



Department of
Infrastructure, Planning and Natural Resources

**REPORT ON THE ASSESSMENT OF
DEVELOPMENT APPLICATION NO. DA-481-11-2003-i
PURSUANT TO SECTION 80 OF THE ENVIRONMENTAL PLANNING AND
ASSESSMENT ACT, 1979**

**PROPOSAL BY PORT STEPHENS PEARLS PTY LTD FOR THE CONSTRUCTION AND
OPERATION OF A COMMERCIAL PEARL OYSTER FARM, PORT STEPHENS LOCAL
GOVERNMENT AREA**

Department of Infrastructure, Planning and Natural Resources

August 2004

EXECUTIVE SUMMARY

On 20 November 2003, Port Stephens Pearls Pty Ltd (the Applicant) lodged a development application (DA) with the Department of Infrastructure, Planning and Natural Resources (the Department) for the construction and operation of a commercial pearl oyster farm in Port Stephens, in the Port Stephens local government area. The proposed development consists of three oyster aquaculture leases within the enclosed waters of Port Stephens, occupying a total area of 30.25 hectares and the continued use of a land-based site at Diemars Road, Cromartys Bay for administration, harvesting, grading and treatment of pearls, and storage and maintenance of work vessels and equipment. The proposed pearl farm will employ up to 45 people on a full-time basis.

A DA for a similar proposal was lodged with the then Minister for Urban Affairs and Planning in November 2001, which included a land-based component and five aquaculture leases, three internal to the Port and two external to the Port. The Minister essentially refused the majority of the DA, only permitting the continued operation of the existing lease at Wanda Head for a period of three years after which time all infrastructure was to be removed from the waters.

By virtue of a declaration made by the then Minister for Urban Affairs and Planning on 3 August 1999 on aquaculture industry, the Minister for Infrastructure and Planning (the Minister) is the consent authority for the proposal. Under the *Environmental Planning and Assessment Act, 1979* (the Act), the proposal is classified as State significant, integrated and designated development and accordingly, the DA is accompanied by an Environmental Impact Statement (EIS). An additional approval from NSW Fisheries under the *Fisheries Management Act 1994*, is also required.

The DA and accompanying EIS were exhibited by the Department from Friday 23 January 2004 until Monday 1 March 2004, in accordance with the requirements for public participation identified under Division 6, Part 6 of the *Environmental Planning and Assessment Regulation, 2000* (the Regulation).

The Department received 683 submissions during the exhibition period, three of which were from government agencies, including the Department of Environment and Conservation, the NSW Waterways Authority and Port Stephens Council. A submission was also received from the Worimi Local Aboriginal Land Council who stated its support for the proposal. The other 679 submissions were received from the public and special interest groups of which 434 objected to the proposal, 203 supported the proposal, and 42 did not state a clear position but raised issues. Two petitions were also received during the exhibition period, one which was signed by 495 individuals stating their support for the development, the other, signed by 17 individuals stating their objection to the proposal.

The key issues raised in submissions that objected to the proposal included:

- a perception that the proposed development would lead to the privatisation and industrialisation of the Port Stephens waters with the potential for other similar developments to follow if this proposal is approved;
- site suitability, particularly the perception that this type of development is suitable in remote areas only;
- flora and fauna impacts, particularly on seagrasses, dolphins and migratory whales;
- navigational/ safety impacts from lease infrastructure on other users of the Port; and
- water quality, particularly in relation to sediment plumes, caused during cleaning activities.

Where submissions stated their support for the proposal, the key issues raised included:

- the potential employment opportunities;
- economic benefit to the local community, including flow-on effects;
- the potential for increased tourism through the establishment of a new tourist icon; and
- that the proposal represents an ecologically sustainable development.

These issues have been addressed in section 6 of this assessment report.

The Department considers that the proposed development is consistent with all local, regional and State planning objectives. In addition proposal has the potential to create economical, social and technological benefits at local and regional levels in the form of employment and investment as well as providing high quality Australian Akoya pearls to the market.

The Department has undertaken a full and comprehensive assessment of the development application which included a thorough investigation of all impacts, independent analysis on key issues, comparative analysis with existing similar facilities already operational within NSW and other parts of Australia, all issues raised in submissions, and improvements made to the proposal following the refusal of the former development application.

The Department's assessment concludes that:

- The proposal could be undertaken within acceptable environmental limits subject to the imposition and adherence to stringent conditions of consent to offset residual impacts. The Department notes in this regard that the revised proposals provide important environmental and ecological benefits relative to the previously refused DA.
- There remains considerable concern and opposition to the proposal proceeding both amongst the general Port Stephens community and key business and tourism organisations;
- Stringent operating and management practices are likely to minimise residual impacts. As with many industrial and rural industries it will not be possible to eliminate all risk associated with the development; and
- There remains some uncertainty regarding the proposal and its implications in relation to the Government's desire to establish a Marine Park in Port Stephens.

While satisfied that the proposal could be operated within acceptable environmental limits, the Department considers that the Minister in making his decision should be aware that over the operating life of the proposal some form of unacceptable operating incidents are likely to occur.

While acceptable in a less sensitive environment they have the potential to significantly elevate community concern given that community's fear for the Port Stephens environment and the substantial tourism industry which it supports.

In addition there remains some uncertainty as to the implications of the proposal and its associated risk and the Government's intention to establish a Marine Park in the Manning Bioregion.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	I
1 INTRODUCTION	4
1.1 Existing Trial Operation and Previous Development Application	4
1.2 Current Development Proposal	5
2 SITE CONTEXT	5
2.1 Site Location	5
2.2 Site Description	5
2.3 Surrounding Land Uses	5
3 DEVELOPMENT PROPOSAL	8
3.1 Outline of the Proposal	8
3.2 Operation Activities	8
3.3 Water-Based Infrastructure	10
3.4 Land-Based Site	14
3.5 Decommissioning of the Proposal	16
3.6 Justification for the Proposal	16
3.7 Alternatives for the Proposal	17
4 STATUTORY PLANNING FRAMEWORK	18
4.1 Legislative Context	18
4.2 Permissibility	19
4.3 Relevant Environmental Planning Instruments and Strategies	19
5 CONSIDERATION OF ISSUES RAISED IN SUBMISSIONS	22
6 CONSIDERATION OF ENVIRONMENTAL ISSUES	24
6.1 Water Quality Impacts	25
6.2 Bio-sedimentation	27
6.3 Marine Fauna	29
6.4 Seagrasses	32
6.5 Impacts on Recreational / Commercial Fishing of Port Stephens and Privatisation of its Waterways	34
6.6 Navigation and Safety Impacts	37
6.7 Socio-economic Impacts	39
6.8 Visual Impacts	42
6.9 Disease impacts	44
6.10 Marine Park – Manning Shelf Bioregion	45
6.11 Noise Impacts	48
6.12 Waste Management and Odour Impacts	50
7 SECTION 79C CONSIDERATION	51
8 RECOMMENDED CONDITIONS	51
9 CONCLUSIONS	51
10 RECOMMENDATIONS	52
REFERENCES	53
APPENDIX A – CONSIDERATION UNDER SECTION 79C	54
APPENDIX B – PROVISIONS OF ENVIRONMENTAL PLANNING INSTRUMENTS	56
APPENDIX C – ISSUES RAISED IN SUBMISSIONS	65

1 INTRODUCTION

1.1 Existing Trial Operation and Previous Development Application

In 1995, Barrier Pearls Pty Ltd funded a survey by the Australian Museum to identify potential species for the establishment of a pearl industry in NSW. In 1997, NSW Fisheries sought expressions of interest from the pearling industry to partner NSW Fisheries in undertaking research into hatchery and growout trials to determine the viability of establishing a pearl industry in NSW. Australian Radiata Pty Ltd was the preferred tenderer. In 1999, NSW Fisheries in conjunction with Australian Radiata Pty Ltd established trial leases for the cultivation of pearls at Wanda Head in Salamander Bay and Pindimar, Port Stephens. The trial demonstrated that pearls could be successfully grown and cultivated at the Wanda Head site.

Following the success of the trial, the company lodged a Development Application with the Department in November 2001 for the establishment and operation of a land-based site and five pearl oyster leases, three within the enclosed waters of the Port and two in the waters external to the Port. Following significant community concern with the proposal, the Department recommended to the Minister that a Commission of Inquiry (COI) be held into all environmental aspects associated with the proposal. The Minister agreed and a COI was subsequently held in the early half of 2002.

On 27 July 2002, the Commissioner released a report detailing his findings and recommendations to the Minister on the proposal. The report concluded that there would be no environmental aspects of the proposal that would preclude its approval, subject to the recommended conditions of consent being adopted. The Department's report concluded that from a technical perspective, the proposal could be approved, subject to stringent conditions being imposed, however, it noted that the Minister should take into consideration the community's concern with the proposal.

On the basis of the information available to him at the time, the Minister determined to refuse the majority of the proposal. The Minister cited that there were uncertainties in determining the extent of the risk to the biophysical environment and associated potential consequences to the social and economic environment, and that the proposal was at this time, not in the public interest. The Minister did, however, grant consent to the operation of the land-based site and the continuation of operations at the Wanda Head lease for the purposes of cultivation and harvesting of the existing oyster stock subject to the approval of a de-stocking program required as part of the development consent. On 2 December 2002, the Minister approved the Applicant's destocking program, which permits the harvesting of the existing oyster stock for a period of 3 years, with all stock and lease infrastructure to be removed by December 2005.

The Wanda Head oyster lease currently operates in accordance with the approved destocking program and the conditions of consent. To date, there have been no reported incidences associated with other boating or recreational activities, no entanglements of marine fauna or other significant impacts on marine life. Dolphins have been sighted within and adjacent to the lease on numerous occasions.

There are approximately 20 people currently employed at the pearl farm. The company estimates it has contributed approximately \$5 million into the local economy through wages, equipment and supply purchases and through engagement of local service industries. Akoya pearls harvested from the site are currently used and sold by jewellers in Nelson Bay and Sydney.

1.2 Current Development Proposal

On 20 November 2003, the Department received a new development application (DA) from Port Stephens Pearls Pty Ltd (the Applicant, formerly Australian Radiata Pty Ltd) for the construction and operation of a commercial pearl oyster farm. The proposed pearl farm includes three aquaculture lease sites within the enclosed waters of Port Stephens with an accompanying land based site located at Diemars Road, Cromartys Bay, within the Port Stephens local government area (see Figure 2).

This report represents the Department's assessment of the proposed development, in accordance with the *Environmental Planning and Assessment Act 1979* (the Act). The Department has assessed the development application and the issues raised in submissions, and determined that the development could be constructed and operated within appropriate environmental limits. If the Minister agrees, the Department recommends the imposition of conditions as per the draft instrument of consent. It is considered that the conditions of the recommended instrument of consent impose appropriate measures to ensure the potential environmental and social impacts associated with the proposed development are adequately managed, mitigated and monitored.

2 SITE CONTEXT

2.1 Site Location

The three proposed oyster leases are located within the enclosed waters of Port Stephens, at Wanda Head (12.25 ha), Mambo Creek (9 ha) and Pindimar (9 ha), combining to give a total area of 30.25 hectares. The land-based site is located at 7-9 Diemars Road, Cromartys Bay, in the Port Stephens local government area.

2.2 Site Description

The oyster aquaculture leases are located in an area zoned 7(w) Environmental Protection "W" (Waterways) Zone under the *Port Stephens Local Environmental Plan 2000* (Port Stephens LEP). The aquaculture leases are located over submerged Crown land and is subject to an Aboriginal Land Claim (ALC 6686 lodged 25/4/2002) by Worimi Aboriginal Land Council. It should be noted, however, that the Department received a submission from the Worimi Aboriginal Land Council stating its support for the proposed pearl farm.

The land-based site is located on land zoned 4(a) Industrial General "A" Zone under the Port Stephens LEP. The land-based site is currently used for pearl farming activities associated with the existing pearl oyster farm at Wanda Head. The site has previously been used for oyster farming and was also leased to a motorcycle club. The existing consent granted approval for the construction and operation of several new buildings on the land-based site. To date, however, only minor works have been undertaken and the pearl farm still operates out of an existing shed on the site.

2.3 Surrounding Land Uses

The land-based site is located in an industrial area within the Port Stephens local government area. Adjacent foreshore land to the south is owned by Port Stephens Council and is vacant. Land adjacent to the southern boundary and to the north of the site are used for edible oyster farming activities. Land to the east of the site is vacant open space that supports remnant native vegetation.

A quarry is located approximately 100 metres to the southeast with the nearest residence approximately 600 metres to the southeast (refer to Figure 1).

The water-based aquaculture leases are located within the enclosed waters of Port Stephens, specifically, within the area bounded by Soldiers Point to the west and Corlette Point to the

east (refer to Figure 2). Land adjacent to the Wanda Head and Mambo Creek leases is zoned a mix of 2(a) Residential “A” Zone and 6(a) General Recreation “A” Zone under the *Port Stephens Local Environmental Plan 2000* and accordingly, these areas are dominated by residential development and public recreation areas. The land adjacent to the Pindimar lease is zoned 1(a) Residential, under the *Great Lakes Local Environmental Plan 1996* and is accordingly occupied by residential dwellings.

Figure 1. Location of the land-based site and surrounding landuses.



Legend



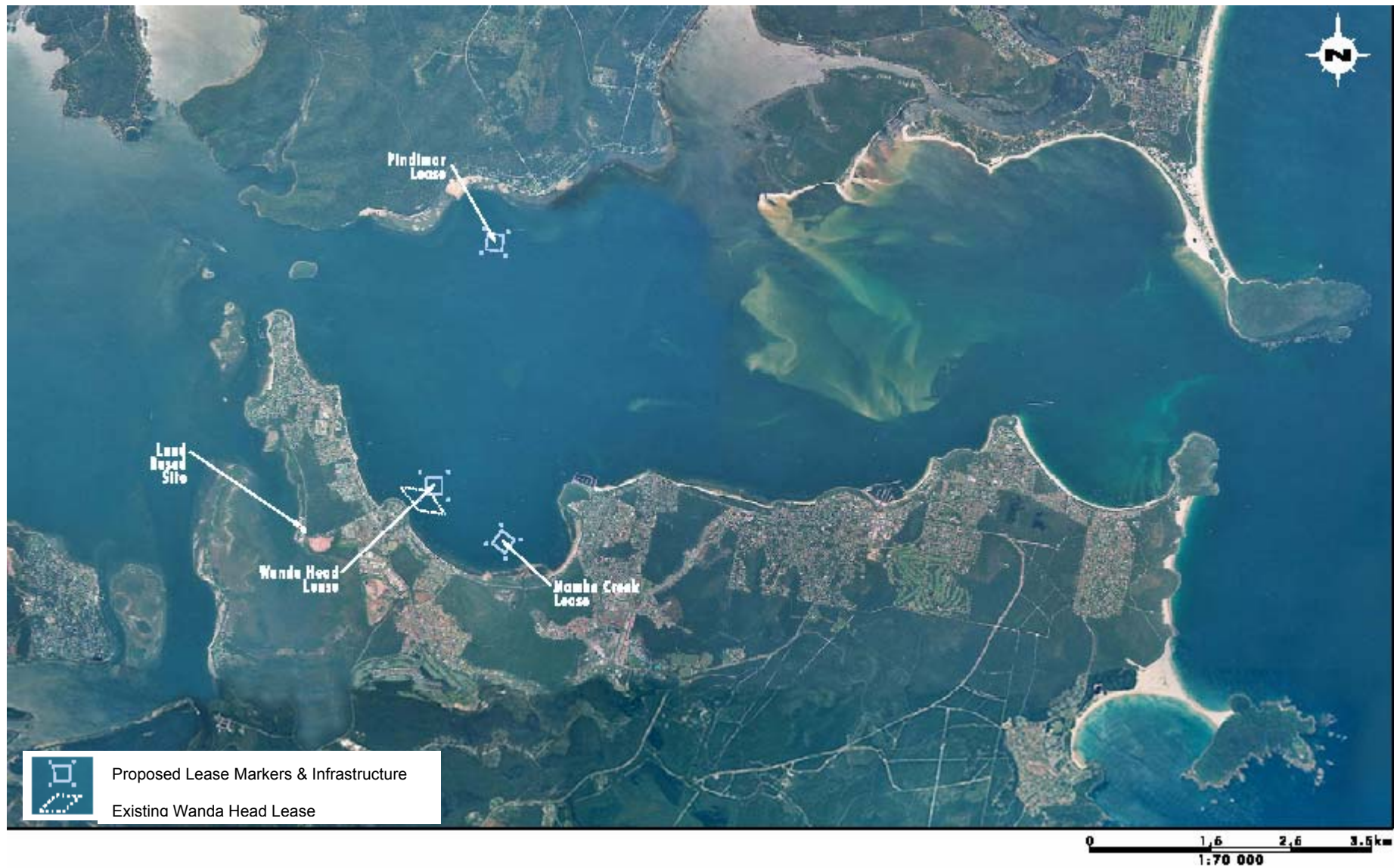
-  Land Based Site
-  Developed Caravan Park

Figure 2. Locality plan identifying the site and surrounding land uses.



3 DEVELOPMENT PROPOSAL

3.1 Outline of the Proposal

The Applicant is seeking consent for the operation of a commercial pearl oyster farm in the enclosed waters of Port Stephens and for the continued use of a land-based site at Cromartys Bay.

The proposed development involves the:

- establishment of three oyster leases in the internal waters of Port Stephens at Wanda Head (12.25 hectares), Pindimar (9.0 hectares) and Mambo Creek (9.0 hectares). These leases will accommodate oysters throughout their lifecycle from spat, to grow-out, to production oysters implanted with pearls. Approximately 14.7 hectares of the proposed 30.25 ha lease area will be stocked with pearl oysters. The remainder of the area will be used for anchoring the sub-surface longlines that support the farmed oysters;
- use of up to nine (9) punts, consisting of three (3) with cleaning units installed for cleaning the oysters and six (6) work punts used for sorting and grading the oysters;
- continued use of the land-based facility at Cromartys Bay for administration; carparking; housing and maintenance of work vessels; storage and maintenance of equipment and waste; and harvesting, grading and treatment of pearls;
- operation of the aquaculture leases typically from 7:00am to 2:30pm, Monday to Friday, with potential to operate until 5:00pm during the summer months; and
- operation at the land-based site from 6:30am to 5:30pm, Monday to Friday and 8:00am to 5:00pm at other times, with deliveries to the site occurring after 7:00am Monday to Friday and after 8:00am at other times.

3.2 Operation Activities

At present, the Applicant holds a Fisheries permit that allows the cultivation of the Akoya pearl oyster *Pinctada imbricata* which is native to Port Stephens, for the purposes of producing pearls. The Applicant also holds a development consent which permits the commercial production of existing pearl oyster stock at Wanda Head and Diemars Road for a period up to December 2005.

The production of pearls from hatchery to harvest typically takes between 30 and 48 months depending on the time of year the spat are produced, prevailing weather conditions, when the implantation occurs and the thickness and quality of nacre (mother-of-pearl, iridescent layer that gives pearls their lustre) desired. It involves the following six steps:

- hatchery production and larval rearing (1-2 months duration);
- juvenile rearing (2-3 months);
- growout production (12-18 months);
- conditions and implanting mature oysters with a pearl nucleus and nacre initiate (approximately 4 months);
- ongrowing of implanted oysters (approximately 12-18 months); and
- pearl harvest.

Hatchery Production and Larval Rearing

Pearl oyster spat (young oysters, up to 2mm in diameter), are currently produced in a hatchery at the NSW Fisheries Research Centre at Taylors Beach, Port Stephens. The Applicant is currently seeking a suitable site for the establishment of a hatchery, which would be the subject of a separate development application, however, in the interim, it is proposed to continue to use the NSW Fisheries hatchery. This arrangement will continue with the proposed development.

Juvenile Rearing

The spat would be transferred from the upweller units located at the hatchery to the aquaculture leases. They will be suspended from longlines within the leases in 0.5mm mesh nylon bags called spat bags. As the spat grows they will be transferred to larger bags with a larger mesh size to facilitate growth and water circulation. Spat will be reared to a mean size of 20mm.

Growout Production

Growout involves the rearing of spat in meshed cages to a size suitable for nucleus implantation. During growout, the oysters would be sorted and graded and slow growing or damaged oysters culled and removed. At each grading, stocking densities would be reduced and the mesh size of the cages increased. Oysters would be grown to 50mm in size or greater and then transferred to panel nets or large mesh pearl cages until they achieve a shell weight of approximately 30g (around 60mm in diameter) when they will be suitable for implantation.

Stocking densities on the leases are strictly controlled to maximise growth, minimise sedimentation processes below the leases and attain a high quality product. The Applicant notes that stocking densities would vary seasonally in response to the lifecycle of the oyster, however, it is anticipated that the maximum stocking density of oysters on the leases would be 6,900 kg/ha/year which would occur during the growout stage. At present, the current stocking density is 4,800 kg/ha/year due to current occupational health and safety requirements.

The Applicant highlights that the proposed stocking density is approximately 5 times less than that used in pearl oyster farms in Japan and 5 to 6 times less than the stocking density of mussels in a mussel farm at Two Fold Bay, Eden on the southern coast of NSW.

Implantation Operation

Before being implanted, the oyster shell will be kept in a conditioning box at high stocking densities to restrict water flow and food availability. This has the effect of reducing the strength of the adductor muscle so that the shells can be opened without damaging them. The implantation operation would involve the implantation of the nucleus and graft tissue (known as saibo) within the reproductive organ (gonad) of the recipient oyster. The nucleus is a spherical bead ground from the shell of a Mississippi River mussel.

The Applicant states that a small amount of antibiotic (tetracycline) will be used during the implantation procedure to protect the health of the oyster and reduce the chance of infection after operation. The Department understands that with the existing operations, the use of antibiotic has been replaced by seawater. If this proves successful, it is understood that the antibiotic will not be used at the proposed farm.

Ongrowing of Implanted Oysters

Once the oysters have recovered from the implantation operation, they would be returned to panel nets or large mesh pearl oyster cages for ongrowing. The oysters would be cleaned frequently to remove siltation and biofouling, monitored, and moved between lease sites to allow maximum exposure to optimal environmental conditions. The cleaning operations are discussed in greater detail in sections 3.3 and 6 of this report.

Pearl Harvest

At harvest time, the pearl would be removed from the gonad. Most harvests are expected to occur towards the end of the winter months when nacre deposition is slowest giving better lustre and colour, however, this will likely vary depending on water temperature and salinity. By-products of this process include the shell, adductor muscle and the viscera (soft body

tissue). The Applicant has stated that domestic and international markets have been identified for the adductor muscle and the shell, and that alternative uses are currently being considered for the soft tissue, however, at this stage the waste material will be disposed of at an appropriate waste facility.

Marketing and Sales

The Applicant proposes to market the pearls world-wide where they will either be transported to Japan to undergo a finishing process (cleaning and polishing) or sold locally for use in their natural state or for further processing. As currently occurs with the existing lease, pearls will initially be marketed to wholesalers with the potential for a direct sales outlet, most likely located in Sydney.

3.3 Water-Based Infrastructure

Longline Infrastructure

The aquaculture leases are proposed to be located at Wanda Head, Mambo Creek, and Pindimar (see Figure 2). The location of the lease sites has been determined by a number of factors which include salinity, water temperature, water depth, current strength, wave action and substrate.

The pearl oyster has different requirements at different stages of its life cycle and the Applicant states that the lease areas within Port Stephens are the only areas identified as being suitable for pearl maturation. This is due to the ideal characteristics of the water in these areas, primarily its salinity and temperature.

At each of the lease sites, a set of 'longlines' will be established for oyster cultivation. All longline equipment would be located such that it is a minimum depth of 4 metres below the surface of the water. The proposed longline system consists of a single main horizontal nylon rope (also known as the 'backbone'), anchored at each end. Longlines would be set a minimum of 10 metres apart and are proposed to be between 200 and 250 metres in length. Breast lines will also be installed to aid in the alignment of the cultivation equipment and to minimise the risk of the longline coming adrift in the event an anchor comes adrift. The breast lines will be located approximately 2 metres below the longline at a distance of approximately 36 metres apart. The general arrangement of the longlines for the leases is identified in Figure 3 and Figure 4 and has been designed to align with the main current flow direction. This has the dual advantage of minimising the load placed on the culture apparatus and minimising the reduction in current flow velocity.

The proposed pearl oyster leases would occupy an area of approximately 0.3 km² of water ranging in depth from 7 to 16 metres. The Applicant identified that approximately 23% (or 28 km²) of Port Stephens has a water depth greater than 7 metres and hence, the proposed leases would only occupy approximately 1% of this deeper water.

The location of the proposed lease sites will be marked at each corner of the lease area with a special yellow aquamark approximately 1.2 metres in height. Each aquamark will be equipped with a flashing light, as required by the NSW Waterways Authority. The Applicant notes that similar aquamarks are located at each of the four corners of the existing lease at Wanda Head.

Figure 3. Proposed lease configuration for the proposed pearl farm

Figure 4. Typical cross-section of longline infrastructure for each of the three leases of the proposed pearl farm.

Longline Identification

The current lease at Wanda Head uses three surface buoys per longline in order to visually identify the location of the longlines and to determine the elevation of the longlines in the water column. The elevation of the longlines needs to be regularly monitored as it is an indicator of the weight of the oysters on each line and when the cages and nets need to be cleaned. It also serves as a visual indicator that the longline has not dropped to the sea floor.

During consideration of the previous development application, concern was raised in regard to the visual impact of the surface buoys and the potential for the entanglement of marine fauna and boats in the buoys. The Applicant, therefore, is proposing to remove all surface buoys as part of this development with only aquamarks at each of the four corners of the leases to delineate their area. The use of aquamarks is discussed in greater detail in section 6.6 of this report.

In order to continue to be able to locate sub-surface longlines and readily check on the elevation of the longlines in the water column, the Applicant proposes the following systems:

- use of GPS (Global Positioning Systems) to survey all longlines to determine their coordinates and then use the punts which will be fitted with GPS units to identify the location of the longlines;
- all longlines will be colour coded to enable confirmation that the correct longline has been accessed; and
- each work punt will be fitted with a sonar system to enable the height of the longline to be monitored.

The Applicant states that all workers will be trained in the use of these systems.

Cleaning Equipment

The Applicant states that the regular cleaning of the oysters and lease infrastructure is a necessary task in order to remove biofouling and sediment buildup to help maintain optimal growth and production of oysters. The Applicant states that this cleaning will be undertaken at the lease sites using a purpose-built cleaning unit that is housed on a work punt.

The operation of the existing cleaning unit at the Wanda Head lease has been the subject of considerable concern from the public, particularly those residents that have a direct view of the existing operations from their homes. As part of the current cleaning process, water used to clean the oysters is filtered and returned to the Port waters. This has often resulted in visible plumes of discoloured water and foam occurring around the outside of the cleaning punt. The plume varies in size and duration depending on prevailing wind and weather conditions and the length of time between the previous cleaning event. Concern has also been raised by members of the public regarding the impact of the sediment plume on adjacent seagrass beds, particularly that the sediments may settle on the seagrass and affect their health. The Applicant has undertaken studies to determine whether the proposed development is having a detectable impact on seagrass health and the results of these are discussed in greater detail in section 6.4 of this report.

Laboratory analysis has previously been undertaken to characterise the composition of the discharge waters. The analysis showed that approximately 80% of the material was inert, that is, the material that has settled on the lease infrastructure and oysters has come from sediment suspended in the water column, whilst the remaining 20% is organic and has been generated from the oysters (in the form of faeces and pseudofaeces) and other flora and fauna that has settled on the infrastructure (for example, ascidians and algae).

The Applicant is working on a number of modifications to the cleaning system in order to reduce the extent of the sediment plume. The Department notes that these improvements have been ongoing since the Wanda Head lease has been operating (see section 6.1 for more detail).

The impact of the proposed development on the surrounding environment in relation to the sediment plume is discussed in greater detail in sections 6 of the report with recommendations made as to how the cleaning system should operate and be monitored in order to assess compliance and to ensure an environmental and social (particularly from a visual perspective) outcome that is beneficial to all parties.

Boat Numbers and Movements

Purpose-built boats would be used for operation and maintenance of the leases. The proposed fleet would include three covered punts (approximately 9 metres in length) with cleaning equipment on board and three covered work punts (approximately 15 metres in length) to be used for grading and hand cleaning of oysters, and general duties on the leases as required. The Applicant states that one anchor boat would also be required for the installation and maintenance of longlines with the potential use of up to three spotter boats to be used for short periods whilst the longlines are being constructed. These spotter boats would be used to advise passing vessels as necessary and to ensure that vessels do not attempt to pass over the longlines prior to them being properly and safely installed.

The Applicant estimates that each of the cleaning and work punts would generate one round trip from the lease to the land-based site per day. The Anchor boat would generate up to four round trips during the period that longlines are being constructed. The work punts may move between the three leases over the course of the day depending on work requirements, however, the Applicant anticipates that this would generate infrequent movements of up to 2 to 3 per day. It should be noted, however, that there are approximately 5000 registered boats in the Port Stephens area, of which, approximately 150 are oyster punts/ work boats, 60 are small power boats and 1550 are surveyed vessels (charter boats, fishing boats).

The Applicant states that there could be up to 9 work vessels on the three leases at one time, however, the typical arrangement will be one cleaning punt on a lease at any one time and three work punts used across all three leases. More work boats may be required on the leases during busier times. Staffing on these boats will generally consist of 4 on the cleaning punt and 3 on the work punts with up to 10 during busier periods. The Applicant notes that there may also be 1 or 2 fast tender/ response vessels that will be able to carry supplies/ persons between the leases and land-based site if required.

The Applicant intends to use the Wanda Head lease site to grow the seeded pearls as this is the only site with a proven record of being able to produce high quality pearls. At Mambo Creek, the Applicant intends to use the site for seeded oysters, and for conditioning and recovery of oysters before and after they are operated on and for spat. The Applicant intends to use the Pindimar site for oyster growout and spat.

3.4 Land-Based Site

The proposed land base has been designed to support the on-water activities for the commercial pearl oyster operation. The approved site layout consists of three buildings, car parking, boat ramp and fuel storage (see Figure 5), however, these are yet to be constructed.

The land-based site will continue to be used for administration; carparking; housing and maintenance of work vessels; storage and maintenance of equipment and waste; and harvesting, grading and treatment of pearls under this development application.

Figure 5. Layout of Land-Based site

3.5 Decommissioning of the Proposal

The Applicant states that an alternate use for the land-based site would be found in the event that pearl farming activities at the site cease at some time in the future. It is considered that the buildings, parking, fuel storage areas and boat ramp would complement any future use of the site for a range of activities that are permissible with consent in the Waterfront Industrial zoning. A separate application would be lodged with the relevant consent authority if required to facilitate a different future use of the site.

With regards to the aquaculture leases, the Applicant states that all infrastructure at the 3 leases would be removed at the completion of pearl farming activities. The Applicant considers that the infrastructure could easily be removed with the work punts that would be used at the pearl farm, although a timeframe for this removal was not specified. Following removal from the lease sites, the Applicant states that anchors, blocks and ropes would be re-used where possible or disposed of at an appropriate waste facility.

The Department is aware of concerns from a number of members of the public regarding the cost and responsibility for the removal of lease infrastructure in the event the pearl farm ceases operation. In its General Terms of Approval, the NSW Fisheries require the Applicant to bear the full monetary cost for the removal of the lease infrastructure in the event that the development shuts down or is directed to be shut down. All infrastructure is to be removed within 30 days, or as otherwise agreed with NSW Fisheries. This position is reflected in the Department's recommended conditions of consent.

To ensure that the removal of the infrastructure is undertaken in an orderly manner and that relevant Government bodies and the boating public are duly notified in order to minimise the potential for any conflicts, the Department recommends that the Applicant be required to prepare in consultation with the NSW Fisheries and NSW Waterways Authority, a Decommissioning Management Plan, that is to be approved by the Director-General, should the Minister approve the development.

3.6 Justification for the Proposal

The *Environmental Planning and Assessment Act 1979* (the Act) has as its principle objective the guidance of both strategic land use planning and development assessment towards the implementation of the principles of ecologically sustainable development (ESD). The National Strategy for Aquaculture in Australia suggests that aquaculture is generally considered to be an example of an ESD if conducted in an environmentally responsible manner.

On this basis, the Applicant states that the justification of its proposal to establish a pearl oyster operation in Port Stephens is dependent on the extent to which the proposal is consistent with the principles of ESD and contributes constructively to sustainable land and waterway use by the Port Stephens community. The Applicant has assessed the proposal against the principles of ESD and has determined that the proposal is highly consistent with the principles and that a high level of certainty can be attributed to the assessment of potential impacts.

Through the assessment of the proposal, the Applicant considers it has demonstrated that the proposed development will have a negligible impact on the biophysical environment of the Port and surrounding areas. The proposal will result in the continued production of quality pearls that are considered to have already established an international reputation for excellence. It is considered that the proposal will contribute to the maintenance of water quality in the central Port by filtering particulates and that the proposal will not impact on dolphins or whale populations, but will provide an opportunity to monitor and contribute to the enhanced understanding of dolphins in Port Stephens. The Applicant also notes that the proposal will

have economic and employment benefits to the local community and the State and has the capacity to enhance potential tourism experiences in Port Stephens.

The Applicant states that the ongoing monitoring program will provide further data from which regular assessments can be undertaken to ensure the proposal remains an ecological sustainable development.

3.7 Alternatives for the Proposal

The Applicant looked at alternatives in relation to four aspects of the proposal:

- alternative cleaning and water management procedures;
- alternative locations for the pearl oyster aquaculture lease sites, including shallow water sites and site in other estuaries;
- alternative aquaculture methods (that is, alternatives to subsurface longlines); and
- the alternative of not proceeding with the proposal.

With regards to alternative cleaning procedures, the Applicant states it has explored a range of procedures with the view to minimising the extent of the visual plume that is created while cleaning the oysters. Such procedures include the use of flocculant in the discharge waters returned to the Port, implementing a cleaning regime of washing the oysters once every 7 days, use of a hydrocyclone unit to remove fine particles from the discharge stream, and use of an additional barge to act as a settling tank. The Applicant cites that each of these procedures have their limitations and it is considered that the current method of cleaning provides the greatest capacity to minimise water quality impacts. Cleaning operations and water quality impacts associated with the development are discussed in greater detail elsewhere in the report.

The Applicant states that in selecting potential lease sites, the parameters such as depth, current and wave action as well as substrate, salinity, water temperature and potential environmental and social impacts must be considered. The Applicant undertook small-scale trials at four sites in Port Stephens and determined that the middle port sites had the best conditions for oyster growth, with Wanda Head returning the best oyster growth rates. This site was then used for further trial operations. Shallow water sites were also investigated, however, they were found to have a number of problems associated with them such as fluctuations in water temperature and slower growth, and hence were not considered suitable for future pearl oyster maturation.

The use of alternative apparatus for growing pearl oysters was investigated. The Applicant notes that if surface longlines were used, they would prevent other watercraft from passing through the lease area. They also have the disadvantage that they are subject to greater growth of biofouling due to the increased availability of light. The use of bottom longlines also has numerous disadvantages including difficult access for farming activities and easy access for oyster predators such as octopus and starfish. The use of sub-surface longlines with surface buoys attached, as is currently used at the Wanda Head lease, has a number of advantages in that it enables the rapid detection of longlines and that it alerts boats to the presence of underwater apparatus. However, owing to the considerable concern raised in regards to safety and visual amenity and other insurance issues that the surface buoys may cause, the use of surface buoys is not proposed. Sub-surface longlines set at least 4 metres below the surface of the water were therefore considered to be the best method for cultivating pearl oysters and maintaining appropriate navigational safety.

Should the proposal not go ahead, the Applicant states that the opportunity for Port Stephens to become a world class leader in the production of Akoya pearls would be foregone. This would also have the disadvantage of a loss of pearl culture technology and teaching facilities

in the area, reduced employment opportunities in aquaculture in Port Stephens, and the loss of a new economic base for the area, including potential eco-tourism.

4 STATUTORY PLANNING FRAMEWORK

4.1 Legislative Context

In accordance with the provisions of the *Environmental Planning and Assessment Act 1979* (the Act) the proposed development is classified as State significant, integrated and designated development.

As required for designated development, an Environmental Impact Statement (EIS) was prepared and, in accordance with Division 4, Part 6 and Schedule 2 of the Regulation, the development application and accompanying EIS were publicly exhibited for at least 30 days. Exhibition of these documents took place between Friday 23 January 2004 and Monday 1 March 2004 (38 days) at the following locations:

- DIPNR – Information Centre, Sydney;
- DIPNR Regional Planning Office – Newcastle;
- Port Stephens Council;
- Great Lakes Council;
- Tomaree Library and Community Centre, Salamander Bay; and
- Nature Conservation Council, Sydney.

The Department notified in writing approximately 1000 landowners that are located in the vicinity of the proposed aquaculture leases and land-based site about the proposed development. The Department considers that the requirement of the Act to notify landowners adjacent to the development site has been met.

Notification of the proposed development was placed in the following newspapers:

- *Port Stephens Examiner* on 22 January 2004 and 12 February 2004;
- *Newcastle Herald* on 22 January 2004 and 12 February 2004;
- *Hawks Nest News* on 28 January 2004 and 12 February 2004; and
- *Forster-Great Lakes Advocate* on 28 January 2004 and 11 February 2004.

The newspaper notifications provided details of the proposal, exhibition locations and dates, and information on how interested parties could make a submission on the proposal. A number of signs providing the same information were also displayed on the proposed development site for the duration of the exhibition period.

State Significant Development

On 3 August 1999, in accordance with section 76A of the Act, by notice in the Gazette, the then Minister for Planning declared all aquaculture industry that will employ more than 20 people on a full-time basis, to be State significant development.

The Applicant has advised that the proposed pearl oyster farm would employ approximately 45 people on a full-time basis, and is therefore considered to be State significant development. The Minister is the consent authority for State significant development and will determine the development application.

Integrated Development

The development proposal constitutes integrated development, as defined under section 91 of the *Environmental Planning and Assessment Act 1979* because in addition to development

consent, the proposed pearl farm requires an aquaculture permit from NSW Fisheries under the *Fisheries Management Act 1994*.

Designated Development

The proposed development constitutes designated development under Schedule 3 of the *Environmental Planning and Assessment Regulation 2000* (the Regulation) because it meets the criteria of an “**aquaculture**” development.

4.2 Permissibility

The proposed aquaculture leases are located in an area zoned 7(w) – Environmental Significance ‘W’ (Waterways) Zone whilst the land-based site is zoned 4(a) – General ‘A’ Industrial Zone under the *Port Stephens Local Environmental Plan 2000*. Under these zonings, the proposed development is permissible with development consent and is consistent with the zone objectives.

4.3 Relevant Environmental Planning Instruments and Strategies

The assessment of the proposed development is subject to the following environmental planning instruments and strategies:

- *State Environmental Planning Policy No. 14 – Coastal Wetlands;*
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection;*
- *State Environmental Planning Policy No. 71 – Coastal Development;*
- *Hunter Regional Environmental Plan;*
- *Port Stephens Local Environmental Plan 2000;*
- *NSW Coastal Policy 1997;* and
- *Port Stephens/ Myall Lakes Estuary Management Plan.*

Consideration of the proposed development in the context of the objectives and provisions of these environmental planning instruments and strategies is provided below and where relevant, in detail in Appendix B.

State Environmental Planning Policy No. 14 – Coastal Wetlands

In respect of land to which the Policy applies, a person requires development consent to clear the land, construct a levee on the land, drain the land, or fill the land. The Policy also states that development of this type is declared to be designated development.

The proposed development is not located on any land to which this Policy applies, however, there exists a number of wetlands classified under *State Environmental Planning Policy No. 14 – Coastal Wetlands* (SEPP 14) within the general vicinity of the proposed oyster leases and land-based site. The nearest wetland is approximately 300 metres from the Mambo Creek lease. The Department is satisfied that the proposal would not significantly impact upon these wetlands as the proposed leases are water-based and of significant distance from these wetlands. The nearest SEPP 14 wetland to the land-based site is greater than 400 metres and is separated from the site by other industrial development. It should be noted, however, that the land-based site will incorporate suitable measures to ensure that potential impacts such as erosion and sedimentation are controlled.

State Environmental Planning Policy No. 44 – Koala Habitat Protection

State Environmental Planning Policy No. 44 - Koala Habitat Protection aims to:

- encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas;
- ensure permanent free-living populations of koalas over their present range; and
- reverse the current trend of koala population decline.

To this end, a number of local government areas in which populations of koalas are known to reside is provided in Schedule 1 of SEPP 44 and the provisions of the SEPP may apply to that land. The Port Stephens local government area (where the pearl farm is proposed to be located) is included in the Schedule, however, the Policy also states that it does not apply to development located on land that is less than 1 hectare in size. The land-based component of the development is located on land that is less than 1 hectare in area, therefore the provisions of the SEPP do not apply.

State Environmental Planning Policy No 71 – Coastal Development

The proposed development is located within the coastal zone, as defined under the *Coastal Protection Act 1979*. *State Environmental Planning Policy No 71 – Coastal Development* applies to all land within the coastal zone, therefore, the provisions and objectives of SEPP 71 apply to this proposal.

The SEPP provides matters for consideration that must be taken into account by a consent authority when it determines a development application. The Department is satisfied that the proposed development is generally consistent with the aims of the Policy and its matters for consideration particularly in relation to the protection of fish and marine vegetation, public foreshore access and visual impact. A detailed consideration of the proposal against the provisions of the SEPP is included in Appendix B of this report

Hunter Regional Environmental Plan

This plan aims to provide balanced development of the Hunter region, to encourage orderly and economic development and to bring about optimal use of land and other resources, consistent with the needs of the local community.

The Department is satisfied that the proposal meets the objectives of the Hunter REP. Detailed consideration of the proposal against the provisions of the REP is included in Appendix B of this report.

Port Stephens Local Environmental Plan 2000

The land-based site of the proposed pearl farm is located on land zoned 4(a) – Industrial General 'A' Zone. The objectives of this zone include the provision of enabling development of a wide range of industrial services, to regulate industries in proximity to urban localities and to enable the most efficient and effective industrial development of waterfront land. It is considered that the land-based site is consistent with the objectives of this zone.

The water-based oyster leases are located in an area zoned 7(w) – Environmental Protection 'W' (Waterways) Zone under the Port Stephens LEP. The main objectives of the zone are to minimise the impact caused by commercial operations on the marine life and ecology of the Port Stephens waterways and to provide for such activities and facilities including those to protect and maintain the viability of the oyster, prawn and fishing industries of the Port whilst enabling a balance of recreational uses.

The Department considers that the proposed pearl farm is generally consistent with the objectives of this zone, including adding to the viability of oyster farming in the area whilst enabling recreational and other commercial activities to continue.

Under the LEP, the proposal is permissible with development consent in both zones. A detailed assessment of the proposed development against the provisions of the LEP is included in Appendix B of this report.

Coastal Policy 1997

Consideration of development applications against The Coastal Policy, where relevant, is a prescribed matter pursuant to section 90(1)(s) of the Act. The proposed development is in a location to which this Policy applies and hence, its provisions must be taken into consideration as part of the assessment of the development application. The Policy has the objective of managing the coast in an ecologically sustainable way through protecting and conserving the coast for future generations and is based on the principles of Ecologically Sustainable Development (ESD).

Section 3.5 of the report assesses the proposal against the principles of ESD and concludes that the proposal is consistent with these objectives. The Department is generally satisfied that the proposal (with its proposed mitigation measures) meets the objectives of ESD and the provisions of the Coastal Policy.

Port Stephens/ Myall Lakes Estuary Management Plan

The Port Stephens/ Myall Lakes Estuary Management Study and Plan were prepared by the consultants Umwelt (Australia) Pty Ltd on behalf of Port Stephens Council and Great Lakes Council in order to fulfil the requirements of the NSW Estuary Management Policy and the NSW Coastal Policy. The objectives of the Port Stephens/Myall Lakes Estuary Management Plan are:

- to develop a decision making process and assist the community in evaluating the potential impacts of future development on the environmental and socio-economic values of the estuary;
- to recommend actions that are consistent and integrated with other current strategic planning and policy initiatives in the region;
- to provide for structured and prioritised management of key issues in the estuary, identify responsible stakeholders and properly assess the costs and benefits of management actions;
- to provide detailed and practical advice on management actions for local areas;
- to increase community awareness and understanding of estuary processes, and provide opportunities for the community to engage in decision making about estuary management issues; and
- to provide community groups with a strategic context for their work.

These objectives are similar to and consistent with the 7(w) zoning objectives under the Port Stephens LEP. The Department is satisfied that the proposed development is generally consistent with these objectives.

Threatened Species Conservation Act 1995

The Applicant undertook 8 Part tests for a number of fauna species and concluded that a significant impact on threatened species listed on the *Threatened Species Conservation Act 1995* was unlikely (refer to section 6.3 for more detail) and that a Species Impact Statement (SIS) was not required. The Department concurs with the findings of the 8 Part tests (see section 6.3 of this report for more detail).

The Department is satisfied that the Applicant has adequately addressed issues associated with threatened species and that the proposal is unlikely to significantly impact on these.

Commonwealth Environment Protection and Biodiversity Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) commenced on 16 July 2000. One of the key functions of the EPBC Act includes the introduction of a new assessment and approvals system for actions that have a significant

impact on matters of national environmental significance (NES). Should an action be determined that it is likely to significantly impact on NES matters (referred to as 'Controlled Actions'), an approval from Department of the Environment and Heritage (DEH) is required. In order to determine whether a project requires an approval from the Commonwealth, an applicant is required to submit a 'Referral' application to the DEH for consideration.

On 17 September 2003, the DEH determined that the proposed pearl farm was not a 'Controlled Action' and therefore, approval under Part 9 of the EPBC Act is not required before the development could proceed.

5 CONSIDERATION OF ISSUES RAISED IN SUBMISSIONS

Appointment of an Independent Community Consultant

Due to the level of community concern that was raised with the previous DA to establish a pearl oyster industry and to ensure that the community consultation program undertaken for the revised proposal was thorough and the views of the community carefully considered, the Department appointed an independent community consultant.

In August 2003, the Department appointed Milton Morris as the independent community consultant. Mr Morris' appointment was advertised in the Port Stephens Examiner and the Great Lakes Advocate and details on contacting him were provided.

Milton Morris was available to independently meet and listen to any views or issues raised by any stakeholders concerning the proposed pearl farm, prior to the lodgement of the revised DA. All issues raised with Mr Morris were documented and provided to the Department as a community consultation report.

As part of the community consultation undertaken, Mr Morris met with or received correspondences from around 35 individuals or parties. The key issues that were reported by Mr Morris included:

- the potential alienation / industrialisation / privatisation of public waters by the leases;
- the potential water quality impacts resulting from cleaning activities;
- potential impacts on flora and fauna, particularly from entanglements; and
- visual impacts, particularly from the lease markers.

On 28 October 2003, the Department provided Mr Morris' independent community consultation report to the Applicant. This report formed part of the Department's Director-General's Requirements and issues raised in the report were required to be addressed by the Applicant in the DA. In addition, the issues that were raised with Mr Morris and subsequently outlined in his report have been considered by the Department in its assessment of the proposal as outlined in section 6 of this Assessment Report.

Exhibition Period

The Department received a total of 683 submissions during the exhibition period, three of which were from government agencies, including the Department of Environment and Conservation, Waterways Authority and Port Stephens Council. The submission from Port Stephens Council stated its objection to the proposal. Since the DA and EIS were lodged, local Government elections have been held. The views of the current Council are not known. The Department also received a submission from the Worimi Local Aboriginal Land Council, which stated its support for the proposal. The Port Stephens area lies within the land of the Worimi LALC and the Karuah LALC, in the traditional country of the Birpai people. The Department notes that a letter of support for the proposal was received from the Karuah LALC and is included in the EIS.

The other 679 submissions were received from the public and special interest groups of which 434 objected to the proposal, 203 supported the proposal and 42 did not state a clear position on whether they supported or objected to the proposal but raised issues. In addition, two petitions were received during the exhibition period, one which was signed by 495 individuals stating their support for the development, the other, signed by 17 individuals stating their objection to the proposal. A submission from Great Lakes Council was received after the close of the exhibition period, however, it did not state a position on the proposal.

A summary of the major issues raised during the public exhibition of the proposal and consultations is presented in Section 6 of this assessment report, with details of the submissions received during the exhibition period provided in Appendix C. The Department considers that all the requirements of the Act in relation to the receipt and consideration of submissions and to public consultation have been met.

Following the provision of submissions and the receipt of all outstanding information, general terms of approval (GTAs) were sought from the NSW Fisheries. NSW Fisheries have now provided its GTAs indicating the terms under which they would be prepared to issue an aquaculture permit.

Public Submissions

The key issues raised in submissions that objected to the proposal included:

- a perception that the proposed development would lead to the privatisation and industrialisation of the Port Stephens waters with the potential for other similar developments to follow if this proposal is approved;
- site suitability, particularly the perception that this type of development is suitable in remote areas only;
- flora and fauna impacts, particularly on seagrasses and dolphins and migratory whales;
- navigational/ safety impacts from lease infrastructure on other users of the Port; and
- water quality, particularly in relation to sediment plumes;

Where submissions stated their support for the proposal, the key issues raised included:

- the potential employment opportunities,
- economic benefit to the local community, including flow-on effects;
- the potential for increased tourism through the establishment of a new tourist icon; and
- that the proposal represents an ecologically sustainable development.

Agency Submissions

Department of Environment and Conservation

- raised concern regarding a future proposal for a Marine Park that will likely encompass Port Stephens;
- raised concern regarding the entanglement protocol referred to in the EIS and suggested it required some modifications, in consultation with the DEC;
- raised issues relating to marine mammal habitat;
- raised issues relating to the production density of oysters on the lease;
- noted that any discharge of water from the punts must comply with the *Protection of the Environment Operations Act 1997* with respect to pollution of waters; and
- considers a financial bond should be imposed in case the proposal does not continue in the long term.

Port Stephens Council

- objects to the proposal. No reasons for objection were stated in this submission, however, Council cited a previous Notice of Motion that was considered at its meeting of 23 September 2003 which stated that they should continue to object to the proposal.

NSW Waterways Authority

- states that the noise criteria set for work vessels in transit has been superseded by the POEO Noise Regulation, however, notes that there is a noise management plan in place to address this;
- notes it consulted with the Port Stephens Waterways User Group which considered that the proposal will have a negative impact on tourist based and recreational boating through the reduction of safe anchorages and access to navigable water;
- recommends:
 - cleaning be designed to ensure it meets the requirements of the POEO Act;
 - the Applicant inform the boating public that they may access or traverse the lease site;
 - removal of two existing starboard navigation piles at Pindimar and replacement with two lit navigation buoys (with location and design to be specified by Waterways);
 - provision of a program to monitor and maintain the nominated depth of 4m below MLLW at all times;
 - any moorings provided are to be contained within the confines of the lease are and maintained on an annual basis by the Applicant; and
 - navigation marks be installed at the corner of the leases that are to be Lit Special marks of a size and design specified by Waterways and complying with the IALA Buoyage System. Approved signage is to be displayed on each buoy indicating the depth and presence of aquaculture.

Worimi Local Aboriginal Land Council

- Expressed support for the proposal due to potential economic benefits and job creation.

6 CONSIDERATION OF ENVIRONMENTAL ISSUES

The Department has reviewed the Environmental Impact Statement for the proposed development, and duly considered all submissions from Government authorities, Council and the public. As a result, the Department has identified a number of environmental issues associated with the proposal. A full consideration of each of the issues listed is provided from section 6.1 to section 6.12 of this report.

Issues identified as being of **key importance** to environmental planning and assessment:

- impacts on water quality;
- bio-sedimentation impacts;
- impacts on marine flora and fauna;
- privatisation and recreational impacts;
- navigational hazard issues;
- socio-economic and tourism impacts

Issues identified as being of **importance** to environmental planning and assessment:

- impacts on visual amenity;
- disease risks;
- noise impacts;

Other issues associated with the proposed development include:

- waste management; and
- odour impacts

6.1 Water Quality Impacts

Applicant's Position

The Applicant identified potential impacts on water quality from the operations of the pearl farm as being the excretion of waste products produced by the oysters and discharge from the process of cleaning oysters and associated infrastructure.

Over time, sediment suspended in the water column and waste products produced by the oysters can settle on to the oysters and associated infrastructure. In order to ensure optimal health and productivity of the pearl oyster, the Applicant states that the oysters must be cleaned regularly. It is this process that the Applicant notes can result in potential water quality impacts.

During the cleaning process, lines are brought to the surface so that pearl cages and panel nets can be passed through the cleaning unit on the cleaning punt. In doing so, material that has settled on the lease is re-suspended in the water column resulting in a localised discolouration of the water. Water used to clean the oysters is then passed through a filtration unit and discharged at a depth of approximately 4 metres below the surface. The Applicant notes that this process has also resulted in the occurrence of a visible turbidity plume.

In order to manage and minimise these impacts, the Applicant has undertaken a series of improvements to its cleaning process. Such measures have included the use of a turbidity curtain, optimising the frequency of cleaning and disposing of larger particles on land. The cleaning unit is also discussed in section 3.3 of the report and in greater detail in the Department's Position below.

An analysis of the discharge stream from the cleaning process indicated that the material discharged is approximately 80% inert (that is, sediment already present in the waterway) and 20% organic (waste product from oysters and algae etc). As oysters are filter feeders and obtain all their nutrients from the surrounding waters without the need for supplementary feeding, the Applicant argues that the material in the discharge waters was already present in the Port and therefore, the oyster farm is not adding to poor water quality in the Port.

Indeed, the Applicant notes that there would be a net loss of sediment and nutrient from the water as a result of the establishment of the leases, due to the feeding processes of the oysters. The oysters remove nutrients and sediments from the water column and excrete some waste product, whilst the balance of nutrients is held in the biomass of the oyster. The Applicant states that the proposal could also have a positive, localised effect on water quality through a reduction in the potential for eutrophication of the waterway.

Water Quality Objectives

The Marine and Freshwater Water Quality Guidelines (ANZECC, 2000) sets out guidelines for the maintenance of aquatic ecosystems. The ANZECC Guidelines have also set interim environmental objectives relating to the maintenance of aquatic ecosystems, visual amenity and primary and secondary contact recreation.

The Applicant undertook monitoring of the cleaning punt operations prior to any modifications being made to the system and determined that at a distance of approximately 40 metres, discharges from the cleaning punt would not exceed the ANZECC Guidelines or interim objectives. With changes being made to the cleaning unit to reduce the extent, density and duration of the plume, the Applicant considers that it will continue to be consistent with the intent of the ANZECC (2000) Guidelines and interim Environmental Objectives.

The Applicant states that monitoring of the performance of the oyster cleaning system will be undertaken once operational. The proposed monitoring includes:

- measurement of the turbidity and total suspended solids in the discharge stream; and
- measurement of the clarity of waters immediately before, during and after cleaning operations to document the extent and intensity of any plume that may be generated by the cleaning operation. The Applicant also proposes to measure water clarity at seagrass beds on adjacent foreshores.

The Applicant states it will consult with the DEC regarding the monitoring program, particularly in the context of the ANZECC 2000 and Interim Environmental objectives guidelines. The Applicant proposes to report on the water quality results in an Annual Environmental Management Report that will be submitted to the Minister.

Issues raised in submissions

In its submission, the Department of Environment and Conservation (DEC) states that the proposal does not require an Environment Protection Licence, however, it must comply with section 120 of the *Protection of the Environment Operations Act 1997*, which prohibits the pollution of waters.

Many submissions from members of the public raised concern with the potential impacts the proposal would have on water quality in the Port. Submissions cite that the current operations result in an unsightly visible sediment plume which may also have impacts on adjacent seagrasses. A number of submissions stated that they have observed a visible sediment plume along the Salamander shores when the Applicant is undertaking cleaning at the leases.

Department's Position

The Department notes that several public submissions raised the issue of the creation of a 'plume' during the cleaning of oysters on the existing lease site and that this plume has the potential to impact on the local marine life and visual amenity if not managed correctly. To this end, as part of the assessment of the proposal, the Department visited the site to understand the cleaning process and the environmental context of the potential impact.

At this recent site visit, the Department noted that the current filtration unit used to clean the water prior to being discharged back into the Port has resulted in a significant reduction in the amount of visible sediment being returned compared with the earlier systems used by the Applicant. It was observed that any disturbance caused by the return of waters quickly disappears (less than 5 minutes). What was evident, however, is that a visible sediment plume still arises as the pearl oyster cages, panel nets etc. are brought to the surface and on to the cleaning punt for washing.

The Department and NSW Fisheries sought clarification in relation statements in the EIS that a number of measures were trialled to reduce the visible extent of plumes and how foam generated from the cleaning unit is managed. The Applicant provided this information and noted that such measures included shaking the cages underwater before lifting, lifting cages slowly and returning them gently into the water. The Applicant claimed that none of these measures significantly reduced the extent of the plume. Unless future trialling programs are successful, it is unlikely that the extent of the plume would visibly reduce.

The Department notes, however, that previous sampling of the cleaning operations (that is, prior to the modifications) have shown that the sediment plume meets the ANZECC criteria for amenity and recreation at a distance of approximately 40 metres from the boat. The Department considers that this situation would have improved since the modifications to the cleaning system and could improve even further over time as measures to reduce any residual sediment plume impacts arise as a result of on going investigations.

With regards to the issues raised in submissions in relation to turbidity plumes occurring along the shores of Salamander Bay, the Department considers it very unlikely to be the result of the cleaning operations from the pearl farm as inferred in the submissions, particularly as the predominant current runs approximately parallel to the shoreline making it difficult for the plume to be conveyed to the shoreline. The Department considers that the turbidity seen at the shore is in fact a natural phenomenon caused by wave action stirring up the sedimentary shoreline. This position is supported by scientific studies of similar environments such as McLachlan *et al* (2001). Notwithstanding, the Department acknowledges that the issue of the turbidity plume is of key concern to the local community and the Applicant should ensure that the development and implementation of measures to minimise this impact is an on-going priority.

6.2 Bio-sedimentation

Applicant's Position

The Applicant states that the level of sedimentation under the lease sites has the potential to increase as a result of the proposed development due to waste products produced by the oyster depositing on the sea floor and as a result of the intercepting nature of the culture apparatus in the water column.

It is considered that the low stocking densities proposed would reduce the volume of waste produced by the oysters and hence reduce bio-sedimentation levels under, and in the vicinity of, the lease sites. The Applicant also considers that the strong currents experienced in Port Stephens, ranging from between 0.1 and 1.5 metres per second will assist in the dispersion of sediment.

To explore and monitor the potential impacts of the existing Wanda Head lease on the underlying bed sediment, the Applicant has undertaken an on-going program of sediment sampling at the Wanda Head lease and eight control sites around the Port.

Findings from studies presented during the Commission of Inquiry in 2002 into the first development application for a commercial pearl oyster farm determined that the chemical composition of the sediment underneath the Wanda Head lease, specifically, Total organic carbon (TOC), Phosphorus (P) and Nitrogen (N), had not changed significantly over time when compared to five control sites.

Since that time, the Applicant states it has continued to monitor the potential impacts of the Wanda Head lease on sediment chemistry. With a greater number of sampling times to compare and the fact that more recent sampling has included a greater number of control sites (from 5 to 8), the Applicant states that its sampling program has a greater ability to detect any changes in the sediment chemistry as a result of the development. The results of this more extensive analysis supported the findings of earlier work that the pearl oyster farm is not having a detectable impact on the environment beyond the level of naturally occurring variation, or the ability of the environment to assimilate any additional nutrients.

An assessment of benthic fauna under the lease and at control sites was also investigated in 2002. The study concluded that the assemblages were not significantly different.

The Applicant also cites other studies undertaken at similar shellfish farming activities in other areas of Australia which support the findings at Wanda Head that shellfish farms have little impact (or show little evidence of an impact) on the sediment and associated fauna under the leases (see Underwood and Hoskins 1999). Further, stocking densities at these sites were between three and four times greater than that proposed for the oyster farm at Port Stephens, meaning the potential for bio-deposition from this proposal is significantly reduced.

Submissions

No submissions received during the exhibition period raised concern regarding the impact of the oyster farm on sediment chemistry. Many submissions did, however, raise considerable concern regarding the impact of sedimentation on the health of adjacent seagrasses and other marine life. This is addressed in section 6.4 of the report.

Department's Position

The Applicant has undertaken an assessment of total organic carbon, phosphorus and nitrogen at the impacted site (Wanda Head lease) and eight control sites. The Department considers the survey to be well designed and well analysed with an appropriate level of spatial and temporal replication. The Department concurs with the findings presented in the EIS and is satisfied that there have been no detectable changes in the parameters measured as a result of the existing oyster lease.

The Department notes the results of previous studies as outlined in the EIS, and suggests that any minor impacts are likely to be localised and restricted to the areas underneath the proposed lease sites. It is considered that monitoring of the bottom sediment chemistry, including TOC, P and N should be continued, should the Minister approve the proposed development, to ensure that any potential bio-sedimentation impacts can be identified and appropriate measures implemented to mitigate any problems.

Benthic assemblages

The Department notes that an assessment of benthic fauna was undertaken in 2002 (Roberts, 2002) to estimate the presence and abundance of benthic fauna under the existing lease at Wanda Head and at control sites. The results of this sampling concluded that there was no detectable difference between the faunal assemblages under the lease compared to the control areas. The Department is satisfied that at that sampling time, the lease site was unlikely to be having an effect on benthic fauna. No other assessment of benthic assemblages has been undertaken since that time.

It could be argued that as no impact on the measured chemical and physical parameters were detected, there is no need to assess the response of the benthic assemblages to bio-sedimentation. It is possible, however, that benthic fauna respond to changes in these parameters that were not detectable using the survey techniques, or that they responded to parameters not measured. For example, benthic assemblages may respond to the presence of structures associated with the pearl farm. Alternatively, the presence of a large number of suspension feeders (the pearl oysters) may reduce the food available for other species of suspension feeders (for example, other bivalves, crustaceans and polychaete worms).

The Department recommends that the possibility of long-term, but localised impacts on benthic assemblages continue to be investigated. Should the Minister approve the proposed development, the Department recommends the Applicant undertake direct monitoring of benthic invertebrates using a design with appropriate temporal and spatial replication to detect any impact from the pearl farm. Any such monitoring program will need to be approved by the Director-General, following consultation with NSW Fisheries.

The Department is satisfied that any impacts associated with bio-sedimentation have been adequately addressed through the assessment process and notes that NSW Fisheries did not raise any concern in relation to this issue.

6.3 Marine Fauna

Applicant's Position

Dolphins

The Applicant has recorded the presence of dolphins in and around the existing Wanda Head lease area since 2000 and notes that dolphins have continued to use this area whilst the pearl farm has been in operation. To put these dolphin sightings in context, research was undertaken to gain a better understanding of dolphin movement and usage of the entire Port.

Based on the data gathered to date, the Applicant determined that 76% of dolphin sightings occurred in the eastern section of the Port (east of Corlette) whilst 17% of sightings occurred in the central section (east of Soldiers Point, west of Corlette) where the proposed leases are to be located. The probability of encountering a dolphin or dolphin group in the eastern section of the Port was found to be approximately 8 to 10 times higher than in the central section. The Applicant notes that it is because of this and the better clarity of water, that dolphin tour boat operators tend to confine their tours to the eastern section of the Port.

The potential for the proposed pearl farm to displace dolphins is noted as an area of considerable concern to residents and has been discussed in a review by Dr Luciana Möller that was prepared on behalf of the Applicant. Dr Möller noted that the main concerns raised by the public related to the increase in boat traffic and consequently, increase in the potential for boat strike and noise disturbance, habitat loss and displacement and the possibility of entanglements in the lease infrastructure.

In order to gain access to the aquaculture leases from the land-based site, the Applicant states it must pass through the relatively narrow (1 kilometre wide) channel between Soldiers Point and Fame Cove. This channel is also used by dolphins and other boat users to gain access to the inner Port area and forms the starting line for the majority of the Port Stephens Yacht Squadron's races, with Middle Island, often used as one of the marks during the race.

At peak times, the proposed pearl farm will typically generate approximately six round boat trips per day between the land-based site and leases. Given the current usage of the area and noting that there are approximately 5000 boats registered in the Port Stephens area, the Applicant considers that the development will not significantly increase boat traffic and will not prevent or impede dolphins from moving between the Inner and Outer Port. Notwithstanding, the Applicant proposes to install propeller guards on all vessels to avoid laceration in the unlikely event that animal strike occurs.

With regards to noise impacts, it has been suggested that in order to minimise the potential for noise disturbance from the boats, the Applicant should reduce boat speeds through this passage. The Applicant highlights that dolphins are frequently seen riding the bow wave of boats indicating that dolphins can at times, choose to be in a noisy environment. Hence, the Applicant considers that their use of an area may not be restricted by noise even though their ability to communicate with others is impeded for a time. The use of the hydrophone array as proposed will enable the response of dolphins to boat noise to be explored further.

The Applicant states that lease infrastructure will be set at least four metres below the surface of the water with clear water also available between the seafloor and bottom of the leases. The alignment of the longlines, to be generally with the prevailing currents, and maintenance of taut lines, will ensure that marine fauna are able to move freely through the lease areas without the chance of entanglement. The Applicant supports this by noting that dolphins regularly swim through the leases and that there have been no recorded entanglements since the Wanda Head lease was installed in 1999. A contingency plan for any entanglement incidents is provided in the EIS and is consistent with the approved entanglement protocol implemented under the existing consent for the Wanda Head lease.

Based on the information noted above, the Applicant considers that the proposed development will have negligible potential to result in the entanglement of dolphins or the displacement of dolphins from preferred habitat in the Middle Port.

Other Marine Fauna

The Applicant undertook 8 Part tests for a number of fauna species and concluded that there would not be a significant impact on any threatened species listed under the *Threatened Species Conservation Act 1995* that may be present within the locality and that a Species Impact Statement was not required. Species assessed included the green, loggerhead and leathery turtles, grey nurse and great white sharks, southern right, humpback, blue and sperm whales, black cod, and a number of seabirds.

The Applicant states that to address concerns raised by the former NPWS about potential entanglements of turtles in the pearl cages, modifications will be made to the design of the cages such that only one rope will be used to suspend the pearl cage rather than 3 or 4, thereby reducing the potential for entanglements.

The humpback whale and southern right whale have both been recorded within the waters of Port Stephens. It is possible that there may be future visits from these and other whales, therefore, there is the small chance of entanglement from the lease infrastructure. As with the dolphins, the Applicant states that preventative measures will be implemented to minimise the risk of entanglement. Such measures include locating the infrastructure at least 4 metres below the surfaces, maintaining a taut rope policy, orienting the culture apparatus with the general current flow, suspending pearl bags etc. using a single rope and providing 24 hour monitoring of the leases to ensure rapid detection of entanglement to reduce the risk of fatality. An entanglement protocol is also provided by the Applicant to prevent and manage any potential entanglement issues.

Submissions

Submissions received from members of the public tended to focus upon the potential impact the proposal would have on dolphins, particularly from entanglement or displacement. A small number of submissions also noted the potential impact on turtles and migratory whales.

In its submission, the DEC considered that the Entanglement Protocol could be strengthened, but was supportive of the concept. The DEC suggested that if the proposal was approved, the Applicant should be required to prepare an updated entanglement protocol in consultation with the DEC. The DEC also recommended the Applicant prepare a manual to be put on all work vessels to provide advice on how to deal with any entanglement incident, should one occur. The DEC submission also raised concern regarding the removal of the surface buoys and the likely decrease in ability to detect any entanglements.

Department's Position

The Department acknowledges that while dolphins are common in the eastern Port region, they are known to occur in the proposed lease areas (particularly the Wanda Head lease), meaning that there is the potential for entanglement incidents to occur.

The Applicant proposes a 'taut rope approach' to manage or prevent dolphin entanglement. This approach is feasible and is likely to be effective in preventing entanglement of fauna. Indeed, since the aquaculture lease apparatus was installed at Wanda Head in 1999, there have been no recorded incidents of entanglement of dolphins or of any other fauna in the aquaculture apparatus. A similar strategy was also implemented as part of a package of measures to mitigate the impacts of commercial net fishing on dugong and Irrawaddy dolphins in the Great Barrier Reef World Heritage Area. It should be noted that compared to monofilament fishing nets, the structures associated with Akoya Pearl farming are clearly more

acoustically reflective, which will aid dolphins in the detection and avoidance of these structures.

Prevention rather than reactionary strategies are considered to be the best way to manage potential entanglement issues and the Department is satisfied that the Applicant places sufficient emphasis on preventing such incidents from occurring. It is, however, still considered beneficial to implement an Entanglement Protocol in the event an incident occurs and the Department is generally satisfied with the Protocol included in the EIS. The Department recommends a revised entanglement protocol be prepared, in consultation with the DEC and NSW Fisheries and to the satisfaction of the Director-General, should the Minister approve the development. The Protocol should also take into consideration the NSW Fisheries GTAs that relate to management and prevention of entanglement.

The Department also recognises concern from the DEC regarding the ability of the Applicant to detect an entanglement incident if the surface buoys are removed. The Department notes the Applicant proposes to use a hydrophone to enable the detection of any entangled fauna. Due to uncertainties on how this would be monitored, particularly at night, the Department requested further information from the Applicant. The Applicant responded by noting that personnel will be employed at night to monitor the hydrophones and that if any disturbance is detected, personnel will be deployed to investigate the matter. It is noted that hydrophones will also be used for security purposes at the pearl farm.

The Department notes that extensive farming of mussels (15.5 ha) also occurs on the southern NSW coast in Twofold Bay which utilises both raft and longline culture apparatus. Twofold Bay is known to be frequented by dolphins and turtles. In the 20 years since the mussel farm at Twofold Bay has been operating, there have been no recorded incidents of marine animals becoming entangled in the aquaculture infrastructure. Indeed, in a recent review of the mussel farm undertaken by representatives of the Department, NSW Fisheries, NSW Waterways, DEC and Bega Valley Shire Council it was considered that the risk to whales and dolphins from the mussel farming infrastructure may be minimal where measures such as taut ropes, boat speed restrictions, prohibition on netting and contingency plans in the event of an incident, are undertaken. The Department notes that the pearl farm at Port Stephens proposes to adopt all these measures in order to reduce the potential for entanglement incidents to occur. Notwithstanding, the Department recognises that there still exists the potential for entanglements to occur.

The Department acknowledges concern raised in submissions regarding the potential impact of the proposal on the dolphin population and their movement within the Port. The Department notes that Dolphin movements and behaviour can be significantly altered by a wide range of human disturbances including: tourism, prawn trawling and boating (e.g. refer to Connor and Smolker, 1985; Corkeron *et al.*, 1990; Frohoff and Packard, 1995; Orams, *et al.*, 1996). Therefore, dolphins in Port Stephens are already likely to be subject to disturbance from the existing activities undertaken in the Port.

The proposed development may impact on dolphin movement by increased boat traffic, the pearl farm structures and specific activities such as the cleaning of pearl shells. The Department considers, however, that the estimated six boat movements introduced into Port Stephens from the proposed development would be insignificant with respect to existing and projected boating use in Port Stephens which has an estimated 5,000 registered boats. Notwithstanding, the Department supports the Applicant's commitment to put propeller guards on the work boats to reduce the impact of boat strike on marine fauna and has recommended this measure as a condition of consent.

Should the Minister determine to approve the proposed development, the Department recommends the Applicant develop and undertake a program to monitor dolphin behaviour, in

consultation with the DEC and NSW Fisheries, to the satisfaction of the Director-General. The Department is supportive of DEC's recommendation to provide an on-board reference manual to provide guidance to staff on how to handle entangled fauna and potentially administer first aid, and this is reflected in the recommended conditions.

The Applicant has also considered the potential impacts of the proposed development on relevant marine turtle and whale species via the Eight Part Test. The Department is satisfied that the information provided in the Eight Part Test sufficiently documents the regional distribution of these animals and the conclusion of no significant impact from the proposal is supported. As with dolphins, the Entanglement Protocol is discussed as a means of managing any entanglement incidents and the Department considers it to be appropriate for any incidents associated with marine turtles and whales.

With regards to other longline aquaculture farms in Australia, NSW Fisheries provided information to show that of the 88,000 hectares of longline aquaculture occurring in Australia, there have been no reported deaths of whales due to entanglements in longlines. This is despite some aquaculture leases being located in important breeding areas and migratory paths of the humpback whale and southern right whale such as Albany, north of Cape Leveque, and Great Oyster Bay and Mercury Passage.

6.4 Seagrasses

Applicant's Position

Port Stephens contains an abundance of seagrasses comprising *Posidonia*, *Zostera* and *Halophila* spp. Seagrasses require light for photosynthesis, hence, the depth at which seagrasses are found is limited by light availability. Typically, in Port Stephens, seagrasses are found at depths of up to 5 metres.

The proposed lease sites are situated within fine silt and sand substrate in water depths of 7 to 16 metres, therefore, there are no seagrasses located directly under the leases, which the Applicant states was confirmed by field investigations. Seagrass meadows, particularly *Posidonia australis* were, however, found to occur in areas of more shallow water along the shoreline within the general vicinity of the leases (see Figure 5.10 in the EIS).

During the consultation period undertaken by the Applicant prior to lodgement of the DA, it was noted that many residents had concerns regarding the potential impact of bio-sedimentation on seagrasses within the Port. The Applicant observed that the nearest seagrasses are in excess of 100 metres from the southern corner of the Mambo Creek lease and in excess of 250 metres from the Wanda Head and Pindimar leases. The Applicant states that this is at least twice the distance that the plume was able to be detected by taking samples of the water column and therefore, the Applicant does not expect the proposal to have an effect on seagrasses.

Notwithstanding, the Applicant has continued to monitor seagrasses in accordance with the existing conditions of consent for the Wanda Head lease site to measure the effect, if any, the lease (including the sediment plume) is having on seagrass health. Seagrasses were sampled adjacent to the Wanda Head site and the proposed Mambo Creek and Pindimar leases and at five reference sites at Soldiers Point, Salamander South, The Anchorage, Pindimar East and Pindimar West. Seagrass density, percentage cover as well as seagrass leaf length and epiphyte cover were sampled.

Posidonia australis was found to dominate the seagrass beds at all of the sampling sites. In general, the Applicant notes there were no significant differences in the percent cover, density, shoot length and epiphyte cover between the Wanda Head lease site and reference sites. What was evident, however, were significant differences between reference sites for all

variables measured, indicating that there is a high level of variability of *P. australis* within the Middle Port. The Applicant also noted that the percent cover of *P. australis* between smaller plots at a site were significantly different indicating that the level of variability within seagrass beds was as great among sites as within sites. The Applicant, therefore, considers that the 'health' of seagrasses that are adjacent to the existing lease is similar to those at other locations within the estuary. The Applicant notes that the report also provides a baseline for measuring the health of seagrasses that are adjacent to the two other proposed lease areas for comparison with future monitoring data, should the proposal proceed.

The Applicant states it will continue to monitor seagrass health on a two-year basis during the growing period (spring to early summer) to determine if any changes have occurred as a result of the proposed leases. Results will be provided in the AEMR.

Submissions

A large number of public submissions received by the Department raised concern regarding the impacts of bio-sedimentation, with particular concern of the potential impacts on seagrass species. The Department did not receive any submissions from Government agencies that raised concern in relation to the impact of the proposal on seagrasses in Port Stephens.

Department's Position

The Department notes the considerable concern raised by members of the public in relation to the impacts of the lease, particularly from sedimentation, on adjacent seagrass beds. To assess this, the Applicant undertook broadscale mapping of the Middle Port area, and measured a range of parameters for *P. australis* (shoot density, percent cover, leaf length and epiphyte cover) in the putatively impacted site (Wanda Head lease) and reference areas.

The Department recognises that the parameters measured by the Applicant are standard variables used to measure seagrass 'health.' Ostensibly, the survey examining seagrass parameters is a one-off 'snap-shot' survey of the health of seagrasses at one point in time and the limitations of these in assessing temporal and spatial variability of factors is well-acknowledged. Nonetheless, such approaches are still widely used in environmental impact assessment owing to the cost of long-term monitoring.

The EIS mentions an early 2002 seagrass survey undertaken for the operations of the Wanda Head lease and identifies an aim of the current survey as assessing any decline in the health and abundance of seagrasses as a result of pearl farming activities. The analysis undertaken does not, in fact, address this issue as a direct comparison of the health and abundance of seagrass through time was not undertaken. The survey did, however, show that there was no statistical difference between the Wanda Head site and control sites. Nevertheless, the Department is satisfied that the survey used an appropriate hierarchical sampling design with spatial replication at several scales and that there were no differences between the sites at that point in time, consistent with the earlier 'snap-shot' survey of 2002. The Department notes that NSW Fisheries did not raise any issues of concern in relation to seagrasses and that the DEC welcomes the findings of the EIS of no impact to seagrasses.

The Department considers that from the information presented to date, the impact on seagrasses is negligible. Notwithstanding, the Department considers it prudent to undertake monitoring on an on-going basis in order to establish the magnitude of any impact over time. A contingency plan should be prepared and implemented should monitoring identify that the proposal is having a detrimental effect on seagrasses. Such measures could include a stop-work in the area of concern.

6.5 Impacts on Recreational / Commercial Fishing of Port Stephens and Privatisation of its Waterways

Applicant's Position

The Applicant acknowledges that the potential impacts of the proposed pearl oyster farm on the various recreational activities within Port Stephens and commercial activities is a key issue to the local community and has addressed the relevant issues in the EIS (and outlined below).

Recreational Fishing

The Applicant acknowledges that fishing is an important recreational activity within the Port Stephens waterway, with around 40% of the population participating in fishing related activities. The EIS outlines that recreational fishing activities are concentrated around the entrance channels of Port Stephens and Myall Lakes, around the various oyster leases as well as around breakwalls and marinas.

The Applicant suggests that Port Stephens is recognised as a port for game fishing (ie in open ocean waters) as opposed to estuarine fishing, with a major game fishing tournament held every February which attracts a large number of visitors and income each year. In relation to the proposed lease sites, the EIS indicates that in considering a local fishing and boating guide, there are two known fishing locations in the vicinity of the Wanda Head, one at Mambo Creek lease and no known sites located near the Pindimar site (refer to Figure 5.18 of the EIS).

The EIS outlined that a number of recreational fishers expressed concern that the establishment of the leases would reduce their access for fishing purposes. However, the Applicant cites that the proposed lease areas are not known for their recreational fishing opportunities and that the proposed lease infrastructure is in fact likely to attract and enhance fish populations around the lease.

The Applicant does acknowledge that any fishing undertaken at anchor within the lease or while drifting through the lease are likely to result in their fishing gear becoming entangled within the lease longlines.

The Applicant considers that while the lease infrastructure will restrict recreational drift fishing within the lease, they believe the proposal will have a minor impact on the overall recreational amenity for any recreational anglers. This is primarily due to the proposed leases occupying only 0.2% of the Port Stephens waterway and due to the majority of fishing activities within the Port occurring over reefs and shoals in the Outer Port and seagrass areas in the Middle and Outer Port, compared to the deep open waters where the lease areas will be located.

Commercial Fishing

The Applicant acknowledges that Port Stephens is one of the largest commercial estuarine fisheries in NSW. While the number of commercial fishers varies throughout the year, the Applicant indicates that there are around 60 commercial fishermen working in Port Stephens. The main species targeted include yellow-fined bream, sea mullet, luderick, tarwhine, river eels, dusky flathead and sand whiting, and the invertebrate species targeted include mud and blue-swimmer crabs, school prawns and eastern rock lobster. The Applicant estimates that the value of the fish caught in the estuary is valued at around \$2 million per year.

The Applicant suggests that the installation of the pearl leases will hamper the commercial netting of some fish species, however the leases are not known to occur in known commercially fished areas. The Applicant outlines that as the proposal will equate to only 0.2% of the total surface area of the Port and due to the Akoya oysters occurring naturally in the Port which will require no supplementary feed, the proposal is not expected to have a significant impact on commercial fishing activities.

Privatisation of Waterway

The Applicant outlines that aquaculture leases granted under the *Fisheries Management Act 1994* only permit the carrying out of the activity for which the lease is required (that is, pearl farming) and do not convey exclusive access rights of that area to the holder of the lease. As a result, the Applicant suggests that access within the lease is permitted provided the activity does not interfere with any aquaculture apparatus.

The Applicant states that the proposed development has been designed and managed in order to minimise any impact on other activities on the Port, such as other recreational and commercial boating activities. This includes the removal of surface buoys and the placement of the lease longlines at least 4 metres below the waters surface to minimise any potential entanglements of any recreational or commercial water craft.

In addition to the measures outlined above, the Applicant proposes a number of other management measures to mitigate any potential impacts on recreational and commercial activities. In this regard, the Applicant states it will also provide courtesy mooring facilities within the leases for use by recreational fishers. It is proposed to establish two moorings per lease, and that further consultation with recreational fishing groups will be undertaken in order to establish the appropriate locations for these moorings. The Applicant also proposes to liaise with fishing groups and tourist outlets to ensure the lease locations are marked on fishing guides and on maps of the Port.

Issues Raised in Submissions

One of the key issues raised in submissions received from members of the public related to the privatisation of the Port Stephens waterway and that pearling is appropriate in “remote areas” only. A small number of submissions (less than 30) also expressed concerns about the proposal’s impacts on fishing activities. Submissions stated that the proposal will impact and interfere with fishing activities and that the proposal will privatise the waterway through restricting the use of the area for boating activities, that the area is public waterway and should not be developed and that deep water areas should not be developed. The Department also received some submissions from members of the public who indicated that the proposal will not privatise the waterway as water craft will be able to travel through the lease.

The correspondence from NSW Fisheries which provided the Department with their GTA’s raised no concerns about the potential impact of the proposal on recreational or commercial fishing activities.

Department’s Position

Privatisation of Waterway

The Department acknowledges that the issue of privatising or industrialising the waterway is a key concern for a number of private individuals who made submissions on the proposal. The Department notes, however, that the legislation (that is, section 164 of the *Fisheries Management Act 1994*) does not confer the right of exclusive possession of a leased area to the lessee and that private individuals would still be permitted to traverse and fish in the aquaculture leases provided they do not interfere with the aquaculture apparatus. Further, the Department considers that with the modifications made to the proposal since the first development application, such as through the removal of surface buoys and depth of the longlines, the pearl leases are unlikely to significantly impact on the use of the waterway.

The issue raised in submissions of pearl farms being appropriate in remote areas appears to be tied to the South Sea Pearling industry that tends to be located away from residential sites. The Department sought information from the Applicant on this issue to which the Applicant noted that south sea pearls live in high salinity areas that do not require a mix with fresh water

and therefore tend to be located further offshore. The Akoya shell, however, grows naturally in cooler estuarine waters requiring a fresh/ salt water mix and hence will naturally be closer to human habitation. This position is supported by NSW Fisheries which noted that whilst Akoya pearl farms can occur in both estuarine and marine areas, growth rates and pearl quality are generally higher in estuarine areas. Hence, sites suitable for sustainable Akoya pearl farms are limited to estuaries or sheltered embayments and not the open ocean, as is the case with other pearl oyster species farmed in northern Australia.

The Department agrees that with the configuration of the lease infrastructure, the pearl leases will restrict the undertaking of drift fishing activities through the lease and the anchoring of any vessel within the lease due to potential entanglements. However, as the proposed leases represent around 0.2% of the total surface area of the Port, the restriction of these two activities is not considered to be significant.

In addition, the Department is satisfied that with the depth of the lease longlines being maintained at least four metres below the waters surface, the fact that no boat that uses this part of the Port has a draught greater than four metres and due to sailing courses being outside the lease area, the proposed development is unlikely to significantly impact on other boating activities and therefore, privatise these waterways. Therefore the Department concludes that while access within the lease areas would be restricted to some extent for certain activities, it does not believe that the proposal will have a significant impact on the overall use of the Port Stephens waterway.

Recreational Fishing

In relation to recreational fishing activities, the Department recognises that the proposal will restrict anchoring within and drift fishing activities through the leases. The Department notes, however, that the leases represent only 0.2% of the total surface area of the Port.

In addition, the Department believes that the infrastructure which forms part of the lease will actually provide suitable marine habitat, and as such will provide suitable habitat for popular recreational species. It is well known that both man-made and natural structures provide habitat for popular recreational species and as such are a focal point for angling activities. Indeed, NSW Fisheries has an active program of establishing Fish Aggregating Devices (FADs) for the purposes of providing recreational fishing amenity and increasing the diversity of recreational fishing opportunities.

Therefore, the Department believes that the pearl lease infrastructure will provide recognised FADs for various recreationally important fishing species, including yellow-fin bream (*Acanthopagrus australis*) various species of leatherjacket, snapper (*Pagrus auratus*), Tailor (*Pomatomus saltatrix*), Jewfish (*Argyrosomus japonicus*) and for various recreationally important baitfish. The Department also believes that the lease areas may contribute to drift fishing opportunities in this part of the Port by providing readily identifiable structures which would serve to aggregate fish. In addition, the Department considers that the proposal will not impact on any shore based angling activities due to the distance of the leases from the shore.

Commercial Fishing

Due to the infrastructure within each lease area, the proposed pearl farm has the potential to impact on commercial net fishing activities. However, as the proposed lease areas do not appear to correspond to important commercial fishing areas in Port Stephens and due to the limited surface area the leases will occupy, the Department considers that the proposal is unlikely to impact on commercial fishing activities. In addition, as the leases are likely to act as FADs for recreationally important fish species, the proposal may also contribute to providing for increased catch numbers or by diversifying available fish species.

6.6 Navigation and Safety Impacts

Applicant's Position

The EIS outlined that the Port Stephens waterway is utilised by a diverse range of commercial and recreational vessels including commercial fishing trawlers, tourist boats, sailing boats, jet skis, rowing boats and canoes. As part of determining the potential navigational and safety impacts of the proposal on these various users, the Applicant consulted with representatives of the waterway users. The Applicant's response to the issues raised as part of their consultation, is outlined below.

One of the key issues raised related to the potential entanglement of boats, particularly yacht keels and the scratching of boat hulls from the lease infrastructure. The Applicant indicated that as part of its modifications to the proposal, all oyster longlines will be installed and maintained at a depth of at least 4 metres below low tide and the only visible surface infrastructure will be the four aquamarks delineating the corner of the oyster leases. The Applicant suggests that as no recreational or commercial vessel that uses the Port Stephens waterway draw more than 3 metres of water, then the lease infrastructure is unlikely to result in any entanglements.

The Applicant indicated that it discussed the potential navigational safety risk of the proposal with the NSW Water Police and with the NSW Waterways Authority. The EIS outlined that both the NSW Water Police and NSW Waterways Authority verbally advised the Applicant that they considered the proposal posed no risk to navigational safety within the Port.

Concerns were also expressed by some waterway users about potential entanglements during the installation of longlines within each lease as the lines may be located on the surface of the water for short periods. However to manage any risk, the Applicant advises that they will advertise installation dates in the local papers, place other notifications at the local boat ramps and provide information directly to recreational boating clubs.

Due to the yacht and dinghy races that occur within Port Stephens, including in the 'Middle Port' area where the proposed leases will be located, concerns have been expressed about potential entanglements and impediments to racing activities from the proposal. The location of the Port Stephens Yacht Squadron rounding marks in the 'Middle Port' is outlined in Figure 5.17 of the EIS.

The Applicant indicates that it has held discussions with the Port Stephens Sailing and Aquatic Club who advised in writing that the proposed lease sites do not interfere with sailing courses arranged for races conducted by the Club (refer to Appendix 3B of the EIS). However, the Applicant notes that some individuals have expressed concerns about potential entanglements from masts of sailing crafts if they capsized within the lease area, particularly during major racing regattas. However, the Applicant suggests that as the longlines would be at least 4 metres below the surface and 10 metres apart, any capsized boat could be righted by rotating the boat in a direction away from the longline. It also suggested that as the longlines are taut and made of 20-24mm diameter nylon rope, any mast entanglement would be highly unlikely.

Issues were also raised about potential entanglement of rudders and propellers from power and sailing vessels, such as during the oyster cleaning process when the longlines are lifted by cleaning boats. However, the Applicant indicates that the removal of the surface buoys and subsequent placement of all longlines at least four metres below the waters surface has removed the potential for passing craft to become entangled in the lease infrastructure, particularly from the ropes attaching surface markers to the longlines. In relation to potential entanglements during the cleaning operations, the Applicant indicates that due to the sharp angle caused to the longlines by the cleaning operations, the longlines will return back to a four metre depth within around 20 metres of the end of the cleaning boat. As a result, the

Applicant suggests that the potential for any entanglements would be minimal and that appropriate signage will be fitted to each work punt advising of an adequate safe distance to the work punts.

In support of its position, the Applicant also indicates that since the operation of the trial lease at Wanda Head since 1999, there have been no incidents of entanglements of any vessels reported despite the lease being regularly traversed by various water craft.

There are a number of measures proposed in the EIS to mitigate any potential navigational safety impacts from the proposal. This includes maintaining the lease longlines to at least four metres below the surface and removal of the surface buoys, proposals to maintain open communications with the Waterways Authority, Port Stephens Sailing and Aquatic Club and Port Stephens Yacht Squadron and assist with the management of any relevant issues as they may arise.

Issues Raised in Submissions

A number of submissions from private individuals objected to the proposal due to the potential impacts of the proposal on navigation and safety related issues for the various water craft that use the Port Stephens waterway. This included issues raised in relation to the location of the leases in already limited deep water ways that will therefore increase potential safety issues, that the leases will be dangerous to the operations of the Water Police and Volunteer Coast Guard, the leases will lead to cumulative impacts and will encourage further potential proposals and that the proposal will result in entanglement of various water craft. However, there were a number of submissions that supported the proposal indicating that the pearl farm posed limited navigational issues for any waterway users.

A submission from the Royal Volunteer Coastal Patrol outlined that they considered the proposal would create navigational dangers for the boating community. The submission also raised objection to any further navigational hazards being introduced within the Bay and that the proposal would create additional problems for the Patrol rendering any assistance to the boating fraternity who experience problems near the proposed leases.

As part of the notification of the proposal, the Department sent a letter to the NSW Police requesting any comments on the proposal, such as from the Water Police division. No submission was received from this authority for this development application, however, it is noted that for the first development application for a pearl farm in Port Stephens, the NSW Water Police provided a submission expressing its opposition to the proposal.

The NSW Waterways Authority indicated that the Pindimar Lease will impact on the transit route of vessels from Tea Gardens to the western end of Port Stephens and will therefore require modifications to the current navigational aids. In addition, the Authority has recommended a number of mitigation measures concerning navigation and safety issues, including measures to inform the boating community they may access or traverse the lease, remove two existing navigational piles at Pindimar and replace them with two lit navigational buoys, measures to ensure the longlines remain at four metres below the water and the installation of Lit Special marks for each corner within the leases.

Department's Position

The Department acknowledges that boating on the Port Stephens waterway is a popular recreational and commercial activity and includes sailing, fishing, water skiing, canoeing, jet skiing and tourist based interests. Indeed, the Department received a number of submissions from boating enthusiasts and other members of the public who raised concerns about the potential impact of the proposal on navigational safety within the Port.

The Department understands that any boat that utilises the waters of Port Stephens, particularly the area where the pearl oyster leases are proposed to be located, is unlikely to have a draught in excess of four metres. Since the Applicant proposes to maintain the lease longlines at least four metres below the water's surface, there would not be any surface longline buoys, and the Applicant states it will maintain open communication with NSW Waterways and relevant yacht clubs, the Department considers that the potential navigational safety issues associated with the proposed development are small and that the development is unlikely to adversely impact upon the boating public.

The Department also notes that the existing pearl lease off Wanda Head, where surface buoys are still present, has been in operation as an experimental lease issued by NSW Fisheries in 1999, and under a determination by the former Minister for Planning since August 2002. Since this time (approximately four years), there has been no incidents of any entanglements of other boating craft and no reports that the proposal has caused any navigational safety issue on the waterway. Information provided by the NSW Fisheries also noted that the existing longline and other aquaculture activities in NSW, including a 15 hectare mussel farm at Twofold Bay have not resulted in any significant navigation issues.

In relation to concern expressed in certain submissions about potential entanglements during cleaning activities when longline ropes would be raised to within 4 metres of the waters surface, the Department considers that this can be adequately managed through the use of appropriate signage or markers. Should the Minister determine to grant approval to the proposal, a condition has been recommended in the conditions of consent outlining that the Applicant is required to clearly display signage notifying other craft that during cleaning operations on the lease, that ropes within the lease area will be raised. A similar condition was recommended as part of the existing Wanda Head lease granted by the former Minister and since its operation in August 2002, there has been no incidents of entanglements reported.

As part of the Department's assessment of the proposal, copies of the DA and EIS were provided to the NSW Waterways Authority and NSW Police Service for their consideration, particularly in relation to navigational safety issues associated with the proposal. The NSW Waterways Authority did not state that the proposal is likely to result in either navigational or safety issues around the lease, however they recommended a number of mitigation measures be implemented which have been incorporated into the recommended consent conditions. NSW Police Service did not provide a submission on this DA (see above).

Should the Minister approve the proposed development, the Department recommends that a number of measures be implemented in order to manage any potential safety issues associated with the proposal. Such measures should include appropriate navigational markings, and a requirement to implement a Navigation and Safety Protocol, prepared in consultation with appropriate bodies including Waterways, NSW Police and the Royal Volunteer Coastal Patrol.

The Department is satisfied that through the proposed amendments to the aquaculture infrastructure and with the recommended consent conditions, the potential navigation and safety issues associated with the proposal could be adequately managed.

6.7 Socio-economic Impacts

Applicant's Position

The Applicant notes that over the past decade the Port Stephens area has experienced substantial growth in the tourist industry. Tourism is now the biggest single employer of local residents in Port Stephens. A survey of visitors to the area indicated that the major attraction for them was the beaches with many choosing to frequent the shops in Nelson Bay and to a

lesser extent, Salamander Bay. The Applicant notes that dolphin and whale watching is also a popular attraction, however, it tends to be a seasonal activity due to the behaviour of the animals.

Census data for the Port Stephens area shows that the unemployment rate was 11.6% in 1996 compared with the State average of 8.82%, and 9.8% in 2001 compared with the State average of 7.2%.

Once the pearl farm reaches full production, the Applicant states there will be 45 permanent positions created. The Applicant considers that these full-time, all-year round positions will assist in the provision of a stable employment base in an area that is characterised by high levels of unemployment and part-time work. The Applicant proposes to employ local people where possible and to train employees in aquaculture techniques.

The Applicant also notes the positive contributions that the current pearl farm operation has made in terms of research and development of pearl oyster culture in Australia. For example, the pearl farm has provided training to staff, TAFE students and Aboriginal communities and states it will continue to develop these interests as part of this proposal.

Once fully operational, the Applicant predicts that the proposed pearl farm will generate approximately \$5.5 million worth of direct expenditure per annum in the local and State economy. Flow-on effects to other support services and suppliers will also help to boost the economy and provide the potential for increased employment in those areas.

The Applicant notes that concern has been raised within the community that the proposed development has the potential to negatively impact upon tourism in the area. This is because it is considered that the proposal will result in reduced visual amenity and potential impacts on dolphins and whales which are considered to be key reasons for why tourists visit the area. Visual amenity impacts and impacts on dolphins and whales have been discussed elsewhere in this report, and the Applicant concludes that with the proposed design and management of the pearl farm, the development is unlikely to impact upon these and hence, tourism.

The Applicant also considers that the proposed pearl farm has the potential to be marketed as a tourist icon and that it has the potential to contribute to the tourist industry and the amount of money that is spent locally by tourists. The Applicant also cites other successful tourism ventures associated with pearl aquaculture farms, particularly in Western Australia.

Issues Raised in Submissions

Many submissions from members of the public objected to the proposal on the basis that it would jeopardise the tourism industry which would in turn, impact upon employment in the area. A number of submissions also considered that the number of jobs created by this development would be offset by the resulting loss of jobs in the tourist sector.

In contrast, other submissions received from members of the public cited the positive impacts the proposal could have on the local area, particularly with regards to the benefit to the economy, employment opportunities and the transfer of knowledge that has the potential to broaden the skill base in the area. Submissions in support of the proposal also noted the potential eco-tourism opportunities associated with the pearl farm. Several of these submissions also noted that this tourism venture has the potential to operate all year round which will benefit local business, particularly during the quieter months in Port Stephens.

Department's Position

The NSW Government recognises the important contribution aquaculture development can bring to the State in terms of job creation, exploration of new markets in the State and support to local and regional businesses.

At full operation, the proposed development will provide 45 full-time jobs. A significant number of these positions are expected to be filled from within the local area. The Department notes that unemployment in Port Stephens is relatively high and above the State's average and that additional employment opportunities for the area are required.

Impact on other local industries

The Department notes that several submissions objected or stated concern with the proposal on the basis that it may contribute further to water quality decline in the Port, have a negative visual impact and may reduce the number of dolphins frequenting the Port which are major drawcards for the Port Stephens area. They argued that any threat to the Port could in turn threaten the tourism industry resulting in a greater loss of jobs than would be created by this proposal.

The Department notes that the Applicant has substantially modified the proposal compared to the existing pearl farm to address visual amenity concerns, notably by removing all surface buoys from the lease area such that the views of the pearl farm infrastructure are limited to the aquamarks delineating the corners of the lease and the three work punts that may operate on the lease during the day (see section 6.8).

The Department does, however, recognise that there is an existing sediment plume that is often visible during cleaning activities. As discussed elsewhere in this report, the Applicant is continually making improvements to its cleaning procedures to reduce this impact which the Department supports. Water quality impacts associated with the development is an area that requires careful monitoring and management to ensure that it does not have a detrimental effect on the amenity of the area or on the flora and fauna within the Port. The Department is satisfied that with the measures proposed in the EIS and the recommended conditions of consent, the proposed development would have minimal impact with respect to the visual amenity and water quality of Port Stephens. Sections 6.1, 6.2 and 6.4 provide greater detail in relation to this issue.

To date, there is no evidence to suggest that the existing pearl farm is having a negative impact on the number of dolphins frequenting the Port. As previously discussed, dolphins are already subject to a considerable level of disturbance in the Port (refer to section 6.3). Should the Minister approve the development, the Department recommends ongoing monitoring to determine whether the presence of a pearl farm is affecting the dolphin population within the Port. A contingency plan should also be put in place to manage any impact.

Eco-tourism

The Department also understands that the Applicant may be considering the establishment of an eco-tourism based activity associated with the pearl farm development. However, the eco-tourism venture does not form part of this development application. Accordingly, the Applicant would need to obtain any necessary approval(s) for this activity separate to any development consent for this development application (DA-481-11-2003-i).

6.8 Visual Impacts

Applicant's Position

The Applicant acknowledges that the scenic value of Port Stephens is an important quality for the existing residents of Port Stephens and a main factor in attracting new residents and visitors to the area.

The Applicant suggests that five aspects of the pearl farm proposal will be visible to some residential areas and to users of the waterway. This includes:

- the lease areas themselves, which will be delineated by an aquamark (1.2 metres in height) at each corner of the lease (ie 4 per lease). These will be visible from various locations at Wanda Head, Salamander Bay, Pindimar and Fame Cove (part of the Myall Lakes National Park). The Wanda Head Lease is 12.25ha, Pindimar lease 9ha and Mambo Creek lease 9ha (30.25ha in total);
- the use of up to three work punts working within each lease at any one time. Each punt is around 9 to 15 metres in length with an awning over the length of each boat for sun protection;
- the discolouration of water used as part of the oyster cleaning process, characterised by localised water discolouration or plume and foam which floats on the water which under certain conditions may be visible to residents on elevated properties, particularly residents of Wanda Head overlooking the Wanda Head Lease;
- work punts being visible to residents and waterway users as the workers travel to and from the land based site in Cromartys Bay; and
- the buildings and other structures on the land based site at Cromartys Bay being visible from Diemars Road and from boats passing the land based site.

The Applicant indicates that a number of modifications were made to the proposal in order to address some of the visual impacts associated with the previous application and existing Wanda Head Lease. This includes the removal of the small black buoys used within the lease to mark the position of the longlines. While the buoys were black in colour to minimise any potential visual impact, the Applicant acknowledged that the surface buoys are visible to some residents on Wanda Head.

In relation to the proposed work punts used on the lease, the Applicant considers that since they are similar in size and physical appearance to other vessels used and moored in the Port and travel on similar routes to other vessels, the use of the work punts on the lease are not considered to be a significant visual impact.

The Applicant acknowledges that following consultation with the local community, the principle issue raised in relation to visual impacts related to the water plume and foam generated from the oyster cleaning process. The EIS indicates that a plume from cleaning operations has occurred at the existing lease off Wanda Head and may be visible to a number of residents on Wanda Head. However, the EIS suggests that those residents who may be directly impacted by plumes from the cleaning process also have expansive views across other areas of the Port Stephens waterway that are infrequently affected by any other water discolouration.

The Applicant suggests that the visibility of the plume and foam is dependent on the weather and sea conditions, with the plume generally dissipating within 30 minutes of the cleaning activity, however the foam can be visible for longer periods.

In relation to the proposed Mambo Creek and Pindimar lease areas, the EIS indicates that both are located at least 500 metres from any elevated viewing points, and it is therefore inferred that they are unlikely to result in any visual impacts.

The Applicant has considered a number of measures that could be implemented to manage any potential visual impacts, particularly to the oyster cleaning process. The Applicant indicates that it is currently undertaking a number of modifications to the cleaning punt to manage the visual impact from the plume. In addition to the existing filtering equipment used to remove sediments, additional sedimentation control is proposed to remove finer particles from the discharge water and modifications to the filtering system to eliminate entrapped air which generates the surface foam. The Applicant suggests that with these proposed amendments, through monitoring of the filtering system and maintaining consultation with residents, the visual impact of the cleaning activities will be greatly reduced.

In addition, the Wanda Head lease is proposed to be moved a further 200 metres from the headland, modifying the distance and angle of view from Wanda Head.

Issues Raised in Submissions

A number of submissions from private individuals raised concerns or objected to the proposal on the basis of its visual impacts. This included issues about the visual impact of the working punts travelling to and working within the lease areas, impacts from the aquamarks within the leases, that the proposal will spoil or impact on the scenic qualities of the area and that the proposal will affect residential views. The key visual issue raised in submissions related to the plume or water discolouration that currently occurs during the oyster cleaning process at Wanda Head.

However a number of submissions that supported the proposal stated that the proposal was unlikely to cause any negative visual amenity impacts.

Department's Position

The Department acknowledges that the visual impact of the proposal, particularly from the plume that has occurred during cleaning activities at the existing lease at Wanda Head, is an issue for a number of stakeholders who made submissions on the proposal.

The Department acknowledges that since the lodgement of the DA, the Applicant has and is continuing to make modifications to the oyster cleaning punt to reduce the visual occurrence of a plume. As part of a site inspection undertaken by representatives of the Department, the operation of the cleaning punt with some of the modifications was observed and it was noted that the occurrence of a plume had been significantly reduced and any discolouration of the water quickly dispersed.

Notwithstanding this, the Department requested further information from the Applicant as part of considering the potential visual impact of the plume caused during the cleaning activities at the Wanda Head lease site. This included a request for the Applicant to provide a response to a number of photographs the Department received from a private submitter which appears to illustrate an oyster cleaning punt at Wanda Head contributing to a plume. The Applicant responded by noting that this plume occurred after the cleaning punt had been out of operation for an extended period whilst improvements were being made to the system. As a result, some oysters had not been cleaned for 3 months which resulted in a much larger plume generated by lifting the pearl cages and panel nets out of the water than would normally occur. Since that time, the Applicant notes that the plume has been reduced to a small extent, as evidenced in the Department's inspection of the lease in late February 2004.

The Department recognises that the plume created at the existing site is visible to some parties, particularly for people who reside at Wanda Head. However, the Department believes that as a result of amendments that have been made to the cleaning punt and since the plume is generally intermittent and dissipates after a relatively short period of time, that the impact is minimal. However in order to reduce and manage residual impact, the Department has

recommended a number of stringent consent conditions aimed at minimising the occurrence of the plume during cleaning activities including:

- the implementation of a water quality management plan for the approval of the Director-General. The plan is required to include procedures for the on-going monitoring and management of the water quality and for on-going improvements to the cleaning operations;
- requirements to ensure that the water quality at the lease site during cleaning operations, always meet the ANZECC guidelines and interim objectives; and
- contingency plans to mitigate for any impacts should they arise.

In relation to the potential visual impact of the proposed lease areas, the Department considers that the proposed removal of the black surface buoys along each longline and the repositioning of the Wand Head lease a further 200 metres off the headland, will reduce the potential visual impact of the proposal, particularly for the residents of Wanda Head. Through the proposed modifications, the potential visual impact of the lease areas will be restricted to the aquamarks which will be located in each corner of the lease (ie four aquamarks per lease). The Department considers that since there would only be four aquamarks within each lease visual impacts will be minimal. This is due to the aquamarks being consistent with the character of the waterway and are features that would be expected on the waterway for example, features that denote specific information about the Port (eg channel markers, moorings, and marinas). The Department considers that any views from other water users are also unlikely to be significant since the number of viewers would be limited in numbers and that their views would be transient by nature.

Similarly, the Department considers that the proposed work punts that will be used by the Applicant are also unlikely to result in any significant visual impact since there will not be excessive boat movements, movements will be restricted to specific operating hours and the punts are consistent with the character of the waterway.

With respect to the land based site, the Department believes that due to the limited views of the facility and other similar industries in the area, this aspect of the proposal is unlikely to be visually intrusive.

6.9 Disease impacts

Applicant's Position

As part of the existing environmental management plan (EMP) for the current operations, the Applicant briefly discusses disease management. The EMP notes that where Class A diseases, as defined under section 55 of the *Fisheries Management (Aquaculture) Regulations 1995*, are identified on site, NSW Fisheries is to be notified immediately of the outbreak. The Applicant states that the current EMP will be updated to reflect the increase in leases for this proposal, with disease management to form part of this EMP.

Issues Raised in Submissions

A number of submissions from members of the public raised concern regarding the potential for the spread of diseases from oysters grown on the leases, to other oyster populations within Port Stephens. Many of these submissions also drew attention to the mass mortalities of Akoya oysters in Japan due to viruses and poor water quality.

NSW Fisheries General Terms of Approval (GTAs) require the Applicant to notify NSW Fisheries within 24 hours of the discovery of any declared disease, unusual health status or any significant event associated with the welfare of the oysters in the facility and to carry out

any directions so determined by NSW Fisheries for the treatment or destruction of diseased stock.

The NSW Fisheries GTAs also require the Applicant to source oyster spat from authorised suppliers only and that such spat must be spawned from broodstock originating from the east coast of Australia.

Department's Position

The Department notes that the issue of diseases and viruses spreading from the oysters on the lease to the surrounding environment was raised as an issue of concern during the first development application. The report from the Commission of Inquiry into the original DA determined that the quarantine and disease controls applied to aquaculture in NSW are extensive and have proven to be effective. The Commissioner's report also acknowledged the expertise of NSW Fisheries in managing disease and quarantine issues. These comments are still relevant.

The Department notes that whilst the Applicant has not discussed the potential for disease or parasites to affect the Akoya oyster, it does have an existing quarantine protocol in place that was developed in consultation with the NSW Fisheries. To date, it is understood that there have been no incidents of disease outbreak at the farm. The Department highlights that NSW Fisheries has not raised any issues of concern in relation to potential disease impacts from the proposed development, however, it has provided GTAs to manage and report on any incidents, should they occur. Should the Minister determine to approve the proposed development, the Department recommends that the following measures, that are consistent with NSW Fisheries GTAs and existing quarantine protocol, be incorporated into any consent for the proposal in order to manage any potential disease issues:

- oyster spat may only be obtained from authorised suppliers and that such oyster spat must be spawned from broodstock originating from the east coast of Australia;
- notification of any declared disease to Fisheries and the Department within 24 hours of identification;
- treatment and/ or destruction of diseased oysters to be undertaken on the direction of NSW Fisheries; and
- preparation of a Quarantine Management Protocol which details the measures adopted for the sourcing, sterilisation and general management of stock and equipment.

The Department is satisfied that the disease issues associated with the proposed development have been adequately addressed and that any issues that may arise could be managed through appropriate consent conditions, should the Minister approve the development application.

6.10 Marine Park – Manning Shelf Bioregion

The Manning Shelf is one of 65 Australian marine bioregions and provinces identified by scientists and conservation managers to assist in planning a National representative system of Marine Protected Areas (MPAs). National guidelines and criteria have been developed to assist in identifying and selecting MPAs in each bioregion. Three types of MPAs occur in NSW including marine parks, aquatic reserves and the marine components of national parks and nature reserves.

The Minister for Fisheries and the Minister for the Environment are responsible for the Government's Marine Parks program through the Marine Parks Authority. The Marine Parks Authority came into existence in 1997 with the particular aim of managing marine parks for the conservation of marine biodiversity and to maintain ecological processes. The Authority reports to both the NSW Minister for the Environment and the Minister for Agriculture and

Fisheries. The Authority is chaired by the Director-General of the Premiers Department and consists of the Director-General of NSW Fisheries and the Director-General of the National Parks and Wildlife Service.

Aquatic reserves are managed by NSW Fisheries and national parks and reserves are managed by the DEC.

The Manning Shelf Bioregion extends from just north of the Nambucca River to just north of the Hunter River at Stockton, a coastline of approximately 350 kilometres (see Figure 6). The bioregion includes estuaries, the open coast and offshore waters out to the continental shelf break at a depth of 200m. In the Manning Shelf Bioregion there are currently no marine parks, one aquatic reserve at Fly Point, Port Stephens (approximately 0.8 km²) and eleven national parks and nature reserves recognised as having marine components (approximately 130 km²) but with no direct protection for fish or aquatic invertebrates.

Figure 6. Location of the Manning Shelf Bioregion in the context of other bioregions in NSW.

Applicant's Position

The Applicant acknowledges that a number of residents from Port Stephens consider that the proposed pearl farm would compromise the assessment process for the potential establishment and future management of a Marine Park (MP) in Port Stephens. However, the Applicant outlines that NSW Fisheries has advised that no decision has been made about where and if a MP would be cited within the Manning Bioregion.

The Applicant outlines that the NSW Government anticipates that at least one MP will be established for each bioregion in order to protect a representative system of marine areas along the NSW coast. The EIS indicates that NSW Fisheries has advised that under the *Marine Parks Act 1997*, the declaration of a MP does not affect an aquaculture permit or lease issued under the *Fisheries Management Act 1994* in force at the time of the declaration of the MP. However, the EIS indicates that with the exception of the first review of an aquaculture permit or lease, a lease applying within a MP can not be extended or renewed unless the aquaculture development is permitted in that part of the MP.

The Applicant outlines that once a MP has been declared, a management regime consisting of four distinct zones is developed to provide a strategic direction for the management of the area. This includes a sanctuary zone, habitat protection zone, general use and special use zone. The EIS suggests that NSW Fisheries has advised that aquaculture developments with

appropriate controls are permitted in all zones except for sanctuary zones, which are designed for the protection of marine flora and fauna and their habitat. The EIS suggests that since the leases are located in mud basin substrate and not within an area considered to be principal dolphin habitat, then it is unlikely the proposed lease areas would be declared sanctuary zones.

As a result, the EIS concludes that the proposed locations of the pearl lease sites are unlikely to meet the criteria for inclusion in a sanctuary zone and that the proposal would not constrain the potential declaration and process for establishing a MP in Port Stephens in the future.

Issues Raised in Submissions

A number of submissions received by the Department from private individuals objected to the proposal on the basis of MP related issues. Issues raised in the submissions included statements that no aquaculture development should occur until the Marine Park assessment has been completed, that the proposal should not occur in an area where a MP is proposed and that the State Government should recommend that a MP be established for Port Stephens.

In addition, the Department of Environment and Conservation (DEC) in its submission indicated that the EIS had not discussed the possibility that parts of Port Stephens are proposed to be part of a MP nor the potential implications of this in relation to the proposal. The DEC raised concerns that the proposal may pre-empt the gazettal of the MP and potentially affect the zoning of this part of the Port due to the presence of the pearl oyster leases, rather than the zoning process occurring on the basis of the area's conservation value.

However in providing its general terms on the proposal, NSW Fisheries raised no issues or concerns about the potential implications of the proposal on any possible MP for the Manning Bioregion. In addition, a copy of the DA and EIS were forwarded to the Marine Parks Authority for comment, however no submission was received from this agency.

Department's Position

Since the lodgement and public exhibition of the DA and accompanying EIS, the Marine Parks Authority has released a report on the Manning Shelf Bioregion which identified areas that could be considered for inclusion in any marine park for the Manning Bioregion. Such areas include Port Stephens as well as the Karuah River, Myall Lakes, Smiths Lake, Wallis Lake and the adjacent coast and ocean.

NSW Fisheries and the Marine Parks Authority have advised, however, that there has been no formal announcement by the Government on the creation of a marine park in the Manning Bioregion and that any announcement is not likely to occur until around the middle to late 2004. These agencies also outlined that once an announcement has been made, there is a thorough consultation process with key stakeholders which leads to the creation of a zoning plan for the area. The Department understands that this process can take from 18 months to 2 years to be finalised.

The Department understands that as part of the MP zoning plan, sanctuary zones are created for the purposes of protecting special areas such as important marine habitats. Under the *Marine Parks Regulation 1999*, aquaculture is permitted in every zone in a MP, except sanctuary zones. NSW Fisheries has advised the Department that should a marine park be created in Port Stephens, it is unlikely that the proposed location of the pearl lease areas for this DA would be in any sanctuary zones. This is primarily due to the pearl leases being located in bare sand-mud habitat areas, which are not considered to be unique or important to the Port Stephens area.

Without knowing whether a marine park will be established within the Port Stephens area, it is difficult for the Department to be in a position to more thoroughly consider the potential impact that the pearl farm may have on the management of any marine park in Port Stephens.

Notwithstanding, the Department recognises that the establishment of any marine park in Port Stephens has the potential to affect both existing and future activities within the Port and that there is also the potential for existing development within the Port to affect the future management and zoning of any marine park in Port Stephens.

6.11 Noise Impacts

Applicant's Position

Aquaculture Leases

The Applicant indicates that the main potential noise sources from the activities on the leases include noise generated by the outboard motors of the work boats and noise generated by the on-board cleaning machine on the work punt. To ascertain the potential noise levels emitted by these activities, the sound pressure levels for each source were obtained from the existing operations on the Wanda Head lease site and modelled.

The Applicant indicates that the work punts use twin 80 horsepower 4 stroke outboard motors. Noise measurements were undertaken of the work punts while in operation on the Wanda Head lease and the Applicant indicates that the punts recorded an L_{A10} noise level of 64 dB(A) at 30 metres, which is significantly lower than the Maritime Services Board requirement of 85 dB(A) at 30 metres.

The EIS outlined that noise modelling was carried out on the on-board cleaning machine to determine its potential noise impact. The results of modelling indicated that the predicted noise levels generated by the water-based activities (including cleaning operations) at the nearest residential receivers will meet the project specific noise criteria (as defined under the EPA's Industrial Noise Policy (2000)) during all periods of the operation (see Table 1).

Table 1. Predicted noise levels received at the nearest residences to the aquaculture leases.

Location	Predicted Noise Level	Project Specific Noise Criteria
56 Randall Drive, Wanda Head	30 dB(A)	Daytime (7am-6pm) - 43 dB(A) Evening (6pm-10pm) - 45 dB(A) Night (10pm-7am) - 40 dB(A)
41 Cunningham Street Pindimar	< 30 dB(A)	Daytime (7am-6pm) - 38 dB(A) Evening (6pm-10pm) - 37 dB(A) Night (10pm-7am) - 35 dB(A)

The Applicant acknowledges that as part of its community consultation, other sporadic noise emissions from water based activities on the Wanda Head lease have been identified. The Applicant suggests that these noise issues have been addressed through its Noise Management Plan for the existing Wanda Head lease operation, which includes a 'Good Neighbour Policy'. These mitigation measures are discussed in more detail in the next section of this noise assessment.

Land-based Site

The Applicant indicates that the potential noise emissions from the land based site at Cromartys Bay will result from the use of work utilities and an articulated mobile crane. The sound pressure levels for this equipment were measured as part of determining the potential noise emissions from the land based site. Four sensitive receiver locations were considered as part of the noise modelling assessment undertaken of noise emissions from the land based site. This included the Salamander Bay Caravan Park, a new residential subdivision to the

West of the site (which is also the nearest residential receiver), the southern end of Cromarty Bay Road and the nearest residence on the southern side of Kent Gardens. The results of this assessment are presented in Table 2 below.

Table 2. Predicted noise levels at the nearest noise sensitive receivers to the land-based site.

Location	Predicted Noise Level	Project Specific Noise Criteria
89 Cromarty Bay Road	< 34 dB(A)	Daytime (7am-6pm) - 38 dB(A) Evening (6pm-10pm) - 40 dB(A) Night (10pm-7am) - 36 dB(A)
Salamander Bay Caravan Park	< 20 dB(A)	Daytime (7am-6pm) - 38 dB(A) Evening (6pm-10pm) - 40 dB(A) Night (10pm-7am) - 36 dB(A)
Homestead Road Subdivision	< 20 dB(A)	Daytime (7am-6pm) - 38 dB(A) Evening (6pm-10pm) - 40 dB(A) Night (10pm-7am) - 36 dB(A)
Kent Gardens	< 32 dB(A)	Daytime (7am-6pm) - 38 dB(A) Evening (6pm-10pm) - 40 dB(A) Night (10pm-7am) - 36 dB(A)

As illustrated by the above table, the predicted noise levels from the proposed land based operation will clearly meet the project specific noise criteria specified under the EPA's Industrial Noise Policy (2000) at all times.

In relation to road traffic noise, the Applicant indicates that traffic movements associated with the proposal will occur as a result of employees and other vehicles accessing the land based site at Cromartys Bay. The Applicant outlines that provided there are no deliveries, waste disposal or septic truck movements to and from the site until after 7am, then the relevant road traffic noise criteria will be met.

The Applicant proposes to address any potential noise issues from the proposal through the existing Noise Management Plan for the development, which includes a Good Neighbour Policy. This mitigation measure includes specific requirements that apply to the type of machinery the Applicant can use (eg the use of 4 stroke outboard motors), the route and speed the work punts can take to and from the lease sites to minimise noise, boat motor operations within the lease and restricting communications between vessels to via UHF radios.

The Applicant also outlines that in response to a number of potential noise sources identified with the daily work operation, a number of modifications have been made to the oyster cleaning punts. This includes the use of rubber matting on noise generating surfaces, securing work equipment while not in use, routine maintenance and servicing of vessels and equipment and the hull of the boat foam filled to reduce the transmission of noise.

Issues Raised in Submissions

A number of submissions that objected or raised issues with the proposal were on the basis of the potential noise impacts of the proposal. This included submissions from private individuals who raised issues about noise generated by the work punts particularly the boat motors, noise from the cleaning operations and noise from conversation amongst workers on the lease. A small number of submissions also noted that this proposal would not be noisy, especially when the use of jet skis and other watercraft in Port Stephens is taken in to consideration.

A submission from NSW Waterways also raised an issue with the noise assessment of the boat motors undertaken in the EIS. NSW Waterways indicated that the assessment of the engine noise emitted was compared to a criteria used by the Maritime Service Board, and was not undertaken in accordance with the relevant DEC policy. However, the submission

acknowledged that the Applicant's Noise Management Plan and Good Neighbour Policy addresses noise from vessels and other sources on the water.

The DEC did not raise noise impacts as an issue of concern in its submission to the Department on the proposal.

Department's Position

The Department is satisfied that noise impacts associated with the oyster lease areas and the land based site at Cromartys Bay have been adequately addressed in the EIS, and that the assessment undertaken has demonstrated that noise emissions will meet the relevant project specific noise criteria. However, the Department notes that some residents have expressed concern about the proposal stating that noise from the operation of the work boats can often be heard from the shore.

In order to address this issue and to ensure that potential noise impacts are adequately managed, the Department has recommended a number of mitigation measures, should the Minister approve the development. These include:

- a requirement for the Applicant to prepare a noise management plan to the satisfaction of the Director-General. The Plan is required to address the requirements for managing any potential construction and operational noise impacts, including measures for managing the occurrence of any tonal or intermittent noise sources, measures for managing boat movements between the leases and details of the relevant noise criteria developed under the Industrial Noise Policy that will be adhered to by the development;
- a requirement for the Applicant to develop a complaints protocol for the purpose of receiving complaints from members of the public. Should noise emissions at the leases prove to be an issue of concern, the Department may request the Applicant to undertake noise monitoring to determine the nature and scale of noise emissions, and implement further mitigation measures to manage noise emissions;
- restricting deliveries and other heavy vehicle movements such as waste disposal and septic trucks from the land based site until after 7am on weekdays and 8:00am on weekends; and
- restricting the hours of operation at the oyster leases to between 7:30am and 5:00pm with no work on Saturdays, Sundays or Public Holidays.

6.12 Waste Management and Odour Impacts

Applicant's Position

Waste generated by the proposed development will include oyster shell, meat and viscera, biofouling and other general rubbish.

The Applicant states that the harvesting of pearls results in the sacrifice of the remainder of the oyster, thereby contributing to the waste produced. In accordance with NSW Government waste minimisation policies, the Applicant proposes to re-use this material where possible. For example, the Applicant stated that oyster shell could be used for buttons and in the production of paint, the muscle could be processed for human consumption (QUAP requirements), fish food, burley or bait, and viscera could be processed for fish feed, burley or bait. Until these options are developed, the Applicant states that the viscera and meat will be collected under contract with the remainder of the waste taken to the local waste transfer station.

The biofouling material collected during the cleaning of the oysters on the aquaculture leases will be returned to the land-based site for disposal at the local waste transfer station with measures put in place to minimise the potential for odour generation. General rubbish from employees and site operations will be collected and taken to the local transfer station.

Given the land-based site is located in an area that supports other oyster industry, the Applicant does not expect it to cause odour concerns within the immediate vicinity of the site. Further, the nearest residence is approximately 600 metres to the east of the site and is separated from the site by a forested ridge approximately 36m above the Australian Height Datum. Due to the protection offered by the high ridge and the strong dispersive characteristic of winds in the area, the Applicant does not consider odour to be an issue of concern.

Issues Raised in Submissions

No submissions received raised concern regarding the impacts of waste or odour. Concern was raised in relation to bio-sedimentation and this issue is covered elsewhere in this report.

Department's Position

The Department supports the development of waste minimisation strategies to reduce the amount of waste going to landfill. The Department is satisfied that the Applicant has adequately addressed issues associated with waste management at the land-based site.

With regards to odour, the Department notes that the proposed development is located in an area used predominantly for activities associated with the oyster industry and is a significant distance from residential development. The Applicant has identified management measures to minimise odour generation during operation of the development and the Department is supportive of this. It is considered that odour emissions from the land-based site are unlikely to be a significant issue.

7 SECTION 79C CONSIDERATION

Section 79C of the *Environmental Planning and Assessment Act 1979* sets out matters that a consent authority must take into consideration when determining a development application. The Department has assessed the development application in the context of Section 79C of the Act, having regard to the identified heads of consideration. This consideration is provided in Appendix A. The Department is satisfied that on a technical basis, the proposed development could be approved subject to the imposition of, and more importantly, the adherence to stringent conditions of consent.

8 RECOMMENDED CONDITIONS

Should the Minister determine to approve the development application, the Department considers that a number of conditions could be imposed with the aim of controlling and monitoring the future environmental performance of the proposed pearl farm and that take into account the issues raised in submissions from the public, Council and Government agencies.

The conditions should cover issues relating to water quality, flora and fauna, disease management, noise management as well as conditions to cover any future decommissioning of the development.

9 CONCLUSIONS

The Department considers that the proposed development is consistent with all local, regional and State planning objectives. In addition proposal has the potential to create economical, social and technological benefits at local and regional levels in the form of employment and investment as well as providing high quality Australian Akoya pearls to the market.

The Department has undertaken a full and comprehensive assessment of the development application which included a thorough investigation of all impacts, independent analysis on key

issues, comparative analysis with existing similar facilities already operational within NSW and other parts of Australia, all issues raised in submissions, and improvements made to the proposal following the refusal of the former development application.

The Department's assessment concludes that:

- The proposal could be undertaken within acceptable environmental limits subject to the imposition and adherence to stringent conditions of consent to offset residual impacts. The Department notes in this regard that the revised proposals provide important environmental and ecological benefits relative to the previously refused DA.
- There remains considerable concern and opposition to the proposal proceeding both amongst the general Port Stephens community and key business and tourism organisations;
- Stringent operating and management practices are likely to minimise residual impacts. As with many industrial and rural industries it will not be possible to eliminate all risk associated with the development; and
- There remains some uncertainty regarding the proposal and its implications in relation to the Government's desire to establish a Marine Park in Port Stephens.

While satisfied that the proposal could be operated within acceptable environmental limits, the Department considers that the Minister in making his decision should be aware that over the operating life of the proposal some form of unacceptable operating incidents are likely to occur.

While acceptable in a less sensitive environment they have the potential to significantly elevate community concern given that community's fear for the Port Stephens environment and the substantial tourism industry which it supports.

In addition there remains some uncertainty as to the implications of the proposal and its associated risk and the Government's intention to establish a Marine Park in the Manning Bioregion.

10 RECOMMENDATIONS

It is RECOMMENDED that the Minister:

- (i) consider the findings and recommendations of the Department's Assessment Report for DA No. DA-481-11-2003-i (this document, tagged "B"), prior to making his determination in accordance with Section 80 of the *Environmental Planning and Assessment Act 1979*.

Sam Haddad
Deputy-Director General
**Office of Sustainable Development
Assessments and Approvals**

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APPENDIX A – CONSIDERATION UNDER SECTION 79C

Section 79C of the EP&A Act requires that the consent authority, when determining a development application, take into consideration the following matters:

<i>The provisions of:</i> <i>(i) any environmental planning instrument</i>	<p>The following EPIs apply to the pearl farm redevelopment:</p> <ul style="list-style-type: none"> • <i>State Environmental Planning Policy No. 71 – Coastal Development;</i> • <i>Hunter Regional Environmental Plan;</i> • <i>Port Stephens Local Environmental Plan 2000.</i> <p>Consideration of the provisions of these instruments in the context of the proposed development is outlined in section 4.3 and in detail in Appendix B of this report.</p>
<i>(ii) any draft environmental planning instrument that is or has been placed on public exhibition and details of which have been notified to the consent authority</i>	<p>There are no draft instruments that apply to the proposed development</p>
<i>(iii) any development control plan</i>	<p>There are no DCPs that apply to the proposed pearl farm development:</p>
<i>(iv) any matters prescribed by the regulations that apply to the land to which the development application relates</i>	<p>Clause 92 of the <i>Environmental Planning and Assessment Regulation 2000</i> requires the following matters to be taken into consideration by a consent authority in determining an application</p> <ul style="list-style-type: none"> • <i>The Government Coastal Policy (where relevant)</i> The Government Coastal Policy applies to development in the Port Stephens local government area. Sections 4.3 and 6 of the report identify that the development is consistent with the matters outlined in the Policy. • <i>In the case of a DA for the demolition of a building, the provisions of Australian Standard AS 2601-1991: The demolition of structures, as in force 1 July 1993</i> A recommended condition has been included to ensure the development complies with this Australian Standard for the demolition of buildings.
<i>the likely impacts of that development, including environmental impacts on the natural and built environments, and social and economic impacts in the locality</i>	<p>Section 6 considers the environmental impacts of the proposed development in detail. The Department is satisfied that all environmental impacts can be appropriately managed and mitigated through the conditions of the recommended instrument of consent.</p>
<i>the suitability of the site for the development</i>	<p>Refer to Section 4.2 and Appendix B for a greater discussion on the suitability of the site for the development.</p> <p>The proposed pearl farm redevelopment is permissible with development consent.</p>

<i>any submissions made in accordance with this Act or the Regulations</i>	<p>A total of 683 submissions were made in response to the exhibition of the development application for the proposed pearl farm (see summary in Appendix C). All matters raised in these submissions have been given due consideration as part of the assessment of the proposed development (see section 6 of the report).</p>
<i>the public interest</i>	<p>The proposed development has received substantial opposition from members of the public, particularly local residents of Port Stephens. As discussed in Section 5 of the assessment report, the majority of public submissions either objected to, or were concerned about the proposal.</p> <p>The Department is of the opinion that public interest in the proposed development is substantial and warrants careful consideration by the Minister.</p>

APPENDIX B – PROVISIONS OF ENVIRONMENTAL PLANNING INSTRUMENTS

Following is a consideration of the proposed prawn farm redevelopment against the objectives and provisions of relevant environmental planning instruments.

State Environmental Planning Policy No. 71 – Coastal Development	
<p>SEPP No. 71 – Coastal Protection has been made to ensure:</p> <ul style="list-style-type: none"> ▪ development in the NSW coastal zone is appropriate and suitably located; ▪ there is a consistent and strategic approach to coastal planning and management; ▪ there is a clear development assessment framework for the coastal zone. 	
Clause 8 – Matters for Consideration: <i>The matters for consideration are the following:</i>	
<i>(a) the aims of this Policy set out in clause 2;</i>	The issues identified in the aims of the policy have been considered as part of the Department's assessment of the proposal and is provided in Section 6 of this assessment report. The Department's assessment concludes that the proposal is consistent with the aims of the Policy.
<i>(b) existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved;</i>	The land-based site has and is currently private land used for oyster farming activities and therefore had no existing public access to and along the coastal foreshore. The aquaculture leases are located offshore and therefore will not affect the public access to the foreshore.
<i>(c) opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability;</i>	The land-based site is the only foreshore component of the proposed development. Due to bio-security reasons and as private land, there is no intention to establish any access to the land-based site.
<i>(d) the suitability of development given its type, location and design and its relationship with the surrounding area;</i>	The land-based site is located within an industrial zone and is surrounded by other similar oyster farming activities. The aquaculture leases are permissible with consent in its zoning. The Department's assessment concludes that the proposal is unlikely to result in any significant environmental impacts, including on any private properties (refer to Section 6 of this Report).
<i>(e) any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore;</i>	The proposal will not cause any overshadowing of the foreshore and no views from any public place will be detrimentally impacted.
<i>(f) the scenic qualities of the New South Wales coast, and means to protect and improve these qualities;</i>	The development will not result in any significant impacts on the scenic quality of the coast. Refer to section 6.8 of the report.

<i>(g) measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995) and plants (within the meaning of that Act), and their habitats;</i>	Threatened species issues have been considered in accordance with Part 5A of the EP&A Act. The Department is satisfied the proposal is unlikely to significantly impact on any threatened species or their habitats and that measures are in place to deal with any incident, should it occur.
<i>(h) measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994) and marine vegetation (within the meaning of that Part), and their habitats;</i>	The potential impact of the proposal on marine fish and vegetation were considered by the Department and it is satisfied that impacts are unlikely, but measures are in place to deal with any incident, should it occur.
<i>(i) existing wildlife corridors and the impact of development on these corridors;</i>	The potential impact of the proposal on wildlife corridors, was considered and the Department concluded that the proposal is unlikely to result in any impacts. Section 6.3 of the report discusses migratory whales and concludes that the proposal is unlikely to impact on these.
<i>(j) the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards;</i>	Due to the distance from the foreshore, the land-based site will not result in any impacts on coastal processes or cause any coastal hazard or be impacted upon by these. The orientation of the leases along the predominant current direction is unlikely to result in any impact on coastal processes. The depth of the lease and the requirement for appropriate signage will manage any potential impacts on coastal hazards.
<i>(k) measures to reduce the potential for conflict between land-based and water-based coastal activities;</i>	The land-based site will not conflict with water-based coastal activities (refer to section 6 of the report).
<i>(l) measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals;</i>	The DEC did not raise any issues in relation to Aboriginal issues. A submission was received from the Worimi LALC indicating its support for the proposal. The Department is satisfied that the proposal will not impact upon any Aboriginal issues.
<i>(m) likely impacts of development on the water quality of coastal waterbodies;</i>	Water quality issues were assessed by the Department, particularly with regards to the cleaning operations. The assessment concluded that through the proposed management and mitigation measures, any proposed impacts on water quality will be adequately managed (refer to section 6 of the Report).
<i>(n) the conservation and preservation of items of heritage, archaeological or historic significance;</i>	The Department is satisfied that the proposal will not impact upon any items of heritage, archaeological or historic significance given the majority of the proposal is water-based and previous assessment of the land-based site found no items of significance.

<p>(o) <i>only in cases in which a council prepares a draft local environmental plan that applies to land to which this Policy applies, the means to encourage compact towns and cities;</i></p>	<p>Not relevant to this assessment</p>
<p>(p) <i>only in cases in which a development application in relation to proposed development is determined:</i> <i>(i) the cumulative impacts of the proposed development on the environment, and</i> <i>(ii) measures to ensure that water and energy usage by the proposed development is efficient.</i></p>	<p>Not relevant to this assessment.</p>
<p>Clause 14 – Public Access <i>A consent authority must not consent to an application to carry out development on land to which this Policy applies if, in the opinion of the consent authority, the development will, or is likely to, result in the impeding or diminishing, to any extent, of the physical, land-based right of access of the public to or along the coastal foreshore.</i></p>	<p>Refer to response to clause 8(b) and 8(c) above.</p>

<p>Hunter Regional Environmental Plan 1989</p>	
<p><i>Aims of the Policy:</i> <i>(a) promote the balanced development of the region, the improvement of its urban and rural environments and the orderly and economic development and optimum use of its land and other resources, consistent with conservation of natural and man made features and so as to meet the needs and aspirations of the community</i></p>	<p>The land-based component of the development is within an industrial estate, thereby utilising existing infrastructure. The pearl farm brings a new type of industry to the area, thereby broadening the skills base of the community. Through the assessment of the proposed development, the Department has established that the proposal would be consistent with the conservation of natural and man made features of the site and surrounds.</p>
<p><i>(b) coordinate activities related to development in the region so there is optimum social and economic benefits to the community</i></p>	<p>The proposed development will have significant positive impacts on employment and investment in the local area. It is considered that the proposal will generate flow-on jobs to the community including suppliers to the farm, such as transporters, product distributors, ancillary service providers and construction.</p>
<p><i>(c) continue a regional planning process that will serve as a framework for identifying priorities for further investigations to be carried out by the Department and other agencies.</i></p>	<p>Not applicable</p>
<p><i>Provisions relating to industrial development:</i></p>	<p>Not applicable</p>

<i>(a) ensure that sufficient zoned and serviced industrial land is provided in locations appropriate to the needs of industry, while ensuring protection of the environment</i>	
<i>(b) promote the distribution of employment in secondary industry in a manner compatible with the availability of services and distribution in population</i>	The proposed development will generate 45 full-time positions, the majority of which are expected to be sourced from the local area. Therefore the development will be compatible with the availability of services and people.
<i>In relation to industrial development, the consent authority should:</i> <i>(a) ensure that an adequate supply of zoned and serviced industrial land is available in appropriate locations to meet needs, taking into account the extensive nature of modern industrial and quasi-industrial development</i>	The proposed development is located within an Industrial Estate where there are other oyster farming operations nearby. The development will not affect the supply of industrial land within the area.
<i>(b) ensure that waterfront industrial land is retained for industries requiring waterfront access</i>	The proposed development is located on waterfront industrial land and requires waterfront access to gain access to the water-based leases.
<i>(c) in consultation with the Environment Protection Authority, identify sites for hazardous or offensive industries in appropriate locations, taking into account State Environmental Planning Policy No. 33 – Hazardous and Offensive Development</i>	Not applicable
<u><i>Objectives relating to Pollution Control</i></u> <i>A consent authority should not grant consent to the carrying out of a development listed in Schedule 3 of the Environmental Planning and Assessment Regulation 1980 (including development comprising the expansion of an existing facility) unless it is satisfied that:</i> <i>(a) topographic and meteorological conditions are such that air pollutants would have no significant adverse effect</i>	The Department is satisfied that the proposed development would not result in any air pollutants that will have significant adverse effects.
<i>(b) an appropriate buffer zone can be provided to ensure that noise, dust and vibration are maintained at acceptable levels</i>	The Department is satisfied that the proposed development would not generate unacceptable noise, dust or vibration impacts. The land-based site is situated in an industrial estate with the closest residents being approximately 600m from the site. The Applicant proposes a Noise Management Plan to manage any potential noise impacts associated with the water-based component of the development.
<i>(c) the best practice technology for air,</i>	The Department is satisfied that best practice

<i>water and noise pollution control will be incorporated in the design and operation of equipment and facilities to be used for the purposes of the industry.</i>	technology will be used in the design and operation of equipment and facilities to minimise impacts associated with the facility on air, noise and water quality. Refer to section 6 of the report.
<i>(d) there will be no significant deterioration of air or water quality as a result of emissions from that equipment or those facilities</i>	The Department considers that the air and water impacts associated with the proposed development will be within accepted environmental limits and will therefore not lead to a deterioration in air or water quality. This position is reinforced in the recommended instrument.
<i>(e) the site will not become contaminated within the meaning of Part 5 of the Environmentally Hazardous Chemicals Act 1985</i>	The Department is satisfied that the site will not become contaminated as a result of the proposed development (refer to section 6 of the report).
<i>A consent authority should not grant consent to any development unless it is satisfied that:</i> <i>(a) there is adequate provision for setbacks between the development and existing watercourses</i>	In relation to the land-based component of the development, the Department is satisfied that there is adequate provision for setbacks.
<i>(b) an adequate vegetation cover is maintained or reinstated so as to minimise soil erosion</i>	Existing trees will be maintained where possible. Twenty percent of the industrial site will be landscaped (in accordance with Port Stephens DCP).
<i>(c) where necessary, adequate retardation basins, grassed floodways, sedimentation pits and trash collection facilities are established and maintained</i>	Approximately 75% of the land-based site will have an impervious surface with the remainder of the site being landscaped.
<i>(d) adequate measures are provided to control soil erosion during construction of the development</i>	The Applicant is required to maintain appropriate erosion and sedimentation controls throughout the life of the development.
<u>Objectives Relating to Waste</u> <i>(a) provide for safe and effective disposal of domestic, commercial and industrial wastes, including toxic materials.</i>	All waste associated with the development will be disposed of to a licenced waste facility.
<i>(b) avoid the entry of harmful chemicals into the environment</i>	The development will not involve the use of harmful chemicals, excepting fuel for the operation of the boats.
<i>(c) encourage the most efficient use of resources by recycling or alternative use as appropriate</i>	See section 6.12 of the assessment report.
<u>Objectives Relating to Natural Areas</u> <i>(a) protect natural areas of geological, ecological or scenic interest such as important forests, bushlands, wetlands, rivers, estuaries, lakes, beach and dune systems, headlands, mountain ridges and escarpments,</i>	The Department is satisfied that the natural areas will not be affected by the development. Refer to section 6 of the report.

<i>(b) strictly control any reduction in the extent of important natural areas, especially important habitats such as natural wetlands,</i>	The proposed development will not result in the reduction in the extent of important natural areas such as wetlands.
<i>(c) protect and preserve bushland within larger urban areas because of its natural, aesthetic, recreational, educational, scientific, soil conservation and habitat values, and</i>	The land-based site has previously been cleared and contains only remnant species of native vegetation. The Applicant will maintain trees on site where possible and will landscape at least 20% of the site.
(D) IMPROVE THE AESTHETIC APPEAL AND IMAGE OF THE REGION WHERE POSSIBLE AND PRESERVE EXISTING AMENITY.	Through the Department's assessment, it is considered that the proposal will preserve the existing amenity.
<u><i>Objectives Relating to Recreation</i></u>	
<i>(a) to ensure adequate provision of a wide range of recreation and leisure opportunities including a wide range of open space types in accordance with developing needs and capability of the land concerned,</i>	Not applicable
<i>(b) to encourage compatible recreation and nature conservation and other land and water uses wherever appropriate throughout the region, and in particular to improve public access to natural areas, including foreshore and waterways,</i>	The Department is satisfied that the proposed development is compatible with other land and water uses. The land-based component is on private land and it is not intended to provide public access to the land. The aquaculture leases are located offshore and therefore will not affect the public access to the foreshore, and will not hinder access to the waterways.
(C) TO IMPLEMENT A REGIONAL OPEN SPACE PROGRAM THROUGH A PARTNERSHIP OF STATE AND LOCAL GOVERNMENT FUNDING.	Not applicable
<i>A consent authority, in considering proposals for development on land within 100 metres of the ocean or any substantial waterway should consider:</i>	
<i>(a) whether there is sufficient foreshore open space accessible and open to the public in the vicinity of the proposed development,</i>	The land-based site is located in an area zoned Industrial and access for the public to foreshore open space available is limited.
<i>(b) the likely impact of the proposed development on the amenity of the waterway,</i>	Through the assessment of the proposal, the Department is satisfied the development will not significantly impact upon the amenity of the waterway (refer to section 6 of the report).
<i>(c) the principles of any foreshore management plan applying to the area, and</i>	Not applicable

(D) ANY ALTERNATIVE USE FOR WHICH A WATERFRONT SITE IS ESSENTIAL.	The Department is satisfied that the proposed development requires a waterfront site.
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Port Stephens Local Environmental Plan 2000	
<i>The objectives of this Plan are:</i>	
<i>(a) to provide for appropriate planning and environmental control over the use and development of land within the area of Port Stephens, in order to uphold and promote the objectives of the EP&A Act, and</i>	The proposed development is permissible with development consent under the LEP. Refer to the main report for greater detail.
<i>(b) provide an updated and simplified plan for the area of Port Stephens, and</i>	Not applicable
<i>(c) achieve the objectives of each zone referred to in clause 10, and</i>	See below
<i>(d) promote community involvement and participation in environmental planning and development assessment, and</i>	Not applicable
<i>(e) ensure that existing and future residents enjoy a range of attractive living environments, have safe and secure communities and have access to a wide range of services and amenities, and</i>	
<i>(f) allow flexibility in the planning framework so as to encourage orderly, economic and equitable development while safeguarding the community's interest, and</i>	
<i>(g) ensure that development has regard to the principles of ecologically sustainable development.</i>	
<i>Clause 10 – Zone objectives and development control table</i>	
<i>(1) Each zone is described in the following development control tables, indicating the zone objectives, what development is permissible (with or without consent), and what development is prohibited.</i>	The proposed development is permissible with development consent under the 7(w) and 4(a) zones.
<i>(2) The consent authority must not grant consent for development of land to which this plan applies unless it is satisfied that the proposed development is consistent with the objectives of the zone in which it is intended to be carried out</i>	The Department is satisfied that the proposed development is consistent with the objectives of the zone in which it is proposed to be carried out (see below for more detail).
<i>(3) The consent authority may decline to grant consent for development until after it has considered an environmental management plan, if the proposed development is likely to result in increased stormwater run-off, erosion or sedimentation or other significant pollution</i>	Not applicable.

<i>within the Williams River catchment.</i>	
<i>(4) Except as otherwise provided by this plan, the consent authority must not grant consent to the carrying out of development on land within the Williams River catchment unless the consent authority is of the opinion that the carrying out of the development will not have a significant adverse effect on water quality in the Williams River.</i>	Not applicable.
<p><i>(5) The consent authority, when determining a development application for a site area consisting of land in the Williams River catchment, must consider:</i></p> <p><i>(a) the aims and objectives of Williams River Catchment Regional Environmental Plan 1997, as set out in clause 3 of that plan, and</i></p> <p><i>(b) the Williams River Catchment Regional Planning Strategy.</i></p>	Not applicable.
The proposed development is partly located on land zoned 4(a) (Industrial General "A" Zone) and is permissible with consent in this zone.	
<p><i>The objectives of Zone 4(a) are as follows:</i></p> <p><i>(a) to enable the development of a wide range of industrial, service and storage activities and a limited range of business and retail activities, and</i></p>	The construction and operation of a land-based facility for the proposed oyster farm is permissible with development consent in this zone.
<i>(b) to allow industrial development only after comprehensive hazard analysis and risk assessment provide adequate safeguards designed to protect the surrounding environment and ecological balance, and</i>	Not applicable.
<i>(c) to regulate industries in proximity to urban localities and to ensure that adequate buffers are provided in the vicinity of adjacent zones, so that activities near the boundary of an adjacent zone will not have a significant detrimental effect on the amenity of that zone, and</i>	The land-based site is separated by distance and topography from the closest urban locality. The Department is satisfied that the proposed development would not have a significant detrimental effect on adjacent zones.
<i>(d) to enable the most efficient and effective industrial development of waterfront industrial land by encouraging associated waterfront land uses sympathetic to the environment and ecology of the waterfront lands, and</i>	The proposed development is located on waterfront industrial land and requires waterfront access to gain access to the water-based leases. The Department is satisfied that it would be sympathetic to the environment and ecology of the waterfront lands.
<i>(e) to allow commercial, retail, residential, or other development only where it is associated with, ancillary to, or supportive of, industrial development, and</i>	Not applicable.

<i>(f) to limit development for the purpose of bulky goods salesrooms or showrooms, and</i>	The proposed development would not constitute this type of development.
<i>(g) to encourage a high standard of design and amenity in industrial areas.</i>	The Department is satisfied that the proposed development would meet these standards.
The proposed development is partly located on land zoned 7(w) (Environment Protection "W" (Waterways) Zone) and is permissible with consent in this zone.	
<i>The objectives of this Zone are to minimise the impacts caused by commercial operations on the marine life and ecology of the Port Stephens waterways and to provide for such activities and facilities which:</i> <i>(a) are compatible with the existing or planned future character of the waterways and adjoining foreshores, and</i>	The proposed development will not impact on any public foreshore area and has been designed in a manner that would not prevent public access to the lease area. The Department notes that aquaculture leases are not exclusive use zones for the lessee.
<i>(b) protect and maintain the viability of the oyster, prawn and fishing industries of the Port whilst enabling a balance of compatible recreational uses, and</i>	The proposed development is for the establishment of a sustainable aquaculture industry that also has the potential to complement the existing edible oyster industry.
<i>(c) maintain the integrity of the waterways resource base and provide for its continued use by future generations, and</i>	The Department is satisfied that the proposed development will maintain the integrity of the waterways resource base by incorporating stringent environmental control measures. The proposed development would not impact upon the use of the waterways by future generations as the leases have been designed in a manner that would not prevent public access (eg, infrastructure is at least 4 metres below the surface) and aquaculture leases are not exclusive use zones for the lessee.
<i>(d) ensure there is provision for multiple use of the waterways of Port Stephens having regard to the use and zoning of adjoining waterfront lands, and</i>	The proposed lease areas are located away from the main areas used for tourism. See also response to objective (a).
<i>(e) protect and enhance the aquatic environment and the significant marine habitats of Port Stephens, and</i>	The Department's assessment concludes that the proposed development would not impact on the aquatic and marine environment of Port Stephens. The proposed development would enhance the marine habitat of Port Stephens by providing structures which are known to attract fish (see section 6.5 for more details).
<i>(f) protect and enhance the natural environment based on the principles of ecologically sustainable development including biological diversity and ecological integrity, and</i>	Refer to section 3.5 of this report.
<i>(g) do not adversely affect and are not adversely affected by coastal processes, in both the short and long term.</i>	The orientation of the leases along the predominant current direction is unlikely to result in any impact on coastal processes nor is the proposed development likely to be affected by coastal processes.

APPENDIX C – ISSUES RAISED IN SUBMISSIONS