



**Taking Stock:
modernising fisheries management in Queensland**

December 2014

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Foreword

Queensland is naturally blessed with a diverse array of world-class seafood, as well as outstanding recreational fishing opportunities in both marine and freshwater environments. Both commercial and recreational fishing make valuable contributions to regional economies, and access to fresh, local seafood and ‘throwing a line in the water’ are a big part of the Queensland way of life.

However, the systems that have evolved over time to manage and share access to Queensland’s fish stocks are complex and don’t support the best use and stewardship of our fisheries. The incentives at the moment are for short term gain and not long-term investment.

This report sets out a new course for fisheries management that will help us better care for, and share, Queensland’s fish stocks for this and future generations. The report attempts to deal with the structural challenges facing the management of Queensland’s fisheries, as well as setting up systems capable of dealing with the local issues of concern to many fishers.

For commercial fishers, we hope the reforms will provide for a more secure, stable operating environment that will help plan their businesses. For recreational anglers, we hope the reforms give recreational fishing the recognition it deserves. For customary fishers, the reforms recognise the cultural importance of fishing to the indigenous way of life. And for future generations, we hope the reforms mean that the fish stocks and environment we leave to them will be at least as healthy as the ones our parents left for us.

Notwithstanding this, implementation of the proposed reforms will require change, and change is often hard. The reforms will also require investment, and all beneficiaries of the reforms will be asked to play their part in funding those reforms over time. Because of this we accept that the recommendations may not be universally welcomed by all.

Nevertheless, what is certain is that change is required to achieve the future that all Queensland fisheries stakeholders have told us they’d like to see. To this end, we commend the report to the Government and thank all stakeholders who participated in the review.

- Prof. Glenn Hurry, Review Team Chair

Acknowledgements

Carrying out this review has involved consultation and engagement with a wide range of stakeholders across all sectors of the fishing 'industry'. Consequently, there are quite a number of people to thank. Thanks in particular go to all of the Queenslanders who attended public meetings and took the time to prepare written submissions. The public meetings gave the Review Team a very good practical sense of the issues of concern to local fishers, and despite occasional dire warnings otherwise (!), participants across all sectors engaged positively both with the Review Team and each other. Likewise, most written submissions were thoughtfully prepared and provided constructive suggestions about how Queensland's fisheries should be managed in future. If there was a common theme across both the public meetings and written submissions, it was that all fishers, irrespective of sector, have the best interests of Queensland's fish stocks at heart.

Thanks also go to each of the stakeholder organisations who met with and provided their thoughts to the Review Team, including QSIA, Sunfish, ANSA, FFSAQ, MBSIA, WWF, the Queensland Recreational Fishers Network, the Fishermen's Portal and others, as well as individual fishers who participated in small group meetings.

We also thank the Deputy Director General and staff of Fisheries Queensland who were unfailingly courteous in providing technical advice and information, as well as providing excellent administrative support.

Lastly, thanks go to the members of the Fisheries Review Committee who participated professionally in the review process and provided with the Review Team with valuable guidance and advice.

- The Review Team

Executive Summary

Queensland is naturally blessed with a diverse array of world-class seafood, as well as outstanding recreational fishing opportunities in both marine and freshwater environments. Both commercial and recreational fishing make valuable contributions to regional economies, and access to fresh, local seafood and ‘throwing a line in the water’ are a big part of the Queensland way of life.

Nevertheless, the systems that have evolved over time to manage and share access to Queensland’s fish stocks are, by any measure, exceedingly complex and inadequate to deal with the modern challenges faced by its fisheries. In short, there has been too much regulation, with too little strategy. Many stakeholders have characterised the current arrangements as ‘band-aids upon band aids’ and this is not too far from the mark. In the absence of clear structure and ‘rules of the game’, passionate debates over resource allocation continue unabated without any clear sense of resolution, commercial fishers have difficulty in planning the future of their businesses, recreational fishers are frustrated that angling hasn’t been given the recognition it deserves and Government officials lack a clear sense of direction and purpose in the management of fisheries.

In response to ongoing concerns about the state of fisheries management, on 6th March 2014 the Queensland Minister for Agriculture, Fisheries and Forestry, Hon. John McVeigh, announced “a wide-ranging review of fisheries management in Queensland to deliver a better system for the state’s commercial and recreational fishers”. MRAG Asia Pacific was commissioned to undertake the review, using a Review Team led by Professor Glenn Hurry, and comprising Duncan Souter, Tom McClurg and Dr Michael Sissenwine.

As part of the review, the Review Team conducted extensive consultation with stakeholders including 17 public meetings from the Gold Coast to the Torres Strait, with over 500 attendees in total. In addition, around 280 written submissions were received from fishers, environmentalists, government agencies and others.

Not surprisingly, given the root and branch nature of the review and the varied interests Queenslanders have in their fish stocks, the topics upon which the Review Team received feedback were diverse. Nevertheless, a number of key messages stood out and were common across all sectors. In short, in any future fisheries management system, Queenslanders told us they wanted:

- A clear Government policy framework which sets out clear goals and the main ‘rules of the game’;
- Clear, unambiguous legislation;
- Healthy fish stocks and aquatic ecosystems;
- Secure rights to a sustainable share of the catch;
- More timely, transparent, responsive decision making;
- A clear framework for resource sharing;
- Better information on which to manage stocks and ecosystem impacts;
- Clear structures through which stakeholders can have their say on the future management of fisheries;
- Stronger, smarter compliance; and
- Sufficient resourcing to meet management needs.

This report responds to those aspirations by charting a new course for fisheries management in Queensland. The framework proposed sets out a clear central strategy for the management of fisheries, based on maximising benefits from the use of Queensland's fish stocks, and is supported by a fisheries management system of integrated components that work together to achieve the objectives of the strategy.

The proposed strategy is guided by the principle that:

“Queensland will receive maximum benefit from the use of its fish stocks where harvesters are provided with secure access rights to a share of the sustainable catch, and they are allowed maximum flexibility to enjoy benefit from those rights without compromising the opportunities available to current and future generations”.

Recommendations for the design of a future fisheries management system capable of supporting the strategy and delivering on the aspirations of all Queenslanders, including future generations, are proposed. These are structured around the eight main components of a ‘good fisheries management system’ highlighted by the Review Team through a ‘best practice’ review of Australian and international jurisdictions, namely: (a) policy, legislation and decision making, (b) allocation and harvest controls, (c) monitoring, information collection and assessment, (d) management of non-target species and ecosystems, (e) compliance, (f) stakeholder participation, (g) performance review and (h) resourcing. These recommendations are listed below.

If adopted, we believe the proposed reforms will deliver:

- For commercial fishers, a more stable, transparent and strategic operating environment, based on more secure harvesting rights and greater individual flexibility around how those rights are used;
- For recreational fishers, greater recognition for anglers in the fisheries management process including setting aside for the first time an explicit share of the key target species for the exclusive enjoyment of recreational anglers, as well as a setting up a ‘common currency’ framework which allows for ongoing, market-based adjustment of sectoral shares over time;
- For customary fishers, greater recognition of traditional use rights and the establishment of a framework that can accommodate determinations outside of the Fisheries Act (e.g. Native Title) where they arise;
- For future generations and the environment, the maintenance of stock sizes of key species at levels ‘thicker’ than that capable of producing maximum sustainable yield (MSY) in order to reduce levels of risk and maintain the resilience Queensland’s aquatic environment.

The implications for the future management of each of Queensland’s main marine capture fisheries are discussed in the context of the proposed recommendations. For each fishery, the Review Team has set out the main current challenges and a proposed future operating environment which should serve as a starting point for discussion with stakeholders and a default option for future management in accordance with the proposed management model.

Recommendations have also been made on a number of matters both in scope and out of scope including the future management of freshwater fisheries, Queensland's future involvement in Joint Authorities, the interaction between fisheries and marine parks planning and the structure and functions of Fisheries Queensland in the context of the proposed changes.

Summary of recommendations

Policy, legislation and decision making

1. The Queensland Government should develop, as soon as practical, a clear policy statement setting out its preferred approach for the future management of Queensland fisheries. The design of the policy is a matter for Government, however we recommend the policy contain at a minimum:
 - a) overarching objectives for Queensland's fisheries;
 - b) principles for catch setting, including the use of target stock sizes, harvest strategies and reference points;
 - c) principles for catch sharing;
 - d) preferred approaches to the management of each sector's share of the fishery;
 - e) management of non-target species and ecosystems;
 - f) systems to allow for stakeholder participation in management/decision making;
 - g) approaches to compliance;
 - h) performance review;
 - i) resourcing;
 - j) protection of fisheries habitats;
 - k) interaction between fisheries and marine protected areas.
2. That the revised Fisheries Act contain a clear statement of purpose, consistent with the guiding principle of maximising benefits from the use of Queensland's fisheries in a way that ensures sustainability for future generations.
3. Queensland's fisheries decision making process should separate strategic decision making – which should be undertaken by politicians on behalf of the community – from technical decision making - which should be made by subject matter experts in coordination with stakeholders affected by the decision. Under the revised decision making framework:
 - a) the Minister and Cabinet set the strategic policy framework and main operational 'rules of the game' for managing Queensland's fisheries;
 - b) the CEO of Fisheries Queensland (FQ) would be the main technical/administrative decision maker, and would have the delegated capacity to take administrative decisions as long as the change was in accordance with an approved harvest strategy;
 - c) Fishery Councils (FCs) would be the primary source of technical advice of measures to achieve Government policy for their relevant fisheries.

Allocation and harvest controls

4. Queensland needs a more strategic, stable and transparent approach to allocating and managing access to its fisheries resources, as well as prioritising its fisheries management efforts.

Categorisation of stocks into tiers...

5. Queensland's fisheries resources should be categorised into three 'tiers' which would then determine the level of management activity applied to each stock:
 - a) Tier 1 stocks are the key target species for one or more sectors and are of the highest importance socially and economically.
 - b) Tier 2 stocks are not 'primary' target species, but require some form of active management to maintain fishing mortality within acceptable levels of risk.
 - c) Tier 3 stocks are not typically actively targeted and risk assessments show need little active management other than catch reporting.

Management of Tier 1 stocks...

6. Stocks of Tier 1 species should be managed at target stock sizes larger than those capable of producing Maximum Sustainable Yield (MSY), and equivalent to Maximum Economic Yield (MEY).
7. For each Tier 1 stock, a total allowable catch (TAC) should be calculated periodically.
8. For each Tier 1 stock, an explicit share of the TAC should be allocated to the three main sectors: commercial, recreational and customary. For the avoidance of doubt, a sector's share may be 100%.
9. The initial allocation of sectoral shares is a strategic decision and should be made by the Minister. Although initial allocations could be informed by factors such as relative social or economic or cultural importance, the basic principle would be to allocate initial shares based on relative historical catch (i.e. 'grandfathering').
10. The preferred instrument for the management of commercial sector catch of Tier 1 stocks should be individual transferable quotas (ITQs). ITQs should be afforded the highest levels of resource access security, consistent with a perpetual right.
11. Where commercial fisheries move to ITQs for Tier 1 species, the default position should be that input controls which constrain the efficient harvest of the commercial sector share should be removed.
12. The preferred method for managing recreational catches within the share of Tier 1 stocks should be bag limits. Bag limits for Tier 1 stocks should be set at a level that constrains catches within the recreational share, and allows an equitable distribution of recreational fishing opportunities within the sector.

Management of Tier 2 and 3 stocks...

13. Stocks of Tier 2 species should be managed to ensure fishing mortality remains within an acceptable level of risk, using a robust risk-assessment methodology. Risk assessments should be repeated every 2-3 years to assess changes to risk. If fishing mortality results in unacceptable risk, stocks should be elevated to Tier 1, or additional controls applied to ensure risk remains within acceptable levels.
14. Stocks of Tier 3 species should be subject to periodic risk assessment to determine whether risk levels have changed. Risk assessments may be performed with lesser frequency (e.g. 5 years).
15. In the recreational sector, Tier 2 stocks may be subject to specific bag limits, however should be subject to an overall per person bag limit. Tier 3 stocks should not be subject to a species specific bag limit, but should be subject to an overall per person bag limit.
16. In the commercial sector, sufficient management controls are required to ensure Tier 2 stocks remain within an acceptable level of risk. If input controls on Tier 2 stocks constrain the efficient harvest of Tier 1 stocks, consideration should be given to elevating the stock to Tier 1. Tier 3 stocks should be able to be retained by commercial fishers where risk assessments rate the risk as low.

Harvest strategies for all fisheries...

17. All fisheries should be subject to clear harvest strategies aimed at meeting Tier 1, 2 and 3 stock management objectives. Harvest strategies should set out target, limit and threshold reference points for Tier 1 stocks, as well as pre-agreed decision rules in event that reference points are reached.
18. A harvest strategy policy incorporating these basic concepts and setting out operational guidance on how they should be applied should be developed.
19. Harvest strategies should be agreed by the Minister, but annual decisions in relation to TACs, ITQs and bag limits consistent with the harvest strategy should be made by the head of Fisheries Queensland. Annual decisions on catch should be administrative, not political.
20. Catches across all sectors should move up and down according to the harvest strategy in proportion to their allocated share.
21. Future re-allocations within sectors and between sectors would be achieved through voluntary trade and market-based adjustment.

Monitoring, information collection and assessment

22. FQ needs to develop a credible system to independently verifying the information reported in commercial catch and effort logbooks.
23. All buyers of commercial fish in Queensland should be registered and have an obligation to periodically report their purchases to FQ. At the FQ end, the information should be stored

in a secure information management system that allows, where possible, for automatic cross-referencing with commercial catch and effort data.

24. The independent scientific observer program should be re-established.
25. FQ should continue to support the development and roll out of eLogs for commercial sector on a voluntary basis.
26. Recreational sector catch monitoring should be re-aligned to ensure monitoring arrangements are capable of delivering the information needed to support harvest strategies and ecological risk assessments (ERAs).
27. The activities of the LTMP be reviewed in the context of the new management arrangements to ensure they are delivering the information most needed to support harvest strategies and ecological risk assessments.
28. Future stock assessment activities should be driven by the information needs of harvest strategies, with priorities overseen by Fishery Councils.
29. Stock assessment staff currently in the DAFF Animal Science section should either be transferred under the direct control of FQ, or FQ given greater funding control over which resource assessment activities get undertaken each year.
30. FQ needs to strengthen its investment in socio-economic monitoring to deliver basic information on the social and economic characteristics of each sector, plus key indicators (e.g. commercial profitability; recreational satisfaction) that help to assess the overall performance of management arrangements.
31. The process of identifying research priorities for each fishery should be overseen by the relevant Fishery Council, based on the needs of the harvest strategy, ERA or other agreed need.
32. Where they do not breach commercial confidentiality, all monitoring and assessment results should be made publicly available via the FQ website.

Management of non-target species and ecosystems

33. The basic approach to the monitoring and management of non-target species and ecosystem interactions in future should be to prioritise according to risk.
34. All main fisheries should be subject to formal ecological risk assessments. ERAs should cover all main sectors of the fishery, including the recreational sector. The process of ERAs should be overseen by the relevant Fishery Council and the outcomes used to guide priorities for management, monitoring, compliance and research.
35. Where activities and interactions are identified as being high risk through an ERA, formal ecological risk management (ERM) plans should be developed with the aim of reducing the risk to acceptable levels.

Compliance

36. Queensland's compliance activities should be refocused and strengthened to develop a more targeted, sophisticated compliance program. Compliance activities should be underpinned by sophisticated risk assessment, and greater use made of intelligence-gathering, surveillance, forensic accounting and information management to ensure limited compliance resources are directed at the areas of highest risk.
37. Consistent with the need to encourage high levels of voluntary compliance, considerable focus should also be placed on preventing non-compliant behaviour at its source through targeted education and awareness campaigns, and involving stakeholders in decisions making.
38. In the process of revising the Fisheries Act, the existing regime of compliance powers and sanctions should be strengthened where necessary to effectively underpin the new arrangements, and bring Queensland's compliance powers up to the recognised best practice arrangements in other states and the Commonwealth.
39. Operational Compliance Plans (OCPs) developed in response to risk-assessments should use the most cost effective approach available to target each individual risk (even where this is not the most popular).
40. Any future compliance arrangements should consider how best to potentially 'multi-task' resources available collectively to the QB&FP, Police and Marine Parks officers to deliver the most cost effective fisheries compliance regime.
41. Vessel monitoring systems should be installed on all vessels in offshore quota managed fisheries, commencing initially with the coral reef line fishery (primaries and dories), spanner crab fishery and offshore shark fishery. The AIVR system should be discontinued upon the introduction of VMS in these fleets. The introduction of VMS on small vessels should be trialled prior to roll-out.
42. In order to promote voluntary compliance and enforceability, the new Act and regulations should be written in language that all reasonable fishers would understand.

Stakeholder participation

43. Stakeholder-based Fishery Councils (FC) should be established to act as the primary source of technical advice on the management of individual fisheries. The structure of the FC should mirror the fisheries management unit.
44. The primary role of the FCs should be to develop, and oversee the implementation of, a harvest strategy for their fishery, consistent with Government policy and operational 'rules of the game'.
45. Each FC should be supported by a FQ fishery manager.
46. FCs should be 'decision making' bodies to the maximum extent practical. If the recommendations of the FC meet Government policy and the development of the harvest strategy has followed the appropriate process, it should be adopted.

47. FCs should also advise on priorities for monitoring, research and compliance, as well as oversee the process of ecological risk assessments for their fisheries.
48. The composition of FCs should mirror the rights/share holdings in the management unit. That is, they should be composed of commercial, recreational and customary fishers with the number of members each had on the FC roughly mirroring their relative shares in the fishery.
49. The operation of the FCs must be transparent. FCs should be chaired independently, and the minutes made publicly available (excepting anything commercial-in-confidence). Meetings of the FC should involve some public sessions in which local fishers can put their concerns and suggestions directly to Council members.
50. FCs should have defined terms (e.g. 3 years), with a clear process for re-appointment at the expiry of the term.
51. FC members will require some training both on 'process' issues – e.g. the Government's legislative obligations, negotiation/conciliation – and 'technical' issues - e.g. harvest strategies, ERAs, monitoring, etc.
52. FCs should not do sectoral allocation (or intra-sectoral allocation), but may advise on spatial catch sharing arrangements.
53. The operation of the FCs should be reviewed after three years.

Performance review

54. At the fishery level, the main systems of performance review should be:
 - a) For target species - ongoing monitoring of stock management objectives in accordance with the harvest strategy; and
 - b) For non-target species and the ecosystem – periodic ecological risk assessments.
55. That the CEO of FQ be required to provide 6-monthly reports to the Minister and stakeholders on progress with the implementation of reforms.
56. Within five years of the Government's response to this review, a system-wide review should be completed to ensure the new arrangements are working effectively to achieve Government's policy goals.

Resourcing

57. The Review Team's view is that the bulk of the initial funding to introduce the proposed new arrangements will need to come from Government. Work needs to commence on the new arrangements immediately and will require considerable upfront investment before substantial practical benefits begin to flow to all sectors.
58. Over time, both commercial and recreational fishers should make a greater contribution to the costs of management.

59. For the commercial sector, Fisheries Queensland should develop, over the course of the next 2 years, a detailed policy and transitional timeline for the introduction of cost recovery in Queensland's commercial fisheries.
60. For the recreational sector, the Review Team's view is that the reforms proposed will 'work' without a Recreational Fishing License (RFL), but will work considerably better with one.
61. The Government should commit to a more detailed examination of the cost and benefits of introducing an all waters RFL in the context of any new fisheries management arrangements. The examination should test the level of support amongst the broader recreational fishing community to an all waters RFL under a range of different scenarios, including:
- To whom should the license apply?
 - Which species, waters and activities should it cover?
 - How much should it cost, and how much could be expected to be raised?
 - For what purposes could the funds be spent?
 - Who would administer the funds, and under what governance model?
 - How would any new RFL interact with the existing SIPS and RUF fees – e.g. would they be rolled into a single scheme?
 - How would recreational fishers be able to have their say on how the funds should be spent?

The study should involve a very high level of consultation with recreational fishers, and ultimately provide advice to Government on the level of support for various options, the pros and cons of each and make recommendations on a proposed plan of implementation for any preferred future model.

62. To ensure equity between sectors, the introduction of any new recreational licensing regime should be introduced in parallel with new commercial cost recovery arrangements.

Freshwater fisheries

63. A Freshwater Fisheries Council should be established to provide technical advice on the management of freshwater fisheries.
64. Access to the Stocked Impoundment Permit Scheme (SIPS) should be extended on a voluntary, 'opt-in' basis to the stocking of all impoundments and freshwater river systems that meet the criteria for SIPS involvement which includes the suitability to be a public access fishery.
65. Once it is determined how many stocking groups do not fit under the SIPS alternative funding arrangements should be considered to assist them with re-stocking programs.
66. An extension of the SIPS will require a greater level of administration by FQ. Consideration should be given to improving the administration of the SIPS by:

- a. Defining core functions that should be delivered by FQ from the administration fee and internal budget, and ensuring that administrative costs remain within an agreed percentage of the overall income from SIPS;
 - b. Encouraging the adoption of new technology for licensing and for automating data collection;
 - c. Providing a greater level of educational material to anglers and “grey nomads” through appropriate outlets (tackle shops, service stations and van parks);
 - d. Re-establish the annual meeting of stocking groups; and
 - e. Publish a register of hatcheries by region who provide fingerlings for restocking.
67. Ensure that in extending the scheme, the individual allocations made to stocking groups are based on a fair and equitable formula.
68. Review the stocking guidelines for freshwater rivers and impoundments including the guidelines for sourcing brood-stock and the impact of historical stocking of non-endemic species.

Joint Authorities

69. The Queensland Government should stay engaged in the Torres Strait Protected Zone Joint Authority however engagement should be focused on strategic management issues and not day to day fisheries management. Responsibility for day to day management should be transferred to a single agency, ideally the Australian Fisheries Management Authority (AFMA).
70. The Queensland Fisheries Joint Authority (QFJA) should be disbanded and sole management responsibility for QFJA fisheries transferred to a single jurisdiction. Coordination of the management of stocks shared between Queensland and the Northern Territory be coordinated through the Northern Australian Fisheries Management Forum.

Aquaculture

71. The Review Team recommends that the observations from this report on aquaculture be passed to QCA for consideration in the final QCA review of aquaculture arrangements report.

The management of Fish Habitat Areas and marine plants

72. That the existing marine plant and fish passage protection provisions in the Fisheries Act be moved into environmental legislation, provided equivalent or stronger levels of protection for fisheries habitats can be achieved.
73. That proponents of new developments which result in unavoidable impacts on fisheries habitat (and fisheries access) pay for the full costs of those impacts through offsets.

Interactions between marine parks and fisheries

74. A whole of Government policy position is required on the interaction between marine parks and fisheries access. The intent of the policy should be to provide all stakeholders with

clear 'rules of the game' for how fisheries issues will be treated in any future marine parks zoning discussions.

75. We suggest marine parks legislation at both the State and Commonwealth level be reconfigured to allow for minor local scale changes to zoning plans without the need to re-open the full zoning plan.

Implications for Fisheries Queensland and implementation

76. The functions, structure and services delivered by Fisheries Queensland be reviewed internally in the context of the recommendations accepted by Government, and re-aligned to the needs of the proposed strategy.
77. Consideration should be given to increasing staffing in regional offices to be 'closer to the action' and provide technical and administrative support to the new framework.
78. As much as is practical, a commitment is required that the DDG of FQ commencing the process of change will remain in the role until the process is bedded down (around 3 years).
79. FQ should establish a dedicated Change Management Group (CMG) to plan and oversee the process of change. The CMG should be led by a senior officer, reporting directly to the DDG.
80. A targeted education campaign should be developed and adequately resourced to raise awareness of the proposed reforms. This campaign should be developed with the participation of stakeholder representatives.

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Acronyms

ABARES	Australian Bureau of Agricultural and Resources Economics and Science
AFMA	Australian Fisheries Management Authority
DAFF	Queensland Department of Agriculture, Fisheries and Forestry
CRFFF	Coral Reef Fin Fish Fishery
CSIRO	Commonwealth Scientific and Industrial Research Organisation
ECIFFF	East Coast Inshore Finfish Fishery
ECOTF	Queensland East Coast Otter Trawl Fishery
EKP	Eastern king prawn
EPBC	Environment Protection and Biodiversity Conservation Act
ERA	Ecological risk assessment
ERM	Ecological risk management
ESD	Ecologically sustainable development
FC	Fishery Council
FHA	Fish Habitat Area
FQ	Fisheries Queensland
GBRCMP	Great Barrier Reef Coast Marine Park
GBRMP	Great Barrier Reef Marine Park
GBRMPA	Great Barrier Reef Marine Park Authority
GSSMP	Great Sandy Strait Marine Park
GoC	Gulf of Carpentaria
GVP	Gross value of production
ITE	Individually transferable effort
ITQ	Individually transferable quota
LTMP	Long Term Monitoring Program
MAC	Management Advisory Committee
MEY	Maximum economic yield
MLS	Minimum legal size
MSQ	Maritime Safety Queensland
MSY	Maximum sustainable yield
NGO	Non-government organisation
OCP	Operational Compliance Plan
OCS	Offshore Constitutional Settlement
PMS	Performance management system
PZJA	Protected Zone Joint Authority
QB&FP	Queensland Boating and Fisheries Patrol
QCA	Queensland Competition Authority
QFJA	Queensland Fisheries Joint Authority
QSIA	Queensland Seafood Industry Association
RFL	Recreational fishing license
RUF	Recreational Use Fee
SIPS	Stocked Impoundment Permit Scheme
SOCI	Species of conservation interest
SRA	Scallop Replenishment Area
TAC	Total allowable catch
TACC	Total allowable commercial catch
TSRA	Torres Strait Regional Authority
VMS	Vessel monitoring system
WTO	Wildlife Trade Operation
ZAC	Zonal Advisory Committee

1. Introduction

Fisheries management is a difficult business at the best of times. Fish stocks are hard to count, stakeholders often have polarised interests and competing views about how fisheries should be managed, and the socio-economic and ecological environment in which fisheries operate is complex and ever-changing.

Notwithstanding these inherent challenges, the arrangements for fisheries management that have evolved over time in Queensland are, by any measure, exceedingly complex and inadequate to deal with the modern challenges faced by its fisheries. Many stakeholders have characterised the current arrangements as ‘band-aids upon band aids’ and this is not too far from the mark. In the absence of clear structure, passionate debates over resource allocation continue unabated without any clear sense of resolution, commercial fishers have difficulty in planning the future of their businesses, recreational fishers are frustrated that angling hasn’t been given the recognition it deserves and Government officials lack a clear sense of direction and purpose in the management of fisheries. This absence of structure and clarity breeds conflict within and between sectors and ultimately deflates confidence in the fisheries management system as a whole.

In response to ongoing concerns about the state of fisheries management, on 6th March 2014 the Queensland Minister for Agriculture, Fisheries and Forestry, Hon. John McVeigh, announced “a wide-ranging review of fisheries management in Queensland to deliver a better system for the state’s commercial and recreational fishers”. The TORs for the review are included at Annex 1. The overarching aim of the review was to modernise Queensland’s system of fisheries management and reduce complexity for all stakeholders.

MRAG Asia Pacific was commissioned to undertake the review, using a Review Team led by Professor Glenn Hurry, and comprising Duncan Souter, Tom McClurg and Dr Michael Sissenwine. As part of the review, the Review Team examined existing fisheries management arrangements in Queensland, alternative approaches to similar fisheries management challenges used elsewhere in Australia and internationally, and conducted extensive consultation with stakeholders including 17 public meetings from the Gold Coast to the Torres Strait, with over 500 attendees in total. In addition, over 280 written submissions were received from fishers, environmentalists, government agencies and others.

Not surprisingly, given the root and branch nature of the review and the varied interests Queenslanders have in their fish stocks, the topics upon which the Review Team received feedback were diverse. Nevertheless, a number of key messages stood out and were common across all sectors. In short, in any future fisheries management system, Queenslanders told us they wanted:

- A clear Government policy framework which sets out clear goals and the main ‘rules of the game’;
- Clear, unambiguous legislation;
- Healthy fish stocks and aquatic ecosystems;
- Secure rights to a sustainable share of the catch;
- More timely, transparent, responsive decision making;
- A clear framework for resource sharing;

- Better information on which to manage stocks and ecosystem impacts;
- Clear structures through which stakeholders can have their say on the future management of fisheries;
- Stronger, smarter compliance; and
- Sufficient resourcing to meet management needs.

This report responds to those aspirations and charts a new course for fisheries management in Queensland. The framework proposed sets out a clear central strategy for the management of fisheries and is supported by a system of integrated components that work together to achieve the objectives of the strategy. The framework is designed to be capable of delivering on the aspirations of all Queenslanders, including future generations. If adopted, we believe the proposed reforms will deliver:

- For commercial fishers, a more stable, transparent and strategic operating environment, based on more secure harvesting rights and greater individual flexibility around how those rights are used;
- For recreational fishers, greater recognition for anglers in the fisheries management process including setting aside for the first time an explicit share of the key target species for the exclusive enjoyment of recreational anglers, as well as a setting up a 'common currency' framework which allows for ongoing, market-based adjustment of sectoral shares over time;
- For customary fishers, greater recognition of traditional use rights and the establishment of a framework that can accommodate determinations outside of the Fisheries Act (e.g. Native Title) where they arise;
- For future generations and the environment, the maintenance of stock sizes of key species at levels 'thicker' than that capable of producing maximum sustainable yield (MSY) in order to reduce levels of risk and maintain the resilience Queensland's aquatic environment.

Given the passion with which Queenslanders care about their fish stocks, and the undoubted social and economic importance of healthy fisheries, attractive recreational fishing opportunities and fresh, local seafood to regional economies, tourism and the wider environment, Queenslanders deserve nothing less.

Importantly, this report does not attempt to address each and every issue raised with the Review Team. This was not the aim of the review, nor would it have been possible in the timeframe. Rather, what we have tried to do is to design a management system that is capable of considering and addressing each of these issues, as well as unknown future challenges to come, in a robust, evidence-based and fair way, taking into account the aspirations of all stakeholders and the needs of future generations. The main focus of the report is on marine capture fisheries, because this is where most of the main challenges were, although the implications of any review of the Fisheries Act on aquaculture, freshwater fisheries and fisheries habitat management are also discussed.

This report is broadly structured in eight parts following this introduction:

- Section 2 provides a summary of feedback to the Review Team received at public meetings and through written submissions to the review;
- Section 3 provides the Review Team's overarching analysis of the existing challenges faced by Queensland's fisheries based on interviews with stakeholders, feedback from submissions to the review and analysis of the available documentation;
- Section 4 provides a number of observations about 'what makes good fisheries management?' based on a review of alternative fisheries management approaches undertaken in conjunction with the review;
- Section 5 sets out recommendations for a future management model for Queensland's fisheries taking into account the Queensland Government's obligations to current and future generations and the feedback received from stakeholders;
- Section 6 sets out the implications of the proposed arrangements on Queensland's main fisheries;
- Section 7 addresses other important issues of relevance within the scope of Fisheries Act and not addressed in the sections above, including Queensland's involvement in Joint Authorities, aquaculture, freshwater fisheries and habitat management;
- Section 8 discusses a number of issues outside of the Fisheries Act, but which may influence the success of any future fisheries management regime, most notably the interaction between fisheries and marine parks;
- Section 9 set out the implications of the proposed arrangements for the organisational structure and functions of Fisheries Queensland and discusses issues surrounding the implementation of the proposed framework.

2. The state of fisheries management - what did you tell us?

An important aim of the Review Team was to seek the views of Queenslanders on the current challenges and opportunities which exist within the current fisheries regime and what features they would like to see in any future arrangements. This was primarily done through public meetings, one-on-one and small group discussions with stakeholders, as well as the opportunity to provide written submissions. This section provides a summary of the feedback received by the Review Team.

2.1. Public meetings

Seventeen public meetings were held in total, from the Gold Coast in the south to Karumba in the north. The final presentation given by the Review Team to the meetings is included at Annex 2. Notes from each of the meetings are available at Annex 3. Around 500 people in total attended the meetings, with good representation at most meetings from both the commercial and recreational fishing sectors. Less representation was received from the customary and aquaculture sectors. In the customary sector this probably reflects the need for a more targeted engagement approach, while in the aquaculture sector the limited numbers may have been influenced by the fact that a dedicated review of aquaculture arrangements was being undertaken in parallel by the Queensland Competition Authority (QCA).

Much of the discussion at the public meetings was focused on ‘local’ issues (e.g. specific local closures, local compliance issues), but many of the key messages and themes emerging from the meetings remained consistent throughout the coast. These are summarised in Table 1 below. For the purpose of consistency, we have summarised them according to the eight components of ‘good fisheries management’ which guided the discussions at the meetings.



Figure 1: Mackay public meeting.

Table 1: Common themes from discussions at the public meetings.

Legislation, Policy and Decision Making
<ul style="list-style-type: none"> Overarching goals are unclear. No clear policy or direction. “Does the Government want commercial fishing?” A lot of uncertainty about where industry stands Fisheries legislation changes, but not in a planned way and people are not consulted No security of rights
Resource Allocation and Harvesting Controls
<ul style="list-style-type: none"> Sectors compete for fish in the absence of explicit shares (leads to conflict) Catch is generally not tightly controlled: commercial fishers have effort controls, recreational fishers have ‘opportunity controls’ (bag limits) There is a race for fish and both recreational and commercial fishers feel they are losing the race Environmental degradation and closed areas are reducing resource availability
Monitoring and Assessment
<ul style="list-style-type: none"> Need for accurate and timely catch information from all sectors. Concern that some sectors of commercial logbooks inaccurate due to impacts of history based allocation. Black market? Science activity is capable but scope is very limited and is often not influential in fisheries management decision making
Stakeholder Participation
<ul style="list-style-type: none"> No clear opportunities for participation (MACs/ZACs abolished) Need to move from consultation to active participation in decision making. Desire for a partnership approach. Stakeholder participation best with robust underlying sectoral representation structures for communication with members and appointment of representatives Lack of transparency and feedback on why decisions are (or are not) made
Compliance
<ul style="list-style-type: none"> Compliance focused on “small stuff” but little impact on serious issues like the black market Seems to be a lot of focus on the commercial sector Little systematic cross-checking of catch reports or targeting of compliance effort based on intelligence or analysis
Resourcing
<ul style="list-style-type: none"> Perceptions are that core fisheries management functions are under-resourced Some users can’t afford more cost recovery because of low profitability

Other Issues

- SIPs a very good scheme but needs more streamlined administration and expansion
- Support for recreational licencing if tied to a Trust like NSW and concessions for pensioners and juniors
- Uncertainty about status of stocks – mixed comments – some concern about localised depletion, particularly of inshore species
- Environmental impacts on fisheries are very significant - floods, coastal development and pollution. Beneficiaries of land based developments do not adequately compensate for adverse effects on marine resources/ fisheries uses
- Longstanding investment warnings confirm (add to) uncertainty
- Fundamental changes are needed – not tweaking

2.2. Written submissions

In addition to public meetings, Queenslanders were invited to provide written submissions to the review. A total of 279 written submissions were received. Considerable thought and care was put into many submissions and the Review Team are very appreciative of the time taken by submitters over their submissions.

Of the 279 submissions, the majority of submissions came from recreational fishers (150). Around 45 submissions were provided by commercial fishers, 42 were from persons whose affiliation (if any) couldn't be identified and 32 were from organisations or entities other than fishers. The remainder were from environmental or aquaculture entities (Figure 2).

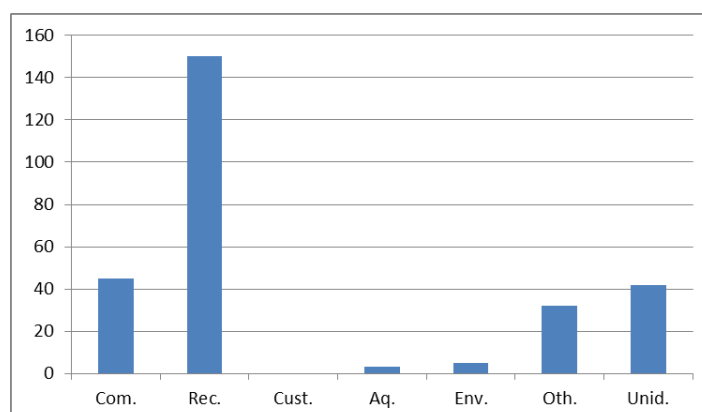


Figure 2: Apparent sectoral affiliation of respondents.

Not surprisingly, given the diverse nature of Queensland's fisheries and the 'blank canvass' nature of the call for written submissions, the number of topics canvassed in submissions was large (Figure 3). The key issues and common themes raised are outlined below:

- On the whole, submissions tended to be focused on local (e.g. local closures) and specific issues (e.g. minimum legal size of a particular species) rather than 'strategic' or 'systems and processes' type issues. Nevertheless, those submissions that focused on strategic issues were well-thought through and covered a considerable amount of common ground, irrespective of sectoral interest. Often repeated themes included:
 - the need for a clear vision and objectives for Queensland's fisheries;
 - a need to tackle resource allocation issues;
 - the need for clear harvest strategies for key stocks;

- a smarter, more sophisticated approach to compliance;
 - the need for better information upon which to base management decisions;
 - the need to ensure adequate resourcing.
- Few, if any, submissions argued that the status quo was working (albeit some argued for no change in their sector), and most agreed that fundamental changes in management were required.
- Of the recreational fishing submissions, there was a very strong 'anti-net' and, to a lesser extent, 'anti-commercial fishing' flavour. This was often coupled with arguments around the need to recognise and better promote recreational fishing and in particular a view that recreational fishing generated better economic returns from fisheries resources. The majority of submissions advocating netting bans supported some form of fair buyback program.
- Of the submissions advocating net fishing bans, many (perhaps 1/3 – 1/2) were form letters or simple, one line submissions. These were clearly influenced by a couple of strong local campaigns being run in parallel to the review.
- Of the commercial sector submissions, most focused on sectoral specific issues (e.g. trawl fishery management, removal of netting restrictions). If there was a common theme running through them it was to remove unnecessary regulation and inefficiency on the industry.
- Of the submissions which mentioned a Recreational Fishing License (RFL), all bar one supported the idea (i.e. 41 to 1). Support was usually provided with the 'standard' caveats that funds should be held in some form of Trust, with the funds to be spent solely to benefit recreational fishing. The most common suggested use of the funds was to buy commercial fishing licenses, although other suggestions included funding better compliance, better research, angler education and better infrastructure. Many pointed to the NSW and Victorian recreational fishing license arrangements as good models to follow. This weight of support for an RFL mirrored the comments received by the Review Team during the public meetings.
- There was strong support for the concept of zoning and regional management, particularly of the inshore fishery and particularly amongst the recreational sector. Although other arguments such as being able to better husband local resources were used, the most common justification provided was to 'stop out of town netters catching our fish' (or less polite words to the same effect). There was no strong, consistent view expressed on zoning one way or another amongst commercial fishing submissions.
- There was a strong flavour, particularly amongst recreational fishing submissions, that inshore fish stocks were in a depleted state and that action needed to be taken to promote recovery. Many wanted a better chance to catch a fish.
- There was concern expressed, particularly by recreational fishers, about the composition of the Fisheries Review Committee. Concern was also expressed by some commercial fishers, for different reasons.
- There was a very strong flavour amongst recreational submissions that the Government didn't give recreational fishing the weight it deserved, and that management has historically favoured the commercial sector.

- There was a strong sense in submissions across all sectors that better information is required to manage our fisheries. Amongst recreational fishers expressing this view, the criticism was often accompanied by an offer to provide logbook or other data on catches.
- Considerable concern was expressed by many recreational fishers about commercial fishing in yellow zones. There was a clear flavour that yellow zones were seen as de facto recreational only (or at least 'net-free' areas) and that commercial fishing in these zones (particularly small mesh netting) was not in the spirit of this 'allocation'.
- A sizeable number of submissions made specific comments about recreational bag and size limits. Most thought they were too high and should be reduced. Submissions were made on a wide range of species although the most common comments were made on barramundi (many thought the size limit should be reduced to ~80-90cm and the bag limit to 2-3 per person) and mud crabs (reduce the bag limit from 10 to 5). Other common comments were that many cod species don't reach the MLS of 38cm and Maori wrasse and barramundi cod should be removed from the prohibited species list.
- There was very strong concern about illegal fishing and black marketing and most submissions supported increased compliance resources, and in particular more patrol officers. Apart from banning net fishing, strengthening compliance was the most common issue raised.
- There was a strong sense across all sectors that people wanted a greater say over the future management of fisheries. Some suggested a return to Management Advisory Committee (MAC)/Zonal Advisory Committee (ZAC) arrangements, while others advocated committees which advised the Minister directly. Most submissions thought that locals had a significant contribution to make.
- Many submissions across both sectors expressed a view that FQ staff did not have a good sense of the day to day realities of either commercial or recreational fishers. Several submissions suggested a performance review arrangement in which ongoing employment of fisheries managers was linked to positive outcomes in the fishery.

Review of Queensland Fisheries Management

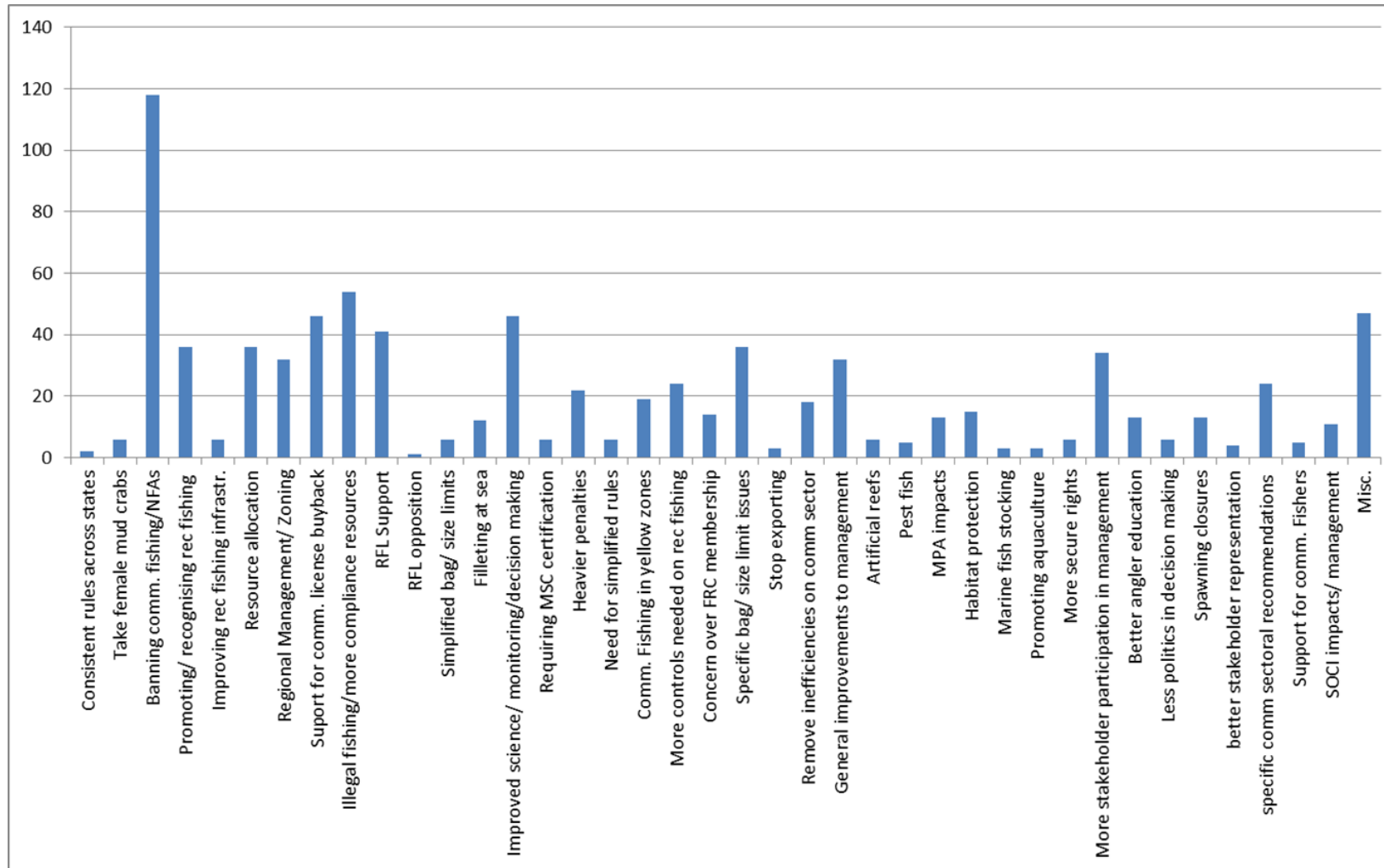


Figure 3: Main issues raised in written submissions.

3. Where does that leave us?

Queensland has an outstanding array of seafood and a wealth of world-class recreational angling opportunities, however the existing fisheries management arrangements are plainly inadequate to deliver optimal benefits to Queenslanders of both current and future generations.

A high level policy vacuum exists with no specific goals or objectives setting out the future direction of Queensland's fisheries, and no clear operational 'rules of the game'. This is a fundamental weakness which pervades all other components of the management system. In the absence of a clear policy framework, the Ecologically Sustainable Development (ESD) objectives of the Fisheries Act are not sufficient to provide practical guidance to fisheries managers.

The decision making process appears 'gummed up' with most decisions elevated to the Minister and Cabinet, who don't have time to deal with it in an otherwise crowded program. Consequently, some necessary decisions don't get made, while others are made at the wrong 'level' – e.g. technical decisions being made at the strategic level.

The rights of stakeholders are arguably nebulous and insecure. Commercial fishers want greater certainty to plan their businesses, recreational fishers want greater recognition for the value angling brings to regional communities and customary fishers have little engagement in the management system. There is no clear policy framework for interaction of fisheries regime with other marine planning, including marine parks. In the absence of clear policies, secure rights and a stable operating environment, the existing incentives are for short term gain, not long term investment.

The lack of clear arrangements for resource sharing means that fights over shared fisheries resources continue with no obvious process for resolution. There is currently no formal structure to allow stakeholders to have a say on the future of their fisheries. As a result, they feel disconnected and disenfranchised from the management process.

There is a weak information base for many of the key species, while for others perverse incentives have reportedly compromised the data in some cases (e.g. crab). This has been able to happen because we have no independent system to verify commercial logbook data.

Stakeholders are concerned over effectiveness of compliance which is seen as focusing on the small stuff, while many fishers believe an active black market operates largely unchecked. Considerable public pressure exists for more compliance 'boots on the ground', but the boots need to be pointed in the right direction. Queensland's very large coastline and large number of fishers dictate that we need to find smarter ways of targeting our compliance resources through more sophisticated, risk and intelligence driven compliance.

Fisheries Queensland has limited resources to meet management 'objectives', but many of its activities not 'core' fisheries management (e.g. shark control, marine safety, habitat impact assessment). Many of FQ's activities seem unconnected to any central strategy for managing fisheries.

The bottom line from this analysis, supported by stakeholders across all sectors as well as Fisheries Queensland, is that fundamental change is required to deliver a system capable of maximising the benefits to Queensland from the use of its fish stocks in the 21st century.

4. What makes good fisheries management?

Part of the Terms of Reference for the review is to undertake a review of fisheries management approaches used in different jurisdictions both in Australia and internationally, with a view to identifying 'best practices' that might be applied in Queensland.

Arrangements in five jurisdictions were reviewed: New Zealand, Western Australia, the United States (with comparisons to the European Union), the Australian Commonwealth and Norway. Each jurisdiction was reviewed against a consistent 'template' of information requirements to ensure comparability of results. The results of each case study are available at Annex 4. The approach of reviewing multiple jurisdictions recognises that no one jurisdiction is likely to apply what could be considered 'best practice' across the board. Put simply, some jurisdictions do some things well, while others do other things well. 'Best practice' is an evolving concept as we learn from successes and failures everywhere.

Ultimately, one of the main purposes of this exercise was to identify a suite of 'best practice' principles and practices that apply to well-managed fisheries irrespective of jurisdiction. These provide a valuable guide as to desirable traits in any future system of fisheries management for Queensland and are outlined below.

At the highest level, the main message reinforced from the review is that fisheries management works best as a system of components that work together to achieve defined objectives. Although the pie could be cut a number of ways, we identified eight main components required in any 'good fisheries management system'. These are outlined in Box 1.

Box 1: Components of a 'good fisheries management system'

1. Policy, legislation and effective decision making

Sets strategic direction and management objectives, provides powers to manage fisheries effectively, ensures decision making is timely and transparent

2. Allocation and harvest control systems

Establishes how much can be harvested, who can harvest what, and that catches are maintained within shares

3. Monitoring, information collection and assessment

Provides the information to manage fisheries the way we want them to be managed (right information, at the right time, at the right scale, in the right level of detail)

4. Management of non-target species and ecosystems

Ensures that fishing is not resulting in serious or irreversible impacts on aquatic ecosystems

5. Compliance

Ensures integrity of management arrangements by ensuring everyone plays by the rules

6. Stakeholder participation

Allows stakeholders to participate in main components of management system – management, monitoring, compliance

7. Performance review

Allows for performance of the management system to be reviewed over time and optimised to best achieve management objectives

8. Resourcing

Ensures the management system is effectively funded/resourced, consistent with management objectives

The inter-connected nature of the eight components is outlined in the conceptual fisheries management system described in Figure 4. Put simply, each of the components is required for the system to work effectively. For example, there is little benefit in having a very good information collection and assessment system if the decision making system does not allow decisions to be made on the basis of that information in a timely, responsive and transparent manner. Similarly, there is little benefit in having a responsive and transparent decision making system if the monitoring and assessment information being fed into it is inaccurate or not relevant.

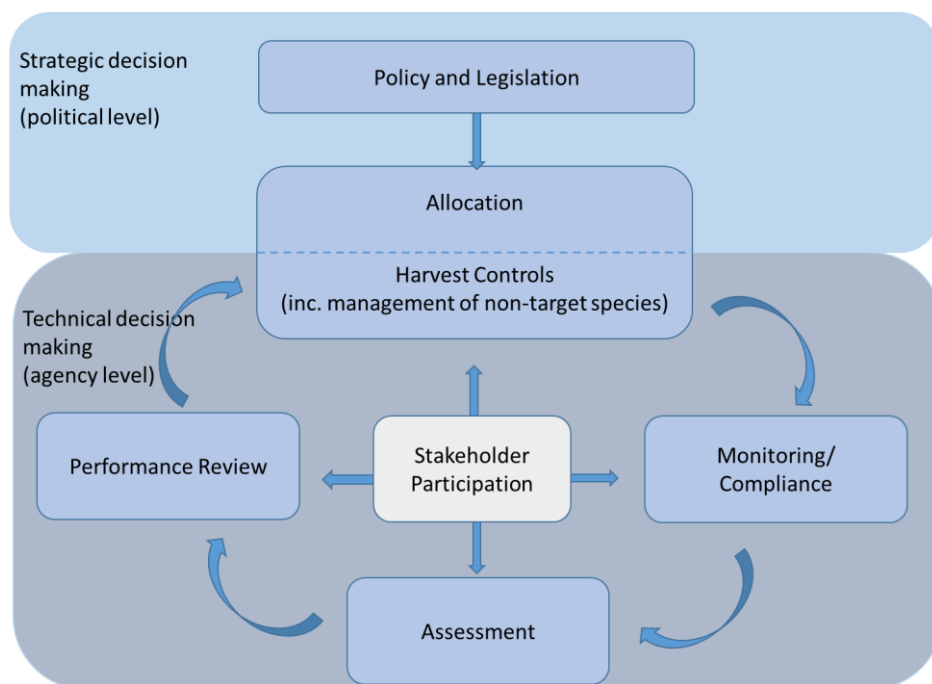


Figure 4: Conceptual fisheries management system with component parts working together to achieve defined goals and objectives.

Within each of the eight components, well-structured fisheries management systems tend to have a number of characteristics in common. The Review Team has summarised some of the main observations on ‘well-managed’ fisheries arising from the best practice review in Table 2 below. The list is not intended to be comprehensive, but has served as a useful benchmark against which to assess the performance of the existing Queensland fisheries management regime.

Table 2: Some characteristics common to well-managed fisheries.

Legislation, policy and decision making
<ul style="list-style-type: none"> Well-managed fisheries operate within a clear policy framework which sets out objectives and provides clear operational 'rules of the game' to all stakeholders; Well-managed fisheries operate within a clear legislative framework that provides the capacity to manage fisheries consistent with Government policies and community expectations; Well-managed fisheries have a clear decision-making system capable of responding to new information in a timely, transparent and predictable manner;
Resource allocation and harvest controls
<ul style="list-style-type: none"> In well-managed fisheries, the health of the stock and broader environment come first; Well-managed fisheries have clear access rights, with explicit shares allocated amongst the different harvesting sectors within an total allowable limit on catch or effort; Well-managed fisheries ensure that available harvesting entitlements are proportional to the biological/economic potential of the stock (i.e. they are not over-allocated, nor under-allocated); Well-managed fisheries have systems capable of adjusting harvesting entitlements in line with fluctuations in the stock; Well-managed fisheries directly manage catch where they can; Well-managed fisheries minimise waste;
Non target species and ecosystems
<ul style="list-style-type: none"> Well-managed fisheries prioritise management, monitoring and research activity for non-target species and ecosystem impacts on the basis of risk;
Monitoring and assessment
<ul style="list-style-type: none"> Well-managed fisheries have monitoring and assessment systems that deliver information in a timeframe, at a level of detail and at a scale that meets management objectives;
Stakeholder participation
<ul style="list-style-type: none"> Well-managed fisheries have clear systems to allow for the participation of interested stakeholders in the main components of the management system (management, monitoring and assessment, compliance)
Compliance
<ul style="list-style-type: none"> Well-managed fisheries have compliance systems that balance voluntary compliance and deterrence, and are informed by risk-assessment, intelligence and information analysis;
Performance review
<ul style="list-style-type: none"> Well-managed fisheries have effective systems of performance review that allow ongoing evaluation of performance against management objectives and optimisation of the management regime;
Incentives
<ul style="list-style-type: none"> Well-managed fisheries provide clear incentives for all stakeholders to do the right thing;
Resourcing
<ul style="list-style-type: none"> Well-managed fisheries have systems of funding that allow for the achievement of management objectives.

5. A new fisheries management system for Queensland

The Review Team's view, based on feedback from stakeholders across all sectors, the outcomes of the best practice review of international fisheries management approaches and the inherent characteristics of Queensland's fisheries, is that any future fisheries management system should include the following:

- A clear policy framework;

- Clear, unambiguous legislation;
- Secure rights for all sectors;
- More timely, transparent, responsive decision making;
- A stable, depoliticised operating environment;
- A clear framework for resource sharing;
- Better information on which to manage stocks and ecosystem impacts;
- Clear structures through which stakeholders can have their say on the future management of fisheries;
- Stronger, smarter compliance; and
- Sufficient resourcing to meet management needs.

The remainder of this section outlines our proposed strategy for achieving maximum long term benefits from the use of Queensland’s fish stocks, and sets out recommendations for a system of fisheries management components that work together to underpin that strategy.

5.1. Overarching strategy

A key weakness in the existing arrangements for fisheries management in Queensland has been the absence of any central strategy to guide the implementation of new arrangements. Put simply, there has been too much regulation, with too little strategy. In the absence of strategy, fisheries management has become ad hoc, unpredictable and ineffective.

A strategy is more than lofty ideals, and should not be confused with a ‘vision’. At its core, a strategy is a guiding principle or policy to deal with a particular challenge, and set of coherent actions designed to work together to accomplish the guiding policy. Having a strategy is powerful because it helps to focus organisational and stakeholder resources around a consistent set of principles and approaches which allow us to deal common challenges.

Box 2 sets out the core components of the Review Team’s proposed strategy for the future management of Queensland’s fish stocks. The aim of the strategy is to achieve maximum benefit from the use of Queensland’s fisheries resources in a way that does not compromise the opportunities available to current and future generations. “Benefit” is defined broadly and may include social and economic benefits derived from commercial sale, social and economic benefits derived from recreational angling, or customary benefits derived from subsistence and other fishing. The main concepts included in the guiding principle are explained in Figure 5.

Box 2: An overarching strategy for the management of Queensland’s fisheries

Guiding principle

Queensland will receive maximum benefit from the use of its fish stocks where harvesters are provided with secure access rights to a share of the sustainable catch, and they are allowed maximum flexibility to enjoy benefit from those rights without compromising the opportunities available to current and future generations.

How will this be achieved?

- Maintain stock sizes of key species at levels that cater for the needs of the environment

and future generations (i.e. at levels greater than MSY, or broadly equivalent to maximum economic yield – MEY)

- Define a sustainable proportion of the stock that can be harvested
- Allocate explicit shares in the sustainable harvest to the three main sectors (commercial, recreational, customary)
 - The commercial sector should be allowed maximum flexibility to harvest their share in the most efficient way possible
 - Recreational catch should be managed through bag limits that maintain overall catch within their share and distribute catching opportunities equitably throughout the sector
 - Customary catch should be managed within their share taking into account its importance to the traditional way of life
- Each main stock should be subject to a harvest strategy with pre-agreed decision rules aimed at maintaining stocks at target levels and prohibiting fishing where stocks fall below limit reference levels
- Each sector's catching right should rise and fall in proportion to their share of the TAC – all sectors should wear the cost and reap the benefits of good stock management

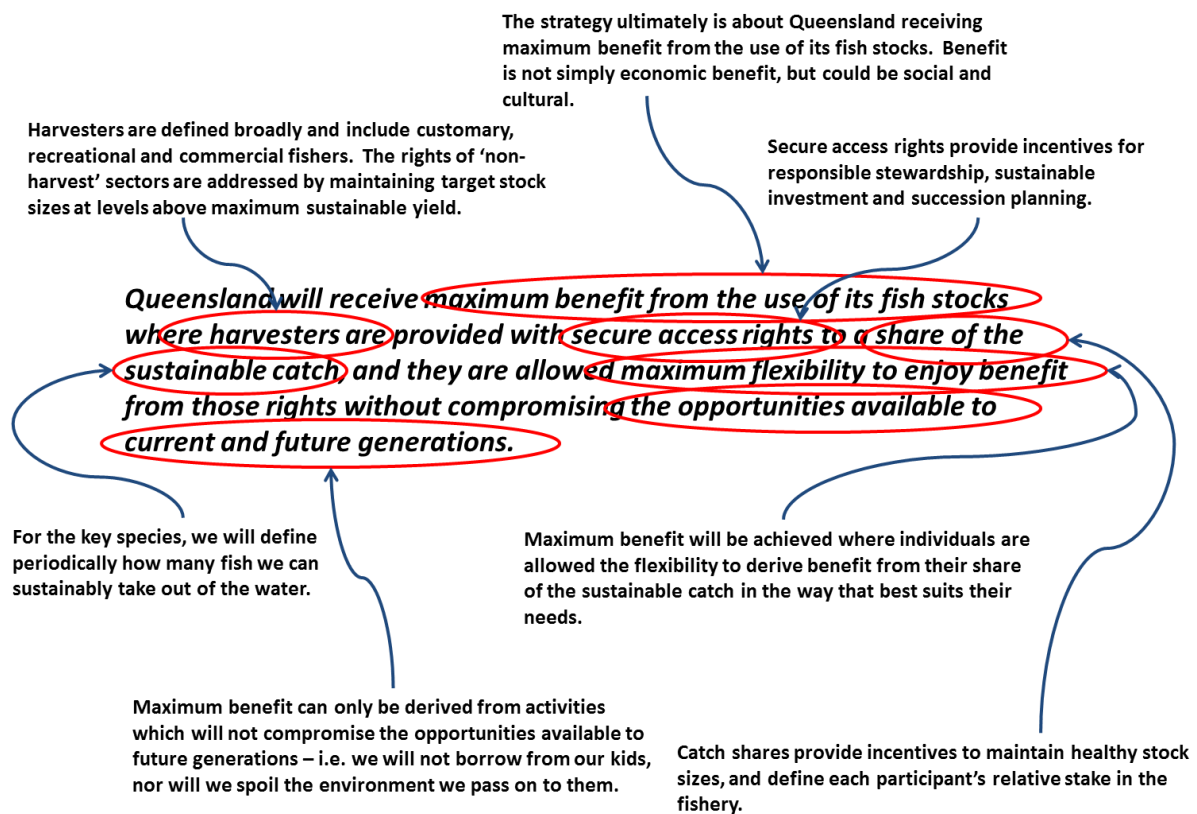


Figure 5: The main concepts in the guiding principle explained.

5.2. Proposed fisheries management system

In order to support the achievement of the overarching strategy, a modern fisheries management system is required comprising each of the eight components described in section 4 above, and in which all components are aligned and working together to achieve the Government's overall goals. The system should be seen as an inter-connected package - none of the components is 'optional', nor are they a luxury. You cannot have a world class fisheries system for Queensland if you "cherry pick" the components and apply some and not others. Some recommendations and suggested approaches in the report are optional; the components are not.

This section sets out the main recommendations for the design of each of the eight components, and their inter-relationships with each other.

5.2.1. Policy, legislation and decision making

Policy and legislation

Current situation and main challenges...

A Government policy framework setting out clear goals and targets for fisheries management as well as the main operational 'rules of the game' is essential in providing both stakeholders and the fisheries management agency with clear expectations on how fisheries are to be managed and their role and position within the process. Legislation is then a reflection of that policy and provides an enabling legal framework through which Government policies can be carried out.

The existing fisheries management framework in Queensland has a policy vacuum at the highest level. There are no clearly articulated goals and objectives for the management of fisheries – other than the very high level objectives in the Fisheries Act - nor operational 'rules of the game' providing guidance and structure to the process of fisheries management. The absence of a clear policy framework is a fundamental problem which pervades all other aspects of fisheries management. Put simply, it is hard for fisheries managers to hit targets that don't exist, and the absence of structure and transparency created by a good policy framework has allowed for uncertainty in the investment environment, conflict between the sectors and unpredictability in decision making.

If there is a clear goal for Queensland's fisheries it is to achieve "Ecologically Sustainable Development" (ESD), which is the main purpose of Fisheries Act. ESD is undoubtedly a noble aim, however (in the absence of a more specific policy framework) the concept is too nebulous to provide practical guidance to fisheries managers and stakeholders in the day to day functions of fisheries management. 'ESD' encourages the balancing of potentially competing principles and the needs of current and future generations, however the practical result of 20 years of strenuous efforts to balance ESD principles is arguably a regime that manifestly does not encourage optimal use or ensure sustainability.

Proposed future arrangements

A clear policy framework...

In order to address the existing policy vacuum, the Queensland Government should develop, as soon as practical, a clear policy statement setting out its preferred approach for the future management of Queensland fisheries. The policy should include clear, measurable goals and targets and unambiguously lay down the main operational 'rules of the game'. The policy should serve as clear

guidance to stakeholders on the future operating environment, as well as setting out clear expectations to Fisheries Queensland on how fisheries are to be managed.

The design of the policy is a matter for Government, however we recommend the policy contain at a minimum:

- overarching objectives for Queensland's fisheries;
- principles for catch setting, including the use of target stock sizes, harvest strategies and reference points;
- principles for catch sharing;
- preferred approaches to the management of each sector's share of the fishery;
- management of non-target species and ecosystems;
- systems to allow for stakeholder participation in management/decision making;
- approaches to compliance;
- performance review;
- resourcing;
- protection of fisheries habitats;
- interaction between fisheries and marine protected areas.

The main elements of the policy can be drawn from the recommendations in this report accepted by Government.

It is essential that the policy not be a 'motherhood' statement. The document must be written in clear, unambiguous language able to be understood and followed by all stakeholders. We note that the Ministerial Direction provided to the Australian Fisheries Management Authority (AFMA) by the then Commonwealth Minister for Fisheries, Forestry and Conservation in 2005 provides a useful template for the type of clear language required.

Powerful legislation with a clear purpose...

The overarching aim of any legislation is to provide an effective enabling legal framework to allow for the carrying out of Government policies and commitments. While the bulk of any statute is concerned with the systems, processes and powers to carry out policy, a fundamental feature of any good legislation should be a clear statement of purpose or objectives. The purpose statement should provide a succinct snapshot of the key aims of the legislation and give context to the reading and interpretation of subsequent provisions. Ideally, the statement should be unambiguous and capable of being monitored.

The objective of the existing Fisheries Act is to achieve ESD. As discussed above, ESD is a worthy aim however on its own provides limited practical guidance to fisheries managers and stakeholders on how fisheries should be managed and is difficult to determine objectively whether it has been achieved (albeit some frameworks have been developed to assess this). As such, the concept needs practical elaboration so that people better understand their responsibilities.

Our view is that the revised Fisheries Act would benefit from a clearer statement of purpose more specifically relevant to fisheries and closely aligned to the types of concepts expressed in the guiding principle to the proposed strategy outlined above. The purpose statement should make clear that the purpose of the Act is to maximise the benefits from the use of Queensland's fisheries resources

by the three main sectors, and that that use should not compromise the opportunities available to current and future generations. To this end, we propose wording along the following lines (however different wording may be chosen to achieve the same intent):

- 1. To provide for the commercial, recreational and customary use of Queensland fisheries so that users have clear and secure rights to access fisheries in order to generate individual and collective economic, social and cultural benefits.*
- 2. To ensure that all uses of Queensland fisheries are sustainable so that future generations inherit fish stocks and marine ecosystems capable of generating individual and collective economic, social and cultural benefits also.*
- 3. To promote mutual respect between commercial, recreational and customary users of shared Queensland fisheries.*
- 4. To promote shared responsibility for the sustainability of fish stocks and marine ecosystems between commercial, recreational and customary users of shared Queensland fisheries.*

‘Benefits’ would explicitly encompass economic, social and cultural benefits (not just economic). It is recognised that perceptions about ‘highest and best use’ will change over time and an objective of the legislation is to create a legal environment where uses of fisheries can evolve in the light of new opportunities or changing demand but that changes occur without violating the legitimate expectations of commercial, customary and recreational right holders. This implies that changes to the pattern of fisheries uses will be determined to a greater extent by processes that are transparent and perceived as fair, such that outcomes are respected.

‘Sustainability’ would be defined with respect to capacity to offer future generations the same (or enhanced) opportunities to benefit from Queensland’s fisheries. Unlike the present Act that balances sustainability and use, it is suggested that a tougher sustainability objective should be applied. It is recommended that an objective of new legislation should be to **ensure** sustainability. This means that both officials and fisheries users would be required to act so as to ensure that fisheries uses and harvest strategies were conducted and designed to meet the sustainability objective, given the information available to them at that time.

The legislative framework would recognise that fisheries resources are shared resources and that fisheries users have shared responsibilities. The main implication of this is to highlight the fact that ensuring sustainability is a responsibility of all fisheries users – not just one sector. Furthermore, that responsibility is broadly equivalent to the sustainability impact of those uses.

The legislative framework would also set out procedural principles for fisheries management decision making and legislated structures and processes by which stakeholders would participate in such decision making.

Such a purpose statement is consistent with Government commitments to ESD and the precautionary principle, but importantly gives the concepts more practical effect in the context of Queenslanders’ aspirations for their fisheries.

Decision making

Current situation and main challenges...

The capacity to take necessary decisions in timely, transparent and responsive manner is essential to good fisheries management. In general, the characteristics of a good decision making system are that it:

- Responds in a timely way to relevant information;
- Ensures decisions are taken at the right level – i.e. strategic decisions are taken at the strategic level and technical decisions are taken at the technical level;
- Facilitates active involvement from those who the decisions will affect and provides feedback on the reasons why decisions were and were not taken;
- Operates in a transparent, stable, predictable manner.

The clear perception amongst Queensland's fishers is that the decision making process in Queensland is 'gummed up'. Decisions are not being taken in a timely way and stakeholders are not clear about the reasons for those decisions that are taken. In the absence of a clear strategic policy framework discussed above, the practice has been that most decisions, however minor and technical in nature, are elevated to the Minister and Cabinet for decision. This has at least three practical consequences:

1. first, all decisions become 'political' decisions (irrespective of whether political considerations played an active part in decision making) and has led to the perception of increasing 'politicisation' of Queensland's fisheries management;
2. second, because Cabinet has so little time for fisheries issues in an otherwise ultra-crowded agenda, there are very few opportunities to have necessary decisions taken. The net result is that decisions that would otherwise be taken in a well-functioning decision making system are placed 'on the backburner' because there is no opportunity to have them progressed. This in turn leads to stakeholder frustration and a perception that management is either ignoring key issues or incapable of action; and
3. third, occasionally bad decisions are made. This occurs because not people operating at the political level have the time to carefully analyse all of the alternatives, or in some cases because "politics trumps science."

Proposed future arrangements

A need to separate strategic from technical decision making...

What's required for Queensland to move forward is an effective system of decision making that separates strategic decision making – which should be undertaken by politicians on behalf of the community – from technical decision making - which should be made by subject matter experts in coordination with stakeholders affected by the decision. In effect, Queensland needs a system in which the Minister and Cabinet set the strategic framework and goals for fisheries management, and the fisheries management agency, in cooperation with stakeholders, agree the technical detail of measures to most cost effectively meet those goals.

Putting such a system in place requires discipline from all participants in the process:

- The Executive need to set a clear strategic direction and have the courage and discipline to allow the management agency and stakeholders to take day-to-day decisions to achieve the Government's goals;
- The management agency needs to have the discipline to take day-to-day decisions within the strategic framework above, and resist the temptation to elevate technical decisions to Cabinet;
- Stakeholders need to avoid seeking political involvement every time the management agency takes a technical decision which negatively affects them in the short term (e.g. annual TAC decisions); and
- Members of Parliament and other high level officials need to have the courage to point constituents back towards the agreed decision making process rather than seeking to intervene in technical, day-to-day decisions. That is, they need to defend against "end runs" that undermine the entire decision making system.

Importantly, this approach presupposes that (a) the necessary legislative and delegation arrangements are in place for the management agency to take technical decisions (this already largely exists in Queensland has been used recently to make annual TAC decisions for coral trout and spanner crabs) and (b) clear structures exist to allow for stakeholder participation in decision making. These latter structures are a critical part of effective decision making and proposed arrangements for stakeholder participation are covered in section 5.2.6.

Board or CEO?..

Having established the broad parameters for a future decision making system, a key question is which governance structure is best placed to deliver the desired result. There are two main alternatives commonly in use:

- Delegation of day-to-day decision making to the CEO of the fisheries management agency (in Queensland's case the Deputy Director General of Fisheries Queensland); or
- Delegation of day-to-day decision making to a statutory authority overseen by an expertise-based board (e.g. the Commonwealth AFMA model).

The Review Team considered the merits of both options in the context of Queensland's future needs. The statutory authority model has a number of advantages over the Departmental/CEO model including its 'arm's length' nature from Government and the fact that decisions are taken by a Board of diverse, technical experts and otherwise respected people. The latter advantage provides confidence to stakeholders that decisions are being taken by 'people who know what they're on about', removes the perception of political involvement in decision making and is a relatively efficient way of ensuring technical advice coming from stakeholder committees and the Department is subject to high level, expert review prior to implementation. Nevertheless, the establishment of new statutory authorities can be an expensive exercise and maintaining a dedicated authority servicing only a relatively small number of participants (in general terms) can be a cost burden.

Ultimately, given the limited available resources available for fisheries from all stakeholders and the capacity to strengthen the 'backbone' of the decision making process through the creation of a clear Government policy framework, the establishment of stakeholder based Fishery Councils and the development of harvest strategies with pre-agreed decision rules (see sections 5.2.2 and 5.2.6), our

view is that technical decisions should be delegated to the CEO of Fisheries Queensland, with any new funding available for fisheries management invested in strengthening the underlying operational systems described in this report.

The general decision making framework recommended by the Review Team is illustrated in Figure 6. Under this structure, the Minister and Cabinet set the strategic policy framework and main operational ‘rules of the game’ for managing Queensland’s fisheries, consistent with the policy statement recommended above. In addition, the Minister would also make other strategic decisions such as decide on sectoral catch sharing allocations and approve harvest strategies. The CEO of FQ would be the main technical/administrative decision maker. The CEO would have the delegated capacity to take administrative decisions such as amend Total Allowable Catch (TAC) without referring the matter to the Minister as long as the TAC change was in accordance with an approved harvest strategy. The Fishery Councils (see section 5.2.6) would be the primary source of technical advice on measures to achieve Government policy for their relevant fisheries and would be responsible for the development of harvest strategies, as well as overseeing Ecological Risk Assessments (ERAs) and advising on research, monitoring and compliance priorities. Fishery Councils would consider input from stakeholders in the discharge of their obligations.

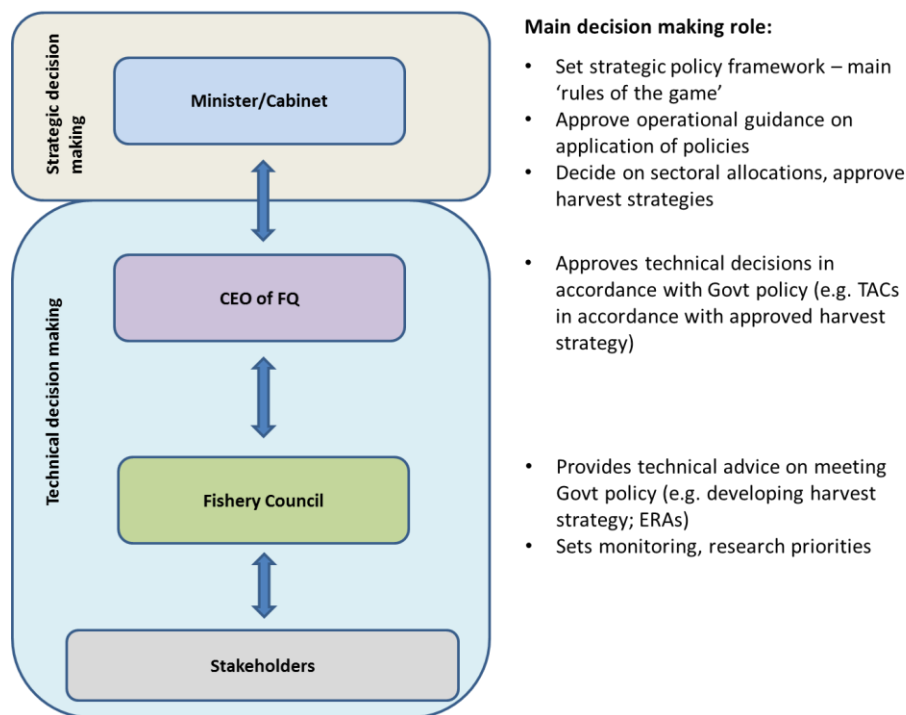


Figure 6: Proposed fisheries decision making structure.

RECOMMENDATIONS:

1. The Queensland Government should develop, as soon as practical, a clear policy statement setting out its preferred approach for the future management of Queensland fisheries. The design of the policy is a matter for Government, however we recommend the policy contain at a minimum:
 - a) overarching objectives for Queensland’s fisheries;
 - b) principles for catch setting, including the use of target stock sizes, harvest

- strategies and reference points;
- c) principles for catch sharing;
- d) preferred approaches to the management of each sector's share of the fishery;
- e) management of non-target species and ecosystems;
- f) systems to allow for stakeholder participation in management/decision making;
- g) approaches to compliance;
- h) performance review;
- i) resourcing;
- j) protection of fisheries habitats; and
- k) the interaction between fisheries and marine protected areas.

2. That the revised Fisheries Act contain a clear statement of purpose, consistent with the guiding principle of maximising benefits from the use of Queensland's fisheries in a way that ensures sustainability for future generations.
3. Queensland's fisheries decision making process should separate strategic decision making – which should be undertaken by politicians on behalf of the community – from technical decision making – which should be made by subject matter experts in coordination with stakeholders affected by the decision. Under the revised decision making framework:
 - a) the Minister and Cabinet set the strategic policy framework and main operational 'rules of the game' for managing Queensland's fisheries;
 - b) the CEO of FQ would be the main technical/administrative decision maker, and would have the delegated capacity to take administrative decisions as long as the change was in accordance with an approved harvest strategy;
 - c) Fishery Councils would be the primary source of technical advice of measures to achieve Government policy for their relevant fisheries.

5.2.2. Allocation and harvest controls

Current situation and main challenges...

Ensuring appropriate allocation of fisheries resources and designing harvest control frameworks that facilitate optimal, sustainable use of fisheries over time is arguably the core challenge of fisheries management and certainly one of its most difficult. History tells us that the most successful fisheries management regimes are those that deal best with the problems of allocating secure access to scarce fisheries over time. Without clarity around allocation both within and between generations, the right mix of instruments and tools to control access to that allocation, and a strategic, transparent process for adjusting access over time in line with stock availability and Government goals, fisheries management becomes a very difficult proposition.

As highlighted above, a key weakness in the existing Queensland arrangements is the absence of any central strategy around how we handle these issues. In the absence of a clear policy framework, decisions around allocation and harvest controls have been ad hoc and inconsistent (resulting in a confusing array of licenses, symbols, input controls, output controls, general fisheries permits and bag limits), the operating environment for all sectors unpredictable, and the process of fisheries

management too easily influenced by short term political and other considerations not conducive to good fisheries management.

The net result is that Queensland faces considerable challenges in relation to allocation and harvest controls that require immediate attention. Some of the main ones include:

- There is currently no formal allocation to the needs of the environment and future generations for key stocks in many fisheries, while for others where a 'TAC' has been set (e.g. coral trout, Spanish mackerel) it effectively covers only one sector of the fishery;
- Access rights in many fisheries are arguably nebulous and insecure. In the commercial sector this weakens their capacity to re-invest in their businesses and undertake succession planning, while in the recreational sector feeds the perception that Governments have yet to give it the recognition it deserves;
- There is current no effective policy framework for resource sharing in shared fisheries, and no 'common currency' to facilitate market-based changes in resource access over time. In the absence of clear allocations within and between sectors, the incentive is for a race to fish. These arrangements breed 'short termism', rather than the long term thinking required to optimise the benefits from the use of fish stocks over time;
- The number of harvesting entitlements available in many fisheries are likely to be well above optimal levels, and the current management system lacks the tools to adjust harvests as required. This means that net economic returns from many fisheries are likely to be close to zero, asset values are depressed, conflict between sectors in shared fisheries is more intense than it needs to be and catches in many fisheries are not effectively constrained by existing arrangements; and
- There is no transparent process in place for prioritising FQ's limited resources amongst the many hundreds of species harvested by Queensland fishers. This means that considerable effort can be applied to species that are of little consequence to Queensland's fishers, while insufficient attention is given to some of the key target species.

Proposed future arrangements

To address these challenges, Queensland needs a more strategic, stable and transparent approach to allocating and managing access to its fisheries resources, as well as prioritising its fisheries management efforts.

The approach needs to be aligned to the overarching strategy outlined above, and allow for the application of a consistent set of management principles and approaches across all of Queensland's main fish stocks. At the highest level, any future approach needs to:

- Meet Queensland's obligations to the environment and future generations, first and foremost, through clear allocations;
- Establish a framework for the equitable sharing of fisheries resources amongst the three main sectors – commercial, recreational and customary - as well as allowing for the ongoing adjustment of sectoral shares over time;
- Provide a strategic and predictable approach to catch setting and the adjustment of harvest entitlements for all sectors based on clear targets and transparent 'rules of the game';

- Facilitate the simplification and streamlining of the confusing array of instruments, symbols, input and output controls currently in existence in Queensland;
- Provide a clear and transparent framework within which to prioritise fisheries management resources.

To this end, we recommend the following measures:

Categorisation of stocks into tiers...

Consistent with the overarching strategy and the principle of risk-based management, Queensland's fisheries resources should be categorised into three 'tiers' which would then determine the level of management activity applied to each stock:

- **Tier 1 stocks** are the key target species for one or more sectors and are of the highest importance socially and economically. Tier 1 stocks would typically require very active management to optimise benefits and avoid problems;
- **Tier 2 stocks** are not 'primary' target species, but require some form of active management to maintain fishing mortality within acceptable levels of risk. Tier 2 stocks may include species of moderate/high biological vulnerability, which require special management arrangements to ensure biological and ecological objectives are met. Tier 2 stocks may be either target or by-catch stocks. Tier 2 by-catch stocks may be more vulnerable than their associated target stock(s) to fishing pressure and the normal situation where protection of target species simultaneously protected associated species did not apply;
- **Tier 3 stocks** are not typically actively targeted and risk assessments show need little active management other than catch reporting. Tier 3 species would typically be characterised by relatively low levels of catch that posed no significant threat to sustainability, and/or very high levels of inherent resilience, and where open access arrangements to the species were economically efficient.

Species may be moved between tiers over time based on advice from the relevant Fishery Council and taking into account the outcomes of updated risk assessments. We have 'taken a stab' at an initial categorisation to illustrate the concept (Annex 5), but ultimately categorisation should be done in conjunction with the relevant Fishery Council. In categorising, explicit recognition is needed that Tier 1 stocks require more resources to manage than Tier 2 or 3 stocks. Equally, elevation into Tier 1 potentially confers substantial asset value and obligations on all sectors. A decision to move a stock from Tier 2 to 1 should not be taken lightly. By the same token, stocks which obviously fit the criteria of a Tier 1 species should not be categorised Tier 2 simply to avoid the resourcing implications which arise from Tier 1 management obligations.

Management of Tier 1 stocks...

- ***Stocks of Tier 1 species should be managed at target stock sizes larger than those capable of producing Maximum Sustainable Yield (MSY), and equivalent to Maximum Economic Yield (MEY).***

While MEY is a concept normally associated with the commercial sector, in practice aiming to maintain stock sizes at levels capable of supporting MEY is likely to support the objectives of all sectors:

- In the commercial sector, MEY is the stock size at which net profits from the fishery are maximised and takes into account both the costs and returns of fishing;
- In the recreational sector, because stock sizes at MEY are normally 'thicker' than MSY recreational fishers have a better chance of catching fish, all other things being equal;
- For the environment, because fish stock sizes at MEY are normally larger than at MSY, the ecosystem should be more resilient to change;
- Moreover, because fishing to MEY means fishing stocks less intensively than at MSY, more fish are effectively allocated to the needs of future generations.

The concepts of MSY and MEY are further explained in Annex 6.

- ***For each Tier 1 stock, a total allowable catch (TAC) should be calculated periodically.***

For those stocks which Queensland identifies as being socially and economically the most important – i.e. Tier 1 stocks – it is reasonable to expect that fisheries managers and scientists should have a good understanding of how many fish can be harvested each year, consistent with a strategy to achieve a target stock size of BMEY. The proportion of the fish stock surplus to the TAC is a de facto allocation to the needs of the environment and future generations.

The frequency with which TACs are recalculated should be a function of the biological characteristics of the stock, the frequency and cost of stock assessments and the design of the harvest strategy.

- ***For each Tier 1 stock, an explicit share of the TAC should be allocated to the three main sectors: commercial, recreational and customary. For the avoidance of doubt, a sector's share may be 100%.***

The primary mechanism to facilitate equitable sharing of Queensland's fisheries resources between competing sectors is to allocate explicit shares to each of the three main sectors. The allocation of explicit shares defines each sector's relative interest in a stock, and removes incentives for a race to fish between the sectors. In addition, it:

- allows for optimised management arrangements for each sector in order to achieve maximum benefit without impacting the other sector's share;
- ensures all sources of fishing mortality on Tier 1 stocks are managed under the harvest strategy;
- creates a 'common currency' framework (i.e. kilos of catch) that allow for inter-sectoral trading and adjustment of sectoral shares over time.

For the recreational sector, the allocation of a proportion of the TAC sets aside for the first time an explicit share of the key target species for the exclusive enjoyment of recreational anglers.

The fact that a stock is not shared in practice between different sectors should not preclude the allocation of explicit shares. For example, tiger prawns may be managed as a Tier 1 stock and the allocation may be 100% commercial.

- ***The initial allocation of sectoral shares is a strategic decision and should be made by the Minister. Although initial allocations could be informed by factors such as relative social or economic or cultural importance, the basic principle would be to allocate initial shares based on relative historical catch (i.e. 'grandfathering').***

History tells us that the relative allocation of shares in a fishery is not easily able to be negotiated between stakeholders, and that an independent arbiter is usually required. Equally, getting the balance 'right' is important to achieving maximum community benefit on behalf of Queenslanders. To this end, the initial allocation of shares in Tier 1 stocks should be undertaken by the Minister after receiving appropriate advice. This may take the form of an Independent Allocation Panel or similar technical group.

- ***The preferred instrument for the management of commercial sector catch of Tier 1 stocks should be ITQs. ITQs should be afforded the highest levels of resource access security, consistent with a perpetual right.***

'ITQ' or 'quota' are often loaded terms and the Review Team received considerable negative feedback from commercial fishers on the way in which the introduction of quota to Queensland fisheries has been carried out to date. Many of the criticisms appear valid. However, they do not persuade the Review Team that ITQ is not the correct option for Tier 1 stocks. Tier 1 stocks are valuable, meaning that harvesting them is either currently or potentially profitable. In the absence of appropriate investment in management that value will be destroyed. Either open access will harm the resource itself through over fishing or input controls will harm profitability through the imposition of ever rising costs and inefficiencies.

For Tier 1 stocks, the preservation and enhancement of value over time can only be assured if the users of those stocks have incentives to protect the fishery, take personal responsibility for its management and to invest in the services and actions that comprise the detail of management. These incentives only exist if fishers have a valuable stake in that fishery that is personal property and is transferable. That stake must be of sufficiently long term that users face the consequences of bad management decisions or under-investment in fisheries management through adverse market assessments of the value of their right.

In order for commercial fishers to invest collectively in the management of Tier 1 stocks, they need to know two things about their peers:

1. Who they are;
2. What their relative shares in the fish stock are.

The final condition means that right holders know that the relationship between costs borne today and benefits received in the future is a fair one. All of the conditions above are satisfied by ITQ. It is difficult to think of another general scheme that allows an equivalent level of security while allowing broad participation in a fishery.

A more detailed discussion of quota arrangements and some of the more frequent myths is included at Annex 7.

- ***Where commercial fisheries move to ITQs for Tier 1 species, the default position should be that input controls which constrain the efficient harvest of the commercial sector share should be removed.***

The clear 'quid pro quo' behind setting TACs and moving to sectoral shares and ITQs in the commercial sector is to allow the efficient harvest of their share. This does not mean that all input controls should be automatically removed, but the onus of proof should very clearly be reversed – in essence, fishers and fishery managers should have to justify why input controls should stay in an output controlled fishery (and why that would be consistent with the overall strategy), rather than having to justify why they should be removed.

Over and above this, arrangements are required to facilitate the efficient use of quota and minimise discarding. This includes allowing operators a defined period of time (e.g. 28 days) to purchase or lease quota to cover any catches taken over an operator's existing quota holdings. Similar arrangements are in place in many if not most other jurisdictions using quota-based management (e.g. AFMA allows 28 days). Consideration should also be given to allow for some degree of quota balancing across years – for example, AFMA operates a system in the Southern and Eastern Scalefish and Shark Fishery which allows for quota balancing across years within specified limits and penalties.

- ***The preferred method for managing recreational catches within the share of Tier 1 stocks should be bag limits. Bag limits for Tier 1 stocks should be set at a level that constrains catches within the recreational share, and allows an equitable distribution of recreational fishing opportunities within the sector.***

Bag limits are likely to be the most practical way of managing recreational catch within its allocated share of the TAC. While bag limits for key species have been in place for many years, the main change arising here is that bag limits would be set in a much more strategic way. In the case of Tier 1 species, the bag limit should effectively constrain overall recreational catch within its allocated share, as well as distribute the catching opportunities equitably across the recreational sector. The bag limit then should take into account the number of fishers targeting a species, the frequency of fishing activity, the amount of post release mortality and the need to allow the 'non-keen' anglers an opportunity to harvest some of the recreational share.

Management of Tier 2 and 3 stocks...

- ***Stocks of Tier 2 species should be managed to ensure fishing mortality remains within an acceptable level of risk, using a robust risk-assessment methodology. Risk assessments should be repeated every 2-3 years to assess changes to risk. If fishing mortality results in unacceptable risk, stocks should be elevated to Tier 1, or additional controls applied to ensure risk remains within acceptable levels.***

The general principle behind Tier 2 stocks is that they are not sufficiently socially or economically important enough to justify Tier 1 management, but are subject to sufficient fishing mortality (either because of the level of targeting or because of the inherent biological vulnerability) to require some degree of active management to main stocks within an acceptable level of risk. For practical purposes, this should be defined as moderate risk or below under most standard risk assessment methodologies. Because they are either targeted or vulnerable, risk assessments should be performed with greater frequency than Tier 3 stocks which are lower risk. Where a risk assessment

indicates that the level of risk has elevated, Fishery Councils should assess what additional measures are required to maintain stocks within acceptable levels of risk. Where risk is elevated because of increased targeting, consideration should be given to elevating the species to Tier 1 management.

- ***Stocks of Tier 3 species should be subject to periodic risk assessment to determine whether risk levels have changed. Risk assessments may be performed with lesser frequency (e.g. 5 years).***

Tier 3 stocks should typically be lowest risk with little active management intervention required. Although these stocks should be subject to ongoing assessment, because of their low risk nature, risk assessments may be performed less frequently.

- ***In the recreational sector, Tier 2 stocks may be subject to specific bag limits, however should be subject to an overall per person bag limit. Tier 3 stocks should not be subject to a species specific bag limit, but should be subject to an overall per person bag limit.***

The main control on the harvest of Tier 2 stocks for the recreational sector will be bag limits. Because Tier 2 stocks require some form of management intervention to maintain stocks with acceptable levels of risk, species specific bag limits may apply. Bag limits should be calculated to with the objective of limiting fishing mortality to levels consistent with maintaining the stock at an acceptable level of risk, taking into account the sector's relative impact on the stock. Stocks of Tier 3 species should not require a specific bag limit consistent with their low risk nature, although both Tier 2 and 3 stocks should be included in an overall recreational bag limit.

- ***In the commercial sector, sufficient management controls are required to ensure Tier 2 stocks remain within an acceptable level of risk. If input controls on Tier 2 stocks constrain the efficient harvest of Tier 1 stocks, consideration should be given to elevating the stock to Tier 1. Tier 3 stocks should be able to be retained by commercial fishers where risk assessments rate the risk as low.***

For most Tier 2 stock not already managed through ITQs, the main form of management control applied is likely to be input controls (e.g. limits on effort, gear). Sufficient input controls are required to ensure Tier 2 stocks remain within acceptable levels of risk, however where the application of input controls would be sufficient to impact the efficient harvest of Tier 1 stocks, consideration should be given to elevating the relevant Tier 2 stock to Tier 1.

While only Tier 1 stocks have explicit shares allocated between sectors, this should not preclude management of the commercial harvest of Tier 2 and 3 species through formal catch shares such as ITQs where it makes sense to do so. Equally, it does not preclude full quantitative stock assessments being undertaken for Tier 2 stocks if resources are made available.

Harvest strategies for all fisheries...

- ***All fisheries should be subject to clear harvest strategies aimed at meeting Tier 1, 2 and 3 stock management objectives. Harvest strategies should set out target, limit and threshold reference points for Tier 1 stocks, as well as pre-agreed decision rules in event that reference points are reached.***

Harvest strategies provide a predictable and transparent approach to setting catch limits to achieve defined stock management objectives. The pre-agreed nature of decision rules signals to stakeholders in advance how TACs will be adjusted in response to relevant indicators, and provides a transparent framework that helps insulate fisheries against capricious and unpredictable decision making. Moreover, the pre-agreed nature of decision rules also addresses the criticism of the existing Performance Management System (PMS) framework which has seen only limited management responses to breaching trigger points.

- ***A harvest strategy policy incorporating these basic concepts and setting out operational guidance on how they should be applied should be developed.***

The bodies responsible for the development of harvest strategies for each of the fisheries in practice will be the relevant Fishery Council, with the support of FQ fishery managers. In developing harvest strategies, Fishery Councils should have access to a clear Queensland Government Harvest Strategy Policy, which sets out preferred target, limit and threshold reference points, and operational guidelines around how these concepts should be applied in practice. A useful template for such a policy is the Commonwealth Harvest Strategy Policy and Operational Guidelines.

- ***Harvest strategies should be agreed by the Minister, but annual decisions in relation to TACs, ITQs and bag limits consistent with the harvest strategy should be made by the head of Fisheries Queensland. Annual decisions on catch should be administrative, not political.***

A harvest strategy is, in effect, an operational plan for a fishery to meet the Government's stock management objectives. With this in mind, the Minister should be responsible for approving whether the proposed harvest strategy for each fishery is consistent with the Government's objectives. Once this framework is approved however, annual decisions on TACs, ITQs and bag limits become technical decisions which do not require political involvement. Annual TACs should be recommended by Fishery Councils and approved by the head of FQ. In determining whether to approve the recommended TAC, the primary consideration of the head of FQ should be whether the recommendation is consistent with the approved harvest strategy, not the specific merits of the recommendation. This places a clear onus on the Fishery Council to get the harvest strategy right.

- ***Catches across all sectors should move up and down according to the harvest strategy in proportion to their allocated share.***

This ensures that all sectors bear the burden and share the benefits of good stock management in proportion to their share. Harvest strategies should consider the implications of a sector exceeding its share and have clear, pre-agreed arrangements to deal with this circumstance.

- ***Future re-allocations within sectors and between sectors would be achieved through voluntary trade and market-based adjustment.***

A pre-requisite of establishing a framework of secure access rights for all sectors is that those rights should not be able to be re-allocated arbitrarily and without compensation. Nevertheless, the framework proposed here recognises that stakeholders will seek to change allocations over time and creates a common currency framework through which market-based adjustment can occur. While the most obvious example of market-based adjustment is likely to be recreational fishers (for

example through a Trust) purchasing commercial sector rights to improve recreational fishing opportunities, the common currency framework allows shares to be traded both ways, or indeed to stakeholders (e.g. conservation non-government organisations, tourism operators) who wished to specifically ensure non-use of the rights.

RECOMMENDATIONS:

1. Queensland needs a more strategic, stable and transparent approach to allocating and managing access to its fisheries resources, as well as prioritising its fisheries management efforts.

Categorisation of stocks into tiers...

2. Queensland's fisheries resources should be categorised into three 'tiers' which would then determine the level of management activity applied to each stock:
 - d) Tier 1 stocks are the key target species for one or more sectors and are of the highest importance socially and economically.
 - e) Tier 2 stocks are not 'primary' target species, but require some form of active management to maintain fishing mortality within acceptable levels of risk.
 - f) Tier 3 stocks are not typically actively targeted and risk assessments show need little active management other than catch reporting.

Management of Tier 1 stocks...

3. Stocks of Tier 1 species should be managed at target stock sizes larger than those capable of producing Maximum Sustainable Yield (MSY), and equivalent to Maximum Economic Yield (MEY).
4. For each Tier 1 stock, a total allowable catch (TAC) should be calculated periodically.
5. For each Tier 1 stock, an explicit share of the TAC should be allocated to the three main sectors: commercial, recreational and customary. For the avoidance of doubt, a sector's share may be 100%.
6. The initial allocation of sectoral shares is a strategic decision and should be made by the Minister. Although initial allocations could be informed by factors such as relative social or economic or cultural importance, the basic principle would be to allocate initial shares based on relative historical catch (i.e. 'grandfathering').
7. The preferred instrument for the management of commercial sector catch of Tier 1 stocks should be ITQs. ITQs should be afforded the highest levels of resource access security, consistent with a perpetual right.
8. Where commercial fisheries move to ITQs for Tier 1 species, the default position should be that input controls which constrain the efficient harvest of the commercial sector share should be removed.
9. The preferred method for managing recreational catches within the share of Tier 1 stocks should be bag limits. Bag limits for Tier 1 stocks should be set at a level that constrains catches within the recreational share, and allows an equitable distribution of recreational fishing opportunities within the sector.

Management of Tier 2 and 3 stocks...

10. Stocks of Tier 2 species should be managed to ensure fishing mortality remains within an acceptable level of risk, using a robust risk-assessment methodology. Risk assessments should be repeated every 2-3 years to assess changes to risk. If fishing mortality results in unacceptable risk, stocks should be elevated to Tier 1, or additional controls applied to ensure risk remains within acceptable levels.
11. Stocks of Tier 3 species should be subject to periodic risk assessment to determine whether risk levels have changed. Risk assessments may be performed with lesser frequency (e.g. 5 years).
12. In the recreational sector, Tier 2 stocks may be subject to specific bag limits, however should be subject to an overall per person bag limit. Tier 3 stocks should not be subject to a species specific bag limit, but should be subject to an overall per person bag limit.
13. In the commercial sector, sufficient management controls are required to ensure Tier 2 stocks remain within an acceptable level of risk. If input controls on Tier 2 stocks constrain the efficient harvest of Tier 1 stocks, consideration should be given to elevating the stock to Tier 1. Tier 3 stocks should be able to be retained by commercial fishers where risk assessments rate the risk as low.

Harvest strategies for all fisheries...

14. All fisheries should be subject to clear harvest strategies aimed at meeting Tier 1, 2 and 3 stock management objectives. Harvest strategies should set out target, limit and threshold reference points for Tier 1 stocks, as well as pre-agreed decision rules in event that reference points are reached.
15. A harvest strategy policy incorporating these basic concepts and setting out operational guidance on how they should be applied should be developed.
16. Harvest strategies should be agreed by the Minister, but annual decisions in relation to TACs, ITQs and bag limits consistent with the harvest strategy should be made by the head of Fisheries Queensland. Annual decisions on catch should be administrative, not political.
17. Catches across all sectors should move up and down according to the harvest strategy in proportion to their allocated share.
18. Future re-allocations within sectors and between sectors would be achieved through voluntary trade and market-based adjustment.

5.2.3. Monitoring, information collection and assessment

Current situation and main challenges...

The availability of timely and accurate information is the cornerstone of any good management system. Good information is required to design management arrangements to meet Government policy objectives, as well as monitor performance against objectives and track new trends over time. To that end, monitoring and assessment systems need to be linked to management needs and be

capable to delivering the right information and analysis to decision makers at the right scale, in the right level of detail and at the right time.

The existing information base available to fisheries managers in Queensland is weak in a number of key areas. Few regular stock assessments are undertaken for key species and the status of many remains uncertain (e.g. east coast mud crab), or disputed (e.g. snapper). There is limited cross-checking of information submitted through commercial logbooks, and limited capacity to verify logbook data through independent sources (e.g. buyer's returns). In the absence of independent verification, the prospect of history-based allocations has provided incentives for fishers to 'game' logbooks in some cases. In particular, commercial fishers crab fishers throughout the State expressed a consistent view that, given the difficulty enforcing pot limits and the absence of data validation, recent catch and effort data in the mud and blue swimmer crab fisheries 'wasn't worth the paper it was printed on'.

On top of this, the recent discontinuation of the independent scientific observer program has further weakened our ability to cross-check fisher-submitted information in the commercial sector, and in particular our capacity to monitor interactions with non-target species and species of conservation interest (SOCI).

In the recreational sector, periodic statewide surveys have been conducted according to a nationally-agreed methodology, although it is not clear this approach will meet all of the future needs of management. The need to get better data on recreational catches was raised at most of the public meetings, with a clear flavour that recreational fishers would be happy to contribute to better monitoring if it meant better management of the fishery.

Very limited social or economic data exists on the contribution of any of the main sectors to the Queensland economy, and there is little current tracking and analysis of key social or economic indicators (e.g. commercial sector profitability) to assess management performance. In the commercial sector, this appears to be as much a product of reluctance to contribute to Government economic assessments as it is about a lack of resources. Feedback from the recreational sector in particular was very strong in written submissions that they would like to see better information on (and recognition of) the social and economic contribution of recreational fishing to regional communities.

In addition, the current structure of the Department means that FQ has little direct control over the activities of fisheries assessment staff. While most of the feedback we received during the review indicated stock assessments undertaken were of a high standard, the housing of fisheries assessment scientists in a separate section of the Department (DAFF Animal Science) meant that FQ had little funding control over their activities each year. Rather than FQ being able to dictate which assessment work was completed each year and by what time based on management priorities, the existing process appears to be more one of negotiation with assessment staff having equal say. This is not ideal.

Proposed future arrangements

Overall

Overall, the monitoring and assessment functions of DAFF need to be re-aligned to meet the information needs of the strategy proposed. In particular, priorities for assessment and monitoring should be guided by the information requirements of fishery harvest strategies and ecological risk assessments. Existing monitoring and assessment not closely aligned to these priorities should be revised appropriately or discontinued.

The process of prioritising future management and assessment activities in each fishery should be guided by the relevant Fishery Council.

Commercial sector

Verifying commercial logbook data...

The main need in the commercial sector is to establish a credible system of independently verifying the information reported in catch and effort logbooks. If this information is not accurate, the basis for future management is weak.

The capacity to verify logbook information relies heavily on having at least two independent sources of the 'same' data that are able to be cross-referenced for discrepancies. In many other regimes (e.g. NZ, AFMA) this is achieved by requiring both the fisher and the buyer of the product to report their activity. While there is currently an obligation on buyers in Queensland to hold documentation to 'cover' any fish in their possession, there is no requirement to actively report purchases to FQ.

We recommend this obligation be extended to require commercial buyers of fisheries products to periodically report their purchases to FQ. At the FQ end, the information should be stored in a secure information management system that allows for automatic cross-referencing with commercial catch and effort data. Discrepancies identified through cross-referencing should be followed up with the relevant fisher/buyer.

In addition to strengthening the commercial information base for management purposes, such information is invaluable for compliance analysis and will assist in tackling the black market described in the compliance section below.

The equivalent system in AFMA works by having the fisher, SFR holder or designated person complete a Catch Document Report (CDR) form once the fish is landed and weighed. This form is in triplicate. The original is sent to AFMA and the two copies go with the fish to the Licensed Fish Receiver (anyone receiving fish at first point of sale from an AFMA licensed fisher must have a Fish Receiver permit). The fish receiver weighs and/or counts the fish then completes the second copy of the CDR and must send it to AFMA within three days of receiving the fish (some allowances are made for weekends and holidays).

Re-establish the independent observer program...

Strengthening validation of logbook data is essential to improving target species catch information, however there are important types of management information that it is not able to verify – for example, fishing effort in some fisheries, composition of discarded species and SOCI interactions. For this information, direct observations of fishing activity either through independent observers or electronic monitoring are required. The use of independent observation is particularly important

where important information is either not required to be reported in logbooks (e.g. discarded species volume and composition) or where fisher compliance with reporting obligations is thought to be low. Importantly, independent observers should not be seen as a burden on the industry. In the Review Team's experience, observer data has more often been used as credible information to defend the industry's interests against ill-informed criticism, rather than as a justification for further management restrictions.

In addition, independent scientific observers can play a valuable role in extension and awareness raising (e.g. of new bycatch reduction technologies/management measures), as well as help provide scientists and managers with a practical understanding of the operation of fishery.

FQ operated an observer program in house for a number of years, however the program was discontinued for in 2012 budgetary reasons. We recommend this program be re-established.

Coverage rates and data needs should be guided by the harvest strategy and ERA process, and overseen by the relevant Fishery Committee. Fisheries with higher risks, and fewer alternate sources of delivering the relevant information, are likely to need higher rates of coverage than others.

Options to reduce the cost of observer services by outsourcing through competitive tender should be explored¹.

Encouraging the use of electronic logbooks (eLogs)...

The Review Team received mixed feedback from fishers during the public meetings about the use of eLogs. Some (usually younger) fishers encouraged FQ to develop and roll out eLogs ASAP to facilitate better access to near real-time data and reduce compliance costs associated with paper logs, while others expressed concerns about the capacity of older fishers to adapt to new technology.

AFMA has introduced e-logs across AFMA managed fisheries. This is a well-documented and efficient system for providing timely information on catch and effort. There may be some differences in the capacity and electronics on AFMA vessels vs Queensland commercial fleet and allowances may need to be made for smaller vessel operators.

While the Review Team appreciates the latter difficulties, we strongly encourage FQ discuss with AFMA the capacity and transferability of their e-logs system as adoption of the AFMA system or a modified version of it may save considerable time and money for Queensland. However, given the nature of the Queensland fleet it may not be practical for smaller vessels to enter log books electronically while at sea. The alternative may be to fill out the paper log then enter the data electronically once they are in port as most trips are short trips.

Recreational sector

Aligning recreational monitoring to the needs of harvest strategies...

The main need in the recreational sector is to ensure monitoring arrangements are capable of delivering the information needed to support harvest strategies and ERAs. In particular, this means

¹ MRAG AP places on record that it is a provider of observer services to other clients.

tracking catch against the recreational share of Tier 1 stocks at the relevant spatial scale (e.g. statewide for coral reef finfish, regional for inshore finfish), as well as tracking trends in catches of Tier 2 and 3 species for the purposes of ecological risk assessment.

Consistent with the discussion above, the costs of recreational surveys should be balanced against the needs of management. For the purpose of monitoring catch shares it is not likely to be necessary to monitor recreational catch to the very last fish. Instead, what's required is to know with an acceptable degree of confidence whether recreational catch is within its share, and if not, by what rough proportion is it over or under. The recreational fishing monitoring section within FQ should be tasked with supplying advice to Fishery Councils about what options are available to monitor recreational catches at what cost in the development of harvest strategies.

Vessel Monitoring Systems and their importance to fisheries management

Vessel Monitoring Systems (VMS) are most often portrayed as a compliance tool but they are a valuable addition to fisheries management more generally given it provides independent verification of fishing effort and location. These days commercial VMS packages provide location services as well as integrated data entry and logbook packages.

Use of apps and new technology...

During the public consultations and written submissions for the review, many recreational fishers expressed an interest in contributing their catch data via a logbook or mobile phone app. While the question of how best to monitor recreational catch is ultimately one for subject matter experts, we encourage them to consider whether the use of fisher submitted data could usefully contribute to monitoring recreational catch (or at least some aspects of it). Our sense from the consultation was that many recreational fishers, and particularly those at the keen end of the spectrum, were keen to make a positive contribution to the management of fisheries.

Long term monitoring

FQ currently operates a long term monitoring program (LTMP) which employs around 22 staff and accounts for about 8% of the agency's budget. The main purpose of the LTMP is to estimate the length, sex and age structure of the catch of commercially and recreationally species, including barramundi, beam, whiting, flathead, snapper, mullet and mackerels amongst others.

Data of the type collected by the LTMP are potentially highly valuable as a source of independent information about the health of the fishery, and feed into stock assessments. The challenge in the context of future management arrangements is to ensure that LTMP activities link directly with the needs of management. To this end, we recommend that the activities of the LTMP be reviewed in the context of the new management arrangements to ensure they are delivering the information most needed to support harvest strategies and ecological risk assessments.

Stock assessment

Prioritisation according to harvest strategies...

The current process of prioritising which stock assessments get undertaken at present is not well-understood by stakeholders, and does not seem clearly aligned to any overall strategy. Future stock

assessment activities should be driven by the information needs of harvest strategies, with priorities overseen by Fishery Councils.

Stock assessment staff under the control of FQ...

Stock assessment staff currently in the DAFF Animal Science section should either be transferred under the direct control of FQ, or FQ given greater funding control over which resource assessment activities get undertaken each year. Assessment staff should be intimately involved in the planning of resource assessments, however ultimate control over which assessments get done, and in what timeframe, should be FQ's (in conjunction with Fishery Councils).

Research prioritisation and planning

The process of identifying broader research priorities for each fishery should be overseen by the relevant Fishery Council, based on the needs of the harvest strategy, ERA or other agreed need (e.g. better social or economic information). Ideally, priorities should be set out in formal research plans that can be made available to potential funders, researchers and stakeholders.

FQ may play an overarching role in coordinating priorities between Fishery Councils, or in developing cross-fishery research priorities.

Socio-economic monitoring

Commercial and recreational fisheries are important contributors to regional economies and employment opportunities throughout the State. Despite this, at present, even routine data such as gross value of production in each of the commercial sectors is difficult to source with confidence, and there is little information to inform more complex analyses such as capacity to fund cost recovery in the commercial sector.

With this in mind, FQ needs to strengthen its investment in socio-economic monitoring to deliver basic information on the social and economic characteristics of each sector, plus key indicators (e.g. commercial profitability; recreational satisfaction) that help to assess the overall performance of management arrangements.

In the commercial sector, the ABARES Australian Fisheries Survey Report series for Commonwealth fisheries (e.g.²) serves as a useful guide to the types of information required. For its part, the commercial sector must accept that the only way good economic data will be collected is if it participates actively and willingly with economic surveys.

Fisheries Councils may also identify areas where better economic analysis might result in better management arrangements. For example, the scallop trawl fishery appears to be one where a better understanding of the economics of meat weight counts and market dynamics might help design management arrangements to optimise the value of the fishery.

² George, D & New, R 2013, Australian fisheries surveys report 2012: Financial and economic performance of the Eastern Tuna and Billfish Fishery, the Commonwealth Trawl Sector and the Gillnet, Hook and Trap Sector, ABARES, Canberra, May. CC BY 3.0.

Transparency of monitoring and research data

Where they do not breach commercial confidentiality, all monitoring and assessment results should be made publicly available via the FQ website.

RECOMMENDATIONS:

1. FQ needs to develop a credible system to independently verifying the information reported in commercial catch and effort logbooks.
2. All buyers of commercial fish in Queensland should be registered and have an obligation to periodically report their purchases to FQ. At the FQ end, the information should be stored in a secure information management system that allows, where possible, for automatic cross-referencing with commercial catch and effort data.
3. The independent scientific observer program should be re-established.
4. FQ should continue to support the development and roll out of eLogs for commercial sector on a voluntary basis.
5. Recreational sector catch monitoring should be re-aligned to ensure monitoring arrangements are capable of delivering the information needed to support harvest strategies and ERAs.
6. The activities of the LTMP be reviewed in the context of the new management arrangements to ensure they are delivering the information most needed to support harvest strategies and ecological risk assessments.
7. Future stock assessment activities should be driven by the information needs of harvest strategies, with priorities overseen by Fishery Councils.
8. Stock assessment staff currently in the DAFF Animal Science section should either be transferred under the direct control of FQ, or FQ given greater funding control over which resource assessment activities get undertaken each year.
9. FQ needs to strengthen its investment in socio-economic monitoring to deliver basic information on the social and economic characteristics of each sector, plus key indicators (e.g. commercial profitability; recreational satisfaction) that help to assess the overall performance of management arrangements.
10. The process of identifying research priorities for each fishery should be overseen by the relevant Fishery Council, based on the needs of the harvest strategy, ERA or other agreed need
11. Where they do not breach commercial confidentiality, all monitoring and assessment results should be made publicly available via the FQ website.

5.2.4. Management of non-target species and ecosystems

Current situation and main challenges...

A basic premise of carrying out any fishing activity, be it commercial, recreational or customary, is that it shouldn't result in serious or irreversible harm to non-target species, habitats or ecosystems. While this is true of all fisheries, it is especially so in Queensland given roughly 60-70% of fishing activity occurs within the boundaries of the Great Barrier Reef World Heritage Area (GBRWHA). Although the Fisheries Act makes no distinction between fishing taking place inside and outside the GBRWHA, the practical reality is that Queensland has special obligations to ensure its fishing activities are consistent with its responsibilities as a custodian of the world heritage site. Add to this the fact that a number of internationally significant populations of endangered, threatened and protected species, including dugongs, turtles and dolphins, live along the Queensland coast and it is important that Queensland has in place good arrangements to monitor and manage the ecosystem impacts of its fisheries.

The multi-species, tropical nature of many of Queensland's fisheries means that they potentially interact with many hundreds, if not thousands, of species. In practice, there is insufficient funding to research each of these interactions in detail, nor would it be justified in most cases. Instead, what's required structured, defensible process to identify those species at high risk from fishing activities, from those species at lower risk. This process is usually termed Ecological Risk Assessment (ERA) and allows fisheries managers and stakeholders to focus their limited management, research and compliance resources on those species at highest risk and greatest need.

Although a number of Queensland's fisheries have been subject to very good ERAs (e.g. the East Coast Otter Trawl Fishery - ECOTF - in the GBRMP³), a key criticism is that the outcomes have not been acted on in a timely manner. In the case of the trawl fishery, although overall risks to most non-target species and ecosystems were generally low based on current levels of effort, high residual risks remained for 11 species of skates and rays and two species of sea snakes. The results of the risk assessment have been known for a number of years, however have only recently resulted in a management response (changed net configurations to minimise interactions). For ERA process to have credibility, both the design of the assessment needs to be robust and the outcomes need to be acted upon in a timely manner.

Proposed future arrangements

Manage non-target species and ecosystem interactions according to risk...

The basic approach to the monitoring and management of non-target species and ecosystem interactions in future should be to prioritise according to risk. The guiding principles behind this approach should be set out in the Government's fisheries policy statement recommended above.

Formal ecological risk assessment for all main fisheries...

All main fisheries should be subject to formal ERAs. Australia arguably leads the world in the development of ERA approaches and there are a number of very good methodologies in existence (e.g. the AFMA/CSIRO hierarchical ERA approach). While we have not been prescriptive about a

³ Pears, R.J., Morison, A.K., Jebreen, E.J., Dunning, M.C., Pitcher, C.R., Courtney, A.J., Houlden, B. and Jacobsen, I.P. 2012, *Ecological risk assessment of the East Coast Otter Trawl Fishery in the Great Barrier Reef Marine Park: Technical report*, Great Barrier Reef Marine Park Authority, Townsville.

preferred methodology, the approach taken should be robust, transparent and repeatable, and have the confidence of the key stakeholders. Ideally, the methodology should be consistent across all fisheries to allow for comparability of results and efficiencies in implementation. The level of detail for each ERA should be consistent with the inherent level of risk associated with each fishing activity. Fishing methods widely recognised as being inherently benign may be subject to less intensive ERAs than those with inherently higher risk.

ERAs should cover all main sectors of the fishery, including the recreational sector.

The process of ecological risk assessment should be overseen by the relevant Fishery Council and the outcomes used to guide priorities for management, monitoring, compliance and research.

ERAs should be repeated periodically to track changes in risk over time and assess the success of risk mitigation measures. The length of time between ERAs may be influenced by previous risk ratings – e.g. activities assessed as low risk may be subject to a longer period between ERAs – but should generally not exceed five years.

Ecological risk management plans...

Where activities and interactions are identified as being high risk through an ERA, formal ecological risk management (ERM) plans should be developed with the aim of reducing the risk to acceptable levels. To ensure action is taken in a timely manner, a maximum timeframe (e.g. 12-18 months) should be specified between the outcomes of the ERA being known and the finalisation of an ERM plan.

The development and implementation of ERM plans should be overseen by the relevant Fishery Council.

Independent observation of non-target species interactions...

A key objective of the independent scientific observer coverage recommended in ‘monitoring’ above should be to strengthen the information base on non-target and SOCI species interactions to support ongoing ecological risk assessment and management. Observer coverage targets should take into account inherent risks in each fishing activity with priorities guided by ERA/ERM plan information needs.

RECOMMENDATIONS:

- 1. The basic approach to the monitoring and management of non-target species and ecosystem interactions in future should be to prioritise according to risk.**
- 2. All main fisheries should be subject to formal Ecological Risk Assessments. ERAs should cover all main sectors of the fishery, including the recreational sector. The process of ERAs should be overseen by the relevant Fishery Council and the outcomes used to guide priorities for management, monitoring, compliance and research.**
- 3. Where activities and interactions are identified as being high risk through an ERA, formal ecological risk management (ERM) plans should be developed with the aim of reducing the risk to acceptable levels.**

5.2.5. Compliance

Current situation and main challenges...

An effective compliance regime is essential in maintaining the integrity of the fisheries management system. Good compliance is typically a balance between encouraging voluntary compliance and deterrence, with the most cost effective compliance regimes being ones where everyone complies voluntarily. With this in mind, substantial effort should be made to encourage voluntary compliance amongst all stakeholders. This can include involving stakeholders in the process of making regulations so there is a level 'ownership' and incentives to comply, ensuring legislation is written in a way that is clear and understandable to all fishers, targeted education campaigns to raise awareness of regulations, and providing incentives for positive compliance. Notwithstanding that, not all stakeholders will comply all of the time so there is a need for an effective regime of powers and sanctions to punish non-compliance. As well as dealing with the original offence, a key aim of the sanctions regime should be to deter those 'at the margin' of compliance and non-compliance away from non-compliant behaviour.

The need to strengthen the effectiveness of Queensland's compliance regime was a common theme of discussion at public meetings, and one of the most frequent comments in written submissions. There was a strong and consistent message from stakeholders that an active black market exists throughout Queensland, and both recreational and commercial fishers pointed to examples of non-compliance within their (and the other) sector that required a stronger compliance response. Stakeholders also expressed concern at inconsistent enforcement between patrol officers given the complexity of the existing regulations, and in many cases compliance was 'focused on the small stuff' (e.g. checking flares were in date) while bigger problems (e.g. black market) went largely unchecked. Notwithstanding that, most compliance officers were generally well-regarded at the individual level by stakeholders who thought they were trying to do a good job with the resources available.

The QB&FP currently has around 100 staff, including 85 authorized officers stationed at 19 locations throughout Queensland. The budget of around \$12.6m (not including the Shark Control Program) represents roughly one-third of the total FQ budget, with around \$7m of this to provide boating safety compliance services. Generally the level of operational funding available for the QB&FP has declined in recent years, with 115 authorised officers in 2008/9 and a budget of \$14m.

The response of most stakeholders to the challenge of strengthening compliance is to call for 'more boots on the ground' in the form of more patrol officers. The strategic challenge facing FQ and the Queensland Government generally is that Queensland is a very large State with a very long coastline and all Governments have limitations on the resources at their disposal. In that context, the key need is to 'work smarter' and throwing more patrol officers at random patrols may not be the best use of Queensland's limited resources (albeit it would be popular). By contrast, what's required is a more sophisticated approach to compliance in which the 'boots on the ground' are pointed in the right direction, and the resources available (including personnel, assets, intelligence) is used to tackle areas of highest risk, using the more cost effective approach.

Proposed future arrangements

A more sophisticated approach to compliance...

At the higher level, Queensland's compliance activities should be refocused and strengthened to develop a more targeted, sophisticated compliance program. Compliance activities should be underpinned by sophisticated risk assessment (including development of risk algorithms and profiles), and greater use made of intelligence-gathering, surveillance, forensic accounting and information management and sharing to ensure limited compliance resources are directed at the areas of highest risk. Consistent with the need to encourage high levels of voluntary compliance, considerable focus should also be placed on preventing non-compliant behaviour at its source through targeted education and awareness campaigns, and involving stakeholders in decisions making. While there may be several useful to models to examine, the AFMA domestic compliance approach is a useful starting point.

Given the limitations on available resources, this may require re-balancing investments away from some activities (e.g. routine patrolling) that are popular, but are not effectively targeted at the areas of highest risk.

Stronger powers...

In addition to better targeting limited resources, ensuring officers have access to an effective suite of compliance powers is an important component of strengthening compliance outcomes. Discussions with QB&FP officers in a number of areas indicated their capacity to tackle some of the more serious fisheries crime – for example, black marketing – was currently limited by the types of powers available to them. For example, if a business was suspected of black marketing product it is currently not possible for officers to covertly purchase fish in an effort to collect the required evidence. Under the current legislation, the officer must reveal their identity upon entering any premises, which clearly defeats the purpose of any covert action.

A key component in developing the new Fisheries Act should be to review the compliance powers needed to enforce the new arrangements, and bring compliance powers up to the recognised best practice arrangements in other states and the Commonwealth. This may include powers to:

- allow access by fisheries inspectors to the premises of fish-related businesses (other than any areas being used for residential purposes) to check for illegal activity;
- allow covert and intelligence based evidence and information gathering;
- allow for the inspection of fishing gear and resources in temporary campsites, subject to reasonable suspicion that an offence has occurred. Access limited to open areas not used for residential purposes;
- allow for the inspection of vehicles that are being used in activities regulated by the Act;
- amend penalties so they are more appropriate to the offence and allowing courts to award the State certain costs of investigation from a convicted person.

Smarter sanctions...

Following the process of better targeting compliance resources through risk analysis and intelligence, and then using stronger powers to investigate offences, the next link in the compliance chain is to ensure the sanctions available to FQ are proportionate and act as an effective deterrent to non-compliance. To this end, in the process of reviewing the Act, consideration should be given to whether the current sanctions regime in the Fisheries Act remains appropriate to underpin a

modernised system of fisheries management. Options for establishing smarter sanctions provided to the Review Team include:

- the option for magistrates to issue Control Orders (e.g. Court orders a recidivist offender who has failed to pay fines to not go fishing for a prescribed period);
- Powers to retain – for example, a requirement that a vessel must remain with the owner until the outcomes of a court case are known. It would be an offence to sell or alter the vessel;
- Automatic licence suspension, or in extreme cases cancellation;
- Extraterritorial powers – for example, allowing a QB&FP officer to apprehend a person suspected of committing an offence against the Queensland Fisheries Act if they were immediately across the border in NSW (by agreement with NSW authorities);
- Offence of trafficking in a commercial quantity of nominated (e.g. prohibited) species;
- Link to fisheries offences to Criminal Proceeds Confiscation Act 2002.

These and other options should be investigated as part of a wider examination of an optimal sanctions regime.

A stronger chain of custody...

A strong chain of custody is essential in monitoring and validating fish catches, detecting possible patterns of black marketing and quota evasion, as well as for food safety and other purposes. Consistent with the discussion under ‘monitoring’ above, all commercial buyers of fish in Queensland should be registered and have an obligation to report fish purchases to FQ. This information must be able to be cross-referenced with commercial logbook records to highlight discrepancies for further investigation.

The functions of the QB&FP...

In an ideal world, the fisheries compliance agency would be focused solely on fisheries compliance. In Queensland the situation is different, with QB&FP performing a range of fisheries and non-fisheries functions on either a core-funded or cost recovered basis. These include:

- On-water boating safety inspections and education for Maritime Safety Queensland (MSQ); marine incident investigation for MSQ (core funded)
- Enforcement activities on behalf of the Australian Government within the Great Barrier Reef Marine Park (fee for service).
- Enforcement activities on behalf of National Parks, Recreation, Sport and Racing within State Marine Parks.
- Enforcement activities in the Northern Prawn and East Coast Tuna fisheries on behalf of the Australian Fisheries Management Authority (fee for service).
- Enforcement activities on behalf of the Protected Zone Joint Authority in the Torres Strait (partial fee for service).

While most of these have some connection with fisheries (albeit some through enforcing marine parks legislation), the main ‘outlier’ is QB&FP’s role in boating safety compliance. There are arguably synergies and cost efficiencies between fisheries and boating safety functions given both functions can be performed simultaneously, although many stakeholders expressed concern that the focus on

marine safety compliance distracted from the 'main game' of fisheries compliance and as a consequence many visits from the patrol appeared to be focused on 'the small stuff' whereas larger offences were not being seen to be tackled.

In the context of the review, the key question is whether the synergies – and the \$7m in funding – received by the QB&FP to deliver boating safety compliance allows more effective delivery of fisheries compliance services (e.g. by allowing for a larger number of patrol officers), or whether fisheries compliance would be better placed with an agency focused solely on fisheries. On balance, our view is that maintaining the dual focused role of the QB&FP is probably the smartest and most cost effective method for the Queensland government to deliver both services. It is important however that the obligation to deliver boating safety services doesn't affect the main recommendation in this section, which is to re-balance QB&FP's fisheries compliance activities into a more sophisticated, targeted program which will require investment in risk-assessment, intelligence and information management amongst other things.

Cost effective service delivery...

In recent years there has been an increasing move towards shore-based compliance (e.g. checking people at boat ramps), with the introduction of compliance tools such as VMS to complement on water activity. The Review Team strongly supports this approach. While there are frequent calls by some stakeholders for greater 'on water' presence from the boating patrol ("we never see them out on the water..."), the reality is that on water patrolling is very costly and many of the risks being targeted by on water patrolling can just as easily be targeted on land. In the context of the strategic need to 'work smarter', the review team makes the general recommendation that Operational Compliance Plans (OCPs) developed in response to risk-assessments should use the most cost effective approach available to target each individual risk (even where this is not the most popular). Part of the Department's compliance communication strategy could be explaining to fishers in broad terms why boat ramp checks are used in preference to more costly on water patrolling.

The principle of cost effective service delivery should also guide the inter-relationships between the three Queensland agencies with scope to undertake fisheries compliance related work – the QB&FP, the Queensland Police Force and marine parks officers under the Queensland Department of National Parks, Recreation, Sport and Racing. While a detailed assessment of the inter-relationships between these agencies at present was beyond the scope of the review, any future compliance arrangements should consider how best to potentially 'multi-task' resources available collectively to the three agencies to deliver the most cost effective fisheries compliance regime.

VMS and AIVR...

Satellite vessel monitoring systems are an important tool to support better targeting and risk assessment of on water and aerial surveillance, both of which are very costly exercises. VMS have been fitted to the East Coast Trawl fleet since the late 1990s and are a critical tool for monitoring compliance with fisheries and marine parks closures, as well as the tracking of effort unit usage. Despite some initial teething problems, VMS now appears to be operating relatively effectively.

There are a number of commercial fleets currently managed through ITQ regimes who are required to 'prior report' before landing product. These include the coral reef fin fish, spanner crab, Spanish mackerel and tropical rock lobster fisheries. Prior reporting gives patrol officers advance notice of

the landing and allows them opportunity to undertake inspections. Prior reporting is undertaken through a system called Automated Interactive Voice Response (AIVR). The Review Team received a considerable number of complaints about the AIVR system, including complaints about phone coverage dropping out, as well as having to remain at the landing site for a minimum period of time to give the opportunity for patrol officers to inspect.

Our view is the AIVR system should be replaced with VMS on all vessels in offshore quota managed fisheries, commencing initially with the coral reef line fishery (primaries and dories), spanner crab fishery and offshore shark fishery. Using VMS, the patrol should be able to use automated 'geofencing' to detect when a vessel is close to port, providing them with the opportunity to inspect. VMS would also substantially improve the capacity of enforcement agencies to police fisheries and marine parks closures, including those in the GBRMP.

We are aware of concerns in relation to introducing VMS on small vessels, and the system should be trialled prior to be rolled out. Given the substantial potential benefits to compliance in the GBRMP, the Commonwealth should be approached to participate and co-invest in the trials and ideally the roll-out of the system.

More broadly in relation to VMS, we understand FQ is currently exploring options to make the administration of the VMS more cost effective by contracting some components of service delivery through AFMA, and we support these efforts.

Clearer Rules...

A critical part of encouraging voluntary compliance is ensuring rules make sense to fishers and are written in a way that can be easily understood and complied with. During the public meetings and associated discussions, the Review Team received considerable comment from all sectors that Queensland's existing fisheries regulations were confusing and contradictory, could be interpreted in multiple ways and were ultimately difficult to comply with in some cases. In the commercial sector there was particular concern that the confusing nature of the existing regulations meant that different patrol officers were interpreting the same legislation in different ways.

There was also concern, particularly from the commercial sector, that the complex nature of the existing regulations stifled innovation. For example, several operators in the net fishery gave examples of new net designs that they would like to try to minimise the catch of non-target species. However, because the regulations so rigidly define the existing types of net able to be used, innovations to improve environmental performance were prohibited.

The Queensland Government has announced that this review will be the start of a process to remake the Fisheries Act. While we accept there are certain legal formalities that must be observed in the drafting of legislation, a general principle of preparing the new Act and regulations should be that they are written in language that all reasonable fishers would understand. Moreover, where there are opportunities to take an approach that provides greater clarity and enforceability to the existing legislation, these should be taken.

A good communication strategy...

A core part of compliance is communicating compliance activity, focus and outcomes with industry. This approach plays an important part in education and goes some way to preventing those wavering on the edge of illegal activity to remain on the right side of the law.

Communications with industry on activities and outcomes can also lead to a better understanding amongst fishers that the targeted and intelligence based approach is getting real results against people who seriously breach the rules. This is normally welcomed given the flip side of this approach is that the majority of people who normally do the right thing are left to go about their day to day business unhindered.

RECOMMENDATIONS:

- 1. Queensland's compliance activities should be refocused and strengthened to develop a more targeted, sophisticated compliance program. Compliance activities should be underpinned by sophisticated risk assessment, and greater use made of intelligence-gathering, surveillance, forensic accounting and information management to ensure limited compliance resources are directed at the areas of highest risk.**
- 2. Consistent with the need to encourage high levels of voluntary compliance, considerable focus should also be placed on preventing non-compliant behaviour at its source through targeted education and awareness campaigns, and involving stakeholders in decisions making.**
- 3. In the process of revising the Fisheries Act, the existing regime of compliance powers and sanctions should be strengthened where necessary to effectively underpin the new arrangements, and bring Queensland's compliance powers up to the recognised best practice arrangements in other states and the Commonwealth.**
- 4. Operational Compliance Plans (OCPs) developed in response to risk-assessments should use the most cost effective approach available to target each individual risk (even where this is not the most popular).**
- 5. Any future compliance arrangements should consider how best to potentially 'multi-task' resources available collectively to the QB&FP, Police and Marine Parks officers to deliver the most cost effective fisheries compliance regime;**
- 6. Vessel monitoring systems should be installed on all vessels in offshore quota managed fisheries, commencing initially with the coral reef line fishery (primaries and dories), spanner crab fishery and offshore shark fishery. The AIVR system should be discontinued upon the introduction of VMS in these fleets. The introduction of VMS on small vessels should be trialled prior to roll-out.**
- 7. In order to promote voluntary compliance and enforceability, the new Act and regulations should be written in language that all reasonable fishers would understand.**

5.2.6. Stakeholder participation

Current situation and main challenges...

A key weakness in the existing arrangements is the absence of any structured system for stakeholder participation in management. Without a formal avenue to have a say in the future of their fisheries, stakeholders feel disconnected from the management system, there is no clear understanding of how new regulations have come to be and there is little 'ownership' from stakeholders over management arrangements, and therefore less incentive to comply with them. Equally, without a system for direct, formal communication with fishers, managers have no regular, structured process to canvass fisher views on priorities for management, monitoring, research and compliance.

In the absence of a formal system for stakeholder participation, fishers have increasingly used political and other channels to seek management change and influence Departmental priorities. The net result has been an increasing frustration at the grass roots level with fisheries management, an increasing politicisation of the fisheries management process, and a strong perception that decisions are influenced only by those who are 'well connected'. None of these things are good for fisheries management.

Arguably, the impacts of the absence of any formal systems for stakeholder participation in management have been magnified by the declining resources and influence of the respective sectoral peak bodies (QSIA and Sunfish). These bodies have previously played an important industry-wide policy coordination role and may at one stage have filled the void left by MACs. However, declining participation rates in recent years and the emergence of multiple alternative sectoral groups has resulted in a splintering of the industry voice.

The result has been that confusing and often irreconcilable policy positions are presented to Government by different parts of the same industry on key policy issues. For their part, Ministers and fisheries managers are left to sort through a quagmire of conflicting positions to identify a preferred way forward and it is not surprising that many people believe they've not done a good job. The confusion of inter- and intra-sectoral policy positions has led to a perception amongst decision makers that fisheries stakeholders are "incapable of agreeing on anything" and has contributed, in part, to the circumstances leading to this review.

What's required moving forward are clear, robust structures which allow stakeholders to actively participate in the process of fisheries of fisheries management, and at the same time learn the lessons from the past. Queensland used to have a system of stakeholder-based Management Advisory Committees (MACs) and Zonal Advisory Committees (ZACs), however these were disbanded in 2009 and 2000 respectively. MACs were broadly linked to fisheries management units (Trawl, Harvest, Tropical Finfish, Sub-Tropical Finfish, Reef) and provided advice on management arrangements, attempted to resolve conflicts, as well as helped set agency priorities for monitoring and research. MACs were comprised of commercial and recreational fishers, conservation representatives, fisheries researchers, compliance staff, fisheries managers and were chaired independently.

ZACs were area based committees and provided advice on fisheries issues within their boundaries. ZACs also had a broadly based composition, including commercial fishers, recreational fishers and conservation representatives. One of the Government fisheries managers usually sat on each ZAC and served as a conduit between the committee and the management agency.

Both groups reported to the management agency, which in turn provided advice to the Minister.

Stakeholders interviewed had a variety of views on the effectiveness of MACs and ZACs. For those who had some involvement in the process, perceptions were generally positive. Despite some weaknesses, they felt they had some influence over the direction of fisheries management and advice provided used the best available evidence. Those not involved in the process were less favourable. Many had little understanding of the role MACs and ZACs played, and those that did were often sceptical about the motivations of the representatives involved (i.e. there was a perception they were there simply to feather their own nests). In the commercial sector, there was a perception that only 'investors' or retired fishermen could be involved given the time demands, and the process didn't lend itself to active participation by 'real' fishermen. The fact there was little noise when MACs were abolished was probably a reflection that the MAC process was not well understood outside of those who had direct involvement, and the outcomes of the MAC were not always well-communicated.

While there was a general view amongst all stakeholders that MACs are 'better than what we have now', our observations of the main weaknesses in the previous system included:

- The MAC system operated without any clear goals or operational 'rules of the game' set out by Government. While it was clear that the MACs' role was to provide advice on future management arrangements, the direction in which those arrangements should head was not clear;
- Advice provided by the MACs was often seen as being 'filtered' by the Department;
- Because implementation of MAC recommendations relied on decisions at the political level - and those decisions were not taken either through lack of time or will - many of the MAC members who had put considerable time into MAC meetings at considerable personal expense, and whose efforts ultimately came to very little, understandably became disillusioned with the process;
- The 'closed shop' nature of MAC meetings and deliberations meant that stakeholders outside the MAC process could not actively engage and fed perceptions that MAC members were deliberately trying to influence decisions to their own advantage;
- The relationship between the MACs and ZACs on different issues was unclear to many people and the double layered structure arguably ended up 'tripping over each other' on issues of common interest.

Any reconstituted stakeholder participation structures need to avoid these problems.

Proposed future arrangements

The establishment of Fishery Councils...

We propose that a single layer of stakeholder-based Fishery Councils (FC) be established to act as the primary source of technical advice on the management of individual fisheries. The structure of the FC should mirror the fisheries management unit. For some fisheries – e.g. trawl and coral reef fin fish – the FC will be statewide, while for others better management at a regional scale (e.g. inshore fin fish) a FC should be established for each zone.

The primary role of the FCs should be to develop, and oversee the implementation of, a harvest strategy for their fishery, consistent with Government policy and operational 'rules of the game'.

Under this structure, the Government provides the policy framework, stock management targets and operational harvest strategy guidelines, and the FCs are the primary source of technical advice about how best to meet the goals. The development of harvest strategies should occur within a defined timeframe – say two years from the publication of the Government’s harvest strategy policy.

Each FC should be supported by a FQ fishery manager. The fishery manager should provide advice to the FC in the development of the harvest strategy – for example, are the measures proposed consistent with government policy?, is it consistent with the harvest strategy policy? are there more cost effective ways of achieving the same outcome? – as well as act as a conduit between the FC and FQ.

FCs should be ‘decision making’ bodies to the maximum extent practical. If the recommendations of the FC meet Government policy and the development of the harvest strategy has followed the appropriate process, it should be adopted. Equally, if the FC makes ongoing recommendations on TAC setting and other measures consistent with the harvest strategy policy approved by the Minister, these should also be approved by the CEO of FQ. This model is consistent with the general approach used in the US Fishery Management Council model. Providing FCs with genuine decision making power shifts the involvement of stakeholders from consultation to active participation, and avoids the criticisms in the previous MAC process that the advice was filtered by the Department. Moreover, providing the capacity for the CEO of FQ to approve TAC and other recommendations consistent with an approved harvest strategy avoids problems associated with having to get technical decisions made at the political level.

In addition to developing and overseeing harvest strategies, FCs should also advise on priorities for monitoring, research and compliance, as well as oversee the process of ecological risk assessments for their fisheries. For fisheries involving an export component, FCs should play a lead role in the negotiation of any EPBC WTO conditions.

The composition of FCs should mirror the rights/share holdings in the management unit. That is, they should be composed of commercial, recreational and customary fishers with the number of members each had on the FC roughly mirroring their relative shares in the fishery. While there is likely to be no precise way of doing this, in general fisheries in which the larger share is taken by recreational fishers should have greater recreational representation (e.g. rocky reef fisheries), and vice versa. FCs should also be able to invite relevant experts as necessary to provide input at meeting (e.g. researchers), however voting rights should be limited to rights holders in the fishery.

The operation of the FCs must be transparent. FCs should be chaired independently, and the minutes (or at the minimum a Chair’s summary of the meeting) made publicly available (excepting anything commercial-in-confidence). Moreover, meetings of the FC should involve some public sessions in which local fishers can put their concerns and suggestions directly to Council members. All interests in the fishery from each of the Council members should be declared up front and made public.

The question of the best process to appoint Council members is an important one and requires careful handling. Ultimately, all rights holders with an interest in the fishery should have the opportunity to be appointed to the Council. The two main options for appointment appear to be having Government appoint Council members based on an application and an assessment of relative

skills and experience, or allowing shareholders in the fishery to vote on membership. We understand there are pros and cons both processes. If a practical, cost effective process can be developed to allow stakeholders to vote on membership this would provide some confidence that a democratic process was followed and avoid perceptions that membership was restricted only to those 'well-connected'. Another approach would be to solicit nominations from stakeholders and to have them reviewed by an independent panel of fishery managers and scientists from outside of the region, and other respected citizens without a connection to fisheries. Under this model, ultimately it should be left to the Government to appoint members, but they should have to justify their decisions relative to the recommendations of the independent panel. FCs should have defined terms (e.g. 3 years), with a clear process for re-appointment at the expiry of the term.

Given their importance in the future management structure, FC members will require some training both on 'process' issues – e.g. the Government's legislative obligations, how the FCs fit into the decision making process, negotiation/conciliation – and 'technical' issues - e.g. harvest strategies, ERAs, monitoring, etc. Council members should also receive a modest sitting fee for meetings.

Given the challenges associated with stakeholders negotiating relative shares in the fishery, FCs should not do sectoral allocation (or intra-sectoral allocation), but may advise on spatial catch sharing arrangements. We expect this may particularly relevant for the zonal inshore fin fish FCs. FCs may also provide advice on practical issues in the process of allocation, such as the most appropriate catch history period (if catch history is used), however care should be taken to avoid any real or perceived conflicts of interest.

The operation of the FCs should be reviewed after three years. This should provide sufficient time for FCs to have developed harvest strategies, ERAs and monitoring programs and assess their relative performance. The review should take account of any changes in relative shareholding as well as make recommendations to improve the performance of FCs based on experience over the initial period.

Systems for broader stakeholder participation/communication

In addition to formal Fishery Council structures, systems are needed to allow the opportunity for rank and file fishers to provide input into management decisions on issues of concern. These should include a formal opportunity to comment on proposed new instruments (e.g. draft harvest strategies), as well as the opportunity to provide their thoughts and proposals for the consideration of FCs in the development of new management arrangements (e.g. by attending public sessions of the relevant FC). While we are not prescriptive about how this happens, any system should take account of advice from the relevant FC on the best process to communicate with fishers in the relevant fishery (taking into account the nature of the fishery and different sectors, existence of peak bodies, etc), as well as meet the Department's legislative obligations for consultation.

Role of peak bodies

Another key question in the context of stakeholder participation is the role that peak stakeholder bodies might play in any future management model. The Review Team's view is that peak bodies can play a valuable role in effectively coordinating stakeholder policy input into the management system,

however the need for peak bodies and their structure and functions are matters for industry and stakeholders and not the province of Government.

The situation surrounding the two historical peak bodies in Queensland – QSIA and Sunfish – has changed markedly since the introduction of the current Fisheries Act in 1994. In the QSIA’s case, the organisation has moved from compulsory to voluntary funding, while in Sunfish’s case, anecdotal evidence suggests the level of participation in fishing clubs by anglers has declined. In the same vein, the environment surrounding both organisations is likely to continue to evolve over coming years. In the commercial sector, the nature of rights holdings will change with clearer groups of rights holders emerging in many fisheries. This may lead naturally to greater coordination of interests through sectoral or peak bodies. In the recreational sector, the definition of anglers’ stake in the fishery will be influenced by the debate over any recreational fishing license and the introduction of any new governance arrangements to oversee management of the funds (e.g. a recreational fishing trust).

While it is difficult to predict exactly how these issues will shake out, in the context of the reforms proposed the key question for peak bodies is how they best ‘add value’ in the system on behalf of potential members. In general, the most successful peak or sectoral bodies under the proposed new arrangements will be the ones that offer potential members the clearest value proposition in being able to influence management direction (e.g. by influencing the direction and operation of fishery harvest strategies). This will, in turn, depend on their capacity to develop credible, irresistible policy positions and may benefit from aligning structures, functions and skills sets around the new management system (e.g. by aligning fishery sectoral representative structures around Fishery Council structure to demonstrate clear pathway for policy input).

RECOMMENDATIONS:

1. **Stakeholder-based Fishery Councils (FC) should be established to act as the primary source of technical advice on the management of individual fisheries. The structure of the FC should mirror the fisheries management unit.**
2. **The primary role of the FCs should be to develop, and oversee the implementation of, a harvest strategy for their fishery, consistent with Government policy and operational ‘rules of the game’.**
3. **Each FC should be supported by a FQ fishery manager.**
4. **FCs should be ‘decision making’ bodies to the maximum extent practical. If the recommendations of the FC meet Government policy and the development of the harvest strategy has followed the appropriate process, it should be adopted.**
5. **FCs should also advise on priorities for monitoring, research and compliance, as well as oversee the process of ecological risk assessments for their fisheries.**
6. **The composition of FCs should mirror the rights/share holdings in the management unit. That is, they should be composed of commercial, recreational and customary fishers with the number of members each had on the FC roughly mirroring their relative shares in the fishery.**
7. **The operation of the FCs must be transparent. FCs should be chaired independently, and the minutes made publicly available (excepting anything commercial-in-confidence). Meetings of the FC should involve some public sessions in which local fishers can put their**

concerns and suggestions directly to Council members.

8. FC members should have defined terms (e.g. 3 years), with a clear process for re-appointment at the expiry of the term.
9. FC members will require some training both on 'process' issues – e.g. the Government's legislative obligations, negotiation/conciliation – and 'technical' issues - e.g. harvest strategies, ERAs, monitoring, etc.
10. FCs should not do sectoral allocation (or intra-sectoral allocation), but may advise on spatial catch sharing arrangements.
11. The operation of the FCs should be reviewed after three years.

5.2.7. Performance review

Regular performance review is essential to ensure management arrangements are on track to meet Government and stakeholder policy objectives. In short, good fisheries management is not 'set and forget'. Fisheries operate with complex and dynamic systems and good fisheries management has arrangements in place both to detect changes and trends over time, and to adjust management measures as necessary to continue to meet agreed policy goals. Good fisheries management should also be mature enough to learn from experience. Importantly, the process of review need not create an atmosphere for stakeholders that arrangements are in a constant state of flux. Rather, good systems of performance review should serve to strengthen the stability of the operating environment and access rights by giving confidence to stakeholders that arrangements exist to optimise the benefits received from the system over time (e.g. in much the same way as an effective company Board looks to continually refine arrangements to optimise value for shareholders).

Fisheries Queensland's main internal system of performance review is through the Performance Management System (PMS) framework for key fisheries⁴. Each PMS comprises a series of performance indicators (target species, bycatch, ecosystem, social and economic) against which the performance of key fisheries are reviewed annually. While fishery PMS' serve as a useful yardstick against which track the progress of fisheries, concern exists that outcomes are not pre-agreed. This has led to a perception amongst many stakeholders that problematic trends are simply 'explained away' in the interests of maintaining the status quo, and that very little of substance changes. Systems of performance review in any future management model should avoid these problems and give all stakeholders confidence that decisions will be taken to optimise performance where necessary.

The Review Team's view is that systems of performance review are required at two levels: (a) the fishery level and (b) the management system level.

Fishery level

⁴ Periodic external reviews of Queensland's export fisheries are also undertaken as part of the EPBC Act accreditation process.

At the fishery level, the main systems of performance review should be:

- For **target species** - ongoing monitoring of stock management objectives in accordance with the harvest strategy; and
- For **non-target species and the ecosystem** – periodic ecological risk assessments.

These measures are relatively self-explanatory. In the case of the fisheries harvest strategies, the pre-agreed nature of the decision rules requires action to be taken maintain stocks at target levels and avoids the weakness in the current PMS framework where taking action is optional. The timing of reviewing relevant stock indicators should be set out in the harvest strategy for transparency (e.g. annual, bi-annual). Each harvest strategy itself should be reviewed every 5-7 years to ensure the approach taken best meets Government policy objectives.

In the case of ERAs, where risk levels are assessed as being outside the bounds of acceptable risk, Government policy should dictate a timeframe within which action must be taken to reduce residual risks to acceptable levels.

The process of fishery-level performance review should be overseen by the relevant Fishery Council.

Management system level

At the system-wide level, periodic review is necessary to ensure each of the components is working effectively individually, and with each other, to meet Government objectives.

Given the nature and significance of the reforms recommended in this report, adequate time will be necessary both to implement the reforms and to allow them to start working before being subject to system-wide review. In the context of this review, we suggest the following process:

- The CEO of FQ be required to provide **6-monthly** reports to the Minister on progress with the implementation of reforms. Six-monthly updates should also be provided to stakeholders. These reports need not necessarily focus on the outcomes of reforms, but rather set out progress in implementation and any outstanding challenges;
- Within **five years** of the Government's response to this review, a system-wide review should be completed to ensure the new arrangements are working effectively to achieve Government's policy goals. The system-wide review should be overseen by the Fisheries Minister and may be undertaken internally or externally. The process of review should be transparent and allow for stakeholder input.

RECOMMENDATIONS:

1. At the fishery level, the main systems of performance review should be:
 - c) For **target species** - ongoing monitoring of stock management objectives in accordance with the harvest strategy; and
 - d) For **non-target species** and the ecosystem – periodic ecological risk assessments
2. That the CEO of FQ be required to provide 6-monthly reports to the Minister and

stakeholders on progress with the implementation of reforms.

3. Within **five years** of the Government's response to this review, a system-wide review should be completed to ensure the new arrangements are working effectively to achieve Government's policy goals.

5.2.8. Resourcing

It is self-evident that effective fisheries management requires effective resourcing. The most soundly designed and well-intentioned fisheries management system will struggle to achieve its objectives without adequate funding.

This section examines the existing level of resourcing available to Fisheries Queensland, sets out the resourcing implications of the reforms being proposed and discusses options to ensure adequate levels of funding are available to achieve Queensland's fisheries objectives.

Existing level of resourcing

Fisheries Queensland has an existing annual budget of around \$35.5m. Over half of the agency's budget is provided through core Government funding (ignoring the once-off funding for the net license buyback), with the remainder sourced through commercial license fees (\$4.9m), the Recreational Use Fee (\$4m), SIPS, funding for development assessments and other miscellaneous sources (Figure 7).

Of the total budget, around \$11.7m (39%) is spent on compliance and education, around \$14m on fisheries licensing, monitoring and assessment and around \$1.3m on strategy, policy and legislative reform. The overall 'fisheries' budget is supplemented slightly by funding for fisheries resource assessment staff in the DAFF Animal Science section.

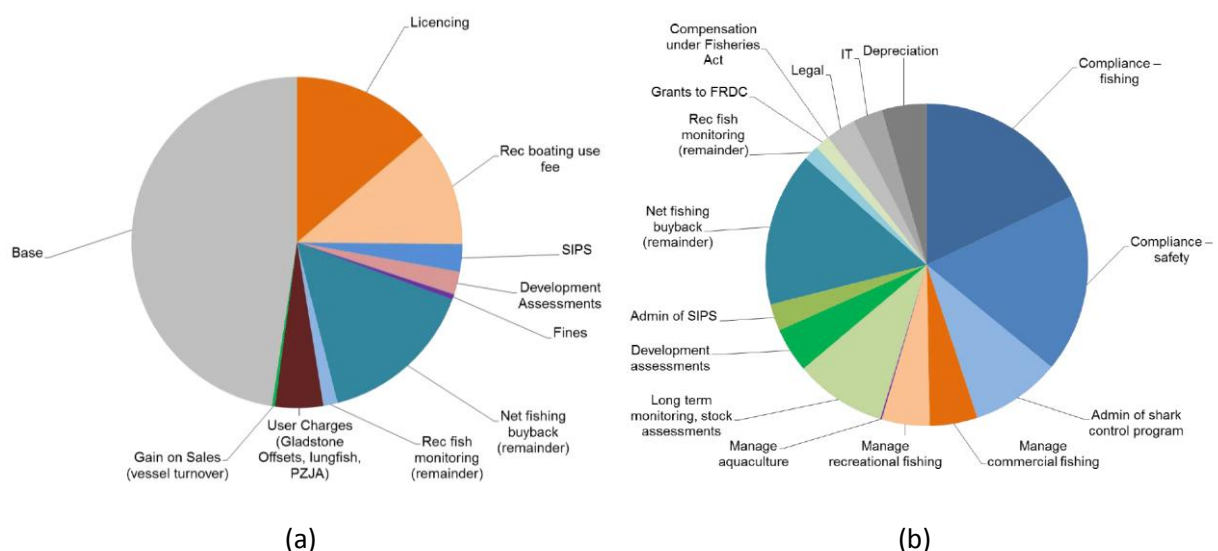


Figure 7: Fisheries Queensland (a) budgeted sources of revenue and (b) expected areas of expenditure in 2014-5.

While it is very difficult to make direct comparisons in resourcing between different state and Commonwealth fisheries agencies given the different functions, FQ would currently sit somewhere

towards the lower end of the spectrum in terms of available resources. Of five jurisdictions examined, only South Australia has a lower 'budget per commercial license' and only South Australian and AFMA have a lower budget as a proportion of the wild catch GVP (Table 3).

However, perhaps the most striking feature of Fisheries Queensland's current budget is the proportion spent on activities that would not normally be considered 'core' fisheries management – for example, around \$7m on boating safety, around \$2.6m on the Shark Control Program and around \$1.6m on assessing development applications on habitats. If these amounts were removed, the amount spent on core fisheries management is likely to be less than that spent by comparable fisheries management agencies elsewhere in Australia.

Table 3: Comparative analysis of resourcing available to Fisheries Queensland against other comparable Australian jurisdictions.

Indicator	Queensland [^]	NSW	WA [@]	SA	AFMA ^{>}
Budget	\$30m	\$46.4m	\$77.3m	\$13.8m	\$36m
Staff	194	400	449	85	201
Commercial licenses	1,450	1090 (2012)	1,337	836	672 Concession holders
GVP (wild)	\$186m	\$82m	\$276m	\$209m	\$308m
Recreational fishers	703,000	903,048	740,000	236,000	Limited
Aquaculture GVP	\$83m	\$55m	\$109m	\$237m	NA
Costs recovered from comm. sector	\$4.9m	Unknown	\$16.2m	\$11.2m (Av. \$13,358 per license)	\$14.9m
Costs recovered from rec sector	\$4m (RUF)	Unknown	\$6.2m	Nil	Nil
Notes: [^] Fisheries Queensland budget includes funding for a range of 'non-core' fisheries management tasks including marine safety compliance (~\$7m), the shark control program (~\$2.6m), habitat impact assessment, and some fisheries science functions are funded through DAFF Animal Science [@] The WA Department of Fisheries budget includes 'in house' research staff which are outside the management agency in many other jurisdictions ^{>} AFMA's budget includes appropriations for foreign compliance					

Future funding options

Many of the reforms proposed in this report will have funding implications. The bottom line is that common property resources do not manage themselves, and the operation of a modern, world-class fisheries management system requires investment.

The main opportunities to generate funding to support ongoing fisheries management are really three-fold:

- Revenue from Government, through general taxation;

- Revenue recovered from the commercial sector; and
- Revenue recovered from the recreational sector.

Other opportunities exist (e.g. external research grants, administering developer's 'offset' funding) however these are likely to be a supplement only to the sources above.

Government funding

The Review Team's view is that the bulk of the transitional funding to introduce the proposed new arrangements will need to come from Government. Work needs to commence on the new arrangements immediately and will require considerable upfront investment before substantial practical benefits begin to flow to all sectors. While little economic data exists on the profitability of the commercial sector, the Review Team suspects that, in general, there is limited capacity to pay increased costs of management in the short term. Equally, discussions will be required with the recreational sector around equitable long-term funding options before these can be introduced. As a result, the Review Team's view is that upfront Government investment is required to put the new structure in place. For the sake of clarity, our view is that investment in strengthening the management system in Queensland is a far wiser use of public funds than a short-term commercial buyback without any underlying structural reform.

Over time, once the initial transition is complete, both the commercial and recreational sectors should make greater contributions to the cost of management through a properly structured process of cost recovery.

Commercial sector funding

The commercial sector currently contributes around \$4.9m annually in funding for management, generated through license fees. No formal cost recovery framework exists, and existing fees are effectively fees to access a common property resource. In general, the license fees paid by Queensland fishers are considerably lower than equivalent fishers in other jurisdictions. For example, average annual fees paid by Queensland East Coast Trawl vessels are around \$3,341, while those in the Commonwealth Northern Prawn Fishery average around \$41,000 and the Spencer Gulf prawn fishery are \$26,915. Similarly, the proportion of fees recovered from Queensland's fishers as a percentage of GVP in the wild catch sector is considerably lower than other jurisdictions. Queensland currently recovers an equivalent of 2.6% of GVP in fees, whereas AFMA, South Australia and Western Australia are 4.8%, 5.4% and 5.75% respectively. There are various reasons for this including legal complexities associated with introducing cost recovery, government attitudes towards higher fees and commercial capacity to pay.

In the future, as commercial fishers begin to see benefits associated with a framework of stronger rights and more stable operating environment, it is reasonable to expect them to make a greater contribution to the costs of management and accessing the community's resources. This does not automatically mean that all costs associated with fisheries management should be recovered. However, there should be a transparent process in which a fair proportion of the reasonable costs of management attributable to the industry (and from which they receive a private benefit) are paid for by the industry, and not the taxpayer.

In order that this transition occurs in a structured way, the Review Team recommends that Fisheries Queensland develop, over the course of the next 2 years, a detailed policy and transitional timeline for the introduction of cost recovery in Queensland's commercial fisheries. Ideally, the implementation of the policy would be phased in over time (say 4-5 years), however the broad outline of the policy should be developed as soon as practical to allow commercial operators to make informed decisions about their future.

The development of any new cost recovery regime should include a high degree of participation from the commercial sector.

Recreational sector funding

To license or not to license...

Discussions around recreational fishing licensing (RFL) are usually had in the context of raising revenues to fund recreational fishing services and support infrastructure (and admittedly we have included in it the resourcing section here), however there is much more to it than that. Perhaps the primary benefit from an RFL is to strengthen the information base upon which to manage our fisheries. Information from licensing tells us how many people are fishing, where they are from and importantly provides an efficient sampling 'frame' for which to target surveys of recreational catch and effort. In addition, knowing who recreational fishers are helps target angler education campaigns and consultation and thereby strengthens voluntary compliance and engagement in the management process.

From the outset of the review we were conscious of the potential sensitivities around recreational fishing licensing in Queensland. It is not the current policy of this Government to introduce an RFL, and the Minister has made this point very clearly in numerous media interviews. Given the sensitivity, the introduction of an RFL was not something that we specifically requested comment on at public meetings or in written submissions. Nevertheless, at each of the 17 public meetings the topic of an RFL was raised, as it was in numerous written submissions to the review.

Although there were one or two exceptions, those people who spoke about an RFL in the public meetings spoke strongly in favour of a license. Likewise, of the 45 written submissions that mentioned an RFL, 44 were in favour. While we are very conscious that the fishers most likely to attend public meetings and take the time to prepare written submissions are from the keen end of the spectrum (and are most likely to support an RFL), informal discussions with fishers across the State indicated that attitudes towards licensing amongst the broader angling community had changed over the last decade and that many saw an RFL as 'an idea whose time had arrived'. A number of reasons for this were given although two of the most consistent were the undoubted success of the freshwater Stocked Impoundment Permit Scheme (SIPS) (i.e. anglers were happy to invest if they saw something coming back) and the reported success of similar schemes in NSW, Victoria and elsewhere internationally. Many recreational fishers thought the introduction of a license was an important part of the process of the recreational sector 'coming of age' and of the Government giving the sector the recognition it deserved.

While it has not been the policy to date of the current (or previous) government to introduce a RFL, our view is that the management of Queensland's fisheries would benefit from the introduction of a well-structured all waters RFL. Moreover, both public meetings and written submissions indicated

strong in principle support for the concept at least amongst recreational fishers at the keen end of the spectrum, subject to appropriate caveats.

What might a RFL look like?

While it was not the specific aim of the Review to examine the detail of any RFL, there are a number of 'core' questions important in its design. For example:

- To whom would the license apply?
- Which species, waters and fishing activities would it cover?
- How much would it cost?
- Which entity should control the funds, and on which uses could they be spent?
- Should the existing SIPS and RUF be rolled into a single all waters recreational fishing license?

It is important to note up front that most fisher's strong support for an RFL was conditional upon some equally strong caveats. For example, almost all fishers argued that:

- Funds must be paid into a Trust or a Recreational Fishing Future Fund managed at arm's length from Government and overseen by representatives with the responsibility to invest the funds for the benefit of recreational fishers; and
- Pensioners and juniors were not to be charged for the license fee, or to be charged a concessional amount.

Some others also argued that an allowance should be made for people taking their children or grandchildren down the beach or the river bank fishing and that the funds should not be used to fund what are seen as core government responsibilities to the recreational and commercial sector.

Recreational fishing licensing has been in place in a number of other jurisdictions in Australia for many years, with a mix of arrangements used (Table 4). NSW and Victoria both introduced 'all waters' RFLs in the early 2000's, with exemptions in NSW for persons under the age of 18 years, indigenous people and person holding pension concessions cards. Tasmania has a complex mix of both sea and inland licensing with separate sea and inland licenses and "add ons" for species and extra rods. WA has both a Recreational Fishing From Boat license, introduced in 2013, as well as individual licenses for selected species and activities (e.g. abalone, rock lobster, marron, net fishing). Fishing from land (or in a non-powered boat) for species other than those to which a specific license applies is an 'as of right' activity. There are no licenses or additional boat charges in NT, SA or the ACT, although recreational fishing on Aboriginal lands in the NT is subject to the issue of permits by the relevant Land Councils.

Table 4: Recreational fishing licenses/permits or additional boat charges.

State	All-water	Freshwater	Saltwater	Boat license or permit
NSW	Yes	N/A	N/A	No
Qld	No	Some (SIPS)	No	Yes
Victoria	Yes	N/A	N/A	No
Tasmania	No	Yes	Yes (some species)	No
ACT	No	No	No	No

NT	No	No	No	No
SA	No	No	No	No
WA	No	Yes	Yes (some species)	Yes

In jurisdictions where licensing schemes have been implemented, the ones described as working well are those where there are clear and transparent governance arrangements for the management of funds collected, and recreational fishers have confidence that decisions makers have the best interests of recreational fishers at heart. A number of different governance models are used to this end. For example, in NSW the funds are paid into two separate Trusts (one for saltwater one for freshwater) administered by the recreational sector for the benefit of the sector. The Trusts may decide to fund a range of initiatives such as commercial license buybacks, compliance officers⁵, research, restocking, or education but the emphasis being that it is the Trusts' decision, rather than being imposed upon them. The two Trusts administer their own funds but can make loans to each other. In Western Australia, the funds are collected and administered by Government, but all funds collected from recreational licenses are required by law to be spent supporting recreational fishing. The peak recreational fishing body, Recfishwest, provides advice to Government about priorities for allocating the funds.

Some of the other key design considerations are around how much individual fishers would be charged, and how much the scheme would raise overall. The second question is a function of the amount charged and the number of people likely to take out RFLs. While it is difficult to predict how many people in Queensland would purchase an RFL (and this would be influenced to some extent by the amount charged), experience from other jurisdictions indicates that not everyone recorded by surveys as having fished once a year would buy a license. For example, from an estimated population of around 903,000 recreational anglers in NSW only around 500,000 licenses are sold each year for various reasons. Based on a fee structure of \$7 for 3 days, \$14 for 1 month, \$35 for 1 year and \$85 for 3 years, around \$15 million is raised from the NSW RFL scheme annually. In Western Australia, out of a population of around 740,000 recreational fishers, 221,374 recreational fishing licenses of various types were purchased in 2012-3, including 134,116 Recreational Fishing from Boat Licenses⁶. This generated revenue of around \$6.2m.

Assuming the same 'conversion rate' as NSW, if around 55% of the estimated 639,000 Queenslanders who fish once a year purchase a license at the same annual fee rate as NSW (\$35), around \$12,300,750 would be generated annually. This figure is obviously highly uncertain however and requires more work to be done on Queenslanders' willingness to pay and at what amounts to arrive at a more accurate estimate. Consideration should also be given to the fate of the existing recreational fishing funding schemes – the SIPS and Recreational Use Fee (RUF) applied to boat registrations - in the context of any all waters RFL. The SIPS is strongly supported by recreational fishers and raised \$1,000,003 in financial year 2013-14. Of these funds, around \$168,000 (17%)

⁵ e.g. approximately \$2.5 million of the \$15 million raised annually goes to administration and for some 18 compliance officers around the State.

⁶ DoF, 2013. Department of Fisheries Annual Report 2012/3. 181pp.

went to FQ for administration and \$835,000 (83%) went to restocking groups. The RUF (\$19.30 per recreational ship annually) raises around \$4.5m which is provided to FQ to support the management of recreational fishing. While much of this money is paid by boat users who use their vessels for recreational fishing, some of it is paid by boat owners who never use their boats for fishing, which raises equity concerns. The question in the context of an all waters RFL is whether these schemes should be retained, or whether they should be rolled into a single streamlined scheme. If the latter approach is taken, the implications for FQ's existing budget and stocking programs would need to be carefully considered.

Where to from here?

In the context of the future direction for Queensland fisheries proposed in this report, the Review Team's overall view is that the reforms proposed will 'work' without an RFL, but will work considerably better with one. Amongst other things, the introduction of an RFL could:

- Assist in efficiently targeting recreational catch surveys to monitor catch against the recreational share of Tier 1 stocks;
- Provide an ongoing funding base to facilitate market-based adjustment of sectoral allocations of Tier 1 species (i.e. to support the types of commercial license buybacks requested by many recreational fishers);
- Provide funding to support improvements to recreational fishing infrastructure such as filleting tables, artificial reefs, FADs, boat ramps and signage;
- Assist in target angler education campaigns of the type requested in multiple public meetings and written submissions;
- Assist FQ and Fishery Councils in targeting consultation exercises to ensure recreational fishers have greater participation on management decisions;
- Provide funding research and extension to benefit recreational fisheries
- Provide for improved promotion of Queensland as a angling destination; and
- Provide for improved targeting and efficiency of compliance activities.

With this in mind, we recommend the Government commit to a more detailed examination of the cost and benefits of introducing an all waters recreational fishing license in the context of any new fisheries management arrangements adopted by Government as a result of this report.

The examination should test the level of support amongst the broader recreational fishing community to an all waters RFL under a range of different scenarios. These should cover the key design questions described above, including:

- To whom should the license apply?
- Which species, waters and activities should it cover?
- How much should it cost, and how much could be expected to be raised?
- For what purposes could the funds be spent?
- Who would administer the funds, and under what governance model?
- How would any new RFL interact with the existing SIPS and RUF fees – e.g. would they be rolled into a single scheme?
- How would recreational fishers be able to have their say on how the funds should be spent?

The study should involve a very high level of consultation with recreational fishers, and ultimately provide advice to Government on the level of support for various options, the pros and cons of each and make recommendations on a proposed plan of implementation for any preferred future model.

To ensure equity between sectors, the introduction of any new recreational licensing regime should be introduced in parallel with new commercial cost recovery arrangements (unless there is strong support from the recreational sector to introduce an RFL earlier to support funding for resource re-allocation and other purposes).

RECOMMENDATIONS:

- 1. The Review Team's view is that the bulk of the initial funding to introduce the proposed new arrangements will need to come from Government. Work needs to commence on the new arrangements immediately and will require considerable upfront investment before substantial practical benefits begin to flow to all sectors.**
- 2. Over time, both commercial and recreational fishers should make a greater contribution to the costs of management.**
- 3. For the commercial sector, Fisheries Queensland should develop, over the course of the next 2 years, a detailed policy and transitional timeline for the introduction of cost recovery in Queensland's commercial fisheries.**
- 4. For the recreational sector, the Review Team's view is that the reforms proposed will 'work' without a Recreational Fishing License (RFL), but will work considerably better with one.**
- 5. The Government should commit to a more detailed examination of the cost and benefits of introducing an all waters RFL in the context of any new fisheries management arrangements. The examination should test the level of support amongst the broader recreational fishing community to an all waters RFL under a range of different scenarios, including:**
 - To whom should the license apply?**
 - Which species, waters and activities should it cover?**
 - How much should it cost, and how much could be expected to be raised?**
 - For what purposes could the funds be spent?**
 - Who would administer the funds, and under what governance model?**
 - How would any new RFL interact with the existing SIPS and RUF fees – e.g. would they be rolled into a single scheme?**
 - How would recreational fishers be able to have their say on how the funds should be spent?**

The study should involve a very high level of consultation with recreational fishers, and ultimately provide advice to Government on the level of support for various options, the pros and cons of each and make recommendations on a proposed plan of implementation for any preferred future model.

- 6. To ensure equity between sectors, the introduction of any new recreational licensing regime should be introduced in parallel with new commercial cost recovery arrangements.**

6. Implications for the main fisheries

This section sets out the main implications from the recommended future management model on the main Queensland fisheries. Each section commences with a discussion of the main challenges facing the relevant sector, and concludes with a discussion of the Review Team's recommended future approach to management. Where possible and relevant, alternative options to deliver on the proposed Government policy objectives are provided, together with the pros and cons.

The recommendations in this section are not presented as 'boxed' recommendations in the same way as the sections above to allow some flexibility for stakeholders, Fisheries Queensland and Fishery Councils to translate the intent of the recommendations above into practical actions at the fishery level. Nevertheless, the proposed arrangements outlined below should serve as the clear 'default' option for future management in accordance with the proposed management model, and we would caution against a situation that allowed recommendations to be adopted at the higher level without then giving those recommendations practical effect at the fishery level (which ultimately is 'where the rubber hits the road'). Where arrangements other than those outlined below are adopted, clear practical, legal or financial justification should be provided as to why the alternative better achieves the intent of the recommendations above, or otherwise avoids an unintended consequence.

6.1. Crab Fisheries

Current situation and main challenges

Mud crab and blue swimmer crab fisheries

The main challenge in the crab fisheries, with the exception of the spanner crab fishery, has been the absence of active management and structural reform for over two decades. Notwithstanding the very recent measure to allow the combination of two C1 symbols on a commercial primary license, following the issue of C1 symbols in the commercial sector and the introduction of a four pot per person and 10 mud crab in possession limit for the recreational sector, little additional active management has taken place. The fact that management arrangements in the crab fishery remained relaxed while considerable rationalisation was occurring in other parts of the Queensland fishery meant that the crab fishery has acted as a 'sump' for displaced fishing effort. Irrespective of the reasons for this, this has led to a situation where we still have over 400 C1 symbols in the commercial sector providing access across multiple species, stocks and areas and a recreational sector that has limited overall controls on catch or effort.

The net result is there is too much potential effort in the crab fishery and existing arrangements are not sufficiently sophisticated to control catch both within and between sectors. There is no recreational bag limit on blue swimmer crabs, the existing recreational bag limit on mud crabs leaves considerable scope for black marketing, and all sectors recognise that the primary existing control on commercial effort – i.e. the 50 pot limit – is largely unenforceable. In addition, we have no regular stock assessment of either species with the status of east coast stocks of both species listed as 'uncertain' in the 2012 stock status report. There is also a widespread view that the prospect of history-based allocations in the commercial sector has compromised the logbook data to the extent that it's effectively unusable. These arrangements are not befitting of a species, in the case of mud

crabs, that are iconic to Queensland, command a beach price of up to \$60/kg on the domestic market and are one of the most sought after recreational fishing targets.

The good news however is that both mud crabs and blue swimmer crabs are naturally relatively resilient species and, with more active appropriate management arrangements, can form the basis of a profitable and socially valuable fishery.

Spanner crab fishery

Catches in the spanner crab fishery are dominated by the commercial sector, with very little recreational harvest occurring. ITQs were introduced into the commercial spanner crab fishery in 1998 and considerable rationalization of the fleet has occurred. The fishery has operated under a harvest strategy with defined decision rules for a number of years, and to that extent the fishery is seen as a bit of 'poster child' for good management in Queensland, albeit we understand the economic fortunes of the fishery have varied considerably. The main issues raised with the Review Team in relation to the spanner crab fishery were the inconsistent application of general fisheries permits allowing additional gear in recent years, and a general question about whether input controls (e.g. vessel size limits, pot limits) were still needed in a quota managed fishery.

Proposed future arrangements

Each of the main stocks of crabs in Queensland should be managed separately – that is, east coast mud crabs, Gulf of Carpentaria mud crabs, east coast blue swimmer crabs and spanner crabs.

Each of these stocks should be classified as a Tier 1 species, with a total allowable catch (TAC) set periodically. Explicit shares of each stock should be allocated to the three main sectors: commercial, recreational and customary. The commercial sector share should be managed through ITQs. The recreational sector share should be managed through bag limits, with bag limits set at a level that constrains recreational harvest within the sector's share and equitably distributes fishing opportunities amongst the sector.

A separate harvest strategy should be developed for each stock consistent with the Government's harvest strategy policy and operational guidelines. Harvest strategies should set out a target stock size (MEY), target, limit and threshold reference points and a framework of pre-agreed decision rules aimed at achieving stock management objectives. Each sector's share of the TAC should move up and down according to their relative share of the fishery. Changes in sectoral allocation after the initial allocation of shares should be market-based.

A key question for the Review Team was whether the east coast mud and blue swimmer crab fisheries should be zoned to better control spatial harvest of stocks. To this end there are legitimate arguments either way. While we understand both species are a single stock across the east coast, local abundance is heavily influenced by environmental factors such as rainfall in different catchments. Zoning may allow for better local scale responses to spatial variation in recruitment, and given the linkages to the inshore fin fish fishery in both the commercial and recreational sectors, may better fit with proposed arrangements in that fishery. Nevertheless, strict application of zoning would mean allocation at a regional scale, the possible creation of regionally-based crab Fishery Councils, and the adoption of regionally-based harvest strategies. There is nothing inherently wrong with this approach although it may be more costly and possibly more difficult to implement. One

option would be to have a single east coast Fishery Council and harvest strategy, but with a spatial component that broke the overall TAC down into regional components and varied these based on local factors. Numerous other TAC managed fisheries operate in a similar way (e.g. Western Australian Abalone Managed Fishery). These options should be discussed with stakeholders in the context of bringing in new arrangements.

Irrespective of the option chosen allocation of ITQs in the commercial sector will be a challenge given the state of the logbook data, as well as the time elapsed since the first of the investment warnings (2003). While the issue of allocation is complex, it should not be used as a reason not to move to ITQs. Our suggestion would be to use an independent allocation panel who can examine the veracity of logbook data as well as consider fairly the issues associated with the use of the investment warnings.

Following the introduction of ITQs in the commercial sector, input controls in the fishery should be reviewed. If the primary stock management tool is ITQs, on the face of it there is little need for pot limits and the evidence presented by stakeholders suggested these were, in any case, very difficult to enforce. Nevertheless, we accept that there may be other reasons to continue with pot limits at least in the very short term.

Similarly, following the allocation of ITQs to existing C1 symbol holders there is a legitimate question about whether we need to maintain a C1 symbol. While the existing symbol currently has value because it allows access to a fishery, in future the value of the asset should transfer to the quota. Removal of the C1 symbol (and allowing crab quota to be tied directly to a primary license) would remove a barrier to entry into the fishery and allow efficient quota trading between commercial licenses. Nevertheless, perhaps one good reason to maintain the C1 is to link the catch of crab quota to specific compliance regime relevant to the fishery. If this was the case, care would need to be taken that the C1 didn't become an unproductive barrier to entry in the fishery and an impediment to efficient harvest of the quota.

In association with the introduction of quota, the prospect of tagging mud crabs for compliance purposes should be investigated. The Review Team is a supporter in principle of tagging, although is conscious of the views expressed by a number of crabbers that any tagging scheme would in effect become a Queensland 'brand', and this may be better introduced following any initial rationalisation of the fishery. These issues should be discussed with the relevant Fishery Council.

Finally, in the mud crab and blue swimmer crab fisheries the need to retain the prohibition on females should also be considered in the context of the introduction of new, stronger arrangements in the fishery. Queensland is the only State in Australia that prohibits the take of females and while the logic behind the prohibition is strong in the current environment of generally weak arrangements (because the ban on females serves as a 'biological safety net'), the logic is weaker where the broader arrangements are stronger and may not be consistent with optimal use of the resource. Even if the prohibition on females is relaxed as part of a more sophisticated harvest strategy, it may be done conservatively (e.g. by having a higher minimum legal size for females).

The main issues in the spanner crab fishery would be to ensure its existing harvest strategy is consistent with the Government's overarching harvest strategy policy, and to consider whether the existing array of input controls which remain in the fishery (e.g. vessel size, pot limits) are still

required. Consistent with the reverse onus of proof discussed above, our view is that unless very good reasons exist for these limits to be retained, they should be removed. The review of input controls in the fishery should also include examining the need to retain both the C2 and C3 symbols.

6.2. East Coast Trawl Fisheries

Current situation and main challenges

The Queensland East Coast Otter Trawl Fishery (ECOTF) is the State's largest and most economically important commercial fishery. The fishery operates from the Gold Coast to Cape York and retains a range of prawns, scallop, bugs and by-product species. Around 301 (out of 440) licenses were active in 2013, generating a GVP of over \$90m. The fishery has been subject to considerable rationalisation over the past 15 years, with numbers of licenses dropping from around 800 in 1999 to 440 (T1–392; T2–23; M1–47; M2–25) in 2013. Although the ECOTF is managed under a single effort unit regime (apart from M2s), the fishery comprises a number of relatively discrete sectors – e.g. eastern king prawn, saucer scallops, tiger/endeavour prawns, banana prawn, red spot king prawns.

The fundamental challenge in the ECOTF is the 'overhang' of unused effort units. Of the 2.9 million effort units available in the fishery, around one half to one third have not been used in recent years. Effort in the fishery is effectively controlled by economics, not by an effective catch constraint. This is reflected in the price of effort units.

Our view is that unused effort is not an immediate biological or ecological problem, but does represent a very significant structural economic problem in that it serves as a substantial disincentive to improvements in management to create more value. In short, why 'invest' in improved management when the benefits of better management can get soaked up by excess effort units re-entering fishery? While a number of trawl operators expressed the view during consultations that 'latent' operators would never re-enter the industry, our experience suggests that if the economic circumstances surrounding the fishery improve they will.

Accordingly, if the issue of unused effort units is not addressed in some way, the fishery will continue to bump along at its 'open access equilibrium point'. While good operators can still find ways of making money in this environment, and therefore reinvest in their businesses, net economic returns from the fishery overall are likely to be effectively nil and most operators are continuing to run down capital assets.

As described above, the reality is that the east coast trawl fishery is an historical administrative amalgam of a number of quite different 'fisheries' – e.g. eastern king prawn, scallops, tiger/endeavour prawn, banana prawn, red spot king/blue legged king prawns and bugs. While there are some sector specific measures in place (e.g. scallop replenishment areas, scallop minimum legal size, 24 night/month cap on eastern king prawn grounds), the overall management of the fishery is still largely 'one-size-fits-all', with few dedicated measures to optimise the economic return from each sector.

Under this scenario, our judgement is that considerable potential economic value is being lost. The scallop fishery is a good example. By adopting a fairly passive approach to management, scallops are allowed to be harvested at times when meat count and market conditions are not optimal. The

unsophisticated approach to opening Scallop Replenishment Areas for example, leads to pulses of effort and catch, which depresses price and leads to less than optimal overall meat weight. The unpredictable nature of catch patterns also causes problems for processors who find it difficult to manage their workforce. Trawl fishers and processors interviewed were almost universal in their view that greater value could be generated from the fishery with a different management approach. Most thought this should involve a more structured, fine-scale approach to fishing scallop beds, including greater use of surveys to optimise fishing on scallops of the best meat weight, at the optimal market times. Similar approaches could be used in other sectors.

The challenge is to introduce new management arrangements that allow for sophisticated management to optimise the value of each individual sector, while still allowing for diversification and flexibility to access different sectors according to each individual's most efficient harvesting approach.

Future management arrangements must also be conscious that around 70% of ECOTF effort occurs within the boundaries of the GBRMP, and that the operation of the fishery needs to be consistent with Australia's world heritage obligations.

Proposed future arrangements

The main structural need in the fishery is to deal with the overhang of unused effort units – put simply, the fishery will find it difficult to progress economically without it. There are a number of possible options to move forward:

- Move to quota for the main species (e.g. eastern king prawn, scallops, tigers, red spots): a move to quota would deal with the excess effort problem directly by allocating quotas for the main species. A focus on managing catch would also allow for the removal of many inefficient input controls (e.g. gear length, horse power), deal with ongoing issues of effort creep and encourage innovation in management to maximise individual quota value. The introduction of quota for the main species would also establish relative shares in each stock which creates a framework for operators to make business judgements about how much they are prepared to 'invest' in better management of a stock on the basis of a known 'share' of the benefits in return. By contrast, under the existing universal effort unit system, there is no guarantee that an operator investing in better management will receive a share of the benefits proportional to their investment. The introduction of quotas in the fishery would require considerable thought and consultation given the complex multi-species nature of the fishery. At the present time, the Review Team detected no support for this option within the fishery;
- Could have a buyback of unused efforts units: this option would remove an amount of effort units equivalent to the unused portion from the fishery. The questions then are who pays, and then what? The main beneficiary of any effort unit buyback (apart from those selling out) would be the operators remaining in the fishery, who would benefit from less potential competition and (perhaps) increased effort unit asset value. Government has previously ruled out participating in an effort unit buyback, and the situation is unlikely to have changed. The argument for spending taxpayer

money on effort units which have not been used when the main beneficiary of the funding is not the general public, but a defined group of private trawl operators, is not a strong one. The other question is: and then what? After funding an effort unit buyback, if the fishery is still managed by a universal effort unit regime allowing all operators uniform access to all species and with the same number of active effort units in existence, the fishery is essentially in the same position (just several million dollars worse off if the industry funds the buyback). If changes are not made to strengthen the underlying economic performance of the fishery, the case for a buyback seems weak and the fishery will continue to operate an open access equilibrium;

- Could deal with excess effort under the existing effort unit system: this option would involve the development of more sophisticated harvest strategies for each main stock, controlled through closures and other additional input controls in order to optimise the value of each sector. For example, in the scallop sector this may involve greater fine-scale spatial management of stocks, greater use of pre-harvest surveys and more sophisticated opening and closing of scallop beds to optimise meat weights and market timing. Similar approaches may be possible in the other main sectors. While this approach is attractive in the sense that it begins to think about optimising the value of each main sector, the main downside is that without some definition of relative shares in the stock, there is no guarantee that those who 'invest' in better management and exercise restraint for the prospect of larger future returns will reap the benefits. Using the scallop example, unless some other controls are put in place, all vessels will be theoretically able to reap the benefits of better scallop management, potentially diluting benefits for boats more dependent on scallops. Nevertheless, if the benefits of retaining a universal effort unit system are thought to outweigh a greater capacity to optimise returns from each sector by defining relative shareholders in a stock, this is a legitimate option to pursue. It should be recognised however that effort unit prices under this scenario are unlikely to rise, and economic returns at either fishery or boat level are unlikely to improve consistently if unused effort returns to the fishery.

Irrespective of the option chosen above, the fishery should have a single Trawl Fishery Council (TFC). Given the multi-sectoral nature of the fishery, the TFC could have stock specific working groups (e.g. eastern king prawn, scallops, tigers etc) with the aim of optimising arrangements in each sector.

The primary initial role of Fishery Council should be to categorise each retained species into Tiers 1 to 3, and develop a harvest strategy consistent with the Government's harvest strategy policy and operational guidelines. For Tier 1 species harvest strategies should set out a target stock size (MEY), target, limit and threshold reference points and a framework of pre-agreed decision rules aimed at achieving stock management objectives. Necessarily, this will involve a greater focus on the management of individual stocks within the fishery, rather than simply overall levels of effort.

The longer term role of the Fishery Council should be to monitor the implementation of the harvest strategy and recommend future changes in catch or effort levels based on harvest strategy. The

Trawl FC would also oversee the process of ERAs in the fishery as well as advise on priorities for research, monitoring and compliance.

The list of permitted species and management measures should be reviewed on the basis of risk. Species categorised as Tier 2 species may have limits applied to maintain stocks within acceptable levels of risk. Species categorised as Tier 3 stocks on the basis that existing fishing mortality posed little risk should be able to be taken without limit, although these species should still be reported in logbooks. If updated risk assessments demonstrate changes in risk levels over time, species should be moved between tiers and management adjusted accordingly.

6.3. East Coast Inshore Finfish Fisheries

Current situation and main challenges

The East Coast Inshore Fin Fish Fishery (ECIFFF) is a very complex multi-species, multi-sectoral, multi-regional, multi-gear fishery, ranging from the NSW border to the tip of Cape York. In reality, the fishery is not one but several different 'fisheries' managed, more or less, under one umbrella. The fishery is arguably the most socially and economically important recreational fishery in the State, including 'bread and butter' target species such as bream, whiting and flathead in the southern part of the State, and prized angling species such as barramundi in the northern part. The fishery is also an important source of fresh local fish for coastal communities and the tourist trade. Around 606 commercial netting licenses were active in the fishery in 2012-3, taking 4804t of product for an estimated GVP of \$19.9m. The State Government's recent \$9m net license buyback scheme removed around 25% of potential net fishing effort. The commercial sector retains a wide range of species, though the highest value stocks include mullet, whiting and barramundi. The ECIFFF is also an important source of subsistence food for customary fishers.

The abundance of most stocks in the fishery are influenced by local scale environmental factors such as rainfall. Recruitment and stock availability can vary by region/catchment over time and is not uniform across the state. Multiple stocks of some of the key species – e.g. barramundi – exist along the east coast. This ecological complexity must be reflected in an increasingly sophisticated approach to the management of these fisheries over time.

Box 3: A Drought on Land; A Drought at Sea: an Introduction to the ecology of Queensland's Inshore Fisheries

Like most of Australia, the vegetation of Queensland is adapted to hot dry conditions relieved by intermittent and often intense periods of rainfall. Rain transforms the vegetative cover of the State and that transformation is often dramatic and easily observed. In contrast, the face of the ocean presents a far more constant appearance. Beneath the surface, however, the biological activity in the near shore marine ecosystems is far from even.

The biological activity of many of the great fisheries in the world is driven by the collision of warm and cold ocean currents such as the confluence of the Labrador Current and the Gulf Stream off the Grand Banks of Canada. That mixing stirs up sediments from the darkness of the seafloor into the sunlit surface layers of the ocean where it provides essential nutrients for photosynthesizing phytoplankton. In turn, this phytoplankton is consumed by zooplankton and provides a foundation of food energy supporting the complex trophic levels

of predator and prey that make up a marine ecosystem.

In the coastal fisheries of Queensland, sediment and nutrients do not reach phytoplankton and the base layers of marine food-webs through the mixing of ocean currents but are carried from land into the ocean by rivers, particularly rivers in flood. In normal flows, sediment and nutrient load in rivers is relatively low but that load soars when heavy rains scour the hinterland. The pulse of nutrients delivered by swollen rivers to the sea is the lifeblood of Queensland's inshore marine ecosystems. That lifeblood is delivered by a heartbeat that is as irregular and strong as the rainfall events in particular catchments. Hence the adage "a drought on land, a drought at sea".

This particular nutritional dynamic poses unique challenges and unique opportunities for the management of inshore fisheries in Queensland:

- Just as the productivity of land ecosystems fluctuates greatly with rainfall, so it is with fisheries production. Fisheries harvesting by commercial, recreational and customary sectors must therefore be able to respond to both short periods of plenty and longer periods of paucity.
- Local marine productivity in the inshore is driven by local catchment events. Not all rivers receive rainfall at the same time so different parts of the Queensland Coast will experience fisheries plenty or fisheries paucity at different times. Fish harvesting effort must be controllable on a geographic scale sensitive to such regional differences.

Marine productivity lags rainfall and is therefore predictable. To the extent that longer term rainfall predictions are accurate, longer term fisheries productivity predictions can also be made that allow efficient planning of sustainable harvesting operations⁷.

Overall catch in both the recreational and commercial sectors is not tightly controlled within the ECIFFF, except for some species in the commercial sector for which there is a competitive TAC (e.g. sharks and rays, grey mackerel, spotted mackerel, tailor). Neither sector has rights to the resource that could be considered secure.

The fishery is characterised by significant conflict between the sectors over resource allocation. The level of conflict and issues involved are relatively consistent throughout the State— it is only the species in conflict which are different. Conflict is caused in large part by the differences in gear used between the sectors. In the crab pot fishery and reef line fishery, for example, many recreational fishers can 'live with' competing against commercial fishers because the gear used is essentially the same. In the inshore fin fish fishery, recreational fishers use hooks and lines while the commercial sector uses nets. In the absence of limits on the amount commercial fishers can harvest, recreational anglers see this as an unfair fight. At present there is no structured process to resolve these differences, other than by the fairly messy process of attempting to have the other sector banned through political decision.

The net fishery regulations in Queensland are exceedingly complex. They are the product of piecemeal decisions over decades, many of which have made legitimate attempts to solve isolated disputes over resource access and other issues. The net result (sic), however, is that the existing

⁷ See: Sawynok, W, Infofish Australia. "Looking into the "Crystal Bowl", June 2014, Predictions Compared with Observed 2014 Barramundi Season Fitzroy River and Gladstone. (16 pages)

regulations are hard to understand, difficult to enforce and undermine attempts and efficiency and innovation, even where such innovation may result in environmental benefit.

In addition to the above complexities, the commercial net fishery also has an important level of interactions with species of conservation interest (SOCI) such as dugongs, turtles and dolphins. Considerable action has been taken over the last two decades to minimise interactions (e.g. introduction of DPAs, attendance at net requirements), however the ongoing presence of (particularly large mesh) nets in the water with SOCI is one that requires ongoing management attention.

Perhaps more than any other fishery, there is a very strong sense of ownership by locals over their inshore fin fish stocks. The Review Team witnessed the esteem in which local stocks of species such as barramundi, grunter, king and blue threadfin, bream, whiting, flathead and tailor were held during both public meetings and in written submissions. The fact that there is no current formal structure for local fishers to have a say on the future of their fisheries is a source of frustration and disenfranchisement from the management process.

Proposed future arrangements

The ECIFFF should be zoned into an appropriate number of zones to allow for regional scale control over stocks, and facilitate greater involvement of local fishers in the management process. While stakeholders and FQ are better placed to define the precise boundaries of the zones, our thinking is the appropriate number would be between four and eight zones. The size of the zones would balance the need to retain local scale control over stocks (to be able to respond to catchment/large embayment scale differences in stock availability) with cost and practicality. Where possible, 'natural geographical break points' should be used to identify zone boundaries.

Each zone should have a Fishery Council whose composition reflected the broad catch shares of the zone. The process of categorising ECIFFF stocks into Tiers 1 to 3 (or at least for Tier 1 stocks) should ideally be done at a statewide level to ensure consistency between zones. The primary initial role of each zonal Fishery Council would be to develop a harvest strategy consistent with the Government's harvest strategy policy and operational guidelines.

Each Tier 1 stock should have a total allowable catch (TAC) set periodically for each zone. Explicit shares of each Tier 1 stock should be allocated to the three main sectors (commercial, recreational and customary) in each zone. The relative shares in each zone may differ based on catch history or other factors.

The commercial sector share of Tier 1 stocks should be managed through ITQs, with sufficient input controls retained to maintain Tier 2 within acceptable levels of risk. Where input controls on a Tier 2 stock begins to constrain the efficient harvest of Tier 1 stocks, consideration should be given to elevating these stocks to Tier 1. The commercial sector should have the flexibility to move between zones, but must lease or buy quota in Tier 1 stocks from within commercial sector share for that zone.

Existing input controls on the commercial sector should be reviewed in the context of introducing ITQs for Tier 1 species, and in the context of the reverse onus of proof. This includes a review of

the extremely complex array of symbols, gear limits, time limits, closures and other existing measures.

Recreational bag limits for Tier 1 species should be set to constrain catch within the recreational share (as well as distribute it equitably amongst anglers), and maintain Tier 2 species within the levels of acceptable risk. Recreational catch monitoring needs to be able to track catch against share (in reasonable terms), as well as trends in catches of Tier 2 and 3 stocks to allow for ongoing risk assessment.

For Tier 1 species, harvest strategies should set out a target stock size (MEY), target, limit and threshold reference points and a framework of pre-agreed decision rules aimed at achieving stock management objectives. Each sector's share of the TAC should move up and down according to their relative share of the fishery. Changes in sectoral allocation after the initial allocation of shares should be market-based. The shared nature of some stocks with NSW (e.g. mullet) should be considered in the development of the harvest strategy.

Of particular relevance for the zonal FCs, these bodies will not have a role in deciding the initial sectoral allocation of Tier 1 stocks, but may advise on spatial arrangements for harvests where there is local agreement.

The longer term role of the Fishery Council should be to monitor the implementation of the harvest strategy and recommend future changes in catch levels based on harvest strategy.

Each zonal FC would oversee the process of ecological risk management for their zone, including overseeing and contributing to an ecological risk assessment. The process of undertaking ERAs and risk mitigation measures at the regional scale will allow for more sophisticated, fine-scale solutions to ecological risks. Each zonal FC would also advise on priorities for research, monitoring and compliance. Each FC would be supported by an FQ Fishery Manager, although one manager may support multiple councils for consistency and cost effectiveness.

6.4. East Coast Offshore Finfish Fisheries

5.6.1. Coral reef and Spanish mackerel fisheries

Current situation and main challenges

The coral reef fin fish (CRFFF) and Spanish mackerel (SMF) fisheries are important both to the recreational and commercial sectors. The CRFFF is largely focused on the waters of the GBRMP, while the Spanish mackerel are taken from the NSW border to the tip of Cape York. Around 226 licenses were active in the commercial coral reef line fishery in 2012-3, largely targeting coral trout, red throat emperor and other species such as tropical snappers and cods, for a GVP of over \$30m. In the commercial Spanish mackerel fishery, around 168 licenses (out of 252) were active in the fishery in 2012-3, harvesting 261t of product for a GVP of around \$1.8m. In 2010, the recreational sector harvested around 36,208 Spanish mackerel, or around 278t accounting for 35% of the overall statewide harvest that year⁸. In the same year, the recreational sector harvested around 104,000

⁸ Taylor, S, Webley, J and McInnes, K (2012). 2010 Statewide Recreational Fishing Survey. 82pp.

coral trout, over 65,000 red throat emperor and around 300,000 snappers, cods and emperors combined, although it is not known what proportion of the overall harvest these numbers account for.

Much of the necessary structural reform of the Coral Reef Fin Fish and Spanish Mackerel Fisheries has been completed with the introduction of quota to the commercial sector and development of TAC decision rules, at least for coral trout. The fundamental outstanding challenge in the fishery is to incorporate recreational and customary catches in the TAC and harvest strategy. Put simply, stock management objectives in a shared fishery can't be achieved if only one sector of the fishery is subject to effective overall controls on catch. The absence of effective controls on all sectors weakens the security derived from good stock management for all.

Harvest strategies and TAC setting decision rules are also required for the red throat emperor and Spanish mackerel sectors.

In the commercial sector, inefficiencies associated with maintaining a large suite of input controls (e.g. boat length, dory numbers, complex regime of symbols) is hurting profitability and contributes to under-catch of quota, which has been substantial in recent years. In the Spanish mackerel fishery only 42% of the quota was harvested in 2012-3. Similarly, in the CRFFF, only 55% of the coral trout and 31% of the red throat emperor quota was taken in the same year. In the coral trout fishery, high catching costs means the harvest strategy needs to target high catch rates, which in turn means the stock size should be maintained at levels well above MSY.

In the recreational sector, there is an absence of good data about catches of many important reef species, and there was concern about the complexity of bag limits and about the prohibition on filleting at sea (particularly in the Mackay area).

There was also concern from both sectors about some size limits – for example, there is a blanket 38cm MLS on cods and many species don't grow that big. While it may seem like an effective conservation measure, in practice given the high rates of post release mortality and predation by sharks, many released cods are likely to die. Moreover, there was concern about the ongoing prohibition of barramundi cod and Maori wrasse and whether this was scientifically justified (also in the context of high rates of post release mortality).

Proposed future arrangements

A Coral Reef Finfish Fishery Council should be established as the primary source of technical advice about future management arrangements in the fishery. There is a question about whether to incorporate Spanish mackerel into the Coral Reef Fishery Council or have a separate council given the fishery extends south of the 'coral reef' area and includes some different fishers. Our default view is that it should be included in the Coral Reef Fishery Council – which perhaps should establish a separate Spanish mackerel sub-committee – largely on the basis of cost and practicality. This issue should be considered with stakeholders however in the implementation of new arrangements.

The primary initial role of Coral Reef Fishery Council should be to categorise each retained species into Tiers 1 to 3, and develop a harvest strategy consistent with the Government's harvest strategy policy and operational guidelines. One option for ease of transition would be to commence with coral trout, red throat emperor and Spanish mackerel as the Tier 1 species given their 'individually

managed' status at the moment. Shares of Tier 1 species should be allocated to each of the three sectors: commercial, recreational and customary.

For Tier 1 species, harvest strategies should set out a target stock size (MEY), target, limit and threshold reference points and a framework of pre-agreed decision rules aimed at achieving stock management objectives. Each sector's share of the TAC should move up and down according to their relative share of the fishery. Changes in sectoral allocation after the initial allocation of shares should be market-based. In the development of the harvest strategy, the Fishery Council should consider whether any spatial structuring of harvests would be beneficial.

The longer term role of the Fishery Council should be to monitor the implementation of the harvest strategy and recommend future changes in catch or effort levels based on the harvest strategy. The Coral Reef FC would also oversee the ecological risk management process in the fishery as well as advise on priorities for research, monitoring and compliance.

Recreational bag limits for Tier 1 species should be set to constrain catch within the recreational share (as well as distribute it equitably amongst anglers), and maintain Tier 2 species within the levels of acceptable risk. Recreational catch monitoring needs to be able to track catch against share (in reasonable terms), as well as trends in catches of Tier 2 and 3 stocks to allow for ongoing risk assessment.

Consistent with the discussion under 'compliance' above, VMS should be introduced on all reef line fishery primaries and dories following trials to ensure practicality. The AIVR system can be discontinued following the introduction of VMS given the capacity to 'geofence' by VMS polling.

In the commercial sector, the complex array of symbols, authorities and input controls should be reviewed in the context of the reverse onus of proof on input controls. Many of these controls are likely to be a considerable barrier to efficient harvest of the quota. Under the existing arrangements, a commercial fisher needs five separate fishing authorities to catch a coral trout – a master fisherman's license, a primary fishing boat license, an 'L' symbol, an 'RQ' symbol and CT quota. Of these, it is hard to see the fishery management value in the RQ symbol and equally there appears limited value in retaining L symbols in an output managed fishery, other than to link catches to specific compliance regime.

Equally, the arguments to retain a cap on dories in the fishery appear weak, although we accept that licenses with different numbers of dories have different asset values and this issue is a challenging one particularly for those holding L symbols with higher numbers of dories. Our default view is that having set a conservative TAC consistent with MEY and having shared this equitably amongst the sectors, commercial fishers should be able to harvest their share of the fishery in the way that best suits their business. If it best suits their business to harvest their quota using three dories, we see little argument why they shouldn't be able to do so. While we accept that there are social and other reasons why dory numbers shouldn't be unlimited, we see no reason why all fishers shouldn't be able to use the maximum number of dories currently allowed which is six. In practice, we doubt most fishers with licenses holding fewer dories will increase to six given the costs involved, challenges with finding and retaining good crew and the need to balance capital investment with quota availability, but the removal of dory limits would remove an unnecessary barrier to efficient quota harvest.

In addition, administrative arrangements are required to allow for retrospective balancing of quota within a defined period of time (e.g. 28 days). Equally, incidental catches of quota species in other gears should be able to be covered with quota rather than forcing fishers to discard.

While issues in relation to compliance have been covered above, there was considerable concern expressed about black marketing of reef fish throughout all ports effectively from Bundaberg north. Commercial fishers in many ports shared common experiences that it was difficult to sell either reef fish or Spanish mackerel following a weekend of good weather. While there few specific details given, the consistency of the concerns expressed and their widespread nature indicates this is an issue that should be investigated as a priority by FQ, in the context of a more sophisticated, risk-based approach to compliance and using any new compliance powers.

Specific concerns were also raised with the Review Team about the integrity of the coral trout quota documentation system. Because coral trout over 1.5kgs are paid on a 'per piece' rate (i.e. per fish, irrespective of size), there is an incentive to record smaller weights on catch documentation forms in order to have less quota decremented from an individual's balance. If there is collusion between fisher and buyer about smaller weights, this would be very difficult to pick up through documentation alone. Nevertheless, a number of people involved in the sector suggested any quota evasion by recording smaller weights should be relatively easily picked up by analysing average fish weights in different regions, as well as through intelligence. We suggest this issue be specifically examined through the coral reef fin fish compliance risk assessment process.

5.6.2. Rocky reef fisheries

Current situation and main challenges

The rocky reef fin fish fishery is an economically and socially important fishery, focused on species such as snapper, pearl perch and teraglin jew. Catches are dominated by the recreational sector, particularly in the south east corner of the State, with around 65% of snapper taken by recreational anglers. The majority of catches are taken using trailer boats, although there are active charter and commercial line fishers.

The rocky reef fishery has not been subject to the same management reforms as the coral reef fishery. Around 238 L1 symbols exist (as well as 202 L2s and 1050 L3s) taking around 120t of rocky reef fish in 2013. There are no TACs or ITQs for the fishery and many of the available symbols remain largely underutilised. The recreational sector is limited through bag and size limits, although there is no overall control on catch from the sector.

The status of snapper has been questioned by some stakeholders, however the best available science suggests the stock is currently overfished. The status of other key species - e.g. pearl perch, amberjack and teraglin – remains uncertain. Catch per unit effort in the commercial sector has been consistently declining in the commercial sector in the period 2010 – 2013, and there has been concern expressed by commercial fishers about some of the key deepwater stocks (e.g. bar cod).

Stocks of the key species are shared with NSW.

Proposed future arrangements

A Rocky Reef Finfish Fishery Council should be established as the primary source of technical advice about future management arrangements in the fishery. The relative importance of the recreational sector in this fishery should be reflected in the composition of the FC.

The primary initial role of Rocky Reef Fishery Council should be to categorise each retained species into Tiers 1 to 3, and develop a harvest strategy consistent with the Government's harvest strategy policy and operational guidelines. Snapper and pearl perch appear the main Tier 1 species candidates although this should be discussed with stakeholders. The shared nature of these stocks with NSW should be considered in the development of the harvest strategy.

For Tier 1 species, harvest strategies should set out a target stock size (MEY), target, limit and threshold reference points and a framework of pre-agreed decision rules aimed at achieving stock management objectives. Each sector's share of the TAC should move up and down according to their relative share of the fishery. Changes in sectoral allocation after the initial allocation of shares should be market-based. In the development of the harvest strategy, the Fishery Council should consider whether any spatial structuring of harvests would be beneficial.

The longer term role of the Fishery Council should be to monitor the implementation of the harvest strategy and recommend future changes in catch or effort levels based on harvest strategy. The Rocky Reef FC would also oversee the ecological risk management process in the fishery as well as advise on priorities for research, monitoring and compliance.

Recreational bag limits for Tier 1 species should be set to constrain catch within the recreational share (as well as distribute it equitably amongst anglers), and maintain Tier 2 species within the levels of acceptable risk. Recreational catch monitoring needs to be able to track catch against share (in reasonable terms), as well as trends in catches of Tier 2 and 3 stocks to allow for ongoing risk assessment.

Consistent with the discussion under 'compliance' above, VMS should be introduced on all rocky reef line fishery primaries and dories following trials to ensure practicality.

In the commercial sector, the complex array of symbols, authorities and input controls should be reviewed in the context of the reverse onus of proof on input controls. Many of these controls are likely to be a considerable barrier to efficient harvest of the quota. In addition, administrative arrangements are required to allow for retrospective balancing of quota within a defined period of time (e.g. 28 days). Equally, incidental catches of quota species in other gears should be able to be covered with quota rather than forcing fishers to discard. Incidental catches of rocky reef species taken in the GBRMP area should be able to be covered by quota.

6.5. Gulf of Carpentaria fisheries

Current situation and main challenges

The Gulf of Carpentaria (GoC) is a remote and unique area in the management of Queensland's fisheries. The area is home to important inshore fin fish fisheries focused on barramundi, king and blue threadfin and grey mackerel, as well as productive mud crab and Spanish mackerel fisheries. In 2013, 83 commercial inshore fin fish licenses were active in the fishery (out of 84 in total), harvesting

a total of 1623t of finfish (505t barramundi, 485t grey mackerel, 176t king threadfin) for a GVP of \$9.8m. The area is also home to a very important tourist recreational fishery, and is also the focus of a very large annual influx of 'grey nomads' over the winter months. This brings with it welcome economic benefits as well as fisheries management challenges. The area is also home to very important customary fisheries which provide an important source of food for the region's indigenous people.

In general, GoC stocks of the main species are functionally separate from east coast stocks, and some of the management arrangements are already separated – the commercial inshore fin fish fishery, offshore finfish fishery and Spanish mackerel fisheries operate under separate symbols from the east coast, and other arrangements such as the MLS of barramundi are different.

Much like the east coast, conflict and competition exists over the use of inshore fin fish stocks, particularly around the main population centres of Weipa and Karumba. Some conflict also exists between commercial and customary fishers over access to sensitive areas. In addition, the Review Team also heard of concerns expressed by local indigenous over excessive catches by grey nomads which they thought was undermining their capacity to satisfy their subsistence needs.

In the commercial inshore fin fish fishery, some concerns exist about economic overcapacity in the fishery. In the recreational sector, many people who discussed the Gulf thought it should be managed much like the Northern Territory – essentially as a tourist fishery, with a smaller number of more profitable commercial net licenses. Considerable concern was also expressed about the impacts of grey nomads on stocks around popular areas such as Karumba and Normanton. While all parties recognised the undoubted economic benefits grey nomads provide, many were concerned that fishing pressure in some areas (e.g. on grunter spawning aggregations in the Norman River) was unsustainable, and that additional education and compliance effort was required to ensure compliance with bag limits.

Proposed future arrangements

Each of the stocks in the GoC, including mud crabs, should be managed separately to the east coast. The Gulf should have its own Fishery Council with management responsibility for the main fisheries. The composition of the Fishery Council should reflect the broad rights holdings of the Gulf fisheries, although may establish sub-committees or working groups to provide input on specific fisheries.

The primary initial role of the Gulf Fishery Council would be to categorise each retained species into Tiers 1 to 3 and develop harvest strategies for each main fishery (e.g. inshore fin fish, mud crab, Spanish mackerel) consistent with the Government's harvest strategy policy and operational guidelines. Each Tier 1 stock should have a total allowable catch (TAC) set periodically. Explicit shares of each Tier 1 stock should be allocated to the three main sectors (commercial, recreational and customary).

The commercial sector share of Tier 1 stocks should be managed through ITQs, with sufficient input controls retained to maintain Tier 2 within acceptable levels of risk. Where input controls on a Tier 2 stock begins to constrain the efficient harvest of Tier 1 stocks, consideration should be given to elevating these stocks to Tier 1.

Existing input controls on the commercial sector should be reviewed in the context of introducing ITQs for Tier 1 species, and in the context of the reverse onus of proof. If ITQs are not introduced for Tier 1 species, alternative arrangements must deliver the objectives and intent of the proposed strategy.

Recreational bag limits for Tier 1 species should be set to constrain catch within the recreational share (as well as distribute it equitably amongst anglers), and maintain Tier 2 species within the levels of acceptable risk. Recreational catch monitoring needs to be able to track catch against share (in reasonable terms), as well as trends in catches of Tier 2 and 3 stocks to allow for ongoing risk assessment.

For Tier 1 species, harvest strategies should set out a target stock size (MEY), target, limit and threshold reference points and a framework of pre-agreed decision rules aimed at achieving stock management objectives. Each sector's share of the TAC should move up and down according to their relative share of the fishery. Changes in sectoral allocation after the initial allocation of shares should be market-based.

The Gulf FC should not have a role in deciding the initial sectoral allocation of Tier 1 stocks, but may advise on spatial arrangements for harvests where there is local agreement.

The longer term role of the Fishery Council should be to monitor the implementation of the harvest strategy and recommend future changes in catch levels based on harvest strategy.

The Gulf FC would oversee the process of ecological risk management for the main fisheries, including overseeing and contributing to an ecological risk assessment. The Gulf FC would also advise on priorities for research, monitoring and compliance.

The Gulf FC should be supported by a FQ Fishery Manager, who would ideally be based in Karumba or elsewhere in North Queensland.

6.6. Harvest Fisheries

The group of fisheries collectively referred to as the 'harvest' fisheries are a diverse group of fisheries targeting a wide range of species typically through hand collection methods. These fisheries are almost exclusively commercial, or commercial and customary. Many harvest fisheries have relatively few operators, but target relatively higher value species such as beche de mer, tropical rock lobster, aquarium fish and coral. Given the unique and diverse nature of these fisheries, the Review Team has not attempted to make specific comments on preferred future arrangements in these fisheries.

Our impression from talking with Fisheries Queensland and operators in some of the fisheries is that the limited number of licenses in some fisheries has allowed for the development of innovative harvesting arrangements that are proving effective (e.g. rotational harvesting in the beche de mer fishery). Whether formal harvest strategies setting out target stock sizes and reference points are applicable will likely depend on the target species involved. They are likely to be applicable in the tropical rock lobster fishery, for example, but less applicable in the coral collection sector.

Moreover, whether a single formal Fishery Council should be established for the harvest sector should be discussed with stakeholders. Our initial sense is that the nature and diversity of fisheries

involved means they may not be well-served by a single Fishery Council, but stakeholders may see value in some form of consultative arrangement to co-ordinate higher level policy across the sector.

7. Other matters in scope

7.1. Freshwater fisheries

Notwithstanding a small commercial eel fishery, freshwater fisheries are exclusively used by recreational and customary fishers. Both inland rivers and stocked impoundments support highly prized freshwater fisheries which make valuable contributions to regional economies. The 2010 Queensland recreational fishing survey showed that freshwater fishing accounted for around 14% of Queensland's total angling effort, accounting for around 350,000 'fisher days'⁹.

Fish stocking generally....

Fish stocking occurs because many native species will not breed in impoundments and therefore require regular stocking to improve fishing opportunities for recreational fishers. Stocking in rivers is often used as a way to improve fishing by re-introducing local fish stocks to streams and rivers that have been previously overfished or have been subject to environmental or habitat changes.

There are four main components of fish stocking in Queensland. They are:

- impoundments stocked under the Stocked Impoundments Permit Scheme (SIPS);
- conservation stocking (jungle perch, Mary river cod etc);
- impoundments stocked but not as part of the SIPS Scheme; and
- the stocking of freshwater rivers and streams.

Fish stocking is undertaken by local groups of interested fishermen who donate their time and effort to try to improve fishing opportunities for locals and visitors alike in their local impoundments and rivers. There are around 70 separate fishing stocking groups in Queensland and this number varies through time as interest levels increase or decline particularly in the non-SIPS groups.

Freshwater stocking in a formal sense started in Queensland in the late 1980's with the introduction of the Recreational Fishing Enhancement Program which provided \$1 million a year for three years to support stocking. When this funding ceased, funding was still provided to the scheme but at a lower level by the Queensland government. Then in 2000 the SIPS was introduced first to some 28 impoundments and then was extended over time to the current 32 impoundments. With the introduction of SIPS the government continued to provide to non-SIPS stocking groups around \$168,000 a year to assist with the purchase of fingerlings, however this funding ceased in 2012 and since then these groups have had to raise their own funding through chook raffles and local fund raising efforts.

The freshwater impoundments in Queensland vary in size but it is estimated that there are 182 locations (including some rivers) that are stocked or can be stocked, of which 32 are impoundments stocked under the SIPS, 46 new impoundments that are stocked by volunteer groups but not under

⁹ Ibid. Taylor et al (2012)

SIPS (but who have made application to be involved) and 104 locations that are currently stocked. Some of these locations could be suitable for inclusion under the SIPS, however 66 of these locations are river tributaries or small lagoons and the remaining 38 locations may not have the physical capacity to support an open access recreational fishery, or may not wish to have open public access to their fishery. Fish stocking groups are represented in Queensland by the peak body called the Freshwater Fishing and Stocking Association of Queensland (FFSAQ).

The Stocked Impoundment Permit Scheme (SIPS) - the best scheme in Queensland...

One of the stand-out programs conducted by FQ in conjunction with the community was the SIPS scheme which commenced in Queensland in 2000. The scheme is universally well regarded; local groups participated in the scheme voluntarily and with significant interest and enthusiasm. This same level of enthusiasm was found in the other stocking groups as well even though that were not benefiting from the umbrella of the SIPS. People who participated in the review strongly recommended that access to the SIPS be extended to all impoundments in Queensland and that the administration of the program be tightened and improved.

The scheme is administered by FQ and funded by a permit fee that then allows access to the impoundment. The fees charged are as follows:

- \$8.00 for a weekly permit;
- \$40.00 for a yearly permit; and
- \$35.00 for a yearly discount permit.

The funds are either collected through an online permit payment arrangement or by local small businesses that see commercial benefit in participating in the scheme (gear, fuel, accommodation, food sales etc).

In the financial year 2013/14, 54,635 permits were sold raising \$1,000,003. FQ retained 17% of these funds or \$165,003 for administration of the scheme and \$835,000 was made available for restocking. The funds available for fish stocking are then divided among the impoundments on the scheme according to a formula. The formula is based on calculations of 50 per cent allocation on angler preference and 50 per cent allocation on the size of dam, with the angler preference allocation determined by the impoundment or dam that is ticked in the 'Nominate Your Preference' field on a SIP by the angler purchasing the permit.

The few frustrations people were experiencing with the scheme were:

- Availability of fingerlings for stocking;
- The requirement to use local native stock for brood stock even though restocking of non-local species may have occurred in the past, or because fingerlings for species such as barramundi may not be readily available; and
- The lack of compliance officers to service the vast distances of inland Queensland.

Voluntary impoundment stocking (non-SIPS)

Dedicated anglers with a passion for freshwater fishing often band together in voluntary stocking groups to stock dams or weirs that are not part of the SIPS. These groups raise their own funds to

purchase fingerling and negotiate with the impoundment management for access and restocking permission. In a limited number of cases these voluntary groups allocate their own permits to people wishing to fish in the dam and are willing to voluntarily pay for the experience.

As noted above, many of these non-SIPS groups have made application to be involved in the SIPS scheme.

The disadvantage for these non-SIPS groups with voluntary permitting arrangements is that they are not under the formal FQ SIPS and as such cannot control access, enforce payment and compliance. Now that the annual funding to these non-SIPS groups has ceased, the groups go to significant effort to raise the necessary funds to undertake the stocking and this depends very much on the activity and interest of the voluntary groups at any point in time and at times this can mean only a handful of people take responsibility for the initiative to restock.

Voluntary river and stream stocking

This scheme operates similarly to the approach outlined above for voluntary impoundment stocking and relies on a network of dedicated volunteers who obtain the relevant permissions from FQ to undertake the stocking activities. Again the disadvantages and issues are in not being able to regulate access or to issue permits and as such much local effort goes into raising funds for restocking that then benefit locals and visitors alike.

Freshwater habitat and pest fish

The issues of freshwater habitat decline and the impact of pest fish (Carp and Tilapia) were raised at a number of meetings with the review team. Fishers felt that the impact of farming on both habitat and water quality for native fish was not taken into account when governments made decision on issues such as land clearing and agricultural development and this contributes to some fish requiring conservation stocking as they are listed as threatened or endangered under environmental legislation.

Pest fish as in other parts of the Murray/Darling river system continue to have a major impact on water quality and habitat and provide competition for native species. The number of pest fish seems to expand over time but the established group includes carp, tilapia and red-fin. Queensland contributes to pest fish management through the Freshwater Working Group of the Australian government's National Biosecurity Committee.

Proposed future arrangements for fish stocking and freshwater fisheries management

Given the largely "put and take" nature of impoundment and re-stocked river fisheries and the absence of a commercial fishery on any of these restocked species the approach to management is quite different from the commercial marine fisheries. There is no requirement to have these re-stocked fisheries assessed and categorized under tier 1-3 structure. What is necessary would be an ERA approach on native fish stocks in rivers and then some assessment if certain regional stocks were seen to be endangered.

The Freshwater and restocking fisheries should have their own Fisheries Council. This Council should operate under the same rules and structures as other Fisheries Councils and have an independent

Chair and appointed members reflective of the groups involved in the sector. The activities of the group however, would be quite different and would include advice and decisions on bag limits and size limits, advise on stocking guidelines, review the impact including downstream impact of stocking programs, exotic and pest fish, hatcheries and fingerling availability harvest arrangements (e.g. use of set lines etc) and habitat issues and provide general policy advice on freshwater fishing issues such as permit or license arrangements and funds usage to the Government to consider in a broader strategic sense.

As mentioned above there was universal support for the SIPS and encouragement for the Queensland government to extend the program to all impoundments in Queensland, with improvement to the administration of the scheme. It is useful to note that on 1 December 2014 the Queensland government released for consultation “Proposed changes to the Queensland Stocked Impoundment Permit Scheme and other matters related to freshwater fishing...RIS for comment”. This document is relatively consistent with approaches and finding suggested by the review team.

The Review Team recommendations on freshwater fishing are:

- Establish a Freshwater Fisheries Council to provide technical advice on the management of freshwater fisheries;
- Extend access to the SIPS on a voluntary, ‘opt-in’ basis to the stocking of all impoundments and freshwater river systems that meet the criteria for SIPS involvement which includes the suitability to be a public access fishery;
- Once it is determined how many stocking groups do not fit under the SIPS alternative funding arrangements should be considered to assist them with re-stocking programs;
- An extension of the SIPS will require a greater level of administration by FQ. Consideration should be given to improving the administration of this scheme by:
 - Establishing core functions that should be supported by FQ from the administration fee and internal budget, and ensuring that administrative costs remain within an agreed percentage of the overall income from SIPS;
 - Encouraging the adoption of new technology for licensing and for automating data collection;
 - Providing a greater level of documentation to anglers and “grey nomads” through appropriate outlets (tackle shops, service stations and van parks);
 - Re-establish the annual meeting of stocking groups; and
 - Publish a register of hatcheries by region who provide fingerlings for restocking.
- Ensure that in extending the scheme, the individual allocations made to stocking groups are based on a fair and equitable formula.
- Review the stocking guidelines for freshwater rivers and impoundments including the guidelines for sourcing brood-stock and the impact of historical stocking of non-endemic species; and
- If an all water recreational fishing license is not introduced, consideration should be given to extending the SIPS permit to an inland fishing permit which would make it easier to administer.

RECOMMENDATIONS:

1. A Freshwater Fisheries Council should be established to provide technical advice on the management of freshwater fisheries;
2. Access to the Stocked Impoundment Permit Scheme should be extended on a voluntary, 'opt-in' basis to the stocking of all impoundments and freshwater river systems that meet the criteria for SIPS involvement which includes the suitability to be a public access fishery;
3. Once it is determined how many stocking groups do not fit under the SIPS alternative funding arrangements should be considered to assist them with re-stocking programs;
4. An extension of the SIPS will require a greater level of administration by FQ. Consideration should be given to improving the administration of the SIPS by:
 - a. Defining core functions that should be delivered by FQ from the administration fee and internal budget, and ensuring that administrative costs remain within an agreed percentage of the overall income from SIPS;
 - b. Encouraging the adoption of new technology for licensing and for automating data collection;
 - c. Providing a greater level of educational material to anglers and "grey nomads" through appropriate outlets (tackle shops, service stations and van parks);
 - d. Re-establish the annual meeting of stocking groups; and
 - e. Publish a register of hatcheries by region who provide fingerlings for restocking.
5. Ensure that in extending the scheme, the individual allocations made to stocking groups are based on a fair and equitable formula.
6. Review the stocking guidelines for freshwater rivers and impoundments including the guidelines for sourcing brood-stock and the impact of historical stocking of non-endemic species.
7. If an all water recreational fishing license is not introduced, consideration should be given to extending the SIPS to an inland fishing permit which would make it easier to administer.

7.2. Queensland's involvement in Joint Authorities

In addition to the management of solely State-managed fisheries under the OCS, Queensland also participates in two Joint Authorities with the Commonwealth Government and other entities. These are:

- The Torres Strait Protected Zone Joint Authority (PZJA); and
- The Queensland Fisheries Joint Authority (QFJA).

Queensland's obligations in relation to these Joint Authorities are spelled out in the Fisheries Act.

In the context of the Review, and in particular the overall desire to streamline Queensland's fisheries arrangements, the key question for the review team is what Queensland's future involvement in the Joint Authorities should look like.

7.2.1. Torres Strait Protected Zone Joint Authority

“As Aboriginal and Torres Strait Islander Social Justice Commissioner Mick Gooda stated: ‘[c]ommercial fishing rights are essential to the Indigenous people of Australia, not only because they are traditional rights but because they are integral to the economic development of Indigenous communities’ (Butterly 2014)

While the management of commercial and customary fisheries in the Torres Strait is undertaken through the Torres Strait Fisheries Act, Queensland has an interest in the management of these fisheries through its role on the Protected Zone Joint Authority (PZJA), through its management of recreational fishing and aquaculture in the area, and through its broader economic development commitments in the region. The Review Team visited Thursday Island in August and conducted a series of interviews and presentations with individuals and groups to discuss Queensland’s involvement in these fisheries. The review team also discussed the PZJA arrangements with AFMA and FQ.

The general concern expressed by Torres Strait islanders was that, as Queenslanders, they have a stake in this review and wished to have their thoughts, ideas and concerns recorded so that there was no confusion in the future. Apart from passing discussions in Cairns the Review Team did not meet with non-Torres Strait Islander commercial fishermen (referred to as TVH fishers) and the only issue canvassed and referred to is the ongoing role of Queensland in the PZJA.

This section of the report deals with the issues raised that have links to the review process under three broad themes:

- Potential changes to PZJA arrangements;
- Allocation of rights and fishery issues; and
- Other issues of concern.

Background to the Torres Strait Fishery

The Torres Strait is located between the tip of Cape York Peninsula and Papua New Guinea (PNG). It consists of over one hundred islands and reefs which have evolved from four major origins: volcanic, alluvial, coral cays and flooded land bridges which were once part of the Great Dividing Range. Geographically, the islands are divided into inner, eastern, central, western, and top-western island groups; 18 of which are currently inhabited. (Source PZJA Annual Report 2011)

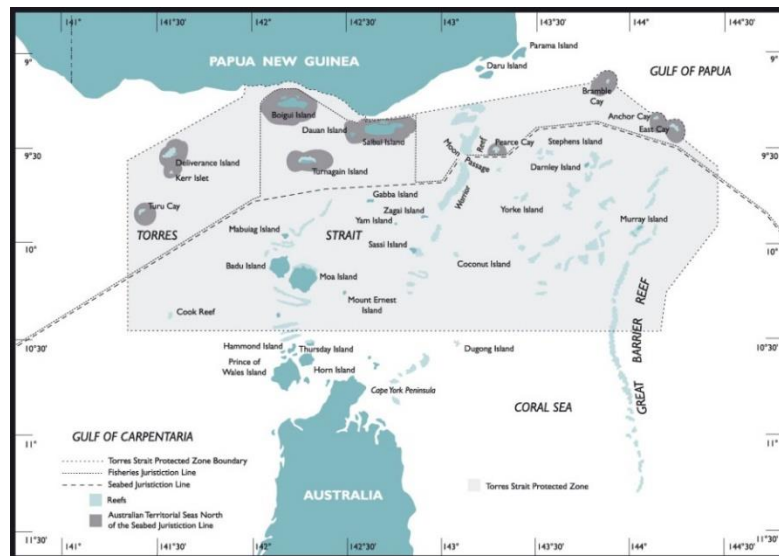


Figure 8: The Torres Strait Protected Zone. (PZJA Annual report 2011)

There are three central components in the formal management of the Torres Straits Marine Resources:

- The Torres Strait Treaty;
- The Protected Zone Joint Authority (Commonwealth, Queensland and the Torres Straits Regional Authority - TSRA); and
- The Commonwealth Torres Strait Fisheries Act

In addition to the formal arrangements, Torres Strait islanders have a number of internal consultative arrangements and agencies that contribute to local management, develop negotiating positions for discussions with Queensland and Commonwealth governments, engage in Native Title claims or are represent industry. They are influential in how the management, ownership and use of these resources in the Torres Strait will be governed in the future. These organisations include:

- TSRA Fisheries Section and Consultative groups
- The Native Title Office (NTO)
- Torres Strait industry organisations.

The NTO is the current native title representative body ("NTRB") for the Torres Strait region under the Native Title Act. There is a proposal for possible transition of NTRB status to an Indigenous owned and operated entity in 2015. That entity is called Gur A Baradharaw Kod Sea and Land Council.

There is already a registered native title body corporate for a determined area of native title over Torres Strait seas. It is called Malu Lamar (Torres Strait Islanders) Corporation ("Malu Lamar"). Indigenous economic developments, based on commercial and recreational fishing, are key priorities for Malu Lamar. Malu Lamar is seeking a position on the PZJA, in its capacity as the newly appointed registered native title body corporate for the current seas determination area.

Working Arrangements

The formal process for the management of the marine resources of the Torres Strait is conducted under the structure and rules of the PZJA. The PZJA is established the Torres Strait Treaty (1985) and the Torres Strait Fisheries Act which obliges Australia and PNG to cooperate in the conservation, management and utilisation of the TSPZ fisheries and to protect the traditional way of life and livelihood of the Traditional Inhabitants of the Torres Strait and the adjacent coastal areas of the two countries. For Australia this has included the Northern Peninsular Area (NPA) Communities at the top of Cape York as the fisheries resources are to an extent shared by these communities.

The Torres Strait Fisheries Act 1984 (the Act) came into force on 15 February 1985. The purpose of the Act is to give effect, in Australian law, to the fisheries elements of the Torres Strait Treaty. Section 8 of the Act specifies the objectives to be pursued in the management of Torres Strait fisheries. Section 8 states:

“In the administration of this Act, regard shall be had to the rights and obligations conferred on Australia by the Torres Strait Treaty.

The PZJA is responsible for management of commercial and traditional fishing in the Australian area of the TSPZ and designated adjacent Torres Strait waters (outside but near). This includes the Northern Peninsula Area (NPA) Communities at the top of Cape York as the fish resources are shared by these communities. The membership of the PZJA was Queensland and the Commonwealth Governments, then in October 2001 the PZJA accepted a recommendation that the Chair of the Torres Strait Regional Authority (TSRA) be made a full member of the PZJA. PNG normally attends the PZJA meetings as an observer.

Since 1 April 1999 the PZJA has managed all fisheries in the Torres Strait with the exception of recreational fishing and aquaculture that remain the responsibility of the Queensland Government under the Queensland Fisheries Act. The fisheries managed by the PZJA arrangements include the following:

- Traditional fishing
- Those fisheries which Australia and PNG have agreed to jointly manage in the TSPZ under Article 22 of the Treaty include prawns, Spanish mackerel, pearl shell, tropical rock lobster, dugong and turtle
- Finfish (coral trout, Spanish mackerel, and mixed reef fish)
- Barramundi
- Crab
- Trochus; and
- Bêche-de-mer (sea cucumber).

Commercial statutory fishing entitlements and commercial activities have existed in the Torres Strait since 1985 when the Torres Straits Fisheries Act was enacted. As a result of changes in 2008 including a buyback scheme, Torres Strait Islanders hold all the statutory fishing entitlements in the finfish fishery (including coral trout, Spanish mackerel and mixed reef fish), pearl shell, trochus, and crab, with dugong, and turtle managed as separate traditional fisheries. Torres Strait islanders hold all but one license in the beche-de-mer fishery and 54% of the tropical rock lobster fishery. The other

lobster rights are held by long term commercial fishermen who fish in the Torres Straits (TVH). The Torres Strait prawn fishery statutory entitlements are all held by long term commercial operators (TVH), along with the remaining statutory entitlements in the rock lobster fishery.

Operationally the fisheries are managed by AFMA and Queensland for the PZJA, with AFMA taking over more of the functions such as licensing that has traditionally been the mandate of Queensland. AFMA manages and reports on the commercial fishing activities for the fisheries listed above and has an office on Thursday Island. The statutory entitlements held by Torres Strait islanders to the commercial aspects of these fisheries are administered by the TSRA on behalf of the traditional inhabitants. These rights can be leased out to commercial operators and the income derived from this leasing is administered by the TSRA.

Fundamental to the whole approach is to meet the Torres Strait Treaty to protect the traditional way of life and livelihoods of Torres Strait Islanders and to look for opportunities in implementing licensing and leasing arrangements to promote indigenous economic development in the region and employment opportunities for traditional inhabitants.

Issues for the Review

The following issues were raised with the review team and are relevant to the review outcomes.

Potential changes to the PZJA arrangements

Discussions are taking place between FQ, TSRA and AFMA and Malu Lamar about long term management arrangements for the Torres Strait fisheries as a whole. A number of these proposed changes are logical. The main proposal is to have one agency responsible for all aspects of Torres Strait fisheries management including licensing, catch monitoring and administration. Under these proposed changes, FQ's current PZJA responsibilities for licensing and compliance functions for commercial fisheries in the Torres Strait would move to AFMA. This would then leave recreational fisheries management and aquaculture as the only Queensland function in the Torres Strait. With the recent closure of the QF&BP Thursday Island office, questions have been raised as to whether these function could also be placed with AFMA, although neither are traditionally an AFMA function.

The comments from individual Torres Strait Islanders/ TSRA and Malu Lamar included:

- Both the TSRA and Malu Lamar would be interested in a shared management arrangement with AFMA that could be implemented and developed with training over time. This might open avenues to reduce costs and develop fisheries management capacity and skills amongst Torres Strait Islanders;
- The TSRA and Malu Lamar understand the reason for Queensland closing their TI office and the logic of a single agency covering all issues, but feel that as Queenslanders the Queensland government has economic development responsibilities to the region's indigenous people. As such, while FQ can leave the day-to-day fisheries management space in the region, it must stay engaged in the PZJA decision making process, continue to make its financial contribution to the PZJA, and to indigenous economic development of fisheries in the Torres Strait;

- Recreational fishing is currently the responsibility of FQ, but is it possible for this function to move to AFMA/TSRA/Malu Lamar under a revised arrangement. This may be difficult as recreational fishing activity is not a function normally regulated by AFMA.
- Both in the discussions with TSRA and Malu Lamar, people raised concerns about recreational fishing by southern charter operators whose activities are reportedly impacting on local reefs. They question why they should be allowed to fish in the Torres Straits and not have to pay a fee. They believe very strongly that the charter operators should be excluded from fishing on reefs utilised by traditional inhabitants for traditional fishing.
- Recreational fishing impacts on the marine resources which could otherwise be taken by native title holders for any purpose. As such Malu Lamar and Torres Strait Islanders requested detailed input into the setting of new controls through things like bag limits and catch sizes for recreational and charter fishers in the Torres Strait region.

While a number of these issues are outside the scope of the review, the review team makes the following observations to help move these issues forward.

The Review Team's comments

To answer the above, the broader question is probably whether Queensland adds real value to Torres Strait fisheries management through this joint authority process or whether as discussed earlier joint authorities are an artefact of the past. The answer however, is not quite so simple and has two parts - political and operational:

- For a host of political and strategic reasons the Queensland government and the Queensland Fisheries Minister should stay engaged in the PZJA as this is a sensitive and important part of Queensland. This engagement however, should be focused on deciding strategic management issues and not day to day fisheries management. Operationally however, the fisheries in the Torres Straits are best run under a single jurisdiction arrangement.
- To make this approach work, there should be a functional split where the Ministers and the TSRA Chair (PZJA) discuss and decide on strategic, policy and budgetary issues and officials decide the day to day management issues. This would be helped if these fisheries were managed under harvest strategy arrangements agreed by the PZJA then the goals of the officials would be very clear.
- The review team supports a move to single jurisdiction management by AFMA and understands that AFMA is interested in pursuing discussion with the TSRA and Malu Lamar on future collaborative arrangements.

Allocation of Rights and Fisheries issues

As previously noted above there are long-held commercial statutory fishing entitlements and licenses to fish in the Torres Strait. Today, as described above, some entitlements are held by commercial operators but many of these statutory entitlements are now held by Torres Strait Islanders. The Torres Strait Islanders, including representatives of the TSRA and Malu Lamar have a long held view that the rights to these fisheries are theirs and have a goal to acquire 100% indigenous ownership of the region's fisheries resources. On 9 April 2014, the Torres Strait Protected Zone Joint Authority ("PZJA") formally resolved to support the 100% ownership aspiration

and committed to the development of a “roadmap” towards achieving the aspiration. Those aspirations are further supported by some important recent legal and policy developments.

There has been a nationally significant native title determination concerning Torres Strait seas; the claim was originally determined by Justice Finn in 2010 and then appealed to the High Court and finally decided in 2013 (*Akiba v Commonwealth of Australia*).

In July 2010, Justice Finn made a native title determination that identified, among other things, a non-exclusive right to take resources from the native title areas for any purpose. A majority of the Full Federal Court subsequently allowed the Commonwealth’s appeal against Justice Finn’s determination, and varied the determination by adding the qualification that the right “does not, however, extend to taking fish and other aquatic life for sale or trade.” However on 7 August 2013 the High Court found those commercial native title rights to take and trade in fisheries resources still exist and have not been extinguished by Commonwealth and state laws.

Most importantly, the High Court found that the native title rights in the sea include the right to take the marine resources for any purpose, including commercial and trading purposes. The commercial native title rights are subject to the statutory fishing licensing regime.

In explaining rationale for judgment his Honour said “The native title right I have found is a right to access and take marine resources as such — a right not circumscribed by the use to be made of the resource taken”. (Butterly2014)

Discussions on the application and implications of these decisions on Torres Strait Islander fishing rights and licensing are continuing.

There are several issues of concern to Torres Strait Islanders:

- From discussions with Malu Lamar it was clear that they were calling for holistic and comprehensive, regulatory and operational reforms to Torres Strait commercial and recreational fisheries. This includes a new licencing regime and innovative commercial structures which would optimise their ability to utilise the resources for economic development purposes. Malu Lamar stated they have circulated a synopsis of its reform proposal and is waiting funding under the Australian Government’s Indigenous Advancement Strategy to progress the development of a detailed proposal. Aspects of the New Zealand model for Maori fisheries reform have been suggested.
- There are linkages to the Queensland Fisheries legislation in the Torres Strait fisheries management arrangements, Acts and treaties. Any re-write to the Queensland Fisheries Act and regulations must therefore protect the current right of the region’s Indigenous people and ensure that those hard won rights are not in any way eroded as part of this process.
- While the native title determination is on the basis of non-exclusive rights, the *Akiba* decision does provide for native title based commercial fishing rights for the native title holders. As such any move to allocation of resources under this review that affects in any way the Torres Strait will need to take these issues into account.
- There are current native title sea claims for the east coast of Australia whose outcomes could potentially impact any allocation of quota or rights in Queensland fisheries and as such any mechanisms developed would need to be able to accommodate these developments.

- The rock lobster buyback in 2008 resulted in the Torres Straits holding 54% of the rights in the fishery. However, this 54% is yet to be translated to quota. Even though a decision was taken in 2005 to move to quota in the rock lobster fishery it is yet to occur. Torres Strait Islanders want the change to quota to occur no later than 2015 and believe that this will encourage a leasing market and also make it easier and fairer to manage the catch.

The review team understands the importance of these five issues. They are recorded so that any relevant discussions in the PZJA on the Review or discussion concerning the allocations of rights flowing from the final review document takes these issues into consideration.

Other Issues

During discussions a number of other issues were raised more about current PZJA management arrangements and while not part of the review process, the issues are recorded and referred to the PZJA for attention.

- There are concerns about the PNG cross endorsed vessels operating the PZJA zone and in particular with observing operations and the reporting of catch. The conditions on these dual licenses need to be reviewed.
- As mentioned above recreational fishing (charter boat operations) is emerging as an issue in the Torres Straits with activity increasing and people fishing close to communities and on traditional reefs without any sort of licensing or control. Torres Strait islanders expressed a view that these vessels should be licensed, require approval to operate in these waters and should pay an access fee; and
- Islanders believed that there needs to be a user pays element in the cost of managing fishing activity in the Torres Straits particularly where Native Title considerations apply. The user pays principle should also apply to meeting costs and attendance at meetings by Torres Strait islanders as attendance at meetings is time consuming and costly.

7.2.2. Queensland Fisheries Joint Authority

The Queensland Fisheries Joint Authority (QFJA) comprises the Commonwealth and Queensland governments and undertakes the management of all northern demersal and pelagic finfish in waters relevant to Queensland in the Gulf of Carpentaria excluding:

- Tuna and tuna like species;
- Inshore fin fish including barramundi, king and blue threadfin;
- Fish taken while trawling for prawns in the Northern Prawn Fishery; and
- Incidental catch of fishing operations for (a) and (c) above.

These fisheries are managed in accordance with the provisions of the *Queensland Fisheries Act 1994*. In an era of small and more cost efficient government it is hard to see where the QFJA adds value to a fishery that is primarily managed by Queensland. The last annual report for the QFJA referenced on the AFMA website is for 2005-06, albeit annual reports for 2006-13 are reportedly signed off by Ministers and awaiting tabling in parliament. While the Commonwealth has an interest in these fisheries given they operate outside 3nm, these interests have successfully protected for numerous other fisheries in which management responsibility has been transferred to the States under Offshore Constitutional Settlements. To this end, the Review Team recommends that the QFJA be

disbanded and management responsibility for QFJA fisheries be transferred to a single jurisdiction, probably Queensland although day-to-day management of some shared stocks may be managed by NT by agreement. Coordination of the management of stocks shared between Queensland and the Northern Territory may be coordinated through the Northern Australian Fisheries Management Forum.

RECOMMENDATIONS:

- 1. The Queensland Government should stay engaged in the Torres Strait PZJA however engagement should be focused on strategic management issues and not day to day fisheries management. Responsibility for day to day management should be transferred to a single agency, ideally AFMA.**
- 2. The QFJA should be disbanded and sole management responsibility for QFJA fisheries transferred to a single jurisdiction. Coordination of the management of stocks shared between Queensland and the Northern Territory be coordinated through the Northern Australian Fisheries Management Forum.**

7.3. Customary fisheries

The Terms of Reference for this Review indicate that the appropriate nature and extent of native title to the sea or Aboriginal and Torres Strait Islander customary fishing rights or the processes for determining native title or Aboriginal and Torres Strait Islander customary fishing rights are issues beyond the scope of this Review. At the same time, the current fisheries legislation contains provisions dealing with indigenous fishing (the issuing of permits for customary take and a partial and temporary exemption to the long-standing moratorium on issuing primary licences). It is also clear that the future legislation needs to be able to respond appropriately to various native title findings as they are made.

As noted in the section on the Torres Strait, there has been a nationally significant native title determination concerning Torres Strait seas; the claim was originally determined by Justice Finn in 2010 and then appealed to the High Court and finally decided in 2013 (*Akiba v Commonwealth of Australia*). On 7 August 2013 the High Court found those commercial native title rights to take and trade in fisheries resources still exist and have not been extinguished by Commonwealth and state laws. Most importantly, the High Court found that the native title rights in the sea include the right to take the marine resources for any purpose, including commercial and trading purposes. The commercial native title rights are subject to the statutory fishing licensing regime.

In explaining rationale for judgment his Honour said "The native title right I have found is a right to access and take marine resources as such — a right not circumscribed by the use to be made of the resource taken". (Butterly2014)

While the above decisions have been taken in respect to Torres Strait native title claims, the existence of native title over areas of the sea has some logical implications for revised legislation in that it will have to have the capacity to recognise and accommodate emerging rights which do not

have origins within the Fisheries Act itself. It is important to note that other native title sea claims are being made elsewhere in Queensland.

The best ways of reconciling native title and new fisheries legislation are not known at this point and little discussion has occurred on this complex topic. The level of indigenous participation in the Review process has been low. While this is disappointing to the Review team, there is an obvious need for the Government of Queensland to engage directly with the indigenous community who in the Torres Strait have been found to have rights that have been clearly recognised in law in terms of their existence but are poorly understood in terms of their content and potential application.

There is a separate section on discussion with Torres Strait Islanders therefore the recommendations below are about the east coast, inland freshwater and the Gulf of Carpentaria. Due to the low participation in the review by indigenous fishers and the complexity of this area, the Review team did not feel comfortable to make recommendations to this review on behalf of the customary fishers. Rather, a separate and dedicated process of consultation with customary fishers should occur to determine future directions in the area.

RECOMMENDATIONS:

- 1. That in the first 12 months following the consideration of this report by the Queensland government, a separate consultation be held with indigenous communities and organizations to gauge their interest in fishing and aquaculture both in a customary use and commercial sense.**
- 2. This separate consultation should include an evaluation of any recent native title determinations, consultation on customary use and the species involved, any current commercial activity and any thoughts on the nature of any commercial activity that they would undertake. The consultation should also include an evaluation of the potential of indigenous aquaculture including the potential barriers to entry and success.**

7.4. Aquaculture

Current situation and main challenges

Globally, aquaculture has emerged as one of the major growth areas in food production over the last 15 years with FAO recording total aquaculture production in 2012 at 90 million metric tonnes (mmt), including 66 mmt of edible finfish from both inland and marine culture. A quick review of the 2014 FAO Status of Fisheries and Aquaculture report shows that Asia is still the hub of world aquaculture production (88%). By contrast, aquaculture production in a number of industrialized and developed countries has fallen over time as a result of production shifting to countries with lower production costs (SOFIA 2014).

In Australia, there has been a slow increase in aquaculture production over the last 15 years, largely on the back of prawn, salmon, mollusc and bluefin tuna aquaculture. Much of the growth has occurred in South Australia, the Northern Territory, Queensland and Tasmania. In Tasmania and South Australia some of the success is often attributed to the development of regional aquaculture

hubs around the Derwent Estuary and Macquarie Harbor in Tasmania and Port Lincoln in South Australia. Interestingly, both of these States also have separate Aquaculture Acts and governments which actively encourage aquaculture development, understanding its value to these regional economies.

Australia sits on the Asian Pacific rim where seafood is one of the most popular and important food sources. Australia produces world class product from its wild capture fisheries and as such much of our wild caught product (40,000 tonnes annually) is exported. With increasing domestic demand for seafood, Australia now imports around 200,000 tonnes of seafood each year or in edible weight 72% of all seafood consumed in Australia.

Queensland is one state that lends itself to coastal aquaculture of a number of important and potentially valuable species, including the current mainstays of prawns and barramundi. The Queensland coastal zone is geographically suited to land-based farming of prawns, cage culture of high value coastal species such as coral trout, snappers and cods for the live fish market, as well as pond and sea-cage culture of barramundi. All of which would build the nucleus for an excellent and high-end aquaculture industry in Queensland.

While there are undoubtedly cost of production pressures facing aquaculture operations in developed world economies, feedback from the aquaculture sector suggests that a key driver of the lack of aquaculture growth in Queensland has been the complex and onerous process of seeking (primarily environmental) regulatory approvals for new farms. This is particularly the case adjacent to the Great Barrier Reef Marine Park, which has multiple jurisdictions involved. While the State Government's planning processes received some comment from industry, much of the concern in relation to environmental approvals was focused on the Great Barrier Reef Marine Park Authority's (GBRMPA) aquaculture approvals process which has at its core a policy of no net discharge.

In the context of the review the bottom line is that, despite the unprecedented period of growth and development of aquaculture globally over the last 15 years, there have been no new aquaculture farm approvals on the east coast of Queensland since 2002. Given that existing Queensland aquaculture operations appear to be profitable, there needs to be a major change in attitude towards aquaculture in Queensland for it to become the industry it promises to be.

The Queensland Competition Authority (QCA) Review of Aquaculture

The Review team notes that the Queensland Competition Authority (QCA) was directed to investigate and report on regulation of the Queensland aquaculture industry, including investigation of whether there should be a separate Aquaculture Act. The QCA commenced its aquaculture review on 12 November 2013, released an issues paper in February 2014 and a draft report on 22 July 2014¹⁰. Comments on the draft report closed on 1 September 2014 and the final report is currently under consideration by Ministers. The QCA process has been thorough and has elicited detailed submissions from parties with a strong interest in aquaculture.

¹⁰ Draft Report, Aquaculture in Queensland, July 2014, 124 pages (QCA, Level 27, 145 Ann Street, Brisbane Q 4000).

In these circumstances, the Review team considers that it is appropriate to defer to the QCA process and recommendations given the fact that engagement of aquaculture interests was plainly greater than in the Fisheries Legislative Review where aquaculture was a somewhat tangential topic. Nevertheless we have received some aquaculture focused submissions and comments at port meetings and generally, these urged us to support the recommendations of the QCA on aquaculture and to express any additional views on the subject that we may have.

The Review team make the following supplementary observations and comments consistent with the general approach to fisheries management outlined in this report that we consider equally applicable to aquaculture. We advocate the application of a 'risk-based' approach to fisheries management. This approach is suitable for application in two extensive areas of Queensland waters that are subject to what is effectively a blanket ban on aquaculture. These areas are the Great Barrier Reef under the jurisdiction of GBRMPA and Fish Habitat Areas (FHAs) under the jurisdiction of the Department of Agriculture Forestry and Fisheries (DAFF).

GBRMPA identify aquaculture as an activity that requires approval under the Environmental Protection and Biodiversity Protection Act (EPBC Act) and that such approval should be consistent with the precautionary principle. Given the possible impacts of aquaculture on the reef as identified by GBRMPA and summarised in Table 12 of the Draft QCA Report¹¹, such approval is reasonable. However, the way that GBRMPA have chosen to assess individual aquaculture applications for approval does not seem reasonable. In fact, it appears to involve no objective weighing of actual likely impacts at all.

The current GBRMPA policy is not to approve any aquaculture application that does not deliver a 'net environmental benefit' - effectively an aquaculture facility that has a negative net discharge. It does not appear to consider the location of any discharge, the composition of any discharge (for instance whether it is in the form of algae) or the marginal impact on the environment of the quantity of discharge. There is little doubt that the application of such a rigid policy that is divorced from the consideration of real world risks is limiting economically significant Queensland aquaculture development that has negligible adverse environmental risks.

The Review Team does not think that the EPBC Act requires modification. Rather, what's required is to replace the current process of approval with one that involves a proper case by case risk assessment by GBRMPA. The framework for such a risk assessment would be equally applicable within FHAs. In this case, a minor modification to the regulatory framework for FHAs appears to be required.

The observations taken in the Draft QCA Report on marine aquaculture seem at odds with developing an industry. Yes, it will conflict with other users, however the question is whether it can be done in a way that other users are comfortable with. Yes, it will also have issues with approvals because of the potential for disease outbreaks, however the question then is can these be mitigated? Sending any future marine aquaculture development to the Torres Straits or the Gulf of Carpentaria simply avoids these questions and prevents any mid-term development of this industry sector.

¹¹ Table 12, Appendix C, page 80, Ibid.

The move to set aside 450 hectares for aquaculture development seems logical, however, it is not a large enough area to encourage any real development and at least half of that area could reasonably be taken up by one of the current proponents seeking approval for a prawn farm.

Recommendations for aquaculture development in the Gulf region again are a sensible approach up to a point. The potential challenges with the proposal are the availability of specialist labour, distance to markets, transport and the impact of a monsoon season. Perhaps over time these issues will be resolved and the Gulf will become a frontier area for aquaculture development, however it is not in the foreseeable future.

RECOMMENDATIONS:

- 1. The Review Team recommends that the observations from this report on aquaculture be passed to QCA for consideration in the final QCA review of aquaculture arrangements report.**

7.5. Management of Fisheries Habitat Areas and marine plants

The management and protection of fisheries habitats is a critical component of ensuring overall fisheries sustainability. Put simply, without healthy and productive fisheries habitats we will not have healthy and productive fisheries, irrespective of how good our controls are on the harvest sector. Feedback from stakeholders at public meetings highlighted considerable concern about external impacts on the quality of fisheries habitats in both coastal and freshwater areas in many areas of the State.

Fisheries Queensland has historically performed three main functions in relation to habitats under the Fisheries Act: the declaration and management of Fisheries Habitat Areas (FHAs); the assessment and management of impacts on marine plants; and the assessment and management of impacts on waterway barrier works to enable fish passage between salt and fresh water environments. In May 2012, responsibility for FHAs was transferred to the Minister for National Parks, Recreation, Sport and Racing, while coordination of assessments in relation to marine plants and waterways barrier works remained with DAFF. FQ impact assessment staff provide technical input for impacts on marine plants and waterway barrier works through the planning development assessment process for the State Assessment and Referral Agency.

In the context of the review, the key question is whether the protection of fisheries habitats is best served by retaining the current marine plant and fish passage protection provisions in the Fisheries Act or by shifting them to more environmentally-focused legislation (e.g. the *Environmental Protection Act 1994*) which potentially provides more 'teeth'. While we acknowledge there are arguments both ways, our view is that on balance the better approach is to move the protection provisions to more environmentally focused legislation. This would allow greater synergies between the protection of marine and terrestrial environments, as well as better allowing FQ to focus on its core role of fisheries management.

The other main concern expressed by stakeholders in public meetings was to ensure that proponents of developments that impacted on fisheries habitats (and fisheries access) paid for the

full cost of those impacts through offsets (if the development couldn't first be amended to avoid impacts). We understand that the impact of future developments on fisheries will be assessed as part of the State Government's whole-of-government offsets policy and the *Environmental Offsets Act 2014*, which commenced 1 July 2014.

RECOMMENDATIONS:

- 1. That the existing marine plant and fish passage protection provisions in the Fisheries Act be moved into environmental legislation, provided equivalent or stronger levels of protection for fisheries habitats can be achieved.**
- 2. That proponents of new developments which result in unavoidable impacts on fisheries habitat (and fisheries access) pay for the full costs of those impacts through offsets.**

8. Other matters out of scope

8.1. Interaction between marine parks and fisheries

While marine parks are outside the scope of this review, to the extent that they influence access to fisheries resources, regulate by fishing gear type and, in the case of yellow zones, provide a de facto resource allocation between fishing sectors, they can have considerable influence over the operation of the fisheries management regime and cannot be ignored. Well planned and integrated marine parks regimes can act in support of fisheries management objectives by providing refuge areas and protection of representative suites of biodiversity consistent with an ecosystem based approach to fisheries management. Conversely, poorly planned marine parks can act against well-functioning fisheries management regimes by undermining resource access security and therefore incentives for responsible stewardship, interfering with existing resource sharing agreements and compromising incentives to provide accurate data.

Considerable comment was received by the review team during public meetings on the interaction between fisheries management and marine parks in Queensland. While some comments were positive, the majority of speakers expressed concern (sometimes passionately) about one or more aspects of the marine parks planning process and its impacts on fisheries management. The most consistent concerns included:

- Ineffective consultation on the location of marine parks zones;
- Lack of effective integration and coordination between fisheries and marine parks planning processes, which lead to a 'double jeopardy' for fishers;
- A strong and consistently expressed view that data provided to marine parks planners was 'used against them' - 'I provided information on my best fishing spots and now they're all closed'. People expressing this view were typically both upset at the existing position of zones and vocally opposed to providing any data or input into future zoning exercises;

- Concerns that ‘special deals’ have been done to win support from certain sectors of the fishing community – e.g. a consistent complaint from the commercial sector is that inshore yellow zones are really just a re-allocation of resources to the recreational sector and have been used as a bargaining chip to win recreational support for green zones at the expenses of commercial fishers; a consistent complaint from the recreational sector in the Hervey Bay/Tin Can Bay region is the ‘red cross hatching’ on the yellow zone in Great Sandy Strait was a special deal to limit opposition to the GSSMP zoning plan from the commercial sector;
- Ineffective (or absent in the case of the GBR Coast Marine Park) structural adjustment in the commercial sector to offset displaced effort. This has led to fishers being squeezed into smaller areas, with predictable impacts on resource competition, conflict and commercial fisher’s bottom lines;
- Inflexibility of zoning arrangements, such that minor alterations to effect small, agreed refinements can’t be made under existing legislation unless the full zoning plan is opened up.

Clear ‘rules of the game’ for interactions between fisheries and marine parks...

In the context of this review, the key strategic issue arising from the above discussions is to ensure future marine parks planning exercises work in harmony with any revised fisheries management framework, and vice versa. Put simply, there is little value in creating a world class fisheries management framework if the framework can be undermined by a lack of coordination in fisheries and marine parks planning.

To that end, a whole of Government policy position is required on the interaction between marine parks and fisheries access. The intent of the policy should be to provide all stakeholders with clear ‘rules of the game’ for how fisheries issues will be treated in any future marine parks zoning discussions. The policy should set out how stakeholders will be consulted on marine parks, key principles to be used in the process of zoning, how the impacts of proposed zoning will be assessed and the processes in place for offsetting loss of access and displacement of fishing effort across all sectors.

The policy should aim to provide a clear framework for coordination between environment and fisheries officials on marine park matters, and end the ‘double jeopardy’ uncertainty associated with uncoordinated fisheries and marine parks planning regimes.

For the sake of clarity, the default position of the policy should be that where decisions are taken on behalf of the community to protect biodiversity through MPAs, one section of the community – fishers – shouldn’t bear the cost of protection on behalf of the community. The full costs of introducing or adjusting marine parks boundaries should be factored into MPA planning decisions.

This may be part of the broader fisheries policy discussed above.

A capacity for ‘keyhole surgery’...

In addition to the broader challenges of effectively integrating fisheries and marine parks regimes, a number of other practical suggestions were raised with the review team during public meetings which would improve the inter-relationship between marine parks and fisheries access. One of these was the need to ensure marine park legislation, at both the State and Commonwealth level,

allowed for minor, local-scale refinements to zoning arrangements to improve access without the need to open up the full zoning plan – proponents of this idea have called it ‘keyhole surgery’.

In one practical example provided, commercial net fishers are prevented from fishing in productive areas away from recreational fishers by a yellow zone (recreational fishers are unable to access the area easily because there is no road access), while the only productive area left available to net fishers locally is directly in front of a beachside community. Both commercial and recreational fishers at the local level have agreed the better arrangement would be to have the yellow zone adjacent to the community and to allow for commercial netting in areas difficult for recreational fishers to access.

While such an arrangement appears to have the benefit of both common sense and community support, the existing construction of both State and Federal marine parks legislation means that such local agreements cannot be implemented without opening up the full zoning plan. State and Federal Governments are understandably reticent to go through the exercise of opening the full zoning plan (in the case of the GBRMP from Bundaberg to Cape York) simply to massage one yellow zone.

With this in mind, we suggest marine parks legislation at both the State and Commonwealth level be reconfigured to allow for minor local scale changes to zoning plans without the need to re-open the full zoning plan. If there was concern from some sectors of the community that the amendment would allow for ‘watering down’ of protections, the capacity to amend could be limited to zones other than ‘no-take’ areas. Given the scale and complexity of marine park zoning throughout Queensland it is not surprising that some local communities feel that marine parks managers ‘got it wrong’ in some areas. Such an amendment would allow for fine tuning of zoning arrangements where agreement existed across all sectors, and may allow for better retrospective meshing of marine parks and fisheries resource sharing regimes.

The lingering effects of GBRMP complementary zoning...

Another key concern expressed by all sectors during the public meetings adjacent to the GBRMP was the absence of any program to remove displaced effort arising from the State Government’s Great Barrier Reef Coast Marine Park (GBRCMP) introduced in late 2004. While the area encompassed by the GBRCMP is small compared to the GBRMP, the social and economic value of the area is very significant – it covers the entire coastline from Bundaberg to Cape York including much of the most productive mud crab and inshore finfish habitat and fishing activity. While the Commonwealth Government funded a structural adjustment package to remove displaced effort from the GBRMP rezoning, no similar scheme was introduced by the State Government to offset the impacts of its ‘complementary zoning’ in State waters between low and high water mark. At the time, the State Government suggested fishers avail themselves of the Commonwealth’s package for these impacts, while the Commonwealth justifiably indicated that they would not pay for impacts arising from a State marine park. Ultimately, no agreement was reached.

The net result has been that displaced effort arising from the State Government’s complementary zoning of inshore waters adjacent to the GBRMP has never been removed, and inshore fishers have been living with the effects ever since. If there is a case for additional structural adjustment in the inshore commercial sector, this is perhaps the strongest argument.

RECOMMENDATIONS:

1. **A whole of Government policy position is required on the interaction between marine parks and fisheries access. The intent of the policy should be to provide all stakeholders with clear ‘rules of the game’ for how fisheries issues will be treated in any future marine parks zoning discussions.**
2. **We suggest marine parks legislation at both the State and Commonwealth level be reconfigured to allow for minor local scale changes to zoning plans without the need to re-open the full zoning plan.**

8.2. Other matters

In addition to marine parks issues, a number of other issues were raised with the Review Team that, while not within the scope of this Review, were relevant to the operation of commercial and recreational fisheries and are worthy of attention through the appropriate processes. Some of the main ones are discussed briefly below.

8.2.1. Country of origin labelling laws

A considerable number of stakeholders across all sectors expressed support for extending country of origin (CoO) labelling laws to the restaurant sector. While CoO labelling requirements currently exist for the retail sector, supporters of the extension to the restaurant sector were of the view that extending the requirement would provide for more informed consumer choice as well as additional support for local seafood producers.

8.2.1. Tourism and fishing

Queensland’s fisheries resources play an important role in supporting the State’s tourism sector, both through the availability of fresh, local seafood as well as through recreational fishing tourism. In association with measures to strengthen the underlying management of Queensland’s fisheries, many fishers across both sectors thought there was scope to better promote Queensland’s natural advantages as both a seafood and recreational fishing destination. To this end, they encouraged greater coordination between FQ and relevant tourism agencies in planning promotional campaigns.

8.2.2. Training

A large number of commercial fishing business operators expressed frustration at the shortage of quality crew in recent years. While all acknowledged that greater competition for labour as a result of the resources boom had a big role to play, many pointed to a decline in the availability of commercial fishing training courses as a key factor. The Review Team has not had the opportunity to investigate this issue in detail although has recorded it here as a consistent concern of the commercial industry.

9. Implications for Fisheries Queensland and implementation of the new framework

The recommendations made in this report will have substantial implications for the functions, structure and focus of Fisheries Queensland. Some of these relate to 'content' issues such as the structure and functions of the agency, while others relate to the process of implementing the new reforms which will require careful handling. This section doesn't attempt to address each of these implications, but discusses a few of the main ones.

Re-alignment of FQ structure and functions...

At the higher level, the existing structure, functions and focus of Fisheries Queensland should be reviewed internally and re-aligned to meet the needs of the management model adopted by Government. The review should examine both the mix of services delivered at the whole-of-agency level, as well as within each of the main functional units. For example, the functions and services delivered by monitoring and assessment staff should very clearly focus on meeting the prioritised information needs of harvest strategies and ecological risk assessments. Similarly, the skills mix and services delivered by compliance staff should be aligned to a more targeted, intelligence-based approach to compliance. As part of this process, consideration should be given to whether the existing skills base available to FQ is adequate to deliver the required services or whether it should be supplemented in some areas. At the end of the review, each FQ officer should be clear about their position in the management system and how they contribute to the overall strategy.

Greater regionalisation of FQ...

A new system for fisheries management in Queensland including the creation of Fisheries Councils will be better served with Fisheries Queensland officers in the field and closer to the stakeholders they are supporting. While FQ should retain management, science and policy capacity in Brisbane, a key part of the work is in the field walking, talking and partnering with stakeholders to move the fishery forward. Staying in Brisbane will reinforce strongly held beliefs about FQ being remote from the action in the fisheries and having only a limited practical understanding of the day-to-day lives of fishers and developments in the fishery.

FQ currently has a regional network of offices with officers in 19 locations throughout Queensland. Most of these are associated with the QF&BP, but some are associated with broader functions such as habitat (e.g. Nambour, Cairns and Townsville) and habitat and long-term monitoring (e.g. Cairns). The Review Team believes that the benefits will outweigh the costs if three regional locations were staffed with quality high level management staff. For example, the Gulf Region will be served by a Gulf Fisheries Council. To support this process, management staff should ideally be located in Karumba and they need to be mature, flexible staff who can handle the environment and add value to the system.

The other two regional offices should be located in north Queensland and central Queensland. These offices only require one to two additional fisheries management staff as QF&BP staff are already in place in a number of locations.

Stability at the level of the DDG...

Implementing the proposed reforms will be a task for FQ that will take around 3 years to accomplish and involves both cultural and organisational change. This will be a challenging task and the DDG will have to be at the forefront, committed to delivering the change and building belief in the new system. As such the DDG who is in charge at the start of this process needs to commit (as much as is practical) to being there at the end. Changing the DDG half way through may cause confusion with both staff and stakeholders and could derail the process if the replacement does not understand what has gone on before. This is a critical starting point and having a DDG understanding the issues, committed, trusted and energetic will be the rock on which the new FQ will be built.

Need for a Change Management Group...

Within FQ there is a need for a dedicated Change Management Group (CMG) to oversee the process of implementing reform. Many of the reforms proposed will require careful sequencing, and the main stakeholders should be closely engaged in the process of change from the beginning.

This dedicated CMG will be the focal point to drive the change process and must be led by a talented and committed officer with the ability and wisdom to drive change and to communicate at all levels. This group must do all the planning ensure that the timeframe for change is achieved and importantly that industry are included at all steps and are brought along as partners in the process. It is important that they are established at the beginning of the process and operate separately, as the main work of the agency must continue through this time of change. This group will also task other experts (e.g. legislative drafters) to undertake work as the change process moves forward and undertake the six monthly reporting on progress.

Need for an adequately resourced awareness raising package...

Implementing change from this review will require an adequately resourced awareness raising package and an accompanying communication strategy to accurately inform stakeholders across all sectors about the nature and impact of the reforms. This is essential and must be done at the beginning of the process to prevent misinformation circulating that can damage the process before it begins.

The package will be multi-faceted, including media, awareness raising material to stakeholders, stakeholder meetings and discussions and targeted education on issues such as ITQs, catch shares, harvest strategies and the role of Fishery Councils. It must be clearly identified who will talk on what issues and to what audiences.

Media interest will be high, particularly at the time of the release of the report. Media will want answers to questions, many of which will be predictable. Talking points should be prepared. This is a complex area of management and it is essential that anyone talking on the key point of this new strategy be fully briefed and understands the terminology and concepts.

RECOMMENDATIONS:

- 1. The functions, structure and services delivered by Fisheries Queensland be reviewed internally in the context of the recommendations accepted by Government, and re-aligned to the needs of the proposed strategy.**

- 2. Consideration should be given to increasing staffing in regional offices to be 'closer to the action' and provide technical and administrative support to the new framework.**
- 3. As much as is practical, a commitment is required that the DDG of FQ commencing the process of change will remain in the role until the process is bedded down (around 3 years).**
- 4. FQ should establish a dedicated Change Management Group (CMG) to plan and oversee the process of change. The CMG should be led by a senior officer, reporting directly to the DDG.**
- 5. A targeted education campaign should be developed and adequately resourced to raise awareness of the proposed reforms. This campaign should be developed with the participation of stakeholder representatives.**

Annex 1: Terms of Reference

Terms of Reference for the review of Queensland's fisheries

The Queensland Government has announced a review of fisheries management in Queensland. The aim is to modernise and simplify fisheries management systems, cut red tape, and maintain and improve environmental sustainability. This will provide the flexibility for industry to prosper, ensure recreational and traditional fishers have reasonable access to the resource, and ensure our lifestyle is maintained.

What is to be achieved?

Vision

Fisheries management systems and processes that are simple, robust, responsive and flexible in delivering sustainably managed fisheries for the benefit of Queenslanders.

Objectives

The review has two main objectives:

- **To develop fisheries systems and processes that:**
 - provide for future management to achieve an appropriate balance between environmental and economic use while providing for broader social enjoyment by the community
 - facilitate the settings to support economically viable commercial fishing businesses that provide to the maximum extent possible for market forces to determine industry outcomes within established environmental parameters
 - reduce complexity
 - improve management flexibility
 - take a risk-based approach to fisheries management and regulation
 - establish mechanisms to allow fisheries to be managed at the appropriate level eg. statewide, regionally and/or locally.
- **To develop a new, simplified regulatory framework**, including administrative arrangements that meet the challenges and demands of the community and how it expects fisheries to be managed.

In scope

- All legislative provisions of the *Fisheries Act 1994*, including appropriate reference to freshwater issues and aquaculture, which is currently under review through a separate process.

Out of scope, but relevant to the review

- Marine parks, while acknowledging the overall impacts of marine parks on fishing
- Boating safety
- Native Title
- Marine transport issues

Deliverable

- A policy framework that outlines a path for achieving simplified, transparent, appropriate fisheries management for consideration by Government.

Who will take part in it?

Stakeholders

There will be a number of key stakeholders in the review, including:

- commercial fishers
- recreational fishers
- traditional fishers
- charter and tourism operators
- seafood marketers
- conservation sector representatives
- other relevant participants (e.g. aquaculture, freshwater fishing) as necessary
- government agencies at local, state and Commonwealth level
- academics and researchers
- the Queensland community.

How it will be achieved?

Initially, the Government will commission an appropriate independent specialist to examine fisheries management arrangements across Queensland, in other jurisdictions, establish a suite of principles to guide fisheries management and recommend alternative arrangements for Queensland.

Stakeholder consultation will be undertaken throughout the process. A final suite of recommendations will then be presented to Government for consideration (through the Agriculture Committee of Cabinet).

When it will be achieved?

The timeframe for finalisation of review recommendations is nine months. It is anticipated the recommendations for a future framework that outlines a path for achieving simplified, transparent, appropriate fisheries management will be presented to Government for consideration by December 2014.

NB: In recognition of the need for ongoing management of the fishery, the Government reserves the right to progress urgent initiatives, such as those necessary to maintain export accreditation, during the review.

Annex 2: Public meeting presentation

The public meeting presentation is available at: <http://www.mragasiapacific.com.au/Queensland-Fisheries-Review>.

Annex 3: Notes from the public meetings

Notes from the public meetings are available at: <http://www.mragasiapacific.com.au/Queensland-Fisheries-Review>.

Annex 4: Review of alternative fisheries management approaches

The review of alternative fisheries management approaches used in selected jurisdictions in Australia and internationally is available at: <http://www.mragasiapacific.com.au/Queensland-Fisheries-Review>.

Annex 5: Indicative tiers

Table 5: Indicative categorisation of Queensland's main stocks into tiers.

Species	Stock	Principal Fishery	Indicative Tier
Snapper (<i>Pagrus auratus</i>)	EC	RRFFF/ Rec	1
Barramundi (<i>Lates calcarifer</i>)	EC	ECIFFF/ Rec	1
Barramundi (<i>Lates calcarifer</i>)	GOC	GOCIFFF	1
Bream–Yellowfin (<i>Acanthopagrus australis</i>)	EC	ECIFFF/ Rec	1
Bugs–Balmain (<i>Ibacus chacei</i> and <i>I. brucei</i>)	EC	ECOTF	2
Bugs–Moreton Bay (<i>Thenus australiensis</i> and <i>T. parindicus</i>)	EC	ECOTF	2
Crab–Mud (<i>Scylla</i> spp.)	GOC	MCF	1
Crab–Three-spotted (<i>Portunus sanguinolentus</i>)	EC	ECOTF / BSCF	3
Flathead–Dusky (<i>Platycephalus fuscus</i>)	EC	ECIFFF/ Rec	1
Freshwater Eel (<i>Anguilla australis</i> and <i>A. reinhardtii</i>)	EC	QEF	2
Mackerel–Grey (<i>Scomberomorus semifasciatus</i>)	EC	ECIFFF	1
Mackerel–Spanish (<i>Scomberomorus commerson</i>)	EC	ECSMF/ Rec	1
Mackerel–Spanish (<i>Scomberomorus commerson</i>)	GOC	GOCLF	1
Mackerel–Spotted (<i>Scomberomorus munroi</i>)	EC	ECIFFF/ Rec	1
Prawn–Banana (<i>Fenneropenaeus merguensis</i>)	EC	ECOTF/ RIBTF	2
Prawn–Eastern King (<i>Melicertus plebejus</i>)	EC	ECOTF	1
Prawn–Endeavour (<i>Metapenaeus endeavouri</i> and <i>M. ensis</i>)	EC	ECOTF	2
Prawn–Northern King (Redspot and Blue Leg) (<i>Melicertus longistylus</i> and <i>M. latisulatus</i>)	EC	ECOTF	2
Prawn–Tiger (<i>Penaeus esculentus</i> and <i>P. semisulcatus</i>)	EC	ECOTF	1
Scallop–Saucer (<i>Amusium balloti</i>)	EC	ECOTF	1
Sea Cucumber–White Teatfish (<i>Holothuria fuscogilva</i>)	EC	ECBDMF	2
Sea Mullet (<i>Mugil cephalus</i>)	EC	ECIFFF/ Rec	1
Snapper–Striped (<i>Lutjanus carponotatus</i>)	EC	CRFFF	2
Tailor (<i>Pomatomus saltatrix</i>)	EC	ECIFFF/ Rec	1
Threadfin–Blue (<i>Eleutheronema tetradactylum</i>)	EC	ECIFFF	2
Threadfin–Blue (<i>Eleutheronema tetradactylum</i>)	GOC	GOCIFFF	2
Tropical Rocklobster (<i>Panulirus ornatus</i>)	EC	CCRF	1
Whiting–Sand (<i>Sillago ciliata</i>)	EC	ECIFFF/ Rec	1
Whiting–Stout (<i>Sillago robusta</i>)	EC	FFTF	2
Crab–Spanner (<i>Ranina ranina</i>)	EC	SCF	1
Emperor–Redthroat (<i>Lethrinus miniatus</i>)	EC	CRFFF	1
Trochus (<i>Trochus niloticus</i>)	EC	ECTF	2
Coral Trout (<i>Plectropomus</i> and <i>Variola</i> spp.)	EC	CRFFF/ Rec	1
Crab–Blue Swimmer (<i>Portunus armatus</i>)	EC	BSCF/ Rec	1
Crab–Mud (<i>Scylla</i> spp.)	EC	MCF/ Rec	1
Emperor–Red (<i>Lutjanus sebae</i>)	GOC	GOCDDFTF/ GOCLF	2
Mackerel–Grey (<i>Scomberomorus semifasciatus</i>)	GOC	GOCIFFF	1
Pearl Perch (<i>Glaucosoma scapulare</i>)	EC	RRFFF/ Rec	1
Snapper–Crimson (<i>Lutjanus erythropterus</i>)	GOC	GOCDDFTF/ GOCLF	2
Snapper–Saddletail (<i>Lutjanus malabaricus</i>)	GOC	GOCDDFTF/ GOCLF	2
Threadfin–King (<i>Polydactylus macrochir</i>)	GOC	GOCIFFF	2
Amberjack (<i>Seriola dumerili</i>)	EC	RRFFF/Rec	3
Blue Eye Trevalla (<i>Hyperoglyphe antarctica</i>)	EC	DWFFF	3

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Bonito (<i>Sarda</i> spp.)	EC	RRFFF/ ECIFFF	3
Cobia (<i>Rachycentron canadum</i>)	EC	RRFFF/ Rec	2
Cuttlefish (<i>Sepia</i> spp.)	EC	ECOTF	3
Emperor–Grass (<i>Lethrinus laticaudis</i>)	EC	RRFFF/Rec	2
Emperor–Red (<i>Lutjanus sebae</i>)	EC	CRFFF/Rec	2
Emperor–Spangled (<i>Lethrinus nebulosus</i>)	EC	CRFFF	2
Groper–Bass (<i>Polyprion americanus</i>)	EC	DWFFF	2
Javelin (<i>Pomadasys</i> spp.)	EC	ECIFFF/ Rec	2
Javelin (<i>Pomadasys</i> spp.)	GOC	GOCIFFF/ Rec	2
Kingfish–Yellowtail (<i>Seriola lalandi</i>)	EC	RRFFF/Rec	2
Lobster–Red champagne (<i>Linuparus trigonus</i>)	EC	ECOTF	2
Mackerel–School (<i>Scomberomorus queenslandicus</i>)	EC	ECIFFF/ Rec	2
Mackerel–Shark (<i>Grammatorcynus bicarinatus</i>)	EC	ECIFFF / Rec	3
Mahi Mahi (<i>Coryphaena hippurus</i>)	EC	RRFFF/Rec	3
Octopus (<i>Octopus</i> spp.)	EC	ECOTF / FFTF	3
Prawn–Coral (<i>Metapenaeopsis</i> spp.)	EC	ECOTF	3
Prawn–Greasyback (<i>Metapenaeus bennettiae</i>)	EC	ECOTF / RIBTF	3
Prawn–School (<i>Metapenaeus macleayi</i>)	EC	ECOTF / RIBTF	3
Rockcod–Bar (<i>Epinephelus ergastularius</i> and <i>E. septemfasciatus</i>)	EC	DWFFF/ CRFFF	2
Scallop–Mud (<i>Amusium pleuronectes</i>)	EC	ECOTF	2
Sea Cucumber–Burrowing Blackfish (<i>Actinopyga spinea</i>)	EC	ECBDMF	2
Shark	EC & GOC	ECIFFF/ GOCIFF	2
Snapper–Crimson (<i>Lutjanus erythropterus</i>)	EC	CRFFF/ Rec	2
Snapper–Goldband (<i>Pristipomoides multidens</i>)	EC	CRFFF/ DWFFF	2
Snapper–Hussar (<i>Lutjanus adetii</i> and <i>L. vitta</i>)	EC	CRFFF	2
Snapper–Rosy (<i>Pristipomoides filamentosus</i>)	EC	CRFFF/ DWFFF	2
Snapper–Saddletail (<i>Lutjanus malabaricus</i>)	EC	CRFFF/ DWFFF/ Rec	2
Squid–Pencil (<i>Uroteuthis</i> spp.)	EC	ECOTF/Rec	3
Teraglin (<i>Atractoscion aequidens</i>)	EC	RRFFF / Rec	2
Threadfin–King (<i>Polydactylus macrochir</i>)	EC	ECIFFF	2
Trevally (Carangidae)	EC	ECIFFF/ RRFFF/ Rec	2
Tuskfish (<i>Choerodon</i> spp.)	EC	CRFFF / Rec	2

Annex 6: Maximum Sustainable Yield (MSY) and Maximum Economic Yield (MEY)

MSY and MEY concepts are important underpinnings of fishery management. They are closely related concepts that are both based on the idea that the population dynamics of a fish population can be described by a production function.

A fish population produces biomass by growth of individual fish in the population and by reproducing, which adds young fish or recruits to the population. Production is reduced by fish that die from natural causes (e.g., diseases, old age, or being eaten by a bigger fish). The amount of production by a fish population is a function of the size of the population (thus it is referred to as a production function). Production is low at low population size because only a small number of fish grow and reproduce. It is also low at a high population size because growth and reproduction is slowed because the fish in the population have to compete for food or perhaps for breeding habitat. The maximum production occurs at an intermediate stock size or biomass where there are plenty of fish to grow and reproduce and growth and reproductive rates are not depressed by competition.

The production rate of a population is also known as the equilibrium or sustainable yield because this is the amount of catch that leaves population size unchanged. Therefore, the maximum sustainable yield (MSY) corresponds to the maximum population production. The intermediate biomass level that corresponds to the maximum population production or MSY is known as B_{MSY} . MSY corresponds to catching a specific fraction or percentage of the fish in the population. This fraction is expressed as a fishing mortality rate (F). The rate that corresponds to MSY is known as F_{MSY} . Fishing effort (E , which might be expressed as the number of days of fishing, for example) is more or less proportional to the fishing mortality rate and the amount of effort that corresponds to MSY is known as E_{MSY} .

MSY is often used as a fishery management objective because it sustains a fish population while allowing a high catch. The population biomass is substantially reduced (compared to an unfished population, typically by 50% or more), but not to a point where the long term viability of the population is a concern. However, the MSY concept ignores the underlying motive for commercial fishing, which is to make a profit.

The Maximum Economic Yield concept builds on the MSY concept by taking the cost of fishing into account. For simplicity sake, let's assume that the cost is proportional to effort (E) and that gross revenues are proportional to catch or yield. The profitability of a fishery depends on the difference between gross revenues and the cost of fishing. The biomass level where the difference between gross revenues and cost is maximized corresponds to the Maximum Economic Yield (to be more precise, it is actually the net economic yield). The biomass level at which MEY is achieved is referred to as B_{MEY} . As illustrated in the figure below (which is described in more detail in the Commonwealth Fisheries Harvest Strategy Policy and Guidelines, September 2007), B_{MEY} almost always occurs at a higher biomass level than B_{MSY} (typically about 20% higher according to aforementioned Commonwealth document), with less fishing effort and a lower fishing mortality rate. The catch is lower than MSY, but with less effort costing less, the fishery is more profitable. Profits from fishing disappear all together when the total cost of fishing line in the figure crosses the gross revenues curve. This usually occurs at a biomass level that is less than B_{MSY} and with a high level of effort and fishing mortality than is necessary to produce MSY.

While the MEY concept was initially proposed to address profitability of commercial fisheries, it is also relevant to recreational and customary fishing. The high biomass level associated with MEY should result in more and better recreational and customary fishing opportunities. Moreover, because stocks are typically 'thicker' at MEY levels, MEY is more environmentally conservative than MSY and should better support resilience in the ecosystem.

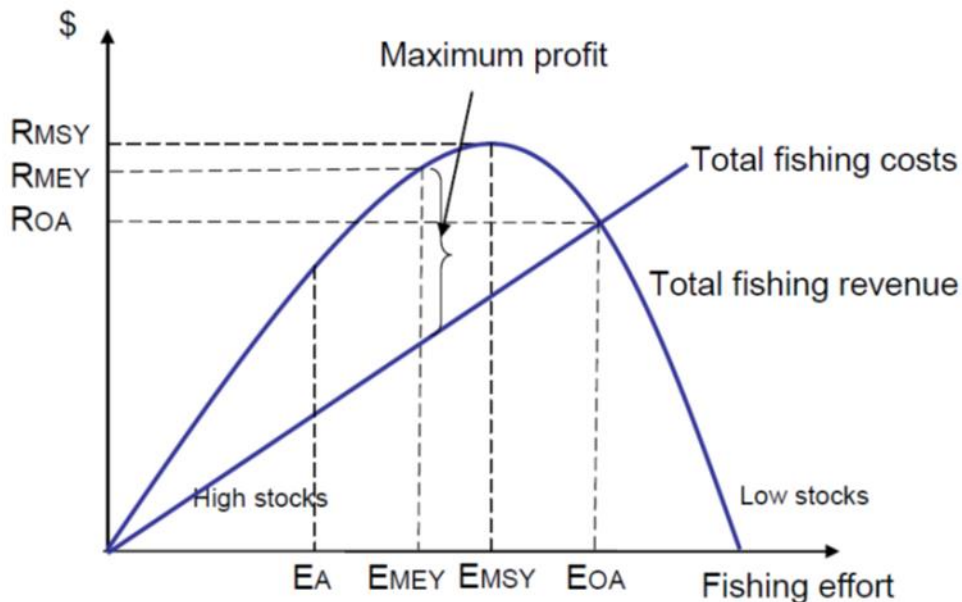


Figure 9: Maximum economic yield.

While MSY and MEY are useful fishery management concepts, applying them requires scientists, managers and fishers to cope with real world fish populations with production functions that are highly variable and fisheries that have complex cost functions. Estimating MSY and MEY reference levels, such as B_{MSY} and B_{MEY} , is difficult, and ecosystem dynamics may mean that these reference levels are moving targets. This means that MSY and MEY concepts need to be considered from the perspective of long term averages and that fishery management needs to have a long term perspective.

Annex 7: A discussion on quotas

The Essentials

Quota often arrives wrapped in a bundle of measures at a time of crisis in the management of a fishery. “Quota” therefore becomes a shorthand term for this bundle or cluster. The existence of over-fishing or over-capitalisation in the fishery means that quota allocation often takes the form of a game of musical chairs where there are fewer quota chairs than fisher backsides. This game cannot be played without fear or unhappiness. This reminds us that the basic problem of fisheries management is allocation and that there is no solution to the fundamental problem of resource scarcity, only better or worse ways of managing the conflict scarcity causes.

Individual Transferable Quota (ITQ) can be one of the better ways, but this depends on how it is specified and operated. In particular, it depends on the nature of the other measures clustered about it such as the reporting, compliance, research and cost recovery regimes imposed by Government.

ITQ is frequently lumped in with other instruments such as Individual Quotas (IQs), Individual Vessel Quotas (IVQs), Catch Quotas or Tradable Fishing Rights indicating that Government fisheries managers regard ITQ as one of a broad family of regulatory instruments employed to achieve a specific objective such as fleet rationalization. *“Individual Transferable Quotas (ITQs) are one of many fishery rationalization instruments. They are defined under the Magnusen-Stevens Fishery Conservation and Management Act as permits to harvest specific quantities of fish...It is important to understand the differences between catch shares and ITQs. While catch shares are a dedicated access privilege (DAP) for a certain portion of the overall TAC (total allowable catch), an ITQ is a property right conveyed by the government to a private party.”*¹²

This American perspective reveals a contradiction in many pronouncements about quota. Depending on the audience, quota can be presented as a control or a right. A common understanding is that ITQ begins with a Government set TAC (tonnes by year) for a fishery followed by an apportionment of this TAC to fishers in the form of a tradable property right. The assumptions supporting this definition are that:

1. The Government must collect the scientific information to carry out a stock assessment on which the TAC is based.
2. The TAC reflects government biological and social objectives for fisheries management.
3. ITQ owners are usually fishers or vessel owners.

However, it is also possible to conceive ITQ regimes where none of these assumptions would apply. For instance, ITQ could be defined as a defined percentage of the commercial rights in a defined fishery, the right holders might set annual or seasonal catch limits, and ITQ shares could be owned by anyone – or at least with the same restrictions that apply to the ownership of shares in companies or other classes of property. Moreover, it is possible to imagine ITQ rights applying to multi-species fisheries where right holders would collectively implement fish harvesting strategies

¹² [Wikipedia.org/wiki/Individual_fishing_quota](https://en.wikipedia.org/wiki/Individual_fishing_quota)

that reflect ecosystem impacts and the opportunity to maximise returns from integrated management of inter-dependent stocks. This leaves us with the following definition of quota essentials:

ITQ is a tradable private property right to a defined proportion of the commercial harvesting rights in a fishery.

That is all. Any expansion of this definition runs the risk of importing elements of a foreign ITQ description which are unsuited to local conditions and more complex definitions are already ‘contaminated’ with un-examined add-ons. The definition above identifies that only two determinations must be made as a matter of necessity:

- **“Fishery”** (in particular, the definition of the geographic bounds of the property right and the species to which the right applies, but not necessarily the tonnage of catch).
- **“Rights”** (in particular, the key legally recognised attributes of ITQ).

Not all ITQs are equal. Some are issued for a fixed term, others in perpetuity. The exact specification of these and other characteristics shapes the set of incentives and therefore the likely behaviour of ITQ owners. One of the best practical frameworks for describing property rights has been provided by Anthony Scott¹³ and each characteristic requires careful specification with a view to the incentive consequences of any setting. His six characteristics of property rights are:

1. **Duration:** whether the right is in perpetuity or a designated number of years. Longer terms mean that owners or buyers will take into account long-term effects into their calculations of value.
2. **Flexibility:** the degree of discretion to manage the use of the right and to take advantage of new uses of the resource to which the right applies. Greater flexibility imparts greater option value to the right.
3. **Exclusivity:** the number of holders of the same or a similar property right. Greater exclusivity confers a greater proportion of profits onto the holder and reduces the transaction costs of negotiating with other parties.
4. **Quality of Title:** The nature and level of legal enforcement of the right. This includes whether the title is government guaranteed or can be used as registered security against loans. Greater quality of title gives the owner a greater level of security, thereby reducing the risks of associated investments.
5. **Transferability:** the ability to sell or lease the property right. Transferability allows the movement of rights into the control of those who value them most highly. It provides right holders the incentive to maximise the value of use and to invest in management of the right that will enhance its future value.
6. **Divisibility:** the extent to which the owner of the right is entitled to divide the right by area or by attribute. Divisibility allows right holders to divest themselves of areas or attributes to

¹³ Scott, A., Marine Resource Economics Development of Property in the Fishery Vol. 5, No. 4, 1988. Pages 289-311.

buyers who believe they can use and manage the right to better advantage than the incumbent.

The key thing about quota is that it identifies the right holders in a fishery and their relative shares. Security about these two things is a necessary foundation for all future co-operation and joint investment in the conservation, management and development of the fishery. Without security, the conditions for investment are weakened. Without tradability, the conditions for innovation are weakened. Without investment and innovation, the conditions for value creation are weakened.

When a Government closes a fishery (by limiting entry or catch) the day-to-day benefits of that fishery are no longer a public good but become henceforth a private good (more correctly, a species of private good called a club good meaning that the benefits are captured by the 'club' who are authorised to take fish). In any high value commercial fishery, most of the population in a State must be excluded from the club. This is an unpalatable reality but necessary if such fisheries are not to be destroyed economically or even ecologically under open access. The key role of quota is not to limit catch in the short term. The key role of quota is to establish workable foundations for co-operation and investment by the 'club' so that members are collectively encouraged and enabled to be socially responsible users and managers of 'their' fishery in the longer term.

Some Myths about Quota

Commercial fishers in most countries who do not operate under quota management arrangements generally feel that their fisheries rights are weak and are crying out for greater security over their livelihoods. At the same time, they are in general agreement that such security should preferably not take the form of quota. The reasons given for this opposition to quota are diverse and obviously strongly felt. However, they share two common features. The first is a failure to clearly distinguish the necessary attributes of quota from those that are optional and often ill-advised. The second is a failure to clearly distinguish quota from other parts of a fisheries management regime.

What is the harm in a few myths? Myths can be comforting but quota myths amount to a mythical iceberg capable of sinking any rational discussion of quota that comes near to it. When myths are repeated over and over they evolve, leaving in the parts that made a strong impression on the hearer and shedding the 'unimportant' parts. Scary myths therefore come to reveal our fears and heroic myths reveal our aspirations.

Each of the quota myths below is a scary myth. They reveal fears about change, loss of commercial flexibility and resilience, increased costs and the great underlying fear about the uncertain outcomes of any possible quota allocation formulae. The good news is that these fears can be significantly allayed by good fisheries policy and management that recognises them as legitimate and reasonable concerns. Here are the top five quota myths:

1. Quota is inflexible
2. Quota is costly
3. Quota wipes out small business
4. Quota corrals fishers in zones
5. Quota causes dumping of fish

Quota is inflexible

By this fishers describe quotas set at a constant level that do not respond to good fishing seasons meaning fishers miss out on catching opportunities which the fishery could sustain. On the flip side, fishers “cannot catch their quota” in bad years, meaning the “fixed” quota is not having any conservation effect. Either way, quotas allegedly cannot get it right. However, these are not comments about quota but about TAC¹⁴ setting. Quota is generally defined as a share of a TAC set by the Government. However, problems arise when these TACs are not clearly linked to explicit management objectives, harvest strategies or decision rules operated with real time data from the fishery. The tendency has also been to ‘set and forget’ TACs. This is not best practice fisheries management but inflexible TACs are obviously not a necessary feature of quota.

Quota is costly to manage

The introduction of quota is often associated with a substantial lift in operating costs faced by fishers through expanded administration of catch reporting and catch balancing and increased cost recovery for government research and compliance. The introduction of these costs by Government is real but also reflects that to some extent that they are costs for activities that should be undertaken whether there is quota or not.

This issue is illuminated by statements from Government fisheries agencies declaring that they could not introduce quota because they have not done the necessary research to set an appropriate TAC. This is another way of saying that the Agency has not got the information to decide whether active management of the fishery is necessary. This reveals that management cost is not attributable to quota but to the task of setting of a catch limit of some kind in the fishery, or even simply having the information to decide that a catch limit is not currently necessary. Fisheries management, even under open access, is not free. The Agency still has to profile fishers and their catch and analyse this information to determine whether restrictions on catch should be introduced. These costs should be recovered from all fishers or none. They should not be recovered only from the subset of fisheries with quota.

Quota wipes out small business

The allocation of quota is often followed by a reduction in the number of harvesters. This is a classic case where care is required to avoid the logical fallacy *post hoc, ergo propter hoc* (after this, therefore because of this). There are two likely explanations for this pattern that suggest that quota, in itself, is not harmful to small businesses. First, quota is usually resorted to as a management initiative only after a fishery reaches a stressed state, often described as ‘too many fishers chasing too few fish’. Quota is therefore introduced in association with measures to reduce catch. It is this reduction in catch limit, not quota, which is responsible for the exit of fishers. At least exiting fishermen have a quota entitlement to sell.

The second explanation for the reduction in quota ownership by owner-operators relates to the breadth of quota markets and the identity of quota buyers. Quota is of interest to businesses throughout the value chain (fish harvesting, processing and marketing). This is because a secure

¹⁴ Total Allowable Catch (TAC) or Total Allowable Commercial Catch (TACC) the total quantity of catch able to be legally harvested by commercial fishers from a designated fishery in a particular year.

supply of fish is a critical input into all of these businesses and the purchase of quota is an excellent way of managing risk around this supply. This competition between tiers of potential buyers explains why demand for quota is often strong. It is also true that there are economies of scale in many (but not all) of these value chain businesses.

The unremarkable consequence of starting with a set of owners comprised solely of harvesters but allowing sales to others will be that it is likely that the proportion of quota owned by harvesters will decline over time. It should be recalled that this process only occurs through the voluntary sale of quota to the highest bidder. It is difficult to argue that a voluntary sale is against the interests of the vendor.

Quota confines fishers to zones

Once it is decided to implement output controls in a fishery (catch limits) then the geographic boundaries of the fishery management unit must be defined. Where this process of definition does not cover the entire areas where access was previously granted, fishers fear that they will lose some of their right to relocate their vessels from areas of fish scarcity to areas where fish are more plentiful. Quota allocations on the basis of catch history therefore reflect an 'average' pattern of harvesting that they may not wish to follow every year. This is a common objection to any kind of zoning proposal.

First, quota fisheries generally do not work by managing effort by type and location but by managing catch by species and area. Arguably, effort can be more mobile and flexible under quota than under fisheries managed by input controls. It is true that the fisher will have to acquire quota in whatever areas they wish to fish in. The opposite side of this coin is that 'non-local' fishers face the same obligation. This protects local fisheries where a group of quota owners traditionally operated in a way designed to avoid over-exploitation. As mentioned above, a key to flexibility is responsive TAC setting. In a very good year a local quota owner would have the choice of increasing catch or leasing out surplus quota to either local or non-local harvesters. Quota therefore constrains catch but not catching; it zones fish but not fishers.

Quota causes dumping of fish

Sometimes quota fishermen are caught high-grading their catch in order to maximise returns on their individual quota entitlement. This dumping is often not reported and, apart from being wasteful, also undermines data-based fisheries management. However, this problem is not unique to quota. It arises anywhere that the catch of individuals is constrained. For instance, a recreational fisher with a constraining bag limit has the same incentive to high-grade by releasing or discarding all but the largest fish. It is not quota in particular that encourages dumping but any individual catch limit. A quota owner actually has a lower incentive to dump fish than other forms of catch limitation. Quota owners collectively carry the environmental and economic costs of dumping through an impact on the value of future catching rights on which all calculations of quota value are based.

This nicely illustrates the point that in fisheries management (as in other things) most actions have both benefits and costs and it is important not to focus solely on one side of the ledger. It is true that constraining catch creates an incentive to maximise value. This incentive is good and only one of thousands of strategies to maximise value involves dumping fish. The alternative (unconstrained

catch) has no incentives to maximise value at all - or to conserve the resource for that matter. It is better to have to address one potentially perverse incentive than to have nothing but perverse incentives.