



Australian Government

Department of the Environment and Energy

Assessment of the
**NEW SOUTH WALES
ESTUARY GENERAL FISHERY**

MARCH 2018

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This report should be attributed as '*Assessment of the New South Wales Estuary General Fishery March 2018*, Commonwealth of Australia 2018'.

Disclaimer

This document is an assessment carried out by the Department of the Environment and Energy of a commercial fishery against the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition*. It forms part of the advice provided to the Minister for the Environment and Energy on the fishery in relation to decisions under Parts 13 and 13A of the *Environment Protection and Biodiversity Conservation Act 1999*. The views expressed do not necessarily reflect those of the Minister for the Environment and Energy or the Australian Government.

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EXECUTIVE SUMMARY OF THE ASSESSMENT OF THE NEW SOUTH WALES (NSW) ESTUARY GENERAL FISHERY

In October 2017, the NSW Department of Primary Industries (DPI) submitted an application for the NSW Estuary General Fishery to the Department of the Environment and Energy for assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), against the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition*. A public comment period was open from 18 September to 23 October 2017. No comments were received.

The fishery

The NSW Estuary General Fishery is a multi-species, multi-gear fishery operating within NSW estuarine systems. It targets approximately 11 primary species and 9 key secondary species. The fishery includes all forms of commercial estuarine fishing (excluding prawn trawling) as well as the gathering of pipis and beachworms from ocean beaches.

The fishery is currently managed mainly through input controls including gear restrictions, entry requirements, limits to the number of fishers, seasonal and weekend closures and size limits for key species. However, a full total allowable commercial catch (TACC) determination setting process has recently been implemented for three key target species, with four more species currently transitioning to quota management. An Environmental Impact Statement (EIS) was completed for the fishery in 2002 and remains valid.

Target stocks

Commercial harvest of this multi-species fishery is monitored annually and most target species are assessed as being fished within sustainable levels. Stocks of eastern king prawn and silver trevally are currently assessed as growth overfished and mullet has been assessed as overfished. Specific measures are in place to protect and rebuild these stocks.

Protected species and ecosystems

There have been minimal reported interactions with protected species since 2012, with most incidentally caught and released alive. The 2001 EIS found risks to protected species were low and independent observer surveys have confirmed that interactions are rare.

The most likely impact of the fishery on protected species is disturbance to the nesting sites of protected birds on beaches. This potential threat of disturbance by commercial fishing to nesting birds was assessed as a moderate to high risk in the NSW government's independent assessment of Threat and Risk Abatement (TARA) for its marine estate. However, the 2017 TARA report's specific consideration of the Estuary General Fishery assessed the risk to protected species from the fishery as low-moderate.

The broader health of the ecosystem in which the fishery operates is currently under review through the NSW government's Marine Estate Management Strategy (MEMA) process. There are no CITES species caught in this fishery.

Conclusion

Following assessment against the Guidelines at Section 2, the NSW Estuary General Fishery has been found to meet the requirements of the EPBC Act. Product taken in this fishery is therefore recommended for inclusion in the list of exempt native specimens under Part 13A of the EPBC Act until 31 March 2028.

SECTION 1: ASSESSMENT SUMMARY OF THE NEW SOUTH WALES ESTUARY GENERAL FISHERY AGAINST THE *GUIDELINES FOR THE ECOLOGICALLY SUSTAINABLE MANAGEMENT OF FISHERIES (2ND EDITION)*, CONSISTENT WITH THE EPBC ACT

	Meets	Partially meets	Does not meet	Details
Guidelines				
Management regime	8 of 9		1 of 9 n/a	Overall the management regime appears to be effective. The ongoing implementation of recent reforms will further increase effectiveness in the immediate future.
Principle 1 (target stocks)	6 of 11	5 of 11 (1.1.4, 1.1.5, 1.1.6, 1.1.8 and 1.2.2)		<p>Commercial harvest is monitored annually. Overall, most key target stocks are at sustainable levels.</p> <p>1.1.4 – Limited data for Indigenous harvest of some species and illegal harvest.</p> <p>1.1.5 – A number of the primary and secondary stocks are classified as ‘undefined’.</p> <p>1.1.6 – The development of appropriate reference points and trigger responses is ongoing.</p> <p>1.1.8 – Uncertainties around impacts of fishing on some byproduct species.</p> <p>1.2.2 - Currently no category for Blim equivalent. A review occurs when stocks fall below trigger points</p>
Principle 2 (bycatch and TEPS)	9 of 12	1 of 12 (2.1.1)	2 of 12 n/a	<p>Interactions with bycatch and protected species appear low, however there is limited information for some species.</p> <p>2.1.1 – Further reporting, monitoring and research into bycatch and TEPS recommended.</p>

Principle 2 (ecosystem impacts)	5 of 5			Ecosystem impacts considered are assessed and managed appropriately.
EPBC requirements				
Part 12	Met			<i>Marine bioregional plan for the Temperate East Marine Region</i> considered, values not compromised.
Part 13	N/a	N/a	N/a	N/a due to fishery operating in state waters only.
Part 13A	Met			Based on outcomes of Guidelines assessment, the Objects of Part 13A are considered met, with EPBC consultation requirements also met.
Part 16	Met			The fishery's management arrangements are considered sufficiently precautionary to manage/mitigate known risks.

Notes:

Assessment history:

1st assessment finalised 2003 – LENS with eight recommendations.

2nd assessment finalised 2008 – LENS with nine recommendations.

No Part 13 assessment has been conducted, as the fishery operates entirely within NSW state waters.

Fishery reporting:

Annual report – The most recent full public reports on this fishery are contained in the *Status of Fisheries Resources in NSW 2013-14 Full Report* – https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0008/598436/INT16-61462-Attachment-C-Status-of-Fisheries-Resources-in-NSW-2013-14-Full-Report-406-pages-updated.pdf. Subsequent reviews of these species' status are at the links below.

Protected species interactions – Fishers are required to record protected species interactions, however these are not reported publicly.

Key links:

Fishery information page on agency website: <http://www.dpi.nsw.gov.au/fishing/commercial/fisheries/eqf>

Fishery Management Strategy for the Estuary General Fishery (FMS) - https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0006/632409/EG-FMS.pdf

Submission for reassessment under the EPBC Act (2017): <http://www.environment.gov.au/system/files/consultations/7adc92d2-f110-4f8f-8679-d4f6a5d39b8c/files/estuary-general-fisheries-export-approval-submission-2017.pdf>

One public comment received, in support of continued approval for the fishery, from the Professional Fishermen's Association (PFA).

Enforcing legislation:

NSW *Fisheries Management (Estuary General Share Management Plan) Regulation 2006* - <https://www.legislation.nsw.gov.au/#/view/regulation/2006/734>

NSW *Fisheries Management Act 1994* - <https://www.legislation.nsw.gov.au/#/view/act/1994/38>

NSW *Fisheries Management (General) Regulation 2010* - <https://www.legislation.nsw.gov.au/#/view/regulation/2010/475>

NSW *Fisheries Management (Supporting Plan) Regulation 2006* - <https://www.legislation.nsw.gov.au/#/view/regulation/2006/733>

Ecological Risk Assessment:

Environmental Impact Assessment (2001) for this fishery comprises three volumes found here:

<https://www.dpi.nsw.gov.au/fishing/commercial/ea/egf-eis>

New South Wales Marine Estate Threat and Risk Assessment Report – November 2016 (TARA report) –

http://www.marine.nsw.gov.au/_data/assets/pdf_file/0007/674566/Statewide-TARA-Draft-Report.pdf

DRAFT Marine Estate Management Strategy 2018 – 2028 (MEMA)

[https://www.marine.nsw.gov.au/_data/assets/pdf_file/0019/740170/Draft MEM strategy.pdf](https://www.marine.nsw.gov.au/_data/assets/pdf_file/0019/740170/Draft_MEM_strategy.pdf)

Stock assessments:

Status of fisheries resources in NSW 2014-15 Summary – http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0006/692646/INT16-161027-DRAFT-Status-fisheries-resources-NSW-2014-152-Summary.pdf

NSW Fisheries Statistics Report 2014-15 – http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0003/599421/Fisheries-statistics-report-2014-15.pdf

Status of Australian Fish Stocks – Stock status reports - relevant species 2016 (Fisheries Research and Development Corporation) –

<http://www.fish.gov.au/Jurisdiction/New-South-Wales>

Survey of Recreational Fishing in NSW and ACT, 2013/14 (published 2015) -

http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/598628/West-et-al-Survey-of-rec-fishing-in-NSW-ACT-2013-14-2016_03_02.pdf

Other:

Report Series: 29 – A Preliminary Survey of Pipis (Donax deltoides) on the New South Wales South Coast (2012) -

http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0003/438087/2192_A-Preliminary-Survey-of-Pipis-Donax-deltoides-on-the-New-South-Wales-South-Coast.pdf

Fisheries Compliance Enforcement Policy and Procedure – https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0010/639874/Fisheries-compliance-prosecution-policy-and-procedure.pdf

NSW commercial fisheries governance and consultation structure – <https://www.dpi.nsw.gov.au/fishing/commercial/consultation>

Monitoring and assessment of the impact of management changes under the Mulloway recovery program (2016) -

https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0006/709710/INT16-139407-Mulloway-review-research-package-Oct-2016-Oct-update.pdf

Developing fishery-independent surveys for the adaptive management of NSW's estuarine fisheries –

<https://www.dpi.nsw.gov.au/content/research/areas/fisheries-and-ecosystems/wild-fisheries/outputs/2008/943>

Fish Habitat Improvement Program Plan 2014-2018: <https://www.dpi.nsw.gov.au/content/research/fish-habitat-improvement-program-plan-2014-2018>

SECTION 2: DETAILED ANALYSIS OF THE NEW SOUTH WALES ESTUARY GENERAL FISHERY AGAINST THE ***GUIDELINES FOR THE ECOLOGICALLY SUSTAINABLE MANAGEMENT OF FISHERIES (2ND EDITION)***

Guidelines for the Ecologically Sustainable Management of Fisheries (2 nd edition)	Comment
THE MANAGEMENT REGIME	
The management regime does not have to be a formal statutory fishery management plan as such, and may include non-statutory management arrangements or management policies and programmes. The regime should:	
Be documented, publicly available and transparent	Meets Legislation, regulation, fishery management strategy (FMS), environmental impact statements and fishery resources reports, are publicly available on the NSW Department of Primary Industries (DPI) website (see links above).
Be developed through a consultative process providing opportunity to all interested and affected parties, including the general public	Meets The management strategies are prepared through stakeholder and public consultation, adhering to state legislation. Development of new management arrangements are undertaken in accordance with the consultative process described in the submission and NSW DPI's consultation structure (see links above).
Ensure that a range of expertise and community interests are involved in individual fishery management committees and during the stock assessment process	Meets A range of expertise and community interests are involved in fishery advisory committees and working groups. The Ministerial Fisheries Advisory Council includes representatives from the commercial, recreational, indigenous, aquaculture and conservation sectors Independent peer review and advice on stock status assessments are provided by stakeholders, scientists and agency representatives.
Be strategic, containing objectives and performance criteria by which the effectiveness of the management arrangements are measured	Meets Objectives and performance indicators are included in the FMS (see link above). The fishery's performance against FMS trigger points is publicly reported in Fisheries Statistics reports (see link above).
Be capable of controlling the level of harvest in the fishery using input and/or output controls	Meets The level of harvest has mainly been managed through input controls including limited entry, licensing arrangements, net restrictions, gear and vessel restrictions, transfer policies, and temporal and spatial closures. As of 1 December 2017, catch quotas were implemented for blue swimmer crab, mud crab, eels. Catch quotas will be introduced for pipis, beachworms, cockles and nippers (bait) in 2018. Effort quotas (trap numbers, limited fish, eels and mud crab) and limited days are in place for meshing and hauling.

Contain the means of enforcing critical aspects of the management arrangements	Meets NSW Fisheries officers enforce aspects of the management arrangements through patrols and inspections. Officers can also check information from fishers in real time against fishing activity and catch using new FisherOfficer software. See link above on compliance enforcement policy and procedures.
Provide for the periodic review of the performance of the fishery management arrangements and the management strategies, objectives and criteria	Meets The fishery's performance against FMS trigger points are reviewed periodically (see link above to Fishery Statistics Report). Periodic reviews (2-3 years) of performance indicators and trigger points scheduled to be undertaken by NSW DPI. A Total Allowable Fishing (TAF) committee periodically reviews and sets catch and effort quota for components of the fishery.
Be capable of assessing, monitoring and avoiding, remedying or mitigating any adverse impacts on the wider marine ecosystem in which the target species lives and the fishery operates	Meets Impacts of the fishery on the marine ecosystem were assessed through the EIS process in 2001 (see link above) and the TARA process in 2016 (see link above, Appendix C, page 12). The broader health of the ecosystem in which the fishery operates is currently under review through the MEMA process (link above). Ongoing monitoring is conducted through performance indicator reviews. Potential adverse impacts on the marine environment are assessed through environmental impact assessments and mitigation measures are outlined in the FMS (see links above). Legislation provides for various fishing closures to be implemented for a period of up to 5 years as needed.
Requires compliance with relevant threat abatement plans, recovery plans, the National Policy on Fisheries Bycatch, and bycatch action strategies developed under the policy	N/a The fishery operates in state waters only.
PRINCIPLE 1 - A fishery must be conducted in a manner that does not lead to over-fishing, or for those stocks that are over-fished, the fishery must be conducted such that there is a high degree of probability the stock(s) will recover.	
Objective 1 - The fishery shall be conducted at catch levels that maintain ecologically viable stock levels at an agreed point or range, with acceptable levels of probability.	
Information requirements	
1.1.1 There is a reliable information collection system in place appropriate to the scale of the fishery. The level of data collection should be based upon an appropriate mix of fishery independent and dependent research and monitoring.	Meets Catch rates are monitored through catch, effort and disposal reports. As of December 2017, catch and effort for quota species are monitored and reported in real time via electronic reporting. A cross fishery scientific observer program, identifies and prioritises the high risk fishing methods, to focus observer resources on fishing methods likely to pose the most risk to fish stocks. Observer studies were last undertaken in the Estuary General Fishery in 2005.

Assessment	
<p>1.1.2 There is a robust assessment of the dynamics and status of the species/fishery and periodic review of the process and the data collected. Assessment should include a process to identify any reduction in biological diversity and /or reproductive capacity. Review should take place at regular intervals but at least every three years.</p>	<p>Meets NSW DPI assesses the status of key target stocks annually and a report is produced biennially. Key species are also considered biennially through FRDC Status of Key Stocks assessments (see links above).</p> <p>Commonwealth and Fisheries Queensland scientific representatives take part in annual workshops to assess NSW fishery resources. These workshops consider shared stocks, catch information, research outcomes, management arrangements and stock assessment status.</p> <p>Large-scale mortalities ('fish-kill events') occasionally occur in eastern Australian estuaries following major flooding. An independent study found that integrating data from multiple sources, such as fishery and fishery independent data, improved long term decision making for fisheries resources and biodiversity (Rotherham et al. 2010).</p> <p>A list of scientific outputs and NSW DPI published research relevant to stock assessment considerations for a number of key species caught in the fishery is provided in NSW DPI's 2017 submission for the reassessment of the fishery (see link above).</p>
<p>1.1.3 The distribution and spatial structure of the stock(s) has been established and factored into management responses.</p>	<p>Meets All key species are managed as single stocks, although management arrangements are implemented at a regional level (spatially by estuaries).</p> <p>Spatial distribution is considered in stock status assessments and factored into the management arrangements, including spatial and seasonal closures.</p> <p>Some species in the fishery are also caught in other fisheries (NSW and Commonwealth). Where appropriate, complementary arrangements are/will be developed to ensure sustainable harvest of straddling stocks.</p>
<p>1.1.4 There are reliable estimates of all removals, including commercial (landings and discards), recreational and indigenous, from the fished stock. These estimates have been factored into stock assessments and target species catch levels.</p>	<p>Partially met Commercial harvest is monitored through an annual resource assessment process and as part of the FMS performance monitoring process (see link above).</p> <p>As part of the recent reforms to commercial fishing in NSW, three species were moved to catch quota regimes in late 2017 with four more to follow from 1 December 2018. Three shareclasses within the fishery have moved to an effort quota regime. These catch and effort quota are subject to real time reporting, allowing monitoring to be undertaken in real time.</p> <p>Recreational fishing surveys are conducted regularly (see link above) and estimates of recreational harvest are considered in assessments of target stock status. There are no estimates of Indigenous harvest or illegal take.</p>

<p>1.1.5 There is a sound estimate of the potential productivity of the fished stock/s and the proportion that could be harvested.</p>	<p>Partially met</p> <p>The exploitation status for the 11 primary target species and the 9 secondary target species taken in the fishery is assessed annually by fisheries scientists and managers. Half of primary species and all of the secondary species are currently assessed as 'undefined' or 'uncertain'.</p> <p>Sound estimates of productivity are planned to be developed for main target species (i.e., mud crabs, blue swimmer crabs, eels, pipis, beachworms, cockles and nippers) as these species transition to quota management (see 1.1.4). A full TACC determination setting process by annual review and committee consideration will apply to quota species in the future.</p>
<p>Management responses</p>	
<p>1.1.6 There are reference points (target and/or limit), that trigger management actions including a biological bottom line and/or a catch or effort upper limit beyond which the stock should not be taken.</p>	<p>Partially met</p> <p>The FMS specifies upper and lower trigger points for target species and some secondary species. When trigger points are met, a review is conducted.</p> <p>The development of appropriate reference points and trigger responses is ongoing, with current triggers considered conservative by NSW DPI.</p> <p>A Total Allowable Fishing (TAF) committee will periodically review and set catch and effort quota for components of the fishery for stocks moving to quota management.</p>
<p>1.1.7 There are management strategies in place capable of controlling the level of take.</p>	<p>Meets</p> <p>Currently, take is mainly managed through input controls, including gear restrictions, limit to the number of fishers, entry requirements, seasonal and weekend closures and size limits for key species.</p> <p>However, this fishery is in active transition to adopt a number of output controls, including catch and effort quota. This will include increases to minimum shareholding requirements which will further limit the number of fishers endorsed.</p>
<p>1.1.8 Fishing is conducted in a manner that does not threaten stocks of by-product species.</p>	<p>Partially met</p> <p>The total landings of byproduct (secondary) species, other than key secondary species, are monitored, reported and resource assessed with rules for byproduct articulated in the FMS. The FMS also includes rules about prohibited size relating to gear type used. A review is conducted if triggers are breached.</p> <p>The current status of most secondary species is 'undefined' or 'uncertain', with one species classified as overfished. However, these uncertainties are expected to decrease over time, after recent changes to strengthen management arrangements.</p>
<p>(Guidelines 1.1.1 to 1.1.7 should be applied to by-product species to an appropriate level)</p>	
<p>1.1.9 The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.</p>	<p>Meets</p> <p>Notwithstanding some uncertainties regarding some byproduct stocks, on the whole, the fishery's management arrangements appear likely to maintain stocks within ecologically viable levels, particularly considering recent reforms and current moves to tighten controls on harvest.</p>

<p>If overfished, go to Objective 2: If not overfished, go to PRINCIPLE 2:</p>	
<p>Objective 2 - Where the fished stock(s) are below a defined reference point, the fishery will be managed to promote recovery to ecologically viable stock levels within nominated timeframes.</p>	
<p>Management responses</p>	
<p>1.2.1 A precautionary recovery strategy is in place specifying management actions, or staged management responses, which are linked to reference points. The recovery strategy should apply until the stock recovers, and should aim for recovery within a specific time period appropriate to the biology of the stock.</p>	<p>Meets</p> <p>The FMS requires that where the fishery harvests an 'overfished' species, a recovery program for that species will be developed and implemented within specific timeframes.</p> <p>The Estuary General Fishery is a multi-species, multi-gear fishery with the majority of harvest comprising species assessed as being fished sustainably. However, three species are currently assessed as overfished. As these species are caught in a number of NSW fisheries, recovery measures are applied to other fisheries as well as the Estuary General Fishery.</p> <p>The three overfished species are:</p> <ul style="list-style-type: none"> • mullocky (secondary species) – overfished. A recovery program was developed and implemented in 2013. The arrangements include; a reduction in recreational bag limits, increase in minimum legal length, a bycatch allowance of 10 fish (with size limits) caught in meshing nets, and a 500 kilogram trip limit for beach hauling. A review of the mullocky recovery program is underway to determine why the species remains overfished. The mullocky working group recently met in January 2018. See the 2016 review at link above. • eastern king prawn (primary species) – growth overfished. The <i>Fish Habitat Improvement Program Plan 2014-2018</i>, includes a project currently underway that is investigating improvements to habitat and fisheries production for Eastern King Prawns. See link above. • silver trevally – growth overfished. Current recovery response is an increase in minimum size limit across all sectors. This species is a minor component of harvest in the Estuary General fishery, it is also taken in the Ocean Hauling, Ocean Trap and Line, and the Fish Trawl fisheries. <p>For further information on the status and management response for these species, see the 2017 submission and the <i>Status of Australian Fish Stocks - Stock status reports - relevant species 2016 (Fisheries Research and Development Corporation)</i> (links above).</p> <p>A small number of other species previously overfished, have recovered to fully fished through recovery strategies implemented.</p>
<p>1.2.2 If the stock is estimated as being at or below the biological and / or effort bottom line, management responses such as a zero targeted catch, temporary fishery closure or a 'whole of fishery' effort or quota reduction are implemented.</p>	<p>Partially met</p> <p>Management arrangements do not have a category for Blim equivalent. The FMS requires a review of management arrangements if stocks fall below specified trigger points.</p> <p>Mullocky is the only stock currently confirmed below the default limit reference point, articulated in the FRDC's <i>Status of Australian Fish Stocks</i> (link above). As described above, management measures to reduce catch of mullocky have been in place since 2013, these arrangements are currently under review.</p>

PRINCIPLE 2 - Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem.

Objective 1 - The fishery is conducted in a manner that does not threaten bycatch species.

Information requirements

2.1.1 Reliable information, appropriate to the scale of the fishery, is collected on the composition and abundance of bycatch.

Partially met

Fishers can only retain permitted species and are not required to collect or report information on bycatch. Scientific observers have recorded catch data on target species and bycatch through NSW's cross-fishery observer program (described above).

The three recognised categories of bycatch are juvenile species (of commercial or recreational importance), species of conservation significance and 'other'.

A paper *Developing fishery-independent surveys for the adaptive management of NSW's estuarine fisheries* (2008, see link above) looked at the development of sampling methods for a large range of fish species in NSW estuaries. It noted that monitoring of NSW estuaries relied heavily on fishery-dependent data sources which did not provide information on bycatch or areas of estuaries which are closed to fishing, often resulting in errors due to varying species knowledge and skills of fishers. More fishery-independent surveys were recommended in estuaries, which would improve the reliability of information collection on the composition and abundance of bycatch species.

The 2003 FMS (see link above) noted that more information was needed about effects on bycatch (specifically from minor fishing methods including crab and eel traps). Further bycatch focused research was recommended, including observer based surveys looking at impacts on bycatch species and validation of catch levels.

Assessments	
<p>2.1.2 There is a risk analysis of the bycatch with respect to its vulnerability to fishing.</p>	<p>Meets</p> <p>Levels of bycatch vary across methods in this multi-gear fishery. The relative risks of each method and the bycatch species likely to be impacted in each, is discussed in the 2001 EIS (see link above). Bycatch mainly occurs in haul and mesh nets in the fishery, impacting fish species including sand whiting, yellowfin bream, dusky flathead, tarwhine, snapper, leatherjackets, tailor and luderick.</p> <p>The MEMA report indicates that the fishery poses a moderate risk to a wide range of bycatch and harvest assemblages. See link above.</p> <p>In 2017, the statewide TARA process (link above) assessed the impact of commercial fisheries on a wide range of pelagic assemblies of fish. It concluded that the fishery poses a moderate to high risk to pelagic species (harvest and bycatch) assemblages.</p>
Management responses	
<p>2.1.3 Measures are in place to avoid capture and mortality of bycatch species unless it is determined that the level of catch is sustainable (except in relation to endangered, threatened or protected species). Steps must be taken to develop suitable technology if none is available.</p>	<p>Meets</p> <p>There are specific measures in place to reduce bycatch, including fishing closures (based on season, time, area and operator/gear) and mesh size restrictions. Bycatch reduction and survival devices are required throughout the fishery (eg square mesh codends and discard chutes). Permits are issued to fishers wishing to trial gear modifications to improve gear selectivity, operating efficiency and bycatch reduction.</p> <p>Nets are required to be attended based on their level of risk (some are attended, some are not). When using hauling nets in lakes and lagoons the net must be landed against a backing net and the catch sorted in the water to increase the survival of released prohibited size fish and bycatch .</p> <p>The 2017 TARA report (see link above) describes additional management measures which have been implemented that would benefit bycatch species:</p> <ul style="list-style-type: none"> • The prohibition of all hauling nets used over beds of strapweed seagrass (has a very low recovery rate if damaged). • Provisions for modified gear and adaptive use of fishing gear as necessary, to reduce impacts on fish habitats and non-retained species. • Increased minimum mesh size in flathead nets, to reduce the capture of dusky flathead below the minimum legal length. • Increased minimum mesh size in overnight set meshing nets (set during winter), to reduce the catch of unwanted fish and/or fish below the minimum legal length.
<p>2.1.4 An indicator group of bycatch species is monitored.</p>	<p>Meets</p> <p>The impact of bycatch of most species is not considered to be high risk, therefore monitoring of an indicator group of bycatch species is not required. However, some monitoring is undertaken on undersized mulloway bycatch, to inform recovery measures for this species.</p>

2.1.5 There are decision rules that trigger additional management measures when there are significant perturbations in the indicator species numbers.	Meets A recovery program which includes monitoring requirements and associated triggers, is in place for mullock species.
2.1.6 The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.	Meets It is likely that the fishery is conducted in a way that does not threaten bycatch species. Various management measures have been implemented to assist in reducing the impacts of fishing on bycatch species.
Objective 2 - The fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities.	
Information requirements	
2.2.1 Reliable information is collected on the interaction with endangered, threatened or protected species and threatened ecological communities.	Meets Since 2005 it has been a requirement for fishers to report all interactions with protected species through catch and effort log books.
Assessments	
2.2.2 There is an assessment of the impact of the fishery on endangered, threatened or protected species.	<p>Meets</p> <p>The last observer-based survey in the fishery (2005) reported no interactions with marine mammals, sea turtles or seabirds during fishery operations. There were 37 interactions reported by fishers in logbooks between 2012 and 2016, comprising 35 interactions with green turtles* (released alive and healthy) and one great hammerhead shark (caught, discarded dead) and one black rockcod (unknown fate).</p> <p>The EIS (2001) for the fishery (link above) found that the fishery was not having an adverse impact on any threatened species (see pages F294 – F300).</p> <p>Potential indirect impacts of the fishery (disturbance) have been identified for a number of protected shorebird species, including the eastern hooded plover (<i>Thinornis rubricollis</i>) and migrating seabirds using listed Ramsar Wetlands or known JAMBA and CAMBA migratory bird habitats, in some areas of the fishery.</p> <p>The impact on threatened birds by activities associated with the Estuary General Fishery was assessed as a moderate to low risk in the 2017 TARA process (link above).</p> <p>* Reports are from the same fisher operating in a specific area of a specific estuary. Data is subject to validation, including confirmation of species.</p>
2.2.3 There is an assessment of the impact of the fishery on threatened ecological communities.	N/a There are no EPBC Act listed threatened ecological communities in the area of the fishery.

Management responses	
2.2.4 There are measures in place to avoid capture and/or mortality of endangered, threatened or protected species.	<p>Meets</p> <p>Limited specific management measures are in place, as the risk is considered low. However, general measures that reduce potential risk to protected species are in place within the area of the fishery, including marine protected areas (specifically to protect threatened species) that provide spatial refugia from potential interactions with the fishery.</p> <p>The TARA report states that provisions from protected species recovery plans or threat abatement plans must be adopted, and necessary fishery management changes implemented.</p> <p>The FMS contains an objective to reduce the impact of activities which could harm marine and terrestrial habitat within the area of the fishery that is utilised by protected shorebirds. It also specifies a code of conduct (including performance measures) which will minimise disturbance in the vicinity of Ramsar wetlands or JAMBA and CAMBA migratory bird habitats should be developed.</p>
2.2.5 There are measures in place to avoid impact on threatened ecological communities.	<p>N/a</p> <p>There are no EPBC Act listed threatened ecological communities in the area of the fishery.</p>
2.2.6 The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.	<p>Meets</p> <p>Yes, the fishery is conducted in a way that is likely to be effective in avoiding impacts to protected species and ecological communities.</p>
Objective 3 - The fishery is conducted, in a manner that minimises the impact of fishing operations on the ecosystem generally.	
Information requirements	
2.3.1 Information appropriate for the analysis in 2.3.2 is collated and/or collected covering the fisheries impact on the ecosystem and environment generally.	<p>Meets</p> <p>An EIS was undertaken (2001) that collated information on fishery impacts on the ecosystem and environment generally. The FMS performance assessment process, monitors the management of any ongoing impacts on the ecosystem. See links above.</p> <p>In 2017, the MEMA process finalised a comprehensive evidence-based review of the threats and risks affecting estuaries in NSW and found that commercial fishing is a lower order issue.</p>

Assessment	
<p>2.3.2 Information is collected and a risk analysis, appropriate to the scale of the fishery and its potential impacts, is conducted into the susceptibility of each of the following ecosystem components to the fishery.</p> <ol style="list-style-type: none"> Impacts on ecological communities <ul style="list-style-type: none"> Benthic communities Ecologically related, associated or dependent species Water column communities Impacts on food chains <ul style="list-style-type: none"> Structure Productivity/flows Impacts on the physical environment <ul style="list-style-type: none"> Physical habitat Water quality 	<p>Meets</p> <p>Composition of total Estuary General Fishery catch is considered biennially. Due to the various fishing methods, species and areas fished, the specific impacts may vary.</p> <p>Impacts of the fishery on the marine ecosystem were assessed through the EIS process in 2001 (link above) and the TARA process in 2017 (link above).</p> <p>The EIS found that the risk of impact on the biophysical environment varied dependent on the component, ranging from low (10 components) to medium (2 components) to high (1 component). See A-9 at link above. The TARA report notes (in Appendix C page 13) that the consequence of the potential impacts of the fishery poses a low to minimal risk to most of the habitats in which it operates.</p> <p>Specific studies have also been conducted about the collection of pipis (<i>Fisheries Research Report Series: 29 – A Preliminary Survey of Pipis (Donax deltoides) on the New South Wales South Coast</i> (2012), see link above). The report includes an assessment of the environmental impacts and any impact on pipi abundance and habitat.</p> <p>The study found overall that the relative abundance of pipi stocks varied along the coast. Fishing had some impact on numbers, as well as the influence of various coastal currents on dispersal and settlement of pipis. Predation also influenced stocks. See link above.</p> <p>The MEMA report (see link above) indicates that the fishery has an impact on the reduction in trophic levels and disturbance of the physical environment.</p>
Management responses	
<p>2.3.3 Management actions are in place to ensure significant damage to ecosystems does not arise from the impacts described in 2.3.1.</p>	<p>Meets</p> <p>The main management measures in place to prevent damage to ecosystems are spatial and temporal closures.</p> <p>Some restrictions apply (hand collection) for the collection of pipis on Bherwerre Beach, Jervis Bay, in the area of the hooded plover habitat. Road access to this beach has been restricted to minimise disturbance. The FMS (2003) outlines precautionary management responses and relevant research generally. See link above.</p>
<p>2.3.4 There are decision rules that trigger further management responses when monitoring detects impacts on selected ecosystem indicators beyond a predetermined level, or where action is indicated by application of the precautionary approach.</p>	<p>Meets</p> <p>Performance measures and triggers are outlined in the FMS (see link above). It is expected that the management arrangements for a limited number of primary target species, will move to TACCs, allowing for further triggered responses.</p>
<p>2.3.5 The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.</p>	<p>Meets</p> <p>The management response appears likely to be effective in minimising the impact of the fishery on the ecosystem.</p>

SECTION 3: ASSESSMENT OF THE NEW SOUTH WALES ESTUARY GENERAL FISHERY AGAINST THE REQUIREMENTS OF THE EPBC ACT

The table below is not a complete or exact representation of the EPBC Act. It is intended to show that the relevant sections and components of the EPBC Act have been taken into account in the formulation of advice on the fishery in relation to decisions under Part 13 and Part 13A.

Part 12

Section 176 Bioregional Plans	Comment
(5) Minister must have regard to relevant bioregional plans	Meets The fishery operates adjacent to the Temperate East Marine Region. It is not expected to have an impact on matters identified as priorities in the <i>Marine bioregional plan for the Temperate East Marine Region</i> .

Part 13 - not required, fishery operates in state waters only.

Part 13A

Section 303BA Objects of Part 13A	
(1) The objects of this Part are as follows: (a) to ensure that Australia complies with its obligations under CITES and the Biodiversity Convention; (b) to protect wildlife that may be adversely affected by trade; (c) to promote the conservation of biodiversity in Australia and other countries; (d) to ensure that any commercial utilisation of Australian native wildlife for the purposes of export is managed in an ecologically sustainable way; (e) to promote the humane treatment of wildlife; (f) to ensure ethical conduct during any research associated with the utilisation of wildlife; and (h) to ensure the precautionary principle is taken into account in making decisions relating to the utilisation of wildlife.	
Section 303DC Minister may amend list (non CITES species)	Comment
(1) The Minister may, by legislative instrument, amend the list referred to in section 303DB [list of exempt native specimens] by: (a) doing any of the following: (i) including items in the list; (ii) deleting items from the list; (iii) imposing a condition or restriction to which the inclusion of a specimen in the list is subject; (iv) varying or revoking a condition or restriction to which the inclusion of a specimen in the list is subject; or (b) correcting an inaccuracy or updating the name of a species.	The Department recommends that specimens derived from species harvested in the NSW Estuary General Fishery , other than specimens that belong to species listed under Part 13 of the EPBC Act (other than a conservation dependent species), and specimens that belong to taxa listed under section 303CA (Australia's CITES list), be included in the list of exempt native specimens until 31 March 2028.

(1A)	In deciding to amend the LENS, the Minister must rely primarily on outcomes of Part 10, Div 1 or 2 assessment	N/a. Not a Commonwealth fishery.
(1C)	The above does not limit matters that may be considered when deciding to amend LENS.	Meets Through the above assessment at Section 2 against the Guidelines, the Department has taken into account all matters relevant to making an informed decision to amend the list of exempt native specimens to include product taken in this fishery.
(3)	Before amending the LENS, the Minister must consult:	Meets
(a)	other Minister or Ministers as appropriate; and	The submission from the NSW DPI was made available on DoEE website from 18 September 2017 to 23 October 2017. One comment was received from the NSW Professional Fishermen's Association, in support of continued export approval for the fishery.
(b)	other Minister or Ministers of each State and self-governing Territory as appropriate; and	
(c)	other persons and organisations as appropriate.	

Part 16

Section 391 Minister must consider precautionary principle in making decisions		Comment
(1)	Minister must take account of the precautionary principle in making a decision, to the extent that the decision is consistent with other provisions under this Act.	Meets Given the limited entry requirements, net and gear restrictions and spatial management measures, precautionary measures are considered to be in place, to prevent serious or irreversible environmental damage being caused by this fishery.
(2)	The precautionary principle is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage.	

REFERENCES

Department of the Environment (2012) *Marine Bioregional Plan for the Temperate East Marine Region*.

Rotherham, D., Gray, C.A., Underwood, A.J., Chapman, M.G., Johnson, D.D. (2010) *Developing fishery-independent surveys for the adaptive management of NSW's estuarine fisheries*