



**Australian Government**

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**Department of the Environment and Heritage**

Assessment of the  
**Southern and Eastern Scalefish and Shark Fishery**

**December 2006**

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# Assessment of the ecological sustainability of management arrangements for the Southern and Eastern Scalefish and Shark Fishery

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## EXECUTIVE SUMMARY

### Background

A strategic assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was conducted by the Department of the Environment and Heritage (DEH) for the Southern and Eastern Scalefish and Shark Fishery (SESSF) in 2003. Decisions were made as outcomes of the strategic assessment to declare the SESSF an approved Wildlife Trade Operation (WTO) under section 303FN of Part 13A of the EPBC Act until 22 December 2006 and to accredit the *Southern and Eastern Scalefish and Shark Fishery Management Plan 2003* (SESSF Plan) under section 33 of the EPBC Act in relation to actions affecting the environment in a Commonwealth marine area and under Part 13 of the EPBC Act in relation to impacts on protected species. DEH's initial report on the assessment of this fishery and copies of the declarations made can be found at the DEH website at: <http://www.deh.gov.au/coasts/fisheries/index.html>.

The Australian Fisheries Management Authority (AFMA), as the agency responsible for the management of the SESSF, has submitted a document for consideration of a further declaration of a WTO under Part 13A of the EPBC Act. The draft document *Southern and Eastern Scalefish and Shark Fishery Wildlife Trade Operation Re-assessment 2006* (the submission) was received by the DEH in September 2006. The submission was released for a thirty-day public comment period that expired on 27 October 2006. Eight public comments were received. AFMA provided a response to DEH on the issues raised.

The submission reports on the progress made by AFMA in addressing the recommendations made in the 2003 strategic assessment of the SESSF along with other measures being developed to improve the ecologically sustainable management of the fishery. The DEH assessment considers the submission, associated documents, public comments and AFMA's response to the comments.

**Table 1: Summary of the SESSF**

<p><b>Area</b></p>	<p>SESSF overall extends from 80 nautical miles (nm) off Fraser Island, Queensland (Qld), to Cape Leeuwin in Western Australia (WA). The SESSF has the following spatially zoned fishery sectors:</p> <p><b>Scalefish Hook, Shark Hook and Gillnet Sectors</b> - Gillnet fishing in waters from the New South Wales (NSW)/ Victoria (VIC) border to the South Australia (SA)/ WA border including waters around Tasmania (TAS) from the low water mark to the extent of the Australian Fishing Zone (AFZ). Hook fishing in all the AFZ waters off SA, VIC and TAS to the low water mark and waters off southern Qld (south of Sandy Cape) and NSW outside 60-80 nm from the coast. Trap fishing in hook fishing area north of 42 degrees 20' S.</p> <p><b>Commonwealth Trawl Sector (CTS)</b> (including Victorian Inshore Trawl) – waters out to the AFZ south of Barrenjoey Point (north of Sydney) around the NSW, VIC and TAS coastlines to Cape Jervis off SA, except for waters inside of 3nm off TAS, SA and NSW coasts.</p> <p><b>East Coast Deepwater Trawl Sector (ECDWTS)</b> - waters in a 200 nm radius around Lord Howe Island off NSW, with a trawl exclusion box to the west extending from north of</p>
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	<p>Barrenjoey Point to south of Sandy Cape.</p> <p><b>Great Australian Bight Trawl Sector (GABTS)</b> - incorporates AFZ waters from Cape Jervis to Cape Leeuwin, WA, except for most eastern and western continental shelf waters out to the 200 metre bathymetric line.</p>
<b>Fishery status</b>	The 2005-06 AFMA Annual Report – report against the SESSF performance criteria - indicates that 6 quota species or species groups overfished - orange roughy, eastern gemfish, blue warehou, school shark, silver trevally, smooth dory (outside the Cascade Plateau) and other oreo dory species. 2 species – ling and redfish – subject to overfishing. Several quota species with uncertain stock status.
<b>Target Species</b>	30 species or species groups are under quota management arrangements.
<b>Byproduct Species</b>	Over 100 species regularly landed.
<b>Gear</b>	Demersal otter board trawl, midwater trawl, Danish seine, demersal longline, dropline, handline, trotline, demersal gillnet, fish traps.
<b>Season</b>	All year. Fishing year May – April.
<b>Commercial harvest 2003/04</b>	Approximately 38,000 tonnes.
<b>Value of landed catch 2003/04</b>	Around \$92 million.
<b>Recreational harvest</b>	Uncertain for all species. Managed by States with State controls such as bag and size limits. Commercial SESSF species targeted by recreational fishers include flathead, silver trevally, school whiting, blue warehou, john dory and several shark species.
<b>Commercial licences issued</b>	As at 5 November 2006 following first round of fishery concession buyouts from Australian Government Business Exit Assistance program component of the Australian Government <i>Securing our Fishing Future</i> package. 62 boat Statutory Fishing Rights (SFRs) in CTS, 74 scalefish hook boat SFRs, 62 gillnet boat SFRs, 18 shark hook boat SFRs, 10 GABTS concessions, 13 ECDWTS permits, less than 11 autolongline permits, less than 5 trap permits and a number of SA, VIC and TAS coastal permits.
<b>Management arrangements</b>	Output controlled through a Total Allowable Catch (TAC) and Individual Transferable Quotas (ITQs) for 30 species or species groups, some trip and minimum size limits. Input controls include limited entry, area and temporal closures and gear restrictions.

<b>Export</b>	Majority of product sold on domestic market. Export products include shark fin, orange roughy, school whiting, blue grenadier, blue eye trevalla and ling.
<b>Bycatch</b>	Over 300 species caught, high discard levels in some sectors – over 40% by weight of catch in trawl sectors.
<b>Interaction with Threatened Species</b>	Potential interactions with range of protected species. Actual interaction levels uncertain. Main interactions with fur seals, great white sharks, seabirds and syngnathids.

The strategic assessment report of the SESSF in 2003 provided a detailed analysis of the SESSF management characteristics, including fishery area and history, species taken, management structures and harvest control measures, bycatch and protected species interactions and arrangements with other jurisdictions.

The 2003 strategic assessment highlighted the size and complexity of the SESSF as a multi-species, multi sector and multi gear fishery with potential to impact on a wide range of components of the marine ecosystem. The DEH assessment in 2003 focussed on addressing areas of management where more fundamental changes were required to improve the ecological sustainable management of the fishery.

The key issues DEH considered needed addressing were:

- the number of highly exploited stocks, including a number of overfished species;
- the uncertainty with stock status and the need for a more structured approach to recover stocks to sustainable levels;
- the limited direct management of non-quota species and the uncertainty with the extent of impacts on these species;
- the need for more spatial management arrangements, including measures to prevent uncontrolled expansion of fishing effort to new areas;
- the high levels of discarded catch; and
- the uncertainty with the extent of overall interactions with protected species and known continuing interactions with some protected species.

DEH made 18 recommendations to improve the management of the fishery and address these issues, including a number of recommendations to be included in the revision of the draft SESSF Plan. The recommended revisions were incorporated into the final SESSF Plan that came into effect at the end of 2003.

AFMA has made notable progress against several of the key issues raised in the last assessment. These include:

- harvest strategies were introduced for quota species in 2005 through a framework that provided for a goal of managing and maintaining stocks above reference levels and setting of more precautionary TACs to support stock recovery;
- substantially reduced TACs have been set for many quota species to reduce the fishing impacts on heavily exploited stocks and support their recovery;
- a range of spatial management measures have been developed to reduce impacts on highly vulnerable species such as deepwater dogfish and other deepwater species, school shark and

protected species such as sea lions and support the recovery of highly exploited stocks such as ling and orange roughy;

- a number targeted non-quota species have been brought under ITQ management and preliminary reference or trigger points established for other non-quota species of commercial interest such as squid;
- modifications to trawl gear have been regulated and are beginning to reduce the extent of discarding for some highly impacted species such as redfish;
- structured independent monitoring programs have established in some sectors such as the GABTS to improve estimates of stock status of target species and composition of non target catch; and
- more formal reporting arrangements for protected species interactions have been established and a targeted information program undertaken in the CTS to enhance the level of understanding and reporting of interactions with fur seals. Fur seals are the species with the most prevalent protected species interactions in the SESSF.

In December 2005, the former Minister for Fisheries, Forestry and Conservation, Senator the Hon Ian Macdonald, as part of the Australian Government's \$220 million *Securing our Fishing Future* package, issued a formal direction to AFMA (Minister's Direction) to immediately take action to cease overfishing and recover overfished stocks, avoid further species from becoming overfished and manage the broader environmental impacts of fishing, including on species protected under the EPBC Act. AFMA has committed to a number of actions for the SESSF in response to the Minister's Direction that have direct relevance to the issues raised in the 2003 strategic assessment of the SESSF. These include:

- the implementation of fishery independent surveys (FIS) across the SESSF by 2008;
- halving of bycatch by 2008;
- the mandatory use of Vessel Monitoring Systems (VMS) by July 2007; and
- the development of recovery plans for all overfished species and further measures to control take of non-quota species.

DEH acknowledges the sound progress made towards addressing many of the significant issues raised in the 2003 strategic assessment and commitments in AFMA's intended responses to the Minister's Direction that will further progress these issues. DEH notes that there are still a number of sustainability concerns with the SESSF such as the number of overfished species or species subject to overfishing, uncertainty with stock status for many quota species, limited direct management for most non-quota species and continuing interactions with some protected species that will require ongoing management action to provide further certainty on the ecological sustainability of management across the SESSF. DEH also notes that a number of recommended actions are outstanding from the strategic assessment of the SESSF and are in need of further attention. These include finalisation of a SESSF Bycatch Action Plan (BAP) with specific measures to quantify and reduce impacts on bycatch species and the broader marine environment; implementation of responses to the risks identified by AFMA's Ecological Risk Assessment (ERA) process; particularly for high risk non-quota species, implementation of a structured process to ensure any expansion of spatial fishing effort is suitably controlled and ecologically sustainable; and measures to minimise ongoing interactions with protected species.

DEH considers that these issues warrant immediate attention and action from AFMA.

## Overall assessment

The material submitted by AFMA demonstrates that the management arrangements for the fishery, in conjunction with the commitments made under the Minister's Direction for the fishery, meet most of the requirements of the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries*.

Management responses currently in place include limited entry, quota management, various spatial and temporal closures, gear modifications and restrictions, harvest strategies for quota species, formal ERA process, trip limits for some species at risk, a scientific observer program and a comprehensive stock assessment process.

While the impending implementation of responses to the Minister's Direction will provide for more comprehensive and precautionary management arrangements for the fishery, DEH has identified a number of current risks and uncertainties that must be managed to ensure that their impacts are minimised:

- number of overfished species without specific recovery strategies;
- significant levels of discarding and bycatch in some sectors and no current BAP in place;
- need for management responses to address the range of high risk species identified from the ERA process, including number of non-quota species with limited direct management measures; and
- uncertain but potentially significant levels of interactions with some protected species and limited measures in place to mitigate interactions.

These concerns reflect some of those raised in the strategic assessment of the fishery in 2003 and DEH considers that they have only been partially addressed since then. DEH has therefore suggested a number of specific conditions to be attached to the proposed WTO along with additional recommendations to ensure that outstanding risks and uncertainties in the fishery are addressed and minimised in the medium term.

Through the implementation of the conditions and recommendations and in combination with the range of commitments made by AFMA to respond to the Minister's Direction for the fishery, management arrangements can be considered to meet the objects of Part 13A of the EPBC Act, as set out in section 303BA of the EPBC Act, being sufficiently precautionary and capable of controlling, monitoring and enforcing the level of take from the fishery while ensuring the stocks are fished sustainably.

The management arrangements aim to ensure that fishing is conducted in a manner that does not lead to overfishing and for fishing operations to be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem. The assessment that several stocks are overfished will be addressed through a range of stock rebuilding and recovery measures as part of AFMA's commitments to addressing the Minister's Direction. DEH considers these responses provide adequate certainty that stocks will recover to ecologically sustainable levels. On balance, DEH agrees that the fishery is being managed in an ecologically sustainable manner and that AFMA is currently working to address existing problems and minimise environmental risks in the fishery.

The operation of the fishery is consistent with the objects of Part 13A of the EPBC Act. Given the management arrangements in place and the commitment to introduce in the short term a wide range of additional measures, DEH considers that, on balance, the fishery will not be detrimental to the survival of the taxon to which it relates in the short term. DEH also considers that, based on

information currently available and on management arrangements in place and under development, the fishery is unlikely to be detrimental to the conservation status of the taxon to which it relates in the short term. Similarly, it is not likely to threaten any relevant ecosystem in the short term. DEH acknowledges in this assessment report the need for significant additional action and information on stock status for certain species, in particular overfished species. The assessment of the impacts of the fishery is subject to further developments that will need to be kept under review for these species.

DEH recommends that the fishery be declared an approved WTO with the actions specified in the conditions attached to the WTO and the recommendations to be addressed by AFMA to contain the environmental risks in the medium term. DEH considers that the fishery, as managed in accordance with the management regime, is not likely to cause serious or irreversible ecological damage over the period of the export decision. Specifically, the WTO declaration would allow the export of product from the fishery until 22 December 2009. The WTO declaration will require AFMA to meet specific conditions to ensure it addresses in the short term the outstanding recommendations from the previous strategic assessment of the SESSF and implements recent commitments made under the Minister's Direction for the fishery. The WTO declaration will also require AFMA to report on the implementation of the conditions and on progress in implementing the recommendations in this report and other managerial commitments.

Consideration under Part 13 of the EPBC Act is also required regarding the impact of the fishery on listed threatened species, listed migratory species, cetaceans and listed marine species. Taking account of the commitments made by AFMA in response to the Minister's Direction along with actions to address the recommendations in this assessment, DEH considers that the management arrangements require that all reasonable steps are taken to avoid killing or injuring protected species as a result of fishing and that the management arrangements do not, or are not likely to, adversely affect the survival or recovery in nature of protected species. DEH therefore considers that the accreditation of the SESSF Plan under Part 13 of the EPBC Act made at the last strategic assessment still stands for the fishery.

The implementation of recommendations and other commitments made by AFMA in the submission will be monitored and reviewed as part of the next DEH review of the fishery in 3 years time.

### **Conditions to the WTO**

1. Operation of the fishery will be carried out in accordance with the SESSF Plan.
2. AFMA will inform DEH of any changes to the SESSF Plan or other significant policy documents to enable DEH to evaluate any impact on the ecological sustainability of the fishery.
3. Reports to be produced and presented to DEH annually, and to include:
  - a. a statement of the extent to which the performance criteria of the SESSF Plan were met in the year; and
  - b. information sufficient to allow assessment of the progress of AFMA in implementing the recommendations made in the *Assessment of the Southern and Eastern Scalefish and Shark Fishery December 2006*.
4. AFMA by the end of 2007 to ensure a defined process for expanding fishing effort in each sector of the SESSF to new areas and/or new species is implemented within the formal management arrangements for the SESSF.

5. AFMA to develop and implement within 12 months formal recovery plans for species in the SESSF classified as overfished, with priority to be given to eastern gemfish and school shark.
6. AFMA to finalise the SESSF BAP by June 2007. The BAP should include specified targets for bycatch reduction across all sectors, with the aim of minimisation, along with measures to address bycatch mitigation and performance measures to evaluate effectiveness of the various bycatch reduction measures.

## **Recommendations**

1. AFMA to continue to work with DAFF and other jurisdictions to pursue complementary management and research of shared stocks, in particular with NSW for quota managed and high risk species.
2. AFMA, within 18 months, to implement the Ecological Risk Management (ERM) framework to address the high risks identified by the ERA process, in particular high risk non-quota species.
3. AFMA, in conjunction with SESSF stakeholders, to continue to systematically assess the spatial and temporal management requirements across the SESSF and implement relevant spatial or temporal management measures within the ERM framework and other management mechanisms. Spatial and temporal measures should be supported by appropriate evaluation mechanisms to determine their effectiveness.
4. AFMA to develop and implement further measures to verify the extent and type of interactions with protected species in the SESSF, with priority given to sea lions, fur seals, great white sharks, syngnathids and seabirds.
5. AFMA to give priority to developing specific mitigation measures to reduce fishing impacts on fur seals, seabirds and sea lions across the sectors of the SESSF. Measures to mitigate interactions should be formally incorporated into AFMA's management prescriptions for the relevant sectors of the fishery.

## **PART I - MANAGEMENT ARRANGEMENTS**

The first strategic assessment of the SESSF in 2003 noted the comprehensive management regime for the fishery that was in place, or pending implementation, that provided for performance assessment, consultative mechanisms, data collection and research requirements, compliance with relevant management arrangements, policies and conventions, harvest controls and cross jurisdictional management of shared stocks. These arrangements continue to apply in the fishery and have been supplemented by a number of improvements since the last assessment.

The following outlines the main changes to the SESSF management regime since the last assessment.

### Implementation of the SESSF Plan

The SESSF Plan was determined by AFMA in conjunction with the last strategic assessment in 2003. The Plan provides a statutory overarching management framework for the various sectors of the SESSF that comprise:

- CTS, formerly the South East Trawl Fishery including Danish seine fishers;
- ECDWTS;
- Scalefish Hook, Shark Hook and Gillnet Sectors, formerly the South East Non-Trawl and Southern Shark Fisheries;
- GABTS, formerly the Great Australian Bight Trawl Fishery; and
- Coastal water permits in South Australia, Victoria and Tasmania.

The last assessment included a range of recommendations to amend the draft SESSF Plan to more specifically address:

- data collection, verification and analysis;
- setting of TACs, determining of harvest strategies and reference points for non-quota species;
- the need to take account of the broader fishing, ecological and stock structure implications when setting the TACs;
- maintaining stocks above reference points and implementing recovery strategies to rebuild depleted stocks; and
- requirements of BAPs, including appropriate bycatch limits, the minimisation of bycatch interactions and requirements for protected species under the EPBC Act.

These were incorporated into the final SESSF Plan. The implementation of the SESSF Plan allowed for boat and quota SFRs to be granted from 1 January 2005 for around 20 quota managed species to replace ITQs under a permit system. Further amendments to the SESSF Plan were made in 2005 to allow the implementation of ITQs for the key target species in the GABTS (Bight redfish, deepwater flathead and orange roughy) and for alfonsino in the ECTWTS from 1 January 2006. The draft amendments were subject to consultation with a range of SESSF stakeholders before determination by AFMA and the amended Plan was tabled in both Houses of Parliament.

Further amendments to the Plan are expected to be determined by AFMA by the end of 2006 that will formally include ribaldo cod and a range of deepwater shark and oreo species on the Schedule

of quota managed species in the SESSF. These species have been managed under quota allocation since 1 January 2005.

**Condition 1 (to WTO):** Operation of the fishery will be carried out in accordance with the SESSF Plan.

#### Implementation of SESSF Harvest Strategy Framework (HSF);

A HSF was introduced in the SESSF in 2005 to provide a more structured process for managing stocks in the fishery at ecologically sustainable levels. The HSF has been used to determine TACs for SESSF quota species from the 2006 fishing year. The HSF includes a tier catch setting process that involves determining a Recommended Biological Catch (RBC) based on the best available scientific advice on total fishing mortalities for each species that is then used as the basis for setting the TAC. Other components of the HSF include the setting of agreed target and limit reference points and decision rules to maintain stocks at target biomass levels, to reduce catches when stocks decline below target levels and cease targeted fishing when stocks decline below limit reference points.

The SESSF HSF will be further reviewed in line with the development of the Commonwealth Fisheries Harvest Strategy Policy that is due to be implemented for all Commonwealth fisheries from 1 January 2008.

#### Minister's Direction to AFMA

As part of the Government's \$220 million *Securing our Fishing Future* package announced in November 2005, the Minister for Fisheries, Forestry and Conservation issued a formal direction to AFMA to:

- cease overfishing and recover overfished stocks to levels that will ensure long-term sustainability and productivity;
- avoid further species from becoming overfished; and
- manage the broader environmental impacts of fishing.

In addition to HSFs being applied to all Commonwealth fisheries, AFMA has responded to the Minister's Direction by committing to a range of other measures for Commonwealth fisheries, including further priority to implement the outcomes of the ERA process, improving compliance and data collection, prohibit discarding of quota and TAC managed species, substantially reduce the extent of bycatch by 2008 and support the revision of Offshore Constitutional Settlement (OCS) arrangements with States and the Northern Territory. Some of these measures are already under development, including a system of FIS for major Commonwealth fisheries and the compulsory use of VMS by 1 July 2007. AFMA reports on progress with actions required to implement the Minister's Direction in its annual report.

In the SESSF, AFMA has committed to a range of additional specific management actions, including implementation of spatial closures across the SESSF to enhance the recovery of depleted stocks and protect vulnerable deepwater species and habitats and the development of recovery plans to support recovery of overfished stocks. Further details on the new measures under the Minister's Direction are discussed later in this report.

A key component of the *Securing our Fishing Future* package is a \$150 million structural adjustment package to allow fishing businesses to leave Commonwealth fisheries and reduce excess fishing capacity. In the SESSF around 50 % of trawl boat SFRs and 30% of scalefish hook and

shark hook boat SFRs have been surrendered under this process to date. A second round tendering process is expected to be finalised in early 2007.

#### Extension of Integrated Scientific Monitoring Program (ISMP)

At the time of the last strategic assessment the ISMP was in place across all sectors of the SESSF, apart from gillnet fishing. The ISMP was extended to the gillnet sector in 2006 so that all sectors of the fishery now provide a consistent set of observer sampled data to determine the weight and length composition of retained and discarded catch of both quota and non-quota species.

#### Complementary management arrangements

The Minister's Direction to AFMA has already highlighted an increased focus on reviewing and revising OCS arrangements with States and the Northern Territory to enhance the integrity of management arrangements with other jurisdictions. This approach needs to address the existing arrangements with management of shared stocks. Since the last strategic assessment of the SESSF, industry and other SESSF stakeholders have increasingly raised concerns about the inconsistency between Commonwealth and State controls on shared stocks, particularly in NSW waters. Particularly in relation to stocks taken in the SESSF, the development of more stringent Commonwealth controls on quota managed and high risk species does not appear to be matched by complementary measures in NSW, placing the longer term sustainability of shared stocks at continuing risk. DEH has raised this issue with the NSW Department of Primary Industries (DPI) in recent assessments of NSW line and trawl fisheries and has identified the need for more complementary stock management measures to be implemented.

Public comments also highlighted the need for further initiatives to ensure State commercial and recreational catches of AFMA managed species are managed on a complementary basis. This is an issue that requires further attention by the Department of Agriculture, Fisheries and Forestry (DAFF) and revision of the current OCS arrangements to more appropriately address the management and protection of shared stocks. In the interim, AFMA should continue to work with other jurisdictions and take whatever steps are available to develop and implement complementary management and research measures to enhance the longer term sustainability of shared stocks.

**Recommendation 1 :** *AFMA to continue to work with DAFF and other jurisdictions to pursue complementary management and research of shared stocks, in particular with NSW for quota managed and high risk species.*

AFMA has publicly reported against the performance criteria of the SESSF and other Commonwealth fisheries, along with progress made with the strategic assessment recommendations, in the AFMA Annual Reports which are available in hard copy and on AFMA's website. AFMA has also reported periodically through the AFMA Environment Committee on its progress with implementing the recommendations from the first strategic assessment of the SESSF.

These arrangements need to be maintained to ensure that appropriate progress is being made with commitments to address the key risks to the fishery and for improving the ecological sustainability of fish stocks and the fishery overall. Given the significant changes pending for the SESSF management regime through proposed responses to the Minister's Direction, DEH also considers it essential that it continues to be advised of any changes that are made to the management regime and make an assessment that the new arrangements are equivalent or better, in terms of ecological sustainability.

**Condition 2 (to WTO):** AFMA will inform the DEH of any changes to the SESSF Plan or other significant policy documents to enable DEH to evaluate any impact on the ecological sustainability of the fishery.

**Condition 3 (to WTO):** Reports to be produced and presented to the DEH annually, and to include:

- a statement of the extent to which the performance criteria of the SESSF Plan were met in the year; and
- information sufficient to allow assessment of the progress of AFMA in implementing the recommendations made in the *Assessment of the Southern and Eastern Scalefish and Shark Fishery December 2006*.

## **Conclusion**

DEH considers that the SESSF management regime continues to be well documented, publicly available and transparent and developed through a consultative process. The implementation of the SESSF Plan has enhanced the management framework through comprehensive objectives and performance criteria by which the effectiveness of the management arrangements can be measured, enforced and reviewed.

The management arrangements remain capable of controlling the harvest through a combination of input and output controls appropriate to the size of the fishery. The periodic review of the fishery is provided for, as are the means of enforcing critical aspects of the management arrangements.

The management regime continues to adhere to arrangements established under Australian laws and international agreements. While the management regime takes into account arrangements in other jurisdictions, compatibility of arrangements with other jurisdictions is an aspect identified as requiring further priority and DEH has provided a recommendation for improvements in the longer term.

## **PART II – GUIDELINES FOR THE ECOLOGICALLY SUSTAINABLE MANAGEMENT OF FISHERIES**

### **Stock Status and Recovery**

Principle 1: *‘A fishery must be conducted in a manner that does not lead to over-fishing, or for those stocks that are over-fished, the fishery must be conducted such that there is a high degree of probability the stock(s) will recover’*

### **Maintain ecologically viable stocks**

Objective 1: *‘The fishery shall be conducted at catch levels that maintain ecologically viable stock levels at an agreed point or range, with acceptable levels of probability’*

### **Information requirements**

In the last strategic assessment for the SESSF in 2003, DEH noted a range of information collection and verification measures provided across the SESSF. These include:

- compulsory daily logbook entries recording shot-by-shot catch and effort data, vessel and gear details and protected species interactions;
- catch disposal records at the completion of fishing trips and prior reporting of catch landings;
- key age composition data for key target species from the Central Aging Facility;
- sample surveys under the ISMP to estimate the size and age composition of landed and discarded catch;
- strategic research plans; and
- specific research projects on both target and non target species.

Since the last assessment, additional monitoring arrangements have been implemented, including the previously noted extension of the ISMP to the gillnet sector of the GHATS; a comprehensive fishery independent survey program developed for the GABTS in 2005 to determine the relative abundance of the two key target species - deepwater flathead and Bight redfish; and targeted industry-led surveys of stock structure and relative abundance for target species such as orange roughy, blue grenadier and blue warehou.

The last strategic assessment noted a number of key management issues that required close monitoring, including the impacts of fishing on discarded species and the extent of interactions on protected species. A recommendation was made for AFMA to define the monitoring priorities across the SESSF to address the rates of both discarding and threatened and listed species interactions, as well as determine the extent of appropriate observer-based and fishery independent studies required across the fishery.

This recommendation has to a large extent been overtaken by the developments in response to the 2005 Minister’s Direction. Fishery independent data requirements are being addressed through a commitment by AFMA to develop and implement fishery independent surveys in major Commonwealth fisheries, including the SESSF. The survey designs are currently being developed and the actual surveys will be undertaken in 2008. Apart from providing key abundance data to support improved stock assessments for quota species, AFMA has indicated that the surveys will also provide an additional source of verified information on abundance of non target and bycatch species. Other proposed responses to the Minister’s Direction with data monitoring implications

include AFMA's intention to ban discarding of quota species from 2007, a commitment to reduce bycatch by 50% and the mandatory use of VMS across the fishery by July 2007. The draft SESSF BAP includes a range of measures to address these new discarding and bycatch commitments, including monitoring arrangements, which are discussed later in this report. Trialling of on-board cameras has already been undertaken in the Gillnet sector as a more cost effective means of verifying the extent of discarding and protected species interactions with the intention to further evaluate the use of cameras where applicable across the SESSF and other Commonwealth fisheries.

In relation to improved monitoring of protected species interactions, formal protected species reporting arrangements have been implemented between DEH and AFMA via a memorandum of understanding, logbooks have been amended to enhance protected species reporting details. A Natural Heritage Trust (NHT) funded project has been undertaken in the CTS to provide more robust fishery dependant reporting of seal interactions to better quantify the extent of, and reasons for, seal interactions with trawlers. AFMA has acknowledged that there needs to be further measures to more accurately quantify the extent of protected species interactions. These issues are discussed in more detail later in this report.

AFMA notes in its submission that a strategic research plan and data strategy for the SESSF has been developed, in consultation with the SESSF MACs, as part of an NHT funded project on improving the sustainable management of Commonwealth fisheries. However, AFMA notes that the completion of these documents has been delayed until the actions to address the Minister's Direction on the SESSF have been further developed. AFMA has also acknowledged the need to review observer and related monitoring programs in the SESSF to comply with the range of management requirements arising from the Minister's Direction. Public comments received raised concerns that the research plan and data strategy have not been implemented and also noted the lack of detail about how the fishery independent survey program would address discarding rates, protected species interactions and the level of observer coverage required. The need to define adequate level of observer coverage across the SESSF was also raised by DEH in the last strategic assessment. While DEH acknowledges that key measures such as enhanced fishery independent monitoring and verification of fishing activity are being addressed, AFMA should ensure that the above concerns, in particular the finalisation of the research and data collection strategy and determination of ongoing observer requirements, are given priority in the context of implementing the immediate commitments for the SESSF in response to the Minister's Direction.

Overall, given the range of fishery dependent data gathered by AFMA, the fishery independent data collection programs under development, and the mechanisms for regularly reviewing the data requirements, DEH considers that there is a reasonably reliable information collection system in place appropriate to the scale of the fishery. However, DEH believes but that this can be improved. Continuation of existing data collections and research programs, combined with the planned extension and refinement of such activities, will be important for the future management of the fishery.

## **Assessment**

The last strategic assessment of the SESSF noted the comprehensive assessment process in place to determine the status of stocks and to set the annual TAC for quota species. This includes an annual review of quota species stock status by Resource Assessment Groups (RAGs) and analysis of trends in stock status and environmental issues through the annual Bureau of Rural Sciences (BRS) Fishery Status Reports, both of which are publicly available. Since the last strategic assessment, the 2004 BRS Fishery Status Report has been published. As noted in the last strategic assessment, the stock assessment process is primarily reliant on logbook catch and effort data, available biological data such as age and size distribution, discard rates and relevant research data. As noted previously

in this report, the commitment to implement fishery independent surveys from 2008 is expected to provide for more robust stock assessments by obtaining more reliable information on the abundance of both target and non target species.

Quantitative stock assessments continue to be conducted for SESSF quota species. AFMA notes that in 2004 stock assessments were conducted for flathead, jackass morwong, blue grenadier, Cascade Plateau orange roughy, blue warehou, spotted warehou, saw shark and elephant fish. More recent quantitative stock assessments have been conducted for Bight redfish, deepwater flathead, blue grenadier, blue warehou, silver trevally, flathead, orange roughy (Cascade Plateau and Eastern Zone stocks) and ling.

The last assessment noted the number of overfished species and also the high number of target species with uncertain stock status in the SESSF. The 2005-06 AFMA Annual Report notes that orange roughy, eastern gemfish, blue warehou, school shark and silver trevally are overfished along with smooth dory, outside the Cascade Plateau, and other oreo dory species and require formal recovery plans; that redfish is growth overfished and subject to overfishing; that ling is subject to overfishing; and that blue grenadier, whilst currently not overfished, is subject to a declining biomass due to poor recent recruitment. The Minister's Direction and the SESSF Plan both require AFMA to take action to cease overfishing and recover overfished stocks that are below reference points. AFMA has acknowledged the need to take further recovery action with these species and this is discussed in further detail later in this report. The AFMA Annual Report also identifies a range of other quota species with uncertain stock status including western gemfish, john dory, ocean perch, ribaldo, saw shark, elephant fish and royal red prawn.

The last strategic assessment noted the high level of impacts on and uncertainty with the status of many stocks in the SESSF that required more comprehensive harvest management arrangements. A recommendation was made for AFMA to develop and implement harvest strategies for quota and high risk non-quota species that included specific decision rules and reference points. As noted previously in this report, a HSF has been applied to quota species in the SESSF since 2005. The HSF provides for quantitative reference points and control rules to maintain stocks at target levels, with the general principle of reducing fishing mortality once stocks decline below a target level (40% unfished biomass for most species) and to cease fishing once stocks fall below the limit point (20% unfished biomass for most species). In the absence of comprehensive stock information for all species, a 4 tiered assessment approach is taken when determining the RBC, with advice on the allocation of species to respective tier levels provided by the RAGs. Increasingly precautionary catch limits are set for those species in the tier levels where knowledge of stock status is limited. The majority of SESSF quota species at this stage are classified in the lower tier levels (requiring more precautionary approaches) due to limited robust information on biomass levels. The proposed fishery independent surveys are expected to improve abundance estimates in the coming years and provide for more species to be assessed with more certainty under the higher tier levels.

As mentioned earlier in this report, a Commonwealth Harvest Strategy Policy is currently under development and due for implementation in January 2008. The Harvest Strategy Policy will involve the development of harvest strategies in Commonwealth fisheries as a means of maintaining stocks at ecologically sustainable levels. Further refinement of the SESSF HSF is expected to occur in line with the development and implementation of the Commonwealth Policy.

The application of the HSF in the SESSF has seen a significant drop in TACs for several species in the SESSF in the last 2 years, as a more precautionary approach is taken to the setting of catch limits and the full extent of removals from stocks, including discarding, is explicitly factored into the TAC setting process. The species include blue grenadier, orange roughy, western gemfish, redfish, school whiting, silver trevally, jackass morwong and spotted warehou.

DEH notes that while quota species are adequately addressed by the HSF, the same process has yet to extend to non-quota species in the SESSF, some of which are regularly landed as significant byproduct in the fishery. The last DEH assessment raised concerns with the limited direct controls that applied to the high number of non-quota species taken across the SESSF and the need to ensure that catches did not increase, particularly for high risk non-quota species, unless controlled arrangements such as harvest strategies were in place. A recommendation was made to this effect. The landed catch of non-quota species remains fairly significant in some sectors of the SESSF, particularly in the trawl sectors. The 2005 ISMP data indicates that retained non-quota species comprises around 27 % by weight of the catch landings in CTS, compared with around 3% in the GHATS.

DEH acknowledges that, given the limited information currently available on non-quota species, the HSF as currently applied to quota species may not be feasible in the SESSF in the short term for most non-quota species. In lieu of a harvest strategy approach as applied to quota species, DEH acknowledges that AFMA has developed a range of measures to monitor and manage fishing impacts on the more prominent non-quota species taken across the fishery.

As noted previously in this report, AFMA has responded to the targeting of some key non-quota species by allocating quota under the SESSF Plan. From 1 January 2005 this included ribaldo and a range of oreo and deepwater shark species. These species are subject to the HSF and, in the absence of data to conduct reliable stock assessments, are currently managed under fairly conservative TACs. The key commercially targeted species in the GABT sector, and alfonsino in the ECDWTS, were also placed under quota management on 1 January 2006. TACs for the GABTS are based on substantial catch and effort data, supported by biological and other data from the recent GAB fishery independent survey program designed to verify stock status. The ECDWTS is still a developmental fishery with low activity, but to ensure controlled development AFMA has advised that the future harvesting of alfonsino will be subject to further collection of biological data and progressive stock assessment.

AFMA's submission notes significant changes in major non-quota catches since the last assessment for species that can constitute significant byproduct. In particular, catches of hapuku, leatherjackets, knifejaw and whiskery shark have increased substantially, which could be attributed to significant increases in fishing effort in both the GABTS (up 35%) and the GHAT autolongline sector (up 150%) over recent years. Apart from these species, substantial catches of non-quota species at times taken as byproduct such as latches, king dory, barracouta, southern frostoffish, boarfish species, dogfish species, angel shark, bronze whaler, seven gill shark and squids are still being caught across the SESSF. With the exception of knifejaw, leatherjackets and squid, all the above species have been allocated a high risk status in at least one sector of the SESSF under the ERA process.

Apart from the species brought under quota management, a limited range of measures have been implemented since the last assessment to directly control the catch of major non-quota species. A developmental strategy to address future targeting of squid, including catch trigger and review levels, has been adopted for the SESSF and other Commonwealth fisheries targeting squid. AFMA notes that biological information such as otoliths is being collected for hapuku, prior to reviewing management arrangements for the species. AFMA's submission notes that reference points were established in 2004 for a range of non-quota shark and finfish species, including several that have been ranked as high risk in the ERA process. Public comments have queried the basis for determining the species selected for these reference points and the process for identifying additional species for which reference points should be established. DEH agrees that this should be further elaborated within the context of the ERA process and ERM response framework.

The fishery independent surveys implemented for the GABTS provides the capacity to further define the abundance of the more prevalent non-quota species in that sector. AFMA notes that the fishery independent surveys being developed for the SESSF will provide similar capacity for other sectors of the SESSF once implemented. The GABTS has also developed a staged process for targeting additional species in the slope waters of the fishery. This process involves setting precautionary triggers that, when progressively reached, require collection and analysis of biological data, full stock assessment and potential cessation of fishing. Trigger limits already apply to the primary byproduct species such as western gemfish and blue grenadier that are managed under quota in the CTS and GHATS. The AFMA Board has recommended that similar developmental strategies for non-quota species be implemented for the CTS and GHATS. DEH endorses this approach and considers that the extension of these developmental strategies for non-quota species across the SESSF should be given further priority by AFMA.

AFMA's intended responses to the Minister's Direction also include consideration of limiting the proportion of non-quota species landed in any fishing trip to prevent unsustainable targeting. However, it is unclear at this stage when this would be implemented and what actions this would entail. As a first step, such actions may be more appropriately addressed through responses linked to the outcomes of the ERA process, with priority given to species classified as high risk.

At the time of the last DEH strategic assessment AFMA had commenced the ERA, a tiered process to ultimately provide quantitative risk assessments of the impacts of fishing on target, byproduct and bycatch species along with impacts on habitats and the broader ecological communities. The last strategic assessment included a recommendation for AFMA to implement management responses to the outcomes of the ERA process. AFMA is developing an ERM framework to respond to the outcomes of the ERA. The ERM will provide the main mechanism to address high risks identified in the ERA process but its implementation has been delayed due to the delays in completing the initial Level 1 and 2 assessments outcomes from the ERA process.

The ERA process across the various SESSF sectors identified a range of high risk species and habitats that need further management attention. These included:

- a range of targeted finfish species managed under quota, including species such as ling that has been noted as subject to overfishing in the AFMA 2005-06 Annual Report;
- a wide range of low productivity shark, skate and ray species taken as by-product or bycatch;
- listed threatened species such as great white and grey nurse sharks, Australian sea lions and several species of albatross;
- a range of outer shelf and slope habitats vulnerable to trawling;
- a number of non-quota species subject to high levels of catch landings such as latchets, hapuka, leatherjackets and king dory; and
- a wide range of discarded finfish species for which little information is available.

The Level 2 assessments recently completed for the SESSF identified around 205 high risk species and habitats in the CTS, 116 in the GHATS and 81 in the GABTS.

AFMA's responses to the identified high risks have to date have mainly been on an individual species basis, including:

- reductions to the TACs for some species managed under quota and spatial closures to protect spawning aggregations of highly impacted stocks such as ling;

- targeted surveys and spatial closures for highly vulnerable deepwater species such as deepwater dogfish; and
- gear modifications to reduce the incidental catch of undersize overfished stocks such as eastern gemfish.

These measures have the potential to reduce the impacts on other high risk species. DEH notes that measures proposed in the Minister's Direction for the SESSF, such as the fishery independent surveys across the SESSF and a range of spatial closures, also have the potential to further reduce the uncertainty with the status of many of these species and provide the basis for greater protection from a range of adverse impacts.

Notwithstanding these actions, the wide range of high risk components identified by the ERA process requires a more consolidated approach to ensure that these impacts are addressed, particularly for the high number of low productivity shark, ray and skate species at risk from the various gears deployed across the various depth ranges of the SESSF. DEH considers that priority needs to be given to implementing the ERM process for the SESSF to ensure that appropriate management responses are developed and implemented in the short term for the various high risk components identified by the ERA for the SESSF.

AFMA has advised that a structured process for responding to high risks identified by the ERA process has been developed and appropriate management responses to the identified risks will be further developed by the SESSF MACs in early 2007. Where a significant number of high risks have been identified by the ERA process, such as in the CTS, AFMA intends to apply a further ranking system that classifies responses for species or habitats along the lines of:

1. evident high risks, further action needed;
2. precautionary high risk rating based on limited available information; and
3. precautionary high risk that may be addressed by spatial management or other measures under development.

While noting these developments, DEH considers that with the recent increase in fishing effort in some sectors of the SESSF and the outcomes of the ERA process, a significant level of risk remains with the harvesting of a range of non-quota species. DEH acknowledges that a high number of species and habitats have been ranked as high risk due to limited available information on actual impacts and that measures are already in place or under development that may mitigate this high risk ranking. Nonetheless, DEH expects that for species where significant risks are evident, and where the species are known to be vulnerable to harvesting operations, priority should be given to more direct management responses that mitigate these impacts.

**Recommendation 2:** *AFMA within 18 months to implement the ERM framework to address the high risks identified by the ERA process, in particular high risk non-quota species.*

### **Management response**

The last strategic assessment noted the range of background research and assessment to develop reference points for species managed in the SESSF. AFMA's submission notes that reference points have been set for all quota species. As discussed previously in this report, the HSF introduced for the SESSF includes the establishment of quantitative reference points to support the objective of maintaining stocks at target levels. Reference points for non-quota species have been discussed earlier in this report and the process for setting precautionary reference limits for non-quota species will need to be pursued further in conjunction with the implementation of the ERM framework and

the proposed developmental strategies for non-quota species in the SESSF. The forthcoming fishery independent surveys are expected to further inform the development and refinement of quota and non-quota species reference points.

The last strategic assessment also noted the range of output and input controls applied across the SESSF to control harvesting and maintain ecologically viable stock levels, including ITQs for a range of species, trip limits, size limits and no take restrictions for some State managed species, limited entry, gear restrictions and selected spatial and temporal closures. The primary management tool in the SESSF remains the adjustment of the TAC to respond to changes in the stock status for quota managed species. Since the previous strategic assessment in 2003, the number of quota species or species groups in the SESSF has increased from 20 to 30. As noted earlier in this report, the TACs for a number of species have been reduced significantly in recent years. AFMA's submission notes that since the last strategic assessment, at various stages TACs for 20 species were significantly reduced, 9 TACs were essentially unchanged and increased TACs were allocated to 5 species. AFMA also noted that substantial TAC reductions were necessary for catches to remain sustainable and to support recovery of some stocks.

In the previous strategic assessment DEH noted that primarily relying on single species management controls such as species-specific TACs for such a large fishery as the SESSF with complex multi-species and multi-gear interactions would not adequately address the range of risks and impacts evident in the fishery such as high discard rates, numerous overfished species, increasing fishing effort and vulnerable non-quota species such as deepwater sharks. DEH made a recommendation for AFMA to develop and implement a system of spatial and temporal management measures to address the above mentioned, as well as other risks and impacts across the SESSF, to assist the fishery to be managed in an ecologically sustainable manner.

DEH notes that an overarching spatial and temporal management system applying across the SESSF was being pursued in the context of a major Alternative Management Systems (AMS) project that was to evaluate integrated management strategies to address the key economic and environmental issues facing the SESSF. However, this project has been delayed and overtaken to some extent by actions being developed in response to the Minister's Direction for the SESSF. This includes proposals by AFMA to establish a structured system confining the various gears to various zones and depth ranges to minimize impacts on key vulnerable species such as school sharks, deepwater dogfish and other deepwater species. DEH notes this approach was suggested in the first DEH assessment of the SESSF and maintains that it should be followed through. AFMA also intends to pursue a research project in 2007 on evaluating the effectiveness of spatial systems in Commonwealth fisheries that may also contribute to the longer term effectiveness of spatial management systems established in the SESSF.

Since the previous strategic assessment a number of measures have been, or are about to be, implemented to address several of the factors that DEH considered should be taken into account in establishing a system of spatial and temporal management in the SESSF, such as protection for species vulnerable to fishing, key breeding, feeding and refuge grounds and supporting the recovery of overfished stocks. Spatial measures developed and implemented, or under implementation, since the last assessment include:

- a series of voluntary seasonal closures in waters off Victoria and Tasmania to protect ling spawning grounds;
- inshore closure of South Australian waters from the head of the Great Australian Bight to the Western Australian border to minimize fishing impacts on large breeding-age sharks, great white sharks and Australian sea lions;

- Scalefish Hook sector is constrained to waters deeper than 183m to reduce incidental catches of school shark and is subject to seasonal closures around Kangaroo Island;
- gillnet fishing closures in 3 separate South Australian inshore water areas (also closed to shark hook fishing in 2 of these areas) to minimise bycatch of breeding age school shark;
- permanent closure of shark gillnet and shark hook fishing in waters deeper than 183 metres, with the exception of two small areas in eastern Bass Strait, and permanent closure in waters off south west Tasmania in depths greater than 130 metres, to minimise the take of school shark; and
- closures to protect remnant deepwater dogfish populations in waters off South Australia at depths of 300-600 m for demersal trawling and 183-600 m for scalefish hook fishing between 133 45' E and 134 45' E, in waters off Sydney and in the new Flinders Marine Park off north east Tasmania.

The AFMA conservation program for the recovery of orange roughy closes all waters in the SESSF below 700m (750m in the GABTS) to trawl methods except on the Cascade Plateau. This will also provide extensive protection for vulnerable deepwater species such as deepwater sharks and oreo species.

The above deepwater dogfish, autolongline and shark gillnet and hook closures and gillnet fishing closures are expected to come into effect under AFMA Directions from 1 January 2007.

A recent spatial management workshop convened with industry representatives, committed to developing further spatial closures, including closure of most of the southern Bass Strait waters and waters surrounding Tasmania to demersal trawling. The impending declaration of the network of Marine Protected Areas (MPAs) in the south east region effectively provides additional habitat protection in the area of the fishery and refuge for some fish stocks, although this is not a main reason for their declaration.

DEH notes that significant enhancements to spatial management arrangements have been made in the SESSF in recent years. Given the ongoing need for responses to the ERM framework, Bycatch Action Plan and other management arrangements, a suitable process should be maintained to strategically address the future spatial and temporal management requirements across the SESSF. Spatial measures should also be supported by an evaluation process to determine their effectiveness.

**Recommendation 3:** *AFMA, in conjunction with SESSF stakeholders, to continue to systematically assess the spatial and temporal management requirements across the SESSF and implement relevant spatial or temporal management measures within the ERM framework and other management mechanisms. Spatial and temporal measures should be supported by appropriate evaluation mechanisms to determine their effectiveness.*

The previous strategic assessment DEH noted that, with the increase in fishing effort across various areas of the SESSF, there was a need to ensure that any expansion in fishing areas was undertaken under controlled and precautionary arrangements. A specific recommendation was made to address this issue.

DEH notes that to date no process has been implemented that explicitly provides for controlled expansion of fishing into new areas for each relevant gear type in the SESSF. AFMA notes in its submission that there were difficulties in establishing a baseline of pre-fished and unfished areas for each SESSF sector given the spatial scale of available data. While fishing effort has remained stable or contracted in recent years for the shark gillnet and SET sectors, the AFMA submission indicates

significant expansion of effort in both the autolongline and GABT sectors, reinforcing the concerns identified previously by DEH. The GABT sector activated all 10 boat SFRs for the first time in 2005 and has expressed interest in further developing catches of slope species and use of midwater trawl for market species such as squid. The number of autolongline permits has increased to 15 since the last DEH assessment and the availability of autolongline permits to all scalefish hook operators is under review. Autolongliners have expanded their areas of operation through increased targeting of both quota species such as ling and non-quota species such as hapuku and bass gropers, and have expressed interest in expanding into traditional shark gillnet areas such as the Bass Strait. There are implications for increased impacts on non target species, refuge areas and vulnerable habitats if this expansion of effort continues and DEH believes AFMA should take the steps necessary to ensure any such expansion is sustainable.

DEH does however note the steps taken in the GABT sector to develop a controlled process for further development of slope species in the fishery through a series of precautionary triggers. Prior to the recent development of the orange roughy conservation program, the GABT sector agreed to close 20% of features such as seamounts in the sector to fishing to protect orange roughy aggregation sites. As noted above, autolongline fishing has been constrained to certain areas.

AFMA's proposed responses to the Minister's Direction include a commitment to limit fishing in the SESSF to areas and species fished to date, with any proposed expansion of areas and species to be subject to a set developmental process agreed with the SESSF MACs. DEH agrees with this approach, but notes that this is essentially the intent of the original DEH recommendation from the last assessment of the SESSF. AFMA therefore should give priority to ensuring this process is clearly defined and endorsed within the formal management arrangements of the SESSF within the next 12 months.

**Condition 4 (to WTO):** *AFMA by the end of 2007 to ensure a defined process for expanding fishing effort in each sector of the SESSF to new areas and/or new species is implemented within the formal management arrangements for the SESSF.*

The previous strategic assessment noted the significant levels of discarding in the SESSF, particularly in the trawl sectors, and the potentially adverse impacts this was having on the ongoing productivity and sustainability of both quota and non-quota species. Recommendations were included in the strategic assessment to set discard reduction targets, develop and implement measures to reduce discards and ensure uptake of bycatch mitigation measures.

The discard reduction targets and measures to meet the targets were to be primarily delivered through the new SESSF BAP. DEH is concerned that despite substantial stakeholder consultation on draft versions of the BAP over the last 3 years, a new SESSF BAP is still to be finalised and consequently no formal bycatch reduction targets or a structured program of bycatch reduction actions are in place. This is a significant management deficiency given the historical magnitude of discarding, particularly in the trawl sectors of the fishery, and the implications for stocks already under fishing pressure, as well as ongoing interactions with protected species. Further discussion on actions required to address bycatch issues is provided later in this report.

While there have been delays in establishing bycatch reduction targets within a finalised SESSF BAP, DEH notes that the issue of targeted reduction of overall bycatch has been addressed by AFMA in the proposed responses to the Minister's Direction. In particular, AFMA has in effect set a zero discard target for quota species by committing to making the discarding of quota species illegal from 2007 and, in relation to other bycatch, to halve total discards across the fishery by 2008. AFMA notes in its submission that the proportion of total discards made up by quota species is relatively minor, comprising in 2004 only 7% in the SETS, 1% in the GABTS and 1% in the

scalegfish hook sector of the GHATS. AFMA is currently working with industry to develop arrangements to achieve the new bycatch reduction objectives. DEH notes that gear modifications in the trawl sectors that were noted as under evaluation in the previous strategic assessment, such as modifications to mesh configuration and mesh twine specifications, have now been regulated for use. These gear changes are starting to have an impact on discarding rates of some key quota species, in particular redfish, with discard rates for this species falling from 36% in 2004 to 16% in 2005 following the increased use of the modified trawl gear.

## **Conclusion**

DEH considers that the management regime in the SESSF is appropriately precautionary and, in conjunction with the range of changes being implemented in response to the Minister's Direction, provides for the fishery to be conducted in a manner that does not lead to overfishing. DEH considers that the information collection system and stock assessment and management arrangements currently in place, and under revision, are generally sufficient to ensure that the fishery is conducted at catch levels that maintain ecologically viable stock levels with acceptable levels of probability. DEH considers that the measures being implemented in response to the Minister's Direction will assist in the short to medium term in reducing the current uncertainty with the status of stocks.

DEH considers there is an immediate need to implement further management responses for high risk non-quota species and a structured process to control any spatial expansion in fishing effort, whilst maintaining a strategic approach to spatial management requirements across the fishery, and has provided a specific condition to the WTO and recommendations for improvements in the short to medium term.

## **Promote recovery to ecologically viable stock levels**

Objective 2: *'Where the fished stock(s) are below a defined reference point, the fishery will be managed to promote recovery to ecologically viable stock levels within nominated timeframes'*

At the last strategic assessment of the SESSF, 5 species were classified by BRS as being overfished – orange roughy, blue warehou, eastern gemfish, school shark and redfish. In 2004 BRS classified 6 species as being overfished - orange roughy, blue warehou, eastern gemfish, school shark, silver trevally and redfish, and one species, ling, as subject to overfishing. The 2005 BRS Fishery Status Report is not yet available. As noted earlier in this report, the HSF that commenced in the SESSF in 2005 provides a structured process, including assessment against quantitative reference points, to address the requirements under the Minister's Direction to recover overfished stocks and to prevent species from becoming overfished in the future. The HSF therefore provides the current basis for determining where stock recovery action is required for species in the SESSF. The 2005-06 AFMA Annual Report, as previously mentioned, notes from available assessment information that orange roughy, eastern gemfish, blue warehou, school shark, silver trevally, smooth dory (outside the Cascade Plateau) and other oreo dory species are overfished and that redfish and ling are subject to overfishing.

The most recent RAG assessments for species classified as overfished indicate that eastern gemfish, school shark, blue warehou and most stocks of orange roughy are below limit reference points, and that a high degree of uncertainty exists on the abundance status of redfish, silver trevally and ling, but they are likely to be well below stock target reference points.

DEH noted in the last SESSF strategic assessment the need for more structured stock recovery strategies for overfished species. These recovery strategies were to take account of gear modifications required to minimise growth overfishing and discarding, area and temporal closures to protect critical areas such as aggregation sites, complementary management for shared stocks, arrangements for spatially distinct stocks and targeted research and monitoring to improve understanding of stock abundance and dynamics. DEH acknowledges that the SESSF Plan includes the requirement of effective recovery strategies to be implemented within 12 months if a stock is found to be below the reference point for the species. However, DEH believes that such a response is already needed for several species as a matter of priority.

DEH notes that considerable uncertainty exists with the status of most stocks in the SESSF and that, despite mitigation measures in recent years, many stocks still remain under pressure from fishing impacts. This is reflected by substantial reductions in TACs being applied to most of the SESSF quota species since 2003, including key commercial species for the fishery such as blue grenadier, ling, flathead, orange roughy, spotted warehou and redfish. The HSF, introduced in the SESSF in 2006, provides a more consistent platform for stocks to be recovered through conservative harvest levels. However, the only species for which adequate quantitative assessment data is considered available by the relevant SESSF RAGs to classify the species under the more robust Tier 1 or 2 levels under the HSF, and hence determine more reliable stock abundance reference points, are orange roughy, blue grenadier, flathead, school shark, gummy shark, blue warehou (western stocks), spotted warehou and jackass morwong.

The SESSF comprehensive recovery strategies have only been articulated for orange roughy, through the recently developed conservation program. The conservation program includes specific actions to support the recovery of orange roughy stocks, including designation of prescribed fishing areas, deepwater fishing closures outside the prescribed fishing areas, setting of bycatch TACs, a research and monitoring program to assess the status of orange roughy stocks and projected timeframes for stock recovery. DEH notes that while eastern gemfish and school shark have also been nominated for listing under the EPBC Act, they have more basic recovery strategies based on provisional recovery targets and that these strategies do not appear to have changed since the last DEH assessment of the SESSF.

Apart from the specific conservation program for orange roughy, a range of measures have been implemented or proposed in recent years that have stock implications for other species classified as overfished and/or subject to overfishing. These include:

- eastern gemfish – ongoing bycatch TAC, gear modifications in CTS sector to reduce discarding of small fish, stock abundance survey and revised assessment proposed for 2007-08;
- school shark – TAC progressively reduced, targeted spatial closures to protect key school shark breeding and feeding grounds;
- redfish – gear modifications to reduce discards, substantial TAC reductions
- blue warehou – establishment of separate east/west stock TACs, industry relative abundance surveys;
- silver trevally – TAC substantially reduced, gear modifications to minimise discards;
- ling – spatial closures on spawning sites, substantial TAC reductions; and

- oreos – deepwater fishing closures required under orange roughy conservation program, recent quota allocation, bycatch TACs.

While providing some benefits to stock recovery, these measures have mostly been reactive and not part of a more considered plan or strategy involving a range of measures to promote recovery of stocks within a prescribed period. DEH notes that for many of the above species the application of the HSF rule of ceasing targeted fishing when stocks have fallen below limit reference points does not appear to have been fully applied and needs to be more clearly defined and applied in the context of stock recovery actions.

DEH also notes that AFMA's response to the Minister's Direction includes a commitment for explicit stock recovery plans to be developed to support recovery of overfished stocks. AFMA has advised that the stock recovery plans will include a stock rebuilding reference point, a timeframe for reaching the reference point, a monitoring program and ways of limiting fishing mortality to aid stock recovery. AFMA has committed to developing recovery plans in 2006 for orange roughy (already addressed through recent conservation program), school shark and eastern gemfish but has not specified when recovery plans will be developed for other overfished species.

DEH acknowledges that other responses to the Minister's Direction such as the fishery independent surveys and spatial management measures should assist with improving the reliability of assessments of stock status and rebuilding stocks to more precautionary levels. Given the recurring level of overfished species in the SESSF and the problems with the generally low productivity, uncertain stock status and slow recovery rates for overfished species, priority needs to be given to a more concerted and comprehensive stock recovery approach consistent with that proposed under the Minister's Direction. Recovery plans should also include a review of limit and target reference points to ensure they are appropriate to the particular species' characteristics and provide for more robust and precautionary stock recovery levels. There is a need for the development of stock recovery plans for all species identified as overfished, and these should include targeted data collection, recovery targets and timelines, precautionary limits and target reference points and a range of supporting actions to ensure recovery targets are reached. Given the current listing nominations for eastern gemfish and school shark, priority should be given to developing recovery plans for these species.

**Condition 5 (to WTO):** *AFMA to develop and implement within 12 months formal recovery plans for species in the SESSF classified as overfished, with priority to be given to eastern gemfish and school shark.*

## **Conclusion**

The assessment that several species taken in the fishery are overfished is being addressed through the recently implemented HSF and the range of commitments being implemented in response to the Minister's Direction. Some primary species harvested in the SESSF are currently classified as growth overfished and are at risk of becoming recruitment overfished. DEH considers that the measures in place and in progress should provide for the rebuilding and eventual recovery of these stocks, should they become recruitment overfished.

DEH considers that specific recovery programs are required to give priority to the recovery of overfished stocks in the short term and has made a specific condition to the WTO to immediately address this deficiency in the existing management arrangements and increase the probability of stocks recovering.

## **Ecosystem impacts**

Principle 2: *'Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem'*

### **Bycatch protection**

Objective 1: *'The fishery is conducted in a manner that does not threaten bycatch species'*

The previous strategic assessment report on the SESSF in 2003 provided a detailed overview of the extent of bycatch taken in the various SESSF sectors and the range of measures to monitor and address the level of bycatch. As noted earlier in this report, the relatively high levels of bycatch in the SESSF, particularly in the trawl sectors, are a continuing issue for the fishery. Data on bycatch rates is primarily drawn from the annual ISMP monitoring of discarded species. The 2005 ISMP data indicates that around 42% total catch by weight in CTS is discarded compared with around 20% of the much smaller total catch in the Scalefish Hook sector of the SESSF. Discarded species are primarily non-quota species for which limited biological and stock status information exists. As previously noted in this report, the forthcoming fishery independent surveys in the SESSF are expected to provide a further source of data to help verify the rate and composition of bycatch across the fishery.

Recent ISMP data indicates that the main species discarded as bycatch in the various sectors of the SESSF are:

- GABTS – latchets, stingarees, sponges, fiddler ray and smooth stingray;
- CTS – barracouta, southern frostfish, chinaman leatherjacket, gurnards, piked dogfish, whiptails, jack mackerel, New Zealand dory, cucumber fish and ruby fish;
- Scalefish Hook sector – greeneyed dogfish, draughtboard shark, skates, platypus shark.

A number of the more prevalent bycatch species have been identified as high risk from the ERA process for the SESSF. AFMA has indicated that it will shortly be developing management responses to high risks through the ERM framework. DEH has made a recommendation earlier in this report for AFMA to give priority to the responses for high risk non-quota species.

Previously in this report, DEH noted its concerns with the delays with finalising the new SESSF BAP that had in place bycatch reduction targets and an established program of bycatch reduction actions to meet these targets. The draft SESSF BAP is currently undergoing a final round of public consultation and is expected to incorporate key responses to the Minister's Direction before finalisation in 2007. These include the commitment to reduce overall bycatch by 50% by 2008; relevant spatial measures that include objectives to reduce bycatch of certain species, including juvenile scalefish in the trawl sectors; and the FIS that provides periodic information on the abundance of key bycatch species. The BAP can also be expected to progress bycatch data collection and refine reporting systems as work continues on methods to minimise bycatch in the fishery. DEH appreciates the need to take account of the range of new measures under the Minister's Direction, however the commitments made under the Minister's Direction further emphasise the need to give priority to formalising bycatch reduction actions through a SESSF BAP as soon as possible.

Notwithstanding the absence of a formal SESSF BAP, a number of actions have recently been developed and implemented in the SESSF since the last strategic assessment that have implications for quantifying and reducing bycatch in the SESSF. These include:

- regulated trawl mesh modifications including the use of minimum single twine and double twine codend mesh and modified mesh panel configurations to reduce catch of undersize scalefish in trawlers;
- an industry program of bycatch reduction for fishing operations with smaller mesh for royal red prawns in the CTS, involving trials of modified gear, review of fishing practices and detailed catch data collection and analysis;
- spatial closures to protect key deepwater dogfish aggregation sites off South Australia, Tasmania and NSW, with the commitment to survey fishing areas off north east Tasmania to determine if further deepwater dogfish closures are required;
- restriction of autolonglining from depths shallower than 183 metres to minimise incidental catch of overfished school sharks;
- direction to install seal excluder devices (SEDs) in midwater trawl nets in the winter blue grenadier fishing component of the CTS;
- extension of the ISMP to gillnet fishing to enable standard estimation of discard rates across all SESSF sectors;
- explicit incorporation of discard estimates in the calculation of RBCs and TACs under the HSF; and
- amendment of GABTS and CTS logbooks to allow for reporting of discards.

Further work proposed to support the reduction of discards in the SESSF includes a review of trawl codend design and performance, selectivity studies to reduce bycatch from Danish seine fishing and a strategy by the trawl industry to accurately record and reduce bycatch in line with Ministerial Direction requirements. The range of spatial closures mentioned earlier in this report should also have implications for reducing fishing contact with a number of bycatch species in the fishery. The expected reduction in fishing effort as a result of licences in the SESSF being surrendered under the current structural adjustment process for Commonwealth fisheries should also have some effect in reducing overall impacts on bycatch species across the SESSF.

DEH considers that while some progress has been made to date, a comprehensive approach needs to be taken across all sectors of the SESSF through the finalised BAP to achieve stated bycatch reduction targets with specified actions to achieve an ongoing level of bycatch reduction and mitigation of threats to key at risk species. The BAP should also include robust performance measures to evaluate the effectiveness of bycatch reduction across the SESSF.

**Condition 6 (to WTO):** *AFMA to finalise the SESSF BAP by June 2007. The BAP should include specified targets for bycatch reduction across all sectors, with the aim of minimisation, along with measures to address bycatch mitigation and performance measures to evaluate effectiveness of the various bycatch reduction measures.*

## **Conclusion**

DEH considers that, on balance, given fishing methods used and the proposed enhancements to management arrangements, there is a likelihood the fishery is conducted in a manner that does not threaten bycatch species. Should this situation change, or the risk assessment process indicates otherwise, DEH expects that AFMA would undertake appropriate actions to ensure bycatch species are not threatened by the fishery.

The absence of a formal BAP to focus efforts on further quantifying and reducing bycatch levels is an issue that should be given priority by AFMA. Recommendations have been developed to address

this issue in the short term and ensure the risk of unacceptable impact on bycatch species is detected and minimised in the longer term.

## Protected species and threatened ecological community protection

Objective 2: *'The fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities'*

The previous strategic assessment report for the SESSF in 2003 outlined the range of actual and potential protected species interactions with fishing activities in the SESSF. Given the large area of the fishery and range of fishing activities conducted, the SESSF has the potential to interact with a wide range of protected species including fur seals and Australian sea lions, great white sharks and grey nurse sharks, syngnathids such as pipefish species, marine turtles, whales, dolphins and a range of seabirds. The available data indicated that the most prevalent protected species interactions were with fur seals and great white sharks. While the ISMP and daily logbooks provided for the recording of protected species interactions, it was acknowledged at the time that data on protected species interactions across the fishery was very limited.

DEH's 2003 assessment highlighted the need for AFMA to give priority to establishing more robust protected species data collection and reporting systems to quantify the extent of interactions with fishing activities in the SESSF, particularly for seals, cetaceans, seabirds, white sharks and syngnathids. DEH notes that since the assessment the following measures have been implemented:

- establishment of an Memorandum of Understanding (MOU) between DEH and AFMA to facilitate quarterly reporting of protected species interactions in the SESSF, including data on types of interaction;
- an industry based FRDC funded project has trialled measures to promote more comprehensive reporting of seal interactions in the trawl sectors of the SESSF;
- observer coverage for autolongliners in the Scalefish Hook sector has been maintained at around 13% and 25% for blue grenadier factory trawlers, with 100% coverage required for vessels in response to incidents of significant interactions;
- observer program developed for Danish seine vessels to quantify extent of syngnathid interactions in that sector of the SESSF;
- collection of further protected species interaction data through the ISMP for the trawl sector; and
- education and awareness programs on protected species reporting.

AFMA's logbook and other records of protected species interactions over the last 3 years indicate the most significant interactions are still with fur seals, with a small number of interactions with a range of seabirds and with great white sharks. The draft SESSF BAP notes the need for improved and verified reporting of protected species across all sectors of the SESSF and highlights the uncertainty with the extent of interactions with seals and sea lion, great white sharks, cetaceans such as dolphins and seabird interactions with trawl gear due to limited suitable monitoring information. The draft BAP also identifies a significant anomaly in the Danish seine sector with seahorse and pipefish interaction reports dropping from up to 1600 between the years 2000 – 2002 to zero reports since 2002 that requires further verification.

The draft BAP includes strategies and actions to establish more reliable estimates of protected species interactions across the SESSF, including expansion of current observer programs to ensure

equal coverage across the SESSF sectors and a commitment to determine adequate observer coverage. DEH has previously noted in this report its concerns with the delay in developing and finalising a new SESSF BAP and has recommended that priority be given to its implementation.

Given the size of the SESSF and the number of protected species that potentially are vulnerable to interacting with fishing activities across the various sectors, a range of measures is needed to provide reliable estimates of interactions across the fishery. AFMA has indicated that the current trialling of cameras on board vessels to monitor catch and fishing activity may be extended to provide a more cost effective monitoring option on a broad scale to further verify bycatch and protected species interactions. DEH also considers that the approach taken in the trawl sector to promote reporting of seal interactions should be extended to other sectors of the fishery to promote awareness of protected species issues and requirements to accurately report interactions, particularly for listed threatened species such as sea lions and great white sharks.

As an outstanding commitment from the first strategic assessment, DEH considers there is an ongoing need and scope for AFMA to implement further measures to verify the extent of protected species interactions, particularly for those species with ongoing or highly uncertain levels of interactions such as sea lions, fur seals, great white sharks, seabirds and syngnathids.

**Recommendation 4:** *AFMA to develop and implement further measures to verify the extent and type of interactions with protected species in the SESSF, with priority given to sea lions, fur seals, great white sharks, syngnathids and seabirds.*

The SESSF ERA identifies a range of protected species as high risk. These are Australian fur seals across most sectors, white sharks in the Gillnet sector and GABTS, sea lions in the Gillnet sector, some seabird species and spiny pipehorses in the CTS and around 25 seabird species, mainly albatrosses, petrels and shearwaters, plus Hector's beaked whale in the autolongline component of the Scalefish Hook sector. DEH has recommended earlier in this report that priority be given to implementing management responses to high risk species identified in the ERA process.

The draft SESSF BAP identifies, as a priority action, the establishment of a program to evaluate and implement measures to mitigate interactions and mortalities with protected species. However, the draft BAP is limited on specific actions to be taken to prevent and mitigate interactions. Public comments raised concerns with the continuing high rate of fur seal interactions and incidents of significant catch of seabirds from autolonglining. The comments noted that mitigation measures such as SEDs in trawl nets and the full range of mitigation requirements of the *Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations* (TAP) such as night setting, use of thawed bait and offal retention do not apply across the relevant SESSF sectors. AFMA notes in its submission that instances of high catch of seabirds has only occurred for one vessel which resulted in 100% observer coverage for the vessel and stricter mitigation measures applied until the problems were resolved. AFMA also notes that all the requirements of the TAP have been met relevant to the SESSF, including uptake of measures such as weighted lines to meet required mitigation targets.

DEH acknowledges that action has been taken to minimise seabird interactions with line fishing in the SESSF. Given the high risk rating in the ERA of seabirds to longline fishing and occasional capture of seabirds noted in protected species reports, DEH considers AFMA should investigate, in the context of the proposed ERM responses to high risk species, the need for further mitigation requirements for longline fishing consistent with requirements in the Eastern Tuna and Billfish Fishery and Western Tuna and Billfish Fishery.

The AFMA submission notes that the investigation of seal capture mitigation techniques has focussed on trials of SEDs. DEH notes that SEDS are only required in factory trawlers targeting blue grenadier using midwater trawl gear. There is a reliance on the South East Trawl Fishing Industry Association code of practice, which is currently being reviewed, to provide the main mitigation measures for fur seal interaction in the SESSF, but recent incidences, where a factory trawl operator in the blue grenadier fishery did not follow the recommended measures in the code, resulted in significant fur seal bycatch and mortality. Limited progress appears to have been made for fur seals against the DEH recommendation at the last assessment, to extend effective mitigation measures across the trawl sectors. DEH also notes the potential extension of midwater trawling in the GABTS and CTS that can increase the risk of capture of seals and cetaceans. A more concerted effort is therefore required to develop and implement specific mitigation measures across the SESSF sectors for fur seals.

DEH notes that progress has been made since the last DEH assessment in implementing measures to reduce sea lion and great white shark interactions. The range of inshore spatial closures in South Australia implemented in 2004, along with pending gillnet fishing closures previously noted in this report have direct implications for reducing interactions with school shark, great white shark and Australian sea lion populations. DEH understands that SharkRAG has been requested to review the effectiveness of current spatial measures to determine if further measures are required to mitigate gillnet fishing impacts. While these developments are encouraging, the vulnerability of local sea lion populations to the impacts of gillnet and other fishing will need close monitoring and ongoing mitigation measures to address identified risks.

**Recommendation 5:** *AFMA to give priority to developing specific mitigation measures to reduce fishing impacts on fur seals, seabirds and sea lions across the sectors of the SESSF. Measures to mitigate interactions should be formally incorporated into AFMA's management prescriptions for the relevant sectors of the fishery.*

As noted earlier in this report, the recent listing of orange roughy as conservation dependant under the EPBC Act is based on a detailed conservation program with specific recovery measures such as deepwater spatial closures and targeted monitoring programs. Similar approaches may be required in the short term for the other fish species, such as deepwater dogfish, school shark and eastern gemfish, that have decisions pending on their nominations for listing under the EPBC Act. DEH has noted earlier in this report the spatial closures to come into effect from 1 January 2007 to restrict fishing interactions in key areas for deepwater dogfish and school shark and the immediate requirements for recovery plans for school shark and eastern gemfish.

## **Conclusion**

DEH notes that while there is potential for interactions with a wide range of protected species in this fishery, apart from fur seals, and to a lesser extent seabirds and sea lions, these interactions are thought to be minimal, although this assessment needs further quantitative data. At the present time, DEH considers that the fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species. Should this situation change, or if new data indicate otherwise, DEH expects that appropriate actions will be undertaken to ensure the fishery avoids mortality or injury to these species and avoids or minimises impacts on threatened ecological communities.

DEH expects that the measures in the SESSF BAP, once finalised, should assist with reducing the risks to protected species. DEH considers further effort needs to be made to quantify and minimise fishing interactions with protected species in the SESSF, particularly with fur seals, sea lions and

seabirds, and has therefore developed recommendations to ensure that the risk of unacceptable impact on protected species is minimised in the longer term.

## Minimising ecological impacts of fishing operations

Objective 3: *'The fishery is conducted in a manner that minimises the impact of fishing operations on the ecosystem generally'*

The previous DEH strategic assessment in 2003 noted the range of provisions in the draft SESSF Plan, data collection and research programs across the SESSF that address the impacts of fishery across the broader ecosystem. The SESSF Plan has since come into effect and includes specific provisions with broader ecosystem implications such as establishing harvest strategies for both quota and non-quota species, taking account of the distribution and population structure of species and the ecological implications of harvesting the TAC when setting TAC levels for species and developing a BAP that takes account of the ecological impacts of fishing on bycatch and habitats.

The previous assessment noted the range of catch and effort and biological information collected across the fishery over a number of years that has provided some basis for broader ecosystem based management such as determining key spawning grounds for protection. The fishery independent programs being developed across the fishery will systematically collect information on a broader scope for both target and non target species and provide a sounder basis, in combination with the ISMP now established across all sectors of the SESSF, to develop more ecosystem-based management measures.

As noted in the last SESSF strategic assessment, a range of past research projects have addressed species distribution, trophic dynamics, habitats and oceanic conditions in the area of the fishery. Since the last assessment a major CSIRO and industry led project on mapping trawling effort and habitat in the south east region has been completed to provide a further basis for the development of spatial management measures in the fishery. DEH is concerned at the lack of information collection and research covering the fishery's impact on the ecosystem and environment generally. However, DEH understands that this lack of information is the case across a range of Australian and international fisheries and until appropriate research techniques and programs are developed and implemented this will continue to be the case. DEH strongly supports research in this area.

DEH notes that one of the aims of implementing the SESSF Plan was for AFMA to take a more ecosystem-based approach to management across the fishery. This approach will need to be supported by ongoing and targeted research and monitoring measures in the SESSF research and data strategies. DEH has noted earlier in this report the need to give priority to finalising these strategies.

As noted earlier in this report, a comprehensive ERA process has been implemented for the SESSF that has addressed the impacts of fishing operations on target, byproduct and bycatch species along with impacts on habitats and the broader ecological communities. The ERA outcomes for the SESSF identified a wide range of non target species and habitats as at high risk from fishing impacts, particularly in the trawl sectors, and hence requires management responses to mitigate these risks. DEH has previously recommended priority be given to implementing appropriate responses to these high risk through the ERM framework currently being implemented by AFMA.

AFMA has developed or committed to a range of management measures that minimise the risk of significant impact of fishing on ecosystems and their components. Most management measures were established to protect target species and their habitats, although some actions are specifically designed to protect the broader environment. Spatial management measures discussed earlier in this report, that were developed to protect vulnerable species such as deepwater dogfish and school

shark, along with the broadscale deepwater closures to support the recovery of orange roughy stocks, also provide protection for other vulnerable species and habitats and refuge areas for a range of both target and non target species. DEH has also recommended earlier in this report that AFMA gives priority to developing and implementing defined processes for expanding fishing effort to new areas to ensure that the ecological implications are taken into account under controlled arrangements.

The commitment to reduce bycatch by 50% will require further effort to ensure fishing practices are more targeted and, consequently, impacts on the non target ecosystem components should be reduced. AFMA has implemented trawl gear modifications to reduce the level of discarded trawl catch and has indicated that gear modifications will need further refinement to meet discarding targets. The draft SESSF BAP priority areas include addressing the impact of total bycatch on the broader ecosystem and taking measures to reduce the impact on habitat by fishing practices. DEH has recommended earlier in this report that priority be given to finalising the SESSF BAP and bringing appropriate measures into effect.

As discussed earlier this report, significant reductions in TACs in recent years and the recent fishing concessions buyback under the *Securing our Fishing Future* package should result in a significant reduction in fishing effort in the SESSF in the short term, which should also result in a reduction in the amount of bycatch and discards and reduction in the impact of the fishery on benthic communities.

Industry associations in the SESSF have also developed codes of practice that aim to minimise impacts across the fishery such as interactions with protected species and to control impacts on water quality from waste discharges.

DEH considers that the scope and complexity of the SESSF will continue to require an ongoing commitment to managing the broader ecological components of the fishery, to ensure that the overall fishery is managed to minimise ecosystem and broader environmental impacts.

## **Conclusion**

DEH considers that, despite limited specific ecosystem information, the fishery, with the implementation of the ERM framework and commitments made in response to the Minister's Direction, will be conducted in a sufficiently precautionary manner to reduce the impact of fishing operations on the ecosystem generally. Conditions and recommendations have been made elsewhere in this report to ensure the risk of significant impact by the fishery on the marine environment generally is further reduced in the longer term.

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## LIST OF ACRONYMS

AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
BAP	Bycatch Action Plan
BRS	Bureau of Rural Sciences
CTS	Commonwealth Trawl Sector
DAFF	Department of Agriculture, Fisheries and Forestry
DEH	Department of the Environment and Heritage
DPI	Department of Primary Industries
ECDWTS	East Coast Deepwater Trawl Sector
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERA	Ecological Risk Assessment
ERM	Ecological Risk Management
FIS	Fishery Independent Survey
GABTS	Great Australian Bight Trawl Sector
GHTS	Gillnet, Hook and Trap Sector
HSF	Harvest Strategy Framework
ISMP	Integrated Scientific Monitoring Program
ITQs	Individual Transferable Quotas
MAC	Management Advisory Committee
MOU	Memorandum of Understanding
MPA	Marine Protected Areas
NHT	Natural Heritage Trust
NSW	New South Wales
OCS	Offshore Constitutional Settlement
QLD	Queensland
RAG	Resource Assessment Group
RBC	Recommended Biological Catch
SA	South Australia
SEDs	Seal Excluder Devices
SESSF	Southern and Eastern Scalefish and Shark Fishery
SESSF Plan	<i>Southern and Eastern Scalefish and Shark Fishery Management Plan 2003</i>
SETFIA	South East Trawl Fishing Industry Association
SFRs	Statutory Fishing Rights
TAC	Total Allowable Catch
TAP	Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations
TAS	Tasmania
VIC	Victoria
VMS	Vessel Monitoring Systems
WA	Western Australia
WTO	Wildlife Trade Operation