FISHERIES
& AQUACULTURE
PIRSA

Cost Recovery Implementation Statement

Finfish Sector

For the year ending 30 June 2020

Government of South Australia
Primary Industries and Regions SA

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Introduction

PURPOSE OF THE COST RECOVERY IMPLEMENTATION STATEMENT (CRIS)

This Cost Recovery Implementation Statement (CRIS) provides information on how PIRSA Fisheries and Aquaculture Division implements cost recovery activities associated with the ecologically sustainable development (ESD) of the South Australian aquaculture industry- Tuna Sector.

The Department of Primary Industries and Regions South Australia (PIRSA) has a number of Divisions that provide cost recovered services to primary industries. The Divisions include Fisheries and Aquaculture, Agriculture, Food and Wine, Rural Solutions SA and the South Australian Research and Development Institute.

PIRSA Fisheries and Aquaculture's Cost Recovery Policy considers the Commonwealth Department of Finance and Administration's '*Australian Government Cost Recovery Guidelines report*' (2014), in addition to the Productivity Commission's '*Cost recovery by government agencies: inquiry report*' (2001), to ensure consistency with National Guidelines.

DESCRIPTION OF THE ACTIVITY

PIRSA Fisheries and Aquaculture's core business is the ecologically sustainable development (ESD) of the South Australian aquaculture industry, through the administration of the *Aquaculture Act 2001* (the Act). Key activities include the development, implementation and review of legislative and policy frameworks for the South Australian aquaculture industry. Although the management of aquaculture activities in South Australia is undertaken predominantly through implementation of the Act, there are a number of other related State, national and international legislative instruments and policy initiatives that also apply to the activities undertaken by PIRSA Fisheries and Aquaculture, which have been explained throughout this document.

The costs of managing aquaculture activities in South Australia are partially recovered from industry. The PIRSA Cost Recovery Policy determines that 'Cost Recovery' broadly encompasses fees and charges related to the provision of government goods and services, which includes regulatory and information services. As part of the four-yearly cost recovery process, PIRSA Fisheries and Aquaculture consults with various industry sectors prior to the commencement of the program to establish the costs associated with regulating the industry according to the Act. Additional consultation is held with sectors where any significant changes to the programs occur.

Activities of PIRSA Fisheries and Aquaculture are grouped into the following nine key programs.

1. Resource Planning
2. Aquaculture Leasing and Licensing
3. Legislation
4. Compliance
5. Aquaculture Systems
6. Aquatic Animal Health
7. Environmental Monitoring and Management
8. Program Management and Administration
9. Other Aquaculture Activities.

These key programs ensure consistent development and management of each sector of the aquaculture industry.

This document describes the programs, activities and associated costs required to develop and manage the Finfish sector. The costs of PIRSA Fisheries and Aquaculture associated with administering Finfish related activities are described in this document using an activity-based costing approach.

OUTCOMES OF COST RECOVERY REVIEW, 2018

The Government made an election commitment to initiate an independent review of the cost recovery policy of 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; all recommendations were accepted by Government.

The report, in addition to the recommendations, noted that PIRSA's management of both the fisheries and aquaculture sectors had significantly improved since 2015; specifically 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.

For example, 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 aquaculture was determined. The following is an example of an annual engagement and communication schedule for aquaculture.

Date*	Activity	Parties
Sept/Oct	Review long-term objectives for aquaculture and update if necessary. Identify priority outcomes for upcoming financial year.	PIRSA and industry representatives
October	Develop policy, research and compliance work programs in readiness for discussions in November.	PIRSA
November	Consult with relevant industry members in relation to proposed programs and reach agreement. Industry representatives to consult with wider industry.	PIRSA and industry representatives
February	Formal meetings with industry representatives to finalise work programs and summarise costs.	PIRSA and industry representatives
March	Submit proposed licence fees to Minister. Prepare Cabinet Submission to vary regulations to prescribe lease and licence fees for the next financial year.	PIRSA and government agencies
June/July	Invoices sent for annual lease and 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

2018-19 ($)	Activity	2019-20 ($)
13,135	Resource Management and Planning* *Note: costs for 2019-20 and 2020-21 include additional effort relating to review of the Lower Eyre Peninsula Zone Policy*	21,169
24,176	Program Management and Administration*	24,780
41,699	Aquaculture Leasing and Licensing*	42,742
14,646	Legislation*	15,012
13,678	Compliance*	14,020
17,103	Aquaculture Systems*	17,530
20,341	Aquatic Animal Health*	20,849
49,041	Environment and Resource Management*	50,267
4,347	Other Activities*	4,456
58,000	Environmental Monitoring *Note: Fixed amount for 4 years, refer to Attachment 1*	65,909
256,165	**Total ****	**276,733**

* The indexation rate of 2.5% has been applied to the 2018-19 program costs, which is consistent with Department of Treasury and Finance's forward estimates for the annual fees and charges indexation rate.
** Please note all dollar values have been rounded to the nearest dollar figure.

	2018-19	**2019-20**
Finfish Lease Fee	*3,446*	**4,016**
Finfish Licence Fee	*7,691*	**9,162**

Resource Planning

Program Summary

Resource Planning captures PIRSA Fisheries and Aquaculture's activities relating to the development of new, and review of, existing statutory aquaculture zone policies and identification of areas of State waters that are suitable for future marine aquaculture development activity. This program covers input to the development of State and national legislative and policy initiatives, which have the potential to impact aquaculture.

Aquaculture zone policies follow an Ecologically Sustainable Development (ESD) approach that covers environmental, social and economic considerations relating to aquaculture activity. This requires an ongoing review and collation of technical information as well as consultation with all stakeholders; industry, government and community. This program also ensures that all aquaculture zone policies are consistent with other South Australian, national and international legislative and policy requirements and ensures the interests of aquaculture operators are represented in broader policy and planning frameworks.

Objectives

To provide certainty to aquaculture operators and other key stakeholders through establishing and maintaining specified areas of State waters as zones designated for the purposes of marine aquaculture activity and ensuring the interests of aquaculture operators are represented in broader policy and planning frameworks.

Activities

The Aquaculture Tenure Allocation Board (ATAB) established by the Act provide high level strategic advice and informed recommendations for tenure allocation, respectively, to PIRSA Fisheries and Aquaculture and the Minister. PIRSA Fisheries and Aquaculture provides policy related information, administrative and financial support for the ATAB.

There are currently seven (7) Aquaculture Zone Policies that accommodate the farming of finfish species in the following locations: Lower Eyre Peninsula, Tumby Bay, Port Neill, Lacepede Bay, Arno Bay, Fitzgerald Bay, Wallaroo and.

The investigation of further aquaculture zones and the review of existing zones, which could facilitate further finfish aquaculture (e.g. investigate a deep water zone east of Port Lincoln, review of Lower Eyre Peninsula aquaculture zone policy).

The following four (4) key activities are undertaken by the Resource Planning Program to establish and review zone policies for aquaculture activities in South Australia. The zone policy development process requires an integrated approach to development of each aquaculture zone, which involves facilitating broad participation of stakeholders in planning processes.

1. Strategic Resource Planning and Management (Part 4; Sections 10 – 14 of the Act)

Strategic planning and management to meet the requirements of South Australia's expanding aquaculture industry includes a number of policy related activities prescribed by the Act. These include:

- New zone policy development, existing zone policy review and extension of an existing zone policy is undertaken to ensure future zone policy development or amendment continues to meet the requirements of South Australia's aquaculture industry. This includes the identification of potential future areas appropriate for the expansion of the finfish industry such as the potential for a deep water finfish zone in lower Spencer Gulf and a review of the *Aquaculture (Zones - Lower Eyre Peninsula) Policy 2013*. This process informs planning for scientific technical investigations.

- Ongoing monitoring and auditing of zone policy performance is required to plan advertisement of tenure and ensure movement of sites and change of species within aquaculture zones and sectors do not compromise the allocation limits of the policy. This ensures transactions can be assessed in an efficient manner.
- Development of zone policy templates and procedures to ensure the zone policy development process is managed from a quality management perspective and remains efficient.
- Finalisation and implementation of the Standard Lease and Licence Conditions Policy across all aquaculture sectors, following its development in 2017-18.
- The development of internal policies/guidelines that flow from the amendments to the Act and Regulations - Public Call guideline for zoned areas, Aquaculture Tenure Allocation Board guidelines for how lease/licence applications are assessed, Sector-based Strategies and Lease Renewal guidelines.
- Implementation of the 2018 election commitment to promote aquaculture industry growth by extending the maximum term of aquaculture leases from 20 to 30 years.

2. Zone Policy Review (Part 4; Sections 10 – 14 of the Act)

Existing zone policies are reviewed on a periodic basis to ensure they remain consistent with industry practice, legislative requirements, and technical research and that they appropriately address Industry development needs and broader public concerns.

3. Zone Policy Development for New regions or Emerging Sectors (Part 4; Sections 10 – 14 of the Act)

Zone policies are developed for new regions and emerging aquaculture sectors to ensure a framework exists to provide for ESD of aquaculture activities and to ensure appropriate levels of access security exist for industry participants. Zone policies also provide for a level of public accountability of the aquaculture activities being undertaken inside the zone boundaries.

4. Provide Input to, and Alignment with, Broader State and National Policy Development Activities and Planning Frameworks that Impact on South Australian Aquaculture Zone Development Processes (Sections 8 and 9 of the Act)

PIRSA Fisheries and Aquaculture provides input to a range of State and Commonwealth Government environmental and conservation initiatives, to ensure aquaculture zone development objectives and aspirations are adequately taken into account and factored in to broader conservation policy development. As part of this activity, PIRSA Fisheries and Aquaculture regularly engages with the South Australian Department of Environment and Water (DEW), the Commonwealth Department of the Environment and Energy, the Environment Protection Authority (EPA), the Department of Planning, Transport, and Infrastructure (DPTI), Local Councils, and South Australian Natural Resource Management Boards.

Under section 11(3)(a) of the Act, PIRSA Fisheries and Aquaculture is required to further the objectives of the *Marine Parks Act 2007*. PIRSA will continue to consult with DEW in respect to aquaculture zoning and licence applications in marine parks.

PIRSA Fisheries and Aquaculture will participate in the reform of the Natural Resource Management in South Australia, including implementation of the Landscape South Australia Bill expected to be introduced into Parliament in the first quarter of 2019. This will include input into subsequent regulations and regional plans that will be required to be reviewed for consistency to the new legislative requirements and as they relate to aquaculture development.

PIRSA Fisheries and Aquaculture will continue to participate in development plan amendments as they are reviewed under the *Development Act 1993* until such time that *the Planning, Development and Infrastructure Act 2016* is implemented. Planning tools, and policies are considered to ensure adequate representation of aquaculture development and that aquaculture zones are included in appropriate development plans under the *Development Act 1993*.

PIRSA Fisheries and Aquaculture will participate in the implementation of *Planning, Development and Infrastructure Act 2016* as it relates to aquaculture developments. This new Act introduces a raft of new planning tools and an online ePlanning system that is in the process of being implemented in 2018-19, which is the biggest

modernisation of planning legislation in 20 years. PIRSA will continue to ensure that the new planning framework does not add further non legislated restrictions to aquaculture development in the State for both marine based and land-based aquaculture. PIRSA is also determining referrals for development activities that may conversely impact on the aquaculture industry (ie dredging activities and spoil placement, development of coastal environments for wastewater outlet pipes etc).

PIRSA Fisheries and Aquaculture participates in consultation on major developments that can impact on the aquaculture industry (e.g. mining infrastructure, desalination plants, new harbours, etc.)

PIRSA Fisheries and Aquaculture ensures aquaculture zone policies and planning frameworks adhere to and are consistent with South Australian and national development framework agreements, including:

a. National legislation and policy frameworks, principally: the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*, *Native Title Act 1993 (Cth)*, *Fisheries Management Act 1991(Cth)*, *Historic Shipwrecks Act 1976 (Cth)*, and the *National ESD Reporting Framework: The 'How to' Guide for Aquaculture (2004)*.

b. State legislation and policy frameworks including: *Environment Protection Act 1993*, *Coast Protection Act 1972*, *National Parks and Wildlife Act 1972*, *Fisheries Management Act 2007*, *Livestock Act 1997*, *Crown Land Management Act 2009*, *Heritage Places Act 1993*, *Historic Shipwrecks Act 1981*, *Wilderness Protection Act 1992*, *Harbors and Navigation Act 1993*, *Aboriginal Heritage Act 1988*, *Marine Parks Act 2007*, *Native Vegetation Act 1991*, *Natural Resources Management Act 2004*, *Agricultural and Veterinary Chemicals (Control of Use) Act 2002 and Regulations 2004*, *Environment Protection (Water Quality) Policy 2015*.

Outputs/Outcomes

Activity 1

Strategic zone policy planning meets the future requirements of industry.

Zone policy templates and procedures remain up to date with changing circumstances that impact on zone policy development.

Allocation of finfish lease and licences within an existing aquaculture zone is in accordance with the respective zone's prescribed requirements including processes related to the Aquaculture Tenure Allocation Board (ATAB).

Internal policies and guidelines that flow from the amendments to the Act and Regulations are developed and implemented; such as the Standard Lease and Licence Condition Policy, Sector-specific Strategies, ATAB procedures etc.

Finalise Lease Renewal and Performance Criteria Guidelines and implement into operational procedures.

Review zones with finfish allocations, for use, productivity and commonly occurring operational concerns.

Activities 2 and 3

Maintenance of core policy development activities and processes, including industry consultation and liaison.

Ongoing liaison and consultation with relevant government departments and prescribed bodies in relation to zone policy development.

PIRSA Fisheries and Aquaculture works with the South Australian Research and Development Institute Aquatic Sciences (SARDI) to develop outcomes in relation to provisions within a zone policy that refer to changes in prescribed maximum biomass or zone locations.

Activity 4

Ongoing input to broader State and national policy, legislative and planning frameworks that influence finfish zone development processes such as Marine Parks and marine mining activity.

Ongoing participation in broader government processes, at a national and state level.

Aquaculture Leasing and Licensing

Program Summary

Aquaculture Leasing and Licensing provides a range of core services related to the processing and management of aquaculture leases and licences. For example, the program assesses, grants, monitors and varies, new and existing leases and licences in accordance with the Act, with evidence-based consideration of factors relating to social, environmental and economic sustainability. Functions of these services include case management, referrals to other agencies, ESD assessments on applications, new lease and licence applications, and renewals or variations to existing leases and licences.

Objectives

To maintain and administer a leasing and licensing framework that enables management of aquaculture activities in accordance with the Act.

Activities

1. Management of leases and licences (Pursuant to the Act *and* the *Aquaculture Regulations 2016*)

PIRSA Fisheries and Aquaculture manages a number of core administrative processes and procedures that provide the basis of leasing and licensing services for the aquaculture industry. The core processes are detailed below.

Case management

The Case Management process is used by PIRSA Fisheries and Aquaculture to manage individual lease and licence transactions to reduce complexity for the customer and provide a single point of entry for industry when developing or changing aquaculture operations. Individual transactions go through several steps for each type of application, relating to notifications, approvals, assessments and administrative steps. Case Managers ensure that each step is achieved and that the given transaction is finalised in an accurate and timely manner, including referrals and follow up with external government agencies and other stakeholders. Case Management simplifies the government approvals process for aquaculture development and therefore supports red-tape reduction and customer service objectives.

PIRSA Fisheries and Aquaculture has a working framework to ensure regulatory responsibilities for ESD under the Act are met during lease and licence assessment processes through the application of ESD Risk Assessment Guidelines, which align with national best practice frameworks.

Sector specific and general problem solving

PIRSA Fisheries and Aquaculture work together with industry and other government departments to solve specific issues related to new developments and changes to existing lease and licence sites to ensure that community values are upheld and all other relevant government legislation is adhered to, such as the *Environment Protection Act 1993*. Generally, the Case Manager will work closely with applicants to ensure their proposals align with these interests and requirements as the application progresses through each step.

PIRSA Fisheries and Aquaculture receive requests from lease and licence holders for variations of licence conditions or lease arrangements. The Case Manager processes requests using a pragmatic approach, based on the implications and timeliness of the question or issue to be considered.

Licence appeals and public submissions

PIRSA Fisheries and Aquaculture administers a legally compliant appeals procedure in accordance with Part 9 of the Act. This process provides unsuccessful applicants with the right to appeal against decisions. Case Managers actively work to establish an acceptable outcome among all parties rather than work towards not granting a licence or licence variation application.

Whilst not considered a formal appeal under Part 9 of the Act, submissions can be made by external stakeholders or members of the public as a result of the public notification of the proposed grant of a lease and licence. Upon receiving a submission, PIRSA Fisheries and Aquaculture must consider and respond to all submissions as part of the application process. This information is critical for the ESD assessment conducted for each application.

Manage audit programs

PIRSA Fisheries and Aquaculture periodically review application forms and processes as well as ESD templates with relevant external agencies to ensure the correct information is collected and to increase efficiency in application assessments.

PIRSA Fisheries and Aquaculture maintain internal lease and licence audit functions, including auditing procedures (flowcharts, checklists and manuals) and performance criteria relating to leases and licences to ensure accuracy of data on leases and licences and therefore the quality management of registrations and applications by the Case Manager.

Insurance and indemnity conditions in aquaculture leases are in place to mitigate risks to the Minister from a loss to a third party as a result of an authorised aquaculture activity, or from the rehabilitation costs of an aquaculture site if it is abandoned. PIRSA Fisheries and Aquaculture seeks to ensure appropriate instruments are used to reduce the possibility of sites being abandoned

PIRSA Fisheries and Aquaculture maintains a process and works with individual lease and licence holders and industry representatives to ensure rehabilitation of abandoned sites.

PIRSA Fisheries and Aquaculture provides a process for the payment of lease and licence fees through instalments and implements a debt recovery process for following up instalment fee payments on leases and licences, including the potential application of 10% penalty for failure to pay annual fees. This may include composing and sending notices for payment. Legal action is investigated and taken where appropriate (e.g. civil action).

Projects or programs involving industry sectors and relevant stakeholders

PIRSA Fisheries and Aquaculture undertakes projects that involve the presence of aquaculture leases and licences in relation to issues regarding industry stakeholders. Activities include liaison, public consultation, meeting or workshop organisation, development of policies and programs and the reporting or collation of data, such as Adopt a Beach, and liaison around marine parks.

Manage relationship with internal and external stakeholders

PIRSA Fisheries and Aquaculture manages a formal referral process with other government agencies, as required under the Act.

PIRSA Fisheries and Aquaculture is often required to produce reports on State government and national levels which include data relating to leases and licences. Functions of reporting include use of information databases, collection and collation of data. Examples include reporting of lease/licence data in the annual South Australian Aquaculture Report (produced by PIRSA), and provision of data to ABARES, the National Native Title Tribunal and EconSearch Pty Ltd. Note that any data provided is under the provision of section 89A of the Act (relating to Confidentiality) which only allows for information to be provided to other agencies with the permission of the licence holder, if the individual is not able to be identified or if the information is required by an agency for the purposes of the proper performance of its functions. *Industry liaison (customer service)*

Management of calls from lease and licence holders regarding invoices, late payments, fees and general enquiries.

Provision of spatial maps to industry when requested.

PIRSA Fisheries and Aquaculture staff are encouraged to visit leased and/or licensed aquaculture sites to understand operational constraints, the use of particular farming structures and engage with industry participants to ensure a relevant understanding of current practices and trends within the sectors of the SA aquaculture industry. This also improves communication channels between PIRSA staff and industry.

Production returns

Production returns are collected, collated and analysed for each aquaculture business, to enable adequate reporting of state and national economic information. Production returns that are not returned within set timeframes established under the Act or are deficient, are followed up in a timely manner by PIRSA Fisheries and Aquaculture to ensure adequate and accurate information can be used to inform decision-making, policy development, regulation and licence conditions.

2. Processing of lease and licence applications (including Pilot, Production, Research and Emergency Leases) – (Fee for Service[1]) (Pursuant to the Act *and* the *Aquaculture Regulations 2016*)

New lease and licence applications

Provision of support to lease and licence holders in regard to completion of required forms and application information, in regard to ATAB submissions and administrative requirements.

Ensure new lease and licence applications meet the requirements outlined in PIRSA Fisheries and Aquaculture's zone policy requirements where applicable.

Provision of support to lease and licence holders in regard to the submission of required forms to the State Commission Assessment Panel (SCAP) and/or relevant local government councils.

Ensure the development of the terms and conditions of leases and licences address the interests of aquaculture operators, the environment and the broader community, in addition to adhering to the objects of the Act and other relevant legislation.

Lease and Licence renewal

PIRSA Fisheries and Aquaculture coordinates a renewal procedure for aquaculture leases and licences. The procedure ensures that the Case Manager identifies if there are any legislative or technical requirements associated with an aquaculture activity that need to be addressed on the lease and/or licence.

PIRSA Fisheries and Aquaculture also reviews performance of lease and licence and determines if any actions are required. Functions of this activity include determination of renewal period based on current development performance against renewal guideline framework. This includes provision of correspondence, resolving delinquent fees bank guarantees or insurance details, historical submission of returns and applicability of conditions.

Lease and Licence variation and substitution

PIRSA Fisheries and Aquaculture is to ensure that there is sufficient provision of information provided to lease and licence holders to enable the variation of existing leases and licences contemplated under the Act to occur. This includes the provision of application forms that collect suitable information for assessment of risks and the establishment of associated fees. Variations include:

a. New species addition

b. Change of species type or production system

[1] Fee for Service activity refers to work undertaken by PIRSA to process applications submitted by individuals and companies relating specifically to their own site/s. It does not include activities that are relevant to the whole industry sector.

c. Movement of a site to a new location

d. Sub-division of a site

e. Amalgamation of two or more sites

f. Transfer of a licence or lease

g. Lease Conversion (i.e. pilot to production lease)

h. Surrender of a site

i. Change to specified or nominated person

Licence ESD Assessment and Agency Referrals

PIRSA Fisheries and Aquaculture assess licence applications in a manner that ensures regulatory responsibilities for ESD under the Act are maintained.

Referrals that are sent to the Environment Protection Authority (EPA) for approval, as legislated under the Act, contain accurate and adequate information to enable EPA staff to make a timely assessment of applications.

Ensure accurate and adequate information is detailed in ESD assessment reports to enable compliance with other government agency policies and legislation and as part of the ESD, ensure the concerns of key industry members, relevant government agency staff and interested stakeholders, including the community from public notification are addressed.

Produce public submission response documents that clearly address community concerns, where applicable.

Ensure ESDs are assessed for any aquatic biosecurity risks including threats to established industry and wild stocks of aquatic animals (refer Program 7: Environmental Monitoring and Management for ESD assessment development and Program 2: Aquaculture Leasing and Licensing for ESD implementation).

Ensure information provided to the Department of Environment and Water (DEW) is accurate and adequate for DEW staff to make a timely assessment of aquaculture licence applications in light of the requirements of the *Coast Protection Act 1972*, *Marine Parks Act 2007*, *National Parks and Wildlife Act 1972*, *Crown Land Management Act 2009*, *Heritage Places Act 1993*, H*istoric Shipwrecks Act 1981* and *Wilderness Protection Act 1992*.

Ensure accurate and adequate information is provided to the State Commission Assessment Panel (SCAP) to make a timely assessment of aquaculture licence applications in light of the requirements of the *Development Act 1993*.

Ensure accurate and adequate information is provided to the Department of Planning, Transport and Infrastructure (DPTI) to ensure concurrence for the proposal is obtained where appropriate in conjunction with the *Harbours and Navigation Act 1993*.

Spatial Assessment of Sites

Ensure accurate coordinates of each lease site are maintained and reviewed are not in conflict with Aquaculture Exclusion Zones, Marine Parks, Aquatic Reserves, Shipping Channels, Seal and Sea Lion buffers, Conservation Parks, National Parks and Reserve buffers, proximity to other aquaculture activities, thereby addressing concerns from agencies, industry and the public.

The spatial data also updates the Aquaculture Public Register with both application and current site locations.

Ensure spatial assessment of proposed sites in a timely manner for efficient processing of applications.

Outputs/Outcomes

Activity 1 - Management of leases and licences

- Maintenance of systems and procedures to support day to day administration of leasing and licensing activities, including industry consultation and liaison and reviewing licence application forms and processes and ESD templates to increase efficiency in application assessments.
- Ongoing liaison with relevant government (e.g. Department of Planning, Transport and Infrastructure (DPTI), Environment Protection Authority (EPA), Attorney-General's Department – Native Title) and non-government agencies (industry peak bodies).
- Maintenance of internal lease and licence audit functions, including auditing procedures (flowcharts, checklists and manuals) and performance criteria relating to leases and licences.
- Liaison with fisheries compliance officers to undertake compliance inspections with relevance to unused lease/licence areas after being occupied.
- Issuing of outstanding and annual invoices relating to licence and lease renewals, transfers and surrenders.
- Process annual production returns from the Finfish sector. Follow-up unreturned Production returns to ensure licence holders meet their obligations under the Act and ensure information is collated effectively for the development of economic reporting.

Activity 2 - Processing of lease and licence applications

- Assessment of lease and licence applications in an accurate and timely manner.
- Issuing and processing of invoices relating to licence and lease applications.
- Ongoing liaison with applicant/licence holder.
- Production of internal risk assessment documents specific to each application.
- Referrals and liaison with other government and non-government agencies as required (e.g. EPA, DPTI, AGD, SCAP, Industry).
- Respond to public submissions specific to applications.
- Adherence to internal policies, guidelines and processes relating to application.
- Case Management administration.

Legislation

Program Summary

The administration of the Act is a core function of PIRSA Fisheries and Aquaculture. The stand-alone Act is unique to South Australia and provides evidence of the importance of aquaculture to the State. To support this industry, planning and management arrangements under this legislation should be regularly reviewed for relevance and coverage. Where gaps exist, it is PIRSA Fisheries and Aquaculture's role to assist in the development of appropriate legislation in consultation with industry and to ensure the legal framework allows for effective decision-making for industry and for government. This program facilitates the translation of policy decisions into legislation, where necessary, and ensures that policies, procedures and guidelines are developed to facilitate the operation of regulations.

Objectives

To ensure the Act is administered legally, effectively, transparently and consistently and remain up to date and relevant to manage industry practices.

Activities

1. Administration of the Act and *Aquaculture Regulations 2016* (sections 7 and 9 of the Act)

Administrative decision-making under the Act is both within jurisdiction, under appropriate delegation and made on the basis of due consideration of relevant information. Appropriate delegations must be in force. Example decisions (not a complete list - referral of draft policy to the ERD Committee; determining the manner and form of application forms; waiver of fees; cancellation of licences; causing action to be taken by licence holder; notifications and requiring information for the determination of applications under the *Aquaculture Regulations 2006* (Regulations).)

Ongoing implementation of requirements of the Act and *Aquaculture Regulations 2016* (legislative compliance) to: continue to streamline regulatory requirements for the industry by rationalising the regulatory rules imposed on aquaculture lease and licence holders; and continue to improve the delivery of the objectives of the Act, including 1) the promotion of ecologically sustainable development or marine and inland aquaculture, 2) maximising the benefits to the community from the state's aquaculture resources, and 3) ensuring the efficient and effective regulation of the aquaculture industry.

2. Legal Services and legislative interpretation (sections 7 and 9 of the Act)

PIRSA Fisheries and Aquaculture provide strategic legal services are provided for day to day administration of the Act and Regulations. Formal advice as to the Interpretation of the provisions of the Act, as amended, and associated Acts, Regulations and policies is sought from either Parliamentary Counsel or the Crown Solicitor's Office (CSO), where required, before some decisions are made and proposed actions are taken.

Key internal processes, documents, instruments and correspondence are reviewed for consistency with Act and Regulations.

Finalisation of the Standard Lease and Licence Conditions Policy across all aquaculture sectors, following its development in 2017-18.

The coordination of advice and the preparation of contractual documentation for commercial and property transactions undertaken by PIRSA Fisheries and Aquaculture through the Crown Solicitor's Office is required to ensure compliance with legal and PIRSA policy responsibilities relating to contract law.

Input into applications made under the Freedom of Information Act (FOI).

Outputs/Outcomes

Activity 1 Administration of the Act and *Aquaculture Regulations 2016*

Implementation of informed and legally valid administrative decisions consistent with the Act to promote efficient and transparent government administration and industry development.

Referral to and liaison with Parliamentary committees and gazettal process for aquaculture policies.

Internal strategic, Crown and Parliamentary Counsel legal input into new internal policies, procedures, documents, instruments and decisions under the Act as amended.

Ongoing implementation of the requirements of the Act and *Aquaculture Regulations 2016*.

Working with Parliamentary Counsel and CSO to effect policy requirements.

Activity 2 Legal Services and legislative interpretation

Interpretation of the Act and Regulations.

Interaction of the Act with requirements of other legislation (e.g. *Fisheries Management Act 2007*, *Native Title Act 1993*, *Marine Parks Act 2007*, *Environment Protection Act 1993*, *Livestock Act 1997*, *Development Act 1993*).

Compliance Operations

Program Summary

Compliance of the activities conducted on aquaculture sites with required legislative frameworks includes provision of due notice, monitoring and compliance activities by PIRSA Fisheries and Aquaculture staff and other related SA government agencies to ensure lease and licence holders comply with the Act, associated Acts, Regulations, policies and specific lease and licence conditions pertaining to their operations.

Objectives

To maximise voluntary compliance through education and awareness programs and creating an effective deterrence through strategic monitoring and enforcement programs.

Activities

1. Operational planning and implementation (Section 82; Regulations 13, 14, 20, 21)

Communication and monitoring activities are undertaken by PIRSA Fisheries and Aquaculture and related SA government agencies to ensure compliance by aquaculture lease and/or licence holders with legislation (Act, other Acts, Regulations and policies) and conditions of leases and/or licences.

Procedures and processes required for response to notifiable events (e.g. interactions with protected species, escaped stock, high mortalities) in an efficient and timely manner are developed and implemented by all agencies concerned.

Work is undertaken to strategically plan for compliance inspections to enable targeted inspection of high risk activities, in order to increase the overall efficiency of the compliance process.

2. Site Surveillance (Parts 6 and 7; Section 82A; Regulation 25)

Site surveillance inspections are undertaken by PIRSA Fisheries and Aquaculture pursuant to ensure lease and licence holders comply with the Act, associated Acts, Regulations, policies and specific lease and licence conditions, to investigate complaints from the public, or to ensure appropriate rehabilitation of surrendered or expired sites. Surveillance activities include:

- Site inspections undertaken by Fisheries Officers.
- Marine compliance inspections require a minimum of two officers and a suitable vessel to complete each inspection. They also involve photographing and plotting the site markers to ensure that it is in compliance with lease and licence conditions and spatial description (includes compliance with navigational standards and lease performance criteria) of the site by Fisheries Officers.
- Reports made to PIRSA Fisheries and Aquaculture subsequent to compliance inspections outline any compliance issues with a site and include photographs and site waypoints.
- Follow up inspections are required for sites that have identified compliance issues. These inspections are carried out within a reasonable timeframe, with due consideration of the risks to other users of the waters or resource.
- Inspections are also undertaken on sites that have been or are due to be, rehabilitated by lease or licence holders or contractors of lease and/or licence holders on an as required basis.

Fisheries Officers respond to various reactive compliance issues that arise from reports by members of the public and other government agencies, from issues observed during environmental monitoring programs or from aquaculture lease and licence holders, in regard to operational infrastructure, interactions with protected species, aquaculture stock, escape events and possible disease outbreaks.

PIRSA Fisheries and Aquaculture Services expiate licence holders for failure to submit EMP reports.

Annual site inspections undertaken by Fisheries Officers which include: visual inspection of sites, undertaking video footage, GPS location of infrastructure, navigation marking requirements, condition of infrastructure and recording of data.

3. Aquaculture Compliance Liaison (Section 9)

PIRSA Fisheries and Aquaculture Policy Staff liaise with the Fisheries Officers to assist with annual compliance planning activities, to provide information on conditions relating to individual lease and licence holders and existing aquaculture legislation and policy, to assist compliance field operations, investigations and other compliance activities. Policy staff also provide technical input to environmental compliance and the nature of aquaculture development and operation when concerning compliance related issues.

Policy staff also assist with collation of compliance data after the inspection process and supply lines of evidence regarding compliance outcomes if and when required.

Outputs/Outcomes

All Activities

Maximise compliance with the Act, regulations and lease/licence conditions through education, deterrence and site inspections.

Conduct appropriate investigations of reported and potential disease, fish kills or protected species interactions/entanglements.

Provision of information to Fisheries Officers.

Compliance activities relating to surrendering sites (e.g. rehabilitation). There is a need to identify the site to the Compliance Officers, and have the field Officers verify that all structures are cleared from a site before it is surrendered.

Planning and revision of compliance program:

- This includes designing of compliance field data sheets, assessment of data that is required from compliance inspections,
- Liaison with compliance officers – field compliance is undertaken in conjunction with local compliance officers. This also includes organisation and planning of equipment, vessels, personnel, weather, accommodation etc. and provision of technical input regarding environmental compliance and development and operation of aquaculture sites
- Spatial analysis and reporting for compliance visits. Spatial analysis is undertaken to identify sites that are to be inspected. Information relating to these sites is reported from PIIMS (i.e. location of sites, lease and licence conditions, and contact details for licence holders to receive notification of site visits etc.).

Site inspections undertaken by Fisheries Officers. PIRSA Fisheries and Aquaculture Environment Program also assists and undertakes this work, which includes: visual inspection of sites, GPS location of infrastructure, assessment of site appearance, recording of data. This may include travel to and from remote locations.

PIRSA Fisheries Officers and the Aquaculture Environment Program collect, collate and summarise site inspection data to inform compliance decisions and outcomes. This includes: liaison with compliance officers, data and database management, spatial analysis of GPS information and identification of lease/licence holders through PIIMS database. Spatial analysis includes plotting coordinates (waypoints) from the field data into GIS to verify locations of sites (whether on or off site). This information is all considered with regards to legislative requirements where lines of evidence are provided regarding potential compliance outcomes.

PIRSA Fisheries and Aquaculture Environment Program identify possible abandoned sites through compliance inspections and through report follow ups. This includes desktop spatial analysis, field identification (including quantification of infrastructure, GPS marking of abandoned structures and photos) and identification of lease/licence holders through PIIMS database.

Aquaculture Systems

Program Summary

Aquaculture Systems comprise of a range of key computer-based and manually-operated tools to ensure that PIRSA Fisheries and Aquaculture operates in an efficient and effective manner. Activities under Aquaculture Systems include ensuring up to date IT systems are in place and are effective, such as the Primary Industries Information Management System, Public Register and ArcGIS mapping software.

Objectives

To develop, maintain and review systems to support management and administration of the aquaculture industry, in accordance with the Act.

Activities

1. IT Systems management (Section 7, 9, 80 and 83 of the Act)

Successful delivery of services to the aquaculture industry is dependent upon the effective maintenance and management of IT systems. These include:

- State-wide Primary Industry Information Management System (PIIMS) database - PIRSA Fisheries and Aquaculture uses PIIMS to manage lease and licence holder information to ensure that accurate records are kept on all legal parties involved in aquaculture in South Australia, where the activities are occurring, the correct allocation of lease and licence conditions for each registration and for the management of transactions by Case Managers. PIIMS is required to create legal lease and licence instruments and to supply selected information held on the database to PIRSA Fisheries and Aquaculture's online Public Register (AgInisght).
- Public register – Maintaining a public register is a mandatory requirement under section 80 of the Act. PIRSA Fisheries and Aquaculture's Public Register online application (AgInsight) has been developed using Spatial Software tools that will provide a visual, interactive and printable display of aquaculture lease and licence sites and conditions (maintained in PIIMS).
- ArcGIS mapping software and layers – is used to spatially map all sites to ensure these meet the requirements of various parameters including aquaculture zone policies (including exclusion zones), Conservation Parks, National Parks, Reserves, Seal and Sea Lion sites, Historic Ship wrecks locations, associated buffer areas and bathymetry. The spatial information is used to address concerns of other government agencies, industry members or public resource users. PIRSA Fisheries and Aquaculture engages with PIRSA Spatial Information Services to ensure that the spatial data collected and used to regulate aquaculture lease and licence information is up-to-date and operates with current software. The spatial data also updates the Aquaculture Public Register with both application and current site locations.
- In February 2020, a new geodetic datum system for coordinates (Geocentric Datum of Australia 2020 - GDA2020) will replace the current system (AGD94) and PIRSA Fisheries and Aquaculture will liaise with PIRSA Spatial Information Services to ensure that lease and licence data integrity is maintained through the transition into the new system.
- Review, troubleshooting and ongoing maintenance of the on-line reporting system for electronic lodgement of annual EMP and production return reports (myPIRSA) by lease and licence holders.
- Microsoft Access and Excel Database – Information supplied to PIRSA Fisheries and Aquaculture from aquaculture lease and licence holders for Environmental Monitoring Program reporting and production return information is managed through the use of Microsoft Access and Excel Databases. Production return data is analysed and summarised into a standard format to identify production of aquaculture products for the various aquaculture sectors in SA (for economic analysis).

- PIRSA Fisheries and Aquaculture utilises all available PIRSA systems and internal processes such as the Objective filing system, records management processes, email, intranet and website systems.
- Reporting from these databases are also required for external agencies on state government and national levels, so that trends in aquaculture development and management can be quantified.
- Time is also spent liaising with PIRSA spatial and IT staff to rectify issues that may arise with databases, this also includes updates to systems and testing required when updates or upgrades are installed.

Outputs/Outcomes

Activity 1 IT Systems management

Accurate and efficient systems are maintained and enhanced to provide for effective and efficient management and administration of the aquaculture industry, in accordance with the Act.

Provide for public transparency of use of the States aquaculture resources (e.g. Public Register is available on the PIRSA Fisheries and Aquaculture website for all stakeholders, including the aquaculture industry, relevant government Agencies and general public).

To safeguard lease and licence holder details by adhering to broader government guidelines (e.g. records management requirements for public service document standards and freedom of information requests).

Included in the management of the PIIMS database is assessing reporting functionalities, liaison with the PIRSA IT group, testing updates to the database, reporting of functional issues and troubleshooting with system users.

Included in the management of the Public Register system is rollout of updates, reporting of functional issues to the PIRSA IT group, testing when updates occur and troubleshooting with system users both internally and externally.

Included in the management of ArcGIS is the rollout of update software, appropriate training for use of the program, recognition, requests and testing for software fixes, liaison with the PIRSA spatial group, reporting spatial information and troubleshooting with system users.

Management of the Microsoft Access Database includes alignment of databases annually to reflect data requirements of Environmental Monitoring Reports.

Management of records management systems (e.g. Objective) may include testing of various functionalities, liaison with the PIRSA IT group and requests for further updates to systems and software.

Ongoing maintenance and troubleshooting of the electronic lodgement system (my PIRSA) for environmental monitoring program and production return data.

Aquatic Animal Health

Program Summary

The Aquatic Animal Health program provides a range of services relating to the prevention, preparedness, and response to aquatic disease. The program is underpinned by science and risk-based management. In addition the program provides input to and alignment with broader state and national biosecurity policy.

Objectives

To maintain the integrity of SA's aquatic biosecurity through prevention, preparedness and response strategies, the use of risk based assessments and surveillance that aim to identify and manage the disease risks to industry and the aquatic environment associated with aquaculture stocks.

Activities

1. Management of aquatic animal health risks and emergency response (Pursuant to the Act and the *Aquaculture Regulations 2016*)

Monitoring of aquatic animal health/biosecurity risks

- PIRSA Fisheries and Aquaculture's aquatic animal health programs address the potential risk and occurrence of aquatic animal pathogens and diseases in relation to aquaculture stocks that are important focus for the aquaculture industry, its productivity and other users of SA State waters.
- Provide technical advice to industry on how to implement national Aquaculture Farm Biosecurity Plan guidelines: http://www.agriculture.gov.au/fisheries/aquaculture/farm-biosecurity-plan. Farm biosecurity provides the measures to minimise the risk and impact of disease. Assessment and management of biosecurity risks include particular attention to significant and notifiable diseases of finfish. These include (but not limited to): epizootic haematopoietic necrosis (EHN), epizootic ulcerative syndrome (*Aphanomyces invaderis*) (EUS), *Aeromonas* spp., viral encephalopathy and retinopathy (VER), iridovirus diseases, enteric septicaemia of catfish (*Edwardsiella ictaluri*), bacterial kidney disease (*Renibacterium salmoninarum*), viral haemorrhagic septicaemia (VHS). Examples of parasites that require management, including use of veterinary medicines, include *Cardiocola forsteri* and *Paradeontacylix* spp. (blood fluke), *Caligus* spp. (sea lice) *Benedenia seriolae* (skin fluke), and *Hexostoma thynni* and *Zeuxapta seriolae* (gill fluke).

Disease surveillance

- Maintenance of a passive surveillance capacity to comply with Commonwealth disease reporting requirements. Information from surveillance allows PIRSA Fisheries and Aquaculture to determine what is occurring within a sector, what disease issues are of concern and allows identification of emerging disease issues.
- Coordinate active surveillance programs as determined or required by the Commonwealth
- Provide advice to licence holders on industry based active surveillance programs.

Site inspections and investigations

- PIRSA Fisheries and Aquaculture staff monitor and investigate breaches of the aquaculture stock translocation requirements under the *Livestock Act 1997* and inappropriate use of chemicals in accordance chemical use approval issued under the *Aquaculture Regulations 2016*. Provide assistance to Biosecurity SA or the Commonwealth with regard to breaches of Australian Pesticide and Veterinary Medicine Authority (APVMA) permitted or registered chemicals. Investigation of breaches includes taking evidence and undertaking a site

visit in conjunction with PIRSA Biosecurity Officers to determine the nature of the breach. Investigations may result in legal action or education of licence holders.

- PIRSA Fisheries and Aquaculture staff investigate unusual mortalities and suspected disease as per the reporting requirements under the *Aquaculture Regulations 2016*. Investigations may include site visits to obtain information from the farmer, inspection of the stock register and the taking of samples for laboratory diagnosis. Investigations may result in assistance to the licence holder, administrative or legal action. There are ongoing requirements to develop suitable mortality guidelines (as per the Regulations) for the finfish sector, including an appropriate database that adequately captures necessary data to identify trends in unusual mortality across the sector. If an investigation results in the detection of an infectious or notifiable disease, then this may initiate an emergency response led by Biosecurity SA.

Emergency response

- PIRSA Fisheries and Aquaculture are responsible for the prevention and preparedness of aquatic animal disease incidents. This includes maintaining a capacity to deal with minor and major aquatic disease incidences reportable under the Regulations and the *Livestock Act 1997*. The management of emergency responses, once initiated if a significant biosecurity issue is identified from investigation, are not lead by PIRSA Fisheries and Aquaculture but by Biosecurity SA. However, PIRSA Fisheries and Aquaculture would be closely involved during an emergency response.

Assist Biosecurity SA in emergency response training as well as developing, reviewing and updating emergency response plans

Translocation applications

- Provision of support to licence holders in regard to translocation applications.
- Ensure new applications meet the requirements outlined in the Livestock (Restrictions on Entry of Aquaculture Stock) Notice 2014 and PIRSA Fisheries and Aquaculture's internal procedures where applicable.
- Ensure the application and any conditions address the interests of aquaculture operators, the environment and the broader community, in addition to adhering to the objects of all relevant legislation.
- Ensure appropriate health certification and biosecurity protocols are provided where required and potential biosecurity risks are considered and evaluated (including State and National notifiable diseases), where necessary, in line with relevant risk assessments.
- Ensure required consultation with all applicable stakeholders (Interstate authorities, State government agency staff including Biosecurity SA, aquaculture industry, commercial and recreational fisheries and general public) is undertaken in a timely and efficient manner to ensure the application assessment process can be undertaken efficiently.
- Provide background and advice to the Executive Director Fisheries and Aquaculture and Chief Veterinary Officer where required for Ministerial Approval.
- Follow up on conditions of approvals as required and collate information where required. Maintain all relevant information and data in a central database.

Chemical use applications

- Provision of support to licence holders in regard to chemical use applications.
- Ensure new applications meet the requirements outlined in the Regulations and PIRSA Fisheries and Aquaculture's internal procedures where applicable.
- Ensure the application and any conditions address the interests of aquaculture operators, the environment and the broader community, in addition to adhering to the objects of all relevant legislation.
- Ensure appropriate veterinarian prescription and biosecurity protocols are provided where required and assessment of the environmental risks are evaluated. Where necessary, a risk assessment may be required.
- Ensure required consultation with all applicable stakeholders (Interstate authorities including the APVMA, State government agency staff including Biosecurity SA and the EPA, industry veterinarian, aquaculture

industry, commercial and recreational fisheries and general public as required) is undertaken in a timely and efficient manner to ensure the application assessment process can be undertaken efficiently.

- Where required, undertake a literature search and collate background information including efficacy, environmental and ecotoxicology research.
- Provide background to the Executive Director Fisheries and Aquaculture where required for Ministerial Approval.
- Follow up on conditions of approvals as required are met and collate information where required. This includes environmental monitoring data and information. Maintain all relevant information and data in a central database.

Policy and Legislation

- Develop, review and update aquatic animal health related policy and legislation as required.
- Implement the outcomes of the Aquaculture Regulations 2016.
- Review and update the *Livestock (Restriction on Entry of Aquaculture Stock) Notice 2014*, as required.
- Assist with implementation of an Emergency Lease guidelines document, if required.

2. Provide Input to and alignment with broader state and national biosecurity policy frameworks, legislation and other processes (Pursuant to the Act and the *Aquaculture Regulations 2016*)

Disease surveillance reporting

States and Territories are required to regularly report the presence or absence of notifiable and significant diseases in their jurisdictional zone to the Australian Government. As a member country of the OIE, Australia contributes to the international reporting of OIE listed diseases of aquatic animals on a regular basis. Australia's active participation in the OIE aquatic animal disease reporting program provides historical evidence to substantiate Australia's claims of freedom from major diseases to support export certification and quarantine import policies.

Representation on Committees dealing with aquatic animal health

Sub-Committee for Aquatic Animal Health (SCAAH) provides scientific and technical advice on aquatic animal health/biosecurity issues to Animal Health Committee. SCAAH members represent the Australian, State and Northern Territory governments and the CSIRO Australian Animal Health Laboratory. Other aquatic animal health experts from both government and non-government agencies including specialists from academia, industry and the private sector - may also be invited to participate.

Aquatic Consultative Committee on Emergency Animal Disease (Aquatic CCEAD) coordinates a national response to aquatic animal disease emergencies. This advisory committee is made up of the Australian Chief Veterinary Officer (CVO), representatives from the Australian Quarantine and Inspection Service and Biosecurity Australia, the Chief Veterinary Officer (or the Director of the fisheries department) in each State and Territory government, and the head of the CSIRO Australian Animal Health Laboratory. Technical representatives from industry are also included. The Aquatic CCEAD helps to ensure that the most effective technical response is implemented. PIRSA Fisheries and Aquaculture provides advice to the South Australian CVO and sits on the Aquatic CCEAD as needed.

Advice and input for all aquatic issues dealt with by the CVO when representing SA at the Australian Animal Health Committee. AHC provides scientific and technical advice on animal health issues to PISC via NBC. Comprising Australian state and territory and New Zealand Chief Veterinary Officers and representation from CSIRO, Biosecurity Australia and Animal Health Australia, AHC drives and manages high level strategic policy development, operational strategies and standards for government in animal health, domestic quarantine, animal welfare and veterinary public health. AHC members also meet regularly to discuss issues of national importance.

PIRSA Fisheries and Aquaculture regularly participates in committees and working groups whose objectives have a direct link to the SA aquaculture industry. Currently, participation includes membership on the Aquatic Emergency Animal Disease Response Arrangement working group (under Animal Health Committee) which is exploring cost sharing agreements between industry and government in the event of any aquatic emergency animal disease

incident. Other national working groups of relevance include: the Domestic Bait translocation working group, the Biosecurity Plan guideline working group and the Aquatic Veterinary Medicines working group.

Representation to national regulators dealing with aquatic animal health

Advice and input for all aquatic animal health issues dealt with by state and federal authorities, including the APVMA when representing SA aquaculture industry sectors. PIRSA Fisheries and Aquaculture provides scientific and technical advice on animal health issues to underpin development of industry-wide scale chemical use.

Outputs/Outcomes

Activity 1 Management of aquatic animal health risks and emergency response

Maintain the ability to deliver accurate and timely investigations for minor and major disease events (e.g. unexplained mortality event) and information to lease and licence holders to provide for appropriate response.

Site visits conducted by PIRSA Fisheries and Aquaculture staff to investigate issues identified by lease and licence holders, government and local government agencies and general public or other stakeholders.

Conduct appropriate investigations of reported and potential disease and fish kills.

Ensure the maintenance and accuracy of PIRSA's passive surveillance database

Assist with or coordinate active surveillance activities as required in response to disease threats or requirements from the Commonwealth to support trade and market access. Where surveillance programs need to be developed and implemented, seek funding to undertake those activities (for example POMS surveillance in the oyster industry).

Provide technical advice to industry on how to implement national Aquaculture Farm Biosecurity Plan guidelines. When sector or farm specific biosecurity guidelines are required to be developed or implemented, seek funding to undertake those activities (for example the development of national abalone and oyster hatchery biosecurity guidelines: http://www.frdc.com.au/project?id=22).Develop, review and update emergency disease response plans as required.

Contribute to the implementation of Aquaculture Regulations 2016.

Review and update the *Livestock (Restriction on Entry of Aquaculture Stock) Notice 2014*, as required.

Assessment of chemical use applications in an accurate and timely manner.

Chemical use applications are processed.

Ongoing liaison with applicant/licence holder where technical advice is required.

Ongoing liaison with relevant government [e.g. Interstate authorities (APVMA, government veterinarians), Biosecurity SA, Environment Protection Authority (EPA)] and non-government agencies (Industry peak bodies).

Production of internal risk assessment documents specific to each application where required.

Referrals and liaison with other government and non-government agencies as required (e.g. EPA, DPTI, AGD, DAC, Industry).

Off-label veterinary medicines can be used under Ministerial approval for emergency and experimental use, including pursuing APVMA permit applications.

Investigate breaches of the aquaculture stock translocation requirements under the *Livestock Act 1997* and inappropriate use of chemicals in accordance chemical use approvals issued under the *Aquaculture Regulations 2016*.

Provide assistance to Biosecurity SA or the Commonwealth with regard to breaches of Australian Pesticide and Veterinary Medicine Authority (APVMA) permitted or registered chemicals.

Activity 2 Provide Input to and alignment with broader state and national biosecurity policy frameworks, legislation and other processes

Participation in biosecurity committees related to the Finfish sector.

Provide input to national policy developments to ensure alignment with South Australian considerations and priorities.

Align South Australian legislation and disease response plans with national requirements.

Environmental Monitoring and Management

Program Summary

The Environmental Monitoring and Management programs are required for all licence holders to ensure that the environmental risks associated with the aquaculture industry can be adaptively managed, and the industry can operate in a sustainable manner. Information obtained as a result of environmental assessments and monitoring programs inform policy and planning decisions, and therefore must be derived from the best available information. If environmental issues arise, PIRSA Fisheries and Aquaculture are responsible for government response to such issues as the central point for the management of the aquaculture industry. This may include collaboration with external government departments, to ensure adherence to relevant environmental legislation.

Objectives

To monitor and manage the environmental performance of the South Australian Aquaculture industry.

To ensure aquaculture policy, planning and assessment activities are informed by the best available scientific and environmental information.

To ensure risks to the aquaculture industry, posed by other uses of aquatic resources remain within acceptable limits.

To ensure that environmental issues are understood and responded to by the most efficient and effective means.

Activities

1. Management of environmental monitoring programs (Regulations part 3 Regulations 22 and 23 of the *Aquaculture Regulations 2016*)

Ensure the sector specific EMPs are reviewed on a regular basis and are current to evolving industry practices and needs, actual and perceived environmental risks (i.e. industry, government agencies, general public etc.) and up to date technical information to ensure the ongoing sustainability of the SA aquaculture industry.

Ensure EMP's are developed, implemented and regulated appropriately.

Ensure EMP information is collected by licensees, contractors or PIRSA officers in a timely manner, as per formal EMP frameworks and regulatory arrangements.

Ensure analysis of EMP data is undertaken by PIRSA Fisheries and Aquaculture in a timely manner to determine compliance with lease performance criteria, licence conditions, zone policy biomass limitations and the Act, its subordinate regulations, and other associated legislation and policies (refer Program 4: Compliance for taking action on noncompliance events identified).

Ensure EMP data collected is used to inform relevant decision-making processes (e.g. policy development, lease and licence renewals, regulation and licence conditions).

Ensure a public summary of EMP and other relevant information is collated by PIRSA Fisheries and Aquaculture for each sector within an appropriate timeframe and made publicly available to demonstrate ongoing awareness and compliance with ESD directed by the Act for aquaculture activities within SA. The South Australian Aquaculture report is produced annually and is available on the PIRSA website.

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EMP reports that are not returned within set timeframes established under the Act or are deficient in information submitted are followed up in a timely manner to ensure complete set of data is maintained for each licence holder. Correspondence and decisions regarding penalty may be required to be carried out thereafter.

Liaise with industry and SARDI to maintain the Service Level Agreement and regional EMP program to ensure the program is maintained according to schedule.

2. Response to Environmental issues (Sections 7 and 82A of the Act)

PIRSA Fisheries and Aquaculture staff monitor and investigate potential breaches of the Act, *Aquaculture Regulations 2016* or other relevant environmental legislation, based on random and targeted inspections, information received by the public, other government agencies and other stakeholders (including recreational marine resource users), in an efficient and timely manner. PIRSA Fisheries and Aquaculture aim to work in collaboration with the industry to address and rectify any environmental issues as they arise. Subject to the circumstances of any reported non-compliance, PIRSA will apply the most appropriate measures such as education of licence holders, changes in licence conditions, direction to carry out work or further enforcement action if required.

Under the Regulations licence holders are required to submit strategies for approval by the Minister to PIRSA Fisheries and Aquaculture relating to methods to mitigate the risk of stock escapes and adverse marine mammal/protected species interactions. Alternatively, a sector-based strategy can be developed and approved, against which all operators within that sector must comply. Should one of these events (escape or adverse interaction) take place PIRSA Fisheries and Aquaculture investigates the incident and determines whether the licence holder was in breach of their strategy and whether the strategy needs to be updated and resubmitted for approval.

Implementation and liaison with industry, members of the public and other government agencies to implement, monitor and review the Adopt a Beach program.

3. Provide input to and alignment with State and National environmental policy, legislation and strategies (Section 7 of the Act)

Broader Environment and Conservation Policy Initiatives

Ensure that representation of PIRSA Fisheries and Aquaculture activities and activities of the SA aquaculture industry within other government legislation, strategies and plans are reflective of each industry sector's actual environmental risk (not perceived environmental risk).

PIRSA Fisheries and Aquaculture must also work with the SA aquaculture industry to ensure that technical inputs into other State legislation, strategies and plans are accurate and adequate.

South Australia has particular natural advantages as a location for aquaculture operations and the SA aquaculture industry must be cognisant of these environmental factors to ensure there is stable and sustainable growth. It is therefore essential for PIRSA Fisheries and Aquaculture to provide a comprehensive legislative, regulatory and administrative framework to guarantee maximum access and use for industry while ensuring that the following sections of the Act (Section 4(1)a to c) are addressed through the regulation and activities of the SA aquaculture industry:

a. Natural and physical resources are maintained to meet the reasonably foreseeable needs of future generations (including adherence to *Environment Protection Act 1993*, *Environment Protection (Water Quality) Policy 2015*, *Coast Protection Act 1972*, *Heritage Places Act 1993*, *Historic Shipwrecks Act 1981* and *Aboriginal Heritage Act 1988*);

b. Biological diversity and ecological processes and systems are protected (including adherence to *Coast Protection Act 1972*, *Marine Parks Act 2007* and *National Parks and Wildlife Act 1972*)

c. Adverse effects on the environment are avoided, remedied or mitigated (including adherence to the *Environment Protection Act 1993*).

4. Identify research needs/opportunities for sustainable aquaculture planning and management (Section 9 of the Act)

Aquaculture related research produces information that can lead to new innovations and opportunities for industry development and to produce effective solutions to a range of challenges facing the SA aquaculture industry.

PIRSA Fisheries and Aquaculture to further develop projects under PIRSA Fisheries and Aquaculture and Fisheries and Research Development Corporation (FRDC) initiative called Innovative Solutions for Aquaculture Planning and Management from recommendations identified by the SA aquaculture industry, research providers, national/international innovation and research that will support the development of aquaculture in South Australia.

Address recommendations from SARDI scientists and other research agencies to ensure these are considered in the development of policies, regulations and licence conditions.

Outputs/Outcomes

Activity 1 Management of environmental monitoring programs

EMP programs are specific to monitoring the Finfish sector's key risks through annual review.

Licence holders provide the information required to submit EMP forms electronically.

If requested, hard versions of the EMP proformas are sent to licence holders to ensure that they are received.

Follow up correspondence/contact to all licence holders that have not submitted EMP proformas or where there is information missing.

Entry of EMP data into the Finfish database.

Accurate and timely analysis of data collected from EMP reports (e.g. collect and analyse within timeframes established for each reporting period so that further action can be taken if required) (refer Program 4: Compliance for actioning noncompliance). Analysis includes viewing against EMP data against the Regulations, biomass held on site, and mapping of the co-ordinates of sea-cages to determine if fallowing occurred on site and position of sea-cages relative to the lease boundaries.

Analysis of benthic videos are obtained and assessed as part of the EMP.

EMP summary of EMP reports is available through a publically available Aquaculture Report on the PIRSA website.

Liaise with industry and SARDI to maintain the Service Level Agreement and regional EMP program to ensure the program is maintained according to schedule.

Review, troubleshooting and maintenance of a database to allow licence holders to access, fill out and submit EMP proformas electronically.

Activity 2 Response to Environmental issues

Implement accurate and timely action by licence holders in response to issues identified from submitted EMP reports, site visits and complaints (e.g. marine debris workshops and industry plans, investigation of sea-cages off-site and holding and maintenance of sea-cages on local beaches) – including the potential to issue Environment Protection Orders, as an Administering Agency under the *Environment Protection Act 1993*.

Liaison with industry, SARDI and DEW to develop sector-based strategies relating to finfish aquaculture and interactions with marine mammals and seabirds and escape of stock.

Approvals and review of strategies relating to interactions with marine mammals and escape of stock (until a sector-based strategy is developed and adopted).

Conduct appropriate investigations of reported and potential protected species interactions/entanglements and escapes.

Activity 3 Provide input to and alignment with State and National environmental policy, legislation and strategies

The Finfish sector is represented at inter- and intra- Departmental and Agency meetings and workshops on environmental issues or development of new legislative arrangements/tools (e.g. new and amended zone policy discussions, EPA's review of ANZECC water quality guidelines, sector-based strategies, marine debris, research opportunities).

Input is provided on behalf of the Finfish sector to internal PIRSA documents, EPA scorecards which evaluate the health of the marine environment.

Activity 4 Identify research needs/opportunities for sustainable aquaculture planning and management

Accurate and timely input to the development of research initiatives that contribute to more efficient and adaptive management. Specific examples include industry support through development of projects under the umbrella of Innovative Solutions, Marine Innovation SA, Australian Seafood CRC projects, sustainable finfish aquaculture and seagrass and workshops conducted with the South Australian Research and Development Institute.

Recommendations from research initiatives are implemented in an accurate and timely manner (e.g. environmental monitoring program review, carrying capacity modelling).

Program Management and Administration

Program Summary

Program Management and Administration broadly outlines those activities relating to running the PIRSA Fisheries and Aquaculture Division. This includes financial processes, including cost recovery, human resource management, customer liaison, business and strategic planning, implementation and cross-agency relationship building and collaboration.

Objectives

To ensure strategic goals of PIRSA Fisheries and Aquaculture are achieved and overall governance of PIRSA Fisheries and Aquaculture operations meet public sector standards.

Activities

The following activities are undertaken by the Management and Administration Program:

1. Directorate (Section 9 of the Act)

Directorate activities provide a range of essential management and administrative services for support of PIRSA Fisheries and Aquaculture activities required by the Act, including:

- Providing strategic direction and leadership to deliver on PIRSA Fisheries and Aquaculture strategic goals;
- Establishing interagency agreements to support the efficient and timely endorsement of aquaculture leases and licences;
- Coordinating internal aquaculture program reports, administering external contracts and agreements:
- Ensuring that practices and procedures of PIRSA Fisheries and Aquaculture remain current and progressive in line with business developments and requirements of PIRSA, Government and industry and that reporting processes are maintained to support decision-making;
- Providing effective executive administrative support to PIRSA Fisheries and Aquaculture's Senior Management Team;
- Ensuring appropriate delegations under the Act and associated Acts are in place to support effective decision-making.

2. Human Resource Management and Administration (Sections 7 and 9 of the Act)

General Management and Administration activities ensure that all administrative tasks undertaken by PIRSA Fisheries and Aquaculture adhere to departmental and broader government policies and standards for human resource management, work, health and safety, customer service standards, records management and other specified policies as determined by PIRSA.

HR Management

- Effective recruitment, selection, retention and ongoing management and development of staff within the PIRSA Fisheries and Aquaculture Division, in line with requirements of the *Public Sector Act 2009*.
- Effective management and development of human resources, including delegation of HR responsibilities
- Promote operational efficiencies within PIRSA Fisheries and Aquaculture, whilst maintaining appropriate levels of responsibility, security and protocol for all staff.

Team/Divisional/Strategic Meetings

- Effective management of divisional operations ranging from specific internal agency groups to whole divisional meetings where necessary.

WHS Management

- PIRSA Fisheries and Aquaculture is required to align all WHS policies, actions and committees to meet State legislative requirements and PIRSA policies to ensure a safe working environment is provided for all staff to undertake their duties.

Define and develop customer service standards

- Improve customer satisfaction with the services provided by PIRSA Fisheries and Aquaculture and to meet the SA Strategic Plan targets of an increase in the level of satisfaction of SA people with government services.

Participation in training, education and awareness programs

- A broader awareness of the environment in which PIRSA Fisheries and Aquaculture operates, including other industries and government priorities, provides a greater depth of understanding which can be used to inform decision-making, or challenge current thinking to remain at the forefront of aquaculture planning and management.
- Ensure PIRSA Fisheries and Aquaculture staff understand and are aware of their responsibilities and remain abreast of the latest technical and business tools. This includes both formal and internal training of staff by mentors and peers.

Project management

- To ensure all routine activities and special projects are undertaken in an efficient and effective manner.
- Ensure that reporting timeframes are kept by PIRSA Fisheries and Aquaculture staff.

3. Operational and Strategic Business Planning (Section 9 of the Act)

Business Planning ensures that PIRSA Fisheries and Aquaculture has a vision, actions and goals that are consistent with the broader PIRSA direction, industry expectations, and the Strategic Planning for South Australia (2018) and supports the growth and innovation for the state's aquaculture industry.

PIRSA Fisheries and Aquaculture activities are aligned to the Strategic Planning for SA (2018) and PIRSA Strategic Directions, where appropriate.

Provide administrative support for statutory boards and committees (e.g. ATAB).

4. Financial Management and Cost Recovery (Section 9 of the Act)

- Finance and Budget Management ensures that all PIRSA Financial policies and procedures are adhered to in line with Treasury and Finance guidelines.
- Ensure appropriate financial delegations are in place.
- Effectively manage and implement the PIRSA Cost Recovery Policy (2016) to ensure a consistent and equitable process for the SA aquaculture industry.
- PIRSA Fisheries and Aquaculture is required to regularly review existing cost recovery arrangements having regard to the full range of activities/services provided to the SA aquaculture industry.
- The principles underpinning PIRSA Fisheries and Aquaculture's cost recovery process must be aligned to the PIRSA Cost Recovery Policy (2016), and the 'Australia Government Cost Recovery Guidelines' report (2014)[2], in addition to the Productivity Commission's 'Cost recovery by government agencies: inquiry report' (2001)[3].

[2] Commonwealth Department of Finance and Administration (2014) Australian Government Cost Recovery Guidelines, July. <https://www.finance.gov.au/sites/default/files/australian-government-cost-recovery-guidelines_0.pdf>

[3] Australian Productivity Commission (2001) Cost recovery by government agencies: inquiry report. Australian Government.

5. Provision of timely advice to Chief Executive and Minister – PIRSA and other government agencies (Sections 7 and 9 of the Act)

- Ensure that the Chief Executive of PIRSA and Minister are aware of current and emerging issues faced by PIRSA Fisheries and Aquaculture and the SA aquaculture industry through the provision of relevant, accurate and timely advice.
- Provide Ministerial Liaison services to the Minister's office.

Outputs/Outcomes

Activities 1, 2 and 3 (Directorate, Human Resource Management and Administration, Operational and Strategic Business Planning)

Strategic direction provided to aquaculture development in South Australia.

Management and development of human resources.

Develop, review and implement policies and procedures relating to administrative practices.

Develop, review and monitor customer satisfaction standards and implement recommendations for improvement.

Accurate and timely project management and administration of external contractual services and agreements that are consistent with SA Public Service standards and legal obligations (e.g. tenders for rehabilitation of suspended aquaculture sites).

Develop, review monitor and implement PIRSA Fisheries and Aquaculture's budget and business plan.

Demonstrated alignment of PIRSA Fisheries and Aquaculture strategies and actions with State plans and strategic frameworks.

Activity 4 Financial Management and Cost Recovery

Develop, review and implement cost recovery procedures that are transparent, evidence-based and are developed in a consultative manner (e.g. develop PIRSA Fisheries and Aquaculture's Cost Recovery 2019-20 Framework).

Activity 5 Provision of timely advice to Chief Executive and Minister – PIRSA and other government agencies

Accurate and timely advice is provided to the Chief Executive of PIRSA, Minister for Primary Industries and Regional Development and other Ministers.

Other Aquaculture Activities

Program Summary

External Activities and Costs encompasses other processes that are undertaken by third parties and are these activities undertaken on an as required basis including economic and marketing research. All of this is undertaken to ensure decision-making and management of aquaculture industry activities is consistent and based on complete and verifiable information.

Objectives

To ensure effective engagement of external expertise to support PIRSA Fisheries and Aquaculture activities.

Activities

1. Perform economic and production forecasting (Sections 9 and 83 of the Act)

PIRSA Fisheries and Aquaculture to determine the economic inputs the SA aquaculture industry is providing to SA and national economies in terms of direct and indirect employment, farm gate value, direct business turnover and flow on effects from processing, transport, retail and food sectors in alignment with Strategic Planning for SA (2018) and PIRSA Strategic Directions. PIRSA Fisheries and Aquaculture engages a contractor to provide this service. A summary of these data are supplied to Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), on an annual basis for collation of the Australian fisheries and aquaculture statistics report.

Economic analysis of the consequences from new legislative decisions recommended by PIRSA Fisheries and Aquaculture or other parties that can influence SA legislation and SA aquaculture industry practices is necessary to determine if there is potential to restrict industry development, limit the opportunity for competition in the market place or stifle industry innovation from these decisions.

2. Marketing Research (Section 9 of the Act)

Marketing analysis of the future trends of the industry including demand for products, impacts from changing financial markets and impact of Australian dollar value on the SA aquaculture industry are undertaken to address issues including identifying trade barriers to ensure policies, regulations and lease and licence conditions are consistent with future industry trends (e.g. production of PIRSA Fisheries and Aquaculture promotional material).

Outputs/Outcomes

Activity 1 Perform economic and production forecasting

Annual production of economic report (currently through EconSearch Pty Ltd) which is made publicly available through the PIRSA Fisheries and Aquaculture website.

Reporting to Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES).

Activity 2 Marketing Research

Accurate and timely extension of recommendations from economic and marketing research to the Finfish industry sector.

Representation of achievements of aquaculture in SA at national and international forums and conferences.

Attachment 1 - Project Scope and Costing

SCHEDULE 1 - RESEARCH PROJECT SCOPE

1. PROJECT DETAIL

1.1 Title

Tuna and Finfish Aquaculture Environmental Program 2019/20 to 2022/23

Aquaculture (Zones - Lower Eyre Peninsula) Supplementary Fed Environmental Program

1.2 Client Contact Details

Name: Sean Sloan
Position: Executive Director, Fisheries and Aquaculture
Address: Level 14, 25 Grenfell Street, Adelaide, SA 5001
Email: Sean.Sloan@sa.gov.au
Telephone: 8429 0111

1.3 Principal Investigator

Name: Jason Tanner
Position: Subprogram Leader, Environmental Assessment and Rehabilitation
Address: 2 Hamra Avenue, West Beach SA 5024
Email: jason.tanner@sa.gov.au
Telephone: 8429 0119

1.4 Subcontractor/Collaborator

Not applicable

1.5 Timeframe

Commencement Date: 1 July 2019
Completion Date: 30 June 2023

1.6 Summary

PIRSA Fisheries and Aquaculture (F&A) has requested that SARDI undertake the regional and zone scale environmental monitoring program for southern bluefin tuna and finfish aquaculture. This will be the second regional scale monitoring program, following earlier lease-scale programs. The program will comprise 2 components:

1. Pelagic Ecosystems and Oceanography
   a. Pelagic (lower trophic) ecosystem, water quality and oceanographic monitoring in Year 1, 2 and 3.
   b. Hydrodynamic and biogeochemical modelling in Years 2 and 4 to incorporate new data from Years1, 2 and 3.

2. Seagrasses
   a. Seagrass monitoring in Year 1 and 3
   b. Analysis of Year 1 and 3 seagrass datasets in Year 4

2. PROJECT DESCRIPTION

2.1 Background

The management of the finfish aquaculture industry, which includes southern bluefin tuna (SBT) and yellowtail kingfish (YTK), is based on the principles of ecologically sustainable development (ESD) enshrined in the South Australian *Aquaculture Act 2001*. One aspect of ESD is to ensure that aquaculture operations do not deleteriously and irreversibly change the marine environment. To assess compliance with this requirement, aquaculture licensees are legally required under the South Australian *Aquaculture Act 2001* and the *Aquaculture Regulations 2005* to undertake an ongoing Environmental Monitoring Program.

An independent review of the environmental monitoring program for aquaculture in South Australia recommended the development of regional and zone scale environmental monitoring, as well as site-scale auditing of industry practices. These recommendations were based on the recognition that a significant portion of finfish aquaculture waste products occur ultimately as dissolved nutrients whose cumulative impacts are likely to be realised at some distance from their source. Consequently, SARDI undertook a 4 year environmental monitoring program from 2015/16 to 2018/19 that encompassed both regional and zone scale measurements and monitoring of benthic and pelagic ecosystems.

'Tuna' and 'Other Finfish' aquaculture is currently most active in two zones, the Boston Bay Aquaculture Zone and the Lincoln Aquaculture Zone. The Lincoln Aquaculture Zone comprises the Lincoln (inner) Sector, located east of Boston Island and the Lincoln (outer) Sector, located east of Sir Joseph Banks group of islands. Most of the active leases for 'Tuna' (SBT) are currently operating in the southern part of the Lincoln (inner) Sector, while active leases for 'Other Finfish' (YTK) are operating in the Boston Bay Aquaculture Zone.

The monitoring program outlined below has been refined based on outcomes from the initial AEMP and has been designed to assess key water-column and benthic ecosystem groups to better understand the localised and cumulative impacts of dissolved nutrients from finfish aquaculture in the Lincoln Aquaculture Zone (inner sector) and Boston Bay Aquaculture Zone. The pelagic and oceanographic monitoring component largely follows that implemented for 2015-2019, and will again be used to update the coupled hydrodynamic-biogeochemical model and related CarCAP software used by PIRSA F&A for aquaculture planning and management.

The benthic component of the AEMP and its predecessors previously focussed on infauna. However, some 15 odd years of infaunal monitoring has failed to demonstrate an impact either at compliance sites 150m outside lease boundaries, or on a regional scale. Consequently, a recommendation from the initial AEMP will be that infaunal monitoring be scaled back to approximately once every 5 years. In this new 4 year monitoring program, the benthic component instead switches to seagrasses. There have been a number of

anecdotal reports over the last decade or so of seagrass declines in the region associated with aquaculture. Recent EPA data highlights several sites of concern in the Port Lincoln region and the locations are consistent with the modelled circulation which demonstrates connectivity between nutrient waste streams associated with aquaculture and areas of seagrass decline. PIRSA F&A will facilitate a review of the program in Year 4.

2.2 Objectives

2.2.1 Assess status of water quality and lower pelagic ecosystems trophic structure at key sites inside and outside aquaculture zones in the Port Lincoln region.

2.2.2 Update and validate ocean models and CarCap software used to optimize aquaculture lease siting, future monitoring program design and estimates of carrying capacity.

2.2.3 Assess status of seagrasses at key sites inside and outside aquaculture nutrient plumes in the Port Lincoln region.

2.2.4 Assess the contribution of aquaculture derived nutrients to seagrass nutrient budgets at these sites, and the potential contribution of these nutrients to any seagrass decline.

2.3 Methods

Pelagic Ecosystems and Oceanography

The Pelagic Ecosystems and Oceanography Monitoring program comprises 5 sites to be sampled twice per year in the first 3 years (Fig. 1). At all sites a water column integrated water sample will be collected for the analysis of key pelagic water quality parameters which include the concentration of nutrients and biomass components of the lower trophic ecosystem. Parameters to be sampled include: total and dissolved nutrient concentrations (TN, NO_x NH_4, PO_4,; triplicates), chlorophyll-a via fluorometric techniques (triplicates), phytoplankton community composition via HPLC pigments (single), phytoplankton identification and abundance via microscopy (single), virus-bacteria and picoplankton abundance via flow cytometry (triplicates), and meso-zooplankton abundance (single vertical tows, 150 µm mesh nets).

Site selection and survey timing is based on knowledge of the temporal (i.e. seasonal) and spatial circulation patterns and corresponding ecosystem dynamics within Spencer Gulf and the greater Lincoln region (Middleton *et al.* 2013) and outcomes from the initial AEMP. Three sites are situated within or on the boundary of the Aquaculture Zones. The other two sites are situated to the south and north of the Aquaculture Zones. The southern site will include a bottom mooring containing an ADCP current meter with temperature and pressure sensors. The ADCP will provide measures of current speed and direction throughout the water column, and will provide information essential for model validation and determination of natural fluxes from the shelf into the gulf and differentiation of anthropogenic sources within the gulf. The northern site will provide validation of the extent of connectivity between the Aquaculture Zones and upper Spencer Gulf as a consequence of the inverse estuarine circulation. Surveys will be conducted in January and May of each year. These sampling times are based on the major seasonal oceanographic characteristics of Spencer Gulf and the SBT supplementary feed cycle (Middleton *et al.* 2013). The January survey will provide a snapshot of summer conditions when connectivity between the shelf and gulf is restricted. Annual flushing of the gulf with waters from the continental shelf commences in late autumn

and the May survey also coincides with the peak of SBT supplementary feed cycle. The mooring will be deployed in January and recovered in May.

Reporting on the Pelagic Ecosystems and Oceanography Monitoring program will include a brief annual report updating the status and trend of key water quality parameters and indicators of lower trophic ecosystem status. In Year 2 and 4, the coupled hydrodynamic-biogeochemical model will be updated to include the previous years survey data and the monthly finfish feed schedules (to be provided by PIRSA F&A). Ocean model and CarCAP updates provided in this SLA build upon the modelling capability developed through PIRSA Innovative Solutions II (Middleton *et al.* 2013) and the initial AEMP and rely on the continued supply of data streams provided by SAIMOS.

The combination of measurements and modelling will allow for the determination of the gross fluxes and circulation of nutrients and planktonic biomass and an extrapolation of their space-time dynamics in the south-west region of Spencer Gulf. Following Middleton *et al*. (2013), we expect considerable patchiness of the measured and modelled distribution and fluxes of nutrients and planktonic biomass. Extrapolation of the model results to the remainder of the gulf may be uncertain due to the limited spatial extent of the survey design.

Seagrass Monitoring

Seagrass monitoring will occur in years 1 & 3 of the study. Following detailed analysis of data from the EPA Aquatic Ecosystem Condition Report monitoring, in conjunction with model outputs of aquaculture nutrient plume dispersion, a set of 6 sites will be chosen. Three of these sites will be areas impacted by the plume and which have shown a decline in seagrass cover between 2010 and 2018, while 3 will be outside of the plume and not have experienced a decrease in cover over this time. The sites currently monitored by EPA are shown in Figure 1, and if suitable, the 6 sites for this project will be chosen from these to provide greater temporal context. Site selection will be finalised in a workshop with PIRSA Fisheries and Aquaculture, Industry and EPA. At each site in each year, a detailed assessment of seagrass status will be undertaken. This assessment will include a series of 8-10 remote video transects, which will provide data comparable to that obtained by EPA (including % cover of seagrass, species composition, broad-scale epiphyte load and habitat condition index). In addition, a series of 200 x 200 mm quadrats will be harvested, by a diver from inside a shark cage, of all seagrass, at each site (provisionally 5-10 replicates at each of 3 subsites ~ 100m apart). For each of these quadrats, a series of seagrass architectural variables will be assessed, including stem/leaf density, biomass, epiphyte load and stem/leaf length. Seagrass architecture will then be compared between sites and over time using standard non-parametric multivariate analysis. This architectural analysis will provide a more detailed assessment of the condition of seagrasses at each site, and whether it varies with being in the nutrient plume from aquaculture or not.

Following seagrass architecture analysis, a sample from each quadrat will be subject to biomarker analysis to provide more detail on the role of aquaculture derived nutrients to the nutrient budgets of the seagrasses. Biomarkers to be assessed will be: stable isotopes of carbon and nitrogen; % C, N & P; non-structural carbohydrates; and amino acids. These will be examined in seagrass leaf and root tissue, as well as epiphytes, as each has a different turn-over rate and provides information on nutrient sources over a different time-scale. Three replicate samples will be collected from each subsite for each analysis.

All measured parameters will be analysed for difference between sites, and over time. Where variables coincide with those measured by EPA, the EPA data will be included in the analysis to provide greater temporal and spatial context.

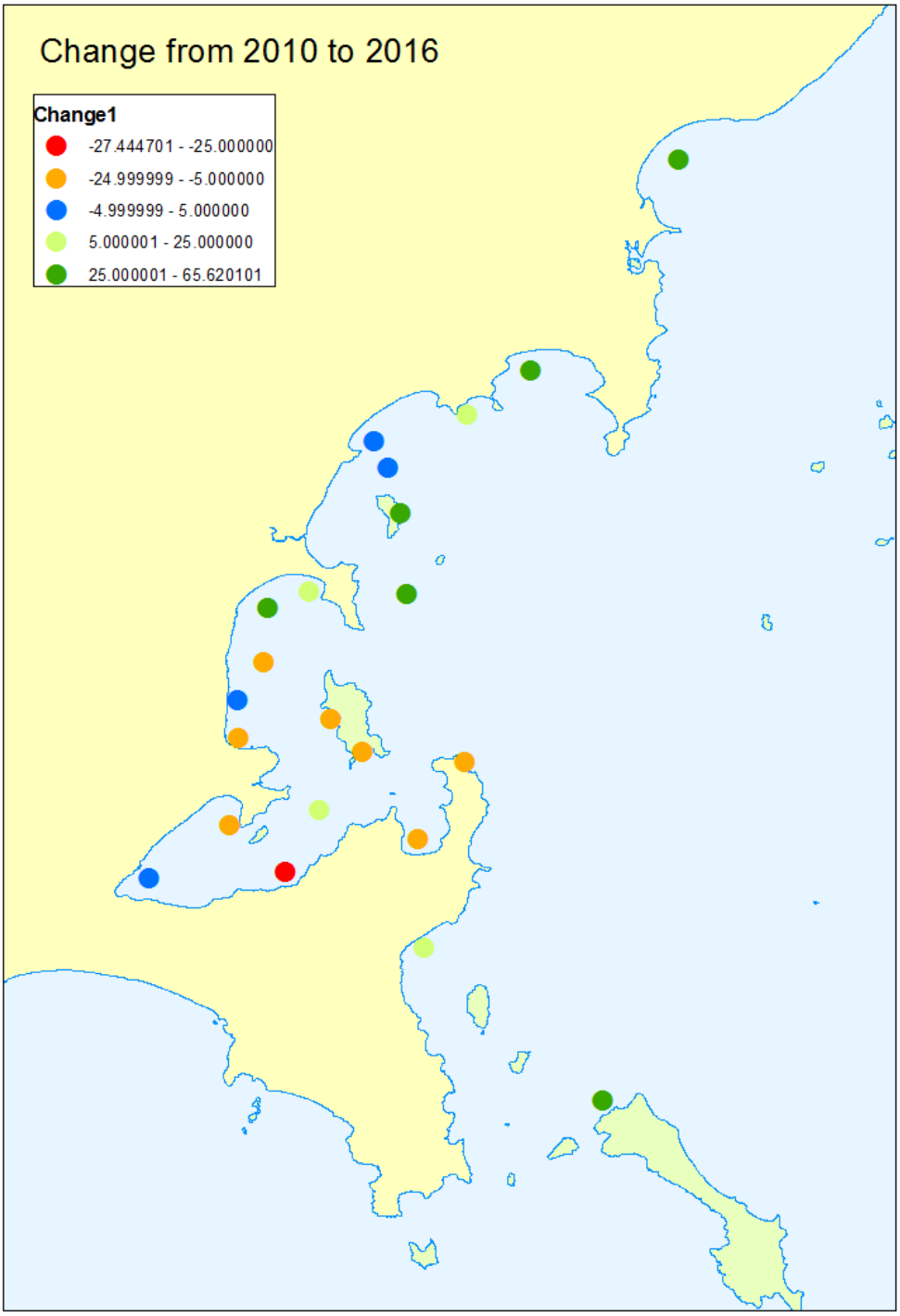

Figure 1. Results of EPA Aquatic Ecosystem Condition Reporting for 2010-16 for the Port Lincoln Region. Colour coding indicates the extent of change in seagrass percent cover as indicated by the legend.

References

Middleton, J., Doubell, M., James, C., Luick, J. and van Ruth, P. (2013). PIRSA Initiative II: Carrying Capacity of Spencer Gulf: Hydrodynamic and Biogeochemical Measurement Modelling and Performance Monitoring. Final report for the Fisheries Research and Development Corporation. South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication No. F2013/000311-1. SARDI Research Report Series No. 705. 96pp.

3. DELIVERABLES

3.1 Service Provided:

3.1.1 **Delivery of monitoring program as described above.**

3.1.2 **Management and quality assurance of research data**
Provide effective storage and management of research data.

3.1.3 **Analysis and interpretation**
Interpret the results of the research program in reports and presentations.

3.2 Outcomes:

Improved understanding of the influence of aquaculture on marine ecosystem health in the Port Lincoln region.

3.3 Outputs and Extension:

Annual milestone reports providing snapshot of previous year's results, including updates of CarCAP in years 2 & 4.

A final report detailing the results from:

1. Seagrass Monitoring in Year 1 and 3, and the temporal analysis of both sets of data, including placing into context with EPA data.
2. Pelagic Ecosystems and Oceanography Monitoring in Year 1, 2, and 3 and model validation and CarCAP update in Years 2 & 4.

Presentations at relevant industry forums, including the annual SBT research workshop.

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

PROJECT COST	2019/20	2020/21	2021/22	2022/23
SUBTOTAL $	165,144	238,412	177,909	168,535
GST	NO GST	NO GST	NO GST	NO GST
TOTAL $	**165,144**	**238,412**	**177,909**	**168,535**

This project scope and costing assumes that the geographic distribution of tuna and other finfish farms remains similar to the current distribution. Any farms outside the Boston Bay and Lincoln (inner) zones will not be covered, and will incur additional costs if monitoring is required.

4.3 MILESTONE AND PAYMENT SCHEDULE

Date	Milestone	Payment ($) Ex GST
29 November 2019	Seagrass site selection finalised	**20,000**
12 June 2020	Field sampling (January and May) completed for Pelagic/Oceanography Monitoring Yr 1 Field sampling (May) completed for Seagrass Monitoring Yr 1	**145,144**
30 November 2020	Laboratory processing and reporting of Year 1 results completed for: – Pelagic/Oceanography Monitoring (including CarCAP update) – Seagrass Monitoring	**83,000**
11 June 2021	Field sampling (January and May) completed for Pelagic/Oceanography Monitoring Yr 2	**155,412**
30 November 2021	Laboratory processing and reporting of Year 2 results completed for Pelagic/Oceanography Monitoring	**25,000**
17 June 2022	Field sampling (January and May) completed for Pelagic/Oceanography Monitoring Yr 3 Field sampling (May) completed for Seagrass Monitoring Yr 3	**152,909**
30 November 2022	Laboratory processing and reporting of Year 3 results completed for: – Pelagic/Oceanography Monitoring (including CarCAP update) – Seagrass Monitoring	**60,000**
30 March 2023	Draft final report	**70,000**
16 June 2023	Final report	**38,535**
SUBTOTAL		**750,000**
GST		**No GST**
TOTAL COST		**750,000**

5. PROJECT STAFF

Staff	Position	2019/20 FTE	2020/21 FTE	2021/22 FTE	2022/23 FTE	Funded/ In-Kind
J Tanner	Subprogram Leader	0.14	0.10	0.14	0.10	Funded
M Doubell	Subprogram Leader	0.05	0.05	0.05	0.10	Funded
S Nayar	Subprogram Leader	0.00	0.05	0.00	0.05	Funded
C James	Research Scientist	0.00	0.07	0.00	0.07	Funded
M Theil	Research Officer	0.00	0.13	0.00	0.13	Funded
L Mantilla	Research Officer	0.09	0.04	0.09	0.00	Funded
P Malthouse	Research Officer	0.05	0.05	0.05	0.00	Funded
I Moody	Research Services Officer	0.08	0.02	0.08	0.00	Funded
TOTAL		**0.41**	**0.51**	**0.41**	**0.45**	

SCHEDULE 2 - PROJECT COSTING

1. 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		59,516	69,299	62,213	70,245
Operating					
Field and Laboratory (consumables and equipment use)		37,549	93,050	40,283	64,516
RV Ngerin		34,008	36,558	39,300	
Travel (flight, allowance, accommodation)		5,985	3,144	6,606	
SARDI overhead		28,086	36,361	29,507	33,774
SARDI in-kind		17,304	22,062	18,180	20,452
Total Cost		**182,448**	**260,474**	**196,089**	**188,987**
Revenue – PRICE					
PIRSA F&A	91%	165,144	238,412	177,909	168,535
Total Revenue		**165,144**	**238,412**	**177,909**	**168,535**
SARDI Investment	9%	**17,304**	**22,062**	**18,180**	**20,452**

The following table outlines the funding structure, between the finfish and tuna sectors, for this research project scope:

Sector	2019/20 Total ($) Ex GST	2020/21 Total ($) Ex GST	2021/22 Total ($) Ex GST	2022/23 Total ($) Ex GST	4 year Total ($) Ex GST
Tuna	121,591	121,591	121,591	121,591	486,364
Finfish	65,909	65,909	65,909	65,909	263,636
Total	**187,500**	**187,500**	**187,500**	**187,500**	**750,000**