

**Submission to the Department of the Environment, Heritage, Water and the Arts on
behalf the NSW fishing industry seeking ongoing export approval for the
NSW Ocean Trawl Fishery - September 2008**

1. Introduction

This submission provides a summary report of the Ocean Trawl Fishery since the initial assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in 2005. Information provided is based on the headings contained within Appendix B of the *Guidelines for the Ecologically Sustainable Development of Fisheries – 2nd Edition*. The purpose of the submission is to seek extended export approval for the NSW Ocean Trawl Fishery (OTF) past the current WTO expiry date of 28 November 2008.

Consistent with the requirements of the Commonwealth guidelines, this submission references sections of related documents including the Environmental Impact Statement (EIS)¹ and the approved Fishery Management Strategy (FMS)¹. Where applicable, fishery and catch information has been updated with the most recent available data and included in the submission.

The EIS for the OTF, published in July 2004, provides an overview of the existing operation of the fishery at that time, including an assessment of the risks associated with the operation of the fishery, and the measures proposed to address the risks. Table 1 presents a summary of the OTF at September 2008.

Share Management Regime

The conversion of five major commercial fisheries, including the OTF, to category 1 share management was completed on 5 February 2007. Share Management Plans have been adopted for each of the five commercial fisheries. The Supporting Plan (encompassing rules that apply to multiple commercial fisheries) and a range of changes have been made to the *Fisheries Management Act 1994* and *Fisheries Management (General) Regulation 2002* have been made to complement the introduction of share management. Major benefits of share management include:

- provision of a secure fishing access right for fishing businesses that hold shares and endorsements in a share management fishery, thus providing a greater incentive for shareholders to sustain the resource and maintain the value of the entitlements;
- providing a stronger basis for restructuring the fishery, including the application of different minimum shareholding levels overtime;
- a stronger foundation for linking the fishing entitlement (shares) to resource access (e.g. such as the number of days/nights fished); and
- from a business efficiency perspective, greater flexibility for fishing business owners to adjust the structure of their fishing businesses.

The *Fisheries Management (Supporting Plan) Regulation 2006* and the *Fisheries Management (Ocean Trawl Share Management Plan) Regulation 2006* are available at www.legislation.nsw.gov.au

Ocean Trawl Fishery Management Strategy

The OTF FMS was finalised in January 2007. NSW DPI and industry have worked cooperatively to implement many actions contained in the OT FMS aimed at addressing issues identified in the OTF EIS. The changes include many direct actions such as modifying the use of fishing gear to reduce environmental impacts (e.g. prohibiting the use of bobbins on ground ropes of fish trawl nets north of Seal Rocks, and limiting the maximum size for bobbins on fish trawl nets south of Seal Rocks), improving methods for reducing incidental

¹ Available at www.fisheries.nsw.gov.au/commercial/management-strategies

catches and the development of trawling restrictions in identified areas and/or times of problem incidental catch to target catch ratios. Indirect actions, such as use of scientific observers and new reporting provisions and production of a colour guide to assist with identification and recording of threatened and protected species interactions, are also underway or have been fully implemented.

Table 1: Summary of the NSW Ocean Trawl Fishery

Area	Ocean waters within NSW (subject to closures to certain methods at some or all times).																
Gear	Otter trawl net (prawn) Otter trawl net (fish) Danish seine net (fish)																
Management Controls	Predominantly managed by input controls																
Fishing Units	270 fishing businesses as at August 2008 (compared with 299 businesses in July 2006)																
Target Species	Primary species include: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Eastern king prawn</td> <td style="width: 50%;">Tiger flathead</td> </tr> <tr> <td>School prawn</td> <td>Sand/Bluespotted flathead</td> </tr> <tr> <td>Royal red prawn</td> <td>Silver trevally</td> </tr> <tr> <td>Balmain bug</td> <td>Fiddler shark</td> </tr> <tr> <td>Octopus</td> <td>Eastern school whiting</td> </tr> <tr> <td>Cuttlefish</td> <td>Stout whiting</td> </tr> </table>	Eastern king prawn	Tiger flathead	School prawn	Sand/Bluespotted flathead	Royal red prawn	Silver trevally	Balmain bug	Fiddler shark	Octopus	Eastern school whiting	Cuttlefish	Stout whiting				
Eastern king prawn	Tiger flathead																
School prawn	Sand/Bluespotted flathead																
Royal red prawn	Silver trevally																
Balmain bug	Fiddler shark																
Octopus	Eastern school whiting																
Cuttlefish	Stout whiting																
Catch	2006/07 – approx 3,515 tonnes																
Stock Status (Primary species)	<table style="width: 100%; border: none;"> <tr> <td style="width: 80%;">Recruitment overfished</td> <td style="width: 20%;">0</td> </tr> <tr> <td>Overfished</td> <td>0</td> </tr> <tr> <td>Growth Overfished</td> <td>3</td> </tr> <tr> <td>Fully Fished</td> <td>5</td> </tr> <tr> <td>Moderately Fished</td> <td>0</td> </tr> <tr> <td>Lightly Fished</td> <td>1</td> </tr> <tr> <td>Uncertain</td> <td>0</td> </tr> <tr> <td>Undefined</td> <td>3</td> </tr> </table>	Recruitment overfished	0	Overfished	0	Growth Overfished	3	Fully Fished	5	Moderately Fished	0	Lightly Fished	1	Uncertain	0	Undefined	3
Recruitment overfished	0																
Overfished	0																
Growth Overfished	3																
Fully Fished	5																
Moderately Fished	0																
Lightly Fished	1																
Uncertain	0																
Undefined	3																
Value	2006/07 - approx \$21.741 million (based on SFM prices)																
By-catch Species	Prawn trawling is a relatively unselective method and therefore all otter trawl nets (prawn) are required to be fitted with a bycatch reduction device, which is subject to ongoing modification to improve its effectiveness.																
Endangered / Threatened / Protected Species Interactions	No report of interactions with threatened species through observer work or since mandatory reporting was implemented for the OTF in 2005. Infrequent interactions with protected species reported in recent observer work.																
Recreational Component	The prominent species in the recreational finfish harvest that are also targeted in the OTF are prawns, sand flathead and silver trevally.																

2. Description of the fishery

For the purposes of this submission the OTF comprises the Ocean Trawl Share Management Fishery as described in Schedule 1 of the *Fisheries Management Act 1994* (the FM Act) and the Southern Fish Trawl Restricted Fishery as described in Division 3 (cl.191 – 198) of the *Fisheries Management (General) Regulation 2002* (the FM(G)R).

The following is a more detailed description of the OTF.

Species

Primary, Key Secondary and Secondary Species:

A large number of fish and invertebrate species are taken in the OTF. The *Fisheries Management (Ocean Trawl Share Management Plan) Regulation 2006* (the OT SMP) details the primary and key secondary species (Table 2) in the OTF which are those species that the fishery captures in large quantities or of high value on a consistent basis. Refer to Section 3bi (Species allowed) (pp 22 – 23) of the OTF FMS and chapter B 1.2(b) (Species taken by the ocean trawl fishery (pp 52 – 55) of the OTF EIS.

Table 2: Primary and key secondary species taken by the OTF

Common name	Scientific name	Designation
Eastern king prawn	<i>Melicertus plebejus</i>	Primary species
School prawn	<i>Metapenaeus macleayi</i>	Primary species
Royal red prawn	<i>Haliporoides sibogae</i>	Primary species
Balmain bug	<i>Ibacus</i> spp.	Primary species
Octopus spp.	various (Family: OCTOPODIDAE)	Primary species
Cuttlefish	<i>Sepia</i> spp.	Primary species
Southern calamari	<i>Sepioteuthis australis</i>	Primary species
Eastern school whiting	<i>Sillago flindersi</i>	Primary species
Stout whiting	<i>Sillago robusta</i>	Primary species
Tiger flathead	<i>Neoplatycephalus richardsoni</i>	Primary species
Sand/Bluespotted flathead	<i>Platycephalus caeruleopunctatus</i>	Primary species
Silver trevally	<i>Pseudocaranx dentex</i>	Primary species
Fiddler shark	<i>Aptychotrema rostrata</i>	Primary species
Blue swimmer crab	<i>Portunus pelagicus</i>	Key secondary species
Squid spp.	various (Family: CEPHALOPODA)	Key secondary species
Gurnard/Latchet	<i>Pterygotrigla andertoni</i> <i>Pterygotrigla polyomata</i> <i>Chelidonichthys kumu</i>	Key secondary species
John Dory	<i>Zeus faber</i>	Key secondary species
Angel shark	<i>Squatina australis</i>	Key secondary species
Flounder spp.	various (Family: PLEURONECTIDAE /BOTHIDAE)	Key secondary species
Red mullet	various (Family: MULLIDAE)	Key secondary species
Redfish	<i>Centroberyx affinis</i>	Key secondary species
Leatherjacket spp.	various (Family: MONACANTHIDAE)	Key secondary species
Ocean perch	<i>Helicolenus barathri</i> <i>Helicolenus percoides</i>	Key secondary species
Mirror dory	<i>Zenopsis nebulosus</i>	Key secondary species

Common name	Scientific name	Designation
Sole spp.	various (Family: SOLEIDAE)	Key secondary species
Rubberlip morwong	<i>Nemadactylus douglasii</i>	Key secondary species
Boarfish	<i>Paristiopterus labiosus</i>	Key secondary species
Shark spp.	Various	Key secondary species

Chapter B 1.6(xv) (Threatened and/or protected fish) (pp 78 - 80) of the OTF EIS lists fish that are threatened and/or protected in NSW.

Management arrangements

The OTF is managed under the FM Act and regulations made under this Act (refer to 'Governing legislation' below). NSW DPI is the State Government agency responsible for the administration of the FM Act. The OTF, comprising the prawn trawling sector, and the fish trawl (north) and fish trawl (south) sectors, is predominantly managed by input controls, however some output controls are also used, as follows:

Input controls

Limited entry:

The OTF, excluding the fish trawl (south) sector, was recently converted to a category 1 share management fishery (refer to Section 2 of this submission). Implementation of share management arrangements commenced with provisional share allocation and the 'limited access stage', in December 2004 and March 2005 respectively. The final stage of share management commenced on 5 February 2007 with the adoption and implementation of a share management plan for the fishery.

Access to the OT SMP is limited to shareholders in the fishery (and/or their nominated fishers) who hold shares above any minimum shareholding level established in the OT SMP. The OT SMP provides for an increase to the minimum shareholding requirement within 2½ years from the commencement date (5 February 2007). This means that existing shareholders in each share class in the OT SMP will need to meet the increased minimum shareholding for that share class in order to continue to be eligible for the endorsement. The minimum shareholding requirement will effectively reduce the number of available endorsements in each share class in the OT SMP.

The fish trawl (south) sector of the OTF is managed under a restricted fishery framework and is referred to as the Southern Fish Trawl Restricted Fishery (SFT). Access to the SFT is limited to persons who own a fishing business with a Southern Fish Trawl Restricted Fishery entitlement, or a person who has been nominated to fish by the fishing business owner.

See Table 7 later in this submission for the figures on the current number of fishing businesses per share class with a comparison to the numbers from February 2003 (when the OTF EIS was prepared) and August 2006 (when the OT FMS was prepared)

Controls on fishing gear and boats:

- Refer to 'Fishing methods / gear types' below.
- Refer to Chapter B1.6b(iv) (Controls on fishing gear and boats) (pp 71 – 73) of the OTF EIS.
- Refer to Section 3a(iv) (Fishing gear used in the fishery) (pp 20 – 21) and 3a(v) (Boats used in the fishery) (pp 21 – 22) of the OT FMS.
- Boat capacity restrictions are regulated in the OT SMP. Under clause 9 of the OT SMP, the maximum boat length in the OTF is 20 metres. This does not apply to boats that

exceed this length but were a component of any ocean trawl fishing business immediately before the commencement of the OT SMP.

Time and area closures:

Schedule 2 of the OT SMP describes waters closed to ocean trawling. These closed areas, known as juvenile king prawn closures, were previously closed by a fishing closure under section 8 of the FM Act to protect juvenile prawns and fish and habitat.

Refer to Appendix 1 of this submission 'Closures authorised under Section 8 and Section 11 of the FM Act relevant to the OTF'.

Refer to Chapter B1.6b(xi) (Time and area closures) (pp 75 – 76) of the OTF EIS, and section 3c(viii) (Time and area closures) (pg 37) of the OT FMS.

Output controls

Size Limits:

Refer to Chapter B1.6b(xiv) (Size limits) (pp 77 – 78) of the OTF EIS and section 3b(iii) (Size Limits) (pp 24 – 25) of the OT FMS.

New minimum legal lengths and increases to existing minimum legal lengths applying to a range of species were implemented from 3 September 2007, including the following species relevant to the OTF: rubberlip morwong, jackass morwong, red morwong, silver trevally, yellowtail kingfish, tarwhine, flounder and sole. Clause 9 of the FM(G)R lists the minimum legal lengths that apply to species permitted to be taken in the OTF.

Due to the difficulty in administering a minimum legal length for prawns, a maximum count of prawns (number to the ½ kilogram) is currently used. 'First point of sale' prawn counts have been implemented for commercial fishers via fishing closures made under section 8 of the FM Act (refer to Appendix 1). For all waters, other than the Clarence Hunter and Hawkesbury Rivers, maximum prawn counts are as follows:

- a count of 125 prawns per ½ kilogram in the case of a catch consisting of king prawns, or
- a count of 180 prawns per ½ kilogram in the case of catch consisting of any other species of prawns, or
- in the case of a catch consisting of both king and other species of prawn, the king prawn count of 125 prawns per ½ kilogram applies to the catch if the catch consist of greater than 10% king prawns by number of individuals.

These counts apply to all sectors, including estuarine fishers, and provide for some ongoing harvest of prawns that are smaller than those taken in the OTF. However the OT FMS adopts counts of 50 king prawns and 100 school prawns per ½ kilogram to be used to guide the design of gear selectivity changes and when defining fishing closures in the fishery.

Commercial catch limits:

A commercial daily catch limit applies to a range of species taken from NSW waters as part of the OTF. These daily catch limits are intended to reduce incidences of misreporting in respect of the quota system administered by the Commonwealth Government that directly limits the harvest levels of these species by Commonwealth endorsed boats. Refer to Chapter B1.6b(xvi) (Catch limits or quotas) (pp 80 – 82) of the OTF EIS. Commercial catch limits are implemented fishing closures under section 8 of the FM Act (refer to Appendix 1). Details of up-to-date commercial catch limits applying to the OTF can be found on the NSW DPI website at: <http://www.dpi.nsw.gov.au/fisheries/closures/general>

Other licensing arrangements:

Refer to Section 3c (Management Controls and Administration) (pp 31 – 38) and Section 4 (Goals, Objectives and Management Responses) (pp 53 – 83) of the OT FMS.

Recent changes made to the licensing and management arrangements are outlined in Section 3 of this submission including implementation of a range of management actions required under the OT FMS.

Fishing methods / gear types

For a full description of fishing methods and gear types refer to:

- Chapter B1.4 (Methods of Harvesting) (pp 58 – 62) and Chapter B1.6b(iv) (Controls on fishing gear and boats) (pp 71 – 73) of the OTF EIS, and
- Sections 3a(iv) and (v) ('Fishing gear used in the fishery', and, 'Boats used in the fishery') (pp 20 – 22) of the OT FMS.

The nets currently prescribed for trawling in ocean waters off NSW are otter trawl net (prawns), otter trawl net (fish) and Danish seine net (fish). Clauses 38, 39 and 40 of the FM(G)R prescribes the restrictions applying to these nets, as summarised in Table 4 below.

Table 3: Characteristics of the nets prescribed in the OTF

Characteristic	Otter Trawl (prawn)	Otter Trawl (fish)	Danish seine (fish)
Mesh size of net (mm)	40 – 60	Not less than 90	Not less than 83
Mesh size of codend (mm)	40 – 50	Not less than 90	Not less than 83
Maximum length of sweep (m)	5 (or the distance from the trawl gallows to the stern of the boat (which ever is greater)	Not specified	Not specified
Maximum headline length (m)	33*	Not specified	Not specified
Bycatch Reduction Device (BRD)	Yes	-	-

* Unless a different maximum length is specified in the boat licence for the boat from which the net is being fished.

It is mandatory for all otter trawl (prawn) nets to be fitted with a bycatch reduction device (BRD) that has been approved for use in the OTF. BRDs currently approved for use in the OTF are outlined below (Table 4). A detailed description of the BRDs is provided in Appendix B1.1 (Bycatch Reduction Devices used in the OTF) (pp 46 – 57) of the OTF EIS (volume 3).

Table 4: Bycatch reduction devices currently (as of September 2008) approved for use in the OTF

BRD
1. Square mesh panel
2. Blubber chute
3. Nordmore grid
4. Composite square mesh panel
5. V-cut
6. Diamond BRD
7. Fish eye
8. Big eye

Note that NSW DPI is currently reviewing the suite of BRDs approved for use in the OTF (otter trawl net (prawns)). The aim of this review is to limit the approved BRDs to those that are proven to be effective, and/or amend specifications to improve their effectiveness.

Square mesh codends

Following comprehensive scientific trials, the NSW Minister for Primary Industries has approved the mandatory introduction of square-mesh codends in commercial prawn-catching gears (refer to Results of any research completed relevant to the fishery in section 4 of this submission). New gear specifications and design rules for square mesh codends to be fitted in prawn-catching gear in the Estuary Prawn Trawl, Estuary General and Ocean Trawl fisheries have been developed by NSW DPI in consultation with industry. The aim of the new gear is to reduce bycatch and improve the selectivity of prawn gear while enabling industry to retain a high proportion of the catch of target species.

Ocean prawn trawl nets (except those used on deepwater prawn trawl grounds) are to be fitted with a square mesh codend as per the specifications listed under the relevant waters in Table 5. An implementation date is expected later this year.

Prawn trawl nets used in the deepwater prawn trawl grounds will continue to use a diamond mesh codend if single rig nets (i.e. one large net only) are used or a square mesh codend as per the specifications listed in Table 6 below. These arrangements for the deepwater prawn trawl sector of the OTF will remain in place pending an assessment of the need for square mesh codends in that sector and development of appropriate specifications.

Table 5: New specifications for square mesh codends in OTF

Component		Otter trawl net (prawns)		
		All waters	Whiting trawl grounds	School prawn trawl grounds
Codend	Material	Single twine knotless polyamide (nylon) or polyethylene not more than 3mm in diameter		
	Mesh size / orientation	35 – 45 mm square mesh		29 – 40mm square mesh
	Circumference	Not greater than 3.2m		
	Length	1 – 3m		
Body	Mesh size	40 – 75mm		
	BRD position	Within 1.2m of the codend drawstring	Within 2m of the codend drawstring	Within 1.2m of the codend drawstring

Table 6: Specifications for square mesh codends in the deepwater prawn trawl sector of the OTF

Component		Otter trawl net (prawns) – Deepwater prawn trawl
Codend	Material	Square mesh: Single twine knotless polyamide (nylon) or polyethylene not more than 3mm in diameter Diamond mesh: Single twine polyamide (nylon) or polyethylene not more than 3mm in diameter
	Mesh size / orientation	Square mesh: 35 – 45 mm Diamond mesh: 40 – 50mm
	Circumference	Square mesh: Not greater than 3.2m Diamond mesh: A circumference that is not greater than that part of the net immediately forward of the codend
	Length	Unrestricted
Body	Mesh size	40 – 75mm
	BRD position	Within 1.2m of the codend drawstring

New provisions for a frill (or skirt) to accommodate the introduction of square-mesh codends will also be introduced. The three options will be:

- a) a frill of 40 mm to 50 mm diamond-shaped mesh up to 15 meshes deep to be sewn into the codend within the last 3 bars of the codend, and for a drawstring to then be inserted in the codend also within the last 3 bars of the codend;
- b) a frill of 40 mm to 50 mm diamond-shaped mesh (of the same or fewer meshes than the number of bars in the circumference of the codend), and for a drawstring to then be inserted in the frill within 3 meshes of where the frill is attached to the codend; or
- c) a draw or closing string may be inserted directly into the codend without a frill or panel of diamond shaped mesh.

Fishing area

- Refer to Chapter B1.3a (Normal areas of operation) (pg 57) of the OTF EIS and section 3a(ii) (Area of operation) (pp 17 - 19) of the OT FMS.
- Clause 8 of the OT SMP outlines waters closed to commercial trawling, noting that additional time and area closures may exist within these waters (see Appendix 1).
- The *Fisheries Management (Supporting Plan) Regulation 2006* outlines waters closed permanently to all commercial fishing or class of commercial fishing.
- Appendix 1 of this submission lists those closures authorised under section 8 and section 11 of the FM Act that are specific to the OTF. Further details of fishing closures can be found on the NSW DPI website at: www.dpi.nsw.gov.au/fisheries/closures
- Three new marine parks have been declared in NSW waters since the OTF was initially assessed in 2005, Cape Byron Marine Park, Port Stephens-Great Lakes Marine Park and the Batemans Marine Park. Significant areas within these marine parks have been closed to trawling including the entire area (approx. 85,000 hectares) of the Batemans Marine Park. Further details regarding zoning plans and commercial fishing restrictions in these marine parks can be found on the Marine Parks Authority website at: www.mpa.nsw.gov.au

Number of fishers

As at August 2008 there were 270 fishing businesses in the OTF, with 204 fishers endorsed to operate in the OTF.

Access to the fishery is limited to shareholders in the fishery and/or their nominated fisher who hold a fishing licence with the appropriate endorsements. There are 5 types of endorsement available in the fishery, as follows:

Inshore prawn endorsement

An inshore prawn endorsement authorises the holder to take fish using an otter trawl net (prawns) from inshore waters.

Offshore prawn endorsement

An offshore prawn endorsement authorises the holder to take fish using an otter trawl net (prawns) from offshore waters that are west of the 280 metre (150 fathom) depth contour.

Deepwater prawn endorsement

A deepwater prawn endorsement authorises the holder to take fish using an otter trawl net (prawns) from offshore waters that are east of the 280 metre (150 fathom) depth contour.

Fish northern zone endorsement

A fish northern zone endorsement authorises the holder to take fish using an otter trawl net (fish) or a danish seine trawl net (fish) from ocean waters that are north of a line drawn due east from Barrenjoey Headland (latitude 33°35' south).

Southern fish trawl endorsement

A southern fish trawl endorsement authorises the holder to take fish using an otter trawl net (fish) or a danish seine trawl net (fish) from ocean waters that are not more than 3 nautical miles from the natural coastline and are south of a line drawn due east of Barrenjoey Headland.

The number of fishing businesses in each sector of the OTF is shown in Table 7, along with a comparison of the number of businesses at the times when the OTF EIS and OT FMS were prepared. The reduction in fishing business numbers in the share managed components of the fishery can be partly attributed to the requirement for increased minimum shareholdings under the OT SMP, within 2½ years of the commencement date of the Plan on 5 February 2007. The reduction in southern fish trawl operators can be attributed largely to the Batemans Marine park buy-out process.

Table 7: Current number of fishing businesses in each sector of the OTF compared with earlier figures.

Share class	February 2003 (OT EIS)	August 2006 (OT FMS)	August 2008 (Current)
Ocean prawn trawl - inshore	267	251	229
Ocean prawn trawl - offshore	238	224	205
Ocean prawn trawl - deepwater	63	63	45
Ocean fish trawl - north	62	64	54
Ocean fish trawl - south	47	44	23

Note: A fishing business may hold shares in multiple sectors of the OTF

Allocation between sectors

- See Section 3g (Interactions with other fisheries) (pp 51 – 52) of the OT FMS, Chapter B1.7a (Interaction with other fisheries) (pp 92 – 94) and Chapter B1.7b (Stakeholders) (94 – 97) of the OTF EIS
- See Scandol, J., Rowling, K. and Graham, K., Eds (2008) Status of Fisheries Resources in NSW 2006/07, NSW Department of Primary Industries, Cronulla, 334 pp. for landings of OTF primary and key secondary species by other NSW commercial fisheries.
- Estimated catches from the National Recreational and Indigenous Fishing Survey² for OTF primary and key secondary species are also provided in Scandol, J., Rowling, K. and Graham, K., Eds (2008) Status of Fisheries Resources in NSW 2006/07, NSW Department of Primary Industries, Cronulla, 334 pp.

Governing legislation

The FM Act seeks to achieve ecologically sustainable development for the fisheries of NSW through the achievement of its stated objectives, which are:

- (1) *To conserve, develop and share the fishery resources of the State for the benefit of present and future generations.*
- (2) *In particular the objects of the Act include:*
 - a. *to conserve fish stocks and key fish habitats, and*
 - b. *to conserve threatened species, populations and ecological communities of fish and marine vegetation, and*
 - c. *to promote ecological sustainable development, including the conservation of biological diversity,*

and, consistently with those objects

 - d. *to promote viable commercial fishing and aquaculture industries,*
 - e. *to promote quality recreational fishing opportunities, and*
 - f. *to appropriately share fisheries resources between the users of those resources, and*
 - g. *to provide social and economic benefits for the wider community of New South Wales.*

Other relevant legal instruments include:

- *Fisheries Management (General) Regulation 2002*
- *Fisheries Management (Supporting Plan) Regulation 2006*
- *Fisheries Management (Ocean Trawl Share Management Plan) 2006.*

Status of export approval under the EPBC Act

The OTF was initially declared an approved Wildlife Trade Operation (WTO) on 29 November 2005 for a period of 3 months. On 24 February 2006, the WTO was extended to 30 June 2006, at which time it was further extended to 28 November 2008.

² Henry, G.W. and Lyle, J.M. (2003). The national recreational and indigenous fishing survey. Final report to the Fisheries Research and Development Corporation, Project 99/158. NSW Fisheries Final Report Series No. 40, 188pp.

3. Management

Changes to management arrangements

Management arrangements have progressed since the OTF was first assessed under the EPBC Act with the finalisation of the Ocean Trawl Fishery Management Strategy and the commencement of category 1 share management arrangements.

Ocean Trawl Fishery Management Strategy

Refer to Appendix 2 of this submission for a progress statement on the implementation of management actions with an 'immediate' or 'short term' timeframe in the OT FMS for the period January 2007 to June 2008.

Commencement of share management

This involved the implementation of the OT SMP, a Supporting Plan encompassing rules that apply to multiple commercial fisheries, and a range of changes to the FM Act and the FM(G)R to complement the introduction of share management. The OT SMP and associated regulatory amendments took effect on 5 February 2007 and were explained in a document previously sent to DEWHA titled '*Information Paper: New commercial fishery licensing and management arrangements commencing on 5 February 2007*'³.

For relevant licensing arrangements, see Section 3c (Management Controls and Administration) (pp 31 – 38) of the OT FMS noting that significant reforms to the commercial fisheries licensing arrangements occurred in February 2007 as described in the publicly available Information Paper³ issued at that time.

Legislative reform in NSW commercial fisheries

Following the commencement of share management and the implementation of the share management plans, the NSW Government is pursuing further legislative reform and is well progressed in drafting amended regulations. The reform includes:

- incorporating the contents of closures that currently exist within closure notifications made under section 8 of the FM Act into regulation,
- moving many of the specific fishery related provisions that currently sit within the FM(G)R into the respective share management plans, and
- implementing, through regulation, many of the high priority management responses specified in various FMSs (including the OT FMS) that remain outstanding.

Performance of the fishery against objectives, performance indicators and trigger points

Refer to Appendix 3 of this submission for a statement of the performance of the OTF against its performance indicators and trigger points contained in the OT FMS based on data for the period January 2007 to June 2008.

Compliance Risks

- See Chapter B1.6f (Compliance) (pp88 – 89) of the OTF EIS and Section 3d (Compliance) (pg 39) of the OT FMS.
- Illegal harvesting and black marketing in NSW was assessed in 'Report on Illegal Fishing for Commercial Gain or Profit in NSW'⁴. The report found, among other things, that the black marketing of prawns was a significant problem. Under-reporting of catch figures by

³ Available at www.fisheries.nsw.gov.au/_data/assets/pdf_file/0015/106512/information-paper.pdf

⁴ Palmer, M. (2004) Report on Illegal Fishing for Commercial Gain or Profit in NSW. Available at www.fisheries.nsw.gov.au/___data/assets/pdf_file/0004/4819/Black-Market-Report.pdf

commercial fishers was also raised as an issue. The NSW Government is progressively developing and implementing actions in response to this report.

- Compliance services relating to the OTF are provided to achieve a high level of compliance in the fishery. As part of the process of developing and implementing compliance operational plans relating to the OTF, Annual District Compliance Plans are developed by identifying compliance issues at a fisheries district level (drawing from the FMS) and set out how the resources allocated and used in a strategic manner, based on localised and state-wide fisheries compliance risks. High levels of compliance are pursued strategically by maximising voluntary compliance in the fishery and creating effective deterrence against illegal activity.
- As part of monitoring compliance operational plans relating to fisheries in NSW, Annual District Compliance Planning models (including the overarching State-wide Compliance Plan) are currently under review and redevelopment. The aim of the review is to align the plans with the Australian National Fisheries Compliance Strategy (AFNCS) which seeks to provide guidance to all Australian fisheries jurisdictions in achieving the objectives of the National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.
- As part of this process of continuous improvement, NSW DPI (Fisheries Compliance Unit) is currently developing refined compliance risk identification and assessment processes based on standardised risk assessment methodologies to better plan objective compliance services. The model is adaptive, allowing changes at any time, such as acting quickly to combat emerging or opportunistic compliance issues in the short term as well as allowing for longer term strategic responses to issues such as organised criminal involvement in fisheries.
- Rate of compliance in the OTF since the fishery was first assessed are as follows:

2004/05	85%
2005/06	90%
2006/07	84%

The rate of compliance is calculated using information from quality inspections reflected on the program activity reports (PARs) that are completed by NSW DPI Fisheries Officers when undertaking inspections of fishers and fishing gear in the OTF.

Consultation processes

- Section 284 of the FM Act identifies the type of items for which NSW DPI is required to consult with the public and the public consultation procedure.
- Refer to Section 3f (Consultation) (pp 50 – 51) of the OT FMS.

Cross jurisdictional management arrangements

NSW DPI continues to work with the Commonwealth and Queensland Department of Primary Industries and Fisheries (QDPI&F) to develop complementary arrangements for shared resources. For example:

- Commonwealth and QDPI&F scientific representatives attended the NSW DPI Resource Assessment Workshop held in April 2008, providing input on relevant shared fish stocks, including recent catch information, updates on existing research, research outcomes, stock assessment status, and changes to management arrangements for each relevant jurisdiction;
- NSW DPI provides data for assessments by Commonwealth Resource Assessment Groups for species which occur off NSW;

- NSW DPI representatives attend meetings (either as observers or State representatives) for the Commonwealth Small Pelagic Fishery, South East Trawl and Eastern Tuna and Billfish Management Advisory Committees;
- Senior fisheries staff from NSW DPI and QDPI&F met in Coffs Harbour on 1 – 2 March 2007 and in Brisbane on 16 May 2008 to discuss a range of cross-border management and research issues and continue to liaise on an informal basis in relation to contemporary management issues.

Compliance with TAPs, recovery plans, etc and also relevant domestic and international arrangements

None of direct influence in the OTF.

4. Research and monitoring

Results of any research completed relevant to the fishery

Refer to Chapter B1.6d (Research) (pp 86 – 87) of the OTF EIS and Section 3e (Research) (pp 40 - 48) of the OT FMS.

Appendix 4 provides references to scientific outputs relevant to the OTF. Scientific outputs and a list of current projects (and their summaries) undertaken by the NSW DPI Systems Research, Wild Fisheries Unit, can be found on the NSW DPI website www.dpi.nsw.gov.au/research/areas/systems-research/wild-fisheries

A summary of key outcomes of completed research relevant to the OTF (prepared since the OT EIS was published) is provided below.

- Macbeth, W.G., Johnson, D.D., and Gray, C.A. 2008. Assessment of a 35-mm square-mesh codend and composite square-mesh panel configuration in the ocean prawn trawl fishery of northern New South Wales.

The objective of this study was to collect detailed catch and operational data to enable a comprehensive assessment of the performance of 35-mm square-mesh codend relative to diamond mesh codends currently used. The study also collected data pertaining to any interactions with 1) threatened and protected species; 2) elasmobranch species; and 3) any other species of particular interest.

- Ives, M.C., Scandol, J.P., Montgomery, S.S., and Suthers, I.M. (in press) Modelling a multiple-fleet prawn fishery influenced by variability in river discharge.

A size-based metapopulation model was developed that incorporated the dynamics of the Clarence River school prawn population in three habitats being harvested by three fishing methods. The study found that river discharge is a key driver of ocean and estuary prawn catches. The study concluded that the population does not appear to be over-exploited and that none of the alternative management strategies tested performed better than the current spatio-temporal closures even under a wide range of river discharge scenarios.

- Scandol, J., Rowling, K. and Graham, K., Eds (2008) Status of Fisheries Resources in NSW 2006/07, NSW Department of Primary Industries, Cronulla, 334 pp

The “Status of Fisheries Resources in NSW 2006/07” is a general overview of the state of fish populations status and a summary of the state of knowledge of all 92 key species harvested by the Estuary General, Estuary Prawn Trawl, Ocean Hauling, Ocean Trawl and Ocean Trap and Line Fisheries.

- Montgomery, S.S., Courtney, A.J., Blount, C., Stewart, J., Die, D.J., Cosgrove, M. and O'Neill, M.F., 2007. Patterns in the distribution and abundance of female eastern king prawns, *Melicertus plebejus* (Hess, 1865), capable of spawning and reproductive potential in waters off eastern Australia. *Fisheries Research*, 88: 80 – 87.

A joint study with the Queensland Department of Primary Industries and funded by the Fisheries Research and Development Corporation to define the spawning stock of the eastern king prawn population. Results from this study showed that female eastern king prawns capable of spawning were distributed throughout the year from Port Stephens (NSW) to Swains Reef (QLD) and that relative abundance and egg production were greater in higher than in lower latitudes.

- Broadhurst, M.K., Macbeth, W.G. and Wooden, M.E.L., 2005. Reducing the discarding of small prawns in NSW's commercial and recreational prawn fisheries. Final Report to the Fisheries Research & Development Corporation. Project No. 2001/031. *NSW Department of Primary Industries - Fisheries Final Report Series No. 71*. 202pp. ISSN 1449-9967.

This study investigated fishing practices that improve size and selectivity and reduce bycatch and discarding of small school and king prawns in NSW's commercial (otter trawl, seines, stow (set pocket) and trap (prawn running)) nets and recreational fisheries. The study recommended changes to the majority of prawn catching gear, in particular, the use of square- mesh codends made from between 27 and 29 mm knotless mesh in most commercial trawls, seines and stow nets.

Following this study the NSW Minister for Primary Industries has approved the mandatory introduction of square-mesh codends in commercial prawn-catching gears.

Monitoring programs

See Section 3e(iii) (Catch monitoring) (pp 48 – 49) of the OT FMS.

The NSW DPI fishery monitoring program includes stock assessment work on the key commercial species; use of scientific observers to record information on catches of target species and by-catch; collection of catch and effort data; and port monitoring of landed fish products (e.g. collecting data on fish length and age).

Scientific observer program

The FMSs for all the major commercial fisheries (excluding lobster and abalone) require the implementation of a cross-fishery scientific observer program. The program has been implemented based on a framework that identifies the highest priority methods for observation based on a number of measures and to ensure that resources are directed towards the methods that pose the greatest risks⁵. Ocean line fishing methods have been identified as the current highest priority and a three year scientific observer program for this method commenced on 1 September 2007.

However, through funds obtained from the Northern Rivers Catchment Management Authority (NRCMA), observer work in the OTF has been undertaken in 2007/08 in water between the Queensland border and Coffs Harbour. Observers collected detailed species-data and measure bycatch levels, habitat interactions and any interactions with threatened/protected species. Refer to:

⁵ Scandol, J. 2005. A prioritisation model for the NSW observer program. Cronulla NSW DPI.

Macbeth, W.G., Johnson, D.D., and Gray, C.A. 2008. Assessment of a 35-mm square-mesh codend and composite square-mesh panel configuration in the ocean prawn trawl fishery of northern New South Wales. Northern Rivers Catchment Management Authority Project No. IS7-8-243-06. NSW Department of Primary Industries – Fisheries Final Report Series No. 13 ISSN 1449-9967. Cronulla, Australia

Collection of catch and effort data

See Section 3e(iii) (Catch monitoring) (pp 48 – 49) of the OT FMS.

A major project is being progressed to develop a new catch information management system and related processes which would, among other things:

- introduce and cater for finer scale spatial and temporal reporting;
- improve NSW DPI'S ability to interrogate, analyse and report on high quality data; and
- improve the NSW DPI's ability to plan research, compliance and management activities (including enhancing cross-jurisdictional cooperation).

As part of this project, an extensive review and analysis was done to identify national standards and best practice for commercial fishing catch and effort information and Departmental and other stakeholder requirements.

The public consultation document '*Catch Records Reform Project: Business Requirements Specification Revised Reporting Arrangements*', previously referred to DEWHA (in May 2008) provides the background and proposed new catch reporting arrangements for NSW. In summary, the key changes include:

- forms to be submitted by fishing business owners, not licence holders;
- single form for all fisheries (except for quota managed fisheries) with daily, event based, reporting of catch and effort – submitted monthly;
- new grid based reporting system based on the "C-squares" CSIRO model, which provides a simple standardised method of recording spatial information. Consistent with Queensland reporting arrangements, this relies on reporting grids of 0.1 x 0.1 degrees of latitude and longitude;
- new species code list identifying catch consistent with the Australian Standard for Fish Names; and
- better species identification.

The final project specifications and timing are dependent partly on broader reforms relating to industry structure and funding priorities.

Port monitoring

Involves the collection of length (and age samples where relevant) of a set of commercially targeted species. The species are determined based upon risks assessments (as part of the EIS) and socio-economic values⁶. For the 2005/06 period the following species were subject of the port monitoring project: sea mullet, yellowfin bream, snapper, yellowtail scad, yellowtail kingfish, mud crabs, bonito, Australian salmon, pilchards, sand flathead, teraglin, red mullet, rubberlip morwong, silver sweep, Balmain bugs, pipis and flounders.

⁶ Resource Assessment and Monitoring of Commercially Harvested Species (FSC2003/123)

5. Catch data

Total catch and value of the OTF

Table 8: Weight (kg) of reported landings for the OTF

Year	Prawn Trawl	Fish Trawl	Deepwater Prawn Trawl	Grand Total
2002/03	3,441,938	1,498,510	230,832	5,171,280
2003/04	3,165,853	1,594,742	100,368	4,860,964
2004/05	2,514,749	1,573,494	85,798	4,174,041
2005/06	2,216,386	1,876,959	30,482	4,123,827
2006/07	1,857,809	1,644,794	13,297	3,515,900

Reported gross landings as at 1 August 2008. Data is subject to ongoing validation.

Table 9: Estimated value (\$) or reported landings in the OTF

Year	Prawn Trawl	Fish Trawl	Deepwater Prawn Trawl	Grand Total
2002/03	\$29,551,111	\$4,768,697	\$1,005,872	\$35,325,681
2003/04	\$23,518,323	\$4,591,292	\$277,580	\$28,387,195
2004/05	\$18,997,076	\$5,000,278	\$221,767	\$24,219,121
2005/06	\$16,677,557	\$6,545,144	\$71,251	\$23,293,952
2006/07	\$15,418,188	\$6,289,263	\$34,353	\$21,741,805

Estimated value based on SFM monthly prices.

Total catch of primary and key secondary species taken in the OTF

- Scandol, J., Rowling, K. and Graham, K., Eds (2008) Status of Fisheries Resources in NSW 2006/07, NSW Department of Primary Industries, Cronulla, 334 pp.

Total catch of primary and key secondary species taken in other NSW fisheries

- Scandol, J., Rowling, K. and Graham, K., Eds (2008) Status of Fisheries Resources in NSW 2006/07, NSW Department of Primary Industries, Cronulla, 334 pp.

Harvest by each sector (commercial, recreational, Indigenous and illegal)

- No estimate available for the Indigenous sector. Refer to Chapter B1.7a(v) (Indigenous Fishery) (pg 94), B1.7b(iii) (Indigenous people) (pg 95), and B5.3 (Indigenous peoples) (pp 214 – 217) of the OTF EIS.
- No estimate available for illegal catch.

Fishing effort data

- Scandol, J., Rowling, K. and Graham, K., Eds (2008) Status of Fisheries Resources in NSW 2006/07, NSW Department of Primary Industries, Cronulla, 334 pp.

6. Status of target stock

NSW DPI has developed and implemented a Resource Assessment Framework for the assessment of marine fish species harvested in NSW⁷. The framework is a well-defined, accessible program for the resource assessment of marine fish species harvested in NSW. The type of assessment carried out for each species (or species complex) is categorised into five classes of resource assessment (Table 10) and takes into account commitments made

⁷ Scandol, J.P. 2004. A Framework for the Assessment of Harvested Fish Resources in NSW. NSW Department of Primary Industries – Fisheries Resource Assessment Series No. 15, ISSN 1449- 9940.

in the relevant FMS, levels of risk identified in the environmental impact statements, the commercial and recreational importance of the species, and the species biology.

Table 10: Summary of attributes of the various resource assessment classes for species (or species complex) harvested in NSW

Attribute	Resource Assessment Class				
	One	Two	Three	Four	Five
Biomass estimate	•				
Estimate of fishing mortality	•				
Quantitative risk analysis of future harvesting	•				
Standard fisheries biological reference points	•				
Credible indicator of abundance	•	•			
Representative time-series of commercial catch	•	•	•	•	
Age structured data (where possible)	•	•			
Local information for growth, mortality, selectivity and maturity	•	•	•		
Length-structured data	•	•	•		
Non-local information for growth, mortality, selectivity and maturity			•	•	•
Externally reviewed or publishable	•	•	•	•	•

The framework also incorporates a standardised method of reporting on the exploitation status of fish stocks across all commercial fisheries including an annual review and interpretation of available data by fisheries scientists. Catch from all sectors (including estimates from recreational and, where available, illegal sectors) are taken into consideration when determining the status of a species.

The resource assessment class and exploitation status for each target and byproduct species in the OTF for 2006/07 is shown in Table 11 below.

Table 11: Status of Primary and Key Secondary Species in the OTF for 2006/07

Primary Species	Resource Assessment Class		Exploitation Status
	Target	Current	
Eastern king prawn	2	2	Growth overfished
School prawn	2	2	Growth overfished
Royal red prawn	3	4	Lightly fished
Balmain bug	2	3	Fully fished
Octopus spp.	2	4	Undefined

Primary Species	Resource Assessment Class		Exploitation Status
Cuttlefish	3	4	Undefined
Southern calamari	3	4	Undefined
Eastern school whiting	2	3	Fully fished
Stout whiting	2	4	Fully fished
Tiger flathead	2	3	Fully fished
Sand/Bluespotted flathead	2	4	Fully fished
Silver trevally	2	3	Growth overfished
Fiddler shark	2	4	Undefined
Key Secondary Species	Resource Assessment Class		Exploitation Status
Blue swimmer crab	2	2	Fully fished
Squid spp.	3	4	Undefined
Gurnard/Latchet	3	4	Undefined
John Dory	3	4	Fully fished
Angel shark	3	4	Undefined
Flounder spp.	3	4	Undefined
Red mullet	For individual species information refer Status of Fisheries Resources in NSW 2006/07 ⁸		
Redfish	2	3	Growth overfished
Leatherjacket spp.	2	3	Fully fished
Ocean perch	3	4	Uncertain
Mirror dory	3	4	Fully fished
Sole spp.	3	4	Undefined
Rubberlip (Grey) morwong	3	3	Overfished
Boarfish	3	4	Undefined
Shark spp.	For individual species information refer Status of Fisheries Resources in NSW 2006/07		

(Source: NSW DPI Resource Assessment System)

⁸ Scandol, J., Rowling, K. and Graham, K., Eds (2008) Status of Fisheries Resources in NSW 2006/07, NSW Department of Primary Industries, Cronulla, 334 pp

7. Interaction with threatened or protected species

Frequency and nature of interactions

Chapter B2.5 (Risk Analysis of Threatened and Protected Species) (pp 160 - 172) of the OTF EIS identifies threatened and protected species (under the FM Act, *Threatened Species Conservation Act 1995* and the Commonwealth EPBC Act 1999) that may interact with the OTF, and, potential direct and indirect impacts. The OT EIS found that all threatened and protected fish species to be at low or moderately low risk from the operation of the OTF. The risk of the OTF impeding the conservation and recovery of threatened marine mammals and reptiles was assessed as low or moderately low, and that for threatened seabirds moderately low.

Observer work⁹ undertaken in the OTF in 2007/08 reported the following interactions:

- One sandtiger shark (*Odontaspis ferox*) known locally as ‘Herbsts nurse shark’ was caught in the centre trawl on eastern king prawn trawl grounds.
- Relatively infrequent interactions with certain species of syngnathid:
 - sad seahorse (*Hippocampus tristis*) - one individual caught;
 - spiny pipehorse (*Solegnathus spinosissimus*) - a total of 20 individuals caught over four trips; and
 - Duncker’s pipehorse (*Solegnathus lettiensis*) – one individual caught.

Under clause 6 of the FM(G)R all these species are protected species. NSW DPI is required to undertake a biennial review of the level of interactions with protected species (in accordance with Performance Indicator 3.2 of the OT FMS) to determine whether the levels are likely to threaten the survival of a protected species.

No interactions with threatened marine fish species were observed during the study.

Management actions taken to reduce interactions and results of such action

The OT EIS recommended ongoing monitoring of interaction between the OTF and threatened species. In this context, NSW DPI has implemented:

- mandatory reporting of threatened species interactions for all commercial fisheries, including the OTF from 2005.
- scientific observer work (refer to Monitoring programs above).

8. Impacts of the fishery on the ecosystem in which it operates

Results of any Ecological Risk Assessments

Refer to Chapter B2.6 (Risk Analysis of Species Assemblages, Species Diversity and Ecological Processes) (pp 172 – 189) and Chapter B2.7 (Risk Analysis of Marine Habitats) (pp 190 – 201) of the OTF EIS.

⁹ Macbeth, W.G., Johnson, D.D., and Gray, C.A. 2008. Assessment of a 35-mm square-mesh codend and composite square-mesh panel configuration in the ocean prawn trawl fishery of northern New South Wales. Northern Rivers Catchment Management Authority Project No. IS7-8-243-06. NSW Department of Primary Industries – Fisheries Final Report Series No. 13 ISSN 1449-9967. Cronulla, Australia

Nature of the impacts on the ecosystem including impacts on any key conservation values

Chapter B2.6 (Risk Analysis of Species Assemblages, Species Diversity and Ecological Processes) (pp 172 – 189) and Chapter B2.7 (Risk Analysis of Marine Habitats) (pp 190 – 201) of the OTF EIS identify the potential impacts of the OTF on species assemblages, species diversity, ecological processes and marine habitats. Refer to Tables B2.38 (pg 175) and B2.42 (pg 182) for summaries of potential impacts from commercial trawling.

Management actions taken to reduce the impacts

Goal 1 of the OT FMS provides for management of the OTF in a manner that promotes the conservation of biological diversity in the marine environment. A number of management actions have been included in the OT FMS to achieve this goal and address the impact of the OTF on species assemblages, species diversity, ecological processes and marine habitats. These include, but are not limited to, requirements to define and map extent of trawling grounds in NSW, implementation of closures to protect a range of ocean habitats, prohibition of mid-water trawling, improving gear for reducing incidental catch, and introduce trawling restrictions in identified areas and/or times of problem incidental catch to target catch ratios.

Refer to Section 4 (Goals, Objectives and Management Responses) (pp 53 – 83) of the OT FMS. Implementation status of these management actions is included in Appendix 2 of this submission.

9. Consolidated detailed information outlining progress in implementing recommendation and conditions

Refer to Appendix 5 of this submission.

Appendix 1: Closures authorised under Section 8 or Section 11 of the *Fisheries Management Act 1994* relevant to the OTF

The table below outlines closures that affect the OTF. Further details can be found on the NSW DPI website www.dpi.nsw.gov.au/fisheries/closures

Closure Title	General Description
'First Point of Sale' Prawn Counts and Closure to Commercial Prawning Nets	Provides for the closure of waters to the taking of prawns by means of all commercial prawning nets if the number of prawns taken by a commercial fish, before grading, is greater the specified counts. Applies to all waters other than the Clarence, Hunter and Hawkesbury Rivers.
Gemfish Closure	50kg whole weight daily catch limit
NSW Ocean Trawl Fleet (Bobbin Gear)	Prohibits the use of bobbin gear in the OTF north of Seal Rocks and limits the size of bobbin gear in the OTF south of Seal Rocks
Shark Fins	Prohibits finning of sharks at sea
Trip Limits for the Southern Trawl Restricted Fishery, the Ocean Trawl Fishery and the Ocean Trap and Line Fishery	Commercial catch limits for a range of species
Cook Island	Prohibits the taking of fish by all methods in waters described
Macleay River and its tributaries (including Trial Bay Front Beach)	Prohibits the use of all nets (except dip or scoop net and landing net) in waters described from 20 December to 31 January each year
Shell Harbour	Prohibits the taking of fish by all nets (except the landing net) in waters described
Merimbula Lake, Yowaka River, Pambula Lake/River, Twofold Bay, Merimbula Bay and Towamba River	Use of various types of nets and other fishing methods in described waters
Port Kembla	Prohibits the taking of fish by nets described in waters described
Clovelly Beach	Prohibits the taking of fish by all nets (except the landing net) in waters described
Bouddi National Park	Closed to all methods
Commercial Fishing Catch Limits for Deep Water Species	Prohibits the taking of fish species described

Appendix 2: Report on the Implementation of (Immediate and Short Term) Management Actions within the OT FMS

ACTION	STATUS
1.1(a) Define and map the extent of 'trawling grounds' and determine the intensity of trawling on each of these grounds	Through funds obtained from the NRCMA, preliminary mapping of prawn trawl grounds (including trawl intensity) inside 100 fathom has been undertaken from the Queensland border to Coffs Harbour
1.1(b) Implement a series of closures to trawling to protect a range of ocean habitats and associated biodiversity, including closure of all reefs and depths greater than 1100 metres, and review the need for additional closures	This management response is being implemented as part of the current regulatory reform process being finalised by NSW DPI. Closures as part of marine parks, aquatic reserves and existing fishing closures (under sections 8 and 11 of the FM Act, and the <i>Fisheries Management (Ocean Trawl Share Management Plan) Regulation 2006</i>) already apply.
1.1(c) Continue the prohibition on using fish trawl nets north of Smoky Cape, and implement additional BRD requirements for prawn trawl nets south of Smoky Cape (to minimise the incidental catch of fish in prawn trawl nets used in this area)	North of Smoky Cape – Ongoing South of Smokey Cape – refer to Management Response 1.2(b) below
1.1(e) Prohibit mid-water trawling in NSW waters	This management response is being implemented as part of the current regulatory reform process being finalised by NSW DPI.

ACTION**STATUS**

1.2(a) Design and implement an industry funded scientific observer program to document the degree of interaction of commercial designated fisheries, including the ocean trawl fishery, with non-retained and threatened species and to collect information on the use and effectiveness of Bycatch Reduction Devices

The FMSs for all the major commercial fisheries (excluding lobster and abalone) require the implementation of a cross-fishery scientific observer program. The program has been implemented based on a framework that identifies the highest priority methods for observation based on a number of measures and to ensure that resources are directed towards the methods that pose the greatest risks. Ocean line fishing methods have been identified as the current highest priority and a three year scientific observer program for this method commenced on 1 September 2007.

However, through funds obtained from the Northern Rivers Catchment Management Authority (NRCMA), observer work in the OTF has been undertaken in 2007/08 in waters between the Queensland border and Coffs Harbour. Observers collected detailed species-data and measure bycatch levels to determine the effectiveness of BRDs, habitat interactions and any interactions with threatened/protected species.

ACTION	STATUS
--------	--------

1.2(b) Refine and improve methods for reducing incidental catches, including the introduction of more effective BRDs for prawn trawl nets. In particular, modify the approved 'square mesh panel' BRD to conform to the following specifications:

- i) a single panel to be comprised of either a) minimum of 65mm mesh with minimum surface area of 770 square cm and minimum width of 200mm, or b) minimum of 75mm mesh with minimum surface area of 650square cm and minimum width of 200mm, and
- ii) a maximum twine diameter of 4mm, and
- iii) bating rates to the top and bottom of the panel to be as follows: if minimum of 65mm mesh is used then 3 points to each bar; if minimum 75mm mesh is used then 4 points to each bar, and
- iv) the base of the panel to be positioned within 1.2m from the cod end drawstring (to be measured in a fully stretched position)

This management response is being implemented as part of the current review of bycatch reduction devices (BRDs) for the fishery. NSW DPI is currently reviewing the suite of BRDs approved for use in the OTF (otter trawl net (prawns)). The aim of this review is to limit the approved BRDs to those that are proven to be effective, and/or amend specifications to improve their effectiveness.

1.2(e) Identify areas and/or times of problem incidental catch to target catch ratios and restrict trawling appropriately. In particular, implement closures to trawling around river entrances during times of high river discharge in accordance with the program described in Appendix 3 of the FMS

This management response is being implemented as part of the current regulatory reform process being finalised by NSW DPI.

ACTION**STATUS**

2.1(a) Monitor the quantity, length and/or age and sex composition of the primary and key secondary species taken by commercial designated fishing activities, including the OTF, as part of the overall resource assessment system

This is being implemented as part of the resource assessment process (port monitoring). Port monitoring involves the collection of length (and age samples where relevant) of a set of commercially targeted species. The species are determined based upon risks assessments (as part of the EIS) and socio-economic values. The set of species subject to port monitoring is reviewed at the end of each fiscal year period. The scientific observer program will, subject to the priority setting framework, also assist in the ongoing implementation of this action, subject to the framework for setting priorities.

2.1(c) Monitor the commercial landings of all secondary species (other than the key secondary species) taken in the fishery annually for comparison against an historical range for each of those species or groups of species, as part of the overall resource assessment system

These species and landings are being monitored as part of the annual resource assessment process and FMS performance monitoring process.

2.1(d) Ensure that the selectivity of the gear used in the fishery is appropriate in relation to the biology of the species being targeted. In particular:

- i) require each prawn trawl net to be comprised of: (a) diamond mesh in the wings and body of between 40 – 75mm mesh, (b) square mesh (hung on the bar) in the codend of between 35 – 45mm mesh, constructed using single twine that is not more than 300 in diameter, and (c) a codend with a length of between 1 – 3m and a circumference of not more than 2m, and
- ii) restrict fish trawl net codends to a maximum of 100 meshes round (hanging ratio 1:1), constructed with single twine of maximum 6mm diameter and with a mesh size of at least 90mm

This management response is being implemented as part of the current regulatory reform process being finalised by NSW DPI.

ACTION	STATUS
<p>2.1(e) Maintain and enhance the effectiveness of the 'juvenile king prawn' closures, and in particular:</p> <p>i) modify the juvenile king prawn closure off South West Rocks to minimise the harvesting of juvenile king prawns between the beach and the inshore boundary of the closure, and investigate the potential for similar changes to other juvenile king prawn closures, and</p> <p>ii) make all juvenile king prawn closures year-round closures, except in areas and at times when, following authorised trial shots, the D-G, NSW DPI, determines that sufficient quantities of school prawns are present, the size of school prawns exceeds that which produces a count of 100 per half-kilogram and bycatch levels are acceptably low.</p>	<p>(i) This management response is being implemented as part of the current regulatory reform process being finalised by NSW DPI.</p> <p>(ii) Implemented under the <i>Fisheries Management (Ocean Trawl Share Management Plan) Regulation 2006</i></p>
<p>2.1(i) Utilise onboard observers to collect additional biological information, including size at maturity and fecundity/brood size data, for the important elasmobranch species taken by the fishery</p>	<p>Refer to management response 1.2(a) above.</p>
<p>2.2(a) Where the OTF is a major harvester of a species determined as overfished in NSW (recruitment overfished or growth overfished) develop and implement a recovery program for that species as detailed in the harvest strategy</p>	<p>As required</p>
<p>4.3(a) Limit operations of 'offshore' prawn trawlers to depths less than 275 metres (150 fathoms), and limit operations of 'deepwater' prawn trawlers to depths greater than 275 metres</p>	<p>Implemented under the <i>Fisheries Management (Ocean Trawl Share Management Plan) Regulation 2006</i></p>

ACTION**STATUS**

5.1(c) Implement suitable gear, area and operational specifications for targeting school whiting (see specific controls in Appendix 4 of the FMS)

Catch and effort controls

The level of catch and fishing effort monitored as part of the annual resource assessment process and FMS performance monitoring process.

Prawn gear and areas

Mandatory introduction of square-mesh codends in commercial prawn-catching gears has been approved and is being implemented as part of the current regulatory reform process being finalised by NSW DPI (refer to the section Fishing methods / gear types in this submission).

NSW DPI is currently reviewing the suite of BRDs approved for use in the OTF (otter trawl net (prawns)). The aim of this review is to limit the approved BRDs to those that are proven to be effective, and/or amend specifications to improve their effectiveness.

Fish gear and areas

Mapping of specific trawl whiting grounds has commenced, in consultation with industry.

ACTION	STATUS
<p>5.2(a) Manage fishing effort in the OTF by:</p> <ul style="list-style-type: none"> i) limiting the number of each endorsement type so as to minimise the potential activation of latent fishing effort, and ii) maintaining hull capacity, engine power and net length restrictions that apply to the offshore prawn sector and extend these rules to the other sectors of the fishery (i.e. inshore prawn trawl, deepwater prawn trawl, northern fish trawl and southern fish trawl), and iii) establishing a maximum level of fishing effort for each sector of the fishery to be achieved within 10 years of the commencement of the share management plan, and iv) limiting the number of days/nights each boat may work in the prawn trawl and fish trawl sectors of the fishery 	<p>Minimum shareholding provisions established in the <i>Fisheries Management (Ocean Trawl Share Management Plan) Regulation 2006</i> will contribute towards this management response.</p> <p>Further review and restructuring of fishing effort levels, through both endorsement numbers and linking shares to access (e.g. days / nights fished) are currently being considered by NSW DPI.</p>
<p>5.3(b) Investigate the data available to assess the economic multiplier (flow-on) effects of the OTF to the broader community, and develop strategies to improve the quality/usefulness of such data</p>	<p>The FMSs for the major commercial fisheries include management actions relevant to economic and social factors affecting fisheries, develop strategies to identify economic issues, and implement targeted surveys to obtain information on the social and economic status of commercial fisheries.</p> <p>A coordinated approach across all fisheries is considered the most efficient approach due to many fishers being endorsed in multiple fisheries. Further consultation with SIAC and MACs is needed to progress this and associated management actions.</p>
<p>5.4(a) Implement the share management provisions of the <i>Fisheries Management Act 1994</i></p>	<p>Share management provisions implemented 5 February 2007.</p>

ACTION	STATUS
6.1(a) Develop, implement and monitor a compliance plan for commercial designated fishing activities, including the OTF	Refer to the section <u>Compliance risks</u> in this submission.
6.2(a) Develop and implement a Research Strategic Plan for the OTF taking account of the priorities for research outlined in the harvest strategy	Refer to <i>Planning Strategic Research for Fisheries Aquaculture and Aquatic Conservation in NSW 2004 – 2009</i> ¹⁰
6.3(a) Develop and implement the fishing business (skipper) card system	Implemented as part of reforms to the commercial fisheries licensing arrangements occurring in February 2007 to complement the introduction of share management.
6.3(b) Modify the arrangements for trawling in the area south of Barrenjoey (within 3 nautical miles) to achieve greater complementarity with the management of the adjacent Commonwealth Southern and Eastern Scalefish and Shark Fishery and to manage fish stocks in State waters on a sustainable basis.	Discussions continuing between NSW DPI and AFMA.

¹⁰ Available at http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0006/168369/Planning-Strategic-Research.pdf

ACTION**STATUS**

7.2(a) Promote and support targeted research projects that are relevant to:

i) the biology and resource assessment of the primary and key secondary species in the OTF,

ii) the distribution of marine habitats off NSW and the potential impacts of trawling on these habitats,

iii) the impacts of trawling on biodiversity and the environment (including mapping of fishing grounds, the effectiveness of trawl closures and 'refuge' areas, and research into the use and effectiveness of approved BRDs in reducing unwanted bycatch), and

iv) economic and social factors affecting the fishery

Refer to Section 4 (Research and Monitoring) of this submission.

Appendix 3: Report on performance indicators in the OTF (2006/07)

Performance Indicator	Trigger Point	Status	Comment
The estimated quantity of the ocean trawl catch (by method) which is discarded	The quantity of discards for any observed method increases between consecutive observer surveys	–	Consecutive observer survey data not available.
Species composition (for all retained and bycatch species) for fishing methods used with in the fishery	Significant shift in species composition detected between consecutive observer surveys for any method	–	Consecutive observer survey data not available.
Response of the fishery to marine pest and disease incursion	Guidelines specified in any Marine Pest and Disease Management Program are not adopted by the OTF	✓	All relevant guidelines adhered to in the fishery
Areas closed to commercial ocean trawling in NSW waters	Areas closed to commercial ocean trawling become open after the commencement of the FMS	✓	Since the commencement of the OT FMS fishing closures, established under sections 8 and 11 of the <i>Fisheries Management Act 1994</i> , relevant to the OTF have been maintained. Indeed the area open to trawling has declined due to the introduction of three new marine parks.
Changes to the exploitation status of primary or key secondary species to 'overfished' or 'recruitment overfished'	The exploitation status of a primary or key secondary is changed to 'overfished' or 'recruitment overfished' by NSW DPI	2006/07 x	For the 2006/07 period the exploitation status for Rubberlip (or grey) morwong (<i>Nemadactylus douglasii</i>), a key secondary species in the OTF, was changed to 'overfished'. Management response 2.2(a) of the OT FMS requires the development and implementation of a recovery program when the exploitation status of a species is changed to 'overfished'.
Total annual landings of all secondary species (other than key secondary species) taken in the prawn and fish trawl sectors of the fishery as a percentage of the total annual landings for those sectors	Contribution of secondary species to total trawl landings exceeds 5% in any one consecutive years	2006/07 Prawn trawl sector ✓ Fish trawl sector x	The total annual landings of all secondary species taken, as a percentage of the total annual landings in the prawn trawl sector was 4%. The total annual landings of all secondary species taken, as a percentage of the total annual landings in the fish trawl sector was 7%.

Performance Indicator	Trigger Point	Status	Comment
Interactions between the fishery and threatened species, populations or ecological communities that are likely to threaten the survival of a threatened species, population or ecological community	Any interactions between the fishery and a threatened species, population or ecological community reported by endorsement holders in the fishery or observed during an observer survey that are likely to threaten the survival of that threatened species, population or ecological community, as determined by the Director-General of NSW DPI on advice from relevant threatened species experts	✓	No report of interactions with threatened species through the observer work or since mandatory reporting was implemented for the OTF in 2005.
Interactions between the fishery and protected species that are likely to threaten the survival of a protected species	A biennial review undertaken by NSW DPI of interactions between the fishery and a protected species reported by endorsement holders in the fishery or observed during an observer survey is likely to threaten the survival of that protected species as determined by the Director-General of NSW DPI on advice from relevant threatened species experts	–	Refer to Section 7 (Interaction with threatened or protected species) of this submission. A biennial review of the level of interactions with protected species (not yet complete) will determine whether the levels are likely to threaten the survival of a protected species.
Change in the distribution of landings between the commercial sector and non-commercial sectors (combining recreational and Indigenous) for each OTF primary species	Maximum absolute difference in the distribution of landings between the commercial and non-commercial sectors is greater than 25 percentage points when compared every five years	–	This performance indicator can only be measured if updated estimates of non-commercial catch become available between comparison years.
Change in the distribution of landings among NSW commercial fisheries for each OTF primary species	Maximum absolute difference in the distribution of landings between the assessment and reference years is greater than 15 percentage points	–	The first assessment year for this indicator will be 2008 (not yet complete) and will compare relative landings from 2005/06 and 2006/07 to the reference years 2000/01 and 2001/02.
Change in the distribution of landings among the ocean prawn trawl and ocean fish trawl gear types for each OTF primary species	Maximum absolute difference in the distribution of landings between the assessment and reference years is greater than 25 percentage points	–	The first assessment year for this indicator will be 2008 (not yet complete) and will compare relative landings from 2005/06 and 2006/07 to the reference years 2000/01 and 2001/02.

Performance Indicator	Trigger Point	Status	Comment
Net economic returns to the OTF	The Director-General of NSW DPI is satisfied that the gross value of production of the fishery has not exceeded the sum of indicative industry operational costs and government management costs relevant to the fishery for three consecutive years	–	Not applicable to this year's assessment. A process of determining indicative operational costs is to be developed in consultation with the Seafood Industry Advisory Council and the relevant MACs.
Average market of OTF shares when traded	Trigger to be determined within two years of the commencement of the share management plan	–	Not applicable to this year's assessment. Share management plans for the OTF commenced on the 5 February 2007.
Annual rates of compliance for the OTF	85% compliance	2005/06 ✓ 2006/07 x	2005/06 90% 2006/07 84%
Number of Ocean Trawl MAC meetings held each year	Less than two meetings for each fishery held in a calendar year, unless otherwise agreed by the MAC	2007 ✓	2007 – 1 meeting 4 & 5 December 2007 as agreed to by OTMAC
Reviews and outcomes of strategic plan for research and compliance in the OTF	The research or compliance strategic plans expire without being reviewed by NSW DPI, or the strategic plans are not modified consistent with approved outcomes of a review	✓	Compliance strategic plans for NSW commercial and recreational fisheries and aquaculture, including the overarching Statewide Compliance Plan are currently under review. Refer to <u>Compliance Risks</u> in this submission Refer to <i>Planning Strategic Research for Fisheries Aquaculture and Aquatic Conservation in NSW 2004 – 2009</i> ¹¹

¹¹ Available at http://www.dpi.nsw.gov.au/data/assets/pdf_file/0006/168369/Planning-Strategic-Research.pdf

Performance Indicator	Trigger Point	Status	Comment			
Number of primary and key secondary species in OTF with an 'uncertain' or 'undefined' exploitation status	The number of primary/ key secondary species with an 'uncertain' or 'undefined' exploitation status has not decreased between two consecutive odd-numbered years	–	First consecutive two odd-numbered years yet to expire.			
			Number of primary and key secondary species harvested in the OTF with an exploitation status "uncertain" or "undefined" for 2005/06 and 2006/07:			
			<table border="1"> <thead> <tr> <th>Year</th> <th>Uncertain / Undefined</th> </tr> </thead> <tbody> <tr> <td>2005/06</td> <td>18</td> </tr> <tr> <td>2006/07</td> <td>16</td> </tr> </tbody> </table>	Year	Uncertain / Undefined	2005/06
Year	Uncertain / Undefined					
2005/06	18					
2006/07	16					
The difference between the current and target resource assessment class for primary and key secondary species of the OTF	The sum of the difference between the current and target assessment class for primary/ key secondary species has not decreased between two consecutive odd-numbered years	–	First consecutive two odd-numbered years yet to expire.			
			The sum of the difference between the current and target assessment class for 2005/06 and 2006/07:			
			<table border="1"> <tbody> <tr> <td>2005/06</td> <td>32</td> </tr> <tr> <td>2006/07</td> <td>32</td> </tr> </tbody> </table>	2005/06	32	2006/07
2005/06	32					
2006/07	32					
The number of research projects underway which have a flow of benefits to the OTF and fill information gaps identified by the EIS	The number of relevant research projects relevant to identified information gaps falls to less than two during any one year	2006/07 ✓	Refer to Appendix 4 of this submission for further details of research projects relevant to the OTF			
Accuracy of catch return data (in terms of quantity of product, record completeness and species identification)	The accuracy of catch return data has not improved when reviewed every two years	–	A major project is being progressed to develop a new catch information management system for NSW commercial fisheries including improved methods to assess data accuracy.			

Appendix 4: Relevant Scientific Outputs for the Ocean Trawl Fishery

Refer to the NSW DPI website for online summaries and, in some cases, full outputs at www.dpi.nsw.gov.au/research/areas/systems-research/wild-fisheries

Broadhurst, M., 2003. Reducing unwanted bycatch and improving size selectivity in NSW prawn fisheries. *Professional Fisherman*, October 2003: 16-17.

Broadhurst, M.K., 2004. (abstract + poster presentation). 'Reducing unwanted bycatch in the prawn fisheries of New South Wales, Australia'. Poster presentation given at the 4th World Fisheries Congress: 'Reconciling Fisheries with Conservation', 2-6 May, 2004, Vancouver, Canada.

Broadhurst, M.K., Wooden, M., Young, D.J. and Macbeth, W.G., 2004. Selectivity of penaeid trap nets in south-eastern Australia. *Scientia Marina* 68(3): 445-455.

Broadhurst, M.K., Macbeth, W.G. and Wooden, M.E.L., 2005. Reducing the discarding of small prawns in NSW's commercial and recreational prawn fisheries. Final Report to the Fisheries Research & Development Corporation. Project No. 2001/031. *NSW Department of Primary Industries - Fisheries Final Report Series No. 71*. 202pp. ISSN 1449-9967.

Broadhurst, M.K., 2006. Improving gear selectivity and reducing unwanted fishing mortality in New South Wales, Australia. Poster presentation given at the 2006 International Council for the Exploration of the Sea (ICES) Symposium on Fishing Technology in the 21st Century: Integrating Fishing and Ecosystem Conservation, 30 October to 3 November 2006, Boston, USA.

Broadhurst, M.K., Dijkstra, K., Reid, D.D. and Gray, C.A., 2006. Utility of morphological data for key fish species in southeastern Australian beach-seine and otter-trawl fisheries: predicting mesh size and configuration. *New Zealand Journal of Marine & Freshwater Research*, 40: 259-272.

Broadhurst, M.K., Barker, D.T., Paterson, B.D. and Kennelly, S.J., 2002. Fate of juvenile school prawns, *Metapenaeus macleayi*, after simulated capture and escape from trawls. *Marine and Freshwater Research*. 53: 1189-1196.

Henry, G.W. and Lyle, J.M., 2003. The National Recreational and Indigenous Fishing Survey. Final Report to the Fisheries Research & Development Corporation and the Fisheries Action Program. Project No. 1999/158. *NSW Fisheries Final Report Series No. 48*. ISSN 1440-3544. 188pp.

Kendall, B., Gray, C. and Bucher, D., 2006. Reproductive biology of flat-tail mullet and sand mullet. Oral presentation given at the 2006 Australian Society for Fish Biology Conference, 28 August - 1 September 2006, Hobart, Australia.

Liggins, G.W., Scandol, J.P. and Kennelly, S.J., 2003. Recruitment of Population Dynamacist. Final Report to Fisheries Research & Development Corporation. Project No. 1193/214.05. *NSW Fisheries Final Report Series No. 51*. ISSN 1442-0147. 44pp.

Macbeth, W.G., Johnson, D.D., and Gray, C.A. 2008. Assessment of a 35-mm square-mesh codend and composite square-mesh panel configuration in the ocean prawn trawl fishery of northern New South Wales. Northern Rivers Catchment Management Authority Project No. IS7-8-243-06. NSW Department of Primary Industries – Fisheries Final Report Series No. 13 ISSN 1449-9967. Cronulla, Australia

Macbeth, W.G., 2003. Improving the selectivity of prawn-catching gears used in NSW estuaries. Oral presentation given at the Australian Marine Sciences Association conference, 9-11 July 2003, Brisbane, Australia.

Macbeth, W.G., Broadhurst, M.K., and Millar, R.B., 2005. Improving selectivity in an Australian penaeid stow-net fishery. *Bulletin of Marine Science*, 76(3): 647-660.

- Macbeth, W.G., Broadhurst, M.K. and Millar, R.B., 2005. Fishery-specific differences in the size selectivity and catch of diamond- and square-mesh codends in two Australian penaeid seines. *Fisheries Management and Ecology*, 12: 225-236.
- Macbeth, W.G., Broadhurst, M.K., Millar, R.B. and Smith, S.D.A., 2005. Increasing codend mesh openings: an appropriate strategy for improving the selectivity of penaeid fishing gears in an Australian estuary? *Marine & Freshwater Research*, 56: 889-900.
- Macbeth, W.G., 2006. Variability in the size selectivity of codends tested in commercial penaeid trawl, seine and stow-net fisheries in south-eastern Australian estuaries. Poster presentation given at the 2006 International Council for the Exploration of the Sea (ICES) Symposium on Fishing Technology in the 21st Century: Integrating Fishing and Ecosystem Conservation, 30 October to 3 November 2006, Boston, USA.
- Montgomery, S., 2006. Biology and life cycle of prawns. Poster for general display. NSW Department of Primary Industries, Cronulla, NSW, Australia.
- NSW Department of Primary Industries, 2006. Determining the biological sustainability of wild fisheries in NSW: Concepts and definitions. An information paper by the Systems Research, Wild Fisheries Program. 27pp.
- Scandol, J.P., 2003. Use of Cumulative Sum (CUSUM) Control Charts of Landed Catch in the Management of Fisheries. *Fisheries Research*. 64(1): 19-36.
- Scandol, J.P., 2004. A framework for the assessment of harvested fish resources in NSW. 96 pages. *NSW Department of Primary Industries - Fisheries Resource Assessment Series No. 15*. ISSN 1449-9940.
- Scandol, J.P., 2005. Essential Concepts of Effective Monitoring. A Guide to Monitoring Fish Stocks and Aquatic Ecosystems. Australian Society for Fish Biology Workshop Proceedings, Darwin, Northern Territory, 11 – 15 July 2005, *Fisheries Incidental Publication No 25, Darwin, Northern Territory Department of Primary Industry, Fisheries and Mines*, pp 10 – 16.
- Scandol, J. and Ives, M., 2005. RAS: An intranet-based resource assessment system for multi-species fisheries monitoring and management. Oral presentation given at the 2005 Australian Society for Fish Biology Conference, 11-15 July 2005, Darwin, Australia.
- Scandol, J., 2006. Planning: The keystone species within ecosystem-based fisheries management. In: Ward, T.M., Geddes, M.C. and Mayfield, S. (eds), National Symposium on Ecosystems Research and Management of Fish and Fisheries. *Australian Society for Fish Biology Symposium Proceedings, Adelaide, South Australia, September 2004*. 156pp.
- Silberschneider, V. and Gray, C.A., 2005. Arresting the decline of the commercial and recreational fisheries for mulloway (*Argyrosomus japonicus*). *Final report on the Fisheries Research & Development Corporation Project No. 2001/027*. 71pp. ISSN 1449-9967.

Appendix 5: A Summary Report against OTF Export Approval conditions and recommendations

Condition / Recommendation	Progress
<p>Condition 1: Operation of the fishery will be carried out in accordance with the management regime in force under the New South Wales <i>Fisheries Management Act 1994</i>.</p>	<p>Operation of the fishery has been carried out in accordance with the <i>Fisheries Management Act 1994</i> and regulations made under this Act.</p>
<p>Condition 2: NSW DPI to advise the Department of the Environment and Heritage (DEH) of any material change to the OTF's management arrangements that could negatively affect the assessment of the fishery against the criteria of the EPBC Act, within three months of that change.</p>	<p>No significant changes have been made to the management arrangements since the WTO was issued that could negatively affect the assessment.</p>
<p>Condition 3: Report to be produced and presented to DEH annually, and to include: a) information sufficient to allow assessment of the progress of NSW DPI in implementing the conditions and recommendations made; and b) the status of the Ocean Trawl Fishery's performance indicators compared to the trigger points.</p>	<p>(a) This report seeks to satisfy this sub-condition. (b) Refer to Appendix 3 of this submission.</p>
<p>Condition 4: The Fishery Management Strategy for the Ocean Trawl Fishery be finalised and approved by December 2006</p>	<p>As previously advised, the OT FMS was finalised and approved in January 2007.</p>

Condition / Recommendation	Progress
<p>Recommendation 1: NSW Department of Primary Industries (DPI) to advise the Department of Environment and Heritage (DEH) of any material change to the Ocean Trawl Fishery's (OTF) management arrangements that could negatively affect the assessment of the fishery against the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) criteria, within three months of that change being made.</p>	<p>No significant changes have been made to the management arrangements since the WTO was issued that could negatively affect the assessment.</p>
<p>Recommendation 2: When determining acceptable ranges for performance indicators as a part of a review, DPI to use ecological sustainability as a primary consideration.</p>	<p>This principle will be a primary consideration in the reviews conducted in respect of the activated trigger points outlined in Appendix 3 of this submission.</p>
<p>Recommendation 3: NSW DPI to develop and implement a compliance plan for commercial designated fishing activities including the OTF within 12 months of the approval of the Fishery Management Strategy (FMS). The compliance plan should be regularly monitored and reviewed.</p>	<p>Compliance strategic plans for NSW commercial and recreational fisheries and aquaculture, including the overarching Statewide Compliance Plan are currently under review. Refer to <u>Compliance Risks</u> in this submission.</p>

Condition / Recommendation	Progress
<p>Recommendation 4: DPI to implement finer scale temporal and spatial logbook reporting in the OTF by mid 2008, to improve the robustness of resource assessments and allow for enhanced cross-jurisdictional cooperation.</p>	<p>A major project is being progressed to develop a new catch information management system and related processes which would, among other things:</p> <ul style="list-style-type: none"> • introduce and cater for finer scale spatial and temporal reporting; • improve NSW DPI'S ability to interrogate, analyse and report on high quality data; and • improve the NSW DPI's ability to plan research, compliance and management activities (including enhancing cross-jurisdictional cooperation). <p>Information on the proposals has been previously forwarded to DEWHA.</p>
<p>Recommendation 5: DPI to develop and implement a robust system to validate catch and effort logbook data by mid 2008.</p>	<p>As per Recommendation 4 above</p>
<p>Recommendation 6: DPI to implement a system to improve the identification and recording of elasmobranch species taken in the OTF.</p>	<p>As per Recommendation 4 above.</p>
<p>Recommendation 7: DPI to develop a robust and regular fishery assessment process that provides a basis for management decisions, which are precautionary and recognise the uncertainty and level of risk. The assessment process will examine the exploitation status of the primary and key secondary species using appropriate resource assessment tiers, within 3 years.</p>	<p>NSW DPI has developed and implemented a Resource Assessment Framework for the assessment of marine fish species harvested in NSW. The framework is a well-defined, accessible program for the resource assessment of marine fish species harvested in NSW. The type of assessment carried out for each species (or species complex) is categorised into five classes of resource assessment and takes into account commitments made in the relevant FMS, levels of risk identified in the environmental impact statements, the commercial and recreational importance of the species, and the species biology</p>

Condition / Recommendation	Progress
<p>Recommendation 8: NSW DPI to institute programs to provide appropriate estimates of the harvest rates of OTF primary and key secondary species by the recreational and indigenous sectors, and incorporate these data into the fishery resource assessment process.</p>	<p>Results from the National Recreational and Indigenous Fishing Survey (2000/01) continue to be used as part of the resource assessment process.</p> <p>NSW DPI is contributing to the project (2008/42) <i>Development of a plan to address national needs for recreational fishing data for fisheries management and development.</i></p>
<p>Recommendation 9: NSW DPI to manage effort in each of the five sectors of the OTF with the aim of achieving ecologically sustainable levels and to actively pursue a reduction in latent effort in the OTF. DPI to provide DEH, within 12 months of the approval of the FMS, with a timeline, including associated milestones and trigger points, for achieving an ecologically sustainable level of fishing effort for each sector of the OTF.</p>	<p>Minimum shareholding requirements implemented under the <i>Fisheries Management (Ocean Trawl Share Management Plan) Regulation 2006.</i></p> <p>Review and restructuring of fishing effort levels are currently being considered by NSW DPI, including endorsement numbers and creating a direct link between shares and resource access (e.g. days/nights fished).</p>
<p>Recommendation 10: NSW DPI to implement the management arrangements outlined in the FMS relating to school whiting (target catch range, trigger points, gear and area restrictions) within 12 months of the approval of the FMS.</p>	<p>Refer to Appendix 2 of this submission.</p>
<p>Recommendation 11: NSW DPI to develop and implement appropriate mechanisms, by November 2008, to promote a high level of compliance with the effort management measures and fishery closures outlined in the FMS.</p>	<p>Upon implementation of any new management arrangements within the fishery NSW DPI undertakes an extensive education and advisory process to maximise voluntary compliance by fishers. In addition, NSW DPI (Fisheries Compliance Unit) is currently developing refined compliance risk identification and assessment processes based on standardised risk assessment methodologies to better plan objective compliance services. The model is adaptive, allowing changes at any time, in response to changes to fishery management arrangements.</p>

Condition / Recommendation	Progress
<p>Recommendation 12: NSW DPI to cooperate with other relevant jurisdictions to pursue complementary management and research of shared stocks for all relevant primary and key secondary OTF species that provide for sustainable harvest limits and effective assessment of stock status. In particular, NSW DPI will cooperate with:</p> <ol style="list-style-type: none"> 1. the Australian Fisheries Management Authority in relation to finfish species also harvested by the Southern and Eastern Scalefish and Shark Fishery, notably ocean perch, silver trevally, redfish and school whiting; and 2. the Queensland Department of Primary Industries and Fisheries in relation to eastern king prawn. 	<p>NSW DPI continues to work with the Commonwealth and Queensland Department of Primary Industries and Fisheries (QDPI&F) to develop complementary arrangements for shared resources. For example:</p> <ul style="list-style-type: none"> • NSW DPI Commonwealth and QDPI&F scientific representatives attended the NSW DPI Resource Assessment Workshop held in April 2008, providing input on relevant shared fish stocks, including recent catch information, updates on existing research, research outcomes, stock assessment status, and changes to management arrangements for each relevant jurisdiction; • NSW DPI provides data for assessments by Commonwealth Resource Assessment Groups for species which occur off NSW; and • Ongoing implementation of commercial daily catch limits for a range of species taken from NSW waters as part of the OTF to reinforce the quota system administered by the Commonwealth Government that directly limits the harvest levels of these species by Commonwealth endorsed boats
<p>Recommendation 13: NSW DPI to develop and implement a recovery strategy for all OTF primary and key secondary species classified as recruitment overfished, within 6 months of the species being so classified. For species classified as growth overfished, the status of the stock/s will be reviewed and specific measures implemented, as required, within 12 months to prevent the stocks from becoming recruitment overfished.</p>	<p>For the 2006/07 period the exploitation status for rubberlip (or grey) morwong (<i>Nemadactylus douglasii</i>), a key secondary species in the OTF, was changed to 'overfished'. In accordance with management response 2.2(a) of the OT FMS, NSW DPI will need to commence the development and implementation of a recovery program for this species.</p>

Condition / Recommendation	Progress
<p>Recommendation 14:</p> <p>By the end of 2007, NSW DPI to develop and implement a system sufficient to identify changes in the composition and quantity of bycatch over time and establish more robust estimates of interactions with threatened and protected species in the OTF.</p>	<p>NSW DPI have implemented the following:</p> <ul style="list-style-type: none"> • Mandatory reporting of threatened species interactions for all commercial fisheries, including the OTF from 2005. • A scientific observer project, funded by the Northern Rivers Catchment Management Authority (NRCMA), for ocean prawn trawling between the Queensland border and Coffs Harbour. Observers collected detailed species-data and measure bycatch levels, habitat interactions and any interactions with threatened/protected species. • A cross-fishery scientific observer program with priorities between different methods determined by a number of measures to ensure that resources are directed towards the methods that pose the greatest risks (refer to <u>Monitoring programs</u> above).
<p>Recommendation 15:</p> <p>NSW DPI to continue to pursue a reduction in the amount of bycatch taken in the OTF through the refinement of bycatch mitigation technology and to support the investigation of methods for increasing survivability of bycatch species.</p>	<p>The NSW Minister for Primary Industries has approved the mandatory introduction of square-mesh codends in commercial prawn-catching gears. In addition, NSW DPI is currently reviewing the suite of bycatch reduction devices (BRDs) approved for use in the OTF.</p>

Condition / Recommendation	Progress
<p>Recommendation 16:</p> <p>NSW DPI to, before the end of 2008, review the data collected on interactions of the OTF with protected species listed under the EPBC Act and other large species of bycatch. If the review indicates the OTF has interactions with any protected species listed under the EPBC Act, NSW DPI to introduce appropriate management responses, which may include turtle excluder devices, seal excluder devices and closed areas, into the fishery as a priority.</p>	<p>A review of available data has not been completed as yet.</p>