



Government of South Australia
Primary Industries and Resources SA



Photo courtesy of Coffin Bay Oyster farm

REPORT
SUPPORTING THE
AQUACULTURE (ZONES—COFFIN BAY) POLICY 2008

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1. INTRODUCTION

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

The Policy establishes the following zones—

- Coffin Bay aquaculture exclusion zone;
- Frenchman Bluff aquaculture zone;
- Kellidie Bay aquaculture zone;
- Mount Dutton Bay aquaculture zone;
- Point Longnose aquaculture zone;
- Port Douglas (central) aquaculture zone;
- Port Douglas (east) aquaculture zone; and
- Port Douglas (west) aquaculture zone.

In accordance with the *Aquaculture Act 2001* (“the Act”), the Minister for Agriculture, Food and Fisheries (“the Minister”) must prepare a report in relation to a draft policy containing—

- (a) an explanation of the purpose and effect of the draft policy;
- (b) a summary of any background and issues relevant to the draft policy and of the analysis and reasoning applied in formulating the policy; and
- (c) 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.

Aquaculture in the Coffin Bay region was previously managed under the Lower Eyre Peninsula Aquaculture Management Plan (1997) prepared under the *Fisheries Act 1982*. This management plan was invalidated with the introduction of the *Aquaculture Act 2001*. The Act enables the Minister to make aquaculture policies and no longer uses management plans provisions.

There now exists an extensive aquaculture industry in the Coffin Bay area and as such, there is increased need for an aquaculture zone policy to better facilitate management of the aquatic resources in this area for aquaculture.

The Report has been prepared to complement the Policy. Its intention is to inform and involve all stakeholders in the decision making process for the allocation of marine resources to aquaculture. The proposed zones will promote the orderly and efficient development of the aquaculture industry. The Policy recognises the industry as a legitimate user of the State’s marine resources, providing guidance and clarity regarding the aquaculture industry’s access to these resources.

Table 1 — Summary of zoning framework established under the Aquaculture (Zones—Coffin Bay) Policy 2008

ZONE	LEASED AREA		CLASS	BIOMASS			
	Maximum total lease area allowed in the Policy	Lease area already allocated (as at 04/03/2008)		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
Frenchman Bluff aquaculture zone	90 ha (85 ha for farming of aquatic animals & 5 ha for algae)	25 ha plus 10 ha in application	b & d No finfish	Nil	680 tonnes (abalone)	Nil	Limited by licence condition
Kellidie Bay aquaculture zone	23 ha (3 ha temporary holding)	19.81 ha	c No mussels	Nil	Nil	Limited by licence condition	Nil
Mount Dutton Bay aquaculture zone	32 ha	31.44 ha	c No mussels	Nil	Nil	Limited by licence condition	Nil
Point Longnose aquaculture zone	63 ha	63 ha	c & d No mussels	Nil	Nil	Limited by licence condition	Limited by licence condition

Port Douglas (central) aquaculture zone	50 ha	50 ha	c No mussels	Nil	Nil	Limited by licence condition	Nil
Port Douglas (east) aquaculture zone	4 ha	4 ha	c No mussels	Nil	Nil	Limited by licence condition	Nil
Port Douglas (west) aquaculture zone	10 ha	10 ha	c No mussels	Nil	Nil	Limited by licence condition	Nil
All aquaculture zones	5 ha for research/educational purposes						
Coffin Bay aquaculture exclusion zone	Nil	Nil	Nil	Nil	Nil	Nil	Nil

The Policy and the Report were—

- developed to support the ecologically sustainable development of aquaculture in the Coffin Bay region;
- developed with input from other government agencies, regional stakeholders, local governments and industry;
- 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; and
- 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 Act, following approval of the Policy by the Minister, the Policy will be referred to the Environment, Resources and Development 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.

2. AMENDMENTS TO DRAFT POLICY

The draft Aquaculture (Zones—Coffin Bay) Policy 2007 and the Report were released for public consultation, in accordance with the Act, from 19 April 2007 to 19 June 2007. A public briefing was held on 29 May 2007 at Coffin Bay. Furthermore, PIRSA Aquaculture staff met with industry representatives, the Local Government representatives, Fishwatch officers, Department for Environment and Heritage regional staff and native title claimants, as well as representatives from the Aboriginal Legal Rights Movement Inc.

PIRSA Aquaculture received 37 written submissions, providing comment on the draft Policy and draft Policy Report.

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

2.1. General

The Policy defines the broad framework for aquaculture management within the defined zones, including through the specifying of 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 is 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 will be subject to the provisions of the Act and the *Aquaculture Regulations 2005*, and relevant lease and licence conditions. An assessment of individual site suitability (including an Environmental Sustainability Development 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 on a stakeholder information paper available on the PIRSA Aquaculture web site; see <www.pir.sa.gov.au/aquaculture> or by accessing the PIRSA Aquaculture Public Register; see <www.pir.sa.gov.au/aquaculture/public_register>.

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. 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 Aquaculture (Zones—Coffin Bay) Policy 2008 are—

- (a) the farming of aquatic animals (other than finfish) in a manner that involves regular feeding (eg abalone);
- (b) the farming of bivalve molluscs (other than mussels) (eg oysters, scallops, razorfish); and
- (c) the farming of algae.

The first class involve the supplemental feeding of the farmed aquatic animals, whereas no supplemental feeding is associated with the latter two classes (b and c) — supplementally 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 a biomass limit for the farming of aquatic animals that involves regular feeding (supplementally fed animals).

The Policy allows for the Minister to alter the maximum biomass limits of all classes of aquaculture through notice in the Gazette. This provides a mechanism to enable flexibility in setting biomass limits for zones and enables future research and environmental monitoring results to be taken into consideration as they become available over time.

The impacts of overstocking systems with aquatic organisms that does 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 oysters, 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.

Control of oyster production at an operational level is achieved through limits on farming structures and/or equipment in licence conditions, such as limiting the total length of line or number of baskets. The nature of oyster farming in the Coffin Bay policy area is such that production is near full capacity and

accordingly, PIRSA has adopted a general policy of consolidation for this industry. There will be no additional allocation of lease area for oyster aquaculture in the Coffin Bay policy area.

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, and from a public interest point of view, how much of that will be in close to shore (i.e. intertidal). A total of 272 hectares (or 10% of all 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. These 5 hectares may be divided across all the zones, but cannot be used in the Coffin Bay aquaculture exclusion zone or for commercial use. Aquaculture research is restricted to the classes of aquaculture allowed in each of the zones.

Zone	Size of zone (Hectares)	Leased area available for aquaculture (Hectares)
Coffin Bay aquaculture exclusion zone	15,686	Nil
Frenchman Bluff aquaculture zone	388	90
Kellidie Bay aquaculture zone	732	23
Mount Dutton Bay aquaculture zone	601	32
Point Longnose aquaculture zone	379	63
Port Douglas (central) aquaculture zone	446	50
Port Douglas (east) aquaculture zone	34	4
Port Douglas (west) aquaculture zone	90	10
Total	18,357	272

The Policy adopts the most up-to-date mean high water springs (MHWS) coastline spatial layer as reviewed in 2006 (based on aerial photography undertaken in 2005). This has resulted in some amendments to zone boundaries. The spatial data applies for landward boundaries for the entire State and can be used consistently across all zone policies. In most instances in previous aquaculture zone policies, the District Council boundary (generally, but not always, based on low water mark) was used as the landward boundary. The distance discrepancy between high and low water mark has been taken into account in this Policy, for example, the Coffin Bay aquaculture exclusion zone will generally extend seaward 1.1 kilometres from the MHWS.

The Policy incorporates a written description of the boundary of each zone area. The authoritative sources of maritime boundaries are usually written descriptions (Hirst, 2006) that are unambiguous, geographically correct and legally defensible. Also, as modern navigational aids, such as geographic positioning systems (GPS), allow boundaries to be identified with greater accuracy, it is becoming increasingly important to ensure that boundaries are described with sufficient certainty to facilitate effective management (Hirst, 2006).

2.2. Morgans Landing subtidal aquaculture zone.

In the draft policy that was circulated for public consultation it was proposed to establish the Morgans Landing subtidal aquaculture zone with a total area of 1,671 hectares, which was to be available for the farming of mollusc aquaculture (other than bivalve molluscs) and algae aquaculture. The amount of leased area originally proposed was 30 hectares of which 10 hectares was already allocated.

During the public consultation period, some 37 submissions were received, of which 18 commented specifically on the Morgans Landing subtidal aquaculture zone.

After consideration of stakeholder concerns and in view of the limited area proposed for aquaculture, it is considered that, on balance, the Morgans Landing area did not warrant zoning for aquaculture.

The existing pilot lease application in the area will remain at its current location and is subject to lease and licence conditions that apply to that site.

The Morgans Landing area will remain unzoned (apart from an aquaculture exclusion zone that extends seaward a minimum 1,000 metres from Coffin Bay National Park). Any expressions of interest to farm in the waters off Morgans Landing area will be subject to the normal pilot lease application process, under the provisions of the Act. Any pilot applications will be considered on a case-by-case basis and any potential impacts on the existing industry of the bay would also need to be taken into consideration.

3. AQUACULTURE ZONES AND AQUACULTURE EXCLUSION ZONE

The Policy covers an area comprising State waters south of a line between Point Sir Isaac and Frenchman Bluff off the western coast of Eyre Peninsula as depicted in Figure 1. The Policy establishes seven aquaculture zones and one aquaculture exclusion zone, as follows—

- Coffin Bay aquaculture exclusion zone;
- Frenchman Bluff aquaculture zone;
- Kellidie Bay aquaculture zone;
- Mount Dutton Bay aquaculture zone;
- Point Longnose aquaculture zone;
- Port Douglas (central) aquaculture zone;
- Port Douglas (east) aquaculture zone; and
- Port Douglas (west) aquaculture zone.

3.1. Coffin Bay aquaculture exclusion zone

This zone covers an area of 15,686 hectares and clearly defines where aquaculture cannot be established. Section 6 of the Report details the constraints used to assist in defining the exclusion zone.

The aquaculture exclusion zone—

- extends 1,000 metres seaward from all National and Conservation Park boundaries;
- extends to the MHWS — the exclusion zone (as described in the previous draft of this policy) has been modified to take into account the most up to date MHWS coastline spatial layer as reviewed in 2006;
- extends a minimum 1,100 metres seaward from MHWS along Farm Beach and Gallipoli Beach for aesthetic purposes;
- extends a minimum 1,100 metres seaward from MHWS from the Mount Dutton Bay East township, Mount Dutton Bay West township and Tadpole Bay for aesthetic purposes;
- includes the navigation channel between Coffin Bay township and Point Longnose; and
- includes the eastern part of Mount Dutton Bay to ensure boating access around this area.

In the case where currently existing aquaculture sites are impacted (from these constraints), the exclusion zone circumvents these sites.

3.2. Frenchman Bluff aquaculture zone

In the draft policy that was circulated for public consultation it was proposed to establish the Frenchman Bluff subtidal aquaculture zone. This zone has been modified to make the original zone narrower and slightly shorter from that proposed in the draft policy.

A small number of commercial marine scalefish fishermen indicated that a scattering of aquaculture sites created issues for them when they fished and it was agreed at the public briefing to narrow the shape of the zone to address this concern. This would allow for spatial alignment of aquaculture operations in such a way that minimised any potential conflict with local marine scalefish fishing activity.

It was originally proposed to establish an aquaculture zone with a total area of 658 hectares. The total area available to aquaculture in the Frenchman Bluff aquaculture zone has now been reduced to 388 hectares.

The classes of aquaculture permitted in the zone are—

- (a) the farming of aquatic animals (other than finfish) in a manner that involves regular feeding; and
- (b) the farming of algae.

The amount of leased area available for aquaculture is 90 hectares of which 25 hectares is already allocated and a further 10 hectares is in application¹. The unallocated area would need to be released by the Minister and go through the Aquaculture Tenure Allocation Board (ATAB) process if it were to be made available.

The biomass limit for the farming of aquatic animals (other than finfish) in a manner that involves regular feeding in this zone is 680 tonnes. The biomass limit is based on a rate of eight (8) tonnes per leased hectare, which is consistent with the biomass rate for abalone in other aquaculture zones in South Australia.

Biomass for algae is yet to be determined. It is proposed to not include any constraints on the amount of algae farming, given that the industry is in its infancy. PIRSA Aquaculture will monitor developments and assess future need for additional regulation. If considered necessary, biomass limits can be placed on licences authorising the farming of algae.

3.3. Kellidie Bay aquaculture zone

The Kellidie Bay aquaculture zone comprises a total area of 732 hectares. The class of aquaculture permitted in the zone is the farming of bivalve molluscs (other than mussels).

The amount of leased area available for aquaculture is 23 hectares, of which 19.81 hectares is already allocated.

It is proposed to allocate an additional 3 hectares for the temporary storage of bivalve molluscs (other than mussels) in the zone. The period of temporary

¹ Information as at 04/03/2008

holding must not exceed 2 weeks and will only be available to existing licence holders in the Coffin Bay policy region.

No biomass limits have been set for bivalve molluscs as these are to be determined by licence conditions. This may be done using limitations on farming structures and/or equipment (e.g. length of rack and rail or line per hectare).

3.4. Mount Dutton Bay aquaculture zone

During the public consultation period, some 37 submissions were received, of which 13 commented specifically on this aquaculture zone. Many local residents felt that there should be more exclusions built into the aquaculture zone, and that aquaculture sites should stay where they are. A letter from three of the oyster growers in the region who claim to have the majority of the growing area supported the local community's recommendation to adopt similar zones to those defined in the previous Management Plan (1996). PIRSA Aquaculture has modified the zone accordingly.

It was originally proposed to establish an aquaculture zone with a total area of 2,093 hectares. The total area available to aquaculture in the Mount Dutton Bay aquaculture zone is now reduced to 601 hectares.

The class of aquaculture permitted in the zone is the farming of bivalve molluscs (other than mussels).

The amount of leased area available for aquaculture is 32 hectares of which 31.44 hectares is already allocated – there will be no further allocation of leased area for aquaculture in this zone.

3.5. Point Longnose aquaculture zone

In the draft Policy that was circulated for public consultation it was proposed to establish the Point Longnose intertidal aquaculture zone. Industry lobbied to have the size and shape of the original zone changed. The zone has been modified—

- (a) to include two small shallow sandbar areas that takes advantage of better tidal flows and a higher flow rate of nutrient rich waters. Industry lobbied strongly for the inclusion of these sandbar areas. South Australian Research and Development Institute (SARDI) research suggests that the placement of BST structures into a sandy intertidal area would not have a deleterious effect on the seabed nor any seagrass cover². Furthermore, seagrass coverage within the majority of this proposed new area is negligible. Nonetheless, approval of

² The assessment is based on two reports. First, the Oyster Environmental Monitoring Program (OEMP): Small-scale seagrass health study (S. Madigan, S. Venema, K. Haskard and S. Clarke (2000), which examined above ground seagrass biomass and found no significant shading effect from 'BST-style' of longline infrastructure, but did find a significant effect from traditional 'rack and rail style' infrastructure. Second, the Summary of Existing Data Collected for the Shellfish Environmental Monitoring Program (SEMP) 1992-to 1994 (P. Hone, 1996) investigated the accretion of sand under intertidal oyster leases and found that there was no net effect (no change).

individual lease sites takes into consideration the presence of any localized seagrass cover; and

- (b) making the eastern end of the zone slightly longer while shortening the western side. This is to include a small area that is suitable for intertidal aquaculture, and to remove a section of the zone that is in deeper water and unsuitable for intertidal aquaculture. The increased area takes into account the 1,000 metre buffer seaward from the national park boundary and avoids the navigation channel.

It was originally proposed to establish an aquaculture zone with a total area of 351 hectares. The total area available to aquaculture in the Point Longnose aquaculture zone has now been increased to 379 hectares.

The classes of aquaculture permitted in the zone are—

- (a) The farming of bivalve molluscs (other than mussels); and
- (b) the farming of algae.

The amount of leased area available for aquaculture is 63 hectares. Two hectares must be used or available for use for the farming of algae. There will be no further allocation of leased area in this zone.

No biomass limits have been set for bivalve molluscs as these are to be determined by licence conditions. This may be done using limitations on farming structures and/or equipment (e.g. length of rack and rail or line per hectare).

Biomass for algae is yet to be determined. It is proposed to not include any constraints on the amount of algae farming, given that the industry is in its infancy. PIRSA Aquaculture will monitor developments and assess future need for additional regulation.

3.6. Port Douglas

In the draft policy that was circulated for public consultation, it was proposed to establish a single aquaculture zone with a total area of 571 hectares.

Industry representatives from this area expressed concern at having one large Port Douglas aquaculture zone that would allow oyster growers to move lease sites to locations that would negatively impact existing lease sites. To address this concern, the previously proposed single zone has been replaced by three aquaculture zones with a total area of 571 hectares: the Port Douglas (east), the Port Douglas (central) and the Port Douglas (west) aquaculture zones.

3.7. Port Douglas (central) aquaculture zone

The Port Douglas (central) aquaculture zone comprises a total area of 446 hectares.

The class of aquaculture permitted in the zone is the farming of bivalve molluscs (other than mussels).

The amount of leased area available for aquaculture is 50 hectares, which is already fully allocated.

3.8. Port Douglas (east) aquaculture zone

The Port Douglas (east) aquaculture zone comprises a total area of 34 hectares. The class of aquaculture permitted in the zone is the farming of bivalve molluscs (other than mussels).

The amount of leased area available for aquaculture is 10 hectares, which is already fully allocated. There will be no further allocation of leased area for aquaculture in this zone.

3.9. Port Douglas (west) aquaculture zone

The Port Douglas (west) aquaculture zone comprises a total area of 90 hectares. The class of aquaculture permitted in the zone is the farming of bivalve molluscs (other than mussels).

The amount of leased area available for aquaculture is 4 hectares, which is fully already allocated.

4. OBJECTIVES

The Minister may make aquaculture policies for any purpose directed towards securing the following objects of *Aquaculture Act 2001*—

- (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 reaching these objectives, consistency must be ensured with the provisions of relevant legislation such as: the *Development Act 1993*, the *Environment Protection Act 1993*, the *Native Vegetation Act 1991*, the *Harbors and Navigation Act 1993* and the *Coast Protection Act 1972*.

Appendix D highlights some of the objects and policies resulting from these Acts that are relevant to this Policy.

5. SUBSEQUENT DEVELOPMENT PLAN AMENDMENTS

The Aquaculture (Zones—Coffin Bay) Policy 2008 is consistent with the relevant provisions of the *Land Not Within A Council Area (Coastal Waters)* development plan³ 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 Aquaculture (Zones—Coffin Bay) Policy 2008 falls within the *Land Not Within A Council Area (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 proposed to be identified within the development plan that give effect to the Aquaculture (Zones—Coffin 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 that the Frenchman Bluff, Kellidie Bay, Mount Dutton Bay, Point Longnose, Port Douglas (central), Port Douglas (east), and the Port Douglas (west) aquaculture zones specified in the Policy be incorporated into the *Land Not Within A Council Area (Coastal Waters)* development plan.

Specific details are as follows—

Frenchman Zone

Establish a new “Aquaculture (Frenchman) 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 finfish) in a manner that involves regular feeding and (ii) the farming of algae.

PRINCIPLES OF DEVELOPMENT CONTROL

- 1 Development should be primarily in the form of—
 - (a) the farming of aquatic animals (other than finfish) in a manner that involves regular feeding; and
 - (b) the farming of algae;and associated activities.

³ The development plan can be viewed on the Primary Industries and Resources SA (Planning SA) web site at www.planning.sa.gov.au/edp/pdf/inwca_cw.pdf.

PROCEDURAL MATTERS

Public Notification

Categories of public notification are prescribed in schedule 9 of the *Development Regulations 1993*”.

It is proposed to insert a map of Aquaculture (Frenchman) Zone in the *Land Not Within A Council Area (Coastal Waters)* development plan (the area will duplicate the area shown as the Frenchman Bluff aquaculture zone as described in the Aquaculture (Zones—Coffin Bay) Policy 2008).

Point Longnose

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

“OBJECTIVES

- 1 The ecologically sustainable development of (i) the farming of bivalve mollusc (other than mussels); and (ii) the farming of algae.

PRINCIPLES OF DEVELOPMENT CONTROL

- 1 Development should be primarily in the form of—
 - (a) the farming of bivalve mollusc (other than mussels); and
 - (b) the farming of algae; and associated activities.

PROCEDURAL MATTERS

Public Notification

Categories of public notification are prescribed in schedule 9 of the *Development Regulations 1993*”.

It is proposed to insert a map of Aquaculture (Point Longnose) Zone in the *Land Not Within A Council Area (Coastal Waters)* development plan (the area will duplicate the area shown as the Point Longnose aquaculture zone as described in the Aquaculture (Zones—Coffin Bay) Policy 2008).

Kellidie Bay

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

“OBJECTIVES

- 1 The ecologically sustainable development of the farming of bivalve mollusc (other than mussels).

PRINCIPLES OF DEVELOPMENT CONTROL

- 1 Development should be primarily in the form of the farming of bivalve mollusc (other than mussels);
and associated activities.

PROCEDURAL MATTERS

Public Notification

Categories of public notification are prescribed in schedule 9 of the *Development Regulations 1993*”.

It is proposed to insert a map of Aquaculture (Kellidie Bay) Zone in the *Land Not Within A Council Area (Coastal Waters)* development plan (the area will duplicate the area shown as the Kellidie Bay aquaculture zone as described in the Aquaculture (Zones—Coffin Bay) Policy 2008).

Mount Dutton

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

“OBJECTIVES

- 1 The ecologically sustainable development of the farming of bivalve mollusc (other than mussels).

PRINCIPLES OF DEVELOPMENT CONTROL

- 1 Development should be primarily in the form of the farming of bivalve mollusc (other than mussels);
and associated activities.

PROCEDURAL MATTERS

Public Notification

Categories of public notification are prescribed in schedule 9 of the *Development Regulations 1993*”.

It is proposed to insert a map of Aquaculture (Mount Dutton) Zone in the *Land Not Within A Council Area (Coastal Waters)* development plan (the area will duplicate the area shown as the Mount Dutton Bay aquaculture zone as described in the Aquaculture (Zones—Coffin Bay) Policy 2008).

Port Douglas

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

“OBJECTIVES

- 1 The ecologically sustainable development of the farming of bivalve mollusc (other than mussels).

PRINCIPLES OF DEVELOPMENT CONTROL

- 1 Development should be primarily in the form of the farming of bivalve mollusc (other than mussels);
and associated activities.

PROCEDURAL MATTERS

Public Notification

Categories of public notification are prescribed in schedule 9 of the *Development Regulations 1993*”.

It is proposed to insert a map of Aquaculture (Port Douglas) Zone in the *Land Not Within A Council Area (Coastal Waters)* development plan (the area will duplicate the area shown as the Port Douglas (central), the Port Douglas (east) and the Port Douglas (west) aquaculture zones as described in the Aquaculture (Zones—Coffin Bay) Policy 2008).

6. CONSTRAINTS

The following matters were taken into account in creating the Policy, in order to secure the objectives of the Act—

- (a) The development and management of aquaculture resources in coastal waters adjacent to Coffin Bay within the framework of ecologically sustainable development;
- (b) The protection of proclaimed conservation areas and Australian Sea-lion (*Neophoca cinerea*) breeding colonies in the region. Note however, that there are no Australian Sea-lion colonies occurring in the Coffin Bay policy area;
- (c) The distribution and habitat of protected species;
- (d) The protection of historic shipwrecks;
- (e) The protection of sites of Aboriginal heritage value in the region;
- (f) The impact of aquaculture development on the tourism and residential qualities of the region;
- (g) The impact of aquaculture development on commercial and recreational fishing in the region; and
- (h) The impact of aquaculture on sensitive species and habitat in the region.

Zone development took into consideration the following—

- National parks, conservation parks and conservation reserves proclaimed under the *National Parks and Wildlife Act 1972*—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 proclaimed under the *Historic Shipwrecks Act 1981* or the Commonwealth *Historic Shipwrecks Act 1976*—Aquaculture development within the zone should be located at least 550 metres from a proclaimed 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;
- 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 *National Parks and Wildlife Act 1972* (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.

The zone 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

Coffin Bay is situated on the southern most tip of Eyre Peninsula approximately 700 kilometres by road from Adelaide. The region has a temperate climate characterised by cool, wet winters and warm, dry summers. Summer temperatures range from 15-25 °C and winter temperatures between 8-16 °C. Average annual rainfall is 490 mm and average annual evaporation (measure at Port Lincoln) is approximately 1,500 mm (Deering, 1999).

The Coffin Bay system covers approximately 120 km² (12,000 hectares) and is comprised of four smaller bays, Kellidie Bay, Yangie Bay, Mount Dutton Bay and Port Douglas Bay. All are relatively shallow with an average depth of 5 metres. Port Douglas Bay is the largest with an area of approximately 51 km² (5,100 hectares). It has access to waters of the Great Australian Bight through a channel approximately 2 kilometres wide and 8 metres deep. Estimates of

exchange and water flow, based on a tidal prism study, range from 1,600 to 3,300 m³ s⁻¹ (Petrusevics, 1998) and up to 25 cm s⁻¹ respectively (Petrusevics, 1999).

Coffin Bay is exposed to winds from the north with protection from Coffin Bay Peninsula to the west and south, and Eyre Peninsula to the east. Maximum fetch to the north, through Port Douglas Bay, is approximately 15 kilometres. The most frequently occurring winds in the region during summer are south (64%) and south-west winds (20%) at 21-30 kilometres per hour. Winter winds are primarily south-west (23%) and west (20%) at 21-30 km hr⁻¹ (37%). Maximum wind speeds are south at 41-50 km hr⁻¹ (2%) during summer and west at 41-50 km hr⁻¹ during winter (Deering, 1999).

Bottom sediments range from coarse sands to mud-sand mixtures to flocculated muds with high organic content. The latter predominate in northwestern and southeastern Port Douglas and central Mount Dutton Bays. Sandy sediments are found on and adjacent to tidally exposed spits in Port Douglas and Kellidie Bays and along much of the southern shoreline where northerly winds have generated sandy beaches and dunes. Bottom sediments in Kellidie Bay and northern Mount Dutton Bay have a higher mud component than those in central Port Douglas Bay (Grove-Jones, 1986).

The waters of Coffin Bay receive relatively little fresh water input and experience high evaporation. Principal sources of input are from Minniribbie Creek and stormwater runoff from the Coffin Bay township. Minniribbie Creek usually flows between July and September into the northeastern corner of Kellidie Bay when Lake Wangary, a salt lake, 12 kilometres away to the north, is full. Outflow may be continuous or intermittent and some years the creek has not flowed at all. The slope of the land at the Coffin Bay township is such that stormwater will quickly run to sea following rain. Groundwater is only 1 m below the surface in some areas within Coffin Bay township and freshwater can be seen rising to the surface only metres from shore in front of the town (Lee, 2004).

Salinity is elevated at approximately 37-39 ppt during winter and 38-40 ppt during summer. Water temperature in the system ranges between 12-13 °C during winter and 21-24 °C during summer. Dissolved oxygen levels range between 8-12 mg l⁻¹ and pH is approximately 8 (Hone, 1996).

6.2. 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 have involved local Aboriginal representatives in its process for developing and amending aquaculture policy and zoning.

The policy area falls within the Naou-Barngarla Native Title Claim (SC97/8); see <www.nntt.gov.au/applications/claimant/SC97_8.html>.

There are numerous known Aboriginal sites on land around Coffin Bay, Port Douglas, Mount Dutton Bay, Yangie Bay and Kellidie Bay and they are at risk of impact by people who are active in the permitted aquaculture zones. To protect those sites and prevent people from breaching the *Aboriginal Heritage Act 1988*, the public awareness of the location of these sites needs to be increased and people are encouraged to approach the Aboriginal Affairs and Reconciliation Division (DAAR) directly before they install infrastructure or undertake activities that will impact the land.

A move to create an Indigenous Land Use Agreement (ILUA) for the Eyre Peninsula region commenced in 2006. Under the ILUA model, separate agreements can be formulated with the different groups involved, such as fishers or aquaculture operators, Local, State and Federal Government.

As a matter of traditional law and custom, these rights and interests extend to the intertidal zone and beyond.

6.3. Reserves and Conservation Areas

National Park surrounds a significant portion of Coffin Bay. The Coffin Bay National Park comprises all of the Coffin Bay Peninsula and extends south of the Coffin Bay township. It is 50 kilometres west of Port Lincoln and 2 kilometres west of the township of Coffin Bay comprising an area approximately 31,069 hectares;

see <www.parks.sa.gov.au/publish/groups/public/@reserveplanning/documents/all/parks_pdfs_property_details.pdf>. The park features diverse coastal landscape and inland swamps and offers camping, scenic drives and associated recreation activities. Mount Dutton Bay Islands Conservation Park consists of seven small islands in the bay. The Kellidie Bay Conservation Park is located north of the Coffin Bay township and comprises an area of approximately 1,788 hectares; see <www.parks.sa.gov.au/publish/groups/public/@reserveplanning/documents/all/parks_pdfs_property_details.pdf>.

A National Park is an area of national significance due to wildlife, natural features of the land, Aboriginal and European heritage whereas a Conservation Park is an area that is protected for the purpose of conserving wildlife or the natural or historic features of the land.

6.4. Sensitive Habitats

Port Douglas (Coffin Bay) is located within the Douglas biounit as defined by Edyvane (1999). It represents a unique South Australian estuary in that only 25-50% of its catchment area has been cleared of native vegetation (Bucher and Saenger, 1989 in Edyvane, 1999). The Coffin Bay coastal wetland system has been identified as a wetland of national importance (Environment Australia, 2001). A total of 97 waterbirds have been recorded in the area (Blakers et al 1984). The Coffin Bay coastal wetland system is part of a closed system of ocean beaches, shallow embayments, intertidal sand flats and salt marshes

offering rich feeding grounds and sheltered high tide loafing areas for a minimum of 4,000 migratory shorebirds annually. (Environment Australia, 2001)

Most resident waterbirds breeding in the Coffin Bay system do so on offshore islands. However pied oystercatchers (*Haematopus longirostris*), hooded plovers (*Thinornis rubricollis*) and red-capped plovers (*Charadrius ruficapillus*) breed on mainland beaches in summer (Environment Australia, 2001).

The Coffin Bay Wetland supports 2.5% of the population of Sanderling (*Calidris alba*), and meets the criteria to be nominated as a shorebird site of international importance on the East-Asian Australasian Flyway (Wilson, 2000., Watkins, 1993).

The seagrasses of Coffin Bay represent the second largest area on the Eyre Coast, estimated to encompass 8,567 ha. The presence of extensive seagrass meadows is due to the dominance of sheltered embayments. Seagrass meadows are populated by *Posidonia angustifolia*, *Heterozostera tasmanica* and *Halophila australis* and the green alga, *Caulerpa cactoides*. Seagrasses are important primary producers, stabilize the sediments, serve as habitats and nurseries, and are a direct and indirect food source for a diverse range of fauna. They provide the basis for significant productivity of coastal regions in terms of fisheries and prawn production (Edyvane, 1999).

6.5. Protected Species

The *NPW Act* provides the legislative framework dealing with native fauna in this State. Most native mammals, reptiles and birds are protected in South Australia. Under the provisions of the Act it is an offence to kill, hunt, catch, restrain, injure, molest or harass a protected animal. Schedules 7, 8 and 9 of the *NPW Act* list rare, vulnerable and endangered species.

The *Fisheries Management Act 2007* provides 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 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. There will be no adverse impact on syngnathids, as cages will not be placed over dense 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, Section 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 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. Finfish aquaculture is not a permitted class of aquaculture in the Coffin Bay policy area.

There is no proposed finfish aquaculture operations proposed for this area. The potential for marine animal interactions has been considered thoroughly by PIRSA in the development of this Policy.

6.6. Matters of National Environmental Significance

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 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, Water, Heritage and the Arts web site 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 within the zoned areas.

Threatened species listed on the data base include—

- Australian Sea-lion (*Neophoca cinerea*) (listed as vulnerable) — breeding known to occur within area. Note however there are no breeding colonies in the Coffin Bay policy area;

- Blue Whale (*Balaenoptera musculus*) (listed as endangered) — species or species habitat may occur within area. Note however that whales are unlikely to occur in the sheltered bays of Coffin Bay;
- Southern Right Whale (*Eubalaena australis*) (listed as endangered) — species or species habitat known to occur within area. Note however that whales are unlikely to occur in the sheltered bays of Coffin Bay;
- Humpback Whale (*Megaptera novaeangliae*) (listed as Vulnerable) — species or species habitat likely to occur within area. Note however that whales are unlikely to occur in the sheltered bays of Coffin Bay;
- Great White Shark (*Carcharodon carcharias*) (listed as vulnerable) — species or species habitat known to occur within area;
- Albatross — Two species are listed as endangered and six species are listed as vulnerable - Species or species habitat may occur within area;
- Petrels — One species listed as endangered & three species listed as vulnerable - Species or species habitat may occur within area;
- Western Whipbird (eastern) and Southern Emu-wren (Eyre Peninsula) are both listed as vulnerable – Species or species habitat may occur within area; and
- Twenty-seven species consisting of bird (including marine birds), marine mammals and shark listed as migratory species on the database and may occur within the area.

6.7. Fisheries Nursery and Juvenile Habitats

The Coffin Bay region includes a variety of marine habitats of significance for various protected, commercially and socially significant marine fauna and flora. The habitat types found in the area above Point Longnose are predominantly reef, seagrass meadow and unvegetated soft bottom. Within the Coffin Bay area (i.e. State waters south of a line between Point Sir Isaac and Frenchman Bluff), the habitat types are predominantly seagrass meadow and unvegetated soft bottom, with tidal flat areas and some salt marshes (Bryars, 2003).

Rocky reefs are high biodiversity habitats that are significant for juvenile purple sea urchin, King George whiting, western Australian salmon, tommy ruff, yellow eye mullet, trevally, leatherjacket, wrasse and sea sweep (Bryars, 2003). Extensive seagrass meadows are important sources of marine primary production and are found in the Coffin Bay region. These areas provide habitats for juvenile sand crabs, southern calamary, king scallop, queen scallop, King George whiting, snapper, western Australian salmon, tommy ruff, southern sea garfish, red mullet, flathead, trevally, yellowtail kingfish, leatherjacket, snook and whaler sharks (Bryars, 2003). Unvegetated soft bottom areas provide habitats for juvenile southern keeled octopus, sand crab, western king prawn, king scallop, queen scallop, King George whiting, western Australian salmon, tommy ruff, yelloweye mullet, red mullet, flathead, trevally and flounder (Bryars, 2003).

Aquaculture leases are situated within zones with careful consideration to limit disturbance of significant and sensitive habitats.

6.8. Carrying Capacity

Oysters feed on microscopic organic particles including phytoplankton, detritus and protozoa and rely on natural production to supply food. Subsequently, the maximum sustainable shellfish stocking density or carrying capacity of a region is determined by the natural productivity of adjacent waters. Natural production may be derived internally or imported from surrounding waters depending on the hydrodynamics of the water body (Deering, 1999).

A number of attempts have been made in Australia and internationally to determine the carrying capacity of waterways for shellfish production. These studies have been hampered by lack of knowledge of seasonal and size related changes in energy requirements of shellfish, seasonal changes in productivity, feeding habits of shellfish and hydrodynamics of many areas. Problems have also been encountered with the models used to determine carrying capacity (Raillard and Menesguen, 1994) and the requirement for long-term environmental data (Deering, 1999). Consequently it is very difficult to predict the carrying capacity of Coffin Bay for Pacific oyster cultivation.

There is high water flow through Port Douglas Bay, with a total volume exchange estimated to occur once every 1.3 days. Additionally, upwellings of cold, nutrient rich seawater occur periodically around the southwestern corner of Eyre Peninsula, adjacent to the mouth of the Coffin Bay system (PIRSA, 1997). The role of the same upwelling system was initially implicated then discounted for its part in the 1995 mass mortality of pilchard (Griffin *et. al.*, 1997). Furthermore, regular phytoplankton surveys carried out in Port Douglas Bay by the South Australian Shellfish Quality Assurance Program (SASQAP) indicate a predominance of oceanic phytoplankton species, including:- *Skeletonema* sp., *Thalassionema* sp., *Rhizosolenia* sp. and *Pseudonitzschia* sp. (Ken Lee, pers. comm., 6 July 2005). This information suggests that phytoplankton production, particularly within Port Douglas Bay, is supported by movement from offshore waters, driven by upwellings of cooler, nutrient rich water.

Approximately 187.95 hectares of intertidal oyster farming development is divided amongst 107 licensees within the Coffin Bay system. Annual production of intertidal oysters can be estimated from a collation of information (12 monthly 'Production Return' forms) submitted to PIRSA Aquaculture by farmers. For the 12 months between July 2003 to June 2004, approximately 31.97 million individual or 2.66 million dozen oysters (50+ mm shell length) were produced from the entire system. Previous collation of data for the same period between 1999 and 2000 estimated that a regional total of approximately 6.51 million individual (0.54 million dozen) oysters were produced. In effect, production has increased in Coffin Bay by over 390% since the 1999/2000 survey. Of the current production, a significant quantity, approximately 94% or 30.19 million individual oysters, is produced from the northern end of Port Douglas Bay.

It should be noted that central to the sustainable management of Pacific oyster production within Coffin Bay is the availability of accurate information relating to the number, size, stocking density and length of time to harvest for all cultured stock. Without this information, managing the economic and environmental sustainability of the industry will be compromised. In the absence of information required to predict carrying capacity, marine resources must be allocated conservatively for aquaculture in Coffin Bay and no increase in allocation of farming area for bivalve molluscs is recommended in the Policy.

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8. 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>BST Structures</i>	BST Adjustable Longline Oyster system is an adjustable system of oyster mesh bags, with the heart of the system being the use of high tensile nylon lines clipped to post supports to support the specially designed mesh baskets.
<i>Closures</i>	Prohibition of fishing during particular times or seasons (temporal closures) or in particular areas (spatial closures), or a combination of both.
<i>Carrying capacity</i>	The maximum population 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>Harvest</i>	A productivity measuring technique.
<i>Infauna</i>	Aquatic organisms (usually animals, but sometimes algae) that live within particulate media such as sediments or soil.
<i>Marine protected area</i>	An area of land and/or sea especially dedicated to the protection

<i>(MPA)</i>	and maintenance of biological diversity and of natural resources, and managed through legal or other effective means.
<i>Organic enrichment</i>	The supply of organic material (eg waste feed, faeces) to the seafloor.
<i>Population</i>	A group of individuals of the same species, forming a breeding unit and sharing a habitat.
<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.

9. APPENDIX B — LIST OF ACRONYMS

AAC	Aquaculture Advisory Council
CRC	Co-operative Research Centre
DAAR	Department for Aboriginal Affairs and Reconciliation
DAC	Development Assessment Commission
DEH	South Australian Department for Environment and Heritage
DEWHA	The Australian Government Department of the Environment, Water, Heritage and the Arts (formerly the Department of the Environment and Water Resources)
DTEI	South Australian Department for Transport, Energy and Infrastructure
DWLBC	South Australian Department of Water, Land and Biodiversity Conservation
EMP	Environmental Monitoring Program
EPA	South Australian Environment Protection Authority
EPBC Act	The Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERDB	Eyre Regional Development Board
ERDC	Environment, Resources and Development Committee
ESD	Ecological Sustainable Development
ILUA	Indigenous Land Use Agreement
LGA	Local Government Association
MPA	Marine Protected Area
NPW Act	<i>National Parks and Wildlife Act 1972 (South Australia)</i>
NRM	Natural Resource Management
PAR	Plan Amendment Report (now known as Development Plan Amendment)
PIRSA	Department of Primary Industries and Resources, South Australia
SARDI	South Australian Research and Development Institute
SATC	South Australian Tourism Commission
The Minister	Minister for Agriculture, Food and Fisheries

10. APPENDIX C — MAPS AND CO-ORDINATES

A written description of the seven aquaculture zones and the Coffin Bay aquaculture exclusion zone is provided in the Aquaculture (Zones—Coffin Bay) Policy 2008.

Unless otherwise mentioned, all lines are geodesics based on the Geocentric Datum of Australia 1994 (GDA94) as defined in the Commonwealth of Australia Gazette GN35 of 6 September 1995. All co-ordinates are expressed in terms of GDA94.

Figure 1 — Overview of aquaculture zones and aquaculture exclusion zone in the Coffin Bay Region

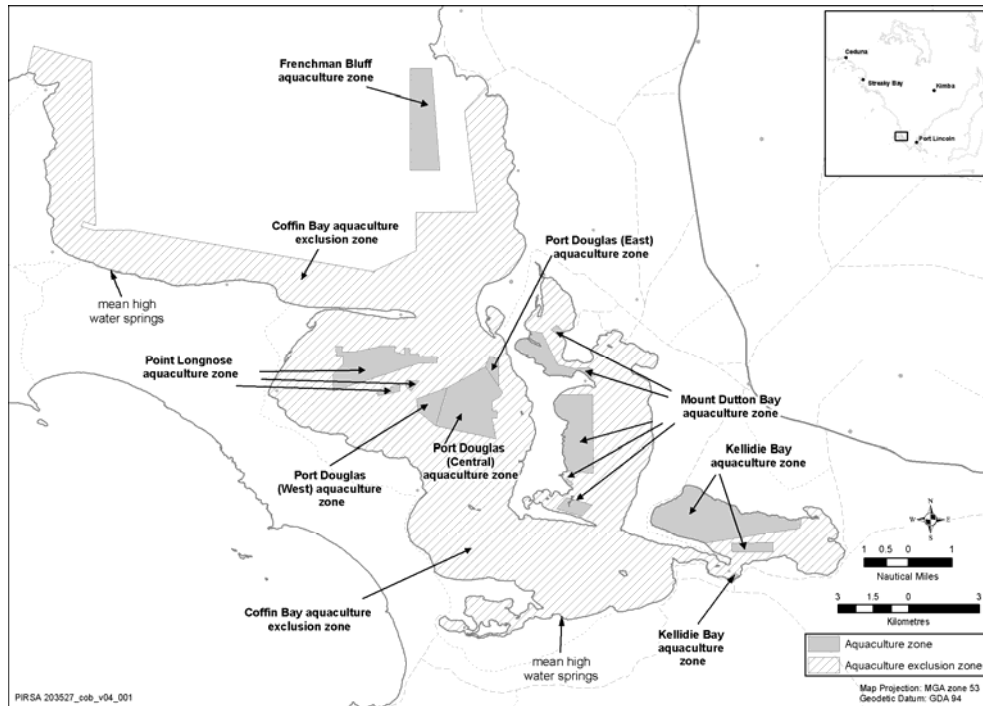


Figure 2 — Map of Coffin Bay aquaculture exclusion zone

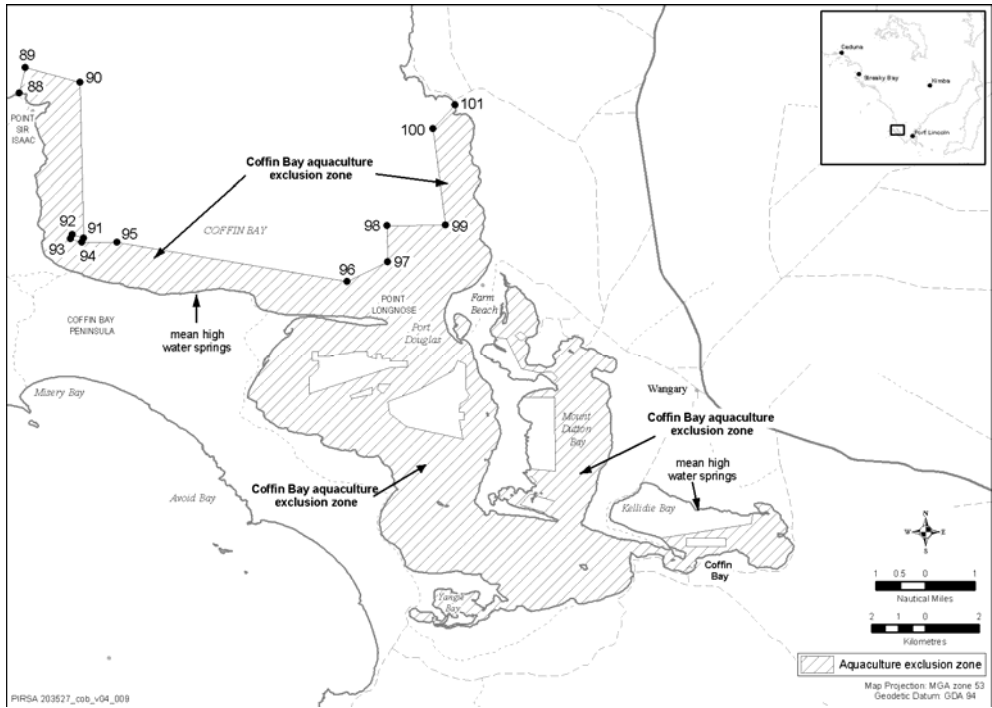


Figure 3 — Map of Frenchman Bluff aquaculture zone

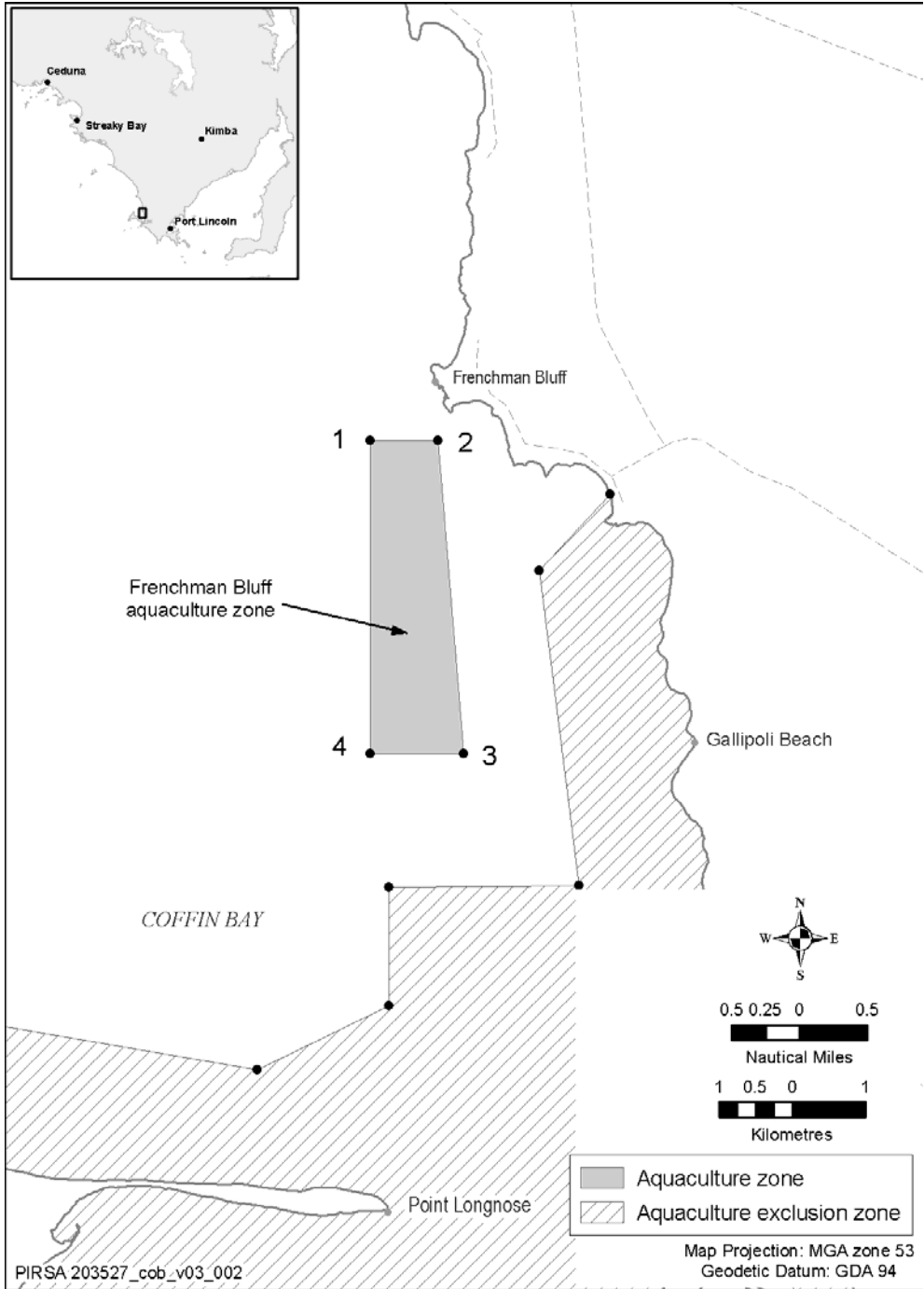


Figure 4 — Map of Kellidie Bay aquaculture zone

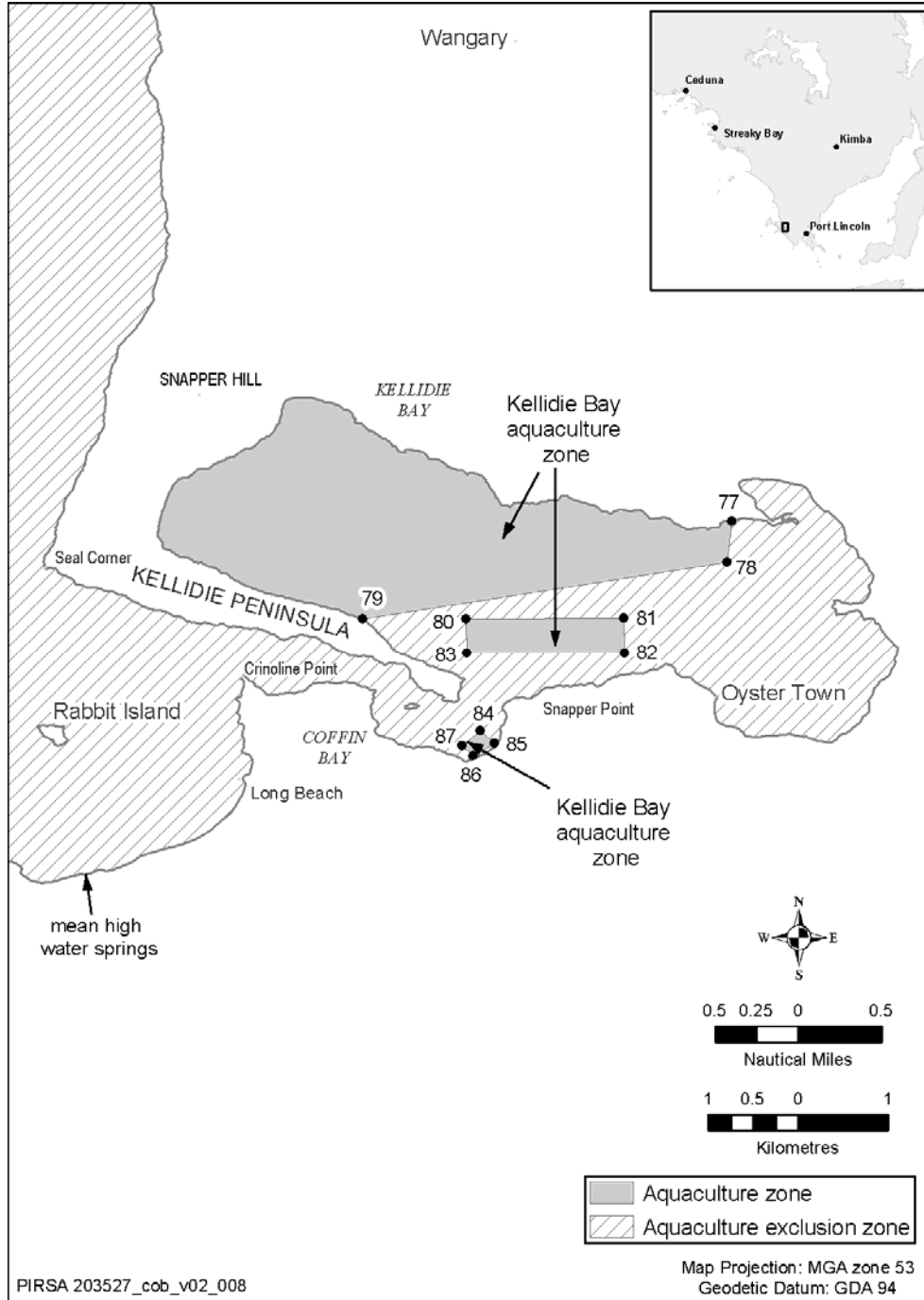


Figure 5 — Map of Mount Dutton Bay aquaculture zone

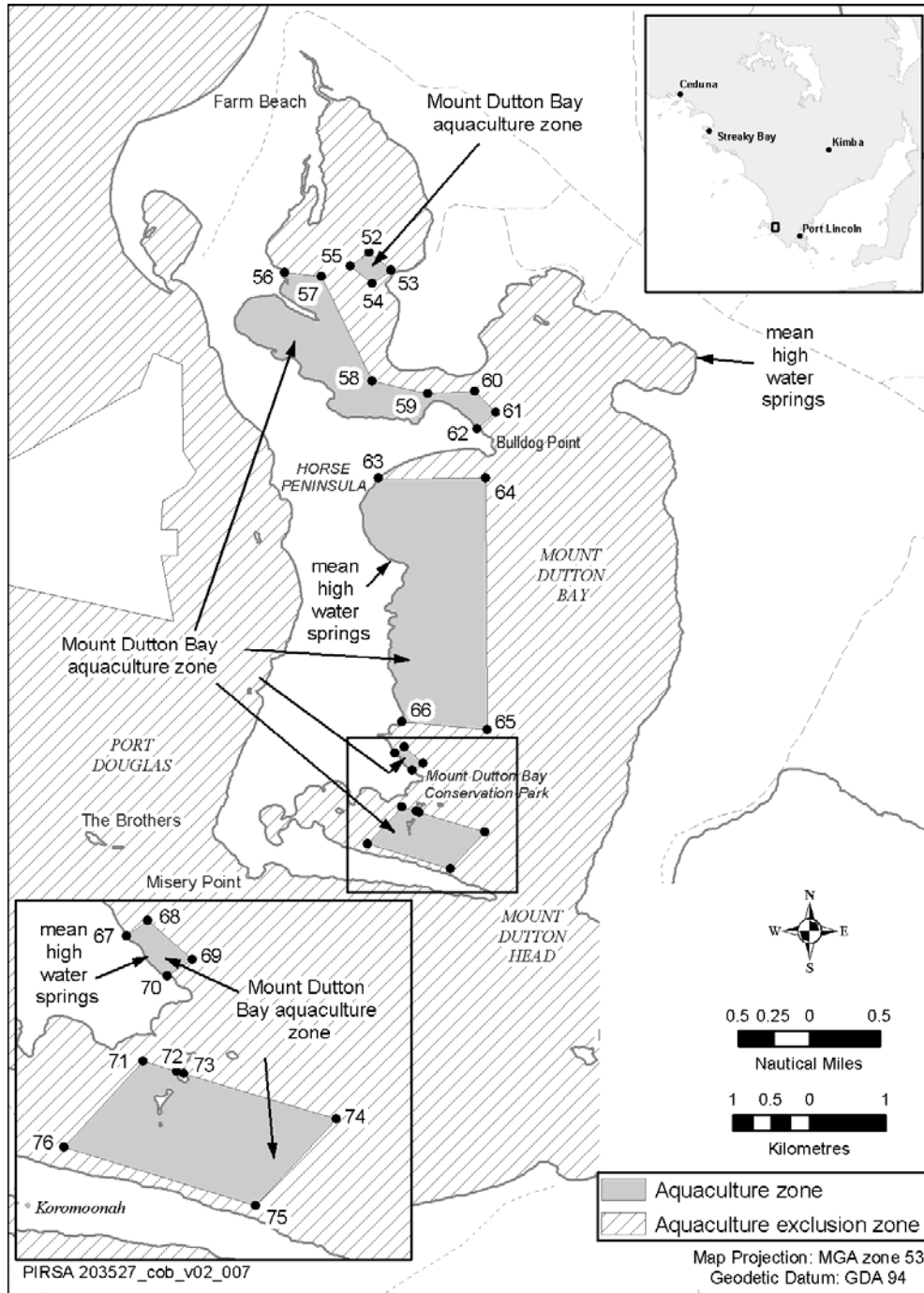


Figure 6 — Map of Point Longnose aquaculture zone

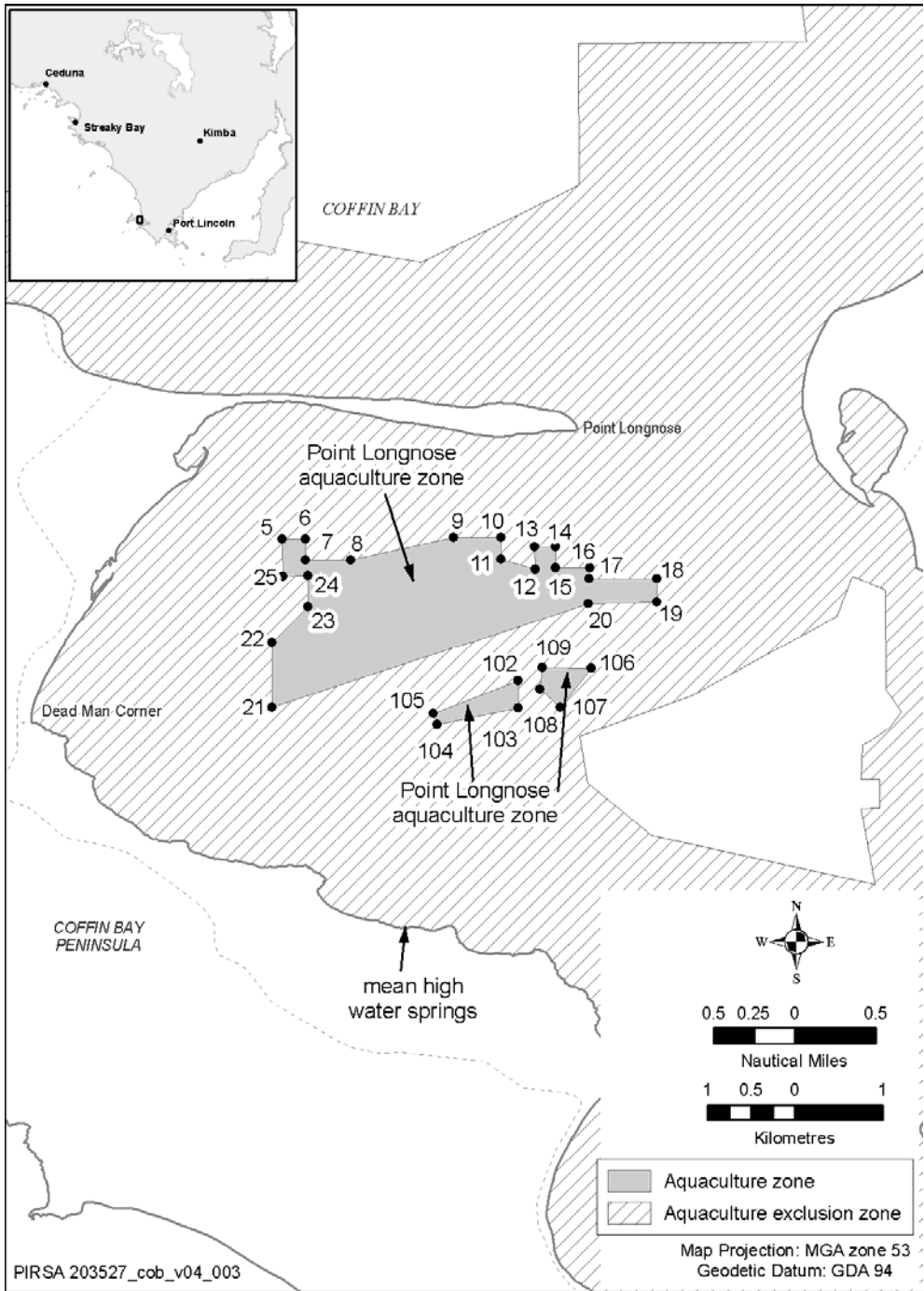
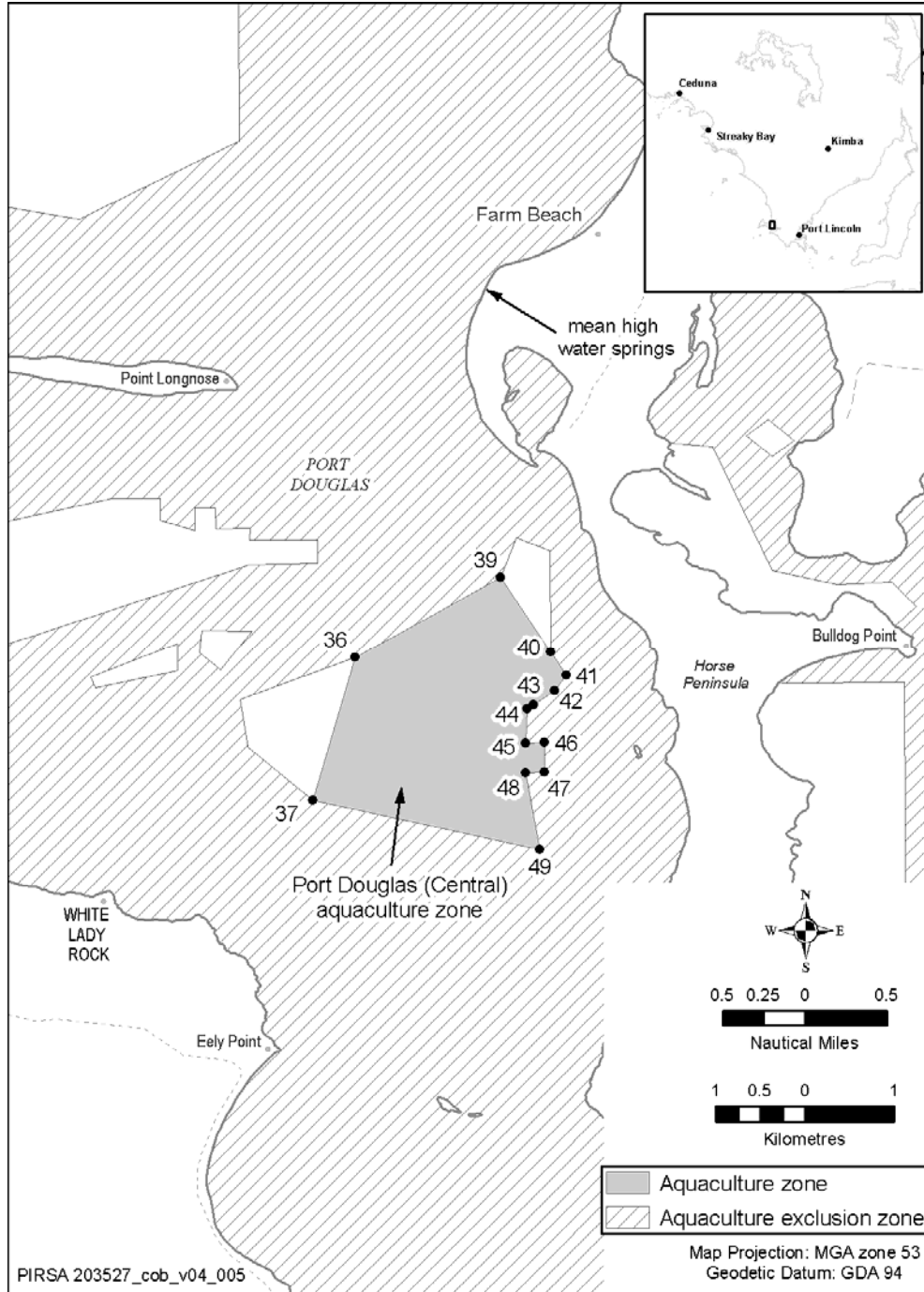


Figure 7 — Map of Port Douglas (central) aquaculture zone



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Figure 8 — Map of Port Douglas (east) aquaculture zone

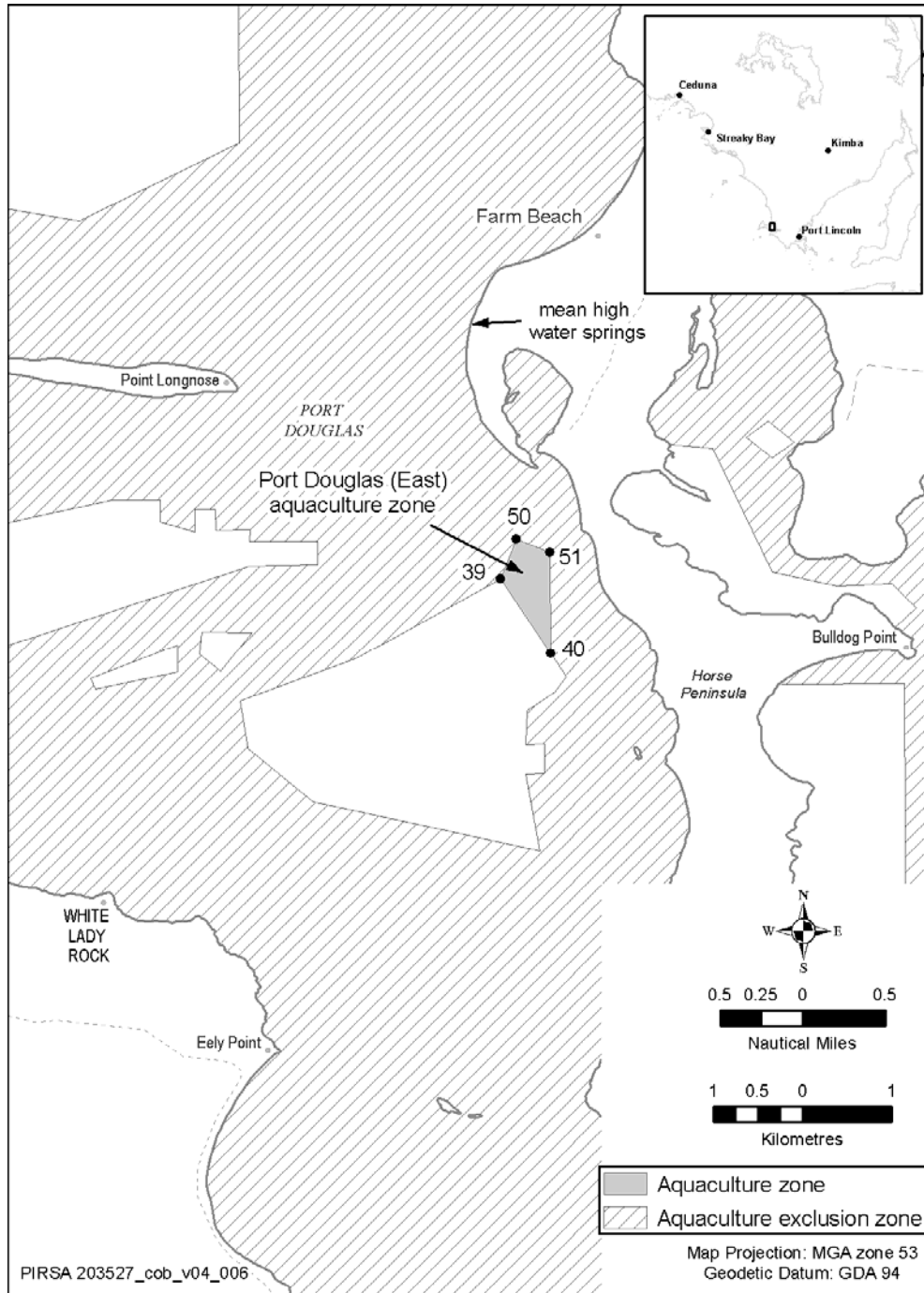
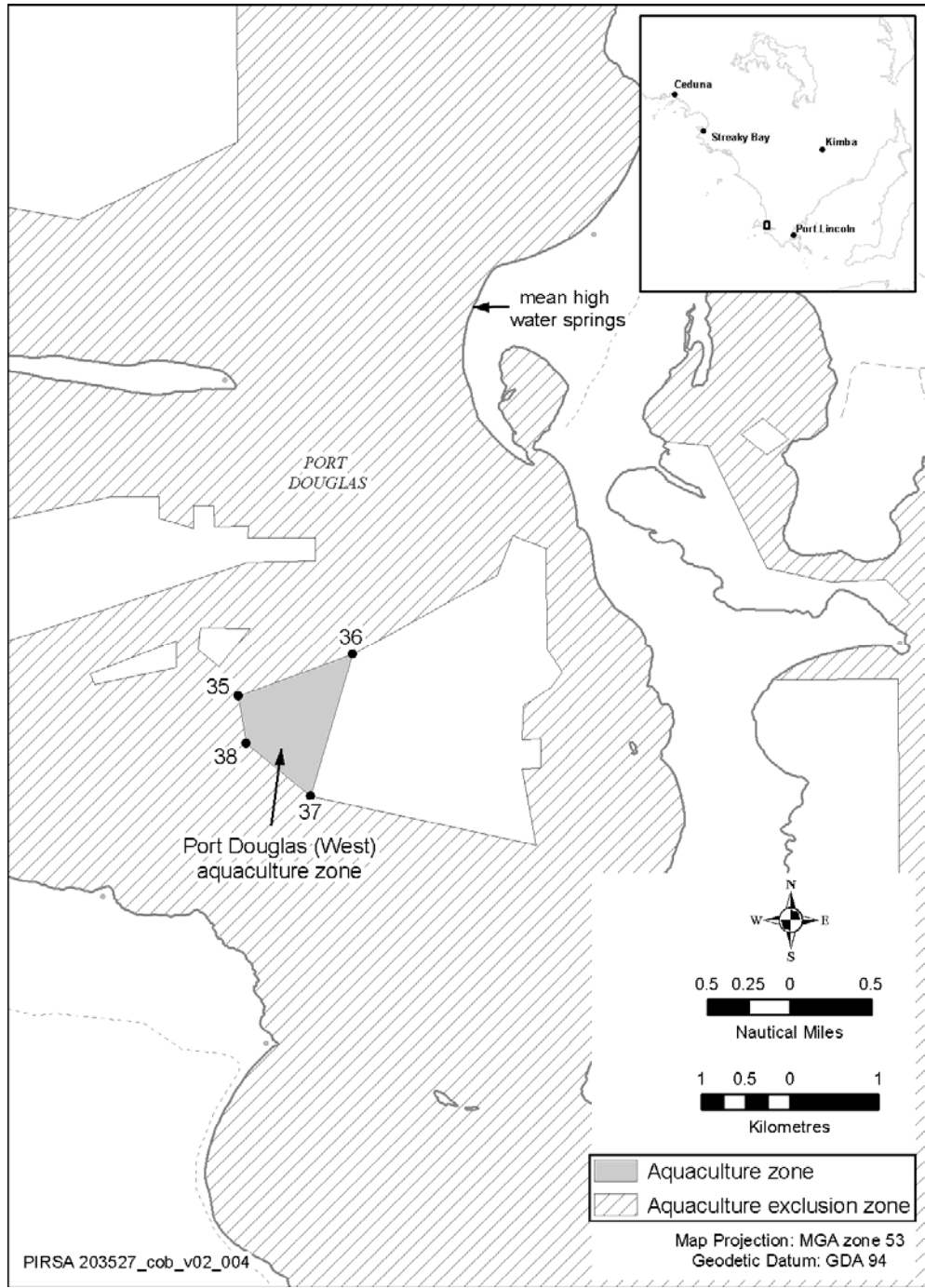


Figure 9 — Map of Port Douglas (west) aquaculture zone



11. APPENDIX D — RELEVANT LEGISLATION

Development Act 1993

On 12 January 2006 the *Development Regulations 1993* were amended to recognise Aquaculture Zone Policies prepared under the *Aquaculture Act 2001*. The amendment 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*.

As detailed in part 3.1 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 1993* 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 is classified as a *complying* development and is exempt from the public notification and consultation under the provisions of the *Development Act 1993*, however public 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 a aquaculture zone would have undergone a public consultation process under the *Development Act 1993* in addition to a 2 month public consultation process under the *Aquaculture Act 2001* for policies. All new licences undergo a public consultation process under Section 50 of the *Aquaculture Act 2001*.

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, 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 proposed 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 (ILUAs) 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 (which is planning based on large areas that are ecologically similar) and this 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 Bill 2007

On 20 June 2007, the Minister for Environment and Conservation formally introduced the *Marine Parks Bill 2007* into Parliament. The Bill passed through Parliament on 20 November 2007.

The Marine Parks Bill provides a legislative framework for the dedication, zoning and management of South Australia's marine parks. The *Marine Parks Bill 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

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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 very good basis for managing the industry against best practice.

Aquaculture zones described in the Aquaculture (Zones—Coffin Bay) Policy 2007 lie 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 all seven aquaculture zones relate only to marine aquaculture there are no matters of water allocation, groundwater or surface water, specific to these aquaculture zones. The policy is consistent with the Eyre Peninsula NRM/CWM Plan.

Environment Protection Act 1993

The Policy was developed within the context of 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 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.

A Draft Code of Practice for Vessel and Facility Management: Marine and Inland Waters (EPA, 2005) has been developed by the EPA. This code applies to people, organisations and agencies that own, operate and use vessels, vessel construction and maintenance facilities (including launch facilities), and vessel storage facilities (including marinas and boat/yacht clubs) within the state waters of South Australia. For the purposes of this draft code, State waters include inland waters, estuarine and marine waters (which include coastal state and territorial waters vested in the state).

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. Matters of titles and jurisdiction related to the territorial sea adjacent to the State and further addressed in the Commonwealth Coastal Waters (State Powers) Act 1980, the Seas

and Submerged Lands Act 1973 and Coastal Waters (State Title) Act 1980. 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.