



Government of South Australia
Primary Industries and Resources SA



Photo courtesy of Frank Dal Piva

**REPORT
SUPPORTING THE
AQUACULTURE (ZONES—FITZGERALD BAY)
POLICY 2008**

Gazetted on
4th December 2008



Table of Contents	Page
1 INTRODUCTION.....	7
2 AMENDMENTS TO DRAFT POLICY	11
3 GENERAL	13
3 GENERAL	13
4 AQUACULTURE ZONE AND AQUACULTURE EXCLUSION ZONE ...	17
4.1 Fitzgerald Bay aquaculture zone.....	17
4.2 Fitzgerald Bay (north) aquaculture zone	18
4.3 Fitzgerald Bay aquaculture exclusion zone.....	19
5 SUBSEQUENT DEVELOPMENT PLAN AMENDMENTS.....	21
6 CONSTRAINTS.....	23
6.1 Physical Characteristics	24
6.2 Marine Planning	24
6.3 Indigenous Heritage	25
6.4 Reserves and Conservation Areas.....	26
6.5 Sensitive Habitats.....	26
6.6 Protected Species	26
6.7 Carrying Capacity and Assimilative Capacity	29
6.8 Commercial and Recreational Fishing.....	29
6.9 Historic Shipwrecks	30
6.10 Shipping and Navigation	30
6.11 Tourism	30
7 REGIONAL IMPACT ASESMENT	31
7.1 Stakeholders	31
7.2 Consultation undertaken in relation to regional issues	31
7.3 Potential Impacts.....	32
7.3.1Economic Factors.....	33
7.3.2The implication if no action is taken.....	34
7.3.3Social Factors.....	34
7.3.4Environmental Factors.....	34
7.3.5Conclusion.....	34
8 REFERENCES	35
9 APPENDIX A – GLOSSARY OF TERMS.....	39
10 APPENDIX B – LIST OF ACRONYMS	41
11 APPENDIX C – MAPS AND COORDINATES.....	43
12 APPENDIX D - RELEVANT POLICIES AND LEGISLATION	51



Table of Figures	Page
Figure 1 Map of the Fitzgerald Bay aquaculture zone, Fitzgerald Bay (north) aquaculture zone and the Fitzgerald Bay aquaculture exclusion zone	44
Figure 2 Map of the 2004 Fitzgerald Bay Aquaculture Management Policy (revoked on gazettal of the Aquaculture (Zones—Fitzgerald Bay) Policy 2008).....	45
Figure 3 Map of water depth contours of waters off Fitzgerald Bay with aquaculture zones.....	46
Figure 4 Spatial distribution of benthic assemblages at Fitzgerald Bay (Parsons Brinckerhoff & SARDI, 2003)	47
Figure 5 Map of the Fitzgerald Bay study site with aquaculture zones	48
Figure 6 Map of the aquaculture zones and benthic habitat mapping (Edyvane, 1999)..	48
Figure 7 New zoning map to delineate the extent of the Aquaculture (Fitzgerald Bay) Zone under the Land Not Within A Council Area (Coastal Waters) development plan.	49



1 INTRODUCTION

The Minister for Agriculture, Food and Fisheries (“the Minister”) may make aquaculture policies for any purpose directed towards securing the following objects of the *Aquaculture Act 2001* (the Act)—

- (a) *to promote 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.*

In accordance with the Act, the Minister must prepare a report in relation to a draft policy containing—

- An explanation of the purpose and effect of the draft policy;
- A summary of any background and issues relevant to the draft policy and of the analysis and reasoning applied in formulating the policy; and
- An assessment of the consistency of the draft policy with the Planning Strategy and any relevant Development Plan under the *Development Act 1993*; and any relevant environment protection policy under the *Environment Protection Act 1993*; and any other relevant plans or policies.

The Fitzgerald Bay Policy Report (“the Report”) supports the Aquaculture (Zones—Fitzgerald Bay) Policy 2008 (“the Policy”). Table 1 summarises the zoning framework to be established under the Policy, the classes of permitted aquaculture, the leased area and biomass permitted in the Fitzgerald Bay aquaculture zone, the Fitzgerald Bay (north) aquaculture zone and the Fitzgerald Bay aquaculture exclusion zone.

Zone policies are developed to ensure that they are both relevant to community and industry needs and, where possible, issues raised are dealt with during the zone planning phase rather than during the individual licence application process. Consequently, the Report has been developed to inform and involve all stakeholders in the decision making process for the allocation of marine resources to aquaculture.

In summary, the Fitzgerald Bay aquaculture zone, Fitzgerald Bay (north) aquaculture zone and the Fitzgerald Bay aquaculture exclusion zone will promote the orderly and efficient development of the aquaculture industry and recognise the industry as a legitimate user of the State’s marine resources, providing clarity regarding the aquaculture industry’s access to marine resources.

The Policy and Report were developed to support the ecologically sustainable development of aquaculture in the Fitzgerald Bay region. The Policy and Report were developed with input from other government agencies, regional stakeholders, local governments and industry. The Report and the Policy were referred to prescribed bodies and relevant public authorities as well as regional stakeholders, local and indigenous communities, native title claimant groups, local government and industry for comment once approval was given for release by the Aquaculture Advisory Committee (AAC) and the Minister. The Policy and Report were made available for a two-month public consultation period. The Minister subsequently considered the advice of the AAC on all matters raised as a result of the two-month public consultation.

As prescribed by the *Aquaculture Act 2001*, following approval of the Policy by the Minister, the Policy will be referred to the Environment, Resources and Developments Committee (ERDC) of Parliament. The ERDC may approve the Policy, seek amendments to the Policy or object to the Policy. In the event the ERDC objects to the Policy, the Policy will be presented to both Houses of Parliament where either House may disallow it.

ZONE/SECTOR	LEASED AREA		CLASS	BIOMASS			
	Maximum total lease area allowed in the Policy	Lease area already allocated (as at 27 October 2008)		Supplementally fed		Non-supplementally fed	
				(a) Farming of prescribed wild-caught tuna	(b) Farming of aquatic animals in a manner that involves regular feeding	(c) Farming of bivalve molluscs	(d) Farming of algae
Fitzgerald Bay aquaculture zone	550 ha (includes 5 ha for research/education)	130 ha active 120 ha under application	b & d	Nil	4,250 tonnes[^]	1,500 tonnes	Limited by licence condition
Western Fitzgerald Sector	150 ha	130 ha active 20 ha under application		Nil	2,250 tonnes*	No specified limit	Limited by licence condition
Eastern Fitzgerald Sector	No specified limit	100 ha under application		Nil	3,200 tonnes*	No specified limit	Limited by licence condition
Fitzgerald Bay (north) aquaculture zone	10 ha	10 ha under application	b	Nil	Nil	Limited by licence condition	Limited by licence condition
Fitzgerald Bay aquaculture exclusion zone	Nil	Nil	Nil	Nil	Nil	Nil	Nil

[^]This is the equivalent to the environmental impact that 4,250 tonnes of finfish would have on the zone.

*The licensed tonnage of the two sectors must not exceed the maximum tonnage for the whole zone.

Table 1 – Summary of zoning framework established under the Aquaculture (Zones – Fitzgerald Bay) Policy 2008.



2 AMENDMENTS TO DRAFT POLICY

Aquaculture in Fitzgerald Bay was previously managed under the Fitzgerald Bay Aquaculture Management Policy, established under the *Aquaculture Act 2001* (Primary Industries and Resources South Australia, 2004) (see Figure 2).

The draft Aquaculture (Zones – Fitzgerald Bay) Policy 2008 and Report were released for public consultation, in accordance with the *Aquaculture Act 2001*, from 5th April 2008 to 6th June 2008. A public briefing was held on 10th April 2008 in Whyalla.

Furthermore, PIRSA Aquaculture staff met with industry representatives and the Mayor and representatives from the City of Whyalla.

PIRSA Aquaculture received 10 written submissions, providing comment on the draft Policy and draft Policy Report.

After consideration of stakeholder issues and concerns during the two-month consultation period, a number of changes to the draft Policy that underwent public consultation have been made.

The Fitzgerald Bay aquaculture exclusion zone has been extended further north to an area in proximity to the existing fence line of the Army lands but excludes the area covered by a pilot lease application for molluscs.

A new zone has been created around this pilot lease, namely the Fitzgerald Bay (north) aquaculture zone, to accommodate the existing application and to limit any further aquaculture development in the area.

In addition, the farming of bivalve molluscs has been added as a permitted class of aquaculture for the Fitzgerald Bay aquaculture zone, with a biomass limit of 1,500 tonnes.

Further information on these changes can be found in section 4 of this Report.



3 GENERAL

The Policy defines the broad framework for aquaculture management within the defined zones, including through the specifying the permitted classes of aquaculture and the prescribed criteria that apply to each zone. More detailed considerations such as the size of each lease; the farming structures permitted on each licence and the stocking densities for different species are managed at the individual licence level. Such management tools do not form part of the zoning policy.

Approval of leases and licences in aquaculture zones are subject to the provisions of the *Aquaculture Act 2001* and the *Aquaculture Regulations 2005*, and relevant lease and licence conditions. An assessment of individual site suitability (including an Ecologically Sustainability Development (ESD) Assessment) and criteria outlined in the Aquaculture Tenure Allocation Policy are considered during the assessment. Ongoing environmental monitoring provides information that is an important input to the adaptive management of aquaculture. Further information about licensing is provided in a Stakeholder Information paper available on the Primary Industries and Resources South Australia (PIRSA) Aquaculture web site¹ or by accessing the PIRSA Aquaculture Public Register².

Lease area

The amount of leased area available for aquaculture in the broader Policy area is detailed in the *prescribed criteria* of the Policy and is summarized in Table 2. This is provided in order to communicate in the Policy, the overall area that would be under aquaculture. A total of 560 hectares (or approximately 12% of the aquaculture zones) is established for leasing in the Policy area.

The Policy sets aside 5 hectares of area for the purposes of research and education. Aquaculture research is restricted to the classes of aquaculture allowed in the Fitzgerald Bay aquaculture zone.

Zone/Sector	Size of zone/sector (Hectares)	Leased area allowed for aquaculture (Hectares)
Fitzgerald Bay aquaculture exclusion zone	2,147	Nil
Fitzgerald Bay (north) aquaculture zone	10	10
Fitzgerald Bay aquaculture zone		
Eastern Fitzgerald sector	2,847	no specified limit
Western Fitzgerald sector	1,704	150
Research/Education		5
Total aquaculture zone	4,561	560
Total all zones	6,708	560

Table 2 – Size of zones/sectors in the Policy area

¹ PIRSA Aquaculture web site: <http://www.pir.sa.gov.au/aquaculture>

² PIRSA Aquaculture Public Register web site: <http://www.pir.sa.gov.au/dhtml/ss/section.php?sectID=2126&tempID=1>

Class of aquaculture

Classes of aquaculture under previous zone policies referred to groups of species e.g. bivalve molluscs; finfish; tuna etc. Under a modified format, classes of aquaculture now relate to the feeding requirements of aquatic organisms, i.e. whether the organisms are supplementary fed or not supplementary fed. Grouping the classes of aquaculture around the feed inputs better focuses the policy on the key determinant of environmental impact, namely, the amount of nutrient that is released into the environment (see section 6.9). The modified format also provides greater flexibility to adaptively manage aquaculture activity through the conditions placed on individual licences.

The classes of aquaculture that may be permitted under the Policy, are—

- (a) the farming of aquatic animals (other than prescribed wild-caught tuna) in a manner that involves regular feeding; and
- (b) the farming of bivalve molluscs; and
- (c) the farming of algae.

The first of these involves the supplemental feeding of the farmed animals, whereas no supplemental feeding is associated with the second two classes – supplemental feeding is the giving of feed to aquatic organisms to supplement any naturally available food.

Biomass limits

Control of the amount of nutrients released into the environment is achieved at the zone policy level by setting upper biomass limits for each zone, i.e. the maximum biomass of organisms farmed under a particular class of aquaculture at any one time. Environmental impacts are also managed by monitoring impacts on an on-going basis, through the environmental monitoring and reporting requirements stipulated in the *Aquaculture Regulations 2005*. Adaptive management enables the modification of upper biomass limits for zones and changing aquaculture licence conditions.

The Policy sets biomass limits for the farming of aquatic animals in a manner that involves regular feeding (supplementally fed animals) in terms of a tonnage of finfish biomass equivalents. The net amount of nutrient released by various types of supplementally fed organisms differs, with finfish aquaculture generating the highest amount of discharge compared for example, with abalone. Because there is still insufficient scientific information to accurately predict the amounts of nutrients that would be released by non-fish species, this policy takes a generally cautious approach in setting biomass limits by assuming that amounts of nutrients released by all farmed organisms that are supplementally fed would be similar to that of finfish. However, in order to accommodate future use of information on nutrient release by non-fish species, the policy adopts the concept of finfish biomass equivalents, where upper biomass limits are expressed and benchmarked in terms of an amount of biomass that would have an environmental impact equivalent to a stated biomass of finfish.

The impacts of overstocking systems with aquatic organisms that do not involve supplemental feeding are likely to be felt by industry (through decreased production) well before any potential environmental harm. For example, in the case of filter feeders like mussels, production is self-limiting since industry performance overall will

be determined by the amount of suitable food available in the water. As a result, the focus of PIRSA Aquaculture's regulatory activity for aquatic organisms that does not involve supplemental feeding is to meet the Government's responsibility "to maximise benefits to the community from the State's aquaculture resources", i.e. to ensure that a zone is not overstocked to the general detriment of the aquaculturalists operating in the area.

The Policy allows for the Minister to alter the maximum biomass limits for the farming of aquatic animals (other than prescribed wild-caught tuna) in a manner that involves regular feeding through notice in the Gazette. This provides a mechanism to enable flexibility in setting biomass limits for zones/sectors and enables future research and environmental monitoring results to be taken into consideration as they become available over time.

In the case of bivalve molluscs, the Minister cannot increase the maximum biomass limit unless satisfied, after consultation with relevant aquaculture industry groups, that such an increase would not compromise the overall productivity of bivalve mollusc farming operations in the area.



4 AQUACULTURE ZONE AND AQUACULTURE EXCLUSION ZONE

The Policy covers an area comprising the State waters off the coast of Whyalla on the Eyre Peninsula as depicted in Figure 1. The Policy establishes three zones as follows—

4.1 Fitzgerald Bay aquaculture zone

An aquaculture zone identifies an area within State waters in which specified classes of aquaculture will be permitted (subject to this Act and other applicable Acts) (Section 11(2) of the *Aquaculture Act 2001*).

The Fitzgerald Bay aquaculture zone is approximately 4,551 hectares in size and is located between 200 metres and nine kilometres from Mean High Water Springs (MHWS). The zone is depicted in Figure 1 and is described in the Aquaculture (Zones – Fitzgerald Bay) Policy 2008.

The zone is divided into the following sectors—

- Eastern Fitzgerald sector; and
- Western Fitzgerald sector.

The creation of one zone with two sectors will allow PIRSA Aquaculture to facilitate movement of leases between the two sectors where considered appropriate, as discussed later in this section of the Report.

The prescribed classes of aquaculture are—

- (a) the farming of aquatic animals (other than prescribed wild-caught tuna) in a manner that involves regular feeding; and
- (b) the farming of bivalve molluscs; and
- (c) the farming of algae.

The total amount of leased area for aquaculture is 550 hectares for the whole zone, with a maximum of 150 hectares in the Western Fitzgerald sector. The 550 hectares for the zone includes 5 hectares to be used or available for use for the purposes of research and/or education.

The biomass of aquatic animals (other than prescribed wild-caught tuna) farmed in a manner that involves regular feeding for the Fitzgerald Bay aquaculture zone must not exceed an amount that would, in the opinion of the Minister, have an environmental impact on the zone equivalent to the environmental impact of 4,250 tonnes of finfish.

Within the total biomass for the zone, the following restrictions apply—

- The total biomass of aquatic animals (other than prescribed wild-caught tuna) farmed in a manner that involves regular feeding for the Western Fitzgerald sector must not exceed an amount that would, in the opinion of the Minister, have an environmental impact on the zone equivalent to the environmental impact that 2,250 tonnes of finfish would have on the zone; and
- The total biomass of aquatic animals (other than prescribed wild-caught tuna) farmed in a manner that involves regular feeding for the Eastern Fitzgerald sector

must not exceed an amount that would, in the opinion of the Minister, have an environmental impact on the zone equivalent to the environmental impact that 3,200 tonnes of finfish would have on the zone.

However, the total licensed biomass for the sectors must not exceed the maximum biomass for the zone of 4,250 tonnes.

The maximum biomass of finfish to be farmed within the Fitzgerald Bay aquaculture zone was calculated using a predictive model developed by the South Australian Research and Development Institute (SARDI) (Tanner et al., 2007). The model predicts the Western and Eastern Fitzgerald sectors could sustain the farming of 2,800 and 3,200 tonnes of finfish, respectively, totalling 6,000 tonnes. However, in keeping with PIRSA's generally conservative approach to setting biomass limits, the total biomass for the whole zone is set at 4,250 tonnes of finfish, well below the model predictions.

Existing industry in the shallower waters of the Western Fitzgerald sector have expressed a preference for the deeper waters of the Eastern Fitzgerald sector. With this in mind, sector-specific biomass limits for the Western and Eastern Fitzgerald sectors have been set at 2,250 and 3,200 tonnes respectively, in order to avoid the possibility of excessive biomass concentration within a single sector.

The maximum biomass of bivalve molluscs is 1,500 tonnes.

A predictive carrying capacity model for shellfish was developed by Parsons Brinkerhoff and SARDI (2003) indicated the Fitzgerald Bay aquaculture zone could sustain 4,000 tonnes of bivalve molluscs; however given the area is not proven for mollusc production, PIRSA Aquaculture has taken a conservative approach by setting the initial biomass limit at 1,500 tonnes. The Policy provides that the Minister may increase the biomass of bivalve molluscs by notice in the Gazette if satisfied that such an increase would not compromise the overall productivity of bivalve mollusc aquaculture operations in the zone.

A biomass limit for algae is yet to be determined. No specific limits have been applied to the biomass for algae farming, given the industry is still in its infancy. PIRSA Aquaculture will monitor developments and consider the need for future regulation.

Ongoing environmental monitoring provides information that is an important input to the adaptive management arrangements used to manage and regulate the industry. Additional information on the monitoring requirements of licence holders can be found in Regulations 22 – 25 of the *Aquaculture Regulations 2005* and in part 9 of the Stakeholder Information paper available on the PIRSA Aquaculture website³.

4.2 Fitzgerald Bay (north) aquaculture zone

The Fitzgerald Bay (north) aquaculture zone incorporates an area of approximately 10 hectares and is located approximately 200 metres from MHWS. The zone is depicted in Figure 1 and is described in the Aquaculture (Zones – Fitzgerald Bay) Policy 2008.

The prescribed classes of aquaculture are:

³ PIRSA Aquaculture web site: <http://www.pir.sa.gov.au/aquaculture>

- (a) the farming of bivalve molluscs; and
- (b) the farming of algae.

At the time this Policy was developed, PIRSA Aquaculture was assessing an application for a pilot lease within the boundaries of this zone. During public consultation for this Policy, concerns were raised regarding future expansion of aquaculture activity in the surrounding area to this application. This zone has been created in order to accommodate the existing application and the concerns raised regarding future activity.

The biomass limits for both bivalve molluscs and algae will be limited by licence conditions.

4.3 Fitzgerald Bay aquaculture exclusion zone

The Fitzgerald Bay aquaculture exclusion zone provides a buffer between aquaculture development and other marine resource uses and areas of high conservation significance.

The Fitzgerald Bay aquaculture exclusion zone encompasses an area of approximately 2,147 hectares. The zone is depicted in Figure 1 and is described in the Aquaculture (Zones – Fitzgerald Bay) Policy 2008.

The aquaculture exclusion zone includes—

- A 1 kilometre buffer around Port Lowly;
- The buffer incorporates three shipwrecks that exist off Point Lowly; and
- A one kilometre buffer around Backy Point and south along the beach to protect aboriginal heritage sites.



5 SUBSEQUENT DEVELOPMENT PLAN AMENDMENTS

The Aquaculture (Zones – Fitzgerald Bay) Policy 2008 is consistent with the relevant provisions of the Land Not Within A Council Area (LNWCA) (Coastal Waters) development plan in that it seeks to ensure the ecologically sustainable development of the aquaculture industry and recognises and respects other users of the marine resource.

The area affected by the Policy falls within the LNWCA (Coastal Waters) development plan.

This development plan currently contains policies to guide aquaculture development (Objective 35 and Principles of Development Control 13, 17-19, 25, 26, 38 and 41). However, to provide more certainty in regard to appropriate locations for aquaculture development, specific aquaculture zones are to be identified within the Development Plan that give effect to the Aquaculture (Zones – Fitzgerald Bay) Policy 2008.

An amendment to the Development Plan may be undertaken, pursuant to Section 29 of the *Development Act 1993*, to give effect to Aquaculture Policies gazetted under the *Aquaculture Act 2001*.

Section 29 of the *Development Act 1993* enables the Minister for Urban Development and Planning to amend a development plan in accordance with an approved aquaculture policy under the *Aquaculture Act 2001*. Accordingly, it is proposed the Fitzgerald Bay aquaculture zone and Fitzgerald Bay (north) aquaculture zone, specified in the Policy be incorporated into the LNWCA (Coastal Waters) development plan.

Specific details are as follows—

Amend the Land Not Within A Council Area (Coastal Waters) development plan

Fitzgerald Bay

Establish a new “Aquaculture (Fitzgerald Bay) Zone” with the following Objective and Principle of Development (PDC):

OBJECTIVES

- 1 The ecologically sustainable development of (i) the farming of aquatic animals (other than prescribed wild-caught tuna) in a manner that involves regular feeding; (ii) the farming of bivalve molluscs; and (iii) the farming of algae.

PRINCIPLES OF DEVELOPMENT CONTROL

Development should be primarily in the form of—

- (a) the farming of aquatic animals (other than prescribed wild-caught tuna) in a manner that involves regular feeding; and
- (b) the farming of bivalve molluscs; and
- (c) the farming of algae;

and the structures associated with the farming of those organisms.

PROCEDURAL MATTERS

Public Notification

Categories of public notification are prescribed in schedule 9 of the *Development Regulations 2008*.

It is proposed to insert a new zoning map to delineate the extent of the Aquaculture (Fitzgerald Bay) Zone (see Figure 7).

6 CONSTRAINTS

The following matters were taken into account in creating this zone policy, in order to secure the objectives of the *Aquaculture Act 2001*—

- The development and management of aquaculture resources in coastal waters adjacent to Fitzgerald Bay within the framework of ecologically sustainable development;
- The protection of proclaimed conservation areas and Australian Sea-lion (*Neophoca cinerea*) breeding colonies in the region;
- The distribution and habitat of protected species;
- The protection of historic shipwrecks;
- The protection of sites of Aboriginal heritage value in the region;
- The impact of aquaculture development on the tourism and residential qualities of the region;
- The impact of aquaculture development on commercial and recreational fishing in the region; and
- The impact of aquaculture on sensitive species and habitat in the region.

Zone development takes into consideration the following—

- National parks, conservation parks and conservation reserves proclaimed under the *National Parks and Wildlife Act 1972 (NPW Act)*. Aquaculture development should be located at least 1,000 metres seaward from these reserves;
- Marine parks and reserves;
- Aquatic reserves under the *Fisheries Management Act 2007*;
- Recreation reserves;
- Indigenous heritage sites recorded under the Register of the *Aboriginal Heritage Act 1988*;
- Non-indigenous and natural heritage sites—Heritage sites are recorded under the register of the *Heritage Act 1993*;
- Shipwrecks protected under the *Historic Shipwrecks Act 1981* or the Commonwealth *Historic Shipwrecks Act 1976*. Aquaculture development within the zone should be located at least 500 metres from a protected shipwreck;
- Sites of scientific importance including geological monuments;
- The health status of farmed and wild stock in the area, with particular emphasis on the occurrence of diseases listed as notifiable under the *Livestock Act 1997*;
- Mineral reserves;
- Areas valued for their outstanding beauty or amenity;
- Navigational channels and shipping lanes—Aquaculture development within the zone should be located not to obstruct nor interfere with navigation channels, access channels and shipping lanes;

- Flinders Ports— there are no ports managed by Flinders Ports in the Fitzgerald Bay area;
- Recreational fishing sites—Aquaculture development within the zone should be located to take into account the requirements of traditional fishing grounds;
- Known Indigenous fishing sites;
- Known commercial fishing sites;
- Launching sites—Aquaculture development within the zone should avoid frequently used natural launching sites, safe and secure anchorage areas;
- Diving areas;
- Shipping—Aquaculture development within the zone should avoid commercial shipping movement patterns or activities associated with existing jetties and wharves; and
- Threatened species—Aquaculture development within the zone should avoid habitats of threatened species (under the NPW Act or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)). A 15 kilometre buffer around major Sea-lion colonies, and 5 kilometre buffer around minor colonies has been established to ensure no finfish aquaculture occurs in these areas.

Zone development also considers—

- Flushing currents— current rates have to be sufficiently high to allow appropriate dispersal of non-solid wastes from the site. Currents should not be strong enough to cause problems with securing of aquaculture facilities.
- Water depth— allow sufficient room between the bottom of farming infrastructure and the sea floor on subtidal sites.

6.1 Physical Characteristics

The Winninowie Biounit extends from Point Lowly (on the western side of Spencer Gulf) to Ward Point (on the eastern side of Spencer Gulf), to Port Augusta, and covers an area of 55,266 hectares. It is an area of very low wave energy. Seagrass meadows comprise 30.4% of the inshore subtidal habitats. Limited rocky substrate is recorded in this region (Edyvane, 1999).

Water depths are up to 22 metres (see Figure 3) with current speeds being low to moderate (Parsons Brinckerhoff & SARDI, 2003). The area experiences surface water temperatures of 13.4°C during winter and 23.8°C during summer (Petruševics et al, 1998).

6.2 Marine Planning

The *Marine Planning Framework for South Australia* (Government of South Australia, 2006b) requires statutory policies to have regard to Marine Plans.

The draft Spencer Gulf Marine Plan (Government of South Australia, 2006a) identifies values of the Spencer Gulf using an ecosystem based management, including environmental, economic, social and Indigenous and non-indigenous cultural values, and identifies ecologically rated (ER) zones to accommodate a range of activities.

“The ER zones are graded as follows:

- *ER1 Zone - Containing the highest diversity of marine, coastal and estuarine habitats and species.*
- *ER2 Zone - Containing a high diversity of marine, coastal and estuarine habitats and species.*
- *ER3 Zone - Containing a moderate diversity of marine, coastal and estuarine habitats and species.*
- *ER4 Zone - Consisting of areas for which the available scientific data is inadequate to identify their importance to the maintenance of biodiversity, ecological health and productivity of the ecosystem.”* (Government of South Australia, 2006a)

The majority of the Fitzgerald Bay aquaculture zone falls in the ER2 classification (approximately 62%), while the remainder falls in the ER1 classification.

The Marine Planning Framework (Government of South Australia, 2006b) requires that:

- Development and use of the marine, coastal and estuarine environment in the ER1 zone is managed such that it will cause negligible impacts on the biodiversity, habitats and ecological processes important to the health and productivity of the ecosystem.
- Development and use in the ER2 zone is managed to ensure minor impacts on the marine, coastal and estuarine biodiversity, habitats and ecological processes of the ecosystem.
- Development and use in the ER3 zone is managed to ensure that moderate environmental impacts to the biodiversity, habitats and ecological processes do not jeopardise the health and productivity of the ecosystem.
- Development and use of the marine, coastal and estuarine environment in the ER4 zone is preceded by research to improve knowledge of the biodiversity, habitats and ecological processes.

The aquaculture zones are consistent with the principles of the Marine Planning Framework.

6.3 Indigenous Heritage

It is acknowledged that it is vital to the well being of Aboriginal community members that their traditional values and practices are respected and that their heritage and native title interests are taken into account when aquaculture developments are planned for a particular area. PIRSA Aquaculture facilitates the involvement of local Aboriginal representatives in its process for developing and amending aquaculture policy and zoning.

There is no Indigenous Land Use Agreement (ILUA) in this area (National Native Title Tribunal, Commonwealth of Australia 2006b). A move to create an ILUA with Naou-Barnjarla and Barnjarla commenced in 2006. Under the ILUA model, separate agreements can be formulated with the different groups involved, such as fishers or aquaculture operators, and local, State and Federal Government (Virginia Leek, pers. Comm., 14 September 2007).

The Barnjarla Native Title Claim (SC96/4) extends into coastal waters. (National Native Title Tribunal, Commonwealth of Australia 2006a).

An Aboriginal fishtrap complex is located at Fitzgerald Bay (Edyvane 1999). Any interaction with Aboriginal fishtrap complex's will be identified and addressed at an individual site level through correspondence with the appropriate Indigenous communities.

6.4 Reserves and Conservation Areas

There are no marine sanctuaries or conservation areas in the immediate Fitzgerald Bay area. Blanche Harbour-Douglas Bank Aquatic Reserve is located about 10 kilometres north of Backy Point, while Cowleds Landing Aquatic Reserve is located about 20 kilometres southwest of Point Lowly. Whyalla Conservation Park lies at least 10 kilometres inland west of Fitzgerald Bay and Winninowie Conservation Park lies on the eastern shore of Spencer Gulf, about 15 kilometres northeast of Backy Point. False Bay, which lies to the southwest of Fitzgerald Bay, is subject to a seasonal closure in the taking of cephalopods including cuttlefish, squid and octopus.

6.5 Sensitive Habitats

The Fitzgerald Bay area was subject to a technical investigation (Parsons Brinkerhoff & SARDI, 2003). The report of this investigation depicted the spatial distribution of benthic assemblages (Figure 4). Within the Fitzgerald Bay study site (Figure 5), the inshore areas were dominated by seagrass meadows, with some areas of mangroves, tidal and salt marsh in the north-western corner of the bay. The report also indicates the seafloor under deeper waters (15-22m) to comprise unvegetated soft bottom.

An overlay of the current aquaculture zones and benthic habitat mapping by Edyvane (1999) is shown on Figure 6. Coastal wetlands of national importance in the region occur to the north of Point Lowly on the Eyre Peninsula. All individual licence applications are assessed against ecologically sustainable development principles and will take into account the benthic environment of the particular site. More information on this process can be found in part 8 of the Stakeholder Information Paper available on the PIRSA Aquaculture website⁴.

Fitzgerald Bay is within the Upper Spencer Gulf focus area for Marine Parks (Government of South Australia, 2006).

6.6 Protected Species

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) assessment and approval is required for actions that are likely to have a significant impact on a matter of national environmental significance or on Commonwealth land. An action includes a project, development, undertaking, activity, or series of activities.

The EPBC Act identifies seven matters of national environmental significance - World Heritage properties, National heritage places, Wetlands of international importance (Ramsar wetlands), Threatened species and ecological communities, Migratory

⁴ PIRSA Aquaculture web site: <http://www.pir.sa.gov.au/sector118.shtml>

species, Commonwealth marine areas and Nuclear actions (including uranium mining).

A search of the Protected Matters Database was conducted on the Australian Government Department of the Environment and Water Resources web site (2007) to obtain a list of the threatened species that are considered to potentially occur in the region. This data is derived primarily from general distribution maps, and thus it is likely that at least some of the species listed will not occur.

Threatened species listed on the data base include—

- Southern right whale (*Eubalaena australis*) (listed as endangered) – species or species habitat known to occur within area.
- Humpback whale (*Megaptera novaeangliae*) (listed as vulnerable) – species or species habitat likely to occur within area.
- Australian Sea-lion (*Neophoca cinerea*) (listed as vulnerable) – species or species habitat may occur within area.
- Great White Shark (*Carcharodon carcharias*) (listed as vulnerable) – species or species habitat may occur within area.
- Slender-billed Thornbill (*Acanthiza iredale iredale*) (listed as vulnerable) – species or species habitat likely to occur within area.
- Thick-billed Grasswren (*Amytornis textilis myall*) (listed as vulnerable) – species or species habitat likely to occur within area.
- Orange-bellied Parrot (*Neophema chrysogaster*) (listed as critically endangered) – species or species habitat may occur within area.
- Albatross – (four species are listed as vulnerable) – species or species habitat may occur within area.
- Petrels – (one species listed as endangered & one species listed as vulnerable) – species or species habitat may occur within area.
- Plains-wanderer (*Pedionomus torquatus*) – (listed as vulnerable) – species or species habitat may occur within area.
- Australian Painted Snipe (*Rostratula australis*) – (listed as vulnerable) – species or species habitat may occur within area.
- Many migratory species – consisting of bird, marine mammals and shark which may migrate in and out of this area, occur within this region.

The *National Parks and Wildlife Act 1972* provides the legislative framework dealing with native fauna in this State. Most native mammals, reptiles and birds are protected in South Australia. Rare, vulnerable and endangered species are listed in Schedules 7, 8 and 9 of the NPW Act.

The nearest breeding and habitat areas for the New Zealand Fur-seal (*Arctocephalus forsteri*) and the Australian Sea-lion is Sir Joseph Banks Group conservation park, some 230 kilometres to the south. A major Australian Sea-lion breeding colony exists at Dangerous Reef (part of the Sir Joseph Banks Group conservation park), located approximately 250 kilometres to the south.

The *Fisheries Management Act 2007* contains the provisions, under Section 71 for interactions with marine mammals, in particular killing or injuring of the same. Under the provisions of Section 71(1)(a) of the Act, a person must not kill, injure or molest, or cause or permit the killing, injuring or molestation of, a marine mammal. Under the same Section of the Act it, is an offence to take protected species, which include white shark (*Carcharodon carcharias*), also known as great white shark. A statutory defence exists in cases where the defendant proves that the alleged offence was not committed intentionally and did not result from any failure on the part of the defendant to take reasonable care to avoid the commission of the offence.

Syngnathid fishes (eg seahorses, sea-dragons and pipefish) are protected under the provisions of section 71 of the *Fisheries Management Act 2007*. Syngnathid fishes are likely to be present, especially in the seagrass, algal and reef assemblages. It is known that at least some seahorses are abundant around finfish cages, using them as an alternative habitat to seagrass beds and algal assemblages.

All marine mammals, and sharks have the potential to become entangled in nets or mooring lines. Seabirds may be adversely affected by activity around any feeding, roosting or nesting sites in the area. However, regulation 19 of the *Aquaculture Regulations 2005* specifies that each licence holder must have a written strategy approved by the Minister to minimise adverse interactions with seabirds and large marine vertebrates. In addition, risks posed by the aquaculture activity are assessed at the time of application through the ESD Assessment process consistent with the National ESD Framework.

In November 2002 Cabinet approved the establishment of a Marine Mammal-Marine Protected Areas Aquaculture Working Group (MM-MPA AWG) to develop management arrangements to address the proximity of aquaculture developments to core areas of proposed marine protected areas and significant marine wildlife habitats such as seal colonies and whale breeding areas.

The MM-MPA AWG concluded that the only aquaculture activity to pose a risk to seal/sea lion colonies is finfish aquaculture, and the only seal/sea lion colonies at risk from finfish aquaculture are breeding colonies of Australian Sea-lions. The New Zealand Fur-seal also interacts with aquaculture operations, however they are not considered to be at risk from finfish aquaculture, and as such no restrictions will apply in relation to New Zealand Fur-seals.

Cabinet considered the MM-MPA AWG report and in 2005 Cabinet noted the following recommendation in order to reduce the potential risk to Australian Sea-lion breeding colonies from finfish aquaculture—

- Finfish aquaculture located within 5 km of any Australian sea lion breeding sites will not be approved;
- Finfish aquaculture will not be approved within 15 km of the eight major Australian sea lion breeding colonies (namely The Pages, Dangerous Reef, Seal Bay, West Waldegrave Island, Olive Island, Franklin Islands, Purdie Island and Nicolas Baudin Island);
- Finfish aquaculture to be located between 5-15 km of minor Australian sea lion breeding colonies will have a risk assessment applied during the licence assessment process specifically related to sea lions; and

- Over 15 km, there will be no restrictions in relation to finfish aquaculture.

6.7 Carrying Capacity and Assimilative Capacity

The concepts of 'carrying capacity' and 'assimilative capacity' are important and interrelated tools for natural resource management. Carrying capacity equates to the biomass (tonnage) of culture product that can be added to the environment without deleterious effects. Assimilative capacity refers to the extent to which the environment can cope with a particular activity without unacceptable change (O'Bryen and Lee, 2003).

Estimating carrying and assimilative capacities for finfish aquaculture is a relatively simpler task than for algae. This is largely due to the additive versus extractive nature of finfish and algae production, respectively. For finfish aquaculture, it is possible to determine, using mass balance equations of the type described by Beveridge (1987), the changes in concentration of nitrate and ammonia in the water column (Fernandes and Tanner, 2007). The level of confidence in these estimations reflects the empirical understanding of sources and sinks for these waste products and their interaction.

For algae aquaculture, estimating carrying capacity is more complicated as potential production must be estimated from available nutrient and light resources. At present there are difficulties in confidently predicting potential production. Firstly, there is limited data to ascertain the availability of nutrient and light for algae in the northern reaches of Spencer Gulf. Secondly, processes such as algae nutrient uptake rates, photosynthetic rates and suitable species need to be investigated within South Australian coastal conditions and compared to seasonally varying nutrient conditions (Mount et al., 2007). Nevertheless, algae aquaculture is currently used in many countries to minimize the negative effects of effluent and reduce the environmental impact of other aquaculture activities (Chopin et al., 2001; Buschmann et al., 2007).

6.8 Commercial and Recreational Fishing

Zone policies are sited in a manner that minimises unnecessary impact on commercial and recreational fishing activities.

The waters off Fitzgerald Bay support a number of fisheries. Bryars (2003) indicates that the Far Northern Spencer Gulf habitat area 31 is directly used by blue swimmer crab, razorfish, southern calamari, king scallop, queen scallop, King George whiting, snapper, western Australian salmon, tommy ruff, southern sea garfish, yelloweye mullet, flathead, trevally, yellowtail kingfish, leatherjacket, snook, flounder and whaler shark.

There is a netting closure for all waters of the Spencer Gulf north of a line east-west through the Douglas Bank Beacon (Edyvane, 1999) situated approximately 7.5 kilometres north of the Eastern Fitzgerald sector.

The Spencer Gulf prawn fishery is based exclusively on the Western king prawn (*Melicertus latisulcatus*). Fishing is permitted in all waters deeper than 10 metres within Spencer Gulf (Carrick, 2003), however there are no prawn fishing blocks in the Fitzgerald Bay Aquaculture Management Policy area. There is an extensive marine scale fishery targeting snapper, King George whiting and shark. No commercial abalone fishing is conducted in the Fitzgerald Bay area (Edyvane, 1999).

There are two artificial reefs within Fitzgerald Bay. One is located near shore at Point Lowly (32°59' 36.74"S, 137°47' 10.85"E) and the other is located offshore about 4 kilometres north of Point Lowly (32°58' 0.62"S, 137°46' 58.97"E) (Primary Industries and Resources South Australia, Fisheries Division, 2007). Neither of these reefs are located within the Fitzgerald Bay aquaculture zone with the reef near shore at Point Lowly falling in the aquaculture exclusion zone.

6.9 Historic Shipwrecks

There are three shipwrecks off the coast of Point Lowly (the Sarah, the Parara and the Angler) (Atlas South Australia, 2005) all of which fall within the Fitzgerald Bay aquaculture exclusion zone. In addition to these wrecks, several ships were lost in the vicinity of Point Lowly in the late nineteenth and early twentieth centuries. If these shipwreck sites or associated relics were discovered they would constitute historic shipwrecks or relics.

6.10 Shipping and Navigation

There are no major ports on the western side of upper Spencer Gulf. There is marine traffic associated with recreational and commercial fishing vessels and leisure craft in the Fitzgerald Bay area. There is a boat ramp and breakwater located at Point Lowly that provides sheltered access into deep water at all times, providing an all-weather launching site.

Aquaculture infrastructure may present a navigational hazard to vessels. However, aquaculture leases and/or licences stipulate that navigation marks be installed, whenever structures are located in the leased area and should not therefore pose a hazard.

6.11 Tourism

Point Lowly at the southern side of Fitzgerald Bay is a popular beachside daytrip destination where visitors enjoy activities such as fishing, sightseeing or a taking a stroll along the rocky shoreline (Whyalla South Australia, 2007). Divers are also attracted to the annual breeding aggregations of the Giant Cuttlefish around Point Lowly. The Fitzgerald Bay aquaculture zone has been situated so that visual and recreational amenity is maintained.

7 REGIONAL IMPACT ASSESSMENT

This section contains an assessment of the impact of the zone policy on the Eyre Peninsula Region. A regional assessment is appropriate, as the matters raised in the Policy will:

- Directly impact on a region or regions;
- Indirectly impact on a region or regions;
- Affect or relate to regional issues; or
- Treat or affect regional and metropolitan areas differently.

7.1 Stakeholders

The following groups may be affected by the policy—

- The Aquaculture industry, local community, native title claimants and other indigenous groups, local government, recreational and professional fishers, Government agencies, conservation groups and other NGOs, research organisations, boards and other relevant planning and natural resource management bodies, recreational users, tourists and the tourism industry.
- The recreational boating sector and commercial shipping.

These parties will be affected in different ways.

7.2 Consultation undertaken in relation to regional issues

Section 12(4)(a) of the *Aquaculture Act 2001* states that the Minister must, after preparation of the draft Policy and related Report, refer the Policy and Report to any body prescribed and to any public authority whose area of responsibility is, in the opinion of the Minister, likely to be affected by the Policy.

The following bodies are prescribed under regulation 4 of the *Aquaculture Regulations 2005*—

- Aboriginal Legal Rights Movement Incorporated;
- Conservation Council of South Australia Incorporated;
- Local Government Association of South Australia;
- Seafood Council SA;
- SA Fishing Industry Council Incorporated;
- South Australian Aquaculture Council;
- South Australian Recreational Fishing Advisory Council;
- Any registered representatives of native title holders or claimants to native title in land comprising or forming part of a zone or area to which the policy applies;
- Any person holding an aquaculture licence or aquaculture lease over an area comprising or forming part of a zone or area to which the policy applies; and
- Any regional NRM Board (within the meaning of the *Natural Resources Management Act 2004*) responsible for a region comprising or forming part of a zone or area to which the policy applies.

In addition to prescribed bodies, PIRSA Aquaculture commenced consultation with the following parties—

- Industry leaders, Department for Transport, Energy and Infrastructure (DTEI), SA Tourism Commission, SARDI, Department for Environment and Heritage (DEH), Department of Water, Land & Biodiversity Conservation (DWLBC), Department of the Premier and Cabinet, Coast Protection Board, Department of Health, Aboriginal Affairs and Reconciliation Division, Native Title Unit, Aboriginal Legal Rights Movement, Environment Protection Authority (EPA), Community and Local Government Relations, Office of Regional Affairs, PIRSA Legal Unit, PIRSA Fisheries, Fishwatch, Spencer Gulf and West Coast Prawn Fishermen's Association, Rural Solutions SA, Regional Local Government Association, Regional Development Board, appropriate Local Council/s, appropriate progress association/s and Community groups within the Local Government area.

PIRSA Aquaculture takes a lead role to coordinate consultation and seek formal comment and advice on the policy proposal from an industry and regional perspective. The Policy, the Report and the Stakeholder Information paper describing the zoning proposal is distributed to key stakeholders as the basis for consultation. These documents were available on the PIRSA Aquaculture website for 2 months. Public notices are placed in *The Advertiser*, the *Whyalla News*, the *National Indigenous Times* and the *Koori Mail* seeking comment from members of the public. In addition, public briefings in the region are organised to take place during the 2 month consultation period to give stakeholders the opportunity to speak directly with PIRSA Aquaculture officers.

All existing lease and licence holders in the zone area were advised during the 2 month consultation period of the policy proposal by letter.

The following stakeholder group meetings were held:

2 to 25 January 2008—Government and other key stakeholders from the following agencies and departments were invited to provide comment—DTEI, DEH, SA Tourism Commission, Aboriginal Affairs and Reconciliation Division, Native Title Unit, DWLBC, EPA, PIRSA Fisheries, Planning SA, Attorney General's Department and Flinders Ports.

10 April 2008—A public meeting was held in Whyalla, with stakeholders and the general public invited to attend. PIRSA Aquaculture representatives were present to discuss the proposal and address any questions.

7.3 Potential Impacts

The Policy stipulates zones where aquaculture is permitted and where aquaculture is not permitted for the waters of Fitzgerald Bay.

The following considerations have been taken into account during the preparation of the policy—

- Zone planning to ensure that coastal resources are managed in a fair and equitable manner to allow for both recreational use and for development opportunities that contribute to community development and employment.
- Zoned areas are carefully located. In determining the suitability of areas for marine aquaculture zoning, a balance will need to be achieved in ensuring

areas are commercially attractive and minimizing social and environmental impacts. Zones should be optimally located for commercially viable marine aquaculture production in balance with these other competing requirements. Zones will preferentially be located in close proximity to services, transport and other infrastructure and with optimal environmental conditions for safe operation and maximum productivity (e.g. wave height, currents).

- Strategic planning for industry development.
- Zoned areas will be consistent with future planning directions.

The benefits of zoning include—

- Zoning offers predictability and equity in opportunity to investors and developers.
- Zoning avoids confusion by both the industry and the community as to where marine aquaculture can be accommodated. Appropriate areas for development are identified and clearly described through the planning process. Without zoning, aquaculture development may occur in an ad-hoc manner and the full economic potential of the industry is unlikely to be achieved.
- Zoning provides appropriate management controls that are specified in the Policy then applied through the licence e.g. prescribed classes of aquaculture, maximum area to be leased and biomass limits.
- Consultation during the zoning process provides the opportunity for stakeholders and local communities to be engaged in the aquaculture that occurs in their locality. A regional community engagement strategy enables local social, economic and environmental knowledge to be considered during the planning process. Policies take into account the impact that change will have on regional communities.

7.3.1 Economic Factors

Most evidence of the economic benefits of aquaculture zoning is qualitative rather than quantitative.

Aquaculture zoning has a range of potential economic benefits, including—

- Facilitating industry growth – zoning provides a framework that facilitates the sustainable development of aquaculture activities, therefore helping to promote significant investment and to enhance employment opportunities to rural and regional economies.
- Optimising the use of the sea – zoning helps to ensure that maximum benefits are derived from the use of the sea by encouraging activities to take place where they bring most value, and do not devalue other activities.
- Reduces costs – zoning can reduce the cost of regulation, planning and decision making, and can eliminate duplication in approval process.

These benefits arise through strategic planning, conflict resolution, sustainable resource use, promoting appropriate use, provision of development space, improving stakeholder involvement and regulatory efficiencies.

Aquaculture can provide significant investment and employment opportunities to rural and regional economies. A report completed by EconSearch (2007) concluded the total economic impact (direct and flow-on) of aquaculture in South Australia in

2005/06 was \$AUD550 million. Direct employment was estimated to be in excess of 1,800 full time equivalent positions (FTE) in 2005/06 with 1,540 flow-on jobs, giving total employment of 3,348 FTE, with around 64% of these jobs generated in regional Eyre Peninsula. The tuna and oyster sectors accounted for the majority of employment on Eyre Peninsula (87%) while 281 FTE positions were engaged in abalone, mussel, yellowtail kingfish and other aquaculture enterprises.

The Fitzgerald Bay aquaculture policy proposes to increase the limit of finfish that can be farmed from 3,750 tonnes to 4,250 tonnes, an increase of 500 tonnes. The benefits that this increase could have for South Australia include directly generating an additional \$5 million annually into the state economy. An additional \$2 million could potentially be generated through flow on effects, mostly in the transport, processing and food services industries, resulting in an annual boost to the state between \$3 million to \$5 million. It is also estimated this increase could create an additional 18 FTE in the aquaculture industry leading to an additional 17 to 30 flow on jobs in other occupations, resulting in a total increase of 46 to 59 FTE within the state (EconSearch, 2008).

7.3.2 The implication if no action is taken

Industry has indicated a desire to move sites to deeper water because water depths in the Western sector are not considered optimal. PIRSA Aquaculture support this approach as sites in deeper water have generally shown to have greater dispersal of nutrients due to higher water flow rates.

The previous policy required a 100 metre separation between sites to facilitate recreational boating movements. This requirement has been removed to allow sites to cluster for operational efficiencies; however the issue of boating movement will be considered by PIRSA Aquaculture during site application processes.

7.3.3 Social Factors

Beyond the employment and economic opportunities discussed in 7.3.1, minimal impact on the local community as a result of the zone amendment is envisaged.

7.3.4 Environmental Factors

The amendment of this policy to allow for the movement of aquaculture activity into deeper waters has the potential for greater dispersal of particulate material and dilution of dissolved nutrients into receiving water bodies than would occur if the activity remains in the shallower waters.

7.3.5 Conclusion

The implementation of this policy amendment will enable the existing aquaculture operators to consolidate and cluster their sites to increase operational efficiencies and, where practical, move the leases into deeper water. The inclusion of algae as a permitted class of aquaculture has the potential to accommodate a greater level of production in the zone due to the capacity of the algae to remove nutrients added into the water column from the farming activity involving the supplementary feeding of aquatic animals.

8 REFERENCES

- Atlas South Australia, 2005. Mapviewer tool. Government of South Australia, Adelaide [online]. [Accessed 14th November 2007]. Available from World Wide Web:
<<http://www.atlas.sa.gov.au/go/mapviewer?envelope=397936%2C1243467%2C1602318%2C2664775&appDataTopic=Coastal%20Management>>
- Australian Government, Department of the Environment and Water Resources, 2007 Interactive Map for Environmental Report Tool [online]. [Accessed 22nd October 2007]. Available from World Wide Web:
<<http://www.environment.gov.au/erin/ert/epbc/imap/map.html>>
- Beveridge, M. C. M. (1987) Cage Aquaculture. 352pp. Fishing News Books Ltd, Farnham.
- Bryars, S. (2003) An Inventory of Important Coastal Fisheries Habitats in South Australia. Fish Habitat Program, Primary Industries and Resources South Australia.
- Buschmann AH, Varela DA, Hernández-González MC, Henríquez L, Correa J, Flores R and Gutierrez A. 2007. The development of an integrated multi-trophic activity in Chile: the importance of seaweeds. World Aquaculture Society. Aquaculture 2007 conference proceedings, pg. 136.
(<https://www.was.org/Meetings/AbstractData.asp?AbstractId=14199>)
- Carrick, N.A. (2003) Spencer Gulf Prawn (*Melicertus latisulcatus*) Fishery. Fishery Assessment report to PIRSA. SARDI Aquatic Sciences RD03/0079-2.
- Chopin T, Buschmann AH, Halling C, Troell M, Kautsky N, Neori A, Kraemer GP, Zertuche-Gonzalez JA, Yarish C and Neefus C. 2001. Integrating seaweeds into marine aquaculture systems: a key toward sustainability. *Journal of Phycology* 37: 975-986.
- EconSearch. (2007). The Economic Impact of Aquaculture on the South Australian State and Regional Economies, 2005/06. A report prepared for PIRSA Aquaculture.
- EconSearch (2008). The Estimated Economic Impact of Establishment of a New Yellowtail Kingfish Aquaculture Zone in South Australia, 2007/08. A report prepared for PIRSA Aquaculture.
- Edyvane, K. (1999) Conserving marine biodiversity in South Australia – Part 2 – Identification of areas of high conservation value in South Australia. Primary Industries and Resources South Australia.
- Fernandes, M. and Tanner, J. (2007) Modelling of nitrogen and phosphorus loads from yellowtail kingfish (*Seriola lalandi*) aquaculture. In Innovative Solutions for Aquaculture: Spatial Impacts and Carrying Capacity – Further Developing, Refining and Validating Existing Models of Environmental Effects of Finfish Farming. South Australian Research and Development Institute (Aquatic Sciences), Adelaide, 126pp. SARDI Aquatic Sciences Publication Number F2007/000537.

- ,, 2006. Blueprint for the South Australian Representative System of Marine Protected Areas Department for Environment and Heritage, Adelaide. [online]. [Accessed 14th November 2007] Available from World Wide Web: <http://www.environment.sa.gov.au/coasts/pdfs/mpa_blueprint.pdf>
- Government of South Australia, 2006a. Draft Spencer Gulf Marine Plan, Coast and Marine Conservation Branch, Natural and Cultural Heritage, Department for Environment and Heritage, Adelaide. [online]. [Accessed 2nd May 2007] Available from World Wide Web: <http://www.environment.gov.au/coasts/pdfs/sg_maine_plan_draft.pdf>
- Government of South Australia, 2006b. Marine Planning Framework for South Australia, Coast and Marine Conservation Branch, Natural and Cultural Heritage, Department for Environment and Heritage, Adelaide. [online]. [Accessed 2nd May 2007] Available from World Wide Web: <http://www.environment.gov.au/coasts/pdfs/sg_maine_plan_draft.pdf>
- Mount, G., Fernandes, M. and Cheshire, A. (2007) Evaluation of waste management strategies for the Southern Bluefin Tuna industry. In Aquafin CRC - Southern Bluefin Tuna Aquaculture Subprogram: Tuna Environment Subproject – Evaluation of Waste Composition and Waste Mitigation. Technical report, Aquafin CRC Project 4.3.2, FRDC Project 2001/103. SARDI Publication No. RD03/0037-9. SARDI Research Report Series No. 207, Aquafin CRC, FRDC and SARDI Aquatic Sciences, Adelaide, pp. 257–280.
- National Native Title Tribunal, Commonwealth of Australia 2006a. Claimant Application Summary [online]. [Accessed 4th May 2007]. Available from World Wide Web: <http://www.nntt.gov.au/applications/claimant/SC96_4.html>
- National Native Title Tribunal, Commonwealth of Australia 2006b. Indigenous Land Use Agreements [online]. [Accessed 4th May 2007]. Available from World Wide Web: <<http://www.nntt.gov.au/ilua/>>
- O'Bryen, P. J. and Lee, C. S. (2003) Management of aquaculture effluents workshop discussion summary. *Aquaculture* 226(1):227-242.
- Parsons Brinckerhoff & SARDI. (2003) Technical Review for Aquaculture Management Plans – Phase 2 Volume A Upper Spencer Gulf, 105 pp. Adelaide, Australia.
- Petrusevics, P., Noye, J., Harbison, P. and Petrusevics, A. (1998), Key Sites for off-shore Aquaculture development in South Australia. Prepared for PIRSA (Aquaculture Group) March 1998.
- Primary Industries and Resources South Australia, 2004. Fitzgerald Bay Aquaculture Management Policy.
- Primary Industries and Resources South Australia, Fisheries Division, 2007. Artificial Reefs [online]. [Accessed 16 November 2007]. Available from World Wide Web: <http://www.pir.sa.gov.au/fisheries/recreational_fishing/artificial_reefs>
- Tanner, J.E., Clark, T.D., Fernandes, M. and Fitzgibbon, Q. (2007) Innovative Solutions for Aquaculture: Spatial Impacts and Carrying Capacity – Further Developing, Refining and Validating Existing Models of Environmental Effects of Finfish Farming. South Australian Research and Development Institute

(Aquatic Sciences), Adelaide, 126pp. SARDI Aquatic Sciences Publication Number F2007/000537.

Whyalla, South Australia 2007. Northern Coastline [online]. [Accessed 7th January 2007]. Available from World Wide Web:
<<http://www.whyalla.com/site/page.cfm?u=34>>

Relevant Legislation

Acts

Aboriginal Heritage Act 1988

Aquaculture Act 2001

Coast Protection Act 1972

Commonwealth Environment Protection and Biodiversity Conservation Act 1999

Commonwealth Historic Shipwrecks Act 1976

Livestock Act 1997

Development Act 1993

Environment Protection Act 1993

Fisheries Management Act 2007

Harbors and Navigation Act 1993

Heritage Act 1993

Historic Shipwrecks Act 1981

Marine Parks Act 2007

National Parks and Wildlife Act 1972

Native Title Act 1993 (Cwth)

Native Vegetation Act 1991

Natural Resources Management Act 2004

Regulations

Aquaculture Regulations 2005

Harbors and Navigation Regulations 1994

Development Regulations 2008



9 APPENDIX A – GLOSSARY OF TERMS

<i>Adaptive Management</i>	Management involving active response to new information of the deliberate manipulation of fishing intensity or other aspects in order to learn something of their effects. Within a stock, several sub-stocks can be regarded as experimental units in which alternative strategies are applied.
<i>Aquatic Reserve</i>	An area of water, or land and water, established as an aquatic reserve by proclamation under the <i>Fisheries Management Act 2007</i> .
<i>Assimilative capacity</i>	The capacity of a natural body of water to receive wastewaters without deleterious effects to aquatic life.
<i>Benthic</i>	Of or relating to or happening on the bottom under a body of water.
<i>Biodiversity</i>	The variability among living organisms from all sources (including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part) and includes: (a) diversity within species; and (b) diversity of ecosystems.
<i>Biomass</i>	The total live weight of a group (or stock) of living organisms (e.g. fish, plankton) or of some defined fraction of it (e.g. spawners), in an area, at a particular time. Any quantitative estimate of the total mass of organisms comprising all or part of a population or any other specified unit, or within a given area at a given time; measured as volume, mass (live, dead, dry or ash-free weight) or energy (joules, calories).
<i>Carrying capacity</i>	The maximum population (a group of individuals of the same species, forming a breeding unit and sharing a habitat) of a given organism that a particular environment can sustain.
<i>Ecologically sustainable development (ESD)</i>	Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.
<i>Ecosystem</i>	A dynamic complex of plant, animal, fungal, and microorganism communities and the associated non-living environment interacting as an ecological unit.
<i>Habitat</i>	The place or type of site in which an organism naturally occurs.
<i>Marine protected area (MPA)</i>	An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity and of natural resources, and managed through legal or other effective means.
<i>Mean High Water Springs</i>	The line representing the average of all high water observations at the time of spring tide over a period of 19 years.
<i>Spatial</i>	Of or relating to space.
<i>Stakeholder</i>	An individual or a group with an interest in the conservation, management and use of a resource.
<i>Stock</i>	A group of individuals of a species occupying a well defined spatial range independent of other groups of the same species, which can be regarded as an entity for management or assessment purposes.



10 APPENDIX B – LIST OF ACRONYMS

AAC	Aquaculture Advisory Council
CRC	Co-operative Research Centre
CWM	Catchment Water Management
DEH	South Australian Department for Environment and Heritage
DTEI	Department for Transport, Energy and Infrastructure
DWLBC	Department of Water, Land and Biodiversity Conservation
EPA	Environment Protection Authority
EPBC Act	The Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERDC	Environment, Resources and Development Committee
ER	Ecologically Rated
ESD	Ecological Sustainable Development
FTE	Full Time Equivalent
ILUA	Indigenous Land Use Agreement
LNWCA	Land Not Within A Council Area
MHWS	Mean High Water Springs
MM-MPA AWG	Marine Mammal-Marine Protected Areas Aquaculture Working Group
NGO	Non-Government Organisation
NPW Act	<i>National Parks and Wildlife Act 1972</i>
NRM	Natural Resource Management
PIRSA	Department of Primary Industries and Resources, South Australia
SARDI	South Australian Research and Development Institute
The Minister	Minister for Agriculture, Food and Fisheries



11 APPENDIX C – MAPS AND COORDINATES

A written description of the Fitzgerald Bay aquaculture zone, the Fitzgerald Bay (north) aquaculture zone and the Fitzgerald Bay aquaculture exclusion zone is provided in the Aquaculture (Zones – Fitzgerald Bay) Policy 2008.

Figure 1 Map of the Fitzgerald Bay aquaculture zone, Fitzgerald Bay (north) aquaculture zone and the Fitzgerald Bay aquaculture exclusion zone

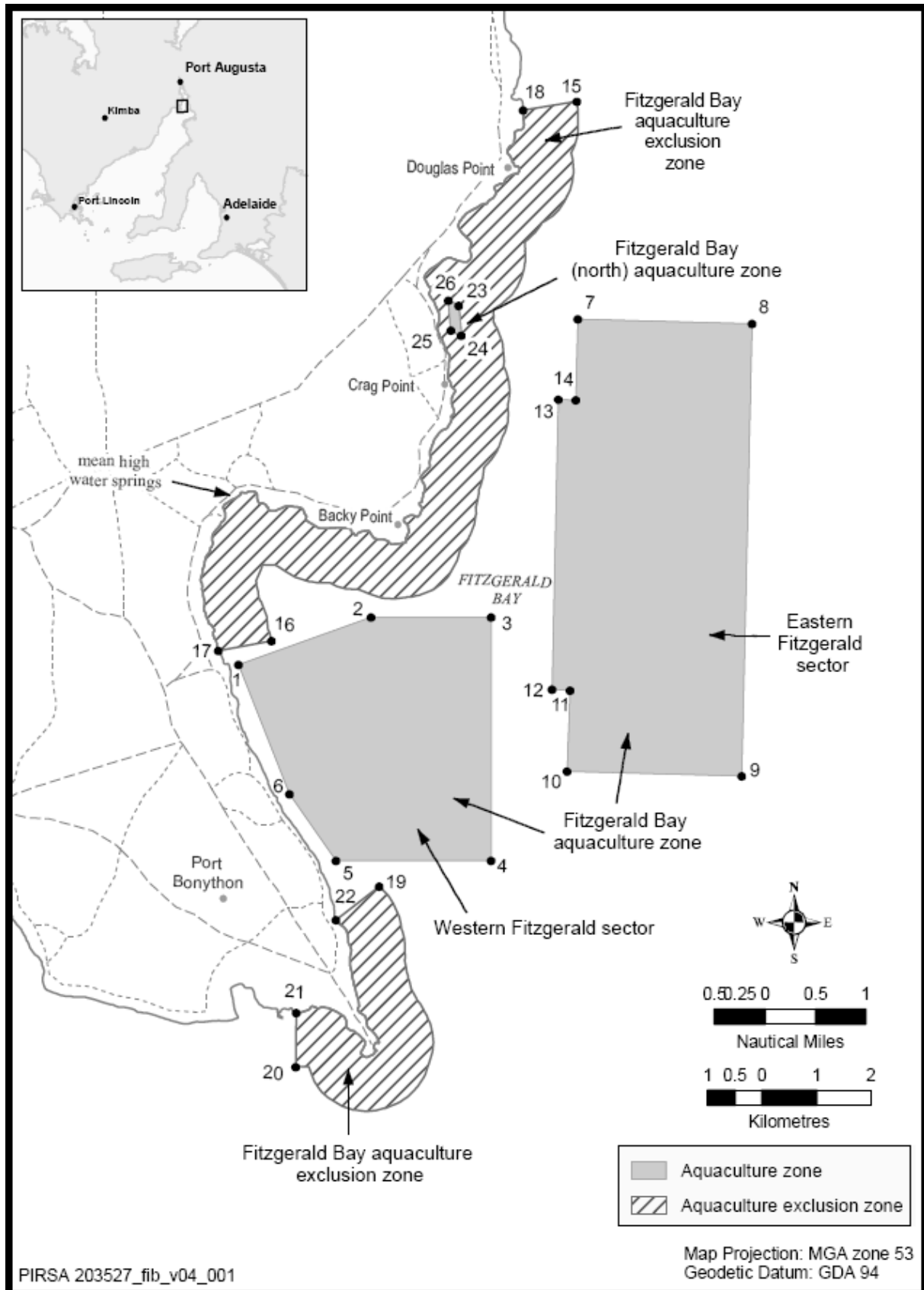


Figure 2 Map of the 2004 Fitzgerald Bay Aquaculture Management Policy (revoked on gazettal of the Aquaculture (Zones—Fitzgerald Bay) Policy 2008)

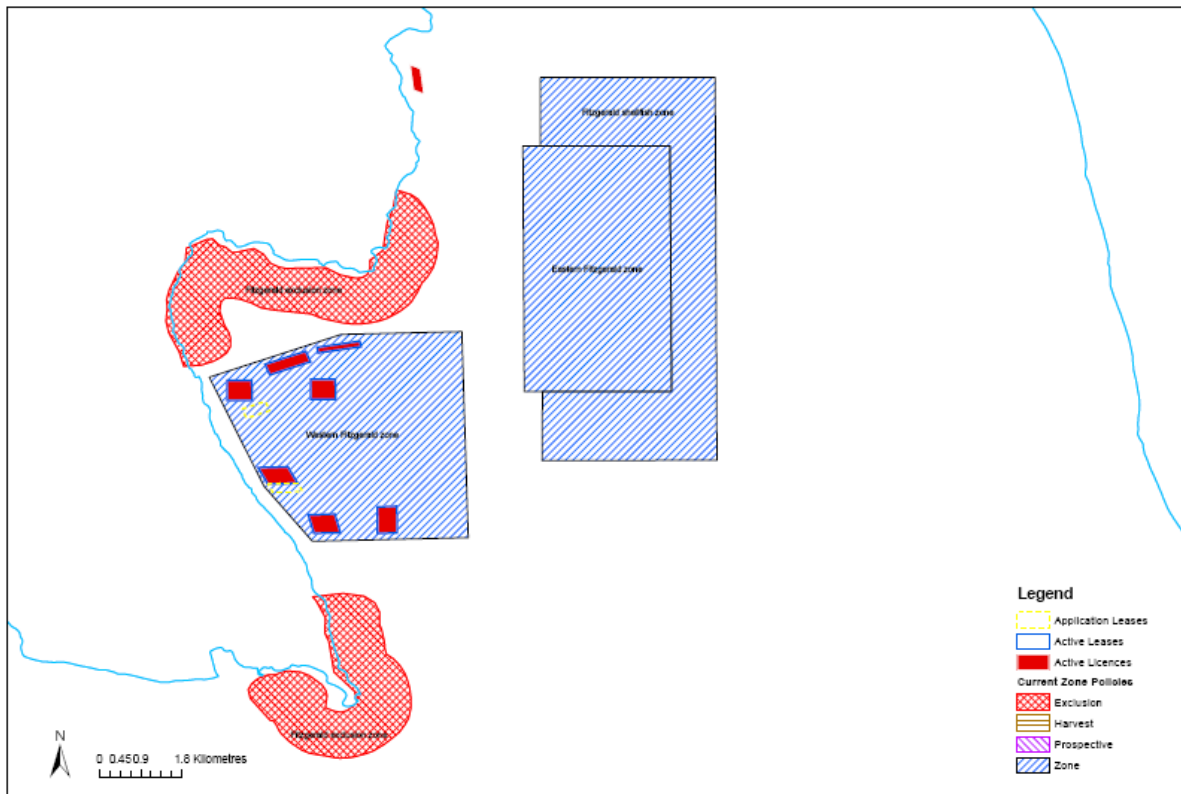


Figure 3 Map of water depth contours of waters off Fitzgerald Bay with aquaculture zones

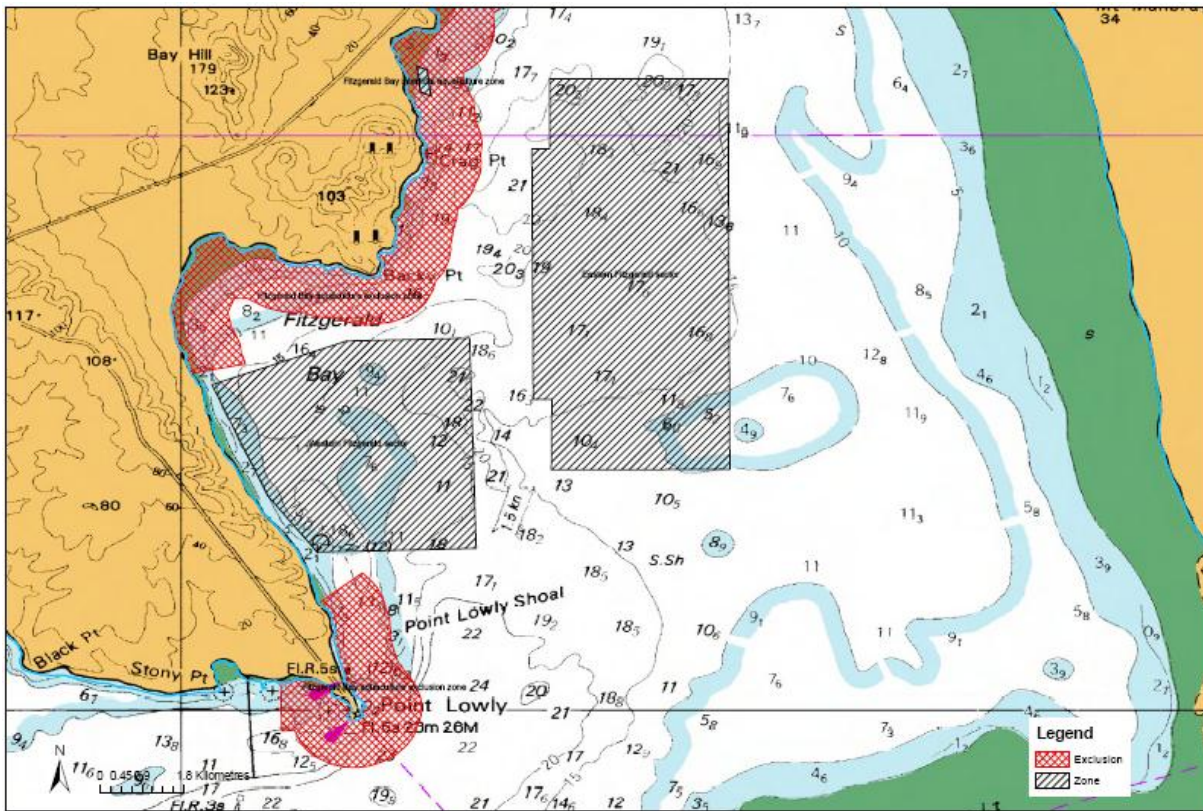


Figure 4 Spatial distribution of benthic assemblages at Fitzgerald Bay (Parsons Brinckerhoff & SARDI, 2003)

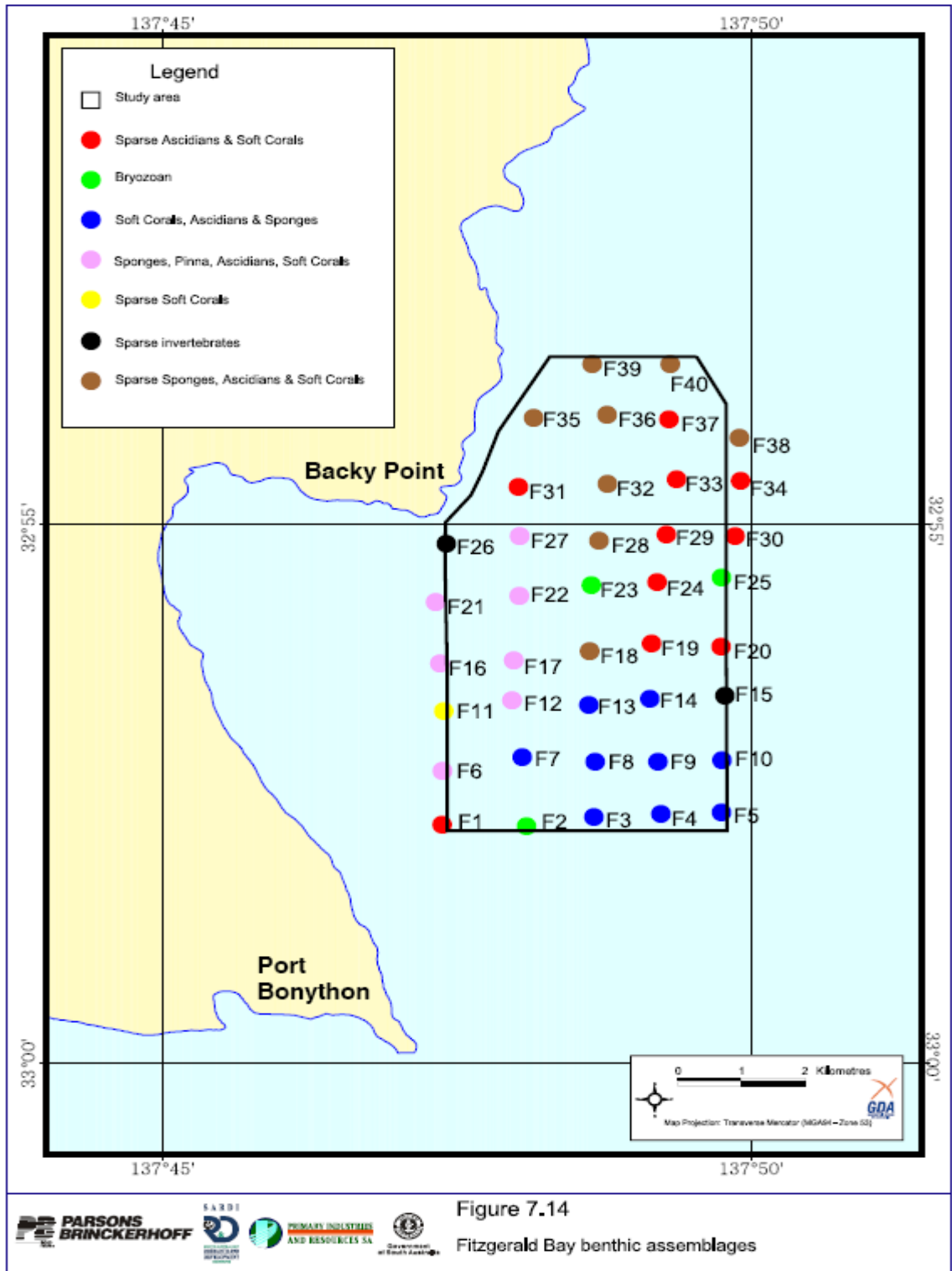


Figure 5 Map of the Fitzgerald Bay study site with aquaculture zones

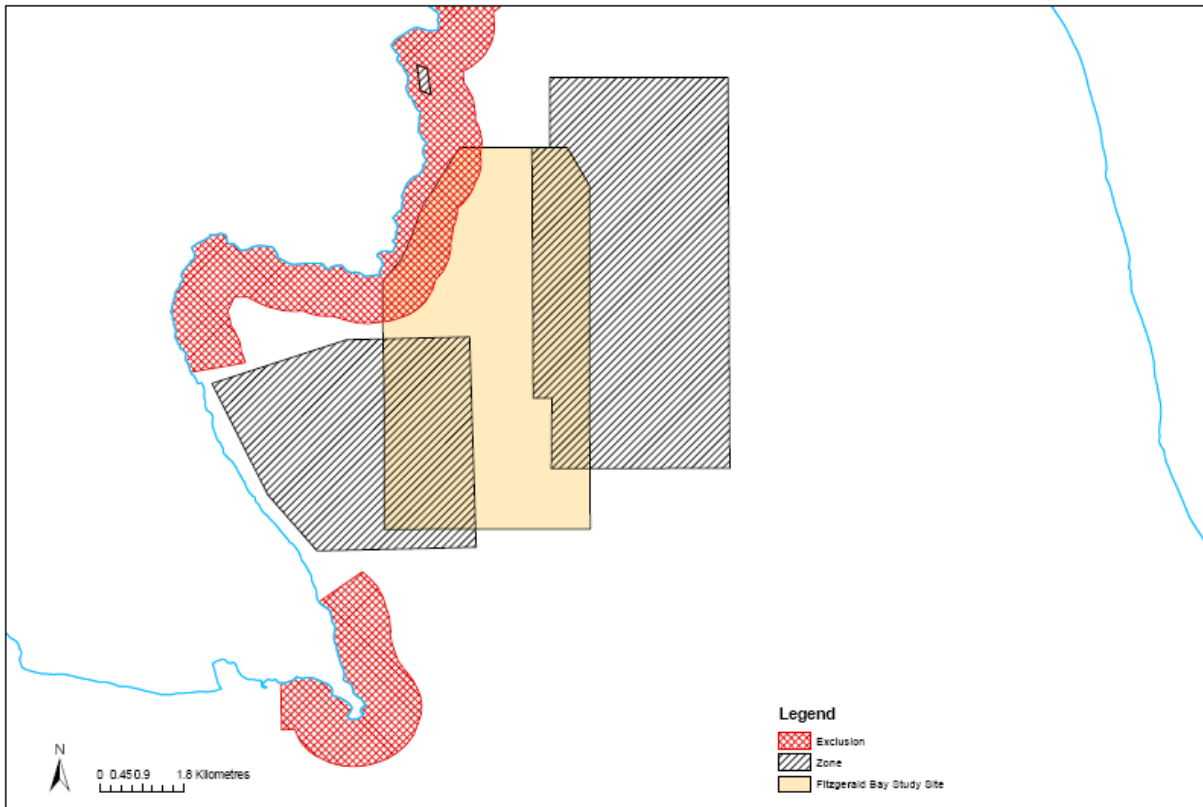


Figure 6 Map of the aquaculture zones and benthic habitat mapping (Edyvane, 1999)

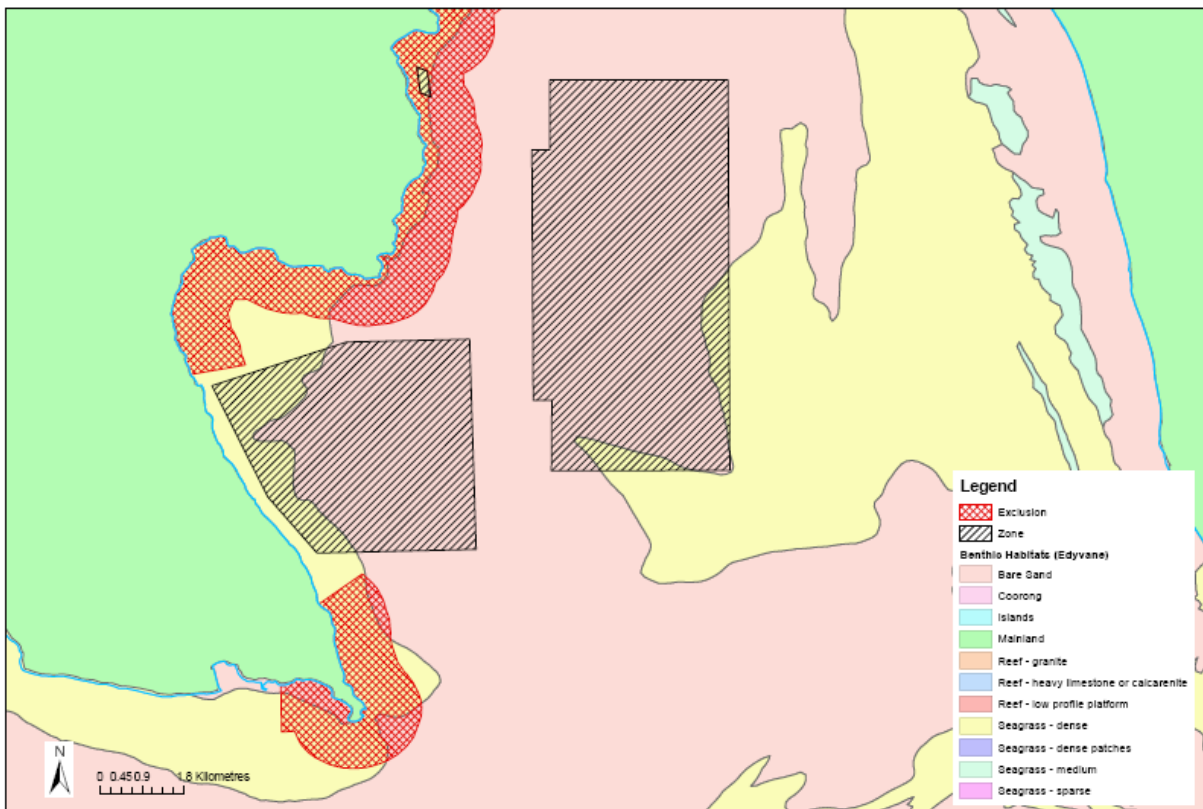
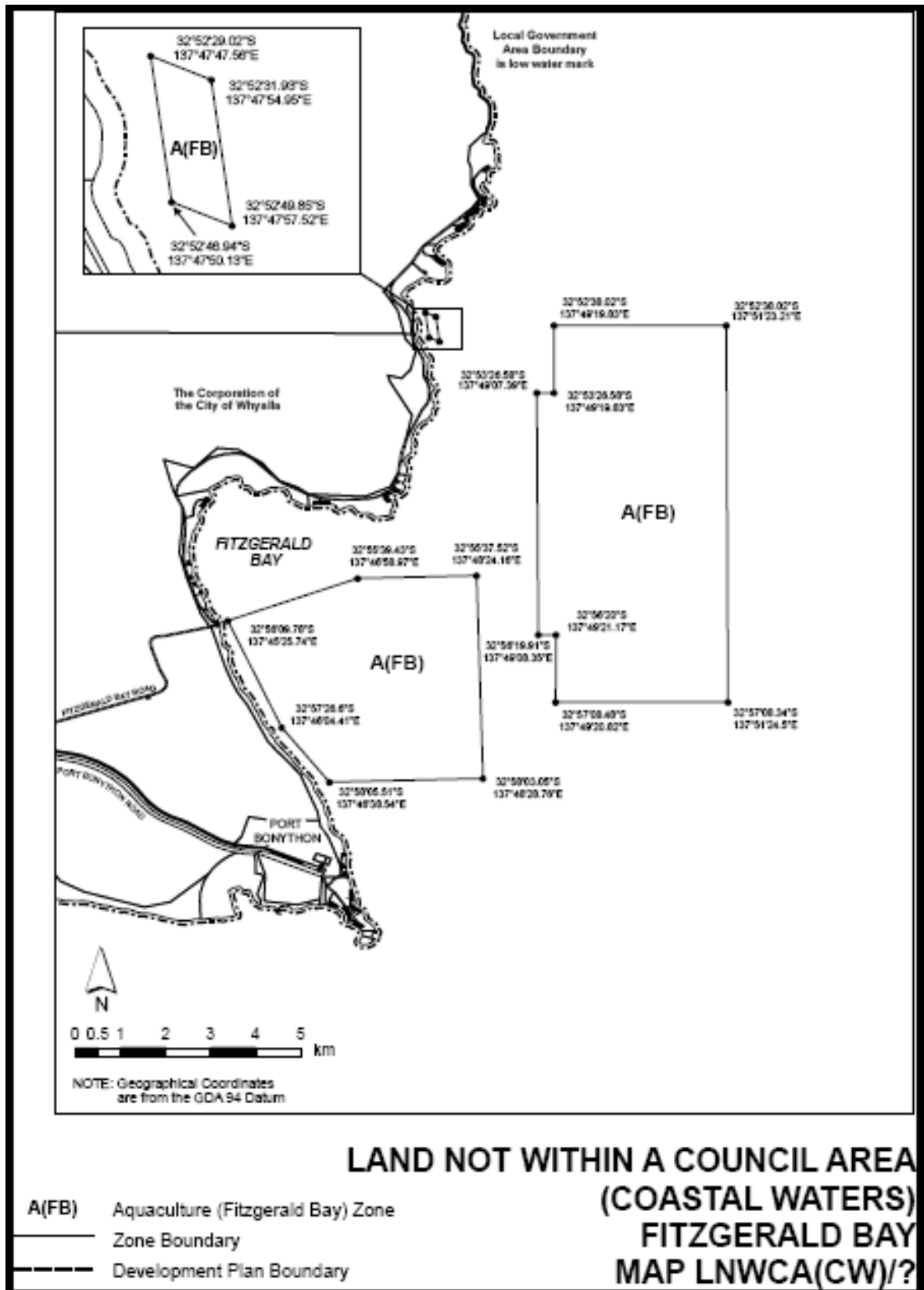


Figure 7 New zoning map to delineate the extent of the Aquaculture (Fitzgerald Bay) Zone under the Land Not Within A Council Area (Coastal Waters) development plan.





12 APPENDIX D - RELEVANT POLICIES AND LEGISLATION

Development Act 1993 and Development Regulations 2008

As detailed in part 5 of the Policy it is intended to amend the Land Not Within A Council Area (Coastal Waters) development plan once the Policy has been approved and gazetted by the Minister for Agriculture, Food and Fisheries.

The amendment to the *Development Regulations 2008* also enables any form of aquaculture development identified in an aquaculture zone policy under the *Aquaculture Act 2001* to be assigned to Category 1 development, subject to the approval of the Minister for Urban Development and Planning. This means that the class of aquaculture development specified in the Policy would be classified as a *complying* development and exempt from the public notification and consultation under the provisions of the *Development Act 1993*. However, consultation on licence applications must still occur under the *Aquaculture Act 2001*.

The amendment removed duplication of processes for aquaculture development whereby aquaculture development in an aquaculture zone would have undergone a public consultation process under the *Development Act 1993* in addition to a public consultation process under the *Aquaculture Act 2001* for policies and licences.

Relevant provisions of the Land Not Within A Council Area (Coastal Waters) development plan apply to aquaculture development. The Development Plan states that aquaculture development should be undertaken in an 'ecologically sustainable way', in 'a manner which recognises the social and economic benefits to the community' and so as 'to conserve environmental quality, in particular water quality, and other aspects of the coastal environment including sea floor health, visual qualities, wilderness, ecosystems, and biodiversity'. Additionally, aquaculture should be undertaken 'in a manner which recognizes other users of marine and coastal areas and ensures a fair and equitable sharing of marine and coastal resources' and minimizes 'conflict between water and land based users', 'adverse impact on the visual amenity of the coastal environment and unspoilt views adjacent to the coast' and 'adverse impacts on sites of ecological, economic, cultural, heritage or scientific significance.' The Policy is consistent with these provisions in that it seeks to ensure the ecologically sustainable development of the aquaculture industry and recognises and respects other users of the marine resource.

South Australia's Strategic Plan

The Policy seeks to further the objectives of the State Government goals and strategies contained in the South Australia's Strategic Plan and is consistent with the objectives of that Strategy.

South Australia's Strategic Plan is organised around 6 objectives and aims to reach 98 measurable targets by 2014.

Aquaculture Policies under the *Aquaculture Act 2001* provide the necessary policy framework to facilitate aquaculture development in South Australia. The new and developing aquaculture industry is greatly assisting economic development and will help meet the following Strategic Plan targets:-

T1.1 Economic Growth, T1.5 Business Investment, T1.10 Jobs and T1.14 Total Exports.

South Australia's strategic plan 2007 provides a process of 'regionalising' that will mean developing coordinated regional approaches to pursuing those South Australia's Strategic Plan targets that reflect priorities specific to each region. The aquaculture industry is expected to be a focal industry in the 'regionalising' process.

Aboriginal Heritage Act 1988

The *Doing it Right* policy on Aboriginal affairs commits the Government to "partnership and transparency", to ensuring that "decision making and priority setting is inclusive of Aboriginal views and opinion".

Aboriginal communities have long and close ties with the coast and the sea in South Australia. The coast is important to Aboriginal people as a source of camping sites, food and water. The coast and sea are often linked to dreaming stories and can be rich in heritage sites and objects as well as ancestral remains. The *Aboriginal Heritage Act 1988* provides for the protection and preservation of Aboriginal sites, objects and remains, whether registered or not, without an authorisation from the Minister for Aboriginal Affairs and Reconciliation pursuant to section 23. Section 20 of the Act requires that any Aboriginal sites, objects or remains discovered on land, be reported to the Minister for Aboriginal Affairs and Reconciliation. Penalties apply for failure to comply with the Act. Some native title claims and Indigenous Land Use Agreements include areas of the sea as well as the land, and aquaculture operators should take care to respect Aboriginal rights in such waters.

The *Aboriginal Heritage Act 1988* establishes the Aboriginal Heritage Committee to advise the Minister for Aboriginal Affairs and Reconciliation and to represent the interests of Aboriginal people through the State in the protection and preservation of Aboriginal heritage.

Native Title Act 1993

On 1 January 1994 the Commonwealth *Native Title Act 1993* commenced operation. The Act was part of the Australian Government's response to the High Court's decision in *Mabo v Queensland No. 2*, which found that Australian common law can recognise the rights and interests over land and water possessed by Indigenous people in Australia under their traditional laws and customs – 'native title'. The Act adopts this common law definition of 'native title'.

In its current amended form, the Native Title Act (1993)

- Recognises native title rights and sets down some basic principles in relation to native title in Australia, including that native title can not be extinguished other than through the Act;
- Validates "past acts" over land, such as the grant of pastoral or mineral interests, which may be invalid because of the existence of native title;
- Provides for a "future act" regime in which native title rights are protected and conditions are imposed on activities affecting native title;
- Extinguishes native title completely over areas covered by valid acts of exclusive possession, like granting freehold title;
- Extinguishes native title to the extent that it is "inconsistent" with valid acts of nonexclusive possession, like some types of pastoral leases;
- Provides a process by which native title rights can be established and compensation determined, and by which determinations can be made as to

whether future grants can be made or acts done over native title land and waters;

- Enables Indigenous Land Use Agreements to be made between native title parties and other interest holders; and
- Provides for a range of other matters, including the establishment of a National Aboriginal and Torres Strait Islander Land Fund.

Planning Strategy for Regional South Australia

The Planning Strategy for Regional South Australia, January 2003, contains a number of strategies relevant to the development of the Policy. In particular, the Policy is consistent with strategies relating to diversifying primary production into new areas to replace or complement existing activities and the integrated and sustainable management of natural resources in a manner that maintains ecological processes.

Australia's Oceans Policy

Australia's Oceans Policy sets in place a framework for integrated and ecosystem-based planning and management for Australia's marine jurisdictions. It promotes ecologically sustainable development of the ocean resources and encourages internationally competitive marine industries, whilst ensuring the protection of marine biological diversity. The key tool is Regional Marine Planning i.e., planning based on large areas that are ecologically similar, and seeks to integrate the use, management and conservation of marine resources at the ecosystem level.

Marine Plans establish an overarching strategic planning framework to guide State and local government planners and natural resource managers in the development and use of the marine environment. Fundamental to these Marine Plans is an ecologically based zoning model. Each of these zones is supported by goals and objectives.

Marine Parks Act 2007

The *Marine Parks Bill 2007* was assented to on 29 November 2007 and commenced in part on 22 May 2008.

The Marine Parks Act provides a legislative framework for the dedication, zoning and management of South Australia's marine parks. The *Marine Parks Act 2007* recognises that Aquaculture is an important and growing industry in this State and provides significant benefits to South Australia. The needs of this lucrative industry have also been catered for with commitments to accommodate, as far as possible, existing aquaculture operations. This has resulted in an accord with the Minister for Agriculture, Food and Fisheries on the relationship and likely interactions between proposed marine parks and aquaculture developments in South Australian waters. This will enable DEH and PIRSA to work together to address key priorities from South Australia's Strategic Plan, specifically to treble exports by 2014 (T1.12) and to create 19 marine parks by 2010 (T3.4), such that each is given optimal effect without detriment to the other.

The accord identifies the general areas of the State's waters where:

- there will be little or no interaction between future marine parks and aquaculture development;
- there may be some interaction but where mutually acceptable outcomes can be reached through pragmatic planning processes; and

- further discussion will be required to resolve potential conflicts.

South Australia's marine parks will be zoned for multiple-use to protect coastal, estuarine and marine ecosystems, while also providing for continued ecologically sustainable use of suitable areas. This means that most activities, including aquaculture operations, will still be allowed within a marine park. However, some activities will not be permitted in particular zones. Areas with high conservation values will be designated as either Restricted Access Zones or Sanctuary Zones to provide the necessary level of protection for habitats, species, ecological and geological features. Both of these zones preclude commercial fishing, recreational fishing and aquaculture operations.

Aquaculture policies will be prepared having regard to Marine Park objectives and boundaries.

Natural Resource Management Act 2004

The Policy has been prepared having regard to the *Natural Resource Management Act 2004* (NRM). The intent of this Act is to establish an integrated system of natural resource management that will assist in achieving sustainable natural resource management in South Australia. Both the *Aquaculture Act 2001* (and policies prepared under it) and the NRM legislation are underpinned by ecologically sustainable development principles and are intended to complement each other. Natural Resource Management Regional Plans are required to recognise best practice by an industry sector. The *Aquaculture Act 2001* and management policies established under it provide a good basis for managing the industry against best practice.

The Fitzgerald Bay aquaculture zone lies within the Eyre Peninsula Natural Resources Management (NRM) Board. The Policy must take into consideration issues raised within the Eyre Peninsula Catchment Water Management (CWM) Plan. As the Fitzgerald Bay aquaculture zone relates only to marine aquaculture there are no matters of water allocation, groundwater or surface water, specific to the aquaculture zone. The policy is consistent with the Eyre Peninsula NRM/CWM Plan.

Environment Protection Act 1993

The Policy was developed to be consistent with the *Environment Protection Act 1993* and the Environment Protection (Water Quality) Policy 2003 (the "Water Quality Policy").

The Water Quality Policy established under the *Environment Protection Act 1993* came into operation on 1 October 2003. The principal object of the policy is to achieve the sustainable management of waters by protecting or enhancing water quality while allowing economic and social development. In particular, the Water Quality Policy requires all reasonable and practicable measures to be taken to avoid the discharge or deposit of waste into any waters or onto a place from which it is reasonably likely that waste will enter any waters. The Water Quality Policy prescribes water quality criteria that must not be contravened and prohibits the discharge or deposition of pollutants into any waters that results in:

- Loss of seagrass or other native aquatic vegetation; or
- Reduction in numbers of any native species of aquatic animal or insect; or
- Increase in numbers of any non-native species of aquatic animals or insect; or

- Reduction in numbers of aquatic organisms necessary to a healthy aquatic ecosystem; or
- Increase in algal or aquatic plant growth; or
- Water becoming toxic to vegetation on land; or
- Water becoming harmful or offensive to humans, livestock or native animals; or
- Increased turbidity or sediment levels.

The Objects of the *Environment Protection Act 1993* include the promotion of the principles of ecologically sustainable development, and in particular, to prevent, reduce, minimise and, where practicable, eliminate harm to the environment. Section 25 of the *Environment Protection Act 1993* imposes a *general environmental duty not [to] undertake an activity that pollutes, or might pollute, the environment unless...all reasonable and practicable measures to prevent or minimise any resulting environmental harm [are taken]*. This duty is enforceable through environment protection orders. The *Environment Protection Act 1993* also provides that communities must be able to provide for their economic, social and physical well being.

The *Environment Protection Act 1993* defines general offences relating to environmental harm and environmental nuisance. Environmental harm is *material environmental harm if...it consists of an environmental nuisance of a high impact or on a wide scale, it involves actual or potential environmental harm (not being merely an environmental nuisance) that is not trivial or it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$5,000*. Serious environmental harm is defined as *environmental harm which involves actual or potential harm to the health or safety of human beings that is of a high impact or on a wide scale of other actual or potential environmental harm (not being merely an environmental nuisance) that is of a high impact or on a wide scale, results in actual or potential loss or property damage of an amount or amounts in aggregate, exceeding \$50,000*.

This Policy is consistent with the provisions of the Water Quality Policy and *Environment Protection Act 1993* in that it seeks to minimise or prevent harm to the environment associated with aquaculture.

South Australia's Food Plan

South Australia's Food Plan was developed with the objective of increasing the food industry's contribution to the South Australian economy to \$15 billion by 2010. The Food Plan identifies eight strategies to accelerate the food industry's growth. The Policy is aligned with strategies relating to market driven food exports, sustainable production and a committed government. Aquaculture Policies support the growth of the food industry – specifically the seafood industry – by allocating and managing marine tenure in which the industry can grow sustainably. In addition, the Policy is consistent with the objectives of the South Australia Seafood Plan in that it seeks to consolidate existing industry and allow appropriate expansion in aquaculture production.

Directions for Regional South Australia

The South Australian Government's regional development policy *Directions for Regional South Australia* identifies a number of objectives for regional development.

The Policy is aligned with objectives relating to planning and infrastructure building, responsive government and economic generation.

Harbors and Navigation Act 1993

The *Harbors and Navigation Act 1993* vests the seabed in the fee simple with the Minister responsible for administration of that Act. That is, section 15 (1) of the *Harbors and Navigation Act 1993* vests all adjacent and subjacent land in the Minister for Transport. Adjacent land is land extending from the low water mark on the seashore or the edge of any navigable waterway or body of water to the nearest road or section boundary, or to a distance of fifty metres from high water mark (whichever is the lesser distance). Subjacent land is land underlying navigable waters within the jurisdiction. Under the *Aquaculture Act 2001*, plans such as aquaculture policies can be prescribed in State waters. State waters being those waters adjacent to the State and territorial sea, and other navigable waters declared as such by regulation. Section 15 (4) of the *Harbors and Navigation Act 1993* provides that the *Crown Lands Act 1929* does not apply to land vested in the Minister under Act but the Crown may, with the concurrence of the Minister, exercise any other power that it has to grant a lease or licence over its land in relation to land vested in the Minister under this Act.

Part 6 of the *Aquaculture Act 2001* provides for the grant of aquaculture leases in “State waters; or State waters and adjacent land within the meaning of the *Harbors and Navigation Act 1993*”. Section 20 of the *Aquaculture Act 2001* provides that the grant of aquaculture leases is subject to the concurrence of the Minister responsible for administration of the *Harbors and Navigation Act*. The Policy is consistent with these provisions as they relate to the jurisdiction of the *Aquaculture Act 2001* and the requirement for concurrence.

Coast Protection Act 1972

The *Coast Protection Act 1972* establishes the Coast Protection Board. The Coast Protection Board has a number of functions including...*to protect the coast from erosion, damage, deterioration, pollution and misuse*. The Policy is consistent with the provisions of the *Coast Protection Act 1972* in that it seeks to protect the coast by minimising any risk of erosion, damage, deterioration, pollution and misuse of the resource, through appropriate siting of aquaculture zones and aquaculture exclusion zones, the specification of appropriate types and levels of aquaculture development.

Native Vegetation Act 1991

The Native Vegetation Act 1991 sets out objectives relating to native vegetation in South Australia. Objectives relevant to this Policy include the conservation of the native vegetation of the State in order to prevent further reduction of biological diversity and further degradation of the land and its soil and the limitation of the clearance of native vegetation to clearance in particular circumstances including circumstances in which the clearance will facilitate the management of other native vegetation or will facilitate the efficient use of land for primary production. This Policy is consistent with these objectives in that it seeks to minimise impacts on native vegetation through appropriate siting of aquaculture zones and aquaculture exclusion zones around sensitive habitats.