 February 2019.
 - An industry member advised that weather conditions were poor at the start of the season which had an impact on operations. Catches during the two-month hookah closure were higher than in previous years. Similar to last season, lobster numbers locally (around Thursday Island) have been low. There is also a high rate of mortality at present due to high temperatures and the harvesting of moulting individuals. The rejection rate is up to 20%, whereas the average throughout the year is normally 3-5%. The mortalities are also unpredictable, with lobsters looking to be in good condition when first received but not travelling well. The member is investigating whether there are any handling issues further down the logistics chain that may be contributing.
 - Another industry member advised that there have been good catches from the start of season consistent with what would be expected from the November 2018 pre-season survey. However poor weather and visibility since the end of January has impacted on most recent catches. The weather appears to have reverted to a historical pattern. Prices have been good due to Chinese New Year festivities, but are expected to drop in the coming weeks as the festivities conclude. In response to a query from another member, the member advised that historically the best price obtained was \$115/kg, with restaurant mark-ups in China being as high as \$250/kg. This is significantly above the average prices expected this season.
 - Another industry member advised that they were only able to fish for a few days on their last trip due to the poor weather, and also returned to port earlier to get the maximum prices before other boats unloaded.
16. The Working Group discussed how data on discards is currently being captured. The AFMA member advised that catches against the total allowable catch (TAC) are monitored at landing through catch disposal records (CDRs) under the mandatory Fish Receiver System. Members discussed that data on discards before lobsters are landed (i.e. at sea) and some discards at the point of landing to fish receivers is not currently captured. In particular:

- a. Fishers discard lobsters that die while being held in cages at sea. This mortality can be due to poor weather, high water temperatures, cages overturning, not resting lobsters before towing, towing cages too quickly etc. These mortalities are not currently captured through CDRs or logbooks.
 - b. Lobsters in poor condition at landing are either tailed or outright rejected by fish receivers. The outright rejection rate is between 1-5% of total landings depending on the condition of lobsters. Those lobsters that are outright rejected are not currently captured through CDRs.
 - c. Fisher's landing tonnes of lobsters at the same time creates logistical problems. This can also result in a significant price drop (e.g. \$4/kg less). The movement of larger volumes results in higher mortality rates. Industry members expressed concerns that recent changes to requirements concerning the possession and use of hookah gear around hookah closure periods is exacerbating this problem. These mortalities should be currently captured through CDRs.
17. The Working Group agreed that there is a need to capture better data on discards, noting that this issue has been identified for discussion at the upcoming TRLRAG Data Sub-Group meeting tentatively scheduled for April 2019. Industry members advised that any changes to data collection protocols to better collect this data needs to be accompanied by education for fishers.
18. The Working Group also discussed industry concerns regarding recent changes to requirements concerning the possession and use of hookah gear around hookah closure periods. The AFMA member and AFMA Compliance Manager advised that previous flexibility around this issue resulted in poor industry compliance and AFMA received many complaints from industry. Noting this, the AFMA member and observer explained the following arrangements will apply this season:
- a. It is an offence under the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018* (the Instrument) for a fisher to be in possession or use hookah gear during hookah closure periods, these being from December-January and periodic moon-tide hookah closures;
 - b. Where there are hookah fishers that wish to free-dive during hookah closure periods, those fishers must remove all hookah gear from their boats during the hookah closure periods. Holding tanks are to be aerated through other means (e.g. pond pumps can be purchased locally);
 - c. For boats that are transiting to port during the hookah closure periods (e.g. transiting from the East coast), AFMA have approved boats to transit directly to port with hookah stowed securely on the primary boat (removed from tenders). This was monitored through VMS and inspections. AFMA have also approved the testing of hookah gear during closure periods while a boat is at a designated anchorage;
 - d. Boats fitted with hookah gear are not permitted to transit to fishing grounds during a hookah closure period;
 - e. For boats anchored in port during periodic moon-tide hookah closures, hookah gear can be left on these boats while the boat remains at anchor;
 - f. Fishers are advised to contact AFMA should they have a situation where they wish to be in possession or use hookah gear during a hookah closure period (e.g. to conduct maintenance, transit between ports). AFMA will assess each request on a case by case basis and provide approval as appropriate.
19. An industry observer noted that Traditional Inhabitants undertaking traditional fishing are not subject to these requirements.

Recommendation

20. The Working Group recommended AFMA provide further guidance to industry concerning:
- a. Current requirements concerning the possession and use of hookah gear around hookah closure periods.

- b. What fishers need to do should they have a situation where they wish to be in possession or use hookah gear during a hookah closure period (e.g. contact AFMA).
21. The Working Group further recommended that the requirements concerning the possession and use of hookah gear around hookah closure periods be considered further at the next meeting of the Working Group. It was also recommended that industry submit proposals for changes to these requirements to AFMA for consideration at this meeting, noting that requirements need to be cost-effective and enforceable.

2.2 Scientific members

22. The Working Group noted an update provided by the scientific member, Mr Darren Dennis, regarding research relevant to the Torres Strait TRL Fishery:
- a. The stock assessment report to be discussed under Agenda Item 3 provides comprehensive details of the results of the November 2018 pre-season survey, updated integrated stock assessment and recommended biological catch (RBC) calculations. The survey and stock assessment indicates that the TRL stock abundance has increased from a historical low level last season to a level approximating the long-term average. Further the July 2018 mid-year survey has verified the low stock abundance levels last season.
 - b. The RBC is currently calculated by applying the interim Harvest Strategy to the results of the pre-season survey and integrated stock assessment. The information collected to manage this Torres Strait TRL Fishery is of a gold standard and includes fishery independent surveys and commercial catch data. The survey methodology has been presented at six conferences, detailed in over 100 peer reviewed papers and most recently reviewed by the US National Fisheries Service.
 - c. A draft Harvest Strategy is currently being finalised for the Torres Strait TRL Fishery, which will work by taking the average catch over the past five years scaled to pre-season survey abundance and CPUE indices.
 - d. The 0+ abundance index from surveys has been shown to be unreliable, but does provide an indication of expected biomass two years later. The scientific member encouraged industry to share any information they have with CSIRO on 0+ aged lobsters to improve the assessment and to ensure the survey is covering the right areas.

2.3 Government agencies

23. The Working Group noted an update provided by the TSRA member, Ms Allison Runck, regarding TSRA activities relevant to the management of the Torres Strait TRL Fishery:
- a. Traditional Inhabitant member induction – the TSRA, through a number of providers, will deliver an Induction Program for Traditional Inhabitant members on PZJA advisory committees. The program is to be delivered at sessions in late February and May 2019. The Program will provide an overview of member roles and responsibilities and fisheries management principles as well as provide support to members in disseminating the outcomes of meetings to communities in a timely manner. This includes support for members to travel to communities, other than the member's home community, at least once a year. Communiqués will also be developed concerning key advice from each meeting, and key issues for discussion at upcoming meetings.
 - b. Export and branding for Torres Strait seafood – last year, a consultant was engaged to assess the economic feasibility, regulatory requirements and infrastructure needs to export seafood directly from the Torres Strait and the potential value derived from creating a brand for Torres Strait seafood. Export handbooks will be made available shortly which aim to provide industry with a better understanding of supply chains and legislative requirements.

- c. Independent entity – supporting the implementation of the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (Management Plan), the TSRA continues to progress the establishment of an independent entity to hold and manage Torres Strait fisheries assets (e.g. licences and quota units) on behalf of Torres Strait communities. With a target implementation date of 30 June 2020, there is a large schedule of work ahead to develop the supporting community arrangements. This will include consulting closely with Prescribed Bodies Corporate (PBCs) in April-May 2019. There will also be a period of transition and support following the establishment of the entity. It was noted that under the Management Plan, TIB quota units will not be able to be permanently transferred or sold. Licences and quota units will be able to be leased. The TSRA has decided that the TVH licences they currently hold will not be leased while the process to formally allocate quota units, under the Management Plan, is undertaken. Future leasing decisions will be made by the entity.
- d. Infrastructure investment – over next 18 months, the TSRA will invest in the development of community based infrastructure facilities across the Torres Strait. This investment plan is based on an earlier audit of existing infrastructure and services, and needs. A project manager will now work with communities to implement the plan. The TSRA member explained that the intention of this investment is not to put existing private businesses out of business. These businesses are able to seek support through the TSRA's Economic Development Program. Such businesses are advised to contact the TSRA to discuss available support further.

24. The Working Group noted an update provided by the AFMA member, Ms Selina Stoute, regarding management initiatives relevant to the Torres Strait TRL Fishery:

- a. TRL Fishery Management Plan - AFMA has commenced the formal allocation process prescribed under the Management Plan and will be in contact with affected licence owners as the process progresses.
- b. Management arrangements for the 2018/19 fishing season - AFMA wrote to all Torres Strait TRL Fishery licence holders prior to the start of the season providing details of key management arrangements for this season, including interim sectoral catch shares, interim TAC and moon-tide hookah closures.
- c. Australia-PNG catch sharing - AFMA and the PNG NFA met on 17 January 2018 to discuss preliminary catch sharing arrangements for the 2018/19 fishing season, as per the terms of the Torres Strait Treaty (the Treaty). Agencies will meet again following the Working Group to agree on final arrangements, prior to the PZJA endorsing a final TAC for this season.
- d. Research pre-proposals – the Torres Strait Scientific Advisory Committee (TSSAC), made a public call in December 2018 for research applications to address research priorities identified for potential funding in the 2019-20 financial year. Three research pre-proposals were received relevant to the Torres Strait TRL Fishery. These were circulated to the Working Group out of session just prior to this meeting. The AFMA member advised that these proposals can be further considered under Agenda Item 7 if members choose.
- e. Reported catches to date - the reported landed catch for the Australian Torres Strait TRL Fishery for the 2018-19 fishing season to date (1 December 2018 - 8 February 2019), is 39.623 tonne, equating to 19.81 per cent of the 200 tonne interim TAC. The AFMA member noted that, as per AFMA's Information Disclosure Policy, sectoral catches have been aggregated, as the data from the TVH sector is currently from less than 5 vessels. The Policy does allow more detailed fishing information to be disclosed where the information has or will be used to guide fishery management decisions, but that is not necessary at this time. AFMA will provide public monthly catch updates from March 2019, via the AFMA and PZJA websites, to assist industry in monitoring catch against interim sectoral split arrangements this season.
- f. Sea surface temperatures (SSTs) - SSTs are currently below the coral bleaching threshold, as determined by the Australian Institute of Marine Science (AIMS), which

monitors SSTs to identify the risk of bleaching events. Reports can be accessed on the AIMS website.

- g. Fish Receiver System (FRS) - in the first half of 2019, AFMA will again visit all communities across the Torres Strait and Northern Peninsula Area (NPA), to provide ongoing support and education and receive feedback on how the FRS is functioning. AFMA will aim to have Traditional Inhabitant members accompany the visits.
- h. Industry liaison visits – AFMA is looking at opportunities to invite members to visit the Canberra office. This would raise awareness of Torres Strait issues in Canberra and build members' knowledge of AFMA business. Mr David advised that his recent visit was very productive and preceded by a climate adaptation meeting in Melbourne. This meeting involved government, industry and scientists sitting down to work out how to best adapt to climate change.
- i. Expiry of appointments for PZJA advisory committees – the appointment terms of members on PZJA consultative forums, excluding Traditional Inhabitant members, expire on 28 February 2019. AFMA will seek to have members' appointments extended until later in 2019, to allow time for a new appointment process to be completed.
- j. Developmental permits – three developmental permits are currently issued to TIB operators for training purposes. A condition on TIB licences requires TIB licenced boats to be solely operated and crewed by Australian Traditional Inhabitants. However, from time to time, there is a need for skills development and training that is unable to be delivered by Traditional Inhabitants, and developmental permits are issued to facilitate such activities.

25. The Working Group discussed industry concerns regarding developmental permits currently issued to TIB operators for training purposes. The AFMA member advised that:

- a. Developmental permits have been issued for many years and applications are currently assessed on a case by case basis. Less than a handful of applications are received each year.
- b. The PZJA does not have a formal policy regarding the administration of developmental permits (eligibility/assessment criteria) and this is a weakness in the current process. AFMA currently seeks details of training proposals when applications are made but there are no criteria limiting the scope of proposals (e.g. trainers are not required to be accredited or be delivering an accredited training course). AFMA have heard varying views from industry concerning the TIB industry's current crewing capacity and needs for skills development and training.
- c. developmental permits are subject to a range of conditions concerning how many and for what purposes a non-traditional inhabitant can be aboard a TIB licenced boat, VMS, logbook reporting, reporting on training delivered and the outcomes. Permit conditions are able to be varied and permits are able to be revoked if an operator does not comply with the conditions of the permit.

26. Industry members and observers expressed their strong discontent that under the developmental permits currently issued, non-traditional inhabitants will be making money by taking lobsters during the course of training and this will be deducted from the TIB sectoral catch share. It was the strong view of industry members and observers that neither TIB operators nor non-traditional inhabitant trainers be allowed to make a profit from activities conducted under developmental permits and that trainers should be paid a wage to deliver training. It was also suggested that a limit be placed on the number of lobsters that can be taken by a boat while operating under a developmental permit. Concern was also expressed that developmental permits could be used by non-traditional inhabitants to control TIB operations.

27. The AFMA member advised that the development of a policy regarding the administration of developmental permits is a priority. Some industry members suggested that a draft policy be made available for consideration at the next Working Group meeting. However, the AFMA member advised that given current workloads, this would be unlikely.

Recommendation

28. The Working Group recommended that the PZJA develop a policy concerning the administration of developmental permits as a priority, and consult with industry in its development. Further, the Working Group recommended the existing developmental permit conditions be reconsidered in light of concerns raised by industry members.

29. The Working Group discussed current TIB primary boat licence conditions which prohibit a TIB primary boat from towing dories not associated with the primary boat – a TIB primary boat can only tow associated tenders (denoted through a common boat mark). Industry members and observers expressed concerns that this prohibition restricts the ability of the TIB sector to catch the TIB sectoral catch share and creates inefficiencies (e.g. fuel costs). The AFMA member noted that this issue has been raised by industry in the past and is relevant to all Torres Strait fisheries, not just the TRL Fishery. Given this, broader consultation is required including with Native Title bodies. The AFMA member further noted that a range of issues will need to be considered in developing a proposal for PZJA consideration including who has ownership of catches carried aboard the primary boat and who is responsible should offences be committed by dories not associated with the primary boat. The TSRA member supported the development of a proposal for PZJA consideration, noting such a proposal did not have PZJA support in the past as, at that time, Torres Strait fisheries were primarily operating under input controls.

Recommendation

30. The Working Group recommended that current TIB primary boat licence conditions which prohibit a TIB primary boat from towing dories not associated with the primary boat, be reviewed with a view to permitting this activity, noting survey requirements for individual primary boats. The Working Group further recommended a proposal be developed for PZJA consideration regarding this matter.

2.4 PNG NFA

31. The Working Group noted an update provided by the PNG NFA observer, Mr Joseph Posu, regarding the PNG TRL Fishery:

- a. 2018 fishery closure – in October 2018, the PNG NFA issued a notice to close the PNG TRL Fishery. This included that area of the fishery in the Torres Strait Protected Zone (TSPZ) and the Western province. However, the provincial government was slow to implement the closure and fishing continued to the end of the season. It was also found that the closure did not have the appropriate legislative basis and so enforcement action was unable to be taken against those operators that continued fishing. The PNG NFA are working to ensure the necessary legislative, policy and administrative arrangements are in place for future seasons.
- b. Reported catches for the 2018 fishing season – the PNG NFA tabled a report on reported catch for the PNG TRL Fishery taken from within and outside the TSPZ for the 2018 fishing season (1 January 2018 - 31 December 2018). A total of 85.289 tonnes was taken from inside the TSPZ and 70.664 tonnes from outside the TSPZ (Western province only).
- c. 2019 fishing season – catches for the 2019 fishing season to date have been better than in previous years. In February 2019, a trial TRL survey was conducted by the PNG NFA, in areas that have been historically surveyed. Further details on this will be provided at the upcoming Australia-PNG Bilateral meetings to be held on Thursday Island in March.
- d. Catch sharing arrangements – the PNG NFA sought the support of AFMA to better understand and articulate catch sharing arrangements under the Treaty so that this can be communicated to PNG stakeholders. The AFMA member advised that catch sharing arrangements are determined using a two tier formula, the first being the 85%:15% split between Australia and PNG. This is based on a historical agreement between Australia and PNG on the likely distribution of the TRL stock. Each Party is then entitled to fish 25% of the other Party's share through cross-endorsement. The AFMA member further

noted that as the TRL stock is migratory, to ensure its effective management, both Australia and PNG need to ensure all impacts on the stock both inside and outside the Torres Strait Protected Zone are accounted for. The PNG NFA reiterated that they would like to continue meeting regularly with AFMA which was supported by the AFMA member.

- e. Data sharing – the PNG NFA will be undertaking a data collection review in 2019. The PNG NFA are also committed to the continued sharing of catch data with Australia to support the stock assessment for the Torres Strait TRL Fishery (which covers both PNG and Australian waters). The PNG NFA sought guidance from AFMA and CSIRO on the desired timeframes for sharing catch data to support the stock assessment.

Action

32. AFMA (and CSIRO) to provide the PNG NFA with:

- a. Further information concerning catch sharing arrangements under the Treaty, in particular the two tier formula and the basis of the historical agreement between Australia and PNG on the likely distribution of the TRL stock.
- b. Guidance from AFMA and CSIRO on the desired timeframes for sharing catch data to support the stock assessment for the Torres Strait TRL Fishery.

2.5 Native Title

- 33. As a Malu Lamar (Torres Strait Islanders) Corporation RNTBC (Malu Lamar) representative was not in attendance at the meeting, no update was provided under this item.
- 34. Some members sought an update concerning Federal Court proceedings between Malu Lamar and the PZJA. The AFMA member advised that Malu Lamar commenced legal proceedings against the Assistant Minister for Agriculture and Water Resources and the PZJA in the Federal Court in late November 2018, challenging the legality of the Management Plan and the legislative amendments that implement the sectoral split for the 2018-19 fishing season. In their application to the Court, Malu Lamar requested and urgent hearing to have the matter heard before the Management Plan and legislative amendments were made.
- 35. The Federal Court considered Malu Lamar's application and determined that grounds for an urgent hearing had not been made out. This meant that the PZJA could proceed to determine the Management Plan and make the legislative amendments that implemented the sectoral split on 26 November 2018.
- 36. Malu Lamar subsequently asked to mediate in this matter, and raised concerns with respect to the condition imposed on TIB licence holders restricting them from having non-traditional crew. This is not raised in their application, and Malu Lamar has leave from the court to amend their application on or before 26 February 2019. The subsequent conduct of these proceedings should become clearer after this amended application is received.

Action

37. AFMA to provide publically available information to the Working Group concerning Federal Court proceedings between Malu Lamar, the Assistant Minister for Agriculture and Water Resources and the PZJA.

3 Total allowable catch for the 2018-19 fishing season

- 38. The Working Group considered an update provided by the AFMA member detailing recent developments concerning the RBC and TAC for the Torres Strait TRL Fishery for the 2018-19 fishing season:
 - a. In order to give effect to the sectoral split, at their meeting on 26 November 2018 the PZJA agreed to open the 2018-19 fishing season with an interim TAC of 200 tonnes for

the Australian TRL Fishery. This decision was based on advice received from the TRLRAG and Working Group.

- b. Preliminary results of the November 2018 pre-season survey and integrated stock assessment update was presented at the TRLRAG meeting held on 11-12 December 2018 (TRLRAG 25). At this meeting, the TRLRAG discussed a conflict in the stock assessment model between the November 2017 0+ survey index (which was very low relative to historical) and the 2018 1+ index (which was closer to average). CSIRO undertook further intersessional work to reduce this conflict.
- c. At the latest TRLRAG meeting held on 5 February 2019 (TRLRAG 26), CSIRO presented additional analyses to reduce this conflict in the stock assessment model. The TRLRAG considered these analyses and agreed to apply a series of additional variance parameters for all years (except the most recent) to the 0+ index series used in the model.
- d. On this basis, the RAG recommended a final RBC of 641 tonnes. The RBC was calculated by applying the interim harvest strategy to the results of the integrated fishery stock assessment.
- e. Current stock biomass is estimated at 46 per cent of B_0 which is above the limit reference point of 40 per cent. The stock biomass is predicted to rise to 92 per cent of B_0 in 2020.
- f. The Working Group is being asked at this meeting to provide advice on the TAC for the Torres Strait TRL Fishery for the 2018-19 fishing season. This is to include consideration of whether to deduct other sources of mortality (e.g. traditional and recreational catches) from the RBC, noting previous advice of the TRLRAG on this matter. The RBC and TAC covers the Torres Strait Protected Zone which includes both Australian and PNG waters.

39. The Working Group discussed whether to account for other sources of fishing mortality in recommending a TAC for the Torres Strait TRL Fishery for the 2018-19 fishing season, noting previous advice from TRLRAG meetings held on 2-3 August 2016 and 4-5 April 2017 (TRLRAG 18 and 20).

Recommendation

40. Noting previous TRLRAG advice (TRLRAG 18 and 20), the Working Group recommended that estimates of other sources of fishing mortality not be deducted from the RBC in recommending a TAC for the Torres Strait TRL Fishery for the 2018-19 fishing season.

41. The Working Group considered the final results of the November 2018 pre-season survey, the integrated stock assessment and the recommendation of the TRLRAG concerning the RBC.

Recommendation

42. Taking into account these results, TRLRAG advice (TRLRAG 26) and the preceding recommendation concerning other sources of fishing mortality, the Working Group recommended a final TAC for the Torres Strait TRL Fishery for the 2018-19 fishing season of 641 tonnes.

43. The Working Group noted the TAC covers the Torres Strait Protected Zone (Australia and PNG) and a final Australian TAC is subject to negotiation with PNG subject to the terms of the Treaty.

44. The Working Group discussed cross-endorsement arrangements under the Treaty. The AFMA member clarified that should Australia decide to exercise cross-endorsement rights in PNG waters, all Australian operators would be entitled to apply for a cross-endorsement licence. There has been a small number of Australian and PNG operators that have expressed an interest in applying for a cross-endorsement licence in the last few seasons. Australia last issued a cross-endorsement licence to PNG operators in the 2014/15 fishing season and has not accessed cross-endorsement catch allocations for any fishery in PNG waters since the early 2000s. Cross-endorsement licences would be subject to the conditions placed on them by the country whose waters an operator is fishing in (i.e. PNG operators in Australian waters would be subject to Australian conditions). A key issue for consideration by Australia, particularly following the implementation of a quota management system under the Management Plan, is how access to cross-endorsement allocations should be shared between Australian licence holders.

45. The AFMA member advised that following this meeting, AFMA will seek final agreement with the PNG NFA on catch sharing arrangements, including cross endorsement, for the Torres Strait TRL Fishery for the 2018-19 fishing season. It was noted that the PNG NFA need to consult with their operators concerning cross-endorsement.

4 Finalising the draft Harvest Strategy for the TRL Fishery

46. The Working Group considered an update provided by the AFMA member concerning the development of the draft Harvest Strategy for the Torres Strait TRL Fishery:
- a. The draft Harvest Strategy for the TRL Fishery has been developed in consultation with the TRLRAG and Working Group at meetings held since 2016.
 - b. The Working Group last considered the draft Harvest Strategy at its meeting on 25-26 July 2017 (TRLWG 6). There have been a number of developments since that meeting:
 - i. The draft Harvest Strategy was endorsed by the TRLRAG at the meeting held on 27-28 March 2018 (TRLRAG 22).
 - ii. At the TRLRAG meeting held on 11-12 December 2018 (TRLRAG 25), the number of years to be averaged in the empirical Harvest Control Rule (eHCR) index and decision rule triggers were reconsidered. The TRLRAG did not recommend any changes to the draft Harvest Strategy.
 - iii. The Commonwealth Fisheries Harvest Strategy Policy was reviewed and updated in June 2018.
 - c. In light of these developments, a number of changes were made to the draft Harvest Strategy in February 2019 – a copy of the draft Harvest Strategy showing these changes was tabled at the meeting (**Attachment C**). These changes did not change the principle substance of the draft Harvest Strategy. Specifically, the objectives, eHCR, reference points and decision rules have remained unchanged. Changes made included:
 - i. Basic edits (e.g. spelling, punctuation etc.).
 - ii. Updates to all references to the Commonwealth Fisheries Harvest Strategy Policy to reflect the June 2018 version, including glossary/definitions, background information, rationale for reference points and review requirements.
 - iii. Updates to summary of the development of the draft Harvest Strategy, to reflect most recent meetings of the TRLRAG and Working Group where the draft Harvest Strategy has been considered.
 - iv. Changes to reflect current arrangements regarding TAC setting.
Updates to reflect new requirements regarding the introduction of the mandatory Fish Receiver System on 1 December 2017.
 - v. Changes to directly quote TRLRAG advice regarding other sources of fishing mortality.
 - d. At TRLWG 6 some Working Group members recommended that the reduction of catch under the draft Harvest Strategy as the stock biomass move towards the limit reference point should not be uniform across the TIB and TVH sectors. Rather, a trigger point should be included in the draft Harvest Strategy before B_{LIM} at which point priority is given for fishing to the TIB sector over the TVH sector. This was considered at TRLRAG 22 and referred back to the Working Group for further consideration.
 - e. Since TRLWG 6, the management of the Torres Strait TRL Fishery has undergone significant change, specifically the determination of the Management Plan and interim sectoral catch shares. Under the interim sectoral catch shares and future quota management system under the Management Plan, each sector (TIB and TVH) is allocated (either as a pool or to individual operators) a relative share of the TAC. The

relative shares can only change through trading. Input controls, for example based on the catch trigger proposed at TRLWG 6, cannot be used to change the relative shares.

47. The Working Group further discussed the proposal for a catch trigger initially proposed at TRLWG 6. Members noted that it would be possible for the TIB sector to propose to use its catch share differently. For example, the TIB sector could propose to reserve a percentage of the TIB catch share for free-dive operators to extend the fishing season. Any such proposal would need to be consulted on widely before an amendment is made to the Harvest Strategy. It may also be more appropriate to give effect to such a proposal through the Instrument or other such legislative mechanism.
48. The Working Group noted an explanation from the scientific member that the eHCR is designed to smooth out peaks and troughs in the RBC. This means there will be less highs, but also less lows. Because the eHCR is scaled over five years, there would need a very steep decline in catches to set a very low RBC. The design of the eHCR has undergone extensive deliberation in the TRLRAG and Working Group. Extensive testing has also been conducted to ensure the eHCR is likely to meet objectives. There are also a range of triggers and decision rules built into the draft Harvest Strategy to respond to circumstances that were seen last season.
49. Noting this explanation, the TSRA member further explained that the low RBC from last season and the situation of intensive competition between sectors that this created, is unlikely to reoccur. The eHCR will mean that such a low RBC will be less likely. Further, the interim sectoral catch shares now implemented under the Instrument, and once fully operational the Management Plan, mean that the TIB sector now have the greater share of the Torres Strait TRL Fishery and will no longer need to compete with the TVH sector for their share of the TAC.
50. With the exception of a Traditional Inhabitant industry member, the Working Group agreed that the catch trigger proposed at TRLWG 6 not be progressed further at this point. A Traditional Inhabitant industry member advised that they still wished to progress the proposal for a catch trigger to reallocate shares between the TIB and TVH sectors in low RBC seasons. The objective is to ensure that the TIB sector does not have to stop fishing early as happened last season.

Recommendation

51. Noting the reservation of a Traditional Inhabitant industry member, the Working Group endorsed the draft Harvest Strategy for further PZJA consideration.
52. The Working Group noted that the PZJA will be asked to release the draft Harvest Strategy for public consultation.

5 Future management priorities

53. The Working Group considered an update provided by the AFMA member concerning future management priorities for the Torres Strait TRL Fishery:
- a. AFMA has committed resources to progress a number of management priorities over the coming year:
 - i. Implementation of the Management Plan, to include the formal allocation of quota units.
 - ii. Finalisation and implementation of the draft Harvest Strategy.
 - iii. Improvement of fishery dependent data collection and analyses, to include meetings of the TRLRAG Data Sub-Group.
 - iv. Legislative amendments to enable more efficient and effective fisheries management and enforcement.
 - b. When determining the Management Plan, the PZJA reaffirmed existing management controls currently applied to the Torres Strait TRL Fishery. A review of existing PZJA licencing policies and management arrangements, including input controls, will be conducted periodically after the quota management system is operational.

- c. At the TRLRAG meeting held on 11-12 December 2018, it was recommended that given the immediate changes that will apply as the Torres Strait TRL Fishery moves to a quota management system under the Management Plan, all current input controls remain in place for the 2018-19 fishing season before a review or change of input controls takes place.
 - d. AFMA proposed the Working Group develop a work plan to address management measures requiring review as the Torres Strait TRL Fishery moves to a quota management system under the Management Plan. It is proposed the next meeting of the Working Group, tentatively scheduled for August 2019, discuss this work plan.
54. The scientific member advised that in order to review management measures effectively, any proposed changes need to be assessed against what objectives are being pursued (e.g. a social objective could be Traditional Inhabitant participation in the commercial fishing industry). It was noted that previous MSE work compiled data on industry composition and assessed how proposed changes would affect industry. The member recommended a triple bottom line approach (social, economic and biological) be taken in reviewing management measures and proposing any changes. This would involve the collection of certain data for assessment against specified metrics and objectives. What these are needs to be determined by the industry and Working Group.
55. The TSRA member advised that a key objective of their work is to improve and support Traditional Inhabitant participation in the commercial fishing industry. There are likely other objectives the industry would like to see pursued, and the TSRA agreed to work with industry members in the intersessional period to identify these objectives and key management measures for review.

Recommendation

56. Noting that all current input controls will remain in place for the 2018-19 fishing season, the Working Group recommended that in preparation for the next meeting, members are to identify management measures for review and objectives (social, economic, biological) against which any proposed changes can be assessed.

Action

57. In preparation for the next Working group meeting, TSRA to work with Traditional Inhabitant industry members to identify management measures for review and objectives against which any proposed changes can be assessed.

6 TRL Fishery budget report for 2019/20

58. The Working Group considered an update provided by the AFMA member concerning the draft budget for the Torres Strait TRL Fishery for the 2019/20 financial year. The Working Group noted:
- a. AFMA consults on its budget with all Commonwealth managed fisheries. Consultation with industry provides accountability and assists with driving management efficiency and priority setting. While Torres Strait fisheries management costs are not currently cost recovered, industry and management are likely to benefit in the same way from understanding and discussing AFMA's budgeting arrangements.
 - b. The draft budget was comprised of direct costs only, and excluded staff costs and associated overheads, compliance, licencing and data management costs.
 - c. The budget covers the convening of three Working Group meetings (two-day meetings on Thursday Island) and two TRLRAG meetings (two-day meetings on Thursday Island). Administrative costs associated with the management of the Fishery and implementation of the Management Plan are also included.
59. An industry member suggested that the spending on flights and accommodation could be reduced.

7 Other business

60. No other matters were raised for consideration under this agenda item.

8 Date and venue for next meeting

61. The Working Group noted that the next meeting is tentatively scheduled for August 2019, location to be advised.
62. The Chairperson thanked members for participating in the meeting in a constructive and effective manner. The meeting was closed in prayer at 3:10 pm on Tuesday 19 February 2019.

**9th MEETING OF THE PZJA TORRES STRAIT TROPICAL
ROCK LOBSTER WORKING GROUP
GROUP (TRLWG9)**

**Tuesday 19 February 2019 – 9:00 AM-5:00 PM – TSRA Boardroom, Level 1 Torres
Strait Haus, 46 Victoria Parade
Wednesday 20 February 2019 – 9:00 AM-12:00 PM – Loban Road Hall, Torres Shire
Sports Complex, Loban Road**

DRAFT AGENDA

1 PRELIMINARIES

1.1 Welcome and apologies

The Chair will welcome members and observers to the 9th meeting of the Working Group.

1.2 Adoption of agenda

The Working Group will be invited to adopt the draft agenda.

1.3 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.

1.4 Action items from previous meetings

The Working Group will be invited to note the status of action items arising from previous meetings.

1.5 Out-of-session correspondence

The Working Group will be invited to note out of session correspondence on Working Group matters since the previous meeting.

2 UPDATES FROM MEMBERS

2.1 Industry members

Industry members and observers will be invited to provide an update on matters concerning the Torres Strait TRL Fishery.

2.2 Scientific members

Scientific members and observers will be invited to provide an update on matters concerning the Torres Strait TRL Fishery.

2.3 Government agencies

The Working Group will be invited to note updates from AFMA, TSRA and QDAF on matters concerning the Torres Strait TRL Fishery.

2.4 PNG National Fisheries Authority

The Working Group will be invited to note an update from the PNG National Fisheries Authority.

2.5 Native Title

The Working Group will be invited to note an update from Malu Lamar (Torres Strait Islander) Corporation RNTBC.

3 TOTAL ALLOWABLE CATCH FOR THE 2018/19 FISHING SEASON

The Working Group will be invited to consider advice from the TRL Resource Assessment Group on the recommended biological catch (RBC) for the 2018/19 fishing season based on the updated integrated stock assessment and interim harvest strategy.

4 FINALISING THE DRAFT HARVEST STRATEGY FOR THE TRL FISHERY

The Working Group will be invited to consider the final draft Harvest Strategy for the TRL Fishery and process for implementation.

5 FUTURE MANAGEMENT PRIORITIES

The Working Group will be invited to consider future management priorities.

6 TRL FISHERY BUDGET REPORT FOR 2019/20

The Working Group will be invited to note the draft TRL Fishery budget for 2019/20.

7 OTHER BUSINESS

The Working Group will be invited to raise other business for consideration.

8 DATE AND VENUE FOR NEXT MEETING

The Working Group will be invited to discuss a suitable date for the next meeting.

Action items from previous TRLWG meetings

#	Action Item	Meeting	Agency	Status
1.	The following be presented at the next TRLWG meeting: a) an overview of the current understanding of stock connectivity between the Queensland East Coast and the Torres Strait TRL Fisheries; and b) the basis for the Queensland east coast TAC.	TRLWG 6 held on 25-26 July 2017	CSIRO	<p>Ongoing – stock connectivity</p> <p>At TRLRAG 21 held from 12-13 December 2017, CSIRO presented the preliminary results of the research project titled '<i>Environmental update for the Torres Strait tropical lobster Panulirus ornatus</i>'. Some further results were presented at TRLRAG 22 held from 27-28 March 2018. CSIRO's final report, titled '<i>Environmental Drivers of variability and climate projections for Torres Strait tropical lobster Panulirus ornatus</i>', was provided as a meeting paper at the TRLWG 8 meeting held on 8 November 2018, for reference.</p> <p>TRLWG 8 agreed to amend the status of this action as 'ongoing' as this work is still being continued by the TRLRAG. A summary will be presented to the TRLWG when completed.</p> <p>Complete – QLD TAC</p> <p>See meeting record for TRLWG 8 meeting held on 8 November 2018.</p>
2.	AFMA to clarify with PNG NFA if the PNG TRL Closure was for the entire fishery or for hookah fishing only.	TRLWG 8 held on 8 November 2018	AFMA	<p>Ongoing</p> <p>AFMA sought confirmation from PNG NFA following the TRLWG 8 meeting, however further clarification from PNG NFA is required. To be considered under Agenda Item 2.4.</p>

Relevant action items from previous TRLRAG meetings*

#	Action Item	Agenda	Agency	Status
1.	The RAG endorsed the draft TRL Harvest Strategy and recommended the WG further discuss and provide the RAG with details on the trigger level and proposed management response.	TRLRAG 22 held on 27-28 March 2018	AFMA	<p>Ongoing</p> <p>To be considered under Agenda Item 4.</p>

*TRLRAG actions not relevant to TRLWG have not been included in the above.



Australian Government

Australian Fisheries Management Authority

Torres Strait Tropical Rock Lobster Fishery

~~Draft Working Draft~~

Harvest Strategy

~~May 2017~~ February 2019

CONTENTS

CONTENTS	2
GLOSSARY	3
OVERVIEW	5
1 BACKGROUND	6
1.1 COMMONWEALTH FISHERIES HARVEST STRATEGY POLICY	6
1.2 DEVELOPMENT OF THE TRL HARVEST STRATEGY	7
2 TRL FISHERY HARVEST STRATEGY	9
2.1 SCOPE	9
2.2 OBJECTIVES	9
2.3 RECOMMENDING TACs FROM RBCs	9
2.4 MONITORING	10
2.5 INTEGRATED STOCK ASSESSMENT MODEL	11
2.6 EMPIRICAL HARVEST CONTROL RULE	11
2.7 REFERENCE POINTS	12
2.8 eHCR AND STOCK ASSESSMENT CYCLE	14
2.9 DATA SUMMARY	15
2.10 DECISION RULES	15
2.11 DECISION RULE SCENARIOS	16
2.12 GOVERNANCE	17
2.13 REVIEW	17
3 REFERENCES	19

GLOSSARY

Types of reference points:

Reference Point	Description
Metarule	A rule that describes how the RBCs obtained from an assessment should be adjusted in calculating a recommended TAC
Target	<u>The desired state of the stock or fishery (for example, MEY or B_{TARG})¹ Relates to a target reference point as per the HSP.</u> <u>Expressed in terms of biomass</u>
Limit	<u>Relates to a limit reference point as per the HSP</u> The level of an indicator (such as biomass or fishing mortality) beyond which the risk to the stock is regarded as unacceptably high ¹ . Fishing stops if this reference point is exceeded a specified number of times. <u>Expressed in terms of biomass</u>
MEY	<u>The sustainable catch or effort level for a commercial fishery that allows net economic returns to be maximised. In this context, maximised equates to the largest positive difference between total revenue and total cost of fishing</u> ¹ <u>Maximum economic yield occurs when the total profit from the Fishery is maximised</u>
MSY	<u>The maximum average annual catch that can be removed from a stock over an indefinite period under prevailing environmental conditions</u> ¹ <u>Maximum sustainable yield is the maximum that can be taken from a stock in perpetuity</u>

Notation:

Notation	Description
B	Spawning biomass level <u>the total weight of all adult (reproductively mature) fish in a population</u> ¹
B_0	The unfished spawning biomass (determined from an appropriate reference point)
F	Fishing mortality rate
B_{LIM}	<u>Biomass limit reference point - the point beyond which the risk to the stock is regarded as unacceptably high</u> ¹
B_{TARG}	<u>Biomass target reference point - the desired biomass of the stock</u> ¹

Other acronyms:

Acronym	Description
CPUE	Catch per unit effort
eHCR	<u>Empirical Harvest Control Rule</u>
HCR	<u>Harvest Control Rule - pre-determined rules that control fishing activity according to the biological and economic conditions of the fishery (as defined by monitoring or assessment). Also called 'decision rules'. HCR are a key element of a harvest strategy</u> ¹

¹ Definition sourced from the *Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries* (June 2018)

HSP	<u>Commonwealth <i>Fisheries</i> Harvest Strategy Policy: <i>Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries</i> (June 2018)-and <i>Guidelines 2007</i></u>
HS	<u>Torres Strait Tropical Rock Lobster Fishery</u> Harvest Strategy
HSF	Harvest Strategy Framework
HCR	Harvest Control Rule
PZJA	Protected Zone Joint Authority
MSE	Management Strategy Evaluation - a procedure whereby alternative management strategies are tested and compared using simulations of stock and fishery dynamics¹
RBC	Recommended Biological Catch
TRLRAG	<u>Protected Zone Joint Authority</u> Tropical Rock Lobster Resource Assessment Group
TRLWG	<u>Protected Zone Joint Authority</u> Tropical Rock Lobster Working Group
TAC	Total Allowable Catch- <u>the annual catch limit set for a stock, species or species group. Used to control fishing mortality within a fishery¹</u>
Tiered approach	A framework that uses different control rules to cater for different levels of uncertainty about a stock
TIB	Traditional inhabitant boat
TVH	Transferrable vessel holder
<u>TRL</u>	<u>Tropical Rock Lobster</u>

OVERVIEW

The Torres Strait Tropical Rock Lobster Fishery (the Fishery) Harvest Strategy (HS) sets out the management actions needed to achieve the agreed Fishery objectives. The Fishery HS describes the performance indicators used for monitoring the condition of the stock, the fishery-independent survey and stock assessment procedures and the rules applied to determine the recommended biological catch (RBC) and the ~~notional~~ total allowable catch (TAC) each fishing season.

The HS uses a single tier approach with an empirical harvest control rule (eHCR) that is used to determine a ~~recommended biological catch (RBC)~~. The eHCR uses the pre-season survey ~~to estimate an~~ index of abundance of juvenile (1+) and newly recruited (0+) Tropical Rock Lobster (TRL) and the catch per unit effort (CPUE) indices for the traditional inhabitant boat (TIB) and transferrable vessel holder (TVH) fishing sectors. The RBC is the best available scientific advice on what the total fishing mortality (landings from all sectors and discards) should be for the stock. The RBC is ~~currently used to monitor the performance of the fishery negotiate Australia-Papua New Guinea catch sharing, in future years it will be used to~~ and recommend ~~Total Allowable Catches~~ TACs (an enforced limit on total catches).

The HS meets the requirements of the Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries (June 2018) ~~Commonwealth Fisheries Harvest Strategy Policy and Guidelines 2007~~ (HSP) by applying a precautionary approach to the reference points and measures to be implemented in accordance with the reference points. This is reflected in the use of proxy reference points that are more precautionary than those specified in the HSP. The eHCR is designed to decrease exploitation rate as the stock size decreases below the target reference point. The HS uses a biomass target reference point equal to recent levels (2005-2015) that take account of the fact that the resource is shared and important for the traditional way of life and livelihood of traditional inhabitants and is biologically and economically acceptable. The HS proxies are B_{LIM} is 32% of B_0 , B_{TARG} is 65% of B_0 .

Further work for the HS will include the development of a tiered approach. The tiered approach applies different types of control rules to cater for different amounts of data available and to account for changes to uncertainty on stock status. A tiered approach adopts increased levels of precaution that correspond to increasing levels of uncertainty about the stock status, in order to maintain the same level of risk across the different tiers.

The status of the stock and how it is tracking against the HS, is reported to the Tropical Rock Lobster Resource Assessment Group (RAG), ~~Torres Strait~~ Tropical Rock Lobster Working Group (~~the Working Group~~ TRLWG) and the Protected Zone Joint Authority (PZJA). The stock assessment is conducted periodically to evaluate stock status relative to reference levels and, in doing so, performance of the eHCR. The stock assessment includes considerations of the catch rates in current and previous fishing seasons, how the catches compare to the RBCs, stock status indicators in relation to the reference points and an RBC for the upcoming fishing season.

1 BACKGROUND

This Torres Strait Tropical Rock Lobster Fishery (the Fishery) Harvest Strategy (HS) has been developed in accordance with the Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries (June 2018) Commonwealth Fisheries Harvest Strategy Policy and Guidelines 2007 (HSP) and consistent with objectives of the *Torres Strait Fisheries Act 1984* (the Act).

The Fishery HS takes into account key fishery specific attributes including:

- a) there is potential for large, unpredictable inter-annual variations in availability and abundance of Ttropical Rrock Lobster (TRL);
- b) TRL is a shared resource important for the traditional way of life and livelihood of traditional inhabitants, commercial and recreational sectors (Tropical Rock Lobster Resource Assessment Group (TRLRAG) 20, 4-5 April 2017); and
- c) advice from the Tropical Rock Lobster Resource Assessment Group (the TRLRAG) industry members to maintain stock abundance at recent levels (2005-2015) (TRLRAG 17, 31 March 2016). (NOTE: Working Group advice to be added)

1.1 COMMONWEALTH FISHERIES HARVEST STRATEGY POLICY

The objective of the HSP is the ecologically sustainable and profitable use of Australia's Commonwealth commercial fisheries resources (where ecological sustainability takes priority) - through implementation of harvest strategies~~sustainable and profitable use of Australia's Commonwealth fisheries in perpetuity through the implementation of harvest strategies that maintain key commercial stocks at ecologically sustainable levels, and within this context, maximise the economic returns to the Australian community.~~

To pursue this objective the Australian Government will implement harvest strategies that:

- a) ensure exploitation of fisheries resources and related activities are conducted in a manner consistent with the principles of ecologically sustainable development, including the exercise of the precautionary principle
- b) maximise net economic returns to the Australian community from management of Australian fisheries - always in the context of maintaining commercial fish stocks at sustainable levels
- c) maintain key commercial fish stocks, on average, at the required target biomass to produce maximum economic yield from the fishery
- d) maintain all commercial fish stocks, including byproduct, above a biomass limit where the risk to the stock is regarded as unacceptable (B_{LIM}), at least 90 per cent of the time

e) ensure fishing is conducted in a manner that does not lead to overfishing - where overfishing of a stock is identified, action will be taken immediately to cease overfishing

f) minimise discarding of commercial species as much as possible

a)g) are consistent with the *Environment Protection and Biodiversity Conservation Act 1999* and the *Guidelines for the Ecologically Sustainable Management of Fisheries*. To meet the HSP objective, harvest strategies are designed to pursue an exploitation rate that keeps fish stocks at a level required to produce maximum economic yield (MEY) and ensure stocks remain above a limit biomass level (BLIM) at least 90 per cent of the time. Alternative reference points may be adopted for some stocks to better pursue the objective of maximising economic returns across the Fishery as a whole or other fishery specific objectives.

For fisheries that are managed jointly by an international organisation or arrangement, the HSP does not prescribe management arrangements. This includes management arrangements for commercial and traditional fishing in the Torres Strait Protected Zone, which are governed by provisions of the Torres Strait Treaty and the *Torres Strait Fisheries Act 1984*. However, it does articulate the government's preferred approach.

The HSP provides for the use of proxy settings for reference points to cater for different levels of information available and unique fishery circumstances. This balance between prescription and flexibility encourages the development of innovative and cost effective strategies to meet key policy objectives. Proxies, including those that exceed the minimum standards, must be demonstrated to be compliant with the HSP objective ensure stock conservation and economic performance as envisaged by the HSP. Such proxies, including those that exceed these minimum standards, must be clearly justified.

With a harvest strategy in place, fishery managers and stakeholders are able to operate with pre-defined rules, management decisions are more transparent, and there are likely fewer unanticipated outcomes necessitating hasty management responses. However, due to the inherently natural variability of TRL abundance there may be a need for significant changes in recommended catch on an annual basis.

1.2 DEVELOPMENT OF THE TRL HARVEST STRATEGY

The HS has been developed in consultation with the TRLRAG (meeting no. 17 on 31 March 2016; meeting no. 18 on 2-3 August 2016; meeting no. 19 on 13 December 2016; and meeting no. 20 on 4-5 April; 2017; meeting no. 22 on 27-28 March 2018; meeting no. 24 on 18-19 October 2018; and meeting no. 25 on 11-12 December 2018) and TRLWG (meeting no. 6 on 25-26 July 2017; meeting no. 9 on 19-20 February 2019). The HS has beenwas endorsed by the TRLRAG at meeting no. [insert meeting number] on [insert date] and TRLWG at Working Group meeting no. [insert meeting number]X on 25-26 July 2017[insert date]. The HS was adopted by the PZJA on [insert date]. This HS replaces the interim HS developed for the Fishery in 2008. (Attachment A).

NOTE: ~~TRLWG advice to be provided once TRLRAG advice finalised~~—t This statement is to be updated as required.

DRAFT

2 TRL FISHERY HARVEST STRATEGY

2.1 SCOPE

This HS applies to the whole ~~F~~fishery and it takes into account catch sharing arrangements between Australia and Papua New Guinea (PNG).

The HS outlines the control rules used to develop advice on the recommended biological catch (RBC) and ~~in future years it will be used~~ to recommend ~~t~~Total ~~a~~Allowable ~~c~~Catches (TACs) (an enforced limit on total catches)². The HS sets the criteria that pre-agreed management decisions will be based on in order to achieve the ~~Fishery~~HS objectives.

Over ~~time~~ the HS may be amended to use a tiered approach to cater for different amounts of data available and different types of assessments (for example mid-~~season~~~~year~~ surveys and annual assessments). Underpinning a tiered HS is increased levels of precaution with increasing levels of uncertainty about the stock status. Each tier has its own harvest control rule (HCR) and associated rules that are used to determine a RBC.

2.2 OBJECTIVES

The operational objectives of the ~~Harvest Strategy~~HS are to:

- a) Maintain the stock at (on average), or return to, a target biomass point B_{TARG} equal to recent levels (2005-2015) that take account of the fact that the resource is shared and important for the traditional way of life and livelihood of traditional inhabitants and is biologically and economically acceptable.
 - The agreed B_{TARG} is more precautionary than the default proxy B_{MEY} (biomass at maximum economic yield) level as outlined in the ~~Commonwealth Harvest Strategy Policy and Guidelines 2007~~ (HSP).
- b) Maintain the stock above the limit biomass level (B_{LIM}), or an appropriate proxy, at least 90 per cent of the time.
 - The agreed B_{LIM} is more precautionary than the default proxy HSP B_{LIM} .
- c) Implement rebuilding strategies, if the spawning stock biomass is assessed to fall below B_{LIM} in two successive years.

2.3 RECOMMENDING TACs FROM RBCs

The ~~Recommended Biological Catch~~ (RBC) is the recommended total catch of TRL (both retained and discarded) that ~~should~~can be taken by all sectors of the Fishery. The HSP states that when setting the TAC for the next fishing season the HS should take into account all sources of fishing mortality.

² ~~The total allowable catch (TAC) for the Fishery is currently notional and is not used to control harvest. It is used to inform catch sharing arrangements with Papua New Guinea and to inform the status of the stock.~~

The HS does not include catches taken by non-commercial fishing sectors, for example traditional, recreational or research catches. The TRLRAG recommended at mMeeting nNo. 18 on 2-3 August 2016 that non-commercial catches not be estimated in the stock assessment model or when setting the TAC at this time should not be accounted for, noting the likely low level of overall catch and the lack of accurate data because the overall catches are likely to be relatively low and there would be limited impact on the stock assessment. However, if unaccounted fishing mortality were to increase significantly this may impact on the performance of the stock assessment. The HS may be updated in the future to account for changing circumstances in the Fishery, the review provisions are described in **Section 2.13.**

~~The total allowable catch (TAC) for the Fishery is currently notional (not enforced) and is not used to control harvest. It is used to inform catch sharing arrangements with Papua New Guinea and to inform the status of the stock.~~

2.4 MONITORING

Biological data for the Fishery are monitored by a range of methods listed below. Currently there is no ongoing monitoring strategy in place to collect economic information.

Fishery independent surveys

A key component of the monitoring program is the fishery-independent survey which provides a time-series of relative abundance indices for TRL. Fishery-independent surveys have been conducted in the Fishery since 1989. Historically (1989-2014 and 2018), mid-season (July) surveys focused on providing an index of abundance of the spawning (age 2+) and juvenile (age 1+) lobsters. Mid-season surveys have been replaced with pre-season (November) surveys (2005-2008; 2014 to current) which focus on providing an index of recruiting (age 1+) lobsters as close as possible to the start of the fishing season to support the transition to quota management and setting of a TAC. Pre-seasons surveys also provide indices of recently-settled (age 0+) lobsters, which may become useful under quota management as they allow forecasting of stock one year in advance and are used in the eHCR.

Catch and effort information

Fishers in the transferrable vessel holder (TVH) sector are required to record catch and effort information in the Torres Strait Tropical Rock Lobster Daily Fishing Log (TRL04). The following data are recorded for each TVH fishing operation: the port and date of departure and return, fishing area, fishing method, hours fished and the weight (whole or tails) of TRL retained. Fishers in both the TVH and the traditional inhabitant boat (TIB) sectors are required to record catch voluntarily report catch and effort information to buyers and processors who record the information in the Torres Strait Seafood Buyers and Processors Docket Book Fisheries Catch Disposal Record (TDB024). The provision of effort information under the TDB02 is voluntary. Some processors previously (2014-2016) reported aggregate TIB catch information directly to AFMA predominantly through the Torres Strait Seafood

Buyers and Processors Docket Book (TDB01), ~~these processors are currently reporting with the TDB01 docket book.~~

2.5 INTEGRATED STOCK ASSESSMENT MODEL

The stock assessment model (termed the 'Integrated Model') (Plagányi *et al.* 2009) was developed in 2009 and is an Age-Structured Production Model, or Statistical Catch-at-Age Analysis (SCAA) (e.g. Fournier and Archibald 1982). It is a widely used approach for providing RBC advice and the associated uncertainties.

The model integrates all available information into a single framework to assess resource status and provide a RBC. The model addresses all of the concerns highlighted in a review of the previous stock assessment approach (Bentley 2006, Ye *et al.* 2006, 2007). The model is fitted to the mid-season and pre-season survey data and TIB and TVH catch per unit effort (CPUE) data. The growth relationships used in the model were revised from the previous stock assessment model (Ye *et al.* 2006) to ensure that the modelled individual mass at age more closely resembled field measurements. The model ~~is compatible~~has been used as an Operating Model in a Management Strategy Evaluation (MSE) framework to support the management of the Fishery.

The stock assessment model is non-spatial and assumes (conservatively) that the Torres Strait Tropical Rock lobster Fishery stock is independent of the Queensland East Coast Tropical Rock Lobster Fishery stock. A spatial version of the model has been developed as part of an earlier MSE project, and can be used to investigate plausible linkages between these stocks (Plagányi *et al.* 2012, 2013).

The model includes three age-classes only (0+, 1+ and 2+ age lobsters) as it is assumed that lobsters migrate out of the Torres Straits in October each year. Torres Strait TRL emigrate in spring (September-November) and breed during the subsequent summer (November-February) (MacFarlane and Moore 1986; Moore and Macfarlane 1984). A Beverton-Holt stock-recruitment relationship is used (Beverton and Holt 1957), allowing for annual fluctuation about the average value predicted by the recruitment curve. The model is fitted to the available abundance indices by maximising the likelihood function. Quasi-Newton minimisation is used to minimise the total negative log-likelihood function (using the package AD Model Builder™) (Fournier *et al.* 2012).

2.6 EMPIRICAL HARVEST CONTROL RULE

The empirical harvest control rule (eHCR) recommended by the TRLRAG uses the pre-season survey 1+ and 0+ indices, both standardised CPUE indices (TVH and TIB), applies the natural logarithms of the slopes of the five most recent years' data and the average catch over the past five years, with ~~includes~~ an upper catch limit of 1,000 t. The relative weightings of the eHCR indices are 70 per cent pre-season survey 1+ index, 10 per cent pre-season survey 0+ index, 10 per cent TIB sector standardised CPUE and 10 per cent TVH sector standardised CPUE.

The basic formula is:

$$RBC_{y+1} = wt_s1 \cdot (1 + s_y^{presurv,1}) \cdot \bar{C}_{y-4,y} + wt_s2 \cdot (1 + s_y^{presurv,0}) \cdot \bar{C}_{y-4,y} \\ + wt_c1 \cdot (1 + s_y^{CPUE,TVH}) \cdot \bar{C}_{y-4,y} + wt_c2 \cdot (1 + s_y^{CPUE,TIB}) \cdot \bar{C}_{y-4,y}$$

Or if $RBC_{y+1} > 1000t$, $TAC_{y+1} = 1000$.

Where:

$\bar{C}_{y-4,y}$ is the average achieved catch during the past 5 years, including the current year i.e. from year $y-4$ to year y ,

$s_y^{presurv,1}$ is the slope of the logarithms of the preseason survey 1+ abundance index, based on the 5 most recent values;

$s_y^{presurv,0}$ is the slope of the logarithms of the preseason survey 0+ abundance index, based on the 5 most recent values;

$s_y^{CPUE,TVH}, s_y^{CPUE,TIB}$ is the slope of the logarithms of the TVH and TIB CPUE abundance index, based on the 5 most recent values;

$wt_s1, wt_s2, wt_c1, wt_c2$ are tuning parameters that assign relative weight to the preseason 1+ (wt_s1) and 0+ (wt_s2) survey trends compared with the CPUE TVH (wt_c1) and TIB (wt_c2) trends.

2.7 REFERENCE POINTS

The HS reference points are:

- a) The unfished biomass B_0 is the model-estimate of spawning stock biomass in 1973 (start of the Fishery). $B_0 = B_{1973}$.
- b) The target biomass B_{TARG} is the spawning biomass level equal to recent levels (2005-2015) that take account of the fact that the resource is shared and important for the traditional way of life and livelihood of traditional inhabitants and is biologically and economically acceptable. B_{TARG} is the proxy for B_{MEY} , $B_{TARG} = 0.65 B_0$.
 - The agreed B_{TARG} is more precautionary than the default proxy B_{MEY} (biomass at maximum economic yield) level as outlined in the (HSP). The TRLRAG

noted a B_{TARG} higher than the HSP default was considered important for the Fishery because: 1) the stock is a shared resource that is particularly important for traditional fishing; 2) the stock has high variability; and, 3) all industry members recommended the HS maintain the stock around the relatively high current levels (TRLRAG meeting no. 17, 31 March 2016 and meeting no. 18, 2-3 August 2016).

- c) The limit biomass B_{LIM} is the spawning biomass level below which the risk to the stock is unacceptably high and the stock is defined as 'overfished'. B_{LIM} is agreed to be half of B_{TARG} , $B_{LIM} = 0.32 B_0$.
 - The agreed B_{LIM} is more precautionary than the default proxy HSP B_{LIM} .
- d) If the limit reference point (B_{LIM}) is triggered in two successive years then the Fishery is closed.
- e) The target fishing mortality rate F_{TARG} is the estimated level of fishing mortality rate that maintains the spawning biomass around B_{TARG} . $F_{TARG} = 0.15$.
 - $F_{TARG} = 0.15$ is the target fishing mortality rate that corresponds to an optimal level in terms of economic, biological and social considerations (TRLRAG meeting no. 18, 2-3 August 2016).

Rational for reference points

The HSP recognises that each stock/species/fishery will require an approach tailored to the fishery circumstances, including species characteristics. The HSP identifies that the selection of reference points within harvest strategies need to be realistic with respect to the scale or nature of the fishery and the resources available to manage it. Reference points should be set at levels appropriate to the biology of the species and the proper functioning of the broader marine ecosystem. ~~for highly variable stocks that may naturally (in the absence of fishing) breach B_{LIM} , the default reference point proxies may not be appropriate. The HSP states 'with highly variable species it is important to develop a harvest strategy that meets the intent of the HSP.'~~ Further, 'stocks that fall below B_{LIM} due to natural variability will still be subject to the recovery measures stipulated in the HSP.' A number of adaptive management approaches may be used to deal with this, such as pre-season surveys to provide estimates of abundance to which the eHCR is applied.

The Fishery is characterised by a highly variable stock where majority of the catch (since 2001 due to the introduction of a minimum size limit) is from a single cohort. The stock assessment model and MSE testing have identified the target biomass should be set between 65 and 80 per cent of the unfished biomass to account for the importance of the stock for the traditional way of life and livelihood of traditional inhabitants and to achieve biological and economic objectives. The HS's higher average target biomass level, compared to the default HSP target of 0.48 per cent of unfished biomass, reduces the risk of recruitment being compromised.

The unfished biomass (B_0) is calculated within the stock assessment model, the value of unfished biomass and target biomass have therefore varied over time in response to annual

data updates and model parameter settings and estimates. Estimates of unfished biomass and target biomass are particularly sensitive to changes to parameter h , which determines the steepness of the stock-recruit relationship, and the input parameter that controls the level of stock-recruit variability.

Independent of variability to the unfished biomass value, the target fishing mortality rate $F_{\text{TARG}} = 0.15$ is applied to maintain the spawning biomass around the biomass target reference point (B_{TARG}), which is the average level over the past two decades. This is assumed to be a proxy for B_{MEY} because stakeholders agreed that this target level corresponded to an optimal level in terms of economic, biological and social considerations (TRLRAG meeting no. 18, 2-3 August 2016).

The biomass limit reference point (B_{LIM}) is 32 per cent of unfished biomass. The higher limit reference point, compared to the HSP proxy of 20 per cent of unfished biomass, is supported by recommendations of similar limit reference points for other highly variable species such as forage fish (Pikitch *et al.* 2012). Due to the changing values of unfished biomass and target biomass the value of the limit reference point, taken as half the target reference point, has previously varied between 32 and 40 per cent of unfished biomass.

Recent MSE testing identified that a limit reference point of 40 per cent unfished biomass is too conservative, it would result in the limit reference point being breached more frequently and add unnecessary precautionary to the HS. The TRLRAG agreed to set the limit reference point at 32 per cent of unfished biomass with the condition that if the stock falls below the limit reference point in two successive years it triggers a Fishery closure. The eHCR is more precautionary than the HSP criterion to 'maintain all commercial fish stocks, including byproduct, above a biomass limit where the risk to the stock is regarded as unacceptable (B_{LIM}), at least 90 per cent of the time ensure that the stock stays above the limit biomass level at least 90 per cent of the time.' The HSP provides for the designation of a limit reference point above the proxy (B_{20}) where this has been estimated or is deemed appropriate states that for highly variable species the risk criterion can be amended to increase the frequency the limit reference point may be breached or by altering the reference point value.

2.8 eHCR AND STOCK ASSESSMENT CYCLE

The eHCR and stock assessment cycle is as follows:

- The eHCR is run in November each year to provide a RBC by 1 December for the following fishing season.
- A stock assessment is run on a three year cycle in-by March, unless the stock assessment is triggered by a decision rule (**Section 2.10**). The stock assessment determines the Fishery stock status and evaluates the performance of the eHCR and identifies if any revisions to the eHCR are required.
- If the eHCR needs to be revised, the stock assessment is conducted annually to estimate the RBC until the revised eHCR is agreed.

2.9 DATA SUMMARY

The annual data summary reviews the nominal and standardised ~~catch-per-unit-effort~~ (CPUE) from the TIB and TVH sectors, as well as total catch from all sectors, the size-frequency information provided from a sub-sample of commercially caught TRL and the fishery-independent survey indices of $+0\pm$ and $+1\pm$ age lobsters. The data summary is used as an indicator to identify if catches correspond to the RBC, and to monitor CPUE.

2.10 DECISION RULES

The decision rules for the ~~Fishery Harvest Strategy~~ HS are:

Maximum catch limit

- The eHCR includes a maximum catch limit of 1000 t. Once the HS is implemented the cap will be reviewed after three years using MSE testing with the updated stock assessment model.

Pre-season survey trigger

- If in any year the pre-season survey $+1\pm$ index is 1.25 or lower (average standardised number of $+1\pm$ age lobsters per survey transect) it triggers a stock assessment.

Biomass limit reference point triggered

- If the eHCR limit reference point is triggered in the first year, a stock assessment update must be conducted in March.
 - If after the first year the stock is assessed below the biomass limit reference point, it is optional to conduct a mid-season survey, the pre-season survey must continue annually.
- If the eHCR limit reference point is triggered two years in a row, a stock assessment must be conducted in December (of the second year).

Fishery closure rules

- If the stock assessment determines the stock to be below the biomass limit reference point in two successive years, the Fishery will be closed to commercial fishing.
 - ~~Management strategy evaluation~~ (MSE) testing of the eHCR has shown that it is extremely unlikely (<1%) for the Fishery to be closed based on its current performance.

Re-opening the Fishery

- Following closure of the Fishery, fishery-independent mid-season and pre-season surveys are mandatory. The Fishery can only be re-opened when a stock assessment determines the Fishery to be above the biomass limit reference point (**Attachment A, Figure 5**).

Based on the decision rules, there are four alternative possible scenarios (**Section 2.11**) that may occur under the application of the eHCR. Graphic representations of the four scenarios are provided in **Attachment A**.

2.11 DECISION RULE SCENARIOS

Scenario 1 – eHCR limit not breached and the eHCR does not require revision

- The eHCR assesses the Fishery to be above the biomass limit reference point.
- The eHCR RBCs appear to remain within ranges tested by ~~management strategy evaluation~~ (MSE).
- The updated stock assessment does not indicate any need for revision of the eHCR.
- Application of the eHCR continues unchanged.
- A graphic representation of Scenario 1 is provided in **Attachment A, Figure 1**.

Scenario 2 – eHCR limit not breached, eHCR and stock assessment require revision

- The eHCR assesses the Fishery to be above the biomass limit reference point.
- The eHCR RBCs appear to remain within ranges tested by MSE.
- The updated stock assessment indicates the eHCR recommended RBCTAGs are outside the revised ranges tested by MSE, indicating that the eHCR should be revised.
- Annual RBCs need to be set using annual stock assessments until a revised eHCR has been agreed, after which the revised eHCR is applied.

A graphic representation of Scenario 2 is provided in **Attachment A, Figure 2**.

Scenario 3– limit is breached, eHCR is reviewed by stock assessment and the limit is not breached

- The eHCR assesses the Fishery to be below the biomass limit reference point in one year.
- A stock assessment update (March) is required to confirm if the limit has indeed been breached. This assessment update determines that the limit has not been breached.
- If the biomass limit reference point is breached once, discussions will be held on preventative measures to reduce the risk of closure.
- The eHCR RBC is applied and consideration is given to revising the eHCR to prevent future incorrect triggering of the biomass limit reference point.
- The stock assessment continues on a three year cycle, unless triggered to occur by a decision rule.

- A graphic representation of Scenario 3 is provided in **Attachment A, Figure 3**.

Scenario 4 – limit is breached, stock assessment confirms the limit is breached

- The eHCR assesses the Fishery to be below the biomass limit reference point in two successive years.
- A stock assessment update (March) is required to confirm if the limit has been breached. This assessment update determines that the limit has been breached.
- The eHCR assesses the Fishery to be below the biomass limit reference point for a second successive year.
- A second stock assessment update (December) is required to confirm whether the trigger has been breached a second time. This assessment update determines that the limit has been breached a second time.
- The commercial fishery is closed until an assessment update confirms that the stock has recovered to above the limit.
 - If the Fishery is closed to commercial fishing, discussions are held on future management arrangements.
 - Fishery-independent mid-season and pre-season surveys are mandatory and conducted on an annual basis. The Fishery will only re-open when the Fishery is assessed to be above the biomass limit reference point by the stock assessment.
 - The eHCR must be revised before being re-implemented to reduce the risk of the Fishery breaching the biomass limit reference point and for the eHCR to incorporate rebuilding requirements.
- A graphic representation of Scenario 4 is provided in **Attachment A, Figure 4**.

2.12 GOVERNANCE

The status of the Fishery and how it is tracking against the HS is reported to the [TRL RAG](#), [Working Group TRLWG](#) and the PZJA as part of the yearly RBC and TAC setting process.

2.13 REVIEW

~~Under certain circumstances, it may be necessary to amend the harvest strategy. For example if:~~

~~there is new information that substantially changes the status of a fishery, leading to improved estimates of indicators relative to reference points; or~~

~~drivers external to management of the fishery increase the risk to fish stock/s; or~~

~~it is clear the strategy is not working effectively and the intent of the HSP is not being met; or~~

~~alternative techniques are developed (or a more expensive but potentially more cost-effective harvest strategy that includes mid-year surveys and annual assessments is agreed) for assessing the Fishery. The HSF may be amended to incorporate decision rules appropriate for those assessments.~~

Harvest strategies are to be reviewed every five years. However, it may be necessary to amend harvest strategies earlier if:

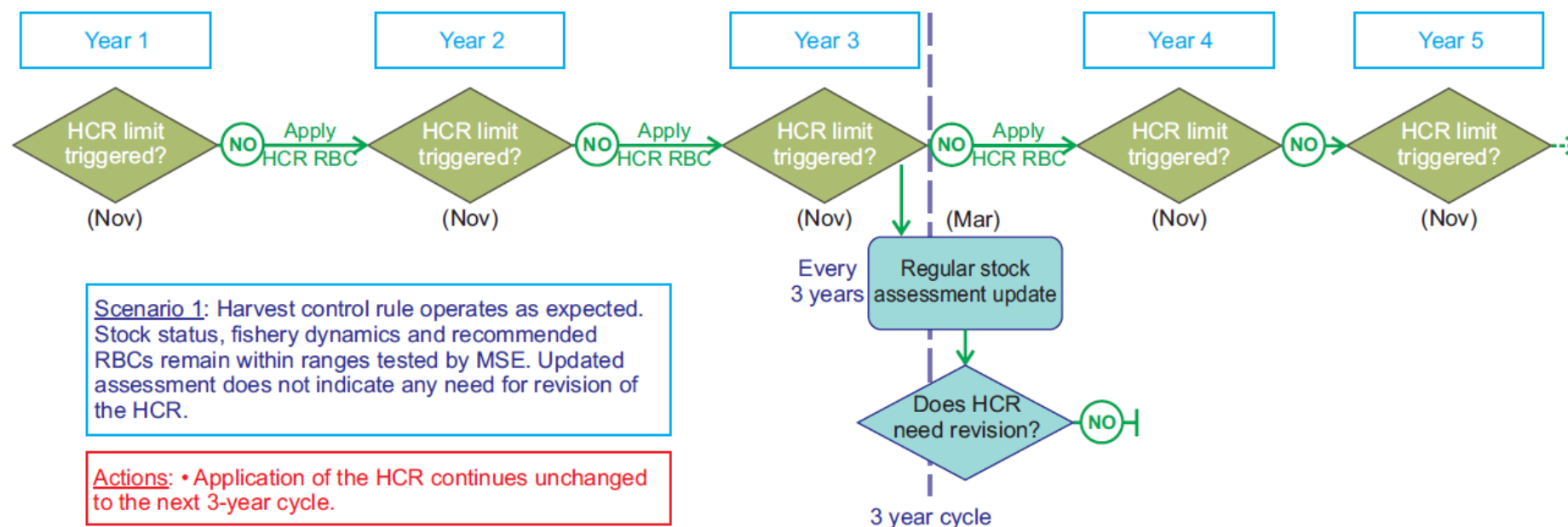
- a marked change in stocks targeted occurs, leading to a change in which stocks are categorised as key commercial
- new information substantially changes understanding of the fishery, leading to revised estimates of indicators relative to reference points
- external drivers have unexpectedly increased the risk to a fishery and fish stocks, including environmental or climate drivers that have substantially altered the productivity characteristics (growth or recruitment) of the stock
- performance indicators show that harvest strategies are not working effectively, and that the intent of the HSP is not being met.

Early review may be triggered when either:

- harvest strategies are implemented without formal testing or evaluation using methods such as MSE
- MSE testing did not take adequate account of the changes in risk factors subsequently observed, or
- subsequent estimates of the performance indicators used in the HCR are biased or uncertain to the extent that application of the control rule using these indicators fails to appropriately adjust fishing pressure.

3 REFERENCES

- Bentley, N. 2006. Review of chapter 5 of Ye et al (2006) "Sustainability Assessment of the Torres Strait Rock Lobster Fishery". Report submitted to AFMA.
- Beverton, R.; Holt, S. On the dynamics of exploited fish populations. UK Ministry of Agriculture and Fisheries Investigations (Ser 2). 19; 1957.
- Fournier, D.A.; Skaug, H.J.; Ancheta, J.; Ianelli, J.; Magnusson, A.; Maunder, M.N.; Nielsen, A.; Sibert, J. AD Model Builder: using automatic differentiation for statistical inference of highly parameterized complex nonlinear models. *Optimization Methods and Software*. 27:233-249; 2012.
- MacFarlane, J.; Moore, R. Reproduction of the ornate rock lobster, *Panulirus ornatus* (Fabricius), in Papua New Guinea. *Mar Freshwater Res.* 37:55-65; 1986.
- Moore, R.; Macfarlane, J.W. Migration of the Ornate Rock Lobster, *Panulirus-Ornatus* (Fabricius), in Papua-New-Guinea. *Aust J Mar Fresh Res.* 35:197-212; 1984.
- Pikitch, E., Boersma, P.D., Boyd, I.L., Conover, D.O., Cury, P., Essington, T., Heppell, S.S., Houde, E.D., Mangel, M., Pauly, D. Plagányi, É.E., Sainsbury, K., and R.S. Steneck. 2012. Little Fish, Big Impact: Managing a crucial link in ocean food webs. Lenfest Ocean Program. Washington, DC. 108 pp.
- Plagányi, É.E., Darren Dennis, Marco Kienzle, Yimin Ye, Michael Haywood, Ian Mcleod, Ted Wassenberg, Richard Pillans, Quinton Dell, Greg Coman, Mark Tonks, Nicole Murphy (2009). TAC estimation & relative lobster abundance surveys 2008/09. AFMA Project Number: 2008/837. CSIRO Final Report, October 2009. 80 pp.
- Plagányi, É.E., Kienzle, M., Dennis, D., Venables, W. Tonks, M., Murphy, N. and T. Wassenberg, 2010. Refined stock assessment and TAC estimation for the Torres Strait rock lobster (TRL) fishery. Australian Fisheries Management Authority Torres Strait Research program Final Report. AFMA Project number: 2009/845. 84 pp.
- Plagányi, É.; Deng, R.; Dennis, D.; Hutton, T.; Pascoe, S.; van Putten, I.; Skewes, T. An integrated Management Strategy Evaluation (MSE) for the Torres Strait Tropical Rock Lobster *Panulirus ornatus* fishery. CSIRO/AFMA Final Project Report; 2012.
- Plaganyi, E.E.; van Putten, I.; Hutton, T.; Deng, R.A.; Dennis, D.; Pascoe, S.; Skewes, T.; Campbell, R.A. Integrating indigenous livelihood and lifestyle objectives in managing a natural resource. *P Natl Acad Sci USA*. 110:3639-3644; 2013.
- Ye, Y., Dennis, D., Skewes, T. (2008). Estimating the sustainable lobster (*Panulirus ornatus*) catch in Torres Strait, Australia, using an age-structured stock assessment model. *Continental Shelf Research*. **28**: 2160-67.

Torres Strait Tropical Rock Lobster Fishery – alternative annual Harvest Control Rule application scenarios**Figure 1.** Torres Strait Tropical Rock Lobster Fishery decision rule scenario 1.

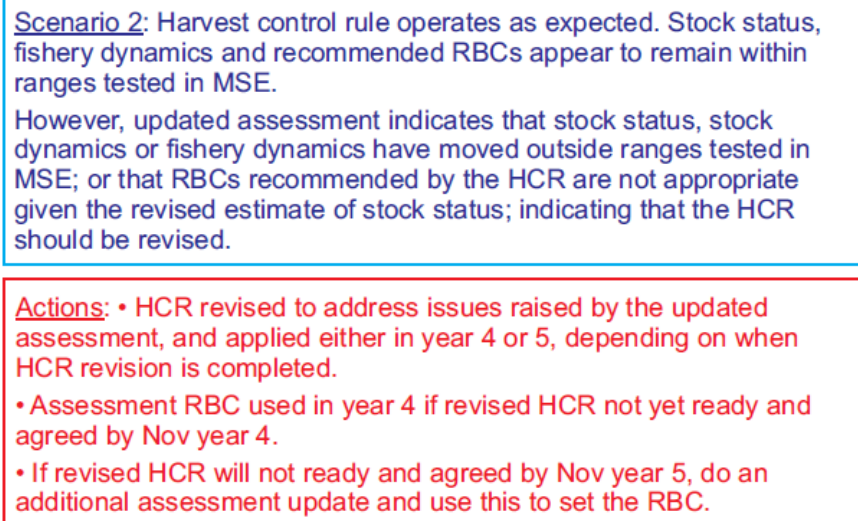
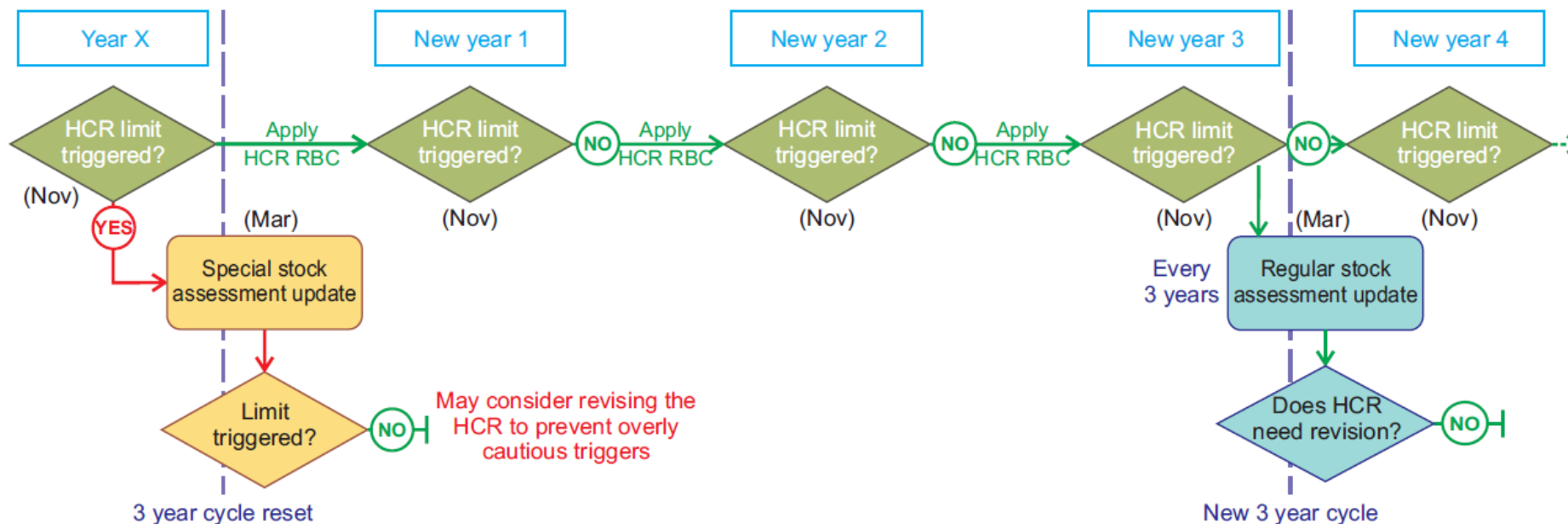


Figure 2. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 2.

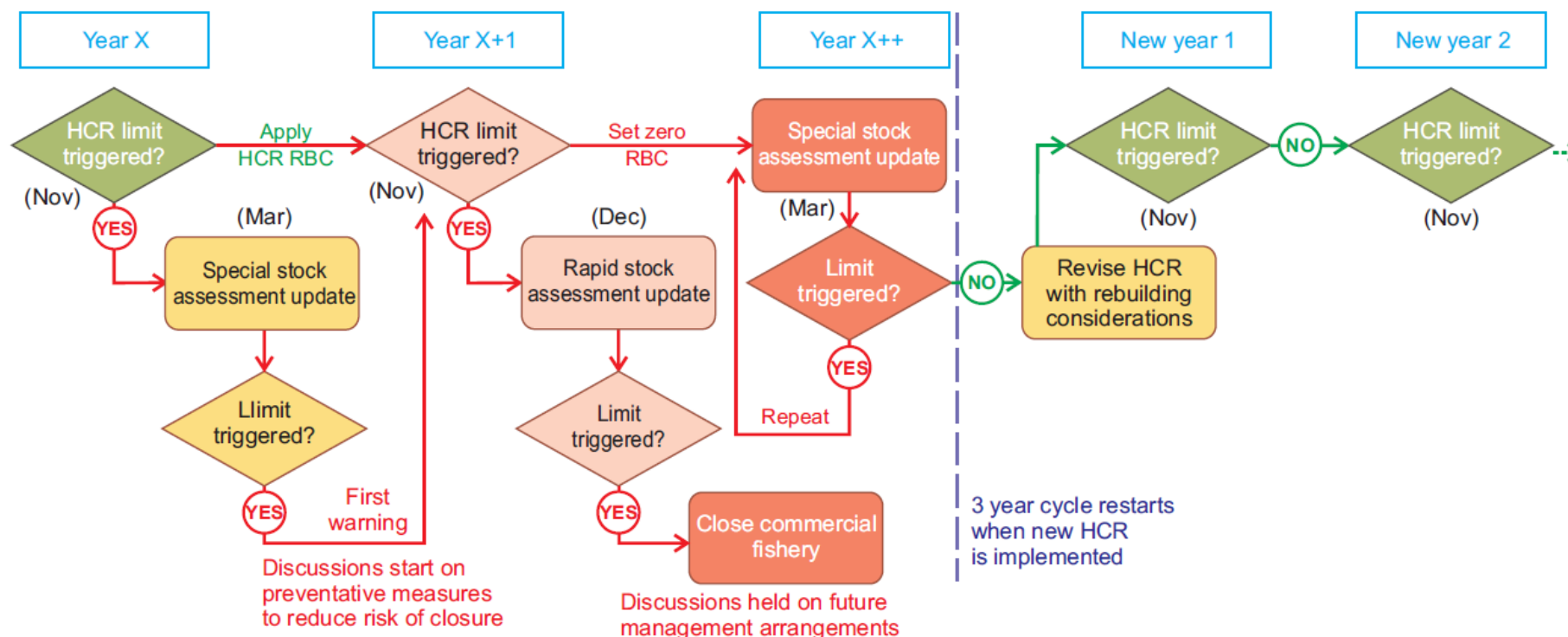


Scenario 3: Application of the HCR in a particular year results in the limit being triggered, requiring a special assessment update to confirm whether the limit has indeed been breached. However, this assessment update determines that the limit has not been breached.

Actions: • Application of the HCR continues unchanged, although consideration may be given to revising the HCR to prevent overly cautious triggering of the limit (refer to Scenario 2).

• The three-year cycle is reset, postponing the next regular assessment update to retain the 3 year spacing between assessments, provided the HCR does not breach the limit again in that period.

Figure 3. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 3.



Scenario 4: Application of the HCR in a particular year results in the limit being triggered, requiring a special assessment update to confirm whether the limit has indeed been breached. Special assessment update confirms that the limit has indeed been breached.

Application of the HCR the following year results in the limit being triggered for the second successive year, requiring a second rapid assessment update to confirm whether the trigger has been breached a second time. Assessment update confirms that the trigger has been breached again.

The commercial fishery is closed until an assessment update confirms that the stock has recovered to above the limit.

Actions: • When it has been confirmed that the limit has been breached the first time, discussions will be held on preventative measures to reduce the risk of closure.

• If it is confirmed that the limit has been breached for a second year and that the commercial fishery must be closed, discussions will be held on future management arrangements to reduce the risk of future closures.

• If the fishery is closed, annual assessments will be done until an assessment update confirms that the stock has recovered to above the limit.

• Before being re-implemented, the HCR will be revised to reduce risk of breaching the limit in future and to incorporate rebuilding requirements.

Figure 4. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 4.

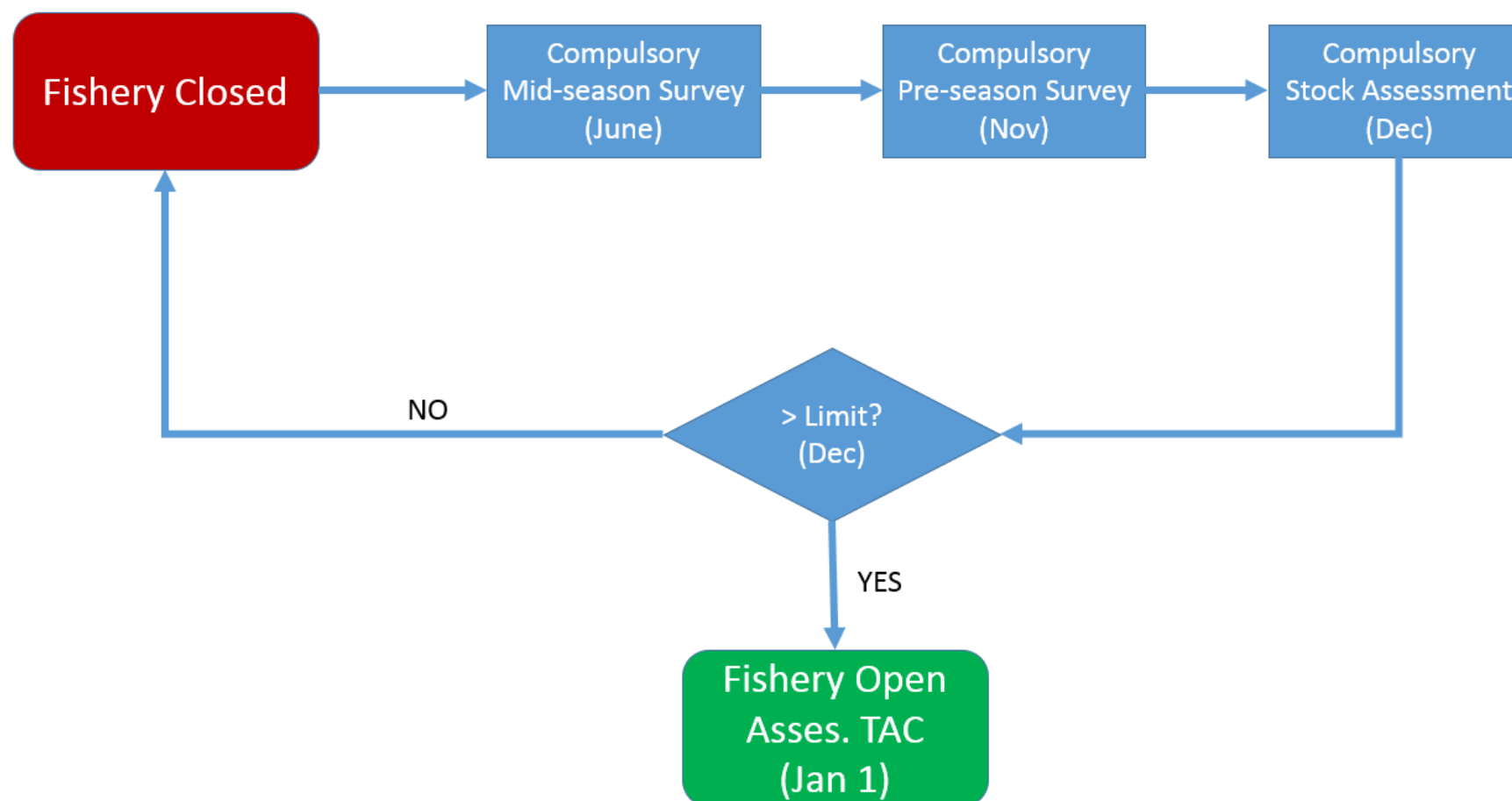


Figure 5. Torres Strait Tropical Rock Lobster Fishery closure and re-opening rule.