



**PRIMARY INDUSTRIES  
AND RESOURCES SA**

# **LACEPEDE BAY AQUACULTURE MANAGEMENT POLICY**

Inner Kingston Zone Policy  
Intermediate Kingston Zone Policy  
Outer Kingston Zone Policy  
Historical Cape Jaffa Zone Policy  
Kingston Exclusion Zone Policy

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# LACEPEDE BAY AQUACULTURE MANAGEMENT POLICY REPORT

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# LACEPEDE BAY POLICY REPORT

## 1 Executive Summary

Aquaculture is a significant contributor to the State's economy, contributing \$285 million in 2002/2003. This represents 58% of value of the State's seafood production and 38% of Australia's aquaculture production value. This makes a significant contribution of some 2,730 jobs, mainly in regional areas of the State.

In 2000/01, the South East region contributed approximately \$3.0 million directly and \$3.7 million in flow-on business to the State's economy. Aquaculture created direct employment for 49 people in 2000/01 in the South East region. Flow-on business activity was estimated to generate a further 27 jobs.

To ensure the ongoing growth and sustainability of the aquaculture industry, specific legislation was developed. In July 2002, the *Aquaculture Act 2001* came into operation and these Policies have been developed under the Act.

The zone policies contained within this Aquaculture Management Policy were established to address:

- the growth and expansion of the aquaculture industry in the Lacepede Bay area;
- the need to ensure that aquaculture development is progressed in an ecologically sustainable manner; and
- the need to provide certainty to the industry and the community in the approval process and license/lease applications.

They relate directly to the objectives of the Aquaculture Act, being:

- To promote the ecological sustainability of the aquaculture industry; and
- To maximise the benefits to the community from the State's aquaculture resources; and
- Otherwise to ensure the efficient and effective regulation of the aquaculture industry.

The Lacepede Bay Aquaculture Management Policy is closely aligned with the previous Kingston Policy Area in the South East Aquaculture Management Plan. The old Kingston Policy Area is now divided into five zones to more closely reflect the previous aquaculture use of the area, conservation areas and the three ecological communities in the area. The Inner Kingston Zone has tight aquaculture development controls as the zone is dominated by sensitive seagrass communities. The Intermediate Kingston Zone is dominated by furoid, red and brown algal communities and as these are less sensitive to aquaculture impacts, more aquaculture development is allowed in this area. The Outer Kingston Zone is considered to be less sensitive to aquaculture development and significant commercial development could

occur here, however the realities are that the exposed nature of this zone mean high infrastructure costs will be associated with development in this Zone.

### **Aquaculture Policies**

All aquaculture policies are approved by processes outlined in the Aquaculture Act 2001, and are accompanied by a Policy Report. The Report is an explanatory note of the purpose and effect of a policy, a summary of any background and issues relevant to the draft policy, and of the analysis and reasoning applied in formulating the policy. In addition, the Policy Report assesses consistency with other relevant strategies, plans and policies. All Policies are on the PIRSA Aquaculture website under “Policy”.

The following aquaculture policies have been approved and are currently in operation:

- Mandatory Provisions (General) Policy
- Aquaculture Cost Recovery Policy
- Lower Eyre Peninsula Aquaculture Management Policy
- Aquaculture Tenure Allocation Board Aquaculture Policy
- Aquatic Animal Health Aquaculture Policy
- Emergency Procedures Manual
- Leasing and Licensing Aquaculture Policy
- South Australian Shellfish Quality Assurance Program Policy

The following aquaculture policies have been developed and are currently at various stages of consultation or approval:

- Arno Bay Draft Aquaculture Management Policy
- Fitzgerald Bay Draft Aquaculture Management Policy
- Streaky Bay Draft Aquaculture Management Policy
- Aquaculture Environmental Management Policy
- Aquaculture Resource Management and Ecologically Sustainable Development Policy

## 2 Purpose and Effect

With the introduction of the *Aquaculture Act 2001* (the Act), there is an opportunity to develop planning practices which better reflect the needs of the industry, government and the community in South Australia. South Australia's Aquaculture Management Plans were developed prior to the introduction of the Act as a statement of the Minister's policy in relation to the type and level of aquaculture appropriate for an area.

The South East Aquaculture Management Plan (1996) introduced specific management objectives for the development, use and management of the coastal waters of the South East within a framework of ecologically sustainable development. The specific management objectives presented in the plan were to:

- provide a framework for the sharing of coastal resources within the region;
- facilitate aquaculture development within the region;
- recognise the legitimate users of the coastal resource within the region; and
- provide protection to those areas that are sensitive to alteration or which have conservation value.

These plans will be phased out and progressively replaced with management policies prepared under the Act. This process will review and evaluate previous zoning concepts and will develop specific policies to accommodate the environmental, economic and social needs of a specific area and industry sector. As provided for in the Act, these policies will have legal standing and decisions concerning aquaculture management will be based on the principles and directions covered in these new policies.

This report provides supporting information relating to the development of policies to promote ecologically sustainable development of the aquaculture industry in the South East region, predominantly for the farming of finfish in Lacedpede Bay. It is intended that these developments will run in conjunction with an intensive monitoring program to identify the extent of impacts of aquaculture on the environment, particularly in relation to seagrass. This Policy will be reviewed within three years of authorisation. This review will affect all operators in the region and will be based on the environmental performance of the farms. At this stage, the Department of Primary Industries and Resources South Australia – Aquaculture Unit (“PIRSA Aquaculture” and the Environment Protection Authority (“EPA”) will decide whether further aquaculture activity continues, is modified or ceases. At any stage before the three years, any evidence suggesting aquaculture activities are having significant impacts on the area as assessed by PIRSA Aquaculture and the EPA, will result in immediate modification or cessation of practices.

The introduction of new zones in the region should address a number of the shortcomings outlined in technical investigations undertaken by Sinclair Knight Merz (2000). The Inner and Intermediate Zones will have restricted biomass

limiting the potential for nutrients and sediment accumulation in the shallower waters protecting seagrass habitat, while the more heavily stocked areas will be located in the Offshore Kingston Zone away from seagrass beds where deeper, more exposed waters improve dispersive and assimilative capabilities.

## **2.1 Area affected**

The area subject to these policies forms part of the south eastern coastline of South Australia often referred to as the Bonney Coast or Limestone Coast, and extends from a point approximately eight kilometres north of The Granites to Cape Jaffa and seaward for approximately eighteen kilometres (Map 1). The coastal characteristics of this region are largely governed by the proximity of the continental shelf to the mainland and the presence of a summer upwelling system between Cape Jaffa and Portland. This upwelling system feeds cool, nutrient rich waters into the area making it conducive to salmonoid production.

However, the region's coastline is very much exposed and suitable sites for aquaculture development are limited. The Lacepede Bay area is one of the few sites in the region providing the benefits of the cooler waters introduced by the upwelling system while offering some protection against the rough open seas. These comparatively protected waters have also allowed extensive seagrass beds to establish in the region.

## **2.2 Lacepede Bay Zones**

The policy establishes the following zones:

1. Inner Kingston Zone;
2. Intermediate Kingston Zone;
3. Outer Kingston Zone
4. Historical Cape Jaffa Zone; and
5. Kingston Exclusion Zone.

It should be noted that approvals in these zones will be subject to comprehensive environmental monitoring.

### **2.2.1 Inner Kingston Zone**

The Inner Kingston Zone has a number of unique characteristics requiring careful management if the aquaculture industry is to expand. The depth in this zone is generally less than 11 metres and Cape Jaffa provides sufficient shelter to allow seagrass to flourish.

To protect the seagrass from excessive nutrients being introduced into the system, the shallower Inner Kingston Zone will have strict stocking rate restrictions. Any growth will be controlled via incremental tonnage increases linked to environmental monitoring results for both the Historical Cape Jaffa and Inner Kingston Zones. A Harvest Zone is an area within the zone that

can used for harvesting sites will be held in conjunction with sites in the Intermediate Kingston Zone and the Outer Kingston Zone.

#### 2.2.2 Intermediate Kingston Zone

The Intermediate Kingston Zone is located seaward of the eleven metre depth contour beyond the region's seagrass beds. Being further offshore, this zone is out of the "shadow" of Cape Jaffa making it less sheltered and therefore subject to rougher conditions. The stock and equipment required to service this zone will need to be more robust to cope with the heavier conditions. However, these conditions and the deeper water generally associated with this zone inhibit the growth of seagrass making the area more suitable for increased stocking rates. Each of the lease sites in the Intermediate Zone can be allocated greater area than would be allowable in the more sensitive Inner Kingston Zone. Although allowance has been made for an increase in stocking rates as compared to the Inner Zone, the proximity to the seagrass beds still influences limits set on stocking rates.

#### 2.2.3 Outer Kingston Zone

The Outer Kingston Zone is located seaward of the twenty metre depth contour setting it well clear of seagrass. Conditions in this area will require stock to be well developed and servicing equipment to be more robust to cope with the more exposed conditions. The sites will have the advantage to operators of allowing a significant increase in stocking rates.

#### 2.2.4 Historical Cape Jaffa Zone

The Historical Cape Jaffa Zone will support the industry currently in place but will not allow for expansion or development. Any requirement for increased production must be addressed by gaining access to sites in the other Zones.

#### 2.2.5 Kingston Exclusion Zone

The Kingston Exclusion Zone remains, for the most part, unchanged to protect conservation areas, maintain navigation channels, fishing use and residential qualities. There are however some new areas included as exclusion zones in this policy.

- Firstly, no aquaculture is permitted within one kilometre of the mean spring high water mark of the mainland within the Lacepede Bay Policy Area. This provides a buffer between aquaculture and the drainage system, maintains accessibility and the aesthetics of the area for all resource users.
- An area set aside for harvest is surrounded by a two kilometre buffer zone.

### **3 Need for policy**

Coastal upwellings in the Lacepede Bay area provide a unique opportunity to farm finfish generally suited to cooler waters. However, the presence of sensitive seagrass beds requires a cautious approach to development. Specifically, development in the region should be undertaken to minimise impacts on water quality and seagrass beds. Policies for aquaculture

development need to maximise benefits from the resource to the community through the development of a sustainable finfish aquaculture industry whilst minimising potential impacts.

The development of these policies follows intensive technical investigations undertaken by Sinclair Knight Merz (2000), a detailed report from an expert in the salmon industry (O'Brien 2002), a report by PIRSA divers on the impacts of industry on the seagrass (Bryars 2002) and the environmental monitoring undertaken by the existing industry in the area. The policies have also taken into consideration the consultation with key stakeholders including relevant Government agencies (Planning SA, Department of Environment and Heritage, Environmental Protection Authority, SA Tourism Commission, Department of Industry and Trade, and Human Services), the aquaculture industry, commercial and recreational fishing sectors and local government.

It should be noted that the issue of infrastructure required to support an expanded finfish industry in the South East must also be addressed to enable the benefits of the developments to be realised. This is discussed under the "Infrastructure" section of this document.

The zone policies contained within this Aquaculture Management Policy have been established to address:

- the growth and expansion of the aquaculture industry in the Lacepede Bay area;
- the need to ensure that aquaculture development is progressed in an ecologically sustainable manner; and
- the need to provide certainty to the industry and the community in the approval process and license/lease applications.

They relate directly to the objectives of the Aquaculture Act, being:

- To promote the ecological sustainability of the aquaculture industry; and
- To maximise the benefits to the community from the State's aquaculture resources; and
- Otherwise to ensure the efficient and effective regulation of the aquaculture industry.

### **3.1 Procedure for making policy**

The South East Aquaculture Management Plan was authorised by the Minister for Primary Industries in 1996. The plan was developed by the Aquaculture Group of Primary Industries South Australia in consultation with other Government agencies and the community to form the basis for management of the aquaculture industry in the South East region. The Lacepede Bay Aquaculture Management Policy supersedes all previous management plans for the area.

The Lacepede Bay Aquaculture Management Policy has been developed in accordance with the provisions of Part 4 of the *Aquaculture Act 2001*. Pursuant to these provisions, the Minister responsible for administering the

*Aquaculture Act* may make aquaculture policies for any purpose directed towards securing the objects of the Act and must, in the preparation of a draft policy, obtain and consider the advice of the Aquaculture Advisory Committee.

Section 12 of the Act requires the Minister to prepare a report in relation to an aquaculture policy containing:

- an explanation of the purpose and effect of the policy;
- a summary of any background and issues relevant to the policy;
- the analysis and reasoning applied in formulating the policy; and
- an assessment of the consistency of the policy with the Planning Strategy and any relevant Development Plan, any relevant environment protection policy and any other relevant plans or policies.

Draft aquaculture policies and the related report must be referred to prescribed bodies and relevant public authorities. Additionally, the Minister must invite interested persons to make written submissions in relation to the draft policy. Following consultation the Minister must consult with and consider the advice of the Aquaculture Advisory Committee on all matters raised as a result of public consultation.

Following approval of the policy by the Minister the policy must be referred to the Environment, Resources and Development Committee of the Parliament. The Environment, Resources and Development Committee may approve the policy, seek amendments to the policy or object to the policy. In the event that the Environment, Resources and Development Committee objects to the policy, the policy must be laid before both Houses of Parliament where it may be disallowed.

### **3.2 Ecologically Sustainable Development**

The *Aquaculture Act 2001* requires that the principles of ecologically sustainable development be promoted in the administration of the Act. Specifically, it provides as follows:

1. Development is ecologically sustainable if it is managed to ensure that communities provide for their economic, social and physical well-being while-
  - a. Natural and physical resources are maintained to meet the reasonably foreseeable needs of future generations;
  - b. Biological diversity and ecological processes and systems are protected and
  - c. Adverse effects on the environment are avoided, remedied or mitigated.
2. In making decisions as to whether development is ecologically sustainable or to ensure that development is ecologically sustainable-
  - a. Long-term and short-term economic, environmental, social and equity considerations should be effectively integrated and
  - b. If there are threats of serious or irreversible environmental harm, lack of full scientific certainty should not be taken to justify the

postponement of decisions or measures to prevent the environmental harm.

The Lacedepe Bay Aquaculture Management Policy and Zone Policies contains objectives for the development of aquaculture, its use and management in the coastal waters of Lacedepe Bay within a framework of ecologically sustainable development. The Policy will:

- facilitate aquaculture development within the region;
- provide a framework for the sharing of coastal resources within the region;
- recognise the legitimate users of the coastal resource within the region; and
- provide protection to those areas that are sensitive to alteration or which have conservation value.

#### **4 Consistency**

This draft policy has been prepared having regard to the State Government goals and strategies contained in the Planning Strategy for Regional South Australia (2003) and is consistent with that Strategy. It is consistent with relevant provisions in the Development Plan and Environment Protection Policies. The policy was developed within the framework of key objectives established in the South Australian Government's *Food Plan* and *Directions for Regional South Australia*. Additionally, consistency with the provisions of the *Environment Protection Act 1993*, *Native Vegetation Act 1991*, *Harbours and Navigation Act 1993* and *Coast Protection Act 1972* is assessed.

##### **The State Planning Strategy**

The Planning Strategy for Regional South Australia (2003) identifies a number of strategies for the development of regional South Australia. These policies further the following strategies:

1. Being more efficient and sustainable;
2. Diversifying primary production into new areas to replace or complement existing activities;
3. Adding value by greater processing of produce within South Australia instead of exporting produce in its raw state;
4. Integrated and sustainable management of natural resources in a manner that maintains ecological processes.

In particular, the policies address the following goals and priorities identified in the Planning Strategy for Regional South Australia relating to:

##### ***Economic activity***

##### **Goals**

1. A more diversified regional export base;
2. Economic development within the context of sustained natural systems.
3. A positive business, investment and employment climate.

### **Priorities**

1. Adding diversity and value to regional development and to South Australian exports, including food, fibre and fabric, tourism, forestry, irrigated production and aquaculture.
2. Sustainably using and managing valuable natural resources including water to facilitate economic development.
3. Retaining people and encouraging them to return to regional areas, especially youth.

### ***Aquaculture and fishing***

#### **Goals**

1. Ecologically sustainable growth of the aquaculture industry while managing access and use of the resources on which the aquaculture industry depends.

#### **Priorities**

1. Encourage marine-based aquaculture in line with aquaculture management plans.
2. Identify sites for specific marine-based aquaculture and establish environmental capability for each area.
3. Promote the establishment and growth of land based aquaculture industries where there is adequate water.
4. Manage effluent disposal from land based aquaculture.

### ***Ecologically sustainable development***

#### **Goals**

1. Promote ecologically sustainable development principles and apply them in all aspects of development and re-vitalisation.

#### **Priorities**

1. Plan for and coordinate the sustainable management of renewable natural resources and the efficient use of non-renewable resources.
2. Establish and maintain an environmental information base and report regularly on the state of the environment.
3. Monitor the quality, quantity, location, relative costs and replacement rates of natural resources.
4. Evaluate potential natural resource demands in the light of economic and population forecasts.
5. Encourage clear guidelines for intensive agriculture to ensure sustainable production.

### ***Biodiversity***

#### **Goals**

1. Conserve biodiversity and integrate with natural resources management and land use planning.

#### **Priorities**

1. Ensure that land use planning is informed by relevant ecological data.

### ***Areas of conservation and cultural significance***

#### **Goals**

1. Protect and manage areas of conservation and cultural significance.

#### **Priorities**

1. Base land use planning and location decisions for development in areas of conservation and cultural significance on proper consideration of relevant habitat, ecosystem, biological and landscape data.

### **The Land Not Within A Council Area (Coastal Waters) Development Plan**

Provides that aquaculture development should be undertaken:

1. In an ecologically sustainable way;
2. In a manner which recognizes other users of marine and coastal areas and ensures a fair and equitable sharing of marine and coastal resources;
3. 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;
4. To minimize conflict between water and land based uses including:
  - a. aquaculture;
  - b. wild fisheries;
  - c. recreational fishing;
  - d. passive and active recreation activities (eg. boating, skiing, sailing, swimming, diving, sightseeing, enjoyment of coastal wilderness);
  - e. farming;
  - f. residential, other urban development, and holiday areas;
  - g. tourism;
  - h. industrial development;
  - i. defined national and conservation parks, and wilderness areas;
  - j. mining and areas with significant mineral deposits;
5. To maintain adequate safety standards, including navigational safety;
6. To minimize the risk of pollution from external sources and activities;
7. So that onshore support facilities and activities are appropriately designed and located;
8. To maintain public access to the foreshore and coastal waters;
9. To minimize adverse impact on the visual amenity of the coastal environment, and unspoiled views adjacent to the coast;
10. To minimize any adverse impacts on sites of ecological, economic, cultural, heritage or scientific significance such as:
  - a. Indigenous, Non-Indigenous or Natural Heritage sites;
  - b. National Parks, Conservation Parks and reserves;
  - c. Recreation reserves;
  - d. Marine Parks and reserves;
  - e. Sites of scientific importance;
  - f. Mineral reserves;
  - g. Areas of high public use;
  - h. Areas valued for their beauty or amenity; and
  - i. Breeding grounds for both marine and terrestrial species.

11. In a manner which recognises the social and economic benefits to the community.

These policies are consistent with these provisions in that they attempt to ensure the ecologically sustainable development of the aquaculture industry and recognise and respect other users of the marine resource.

### ***Environment Protection Act 1993***

These draft policies were 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 came into operation on 1 October 2003. The principal object of this 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:

1. Loss of seagrass or other native aquatic vegetation; or
2. Reduction in numbers of any native species of aquatic animal or insect; or
3. Increase in numbers of any non-native species of aquatic animal or insect; or
4. Reduction in numbers of aquatic organisms necessary to a healthy aquatic ecosystem; or
5. Increase in algal or aquatic plant growth; or
6. Water becoming toxic to vegetation on land; or
7. Water becoming harmful or offensive to humans, livestock or native animals; or
8. Increased turbidity or sediment levels.

The Objects of the *Environment Protection Act* 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* 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* also provides that communities must be able to provide for their economic, social and physical well-being.

The *Environment Protection Act* 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 harm to the health or safety of human beings that is not trivial, or other 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 or 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* to the extent that it seeks to minimise or prevent harm to the environment associated with aquaculture.

### **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 policies are aligned with those relating to:

1. Market driven food exports;
2. Sustainable production; and
3. A committed government.

### **Directions for Regional South Australia**

A number of objectives for regional development are identified in the South Australian Government's regional development policy Directions for Regional South Australia. This policy is aligned with those relating to:

1. Planning and infrastructure building;
2. Responsive government; and
3. Economic generation.

### **Harbours and Navigation Act 1993**

Section 15 (1) of the *Harbours and Navigation Act 1993* vests all adjacent and subjacent land in the Minister for Transport, subject to any pre-existing registered interest in the land. 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 50 metres from high water mark (whichever is the lesser distance). Subjacent land is land underlying navigable waters within the jurisdiction. The jurisdiction is defined as the State, so much of the territorial sea as is adjacent to the State and any other navigable waters declared by regulation to be within the jurisdiction but does not include navigable waters declared by regulation not to be within the jurisdiction.

Matters of title and jurisdiction related to the territorial sea adjacent to the State are further addressed in the *Coastal Waters (State Powers) Act 1980*, *Seas and Submerged Lands Act 1973* and *Coastal Waters (State Title) Act 1980* of the Commonwealth. Section 15 (4) of the *Harbours and Navigation Act 1993* provides that "the *Crown Lands Act 1929* does not apply to land vested in the Minister under this 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* provides for the grant of aquaculture leases in “State waters or State waters and adjacent land within the meaning of the Harbours and Navigation Act”. Section 20 of the *Aquaculture Act* provides that the grant of aquaculture leases is subject to the concurrence of the Minister responsible for administration of the *Harbours and Navigation Act*. This policy is consistent with these provisions as they relate to the jurisdiction of the *Aquaculture Act* 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. These policies are consistent with the provisions of the *Coast Protection Act* in that they seek to protect the coast by minimising the risk of erosion, damage, deterioration, pollution and misuse of the resource.

### **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:

1. 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
2. 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; and
3. The encouragement of research into the preservation, enhancement and management of native vegetation.

The draft policy is consistent with these objectives in that it seeks to minimise impacts on native vegetation.

## **5 Background and Issues**

### **5.1 An overview of the Aquaculture Industry**

South Australia contributed approximately 38% of the value of Australian aquaculture production. In 2000/01 South Australian aquaculture generated production worth more than \$285 million representing 58% of the value of South Australian seafood production. The sector generated income of \$220 million in associated sectors with almost 1,200 South Australians working in the industry and a further 1,530 people working in associated sectors. It is expected that direct employment of around 1,600 people will be achieved by 2003/04 with total direct and indirect jobs being as high as 3,600 people (EconSearch, 2002). A recent survey has estimated that the value of the industry will reach approximately \$390 million in 2003/04 (Love et al, 2003).

## **5.2 The Economic Impact of Aquaculture in the South East region**

Direct business turnover (output) generated by aquaculture in the South East region was approximately \$3.0 million in 2000/01. Flow-ons to other sectors of the regional economy added another \$3.7 million in business income in 2000/01. The sectors most affected were the manufacturing, trade and property and business services sectors (EconSearch 2002b).

Aquaculture was responsible for the direct employment of 49 people in 2000/01 in the South East region. Flow-on business activity was estimated to generate a further 27 jobs. In 2000/01, personal income of \$1.1 million was earned in the South East region aquaculture industry comprising both wages by employees and estimated drawings by owner/operators. An additional \$0.9 million was earned by wage earners in other local businesses as a result of aquaculture industry operations.

## **5.3 Potential Impacts of Marine Aquaculture**

Aquaculture provides the basis for improved biological understanding of Australia's native marine species and can be used to re-establish populations of endangered and threatened aquatic species. Most species have intensive research and development programs in place such as oysters, salmon, tuna and abalone. The detailed research gathered on some marine species will help maintain healthy stocks in the wild and help preserve their genetic integrity. Scientific investigation and monitoring have an essential role in understanding and evaluating the boundaries of risk to help minimise negative environmental impacts.

Studies into the potential impact of activities provide a significant increase in the information on the ecology of areas often extending into regions well beyond the aquaculture sites. Aquaculture monitoring also provides a level of information on the marine environment than would otherwise be available. Broad scale mapping is also giving us high quality information on seagrasses that have not been previously available. This is in addition to the benefits provided by employment and economic opportunities for the region.

Additionally, planning for aquaculture must consider the likely impacts on aquaculture operations. These include planning to avoid navigation channels, oil spills, stormwater run off, sewage outfalls and overflows and agricultural run off.

Limiting access, interfering with scenic amenity, creating navigational obstacles, altering water quality and ecosystems or occupying anchoring sites are some of the impacts aquaculture can have on other resource users if the industry is not carefully managed.

In the Lacepede Bay area particular attention needs to be paid to minimising impact on seagrass beds and ensuring areas with appropriate water depths for finfish farming are used.

## 6 Analysis and Reasoning

### 6.1 Existing Conditions

The area has a diverse range of industries encompassing tourism, agriculture, fisheries, forestry and aquaculture. Included in the agriculture sector are sheep and cattle farms, grain crops, orchards, viticulture and dairy farms. *Pinus radiata* plantations are also common. Other land use is divided between private land used for housing and shack type dwellings and conservation parks.

There are approximately 965 permanent residents in and around Robe and 1,486 residents in and around Kingston. The density of human settlement along the coast and coastal hinterland is low (Census of Population and Housing, 2001).

#### 6.1.1 Pollution Issues

Three drain outlets for the South East drainage system are located in the Lacepede Bay Policy Area. These outlets may be a source of pollution and may impact on aquaculture and therefore should be considered in the siting of developments. Run off from the landfill located on the outskirts of Kingston and the Fish Processing Plant at Cape Jaffa may also be of concern for aquaculture and needs to be considered prior to any aquaculture development in the area (PIRSA, 1996). These concerns are largely negated by the one kilometre exclusion zone along the coast.

#### 6.1.2 Navigational Issues

As previously described, the Kingston area has very significant levels of marine traffic, particularly in relation to leisure craft, recreational and commercial fishing vessels. This high level of traffic poses a threat to aquaculture while the presence of aquaculture may represent a navigational hazard requiring strict standards.

#### 6.1.3 Terrain

The Coorong Biunit that extends from the Murray Mouth to Cape Jaffa in the south is dominated by sandy beaches, sand dunes and associated dune blow outs. One prominent geological feature is the stand of granite rocks known as "The Granites" in the northern section of Lacepede Bay. This outcrop, surrounded by sandy beach, represents the only evidence of Paleozoic bedrock along the entire South East coast and therefore has strong geological significance which is shared by the beach ridge plains of Lacepede Bay (Edyvane, 1999).

#### 6.1.4 Dives and Transects

Further field investigations have been undertaken at Lacepede Bay to allow better understanding of the environment and to determine the level of impact finfish farming is having on seagrass in the inner shore zone.

These investigations, consisting of a series of dives by the Marine Habitat Section from within PIRSA, found the bay does not have a full seagrass cover

but rather consists of a mixture of seagrass species (largely *Amphibolis* and *Posidonia*) and bare sand patches.

The report resulting from the dives proved to be very useful and helped to put farming activities into perspective by siting observations reflecting natural cycles and other human impacts in the region. This is exemplified by noting fish farming is only one aspect of human activity, pointing out the mooring of fifteen vessels in the Cape Jaffa area.

The report also highlighted the dynamic nature of the seagrass beds in relation to natural blowouts and recolonisation and while it was made clear that human activities were having an impact mainly through physical damage from scouring, the point was made that there were positive indications that these areas were recolonising with *Amphibolis* seedlings and by regeneration through the established *Posidonia* root matting.

## **6.2 Oceanography and Meteorology**

### **6.2.1 Climate**

The area has a temperate climate characterised by cool, wet winters and warm dry summers. Water temperature ranges from an average minimum of 11°C and an average maximum of 18°C. The average annual rainfall is around 630 mm.

### **6.2.2 Prevailing Winds**

The seasonal wind regime in the Lacedpede Bay Policy Area is generally controlled by the eastward progression of high pressure cells. During the summer months, high pressure cells move eastward along the subtropical high pressure ridges that exist to the north of the study area. These systems produce predominantly southerly winds. During the winter months the synoptic pattern produces predominantly north west to north east winds as the result of the tropical migration of the high pressure ridge (Sinclair Knight Merz, 2000).

The following seasonal summary of prevailing wind systems has been taken from the Sinclair Knight Merz Technical Investigations Report (2000).

#### *Summer regime*

The dominant winds are from the south with the speeds generally around 21-30 km/hr (45%-61% of the time for all wind directions).

#### *Winter regime*

Northerlies are the dominant winds throughout the winter. The wind speed generally increases from a range of 11-20 km/hr in the mornings to 21-30 km/hr in the afternoon.

#### *Spring regime*

During the mornings the winds are often northerlies which frequently swing around to become southerlies in the afternoon. The wind speed is most regularly 21-30 km/hr.

### *Autumn regime*

The autumn patterns are more unpredictable than those of other seasons. Morning winds are commonly from the north, north west and north east most frequently at a speed of 11-20 km/hr. By the afternoon winds are often southerly increasing to 21-30 km/hr.

### 6.2.3 Strong winds

Characteristics of strong winds were assessed in the technical investigations report showing that since from July 1992 to October 2000 there have 507 events where winds have exceeded 55 km/hr. Summer accounted for 9% of these events, autumn 15%, winter 33% and spring registered the most with 43% of strong wind events.

### 6.2.4 Upwelling System

The South East region is recognised as an area exposed to summer time upwellings. Studies conducted by Rochford (1977) suggested that upwelling of cold water is a regular summer feature of the continental shelf between Cape Jaffa and Portland. The weather pattern over southern Australia from November to March (summer time period) is dominated by a succession of slow-moving, high-pressure systems tracking eastwards south of the continent which produce a south-easterly wind flow parallel to the coast. As the surface waters of the region are forced offshore by wind motion and horizontal motion, due to deflection by coastline topography as well as a deflection owing to the Earth's rotation, waters from greater depth replace the surface waters. If the water column has a deep thermocline, then uplifting or upwelling of the thermocline may occur, with subsequent surfacing or shoaling of the deep cold water layer. A thermocline occurs when the water column shows a gradient in temperature with depth – typically the water column is highly stratified with a layer of cold water near the bottom, and in this region that is only expected to occur during the summer time.

The bottom water is of “sub-Antarctic” character, having lower temperature, lower oxygen content, higher nitrate concentrations, as well as lower salinity than the overlying surface water (Lewis, 1981). Three areas of upwelling activity have been recognised in the region centred around Robe, Southend/Rivoli Bay and Port MacDonnell. These areas can be identified as upwelling centres by the temperature/salinity minima during the summer period. The magnitude of upwelling is expected to be greater in the southern segment of the region, owing to a shorter distance to the continental shelf (28km in the Port MacDonnell area, to 60km seaward in the Robe area), but are not uniformly associated with this factor. Submarine canyons may also modify upwelling patterns, and have been recognised seaward of Southend and Port MacDonnell (Lewis, 1981).

On average, the highest temperatures and lowest salinities (for surface water) occur in the period January-February (35.2 PSU, 18<sup>0</sup>C), and lowest temperatures and highest salinities occur during July-August (35.6 PSU, 14<sup>0</sup>C) (Lewis, 1981, Bye 1983). Analysis was conducted on temperature data from measurements carried out during the summer of 1983 and 1984

(Schahinger, 1987) adjacent to the Bonney coast. It was found that during periods of major upwelling the sea temperature decreased to approximately 14°C whereas during periods of non-upwelling the sea temperature re-stabilised between 17-18°C. The water column is generally well mixed during winter, with uniform temperature and salinity profiles with depth. However, stratification occurs during October to December, with the lower layer showing the characteristics of reduced temperatures (11-12°C), reduced salinity (35.2 PSU), reduced oxygen saturation (<90%) and increased nitrate concentrations accompanying increased density (Lewis, 1981).

It is this upwelling system with its associated cooler waters which makes salmonoid farming in the South East region possible.

#### 6.2.5 Waves

Significant wave parameters were calculated for the centre of the Lacepede Bay Policy Area. It was found that the fetch length associated with winds from the north-east, east and south-east was small compared to the fetch lengths associated with winds from other directions. The fetch lengths associated with winds from the west, southwest and south were the longest.

The wave height varied from approximately 0.8 m for the relatively short fetch associated with the north to approximately 1.6 m due to westerly, south-westerly and southerly winds. The corresponding distance between waves varied from about 3.5 to 5.0 seconds. The larger values of wave height and distance are associated with higher wind speeds occurring in the summer. The associated depth of feel of the waves was between ten and twenty metres (Sinclair Knight Merz, 2000).

#### 6.2.6 Tidal Circulation

##### *High Tide*

At high tide, the currents in the greater portion of Lacepede Bay including the area adjacent to Kingston were near zero. West of Kingston the strength of the currents increased to about 10 cm.s<sup>-1</sup> in a north-easterly direction. Due to constriction between the seaward protrusion of the coastline at Cape Jaffa and the Margaret Brock reef system, the magnitude of the currents increased to approximately 15 cm.s<sup>-1</sup>.

##### *Ebbing Tide*

During the ebbing phase of the tidal cycle, the currents in the northern section of Lacepede Bay were southerly. In the southern section of the Bay, currents developed a south-westerly orientation at speeds of up to 10 cm.s<sup>-1</sup>. In the area between Cape Jaffa and Margaret Brock Reef currents were found to increase to 12-15 cm.s<sup>-1</sup>.

##### *Low Tide*

At low tide currents throughout Lacepede Bay were again near zero. Marginally stronger currents around 5 cm.s<sup>-1</sup> occurred adjacent to Cape Jaffa.

### *Flooding Tide*

On the following flooding tide, the strongest currents of 12-15 cm.s<sup>-1</sup> were adjacent to and south of Cape Jaffa in a north-westerly direction. North of Cape Jaffa, weaker currents ran at around 5 cm.s<sup>-1</sup> in a north-easterly direction. (Sinclair Knight Merz, 2000).

## **6.3 Marine Environment**

### **6.3.1 Water Quality**

The technical investigations showed that there is not substantial historical data on the local water quality (Sinclair Knight Mertz, 2000). The report notes that the upwelling event in summer does introduce naturally cool, nutrient-rich water to the area but is unable to identify the levels of nutrient which are naturally occurring and those that may be humanly induced through activities such as aquaculture, agricultural and domestic run-off. In general, the report does indicate that areas farming finfish may benefit by locating the cages in deeper waters with greater flow to increase the dispersive and assimilative capabilities of the system but it should be noted that further investigations undertaken in the area by a consultant specialising in salmon farms indicated that the flushing rate and exposed nature of the waters in the region vastly reduces the potential for eutrophication to occur in the Lacedepe Bay Policy Area.

The water quality in the region has been, and most likely will continue to be affected by human derived nutrient addition. The way in which these impacts are assessed, reported and managed has important implications for the sustainability of not only aquaculture but other industries in this region and a consistent monitoring program must be undertaken. Obviously this is a much larger issue than a single industry and while licensing conditions will ensure that monitoring is undertaken for aquaculture, it would seem prudent for a similar program to be initiated to monitor the broader system to identify and address other sources affecting water quality in the area.

The aquaculture monitoring programs to be instigated in the new zones will however contribute significantly to the local knowledge base and go a long way towards clarifying a number of issues relating to the compatibility of sea-cage farming and aquatic plants and macro algae. The program will also ensure that if there is an unacceptable level of impact on water quality or existing habitat, the expansion of the salmon industry in the Lacedepe Bay Policy Area will cease until a suitable agreement between all parties can be reached.

### **6.3.2 Eutrophication, Sedimentation and Shading**

Based on the visual assessment of seagrass standing crop, leaf density, and epiphyte load, and the presence of sediments on seagrass, there was no evidence to suggest that any eutrophication or sedimentation was occurring (Bryars, 2002). However, this investigation was limited in scope and further investigation is required.

It was believed that this was as a result of farm management practices and favourable environmental conditions at Lacepede Bay. The report states that there was apparently no eutrophication or sedimentation because:

1. Fish are being fed a pellet diet which results in little wastage and they are being fed efficiently which also results in little wastage; pellet feed is expensive and it is obviously in the farmers best interests to use feed efficiently.
2. The area adjacent to Cape Jaffa experiences strong wind-driven currents, moderate tidal currents (Sinclair Knight Merz, 2000), and apparently swell movements also (diver observations from present study). All of these factors would help to quickly dissipate any feed or faecal wastes from the cages.

The report also found that the single swinging mooring set-up at Cape Jaffa appeared to be very effective in minimising the potential impacts of shading on seagrass.

From their observations, Officers from Marine Habitat were able to make some constructive suggestions which could be easily incorporated under the licensing conditions. The dives indicated that the main environmental difficulties are associated with the scouring of the seabed by the mooring apparatus. These problems could be largely overcome with some engineering improvements such as the attachment of floats to the first mooring chain so it is raised off the seabed during times of slack water movement. It was also recommended that permanent mooring blocks be positioned so that impacts of scouring are limited to one area (Bryars, 2002)

## **6.4 State Development, Social, Environmental and other Impacts.**

### **6.4.1 Community**

Kingston is the primary settlement in the Lacepede District area with around 1,486 residents (Census of Population and Housing, 2001). Smaller coastal settlements are located throughout the region with one of the most popular areas being Cape Jaffa.

Table 1 . Population and Income Statistics for the Lacepede District

(Source: Census of Population and Housing, 2001).

<b>Year</b>	<b>Population</b>	<b>Median Income/wk</b>
<b>2001</b>	2,226	\$300-\$399
<b>1996</b>	2,219	\$200-\$299
<b>1991</b>	2,266	\$200-\$299

The most significant industries in the region include fishing, agriculture and tourism.

#### 6.4.2 Industry Development

The local upwelling system makes this Policy Area suitable for the production of cooler water, mainly salmonoids such as Atlantic Salmon and Ocean Trout that may not normally be associated with South Australian waters. Both species are currently produced in the South East in limited volumes largely restricted by the presence of seagrass in the inner bay areas.

Salmon smolt are transferred to the sea in approximately August and are grown for a further twelve to fifteen months in sea cages. Ocean Trout are transferred to the sea in about April and are then grown for approximately 6-9 months.

Fish harvested are transported overnight to Melbourne, Adelaide or Sydney. Because of the short time to market the industry is able to ensure fresh high quality product.

This policy formalises arrangements which will allow more intensive grow-out of finfish in the deeper waters found in the Intermediate and Outer Zones where seagrass is not a major issue. In addition, the circulation patterns and assimilative capabilities in these waters are beneficial from both the environment perspective and the health of the fish. Being further offshore, these zones should also help to alleviate concerns relating to aesthetics, coastal access and navigational problems.

However, the historical use of limited finfish production in the old "Cape Jaffa Zone" will be recognised to accommodate the existing licence holders currently operating in the area.

#### 6.4.3 Fishing Industry

The commercial fishing industries operating from the South East include major scale fisheries (particularly school shark, tommy ruff, King George whiting, garfish, mulloway and Australian salmon), blacklip abalone and the southern rock lobster fisheries. The offshore waters (greater than 100m deep) also support orange roughy, blue eye trevally, gemfish and grenadier fisheries (Edyvane, 1999).

#### 6.4.4 Tourism

It is estimated that in 1998, tourism in the South East (of which Lacedepe Statistical District is a small component) was responsible for the employment of 2,277 people directly and 1,451 indirectly and generated approximately \$148 million of income in the local area. Draw cards in the region include historic sites and areas containing rare or endangered species particularly the many conservation parks. Specialty tourism focuses largely on aquatic activities including the active lobster fishing fleets, fishing, diving, swimming, windsurfing, surfing and sailing (Sinclair Knight Mertz, 2000).

#### 6.4.5 Ecological values (Sinclair Knight Mertz, 2000)

The marine assemblages west and east of Robe represent the convergence of two distinctly different major biogeographical units. East of Robe, the marine floral and faunal assemblages share more in common with the cooler

temperate water communities of Victoria than they do with the more warm temperate assemblages typically associated with the rest of South Australia (i.e. west of Robe).

The biogeographical region that encompasses the warmer temperate waters extends from southern Western Australia to Bermagui in New South Wales, and is known as the Flindersian Province. The colder water region that is sited within this larger province encompasses the study region and is recognised to be a portion of the Maugerian Subprovince, which also incorporates Victorian and Tasmanian coastal waters. These pelagic provinces incorporate areas at a scale of 100,000's km<sup>2</sup>.

At the finer scale of bioregions (i.e. 1000's of km<sup>2</sup>) the Coorong and Otway bioregions are recognised, which are nested within the Maugerian Subprovince. These two bioregions contain four biounits, which are defined on the basis of oceanographic processes, field surveys of biota as well as coastal orientation and wave environment and are described in Edyvane (1999).

While the productivity of the open ocean in the area outside of the study region can be high at certain times, the productivity of the inshore and coastal regions is expected to be relatively high for a majority of the year. The productivity of the coastal and inshore regions is driven in part by the highly diverse algal assemblages that occur in the region. The high levels of macroalgal biodiversity have been attributed to the convergence of the Flindersian and Maugian biogeographic provinces. In this convergence zone, cool temperate and warm temperate species' ranges overlap.

The area of interest to this study contains several key habitat types, including rocky reefs, soft sediment bottoms and seagrass meadows. The vast majority of the coastal area of the Coorong biounit is comprised of soft sediment systems, commonly fringed by dune systems. There is a general absence of seagrasses in the northern portion of the Coorong biounit, although dense beds of seagrasses are identified by Edyvane (1999) towards the southern end of the unit culminating at Cape Jaffa.

The seagrass meadows within this region have previously been identified to include *Posidonia australis*, *P. angustifolia* and *P. coriacea*, *Amphibolis antarctica* and *Heterozostera tasmanica* (PIRSA, 1996). The seagrass beds are generally within lower energy regions in waters to the lee side of offshore reefs, as the reefs attenuate wave energy. Seagrasses require lower energy environments than macroalgal groups, and this is the most probable explanation for the absence of seagrasses from the sandy substrates along the majority of the Coorong region.

The prominence of the rocky headland of Cape Jaffa at the southernmost extent of Lacedpede Bay, and the numerous offshore reefs that occur within this region sufficiently modify the wave environment promoting the development of dense, extensive beds of seagrasses to be found up to approximately twelve metres in depth. The seagrass beds of this area extend from the south of Lacedpede Bay to the Granites in the north. Nora Creina,

Guichen and Rivoli Bays further south, as well as sheltered sandy zones to the lee of reef systems, may support patches and sparse meadows of *Posidonia coriacea*, *P. australis*, *Amphibolis antarctica* and *Heterozostera tasmanica*.

As a transitional zone between the warm temperate and cool temperate zones of the Flindersian and Maugerian provinces, the spatial extent of the distribution of several species of seagrass is reached within this area. Towards the north of this biounit, Backstairs Passage is the easternmost point at which it is possible to find *Posidonia denhartogii*. Kingston represents the most easterly extent of the species *P. sinuosa* in the Coorong biounit, while Port MacDonnell in the Picanninie biounit represents the easterly range of *P. angustifolia* (Edgar, 2000).

#### 6.4.6 Marine Sanctuaries and Conservation Areas

Butcher Gap Conservation Park is located in this Policy Area, south of Kingston. This park was proclaimed to conserve significant areas of coastal scrub as a wetland refuge for birds and to provide winter feeding grounds for the rare orange bellied parrot. The park includes a range of wetland habitats.

Bernouilli Conservation Reserve is partially located in this Policy Area. This park was proclaimed under the *Crown Lands Act* to conserve a coastal dune system and associated orange bellied parrot habitat. This area includes coastal fore-dunes near Cape Jaffa.

The “Granites” are also located in this region north of Kingston. These rock formations support a marine community that is unique in the area. This is the only area along the south east coast line that the red algae *Nemalion* is found (Womersley, 1990).

There are two rock lobster sanctuaries located in this region that are proclaimed under the *Fisheries Act 1982*. The Cape Jaffa sanctuary is located in coastal waters adjacent to sections of the coastline around Cape Jaffa. Sections of the Margaret Brock Reef sanctuary are located in this zone. This sanctuary includes all waters within 0.55 nautical miles of the lighthouse which is located at 374981E, 5909493N. These sanctuaries were proclaimed to conserve rock lobster breeding areas.

#### 6.4.7 Sediment Fauna

The main point the technical investigations report by Sinclair Knight Mertz (2000) were able to identify in relation to infauna was that there was very little data available to allow sound assessments to be made. It was also acknowledged that the level of sampling undertaken over the course of the study was insufficient to be able to draw any conclusions. The sampling that was undertaken indicated a high diversity of invertebrates, with a total of 44 infaunal invertebrates, in addition to an unidentified Annelid polychaete. No single taxon was consistently represented in the sampling program, with representation highly variable between replicate samples and locations.

Another interesting point is the apparently low abundance of opportunistic species (eg. *Capitella* sp.) found in the study region. However once again, the limited sampling does not allow definite conclusions to be drawn to suggest this is the result of organic pollutants or disturbance by hydraulic forces or oceanographic parameters.

#### 6.4.8 Ship Wrecks

There are no known wrecks in the policy area, however, there are a number of wrecks believed to be in this region, many of which have significant historical value and are also protected under Commonwealth legislation. These wrecks include:

- The Maria, lost in 1840
- The Victoria, lost in 1846
- The Agnes, lost in 1876
- The Kingston, lost in 1880 and
- The Kingston, lost in 1895.

#### 6.4.9 Infrastructure

Infrastructure in the area is a significant issue that needs to be assessed prior to the expansion of aquaculture in the Kingston area. At present the infrastructure is inadequate to cope with any real expansion of the industry. However, the State Government is considering a scheme for development of Cape Jaffa for major project status. Kingston District Council and Limestone Coast Regional Development Board are very supportive of the scheme (O'Brien, 2002).

The development includes specific planning for a Fishing Industry Zone (including aquaculture) with provision of a sheltered area in which facilities for receiving fish, processing, and holding stores, fuel facilities, fish weighing facilities, commercial boat ramps and fishing berths and an aquaculture service and industrial area all accommodated. The essential land-based activities of a medium to large-scale industry would seem to be supported by such a scheme. This should allow for more efficient and better-controlled harvesting and grading operations during rough weather, provide fish loading/unloading facilities, and an area for feed storage and bulk handling (O'Brien, 2002).

Other land-based operations such as net cleaning and drying are not required by the present industry, however planning for such facilities at the design stage of the proposal would be appropriate. Depth and width of the waterways and movement and quality of the 'inlet' will also be critical to the utility of the area especially for harvest and introduction of smolt. However, such a development would not only provide the potential for expansion of the industry in the area into the future but also enable current farmers to more efficiently farm the present leases at Cape Jaffa (O'Brien, 2002).

### **6.5 Management Controls**

Since 1997 the area has supported a limited industry. There is now approval for 40 hectares of salmon production in the sheltered inshore areas. However the shallow waters and presence of seagrass has limited further industry

expansion in the current zone. These sites now provide an ideal opportunity to evaluate the effects of salmonoid farming over seagrass beds. Further expansion of the aquaculture industry in the region, will be in accordance with the provisions of these policies and will be subject to appropriate monitoring of any impacts associated with these developments.

#### 6.5.1 Site Management Practices

PIRSA Aquaculture considers that licensing arrangements can effectively manage finfish culture in the Inner, Intermediate and Outer Zones in the Lacepede Bay Policy Area. In particular licence conditions would include but not be limited to:

- The stipulation of a minimum distance (three metres) between the sea cage and the sea floor to prevent scouring;
- The use of swinging mooring systems in seagrass localities, reducing potential for nutrient build-up and sedimentation under cages and allowing the dissipation and distribution of nutrients over a broader area. The system will also overcome problems of “shading” seagrass, as the mobile system will allow all areas exposure to sunlight with changing weather conditions.
- Adherence to low stocking rates in the more sensitive inner zone.

## 7 Consultation

The basis for the proposed aquaculture zone and associated planning policies has included information obtained through consultation with key community, industry and government stakeholders. The Aquaculture Act requires that the draft policy be presented to the public for comment and that the submissions are taken into account in preparing the final policy. In addition to this statutory process, consultation with key stakeholders was undertaken during Stage 1 to identify issues, concerns and visions for the future.

In developing the policies and management zones recommended in this report, a number of issues have been taken into account including (but not limited to) the following:

- Ensuring an equitable and rational allocation of coastal resources to different uses;
- Principles of Ecologically Sustainable Development;
- Heritage issues and proximity to proclaimed shipwrecks and sites of indigenous heritage and/or archaeological significance;
- Proximity to marine reserves, National Parks, sensitive habitats, and other protected areas;
- Proximity to navigational channels, safe anchorages, marinas, public jetties and other public facilities;
- Impacts of the industry on non-industry activities (eg. commercial/recreational fishing, boating, tourism, public beaches, etc) and vice versa including sewerage outlets, drainage patterns, land use patterns, and on-shore facilities;
- Visual impact of aquaculture activities and amenity issues;

- Impacts on the management of the coastal zone; and
- An analysis of current management practices of the industry.

The draft policy was made available on the web and distributed to the following prescribed bodies for comment:

- Aboriginal and Torres Strait Islander Commission
- Aboriginal Legal Rights Movement Incorporated
- Aquaculture licence and lease holders in the affected area
- Conservation Council of South Australia Incorporated
- Coast Protection Board
- Department for Environment and Heritage
- Department of Human Services
- Department of the Premier and Cabinet
- Department of Primary Industries and Resources
- Department of Transport and Urban Planning
- Department of Water, Land and Biodiversity Conservation
- Division of State Aboriginal Affairs in the Department of Administrative and Information Services
- Environment Protection Authority
- Kingston District Council
- Minister responsible for administration of the *Harbours and Navigation Act 1993*
- Office of Economic Development
- Office of Local Government
- Office of Regional Development
- Registered native title claimants for the affected area
- Seafood Council of South Australia
- South Australian Aquaculture Council Incorporated
- South Australian Catchment Water Management Board responsible for the affected area
- South Australian Fishing Industry Council Incorporated
- South Australian Local Government Association
- South Australian Recreational Fishing Advisory Council
- South Australian Tourism Commission

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# LACEPEDE BAY AQUACULTURE MANAGEMENT POLICY

## Proposal

To establish policies for the ecologically sustainable development of the aquaculture industry, predominantly the farming of finfish in the Lacepede Bay region.

## Background

Technical Investigations undertaken by Sinclair Knight Mertz (2000) put forward the concept of establishing an aquaculture zone fifteen to eighteen kilometres from the coast to ensure that cages were set up in water over twenty metres deep and away from sensitive seagrass.

This area is not considered suitable due to the distance from shore and the rough conditions the area frequently experiences which would make servicing sites unrealistic. This view was supported by an independent consultant from Tasmania engaged by PIRSA Aquaculture to assess the area for salmon farming. He was also able to conclude that the exposed nature of the region would mean there was little prospect of adverse sedimentation in more suitable areas where management could be suitably controlled under licensing conditions.

Policy changes are needed to enable the aquaculture industry in the South East to develop to its full potential. The policies must allow operators to take advantage of the cooler waters produced by the upwelling system and at the same time provide shelter for stock during their more vulnerable early stages of life, but protect the seagrass beds from any adverse impacts.

To accommodate this, three new zones have been developed while the exclusion zone and historical sites have been maintained.

## 1 Lacepede Bay Aquaculture Management Policies

The Lacepede Bay Aquaculture Management Policy Area is defined as all waters within the boundaries of the plan and bounded to the north by a line between points 1 and 4 and to the south-west by a line connecting points 15 and 25, covering an area of around 52,000 ha (Map 1).

	<b>Coordinates GDA 1994</b>	
<b>Point</b>	<b>Longitude</b>	<b>Latitude</b>
1	-36°35' 16.804"	139°39' 50.942"
4	-36°35' 23.143"	139°49' 54.469"
15	-36°51' 16.060"	139°39' 11.646"
25	-36°56' 36.168"	139°40' 58.692"

The Lacepede Bay Aquaculture Management Policy Area is comprised of the following zones:

- Inner Kingston Zone
- Intermediate Kingston Zone
- Outer Kingston Zone
- Historical Cape Jaffa Zone
- Kingston Exclusion Zone

## **OBJECTIVES**

- Objective 1: To protect proclaimed conservation areas in the vicinity of Lacepede Bay.
- Objective 2: To protect historic wrecks in the vicinity of Lacepede Bay.
- Objective 3: To maintain residential qualities in the vicinity of Lacepede Bay.
- Objective 4: To maintain fishing use in the vicinity of Lacepede Bay.
- Objective 5: To protect unique environmental features in the vicinity of Lacepede Bay.
- Objective 6: To maintain navigational safety in the vicinity of Lacepede Bay.
- Objective 7: To provide for the development of a sustainable aquaculture industry in the Lacepede Bay area.

The assessment of licence applications will take into account previously approved sites to ensure that best use is made of the entire Lacepede Bay Policy Area and that the accumulative effect of farms in the vicinity do not place too great a demand on any one locality.

### **General Policies for the Lacepede Bay Aquaculture Management Policy Area.**

1. Lease and corresponding licenses will not be issued for aquaculture development within one kilometre of the mean spring high water mark of the main land within the Lacepede Bay Policy Area unless such a locality is specifically identified as suitable for aquaculture;
2. Cages must be kept three metres above the seafloor at lowest astronomical tide;
3. Licences will not be issued for shellfish culture;
4. Navigational safety issues will be referred to the appropriate officer in Transport SA;
5. Aquaculture licences will only be issued for up to three years from the date of authorisation of this policy;
6. Renewal of licences beyond three years of the date of authorisation of this policy will be subject to an environmental performance review;
7. Farms must adhere to the monitoring conditions as outlined on the Aquaculture Licence;
8. Monitoring results showing unacceptable impacts on seagrass associated with aquaculture may result in an amendment of licence conditions (including stocking density) or cancellation of the aquaculture licence.

## 1.1 Inner Kingston Zone

The Inner Kingston Zone is defined as the area from one kilometre of the mean spring high water mark between the points 4 and 25, and out toward the 11 metre contour following the points as specified below (Map 1).

	<b>Coordinates GDA 1994</b>	
<b>Point</b>	<b>Longitude</b>	<b>Latitude</b>
3	139°45' 24.623"	-36°35' 20.703"
6	139°47' 18.327"	-36°39' 49.835"
8	139°47' 56.156"	-36°42' 24.303"
9	139°45' 09.564"	-36°44' 25.114"
11	139°45' 39.685"	-36°46' 27.794"
12	139°45' 08.232"	-36°47' 01.884"
13	139°43' 45.388"	-36°50' 15.402"
16	139°39' 44.226"	-36°52' 56.435"

The Inner Kingston Zone is in shallower waters (generally ranging between eight and eleven metres in depth) over seagrass beds. Minimal expansion will be approved to allow the existing industry to reach its full potential. Any growth will be controlled via incremental tonnage increases linked to environmental monitoring results for both the Historical Cape Jaffa and Inner Kingston Zones.

### ZONE POLICIES

1. The area contained within the points 18, 19, 20 and 21 on map 1 (2km<sup>2</sup>) the (Harvest Zone), is an area within the zone that can used for harvesting sites will be held in conjunction with sites in the Intermediate Kingston Zone and the Outer Kingston Zone. Only five hectares within this area may be used to hold stock at any one time. These sites will be determined on environmental grounds with a view to minimising impact on seagrass. No feed is to be introduced in this area. No other form of aquaculture will be licensed to operate within two kilometres of this site.
2. The maximum lease size in Inner Kingston Zone is twenty hectares.
3. The total allocation in the zone will not exceed eighty hectares plus the area allocated for harvest.
4. The maximum tonnage per twenty hectare site is one hundred tonnes.
5. All cages must use swinging moorings in accordance with design specifications approved by PIRSA Aquaculture.
6. The maximum stocking rate for the Inner Kingston Zone is 8kg.m<sup>-3</sup>.

## 1.2 Intermediate Kingston Zone

The Intermediate Kingston Zone is defined as the area bounded by the following points (see Map 1):

	<b>Coordinates GDA 1994</b>	
<b>Point</b>	<b>Longitude</b>	<b>Latitude</b>
3	139°45' 24.623"	-36°35' 20.703"
6	139°47' 18.327"	-36°39' 49.835"
8	139°47' 56.156"	-36°42' 24.303"
9	139°45' 09.564"	-36°44' 25.114"
11	139°45' 39.685"	-36°46' 27.794"
12	139°45' 08.232"	-36°47' 01.884"
13	139°43' 45.388"	-36°50' 15.402"
16	139°39' 44.226"	-36°52' 56.435"
15	139°39' 11.646"	-36°51' 16.060"
14	139°40' 59.462"	-36°49' 59.072"
10	139°43' 38.966"	-36°44' 57.740"
7	139°44' 17.793" N:	-36°40' 00.049"
2	E: 139°42' 57.667"	-36°35' 18.930"

This zone is located north of Cape Jaffa and covers an area of approximately 12,897 hectares and is located between the eleven and twenty metre depth contours.

This zone is seaward of the seagrass beds in deeper, rougher waters. It will accommodate fish from the inshore sites to allow grow out of stock. While permissible stocking rates are higher in this zone, its proximity to sea grass requires some restrictions.

### **ZONE POLICIES**

1. The maximum stocking rate in the Intermediate Kingston Zone is 10kg.m<sup>-3</sup>.
2. The maximum size of a lease in the Intermediate Kingston Zone is fifty hectares.
3. The total lease area allocated in the Intermediate Kingston Zone is two hundred hectares.
4. The maximum stocking rate in the Intermediate Kingston Zone on a fifty hectare site is two hundred and fifty tonnes. The total tonnage will be reviewed annually over the three year trial period.

### 1.3 Outer Kingston Zone

The Outer Kingston Zone is defined as the area bounded by the following points (Map 1):

Coordinates GDA 1994		
Point	Longitude	Latitude
1	139°39' 50.942"	-36°35' 16.804"
2	139°42' 57.667"	-36°35' 18.930"
7	139°44' 17.793"	-36°40' 00.049"
10	139°43' 38.966"	-36°44' 57.740"
14	139°40' 59.462"	-36°49' 59.072"
15	139°39' 11.646"	-36°51' 16.060"

This zone is located north of Cape Jaffa and covers an area of approximately 15,469 hectares and is on the seaward side of the twenty metre depth contour in unsheltered conditions.

The distance from sea grass, depth and circulatory properties of this zone allow stocking rates at these sites to be significantly increased.

#### ZONE POLICIES

1. The maximum stocking rate in the Outer Kingston Zone is 15 kg.m<sup>-3</sup>.
2. The maximum size of a lease in the Outer Kingston Zone is one hundred hectares.
3. The total lease area allocated in the Outer Kingston Zone is four hundred hectares.
4. The maximum stocking rate in the Outer Kingston Zone on a one hundred hectare site is five hundred tonnes. The total tonnage will be reviewed annually over the three year trial period.
5. Aquaculture in this zone will be subject to ongoing monitoring as prescribed in the conditions of relevant aquaculture licences.

## 1.4 Historical Cape Jaffa Zone

The Historical Cape Jaffa Zone is defined as the area bounded by the following points (Map 1):

	<b>Coordinates GDA 1994</b>	
<b>Point</b>	<b>Longitude</b>	<b>Latitude</b>
17	139°41' 37.542"	-36°53' 16.865"
22	139°42' 53.009"	-36°54' 41.022"
24	139°40' 35.863"	-36°55' 57.718"
23	139°39' 21.731"	-36°54' 32.517"

This zone is located approximately two kilometres north east of Cape Jaffa and covers an area of approximately 1316 hectares. Waters range between eight and twelve metres in depth.

This zone is to cater for existing aquaculture and no further development will be permitted in this zone.

### **ZONE POLICIES**

1. A maximum of forty hectares is allocated for finfish aquaculture.
2. No new licences will be issued in this zone.
3. Sites will be issued to a maximum twenty hectares and a maximum of three hundred tonnes per site.
4. Aquaculture in this zone will be subject to ongoing monitoring as prescribed in the conditions of relevant aquaculture licences.
5. The maximum stocking density in this zone is 10kg.m<sup>-3</sup>.
6. All cages must use swinging moorings in accordance with design specifications approved by PIRSA Aquaculture.

## 1.5 Kingston Exclusion Zone

This zone is defined as all waters within the Lacepede Bay Policy Area:

- within one kilometre of point 5 on Map 1, (the “Granites”),
- within one kilometre of the mean spring high water mark
- within 2 kilometres of the area designated for harvest only, as defined below;

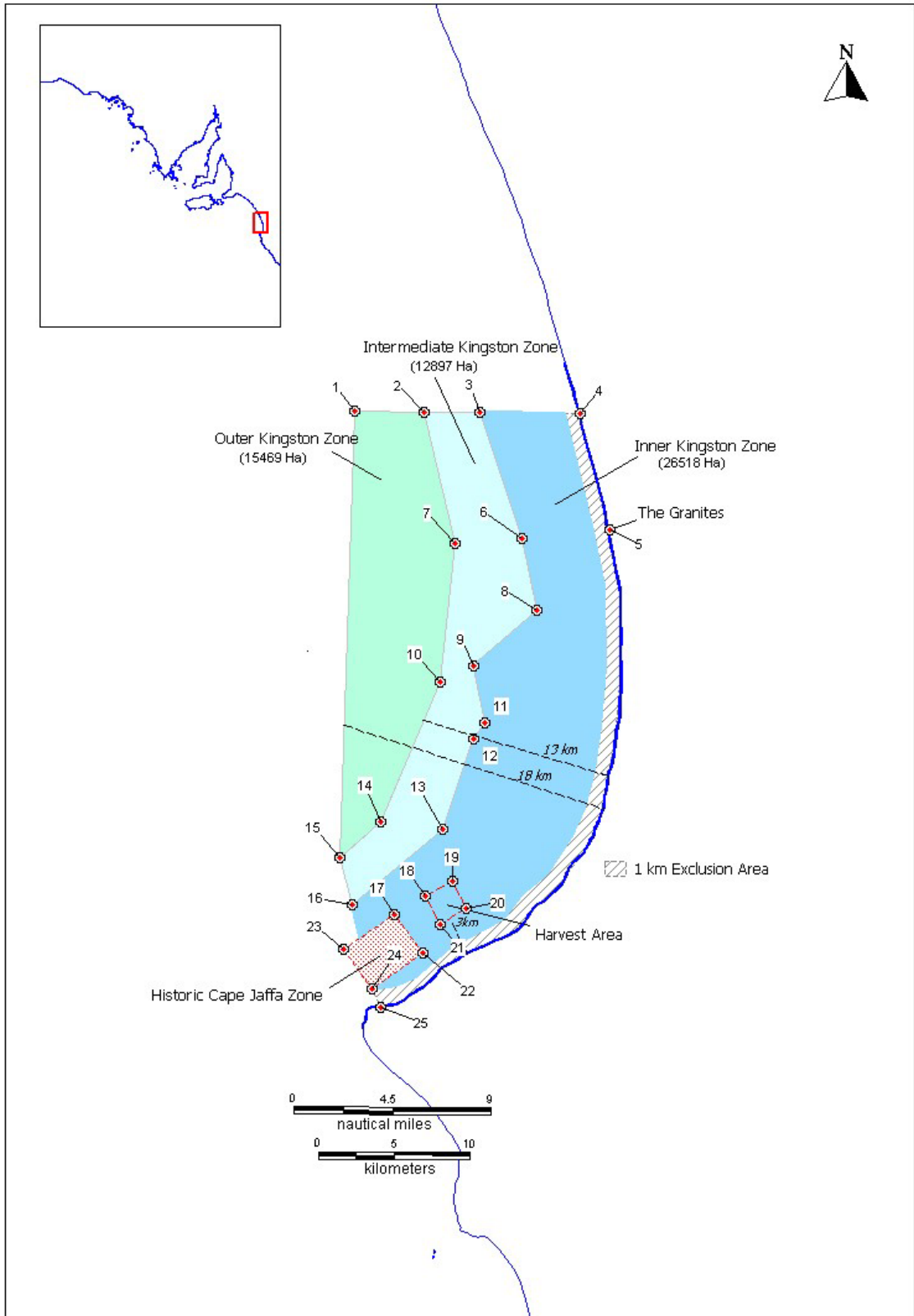
	<b>Coordinates GDA 1994</b>	
<b>Point</b>	<b>Longitude</b>	<b>Latitude</b>
18	139°43' 00.367"	-36°52' 39.381"
19	139°44' 10.925"	-36°52' 06.384"
20	139°44' 48.649"	-36°53' 03.674"
21	139°43' 38.002"	-36°53' 39.584"

No aquaculture will be permitted in this zone.

### **ZONE POLICIES**

1. Licences will not be issued for aquaculture in the Kingston Exclusion Zone.

# Map 1: Lacepede Bay Policy Area



**Table 2 : Coordinates for Lacepede Bay Policy Area**

	<b>Coordinates GDA 1994</b>	
<b>Point</b>	<b>Longitude</b>	<b>Latitude</b>
1	-36°35' 16.804"	139°39' 50.942"
2	-36°35' 18.930"	139°42' 57.667"
3	-36°35' 20.703"	139°45' 24.623"
4	-36°35' 23.143"	139°49' 54.469"
5	-36°39' 32.918"	139°51' 12.100"
6	-36°39' 49.835"	139°47' 18.327"
7	-36°40' 00.049"	139°44' 17.793"
8	-36°42' 24.303"	139°47' 56.156"
9	-36°44' 25.114"	139°45' 09.564"
10	-36°44' 57.740"	139°43' 38.966"
11	-36°46' 27.794"	139°45' 39.685"
12	-36°47' 01.884"	139°45' 08.232"
13	-36°50' 15.402"	139°43' 45.388"
14	-36°49' 59.072"	139°40' 59.462"
15	-36°51' 16.060"	139°39' 11.646"
16	-36°52' 56.435"	139°39' 44.226"
17	-36°53' 16.865"	139°41' 37.542"
18	-36°52' 39.381"	139°43' 00.367"
19	-36°52' 06.384"	139°44' 10.925"
20	-36°53' 03.674"	139°44' 48.649"
21	-36°53' 39.584"	139°43' 38.002"
22	-36°54' 41.022"	139°42' 53.009"
23	-36°54' 32.517"	139°39' 21.731"
24	-36°55' 57.718"	139°40' 35.863"
25	-36°56' 36.168"	139°40' 58.692"