



Australian Government

Department of the Environment and Energy

Assessment of the
South Australian Beach-cast Marine Algae Fishery

September 2018

© Copyright Commonwealth of Australia, 2018.



Assessment of the South Australian Beach-cast Marine Algae Fishery, September 2018 is licensed by the Commonwealth of Australia for use under a Creative Commons By Attribution 3.0 Australia licence with the exception of the Coat of Arms of the Commonwealth of Australia, the logo of the agency responsible for publishing the report, content supplied by third parties, and any images depicting people. For licence conditions see: <http://creativecommons.org/licenses/by/3.0/au/>.

This report should be attributed as 'Assessment of the South Australian Beach-cast Marine Algae Fishery, September 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 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 or the Australian Government.

While reasonable efforts have been made to ensure that the contents of this report are factually correct, the Australian Government does not accept responsibility for the accuracy or completeness of the contents, and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this report. You should not rely solely on the information presented in the report when making a commercial or other decision.

CONTENTS

Executive Summary of the Assessment of the South Australian Beach-cast Marine Algae Fishery 1

Section 1: Assessment Summary of the South Australian Beach-cast Marine Algae Fishery Against the Guidelines for the Ecologically Sustainable Management of Fisheries (2nd Edition), Consistent with the EPBC Act 3

Section 2: Detailed Analysis of the South Australian Beach-cast Marine Algae Fishery Against the Guidelines for the Ecologically Sustainable Management of Fisheries (2nd Edition) 6

Section 3: Assessment of the South Australian Beach-cast Marine Algae Fishery Against the Requirements of the EPBC Act 14

Section 4: South Australian Beach-cast Marine Algae Fishery – Summary of Issues Requiring Conditions, September 2018..... 19

References 23

EXECUTIVE SUMMARY OF THE ASSESSMENT OF THE SOUTH AUSTRALIAN BEACH-CAST MARINE ALGAE FISHERY

In April 2018 the Department of Primary Industries and Regions, South Australia (PIRSA) submitted an application for the South Australian Beach-cast Marine Algae Fishery (the fishery) for assessment under the wildlife trade provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The sustainability of the fishery's management arrangements has also been assessed against the Australian Government's 'Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition'. PIRSA's application was placed on the Department's website for public comment from 17 April 2018 to 17 May 2018.

In June 2018, PIRSA informed the Department that a new exploratory permit had been issued, and that the permit holder was seeking export approval. Subsequent to that advice, PIRSA provided an addendum to the application that included the proposed harvesting area and permit conditions for the new harvesting area. The additional information was placed on the Department's website for public comment from 13 August 2018 to 7 September 2018.

Management arrangements

PIRSA manage the fishery in accordance with the *Fisheries Management Act 2007* (SA), the Fisheries Management (Miscellaneous Fishery) Regulations 2015, and Fisheries Management (General) Regulations 2017. In addition, the Fisheries Management (Miscellaneous Developmental Fishery) Regulations 2013 (SA) allows PIRSA to issue exploratory or developmental permits.

PIRSA has issued two non-transferable Miscellaneous Fishery licences and one exploratory permit to harvest a range of beach-cast marine plants (wrack). One licence (Y080) is held by a local council for facility maintenance purposes, and is not intended for export. Miscellaneous Fishery Licence Y078 is permitted to harvest wrack between Cape Jaffa and Rivoli Bay (~101.6 kilometres (km)). Harvesting under exploratory permit EP003 is permitted from Beachport to the Victorian border (~100 km).

Harvesting is strictly controlled by conditions attached to each licence and permit. PIRSA may issue additional permits during the term of this declaration, and has given an undertaking that similarly strict conditions will be attached to ensure that harvesting will not have a detrimental impact on matters of national environmental significance under the EPBC Act.

Harvesting is limited to no more than 50 per cent of the available wrack within the harvesting area. Wrack is selectively harvested by hand with the aid of mechanical winches. A four-wheel drive vehicle is used to transport wrack, although restrictions apply to minimise the disturbance of important habitat and minimise the impacts to shorebird species. Licence conditions specify restrictions that aim to protect migratory shorebirds while they recuperate from and prepare for migration. Impacts to the environment and threatened species are minimised through area restrictions and harvesting timeframes. Harvesting is a land-based activity limited to sandy beaches and no wrack is to be removed from the water.

The management regime for the fishery is likely to ensure that harvesting is conducted in a manner that is not detrimental to the species collected or the broader ecosystem.

Target stocks

Target species include Bull Kelp (*Durvillaea potatorum*), Common Kelp (*Ecklonia radiata*), Giant kelp (*Macrocystis pyrifera*), and *Gracilaria* species. No species is identified as byproduct or bycatch. There are no concerns in relation to stock status because the wrack is not alive when it is harvested. The daily harvest is recorded in logbooks and reported to PIRSA each month.

The Department has determined the harvesting operations will not be detrimental to the survival or conservation status of the target species, and considers that overall the management regime for the fishery aims to ensure that harvesting is conducted in a manner that does not lead to overfishing.

Protected species and ecological communities

The Giant Kelp Forests of south-east Australia threatened ecological community (TEC) may occur offshore, and adjacent to the harvesting areas. Plant material from this TEC may detach from the seabed and wash ashore. However, the plant material is considered dead or dying when harvested, and therefore the fishery is unlikely to have a significant impact on the Giant Kelp Forest TEC.

The fishery does not harvest any threatened, endangered and protected species (TEPS) listed under the EPBC Act. The accumulation of wrack material provides an ecological benefit for the broader terrestrial and coastal ecosystems, and is important for the ongoing survival of shorebird species. The harvesting area has been identified as containing nationally or internationally important habitat for migratory shorebirds. While there have been no reported interactions with TEPS, the large numbers of shorebirds increases the likelihood of interactions, the consequence of which may be high. It is important that collectors are able to identify individual shorebird species and understand what is an 'interaction' to ensure accurate reporting.

Given the management measures in place, including exclusion zones, seasonal restrictions and mandatory reporting of interactions, the Department considers the fishery is unlikely to have a detrimental impact on TEPS in the short-term.

Ecosystem impacts

Accumulated wrack can stabilise coastal ecosystems and may contribute to the fertility and stability of substrates behind the fore dunes. Particulate matter from decomposing wrack provides food for offshore species, including fish and benthic coastal communities. The removal of large banks of wrack increases the risk of impacts to coastal and nearshore ecosystems.

Licence and permit conditions include area and seasonal restrictions that will help to limit the impacts on the broader ecosystem. Given these and other management arrangements in place in the fishery, the fishery is unlikely to have a significant impact on the environment in which it operates in the short-term.

Conclusion

While the fishery is relatively well managed, there remains a small number of risks and uncertainties that must be managed through conditions as listed at Section 4. These relate to ongoing independent monitoring to evaluate the effect of harvesting on migratory shorebirds and to ensure compliance with licence conditions.

Based on the available information, the Department considers that the declaration of the SA Beach-cast Marine Algae Fishery as an approved wildlife trade operation is appropriate until 17 September 2021. Product taken in the fishery will be included in the list of exempt native specimens under Part 13A of the EPBC Act while a wildlife trade operation is in place.

SECTION 1: ASSESSMENT SUMMARY OF THE SOUTH AUSTRALIAN BEACH-CAST MARINE ALGAE FISHERY AGAINST THE GUIDELINES FOR THE ECOLOGICALLY SUSTAINABLE MANAGEMENT OF FISHERIES (2ND EDITION), CONSISTENT WITH THE EPBC ACT

Guidelines assessment	Meets	Partially meets	Does not meet	Details
Management regime	7 of 9	2 of 9		<p>The management regime is effective.</p> <p>The overall the management regime for the fishery aims to ensure that fishing is conducted in a manner that does not lead to overfishing.</p> <p>The harvesting of marine algae is a small-scale sector within the South Australian Miscellaneous Fishery. While there is no fishery-specific objectives, strategies and performance measures, general objectives and performance criteria contained in state legislation will ensure the fishery is adequately managed. PIRSA has also attached conditions to individual licences and permits that include permitted species, harvesting areas, exclusion zones and seasonal restrictions.</p> <p>Given its small-scale, PIRSA does not undertake periodic reviews of the management arrangements, however the management arrangements may be reviewed at any time if required.</p>
Principle 1 (target stocks)	5 of 11 N/a 4 of 11	2 of 11		<p>Target stocks are well managed.</p> <p>Given the existing and proposed management arrangements for the fishery, the management regime aims to ensure that fishing is conducted in a manner that does not lead to overfishing, and the operation of the fishery will not be detrimental to the survival or conservation status of the target species in the short term.</p> <p>1.1.2 – Status of target species stocks is undetermined due to a lack of research, including stock assessments. No stock assessments or surveys are planned for this fishery. In response to uncertainties, PIRSA takes a precautionary and structured approach to ensure harvesting is sustainable, and continues to support the biological requirements for migratory and threatened shorebirds.</p> <p>1.1.3 – While some information is available on the distribution and spatial structure of the source stocks, there is very little information on the amounts washed ashore and available for harvesting or for use by migratory shorebirds. An accurate assessment and determination for an appropriate ecologically sustainable level of harvesting is only possible through information provided by up-to-date research or studies.</p>
Principle 2 (bycatch and TEPS)	7 of 12 N/a 3 of 12	2 of 12		<p>Negligible impacts to bycatch. Risks to protected shorebird species is minimised through appropriate management measures.</p>

				<p>2.1.1 - Small animals may inhabit beach-cast wrack prior and may be unknowingly removed from the beach, however bycatch is only reported for species listed as threatened, endangered or protected.</p> <p>2.2.1 – There is a lack of independent monitoring of the impact of harvesting on the broader ecosystem and on TEPS, particularly migratory shorebirds, and a lack of information on removals by non-commercial users.</p>
Principle 2 (ecosystem impacts)	4 of 5	1 of 5		<p>Ecological risk is inherently low due to the fishing method used.</p> <p>2.3.4 – The development and implementation of appropriate decision rules is encouraged to allow rapid implementation of management measures to minimise any impact on the ecosystem. It is therefore important that harvest operations are monitored and data collected and analysed regularly.</p>
EPBC requirements	Meets	Partially meets	Does not meet	Details
Part 12	N/a			<p>Not applicable.</p> <p>The fishery operates within state waters only, and therefore does not impact on a Commonwealth marine area.</p>
Part 13	N/a			<p>Not applicable.</p> <p>The fishery operates in state waters only, and is not subject to the provisions under Part 13 of the EPBC Act.</p>
Part 13A	All met			<p>Meets the requirements.</p> <p>The fishery is consistent with the provisions of Part 13A.</p>
Part 16	Met			<p>Meets the requirements.</p> <p>The Department considers that precautionary measures are in place to prevent serious or irreversible environmental damage being caused by this fishery.</p>

Notes

Assessment history:

- Information on previous EPBC Act assessments for the SA Beach-cast Marine Algae Fishery is available on the Department's website at <http://www.environment.gov.au/marine/fisheries/sa/seagrass>.
- 1st assessment finalised August 2004 – Exempt from wildlife trade provisions until 01 August 2009. Export approval was subject to 5 recommendations.
- 2nd assessment finalised June 2015 – Declared an approved wildlife trade operation until 18 May 2018. Export approval was subject to 5 conditions and 1 recommendation.

Fishery reporting:

- Annual report – Department of the Environment and Energy has not received annual reports for this fishery since the most recent assessment under the EPBC Act.

Key links:

- Fishery information is available via the following PIRSA web links:
 - SA commercial fisheries – <http://pir.sa.gov.au/fishing>.
 - SA Beach-Cast Marine Algae Fishery – http://www.pir.sa.gov.au/fishing/commercial_fishing/fisheries/miscellaneous_fishery.
 - Exploratory and developmental permit information – http://pir.sa.gov.au/fishing/commercial_fishing/exploratory_and_development_permits.
 - SA Research and Development Institute (SARDI) – <http://pir.sa.gov.au/research>.
 - Fishwatch – <http://www.pir.sa.gov.au/fishing/fishwatch>.
- EPBC Act Policy Statement 3.21 – Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species – <http://www.environment.gov.au/epbc/publications/shorebirds-guidelines>.
- Wildlife conservation plan for migratory shorebirds – <http://www.environment.gov.au/biodiversity/publications/wildlife-conservation-plan-migratory-shorebirds>.

Management plan

- The fishery is managed under state legislation and regulations. There is no fishery-specific management plan.

Enforcing legislation

- The following legislative and regulatory information is available on the SA legislation website at <https://www.legislation.sa.gov.au/index.aspx>.
 - Fisheries Management Act 2007 (SA)
 - Fisheries Management (Miscellaneous Developmental Fishery) Regulations 2013 (SA)
 - Fisheries Management (Miscellaneous Fishery) Regulations 2015 (SA)
 - Fisheries Management (General) Regulations 2017 (SA)

Harvest strategy or document that articulates control rules

- There is no harvesting strategy for this fishery.

Ecological Risk Assessment

- PIRSA submitted ecological risk assessments for this fishery as part of its application for reassessment under the EPBC Act. These reports are available on the Department's website at <http://environment.gov.au/marine/fisheries/sa/seagrass/agency-application-2018>.

Publicly available stock assessment

- No stock assessment reports have been undertaken due to the low scale of the fishery.

SECTION 2: DETAILED ANALYSIS OF THE SOUTH AUSTRALIAN BEACH-CAST MARINE ALGAE FISHERY AGAINST THE GUIDELINES FOR THE ECOLOGICALLY SUSTAINABLE MANAGEMENT OF FISHERIES (2ND EDITION)

Guidelines for the Ecologically Sustainable Management of Fisheries – (2nd 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 programs. The regime should:	
Be documented, publicly available and transparent.	<p>Meets</p> <p>The management regime is adequately documented, publicly available and transparent (see links under Notes for further information). The SA Beach-cast Marine Algae Fishery (the fishery) is managed by the Department of Primary Industries and Regions South Australia (PIRSA) in accordance with the <i>Fisheries Management Act 2007</i> (SA), the Fisheries Management (Miscellaneous Fishery) Regulations 2015 (SA), and the Fisheries Management (General) Regulations 2017 (SA). In addition, the Fisheries Management (Miscellaneous Developmental Fishery) Regulations 2013 (SA) allows PIRSA to issue exploratory and developmental permits to undertake fishing activities in new areas and for species not currently being fished commercially.</p> <p>Recreational fishing activities (excluding Aboriginal traditional fishing) is managed separately under the <i>Draft Management Plan for Recreational Fishing in South Australia</i>. The Fisheries Management Act allows PIRSA to develop separate management plans for Aboriginal traditional fishing.</p>
Be developed through a consultative process providing opportunity to all interested and affected parties, including the general public.	<p>Meets</p> <p>The Fisheries Act mandates that PIRSA consult with key stakeholders, including the general public, in relation to any changes to the management arrangements. PIRSA also consults with other state government agencies including the Department of Environment and Water, the Department of Planning, Transport and Infrastructure, the Department of State Development, and local governments as required. The harvesting of wrack is subject to licence conditions, which are developed in consultation with other state government agencies, local governments and the licence holder. In 2015, PIRSA invited members of the community and relevant shorebird experts to attend a risk assessment workshop to discuss proposed changes to the fishery management arrangements, and opportunities for harvesting new areas under Exploratory and Developmental Permits (PIRSA 2015). PIRSA has since issued a new Exploratory Fishing Permit to harvest wrack in this fishery.</p>
Ensure that a range of expertise and community interests are involved in individual fishery management committees and during the stock assessment process.	<p>Meets</p> <p>There is no formal fishery management committee. However, given the fishery's small-scale, PIRSA consult directly with licence holders in relation to managing the harvesting and any associated impacts.</p> <p>There is no stock assessment process because cast wrack is not harvested live. However, PIRSA collect and analyse information from monthly reports, which include the amounts and species collected and processed. This information is retained by the SA Research and Development Institute (SARDI).</p>
Be strategic, containing objectives and performance criteria by which the effectiveness	Partially meets

<p>of the management arrangements are measured.</p>	<p>State legislation and regulations contain general objectives and performance criteria, however these are not used to assess the effectiveness of the fishery. The management arrangements do not contain fishery-specific objectives, strategies and performance measures. Conditions attached to individual licences and permits provide more specific guidance in relation to managing the harvesting operations. Fishery performance is monitored via compliance programs and monthly logbook reports.</p>
<p>Be capable of controlling the level of harvest in the fishery using input and/or output controls.</p>	<p>Meets</p> <p>The level of harvest is restricted through input control measures including: limited entry (only two non-transferable licences, and one exploratory permit); harvesting is restricted to less than 50 per cent of the approved harvesting area; use of geo-referencing cameras to record take; harvesting is limited to no more than 50 per cent of available wrack on the day of harvest; seasonal restrictions, and gear and method restrictions. Additional and more specific conditions are attached to each commercial licence or permit.</p> <p>Operators are permitted to harvest beach-cast marine algae along sandy beaches from:</p> <ul style="list-style-type: none"> • a point 100 metres north of the northern breakwater at Cape Jaffa Marina to a point 8 kilometres (km) south east from the Lake George outlet at Beachport under Miscellaneous Fishery Licence Y078, and • a point eight km in a south easterly direction along the beach from the Lake George outlet and the Victorian Border under Exploratory Fishing Permit EP003.
<p>Contain the means of enforcing critical aspects of the management arrangements.</p>	<p>Meets</p> <p>The fishery has effective enforcement capability. Compliance measures include random and targeted inspections of harvesting operations to ensure licence and permit holders meet agreed conditions. PIRSA monitors monthly catch and effort logbooks to determine the numbers and types of species harvested. There are options for the broader public to comment on non-compliance through Fishwatch (see link under Notes).</p>
<p>Provide for the periodic review of the performance of the fishery management arrangements and the management strategies, objectives and criteria.</p>	<p>Partially meets</p> <p>There is no periodic review of the management arrangements including stock assessments. However, PIRSA may review the management arrangements at any time.</p>
<p>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.</p>	<p>Meets</p> <p>Given the low number of harvesters, the management arrangements provide some capacity to effectively manage the impacts on wider marine ecosystem. State and local government agencies are required to monitor beaches and foreshore areas. These agencies are also responsible for providing access to harvesters, and therefore have oversight of the amounts available for harvesting. The amounts harvested is monitored by PIRSA through monthly logbook reports.</p> <p>There is no independent monitoring or assessment of the potential impacts of harvesting on migratory shorebirds or the wider ecosystem. However, licence conditions and proposed codes of practice provides some assurance that environmental impacts will be minimised. The use of geo-referencing cameras allow PIRSA to collect additional evidence for monitoring harvesting activities and to estimate the amounts available for harvesting in each area (PIRSA 2018).</p>

Requires compliance with relevant threat abatement plans, recovery plans, the National Policy on Fisheries Bycatch, and bycatch action strategies developed under the policy.	<p>Meets</p> <p>The fishery appears to be compliant with national environmental policies and plans including the Department's policy statement in relation to avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2015), and Wildlife Conservation Plan for Migratory Shorebirds (DEH 2006).</p>
<p>PRINCIPLE 1 - A fishery must be conducted in a manner that does not lead to overfishing, or for those stocks that are overfished, the fishery must be conducted such that there is a high degree of probability the stock(s) will recover.</p>	
<p>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.</p>	
<p>Information requirements</p>	
<p>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.</p>	<p>Meets</p> <p>Harvesting data is recorded daily and includes the location and time of harvesting, the amounts and types of species harvested, the collection and processing methods used, the volume sold each month, and its intended use. This data is reported to PIRSA each month and maintained by SARDI. However, no fishery independent data is collected. Cameras with geo-referencing technology provide photographic evidence of the harvesting area immediately before and after each harvest activity.</p> <p>In 2015, PIRSA conducted an ecological risk assessment (ERA) workshop for the fishery based on the national ecological sustainable development framework. The ERA considered the fishery's impact on retained species, non-retained species such as migratory shorebirds, and the broader ecosystem (PIRSA 2015).</p> <p>Overall there is a reliable information collection system in place appropriate to the scale of the fishery.</p>
<p>Assessment</p>	
<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>Partially meets</p> <p>The target species stock status is undetermined. PIRSA advised that no up-to-date research is available to determine ecologically sustainable harvest levels, and that no formal stock assessments or surveys are planned for this fishery. This lack of baseline information makes it difficult to determine an appropriate ecologically sustainable level of harvesting.</p> <p>The target species are harvested after they have detached from the marine substrate and been washed ashore. In response to these uncertainties, PIRSA has taken a precautionary and structured approach to ensure that harvesting is sustainable, and that harvesting continues to support the biological requirements for migratory and threatened shorebirds.</p>
<p>1.1.3 The distribution and spatial structure of the stock(s) has been established and factored into management responses.</p>	<p>Partially meets</p> <p>Information is available on the distribution and spatial structure of the source stocks (i.e. live plants attached to the seabed). However, there is very little information on the amounts available for harvest at any given time. The availability of wrack for harvesting is dependent on environmental activities that dislodge plants from the seabed and wash them ashore. These factors result in wrack being unevenly deposited along the foreshore. Harvesting is subsequently conducted sporadically and opportunistically, and times when storm activity is most frequent. There</p>

	<p>is very little information available in relation to the use of wrack by fauna and its onshore accumulation and decomposition.</p> <p>The available information has been factored into management arrangements. Precautionary management arrangements are in place and consider the inconsistent and infrequent distribution of harvestable material.</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>Meets</p> <p>Commercial operators provide reliable estimates of removals through monthly logbook reports to PIRSA. The information includes catch and effort data and sales records.</p> <p>The amounts harvested for recreational and Aboriginal traditional use, and by local councils for amenity purposes are unknown, but considered likely to be negligible.</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>Meets</p> <p>There is a sound estimate of the amounts harvested through monthly harvest data reported to PIRSA. This information may be used to estimate productivity in the future. The productivity is highly variable due to the sporadic and unpredictable availability of harvestable wrack. Harvesting is dependent upon environmental factors including inclement weather and wave and tidal activity.</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>Not applicable</p> <p>The target species can only be harvested from sandy beaches. No live marine plants are harvested. Therefore, the requirement for reference points that trigger management actions is not applicable.</p>
<p>1.1.7 There are management strategies in place capable of controlling the level of take.</p>	<p>Meets</p> <p>Management arrangements are in place to control the level of take including limited entry, and limits on the amounts permitted to be harvested in each harvesting area, provide adequate control measures.</p>
<p>1.1.8 Fishing is conducted in a manner that does not threaten stocks of byproduct species.</p>	<p>Not applicable</p> <p>The fishery does not harvest any byproduct species.</p>
<p>(Guidelines 1.1.1 to 1.1.7 should be applied to byproduct 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>PIRSA has taken a precautionary and structured approach to ensure that harvesting is sustainable, and that harvesting continues to support the biological requirements for migratory and threatened shorebirds. The management arrangements identified above have a high chance of achieving the objective to minimise removals at a level that maintains sufficient wrack for ecological sustainability.</p>
<p>If overfished, go to Objective 2: If not overfished, go to PRINCIPLE 2:</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.	
Management responses	
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.	Not applicable A precautionary recovery strategy is not required because harvesting wrack will not have a significant impact on stocks of native marine plants.
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.	Not applicable Stocks are not considered to be at or below the biological or effort bottom line, and adequate management responses are in place to minimise the impact on live marine plants.
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 meets No information is available regarding the amounts or species discarded. Operators are only required to report bycatch if it is listed as TEPS. Small animals (meiofauna) may inhabit beach-cast wrack prior to collection. The ERA notes the possibility for these animals to be unknowingly removed from the beach with the target species.
Assessment	
2.1.2 There is a risk analysis of the bycatch with respect to its vulnerability to fishing.	Meets ERA workshop attendees considered the impacts of inadvertent collection of non-target species during harvesting operations, and the impact of using motor vehicles to transport wrack along beaches within the harvesting area. The ERA found the fishery's impacts on bycatch species is negligible.
Management responses	
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	Meets Management measures such as restrictions on the methods and gear used, exclusion zones and area restrictions help to minimise any impacts of fishing on bycatch species.

protected species). Steps must be taken to develop suitable technology if none is available.	
2.1.4 An indicator group of bycatch species is monitored.	Not applicable See 2.1.2 above.
2.1.5 There are decision rules that trigger additional management measures when there are significant perturbations in the indicator species numbers.	Not applicable See 2.1.2 above.
2.1.6 The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.	Meets Given the nature of harvesting, the likelihood of inadvertently removing bycatch species is low due to the selectivity of harvesting wrack. Therefore, the management response has a high chance of achieving the objective to conduct the fishery in a manner that does not threaten any 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.	Partially meets Operators are required to record any interaction with TEPS in Wildlife Interaction Logbooks and report this data to PIRSA as part of monthly logbook returns. PIRSA use this data to monitor TEPS interactions. PIRSA considers this information to be up-to-date and reliable. There is no independent monitoring of the impact of harvesting on the broader ecosystem and on TEPS, particularly migratory shorebirds. There are no records for the removal of wrack by recreational or traditional users, or for maintaining council amenities. Though PIRSA consider the amounts harvested by these sectors likely to be negligible. The Giant Kelp Marine Forests of South-east Australia TEC (Giant Kelp TEC) occurs offshore and adjacent to sections of the harvesting area. The Giant Kelp TEC includes species of green, brown, and red algae targeted by this fishery (DEH 2006; DoEE 2017; 2018a; 2018b).
Assessments	
2.2.2 There is an assessment of the impact of the fishery on endangered, threatened or protected species.	Meets In 2015, PIRSA hosted a risk assessment workshop based on the national ecological sustainable development framework (PIRSA 2015). The risks to TEPS was identified as low. PIRSA has also implemented suitable management practices to minimise the impacts to migratory shorebirds as a result of harvesting wrack.
2.2.3 There is an assessment of the impact of the fishery on threatened ecological communities.	Meets The ERA identified the risk posed by the fishery to the broader environment as low. PIRSA has developed and implemented suitable management practices in consultation with licence holders and other state government agencies.

Management responses	
<p>2.2.4 There are measures in place to avoid capture and/or mortality of endangered, threatened or protected species.</p>	<p>Meets</p> <p>A number of measures have been implemented to mitigate potential impacts to migratory shorebirds and to protect nesting or aggregation sites. Licence conditions restrict harvest operations to approximately 50 per cent of the licensed area at all times. Other restrictions include no harvesting within four metres of fore dunes; the removal of sand must be avoided; existing ramps or access tracks may only be used to access the beach, and TEPS log books must be completed and lodged when any interactions occur. PIRSA has established year round exclusion zones to restrict harvest operations.</p>
<p>2.2.5 There are measures in place to avoid impact on threatened ecological communities.</p>	<p>Not applicable.</p> <p>See 2.2.3. above. While the fishery harvests plant material that originates from the Giant Kelp Forest TEC, the material is in a dead or dying state upon harvesting.</p>
<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>	<p>Meets</p> <p>The proposed management actions have a medium to high chance of achieving the objective to conduct the fishery in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities.</p>
<p>Objective 3 - The fishery is conducted, in a manner that minimises the impact of fishing operations on the ecosystem generally.</p>	
Information requirements	
<p>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>	<p>Meets</p> <p>The 2015 ERA workshop was based on the national ESD framework (PIRSA 2015), which considers information appropriate to the analysis in matters identified at 2.3.2. Workshop attendees considered a range of issues relevant to the fishery management arrangements. The ERA identified a low risk to coastal and nearshore ecosystems in areas where wrack occurs. PIRSA has implemented measures that help to avoid negative impacts such as coastal erosion, disruption to terrestrial and marine food webs and interfering with nutrient cycles.</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"> 1. Impacts on ecological communities <ul style="list-style-type: none"> • Benthic communities • Ecologically related, associated or dependent species • Water column communities 2. Impacts on food chains 	<p>Meets</p> <p>The 2015 ERA collected and analysed information and subsequently assessed the fishery and its impact on retained species, non-retained species and general ecosystem impacts (including erosion, trophic level interactions, water quality). Attendees determined that the risks to the environment are low if the fishery is managed in accordance with the existing management arrangements.</p>

<ul style="list-style-type: none"> • Structure • Productivity/flows <p>3. Impacts on the physical environment</p> <ul style="list-style-type: none"> • Physical habitat • Water quality 	
<p>Management responses</p>	
<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 PIRSA, in consultation with licence holders, other state government agencies, local councils, and other key stakeholders has implemented appropriate management actions (described above) to minimise the risks to the environment in which the fishery operates. Industry codes of practice provide assurance that environmental impacts will be minimised.</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>Partially meets No decision rules are in place to trigger management actions if monitoring were to detect any impact of harvesting. The amount of wrack available for foraging and nesting can determine the numbers of shorebirds that use the habitat. The numbers of migratory shorebirds may be considered an ecosystem indicator. It is important that PIRSA continue to collect data through regular monitoring. This information will help to identify risks as they occur to allow rapid implementation of management measures to minimise the impacts to shorebird populations in the harvesting area. While the fishery is considered small-scale, there is a lack of information in relation to monitoring the impacts to shorebirds as a result of harvesting beach-cast wrack. There are no decision rules which trigger further management response.</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 The fishery has a high chance of achieving the objective to conduct harvesting in a manner that minimises the impact of fishing operations on the ecosystem in which the fishery operates.</p>

SECTION 3: ASSESSMENT OF THE SOUTH AUSTRALIAN BEACH-CAST MARINE ALGAE 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 – Identifying and monitoring biodiversity and making bioregional plans

Section 176 Bioregional Plans	Comment
(5) Minister must have regard to relevant bioregional plans	Not applicable. No marine bioregional plan applies to the South-east Marine Bioregion in which the fishery operates.

Part 13 – Species and communities

No Part 13 accreditation is required because the fishery operates within the state jurisdiction.

Part 13A – International movement of wildlife specimens

Section 303BA Objects of Part 13A	
(1) The objects of this Part are as follows: <ul style="list-style-type: none"> (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) ensure ethical conduct during any research associated with the utilisation of wildlife; and (g) to ensure the precautionary principle is taken into account in making decisions relating to the utilisation of wildlife. 	The management arrangements for the fishery have been assessed as consistent with the general guidance provided in the objects of Part 13A as: <ul style="list-style-type: none"> • the fishery will not harvest any Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed species • there are management arrangements in place to ensure that the resource is being managed in an ecologically sustainable way (see Section 2), and • the operation of the fishery is unlikely to be unsustainable and threaten biodiversity within the next three years.
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: <ul style="list-style-type: none"> (a) doing any of the following: <ul style="list-style-type: none"> (i) including items in the list; (ii) deleting items from the list; 	The Department recommends that specimens derived from species harvested in the fishery, but not including: <ul style="list-style-type: none"> • specimens that belong to eligible listed threatened species, as defined under section 303BC of the EPBC Act, or • specimens that belong to taxa listed under section 303CA of the EPBC Act (Australia's CITES List)

<ul style="list-style-type: none"> (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 <p>(b) correcting an inaccuracy or updating the name of a species.</p>	<p>be included in the list of exempt native specimens while the fishery is subject to a declaration as an approved wildlife trade operation.</p>
<p>(1A) In deciding to amend the LENS, the Minister must rely primarily on outcomes of Part 10, Divisions 1 or 2 assessment</p>	<p>Not applicable. The fishery is not managed by the Commonwealth.</p>
<p>(1C) The above does not limit matters that may be considered when deciding to amend LENS.</p>	<p>Yes, the Department considers that it 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.</p>
<p>(3) Before amending the LENS, the Minister must consult:</p> <ul style="list-style-type: none"> (a) other Minister or Ministers as appropriate; and (b) other Minister or Ministers of each State and self-governing Territory as appropriate; and (c) other persons and organisations as appropriate. 	<p>Yes, the Department considers that the consultation requirements have been met. The submission from PIRSA was made available on the Department's website from 17 April 2018 to 17 May 2018. An addendum to the application was also released for public comment from 13 August 2018 to 7 September 2018.</p>
<p>(5) A copy of an instrument made under section 303DC is to be made available for inspection on the Internet.</p>	<p>Yes, the instrument for the SA Beach-cast Marine Algae Fishery made under section 303DC will be registered on the Federal Register of Legislation and links will be made available through the Department's website.</p>
<p>Section 303FN Approved wildlife trade operation</p>	<p>Comment</p>
<p>(2) The Minister may, by instrument published in the <i>Gazette</i>, declare that a specified wildlife trade operation is an approved wildlife trade operation for the purposes of this section.</p>	<p>Yes, the instrument to declare the fishery as an approved wildlife trade operation under section 303FN will be registered on the Federal Register of Legislation (FRL) and a link to the instrument made available through the Department's website. Under subsection 56(1) of the <i>Legislation Act 2003</i> (CTH), registration on the FRL meets the requirements for gazettal.</p>
<p>(3) The Minister must not declare an operation as an approved wildlife trade operation unless the Minister is satisfied that:</p> <ul style="list-style-type: none"> (a) the operation is consistent with the objects of Part 13A of the Act; and 	<p>Yes, the fishery is consistent with the Objects of 13A – see assessment against the Guidelines.</p>
<ul style="list-style-type: none"> (b) the operation will not be detrimental to: <ul style="list-style-type: none"> (i) the survival of a taxon to which the operation relates; or (ii) the conservation status of a taxon to which the operation relates; and (ba) the operation will not be likely to threaten any relevant ecosystem including (but not limited to) any habitat or biodiversity; and 	<p>Yes, the harvesting operations is not expected to be detrimental to the survival or conservation status of a taxon to which it relates, nor will it threaten any relevant ecosystem, within the next three years, given the management measures currently in place, which include limited entry, restrictions on the amounts harvested from each harvesting area, logbook reporting, monitoring, seasonal and permanent area closure, and gear restrictions.</p>
<ul style="list-style-type: none"> (c) if the operation relates to the taking of live specimens that belong to a taxon specified in the regulations – the conditions that, under the 	<p>Not applicable. The EPBC Regulations 2000 do not specify the harvested specimens as a class of animal in relation to the welfare of live specimens. The</p>

regulations, are applicable to the welfare of the specimens are likely to be complied with; and	target species are dislodged from the substrate by natural events, and harvested in a dead or dying state.
(d) such other conditions (if any) as are specified in the regulations have been, or are likely to be, satisfied.	Not applicable. No other conditions are specified in relation to commercial fisheries in the EPBC Regulations.
(4) In deciding whether to declare an operation as an approved wildlife trade operation the Minister must have regard to:	Yes, the fishery is not expected to have a significant impact on any relevant ecosystem within the next three years, given the management measures currently in place, which include the arrangements described above at subsection 303FN3(b).
(a) the significance of the impact of the operation on an ecosystem (for example, an impact on habitat or biodiversity); and	
(b) the effectiveness of the management arrangements for the operation (including monitoring procedures).	Yes, the management arrangements for the fishery as outlined in the assessment against the Guidelines (above), is expected to be effective. However, it is important that PIRSA implement regular monitoring for impacts on shorebirds from harvesting beach-cast wrack (see Conditions 4 and 5 in Section 4 below).
(5) In deciding whether to declare an operation as an approved wildlife trade operation the Minister must have regard to:	Yes, the fishery will be managed under the <i>Fisheries Management Act 2007</i> (SA), the Fisheries Management (Miscellaneous Fishery) Regulations 2015 (SA), and Fisheries Management (General) Regulations 2017 (SA). Exploratory or developmental permits may be issued under the Fisheries Management (Miscellaneous Developmental Fishery) Regulations 2013 (SA). The Fisheries Management Act applies throughout SA waters. The Department considers that the legislation is likely to be effective.
(a) whether legislation relating to the protection, conservation or management of the specimens to which the operation relates is in force in the State or Territory concerned; and	
(b) whether the legislation applies throughout the State or Territory concerned; and	
(c) whether, in the opinion of the Minister, the legislation is effective.	
(10) For the purposes of section 303FN, an operation is a wildlife trade operation if, and only if, the operation is an operation for the taking of specimens and:	Yes, the fishery is a commercial fishery.
(a) the operation is a commercial fishery.	
Section 303FR Public consultation	Comment
(1) Before making a declaration under section 303FN, the Minister must cause to be published on the Internet a notice:	Yes, a public notice which set out the proposal to declare the fishery an approved wildlife trade operation and included the application from PIRSA was released for public comment from 17 April 2018 to 17 May 2018 , a total of 22 business days. In July 2018, PIRSA provided the Department with an addendum to the application for an exploratory permit to harvest in an unfished area. The Department released this additional information for public comment from 13 August 2018 to 7 September 2018 .
(a) setting out the proposal to make the declaration; and	
(b) setting out sufficient information to enable persons and organisations to consider adequately the merits of the proposal; and	
(c) inviting persons and organisations to give the Minister, within the period specified in the notice, written comments about the proposal.	
(2) A period specified in the notice must not be shorter than 20 business days after the date on which the notice was published on the Internet.	

<p>(3) In making a decision about whether to make a declaration under section 303FN, the Minister must consider any comments about the proposal to make the declaration that were given in response to the invitation in the notice.</p>	<p>Yes, 8 public comments were received on the submission. The public comments expressed concerns that the Department's conditions for export approval had not been met, and recommended that PIRSA:</p> <ul style="list-style-type: none"> • facilitate regular bird surveys in consultation with local shorebird experts, develop a monitoring plan as a condition for each licence or permit, and provide regular reports that clearly identify the harvesting areas, any changes in available shorebird habitat, known breeding sites for Hooded Plover, and the amounts harvested during pre-migration periods, • improve monitoring and recording of shorebird interactions and disturbance caused by harvesting activities, including the period in which harvesters travel to and from the harvest site, and • clarify the requirements for reporting of direct and indirect shorebird interactions. <p>The Department's assessment has considered the public comments received on the submission and addressed these issues through Conditions 4 and 5 (see Section 4).</p>
<p>Section 303FT Additional provisions relating to declarations</p>	<p>Comments</p>
<p>(1) This section applies to a declaration made under section 303FN, 303FO or 303FP.</p>	<p>Yes, a declaration for the fishery will be made under section 303FN.</p>
<p>(4) The Minister may make a declaration about a plan or operation even though he or she considers that the plan or operation should be the subject of the declaration only:</p> <p>(a) during a particular period; or (b) while certain circumstances exist; or (c) while a certain condition is complied with.</p> <p>In such a case, the instrument of declaration is to specify the period, circumstances or condition.</p>	<p>Yes, the standard conditions applied to commercial fishery wildlife trade operations include:</p> <ul style="list-style-type: none"> • operation in accordance with the management regime • notifying the Department of changes to the management regime, and • annual reporting in accordance with the requirements of the Australian Government Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition. <p>The wildlife trade operation instrument for the fishery specifies the standard and any additional conditions applied.</p>
<p>(8) A condition may relate to reporting or monitoring.</p>	<p>Yes, one of the standard conditions relates to reporting.</p>
<p>(11) A copy of an instrument under section 303FN, or this section is to be made available for inspection on the internet.</p>	<p>Yes, the instrument for the fishery made under sections 303FN and the conditions under section 303FT will be registered as a notifiable instrument on the Federal Register of Legislation, and a link to the instrument made available through the Department's website.</p>

Part 16 – Precautionary principle and other considerations in making decisions

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. (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.	Yes, precautionary measures are considered to be in place to prevent serious or irreversible environmental damage being caused by this fishery.

SECTION 4: SOUTH AUSTRALIAN BEACH-CAST MARINE ALGAE FISHERY – SUMMARY OF ISSUES REQUIRING CONDITIONS, SEPTEMBER 2018

Issue	Condition
<p><u>General Management</u></p> <p>Export decisions relate to the arrangements in force at the time of the decision. To ensure that these decisions remain valid and export approval continues uninterrupted, the Department of the Environment and Energy needs to be advised of any changes that are made to the management regime and make an assessment that the new arrangements are equivalent or better, in terms of ecological sustainability, than those in place at the time of the original decision. This includes operational and legislated amendments that may affect sustainability of the target species or negatively impact on byproduct, bycatch, EPBC Act protected species or the ecosystem.</p>	<p>Condition 1:</p> <p>Operation of the South Australian Beach-cast Marine Algae Fishery will be carried out in accordance with the Fisheries Management (Miscellaneous Developmental Fishery) Regulations 2013 (SA), the Fisheries Management (Miscellaneous Fishery) Regulations 2015 (SA) and the Fisheries Management (General) Regulations 2017 (SA) in force under the <i>Fisheries Management Act 2007</i> (SA).</p> <p>Condition 2:</p> <p>The Department of Primary Industries and Regions, South Australia (PIRSA) to inform the Department of the Environment and Energy of any intended material changes to the SA Beach-cast Marine Algae Fishery management arrangements that may affect the assessment against which EPBC Act decisions are made.</p>
<p><u>Annual Reporting</u></p> <p>It is important that reports be produced and presented to the Department annually in order for the performance of the fishery and progress in implementing the conditions in this report and other managerial commitments to be monitored and assessed throughout the life of the declaration. 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. Electronic copies of the guidelines are available from the Department's website at http://www.environment.gov.au/resource/guidelines-ecologically-sustainable-management-fisheries.</p>	<p>Condition 3:</p> <p>PIRSA to produce and present reports to the Department of the Environment and Energy annually as per Appendix B of the Guidelines for the Ecologically Sustainable Management of Fisheries - 2nd Edition.</p>
<p><u>Protection of migratory shorebirds</u></p> <p>Many sandy beaches within the harvesting area have been identified as nationally or internationally important habitat for migratory shorebirds (Christie and Jessop 2007; Bamford et al. 2008). Important habitat is defined by the proportion of a migratory species' population that uses the habitat. Shorebird habitat is considered internationally important if the proportion of the species'</p>	<p>Condition 4:</p> <p>PIRSA to take all reasonable steps to mitigate adverse impacts on migratory shorebirds by the operations of Miscellaneous Fishery Y078 (harvesting and/or transporting of beach-cast wrack), including through:</p>

Issue	Condition
<p>population using the habitat is greater than 1 per cent of the total of that shorebird population, while a habitat that accommodates a population greater than 0.1 per cent is considered nationally important.</p> <p>Several migratory shorebird species occur within the fishery boundary in population numbers that exceed the defined national or international thresholds. The Curlew Sandpiper (<i>Calidris ferruginea</i>), Sharp-tailed Sandpiper (<i>Calidris acuminata</i>), Ruddy Turnstone (<i>Arenaria interpres</i>), Red-necked Stint (<i>Calidris ruficollis</i>), and Sanderling (<i>Calidris alba</i>) all exceed the threshold for internationally significant numbers (Australian Government 2009), while the Double-banded Plover (<i>Charadrius bicinctus</i>) and Pacific Golden Plover (<i>Pluvialis fulva</i>) exceed the threshold of nationally significant numbers ($\geq 0.1\%$) (Christie and Jessop 2007).</p> <p>Shorebirds demonstrate high site fidelity and use a mosaic of sites within the fishery boundary for foraging and roosting. Most migratory shorebirds use these non-breeding habitats from September to May (inclusive). In contrast, the area is used by the Double-banded Plover between April and September following its arrival from New Zealand.</p> <p>Bamford et al. (2008) identifies a number of nationally and internationally important habitats for different species that may occur within the new harvesting area under exploratory permit EP003. Port MacDonnell coast is considered internationally significant for Ruddy Turnstone and Sanderling (migratory), and nationally significant for Red-necked Stint (migratory), Sharp-tailed Sandpiper (migratory), Double-banded Plover (migratory) and Curlew Sandpiper (critically endangered, migratory). Brown Bay (Green Point) and Canunda National Park are considered internationally significant for Sanderling (migratory). Carpenter Rocks/Pelican Point is internationally significant for Ruddy Turnstone (migratory), and nationally significant for Red-necked Stint, Sharp-tailed Sandpiper, Sanderling and Double-banded Plover. Rivoli Bay is considered internationally and nationally significant for Ruddy Turnstone and Sanderling (migratory).</p> <p>To mitigate against adverse impacts to migratory shorebirds, it is important that PIRSA exclude harvesting activities in these areas or implement a suite of management arrangements to minimise any impacts on nesting and foraging shorebirds.</p> <p>Adequate management measures must be implemented to avoid any deleterious effect on migratory shorebird species, and impacts on other aspects of the coastal ecosystem. It is important that harvesting is limited to at least 50 per cent of the available wrack within the harvesting area as a precautionary measure to avoid broader ecosystem impacts. Beach-cast wrack is vital for shorebirds, particularly immediately on arrival and prior to departure as it contains essential</p>	<ul style="list-style-type: none"> (a) implementing a management strategy that ensures at least 50% of the licence area is excluded from the fishery operations at all times, including closing the area from the Beachport Conservation Park to approximately one kilometre north of Blowhole Road; (b) avoiding the removal of all non-target species from the harvest area; (c) imposing additional requirements in the period from 1 September to 15 May (inclusive) each year, on sandy beaches along Wrights Bay, Nora Creina, Stinky Beach and the Rivoli Bay area from approximately one kilometre north of Blowhole Road to the southern end of the Fishery, including only permitting harvesting to occur: <ul style="list-style-type: none"> (i) by way of hand harvesting (assisted by mechanical winch if required); (ii) on a maximum of 8 calendar days (or any part thereof) per calendar month, and a maximum of 4 calendar days (or any part thereof) between 1 May and 15 May, with each harvesting day to be advised to PIRSA prior to the commencement of harvesting; and (iii) through the use of up to two vehicles (4 wheel drive utility, or similar, with a trailer with a gross vehicle mass of 3.5 tonne), with up to three people per vehicle, on any one day; and (d) prohibiting harvest operations within 100 metres either side of any nesting areas where <i>Thinornis rubricollis</i> (Hooded Plovers) are currently nesting and/or caring for dependent young, in all areas at all times <p>Condition 5: PIRSA to take all reasonable steps to mitigate adverse impacts on migratory shorebirds by the operations of the Exploratory Fishing Permit EP0003 within the SA Beach-cast Marine Algae Fishery, including harvesting and/or transporting of beach-cast wrack. Mitigation measures must include:</p> <ul style="list-style-type: none"> (a) ensuring at least 50 per cent of the permit area is excluded from the harvesting operations at all times; (b) avoiding the removal of all non-target species from the harvest area; (c) restrict harvesting in the period from 1 September to 15 May (inclusive) each year to sandy beaches: <ul style="list-style-type: none"> (i) by way of hand harvesting (assisted by mechanical winch if required);

Issue	Condition
<p>food items. Wrack also provides camouflage and protection from inclement weather. Decomposing wrack also provides a food source for offshore species, including fish and benthic coastal. Beach-cast wrack also helps to stabilise and may contribute to the fertility and stability of substrates behind the fore dunes.</p> <p>The use of heavy machinery and repeated human disturbance of important habitat can disrupt the foraging and roosting behaviour of shorebird species. It is important that heavy machinery is not used in areas considered nationally and/or internationally important for migratory shorebirds from September to May (inclusive) to reduce the potential impacts on listed migratory shorebirds.</p> <p>Some areas available for harvest are identified as sites of high conservation significance for the Hooded Plover (<i>Thinornis rubricollis</i>), which is a species prone to disturbance and vulnerable to breeding failure (TSSC 2014). It is important that management measures ensure the Hooded Plover is not deterred from foraging or nesting sites due to the harvesting operations. A 100 m buffer zone must be established around individuals identified as nesting or caring for dependent young. Regular liaison with other state and local government agencies, non-government organisations and relevant community groups will help identify the potential presence of this species within the fishery boundary.</p> <p>The Department acknowledges the strict conditions attached to each licence or permit (see Section 1 above). Following the risk assessment workshop, licence holders are required to develop a code of practice (COP) in collaboration with PIRSA, the SA Department of Environment and Water, and the SA Department of State Development. The COP sits outside the legislative framework and describes best practice related to training requirements for harvesters with regard to bird identification and mitigation methods for reducing interactions with shorebirds.</p>	<ul style="list-style-type: none"> (ii) on a maximum of 8 calendar days (or any part thereof) per calendar month, and a maximum of 4 calendar days per calendar month (or any part thereof) between 1 May and 15 May, with each harvesting day to be advised to PIRSA prior to the commencement of harvesting; and (iii) through the use of up to one vehicle (4 wheel drive utility, or similar, with a trailer with a gross vehicle mass of 3.5 tonne), with up to three people per vehicle, on any one day; and (d) prohibiting harvest operations within 100 metres either side of any nesting areas where <i>Thinornis rubricollis</i> (Hooded Plovers) are currently nesting and/or caring for dependent young, in all areas at all times.
<p><u>Monitoring and Research</u></p> <p>As discussed above, wrack harvesting operations is active within sites identified as important habitats for threatened and migratory shorebirds. It is important that PIRSA, in collaboration with licence and permit holders, non-government organisations, and other government agencies, facilitate studies and/or surveys to monitor and assess potential impacts from the fishery on shorebirds listed under the EPBC Act. Noting the small-scale of the fishery, research activities will be appropriate to the level of operations, level of risk and funds available.</p> <p>PIRSA should consider any relevant research and survey results when developing management arrangements for harvesting wrack to minimise any impacts on listed migratory shorebirds and appropriately address any issues that may be identified.</p>	<p>Condition 6:</p> <p>PIRSA, in collaboration with the SA Department of Environment and Water, industry and where possible, the community to:</p> <ul style="list-style-type: none"> (a) implement a monitoring program to annually assess the impact of the SA Beach-Cast Marine Algae Fishery on migratory shorebirds; and (b) continue to support research with the aim of understanding and effectively managing the ecological risk posed by the fishery to shorebirds and all relevant terrestrial and coastal ecosystems. <p>Any data obtained from the monitoring program (excluding commercial-in confidence- data) must be included in the annual report sent to the</p>

Issue	Condition
<p>There is no fishery-independent monitoring of the impact of the fishery on migratory shorebirds. In the past, PIRSA has suggested that licencing arrangements may provide a basis for independent monitoring to be undertaken. Regular monitoring of shorebird populations will assist in determining the level of impact of harvest activity. A comprehensive long term survey or study on protected shorebird species within the harvest areas would improve the knowledge gaps and provide more detailed data on the status of these birds.</p> <p>As mentioned above, the ecological benefit of beach-cast wrack as a significant resource for the broader terrestrial and coastal ecosystems. There is currently no research basis from which to determine ecologically sustainable wrack harvest levels. In the absence of sufficient data or published research to support the long-term sustainability of the harvest operation within the broader ecological network, the Department considers it important that PIRSA and industry also facilitate studies to assess potential impacts from the fishery on the broader ecosystem.</p> <p>The information provided by licence holders through monthly reporting will form part of a monitoring program. Licence conditions require data records for the amount of each species harvested and processed, and any interactions with threatened, endangered or protected species, including shorebirds. The Wildlife Interaction Logbook and Shorebird Sighting Form records include bird sightings and alarm flights as well as negative bird interactions.</p>	<p>Department of the Environment and Energy and should be available to the SA Department of Environment and Water.</p>

REFERENCES

Bamford M, Watkins D, Bancroft W, Tischler G, and Wahl J 2008 'Migratory shorebirds of the East Asian – Australasian Flyway: Population estimates and internationally important sites', Wetlands International – Oceania, Canberra ACT.

Christie M and Jessop R 2007 'Shorebirds on the beaches of the Limestone Coast in the south-east of South Australia', Friends of Shorebirds and WWF Australia.

CPB SA (Coast Protection Board of SA) 2017 'What is beach wrack?' Coastline Factsheet No. 38, March 2017, Department of the Environment, Water and Natural Resources, Adelaide SA, Available at <https://www.environment.sa.gov.au/our-places/coasts/Resources>.

DoE (Department of the Environment) 2015 '*Wildlife conservation plan for migratory shorebirds*', Department of the Environment, Canberra ACT, Available at <http://www.environment.gov.au/biodiversity/publications/wildlife-conservation-plan-migratory-shorebirds-2016>.

DoEE (Department of the Environment and Energy) 2017 'EPBC Act Policy Statement 3.21 – Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species', Department of the Environment and Energy, Canberra ACT, Available at <http://www.environment.gov.au/epbc/publications/shorebirds-guidelines>.

DoEE (Department of the Environment and Energy) 2018a '*Migratory shorebirds*', Department of the Environment and Energy, Canberra ACT, Available at <http://www.environment.gov.au/biodiversity/migratory-species/migratory-birds>.

DoEE (Department of the Environment and Energy) 2018b '*Species profile and threats database*', Department of the Environment and Energy, Canberra ACT, Available at <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>.

DEH (Department of the Environment and Heritage) 2006 '*Wildlife conservation plan for migratory shorebirds*', Department of the Environment and Heritage, Canberra ACT, Available at <http://www.environment.gov.au/biodiversity/publications/wildlife-conservation-plan-migratory-shorebirds>.

Ivey A, Sorokin S and Ward T 2013 'The South Australian Miscellaneous Fishery summary of fisheries data and biological parameters', SARDI No. F2013/000435-1, SARDI Aquatic Sciences, Adelaide SA.

Kirkman H and Kendrick GA 1997 'Ecological significance and commercial harvesting of drifting and beach-cast macro-algae and seagrasses in Australia: a review', *Journal of Applied Phycology*, vol. 9, no. 4, pp. 311-326.

PIRSA (Primary Industries and Resources SA) 2014 'Ecological assessment of the South Australian Beach-cast Seagrass and Marine Algae Fishery: assessment report prepared for the Department of the Environment for the purposes of Parts 13 and 13A of the EPBC Act', Department of Primary Industries and Regions, Adelaide SA, Available at <http://www.environment.gov.au/marine/fisheries/sa/seagrass/agency-application-2014>.

PIRSA (Primary Industries and Resources SA) 2015 'Ecologically sustainable development (ESD) risk assessment of proposed activity to harvest beach-cast marine algae', Department of Primary Industries and Regions – Fisheries and Aquaculture, Adelaide SA, Available at http://pir.sa.gov.au/__data/assets/pdf_file/0006/261069/DRAFT_ESD_Risk_Assessment_report_SA_exploratory_permit_marine_algae.pdf.

PIRSA 2018 'Ministerial determination under Regulation 11(1) - Periodic returns for the Miscellaneous Fishery', Dated 3 January 2018, PIRSA, Available at http://pir.sa.gov.au/__data/assets/pdf_file/0005/309119/MF_Reg_11_-_Periodic_returns.pdf.

TSSC (Threatened Species Scientific Committee) 2014 'Conservation advice for *Thinornis rubricollis rubricollis* (Hooded Plover (eastern))', Department of the Environment and Energy, Canberra ACT, Available at http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=66726.