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By email to: fisheries.review@mpi.govt.nz

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Dear Dave,

Future of Fisheries

Thank you for the opportunity to submit.

Terra Moana Ltd is a niche sustainability consultancy. We focus on using natural capital and ecosystem service analysis approaches (quantitative and qualitative) to improve primary industries. Through our principals Tony Craig and Katherine Short, Terra Moana Ltd blends the best of industry and non-government approaches. We are the sustainability advisers to Moana New Zealand and support them across their interrelated sustainable business development agenda. Our major expertise is sustainable fisheries and seafood both in New Zealand and internationally. A core purpose of our work is to support companies in moving products derived from precious wild natural resources up the value chain and to highlight how relevant incentives can be deployed to restore the health and well-being of the human communities and ecosystems that underpin their production.

We are heartened by the launch of the new Future of Our Fisheries consultation documentation however we raise some significant issues that we urge you to consider;

1. We agree that there is a need to enhance the Quota Management System so that it can make the best use of the wider ecosystem based management theory and practice. That said one does not need to throw the baby out with the bath water by trying to reinvent our entire fisheries management. We strongly suggest the Fisheries Act and other potentially complimentary New Zealand legislation have all the components and capabilities to embrace, encompass and implement ecosystem based management – albeit needing refinement and better alignment.

2. Tragically however we again see a lack of confidence and understanding of the true potential of the Fisheries Act. Whilst there are some valid questions being asked and initiatives being proposed, these need to augment and enable an already sound piece of legislation, not undermine it.

Technology advances and rapid communication mean that society, and those seeking to undermine confidence in the QMS, are much more informed and paying closer attention about the state of the marine environment and the fisheries and industry therein. This scrutiny is now common and will only intensify but that is insufficient reason to destabilise the operating environment through constant review.

The first approach should always be how can these new demands and challenges be met within the current operational (legal, administrative, regulatory) framework, even if that means better aligning management frameworks with the Fisheries Act– and which would call for effective collaboration with other agencies?

The result of continual reviews is destabilisation of both the QMS, and more importantly the Deed of Settlement as is being witnessed by the defensive action both industry and Maori are taking to protect their position. Positions that were granted to them through separate Acts of Parliament i.e. for Maori, the 1989 Maori Fisheries Act, 1992 Sealord Settlement and subsequent 2004 Maori Fisheries Act, and for quota owners through the Fisheries Act 1983 (delivering the QMS) and its enhancement in the1996 Fisheries Act.

It is impossible to consider parliament, officials, Industry and Maori leaders of the time, could have ever contemplated, given the tumultuous events surrounding each Act's development, that we would be facing such significant undermining of such critically important documents and legislation, the foundation of which was based on enormous goodwill and concession by Maori (through the Settlement) industry (with the introduction of the QMS).

3. The review documentation is fundamentally silent on the two critical factors that would enable 1. above to happen namely:
    a. the documents do not go anywhere near far enough in relation to managing recreational fisheries,
    b. the documents are largely silent on how the Ministry and or Government proposes to push back on/halt the terrestrial based activities that are having catastrophic impacts on nearshore fisheries, breeding grounds and habitats.

4. The review and documentation is also heavily biased in favour of the recreational sector as evidenced by the following:
    a. The focus on Integrated Electronic Monitoring and Reporting Systems (IEMRS) being applied to only Commercial and Customary Sectors. What about using modern technology to enhance recreational fisheries management? Why is this not proposed?
    b. The documentation is silent on controlling recreational numbers and recreational take with no commentary on how the Ministry intends to manage the proposed recreational parks that will, by their creation draw more fishers. Without controlling the number of fishers, bag limits risk depletion!
    c. The documentation focuses on "abundance" rather than sustainability. Abundance is a key plank of recreational sector lobbying and is not a requirement of the Fisheries Act. This can therefore only be regarded as superficial "political pandering".

We make the following specific comments on the Options proposed:

Strategic Proposal 1: Maximising Value from our Fisheries

Option 1: Address discarding

- We agree that it is not acceptable to waste fish. Fishers need to either be more selective in targeting fish and/or be allowed to land them so that they can be used for other products such as high grade fish oils.
- However there are poor incentives in the way the QMS is being run which need to be ironed out. The penalties regime especially forfeiture has driven the development of elaborate commercial structures designed to ensure the catcher is separated from the quota owner to avoid forfeiture for offences against the Act.
- ACE has been the mechanism for this to happen and for quota owners, not in the business and activity of fishing, provides a safety net from forfeiture.
- Unfortunately this has meant that the Quota Owner is largely divorced from the actions and responsibilities of the fisher. Add to this the fisher, largely reliant on year to year ACE survival arrangements, becomes less concerned with long term sustainability and more focused on financial survival. This is a dangerous mix.
- Sadly MPI has continued to disregard industry calls for a solution to this which are the "powers of collective action". This is the very tool that would force quota owners to consider the full spectrum of management outcomes, incentives and perspectives to drive the necessary behavioural change.

Option 2: Encourage and enable innovative harvest technologies.

- We strongly support greater flexibility for industry to innovate in gear types. In particular, we support Precision Seafood Harvest being able to be used as soon as it is ready by industry. We urge that this be classified as a modular harvest system and not trawl gear.
- It is simply impractical for the Ministry or for that matter society to require that all fish species can be caught by line. Flat fish are but one example and ironically where the trawl alternative "set netting" is also under attack from NGOs.
- This is poorly considered policy. The implications for gear conflict given the increased number of longlines and hooks in the water needed to catch the volumes of fish traditionally taken by trawl between and within sectors (commercial /recreational and customary) will become immense let alone increase bird by-catch risks.
- Bottom contact gear is inevitable for some species. We would suggest that the first focus should be to restrict such activity within agreed zones. Limiting the trawl footprint means we can then take a more detailed look at the full implications of trawling in such zones and make considered management decisions based on more detailed information.

Option 3 – Maximise the value of our shared fisheries

- We strongly support a shared fisheries approach.
- We question the recreational fishing figures that the Ministry is using. It is disingenuous of MPI to use different figures on the number of fishers. The 2012 MPI recreational fishing report estimates 500,000 recreational fishers whilst these papers state 700,000 estimated fishers, which is the number lobby groups use.
- Furthermore, the estimated economic value to New Zealand of recreational fishing used in the documents has clearly not been subject to the same intellectual rigour processes and disciplines, such as peer review, that such important information in management decision making demands.
- A quick analysis questions the integrity of the MPI recreational fishing survey as evidenced by the following case presented on page 4:

Example: TABLE A. Analysis of the 2012 MPI estimates for recreational take of Paua in the Marlborough Sounds (QMA7) region.

Pau 7	Estimated Tonnes Caught By Rec Sector (14.1mt)														
No Fishers	4,751	4,751	4,751	4,751	4,751	4,751	4,751	4,751	4,751	4,751	Av Wgt Selection:				
Average weight	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325		0.325			
	Number of fish caught (To give total kgs)														
Trips	1	2	3	4	5	6	7	8	9	10					
1	1,544	3,088	4,633	6,177	7,721	9,265	10,809	12,354	13,898	15,442					
2	3,088	6,177	9,265	12,354	15,442	18,530	21,619	24,707	27,796	30,884					
3	4,633	9,265	13,898	18,530	23,163	27,796	32,428	37,061	41,694	46,326					
4	6,177	12,354	18,530	24,707	30,884	37,061	43,238	49,415	55,591	61,768			Percentages of Population		
5	7,721	15,442	23,163	30,884	38,605	46,326	54,047	61,768	69,489	77,210	Estimated	47,514	4,751	10%	
6	9,265	18,530	27,796	37,061	46,326	55,591	64,857	74,122	83,387	92,652			9,503	20%	
7	10,809	21,619	32,428	43,238	54,047	64,857	75,666	86,475	97,285	108,094			14,254	30%	
8	12,354	24,707	37,061	49,415	61,768	74,122	86,475	98,829	111,183	123,536			19,006	40%	
9	13,898	27,796	41,694	55,591	69,489	83,387	97,285	111,183	125,081	138,978			23,757	50%	
10	15,442	30,884	46,326	61,768	77,210	92,652	108,094	123,536	138,978	154,421					
11	16,986	33,973	50,959	67,945	84,931	101,918	118,904	135,890	152,876	169,863					
12	18,530	37,061	55,591	74,122	92,652	111,183	129,713	148,244	166,774	185,305					
13	20,075	40,149	60,224	80,299	100,373	120,448	140,523	160,597	180,672	200,747					
14	21,619	43,238	64,857	86,475	108,094	129,713	151,332	172,951	194,570	216,189					
15	23,163	46,326	69,489	92,652	115,815	138,978	162,142	185,305	208,468	231,631					

Table A exposes the fragility of MPI estimates. The total recreational estimated tonnage could be taken if just **10% (4751)** of recreational fishers **go diving once per year** and take only 9 paua each (the bag limit is 10).

- This highlights the level of potential underestimation of recreational effort. Our analysis shows that the pattern is similar across most rocklobster and paua stocks and catch estimates.
- We find the Future of Our Fisheries lacks analysis about the options to improve recreational fisheries management. This must be remedied if these fisheries are to be sustainably managed.

Option 4 – Build the Market Position for New Zealand Seafood

- We support the application of the Marine and Aquaculture Stewardship Council programmes in New Zealand seafood over the development of any national certification system.
- We believe that these best practice international standards are an essential part of building a credible market position for New Zealand seafood.
- It is important to note that Sanford, Moana New Zealand and Ngai Tahu are all now members of the Sustainable Business Council and have adopted specific sustainability journeys to both improve how they operate, as well as to underpin a stronger provenance and marketing story.
- To ensure all New Zealand's coastal seafood can be certified, our fisherfolk must be supported to understand these international market requirements, the demands of meeting social licence to operate standards and to become responsible fishers. We are developing such a programme for the fishers supplying Moana New Zealand and welcome MPIs input.
- We urge MPI to adopt the approach taken in Western Australia where all coastal fisheries are being assessed bioregionally against the MSC programme and supported, in partnership with both industry and the recreational sector, towards certification.
- Particularly noteworthy for New Zealand is the partnership between the fishing industry and recreational fishing groups that has meant that the Mandurah Blue Swimming crab fishery was MSC certified. The commercial and recreational sectors were co-clients to the certification and did so to push back on unsustainable coastal development that was eroding crab habitat quality.
- We believe this could be a game-changing approach in New Zealand for prized coastal species (paua, rock lobster, snapper, blue cod) and systematically and methodically enable our fisheries

to work through their challenges. A key strength about the MSC programme is how it can create incentives for fishers on the water and develop empowered, responsible fishers.

- Enabling MSC and ASC certification will also dramatically improve traceability and transparency and vice versa. Related to this is how New Zealand needs to modernise its fish-naming requirements to ensure that no illegal, unregulated and unreported seafood is sold and to provide the provenance information the increasingly discerning consumer requires – the consumer we should be targeting to increase the value of our seafood. As New Zealand companies increasingly sell consumer ready tamper proof packaged seafood, and as environmental NGOs increasingly scrutinise not only the species but how and where it was caught, the sector will need clear guidance on best practice labelling norms. This has been done in New Zealand and through JASANZ, New Zealand could usefully learn from this experience.

- Related to this is the issue of inconsistent standards and application of ecolabels in New Zealand and being across all primary industries, MPI is well placed to tackle this, potentially in partnership with the Ministry for the Environment through the Natural Resource Sector.

  Policy research is urgently needed to analyse eco- and sustainability labels in New Zealand and the gap between how New Zealand has developed them versus best practice internationally. MSC and ASC, and its related FSC (forests), are all members of ISEAL, the grouping of credible, independent third party ecolabels. New Zealand has very much had a reinvention for ourselves approach, in how we've tackled sustainability labelling to date. This has traction in the wine industry and in products under for example the Enviromark scheme. These were important learning initiatives, however, there are significant gaps between these programmes and the credibility principles of ISEAL ecolabels. This translates into poor at worst and inconsistent at best, environmental (at least) outcomes and undermines our clean green reputation.

  Of note in this space in New Zealand is that:

  - at least 80% of our plantation forests are FSC certified, yet public awareness of this is extremely low as products sold in New Zealand are not often FSC labelled. Why?

  - There is a requirement on FSC certified forests to consider their relationships with their neighbours which is leading to improved conversations between the forestry and seafood sectors, especially in relation to sediment inputs to the marine environment.

  - most of our deep water fisheries are MSC certified and at least Hoki is MSC branded in New Zealand supermarkets. Yet this is little known to consumers.

  - MSC certified John West Tuna was recently released in the New Zealand market and is being advertised on TV which may grow consumer interest and could become the anchor of a New Zealand sustainable seafood week if seafood companies, the government, retailers, restaurants/chefs etc got on board to co-promote the MSC and ASC – as is occurring in Australia, Singapore, the UK, Hong Kong etc.

  - Moana New Zealand have just had the first New Zealand ASC certification for Blue Abalone (Paua) and are moving towards Chain of Custody certification.

  - the value of MSC and ASC is not only in how they improve the environmental performance of seafood production. They also create motivated, empowered seafood sector professionals who are rewarded for doing the right thing as well as being points of hope for the public, and especially youth that it is possible to have credibly sustainable seafood and well managed fisheries and seafood production.

- the MSC continues to be criticized by environmental organisations, most recently through the New Zealand Orange Roughy certification. In our view, this criticism is healthy and the MSC treads the most objective path between stakeholder perspectives whilst not having a philosophical bias.

An analysis of this ecolabeling space for New Zealand, that is truly rooted in the economics, the ecological and environmental impact, in what is required to underpin clean, green New Zealand products, and what our premium markets, for at least primary industry products would actually welcome and value, rather than what we think we can manage to sell them, would be an important work programme in parallel with the study tour recommended above. We need to raise our standards and stop selling ourselves short if we are to truly value our natural environment and the premium products, including the tourist offering it enables.

Option 5 – deliver value from new and underdeveloped fisheries

We urge MPI to not focus here given what an abject failure the framework established for the development of new fisheries i.e. tendering new species in their undeveloped state, has been. This was because speculators acquired large quota shareholdings assuming that someone else would expend the capital required to actually develop the fisheries and bear the associated risks, and whilst the speculators free-loaded. Other than surf clams where one individual company succeeded in gaining the lion's share of the quota shares tendered, none of the developmental fisheries introduced in recent times have been successfully progressed.

Developmental fisheries require innovation, rapid decision making, an enabling management environment and substantive risk capital. They also require risk takers, provided there is no substantive environmental risk, to have a fair and open chance to be successful. Pulling such species into the QMS from the outset means such innovation is stymied through regulatory and legislative administrative burden and complexity e.g. consultation.

If MPI are truly serious about enabling this Option, we suggest MPI review the whole framework and compare the incentives, innovation and speed of development that occurred when development stocks were not part of the formal QMS framework (in the '80's).

Strategic Proposal 2: Better Fisheries Information

Option 1 – IEMRS

- We support the concept of IEMRS but are concerned that all this will do is provide a more rapid form of information that MPI is already gathering through the industry catch effort landing systems, whilst increasing costs. The failure to extend IEMRS to include the recreational sector is a fundamental mistake that will not improve fisheries outcomes while a significant portion of the data remains missing. We urge MPI to also require reporting for recreational fisheries as otherwise the information for decision making is both incomplete and out of sync with the real-time information required for "tomorrow's" best practice fisheries management norms.

Option 2 – Gather more information to support decision-making and value-adding

- We strongly urge MPI to require recreational fishing reporting.
- MPI are aware of the Fish4all voluntary, free recreational fishing reporting app that we have developed and recently relaunched. We drew your attention to it in the February submission and formally to the Primary Production Select Committee recently too. Fish4all seeks to empower a culture of reporting. We would be pleased to discuss with the Ministry how this can support better data provision for shared fisheries management.

- We urge Government to have a single marine and coastal information system, operating at a finer scale and in real time. This is critically necessary especially in relation to protecting, managing and restoring habitats that support seafood production as well as to track trends in critical risks and stressors to the marine environment including, but not limited to regional climate change, erosion/sedimentation and marine pests. The Natural Resource Sector (NRS) may be an effective collaboration mechanism in this respect given the recent Ministry for the Environment Marine Domain report highlighted the need for better information and we urge MPI to increase its attention to, and participation and investment in, the work of the NRS.

Option 3 – Invest in ecosystem-based management

- This is essential, overdue and critically necessary to stop the decline in the state of especially coastal fisheries.
- It can and must align with Te Ao Maori and support Iwi Maori to be 21st Century kaitiaki.
- There is considerable policy and economic analysis work to be done in parallel with the emerging Sustainable Seas Science Challenge Ecosystem-based Fisheries Management programme of work and that must not be left until the science is in. This is critical to demonstrate how such a management framework can and is likely to add value to quota rights and not undermine them, as is perceived at present by most industry.
- It was worrying to hear MPI officials at the recent consultation commenting on the extensive information requirements to enable Ecosystem-based Management (or EBFM or the Ecosystem-Approach – Note: whilst there are differences, there are many similarities and it is important to get on with it).
- More information is required to manage coastal fisheries and the habitats they rely upon, as the Ministry for the Environment Marine Domain report stated, however we will "Fiddle whilst Rome burns" if we do not urgently progress Ecosystem-based Management. We include an example of coastal fishery ecosystem-based management for your information at the end of this submission, much of which could likely be mapped onto existing management arrangements in New Zealand, albeit perhaps across different agencies.
- Ecosystem-based Management enables use of ecosystem-service analysis tools and methods. These tools are best practice, aligned to the modern sustainable business natural capital approach and will enable MPI to support the Government to more effectively meet and report on the Sustainable Development Goals. This is aligned with the sustainability journeys of at least Moana New Zealand and Sanford as well as the work programmes of the Sustainable Business Council and NRS Natural Capital work programme.
- Terra Moana believes a responsible fisheries culture is critically needed so responsible coastal fishers can demonstrate how they do care for the marine environment and wildlife and which would enable them to secure their social licence to operate. We believe this directly compliments ecosystem-based management and that it would underpin both the shift to collective management urged above, and premium product provenance. It is not good enough that most fishers who do and want to behave responsibly are being undermined by a minority.

Do let us know if we can elaborate on and we welcome involvement in subsequent consultations.

Kind regards

Katherine Short
Partner

Tony Craig
Partner

Guidelines for implementing Ecosystem-Based Management in a hypothetical coastal fishery

COMPONENT	INVOLVING	INTENDED OUTCOMES
1. Identify stakeholder community.	• Fishery management agencies, conservation agencies, conservation NGOs, local community groups, scientific/academic research community, fisher associations or cooperatives, higher and lower levels of government, fish processing / distribution groups, indigenous representatives.	• A formal network of interested parties with whom the fishery representatives will participate to prepare and review the management of the fishery. • A transparent and fully accountable process enabling the participation of all interested parties in the process of managing the fishery.
2. Prepare a map of ecoregions and habitats.	• Conducted by the fishers, research community, fishery managers, stakeholders and partners. • Covers the full area of fishery operations. • The focus is on areas where the fish are, where they are fished, and any specific spawning, nursery or similar obligate habitats or locations. • High resolution is needed in benthic primary producer habitats (such as algal beds, seagrasses, mangroves, coral reefs).	• Maps of the ecosystems throughout the fishery at scales of resolution consistent with the scale of the fishery. • Resolved habitats at a scale consistent with the potential impacts of the fishery. • Coherent with other ecosystem classification nitiatives (at both larger and smaller scales). • Major features and exceptions documented (e.g. highly migratory species, oceanographic currents or features, boundary mismatches between taxa). • Major uncertainties identified and documented as guidance for research and investigation programs.
3. Identify partners and their interests / responsibilities.	• Conservation, environment protection, and coastal planning agencies from all levels of government. • Major users and managers of other, possibly co-located, resources (e.g. tourism, mining, oil/gas, transport, and communications). • Directly affected local communities.	• Clarify specific roles and responsibilities for management in the marine environment. • Engage with other supportive interests. • Promote the opportunity for coordination and integration, improved efficiency across government and better outcomes for marine management, better agency outcomes for lower cost, more accountability in government, more effective long-term solutions to marine ecological problems, and shared approaches to problems held in common.
4. Establish ecosystem values.	• Fishers, research community, fishery managers, stakeholders, partners and the public; designed to identify all major uses and all major natural and ecosystem values throughout the area where the fishery operates.	• A detailed distributional analysis of the main attributes of the ecosystem where the fishery operates. • A clear and agreed expression of the natural and use values, which could include: - highly valued habitats; - representative areas dedicated as reserves; - protected species feeding, breeding, or resting grounds; - fishing, spawning grounds, recruitment areas and migration paths for commercial species; - highly productive areas such as upwellings; - areas popular for recreational fishing or diving; - areas used for ports and harbours; - areas of high scenic and wilderness amenity; - high cultural and historic value; - traditional hunting grounds for Indigenous peoples; - areas of high tourism value; - areas used for dumping of dredge wastes, defence training etc.

5. Determine major factors influencing ecosystem values.	• Establishing cause-effect relationships; consider factors both internal and external to the fishery management system. • Conducted by the fishers, research community, fishery managers, stakeholders and partners.	• Identified hazards to marine ecosystems and their values from the full range of actual and potential human impacts that occur in the fishery region. These could include: - extent of loss/damage of marine habitats; - effects of specific fishing gear on benthic habitats; - effects of pollution from coastal rivers on inshore habitats; - risk of marine pest invasion and disruption to critical habitat or fishing operations; - effects of the removal of the biomass of harvested species (in all fisheries) on trophically dependent species.
6. Conduct Ecological Risk Assessment (ERA).	• ERA conducted with participation of all stakeholders and partners, fishers, research community and the fishery manager: • uses broad multi-disciplinary knowledge base; • identifies key areas of uncertainty; • open for public scrutiny and review; • fully peer reviewed by independent authorities.	• Agreed estimates of high, medium and low risks of the fishery to the ecosystem values identified in step 5, such as the risk of the fishery to protected species, and to the ecosystem, habitats, species and genetic diversity.
7. Establish objectives and targets.	• Fishers, research community, fishery managers, stakeholders and partners. • Performance objectives and targets established for: - high and medium priority risks from the ERA; - important aspects of the ecosystems (including protected species, critical habitat); - stocks.	• Agreed and shared goals for specific elements of ecosystems. • Specific performance objectives and targets for important elements of the ecosystem. • Objectives and targets that are comprehensive and precautionary in terms of valued aspects of the ecosystems. • Could include: - maintaining or recovering population sizes of protected species; - maintaining the distribution, area, species diversity and trophic structure of important habitats; - reducing fishing effort in specific areas to help protect populations of benthic fauna; - increasing the distribution and diversity of benthic fauna considered to be affected by fishing; - rehabilitating marine ecosystems to a past (healthier) condition.
8. Establish strategies for achieving targets.	• Fishers, research community, fishery managers, stakeholders and partners. • Focus is on identifying appropriate and workable strategies to achieve objectives and targets, and on specific capacity matched to responsibilities for implementing strategies. • Strategies designed based on best understanding of the cause-effect relationships developed in Step 5, and matched to highest priority needs for corrective actions identified in Step 6 (ERA). • Use of incremental strategies where necessary and unavoidable.	• Series of prioritised strategies that define workable activities and responses to achieve specific objectives and targets identified in Step 7. Includes who is responsible, what funds and time frames are involved, what controls are needed and where data/outcomes are reported and assessed. • Strategies could include: - declaring a network of sanctuary protected zones; - establishing buffer zones where only specific uses, or types of fishing, are permitted - research on improving gear design to reduce impacts on a sensitive habitat, or reduce the bycatch of an important species; - improved fishery-independent monitoring of catch, or bycatch; - reducing pollution from coastal rivers; - constructing fish escapement panels in trawl nets to avoid catch of a certain type and size of fish, or to reduce overall fish bycatch; - implementing an industry code of practice to reduce risks of bait discards to bird populations.

9. Design information system, including monitoring.	• Fishers, research community, fishery managers, stakeholders and partners. • Focus is on capture of appropriate data/information	• Efficient and effective fishery information system that provides data and information on stock and ecosystem performance (additional to information
	to determine if : strategies are working as expected; objectives and targets are being achieved; cause-effect models are correct; fishery impacts are being reduced. • Collaboration and contributions from partners identified.	needed for stock management); identifies specific effects of fishery strategies on ecosystem values. Could include: - Periodic mapping of important habitat distributions; - Population census of important protected species; - Species diversity in fished habitats; - Distribution of fishing effort by gear types and fine spatial scale; - Size/age classes in harvested species; - Species diversity in closed areas.
10. Establish research and information needs and priorities.	• Fishers, research community, fishery managers, stakeholders and partners. • Focus is on identifying specific high priority areas of uncertainty, and on quality science outcomes, for both stock and ecosystem issues. • Collaboration and contributions from partners identified. • Research strategies are fully peer reviewed or independently audited.	• Comprehensive research programs targeted at resolving key ecosystem and stock issues in the fishery. Could include: - habitat mapping; - impact of fishing on specific habitat types; - effects of coastal development on recruitment of harvested species; - design of monitoring programs to resolve important changes in habitats; - biological data of key species (both utilised and non-utilised); - determining the dietary preferences of harvested species and their major predators; - species composition of bycatch with different gear types used in the fishery.
11. Design performance assessment and review processes.	• Fishers, research community, fishery managers, stakeholders and partners. • Focus is on a process that is participatory and inclusive. • The locations, timing and resourcing enables partner and stakeholder participation in reviews of performance of the fishery in relation to stock and ecosystem values. • Performance outcomes peer reviewed by independent authorities.	• Periodic (but regular) forum for discussion, review and assessment of fishery performance by partners, stakeholders and the public. • Periodic (but regular) forum for review, assessment and revision of monitoring data, objectives and targets by stakeholders and partners.
12. Prepare education and training package for fishers.	• Fishers, fishery managers, extension experts and stakeholders and partners.	• Outreach program to provide training and support for fishers about new fishery management, ecosystem or other EBM initiatives, and provide local technical support for assessment and resolution of ecosystem issues; to commence at the time of Step 1.

Table 6 in: Ward, T., Tarte, D., Hegerl, E., and Short, K. *Policy Proposals and Operational Guidance for Ecosystem-Based Management of Marine Capture Fisheries*. 2002.