

Australian Government

Department of Agriculture, Water and the Environment

# Assessment of the South Australian Sardine Fishery

January 2022

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#### Disclaimer

This document is an assessment carried out by the Department of Agriculture, Water and the Environment 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 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.

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## ASSESSMENT SUMMARY

In June 2021, the Department of Primary Industries and Regions South Australia (PIRSA), applied to the Department of Agriculture, Water and the Environment for assessment of the South Australian Sardine Fishery under Part 13A export provisions of the EPBC Act. The fishery was assessed against the Act, as well as the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries – 2<sup>nd</sup> Edition*. Public comments were sought on the application from 7 July 2021 until 29 July 2021.

#### The fishery

The fishery operates in state and Commonwealth waters, including all waters adjacent to South Australia to the edge of the 200 nautical mile Australian Fishing Zone. For management purposes, the fishery is composed of two zones, the Gulfs Zone (within the Spencer Gulf and the Gulf of St Vincent) and the Outside Zone (the remainder of the fishery outside the gulfs). The fishery operates within the South-west and South-east Marine Regions.

#### **Target stocks**

The primary target species is the Australian sardine (*Sardinops sagax*). There are four separate biological stocks in Australia, including a single biological stock occurring off South Australia and western Victoria. This is the only stock harvested by the fishery. Take of Australian anchovy (*Engraulis australis*) is also permitted.

#### Protected species (including CITES-listed species) and ecosystems

An independent research program (in 2004-2005) found high interaction rates between the fishery and short-beaked common dolphins (*Delphinus delphis*). In response, the South Australian Sardine Industry Association implemented the *Code of Practice for mitigating the interactions of the South Australian Sardine Fishery with wildlife* (the CoP). The CoP seeks to mitigate risk of interactions with all protected wildlife (including sharks and seals), but focusses particularly on dolphins. PIRSA continued its independent observer program and also commenced compliance monitoring of fishers' adherence to the CoP. The effectiveness of the CoP has been reviewed by independent scientists and publicly reported on annually since 2007 (Kirkwood, Goldsworthy & Ward 2020).

The CoP has been refined since its inception and appears to have significantly reduced interaction rates. In the 2019-2020 fishing season, encirclement rates recorded by independent observers and in industry logbooks were approximately eight per 100 net sets, a reduction of 87% since the introduction of the CoP. The CoP has also been a useful mechanism for identifying the most effective measures for safely releasing dolphins that are not observed until after the net is deployed. This is done through quarterly meetings of stakeholders where interaction reports are reviewed.

However, despite these improvements, there are ongoing discrepancies in catch and effort data that correlate to whether observers are onboard (Ward et al. 2015) and some differences in the rate of dolphin mortalities reported by observers compared to those reported in logbooks. While surveillance undertaken by PIRSA indicates fishers are complying with the CoP when observers are not on board, further investigation is required to determine the reason for the discrepancies and to ensure the total mortality of short-beaked common dolphins in the fishery is accurately understood.

The part 13 approval has conditions applied to improve information and understanding on the interactions with protected species.

#### Conclusion

The assessment outlined in this report has found that the fishery meets the requirements of the EPBC Act subject to the conditions outlined in Section 2 of this report. These conditions apply to the Part 13 accreditation of the management regime, and seek to ensure the management arrangements for the fishery require individual fishers to take all reasonable

steps to avoid harming protected species, and that the fishery as a whole will not adversely affect the survival, recovery or conservation status of EPBC Act listed species.

On this basis, the Department considers that the fishery should be included in the list of exempt native specimens under Part 13A, and accredited under Part 13 of the EPBC Act **until 7 March 2027.** 

## SECTION 1: ASSESSMENT SUMMARY

Guidelines assessment	Meets	Partially meets	Does not meet	Details
Management regime	7 of 9	2 of 9	0 of 9	Management arrangements are well documented, publicly available, and transparent. Consultative processes involve a range of stakeholders.
				There is no framework for monitoring or managing fishery performance, but there is a harvest strategy in place to regulate catch rates of target species.
				Management is focused on input and output controls and are effective.
Principle 1 (target stocks)	8 of 11 2 N/A	1 of 11	0 of 11	Data collection systems for target stocks appear to be operating effectively and regular stock assessments indicate that stocks are being sustainably managed.
				The biological stock of the primary target species, Australian sardine, has been assessed as sustainable. The Sardine Fishery Harvest Strategy sets out the management actions necessary, using fixed exploitation rates and maintaining biomass above agreed levels, to control the exploitation of sardines and achieve the fishery's ecological, economic and social objectives.
Principle 2 (bycatch and TEPS)	4 of 12	6 of 12 2 N/a	0 of 12	While the fishery's reported interaction with protected species (TEPS), in particular short-beaked common dolphins, have remained low since the introduction of the Code of Practice, there are significant differences in reported interaction rates between trips when observers are present and when observers are absent. Improved data collection and monitoring, management responses, and supporting population studies would be beneficial for the ongoing management of the fishery.
Principle 2 (ecosystem impacts)	0 of 5	5 of 5	0 of 5	While an ecological risk assessment (ERA) has not been done recently, in 2013 the ERA found that at current fishing levels and the management arrangements in place, impacts on the ecosystem are considered to be low, and management responses are likely to be effective in minimising the impact of the fishery on the ecosystem. If fishing effort increases, PIRSA may want to consider conducting a new ERA for the fishery.
EPBC requirements				

Part 12	Meets		Given the low physical impact of fishing gear on the environment, and the management and risk mitigation measures in place, the fishery is not considered to have significant impact to key ecological features identified for the in the fishery's area of operation.
Part 13	Meets		Conditions are recommended for any Part 13 accreditation of the management regime. These conditions (outlined in Section 2 of this report) require PIRSA, amongst other things, to review and further strengthen their management of protected species impacted by the fishery.
Part 13A	Meets		The fishery meets the requirements under Part 13A. Conditions are however recommended under Part13 to manage risks to protected species.
Part 16	Meets		While there is robust management of the target stock and a CoP for the fishery's interaction with protected species that is reviewed annually, there are concerns regarding the management of the fishery's impact on the ecosystem, as well as concerns that there are still some discrepancies in reporting protected species interactions for the fishery. Conditions have been applied to the part 13 to address these concerns of under reporting.

## **SECTION 2: SUMMARY OF ISSUES REQUIRING CONDITIONS**

Part 13 conditions - South Australian Sardine Fishery		
Issue	Condition	
General Management Export decisions relate to the management arrangements in force at the time of any decision(s) made under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). To ensure that the decision(s) remain valid and export approval continues uninterrupted, the Department of Agriculture, Water and the Environment (the department) needs to be advised of any changes that are made to the management regime. This will allow it to assess whether the new arrangements are equivalent to, or better, in terms of ecological sustainability, than those in place at the time of the original decision(s). This includes any operational and legislated amendments that may affect the sustainability of the target species or negatively impact on byproduct, bycatch, EPBC Act protected species or the ecosystem.	Condition A: The operation of the fishery must be carried out in accordance with the management arrangements specified in the <i>Fisheries</i> <i>Management Act 2007</i> (SA); the Fisheries Management (Sardine Fishery) Regulations 2021 (SA); the Fisheries Management (General) Regulations 2017; and the Management Plan for the South Australian Commercial Marine Scalefish Fishery 2014. Condition B: The Department of Primary Industries and Regions of South Australia must inform the Department of Agriculture, Water and the Environment of any intended material changes to the South Australian Sardine Fishery management arrangements that may affect the assessment against which <i>Environment Protection and Biodiversity Conservation Act 1999</i> decisions are made. Condition C: The Department of Primary Industries and Regions of South Australia must inform the Department of Agriculture, Water and the	
	Environment of any intended changes to fisheries legislation that may affect the legislative instruments relevant to this approval.	
Annual reporting It is important that PIRSA produce and present annual reports to the Department. This will allow the Department to monitor the performance of the fishery and its progress in implementing the conditions described in this report throughout the life of the export approval. Annual reports should follow Appendix B to the 'Guidelines for the Ecologically Sustainable Management of Fisheries - 2nd Edition and include: a description of the fishery; management arrangements in place; research and monitoring outcomes; recent catch data for all sectors of the fishery; status of target stock; interactions with EPBC Act protected species; impacts of the fishery on the ecosystem in which it operates; and progress in implementing the Department's conditions described in the previous assessment for the fishery.	<b>Condition D:</b> The Department of Primary Industries and Regions of South Australia must produce and present reports to the Department of Agriculture, Water and the Environment annually, as per Appendix B of the <i>Guidelines for the Ecologically Sustainable Management of</i> <i>Fisheries - 2nd Edition.</i>	

Part 13 conditions - South Australian Sardine Fishery		
Issue	Condition	
Electronic copies of the guidelines are available from the department's website at <a href="http://www.environment.gov.au/resource/guidelines-ecologically-sustainable-management-fisheries">http://www.environment.gov.au/resource/guidelines-ecologically-sustainable-management-fisheries</a> .		
Interactions with protected species An independent research program in 2004-05 found high interaction rates between the South Australian Sardine Fishery and short-beaked common dolphins ( <i>Delphinus delphis</i> ). In response to this discovery, the South Australian Sardine Industry Association (SASIA) implemented the Code of Practice for mitigating the interactions of the South Australian Sardine Fishery with wildlife (the CoP). This seeks to mitigate against any interactions with protected wildlife (including sharks and seals), but with a particular focus on common dolphins. The CoP includes measures to avoid and minimise interactions with protected wildlife and links mortality events to associated responses. This includes operational measures, fishery dependent and independent monitoring, regular independent assessment and improvements guided through the supporting Wildlife Interaction Working Group. The effectiveness of the CoP has been annually reviewed and publicly reported on since 2007. The most recent being by Kirkwood, Goldsworthy & Ward (2020), which observed that dolphin encirclement event rates with and without an observer were 9.5 and 11.8 events per 100 net sets respectively in 2019-20. This included 455 dolphins encirclements for any year since the current data set was established in 2007-2008. Kirkwood et al. also noted that in 2019-20, the dolphin mortality rate with and without an observer was 1.2 and 0.3 dolphin deaths per 100 net sets respectively. This level of reported mortality was a significant improvement on the previous year's results, which saw 15 dolphins reportedly die through interactions with the fishery and mortality rates of with and without an observer of 11.8 and 0.1 dolphin deaths per 100 net sets. The CoP does appear to have significantly reduced the fishery's interactions with common dolphins. The current reported rates of encirclement and mortality events are significantly less than when the CoP was first introduced. The CoP also appears to have been a useful mechanism for iden	<ul> <li>Condition E: The Department of Primary Industries and Regions of South Australia must ensure the most effective measures to mitigate or eliminate interactions with protected species are adopted in the South Australian Sardine Fishery.</li> <li>This should include working with fishing operators and other relevant parties to consider and, where appropriate, trial any suitable technologies or practices identified in the global literature review of mitigation measures in small pelagic fisheries project (FRDC Project 2020-049).</li> <li>Condition F: By June 2022, the Department of Primary Industries and Regions of South Australia must consider and respond to the outcomes of the "Assessment of the sustainability of common dolphin interactions with the South Australian Sardine Fishery" report (FRDC Project 2019-063).</li> <li>This should include an assessment of any required changes or improvements to existing fishery management arrangements and protected species mitigation/monitoring methods.</li> <li>Condition G: By April 2024, the Department of Primary Industries and Regions of South Australia must implement suitable measures to ensure accurate information on protected species mortality levels is collected in the fishery and that underreporting is not occurring. In satisfying this condition, the Department of Primary Industries and Regions of South Australia must: a) by June 2022, publish a plan detailing how it will respond to this issue, including any systems, controls, or management arrangements that will be implemented and associated</li> </ul>	
mortalities) and potential underreporting of interactions (see below) is also troubling.	timeframes. The plan will need to be made publicly available	

Part 13 conditions - South Australian Sardine Fishery		
Issue		Condition
In accrediting a fishery under Part 13 of the EPBC Act, the Minister for the Environment needs to be satisfied that the associated management plan, regime, or policy requires fishers to take all reasonable steps to ensure members of a listed marine species are not killed or injured as a result of the fishing.		and a copy provided to the Department of Agriculture, Water and the Environment.
		by April 2024, provide evidence that suitable systems have been implemented to ensure accurate information on protected
The Department acknowledges that PIRSA and the Wildlife Interaction Working Group has responded to the 2018-2019 spike in mortalities by undertaking the following:	ร เ	species mortality levels is collected in the fishery and that underreporting is not occurring.
- Initiating a review of the effectiveness of the CoP (as set out in Kirkwood et al. 2020)		
- Temporarily increasing observer coverage to 20% of all nets set (although this objective was frustrated by the outbreak of COVID and has recently been scaled back to 10% of all nets set)		
- Amending the CoP to incorporate new training and education requirements;		
- Working with the South Australian Sardine Industry Association to initiate two supporting research projects (see below).		
FRDC Project 2020-049 aims to evaluate acoustic detection and deterrent devices for the mitigation of dolphin interactions in purse-seine fisheries. This work is being undertaken by the University of Adelaide and is expected to be finalised in early 2022. Once complete, this project will provide a comprehensive review of methods used to mitigate interactions with dolphins in purse-seine fisheries worldwide.		
<b>Condition E</b> has been developed to ensure the outcomes from this project are factored into any future strategies developed for the South Australian Sardine Fishery. It also acknowledges the existing culture of review and improvement that is already present in the fishery.		
The University of Adelaide is also progressing the "Assessment of the sustainability of common dolphin interactions with the South Australian Sardine Fishery" report (FRDC Project 2019-063). This seeks to estimate the abundance of common dolphins in core fishing areas of the South Australian Sardine Fishery, collect critical life history information from museum specimens and develop population models to evaluate bycatch limits of common dolphins. All of which will help develop a more accurate picture of the sustainability of the fishery's interactions with common dolphins.		
<b>Condition F</b> has been developed to ensure the outcomes from this project are factored into any future strategies developed for the South Australian Sardine Fishery.		
Ongoing concerns have been raised regarding the reporting accuracy of protected species interactions when observers are not present on boats in the fishery.		

Part 13 conditions - South Australian Sardine Fishery		
Issue	Condition	
In their 2020 report, (Kirkwood, Goldsworthy & Ward, 2020) noted that considerable uncertainties still remain about fishing behaviour when independent observers are not present on vessels. Specifically, " <i>in the absence of observers, reported rates of dolphin mortalities were lower and fishing behaviour was different, providing uncertainty about how the CoP was applied</i> ".		
Kirkwood also noted "significantly higher mortality estimates from observer data have occurred consistently since 2007-08" and "observed mortality events and dolphin mortality rates were four times those reported in the absence of an observer". In their earlier 2019 assessment, Goldsworthy et al. (2019) also noted "these results are indicative of significant under-reporting of dolphin mortalities in the absence of an observer". This appears to be an ongoing issue, with similar observations made in the 2013, 2015, 2016, 2017, 2018 and 2019 annual assessment reports.		
The accurate identification and reporting of any interactions with protected species is a crucial element in identifying the efficiency of fishery management arrangements. Any potential under reporting of such interactions is a serious issue and needs to be addressed.		
<b>Condition G</b> has been developed to ensure accurate information on protected species mortality levels is collected in the fishery and that any underreporting is not occurring.		

## Assessment history:

Information on previous assessments for the South Australian Sardine Fishery is available on the Department's website at <u>https://www.environment.gov.au/marine/fisheries/sa/sardine</u>

1<sup>st</sup> assessment finalised – February 2006. Nine conditions and two recommendations.

2<sup>nd</sup> assessment finalised – April 2009. Five conditions and seven recommendations.

3<sup>rd</sup> assessment finalised – August 2012. Four conditions, five recommendations, and one Part 13 condition (three parts: A, B, C).

4<sup>th</sup> assessment finalised – August 2016. Three recommendations, one Part 13 condition (three parts: A, B, C).

The Part 13 accreditation was remade in December 2018, due to changes to South Australian legislation. The condition applied to the Part 13 in 2016 remained with no changes.

## Fishery reporting:

Annual report – reported through the State of the Fisheries reports. – See page 176 of Status reports of South Australian Fisheries

Protected species interactions – Reported publicly in the annual State of the Fisheries reports (see link above).

## Key links:

Fishery information

Fishery information page on agency website -

#### Management plan

South Australian Commercial Marine Scalefish Fishery Management Plan

Commercial Marine Scalefish Fishery, PART B – Management arrangements for the taking of sardines

Enforcing legislation

Fisheries Management (Sardine Fishery) Regulations 2021.

## Ecological Risk Assessment

<u>Code of Practice 2021 - For mitigating interactions with Wildlife and the South Australian Sardine</u> <u>Fishery</u>

#### Stock assessments

- Stock assessment of Australian Sardine (Sardinops sagax) off South Australia 2019
- Spawning biomass of Sardine, Sardinops sagax, in waters off South Australia in 2020

## Other

South Australian Recreational Fishing Survey 2013/14 (Fisheries Victoria, 2015).

## SECTION 3: DETAILED ANALYSIS AGAINST THE GUIDELINES

Guidelines criteria	Comment
THE MANAGEMENT REGIME	
The management regime does not have to be a forr management policies and programs. The regime sh	nal statutory fishery management plan as such, and may include non-statutory management arrangements or ould:
Be documented, publicly available and	Meets – Arrangements are documented, publicly available and transparent.
transparent.	The management arrangements for the South Australian Sardine Fishery are contained in publicly available legislation:
	Fisheries Management Act 2007 (SA)
	Fisheries Management (General) Regulations 2017 (SA)
	<ul> <li>Fisheries Management (Sardine Fishery) Regulations 2021 (SA)</li> </ul>
	<ul> <li>Fisheries Management (Miscellaneous Developmental Fishery) Regulations 2013 (SA)</li> </ul>
	<ul> <li>Fisheries Management (Miscellaneous Fishery) Regulations 2015 (SA)</li> </ul>
	Recreational fishing (excluding Aboriginal traditional fishing) is managed separately under the <i>Draft</i> <i>Management Plan for Recreational Fishing in South Australia.</i> The Fisheries Management Act allows PIRSA to develop separate management plans for Aboriginal traditional fishing.
	The South Australian Sardine Fishery is part of the South Australian Marine Scalefish Fishery. New regulations (Fisheries Management (Sardine Fishery) Regulations 2021) for the fishery came into force on 1 July 2021. There is a <u>management plan</u> in place for the fishery, and is available on the PIRSA website at <a href="https://www.pir.sa.gov.au/fishing/commercial_fishing/fisheries/sardine_fishery">https://www.pir.sa.gov.au/fishing/commercial_fishing/fisheries/sardine_fishery</a> .
Be developed through a consultative process	Meets – Consultative processes involve a wide range of stakeholders and the public.
providing opportunity to all interested and affected parties, including the general public.	The management arrangements for the fishery have been developed in consultation with industry and other stakeholders, and where substantive management changes are proposed, proposals of the changes are released for public comment.
	The fishery utilises the expertise of the Wildlife Interaction Working Group (WIWG) that includes members from the South Australian Sardine Industry Association (SASIA), PIRSA, and South Australia's Department for Environment and Water (DEW), as well as a representative from the Conservation Council of South Australia.

Ensure that a range of expertise and community interests are involved in individual fishery management committees and during the stock assessment process.	Meets - Expert panel with a range of interests oversees matters including stock assessments.Target species are subject to regular formal stock assessments undertaken by South Australian Research and Development Institute (SARDI) stock assessment scientists.The management strategies are prepared through stakeholder consultation, adhering to state legislation.The management arrangements are undertaken in accordance with the consultative process described in the 2021 fishery application submission.
Be strategic, containing objectives and performance criteria by which the effectiveness of the management arrangements are measured.	Partially meets - No strategic management framework currently in place, but current management is likely to be effective. Broad management objectives and performance criteria are included in the <i>Fisheries Management Act 2007</i> (SA) although they are not regularly used to assess the fishery's effectiveness. Licence conditions provide more specific regulation and management of harvesting operations. Fishery performance is monitored via compliance programs and monthly logbook reports.
Be capable of controlling the level of harvest in the fishery using input and/or output controls.	Meets –harvest is effectively controlled using a range of input and output controls. There is a total allowable catch (TAC) for the target species, Australian sardine. Australian sardine stocks are considered sustainable and recent catches have been below the TAC (Ward, T. M. et al (2019)).Target and limit reference points are clearly articulated in the fishery's management plan, which incorporates a harvest strategy. The management plan provides a clear decision-making framework that is underpinned by robust scientific assessment of target stock status and consideration of ecological risks associated with fishing activity. Other harvest controls include restrictions on the total number of fishing licences in the fishery, where and when fishers can operate, and what boats and gear they can use. Mandatory use of Vessel Monitoring Systems on all
	boats also provides PIRSA with information about vessel locations and activities which support enforcement of management rules. The harvest strategy requires annual reviews of sardine spawning biomass, the daily egg production method (DEPM) surveys and mean sardine size to determine yearly TACs.
Contain the means of enforcing critical aspects of the management arrangements.	<b>Meets - there are effective means of enforcing management arrangements.</b> The fishery has effective enforcement capability. Compliance measures included random and targeted inspections of harvesting operations to ensure license and permit holders met agreed conditions. PIRSA monitors monthly catch and effort logbooks to determine levels of sardine harvested. There are also options for the broader public to comment on non-compliance through PIRSA Fishwatch service.

Provide for the periodic review of the performance of the fishery management arrangements and the management strategies, objectives and criteria.	Meets – Regular performance reviews built into management. An independent research program in 2004-05 found high interaction rates between the South Australian Sardine Fishery and short-beaked common dolphins. In response to this discovery, the South Australian Sardine Industry Association (SASIA) implemented a <i>Code of Practice for mitigating the interactions of the</i> <i>South Australian Sardine Fishery with wildlife</i> (the CoP) to mitigate against interactions with all protected wildlife (including sharks and seals), but with a special focus on short-beaked common dolphins. PIRSA continued with its independent observer program and commenced compliance monitoring of fishers' adherence to the CoP. The effectiveness of the CoP has been reviewed by independent scientists and publicly reported on annually since 2007. The CoP has been refined since its inception and appears to have significantly reduced interaction rates.	
Be capable of assessing, monitoring and avoiding, remedying or mitigating any adverse impacts on the wider marine ecosystem in which	Partially meets – impacts on the wider marine environment have not been formally assessed but are likely to be negligible. While the ecological risk assessment (ERA) conducted in 2013 did not specially look at the wider marine	
the target species lives and the fishery operates.	ecosystem, there are some measures to address risks to the ecosystem through the fishery's revised management plan (2015), and through complementary measures undertaken by industry through the CoP. PIRSA, in consultation with licence holders, other state government agencies, local councils, and other key stakeholders has implemented management actions to minimise the risks to the environment in which the fishery operates.	
	The department encourages PIRSA considers undertaking a new ERA for the fishery.	
Requires compliance with relevant threat	Meets – Compliant with all relevant plans.	
abatement plans, recovery plans, the National Policy on Fisheries Bycatch, and bycatch action strategies developed under the policy.	The fisheries operate in both state and Commonwealth areas. Fishing in Commonwealth waters is managed by the South Australian Government in accordance with South Australian legislation under an Offshore Constitutional Settlement between the Australian Government and the South Australian Government.	
	The fisheries are compliant with the national <u>Recovery Plan for the Grey Nurse Shark</u> , the national <u>Recovery</u> <u>plan for the White Shark</u> , and the national <u>Recovery Plan for Australian Sea Lion</u> . The fisheries are also compliant with the <u>Threat abatement plan for the impacts of marine debris on the vertebrate wildlife of</u> <u>Australia's coasts and oceans</u> .	

**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

<b>1.1.1</b> 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.	<ul> <li>Meets – reliable information appropriate to the scale of the fishery is collected via observers, logbooks and other systems.</li> <li>All commercial fishers in the fishery are required to report retained catch and fishing effort in logbooks, and interactions with protected species using Wildlife Interaction Forms. All Wildlife Interaction Forms are compiled and provided as <u>Wildlife Interaction Reporting Across South Australian Fisheries</u> advice to SARDI annually as part of EPBC Act requirements.</li> </ul>
	Vessel Monitoring Systems are also used on all commercial fishing vessels to track vessel location and activities and to assist PIRSA to validate reported information (via data auditing and via compliance inspections).
Assessment	

<b>1.1.2</b> 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	<b>Meets – Regular stock assessments and stock status evaluations are done for the fishery.</b> Sardines have constituted around 98% of the total retained catch for the fishery by weight over the last five years.
to identify any reduction in biological diversity and /or reproductive capacity. Review should take place at regular intervals but at least every three years.	Under the criteria outlined in the harvest strategy for the fishery, the Southern stock of Australian sardine in 2020 is classified as sustainable. The estimate of spawning biomass obtained using the daily egg production method (DEPM) survey in 2020 was 378,923 (318,777–439,068) tonnes, which is the highest on record (1995-2020) and above the upper target reference point of 190,000 tonnes in the Management Plan (Ward et al. 2019).
	Estimates of spawning biomass between 2003 and 2014 ranged between 152,000 and 263,000 tonnes. In 2014 the estimate of spawning biomass was 244,000 tonnes and the target reference point for the fishery was 150,000 tonnes (Ward et al. 2015b).
	Catches have ranged between approximately 30,000 and 34,000 tonnes annually since 2007, therefore annual exploitation rates are unlikely to cause the stock to become recruitment overfished and there are no resource concerns for Australian sardines in South Australia. The South Australian Sardine Fishery is classified by the South Australian Research and Development Institute (Ward et al. 2015b) and the Status of Australian Fish Stocks (Ward et al. 2014) as sustainable.
	The model estimate of spawning biomass for 2020 of 378,923 tonnes was also above the target reference point. The exploitation rate for spawning biomass was approximately 13%, which is below the maximum rate at Tier 2 of 22.5% identified in the Management Plan. These findings are consistent with other recent assessments of the status of the southern stock of sardine which classified the stock as sustainable.
	The strongest single piece of empirical evidence indicating that the southern stock of sardine should be classified as sustainable is that the spawning area recorded during the 2020 survey was 75,678 square kilometers, which is the largest on record. It is widely recognised that spawning area is strongly correlated with the size of the spawning stock of sardine (e.g. Mangel and Smith 1990, Gaughan et al. 2004). The 2020 DEPM report from SARDI suggests variations in estimates of spawning biomass are driven primarily by fluctuations in the spawning area (Ward et al. 2020).

<b>1.1.3</b> The distribution and spatial structure of the stock(s) has been established and factored into management responses.	Meets – Stock structure understood and all impacts considered. Stock assessment reports on the fishery have been published annually since 1999. Sardine occurs off the west coasts of North and South America, off Southern Africa, around Japan and off the southern coasts Australia and New Zealand. For the purposes of fisheries management, there are four separate biological stocks in Australia, including a single biological stock occurring off South Australia and western Victoria.
	This is the only stock fished by the South Australian Sardine Fishery (Kirkwood, Goldsworthy & Ward, 2020). While changes in management have driven age composition of cates, a coherent picture of the spatial distribution by size and age is variable in the southern stock of sardine. Sardine taken from the Gulf zone are usually younger and smaller. The distribution and abundance of egg has varied considerably, however the distribution in South Australian waters has been dominate (Ward et al. 2020).
<b>1.1.4</b> 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.	<b>Meets – reliable estimates are available.</b> Recreational and Indigenous harvest of the southern Australian stock of sardines is negligible. The majority of commercial harvest of this stock is taken by the South Australian Sardine Fishery, with much smaller catches in Port Phillip Bay in Victoria (Ward et al. 2020).

<b>1.1.5</b> There is a sound estimate of the potential productivity of the fished stock/s and the proportion that could be harvested.	Meets – Sound estimate of productivity is available.
	The most recent assessment of Australian sardine stocks in South Australian waters found the stock was sustainable (Ward et al. 2020). The modelled estimate of spawning biomass in 2019 was above the target reference points and the exploitation rate for spawning biomass was approximately 18%, which is below the maximum rate at Tier 2, of 22.5% (as outlined in the fishery's management plan).
	The stock assessment also indicates that the harvest strategy (2014) is appropriate for a low-trophic species such as Australian sardines in Australian waters, and that exploitation rates of below 30% are likely to ensure stocks remain above the target and limit reference points over a 50 year time period.
	The stock assessment also indicates that the maximum exploitation rate in the current harvest strategy, of 25% (Tier 1) was established as a precautionary level to reflect the level of information available at the time of the harvest strategy implementation in 2014. The harvest strategy further prescribes a limit reference point of 75,000 tonnes. If spawning biomass is determined to fall below this level, the fishery will be closed.
	The harvest strategy requires annual reviews of sardine spawning biomass, the daily egg production method (DEPM) surveys and mean sardine size to determine yearly TACs.
	With regard to ecosystem impacts it is noted that the quota levels set for the fishery has been within the levels set out in the harvest strategy. The most recent report from SARDI estimates the 2020 spawning biomass (SpB) at 378,923 tonnes. This estimate is the highest on record (1995-2020) and is almost double the upper target reference point described in the harvest strategy (190,000 tonnes).
	Consistent with the harvest strategy rules, a 2021 TAC of 42,750 tonnes with an estimate of SpB of 378,923 tonnes equates to an exploitation rate of 11.2%. This exploitation rate is below the maximum exploitation rate at set in the harvest strategy (22.5%) and below a target exploitation rate of 33% described for sardines in an independent assessment of Australian small pelagic fisheries.
Management responses	
1.1.6 There are reference points (target and/or	Meets – Robust reference points are in place.
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.	The current harvest strategy indicates a precautionary baseline TAC of 30,000 tonnes for sardines be maintained while the latest spawning biomass (SpB) estimate remained between 150,000 and 300,000 tonnes, corresponding to exploitation rates of 20% and 10%, respectively. The harvest strategy allows for increased exploitation rates (and TACs) as the level of understanding of the sardine stock improves by increasing the frequency of surveys and stock assessments in three tier levels. The required monitoring for each of the three tier levels is:
	Tier 3 - biennial stock assessment and biennial fishery survey (alternating each year)
	Tier 2 - biennial stock assessment and an annual fishery survey
	Tier 1 - annual stock assessment and annual fishery survey.

<b>1.1.7</b> There are management strategies in place capable of controlling the level of take.	Meets – there are management strategies in place to control the level of take. Harvest levels are managed through TACS, limits on the number of fishing licences, number of fishers operating under each licence, the gear types able to be used, and area closures .	
<b>1.1.8</b> Fishing is conducted in a manner that does not threaten stocks of byproduct species.	Partially Meets – while the fishery is a highly selective fishery, interactions with protected species also occur.	
	The fishery is highly selective and targets sardines using purse sein nets. While there are interactions with bycatch occurring in the fishery, management arrangements and input and output controls in place for the fishery as discussed in this assessment report reduce the level of risk.	
	The introduction of the CoP has reduced interactions with bycatch. The effectiveness of the CoP has been annually reviewed and public ally reported on since 2007. The most recent being by Kirkwood, Goldsworthy & Ward (2020).	
	The ERA conducted in 2013 found that the risk of the fishery interaction with protected species was high, given the biological nature of the dolphins and the target species. PIRSA has considered undertaking a new ERA for the fishery if the management plan review recommends one is required. The department recommends that PIRSA undertake a new ERA for the fishery.	
(Guidelines 1.1.1 to 1.1.7 should be applied to byproduct species to an appropriate level)		
<b>1.1.9</b> The management response, considering uncertainties in the assessment and	Meets – high chance that the fishery will be conducted at catch levels that maintain ecologically viable stock levels at current fishing levels.	
precautionary management actions, has a high chance of achieving the objective	The harvest strategy for the fishery contains the level of take appropriate.	
	PIRSA has implemented general improvements to reporting functions such as cross checking between logbooks and Vessel Monitoring System data, as well as quarterly catch and effort logbook compliance audits conducted to identify and follow up on missing logbook returns, are now in place for all South Australian fisheries.	
	PIRSA has implemented general improvements to reporting functions such as the CoP, observers, improvements made to Wildlife Interaction Forms, and education to all fishers.	
If overfished, go to Objective 2:		
If not overfished, go to PRINCIPLE 2:		
<b>Objective 2</b> - 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.		

#### Management responses

<b>1.2.1</b> 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.	Not applicable. Target species are not overfished.
<b>1.2.2</b> 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.	Not applicable. There are no overfished stock in the fishery.
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

<b>2.1.1</b> Reliable information, appropriate to the scale of the fishery, is collected on the composition and abundance of bycatch.	Partially Meets - Up-to-date logbooks and reliable records of interactions with endangered, threatened, or protected species, however there is some concerns that all mortalities are not reported.
	All commercial fishers in the fishery are required to report all interactions with protected species to PIRSA using dedicated Wildlife Interaction Forms in addition to logbooks and observer reports.
	An independent research program in 2004-2005 found high interaction rates between the fishery and short- beaked common dolphins. In particular, interactions between short-beaked common dolphins and the fishery occur when the dolphins are feeding on schools of sardines, are encircled or become entangled in the purse- seine nets. These interactions can result in catch loss to the fishers (as they try to release the dolphins) and can result in harm to the dolphins. Generally, dolphin mortalities are caused by stress, drowning or crushing, following entanglement in the net gear.
	In response to this discovery, SASIA implemented the <i>Code of Practice for mitigating the interactions of the South Australian Sardine Fishery with wildlife</i> (the CoP). This seeks to mitigate against any interactions with protected wildlife (including sharks and seals), but with a particular focus on short-beaked common dolphins.
	Vessel Monitoring Systems are used on all boats in the fishery and allow PIRSA to better undertake inspections and to validate where and when fishing is occurring.
	An ecological risk assessment was conducted in 2013 that considered the fishery's impact on target, byproduct, bycatch and protected species. Risks to all species (retained and non-retained) ranged between negligible to medium. Risks to the ecosystem, including trophic structure and habitat disturbance, were all low. Risks to the broader environment were all low except for brine discharge, which was rated high. Measures to address these risks have been addressed through the fishery's revised management plan (2015), and through complementary measures undertaken by industry through the CoP.
Assessment	

<b>2.1.2</b> There is a risk analysis of the bycatch with respect to its vulnerability to fishing.	Meets – Risk analysis of bycatch vulnerability has been conducted through annual review of the CoP.
	Net fishing is generally viewed as a less selective form of fishing. However for this fishery selectivity is considered to be less of an issue as the net is set around a school of fish and quickly retrieved. This minimises the length of the fishing event (estimated by PIRSA to be less than 60 minutes (PIRSA pers. comm 2021)) and restricts the interaction potential of the fishery to species inhabiting the immediately fished area. As seine nets are used to target pelagic schools of sardines their use also improves the specificity of the operation as a whole.
	The CoP is continually reviewed by the WIWG. Current CoP operational procedures with bycatch per net-set include:
	Avoidance procedures
	<ul> <li>Active searching for short-beaked common dolphins prior to setting the net</li> </ul>
	<ul> <li>Immediate reporting of short-beaked common dolphins sighted to skipper</li> </ul>
	<ul> <li>Delaying and potentially relocating fishing activity if dolphins are sighted.</li> </ul>
	Release procedures
	<ul> <li>Active searching for dolphins after setting the net (during hauling)</li> </ul>
	Active searching after lights are switched on and during pumping
	Immediate action to release encircled short-beaked common dolphins
	Abort fishing if short-beaked common dolphins cannot be released.
	The effectiveness of these actions in mitigating dolphin interactions will be observed as they are rolled out over time. If any trials of mitigation measures are found to identify more effective dolphin mitigation measures, such measures will be considered for implementation in the fishery's management arrangements.
	PIRSA continues to monitor the levels of interactions quarterly through a fishery-specific protected species working group. This group monitors the level of interactions and differences between the interaction rates reported by fishers in logbook and those reported by independent observers, while also reviewing international standards for mitigation of interactions with marine mammals.
Management responses	

<b>2.1.3</b> 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.	Meets – risk mitigation measures are in place, reviewed and updated, and current management arrangements appear to be effective.
	The effectiveness of the CoP has been annually reviewed and publicly reported on since 2007. The most recent being by Kirkwood, Goldsworthy & Ward (2020), which observed that dolphin encirclement event rates with and without an observer were 9.5 and 11.8 events per 100 net sets respectively in 2019-2020. This included 455 dolphins encircled in 122 dolphin encirclement events. This represented the highest number of encirclements and encirclements for any year since the current data set was established in 2007/08.
	Following the high levels of short-beaked common dolphins mortalities recorded over the period of 2018 to 2019, PIRSA and the South Australian Sardine Industry Association (SASIA) undertook a review of the industry CoP which included the initiation of research projects, including a review of literature to examine dolphin mitigation measures applied in other jurisdictions; trials of mitigation measures deemed to be most effective in the fishery based on the literature review of mitigation measures in other jurisdictions; and a population estimate of short-beaked common dolphins numbers in waters adjacent to South Australia.
	The following immediate management actions were also implemented to the CoP:
	The level of observer coverage for the 2020 calendar year was increased to 20% of net sets
	training and education requirements for crew aboard vessels in the fishery
	updates to reporting requirement in Wildlife Interaction Forms
	The revised SASIA Code of Practice (CoP) has been implemented, although the effectiveness of the revised management actions will be observed as they are rolled out. The 2021 fishery submission notes that while interactions generally remain low compared with the pre-CoP data, there are some discrepancies between data recorded by observers, and when observers are not on-board (see data in 2.1.1 in this report). The overall discrepancy for encirclement events was that the reported number of short-beaked common dolphins encircled was generally higher when an observer is present.
	The department has set conditions at <b>section 2</b> of this report which aim to improve reporting discrepancies in the fishery.
<b>2.1.4</b> An indicator group of bycatch species is monitored.	Partly meets – no monitoring of any specific indicator group of species is in place, but management is likely to be sustainable.
	Currently there is no bycatch indicator species or species groups that have been identified for monitoring.
	Given the targeted nature of the fishery, the relatively low impacts associated with the various input and output controls, the current management arrangements are likely to be effective in reducing the impact on bycatch in the fishery.

<b>2.1.5</b> There are decision rules that trigger additional management measures when there are significant perturbations in the indicator species numbers.	Not applicable. There is no bycatch indicator species group.	
<b>2.1.6</b> The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.	<b>Meets – management arrangements in place effectively manage risks to bycatch species.</b> While there are interactions with bycatch occurring in the fishery, management arrangements and input and	
	The introduction of the CoP has reduced interactions with bycatch. The effectiveness of the CoP has been annually reviewed and publicly reported on since 2007. The most recent being by Kirkwood, Goldsworthy & Ward (2020).	
	While interactions in the fishery reduced there have been concerns raised that there is reporting discrepancies between fishers when observers are present. The department has set conditions at <b>section 2</b> of this report which aim to improve reporting discrepancies in the fishery.	
<b>Objective 2 -</b> 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		
<b>2.2.1</b> Reliable information is collected on the interaction with endangered, threatened or protected species and threatened ecological communities.	Meets – Up-to-date logbooks and reliable records of interactions with endangered, threatened, or protected species via Wildlife Interaction Forms.	
	All commercial fishers in the fishery are required to report all interactions with protected species using Wildlife Interaction Forms. Vessel Monitoring Systems are used on all boats in the fishery and allow PIRSA to better undertake inspections and to validate where and when fishing is occurring.	
	The introduction of the CoP has reduced interactions with bycatch. While interactions in the fishery reduced there have been concerns raised that there is reporting discrepancies between fishers when observers are present. The department has set conditions at section 2 of this report which aim to improve reporting discrepancies in the fishery.	
Assessments		

<b>2.2.2</b> There is an assessment of the impact of the fishery on endangered, threatened or protected species.	Partially meets – ERA conducted in 2013 and risk is low but going concerns on data validation.
	Since 2004, the fishery has had mortality events with protected species, primarily short-beaked common dolphins.
	The ecological risk assessment conducted in 2013 found short-beaked common dolphins were potentially at high risk from the fishery. This risk rating was due to the biology of the species and the nature of interactions (feeding patterns).
	Dolphin entrapments in the fishery fluctuate. This is partly due to the operational constraints of the fishery which include spatial management, relatively short fishing events, and minimal soak times for the nets. When a dolphin does interact with a seine net, the nets have escape mechanisms that can release the dolphins usually without harm (PIRSA pers. comm 2021).
	The University of Adelaide is undertaking the "Assessment of the sustainability of common dolphin interactions with the South Australian Sardine Fishery" report (FRDC Project 2019-063). This seeks to estimate the abundance of short-beaked common dolphins in core fishing areas of the South Australian Sardine Fishery, collect critical life history information from museum specimens and develop population models to evaluate bycatch limits of common dolphins. All of which will help develop a more accurate picture of the sustainability of the fishery's interactions with short-beaked common dolphins.
	The 2021 review of the CoP for the fishery found that while the 2019-2020 season had the highest set nets, the reporting of interactions by fishers was also improved, and modifications to the CoP resulted in total mortality of 5 dolphins out of 455 interactions.
	PIRSA has engaged the University of Adelaide to undertaking the "Assessment of the sustainability of common dolphin interactions with the South Australian Sardine Fishery" report (FRDC Project 2019-063). This seeks to estimate the abundance of short-beaked common dolphins in core fishing areas of the South Australian Sardine Fishery, collect critical life history information from museum specimens and develop population models to evaluate bycatch limits of common dolphins. All of which will help develop a more accurate picture of the sustainability of the fishery's interactions with short-beaked common dolphins.
	However, there are concerns that the actual level of mortalities is not being reported by fishers. The conditions being applied for the Part 13 at section 2 are aimed to address underreporting and improve this for the fishery over the approval period.
<b>2.2.3</b> There is an assessment of the impact of the	Not applicable.
fishery on threatened ecological communities.	There are no threatened ecological communities in the area of the fishery.
Management responses	

<b>2.2.4</b> There are measures in place to avoid capture and/or mortality of endangered, threatened or protected species.	Meets – management arrangements are in place regarding protections for species protected under the EPBC Act.
	Current risk mitigation measures include the CoP, limits on the number of available fishing licences, spatial, temporal and gear restrictions, including mesh-size limits.
<b>2.2.5</b> There are measures in place to avoid impact	Not applicable.
on threatened ecological communities.	There are no threatened ecological communities in the fishery.
<b>2.2.6</b> The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.	Meets - high chance that the fishery will be conducted in a manner that avoids mortality of, or injuries to, endangered, threatened, or protected species.
	PIRSA and the South Australian Sardine Industry Association (SASIA) undertook a review of the industry Code of Practice (CoP) which included the initiation of research projects including a review of literature to examine dolphin mitigation measures applied in other jurisdictions; trials of mitigation measures deemed to be most effective in the fishery based on the literature review of mitigation measures in other jurisdictions; and a population estimate of dolphin numbers in waters adjacent to South Australia.
	A revised CoP has been implemented, incorporating training and education requirements for crew aboard vessels in the fishery. The operational procedures per net-set include:
	Avoidance procedures:
	1) Active searching for dolphins prior to setting the net
	2) Immediate reporting of dolphins sighted to skipper
	3) Delaying and potentially relocating fishing activity if dolphins are sighted.
	Release procedures:
	1) Active searching for dolphins after setting the net (during hauling)
	2) Active searching after lights are switched on and during pumping
	3) Immediate action to release encircled dolphins
	4) Abort fishing if dolphins cannot be released.
	All interactions, including sightings that delay or require the relocation of net-sets, encirclement and releases, and mortalities are to be reported on Wildlife Interaction Forms, and submitted to SARDI.
Objective 3 - The fishery is conducted, in a manner	r that minimises the impact of fishing operations on the ecosystem generally.
Information requirements	

<b>2.3.1</b> Information appropriate for the analysis in 2.3.2 is collated and/or collected covering the	Partially meets – Formal systems for data collection are not in place but risks to ecosystems and the environment are likely to be low.
fishery's impact on the ecosystem and environment generally.	The ERA conducted in 2013 did not specifically consider habitats or ecosystem processes that may be impacted by the fishery. The purse sein nets are set in coastal and shelf waters at depths above 200 meters. Coastal and shelf waters are typically highly dynamic and inhabited by species that are adapted to a high degree of disturbance from currents and waves. This, coupled with the small number of fishers and short fishing season mean there is likely to be negligible impact from the fishery on habitats and ecosystems.
Assessment	
<b>2.3.2</b> Information is collected and a risk analysis, appropriate to the scale of the fishery and its	Partially meets – while an ERA has been conducted for the fishery the focus was not on ecosystems potentially impacted by the fishery. However, risks are likely to be low at current fishing levels.
potential impacts, is conducted into the susceptibility of each of the following ecosystem components to the fishery.	An ecological risk assessment conducted in 2013 did not explicitly consider impacts on habitats or ecosystem processes that may be impacted by the fishery. Risks to the ecosystem, including trophic structure and habitat disturbance, were all low Risks to the broader environment were all low except for brine discharge, which was
1. Impacts on ecological communities	rated high. Measures to address these risks have been addressed through the fishery's revised management plan (2015), and through complementary measures undertaken by industry through the CoP.
Ecologically related, associated or dependent species	PIRSA has advised that when the management plan is revised they will consider undertaking a new ERA for the fishery if it has been identified as being required.
• Water column communities	The department recommend PIRSA considers undertaking a new ERA for the fishery.
2. Impacts on food chains	
• Structure	
Productivity/flows	
3. Impacts on the physical environment	
Physical habitat	
• Water quality	
Management responses	

<b>2.3.3</b> Management actions are in place to ensure significant damage to ecosystems does not arise from the impacts described in 2.3.1.	<b>Partly meets – Management actions being developed.</b> There are some measures to address risks to the ecosystem through the fishery's revised management plan (2015), and through complementary measures undertaken by industry through the CoP. PIRSA, in consultation with licence holders, other state government agencies, local councils, and other key stakeholders has implemented management actions to minimise the risks to the environment in which the fishery operates. The department recommend PIRSA considers undertaking a new ERA for the fishery.
<b>2.3.4</b> 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.	Partially meets – There is no framework for monitoring the ecosystem or responding to management triggers. While there are no decision rules in place, there are some measures to address risks to the ecosystem through the fishery's revised management plan (2015), and through complementary measures undertaken by industry through the CoP.
<b>2.3.5</b> The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.	<ul> <li>Partially meets – while the ecological risk assessment did not specifically look at the ecological impacts, the fishing method used in the fishery is likely to have a low impact on the dynamics of ocean environments.</li> <li>Fishing methods involves active hauling and retrieval of seine nets (non-meshing). Because the nets are set around visible schools of fish and immediately hauled, with little time in the water.</li> <li>With current levels of fishing, these measures in the fishery are likely to be effective. Future ERAs should however consider all ecological impacts, particularly if fishing levels increase.</li> </ul>

## SECTION 4: ASSESSMENT AGAINST 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 – Identifying and monitorin	g biodiversity and mak	ing bioregional plans
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	Section 176 Bioregional Plans	Comment
(5)	Minister must have regard to relevant bioregional plans	Meets.
		While the fishery operates within both the South-east and South-west Marine Regions, most fishing effort occurs in the Spencer Gulf Shelf Province (Provincial Bioregion 33) in the South-west Marine Region.
		The Marine bioregional plan for the South-west Marine Region 2012 has identified that there are three key ecological features present in this area of the fishery. These are ancient coastline at 90-120 m depth, upwellings around the Eyre Peninsula and aggregations of small pelagic fish. Given the low impact fishing methods used in this fishery and the mitigation measures in place, the expected impact to key ecological features is considered low.

## Part 13 – Species and communities

Accreditable plan, regime or policy (Division 1, Division 2, Division 3, Division 4)	Comment
s. 208A (1) (a-e) , s.222A (1) (a-e), s.245 (1) (a-e), s.265 (1) (a-e) Does the fishery have an accreditable plan of management, regime or policy?	<b>Yes</b> , there is an accreditable management regime. The regime was last accredited under Part 13 in 2018. However, a new Part 13 accreditation will apply for this fishery.
Division 1 Listed threatened species, Section 208A Minister may accredit plans or regimes	Comment
(f) Will the plan, regime or policy require fishers to take all reasonable steps to ensure that members of listed threatened species (other than	Yes, there are specific measures in place to mitigate the risk to protected species.
conservation dependent species) are not killed or injured as a result of the fishing?	The fishery's management strategy does not permit fishers to take protected species, including listed threatened species, and all interactions with protected species must be reported. The South Australian fisheries regulations, and the CoP, outlines management measures for gear in the fishery, to reduce the risk of mortality of listed threatened species. There are measures in place for common

	dolphins, such as a CoP, onboard observers and specific gear restrictions in or near critical habitat areas for common dolphins.
	The fishery's management regime was accredited in 2018. However, a new Part 13 accreditation will apply for this fishery, with conditions applied to better improve the reporting of interactions with common dolphins.
(g) And, is the fishery likely to adversely affect the survival or recovery in nature of the species?	<b>No</b> . Given the relatively low number of interactions, and given the management measures in place, including the use of BRDs, it is unlikely the fishery will adversely affect the survival or recovery in nature that species.
Division 2 Migratory species, Section 222A Minister may accredit plans or regimes	Comment
(f) Will the plan, regime or policy require fishers to take all reasonable steps to ensure that members of listed migratory species are not killed or injured as a result of the fishing?	<b>Yes</b> , under the fishery's management strategy (link in Section 1), fishers are not permitted to take protected species, including migratory species and all interactions with protected species must be reported. Specific management measures are in place to minimise the fishery's impact on protected species, including the CoP and the mitigation measures contained.
	There have been interactions with Mako Sharks were reported in logbooks or by observers in the fishery over the last 3 years., however, these were reported as live specimens released unharmed.
(g) And, is the fishery likely to adversely affect the conservation status of a listed migratory species or a population of that species?	<b>No</b> , the management arrangements in place such as the CoP, and fisher education on handling and releasing of wildlife, appear to be effective for ensuring the fishery is not likely to adversely affect the conservation status of any listed migratory species.
Division 3 Whales and other cetaceans, Section 245 Minister may accredit plans or regimes	Comment
(f) Will the plan, regime or policy require fishers to take all reasonable steps to ensure that cetaceans are not killed or injured as a result of the fishing?	<b>Yes</b> , under the fishery's management strategy (link in Section 1), fishers are to ensure that cetaceans are not killed or injured as a result of the fishing and all interactions with protected species must be reported. Specific management measures are in place to minimise interactions with cetaceans, including the CoP and the mitigation measures contained in the CoP.
	Interactions with cetaceans (in particular common dolphins) were reported in logbooks or by observers in the fishery over the last 3 years. specific management measures are in place to minimise the fishery's impact on

	cetaceans, including through gear restrictions and BDRs to reduce mortality of cetaceans.
(g) And, is the fishery likely to adversely affect the conservation status of a species of cetacean or a population of that species?	<b>No</b> , the fishery is not likely to adversely affect the conservation status of a species of Cetacean or a population of that species.
Division 4 Listed marine species, Section 265 Minister may accredit plans or regimes	Comment
(f) Will the plan, regime or policy require fishers to take all reasonable steps to ensure that members of listed marine species are not killed or injured as a result of the fishing?	<b>Yes</b> , under the fishery's management strategy, fishers are not permitted to take protected species, including marine species and all interactions with protected species must be reported. Specific management measures are in place to minimise the fishery's impact on protected species, including a CoP.
(g) And, is the fishery likely to adversely affect the conservation status of a listed marine species or a population of that species?	<b>No</b> , given the low interaction rates, the management arrangements in place such as the CoP, appear to be effective for ensuring the fishery is not likely to adversely affect the conservation status of any listed marine species.

# Part 13A – International movement of wildlife specimens

Section 303BA Objects of Part 13A		
<ul> <li>(1) The objects of this Part are as follows:</li> <li>(a) to ensure that Australia complies with its obligations under CITES and the Biodiversity Convention;</li> <li>(b) to protect wildlife that may be adversely affected by trade;</li> <li>(c) to promote the conservation of biodiversity in Australia and other countries;</li> <li>(d) to ensure that any commercial utilisation of Australian native wildlife for the purposes of export is managed in an ecologically sustainable way;</li> <li>(e) to promote the humane treatment of wildlife;</li> <li>(f) to ensure ethical conduct during any research associated with the utilisation of wildlife; and</li> <li>(h) to ensure the precautionary principle is taken into account in making decisions relating to the utilisation of wildlife.</li> </ul>	<ul> <li>The management arrangements for the South Australian Sardine Fishery (the fishery) have been assessed as consistent with the general guidance provided in the objects of Part 13A as:</li> <li>the fishery will not harvest any Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed species</li> <li>there are management arrangements in place to ensure that the resource is being managed in an ecologically sustainable way</li> <li>the operation of the fishery is unlikely to be unsustainable and threaten biodiversity within the next five years, and</li> <li>the Environment Protection and Biodiversity Conservation Regulations 2000 do not specify fish as a class of animal in relation to the welfare of live specimens.</li> </ul>	
Section 303 CG Minister may issue permits (CITES species)	Comment	

(3) (a)	<ul> <li>The Minister must not issue a permit unless the Minister is satisfied that:</li> <li>the action or actions specified in the permit will not be detrimental to, or contribute to trade which is detrimental to:</li> <li>(i) the survival of any taxon to which the specimen belongs; or</li> <li>(ii) the recovery in nature of any taxon to which the specimen belongs; or</li> <li>(iii) any relevant ecosystem (for example, detriment to habitat or biodiversity); and</li> </ul>	Not applicable. The fishery does not harvest species listed under CITES.
	Section 303DC Minister may amend list (non CITES species)	Comment
(1) (a) (b)	<ul> <li>The Minister may, by legislative instrument, amend the list referred to in section 303DB [list of exempt native specimens] by:</li> <li>doing any of the following: <ul> <li>(i) including items in the list;</li> <li>(ii) deleting items from the list;</li> </ul> </li> <li>(iii) imposing a condition or restriction to which the inclusion of a specimen in the list is subject;</li> <li>(iv) varying or revoking a condition or restriction to which the inclusion of a specimen in the list is subject; or</li> <li>correcting an inaccuracy or updating the name of a species.</li> </ul>	<ul> <li>The Department recommends that specimens taken in the South Australian Sardine Fishery, as defined in the <i>Fisheries Management Act 2007</i> (SA), Fisheries Management (Sardine Fishery) Regulations 2021 (SA), Fisheries Management (Miscellaneous Fishery) Regulations 2015 (SA), Fisheries Management (General) Regulations 2017 (SA), but not including:</li> <li>(a) specimens that belong to taxa listed under section 209 of the EPBC Act (Australia's List of Migratory Species), or</li> <li>(b) specimens that belong to taxa listed under section 248 of the EPBC Act (Australia's List of Marine Species), or</li> <li>(c) specimens that belong to eligible listed threatened species, as defined under section 303BC of the EPBC Act, or</li> <li>(d) specimens that belong to taxa listed under section 303CA of the EPBC Act (Australia's CITES List)</li> <li>be included in the List of Exempt Native Specimens.</li> </ul>
(1A)	In deciding to amend the LENS, the Minister must rely primarily on outcomes an assessment under Part 10, Divisions 1 or 2	<b>Not applicable.</b> The fishery is not managed by the Commonwealth.
(1C)	The above does not limit matters that may be considered when deciding to amend LENS.	<b>Meets.</b> Although there is no strategic assessment under Part 10 of the EPBC Act, the Department considers its assessment 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 the Department of Primary Industries and Regions,
(b)	other Minister or Ministers of each State and self-governing Territory as appropriate; and	South Australia, was made available on the Department's website from 7 July 2021 until 29 July 2021. One comment was received.
(c)	other persons and organisations as appropriate.	
		Not applicable.
	Section 303FN Approved wildlife trade operation	The fishery is recommended for approval via the LENS (not via a Wildlife Trade Operation declaration).
		Not applicable.
	Section 303FR Public consultation	Public consultation was undertaken as part of this assessment and in accordance with section 303FR of the EPBC Act. However the fishery is recommended for approval via LENS (not via a Wildlife Trade Operation declaration).
Secti	on 303AA Conditions relating to accreditation of plans, regimes and policies	Comment
Secti	on 303AA Conditions relating to accreditation of plans, regimes and policies This section applies to an accreditation of a plan, regime or policy under	Comment Recommend accreditation under sections 208A, 222A, 245 and 265.
Secti (1)	on 303AA Conditions relating to accreditation of plans, regimes and policies This section applies to an accreditation of a plan, regime or policy under section 208A, 222A, 245 or 265.	Comment Recommend accreditation under sections 208A, 222A, 245 and 265. The department considers that accreditation of the fisheries should be subject to
Secti (1) (2)	This section applies to an accreditation of a plan, regime or policy under section 208A, 222A, 245 or 265.	Comment Recommend accreditation under sections 208A, 222A, 245 and 265. The department considers that accreditation of the fisheries should be subject to the following Part 13 conditions:
Secti (1) (2)	This section applies to an accreditation of a plan, regime or policy under section 208A, 222A, 245 or 265. The Minister may accredit a plan, regime or policy under that section even though he or she considers that the plan, regime or policy should be accredited only:	Comment Recommend accreditation under sections 208A, 222A, 245 and 265. The department considers that accreditation of the fisheries should be subject to the following Part 13 conditions: Condition A: The operation of the fishery must be carried out in accordance with the
Secti (1) (2) (a)	This section applies to an accreditation of a plan, regime or policy under section 208A, 222A, 245 or 265. The Minister may accredit a plan, regime or policy under that section even though he or she considers that the plan, regime or policy should be accredited only: during a particular period; or	Comment Recommend accreditation under sections 208A, 222A, 245 and 265. The department considers that accreditation of the fisheries should be subject to the following Part 13 conditions: Condition A: The operation of the fishery must be carried out in accordance with the management arrangements specified in the <i>Fisheries Management Act 2007</i> (SA): the Fisheries Management (Sardine Fishery) Regulations 2021 (SA): the
Secti (1) (2) (a) (b)	This section applies to an accreditation of a plan, regime or policy under section 208A, 222A, 245 or 265. The Minister may accredit a plan, regime or policy under that section even though he or she considers that the plan, regime or policy should be accredited only: during a particular period; or while certain circumstances exist; or	Comment Recommend accreditation under sections 208A, 222A, 245 and 265. The department considers that accreditation of the fisheries should be subject to the following Part 13 conditions: Condition A: The operation of the fishery must be carried out in accordance with the management arrangements specified in the <i>Fisheries Management Act 2007</i> (SA); the Fisheries Management (Sardine Fishery) Regulations 2021 (SA); the Fisheries Management (General) Regulations 2017; and the Management Plan
Secti (1) (2) (a) (b) (c)	This section applies to an accreditation of a plan, regime or policy under section 208A, 222A, 245 or 265. The Minister may accredit a plan, regime or policy under that section even though he or she considers that the plan, regime or policy should be accredited only: during a particular period; or while certain circumstances exist; or while a certain condition is complied with.	Comment Recommend accreditation under sections 208A, 222A, 245 and 265. The department considers that accreditation of the fisheries should be subject to the following Part 13 conditions: Condition A: The operation of the fishery must be carried out in accordance with the management arrangements specified in the <i>Fisheries Management Act 2007</i> (SA); the Fisheries Management (Sardine Fishery) Regulations 2021 (SA); the Fisheries Management (General) Regulations 2017; and the Management Plan for the South Australian Commercial Marine Scalefish Fishery 2014.

#### Condition C:

The Department of Primary Industries and Regions of South Australia must inform the Department of Agriculture, Water and the Environment of any intended changes to fisheries legislation that may affect the legislative instruments relevant to this approval.

#### Condition D:

The Department of Primary Industries and Regions of South Australia must produce and present reports to the Department of Agriculture, Water and the Environment annually, as per Appendix B of the *Guidelines for the Ecologically Sustainable Management of Fisheries - 2nd Edition* 

#### **Condition E:**

The Department of Primary Industries and Regions of South Australia must ensure the most effective measures to mitigate or eliminate interactions with protected species are adopted in the South Australian Sardine Fishery.

This should include working with fishing operators and other relevant parties to consider and, where appropriate, trial any suitable technologies or practices identified in the global literature review of mitigation measures in small pelagic fisheries project (FRDC Project 2020-049).

#### **Condition F:**

By June 2022, the Department of Primary Industries and Regions of South Australia must consider and respond to the outcomes of the "Assessment of the sustainability of common dolphin interactions with the South Australian Sardine Fishery" report (FRDC Project 2019-063).

This should include an assessment of any required changes or improvements to existing fishery management arrangements and protected species mitigation/monitoring methods.

#### Condition G:

By April 2024, the Department of Primary Industries and Regions of South Australia must implement suitable measures to ensure accurate information on protected species mortality levels is collected in the fishery and that underreporting is not occurring.

In satisfying this condition, the Department of Primary Industries and Regions of South Australia must:

a) by June 2022, publish a plan detailing how it will respond to this issue, including any systems, controls, or management arrangements that will be implemented and associated timeframes. The plan will need to be made

	publicly available and a copy provided to the Department of Agriculture Water and the Environment.	,
	b) by April 2024, provide evidence that suitable systems have been implemented to ensure accurate information on protected species mort levels is collected in the fishery and that underreporting is not occurring	ality J.

# Part 16 – Precautionary principle and other considerations in making decisions

Section	on 391 Minister must consider precautionary principle in making decisions	Comment
(1) I (2) T (2) I	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. 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 rreversible environmental damage.	Meets While there is currently low fishing effort, the ecological risk assessment found that ecological risks are likely to be low and the current management regime is sufficiently robust to manage the potential risks associated with the fishery. The introduction of the CoP has proven to be effective in the reduction of interactions with protected species, and this is continually reviewed and modified where appropriate. The management regime, when supported by the conditions proposed in Section 2 of this report are considered to be sufficient to prevent serious or irreversible environmental damage being caused by this fishery.

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