



Government  
of South Australia

# **Smarter Regulation Project**

## **Integrated Assessments**

### **- Aquaculture Case Study**

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Integrated Assessments - Aquaculture Case Study**

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## Executive Summary

The purpose of this “Smarter Regulation” project is to identify ways in which government assessment processes can be better coordinated without loss of rigour. As a starting point, sectors identified as having ‘best practice’ processes have been identified as case studies, highlighting key areas and principles of best practice that might be applied to improve assessment processes in other sectors. Aquaculture regulation in South Australia is the first of these ‘best practice’ sectors, and the subject of this report.

This report concentrates on the most complex and ‘referral rich’ processes conducted by the Department of Primary Industries and Resources South Australia (PIRSA) Aquaculture Division, being aquaculture zoning, a new pilot lease application (outside an aquaculture zone) and a new marine licence application. As many of the steps are similar for other transactions, a detailed examination of all other transaction types is unlikely to provide the reader any further insight into the types of arrangements that have been put in place. Note this case study relates only to the authorisation required to conduct aquaculture (as defined by the *Aquaculture Act 2001*), but does not extend to the authorisations required to establish a business, or those relating to post-harvest handling or export.

The key findings of this report have highlighted where assessment processes have been enhanced by legislative instruments, interagency cooperation (through administrative agreements, delegations or less formal arrangements) and effective information sharing between PIRSA and other stakeholder agencies. Of particular interest are the preliminary referrals in both the aquaculture zone development and the lease application processes, designed to identify the major issues that would make any form of aquaculture inappropriate in a given area thereby introducing the concept of an ‘early no’. In doing so, PIRSA and its fellow agencies have significantly reduced the resources required to conduct assessment processes, as well as reducing the time and cost burden on the applicant. By circulating a ‘statement of intent’ to the relevant agencies early in the zone development process, PIRSA have also been able to avoid the possibility of a policy being drafted in isolation of other government interests, and consequently are able to present a ‘whole of government’ position (as far as possible) prior to the Aquaculture Advisory Committee’s (AAC) endorsement and subsequent public consultation.

With regards to individual applications for aquaculture leases, changes to the *Development Regulations 2008* as a result of consultation and agreement between PIRSA, the Development Assessment Commission (DAC), Department of Planning and Local Government (DPLG) and the Environment Protection Authority (EPA), have also had the significant result of removing the need for separate development approval for applications made for leases within an existing aquaculture zone. As a result of liaison between PIRSA and EPA, many of the risks EPA would ‘have regard to’ under the *Environment Protection Act 1993* have been incorporated into an ‘Ecologically Sustainable Development’ (ESD) assessment conducted by PIRSA, and the EPA’s review of PIRSA’s assessment forms the basis of their own assessment. In the event that an application is made where no zoning has occurred applicants still need to seek approval to erect or moor farming structures on site. Given that PIRSA consider the farming structures to be used in the ESD assessment, the DAC also uses that assessment as the basis for their own assessment, and will sometimes draw on PIRSA Aquaculture staff to assist them in arriving at their decision.

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Throughout this report, various 'Principles of Best Practice' have been highlighted as they are discussed, to show how the assessment process may be improved in other industry areas. Two recommendations have also been made for further improvement to the Aquaculture process. A summary of the principles and recommendations follows here;

### **Principles of Best Practice identified throughout Case Study**

1. Where statutory referrals are known to have the potential to hinder the progression of a policy or other assessment, investigate ways to incorporate early referrals to avoid unnecessary time and expense for government and business.
2. Identify opportunities for cross agency collaboration prior to formal public consultation processes in order to present a 'whole of government' position (as far as possible), and to make policy drafting processes more efficient.
3. Where the assessment of a proposal is subject to multiple assessments considering similar risks, seek opportunities to coordinate those into one process, wherever possible.
4. Identify opportunities for case management of transactions and applications to improve customer service, accountability and timeliness of assessments.
5. The timing and sequence of existing processes be reviewed to establish whether there are opportunities to rearrange process steps to promote more meaningful engagement and a more robust assessment (and therefore better regulatory outcome).
6. Identify opportunities for concurrences to be given at a 'zone' or 'policy' level, rather than at an individual site level if there is little or no risk in doing so.
7. Where multiple agencies assess similar risks, agencies should work together to develop an evidence-based, mutually acceptable risk assessment framework to minimise duplication across agencies.
8. Identify opportunities for applications made to multiple agencies in respect of one activity (or closely related activities) to be consolidated into a single application.
9. Where one legislative requirement has the capacity to address a risk that would otherwise require a separate authorisation, consider the use of exemptions to avoid duplicating the obligations on licence holders.

### **Recommendations for further improvement of Aquaculture processes**

1. That the more 'traditional' consultation methods be maintained, however trials be considered using electronic mediums to enhance consultation.
2. Consider the opportunity for an application for broodstock collection to be assessed in conjunction with an application by the same person for an aquaculture licence, given the similar information requirements.

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## Background

The South Australian Government is committed to reducing government red tape and cutting the costs to business arising from regulatory compliance. In addition to the various initiatives already underway across government, including the Competitiveness Council's Red Tape Reduction Program, the Executive Committee of Cabinet has instituted the State Reform Agenda. The Agenda comprises several policy priorities for the medium and longer term, as well as a number of enablers to enhance South Australia's reputation as a great place to live, work and do business.

Inter-departmental Working Groups were charged with the development of detailed proposals on policy priorities and enablers to support the Reform Agenda. One such enabler is entitled "Smarter Business Regulation" and has the explicit objective to *"increase cooperation between SA regulators and simplify the regulatory framework for business"*. In October 2009 a cross-agency workshop highlighted several common issues including disconnection between agencies' assessment processes, duplicate information requirements, and gaps in information sharing. The outcome of the workshop has been the identification of several potential reform project areas, of which the Steering Group has selected and endorsed "Integrated Assessments" as a priority. The other potential projects include "Personal and Document Approvals", "Information Requirements" and "Development Ready Sites" and may be considered further pending demonstrated need/potential benefits, endorsement of the Executive Committee of Cabinet and relative priority.

The "Integrated Assessment" project seeks to remedy some of the difficulties faced by businesses in obtaining the authorisations they require to operate, such as permits and licences. In many instances, these approvals are assessed and issued unilaterally, and often sequentially, the result of which is a greater level of interaction between business and Government, albeit through different agencies at each step. There may be a number of causes for this, including poorly coordinated information and advice to applicants; lack of coordination within government arising from a limited understanding of cross-agency responsibilities or, indeed, systems and process that have been developed in isolation over time.

Whatever the cause, the result often extends overall assessment timeframes, thereby increasing the risks and costs to the business. The purpose of this project is to identify ways in which the regulatory processes can be better coordinated without loss of rigour, initially by examining sectors that have made significant advances toward integrated assessments, then applying our learning to other sectors.

The marine aquaculture and petroleum and geothermal sectors will be the subject of the initial case studies, with the intention of highlighting efficient assessment, referrals and other arrangements which may serve as a framework for other industries. The first of these best-practice case studies is to be completed by April 2010, and the second by June 2010. Following this, similar case-study reviews of other sectors may be conducted with the intention of improving regulatory practices in those areas.

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## Scope

The case-study of the aquaculture assessment process has been limited to the authorisations required to undertake an aquaculture activity as defined by the *Aquaculture Act 2001*:

***aquaculture*** means farming of aquatic organisms for the purposes of trade or business or research, but does not include an activity declared by regulation not to be aquaculture;

***farming of aquatic organisms*** means an organised rearing process involving propagation or regular stocking or feeding of the organisms or protection of the organisms from predators or other similar intervention in the organisms' natural life cycles.

While the project steering committee initially contemplated an investigation of all authorisations required from the establishment of a business through to export, it was considered that those elements might be more effectively considered as separate modules in the future. The reason for this is that business establishment and export requirements are not unique to aquaculture businesses, nor will every assessment conducted for an aquaculture lease or licence occur in conjunction with the establishment of a business (that is, an existing business may apply for an aquaculture lease and/or licence). Similarly, not every aquaculture business will export its products.

This report does, however, incorporate all the steps required for an individual or business to operate a marine aquaculture venture. This includes the application and assessment process, consultation processes with other government bodies and external parties. The purpose was to map the risks and interests addressed by legislation or regulation with their respective stakeholders and to show the formal and informal links between agencies throughout the application, assessment, and approval process. In particular, areas have highlighted where the regulatory processes have been enhanced by legislative instruments, interagency cooperation (through administrative agreements, delegations or less formal arrangements) and effective information sharing.

The purpose of this report is to highlight areas in which the assessment process for Aquaculture zoning or lease and licence applications is conducted in a way that significantly reduces the regulatory and 'red tape' burden on business. To that end, throughout the report several 'Principles of Best Practice' have been highlighted in the relevant sections. In addition, some recommendations for further improvement to the current processes have been included where appropriate.

## Context

The South Australian aquaculture zoning and assessment processes were considered best-practice due to several factors.

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South Australia's *Aquaculture Act 2001* (the Act) was assented to in 2001 and brought into operation in July 2002. At the time, it was one of the first pieces of legislation in South Australia to contain a specifically stated objective to "*ensure the efficient and effective regulation*" of an industry, in this case, aquaculture. It is important to note that explicitly stating this objective in the Act is reflective of the commitment made by the Government, and has been a driver for those agencies involved in its administration to reduce the regulatory burden which may otherwise have been placed on operators wherever it is possible and appropriate to do so. This is expanded upon in Section 9(1) of the Act:

9 – Efficient administrative practices

- (1) *'The Minister and other relevant Ministers are to endeavour to ensure that practices are established to integrate and expedite administrative processes under this Act and other Acts so far as is practicable for the efficient and effective regulation of the aquaculture industry'*

In 2004 the Productivity Commission released a research paper entitled "Assessing Environmental Regulatory Arrangements for Aquaculture", the purpose of which was to assess the planning and environmental regulatory arrangements covering marine and land-based aquaculture across Australia. The paper found that in several states, the aquaculture industry was subject to "*an unnecessarily complex array of legislation and agencies*" and that many of the State government departments responsible for aquaculture regulatory arrangements had conflicting functions. However, at the time the paper was released many of the areas for improvement noted by the Productivity Commission had already been implemented in South Australia, or were in the process of being implemented. This continuous improvement approach continues in South Australia's aquaculture management approach – evidenced by recent arrangements to streamline the development approval process, as well as investment in scientific research aimed at increasing knowledge of environmental effects thus enabling monitoring efforts to be better defined and targeted (through the Innovative Solutions for Aquaculture Planning and Management suite of projects).

Following the release of Productivity Commission paper, the Primary Industries Ministerial Council (PIMC) noted its key points and directed the Marine and Coastal Committee (MACC) to construct a "Best-Practice" model of regulatory arrangements. The MACC subsequently delegated this project to the Aquaculture Committee, comprised of all State Aquaculture Managers. The Best-Practice Framework of Regulatory Arrangements for Aquaculture in Australia was presented to, and endorsed by the PIMC in April 2005. PIRSA was heavily involved in drafting this framework, and many of the recommendations contained within it were based on the South Australian system due to their proven success and the support of industry.

Additionally, the Competitiveness Council of South Australia conducted an Industry Review into Fishing and Aquaculture involving significant consultation with representative groups, individual businesses and unions. The purpose of the review was to discover the key issues of concern for aquaculture and fishing industry operators in South Australia, and to identify practical initiatives government could take to reduce red tape. Generally speaking, the feedback regarding PIRSA and the overall regulation of the industries was positive, although there remained some confusion regarding legislative responsibilities and the reasons for

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certain regulations. Also, there were numerous requests for simplification of application forms, and the option to lodge them electronically. These matters have been addressed, or are in the process of being addressed, as much as is practicable by PIRSA and other government bodies.

### **Purpose of Aquaculture legislation/regulation**

The Objects contained in the Act are:

- (a) to promote the ecologically sustainable development of marine and inland aquaculture; and
- (b) to maximise benefits to the community from the State's aquaculture resources; and
- (c) otherwise to ensure the efficient and effective regulation of the aquaculture industry.

There are two principal reasons to regulate the operation of the aquaculture industry. For marine and coastal aquaculture, the first is to manage commercial access to a 'public' resource (that is, access to areas in the sea, or to sea water being pumped onto coastal development). For all classes of aquaculture – marine, coastal and inland – it is necessary to manage some of the inherent risks associated with aquaculture activity to support sustainable development objectives.

The key risks are outlined in Appendix 1, largely based on the PIRSA 'Environmentally Sustainable Development Risk Assessment Framework' and component tree layout, covering the possible risks and impacts of individual aquaculture facilities, and of any additional facilities when considered in the context of current regional aquaculture facilities.

### **Stakeholders**

Given the occupation or use of a public resource for marine and coastal aquaculture – and the risks outlined in Appendix 1 – there is a wide range of stakeholders with an interest in where aquaculture is situated, and the conditions of its operation.

The matrix in Appendix 2 identifies the key government agencies with an interest or involvement in the assessment of aquaculture zones, leases and licences. The authors recognise the interests of other individuals and non-government organisations in this process which are considered during consultation processes. However, these other interests provide little – if any – scope to improve integration of government processes so they have not been included in the matrix.

This matrix demonstrates that many of the risk factors identified and assessed by PIRSA are also of interest to other agencies and, in some cases, multiple agencies have an interest in the same risks. This supports the case for government agencies to agree on an evidence based risk assessment process to minimise duplication of effort (refer Principle 7).

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## **Current situation**

Two significant processes are undertaken by PIRSA's Aquaculture Division (PIRSA Aquaculture) requiring interagency involvement. These can broadly be defined as 'zone policy development' and 'lease and licence assessments'. Additionally, ongoing monitoring and compliance is undertaken to ensure that operators are performing in accordance with their lease and licence, and that the operation meets the 'ecologically sustainable development' objectives of the Act. This monitoring informs decisions made subsequent to the initial grant of a lease and licence. In some instances these decisions require the approval of the EPA – for example, all aquaculture licence conditions (whether new applications or amendments), the conversion of a lease from a pilot to a development lease, or a development to a production lease outside a zone.

PIRSA Aquaculture established flow charts for aquaculture zoning and each of the transactions contemplated by the Act, which have served a number of purposes:

- to achieve consistency of process, and to ensure no critical steps are omitted
- to identify opportunities for concurrent processes and referrals
- to identify opportunities for process improvement and efficiency
- to establish, as accurately as possible, the resources required to undertake each process so that fees and charges applied under the Act are in keeping with cost recovery principles

For the purposes of this report, we will concentrate on the most complex and 'referral rich' processes of:

1. aquaculture zoning; and
2. a new pilot lease application (outside an aquaculture zone) and corresponding marine licence application.

As many of the steps are similar for other transactions, a detailed examination of all other transaction types is unlikely to provide the reader any further insight into the types of arrangements that have been put in place. However, some noteworthy advances have been made for new lease applications within a zone, and these will be highlighted in the discussion about lease applications.

The flow charts for aquaculture zoning, pilot lease applications and new licence applications are included in Appendix 3.

### Aquaculture Zone policy development

The Aquaculture Act introduced the ability to develop statutory policies, including aquaculture zone policies which identify a zone within State waters in which specified classes of aquaculture will be permitted, as well as exclusion zones where no aquaculture will be permitted. The ability to create these statutory policies provides a greater level of industry and community confidence as to future plans for growth, and also provides more reassurance to applicants that major impediments have been identified and dealt with in the planning process.

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The proactive approach taken by PIRSA Aquaculture is evident at the very first stages of aquaculture zone policy development, where the initial process step is to consider whether or not the zone is likely to exist within a Marine Park established under the *Marine Parks Act 2007* (the Marine Parks Act). South Australia's multiple use marine parks network allows for recreational and commercial activities to exist in certain areas of a Marine Park, however the Marine Parks Act amended the Aquaculture Act such that the Minister responsible for the Aquaculture Act must not approve a draft aquaculture policy that will apply within a specially protected area without the concurrence of the Minister responsible for the Marine Parks Act; then if the two Ministers could not reach agreement the matter would be referred to the Governor for a determination. This would generally occur at the end of the policy development process, however PIRSA Aquaculture have worked with the Department of Environment and Heritage (DEH) to establish an early referral that would avoid PIRSA expending significant resources over more than a year in developing a zone policy which might have little chance of being granted concurrence. This preliminary referral is designed to identify the major issues that would make any form of aquaculture inappropriate in a given area, and introduces the concept of an 'early no', which is apparent in other approaches taken by PIRSA Aquaculture in the administration of the Act (refer also to lease application section). Rather than develop a full Statement of Intent, PIRSA Aquaculture and DEH have agreed on the minimum level of information necessary to identify those major issues, which requires significantly less resources (26 officer hours compared to 91 officer hours) and can establish early on whether to proceed with further policy development.

*Principle 1: Where statutory referrals are known to have the potential to hinder the progression of a policy or other assessment, investigate ways to incorporate early referrals to avoid unnecessary time and expense for government and business.*

Following the Marine Park referral, a 'statement of intent' is developed and circulated to other interested agencies as a means of seeking early feedback that may further inform policy development. This process step was added by PIRSA Aquaculture to avoid the situation where a policy might be drafted in isolation from other government interests or initiatives, and allows PIRSA to present – as far as possible – a 'whole of government' position prior to the Aquaculture Advisory Committee's (AAC) endorsement and subsequent public consultation.

This represents a variation from the 'Procedures for Making Policies' outlined in Section 12 of the Act, which states that the Minister is obliged to refer the policy and related report to '*any public authority whose area of responsibility is, in the opinion of the Minister, likely to be affected by the policy*' once drafting has been completed. By providing agencies with an opportunity to comment on the proposed policy prior to drafting, policy development can be focussed on areas where there is less likelihood of conflicting resource use, and drafting instructions to Parliamentary Counsel are more complete – thus avoiding unnecessary redrafting later in the process. PIRSA Aquaculture still refers draft policies and reports to agencies during the required public consultation process, at which point agencies are able to determine whether their issues have been adequately addressed in drafting.

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The early interagency referral also allows the Executive Director, Aquaculture and the AAC to make an informed decision as to whether policy drafting should be progressed, or whether a proposed policy be rejected on the basis of information received at that stage.

*Principle 2: Identify opportunities for cross agency collaboration prior to formal public consultation processes in order to present a 'whole of government' position (as far as possible), and to make policy drafting processes more efficient.*

From this point forward the policy development process follows that set out in the Act, with appropriate 'checks and balances' included along the way. When draft policies and reports are released for consultation they are advertised according to the Act, as well as made available on PIRSA's website. Responses are generally received in writing (either by postal mail or fax), and PIRSA does not provide a comprehensive response until the consultation period is complete and the AAC have endorsed any amendments to the draft policy and report.

Whilst reviewing the policy drafting process, it was identified that there may be an opportunity to improve this process by introducing an option for interested persons to submit comments on-line by way of a 'discussion board' or 'forum', moderated by PIRSA – the benefits of which may include:

- improved responsiveness to comments – including the ability to direct respondents to data, scientific reports or other information used to underpin the development of the policy, as well as the opportunity for PIRSA to consider amendments based on information received earlier in the consultation period (it was felt that online responses may be received in a more timely manner than hard copy responses);
- improved engagement with people in rural areas who may otherwise have to travel long distances to public meetings, or rely only on a written response;
- on-line discussion may provide intelligence about 'hot topics' prior to public consultation meetings, thus enabling PIRSA to be prepared with meaningful responses at public meetings;
- the ability to prompt debate and discussion between respondents, and for interested parties to have access to a broader range of perspectives on the proposed policy; and
- the potential to engage with a wider audience who may be more inclined to respond on-line.

*Recommendation 1: That the more 'traditional' consultation methods be maintained, however trials be considered using electronic mediums to enhance consultation.*

Another process improvement identified by PIRSA Aquaculture was to streamline the development approval process. Initially, aquaculture zone policies were not formally recognised by the Land Not Within A Council Area (Coastal Waters) Development Plan, therefore any aquaculture proposed within an aquaculture zone was still a non-complying development and required full public and interagency consultation for each application. Given the consultation processes already undertaken under the Aquaculture Act to establish

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a zone, PIRSA worked with (then) Planning SA to develop a process whereby consultation undertaken for a zone policy also had the effect of amending the Land Not Within A Council Area (Coastal Waters) Development Plan. This meant that applications no longer required public consultation, however mandatory 6 week interagency consultation still occurred to inform the DAC's decision of whether to grant development approval.

In response to the government's earlier Red Tape Reduction Program, (then) Planning SA had initiated a process to determine whether it was possible to streamline any referrals required by the *Development Act 1993* and its supporting regulations. At that time the EPA advised that, due to their involvement in other aquaculture assessment processes, it was not necessary for the EPA to also have referrals through the DAC process.

Prompted by the EPA's advice to Planning SA, PIRSA then worked with the (new) DPLG to identify further efficiencies in interagency referrals. The result was an amendment to Schedule 3 of the Development Regulations 2008 – 'Acts and activities which are not development', whereby '*any form of aquaculture development in an Aquaculture Zone delineated by the Land Not Within a Council Area (Coastal Waters) Development Plan*' was deemed not to be development, thereby removing the need for development approval. This is significant in the sense that development approval could not be applied for concurrently with the aquaculture lease and licence, as the DAC would consider an application for development approval to be 'hypothetical' if the applicant could not demonstrate that the Minister responsible for the Aquaculture Act was prepared to grant a lease.

*Principle 3: Where the assessment of a proposal is subject to multiple assessments considering similar risks, seek opportunities to coordinate those into one process, wherever possible.*

#### Marine lease and corresponding licence application (pilot lease, outside a zone)

Section 22 of the Act sets out a 'general process for grant of leases', which is followed by specific provisions relating to the various classes of aquaculture leases (pilot, development, production and emergency leases). For the purposes of this case study we will consider only a pilot lease application process as it is the most complex, given that zoning has not occurred to establish the suitability for aquaculture within a particular area of the State's waters.

Section 50 details the process required for the grant of licences, including those applications made in connection with an application for an aquaculture lease. For the purposes of this case study the lease and licence process have been considered as one, as assessment is undertaken concurrently and parts of the process are contingent on the outcome of others. A new pilot lease would not be granted if a licence were not to be granted, and vice versa.

Similarly to the zone development process, PIRSA Aquaculture has established a number of steps that are not formalised in the Act in order to avoid unnecessary expense and complexity for applicants.

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The first of these is an 'Expression of Interest' which precedes the formal lodgement of a pilot lease application. A formal application requires payment of a fee, together with a licensed survey, biogeographical report (video plus written report) and a complete application form, comprehensively describing the nature of aquaculture activity and farming structures being proposed. To avoid the time and cost involved in preparing a formal application, PIRSA Aquaculture have encouraged potential applicants to lodge an expression of interest containing very basic information such as site coordinates, the species to be farmed and the type of system. PIRSA Aquaculture can then make a preliminary assessment using other available information such as bathymetry maps (detailing water depth), the presence of shipping channels or other uses, buffers (for example, around national parks) and areas known to have heritage or conservation value (eg shipwrecks). The expression of interest process serves to identify whether the type of activity proposed would fail to meet the most basic assessment criteria, thereby providing potential applicants with an 'early no' and eliminating the need for a formal application.

An important element of PIRSA's assessment process is the use of a 'case management' approach for all applications and transactions (for example, a lease transfer). Once an expression of interest or an application is received, it is assigned to an officer whose responsibility is to conduct parts of the assessment and to guide the application or transaction through to its conclusion. The advantage of this approach is that the applicant only has to deal with one person in government, even though a number of people and/or departments may have input to the assessment process. It has improved the timeliness of applications because part of the case manager's responsibility is to follow up progress with others, and resolve outstanding matters or problems. System reports are generated through PIRSA's database to track the progress of each case manager's 'case load', thus introducing another level of accountability. While a 'case management framework' is employed across the South Australian government for large, one-off projects of significance, the use of case managers at a transaction level has the potential to improve the customer experience of many more routine transactions.

*Principle 4: Identify opportunities for case management of transactions and applications to improve customer service, accountability and timeliness of assessments.*

Similarly to the zone development process, PIRSA have adopted an 'early notification' process for individual site assessments. Section 50(1)(b) allows the Minister to '*decide that a corresponding licence will be granted containing specified conditions ...*' on the condition that '*the Minister has caused public notice of the application or proposal to be published in a newspaper circulating generally in the State and invited interested persons to make written submission on the application or proposal ...*'. In the early years of the Act's operation, PIRSA Aquaculture would carry out an assessment process, then call for submissions. If the department was contacted for details of the application, the ESD assessment would be provided, outlining the management controls proposed to address certain risks. Some stakeholders considered that by this point the decision had already been made to grant a lease and licence, but PIRSA found that useful information was brought to light during the consultation period that could inform the assessment. As the Act was not explicit in this regard, the timing of this process was able to be changed with the effect of (a) increasing the value of notification by bringing to light information that would inform the assessment

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process, and (b) enhancing the reputation of the department by giving opportunity for comment at an early stage of assessment, rather than stakeholders considering that the grant of a licence was a 'foregone conclusion'.

*Principle 5: The timing and sequence of existing processes be reviewed to establish whether there are opportunities to rearrange process steps to promote more meaningful engagement and a more robust assessment (and therefore better regulatory outcome).*

Similarly to the zone creation process, PIRSA Aquaculture are obligated to provide notification of the grant of leases, including those within a zone, under section 24(HA) of the *Native Title Act 1993* (Cwlth). This notification must be provided to any Aboriginal/Torres Strait Islander bodies, registered Native Title bodies corporate or registered Native Title claimants likely to be affected by the grant of a lease or future leases. While pilot leases need to be managed on a case by case basis, PIRSA's current procedure within a zone is to give notification upon the grant of the first lease (or multiple leases) within an aquaculture zone (or amended zone) for that lease and any future grant of leases (and corresponding licences) of a class defined by the relevant zone policy. This avoids the need for referrals to be conducted for the grant of every lease, therefore reducing duplication of effort and improving the timeliness of the assessment.

Section 20 of the Aquaculture Act states '*The power of the Minister to grant an aquaculture lease in respect of an area to which this Part applies is subject to the requirement under section 15 of the Harbors and Navigation Act 1993 for the concurrence of the Minister responsible for the administration of that Act*'. The Department of Transport, Energy and Infrastructure (DTEI) are given an early notification of PIRSA's intention to grant a lease to avoid an assessment being carried out where concurrence is not likely to be given. As for Native Title notification, pilot leases are dealt with on a case by case basis and currently the Minister responsible for the Harbors and Navigation Act must still give concurrence to the granting of a lease or licence within an aquaculture zone. Given that DTEI are consulted during the aquaculture zoning process, PIRSA and DTEI have explored the potential for concurrence on individual sites within a zone to be delegated to the Minister responsible for the Aquaculture Act. However this has not proceeded, with DTEI preferring to reserve concurrence to take account of other potential uses/projects in the marine environment which may arise between the zoning process and grant of new leases.

*Principle 6: Identify opportunities for concurrences to be given at a 'zone' or 'policy' level, rather than at an individual site level if there is little or no risk in doing so.*

Following native title referrals and concurrence from the Minister responsible for the *Harbors and Navigation Act 1993*, a comprehensive 'Ecologically Sustainable Development' (ESD) assessment is undertaken by PIRSA Aquaculture, which assesses the application against the risks outlined in Appendix 1. Risk events are aligned to a 'National ESD Reporting Framework: The "How To" Guide for Aquaculture' (Fletcher et al, 2004) and analysed semi-quantitatively by assessing their consequences and likelihoods in a way that is consistent with the ISO 31000:2009 Risk Management Standard. An ESD assessment template is included as Appendix 4.

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Part 8 of the Act, 'Reference of Matters to EPA' requires that the EPA must approve the grant of an aquaculture licence and its conditions, therefore PIRSA Aquaculture forward the application and their ESD assessment to the EPA. According to Section 59(4), *'The EPA must, in determining its response to a matter referred to it under this section, have regard to, and seek to further, the objects of the Environment Protection Act 1993 and have regard to the general environmental duty and any relevant environmental protection policies under that Act'*. As a result of liaison between PIRSA and EPA, many of the risks EPA would 'have regard to' under the *Environment Protection Act 1993* have been incorporated into the PIRSA ESD assessment, and the EPA's review of PIRSA's assessment forms the basis of their own assessment.

Once the EPA have approved the conditions of a licence, PIRSA advise applicants outside a zone that their lease and licence will be approved, subject to Development Approval. The applicant then prepares and lodges an application for Development Approval with the DAC. As discussed earlier, the development approval step has been eliminated entirely for applications within certain zones, however if no zoning has occurred applicants still need to seek approval to erect structures or moor farming structures on site. PIRSA Aquaculture provide the DAC with a copy of their ESD assessment, as well as the draft lease and licence, thereby making the DAC aware of the matters that have already been taken into account in the assessment, and how it is proposed any risks be managed. Given that PIRSA consider the farming structures to be used in the ESD assessment, the DAC also uses that assessment as the basis for their own assessment, and will sometimes draw on PIRSA Aquaculture staff to assist them in arriving at their decision.

*Principle 7: Where multiple agencies assess similar risks, agencies should work together to develop an evidence-based, mutually acceptable risk assessment framework to minimise duplication across agencies.*

Given that the information the DAC relies upon to conduct its assessment is similar to that already provided to PIRSA, the potential exists for the Development Application and fee payment to be incorporated into the aquaculture application to create a more seamless application process and avoid the need for the applicant to lodge the same information with more than one government department. PIRSA would then refer the application to DPLG for their assessment. It is understood that discussions are currently underway between PIRSA and DPLG in this regard.

*Principle 8: Identify opportunities for applications made to multiple agencies in respect of one activity (or closely related activities) to be consolidated into a single application.*

### **Related Acts**

There are various other Acts which, although not dealing directly with aquaculture, contain provisions which reduce the burden of compliance on business through cooperation by government agencies. An example of this is the *Fisheries Management Act 2007*, which

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exempts holders of an aquaculture licence from the requirements of becoming registered as a fish processor, as per Section 62:

62 – Obligation of fish processors to be registered

(2) However, a person is not required to be registered as a fish processor

if –

(b) the person –

(i) is the holder of a fishery authority or aquaculture licence; and

(ii) only processes aquatic resources taken under the fishery

authority, or aquatic resources farmed under the aquaculture licence (as the case may be) for sale to a registered fish processor or directly to persons who consume such aquatic resources;

The purpose of this particular clause is to provide trace-back for seafood products – that is, it provides a mechanism for investigation in the event of fisheries quotas being exceeded. In some cases, there is the potential for illegally caught wild stock to be ‘laundered’ through an aquaculture facility, however regulation 13 of the *Aquaculture Regulations 2005* requires licence holders to maintain a stock register (primarily for disease control purposes). The same records that are required to be kept under the *Aquaculture Regulations* would also support an investigation of illegal activity.

*Principle 9: Where one legislative requirement has the capacity to address a risk that would otherwise require a separate authorisation, consider the use of exemptions to avoid duplicating the obligations on licence holders.*

Under the *Primary Produce (Food Safety Schemes) (Seafood) Regulations 2006* Section 7 (3) the need for Ministerial approval of a food safety arrangement for bivalve mollusc farming is removed, if the person is carrying out those operations under the conditions prescribed by an Aquaculture licence:

7 – Obligation to have approved food safety arrangement

(3) An accredited producer who farms bivalve molluscs under an aquaculture licence need not have a food safety arrangement approved by the Minister in relation to those farming activities if all bivalve molluscs farmed by the producer are moved to the licence area of another accredited producer who farms bivalve molluscs under an aquaculture licence for further development prior to the molluscs being harvested for sale.

However, the exemption thus provided places constraints upon the producer with regards to the sale of bivalve molluscs, as laid out in Section 8 (h):

8 – Specific requirements

(1) An accredited producer must ensure that the following requirements are complied with in respect of bivalve mollusc production activities:

(h) bivalve molluscs farmed by an accredited producer who is exempt from the requirement to have an approved food safety arrangement must not

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be sold or supplied for human consumption unless the molluscs have been moved to the licence area of another accredited producer who farms bivalve molluscs under and aquaculture licence for further development prior to the molluscs being harvested

These regulations apply to all bivalve mollusc producers (defined in the regulations as *'the holder of an aquaculture or fishery licence authorising the farming or taking of bivalve molluscs'*). Bivalve molluscs are 'filter feeders' which means they get their nutrients from particles in the water. If the water contains toxins that present a risk for human health, the bivalves must not be harvested for consumption. Over time, the level of toxins is flushed out and the bivalves are once again safe to eat.

The regulations require that *'a food safety arrangement must be designed to ensure that the producer meets his or her obligations under the Food Act 2001 relating to ensuring that food for sale is both safe and suitable for human consumption'*. The exemption outlined above recognises the routine industry practice of moving stock from one aquaculture site to another before harvest and exempts the operator of a site from the need for a food safety arrangement where they cease to have any control over the safety of the product prior to its harvest.

This is a good example of familiarity with industry practices informing sensible regulatory instruments – that is, avoiding unnecessary regulation by identifying a group of people to whom the regulation should not apply (those who do not harvest from their site for human consumption) where it otherwise would have (as persons authorised to farm or take bivalve molluscs).

Section 115 of the Fisheries Management Act 2007 allows the Minister to grant exemption from specific provisions in the Act, including the collection of broodstock (broodstock are sexually mature animals taken from the wild for spawning in hatcheries). Aquaculture licence holders may be eligible to apply for the ministerial exemption which enables them to collect broodstock from South Australian waters – an exemption could allow an applicant who is not the holder of a commercial fishing licence to take limited numbers of certain species from the wild, including those that would otherwise be managed under a quota system.

Any such application requires the applicant to complete a form detailing the reasons for the application, the fish required for collection, the qualifications and experience of the person responsible, and the method of capture, transport and maintenance of the stock. Much of the information required in the application form is similar to the information PIRSA Aquaculture collect when assessing applications for aquaculture licences. PIRSA Fisheries assess each application for exemption according to their policy directives and the objectives of the Fisheries Management Act 2007.

Consistent with Recommendation 8, there would appear to be potential to include questions on aquaculture licence applications relating to the collection of broodstock to avoid the need for an applicant to make two applications to PIRSA.

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*Recommendation 3: Consider the opportunity for an application for broodstock collection to be assessed in conjunction with an application by the same person for an aquaculture licence, given the similar information requirements.*

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## Appendix 1 - Key risks associated with Marine Aquaculture

### 1. Construction

Any risk to the environment, or the social and economic wellbeing of communities from the construction of farming structures and any ongoing consequences these structures may have.

#### Habitat Effects

*Disturbance to the habitat on the site, and immediate surrounds, from construction of the facility:* Any habitat that may be removed or affected by the introduction or expansion of aquaculture facilities.

#### Proximity to Sensitive Regions

*Disturbance to naturally occurring sensitive regions from the construction of the site's facilities:* Considered on the basis of proximity of proposed site to the natural surrounds, and the sensitivity of the surrounding habitat.

#### Alienation

*Displacement of stakeholders by the placement of site's facilities:* Considers the displacement or disruption of activities of prior and/or co-users of the proposed site.

#### Erosion

*Erosion on site from construction of site facility:* Considers whether operations may cause erosion to the surrounding environments soils/substrates, including ongoing risks to the environment from potential future erosion

#### Water flow

*Reduced natural water flow:* Considers the presence of farming structures in state waters and any impacts they may have on the flow regimes of the embayment in terms of flow reductions or diversions.

#### Shading

*Shading caused by site facilities:* Considers the potential reduction of sunlight to the surrounding environment as a result of site infrastructure. Construction of site facilities may have adverse effects on the growth of that environment, particularly benthic environments which rely on constant penetration of light through the water column.

#### Rehabilitation

*Licence site is not rehabilitated upon being vacated:* Depending on the complexity of the ecosystem in which the site is created, some sites may recover following the vacation by the lessee without additional rehabilitation measures. Other sites may require rehabilitation measures to be returned to their former condition, which are to be undertaken by the lessee at their own cost, to the satisfaction of the Minister.

#### Navigation

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*The site facilities present a hazard to navigation:* For marine sites only. Considers where unsafe navigational conditions are created by a site, rather than the ability of an approaching vessel/boat to navigate safely.

## **2. Operation**

Considers the risk to the immediate and surrounding environment from the operation of the aquaculture site.

### Noise

*Excessive noise caused by site operations:* Considers proximity to neighbours, operational devices and machinery, and any attempts made by operators to reduce noise.

### Escape

*Stock escaping from the site:* Considers whether the proposed species is exotic or not, and whether escaped stock are capable of establishing population(s), and takes into account the nature of the physical structures containing cultured and/or exotic stock, the methods in place to prevent stock leaving the structures, methods in place to control for and prevent loss of gametes from hatchery sites, and any strategies in place to manage escapes.

### Chemicals and therapeutants

*Incorrect use of chemicals and/or therapeutants at the site:* Consideration is given to:

- chemicals used for general cleaning of infrastructure;
- chemicals used as therapeutants, probiotics, anaesthetics

Use of chemicals must comply with the *Environment Protection (Water Quality) Policy 2003*, the *Agricultural and Veterinary Products (Control of Use) Act 2002*, the *Aquaculture Regulations 2005*, and associated legislation.

### Interactions and entanglements

*Adverse interaction with seabirds and large marine vertebrates, and entanglements of protected animals with site facilities:* Consideration is given to problems associated with interactions and/or entanglements as a result of poorly maintained infrastructure and/or poor farm husbandry, including, but not limited to, slack or loose nets, holes in nets, limited physical barriers, and failure to regularly visit and maintain site and remove dead/moribund stock.

### Habitat effects

*Physical disturbance of natural habitat from site operations:* Considers damage caused to the surrounding environment on the licensed site by general site activity. Examples include trampling of seagrass around an oyster lease, disturbance of rocky reef communities through placement of mooring structures, or access to the site from beaches of National Parks.

### Disease management

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*Inappropriately managed prevention of, and treatment for, disease from site operations:* Considers problems associated with poor disease prevention and treatment due to poorly managed facilities.

Waste sedimentation

*Sedimentation from site operations:* Considers sedimentation of material from deposition of uneaten feed, faeces and other particulate wastes including dislodged fouling or cultured organisms. The aerobic conditions of the seafloor must be maintained, along with a healthy benthic infaunal community to allow for turning over of the sedimentary material derived from the farming activity.

Culture organism disposal

*Improper disposal of mortalities of farmed organisms from site operations:* Proposed disposal method and the mass-per-time period must be appropriate, without unsightly conditions, odour controlled so as to minimise impacts on neighbours, and designed to negate vermin attraction.

General refuse

*Improper disposal of general refuse from site operations:* Aquaculture waste (as defined by the *Aquaculture Regulations 2005*) includes waste generated in the course of carrying on aquaculture such as feedbags, but does not include waste created by living organic organisms.

Biofouling

*Improper disposal of biofouling on site facilities:* Considers the routine farming practice of removing biofouling from farming structures.

### **3. Water Use**

Considers any risks associated with a proposed aquaculture activity at a regional level, within the context of existing aquaculture activities and other activities within the region.

Nutrients

*Unacceptable nutrient pollution, or depletion, from site operations:* Considers the carrying capacity of the zone and other major nutrient inputs or removals in the region.

Sedimentation

*Sedimentation from site operations:* The existence of feed input, filter-feeding activities or nutrient stripping, and the proximity to sensitive regions and the susceptibility of the environment to change are considered in the wider context of the region based on the carrying capacity of the zone and the existence of other major inputs or removals of particulate materials in the region.

Chemicals

*Release of chemicals from site operations, given current regional aquaculture activities:* Consideration is given to the frequency and volume used, and chemicals used for general cleaning of infrastructure, therapeutants for the specific treatment of diseased

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organisms and for anaesthetic purposes. Any chemical and its use must comply with the *Aquaculture Regulations 2005*, *Environment Protection (Control of Use) Act 2002* and any associated legislation.

#### Flow

*Reduced water flow due to site operations, given current regional aquaculture activities:* Considers whether there is a physical impediment to natural water flows within a region. Too many sites in close proximity may affect the flushing rate, and thereby the carrying capacity of the entire region.

### **4. Ecological Community Structure and Biodiversity**

Considers any risks to the ecological community structure and biodiversity associated with a proposed activity, within the context of existing aquaculture activities and other activities within the region.

#### Listed migratory species

*Disturbance to listed migratory species from site operations:* Considers any listed migratory species that may be affected by the introduction or expansion of aquaculture facilities. Listed migratory species are important to the general environment and government has various legislated controls in place that need to be considered (at a state and national level). Each type of disturbance is considered according to the scale, type and location of the proposed aquaculture activity. Examples include:

- reduction of foraging success or movement to non-preferred foraging areas of birds on the shore;
- increase in nutrients in the water column or sediment movement changing local nutrient cycles and causing environmental degradation;
- aggregation of migratory species around an aquaculture site, as a result of the provision of a new potential food source.

Of particular importance is the potential for the site's construction to result in the removal or destruction of the last part of remnant habitat, and whether it will cause the ecosystem to become non-functioning. The placement of a proposed site on or near to places used by listed migratory species, such as breeding grounds, is also considered.

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) establishes an environmental assessment and approval system based on matters of national environmental significance that is separate and distinct from State systems. It operates in parallel with State systems, and does not affect the validity of conduct of State-based environmental and development assessments and approvals.

#### Threatened species

*Disturbance to threatened and protected species from site operations:* Considers protected species residing or temporarily residing in South Australia, including threatened species (endangered or rare) listed under the *National Parks and Wildlife Act 1972*, and those that can be declared as protected from various legislative sources including the *Fisheries Management Act 2007* and the *National Parks and Wildlife Act 1972*.

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### Sensitive habitats

*Disturbance to sensitive habitats (e.g. World Heritage and Ramsar sites) from site operations:* Considers any sensitive habitat that may be affected by the introduction or expansion of aquaculture facilities, such as disruption to natural environmental flows, and nutrient enrichment. Sensitive habitats are important to the general environment and government has various legislated controls in place that need to be considered (at a state and national level). Each disturbance is dependent on the scale, type and location of the proposed aquaculture activity. For further details see the listed migratory species risk event.

### Behavioural changes to species (other than migratory or threatened species)

*Behavioural changes to species as a result of site operations:* Considers potential for behavioural changes to species which may interact with the facility. This includes scavengers and less 'significant' animals that occur within the region where a site is located. Possible causes of changes include poorly managed feed delivery or overfeeding, incorrect storage or removal of farm waste and failure to remove mortalities.

### Translocation between regions

*Translocation of stock between regions from site operations:* Proposed translocations are considered for consistency with the *Livestock (Restrictions on Entry of Aquaculture Stock) Notice 2005* and the *Livestock Act 1997*.

### Phytoplankton

*Change to the phytoplankton community from site operations:* Consideration given as to whether an additional site will cause an algal bloom (in intensity/frequency/composition) or decrease in phytoplankton abundances.

### Benthic communities

*Change to the benthic community from site operations, given current regional aquaculture activities:* Benthic communities are subject to sedimentation of particulate material from waste feed, faeces, mortalities and fouling organisms. The overloading of benthic communities with organic material can cause the sediment to become anoxic (lacking oxygen), thereby suffocating aerobic benthic organisms and altering the rate of sedimentary material turnover. The normal function of the benthos must be maintained to ensure a healthy environment in which to conduct aquaculture and to sustain community resources. Benthic communities also include seagrass, reef or other marine habitat types susceptible to smothering by sedimentation of particulate material. The health of benthic invertebrate communities within regions is directly measured for tuna and finfish sites, and for finfish and subtidal mollusc sites through observation of underwater video footage obtained via annual Environmental Monitoring reports the licence holder is required to submit in accord with the *Aquaculture Regulations 2005*.

## **5. Physical Structures, Construction and Tenure**

Considers any risks caused by the physical structures, construction and tenure associated with the additional site, within the context of existing aquaculture activities and other activities within the region.

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#### Loss of access to a common resource

*Loss of access to a common resource, from construction and tenure of the site's facilities:* Considers whether the regional ecosystem or catchment area might be altered through the physical presence of numerous facilities within close proximity and their size. Access to, or through, a region should not be impaired by the positioning of sites adjacent or in close proximity to each other. Use of the region for other commercial or recreational purposes should also not be inhibited by the creation of additional sites.

#### Effect on Human Cultural Heritage Areas

*Disturbance to World, Commonwealth, National or State Heritage areas from site construction and operation:* The proposed site's heritage value must be considered, and the likelihood that the proposed activity will disturb/damage the heritage sites(s).

In South Australia, State heritage places are protected under the *Heritage Places Act 1993*, local heritage places are protected under the provisions of the *Development Act 1993*, and historic shipwrecks are protected under the *Historic Shipwrecks Act 1981* (SA). Historic shipwrecks in Commonwealth waters are protected under the *Historic Shipwrecks Act 1976* (Fed). Under the EPBC Act an action may require approval from the Federal Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.

#### Navigation

*Hazard to navigation from site construction and operation:* Considers whether the likelihood of unsafe navigation is posed by the proposed site's location and those sites within the region. It is a lease requirement that all sites are marked with navigational buoys. For sites outside an aquaculture zone, consideration must be given to navigational channel(s), Flinders Ports, or Transport SA designated areas. For sites within aquaculture zones, the presence of navigational channels and designated areas should be considered in the zone policy.

### **6. Production**

Considers any risks associated with the additional site, within the context of existing aquaculture activities and other activities within the region. Risks may to the proposed activity, or caused by the activity.

#### Disease

*Disease spread from the site to wider industry:* The spread of disease(s) within a region that when managed poorly may cause disease proliferation and transmission to other areas. There are potential health effects of increasing densities of farms within a region, both environmentally and on each other that must be taken into account when assessing a proposed site. Land-based operations may risk loss of pathogens from sites, which is of particular concern for hatcheries of exotic species or if there is a connection with natural waterways.

#### Disposal of waste

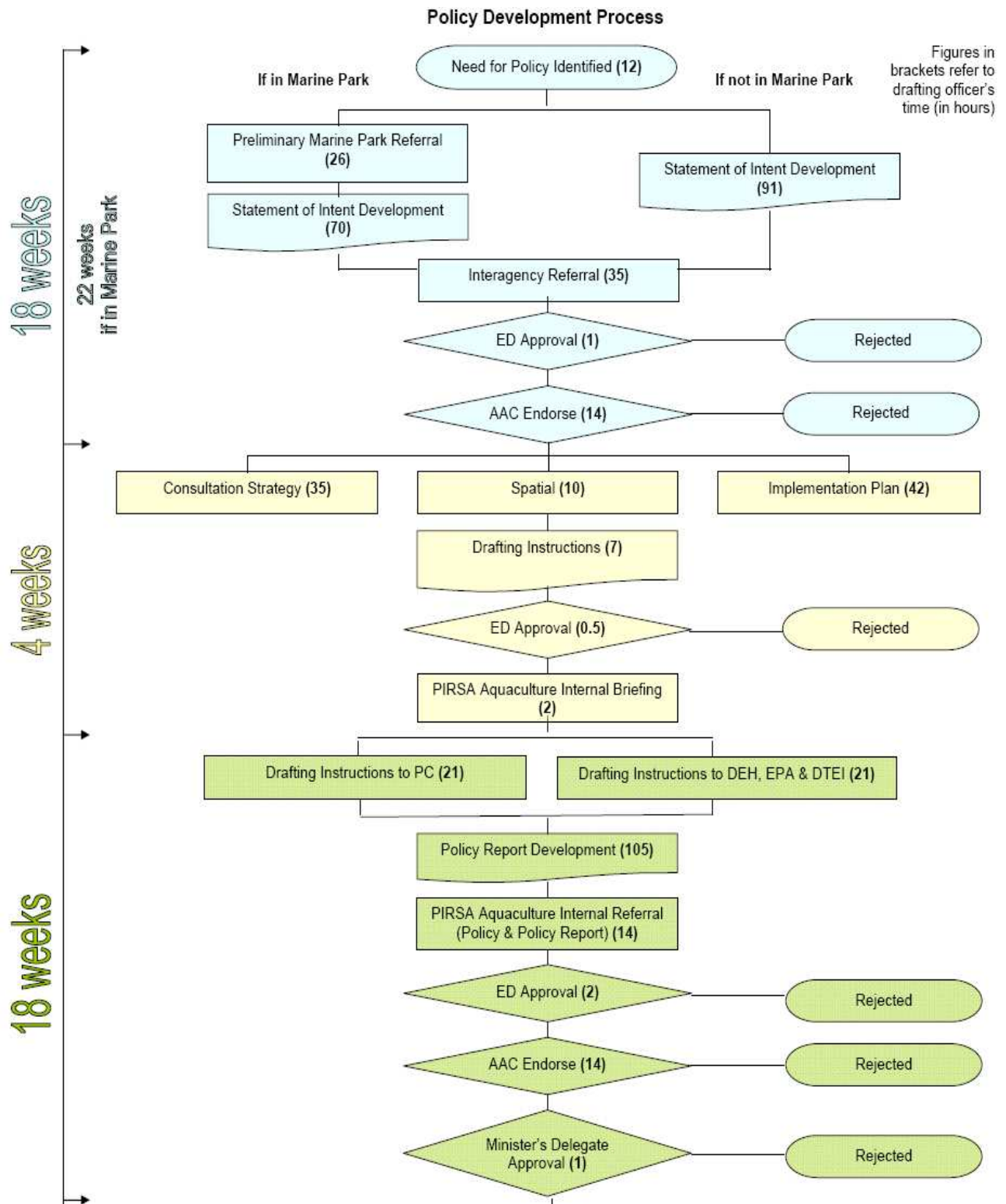
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*Incorrect disposal of waste from the site, given current regional aquaculture activities:* Consideration is given to the disposal of mortalities, general refuse, and biofouling. Access and proximity to sufficient and suitably licensed facilities capable of handling the volume and types of waste generated by the site, and by aquaculture activities within the region is necessary.



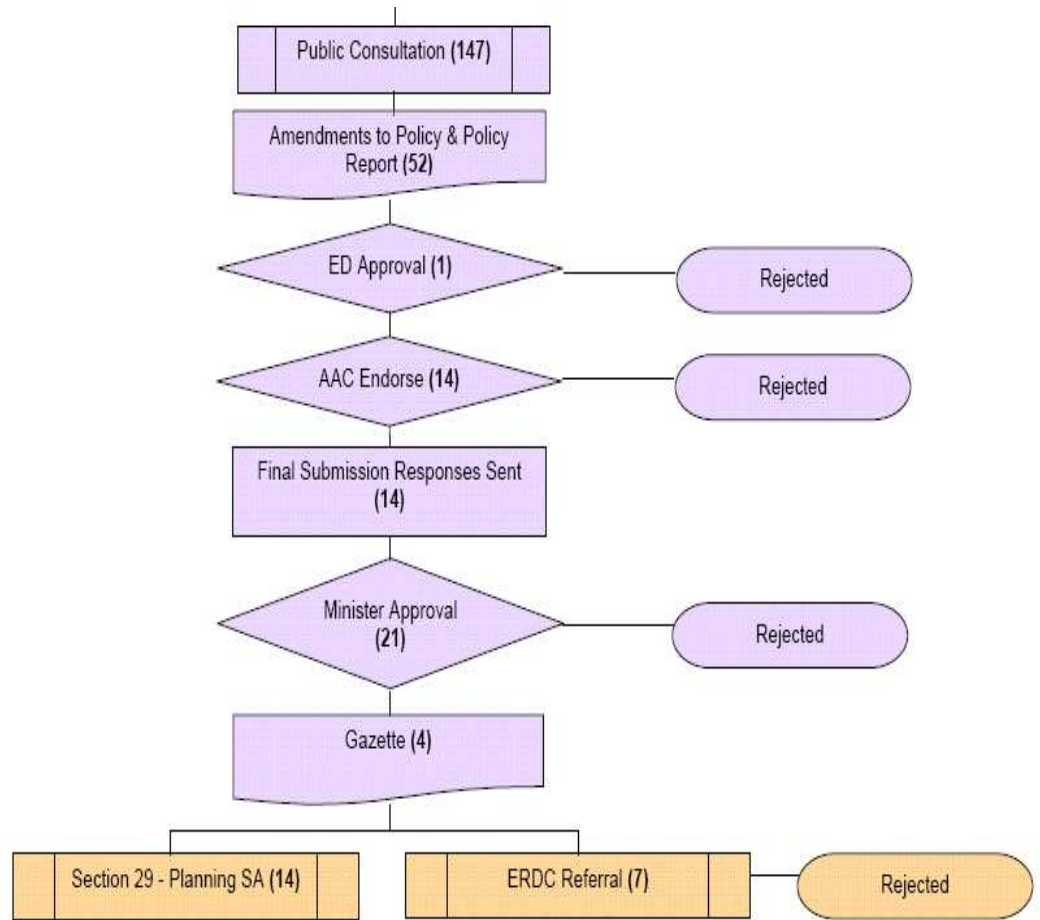
# Appendix 3 – Flow charts for aquaculture zoning policy, pilot lease applications and new marine licence applications

## Aquaculture zone policy development process



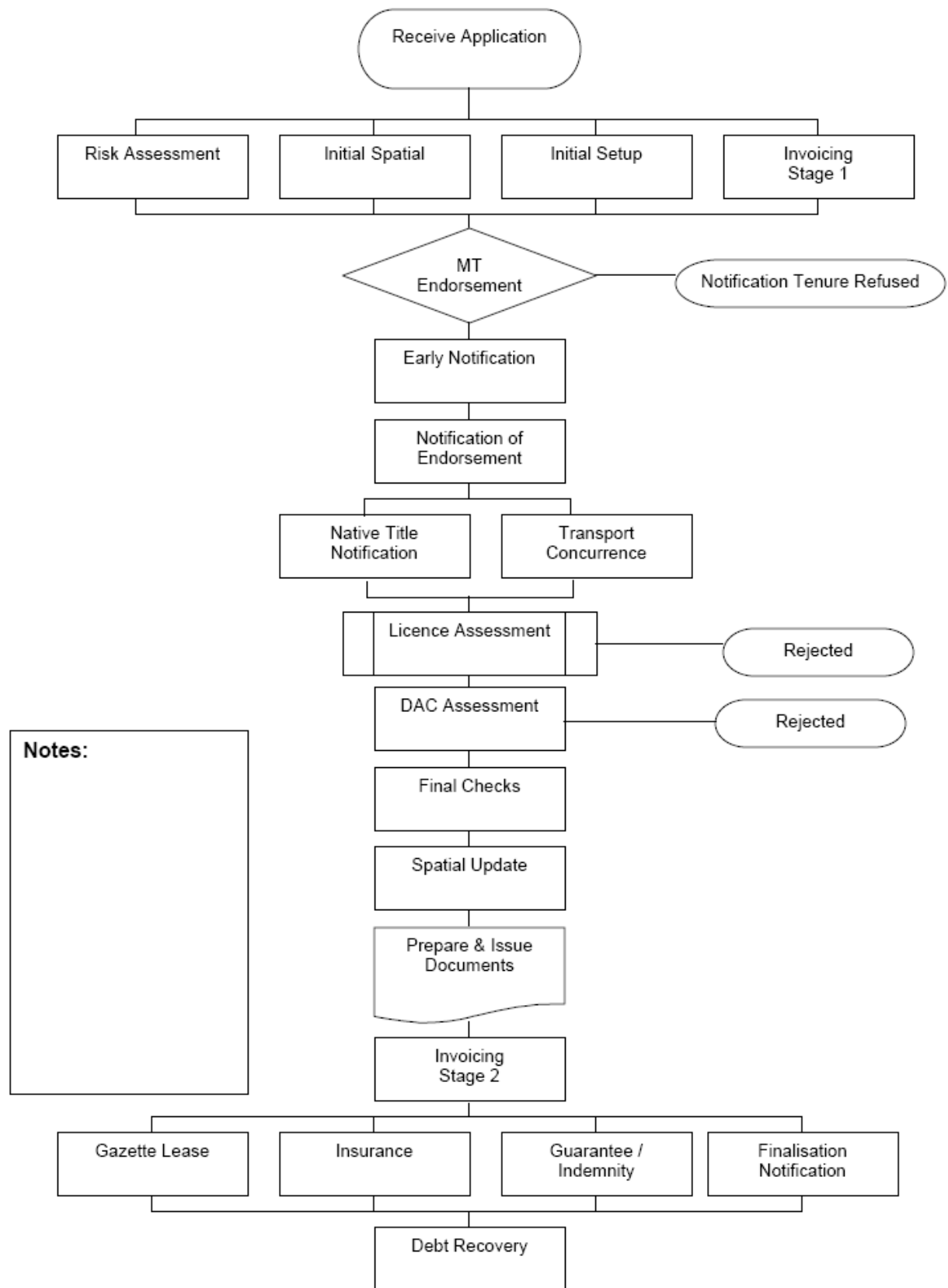
38 weeks

4 weeks



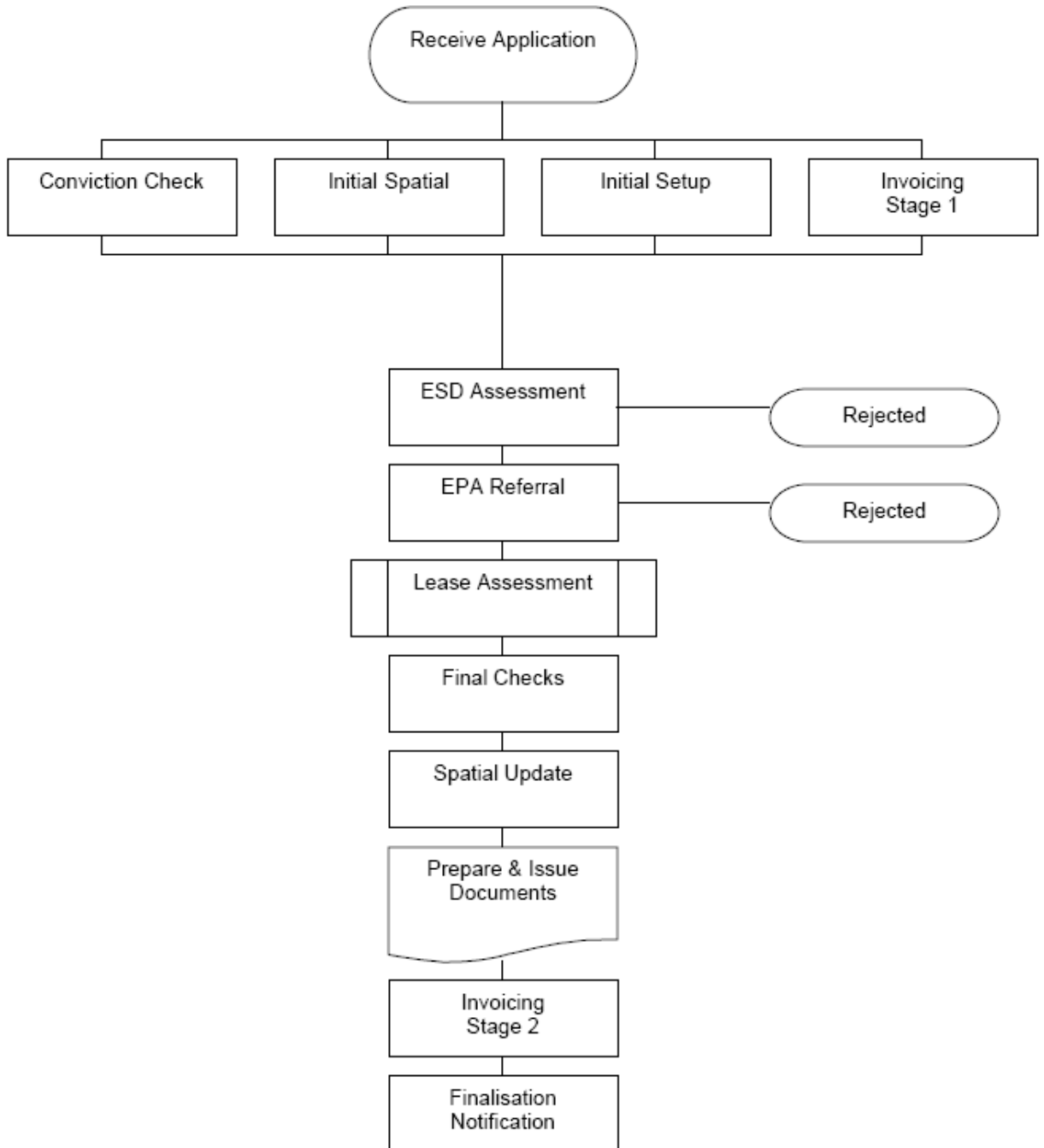
# Pilot Lease Application

## New Pilot Lease Application (Part 6, Division 2, Aquaculture Act 2001)



## Marine Licence Application

### New Marine Licence Application (Section 49, Aquaculture Act 2001)



## Appendix 4 – Environmentally Sustainable Development Assessment Template

### Method and interpretation

The risk assessment method is based on the National Ecologically Sustainable Development (ESD) framework, the Aquaculture ‘How-To’ Guide (9). The framework was developed by the Fisheries Research and Development Corporation (FRDC) to be used consistently across fisheries and aquaculture sectors in Australia and is based on the Australia and New Zealand standard for risk management (AS/NZS 4360 1999) (now superseded by AS/NZS ISO 31000:2009 Risk management standard). Each identified risk is assigned a risk ranking. To assign a risk ranking to an issue, two factors are determined – the potential consequence arising from a particular event, and the likelihood that this particular event will occur. It is noteworthy that the consequence and the likelihood of a particular event are considered independently (as described in Figure 3.1 Risk Management Process – In Detail (10)). The combination of consequence and likelihood produces a risk value, which in turn is used to determine the risk ranking, associated with a particular issue (9).

The consequence and likelihood levels or categories outlined in the National ESD framework are used in this assessment (Tables 2 and 3, respectively). A risk value for each issue (and associated risk event) is then derived by combining the likelihood of occurrence with the corresponding level of consequence using a risk matrix (Table 4). Finally, the risk value is used to determine the risk ranking (Table 5).

Table 2: Standard likelihood levels

Level	Descriptor
Remote (1)	Never heard of, but not impossible
Rare (2)	May occur in exceptional circumstances
Unlikely (3)	Uncommon
Possible (4)	Some evidence to suggest this is possible
Occasional (5)	May occur
Likely (6)	Is likely to occur

Table 3: Standard consequence levels

Level	Descriptor
Negligible (0)	Very insignificant impacts. Impacts unlikely to be measurable at the scale of the stock/ecosystem/community level against background variability.
Minor (1)	Possibly detectable but minimal impact on structure/function or dynamics.
Moderate (2)	Maximum appropriate/acceptable level of impact on (e.g. full assimilation rate for nutrients).
Severe (3)	Wider, longer-term impacts (detectable at the stock/ecosystem/community level).

Major (4)	Very serious impacts with relatively long time frame likely to be needed to restore to an acceptable level.
Catastrophic (5)	Widespread and permanent/irreversible damage or loss will occur - possibility that problem cannot be fixed (e.g. extinction).

Table 4: Risk Matrix

		Consequence					
		Negligible	Minor	Moderate	Severe	Major	Catastrophic
Likelihood		0	1	2	3	4	5
Remote	1	0	1	2	3	4	5
Rare	2	0	2	4	6	8	10
Unlikely	3	0	3	6	9	12	15
Possible	4	0	4	8	12	16	20
Occasional	5	0	5	10	15	20	25
Likely	6	0	6	12	18	24	30

The numbers in cells in the body of the above matrix are risk values, which are calculated by multiplying the likelihood value by the consequence value; the colours/shades correspond to risk rankings (see Table 5) (10).

Table 5: Risk rankings and associated required levels of management (adapted from 13)

Risk Rankings	Risk Values	Explanation & Likely Management Response
Negligible	0	Nil
Low	1 – 6	No specific additional management is needed, but low level monitoring of the issue may be required. Any current management should continue, as the risk ranking is based on the current management in place
Moderate	7 – 12	Additional information may be needed or the issue may require monitoring. Immediate management is required, but the issue should be the subject of continuous improvement with the aim of achieving a low risk ranking in the future
High	13 – 18	Possible increases to management activities in addition to those already being applied. Needs to be monitored and any information deficiencies should be addressed
Extreme	> 19	Increases in management activities in addition to those already being applied are strongly recommended

**TABLE 6: ECOLOGICALLY SUSTAINABLE DEVELOPMENT RISK ASSESSMENT FOR INDIVIDUAL LICENCE APPLICATIONS ASSESSED BY PIRSA AQUACULTURE**

Risk event	Applicability	Risk ranking	Explanation and management response
<b>Individual Facilities</b>			
<b>1 Construction of site and ongoing consequences of those structures</b>			
1.1 Habitat effects	Likely (6) X Minor (1)	Low (6)	
1.2 Proximity to sensitive regions			
1.3 Alienation			
1.4 Erosion			
1.5 Seepage			
1.6 Water flow	Likely (6) x Negligible (0)	Negligible (0)	
1.7 Shading	Likely(6) x Minor (1)	Low (6)	
1.8 Rehabilitation			
1.9 Navigation			
<b>2 Ongoing consequences of those structures</b>			
2.1 Noise	Likely (6) x Negligible (0)	Negligible (0)	
2.2 Escape	Occasional (5) x Minor (1)	Low (5)	
2.3 Chemicals and therapeutants	Occasional (5) x Minor (1)	Low (5)	
2.4 Interactions	Rare (2) x Severe (3)	Low (6)	
2.5 Water use			
2.6 Habitat effects	Unlikely (3) x Minor (1)	Low (3)	
2.7 Disease Management	Rare (2) x Severe (3)	Low (6)	
2.8 Sedimentation			
2.9 Culture organism disposal			

2.10 General refuse	Rare (2) x Moderate(2)	Low (4)	
2.11 Biofouling			N/A
2.12 Water quality			N/A
<b>Regional Effects</b>			
<b>3. Water use quality and quantity</b>			
3.1 Nutrients			N/A
3.2 Sedimentation			N/A
3.3 Chemicals			N/A
3.4 Seepage			N/A
3.5 Flow			N/A
<b>4 Ecological community structure and biodiversity</b>			
4.1 Listed migratory species			N/A
4.2 Threatened species			N/A
4.3 Sensitive habitats			N/A
4.4 Behavioural changes to species			N/A
4.5 Translocations between regions			N/A
4.6 Phytoplankton			N/A
4.7 Benthic communities			N/A
<b>5. Physical structures, construction and tenure</b>			
5.1 Loss of access to a common resource			N/A
5.2 Heritage area effects			N/A
5.3 Navigation			N/A
<b>6. Production</b>			
6.1 Disease			N/A
6.2 Disposal of waste			N/A