TORRES STRAIT PRAWN MANAGEMENT ADVSIORY COMMITTEE	Meeting No. 4 14-15 June 2007
Management Plan – Update on progress	Agenda Item No. 4.1

RECOMMENDATION

That the TSPMAC **NOTES** the update provided in respect to the progress of the Management Plan.

That the TSPMAC **AGREES** to;

a) contract the OLDP approved external drafter identified by AFMA legal, to draft the TSPF management plan.

b) utilise surplus funds from the 2006/2007 TSP budget to subsidise the drafting of the management plan.

BACKGROUND

At the TSPMAC#3 meeting held in February 2007, it was requested that "*the cost of hiring an OLDP approved drafter and the source of funding to draft the management plan"* be investigated. The justification for taking this approach is that OLDP currently have an extensive waiting list for drafting that would result in the TSP Management Plan taking around six months to complete. Following drafting there would be stakeholder consultation, TSPMAC comment, PZJA Standing Committee comment and PZJA approval before the plan could be introduced. As the TSP Management Plan will be most effective if it is in place before the start of the 2008 season (starting on March 1, 2008), it was deemed that the contracting of an external, OLDP approved drafter may be more time and cost effective.

> ***TSPMAC#3 – Action point 6.*** *Investigate the cost of hiring an OLDP approved drafter and the source of funding to draft the management plan.*

Also at TSPMAC#3, it was noted that in regard to the performance indicator/criteria section of the draft management plan, the objectives of the draft management plan did not link with the measures or the performance indicator/criteria sections of the draft management plan. It was agreed that these sections would be reworked by the agencies to ensure greater consistency and then circulated to the Management Plan Working Group members for comment.

> ***TSPMAC#3 – Action point 7.*** *"The management plan working group is to meet via teleconference to discuss the final draft of the proposed management plan before it is forwarded for legislative drafting."*

DISCUSSION

The cost of hiring an OLDP approved drafter and the source of funding to draft the management plan has been further investigated, with the major findings listed below:

1) The OLDP indicated that they will charge around $50,000 to draft the management plan and that it would take up to six months to produce the first version.

2) An OLDP approved drafter (contacted by the AFMA legal section), gave an estimate of $20,000-$34,000 for drafting, with the first draft being ready for review/comment within 4-6 weeks of receiving the drafting instructions.
    a. This is at a rate of $150/hour (approx $4,000/wk) for 4-6 weeks total ($16,000-24,000).
    b. This would be followed by several rounds of amendments totalling 1-2 weeks of work (an additional $4,000-$8,000).

The source of funds to draft the TSPF management plan is yet to be identified. However, given that the TSPF is a cost recovered fishery, it is reasonable to expect that some or all of the expense would be accredited to the TSPF budget.

> ***TSPMAC#3 – Action point 7.*** *"The management plan working group is to meet via teleconference to discuss the final draft of the proposed management plan before it is forwarded for legislative drafting."*

The objectives of the draft management plan and the associated performance indicator/criteria section of the draft management plan and have been reworked by the agencies to ensure greater consistency and connectivity. The revisions were circulated to the Management Plan Working Group on June 5th, 2007 for review/comment (Attachment 4.1A).

Attachment 4.1A: Objectives and Measures

Torres Strait Prawn Fishery (TSPF) Management Plan
Objectives for 2008-2012

Objective 1	Ensure the utilisation of the fishery resources within the TSPF is consistent with the principles of ecologically sustainable development and the exercise of the precautionary principle
Objective 2	To give regard to the rights and obligations conferred on Australia by the Torres Strait Treaty and in particular to the traditional way of life and livelihood of traditional inhabitants, including their rights in relation to traditional fishing
Objective 3	Promote economic efficiency in the utilisation of the fisheries resources within the TSPF
Objective 4	Ensure cooperative, efficient and cost effective management of the Fishery
Objective 5	Manage the fishery's interaction with the marine environment including the incidental capture of non-target species and impacts on demersal habitats.
Objective 6	To have regard to the desirability of promoting economic development in the Torres Strait area and employment opportunities for traditional inhabitants.

Strategies for Achieving the Objectives Outlined in this Plan, and Performance Measures

Objective 1	Ensure the utilisation of the fishery resources within the TSPF is consistent with the principles of ecologically sustainable development and the exercise of the precautionary principle

Strategies	Performance Measures
Develop an Environmental Management Strategy that will include, but not be limited to: - an Ecological Risk Assessment (ERA) that identifies the impacts of fishing and other activities on the sustainable management of the fishery; - a revised Bycatch Action Plan (see also Objective 5); - implementing spatial management arrangements as necessary taking into account subsection 6(3) **[pending drafting]** - develop cost-effective indicators to assess the performance of spatial management and other conservation measures.	Management strategies including ecosystem level approaches developed and evaluated. Ecological Risk Assessment completed by June 2008 Management and research programs in place in accordance with ERA outcomes. Strategies in place and targets of Bycatch Action Plan achieved (see also Objective 5). Identification, implementation and/or maintenance of spatial management to protect juvenile prawns and the marine habitat within the fishery; Indicators developed and spatial management modified in accordance with outcomes.
Developing a program of research, data collection and monitoring relevant to the assessment and management of the fishery.	That cost-effective and high quality research is carried out in relation to the fishery in accordance with advice provided by the Committee, the results of which are: - included in the assessment process for the fishery; - published in the assessment reports for the fishery; and - taken into consideration in determining the total allowable effort in a fishing year. Data is collected and analysed in a timely manner to enable: - evaluation of the effectiveness of the strategies to maintain or, if it becomes necessary, rebuild the resources of the fishery to an acceptable level, - modification of those strategies, - evaluation of the ecosystem impacts of the fishery. Results from research are used to ensure fishing is conducted in an ecologically sustainable manner.
Ensuring that the management practices of the fishery take into account the results of any research conducted in relation to the fishery.	Strategies developed and implemented in accordance with research to meet the fisheries research priorities, the Bycatch Action Plan and the Environmental Management Strategy.

Increase the opportunities for research funding in the fishery to support sustainable development.	Confidence that investment in research is adequate for the long-term interests of the TSPF. Research funding maintained or increased above historical levels in real terms from current and new sources.
Reduce the information gaps that lead to uncertainties in stock assessments of key species to enable sustainable management parameters to be set.	Research undertaken to reduce the information gaps.
Improve the stock assessment model for key species to capture the uncertainties and source of uncertainties.	Stock assessments of the fishery take regard of all removals and other relevant impacts on shared prawn stocks. Improved and more robust stock assessment for key species.
Provide management advice on the effort unit system and allow evaluation of alternative management strategies if required. Monitor the effectiveness of the effort unit system to ensure that the plan can deliver the long-term sustainability of the fishery.	Effectiveness of effort based management, as assessed against reference point, carried out as required.
Use the precautionary approach in developing targets for fishing effort and capacity.	Management strategies take into consideration appropriate limit and target reference points established for the resource. Effort Creep scenarios regularly reviewed.
Continuing and improving an effective program of catch monitoring and surveillance of the fishery to ensure compliance with the Management Plan.	That adequate and reliable data on catch and effort, appropriate to the scale of the fishery, are collected from all sectors to ensure sustainable management of the fishery resources.
Continue to protect nursery grounds, seagrass beds and marine habitats within the TSPF from fishing activities through closure regimes that ensure stock recruitment and breeding grounds are not jeopardised.	Critical fishery habitats identified and protected.
Put in place management measures to ensure that key target and by-product species do not fall below agreed reference limit points (the level at or above which a fish stock should be maintained) for sustainability. Specifically, to maintain each target stock at a point where population size/biomass is greater than the minimum required to sustain the populations at or above current levels.	Target stocks are maintained at a point above B_{MSY} by ensuring fishing mortality is below F_{MSY}. That a total allowable effort is set for the fishery every second year; and that the amount of effort in a fishing year does not exceed the total allowable effort for a given year. Effort and capacity control measures implemented through TSPF Management as required.
Continue to promote anti-pollution measures in the TSPF, such as the retention by fishing vessels of plastics, used oil, oil filters and fishing gear.	TSPF meets its requirements under *Environment Protection and Biodiversity Conservation Act 1999*. Fishing practices recognised by the Committee as achieving world's best practice.

Objective 2	To give regard to the rights and obligations conferred on Australia by the Torres Strait Treaty and in particular to the traditional way of life and livelihood of traditional inhabitants, including their rights in relation to traditional fishing

Strategies	Performance Measures
Continue to preserve all ecologically sustainable traditional fishing opportunities for traditional inhabitants of Australia and Papua New Guinea.	Collaboration with and agreement by representatives from traditional communities on issues effecting traditional fishing practices.
Facilitate the sharing of the catch of the fishery in accordance with articles 23 and 25 of the Treaty.	A proportion of the total allowable effort in the Australian area of jurisdiction is set aside for PNG.
Monitor the incidental take of, or interaction with species that are recognised as important for Traditional fishing.	Appropriate data collected and analysed.

Objective 3	Promote economic efficiency in the utilisation of the fisheries resources within the TSPF

Strategies	Performance Measures
Develop appropriate economic efficiency indicators and assess performance of the fishery against those indicators.	Maintain an economically and socially viable fishery Economic indicators developed and published in annual report. The fishery is performing well against the economic indicators. That data about the current and potential net economic returns of the fishery has been collected and analysed to enable: (i) assessment of whether the data is consistent with improvements in the economic efficiency of the fishery; and (ii) institutional arrangements to be modified, if necessary, to allow improvements in the economic efficiency of the fishery.
Continuing and improving the development of a series of biological, economic and other data that can be used to assess the fishery.	Appropriate data collected and analysed.
Grant transferable fishing licences and units of effort for the fishery.	Transferable fishing licences and units of effort granted across fishery.
Develop and implement effective programs to adjust capacity as and when required.	Adjustment programs meet set targets. Excess capacity removed through appropriate restructuring mechanisms as necessary.
Directing licence holders, as necessary, not to engage in fishing to ensure the sustainability of the resources of the fishery.	Directions not to fish given in a timely manner.

Setting the total allowable effort in the fishery accounting for tiger and endeavour prawns species.	TAE set taking into account tiger and endeavour prawn species.

Objective 4 Ensure cooperative, efficient and cost effective management of the Fishery

Strategies	Performance Measures
Supporting the TSPMAC in facilitating the on-going development of sound, cost-effective fisheries management for the fishery.	That the management of the fishery is acknowledged by government and key stakeholders to be pursuing a cost-effective service.
Preparing annual budget costs associated with managing the fishery, setting and collecting levies and fees for the fishery.	Budgetary objectives of the fishery are achieved. Meet Government targets for the recovery of the costs of management in relation to the fishery.
Review an annual budget of costs associated with managing TSPF including setting levies in relation to the TSPF.	Budget approved by TSPMAC.
Publishing information about the fishery accurately and in a timely fashion.	Publications accurate and on time.
Undertaking regular review of the accuracy and consistency of information kept in relation to the fishery.	Periodic review of databases undertaken.
Regular review of efficiency and cost effectiveness of management services.	All elements of TSPF budget reviewed and tested for efficiency and cost effectiveness progressively over the five year period.
Complete a Compliance Risk Assessment and refine the compliance program for the TSPF to ensure the cost-effectiveness of the arrangements and compliance with the TSPF management arrangements.	High level of compliance with management arrangements. Regular evaluation of effectiveness and efficiency of TSPF compliance program. Increased level of electronic tools used to improve surveillance.
Improve the level of consultation with relevant interest groups on fisheries resource and management issues within the TSPF.	Appropriate and ongoing consultative processes in place. Membership of TSPMAC and/or TSPMAC sub-committees to include representatives from other interest groups as appropriate. Attendance of other interest groups at TSPMAC or sub-committee meetings as appropriate.
Expand the communications strategy, including increased public relations and promotional activities and improvements to the PZJA-TSPF website. Increased understanding by industry of management, research and environmental matters relating to the fishery.	Promotional material on the TSPF developed and disseminated. Extension program to communicate achievements and promote TSPF as fishery leader in pursuing ecological sustainability in place. Continued industry education process in place to ensure industry understanding of stock assessment and the need for precautionary approach.

Objective 5	Manage the fishery's interaction with the marine environment including the incidental capture of non-target species and impacts on demersal habitats

Strategies	Performance Measures
Revise Bycatch Action Plan for the TSPF as necessary. Six monthly Bycatch Action Plan reports	Strategies in place and targets of Bycatch Action Plan achieved. Six monthly reports completed on time.
Monitor the impact of fishing practices in the TSPF on non-target species and marine ecosystems. To ensure that the impacts of the fishery's bycatch on the ecosystem are sustainable and consistent with legislative requirements. Support research on bycatch reduction and development of gear modifications to reduce bycatch.	Research programs aimed at minimising the impact of fishing on bycatch species and the marine ecosystems, supported by the Committee. Observer program reports included in assessments. Evaluation of research reports on Ecologically Sustainable Development related issues, measuring and monitoring bycatch and the effectiveness of bycatch reduction strategies. Highly innovative industry that readily adopts new technologies and rapidly responds to issues affecting the fishery.
Obtain information on target and by-product species to determine key biological parameters, such as abundance and reproductive rates, for these species and therefore their vulnerability to trawling.	Reports to include estimates of key biological parameters and biological reference points, which indicate the level at, or above which, a fish stock should be maintained. These biological reference points objectively tested and incorporated into the TSPF Management.
Maintaining and developing fishing gear designed to minimize negative impacts on the ecosystem (benthic habitat, other fish species). Develop and implement programs to reduce the impact of fishing practices on marine ecosystems, including measures and techniques to reduce bycatch and fish discards such as TEDs and BRDs.	TEDs/BRDs used and updated as deemed necessary by the Committee, across the fishery which are efficient in reducing bycatch with limited prawn loss. Compliance with the turtle recovery program. Bycatch reduction targets from the TSPF Bycatch Action Plan met or exceeded.

Objective 6	To have regard to the desirability of promoting economic development in the Torres Strait area and employment opportunities for traditional inhabitants

Strategies	Performance Measures
Actively engage indigenous communities in discussions about economic opportunities within the fishery.	Indigenous community groups actively involved with TSPMAC in developing involvement strategies.

(1) PZJA must develop and periodically review a strategy to implement any recommendations of the compliance risk assessment of the fishery.

(2) PZJA and TSPMAC must, at least once every 5 years, assess the effectiveness of the Management Plan including the measures taken to achieve the objectives of the Management Plan by reference to the performance criteria mentioned in subsection (1).

(3) Each year, TSPMAC must assess the extent to which the performance criteria mentioned in subsection (1) have been met in that year.

(4) PZJA must include in its annual report for a financial year a statement of the extent to which the performance criteria mentioned in subsection (1) were met in the year.

(5) PZJA must develop a clear process and timeframe for determining the reason for a performance criteria breach and implement appropriate management measures within specified timeframes.

TORRES STRAIT PRAWN MANAGEMENT ADVSIORY COMMITTEE	Meeting No. 4 14-15 June 2007
Harvest Strategy **Performance measures, indicators and reference points for inclusion in the management plan.**	Agenda Item No. 4.2

RECOMMENDATION

The TSPMAC recommends that the PZJA AGREES with the following biological reference points for the fishery:

$B_{LIM} = 0.2B_0$ (20% virgin biomass)

$B_{TARG} = 1.2\ B_{MSY}$

F_{LIM} = 9,200 nights (TAE or E_{MSY})

BACKGROUND

Policy Background

In December 2005 the Australian Government Minister for Fisheries, Forestry and Conservation issued a Ministerial Direction to the Australian Fisheries Management Authority (AFMA) under section 91 of the Fisheries Administration Act 1991 (FA Act). The Ministerial Direction included a requirement for the development of a world's best practice harvest strategy policy for Commonwealth fisheries and the implementation of harvest strategies consistent with that policy in all Commonwealth fisheries by 1 January 2007 (subsequently amended to January 2008).

At its 20th meeting the PZJA noted the progress in developing a Commonwealth Harvest Strategy Policy (the Policy) for fisheries managed under the *Fisheries Management Act 1991* (Commonwealth Fisheries). The PZJA was advised that although the Policy does not apply to Torres Strait Fisheries, the TSFMAC and TSPMAC will provide advice to the PZJA on the utility and applicability of the Policy to fisheries managed by the PZJA.

After a discussion on the differences between Torres Strait fisheries and other Commonwealth Fisheries, the PZJA noted that subject to the finalisation of the Policy, the objectives of the Policy may be used as a guide, while exploring options to manage sustainable commercial harvest and pending agreement with jurisdictions and agencies with an interest in the Torres Strait Fisheries.

Harvest Strategy Terminology

When discussing harvest strategies, terms such as "performance measure", "indicators" and "reference points" are used commonly. In broad terms, a performance measure is used to measure progress against (management) objectives, and is a measure of where an indicator (such as stock biomass) sits in relation to a reference point. The indicator may be some direct observation (such as standardised CPUE), or may be estimated using a stock assessment model (such as biomass). The reference point can be either a target (where you want to be) or a limit (where you don't want to be) and is a particular level of an indicator (Figure 1).

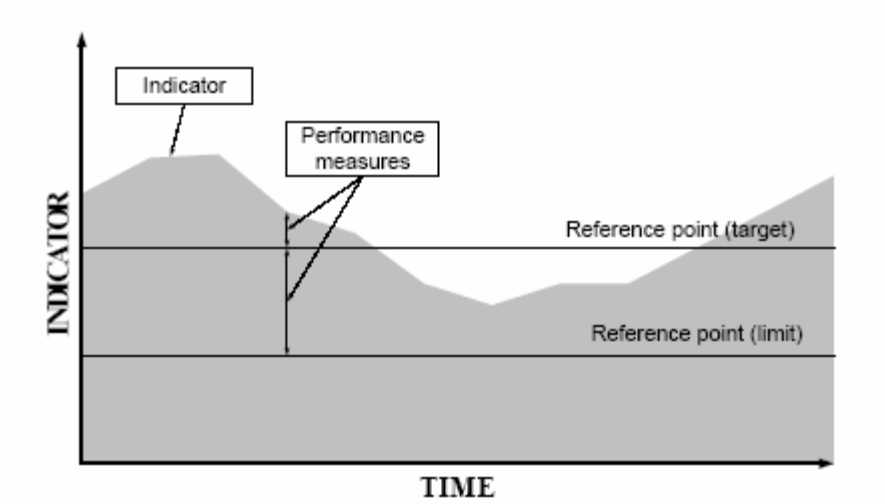

Figure 1: The relationship between indicators, reference points and performance measures as outlined in the Commonwealth Harvest Strategy Policy.

The types of performance measures and reference points used in a particular fishery reflect the level of knowledge of the species and/or fishery and the sophistication of the assessment. For many fish populations, there is insufficient information available to determine optimal harvesting policies. Much attention has therefore been given in the literature to determining biological reference points (BRPs) that can be readily calculated from available information. These BRPs are usually fishing mortalities (Fm, F0.1, F35%, F=M, etc.) or abundance levels (thresholds) and may be specified either as a target for optimal fishing or a danger zone to be avoided (Leaman 1993).

One of the BRPs that are calculated in the current tiger prawn assessment is (B_{msy}), which is the biomass of prawns on the seabed that results in maximum stock productivity. The environment can only support a certain biomass of tiger prawns (and other species), so recruitment in a large unfished stock is low due to competition for resources. Fishing reduces the stock biomass, which reduces competition, allowing increased recruitment (productivity). The stock biomass that maximises recruitment and results in the highest sustainable catches is referred to as B_{msy}. This biomass is usually around 30-50 percent of the unfished (virgin) biomass. Reducing the biomass below this point however, results in less recruitment, as the biomass of spawning prawns is no longer large enough to replace itself. Ideally the stock size should always be kept above B_{msy} to maximise the production of the fishery and reduce the risk of fishing the stock down to a less productive level (overfishing).

DISCUSSION

The Total Allowable effort in the Torres Prawn Fishery (TSPF) is currently set at E_{MSY} which is the effort associated with maximum sustainable yield (MSY). The Policy states that harvest strategies for Australia's Commonwealth fisheries will be designed to produce maximum economic yield (MEY). MEY occurs at the effort level that creates the largest difference between the total revenue and total fishing costs, thus maximising profits. (See figure 2) The level of effort that corresponds with MEY will change given a change in any of the following factors:

- fish prices
- exchange rates
- input costs (fuel, gear, etc.)

• other factors such as changes in fishing technology and management controls.

The calculation of MEY requires bio-economic modelling to optimise the traditional stock assessment parameters in tandem with the economic factors mentioned above.

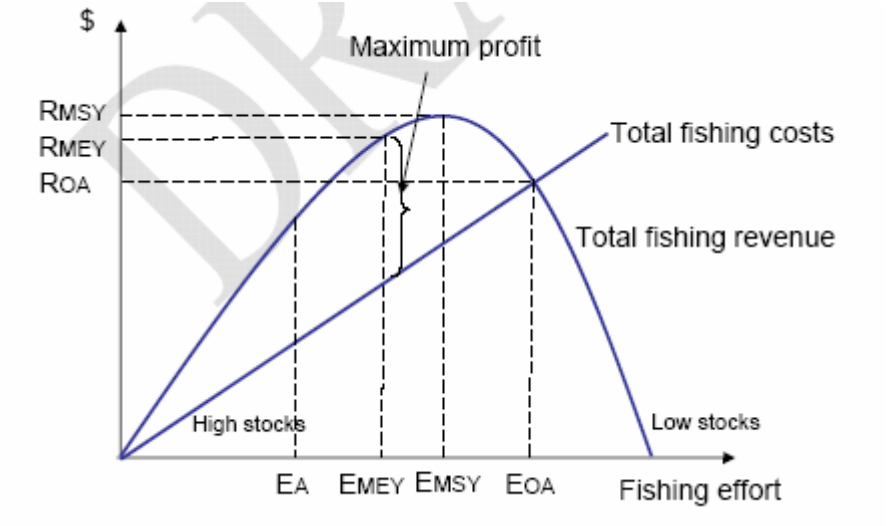

Figure 2: Maximum economic yield as outlined in the Commonwealth Harvest Strategy Policy.

In the cases where the biomass which supports maximum economic yield (B_{MEY}) is not known, a proxy of $1.2B_{MSY}$ is to be used as a proxy.

Strictly adhering to the Commonwealth harvest strategy policy would require significant bio-economic modelling to be undertaken, this modelling is likely to be expensive and take a number of years to complete. In the absence of this modelling work, the TSPMAC should consider the biological target and limit reference points to be used in this fishery.

Figure 3 illustrates the concept limit and target reference points (B_{LIM} and B_{TARG} respectively). The top line indicates the utilisation rate, or in the TSPF, the effort in the fishery. The bottom line indicates the biomass of the stock.

The desired condition of the stock is when the biomass level is above the B_{TARG} (green). When the stock is between B_{LIM} and B_{TARG} (amber), a management response is required to rebuild the stock to B_{TARG}. The red section indicates the state of being 'overfished'. A basic harvest strategy would reduce the fishing effort when biomass gets below B_{TARG} and close the fishery when the stock dropped below $B_{LIM.}$ However in the ideal situation, the limit reference point F_{LIM} would be set at a level which would prevent the stock from dropping below $B_{TARG.}$

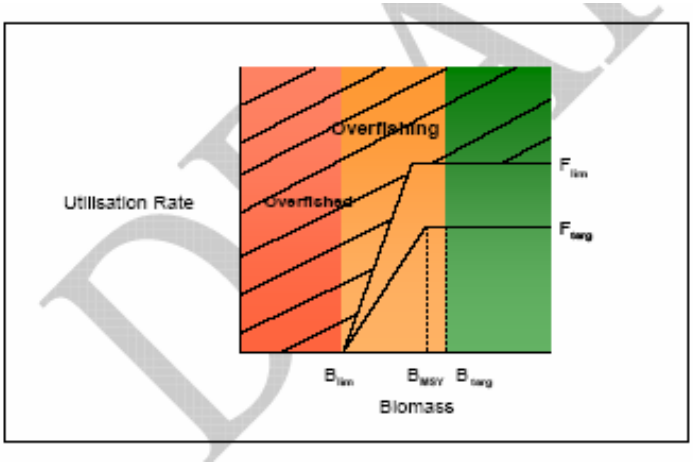

Figure 3: Diagrammatic illustration of reference points

Using the current stock assessment in the TSPF and the Policy as a guideline results in the following reference points:

$B_{LIM} = 0.2B_0$ (20% virgin biomass)

$B_{TARG} = 1.2\ B_{MSY}$

F_{LIM} = 9,200 nights (TAE)

F_{TARG} = Unknown at this time, F_{TARG} is the level of effort required to achieve a biomass of $B_{TARG.}$

The reference points listed above are necessary for the development of a harvest strategy in the fishery. The development of a harvest strategy is relevant in that management action is triggered if some of the reference points are reached. For example, if the biomass in the TSPF was to become depleted (below 1.2 B_{MSY}) via fishing, disease, natural disaster etc a reduction in the TAE would be required until the target biomass was reached.

Any reduction of this kind would be considered by the TSPMAC and PZJA after the reference point was triggered. The necessity and magnitude of any reduction would consider relevant factors such as the target time frame in which to rebuild the stock, the level of effort being used in the fishery and the extent of the stock depletion. Conversely in the event that stock rebuilding from below 1.2 B_{MSY} is required, the reference points would be used to determine when increases in effort are warranted.