

PIRSA

Cost Recovery Implementation Statement for the Sardine Fishery

1 July 2020 to 30 June 2021



Cost Recovery Implementation Statement

Information current as of February 2020
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Introduction

Wild catch commercial fisheries in South Australia are managed in accordance with the PIRSA Cost Recovery Policy. This policy requires commercial fishery licence fees to fund services related to commercial fisheries management costs. PIRSA Fisheries and Aquaculture continue to manage the process of consulting with service providers and relevant industry associations to establish fishery-based management programs, which form the basis of annual licence fees.

For each sector, the program required to manage the fishery has the following components:

- Assessment and Research Services.
- Fisheries Policy and Management Services.
- Compliance Services, including communication, enforcement and monitoring activities.
- Support Services, including Legislation, Licensing and Business Services (Directorate).

This documentation provides a framework to assist in establishing appropriate research, policy, compliance and support services to manage a fishery.

In 2018, the Government made an election commitment to initiate an independent review of the cost recovery policy of Primary Industries and Regions South Australia (PIRSA) as applied to the fisheries and aquaculture sectors. An independent consultant was engaged to undertake the review and consulted with all fisheries and aquaculture sector representatives and representatives from PIRSA. The final report, with 11 recommendations, was provided to PIRSA in November 2018 and all recommendations were accepted by Government. The report observed that PIRSA's management of both the fisheries and aquaculture sectors had significantly improved since 2015 in terms of increasing transparency and accountability as well as taking significant strides to reduce administrative burden, through the use of longer term cost recovery agreements between PIRSA and individual industry sectors. Implementation of the 11 recommendations from the independent review will further enhance efficiency and transparency of PIRSA cost recovery approach to the Fisheries and Aquaculture sectors. Information relating to the Government response to the recommendations can be found at https://www.pir.sa.gov.au/fishing/commercial_fishing/pirsa_services_to_fisheries_industry.

Consistent with Principle 7 of the PIRSA Cost Recovery Policy, an annual schedule of meetings for stakeholder engagement and support for the cost recovery process in relation to commercial fisheries is outlined below:

Annual schedule of meetings

Date	Activity	Parties
Sept/Oct	Review long-term objectives for fishery and update if necessary. Identify priority outcomes for upcoming financial year.	PIRSA and industry association
October	Develop policy, research and compliance work programs in readiness for discussions (fisheries managers with industry) in November.	PIRSA
November	Discuss proposed programs with relevant industry associations and reach agreement on programs for the upcoming period. Industry associations to consult with wider industry.	PIRSA and industry association
February	Formal meetings with industry associations to finalise work programs and summarise costs.	PIRSA and industry association
March	Submit proposed licence fees to Minister. Prepare Cabinet Submission to amend regulations to prescribe licence fees for the next financial year.	PIRSA and government agencies
June	Invoices sent for annual licence fees.	PIRSA

* Dates above are indicative only and may vary due to unforeseen circumstances that may arise throughout any year.

** If a four-year agreement has been adopted, the Cost Recovery Implementation Agreement (CRIA) will determine that an annual meeting will occur to enable annual stakeholder engagement.

Summary Table

2019-20 (\$)	PROGRAM AREA	2020-21 (\$)	COMMENTS	DAYS	FTE
RESEARCH COSTS					
516,419	Stock Assessment and Monitoring	351,919	As per year 2 of 4 year research project scope (stock assessment costs included), NO spawning Biomass DEPM included for 2020-21. Includes 'interactions of the Sardine Fishery with short beaked common dolphins' SARDI project scope \$51,183		
14,551	Economic Assessment	14,987	As per contracted services 2020-21		
73,673	Observer Coverage	135,159	As requested by Industry on 8.04.2020. To be contracted with Kempwilson Pty Ltd (trading as Seatec). Until 30 June 2021		
PIRSA RELATED COSTS *					
76,800	Policy and Management	77,760	Same level of service as previous year	80	0.40
15,450	Legislation	15,765	Same level of service as previous year	15	0.08
15,876	Licensing	16,359	Same level of service as previous year	21	0.11
6,587	Directorate	6,825	Same level of service as previous year	7	0.04
115,110	Compliance	117,450	Same level of service as previous year	90	0.45
53,648	Vessel	55,132	Same level of service as previous year	7	0.04
12,600	VMS	12,600	Maintained at \$900 per licence holder	14	0.07
14,520	Quota Monitoring	14,916	Same level of service as previous year	22	0.11
OTHER COSTS					
63,465	FRDC	63,908	Funding based on 0.25% of rolling three year average GVP		
9,981	Co-Management Services	9,981	In accordance with Marine Scalefish fishery sector co-management services requested for 2020-21		
988,680	TOTAL	892 761			

Licence Fees 2020-21 (\$)	
MS Base Fee	2,947
Net Fee	57,874
Licence Fees 2019-20 (\$)	
MS Base Fee	5,631
Net Fee	64,989

Fishery Management Objectives

Management Plan Objectives	Outcomes	Policy and Management	Compliance	Assessment and Research	Leasing and Licensing
<p>Maintain harvest of sardines, anchovies and by-product species at ecologically sustainable levels.</p> <p>Optimum utilisation and equitable distribution.</p>	<p>Stock and ecosystem maintenance in line with the Management Plan under the <i>Fisheries Management Act 2007</i>.</p>	<p>Review and progress rules review outcomes, including:</p> <ul style="list-style-type: none"> • standardise quota declaration process. • review netting closure exemption in Port Lincoln & Coffin Bay. <p>Administer Sardine TACC-setting in accordance with Harvest Strategy.</p> <p>Administer Anchovy TACC-setting in accordance with Harvest Strategy.</p> <p>Preparation, attendance and participation at SASIA meetings and provision of advice, as required.</p> <p>Support review of Management Plan involving processes required under sections 44 and 45 of the Fisheries Management Act 2007, including Harvest Strategy for the fishery. Specifically movement</p>	<p>Implement compliance program, in accordance with risk assessment.</p> <p>Support implementation of Management Plan.</p> <p>Pre-season briefings with licence holders.</p>	<p>Support implementation of Management Plan.</p> <p>Provide scientific advice to PIRSA Fisheries & Aquaculture and Research and Management Committee of SASIA.</p> <p>Undertake and deliver fishery assessment report, consistent with Harvest Strategy.</p> <p>Undertake fishery-independent DEPM surveys, consistent with Harvest Strategy.</p> <p>Provide scientific advice to industry for fishery-dependent sampling.</p> <p>FRDC project – improve estimates of egg production, including CUFES methodology, for</p>	<p>Support implementation of Management Plan.</p> <p>Provide ongoing support for licensing, quota and transfer queries.</p>

Management Plan Objectives	Outcomes	Policy and Management	Compliance	Assessment and Research	Leasing and Licensing
		<p>between tiers and consideration of potential changes in the levels of exploitation.</p> <p>Assist with Marine Stewardship Council (MSC) certification, both with industry and the assessment group.</p>		<p>incorporation into DEPM model.</p> <p>Support review of Sardine Harvest Strategy.</p>	
<p>Protect and conserve aquatic resources, habitats and ecosystems.</p>	<p>Real-time monitoring of threatened, endangered and protected species (TEPs) interactions.</p> <p>Review of Code of Practice (CoP) to mitigate TEPS interactions (ongoing).</p> <p>Manage observer program.</p> <p>Progress DotE WTO accreditation under EPBC Act</p>	<p>Real-time monitoring of TEPs interactions with industry.</p> <p>Preparation, attendance and participation in TEPs working group meetings.</p> <p>Develop suitable performance indicators and decision rules to inform mitigation of dolphin interactions and observer coverage.</p> <p>Assist in the review of CoP.</p> <p>Manage observer contract and authorisations.</p> <p>Coordinate annual meeting of scientific observers.</p> <p>Continue implementation and management of existing programs.</p>	<p>Implement compliance program, in accordance with risk assessment.</p> <p>Real-time monitoring of TEPs interactions with industry.</p> <p>TEPS interactions investigated.</p> <p>Any mortalities collected and processed.</p> <p>Preparation, attendance and participation in Wildlife Interaction Working Group meetings.</p> <p>Prepare and present information for annual meetings with scientific observers.</p>	<p>Support industry's real-time monitoring of TEPS interactions with industry.</p> <p>Assist in ongoing review of CoP.</p> <p>TEPS annual report.</p> <p>Maintenance of observer data in SARDI database.</p> <p>Preparation, attendance and participation in Wildlife Interaction Working Group meetings.</p>	

Management Plan Objectives	Outcomes	Policy and Management	Compliance	Assessment and Research	Leasing and Licensing
		<p>Administer consultation and setting of observer coverage in the fishery.</p> <p>Assist with Marine Stewardship Council (MSC) certification, both with industry and the assessment group.</p>			
<p>Cost effective and participative management of the fishery.</p>	<p>Effective engagement with industry.</p>	<p>Preparation, attendance and participation at SASIA meetings.</p> <p>Regular communication with industry and Executive Officer, SASIA.</p> <p>Attend annual meeting of skippers.</p> <p>.</p>	<p>Annual session with licence holders.</p> <p>Attend SASIA meetings and provide advice on compliance issues, as required.</p>	<p>Attend SASIA meetings and provide scientific advice, as required.</p>	<p>Provide ongoing support for licensing, quota and transfer queries.</p>

Fisheries Policy and Management Program

Program Manager:

Alice Fistr, General Manager, Fisheries Policy and Management Unit
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Program summary

The Fisheries Policy and Management Unit of PIRSA Fisheries and Aquaculture undertakes activities such as day-to-day management, long-term planning and policy development for South Australian commercial, recreational and Aboriginal traditional fisheries.

The Fisheries Policy and Management unit has the following core functions:

- Administer the *Fisheries Management Act 2007* and regulations.
- Day-to-day management of fisheries resources, to ensure catch and effort levels are commensurate with resource sustainability.
- Develop and implement Management Plans, including Harvest Strategy development and ESD risk assessment, in accordance with the *Fisheries Management Act 2007*.
- Provide advice to the Executive Director, Fisheries and Aquaculture, Minister for Primary Industries and Regional Development, Chief Executive and Deputy Chief Executive on matters relating to fisheries.
- Represent the Executive Director, Fisheries and Aquaculture on committees and other forums on matters related to the administration of the *Fisheries Management Act 2007*.
- Develop over-arching policy frameworks to support fisheries management.
- Build and maintain relationships with key stakeholders, with a particular focus on the commercial and recreational fishing sectors.
- Progress Australian Government recommendations under EPBC Act (1999) assessment.

Objectives

To provide day-to-day fisheries management services to the Sardine Fishery to government and industry, as well as advice and facilitation of fisheries policy and management issues, through the Fisheries Policy and Management Program.

Program strategies and supporting actions and initiatives

Program delivery

1. Participate in inter and intra-departmental meetings and workshops on issues relevant to fisheries management.

2. Liaise within the Fisheries and Aquaculture Division, with SARDI Aquatic Sciences, other parts of PIRSA and other State and Commonwealth agencies on matters relevant to fisheries management.
3. Liaise within PIRSA, with other government agencies and with industry representatives in implementing decisions relevant to fisheries management.
4. Conduct regular assessment or review of existing management arrangements for fisheries management, including analysis of statistical information on fisheries and interactions with threatened, endangered and protected species.
5. Coordinate consultation with fishery stakeholders through established co-management processes.
6. Participate in industry liaison in the field and on vessels to strengthen fishery management knowledge and understanding, and develop rapport with licence holders and divers.
7. Participate in industry development initiatives related to fisheries management.
8. Attending to general correspondence and enquiries relevant to fisheries.
9. Provide advice to the Minister in relation to the management of fisheries and Ministerial correspondence.
10. Communicate on fisheries management issues to key stakeholder groups and the broader community.

Anticipated outcomes

1. Prepare day-to-day necessary legislative instruments and/or advice required for the management of the Sardine Fishery (regulations, catch limits, closure notices, licence conditions, Ministerial exemptions etc).
2. Prepare policies to support fisheries management.
3. Prepare regular fisheries status reports.
4. Develop and maintain day-to-day productive working relationships and outcomes through cooperative management and collaboration with stakeholders.
5. Deliver quality and timely responses to correspondence.
6. Further the development of co-management arrangements.

Performance indicators

1. Australian Government requirements met in relation to EPBC assessment.
2. Setting of TACC for Sardine Fishery
3. Setting observer coverage levels in the fishery.

Program effort allocation

The table below includes an abbreviated suite of core activities and initiatives used to manage risks and reflect the anticipated split of effort and associated costs.

Activity	Days	FTE	Cost (\$)
Policy and Management	80	0.4	77,760

Please Note: All dollar values have been rounded to the nearest dollar figure.

	Deliverables	Due date
1.	Participate in inter and intra-departmental meetings and workshops on issues relevant to fisheries management.	Ongoing
2.	Liaise within the Fisheries and Aquaculture Division, with SARDI Aquatic Sciences, other parts of PIRSA on the application, development and implementation of decisions relevant to fisheries management.	Ongoing
3.	Liaise with the Executive Officer of the South Australian Sardine Industry Association (SASIA) and licence holders in the fishery on the application, development and implementation of decisions relevant to fisheries management.	Ongoing
4.	Coordination of the spatial, seasonal and vessel application of the scientific observer program with the observer program provider contracted by PIRSA.	Ongoing
5.	Participation in SASIA meetings of licence holders to discuss interactions with Threatened, Endangered and Protected Species (TEPS) and management of the fishery as it relates to the target species.	Ongoing
6.	Attending to general correspondence and enquiries relevant to fisheries.	Ongoing
7.	Provide advice to the Minister in relation to the management of fisheries and Ministerial correspondence.	Ongoing
8.	Communicate on fisheries management issues to key stakeholder groups and the broader community.	Ongoing
9.	Undertake a review of the effectiveness of the observer coverage arrangements, in consultation with the SASIA Executive Officer.	July 2021
10.	Coordinate and facilitate a meeting of licence holders in the fishery to seek advice on the setting of the TACC for the 2021 season of the South Australian Sardine Fishery.	November/ December 2020
11.	Coordinate and facilitate a meeting of licence holders in the fishery to seek advice on the setting of the level of observer coverage for the 2021 season of the South Australian Sardine Fishery.	November/ December 2020

Legal Services Program

Program Manager:

Lambertus Lopez, Manager, Legal and Legislative Programs

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Program summary

PIRSA Fisheries & Aquaculture Directorate provides legal services to the Deputy Chief Executive and all other members of the Division, in particular the policy group, on a daily basis. Among other things these services include strategic advice and problem solving, review of draft documentation and correspondence, statutory interpretation and the provision of general advice and statutory interpretation, in consultation with the Crown Solicitor's Office where necessary, regarding any legal issues relating to proposed actions and the implementation or administration of Sardine fisheries management and regulatory arrangements through existing legislative frameworks and licence conditions. Consideration is also given to the impacts and effects of other related legislation if and when required.

Objectives

To provide legal services supporting the implementation of necessary, appropriate and effective statutory and administrative changes to government administration of all fishery sectors, as well as strategic advice and facilitation of related policy development, legislative and regulatory issues, through the Legal Services Program.

Program strategies and supporting actions and initiatives

Anticipated outcomes

1. Co-ordinate the introduction, amendment or revocation of Fisheries legislation in line with Fisheries Policy decisions i.e. Act or regulation amendments, the introduction of new regulations and drafting of other legislative and administrative instruments such as delegation, permit or exemption instruments as required under the Fisheries Management Act 2007 (the Act). New regulations or amendments require the drafting of Cabinet submissions and supporting documentation, including the preparation of drafting instructions, for consideration by Cabinet. This service includes co-ordinating the cabinet process involving liaison with the Office of Parliamentary Counsel and the Crown Solicitor's Office and inter agency consultation to ensure that proposed regulatory arrangements are accurately described, drafted and scrutinised before being implemented.
2. Review licensing arrangements required on an as needs basis to appropriately implement approved fishery management policy and measures within the limitations of the Act. The service includes working with the Licensing program (part of Leasing and Licensing) where necessary to implement efficient administrative systems and finalise forms and instruments that are legally sound.
3. Problem solve together with the provision and co-ordination of legal advisory services in liaison with the Crown Solicitor's office relating to the implementation and administration of the Act, Regulations and fisheries management policies, interaction with other Acts, and the defence of those policies and arrangements raised in litigation or industry correspondence.

4. Coordinate applications for Ministerial exemptions under Part 10 Division 1 and Permits under Part 7 Division 2 of the Act.
5. Additional legal services to support, on an as needs basis, the decision-making of the Executive Director Fisheries and Aquaculture and the Director Operations and other delegates of the Minister under the Act to safeguard the ongoing sustainability of a fishery in any particular year (where required), depending on positive or negative scientific indicators, to implement new fisheries management arrangements (for example the introduction or variation of a quota system) or new administrative or compliance arrangements (for example, changes to licensing processes, conditions, introduction of closures).
6. Support compliance for statutory interpretation, problem solving and correspondence advice (per above).

Program effort allocation

The table below includes an abbreviated suite of core activities and initiatives used to manage risks and reflect the anticipated split of effort and associated costs.

Activity	Days	FTE	Cost (\$)
Legislation	15	0.08	15,765

Please Note: All dollar values have been rounded to the nearest dollar figure.

Leasing and Licensing Program

Program Manager:

Rob Falco, Manager, Leasing and Licensing
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Program summary

The Fisheries Leasing and Licensing unit of PIRSA Fisheries and Aquaculture is responsible for the management of licensing and quota monitoring services.

This business unit provides a range of services related to the timely processing and management of information leading to the issue of licences and other reporting services.

The unit administers a licensing call centre for licence inquiries and other administrative services. The success of these functions is based on maintaining the Primary Industries Information Management System (PIIMS) database.

Objectives

To provide leasing and licensing services to government and industry through the Leasing and Licensing Program.

Program strategies and supporting actions and initiatives

Anticipated outcomes

1. Issue licences to licence holders in an accurate and timely manner.
2. Provide accurate and timely information related to licences.
3. Provide reports as required.

Services to directly support the fishery

1. Renew and maintain fishery licences.
2. Database management for licence renewal.
3. Quota monitoring.
4. Collect licence fees and associated payments.
5. Compose and send quarterly instalment notices.
6. Record and track unpaid invoices.
7. Compose and send late payment instalment notices for un-paid quarterly instalments.
8. Draft and issue notices to fishers.

9. Process requests for information from fishers who make such inquiries over the counter, through the call centre, via facsimile or e-mail. For example, helping fishers to process information relevant to licensing and quota, application for licence transfers, boat changes, gear enquiries and fishing regulations.
10. Regularly update information about licence holders.
11. Research and prepare documents for public record.
12. Liaise with government stakeholders to verify the credentials of fishers.
13. Liaise with PIRSA Fisheries and Aquaculture, SARDI Aquatic Sciences, Crown Solicitors and other state and local agencies on matters relevant to the fishery.
14. Draft and update licence conditions over the duration of the licensing year as determined by the Executive Director, Fisheries and Aquaculture.
15. Provide information to licence holders relating to the requirements pursuant to licence administration.
16. Manage calls from fishers regarding late payment notices, fees and general enquiries about their licences.
17. Provide support regarding an increased frequency of last minute administrative enquiries from fishers. e.g. master changes, boat variations and quota transfers, as well as provide advice and support to fishers on licence information, to complete the required forms.

Services to support fisheries management

1. Participate in inter and intra departmental meetings and workshops on issues relevant to the fishing industry.
2. Liaise with relevant staff within PIRSA Fisheries and Aquaculture in implementing decisions relevant to the fishery.
3. Interrogate the PIIMS database to extract information for other stakeholders to use in preparing reports.
4. Prepare reports requested by internal and external customers including maintenance of a public register of licence holders.
5. Liaise with information technology providers to maintain PIIMS and administer licensing requests.
6. Generate quota management reports to update stakeholders on varying Total Allowable Commercial Catch (TACC) returns and end of season quota holdings.

Program effort allocation

The table below includes an abbreviated suite of core activities and initiatives used to manage risks and reflect the anticipated split of effort and associated costs.

Activity	Days	FTE	Cost (\$)
Leasing and Licensing	21	0.11	16,359
Quota Monitoring	22	0.11	14,916

Please Note: All dollar values have been rounded to the nearest dollar figure.

Directorate Program

Program Manager:

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Program summary

Business Strategy, within the Directorate Unit of PIRSA Fisheries and Aquaculture, provides a range of services to support fisheries management. These include coordinating the cost recovery process and establishing agreements with service providers; coordinating program provider reports; administering external contracts and agreements; and providing audit, financial and human resource functions.

Objectives

To provide support services to government and industry, as well as advice and facilitation of corporate related policy and management issues, through the Directorate Program that incorporates the Fisheries and Aquaculture Business Strategy unit.

Program strategies and supporting actions and initiatives

Anticipated outcomes

1. Coordinate and facilitate cost recovery processes and program agreements, including liaising with program providers, managers and financial services as required.
2. Meet with industry on matters relating to cost recovery, licence setting and related policy issues.
3. Develop and review cost recovery policy, processes and program agreements.
4. Manage major service providers' contractual agreements, and co-management services contractual agreements with industry associations.
5. Project manage and administer external contractual services and agreements – including liaising with PIRSA Accredited Purchasing Unit, preparing acquisition plans and selecting evaluation criteria, managing tender processes, drafting purchase recommendations and liaising with the Crown Solicitor's office to develop contractual agreements.
6. Provide advice on procurement and invoicing requirements.
7. Consult with the Deputy Chief Executive, Executive Director, Fisheries and Aquaculture, Director Operations, PIRSA fisheries managers, and the Office of the Minister and other parties as needed.
8. Ongoing review, development and documentation of the cost recovery model, framework, processes and roles.
9. Meet agreed timeframes on management and administration of external contractual services.
10. Appropriate management of industry funds and services.

Program effort allocation

The table below includes an abbreviated suite of core activities and initiatives used to manage risks and reflect the anticipated split of effort and associated costs.

Activity	Days	FTE	Cost (\$)
Directorate	7	0.04	6,825

Please Note: All dollar values have been rounded to the nearest dollar figure.

Fisheries Compliance Operations Program

Program Manager:

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State Coordinator:

Yolande Markey, Senior Fisheries Officer

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Program summary

PIRSA Fisheries and Aquaculture teams coordinate compliance activities (outputs) to build awareness and behavioural outcomes that have a long term beneficial impact in the Sardine Fishery. The objective of the compliance activities (outputs) is to minimise the risks to aquatic resource sustainability, resource allocation and access rights and ultimately commercial economic viability.

The outputs of the Sardine Compliance Plan are primarily delivered by teams located in Port Lincoln and the Offshore Patrol Vessel. Support is also provided as required from other Regional Operation teams and the Intelligence and Strategic Support team.

The coordination of the compliance outputs is guided by an industry specific compliance plan which was developed in consultation with the Sardine Industry. These outputs are aimed at educating fishers, deterring opportunistic and financially motivated crimes, enforcing the rules and regulations and reducing overall compliance risks to resource sustainability.

A diagrammatic representation of the PIRSA compliance model is shown as a Program Logic Model (Appendix 1). This identifies the high level relationships and intended causal links between fisheries compliance inputs, outputs and intended program outcomes.

The elements of the compliance Program Logic Model are also linked to a new assessment tool (Maturity Model) that was developed during National Fisheries Compliance Committee (NFCC) workshops. The Maturity Model allows a weight of evidence approach to assess the efficacy of the compliance outputs and the outcomes achieved. This is designed to support decisions that achieve a shared view between Sardine industry and PIRSA and the existence of a mature sustainable fishery

Inputs

Compliance inputs are the resources and constraints that frame the delivery of the compliance outputs or activities. This covers policies, legislative and regulatory frameworks, program funding, human resourcing, information technology systems and research. The compliance inputs for the Sardine fishery are identified herein.

Legislative and regulatory framework

Fisheries Management Act 2007

Fisheries Management (Fish Processors) Regulations 2007

Fisheries Management (General) Regulations 2007 Schedule 2

Fisheries Management (Demerit Points) Regulations 2009

Program effort, funding and resources

The level of effort required to deliver the compliance program in accordance with the dedicated plan is reviewed annually taking into account:

- previous effort required to deliver established programs developed over last 10 years.
- the identified risks to the fishery and any associated changes.
- shifts or changes to the fishery management.
- changes to fishing practices.
- additional pressures or influences on fishers or the fishery.
- intelligence holdings.
- trends or change behaviours that required monitoring and/or investigation.
- cost effectiveness and identified efficiencies.
- any other relevant information required to deliver an effective compliance program to monitor and enforce the rules and regulations for each fishery.

PIRSA has continually reviewed the Sardine fishery compliance program, gaining efficiencies through data driven and targeted operations and re-directing compliance effort where necessary to address current and emerging issues and risks.

It should be noted that for the year ending 30 June 2019 PIRSA expended an additional 67 days of effort (~\$85k) above the cost recovered program. Approximately 43% of the total compliance output was attributed to enforcement which was predominantly TEPS related. The following table includes the number of days predicted to reflect the anticipated split of effort and associated costs to deliver the compliance outputs for 2020/21:

Table 1: Sardine - Effort Allocated Against Compliance Outputs

Compliance Outputs	Days	FTE	Cost (\$)
Education Awareness	6	0.03	7,830
Effective Deterrence, Monitoring and Surveillance	71	0.35	92,655
Enforcement	13	0.07	16,965
TOTAL OFFICER DAYS	90	0.45	117,450
Offshore Patrol Vessel	7		55,132

Please Note; to comply with Work Health and Safety obligations and evidentiary requirements, operational activities are generally required to be undertaken by a minimum of two (2) officers at any time.

IT systems, technology and data

Fisheries and Aquaculture Compliance Operations are supported by a number of electronic systems which continue to be refined to allow optimum delivery of information in a reliable and timely way. Some of the key systems that assist to drive the compliance outputs include:

- IBase and Analyst Notebooks (Intelligence system).
- FACT (Fisheries and Aquaculture Information Collection Tool).
- Timewise (Effort Reporting Tool).
- Evidence.com (Video Evidence Collection Tool).
- PIIMS (Primary Industries Information Management System – Quota and Licence Information).
- eCatch.
- eBrief (prosecutions system).
- Vessel Monitoring System (VMS).
- Commercial Fishing Application.

Delivery outputs

The coordination of compliance outputs is guided by an industry specific compliance plan which was developed in consultation with the Sardine Industry. The plan ensures compliance effort is intelligence driven, efficient, and cost effective and outcome focused. The compliance plan comprises three core outputs (Education and Awareness, Effective Deterrence and Appropriate Enforcement) and is optimised towards increasing voluntary compliance and maximising effective deterrence.

Analysis of intelligence and information holdings is regularly conducted to identify the major risks to the sustainable harvest of Sardines. The combination of strategies, actions, and initiatives are critical to focus the primary compliance effort to manage the risks and achieve targeted outcomes. The details are identified herein.

Intelligence

- Information collection.
- Analysis and testing of information voracity.
- Provide recommendations for targeted operations.
- Develop strategic assessments.

Education and awareness

- Conduct pre-season education meetings and participate in industry days.

- Provide electronic distribution of educational material to fishers and licence holders at the start of the season.
- Ensure all interested parties understand their respective obligations and the compliance focus for the coming season.
- Develop Industry communication & relationship programs to facilitate discussion of topics such as compliance inspection outcomes, Threatened Endangered Protected Species (TEPS) and other issues impacting the Sardine fishery.
- Ongoing one on one education during inspections.

Effective deterrence, monitoring and surveillance

- Ensure all aspects of the Quota Management System are monitored such as prior reporting and chain of custody requirements in catch disposal records (CDR) including auditing.
- Ensure all aspects of commercial fishing activities are monitored such as inspections of catch at sea, when landed, in transit and at change of ownership in fish processing premises.
- Conduct intelligence driven operations that give rise to appropriate enforcement action
- Respond to reported incidents/issue.
- Communicate activities in formal reporting.

Enforcement

- Investigate reports of non-compliance and where appropriate take action
- Investigate reports of TEPS mortalities.
- Issue expiations, cautions and court enforced actions.
- Communicate enforcement outcomes in formal reporting.
- Service of suspension.

Risk assessment and management (work priorities)

PIRSA use information obtained from intelligence, monitoring, surveillance and enforcement processes to assess compliance and sustainability risks to the fishery. This subsequently informs work priorities for service delivery. The priorities are prone to change during the fishing season however the following are currently relevant to the Sardine Fishery.

1. Quota Management System Integrity.
2. Threatened Endangered Protected Species Interactions.
3. By-Catch.
4. Illegal Unreported Unregulated Take.

Anticipated outcomes

PIRSA will assess the efficacy of the compliance program by evaluating particular outcomes. The outcomes will be in the form of stakeholder awareness, behavior and impact. The evaluation in the form of a maturity model will be used to establish an order of magnitude to support decision making and progress towards a common view of a mature fishery and ultimately co-management.

Awareness

Awareness is a short term outcome that is necessary to prevent unnecessary use of enforcement activities. Awareness constitutes an improved community and stakeholder attitude towards compliance, an improved understanding of legislation and regulation, improved stakeholder buy-in and participation and community support for offence detection. The attributes for each are articulated herein.

Improved community and stakeholder attitude

- Confidence in compliance ability to use statutory and discretionary powers appropriately.
- Understanding of the public value of compliance.
- Comprehension of services delivered by compliance against the objects of the Act.
- Confidence in compliance ability to sustain resource allocation equity amongst direct resource users.

Improved understanding of legislation and regulation

- Understanding fishing obligations.
- Legislation and regulation is considered simple and fair to follow.

Improved stakeholder buy-in and participation

- Actively engage with compliance in development of risk assessments, reporting frameworks and reviewing rules.
- Collaborative problem-solving.

Community support for offence detection and sanctions

- Actively provide relevant information.
- Industry driven initiatives and evidence of self-regulation.

Behaviour

Successful outcomes and long term sustainable fisheries are ultimately driven by behaviour that is in the interest of sustainability, ongoing economic viability and public value. The behavioural outcomes that are important to PIRSA include stewardship, voluntary compliance and proactive approaches to compliance issues. The attributes for each are articulated herein.

Stewardship

Stewardship is the aggregation of a number of actions and behaviours where industry is entrusted with the management of the Sardine resource and the associated compliance of its members within the regulatory and legislative input constraints.

Some of the behaviours of stewardship include:

- An acceptance of change from traditional approaches and attitudes to strong partnerships between government, industry and key stakeholder groups.
- An established mutual trust and respect between government, industry and key stakeholders.
- An alignment of values that gives rise to industry and PIRSA communicating the same message focusing on the sustainability of the aquatic resource and associated ongoing economic viability as the primary drivers.
- PIRSA compliance appears seamless to industry. Inputs and outputs are shared. Joint investigations and national problem solving actions are taken by all, collectively and with representative groups engaged in partnership.
- Minimal conflict exists with other stakeholder groups or industry has clear mechanisms or a demonstrated capacity to address the conflict.

Voluntary compliant behaviour

- All appropriate attempts to understand and adhere to rules and regulations are made by industry.
- PIRSA Fisheries and Aquaculture compliance is contacted when industry is unable to meet regulatory requirements so an alternative legal solution can be arranged.
- Industry members report other commercial fishers who fail to meet regulatory requirements.

Proactive approaches to compliance issues (incl. participation in governance process)

- Use established industry structures to collaborate on compliance issues to deliver the shared objective of sustainability and public value.
- Actively participate and respond to compliance issues.
- Highlight deficiencies in compliance programs and suggest improvements.
- Influence other industry participants to promote voluntary compliance.

Impact

The awareness and behaviour changes will lead to a longer term impact that is reflected in economic and ecological sustainability, broad confidence in the allocation of Sardine between user groups, a confidence in the ability of PIRSA to manage Sardine resources and an industry that is free from the influence of serious and organised crime. The attributes for each impact is articulated herein.

Ecological and economic sustainability of aquatic resources

- SARDI stock status assessments reflect an ecological sustainability.
- Industry reflect economic sustainability.

Confidence and equity in resource allocation and access

- Recreational, commercial and Aboriginal fishing stakeholders are confident that the division of Sardine resources is fair and equitable.
- Investment support continues for ecologically and economically sustainable harvest of Sardine.

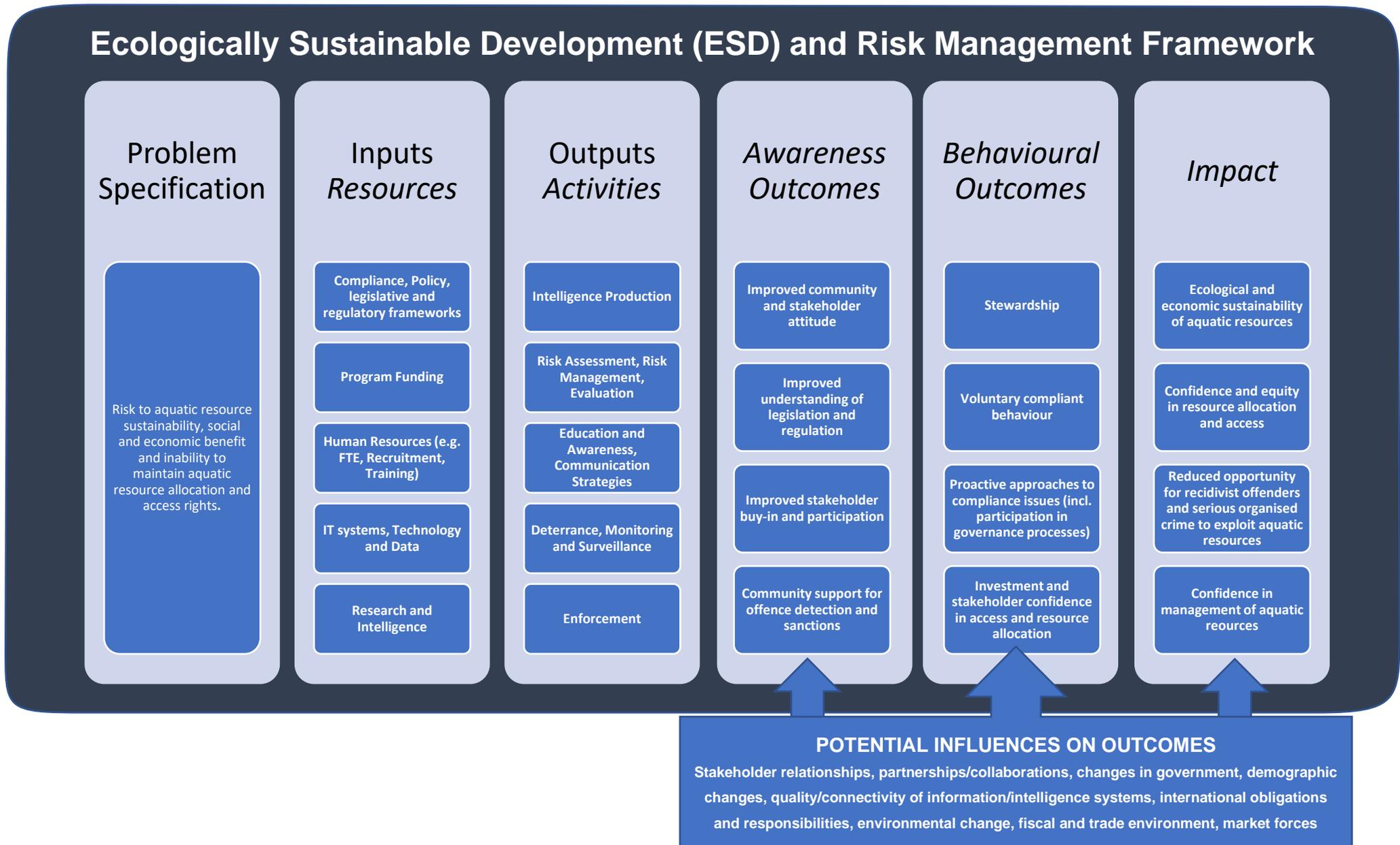
Reduced opportunity for recidivist offenders and Serious Organised Crime to exploit aquatic resources

- Regulators, law enforcement and industry have closed opportunities for Serious Organised Crime to participate in the Sardine industry.
- Industry has not had any impact resulting from Serious Organised Crime activities for a significant period of time.

Confidence in management of aquatic resources

- Positive public perception in the management of Sardine stocks.
- Positive consumer perception for commercially harvested Sardine.
- An absence of adverse industry publicity.

Appendix 1: PIRSA Fisheries and Aquaculture Compliance Program Logic Model



Stock Assessment and Monitoring Program

Sardine Fishery

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1. Project details

1.1 Title

Sardine Fishery

1.2 Subcontractor/collaborator

Not applicable

1.3 Timeframe

Commencement Date: 1 July 2019

Completion Date: 30 June 2023

1.4 Summary

This is a four-year research scope for Australia's largest fishery by weight, the South Australian Sardine Fishery (Sardine Fishery). This stock assessment and monitoring program will provide PIRSA Fisheries and Aquaculture with the information required for the ecologically sustainable management of the Sardine Fishery during the period from 2019/20 to 2022/23.

The main activities are:

- (1) Collating, validating and storing data from fishery logbooks;
- (2) Processing catch samples provided by observers;
- (3) Undertaking a fishery-independent survey using the Daily Egg Production Method (DEPM) and delivering a spawning biomass report; and
- (4) Integrating fishery-dependent and fishery-independent data using Stock Synthesis and delivering a stock assessment report.

The Harvest Strategy for the Sardine Fishery has three tiers. The frequency of delivery of spawning biomass and stock assessment reports is determined by tier. Currently, the Sardine Fishery is managed at Tier 2. The assessment program required to maintain the Sardine Fishery at Tier 2 is shown in bold in the Table below. The additional work required to move the fishery to Tier 1, should that be required, is shown in *italics*

Financial Year	Reports and Surveys	Delivery Date
2019-20	Spawning biomass report (2019 survey)	November 2019
	Stock assessment report (2018 season)	November 2019
	DEPM Survey	Feb/March 2020
2020-21	Spawning biomass report (2020 survey)	October 2020
	<i>Stock assessment report (2019 season)</i>	<i>November 2020</i>
	DEPM Survey	Feb/March 2021
2021-22	Spawning biomass report (2021 survey)	October 2021
	Stock assessment report (2020 season)	November 2021
	DEPM Survey	Feb/March 2022
2022-23	Spawning biomass report (2022 survey)	October 2022
	<i>Stock assessment report (2021 season)</i>	<i>November 2022</i>
	DEPM Survey 2023	Feb/March 2023

2. Project description

2.1 Background

The South Australian Sardine Fishery (Sardine Fishery) is Australia's largest fishery by weight. This scope and costing is for the stock assessment and monitoring required to inform the ecologically sustainable management of the Sardine Fishery in the four-year period from 2019/20 to 2022/23.

The main activities are:

- Collating, validating and storing data from fishery logbooks;
- Processing catch samples provided by observers;
- Undertaking a fishery-independent survey (using the Daily Egg Production Method, DEPM) and producing a spawning biomass report; and
- Integrating fishery-dependent and fishery-independent data (using Stock Synthesis) and producing a stock assessment report.

Logbook data is managed and catch samples are processed in all years.

The Harvest Strategy for the Sardine Fishery has three tiers. At Tier 3 spawning biomass and stock assessment reports are delivered in alternate years. At Tier 2, spawning reports are delivered annually and stock assessment reports are provided every second year. At Tier 1, spawning biomass and stock assessments reports are delivered annually.

A spawning biomass report will be delivered in October 2020 and a stock assessment report in October 2021.

Catch and effort data

Catch and effort data in the Sardine Fishery have been collected continuously since the inception of the fishery in 1991. These data are primary inputs to stock assessment reports.

Catch Sampling

Catch-at-size/age and other biological data have been collected for Sardine Fishery since 1995 and are primary inputs to stock assessments.

Spawning Biomass Reports

The spawning biomass of Australian Sardine off South Australia has been estimated using the DEPM since 1995. Spawning biomass reports assess the status of the stock in relation to the limit and target reference points for the primary performance indicator identified in the Management Plan (i.e. spawning biomass). Estimates of spawning biomass are also primary inputs into stock assessments.

Stock Assessment Reports

Stock assessment reports integrate all available data, including fishery-dependent data on catch, effort, size and age structure as well as fishery-independent information on other aspects of the biology and ecology of Sardine, and estimates of spawning biomass obtained using the DEPM.

These reports assess the status of the stock (including explicit consideration of uncertainty), comment on the biological suitability of current management arrangements and identify future research needs

2.2 Need

Catch and effort data and catch-at-size age information catch sampling need to be collected every year to support stock assessment of the Sardine Fishery.

Spawning biomass reports based on application of the DEPM need to be undertaken annually during the period 2019/20 to 2022/23 to maintain the Sardine Fishery at Tier 2 of the Harvest Strategy.

Stock assessment reports will need to be undertaken every second year (2019/20 and 2021/22) if the Sardine Fishery remains at Tier 2 and annually if the fishery moves to Tier 1.

2.3 Objectives

2.3.1 Complete DEPM survey and deliver spawning biomass report; and

2.3.2 Deliver stock assessment report.

2.4 Methods

2.4.1 Collect and store catch and effort (fishery) data for the Sardine Fishery;

2.4.2 Generate catch-at-size/age and other biological data needed for stock assessment

2.4.3 Conduct expanded sardine egg surveys involving adaptive sampling to ensure optimal coverage of spawning area

2.4.4 Undertake laboratory analyses of egg samples to estimate spawning area and egg production

2.4.5 Use historical data to estimate adult parameters and Integrate the DEPM data to provide estimates of spawning biomass; and

2.4.6 Collate fishery and fishery-independent data using an integrated model (Stock Synthesis) to assess stock status.

3. Deliverables

The key deliverables of the 2020/21 Sardine stock assessment and monitoring program are tabulated below; additional work related to the core program is also identified:

Funding Source	Deliverable	Due Date
SLA	Egg samples from 2020 Fishery-independent (DEPM) survey processed	31 August 2020
SLA	Spawning Biomass Report (2020 survey)	31 October 2020
SLA	SASF dolphin interactions (2019/20) report delivered.	31 October 2020
FRDC	Project continuation: Assessment of the sustainability of common dolphin interactions with the South Australian Sardine Fishery (FRDC project 2019/063)	30 June 2021
FRDC	Project application: Mitigating dolphin interactions with small pelagic fisheries	30 June 2021
FRDC	Project completion: Validating a new sampling technique for estimating egg production (FRDC Project 2017/027)	1 July 2020
FRDC	Chapter update for Status of Australian Fish Stocks 2020	20 December 2020
FRDC	Project commencement: Evaluate use of genetic approaches (DNA-Metabarcoding) to estimate spawning area and monitor pelagic ecosystem (2019/014)	1 July 2020

3.1 Service Provided:

3.1.1 *Catch and effort data*

- Manage a comprehensive fishing logbook program.
- Collate fishing logbook returns and providing a secure and commercial-in-confidence service.
- Maintain database for Sardine Fishery.
- Validate catch returns (consultation with fishers to correct errors).
- Undertake timely entry and storage of fishery data.
- Provide database administration, maintenance and development.
- Collect, collate and report on catch and effort data.
- Provide up-to-date data summaries to fishery scientists and managers on a timely basis.
- Ensure quality control.

3.1.2 *Catch-at age and other biological data*

- Analyse catch samples to determine size composition of catches.

- Analyse otoliths to determine the age composition of catches.
- Collect other biological data required to estimate life history parameters (e.g. growth rates, size and maturity) need for stock assessment modelling.

3.1.3 *DEPM surveys and spawning biomass report*

- Undertake plankton surveys to estimate egg production and spawning area.
- Estimate egg production and adult reproductive parameters using historical data.
- Estimate spawning biomass and provide advice on stock status and uncertainty.

3.1.4 *Stock assessment report*

- Summarise relevant data in the stock assessment report.
- Integrate existing data using stock assessment model.
- Provide model generated estimates of spawning biomass.
- Assess stock status and uncertainty.
- Provide advice on the suitability of the current Harvest Strategy.

3.1.5 *Project management*

- Supervise project, quality control, manage deliverables.
- Respond to requests from PIRSA Fisheries and Aquaculture.

3.1.6 *Communication and reporting*

- Maintain effective communication with industry and from PIRSA Fisheries and Aquaculture.
- Attend industry meetings including preparation and follow up.
- Present results of the research program to industry and fisheries managers.
- Keep industry and fisheries managers informed about research projects relevant to the Sardine Fishery.
- Update SA fisheries status report as required.
- Contribute to review of harvest strategy and management plan

3.2 Outcomes:

- Validated up-to-date databases of catch and effort data maintained for the Sardine Fishery.
- Verbal and written information provided on the age/size structure of catches, biology of sardine, environmental influences on population size and distribution, and ecological sustainability of the Sardine Fishery.

- Spawning biomass reports that provides advice on the status of sardine off South Australia.
- Stock assessment reports that provides advice on the status of sardine off South Australia.
- Verbal and written information provided on stock status including update of sardine chapter of SA status reports.

3.3. Outputs and extension:

- Fishery data summaries provided to fisheries managers on request.
- DEPM surveys and spawning biomass reports.
- Fishery and catch-at age data and stock assessment report.
- Ongoing advice provided to fisheries managers and industry.

4. Funding arrangements

4.1 Project costing policy

This Research Project Scope and Costing has been costed at a Discounted rate.

4.2 Project cost

2019/20

Project Cost	Total Funded 2019/20	Total In-kind 2019/20	Total Project Cost 2019/20
DEPM Survey and Spawning Biomass Report	\$466,369	\$67,072	\$533,441
Stock Assessment Report (Stock Synthesis)	\$293,877	\$54,496	\$348,373
GST	NO GST	NO GST	NO GST
TOTAL	\$760,246	\$121,568	\$881,814

2020/21

Project Cost	Total Funded 2020/21	Total In-kind 2020/21	Total Project Cost 2020/21
Stock Assessment Report	\$300,736	\$55,859	\$356,595
GST	NO GST	NO GST	NO GST
TOTAL	\$300,736	\$55,859	\$356,595

These total Project Costs and payments for 2020/21 reflect the stock assessment as a DEPM for 2021 is not required (Harvest Strategy meta-rule)

2021/22

Project Cost	Total Funded 2021/22	Total In-kind 2021/22	Total Project Cost 2021/22
DEPM Survey and Spawning Biomass Report	\$504,593	\$70,467	\$575,060
Stock Assessment Report	\$307,934	\$57,255	\$365,189
GST	NO GST	NO GST	NO GST
TOTAL	\$812,527	\$127,722	\$940,249

2022/23

Project Cost	Total Funded 2022/23	Total In-kind 2022/23	Total Project Cost 2022/23
DEPM Survey and Spawning Biomass Report	\$532,584	\$72,229	\$604,813
Stock Assessment Report	\$321,979	\$58,686	\$380,665
GST	NO GST	NO GST	NO GST
TOTAL	\$854,563	\$130,915	\$985,478

4.3 Milestone and Payment Schedule

2019/20	Milestone	Payment (\$) Ex GST
30 November 2019	Spawning Biomass Report (2019 survey)	
30 November 2019	Stock Assessment Report (2018 season)	
31 December 2019	First Half Payment 2019/20 SLA	\$233,184*
31 May 2020	Second Half Payment 2019/20 SLA	\$233,185*
TOTAL		\$466,369*
GST		NO GST
TOTAL FUNDED		\$466,369*

* These total Project Costs and first and second half payments for 2019/20 reflect fishery remaining at Tier 2. If fishery changes to Tier 1 for 2020, then a stock assessment will need to be undertaken for the 2019 season and delivered in 2020. If this occurs, then these costs will need to be added to the total and the first and second half payments above. This additional cost is \$293,877. As the decision for this is likely to occur in November 2019, this may need to be added as a separate SLA.

2020/21	Milestone	Payment (\$) Ex GST
31 October 2020	Spawning Biomass Report (2020 survey)	
31 December 2020	First Half Payment 2020/21 SLA	\$150,368*
31 May 2021	Second Half Payment 2020/21 SLA	\$150,368*
TOTAL		\$300,736*
GST		NO GST
TOTAL FUNDED		\$300,736*

* These total Project Costs and first and second half payments for 2020/21 reflect the stock assessment as a DEPM for 2021 is not required (Harvest Strategy meta-rule).

2021/22	Milestone	Payment (\$) Ex GST
31 October 2021	Spawning Biomass Report (2021 survey)	
30 November 2021	Stock Assessment Report (2020 season)	
31 December 2021	First Half Payment 2021/22 SLA	TBA*
31 May 2022	Second Half Payment 2021/22 SLA	TBA*
TOTAL		TBA*
GST		NO GST
TOTAL FUNDED		TBA*

* Total Project Costs and first and second half payments to be added in when Tier level has been determined, though noting a 2021 DEPM survey is not required (Harvest Strategy meta-rule) so delivery of a Spawning Biomass Report from a 2021 survey cannot occur.

2022/23	Milestone	Payment (\$) Ex GST
31 October 2022	Spawning Biomass Report (2022 survey)	
30 November 2022	Stock Assessment Report (2021 season; <i>if Tier 1</i>)	
31 December 2022	First Half Payment 2022/23 SLA	TBA*
31 May 2023	Second Half Payment 2022/23 SLA	TBA*
TOTAL		TBA*
GST		NO GST
TOTAL FUNDED		TBA*

* Total Project Costs and first and second half payments to be added in when Tier level has been determined

5. Project staff

Staff	FTE Spawning Biomass	FTE Stock Assessment
Principal Scientist	0.20	0.20
Senior Research Scientist	0.60	0.50
Senior Research Officer	0.20	0.30
Research Officer	0.60	0.30
SUB-TOTAL	1.60	1.3

6. Project cost summary

6.1 Spawning Biomass DEPM

Cost	Detail	2019/20 Total (\$) Ex GST	2020/21 Total (\$) Ex GST	2021/22 Total (\$) Ex GST	2022/23 Total (\$) Ex GST
Salaries (FTE)		1.60	1.60	1.60	1.60
Salaries (\$)		194,623	199,190	203,952	216,086
Operating (\$)					
Logbook program (\$)					
Payment to industry for surveys (\$)					
Fieldwork (Ngerin; \$)		147,368	158,418	170,300	183,066
Laboratory (\$)		2,000	2,000	2,000	2,000
Travel (\$)		4,500	4,500	4,500	4,500
Office & communication (\$)		1,000	1,000	1,000	1,000
Capital equipment (\$)					
SARDI overhead (\$)		116,878	119,821	122,841	125,932
SARDI inkind (\$)		67,072	68,749	70,467	72,229
Total Cost (\$)		533,441	553,678	575,060	604,813
Revenue – PRICE					
PIRSA F&A (\$)	88%	466,369	484,929	504,593	532,584
Total Revenue (\$)		466,369	484,929	504,593	532,584
SARDI Investment (\$)	12%	67,072	68,749	70,467	72,229

6.2 Stock assessment

Cost	Detail	2019/20 Total (\$) Ex GST	2020/21 Total (\$) Ex GST	2021/22 Total (\$) Ex GST	2022/23 Total (\$) Ex GST
Salaries (FTE)		1.30	1.30	1.30	1.30
Salaries (\$)		161,121	164,785	168,702	179,383
Operating (\$)					
Logbook program (\$)		26,790	27,594	28,422	29,274
Payment to industry for surveys (\$)					
Fieldwork (\$)					
Laboratory (\$)		5,000	5,000	5,000	5,000
Travel (\$)		3,500	3,500	3,500	3,500
Office & communication (\$)		2,500	2,500	2,500	2,500
Capital equipment (\$)					
SARDI overhead (\$)		94,966	97,357	99,810	102,322
SARDI inkind (\$)		54,496	55,859	57,255	58,686
Total Cost (\$)		348,373	356,595	365,189	380,665
Revenue – PRICE					
PIRSA F&A (\$)	86%	293,877	300,736	307,934	321,979
Total Revenue (\$)		293,877	300,736	307,934	321,979
SARDI Investment (\$)	14%	54,496	55,859	57,255	58,686

Explanation of costs above:

Logbook Program - Entry, validation, management and reporting of data

Payment to industry for surveys - Direct costs of using industry vessels and staff to undertake surveys

Fieldwork - Fieldwork costs including vessels, travel and OHS requirements

Laboratory - Costs for processing samples

Travel - Costs for attending meetings with industry, PIRSA F&A and stakeholders

Office and communication - Stationery, communications and publications

Capital equipment

Stock Assessment and Monitoring Program

Sardine Fishery (Dolphin Interactions)

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1. Project details

1.1 Title

Interactions of the Sardine Fishery with short-beaked common dolphins

1.2 Subcontractor/Collaborator

Not Applicable

1.3 Timeframe

Commencement Date: 1 July 2019

Completion Date: 30 June 2023

1.4 Summary

This is a four-year research scope for reporting on the Interactions of the South Australian Sardine Fishery (SASF) with short-beaked common dolphins. This program will provide PIRSA Fisheries and Aquaculture with the information required for the ecologically sustainable management of the Sardine Fishery during the period from 2019/20 to 2022/23.

For each fishing season the project will:

- (1) Receive, store and manage observer data from the SASF.
- (2) Integrate fishery and interaction data from fishery logbooks, wildlife interaction forms and observers data-sheets.
- (3) Examine the patterns of observer coverage.
- (4) Compare fishing patterns with and without an observer and the degree to which it is representative of fishing effort.
- (5) Compare rates of dolphin encirclement and mortality recorded by observers and in fishery logbooks when an observer was not present.

- (6) Compare the number of encirclements and mortalities estimated to have occurred each financial year using observer data with the numbers recorded in logbooks.
- (7) Assess the efficacy of the industry Code of Practice (CoP) in mitigating interactions with dolphins, when observers are present, and when they are not.
- (8) Provide annual reports on all of the above.

2. Project description

2.1 Background

This project follows previous investigations by SARDI Aquatic Sciences of the interactions of the SASF with short-beaked common dolphins (*Delphinus delphis*). Interactions with dolphins were first identified in an observer program conducted in 2005. A CoP was established which successfully reduced interaction rates. Ongoing assessments of the effectiveness of the CoP are needed to ensure interactions are mitigated effectively.

The aim of this project is to assess the efficacy of the Code of Practice at mitigating interactions between the South Australian Sardine Fishery and short-beaked common dolphins. Efficacy of the Code of Practice will be reported each calendar year through the analysis of observer data and industry reported data. The project will:

- Receive, store and manage observer data from the SASF;
- Integrate fishery and interaction data from fishery logbooks, wildlife interaction forms and observers data-sheets; and
- Analyse and report on these data annually.

Key performance indicators that will be reported are:

- Code of Practice (observer data):
 - Success at avoiding an encirclement event.
 - Success of release method and time for release procedure to start.
 - Mortality rate.
 - Observed versus reported encirclement rate.
- Representativeness of observer coverage
 - Assessment of coverage relative to spatial and temporal distribution of fishing effort by the fleet and at the individual boat level.

2.2 Need

All native animals within the state of South Australia are protected under the National Parks and Wildlife Act 1972. The area of jurisdiction of the SASF was defined under the 1996 Offshore Constitutional Settlement (OCS) for scale-fish species to include all waters from adjacent to the coast of South Australia out to the 200 nautical mile limit of the Australian Fishing Zone. The SASF is also subject to the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Section 196 of the EPBC Act prohibits the taking of any listed marine species in Commonwealth waters and Section 147 requires mitigation of any adverse impacts on the wider marine ecosystem.

2.3 Objectives

- 2.3.1 Assess the efficacy of the CoP in mitigating interactions with dolphins in the presence and absence of observers.
- 2.3.2 Compare rates of dolphin encirclement and mortality recorded by observers and in fishery logbooks when an observer was not present.
- 2.3.3 Use a stratified ratio approach to estimate the total number of encirclements per year from observer data and compare these to the total number recorded in fishery logbooks.
- 2.3.4 Report on the degree to which observer coverage represent commercial fishing for the financial year being reported.
- 2.3.5 Compare CPUE_{net-set} for observed and unobserved net-sets for the financial year being reported.

2.4 Methods

Data from fishery logbooks, wildlife interaction forms and observers will be integrated and analysed to determine the extent and nature of interactions with dolphins. This will include examination of patterns of observer coverage and fishing patterns (e.g. CPUE) with and without an observer, as well as analysis of spatial and temporal patterns in encirclement and mortality rates. Observer data will be used to estimate total interactions, logbook reporting rates and assess the effectiveness of the CoP in reducing interactions with dolphins.

3. Deliverables

The key deliverables of the 2020/21 Sardine Fishery (Dolphin Interactions) monitoring program are tabulated below; additional work related to the core program is also identified:

Funding Source	Deliverable	Due Date
SLA	SASF dolphin interactions (2019/20) report delivered.	31 October 2020
FRDC	Project continuation: Assessment of the sustainability of common dolphin interactions with the South Australian Sardine Fishery (FRDC project 2019/063)	30 June 2021
FRDC	Project application: Mitigating dolphin interactions with small pelagic fisheries	30 June 2021

3.1 Service Provided:

- Monitor interaction rates with dolphins.
- Estimate logbook reporting rates.
- Assess the effectiveness of the CoP.

- Provide ongoing advice to PIRSA and sardine industry.

3.2 Outcomes:

- Understanding of interaction rates and effectiveness of the CoP.
- Enhanced mitigation of interactions with dolphins.

3.3 Outputs and Extension:

- Report by 31 October 2019, 2020, 2021 and 2022 on SASF interactions with short-beaked common dolphins for the periods up to 30 June 2019, 2020, 2021 and 2022, respectively.
- Liaise with PIRSA Fisheries and Aquaculture and SASF.

4. Funding arrangements

4.1 Project costing policy

This Research Project Scope and Costing has been costed at a Discounted rate.

4.2 Project cost

Financial Year	Total Funded by Licence Holders \$ (GST N/A)	Total SARDI In-kind \$ (GST N/A)	Total Project Cost \$ (GST N/A)
2019/20	\$50,050	\$9,642	\$59,692
2020/21	\$51,183	\$9,883	\$61,066
2021/22	\$52,394	\$10,130	\$62,524
2022/23	\$54,919	\$10,383	\$65,302
TOTAL PROJECT (over 4 financial years)	\$208,547	\$40,038	\$248,585

4.3 Milestone and payment schedule

2019/2020	Milestone	Payment (\$) Ex GST
31 October 2019	Report–SASF dolphin interactions (2018/19)	
31 December 2019	First Half Payment 2019/20 SLA	\$25,025
31 May 2020	Second Half Payment 2019/20 SLA	\$25,025
SUBTOTAL		\$50,050
GST		NO GST
TOTAL FUNDED		\$50,050

2020/21	Milestone	Payment (\$) Ex GST
31 October 2020	Report–SASF dolphin interactions (2019/20)	
30 Nov 2020	End-of-season (2019/20) presentations to PIRSA Fisheries and Aquaculture and SASIA	
31 December 2020	First Half Payment 2020/21 SLA	\$25,591
31 May 2021	Second Half Payment 2019/20 SLA	\$25,592
SUBTOTAL		\$51,183
GST		NO GST
TOTAL FUNDED		\$51,183

2021/22	Milestone	Payment (\$) Ex GST
31 October 2021	Report–SASF dolphin interactions (2020/21)	
30 Nov 2021	End-of-season (2020/21) presentations to PIRSA Fisheries and Aquaculture and SASIA	
31 December 2021	First Half Payment 2021/22 SLA	\$26,197
31 May 2022	Second Half Payment 2021/22 SLA	\$26,197
SUBTOTAL		\$52,394
GST		NO GST
TOTAL FUNDED		\$52,394

2022/23	Milestone	Payment (\$) Ex GST
31 October 2022	Report–SASF dolphin interactions (2021/22)	
30 Nov 2022	End-of-season (2021/22) presentations to PIRSA Fisheries and Aquaculture and SASIA	
31 December 2022	First Half Payment 2022/23 SLA	\$27,459
31 May 2023	Second Half Payment 2022/23 SLA	\$27,460
SUBTOTAL		\$54,919
GST		NO GST
TOTAL FUNDED		\$54,919

5. Project staff

Staff	FTE 2019/20	FTE 2020/21	FTE 2021/22	FTE 2022/23
Principal Scientist	0.01	0.01	0.01	0.01
Research Scientist	0.22	0.22	0.22	0.22
TOTAL	0.23	0.23	0.23	0.23

6. Project cost summary

Cost	Detail	2019/20 Total (\$) Ex GST	2020/21 Total (\$) Ex GST	2021/22 Total (\$) Ex GST	2022/23 Total (\$) Ex GST
Salaries (FTE)		0.23	0.23	0.23	0.23
Salaries (\$)		30,749	31,458	32,236	34,316
Operating					
Travel (\$)		1,700	1,700	1,700	1,700
Logbook program (\$)					
Office & communication (\$)		800	800	800	800
Capital equipment (\$)					
SARDI overhead (\$)		16,801	17,225	17,658	18,103
SARDI inkind (\$)		9,642	9,883	10,130	10,383
Total Cost (\$)		59,692	61,066	62,524	65,302
Revenue – PRICE					
Licence Holders (\$)	84%	50,050	51,183	52,394	54,919
Total Revenue (\$)	84%	50,050	51,183	52,394	54,919
SARDI Investment (\$)	16%	9,642	9,883	10,130	10,383

Explanation of costs above:

Logbook Program - Entry, validation, management and reporting of data

Payment to industry for surveys - Direct costs of using industry vessels and staff to undertake surveys

Fieldwork - Fieldwork costs including vessels, travel and OHS requirements

Laboratory - Costs for processing samples

Travel - Costs for attending meetings with industry, PIRSA F&A and stakeholders

Office and communication - Stationery, communications and publications

Capital equipment

