

**REPORT ON THE ASSESSMENT OF
DEVELOPMENT APPLICATION NO. DA-80-3-2002-i
PURSUANT TO SECTION 80 OF THE ENVIRONMENTAL PLANNING AND
ASSESSMENT ACT, 1979**

**PROPOSAL BY AXSEVEN PTY LTD FOR THE REDEVELOPMENT OF A POND-BASED
PRAWN FARM AT MICALO ISLAND, MACLEAN LOCAL GOVERNMENT AREA**

Department of Infrastructure, Planning and Natural Resources

January 2004

EXECUTIVE SUMMARY

On 26 March 2002, Axseven Pty Ltd (the Applicant) lodged a development application (DA) with the then Department of Planning (now merged with the Department of Land and Water Conservation to form the Department of Infrastructure, Planning and Natural Resources, the Department) for the re-construction and operation of a pond-based aquaculture system for the commercial production of prawns on Micalo Island in the Maclean local government area. The site is freehold tenure and has an area of 175.81 hectares, however, the pond system for the prawn farm will only occupy 90.93 hectares of the site. A designated area for the processing, packaging and storage of the prawns will also be located on the site.

The proposed development involves a capital investment of approximately \$14 million and will employ 22 people on a full-time basis upon completion of the final stage of a three staged development. During construction which is expected to occur over a 3 year period, between 5 and 20 positions will be created.

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). Additional approvals from the Environment Protection Authority (EPA) under the *Protection of the Environment Operations Act 1997*, NSW Fisheries under the *Fisheries Management Act 1994*, the Department under the *Rivers and Foreshores Improvement Act 1948*, and Maclean Shire Council under section 138 of the *Roads Act 1993* are also required.

The DA and accompanying EIS were exhibited by the Department from Monday 26 May 2002 until Wednesday 25 June 2002, in accordance with the requirements for public participation identified under Division 6, Part 6 of the *Environmental Planning and Assessment Regulation, 2000* (the Regulation). Following a review of the EIS, it was determined that a Species Impact Statement (SIS) was required to be prepared due to the likely significant impacts the proposed development would have on threatened species or their habitat. The Applicant was advised of this and sought requirements from the then National Parks and Wildlife Service (now merged with the EPA to form the Department of Environment and Conservation, DEC) for the preparation of the SIS which were issued to the Applicant on 17 July 2002. The SIS was subsequently lodged with the Department on 13 May 2003. The DA, accompanied by the SIS and EIS, was re-exhibited from Monday 26 May 2003 until Wednesday 25 June 2003.

The Department received 32 submissions during the first exhibition period, four of which were from government agencies, including the DEC, the Roads and Traffic Authority, Maclean Shire Council and the Department of State and Regional Development. The other 28 submissions were received from the public and special interest groups of which 1 supported the proposal, 23 objected, 3 stated concern and one did not state a position.

In response to the second public exhibition period, the Department received 97 submissions from the public and special interest groups, however, none were received from government agencies. Of these 97 submissions, 1 supported the proposal, 84 objected to the proposal, 11 stated concern and 1 submittor did not state its position.

The key issues raised in the submissions were:

- flora and fauna impacts, particularly on migratory bird species;
- water quality;
- acid sulfate soils; and
- traffic impacts.

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

The Department has assessed the development application including issues of concern raised in submissions, and recommends that the Minister approve the proposed development, subject to conditions. It is considered that the conditions of the recommended instrument of consent impose appropriate measures to ensure the environmental impacts associated with the proposed development are appropriately managed, mitigated and monitored.

This includes recommending that the Applicant undertake specific reporting requirements on the performance of the proposal as part of the consent conditions prior to proceeding from Stage 1 to Stage 2 and from Stage 2 to Stage 3 of the proposed development. The performance requirements in the recommended conditions include requirements for the Applicant to report on the proposal's compliance with the development consent conditions and its various licences, results of the various monitoring requirements of the consent (for example, water quality, avifauna and seagrass monitoring), and reporting on disease management issues. The results contained within the report are to demonstrate the prawn farm is operating satisfactorily with regards to environmental performance and compliance, to the satisfaction of the Director-General, in consultation with the EPA and NSW Fisheries, prior to the Applicant being permitted to progress to each subsequent stage.

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1 INTRODUCTION

On 26 March 2002, the Department received a development application from Axseven Pty Ltd (the Applicant) for the re-construction and operation of a pond-based aquaculture system for the commercial production of prawns. The proposed prawn farm is to be located on Micalo Island near Yamba, within the Maclean local government area (see Figure 1).

This report represents the Department's assessment of the proposed development, in accordance with the *Environmental Planning and Assessment Act 1979*. 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 environmental impacts associated with the proposed development are adequately managed, mitigated and monitored.

2 SITE CONTEXT

2.1 Site Location

The site of the proposed development is described as Portions 260 and 368, DP 751388, parish of Taloumbi, county of Clarence, in the Maclean local government area. The development site is located at the southern end of Micalo Island and is approximately 5 kilometres west of the township of Yamba on the far north coast of NSW. The tenure of the redevelopment site is freehold, however, landowners consent was also granted by the then Department of Land and Water Conservation (now administered by the Department of Lands) for the proposed drainage and water reticulation canal works associated with the development which are located on Crown public roads within or adjoining lots 260 and 368.

2.2 Site Description

The total area of the proposed development site is 175.81 hectares. Due to the previous land use activities, Micalo Island and the subject site have been cleared of timber and were previously used for sugar cane farming and cattle grazing. In about 1985, an area of the site was developed into an extensive prawn farm, of which approximately 95 hectares of disused ponds remain today. The original farm is still in place but is no longer in use. The site also contains a machinery shed, an old processing shed and an old cottage situated on the northern boundary of the site next to the road access.

The pond area of the original development is approximately 95 ha consisting of ponds either 3.5 ha or 7.0 ha in area and about 1.0m in depth. The north-western portion of the site (approximately 70 ha in size) was not originally developed for ponds and remains as grazing land. The canals and administration area make up the remaining area of the site.

The majority of the proposed development site is located on land zoned 1(b) – Rural Zone (General Rural Land). Two small areas along the perimeter of the south-western boundary and eastern boundary of the site are zoned 7(a) – Environment Protection Zone (Ecological Significance) under the provisions of the *Maclean Local Environmental Plan 2001*.

2.3 Surrounding Land Uses

The site is located at the southern end of Micalo Island near Yamba, at the mouth of the Clarence River. Micalo Island is one of the many islands formed by channels of the river delta and is approximately 800ha in size. The island is subject to tidal influences. The island is bounded to the east by Oyster Channel, to the west and north by Micalo Channel, and to the south by Wooloweyah Lagoon which is comprised largely of low-lying wetlands.

The topography of the island is low-lying and predominantly flat having a slight fall in elevation from the north to the south. The island has been extensively cleared in the past to allow both the cultivation of sugar cane and the production of cattle. The construction of drains and levee banks to aid in the cultivation of sugar cane has altered the drainage pattern of the island. Currently, land use on Micalo Island consists of cattle raising, nature conservation, a wildlife refuge, residential and the disused prawn farm (see Figure 4.7 of the EIS).

The general project area is essentially flat with an undulating surface elevation owing to the previous land use of the site as a prawn farm. The lower lying parts of the area are subject to periodic flooding and/ or tidal inundation.

Micalo Island is surrounded by a number of wetlands identified under *State Environmental Planning Policy No. 14 – Coastal Wetlands* (SEPP 14). A small portion of the development site is also identified as containing SEPP 14 wetlands and this is discussed in greater detail in section 4.2. These areas are dominated by the grey mangrove communities and represent the largest area of this type of community in the Clarence River System. There is also an extensive mangrove community in areas adjacent to the site, namely the Clarence Estuary Nature Reserve and Micalo and Joss Channels.

The Clarence Estuary Nature Reserve lies immediately adjacent to the southern boundary of the development site. This reserve forms part of the National Parks and Wildlife Service (NPWS) Estate. Yuragir National Park also lies within close proximity to the development site.

The nearest residential dwellings to the site are located approximately 300m to the North of the site. This measurement is taken from the site boundary closest to the dwellings (which is near the administration area) (see Figure 1). The majority of the proposed development is located further south and west of the dwellings.

Figure 1. Locality plan identifying the site and the nearest residential dwellings.

3 DEVELOPMENT PROPOSAL

3.1 Outline of the Proposal

The aim of the proposal is to re-establish a prawn farm for the commercial sale of prawns to the domestic market, primarily Sydney and Melbourne.

The proposed development involves:

- redevelopment of the 95 ha old pond area into an intensive system of smaller ponds in a square configuration averaging about 1 ha in size;
- development of existing grazing land located in the north-west portion of the site into new grow-out ponds, settling ponds and water supply system;
- development of an area of small experimental ponds in the north-eastern portion of the site;
- development of a system of large settling ponds to hold discharge water;
- provision of electricity reticulation for powering paddlewheels to provide adequate aeration in the ponds;
- provision of bird netting over ponds to prevent predation;
- construction of a central administration and processing area for the farm;
- retention and extension of the existing configuration of inlet and outlet structures, including extending the existing outlet canal along the western side of the site to the boundary of portion 260;
- cleaning and servicing of the existing inlet and outlet canals;
- upgrading of the right-of-carriageway to the site to an all-weather, bitumen sealed road;
- operation of the farm 24 hours a day, 7 days a week; and
- construction and implementation of the proposed development in 3 stages (see Table 1 and Figure 2).

Table 1. Staging and construction program for the prawn farm

Stage		Timeframe
Stage 1:	Area 1 (45 ponds in the SE section, approximately 50ha) plus 1 settlement pond (10ha); access road upgrade; administration area	approximately 1 year to construct
Stage 2:	Area 2 (16 ponds in the SW section, approximately 17ha) and Area 4 (12 experimental ponds in the NE section) plus 2 settlement ponds (1ha and 0.6 ha, respectively)	approximately 1 year
Stage 3:	Area 3 (17 ponds on the NW undeveloped area, approximately 19ha) plus 1 settlement pond (5ha)	approximately 1 year

The Applicant states that upon completion of the construction of Stage 1, production of prawns would commence. Provided construction follows schedule and stocking of the prawns commences in early Spring, the Applicant anticipates that the first harvest of prawns would occur in the period of late February to May/ June in the year following the completion of construction of Stage 1. Production would be increased once additional construction stages are completed. Full production is expected to be reached in the same period 2 years later.

Due to the operational nature of prawn farms, the Applicant states that the proposed development will operate 24 hours a day, 7 days a week. The intensity of operations, however, varies throughout the week and seasons with most activities occurring during daylight periods and longer hours occurring during the harvesting season. Section 6.7 of this

report discusses in greater detail the potential noise impacts associated with this operating regime.

Pond Design and Layout

The existing pond layout would be substantially altered with the objective of creating square grow-out ponds with a water surface area of approximately 1ha when full to operational depth.

The new pond layout would operate as four separate systems, with all water sourced from the tidal inlet canal via one of the four gravity-fed distribution canals. Each system would have its own drainage system with pumping facilities to the settlement pond for that system, and water could be recirculated to the supply canal, or discharged to the 'final' outlet canal via settlement ponds as required. Figure 2 shows the layout of the proposed prawn farm.

Figure 2. Layout of proposed prawn farm

External Wall

An external outer wall has previously been constructed around the existing pond system and forms the outer bank of the wastewater discharge canal. The Applicant states that this wall will remain, however, it will be increased in height to protect the farm from a 1 in 100 year flood. A gap in the wall approximately 10 metres in length will be repaired using material sourced from the site.

Pond Specification

The operational depth of pond water would be 1.2m to 1.5m on average, with the bottom of the pond sloped to the lowest point at the outlet which would usually be in the centre of the wall adjacent to the waste water canal, in order to ensure self-drainage of the ponds. Pond water from the inlet canal would be supplied as required.

The pond outlets are designed to control the depth of water in the pond and to allow water to exchange through the pond whilst ensuring no stock in the pond escape. The outlet pipe will be screened.

Water Reticulation System

The existing water supply inlet canal, distribution canal, wastewater canal and outlet canal are generally considered to be in good working order and will be used in the new farm. The Applicant states that some extensions to the western side of the outlet canal will be required and all canals will be drained and dried out for servicing and maintenance where required. This is detailed in sections 6.3 and 6.4.

The existing tidal water supply canal was built in around 1985 in a registered easement DP 640338. This canal passes through neighbouring land not owned by the Applicant to link the site with Oyster Channel.

Four settlement ponds are proposed, in order to allow suspended solids in the wastewater to settle. Water from the settlement ponds would then be recirculated, or directed to the 'final' outlet canal and returned to the river system, provided discharge water quality meets required EPA standards.

The outlet canal would be the final wastewater outlet for the proposed development with any wastewater from the development being discharge to Joss Channel via this outlet. The four independent internal drainage and recycling systems would all be separately connected to this outlet system. A flood gate would be constructed within the outlet canal to enable drying and maintenance works.

Site Administration Area

An administration centre would be established on Portion 260, the site of the buildings for the existing prawn farm, which would be demolished with the exception of the steel frame machinery shed. The building and administrative area footprint would total approximately 30,000m², and would incorporate:

- Two residences on the north east corner of the footprint (subject to further development assessment);
- An administrative office and staff facilities;
- Processing, packaging and storage facilities;
- Two machinery sheds;
- A feed storage shed;
- A plant shed; and
- A lime storage area.

Figure 3. Layout of proposed administration area.

Site Access

Existing access to the site is via a public road and a 'Right of Carriageway' to Lot 2 DP 599146 in the north of the Micalo Island. Currently, during wet weather periods, sections of this route are inaccessible.

In the EIS it was stated that the Applicant proposed to gain legal access over the new private road that has been built on Micalo Island to facilitate access to properties on the island. Since the exhibition of the EIS, the Applicant has modified its preferred access route. The Applicant now proposes to use its existing right-of-carriageway or a modified version (see Figure 4), which meets up with the public road on the island just north of the site in order to gain access to the site. This proposed route is discussed in greater detail in section 6.6 of this report.

The Applicant notes that there are a number of unformed roads that currently traverse the site. As part of the proposal, the Department of Lands required the east-west road to be leased from them as part of a package of leases of Crown Lands associated with the proposal. The Department of Lands also requested that this road reserve be closed and the Applicant states that it may do this if the prawn farm is approved. The implications of this road closure are discussed in detail in section 6.6 of this report.

Figure 4. Proposed site access indicating the Right-of-Carriageway.

3.2 Construction Works

The staging of construction works is described in section 3.1 of this report. Generally, the Applicant states that earthworks will be undertaken during the dry season to enable equipment to access the site. The Applicant highlights an advantage of this is that it will reduce the likelihood of stormwater runoff occurring and consequently lessen the risk of erosion of reshaped areas.

Outer wall repair and pond reconfiguration

The Applicant states that no general fill from off-site sources will be required for the reshaping of the site's pond and canal areas. Notwithstanding, the Applicant states that suitable road base material for road construction and the construction of hard stand for the site administration area facilities will be required. It is anticipated that approximately 4000-5000m³ of this material will be required and will be sourced from local quarries.

The existing outer wall of the development site will need to be repaired. The Applicant states that material used for repairs will be sourced from the site, however, care will be taken to ensure that non-Acid Sulfate Soils (ASS) material is used, or appropriate management measures implemented should ASS material be required to be used. Acid Sulfate Soils management is discussed in greater detail in section 6.6 of this report.

The Applicant highlights that the repair of the outer wall and re-instatement of the floodgate will be the first construction phase items undertaken so as to enable any runoff water and sediments to be contained on-site and managed appropriately during the construction phase.

Following the completion of the outer wall and floodgate, the Applicant states that works will commence on the pond system. All water will be drained from the existing pond system and inlet and distribution canals and dried out prior to the re-configuration of the ponds. Water will be pumped to the existing outlet canal for discharge to Joss Channel at an appropriate time.

Earthworks for pond construction will likely utilise excavators, although the Applicant states that dozers, scrapers and dump trucks may also be used. Importantly, the Applicant states that the construction works will be designed in a manner that incorporates erosion and sediment control measures and procedures for ongoing testing of material for ASS and any necessary treatment prior to final placement.

The Applicant states that the final construction works in the pond area will be the installation of bird netting to control predation. Some concern was raised regarding the use of netting and its effects on avifauna. This is discussed in greater detail in section 6.1 of the report.

Site administration and processing area

The Applicant states the administration area will be cleared of all existing buildings with the exception of the steel-framed machinery building. All building waste is to be disposed of to landfill.

Clean fill is to be transported to the site to provide a hard surface for traffic and to raise the sites for the proposed buildings to above flood level. The administration building will be two stories with offices, staff facilities and laboratory together with undercover parking on the ground floor. The processing facility is to be constructed prior to the harvest of the first crop. This facility will contain a processing area, cooking facilities, cleaning and sorting plant and chilling and packaging plant. The Applicant notes that the storage area for chilled and frozen product will be built in stages in line with the expansion of production.

Vehicle Access

The construction of all-weather bitumen road access to the site, and sealing of hard stand areas in the administration area will take place early in Stage 1. The Applicant states construction of the road will be to Council specifications.

Flood protection

Flood protection for the original prawn farm was achieved by the use of the outer pond and canal walls which were constructed to a height of 2.2m – 2.5m AHD. The Applicant states that these same walls will be used for this proposal with additional walls built at flood protection height around the new northern and eastern pond and canal boundaries. The Applicant states that the walls will be constructed with material used from the site and will be undertaken in line with the construction of each stage of the development such that each stage is flood-proofed.

Flooding impacts are discussed in section 6.5 of the report.

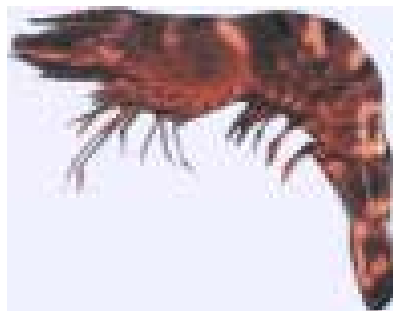
3.3 Operation Works

At present, the Applicant holds a Fisheries permit that allows the cultivation of the: Banana Prawn; Black Tiger Prawn; Brown Tiger Prawn; Eastern King Prawn; Greasyback Prawn; Kuruma Prawn; Offshore Greasyback Prawn; and School Prawn.

The Applicant proposes however, to concentrate on the cultivation of Black Tiger Prawns (see Figure 5), with the possible future cultivation of the Brown Tiger Prawn and the Eastern King Prawn.

Larval prawns would be sourced from the Applicant's hatchery located in South Ballina. The hatchery would have an initial production capacity of approximately 7.8 million post larvae (PL) prawns per run.

Figure 5. Black Tiger Prawn



Cultivation Practices

Prior to being introduced to the ponds, juveniles would be acclimatised to a similar salinity and temperature of the pond water. Once acclimatised, they would be released into the ponds at an initial stocking rate of 50 PLs per cubic metre, or approximately 500,000 per hectare. Stocking would take place between late September and November, with the growing period running for between 4-6 months, through summer to late autumn.

At full production (that is, after Stage 3) it is expected that the prawn farm will have an area of 90.93 hectares stocked with prawns with the Applicant budgeting for a yield of around 5 tonnes of prawns per hectare (approximately 450 tonnes). The long term objective for the farm is to produce between 6 and 7 tonnes per hectare. At 6.5 tonnes/ ha, this equates to a gross production of 590 tonnes.

The prawns would be fed a processed, pelleted, high protein feed. Feed would be distributed within the ponds via a small hopper and blower mounted on the front of a four-wheel ATV. Feeding would be monitored, with the protein content and pellet size of feed changed as the prawns develop. Water quality would be tested and recorded daily. Samples of stock would also be inspected regularly and tested for disease.

Harvesting

The Applicant states that harvesting of the crops will occur once the size of the prawns is optimal for the market targeted (usually between 15g to 35g each), or it is decided that there is minimal chance of further economic gain by feeding the stock any further.

Harvesting would be undertaken using 4 set nets in each pond which are on the perimeter near each wall. These have cod ends which enables prawns to be emptied directly into boxes on vehicles which would then be transported directly to the processing facility. It should be noted that water would not be drained from the ponds until after the pond is emptied of stock.

Post Cultivation Activities

Pond Maintenance

As stated above, once the pond is emptied of stock, the water would be settled and released to the main settling pond. The Applicant states the paddlewheels would be removed from the pond for servicing and checking and any deposits of sludge or organic matter on the floor would be removed. The Applicant states that the pond walls would be serviced for any erosion rectification and the floor of the pond aerated using a cultivating implement attached to a tractor. The pond would then be left to fully dry out and oxidise before the preparation for the next crop.

The cycle of prawn cultivation takes approximately 1 year from stocking, to harvesting and pond maintenance.

Processing Facility

The processing facility consists of an area that is used to process stock prior to packaging for sale or storage, and facilities for short and long term storage of product.

The Applicant states the facility will be constructed in accordance with the required health standards in NSW for handling food products. The Applicant states the facility will be used for the cleaning of stock, sorting for size, cooking (if required), and the pre-chilling ready for packaging or processing for storage.

If the product is not cooked, the Applicant states the stock will be chilled, packed and marketed immediately as uncooked fresh product. If the product is cooked, it is then chilled, packed and marketed, or Individual Quick Freeze (IQF) and stored for sale at a later date.

The packaging area will have an ice-making machine and salt which is added in the packing process. The Applicant states the product will be packed into a standard polystyrene box used in the industry.

The Applicant states that the farm will comply with the SAFE Food NSW protocols and other regulations relating to the processing and storage of products for human consumption.

3.4 Utilities

Electricity

Electricity would be reticulated around the development site underground in the pond walls, with appropriate connections to attach paddlewheels for aeration of the ponds. Each pond

would require eight paddlewheels of 1.5kW each. There would be auxiliary power back-up by diesel generators to provide power to the site in the event of grid power failure.

Domestic Water Supply

The proposed development would be serviced by the Lower Clarence County Council (LCCC) network, which supplies an area extending from Grafton in the south to Iluka in the north. The new administration area would be connected to the existing Town Water supply.

Sewage Treatment

Given the distance between the site and the existing sewer mains, the Applicant considers it impractical to connect the project to the existing system. Instead, the Applicant states that sewage from the two dwellings and administration building would be treated on-site in an approved domestic-scale system.

Waste Disposal

All general waste would be disposed off-site, at an approved landfill facility. Waste oils and chemicals will be disposed of by licensed contractors. Waste management is discussed in section 6.11. The disposal of diseased stock is discussed in greater detail in section 6.9.

3.5 Justification for the Proposal

The Applicant indicates that through the assessment undertaken in the EIS and with the proposed mitigation measures, the proposal is unlikely to have any significant environmental impacts on the local area.

The Applicant states that the proposal will also have economic and employment benefits to the local community through the provision of up to 20 construction and 22 full time operational positions. The majority of which will come from the local area. In addition, construction activities from the proposal will generate around \$12 million in capital spending and inject some \$4 million annually into the local economy during operations. This is also expected to create flow-on spending and employment opportunities within the local and regional area.

The Applicant also indicates that aquaculture is also generally considered to be an example of ecologically sustainable development and that the proposal is consistent with the ESD principles.

3.6 Alternatives for the Proposal

The Applicant states it did not investigate alternative sites for the proposed prawn farm. Rather, the intent of the Applicant was to identify an appropriate use for the site it already owned. In this regard, the Applicant considered a number of options including a water-based tourist facility, a resort, reshaping the land for cropping or grazing, or selling it, but considered that these options were not financially viable and had unacceptable environmental impacts.

Should the Applicant choose not to proceed with the proposal, the Applicant states that a viable aquaculture proposal would be lost to the area with a corresponding loss of business confidence in new aquaculture business ventures in the region. Further, the Applicant notes that both investment and employment opportunities would be lost. From an environmental perspective, the Applicant notes that an opportunity to manage potential ASS problems on-site would be foregone.

Alternative Wastewater Discharge Point

The Applicant considered several different options for the discharge of wastewater from the site including utilising the existing discharge point in Joss Channel, establishing a discharge

point on Micalo Channel, or into Wooloweyah Lagoon, or directly into Oyster Channel to the North-East of the site.

Of these options, the Applicant states that utilising the existing infrastructure would be the most cost effective and it considered to be more environmentally acceptable. This position is based on the fact that the other options would require varying degrees of disturbance to listed wetlands (SEPP 14 and RAMSAR) and that full flushing of pollutants may be restricted.

The location of the discharge point is discussed in greater detail in section 6.3.

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.

First Exhibition Period

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 12 April 2002 and Wednesday 15 May 2002 (34 days) at the following locations:

- Department's Head Office, Sydney;
- Department's Grafton Office;
- Maclean Shire Council; and
- Nature Conservation Council, Sydney.

Nearby landowners and occupiers were notified in writing 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 *Yamba Lower Clarence Review* on Friday 12 April 2002 and on Friday 2 May 2002. The newspaper notifications provided details of the proposal, exhibition locations and dates, and information on how interested parties could make a submission.

A number of signs providing the same information were also displayed on the proposed development site for the duration of the exhibition period.

Second Exhibition Period

Following a review of the EIS, it was determined that a Species Impact Statement (SIS) was required to be prepared due to the likely significant impacts the proposed development would have on threatened species or their habitat. The Applicant was advised of this and sought requirements from the National Parks and Wildlife Service for the preparation of the SIS which were issued on 17 July 2002. The SIS was subsequently lodged with the Department on 13 May 2003. The Development Application, accompanied by the EIS and SIS was placed on re-exhibition from 26 May 2003 until 25 June 2003 at the same locations listed above.

Nearby landowners and occupiers as well as those that made a submission on the development during the first exhibition period were notified in writing that the proposal was being re-exhibited. Advertisements were also placed in the *Yamba Lower Clarence Review*, *The Grafton Examiner* and *The Australian* on 23 May 2003 and 13 June 2003 notifying people that the proposal was being re-exhibited and would be accompanied by the EIS and a SIS.

State Significant Development

On 3 August 1999, in accordance with section 76A of the *Environmental Planning and Assessment Act 1979* (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 prawn farm would employ approximately 22 people on a full-time basis, and is therefore State significant development. The Minister is the consent authority for State significant development and will determine the application.

Integrated Development

The development proposal constitutes integrated development, as defined under section 91 of the *Environmental Planning and Assessment Act 1979*. In addition to development consent, the proposed prawn farm requires:

- a licence from the Environment Protection Authority (EPA) under the *Protection of the Environment Operations Act 1997* (POEO Act) because it is classed as a scheduled activity (Aquaculture) under Schedule 1 of the POEO Act;
- a permit from NSW Fisheries under the *Fisheries Management Act 1994*;
- the Department of Land and Water Conservation under the *Water Act 1912* and the *Rivers and Foreshores Improvement Act 1948*; and
- approval from Maclean Shire Council under section 138 of the *Roads Act 1993* as the development would require work to be undertaken in a road reserve owned by Council.

Designated Development

Under *State Environmental Planning Policy No 62 – Sustainable Aquaculture* (SEPP 62) Class 3 aquaculture (within the meaning of that Policy) is classified as designated development and requires an Environmental Impact Statement (EIS) to accompany a development application. The type of class a proposed aquaculture development falls under is determined through what is known as the “project profile analysis.” A project profile analysis is a matrix of environmental and operational criteria for ranking the level of environmental risk in relation to site location and operational attributes of aquaculture development.

The analysis is developed in accordance with the relevant aquaculture industry development plan (AIDP) which is developed under the provisions of the *Fisheries Management Act 1994*. For this development, the relevant AIDP and the corresponding project profile analysis is contained within the document *NSW North Coast Sustainable Aquaculture Strategy (August 2000)*.

For this proposal, it meets a number of Level 3 criteria listed in the project profile analysis, including:

- being located on a site where more than 5 hectares of the pond area would be situated on land where the elevation is between 1 and 2 metres AHD;
- being an activity that is located in or may drain into areas where SEPP 14 wetlands are present; and
- the distance from the top of the high bank of a natural waterbody or wetland and the edge of the pond water surface is less than 50 metres. It should be noted, however, that this only occurs in a minor number of locations (see section 6.1 for a greater discussion on this).

Accordingly, the proposed development is considered to be designated development and an EIS is required to accompany any development application.

4.2 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. 62 – Sustainable Aquaculture*;
- *State Environmental Planning Policy No. 14 – Coastal Wetlands*;
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection*
- *North Coast Regional Environmental Plan*;
- *Maclean Local Environmental Plan 2001*;
- *NSW Coastal Policy 1997*;
- *NSW North Coast Sustainable Aquaculture Strategy – Land Based Aquaculture*; and
- *Healthy Rivers Commission of New South Wales – Independent Inquiry into the Clarence River System*

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. 62 – Sustainable Aquaculture

State Environmental Planning Policy No. 62 – Sustainable Aquaculture (SEPP 62) aims to encourage the development of sustainable aquaculture in the State making it permissible with consent in certain areas of the State where a comprehensive and integrated regional strategy is present, provided the proposed development meets a number of minimum performance requirements. At the time of this assessment, only the North Coast of NSW has an aquaculture Strategy in place and SEPP 62 only applies to local government areas in the North Coast.

The Policy also provides for a graduated environmental assessment regime for aquaculture development depending on the level of environmental risk associated with the site and operational factors. Under the SEPP, the Department considers the proposal to be permissible with development consent. The provisions of SEPP 62 as they relate to the proposal are discussed in Section 4.3 and in greater 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 Applicant notes that there are a number of wetlands classified under *State Environmental Planning Policy No. 14 – Coastal Wetlands* (SEPP 14) that are located in close proximity to the development site. The published SEPP 14 maps also identify SEPP 14 wetlands as being present on the subject development site.

The Applicant considers that there may be a drafting error in relation to the SEPP 14 boundaries on the site as man-made, prawn farm ponds and outlet canals exist in this locality and have done so since 1984, prior to the original SEPP 14 mapping (gazetted on 12/12/85) (see Figure 4.4 in the EIS). From this, the Applicant states that there is a need to adjust the SEPP 14 boundaries at that point to a location agreed by Maclean Council, the Department and the Applicant. Even though the proposed development site may not be located on a SEPP 14 wetland, the Department's assessment has been on the basis that the Policy applies.

In particular, the Department notes that there will be no development within the areas designated as SEPP 14 wetlands as part of this proposal. The Department is satisfied that the proposal would not significantly impact upon these wetlands.

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. As the Maclean local government area is included in the Schedule, the proposed prawn farm re-development constitutes a development to which SEPP 44 applies.

Potential koala habitat is defined as having a vegetation community with a minimum of 15% of the total number of trees in the upper or lower strata of the tree component which consists of species listed in Schedule 2 of the Policy. The flora and fauna study undertaken for the site did not identify the presence of any species listed in the schedule, nor on any immediately adjoining areas. Therefore the site does not constitute “core koala habitat” or “potential koala habitat.” The Department is satisfied that the requirements of SEPP 44 have been met.

Other State Environmental Planning Policies

The proposal 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. Notwithstanding, Clause 4(2)(b)(i) of the SEPP states that this Policy does not apply to development applications for consent to carry out development to which SEPP 62 applies. The proposed prawn farm is such a development, therefore SEPP 71 does not apply.

North Coast Regional Environmental Plan

The *North Coast Regional Environmental Plan* (North Coast REP) provides an overall framework for the management of development in the region in order to provide optimal economic and social benefits to the local community and visitors to the region.

The objectives of the REP in relation to wetlands and fishery habitats are to preserve and enhance fishery habitats and associated catchments and to promote the sustainable use of natural resources. It is considered that the proposed development satisfies the objectives of the REP as they relate to development in this area. A detailed assessment of the proposed development against the provisions of the REP is included in Appendix B of this report.

Maclean Local Environmental Plan 2001

The majority of the site is located on land zoned 1(b) Rural Zone (General Rural Land). Part of the land is also located on land zoned 7(a) Environmental Protection Zone (Ecological Significance).

The objectives of Zone 1(b) are to: conserve the productive potential of rural land; provide for new forms of agricultural development, and changing patterns of existing agricultural development; to control the clearing of vegetation; to enable rural tourism; and exclude urban development. Due to the existing landform of the site, it is considered that the proposal will provide a value-adding use for the land in the form of aquaculture development and will assist

in the conservation of the productive potential of rural land and is therefore considered to be consistent with the zone objectives.

The site is also identified as being located on land zoned 7(a) which is consistent with that of the SEPP 14 wetland boundary. As discussed above, the Applicant claims there may be an error in the zone boundaries with respect to wetland occurrence on the project site, and hence, there may be a similar zoning discrepancy in the LEP. Despite this, it is considered that the proposal generally accords with the objectives of zone 7(a) since no aspect of the proposed development will occur or impact on this area.

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 proposed development has been assessed against the Policy's strategic actions. The Department's assessment concludes that the proposal is consistent with the provisions of the Policy.

NSW North Coast Sustainable Aquaculture Strategy – Land Based Aquaculture

The NSW North Coast Sustainable Aquaculture Strategy has been developed to provide a focus for facilitating economic development and attracting aquaculture development to the region. The Strategy provides a framework for interfacing the technical provisions of the Aquaculture Industry Development Plan (AIDP) under the *Fisheries Management Act 1994* with the land use planning and integrated regulatory provisions under the EP&A Act.

The proposed development has been assessed against the aims and objectives of the Aquaculture Strategy. A detailed assessment of the proposal against these is discussed throughout this assessment report. The Department is satisfied that the proposal is consistent with these aims and objectives of the Strategy.

Healthy Rivers Commission of New South Wales – Independent Inquiry into the Clarence River System

In addition, the proposal has been assessed with consideration given to the Statement of Intent in the *Healthy Rivers Commission of New South Wales – Independent Inquiry into the Clarence River System*. The Department concludes that the proposal is consistent with Statement of Intent which is discussed further in Section 6.3 of this report.

Other Government Agreements

Ramsar Wetlands

The Australian Government is a signatory to the Ramsar Convention on Wetlands. This treaty provides for international cooperation for the conservation and wise use of wetlands and their resources. The following areas have been identified as wetlands of international importance: Micalo Channel; Oyster Channel; Romiaka Channel and Romiaka Island; and Palmers Channel and Palmers Island and associated intertidal wetlands.

The Department is satisfied that with the management measures identified in the EIS and in the recommended conditions of consent, the proposal is unlikely to impact on any Ramsar wetlands.

JAMBA and CAMBA

The Australian Government has bilateral agreements with the Governments of Japan and China relating to the protection of birds that migrate between Australia and Japan (Japan-Australia Migratory Bird Agreement), and Australia and China (China-Australia Migratory Bird Agreement).

These agreements obligate the respective governments to protect migratory birds and their habitats. Birds listed under these Agreements are listed and protected under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*.

The Department is satisfied that with the management measures identified in the EIS and in the recommended conditions of consent, the proposal is unlikely to impact on any migratory birds. Section 6.1 discusses this in greater detail.

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 likely and a Species Impact Statement (SIS) was required to be prepared in support of the DA. On 17 July 2002, the DEC issued their Director-General's Requirements for the SIS. The SIS was exhibited from 26 May 2003 until 25 June 2003.

The SIS concluded that two species, the Black-necked Stork and Large-footed Myotis, would be affected by loss of pond habitat, however, this impact is considered to be negligible given the availability of large areas of similar or better habitat in the area, notably the adjacent Clarence Nature Reserve and nearby RAMSAR wetlands which constitutes an area of approximately 640 hectares.

For projects which include a SIS as part of the DA and for which the Minister is the consent authority, section 79B(3) of the EP&A Act requires the Minister to consult with the Minister who administers the *Threatened Species Conservation Act 1995* (ie Minister for the Environment), prior to a development consent being granted.

The Department has consulted with both the Minister for the Environment and with the Department of Environment and Conservation (DEC) in relation to the proposal and the recommended draft conditions of consent. The Minister and DEC recommended a number of conditions relating to threatened species which the Department has adopted, except for one condition relating to the provision of at least 8 hectares of compensatory habitat or an alternative habitat area for the Black-necked Stork. The Department did not support this condition, given the location of up to 640 hectares of suitable natural habitat in the surrounding area. Detailed consideration of their comments in relation to the draft recommended conditions of consent is discussed in section 6.1 of this report.

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 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 11 June 2002, the DEH determined that the proposed prawn farm was a 'Controlled Action' due to its potential impact on Nationally listed threatened species and communities. Subsequently, the proposal requires an approval from the DEH. This approval process is undertaken separately to the assessment process under the EP&A Act.

4.3 Permissibility

Maclean Local Environmental Plan 2001

Under the *Maclean Local Environmental Plan 2001* (Maclean LEP), the majority of the proposed development site is located on land zoned 1(b) Rural Zone (General Rural Land). Part of the land is also located on land zoned 7(a) Environmental Protection Zone (Ecological Significance). The proposal is permissible with consent in these zones. A discussion of the proposal against the provisions and objectives of the LEP is provided in section 4.2 and Appendix B.

State Environmental Planning Policy No. 62 – Sustainable Aquaculture

In addition, the proposed development is located on land to which *State Environmental Planning Policy No. 62 – Sustainable Aquaculture* (SEPP 62) applies. Clause 7 of SEPP 62 states that a person may carry out aquaculture development with development consent if it complies with the site location and operational requirements set out in Schedule 1 of the SEPP for the development. Specifically, Schedule 1 of the SEPP sets out minimum performance criteria that a development must meet in order to make it permissible with consent.

It should be noted that since this development application was lodged, Schedule 1 of the SEPP has been amended. Clause 18 of SEPP 62 states that the amendments made to this Policy extend to a development application made but not finally determined before the amendment commences. The current proposal is such a development and hence the amended Schedule applies.

A comparison of the proposal against the minimum performance criteria is included in Appendix B and reveals that it does not meet all of the minimum performance criteria. In particular, the proposal is: 1) located on land that is zoned for rural and environmental protection; 2) located on land where the mean elevation of the area is less than 1 metre AHD, and 3) not located in an area marked 'green' on the maps identified in the Aquaculture Strategy, which generally indicates that the site is located in an area that is potentially acceptable in terms of the Strategy's site selection policy.

Clause 16 of the Policy, however, permits the Minister to waive any of these requirements (with or without conditions) in connection with the continuation of any existing aquaculture development (including the re-establishment of aquaculture development in an area in which aquaculture was abandoned before the commencement of this Policy). As this proposed development is considered to be the re-establishment of aquaculture that was abandoned before the commencement of this policy (1 October 2000), the Minister may waive any of the minimum performance criteria.

With respect to the first criterion, Schedule 1 states that pond-based aquaculture (which this proposed development will be), may be carried out on land that is zoned for rural purposes under an environmental planning instrument. As previously stated, the majority of the proposed development site is located on land zoned 1(b) Rural Zone, however, it is also partly located on land zoned 7(a) Environmental Protection Zone, and hence development on this land is technically prohibited. Notwithstanding, section 76A(8)(c) of the Act states that where part of State significant development that would otherwise be prohibited but for this provision

of the Act, the development may be carried out with development consent. Further, the Applicant does not propose to disturb any part of the land zoned 7(a) as part of this proposal. Therefore the Department considers it justified for the Minister to waive this criterion.

With respect to the second criterion, the Department considers it justified for the Minister to waive this because the proposal is being built on land that was previously used as a prawn farm, which by its operational nature had a pond system that was dug to a depth below 1m AHD. For the third criterion, whilst the proposal is not located in an area marked green on the map, it is located on a previously developed aquaculture site which is coloured yellow on the same map.

It should be noted that Stage 3 of the proposed development does not strictly come under the definition of the re-establishment of an abandoned aquaculture development as it is to be located on land that is currently used for grazing and was not subject to a previous aquaculture development. Therefore the Minister is technically unable to waive the minimum performance criteria for Stage 3. For this part of the site, however, only the requirement to be located in an area marked green on the Aquaculture Strategy Map and the requirement for the mean elevation of the site to be above 1m AHD would not be met, therefore development on this land would be prohibited. However, for the same reasons as stated above, the Department considers development on this land to be acceptable. Further, the Department considers that the provisions under section 76A(8)(c) of the Act relating to part prohibited development that is State significant could also apply for this portion of land as development on this land related to just 26% of the entire development.

Accordingly, the Department considers that the proposal is permissible with development consent.

5 CONSIDERATION OF ISSUES RAISED IN SUBMISSIONS

The Department received 32 submissions during the first exhibition period, three of which were from government agencies, including the then National Parks and Wildlife Service, the Roads and Traffic Authority and the Department of State and Regional Development (DSRD). The DSRD stated its support for the proposal. The other 29 submissions were received from the public and special interest groups in which 1 supported the proposal, 24 objected, 3 stated concern and one did not state a position.

In response to the second public exhibition period, the Department received 97 submissions from the public and special interest groups, however, no submissions were received from government agencies. Of these submissions, 1 supported the proposal, 84 objected to the proposal, 11 stated concern and one did not state a position.

In addition to the public exhibition of the proposal, the Department also met with members of the community on two occasions. The first meeting was held between members of the Department and environmental and interest groups. The second meeting was held between members of the Department and the local residents of Micalo Island. The Member for Clarence, Mr Steve Cansdell MP was also present at this meeting.

A summary of the major issues raised during the public exhibition of the proposal and the two meetings is presented in Section 6 of this assessment report, with full details of each submission provided in Appendix C. The Department considers that it has met the requirements of the Act in relation to receipt and consideration of submissions. There is no basis for the belief that any party has not been afforded every opportunity to comment on the proposal, or disadvantaged in any manner during assessment of the proposal.

It should be noted that the DEC, NSW Fisheries and Department requested additional information from the Applicant on a number of occasions. The time in which it took the Applicant to respond to all these issues was 15 months. Additionally, it took the Applicant 10 months after requirements had been issued for its preparation to submit the SIS.

Following the provision of the last of the additional information, general terms of approval (GTAs) were sought from all agencies. All agencies have now provided their GTAs indicating the terms under which they would be prepared to issue their licences. Maclean Shire Council also provided its GTAs for the proposal.

Public Submissions

Aside from two submissions supporting the development, the public submissions either objected to, or were concerned about the proposal. The issues raised in these submissions were:

- Impacts on wildlife, particularly migratory bird species, through loss and/or degradation of habitat;
- Management of predatory birds due to the expense of netting ponds;
- Impacts on the water quality of the Wooloweyah wetland complex and surrounds, with particular emphasis on nutrient loading and the poor flushing capabilities of Joss Channel;
- Acid Sulfate Soil issues;
- Traffic and access issues, including road upgrading requirements, and the safe operation of the intersection at Yamba Road and Micalo Road;
- Noise issues;
- Flooding issues;
- Disease issues;
- Odour Issues;
- A lack of community consultation undertaken by the Applicant, and as a consequence, low community awareness of the proposal;
- The previous environmental performance of the existing prawn farm;
- The need for a bond, to ensure that any rehabilitation of the site could be financed should the proposed development fail;
- The application of *State Environmental Planning Policy No. 62 – Sustainable Aquaculture* (SEPP 62);
- The findings of the Independent Inquiry into the Clarence River System undertaken by the Healthy Rivers Commission of New South Wales; and
- The quality of the EIS prepared for the proposed development.

Agency Submissions

Department of Environment and Conservation

Environment Protection Authority

- Additional information was requested on water management and monitoring, and groundwater issues;
- Additional information was requested to clarify the impacts of the proposal on the water quality of the Wooloweyah wetland complex and surrounds, with particular emphasis on nutrient loading and the poor flushing capabilities of Joss Channel.

National Parks and Wildlife Service

- Expressed concern regarding:
 - the impacts of the proposal on migratory shorebirds including threatened species;
 - the proposed discharge of wastewater, and subsequent nutrient loading of Clarence Estuary Nature Reserve;

- Predator management;
- Rehabilitation;
- Requested a Species Impact Statement (SIS) for the Black-necked Stork.

NSW Fisheries

- Additional information was requested on:
 - The remediation and recirculation of water to prevent discharge into the surrounding environment;
 - Pond bottom management;
 - Impacts on marine vegetation;
 - Dredging and reclamation activities;
 - Aquatic habitat assessment.

Macleay Shire Council and the Roads and Traffic Authority

- Provided detailed upgrading requirements for roads, including the intersection of Yamba Road and Micalo Road.

Department of State and Regional Development

- 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 6.14 of this report.

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

- impacts on flora and fauna;
- water quality impacts, including groundwater;
- soil impacts, particularly acid sulfate soils;

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

- noise impacts;
- transport impacts;
- hazards and risk impacts;
- socio-economic impacts.

Other issues associated with the proposed development include:

- waste management;
- odour impacts;
- impacts on visual amenity;
- impacts on heritage items; and

6.1 Terrestrial Ecology (threatened species and wetlands)

Applicant's Position

Threatened Species

The Applicant has assessed the potential impacts of the proposal on flora and fauna in the Environmental Impact Statement (EIS) prepared by John Mercer Consulting (2002) and the subsequent Species Impact Statement (SIS) prepared by Wildthing Environmental Consultants (2003).

The dominant vegetation/habitat identified in the study area included the existing prawn ponds (95 ha), pasture (70 ha), mangroves, Casuarina woodland and saltmarsh. Other vegetation occurs on the edges of the ponds. The ponds currently provide a wide range of habitat for native fauna and migratory birds, extending their range from the wetland habitat adjoining the farm.

The SIS notes that no threatened flora species or endangered ecological communities have been identified in the study area. A variety of faunal species were identified in the study area during recent and previous surveys including twelve threatened species (ie the Black-necked Stork, Osprey, Brolga, Grey-crowned Babbler, Large-footed Myotis, Hoary Wattled Bat, Greater Broad-nosed Bat, Eastern Falsistrelle, Little Bent-wing Bat, Bush Stone-curlew, Pied Oystercatcher, and Black-tailed Goodwit).

The SIS indicates that the proposal would result in a number of potential impacts with regards to flora and fauna, including the removal of habitat (95 hectares of existing prawn farms), modification of aquatic habitat attributes and entanglement of fauna in netting. The potential impact of the proposal on aquatic ecology is discussed in Section 6.2 of this report.

Two threatened species, the Black-necked Stork and Large-footed Myotis, would be particularly affected by loss of pond habitat. However, the SIS concludes that the loss of habitat would have a negligible impact on these species given the availability of large areas of similar or better habitat in the area, notably the adjacent Clarence Nature Reserve (75 hectares), Joss Island (45 hectares) and nearby RAMSAR wetlands which constitutes an area of up to 640 hectares. The Applicant considers that the proposal would not directly affect the habitat of any other threatened species.

A referral was made to Environment Australia requesting consideration of whether approval is required under Chapter 4 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Environment Australia has advised that the proposed development is a controlled action and requires an approval under the EPBC Act.

Proposed Mitigation Measures

The SIS proposes a number of mitigation measures during construction, including undertaking construction activities during the day and during the dry season, implementing a detailed erosion control measures and flagging/fencing of vegetation outside the construction area.

Management strategies would be implemented during operation, including water quality control, protection of vegetation around the proposed ponds, pest control, weed management, visual screening, and a fauna monitoring program. The Fauna Monitoring Program would include monitoring of avifauna utilising available habitat within the settling ponds. The Plan would also include monitoring of predator nets.

The SIS proposed no compensatory strategies. However, the SIS does note that although the proposal would result in the removal/modification of 95 hectares of existing constructed ponds, a total of 5.7 hectares of edge habitat (shallow water) and 20.6 hectares of deeper open water would remain available to aquatic avifauna, semi-aquatic avifauna and bats within the settlement ponds and canals.

Given the sensitivity of the remaining wetland vegetation on-site and on adjacent lands, the Applicant has designed the project footprint to only impact on those previously disturbed areas. The Applicant proposes to preserve the buffer of vegetation along the site's Micalo Channel and Joss Channel frontages. No works are to be done in the identified SEPP 14 wetlands on-site.

The SIS concludes that the redevelopment of the site will contribute to the incremental decline of habitat in the locality for the species assessed. However, with the ameliorative measures proposed, it is considered that the level of threat posed by the development will be minimised.

Issues Raised in Submissions

Most submissions received during the public exhibition of the development application, EIS and SIS objected to the proposal on the basis that it would impact on wildlife that currently use the area, preventing these species from utilising the site. The submissions cite that the proposed development site has become an important habitat for bird species, including migratory species.

As discussed above, the NSW Fisheries sought additional information on the extent of removal of mangroves. The NSW Fisheries also suggested that buffer areas around the site be a minimum of 50 metres wide.

Department's Position

The Department considers that the loss of 95 hectares of artificial habitat would not have a significant impact on species, including any threatened species, given the availability of large areas (up to 640 hectares) of similar or better natural habitat in the area which are protected under either SEPP 14 'Coastal Wetlands', the Clarence Estuary Nature Reserve or conservation zonings under the Maclean LEP.

The SIS notes there are two threatened species that are most likely to be affected by habitat removal – the Black-necked Stork and Large-footed Myotis. These species would lose foraging habitat as a result of the proposed development that would contribute to the existing cumulative impact on the locality. The Department is supportive of the proposed measure to maintain at least some habitat during operation of the proposal. This includes 5 ha of habitat suitable for the Black-necked Stork, and 20 ha of habitat suitable for the Large-footed Myotis. The Department notes that these areas would also be utilised by aquatic avifauna, semi-aquatic avifauna and bats, including other migratory species that occur in the area.

Under Section 79B of the Act, where an SIS has been prepared, the Minister is required to consult with the Minister administering the *Threatened Species Conservation Act 1995* (the Minister for the Environment), before the Minister determines the development application. As part of this consultation process, the Department consulted extensively with the DEC concerning the threatened species assessment. The Department agreed with all but one of the recommendations from the DEC, which recommended the Applicant provide compensatory habitat.

In accordance with the consultation requirements under Section 79B of the Act, a letter from the Minister was sent to the Minister for the Environment enclosing a copy of the recommended conditions for the development application. The Minister for the Environment responded with a number of recommendations which were similar to those raised during earlier consultations with the DEC (refer to Attachment "C").

The Department agreed with all of the suggestions provided by the Minister for the Environment, except for one recommendation relating to the provision of compensatory habitat. The correspondence from the Minister for the Environment requested that a condition require the Applicant to either set aside 8 hectares of ponds for on-site shallow water habitat (that is not drained or netted) or to purchase or construct/contribute to an alternative habitat (on or off site) of similar size, as compensatory habitat for the Black-necked Stork.

The Department did not support this recommendation, as it considers that the loss of 95 hectares of artificial habitat would not have a significant impact on any threatened species,

including the Black-necked Stork. This is particularly due to the availability of large areas (up to 640 hectares) of similar or better natural habitat in the area and due to other recommended development consent conditions which require the Applicant to maintain at least 5 hectares of habitat suitable for the Black-necked Stork on the site. Therefore, the creation of further compensatory requirements for impacts on threatened species, such as the purchase of habitat off site, construction of habitat on site or setting aside a greater area of sediment ponds, is not warranted given the level of impact of the proposal.

In relation to the recommendation that the on-site habitat not be drained or netted at any time, the Department notes that drainage works are required for the operation of this prawn farm and the canals and settlement ponds which will form the required on-site habitat will not be netted. The EIS identifies that these areas would be drained initially during the construction of the farm and at the end of each harvest. The Department notes that the drying times coincide with the Winter period, that is, between May/June to August. Migratory waders generally arrive in Australia during August/ September then leave in March/ April, hence, are unlikely to be present during the periods when the settlement ponds and canal are dry.

The Black-necked Stork would be nearing the end of its breeding season while the ponds are dry, therefore, important habitat will be the remnant vegetation where they build their nests. In addition, at this time, there will be fewer migratory waders, so the potential lack of feeding resources would not be such an issue. The Department notes that NPWS documentation identifies artificial water sources as sub-optimal habitat for the Black-necked Stork, suggesting that this species would utilise the surrounding habitat rather than the ponds anyway.

In relation to fauna entanglement in predator nets, the Department had initial concerns with the information provided by the Applicant, particularly its potential impacts on the threatened Large-footed Myotis and Black-neck Stork. However following a review of additional information from the Applicant, the Department concluded that the use of netting is the most feasible method of predator control, compared to other control strategies, such as 'bird fright' methods, deterrents and relocation or destruction of predators. Notwithstanding, the Department considers that monitoring and reporting of any impacts is a critical component of the proposed mitigation measures.

The Department is satisfied that the recommended development consent conditions will adequately manage the potential impacts of the proposal on flora and fauna. The recommended consent conditions require the Applicant to:

- prepare and implement a Terrestrial Flora and Fauna Management Plan to detail measures to minimise the impact of the development on terrestrial flora and fauna, including mangroves, birds and bats during construction and operation of the development;
- undertake construction activities during the day and during the dry season;
- flag and/or fence vegetation outside the construction area;
- prepare and implement a Pest Control Plan and Weed Control Plan; and
- prepare and implement an Avifauna Monitoring Program to monitor and mitigate any potential impacts of the proposal on avifauna (birds and bats).

The Department is satisfied that with the recommended mitigation measures, the proposal will not significantly impact on any threatened flora or fauna species.

6.2 Aquatic Ecology (seagrasses and fish spp.)

Applicant's Position

The Aquatic Ecology assessment is provided in section 6.6.3 of Volume 1 of the EIS. A more detailed assessment is provided in Appendix F in Volume 2 of the EIS and was prepared by the Centre for Coastal Management, Southern Cross University on behalf of the Applicant.

The assessment undertaken in the EIS focussed on the potential impacts of the proposal on Joss Channel, which forms the eastern border of the proposed farm site. As part of the application, it is proposed that Joss Channel also receive the waste water discharge material from the farms operation.

To determine the potential aquatic ecological impacts of the proposal, the Applicant undertook a combination of detailed field surveys (focussing on aquatic flora and fauna and water and sediment quality), database searches and relevant literature reviews. The EIS indicates that the field surveys also concentrated on the area around the proposed discharge point in Joss' Channel.

The EIS indicated that field surveys identified various benthic fauna species (mainly polychaete worms spp. and crustaceans), plankton at various larval stages, crabs and commercial prawns occur within the sampling area. Around nine fish species were also identified, many which are considered to be important recreational and commercial species. However, the EIS indicates that no threatened fish species were identified. While due to the number of juvenile fish species identified, the EIS also suggests Joss Channel and surrounding environment may also act as an important habitat area and as a nursery area for various fish species.

The EIS also indicates that seagrass communities (ie *Zostera capricorni* and *Halophia ovalis*) are located near the entrance of Joss Channel at Oyster Channel and in the shallow waters of the Channel. However, no seagrass areas were identified near the vicinity of the farms proposed discharge point. Trace metals sampled were below ANZECC Guidelines (2001) and nutrient levels in the sediments sampled were comparable to other Australian estuaries.

The EIS concludes that the Joss Channel area and natural surrounds form an important productive habitat area for both aquatic species and for various wading birds (including migratory species), which utilise this area during low tides for feeding.

The EIS suggests that the increased nutrients generated from the discharge of waste water material from the farm may increase epiphyte growth on seagrass leaves and therefore affect their ability to photosynthesise. As a result, this may lead to a decrease in seagrass coverage within Joss Channel over a period of time. However, the EIS suggests that provided the farm meets EPA discharge standards, impacts will be minimal. The EIS also acknowledges that the proposed works on the inlet and outlet canal during construction activities will need to be managed due to potential water quality impacts from the mobilisation of nutrients from within sediments.

In order to manage any potential impacts, the Applicant indicates that monitoring of nutrients within waste water prior to discharge into Joss Channel and of nutrients, dissolved oxygen and biological oxygen demand in the canals during maintenance works will be undertaken. Both discharge waste water and maintenance activities will need to meet relevant water quality criteria.

The EPA, NSW Fisheries and the Department requested further information from the Applicant in relation to issues relevant to the aquatic ecology assessment undertaken in the EIS. Issues raised by the EPA and the Department related to water quality issues that were relevant to

aquatic ecology, while NSW Fisheries raised issues specifically about the ecological assessment undertaken in the EIS.

On a number of occasions, the EPA requested further information about waste water management and disposal issues due to concerns with potential nutrient impacts, which may also impact on the local aquatic ecology. The issue was also subject to a number of meetings between the EPA, Applicant and the Department. Through these meetings and with the additional information provided by the Applicant, the EPA were satisfied that the issue was resolved and has issued its GTA. This issue is further discussed in section 6.3 of this report, including details of the GTA. While the Department requested further information on ASS issues which has also been satisfactorily addressed and is discussed in further detail in section 6.3 of this Report.

NSW Fisheries requested further information specifically about the aquatic ecology assessment undertaken in the EIS. This included issues about the scope of the assessment undertaken in the EIS given that the assessment focussed on Joss Channel when it is also proposed to discharge water to Micalo and Oyster Channels during construction; the threatened species assessments for the Greensaw Fish and Black Cod also be broader given the potential impacts of the proposal on these other channels; disease related issues, potential cumulative impacts; and that the assessment be consistent with section 5 (d) – Flora and Fauna, Assessment Guidelines, of the NSW North Coast Sustainable Aquaculture Strategy. The Applicant provided a response to the issues raised by NSW Fisheries, who advised the Department that they were satisfied the issues were adequately addressed. As a result, NSW Fisheries provided the Department with its GTA.

Issues Raised in Submissions

A number of submissions from private residents and business groups raised issues about the potential impacts of the proposal on aquatic ecology. This included concerns about the adequacy of the survey undertaken in the EIS, impacts on seagrass areas, impacts on recreational and commercially important fish species and impacts of the proposal on Joss Channel and surrounding aquatic environments as fish habitat/nursery areas.

Department's Position

The Department had some issues with the aquatic ecology assessment provided in the EIS, particularly with the timeframe of the aquatic survey undertaken and with the assessment methodology. The Department considered that the assessment provided was limited in terms of assessing collected data and in providing an adequate prediction of the likely impacts. The Department believes that the aquatic surveys undertaken could also have been incorporated more thoroughly with existing published information, particularly for providing an assessment of the occurrence of fish species in the area. However, the Department is satisfied with the hydrodynamic modelling undertaken, the water and sediment quality assessment and with the benthic invertebrate sampling method and design.

In relation to the potential impact of increased nutrients impacting on seagrass areas, the Department concludes that it is more likely that the bulk of additional nutrients from prawn farm discharge will be assimilated by phytoplankton assemblage, rather than by epiphytic algal growth. However, the Department acknowledges that the application as proposed may lead to elevated chlorophyll a and total dissolved nitrogen around the proposed waste water discharge area.

However, in considering the mitigation measures proposed by the Applicant and through the recommended conditions, the Department believes that the proposal is unlikely to lead to serious or irreversible impacts on the aquatic ecology of receiving waters. This includes a recommended condition that requires the Applicant to submit an environmental impact

assessment report prior to proposal proceeding from Stages 1 to Stage 2, and from Stage 2 to Stage 3. The assessment report requires the applicant to adequately demonstrate that the operation is performing adequately and is compliant with all of its development consent conditions, to the satisfaction of the Director-General in consultation with NSW Fisheries and the EPA. As part of the assessment report, the Applicant is required to report on relevant aquatic ecology issues, including monitoring of seagrass areas to determine if any impacts are occurring, details of any disease or health issues and demonstrating relevant water quality parameters are being met by the site, particularly from waste water discharges.

The recommended conditions also include requirements for the Applicant to further demonstrate that any waste water discharge will not impact on the local environment (including the potential relocation of the discharge point), requirements for detailed water quality monitoring, seagrass monitoring, restricting waste water discharge to certain times to minimise impacts, minimising clearing of vegetation, and specific requirements for managing potential acid sulphate soil issues.

The Department considers that the recommended consent conditions, which includes the GTA of the EPA and NSW Fisheries, particularly the requirements for the Applicant to demonstrate the site is performing satisfactorily prior to proceeding to each stage, provides for a greater level of management of the site and the management of potential aquatic ecological impacts.

6.3 Water Quality Impacts

Applicant's Position

Present Conditions

Development site and adjacent to site

Currently, surface water within the site is present in the existing ponds, inlet and outlet channels, drains and surrounding waterways. Three water samples were taken from the existing unused prawn ponds to identify the general water quality of the site. The results of this small sample revealed varying salinity (41,500 and 98,000 mg/L in the two ponds open to tidal influence and 6,940 mg/L in the other pond which is cut off from the rest of the system) and elevated nutrients, which the Applicant considers may be due to the birdlife utilising the ponds or historical prawn farming activities.

Water quality at locations adjacent to the pond system (such as the inlet channel and Micalo Channel) revealed lower salinity levels (generally in the range of 37600 – 39000 mg/L) which is slightly higher than seawater (36,000mg/L), a slightly alkaline pH (7.70 – 8.01), a Cl/SO₄ ratio in the range 7.3 – 7.8 (which exceeds the ASSMAC Guideline of 7.2), and nutrient levels that exceed the ANZECC 2000 trigger value guidelines for ecosystem health. The Applicant considers these waters show a similar chemistry to other natural background waters in the area.

Whilst iron, aluminium and arsenic were detected in some locations, all concentrations were less than the ANZECC 2000 water quality guidelines.

Estuary

The issue of poor water quality within the Clarence River system has been the subject of two studies over the past 10 years. The major findings of these studies indicate that the area has poor water quality, particularly due to the re-suspension of bottom sediment, algal blooms, relatively high salinity in parts, nutrient levels above ANZECC guidelines in Wooloweyah Lagoon and low dissolved oxygen levels.

Sources of Water Discharge

The Applicant states that water will be discharged from the site under the following circumstances:

- controlled discharges from on-site sedimentation dams during site construction;
- controlled discharges of wastewater via the outlet canal to Joss Channel during operation; and
- rainfall runoff from the external faces of the outermost canal walls onto surrounding lands.

Water Quality

Construction

Construction activities associated with the proposed development at the site have the potential to impact on water quality in the surrounding area if not managed correctly. To control these potential impacts, the Applicant states it will construct containment cells around each area that is being built which will enable the Applicant to test and control the discharge of water from the site.

An erosion and sediment control plan is also proposed as part of the development to provide measures to minimise erosion and the discharge of sediment from the site.

Operation

The addition of feed constitutes the main source of nutrients entering the farm. Preserving the quality of water within the farm is one of the keys to the successful management of the farm. Such management measures include maintaining adequate oxygen for the biomass of the pond, not overfeeding or overfertilising and water exchange.

Prior to the release and/ or reuse of water at the site, the Applicant states it will undertake testing to ensure the water is suitable, that is, it meets certain specified water quality limits determined by the EPA, prior to reuse/ discharge. The Applicant states it will also undertake water quality monitoring at the discharge point in Joss Channel in accordance with the existing conditions set in its EPA licence.

As noted above, the process of water exchange is used as a management tool to maintain the quality of water for the efficient production of prawns. The Applicant notes that provided good management techniques are followed, there is little if any requirement for water exchange during the growing phase, therefore, the decision to undertake water exchange is determined on a day to day basis following monitoring results and is not a predictable event.

Further, the Applicant highlights that water discharge from the site is only expected to occur during initial draining of the existing pond and canals during the construction phase, and during harvesting (late February – May/ June) during the operational phase (which is expected to comprise a total volume of 1,182,000m³). It is intended to recycle water within the site at other times.

Dispersal of Effluent

The issues paper of the Independent Inquiry into Coastal Lakes (Healthy Rivers Commission, 2001) classified Wooloweyah Lagoon as a lake requiring 'significant protection.' The Applicant notes the associated recommendations for management include:

- 'control commercial...uses of a lake waterbody in ways that are commensurate with protecting lake health; and
- restore/ protect critical natural ecosystem processes.

As previously discussed, the Applicant highlights that the Lagoon already exceeds the trigger values in the ANZECC guidelines for adverse effects on ecosystem health in terms of nutrients

and dissolved oxygen and the lagoon often experiences algal blooms. ANZECC trigger values are 0.03mg/L for Total P, 0.3mg/L for Total N and between 80 and 110% saturation for dissolved oxygen. Wooloweyah Lagoon does not flush as readily as other parts of the estuary due to the throttling effect of the narrow channels (such as Micalo and Oyster Channels) that connect the Lagoon with the Clarence River.

On the basis that Wooloweyah is a stressed waterbody, the Applicant highlights the importance of ensuring wastewater discharge from the prawn farm does not get into the Lagoon. To this end, the Applicant undertook an investigation of the flushing capability (tidal discharge) of Joss and Oyster Channels to determine the appropriate time and length that discharges may occur from the site without nutrients being transported back into Wooloweyah Lagoon. From the modelling results, the Applicant determined that the ideal time to discharge water from the site is during the first stages of the ebb tide only. The Applicant considers that this will ensure suitable dispersion of the farm's discharge and ensure discharge is not transported to the Lagoon.

The EPA raised considerable concern regarding the ability of the Applicant to ensure that wastewater discharged from the site would not be transported back into Wooloweyah Lagoon. These concerns were based on a number of factors including: the location of the discharge point; timing of discharge; and water velocities/ flushing capacity in the Channels surrounding the Island, particularly Joss Channel. The robustness of the hydrodynamic modelling undertaken was also questioned and the EPA requested further information from the Applicant on this. The Applicant provided this additional information and this is discussed further in the Department's Position below.

Issues raised in submissions

The EPA sought additional information from the Applicant on a number of occasions in relation to water quality issues. In particular, the EPA sought additional information on:

- Details of proposed measures to ensure that water discharged from the existing ponds and parts of the canal system and water discharged from the on-site sediment dams will meet the EPA Licence limits;
- Details of proposed measures to ensure that cleaning and maintenance of the canals does not lead to any polluted discharge from the site, including contamination from ASS;
- Details on the proposed operation of the settlement ponds to demonstrate that the proposal will meet the discharge licence limits;
- Details on the maximum daily discharge from the site;
- Details of the proposed methods of monitoring the volume of effluent discharged from the settlement ponds;
- Further details on the flushing capacity of Joss Channel

Many submissions from members of the public raised concern with the potential impacts the proposal would have on adjoining waterways with respect to water quality. Submissions cite that water quality within prawn farms is generally elevated with nutrients, elevated suspended solids and potentially, disease (see section 6.9 of the report). Submissions also highlight that Wooloweyah Lagoon is already a stressed environment, as identified in the Healthy Rivers Commission inquiry, and that further potential risk of contamination from new prawn farms should not be accepted.

Department's Position

Construction

The Department is supportive of the Applicant's proposal to create containment cells during the construction of the new ponds. The Department notes the Applicant's commitment to test the quality of the waters contained within the cell prior to discharge off-site. The Department is

supportive of such measures, however, notes that no specific monitoring program was provided.

Should the Minister determine to approve the proposed development, the Department recommends that the Applicant be required to meet the water quality limits as recommended by the EPA in its general terms of approval, prior to the discharge of any water from the site during construction works. The Department also recommends that the Applicant undertake water quality monitoring of the water prior to discharge to ensure that it meets the limits set by the EPA.

Operation

The Department notes that on several occasions, the EPA requested additional technical information from the Applicant in relation to water quality issues. Not all of the requested information was provided so in light of this, the EPA included in its general terms of approval, a range of conditions designed to minimise the impact of the proposal and to assess predictions made by the Applicant in relation to the proposed wastewater management strategy.

In particular, the Department notes concern regarding the flushing capability of Joss Channel and whether or not the Applicant would be able to ensure that nutrients would not be transported back into Wooloweyah Lagoon. Subsequently, in its general terms of approval, the EPA required the Applicant to locate the discharge point in a position to ensure effluent discharged from the site will never be transported into Wooloweyah Lagoon, and further, that a report be prepared and submitted to the EPA demonstrating the Applicant can comply with this, prior to the commencement of construction. The Department concurs with this and recommends such a condition be included in any instrument of consent, should the Minister approve the development.

The water quality limits set in the general terms of approval are consistent with the existing licence with the exception of the Total Suspended Solids which has a considerably lower limit (20mg/L compared with the existing licence limit of 60mg/L). The EPA considers this appropriate to assist in minimising the impact of the proposal on the receiving waters. The Department is supportive of the water quality discharge limits set by the EPA. Should the Minister determine to approve the proposed development, the Department recommends the adoption of these limits in any instrument of consent for the proposal. The water quality parameters/ pollutants required to be tested include Total Nitrogen, Total Phosphorus, Total suspended solids and pH.

In addition to the water quality monitoring requirements specified by the EPA, the Department also recommends the Applicant undertake additional water quality monitoring of the site and surrounds (particularly Wooloweyah Lagoon) to test whether the predictions made in the report required by the EPA in relation to the citing of the discharge point to ensure effluent does not reach the Lagoon, are being met. A Water Management Plan is also recommended as part of the recommended conditions.

The Department recognises that the proposal has the potential to impact on the quality of surrounding waterbodies, particularly Wooloweyah Lagoon, if not managed correctly. As previously stated, stringent monitoring and management of the site is required. As a further measure, the Department considers it reasonable to require the Applicant to meet certain performance criteria prior to proceeding to each stage of the development. Specifically, should the Minister approve the proposed development, the Department recommends the Applicant undertake monitoring of a number of key environmental factors, particularly water quality, during the course of Stage 1 of the development and provide a report to the Department demonstrating that it is meeting all required environmental limits before gaining the approval of the Director-General to proceed to the next stage of the development. A

similar program would need to be undertaken prior to the Applicant receiving approval to proceed from Stage 2 to the final Stage 3.

Importantly, the Department recommends ongoing monitoring throughout the life of the development to ensure the proposal is meeting its objectives. Should the results of monitoring identify that the proposal has had, or is having a significant impact, the Applicant would be required to implement a contingency plan and take remedial action to ensure that any issues are rectified.

The Department considers that the proposed development would not have a significant impact on the water quality of the surrounding environment provided the Applicant undertake and implement the measures described in the recommended instrument of consent.

6.4 Groundwater Impacts

Applicant's Position

Groundwater at the site generally occurs at a depth of approximately 1.4-1.5m below ground level. Groundwater was found to be highly saline with greater salinity found on the western side of the site. The Applicant states that groundwater on the west of the site is acidic, whereas on the eastern side it is slightly alkaline. Elevated nutrient levels are also evident as is tidal influence.

The Applicant states that excavation works at the site will not extend deeper than -0.8m AHD in the outlet canal and will generally be in the order of -0.3m AHD. Therefore, the Applicant notes there is the potential for excavation works to intersect groundwater.

The Applicant highlights that ponds and canals would not be lined with impervious material and hence there could be seepage from these areas into the groundwater. The Applicant intends to rely on insitu material to control seepage. In general, the Applicant does not consider that the proposal would have a significant impact on groundwater, given its existing quality, however, it notes that there may be some elevation in nutrient levels.

As part of the management of the farm, the Applicant prepared a management plan for groundwater which has been integrated with its Acid Sulfate Soils Management Plan. The Plan outlines parameters to be monitored, locations of monitoring bores, sampling methods and reporting requirements.

Issues Raised in Submissions

The EPA required detailed information to identify the potential quantity of water that will seep into the groundwater and preventative measures to be used to control seepage to groundwater. Two submissions from members of the public also raised concern with groundwater seepage.

The NSW Fisheries requested additional information from the Applicant with respect to pond-bottom permeability, citing that based on information presented to date, it did not think the ponds were capable of being completely drained.

Department's Position

Seepage

The Department notes that nutrient levels in the groundwater exceed ANZECC guidelines for aquatic ecosystems associated with estuaries at some areas of the site. Further, it is noted that the proposal may lead to increases in groundwater nutrient levels as the Applicant does not intend to line the new grow-out or wastewater ponds. Given this situation, the Department

requested the Applicant provide greater detail on the possible impact of the proposal on nutrient levels in the receiving environment. Ongoing monitoring of the groundwater will be required to ensure contamination does not occur.

The Applicant provided a supplementary groundwater report that provided further detail on the fate and impact of potential seepage, groundwater table intersection by earthworks and pond dryout.

With regards to groundwater seepage, the Applicant states that the outlet channels are expected to act as a seepage collector. Consequently, the Applicant states that almost all the seepage from prawn growing ponds will be intercepted and will flow and be pumped to the treatment ponds. The Applicant notes it is possible for water to seep from the treatment ponds into the main outlet channel with the maximum seepage expected to occur just after effluent discharge. The Applicant highlights, however, that this seepage water would form part of the monitored discharge. The Department is satisfied that potential seepage of nutrients from the site would be negligible when compared with the overall level of nutrients that are predicted to be discharged as surface water. Surface water discharge is discussed in greater detail in section 6.3. The Department highlights that any discharge from the site must meet strict water quality limits.

Pond-bottom permeability

NSW Fisheries raised concern regarding the ability of the pond to completely dry out due to the depth of the pond bottom in relation to the groundwater level. The NSW Fisheries noted that complete draining of the ponds is imperative to remediation practices undertaken between crops or in the event of a disease mortality event. Additional information was sought from the Applicant in relation to this.

The Applicant responded noting that the depth of the existing pond bottoms (Areas 1 and 2) is between RL 0.0m and RL -0.4m and would be similar or higher with the redeveloped ponds. Observed groundwater levels at the site suggest it is at or below mean sea level, hence the bases of the existing ponds would be at or below the water table. Therefore, for the ponds to dry out during the dry season, the rate of evaporation would need to be greater than seepage inflow from the surrounding groundwater table. The Applicant states that silty sands present at the site would facilitate the drying out and that during the previous prawn farming operations at the site, pond bottoms were able to dry out.

With respect to the new pond layout in Areas 3 and 4, the Applicant notes that the pond bottoms would typically range from RL 0.3m sloping to RL 0.0M at the pond outlet. Pond bottoms are expected to be situated at, or marginally below the water table and therefore, are expected to dry out more quickly than Areas 1 and 2. The NSW Fisheries did not raise any further questions in relation to this and subsequently provided its general terms of approval for the proposal.

Groundwater intersection

The Department also requested clarification from the Applicant as to whether the excavations will intersect the groundwater table as a Licence under the Water Act 1912 would be required if this occurs. The Applicant noted that groundwater intersection may occur under some conditions. Accordingly, in its General Terms of Approval, the Department required the Applicant to undertake construction of groundwater monitoring bores in accordance with Departmental requirements and upon completion, the Applicant must provide the Department with a map identifying the location of those bores. The Department recommends the inclusion of these terms in any consent should the Minister approve the development.

As part of ongoing management of the site, the Department recommends the implementation of a groundwater management plan to explore measures to minimise impacts on groundwater, should the Minister approve the development. The Management Plan should be consistent with the ASS and Water Quality Management Plan prepared by the Applicant to address issues raised by the Department and the EPA and should also identify operational processes that have the potential to impact on groundwater and provide subsequent management to prevent those impacts, monitoring of groundwater quality and a contingency plan should results of monitoring identify that the proposal has had or is having an adverse effect on water quality.

6.5 Flooding

Applicant's Position

The ground level on Micalo Island generally ranges from RL 0.3m to RL 1.3m. The Applicant calculated that the 1 in 100 year flood level on Micalo Island is approximately RL 2.2m and consequently, the island is classified as a "high hazard" flood area by the NSW Floodplain Development Manual. Flood proofing for residential development and fail-safe evacuation from the island is required in this type of area. The Applicant notes that the site in its existing configuration will flood to varying degrees in a 20 yr ARI flood and a 100yr ARI flood.

The Applicant notes that flood protection for the original prawn farm was achieved by use of the outer ponds and canal walls which were constructed to a height of between 2.2 and 2.5m AHD. The Applicant proposes to use these as part of the new proposal, however, there is a need to increase the height of some sections of the walls to the new proposed flood protection height of 2.5m AHD. New walls at flood protection height would also need to be constructed around the new northern and eastern pond and canal boundaries and it is proposed to construct these using material won from the site. The Applicant states that flood gates will be constructed as necessary where the outlet canal crosses the flood-proof barrier. The Applicant states that a gap in the outer bund wall approximately 10 metres in length will be repaired using material sourced from the site and will undertake periodic inspection of the site to ensure an effective flood barrier is in place at all times.

Modelling

The Applicant undertook an assessment of flooding effects utilising the 2-dimensional model (TUFLOW) developed for the Clarence River County Council. Flood simulations were run for the 5 year, 20 year, and 100 year ARI design floods using the assumption that there will be a system of 2.5m AHD bund walls and flood gates around the perimeter of the site. The results of the modelling for all scenarios showed that the site would remain free from flooding as the floodwaters would not overtop the bund wall system.

In relation to the 1 in 100 year model, the Applicant notes that as the predominant flow of floodwaters is generally from the north, there would be a slight increase in the peak flood levels (up to 5 cm) adjacent to the northern section of the bund wall (refer to Figure 6.1 of the EIS) due to the surcharge of water against the embankment. This increase, however, is confined to the area close to the bund walls and dissipates with distance from the site. Specifically, the Applicant notes that beyond a distance of 750m from the bund walls, the increase in peak flood levels would be negligible.

The NSW Government *Floodplain Management Manual 2001* states that new developments should not lead to an increase in received flood levels at nearby residences over and above that which would currently occur in the normal course of events. Based on the results of modelling and noting the residential homes present at the time of writing the EIS, the Applicant does not consider that flood levels will be altered at these homes.

As part of the proposed development, the Applicant states that the administration area, sheds, processing plant, storage areas etc. will be built on land that is above the predicted height for a 1 in 100 year flood event.

Issues Raised in Submissions

Numerous submissions raised concern as the site, and Micalo Island, are flood prone. These submissions also noted that if the site floods, there could be a risk of contamination in terms of nutrients and/ or disease from the site to external waters.

Two submissions from the public raised concern about the flood risk to nearby surrounding properties if the proposal goes ahead. In particular, since the EIS was exhibited, two new homes have been built. The EIS states that flood levels will increase extending 750 metres to the north of the site, and one of these submissions notes that there is now a home within this distance. A number of submissions also raised concern regarding the source of the material to be used to repair the flood walls at the site, particularly the potential for Acid Sulfate Soils being used.

Department's Position

The Department notes concern from two members of the public regarding flood impacts on nearby homes. The Department highlights, however, that whilst a minor flood level increase is predicted to be experienced up to 750m to the north of the site, an inspection of Figure 6.1 in the EIS reveals that the marginal increase will occur to the north of Stage 3 (the proposed new grow-out ponds in the NW of the site) where there are no current residences. The two new house mounds are located to the NE of the site where no changes to flood levels are expected to occur.

As part of the flood protection of the site, the Applicant will be required to undertake some repairs and extensions to the outer wall. The Department notes the Applicant intends to use material sourced from the site. As the development site has potential acid-generating soils, the Department highlights the importance of undertaking soil testing for all material proposed to be used on the site, and recommends that this be implemented should the Minister approve the Development. Additional management in relation to Acid Sulfate Soils is discussed in greater detail in section 6.6 of this report.

The Department is satisfied that the Applicant has provided adequate flood protection for the site. Should the Minister approve the proposed development, the Department recommends the Applicant provide adequate flood protection to exclude at least a 1 in 100 year flood from the site. Further, the flood management system at the site must be consistent with the NSW Government's publication *Floodplain Management Manual: the management of flood liable land (2001)*, or as amended.

6.6 Soil Impacts

Applicant's Position

Acid Sulfate Soils

A study of Acid Sulfate Soils (ASS) and potential ASS was undertaken in 2000 with a further study undertaken as part of the preparation of the EIS to provide an understanding of ASS on-site.

The results revealed that there were only local occurrences of ASS, with mostly low acid generating potential within the bund fill material and locally in the underlying soils beneath the base levels of the ponds. Specifically, whilst Jarosite soils were found to be present in portions of the bund wall, the results of laboratory analysis, surface water quality data and field

observations indicated that acid production has ceased or is continuing at a rate that is not having an observable or measurable effect on water quality.

Potential ASS materials were identified in the north western area of the site in the saturated sand stratum at a depth of approximately 1.0m below the natural surface. Potential ASS materials were also encountered below the inferred former natural ground surface in the existing pond area. Laboratory testing of soils in the northern portion of the site indicated that disturbance of soils from below the water table is likely to result in acid generation if soil amelioration is not undertaken.

Proposed Mitigation

The Applicant states that all efforts will be made to ensure potential ASS materials present on site are not disturbed. Where disturbance is unavoidable, substantial liming of soils will be required to ensure that acid production is neutralised.

In particular, as construction works for each area will be undertaken in a contained situation, the Applicant states it will be possible to manage the amount and quality of water permitted to leave the site, including potentially acidified water.

As potential ASS are present on site and the Action Criteria (Table 4.4 of the ASSMAC Guidelines) could be exceeded if such materials were excavated/ oxidised, an Acid Sulfate Soil Management Plan is required to guide site development and environmental monitoring activities. Accordingly, the Applicant prepared a draft management plan as part of the EIS which is briefly discussed below.

The Plan addresses issues in relation to key construction and operation stages, such as the perimeter bund wall rehabilitation and management. The objectives of the Plan are to: protect the water quality of the surrounding environment; minimise disturbance to ASS and potential ASS materials; ensure neutral conditions are maintained in the grow-out ponds; ensure all water discharged from the site meets the EPA recommended pH range (6.5 to 8.5); and to effectively control any release of acid from the oxidation of potential ASS. The Applicant considers the Plan conforms with the ASSMAC guidelines.

Erosion and Sediment Control

The Applicant states it will manage erosion and runoff water in accordance with measures incorporated into an Erosion and Sediment Management Plan. The Plan will identify:

- areas not to be disturbed by construction activities and areas to be used for topsoil storage;
- where temporary fences, detention basins, drainage and bunds are to be installed;
- where lime storage areas are to be installed;
- measures for revegetating and stabilising disturbed areas; and
- measures for undertaking a visual inspection of the site.

Issues Raised in Submissions

The impact of acid sulfate soils on the surrounding environment was a key issue raised in many submissions, particularly concerns regarding the release of acidified water in to the surrounding waterways and concern over the reuse of potential ASS material on-site during construction works.

A number of submissions received from members of the public and interest groups raised concern with potential erosion impacts associated with the development. There was some concern with the design of the ponds and batter walls and that vehicles driving between the ponds could contribute to erosion problems. Concern was also raised in relation to dredging of the water canals and potential erosion impacts. A submission from a member of the public

stated that it did not want the inlet canal to be widened or touched in any way without consultation and approval.

Department's Position

Acid Sulfate Soils

The Department considered that the Applicant had undertaken inadequate sampling of the site in order to identify the extent of ASS and potential ASS. Accordingly, the Department recommended as part of its general terms of approval, that during construction, all excavated material be tested for the presence of ASS.

In response, the Applicant highlighted that additional testing for ASS was always recommended as part of its Environmental Management Plan, however, to address the issues the Department had with the initial assessment, the Applicant prepared a more detailed *Acid Sulphate Soil and Water Quality Management Plan* than that presented in the EIS. The Plan included details on the handling of ASS material and water quality matters to ensure neutral pH is maintained at all times both within the growing ponds and the external environment as a result of development activities both during construction and operation. The Department is generally satisfied with this updated draft management plan.

Should the Minister determine to approve the proposed development, the Department recommends the Applicant be required to undertake testing of all disturbed soils for the presence of ASS and implement appropriate management measures consistent with those proposed in the management plan provided to the Department as additional information and the *Acid Sulfate Soils Manual*, in the event ASS are encountered. The Department is satisfied that the proposal could be undertaken with minimal impact to the environment in terms of ASS provided the measures outlined above are implemented to manage and minimise the risk of acid generation and the release of any acidified material to the surrounding environment.

Erosion and Sediment Control

The Department notes issues raised in submissions regarding erosion impacts, particularly in relation to the pond design. An Erosion and Sediment Control Plan is proposed as part of the development and the Department is supportive of this. Should the Minister determine to approve the proposed development, the Department recommends the imposition of an Erosion and Sediment Control Plan.

Dredging and Reclamation Works

As part of its assessment of the proposal, the NSW Fisheries highlighted that the Applicant would require a section 201 permit under the *Fisheries Management Act 1994* for dredging and reclamation works proposed as part of the development, specifically for repairs to the floodgate and breach in the bund wall. To this end, should the Minister determine to approve the proposed development, the Department recommends that the Applicant obtain a section 201 permit from NSW Fisheries for all dredging and reclamation works subject to such an approval. Further, all works undertaken should be done in a manner consistent with the measures outlined under an Erosion and Sediment Control Plan to ensure that damage or erosion to adjoining waterways or their banks are minimised.

The Department notes some concern raised in submissions about the extent of works in the inlet canal. It should be noted that under the terms set out for the easement and associated inlet canal, the Applicant is permitted to use any tools or machinery necessary for the purpose of repairing and maintaining the canal and is permitted to remain there for any reasonable period to undertake those works. Despite this, the Department acknowledges that the inlet canal traverses through portions of land not owned by the Applicant and further, that some homes have been built on these properties near the inlet canal in the last few years. Therefore, to minimise disturbance to adjacent landowners, the Department recommends that

the Applicant be required to consult and notify all adjacent landowners of the works prior to those works commencing. The Applicant has been consulted in relation to this approach and raised no objection to it.

6.7 Noise Impacts

Applicant's Position

Background Noise Levels

The Applicant undertook a noise survey at the nearest dwelling on Palmers Island (approximately 1 kilometre to the west of the site) in order to determine the background noise in the area. The Rating Background Noise Levels (L_{A90} , RBL) for each time period is shown below:

- Day (7am to 6pm) 33 dB(A)
- Evening (6pm to 10pm) 32 dB(A)
- Night (10pm to 7am) 30 dB(A)

Construction Noise

The EPA's *Environmental Noise Control Manual* (ENCM) stipulates maximum noise levels from construction activities depending on the duration of the works. For construction periods of between 4 and 26 weeks (which this development is proposed to be), the maximum noise level permitted is the RBL plus 10 dB(A). Therefore, a construction criterion (L_{10}) of 43 dB(A) during daylight hours has been set for the project.

At the time of writing the EIS, the closest known residential receiver to the site was at an existing prawn farm located approximately 1 kilometre to the west on Palmers Island. Other potential noise-sensitive receivers are located between 1.5 km and 3 km from the site (refer to Figure 1). The Applicant has also identified the Clarence Estuary Nature Reserve migratory bird habitat as being a potential noise-sensitive receptor.

The assessment of construction noise was undertaken using the RTA's Environmental Noise Model (ENM) software. The results of the noise modelling were presented in the EIS as noise contours overlain on a topographical map of the locality. The model showed that the noise criterion of 43 dB(A) L_{10} would not be exceeded at the nearest residential receptor which was predicted to receive in the order of 30 dB(A). The Applicant highlights that construction noise will fall within the range of normal background noise levels at this residence.

Operation Noise

Noise Criteria

In accordance with the EPA's *Industrial Noise Policy* (INP), the project specific noise levels (PSNLs) for the operation of the development have been determined using the intrusiveness criterion (defined as the RBL plus 5 dB(A)). The PSNLs are as follows:

- Day (7am to 6pm) 38 dB(A) $L_{eq, 15 \text{ min}}$
- Evening (6pm to 10pm) 37 dB(A) $L_{eq, 15 \text{ min}}$
- Night (10pm to 7am) 35 dB(A) $L_{eq, 15 \text{ min}}$

In order to protect against sleep disturbance, the EPA's ENCM specifies the $L_{A1, 1 \text{ min}}$ noise level from an intrusive source should not exceed the night background noise level by more than 15 dB(A). In the case of the proposed development, this would imply a sleep arousal criterion of 45 dB(A), $L_{A1, 1 \text{ min}}$ during the night.

Modelling

The Applicant identified the potential noise generating equipment that would be used during the operation of the development. These include paddle wheel motors, inlet pumps, supply pumps and the refrigeration system.

The Applicant states that there will be a total of 86 ponds each with 8 paddle wheels that are used for aeration. For modelling purposes it was assumed that at any one time during the night period, 50% of the paddle wheels in each pond system would be operating. It was assumed that no pumping for filling or emptying of individual ponds would occur outside of daylight hours. A refrigeration system on site will operate 24 hours per day to freeze product prawns.

The Applicant used the RTA's Environmental Noise Model (ENM) software in order to predict the level of noise received as a result of the proposed development. The model was undertaken for two separate scenarios, day time and night time

The results of modelling for operational noise emissions for both the day and night time operating scenarios showed that there will be no predicted noise impacts at any identified residential receiver as a result of noise emissions from the proposed development. In particular, the received noise at the nearest dwelling on Palmers Island is well below 25 dB(A) during both the day and night operations.

The Applicant states that most operations at the site will occur during the day only. Therefore, the impact of the development on sleep disturbance is likely to be minimal. Indeed, the results of monitoring show that the maximum noise levels received at the most affected residences on Palmers Island would be less than 30 dB(A) at night under adverse weather conditions. From this, the Applicant highlights that for the sleep arousal criterion to be exceeded, the sound power level from equipment would need to be of the order of 120 dB(A). The Applicant notes that this type of sound level is equivalent to a jackhammer hammering concrete. The Applicant considers it unlikely that such events will occur at night as operation during this time is expected to be minimal.

Road Traffic Noise

At the time of the initial noise assessment, the Applicant was proposing to use the private road which traverses the eastern side of the Island to access the site. Several properties on Micalo Island access their properties from this road. The Applicant is now proposing to use its right-of-carriageway (or slightly modified) to access the site. The Applicant notes that there are no nearby residences to this road and therefore considers that road traffic noise issues will be negligible.

This position is considered justified by the Applicant as the initial road traffic noise assessment which was based on the original site access, demonstrated that it could meet the criterion of 55 dB(A) $L_{Aeq, 1hr}$ for road traffic noise on local roads (which Micalo Road is) for all residences located at a distance greater than 5 metres from the centre of the road.

Clarence Estuary Nature Reserve

The Applicant notes that the specific policy objectives of the INP are to establish noise criteria to protect the community from excessive noise from industrial sources. As such, it makes no reference to the impact of industrial noise on the natural environment and sets no criteria in this regard. The Applicant states it has undertaken research into this topic and found no previous studies that relate to the impacts of noise (from industrial or other sources) on migratory species or the impact of noise on bird species in the Clarence Nature Reserve. To this end, the Applicant argues that it is not feasible to set noise criteria or operating limits relating to potential impacts on wildlife in the nature reserve.

Notwithstanding, the Applicant notes that results of noise monitoring during the operational phase of the development show that under a worst-case scenario, the maximum noise emissions received at the Nature Reserve would be 35 dB(A), with the majority of the site receiving much less. These emission levels are approximately equal to the background noise levels during the day and evening and within 5 dB(A) of the night-time background noise levels. Therefore, the Applicant considers it unlikely that the farm would unduly disturb wildlife.

The construction of Area 1 has the greatest potential to cause noise impacts as it is closest to the Nature Reserve. However, construction of the ponds in Area 1 will take place during the dry season when migratory birds are unlikely to be using the Reserve, hence the disturbance to these birds is not expected to be significant. Noise levels during construction of Areas 2-4 at the Reserve are predicted to be less than 35 dB(A).

Noise Attenuation Measures

The modelling undertaken by the Applicant demonstrates that the prawn farm could be constructed and operated within the acceptable noise limits provided activities on the site are undertaken in a responsible manner. To ensure that the prawn farm can operate within the guidelines, the Applicant proposes the following measures:

- construction shall be undertaken during daylight hours;
- all plant equipment will be maintained in efficient working order and checked on a regular basis;
- all mechanical plant items will be fitted with mufflers and silencers, and vehicles and equipment will be turned off when not required;
- fixed plant items will be housed in enclosures with noise insulation, where practicable; and
- a complaint management protocol will be established as part of the site management procedures and will be used in the event a noise complaint is received.

Issues Raised in Submissions

A submission from a member of the public raised concern with the number of vehicles associated with the development that would be accessing Micalo Road. The submission also noted that they had already been subjected to noise from the previous prawn farm and sugar cane activities on the site and considers there will be similar impacts with this proposal. Other submissions also raised road traffic noise as being of concern.

Another submission from the public raised concern over construction noise citing that since the writing of the EIS, two new homes have been built in close proximity to the proposed development site and were therefore not considered as part of the noise impact assessment for the EIS. The submitter claims that construction noise limits would be exceeded at their home. A further submission from a private resident raised concern with respect to noise pollution associated with the operation of the development.

Department's Position

Construction Noise

Due to the staged construction of the proposal, the Department considered that the construction noise criteria of 43 dB(A) was not appropriate and therefore considered that the operational noise criteria would be a more appropriate limit for the Applicant to meet. The Department's assessment has determined that the relevant day time operational noise criteria of 38 dB(A) could be met at all noise-sensitive receptors.

As identified in a submission received from a member of the public, two new homes have been built on Micalo Island since the initial noise assessment was undertaken. The Department

believes that construction noise received at these properties would be approximately 37 dB(A) during the day, which meets the construction noise limit set by the Applicant, and the recommended limit of 38 dB(A) set by the Department.

Since the Applicant indicated it proposes to undertake construction during daylight hours only, the Department has recommended that the Applicant undertake construction during daylight hours only and further, that the Applicant be required to meet the operational noise limits during those times. The Department also recommends the Applicant implement a community complaints protocol which includes the establishment of a 24-hour toll free telephone number, a postal address and e-mail address (should e-mail facilities be available) to which complaints may be sent. The Applicant would be required to follow up on all complaints registered and record what action (if any) was taken in response to the complaint.

Operation Noise

In relation to operational noise, the Department is satisfied that the proposal will meet the relevant project specific noise limits (PSNL) of 38, 37 and 35 dB(A) that apply for the day, evening and night periods, respectively, at all nearby noise-sensitive receptors, including the two new homes built since the noise assessment was undertaken. In its general terms of approval, the EPA recommended that operation activities be required to meet the PSNLs. The Department concurs with this and recommends these limits be adopted in any conditions of consent for the proposal, should the Minister approve the development.

Road Traffic Noise

The Department notes concern raised by members of the public in relation to road traffic noise. The Department is satisfied with the traffic noise assessment and notes the 55 dB(A) $L_{Aeq, 1hr}$ noise criteria could be met as all homes located on Micalo Road since they are greater than 5 metres from the centre of the road. Therefore, the Department does not consider that the proposal would have a significant impact in terms of road traffic noise. The EPA raised no issues with the proposal in terms of road traffic noise. In addition, the Department notes the Applicant is no longer seeking to gain access to the site via the private road which extends along the eastern side of Micalo Island, but instead via its right-of-carriageway (or as modified). This has the positive benefit of reducing potential conflicts with other road users on Micalo Island. The Department is supportive of this and has recommended a condition be imposed that restricts the Applicant to accessing the development site via its right-of-carriageway (or as modified) (refer to section 6.8 for greater detail) only.

Other Noise Impacts

In relation to the Clarence Estuary Nature Reserve supports the Applicant's position that the proposal is unlikely to significantly impact on the fauna within that area given construction will typically occur during the dry period when migratory birds are not present, and that the major noise associated with operation is the low-level sound associated with the constant aeration and pumping of the ponds which is neither intermittent nor impulsive in character.

Should the Minister approve the development, the Department recommends that as part of a Terrestrial Flora and Fauna Management Plan prepared for the development, the Applicant be required to take into consideration timing of construction activities to minimise potential impacts on migratory birds and their associated migratory patterns.

6.8 Transport Impacts

Applicant's Position

Background Traffic

Access to Micalo Island is gained from Micalo Road via Yamba Road (see Figure 4). Traffic volume data for Yamba Road near the Micalo Road/ Yamba Road intersection is available for the Christmas/ New Year period in 1999/2000 which provided an indication of the peak traffic volumes through the area. This portion of Yamba Road was found to have a B level of service as defined by RTA standards as its average daily traffic volumes are less than 6800 vehicles per day (vpd). Average peak hour figures over the same holiday period were found to be between 500 and 600 vehicles per hour.

Site Access

Since the writing of the EIS, there have been some changes to the proposed access route to the site. The initial proposal saw vehicles accessing Micalo Island along the private road that connects to the public road in the south. The Applicant now proposes to use its right-of-carriageway (or as-modified) to access the site (shown in Figure 4) in order to establish an access as far removed from the other island landowners as possible to minimise potential impacts.

Where the new section of road is to be established, the Applicant notes that the land is old cane land now used for grazing and is similar to the land required to be cleared for Stage 3 of the development. The new section of road will require forming, gravelling and the existing right-of-carriageway will require some reforming and gravelling before the entire length is bitumen sealed.

The Applicant states that construction of the bitumen road access to the site and sealing of hard stand areas in the administration area will take place early in Stage 1 of the proposal.

As discussed in section 3.1 of this report, there are a number of roads that traverse the site which in some circumstances, provide access to other parts of the island. Of particular interest is the road that runs east-west between the tidal supply canal and the distribution canal. Lands NSW has requested that the Applicant close this road if approval is granted. Should the Applicant close this road, access to some portions of land not owned by the Applicant would be affected. The Applicant understands and is prepared to provide access to these portions, either by the establishment of a right-of-way for the interested parties, or an alternative access may be arranged over the supply canal. Should the second option be preferred, the Applicant highlights that care would need to be taken to ensure that there is no unnecessary impediment to the flow of the canal.

Construction Traffic

The Applicant anticipates the site construction workforce to be between 5 and 20 people depending on the particular activity occurring on site at any one time. The Applicant states the worst-case scenario would occur when all employees arrive and depart at the same time and use their own vehicle, resulting in the traffic generated to be a total of 20 trips in one direction in a one hour period. The Applicant anticipates that these trips would occur between 6:00am and 7:00am inbound and 3:00pm and 4:00pm outbound.

Traffic generated by heavy vehicles is expected to be minimal, generally one per day. The Applicant expects that at a maximum, 8 truck and trailer units would access the site to deliver quarry material to the site during the period in which the administration building and hardstand areas are being built, however, this would only occur between the hours of 8am – 4pm, 6 days a week.

At the time of writing the EIS there were two permanent residences on the island which used Micalo Road to gain access to their properties. Given the capacity of Yamba Road and the expected timing of traffic movements through Micalo Road/ Yamba intersections, the Applicant does not consider that the level of service on Yamba Road would be affected by the proposed development.

Operation Traffic

The Applicant states there will be approximately 22 people employed at the prawn farm under normal operating conditions. The Applicant states that two of the workforce will live on site with their families and hence, the worst-case scenario would be 20 employees driving their car to and from work during a one-hour period. A summary of the anticipated traffic generated during the operation of the prawn farm is described in Table 2 below.

Table 2. Traffic generated during the operational period of the proposed prawn farm (total number of vehicles)

Vehicle Type		Morning peak period	Afternoon peak period	Total No. of vehicles per working day
Light vehicles (employees)		20 (7am – 8am)	20 (5pm – 6pm)	40
Light vehicles (residential)		2	2	8
Commercial vehicles	Light truck	-	-	1
	Light vehicle	-	-	1
Semi-trailers (delivering produce to market)		-	-	1 (max 6 per week)

The Applicant considers that the level of service of Yamba Road and the intersection of Yamba Road/ Micalo Road would not be affected by the proposed development given the expected timing of traffic movements through the intersection and the capacity of Yamba Road.

Intersection Upgrade

As discussed above, the only road access to Micalo Island is via Yamba Road, then Micalo Road. Yamba Road is a two-lane, sealed road and is classified as a sub-arterial road. Micalo Road is a rural standard, gravel road. The current Micalo Road/ Yamba Road T-intersection has no turning lanes, limited shoulders, little room to manoeuvre and is located on a bend thereby restricting the visibility. With the increasing volumes of traffic using Yamba Road, the Applicant notes that safety at this intersection is of increasing concern. The Applicant states that widening of the seal at this point would improve the level of safety for turning traffic at that intersection.

Issues Raised in Submissions

A number of submissions from members of the public raised concerns over the safety of the Yamba Road/ Micalo Road intersection citing that it currently is hazardous and that any increase would only worsen the situation. Several submission also raised concern about general traffic increases on the local roads, particularly Micalo Road and associated road traffic noise impacts. Other submissions also raised concern regarding the proposed road closures and the implications of access to portions of land that rely on those roads.

In its submission, the Roads and Traffic Authority state that the Yamba Road/ Micalo Road should be upgraded to a Type B intersection. The submission also states that Micalo Road should be upgraded in accordance with the requirements of Council and that section 94 contributions be made to Council based on haulage rates to and from the development site to allow for future maintenance of the road.

The general terms of approval from Council provide detail on how and what roads are required to be upgraded. The GTAs also require the intersection of Yamba Road/ Micalo Road to be upgraded to a Type B intersection for safety reasons.

Department's Position

The Department is supportive of the Applicant's proposal to use its existing right-of-carriageway, or a modified form in order to gain access to the prawn farm site rather than the private road as discussed in the EIS. It is considered this option will minimise traffic related impacts on the Island's residents, including potential safety conflicts between vehicles associated with the farm and other vehicles accessing Micalo Island.

The Department notes that some clearing of vegetation would be required in order to make the right-of-carriageway (including the modified option) usable for vehicles. The Department is however, satisfied that the vegetation is not unique and unlikely to be providing habitat for wildlife, hence its removal would not result in any negative impacts.

Should the Minister determine to approve the proposed development, the Department recommends that vehicles associated with the proposed prawn farm be restricted to using the right-of-carriageway (or as modified) to access the site. The Department is also supportive of the road being constructed early on in the proposal, and considers that it should be constructed prior to the commencement of any other construction works at the site to ensure that construction vehicles are not accessing the site via the private road.

In relation to internal roads, the Department notes that submissions raised concern that the Applicant would close the road that traverses east-west along the northern portion of the property, thereby restricting access to privately owned land. In response to these concerns, the Applicant stated that it would provide access to these portions of land either by establishing a right-of-way for relevant parties or by negotiating alternative access to the site. The Department is supportive of such measures and recommends that the Applicant be required to provide access to those privately owned portions of land in a manner that is mutually acceptable to all parties.

The Department is satisfied that construction related traffic impacts would be minimal given that the majority of vehicles accessing the site are small vehicles for employees. While for operational traffic, the Applicant's use of its right-of-carriageway rather than the private road, will also minimise potential traffic impacts.

Both the RTA and Maclean Council recommend that Micalo Road be upgraded to take into account the increase in road usage from the proposed development. The Department agrees with this and has recommended that the Applicant be required to upgrade the intersection to a Type B, including appropriate turning and deceleration lanes and a slip lane for vehicles to pass other turning vehicles.

For this development, section 94 contributions are not considered to be warranted. This position is supported by Maclean Council who did not request these contributions.

6.9 Hazards and Risk Impacts

Applicant's Position

The Applicant notes that the main potential hazards associated with the proposed development relate to increase in flooding levels at residences in the locality, release of disease and non-native prawn species into the environment and the accidental release of acid water and nutrients to the environment.

Disease

The first issue has been discussed elsewhere in this report. With regards to disease management, the Applicant proposes to undertake a series of measures to monitor prawn health and to isolate and remedy disease outbreaks, should they occur.

The Applicant highlights that the farm has been designed with three separate pond grow-out systems and a separate experimental pond area. Each area has its own water reticulation and wastewater systems which can be isolated should the need arise. Each individual pond can also be isolated from other ponds. The Applicant considers that this arrangement will allow for the ready isolation of disease outbreaks, should they occur. In addition, the Applicant states it will be screening all pond outlets and the settlement pond and water pump inlets to prevent the escapement of prawns from the ponds themselves and off-site.

The Applicant states that the following protocols would be adopted for operations of the proposed development:

- No live prawns would be brought into NSW without NSW Fisheries approval;
- NSW Fisheries would be notified within 24 hours of the discovery of any declared disease;
- Outlets to the development would be appropriately screened;
- Effluent would not be released into the surrounding waterways without EPA approval; and
- Samples of all stock will be submitted to NSW Fisheries for White Spot Syndrome Virus.

The Applicant also intends to implement a Disease Prevention Program to lessen the risk of disease outbreaks on the farm. The program will include procedures for checking daily pond water quality, checking stock for signs of unusual behaviour, routine laboratory examination of stock samples, immediate isolation of diseased ponds and the prompt disposal of diseased stock and wastes in an approved manner.

With respect to the disposal of diseased stock, the Applicant states that it will be done in accordance with NSW Fisheries requirements. Following isolation of the pond(s), the process most likely to be used would be to determine what the disease is and whether or not it is treatable. If treatable, an appropriate program would be undertaken. If not, chemical sterilisation of the stock and associated pathogens would be undertaken, the pond water would be neutralised and drained off. The Applicant would then incinerate insitu all organic matter in the pond, prior to the reconditioning of the pond in preparation for the next season's crop.

Storage of Fuels and Chemicals

With regards to the storage of fuels and chemicals on site, the Applicant notes that the risk is small given that the quantities on site are minimal and storage of all chemicals will take place in bunded enclosures in accordance with all relevant State guidelines. The storage of lime to be used in the neutralisation of ASS on-site will also take place in a bunded enclosure that will be designed to contain any leachate produced.

Pesticide Residue

The Applicant also investigated whether any pesticide residues were present in the soil in the northern part of the site where sugar cane growing and agricultural activities had been undertaken in the past. The results of testing revealed no presence of pesticide residue.

Issues Raised in Submissions

Several submissions were received from the public on disease related issues, particularly on the potential accidental release of contaminated water and of prawns to the external environment. A submission received from a member of public also raised concern regarding safety aspects associated with pumps on site, and the potential for children to fall in to the ponds and be injured by the operation of the pumps.

Department's Position

Disease

The Department and NSW Fisheries are supportive of the measures proposed to be undertaken to minimise the risk of disease outbreaks at the farm. Should the Minister determine to approve the proposed development, the Department recommends the Applicant be required to implement a Disease Prevention Program similar to that described in the EIS. Additionally, the Program should detail measures to dispose of and/ or treat potentially contaminated water, particularly with regards to testing the water for pathogens and timing of treatment and/ or disposal. Disease management should be done in accordance with the requirements of NSW Fisheries.

The Department notes that the internal waste-water canals and settlement ponds associated with each of the four separate grow-out pond systems provide added protection from diseased stock/ water. The Applicant provided additional information on this issue noting that any diseased stock/ water would initially be located in the grow-out ponds. Water/ stock would need to get into the waste-water canals and then into the settlement ponds and in the process, pass through the screened pumps which prevent stock moving in to the settlement ponds. The Department considers the risk of such a scenario occurring to be small.

Storage of Fuels and Chemicals

The Department is satisfied that the proposed development is unlikely to present a significant risk to the environment in terms of the storage of fuels and chemicals. The Department is supportive of measures to bund areas where these fuels and chemicals are stored. Should the Minister determine to approve the proposed development, the Department recommends the Applicant be required to store and handle all dangerous goods and combustible liquids strictly in accordance with all statutory requirements, which includes bunding of storage areas.

Safety

In relation to safety concerns, the Department acknowledges that all pumps associated with the development will be located on-site, with a pump to be located at the northern end of the inlet canal which is within the easement. The Department, therefore, considers it unlikely that children will come in to contact with the pumps located on the prawn farm, however, there is some potential for children to come into contact with the pump located within the easement. To this end, the Department recommends that the Applicant be required to provide adequate signage adjacent to the pumps identifying that pumps are present. Further, the pumps are to be installed in a manner that minimises or prevents the risk of injury to persons, to the satisfaction of WorkCover NSW and any other relevant regulatory bodies.

Accidental Release of water or stock

In relation to concerns raised in submissions on the risk of accidental discharge of pond water or prawns, the Department notes that the Applicant will screen all outlets to ensure prawns cannot escape from the site. This is also reflected in the NSW Fisheries general terms of approval. Should the Minister approve the development, the Department recommends a condition be included that requires the Applicant to undertake measures to prevent the escapement of prawns and further, that all outlets be appropriately screened.

Additionally, it was noted by the Applicant that prawn species permitted to be farmed on-site are regulated by the NSW Fisheries and that the species permitted to be grown in an area are those which naturally occur in the region. The Department concurs with this. Should the Minister approve the proposal, the Department recommends the Applicant be restricted to growing those species listed in the EIS, (which the Department notes are listed on the existing NSW Fisheries permit). Notwithstanding, the Applicant would be permitted to cultivate other

species on site provided it meets the requirements of the NSW Fisheries. The Applicant should be required to provide the Department with a list of any changes to the species grown at the site.

The Department sought further information from the Applicant in relation to the accidental release of pond water from the site. The Applicant provided this information noting that the pond system has been designed in a manner where each stage and ponds can be isolated from each other. The only exit point from the site would be via the discharge point into Joss Channel. In order for accidental releases to occur, numerous outlet points within the system would need to fail as well as the final discharge outlet. Such a scenario is considered unlikely to occur. Notwithstanding, the Department notes that water released into the outlet channel for discharge to Joss Channel should already have been in the settlement ponds for the designated period of time (specified in the proposed instrument and EPA licence) prior to being released to the outlet channel. Therefore, even if there was an accidental release of water located in the outlet canal, it should technically already meet the specified water quality limits.

6.10 Socio-economic Impacts

Applicant's Position

During construction of the proposed prawn farm, the Applicant expects some 20 positions will be created. Once the prawn farm reaches full production, the Applicant states there will be 22 permanent positions created.

The Applicant expects to source the construction contractors from the local area and considers that this will help to maintain and/ or create jobs in the area. Following a review of the Maclean area's employment structure, the Applicant identified a large pool of unemployed labour with the requisite skills for the farm. Therefore, the Applicant expects to employ 20 of the permanent positions from the local area with the two remaining positions (Manger and technician) coming from outside the area. The Applicant notes that some additional casual labour may be required during the harvest season from March to July.

The Applicant considers it unlikely that there will be a noticeable increase in the area's population should the proposal go ahead. The only small increase will be from the two families that will move to the property. The Applicant considers the Council's existing infrastructure will be able to adequately deal with this increase in population.

Potential Markets

The Applicant intends to target the Sydney and Melbourne metropolitan markets, particularly the premium end of the market with medium-large prawns. The offshore market is considered to be vast and profitable, however, the Applicant states the success of such a venture requires a dependable supply of large volumes of top quality prawns which, unless the farm expand or development marketing alliances with other farmers, is not yet viable. At full production, the Applicant expects to produce up to 590 tonnes of prawns each year.

Commercial and Recreational Fishing

Commercial fishing in Wooloweyah Lagoon centres on the catching of school prawns and mullet, which makes up a significant proportion of the total catch of these species for the Clarence Estuary. The Applicant notes that the waterways of Micalo Channel, Oyster Channel and Wooloweyah Lagoon are extensively used by recreational fisherman targeting bream, flathead, blackfish, jewfish, whiting, mullet and mudcrabs.

Joss Channel, forms part of this aquatic ecosystem, hence, any changes to the water quality in this channel has potential implications for the fish species and in turn, commercial and

recreational fishing. Provided discharge of wastewater from the site meets EPA requirements and is discharged in a manner that prevents it from returning into the Lagoon, the Applicant considers that the proposed development would not have a measurable effect on water quality and therefore would not affect commercial and recreational fishing opportunities in the area.

Site Rehabilitation

Should the proposal be decommissioned, the Applicant states it would be impractical to try to reshape the landform back into its original state. The Applicant states it would dismantle and sell off all removable items such as pumps. The pond and canal system would be left in place and a new owner sought for the site.

Issues Raised in Submissions

One submission from a member of the public stated its support for the proposal and considers that it will be a modern facility that will enhance and ensure the prosperity of the business and the local community.

A submission from a member of the public considered that the projected production rates were unrealistic and that the capital generation and employment was not likely to be achieved. Several other submissions also considered the employment generation and economic gains to the community to be unrealistic.

The submission from the Department of State and Regional Development noted that unemployment rates in Maclean Shire are almost double that in all of NSW and that investment and job creation initiatives in the area are therefore needed and welcome.

Many submissions received during the public exhibition of the proposal requested that a bond be provided by the Applicant to provide security in case this proposal fails. This was considered justified on the basis that a previous prawn farm located on the site also failed. The National Parks and Wildlife Service also suggested that a bond system be put in place in case the venture fails and that the Applicant should be required to remove all infrastructure. The lack of detail provided by the Applicant in relation to site rehabilitation was also raised as an issue of concern by a number of submitters.

Submissions received from members of the public also raised concern with the proposal citing that Wooloweyah Lagoon is used for tourism and commercial fishing and any that the threat of the proposed development in terms of water quality impacts could affect the viability of these existing uses. Numerous submissions received from the public requested that the development site be incorporated into the adjacent Clarence Estuary Nature Reserve.

Department's Position

The NSW Government recognises the important contributions 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. To this end, *State Environmental Planning Policy No 62 – Sustainable Aquaculture* was developed in order to encourage and promote ecologically sustainable aquaculture development throughout the State.

At full operation, the proposed development will provide 22 new jobs. As previously discussed, the Applicant expects to fill these positions from within the local area. The Department notes that the unemployment rate in Maclean Shire is well above the State's average (estimated at 14.1% in 2000) and that additional employment opportunities for the area are beneficial.

Impact on other local industries

Several submissions objected or stated concern with the proposal on the basis that it may contribute further to water quality decline in Wooloweyah Lagoon which is used for tourism and commercial fishing. They argued that any threat to this Lagoon could in turn threaten these industries resulting in a loss of jobs. The Department recognises these concerns, however, it considers that with the stringent monitoring and management requirements recommended, the risk will be minimal.

Site Rehabilitation

The Department sought additional information from the Applicant in relation to site rehabilitation and what measures would be implemented in the event the proposal is decommissioned. The Applicant responded and indicated that site infrastructure such as bird netting, paddle wheel aerators, processing plant and machinery shed contents would be removed, chemical storage would be removed and remediated if any contamination is identified, the grow-out ponds would be harvested, drained and dried out and the pond bottom wastes rendered sterile, any areas disturbed would be rehabilitated to control erosion and public access to the site would be controlled by appropriate fencing and monitoring by security. The Department is generally supportive of the measures proposed by the Applicant in the event the development is decommissioned.

Notwithstanding the above, the Department recommends the Applicant be required to prepare and implement a Management Plan in the event the proposal is decommissioned. The Management Plan should include details of the measures that would be undertaken to remove infrastructure from the site, including bird netting, site security and the roles and responsibilities of employees at the site in relation to works being undertaken during the decommissioning.

The Department notes a number of submissions raised the issue of the Applicant providing a bond to ensure that any rehabilitation of the site could be financed should the proposed development fail. The Department understands that the original prawn farm venture was considered to be unsuccessful due to poor farming techniques.

The Department appreciates the concerns of the public, however, in this instance it considers that a bond is not appropriate. However to address the issue raised, the Department has recommended that the proposed development be implemented in Stages with approval to proceed to the next Stage of development being contingent on the development meeting a number of key environmental performance criteria. These include meeting specified water quality limits, ensuring avifauna and seagrasses are not affected, ensuring the proposal is complying with all relevant licences and permits and that the development is consistent with the objectives of the North Coast Sustainable Aquaculture Strategy. The Department considers that this process will ensure the development is meeting its performance objectives prior to being permitted to proceed to the next stage. This system also provides a mechanism for the Applicant to undertake any remedial works if it is identified that the proposal has had, or is having an effect on the environment.

The Department notes that a number of submitters would like the development site to be incorporated into the adjacent Clarence Estuary Nature Reserve. The development application submitted to the Department is for the development of this land for a commercial prawn farm. The Department is required to assess the proposal before it on its merits, which does not include the incorporation of the site in to the adjacent Reserve. The Department's assessment of the proposal is presented in this document and concludes that the Minister could approve the proposed development subject to conditions.

6.11 Odour Impacts

Applicants Position

The Applicant undertook a Tier 1 odour assessment in accordance with the EPA's Draft Policy *"Assessment and Management of Odour from Stationary Sources in NSW"* in order to examine the likely effects of the development on surrounding residential receptors.

The Applicant used various characteristics about the area such as topography, local meteorology and the proximity of receptors, along with the process description of the development to provide a qualitative assessment of the project with respect to odour.

The Applicant identified several potential, odour-producing facilities in the prawn farm including the aquaculture ponds, experimental ponds, discharge water settling ponds and the prawn processing facility. Whilst the odour-generating capacity of these items has not been quantified, the Applicant considers that the potential for the facility to generate significant odours is not significant. The Applicant considers this justified for a number of reasons including:

- the considerable distance of the nearest sensitive receptors to the site, (which are at least 900 metres);
- the water quality in both the production ponds and settling ponds will be of a quality that is not conducive to the production of odours, for example the nutrient levels in the water are unlikely to create anaerobic conditions which could lead to odour generation;
- the wind patterns at the site would tend to direct any odours to areas where the nearest residential receptors are a considerable distance and the population density is low;
- there is no history of complaints associated with odour generation from existing prawn farms in the Maclean Shire; and
- management of the prawn farm operations will be such that odour generation is minimised, for example:
 - ensuring that all equipment is maintained in good working order,
 - appropriate levels of oxygen are supplied to the ponds to minimise the potential for anaerobic conditions to develop,
 - records kept for potentially odour generating activities such as the quantity of feed given to assist in the evaluation of any odour complaints that arise, and
 - any spills are cleaned up promptly and waste is disposed of appropriately.

The Applicant states that an Odour Management Plan will be prepared for the site in order to assist with the management of operations at the site to minimise odour.

The Applicant notes that there is the potential for cumulative effects of odour to arise where there are similar industries operating within close proximity of each other. As there is a similar aquaculture operation located approximately 600 metres to the west of the project site's western boundary, there is the potential for a cumulative odour impact to arise in the south-west of the site where some residences are located.

Issues Raised in Submissions

Three submissions received from members of the public raised concern regarding odour, and considered that odours generated from chemical treatments, fertilisers, diseased crops and sludge and spoils will affect nearby properties, which was considered to be not adequately addressed in the EIS. Another submission raised concern regarding the impact of odour generated from ponds.

Department's Position

Since the time of writing the EIS, two new homes have been built on Micalo Island, located to the NW of the site, approximately 1km from the site's centre. Consequently, a formal assessment of the potential odour impacts on these homes was not undertaken. Notwithstanding, it should be noted that the Tier 1 odour impact assessment undertaken by the Applicant presented a broad discussion on the odour generating potential of the site and likely impacts on nearby receptors, rather than a specific analysis of the potential impacts at each home. Hence, the assessment is relevant to the new homes.

The Department notes that there is the potential for cumulative odour impacts arising from the operation of the prawn farm and other nearby prawn farms, however, the Applicant does not discuss any measures to reduce this potential impact. Despite this, the Department notes that the Applicant will have strict management measures in place and provided these are followed, odour generation should not be an issue. The Department recommends that as part of any odour management plan, the Applicant implement measures to reduce the potential for cumulative impacts to occur, for example by limiting certain operations when the wind is coming from a direction likely to have the most effect on properties to the SW of the site.

The Department is generally satisfied that the proposed prawn farm would not cause an odour impact for nearby properties provided appropriate management measures are undertaken to minimise potential odour generation. Further, the EPA did not raise any concern in relation to potential odour impacts. In this regard, the Department recommends the Applicant prepare and implement an odour management plan to identify measures that will be undertaken to manage and minimise odour generation from the site, such as identifying the sources of odour and the timing of undertaking odour-generating activities.

6.12 Waste Management

Applicant's Position

Construction

Wastes generated during construction include building and demolition waste from the existing site administration and processing area. The Applicant states that all rubbish and demolition waste will be disposed of to landfill.

The Applicant states that cut and fill calculations for the recontouring of the site indicate that all soil present on site would be reused in the proposal. The Applicant highlights that this soil would be tested for the presence of ASS and treated as appropriate. Identification and management Acid sulfate soils is discussed in greater detail in section 6.6 of this report.

Operation

When the ponds are emptied at the end of the growing season, the Applicant states that some sludge and organic matter will remain on the pond bottom. The Applicant states that this will be allowed to dry out as much as possible before being taken to a storage area to fully dry out. The material will then be stockpiled for use on-site for maintenance of pond walls.

All general wastes generated on-site will be disposed of in an approved landfill. Waste oils and chemicals will be disposed of by a licenced contractor in an approved manner.

Issues Raised in Submissions

No submissions received raised concern regarding the impacts of waste, in terms of building waste, from the proposed development. Concern was raised in relation to acid sulfate soils and organic waste from the ponds. These issues are covered elsewhere in this report.

Department's Position

Construction

The Department understands that waste generated during construction is reasonably small. Should the Minister approve the proposed development, the Department recommends the Applicant undertake a Waste Management Plan that details measures to manage and minimise resource consumption.

Operation

The Department is generally supportive of measures to reuse 'sludge' from the pond bottom on-site, however, it considers that such material should be tested for its suitability prior to its reuse. To this end, should the Minister determine to approve the proposed development, the Department recommends that all waste generated on the site be classified in accordance with the EPA's document *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes*. A waste management plan for the site operations is also recommended. Further, testing of the materials for the presence of ASS should also be undertaken prior to any reuse on-site.

6.13 Impacts on Visual Amenity

Applicant's Position

The Applicant notes that the development site has been totally altered by past development activities such that its original condition has been lost. The only remnants of natural vegetation on the site are located on the southern, western and eastern fringes and contribute to the visual character of the locality.

The vegetation along the channels effectively screen the site from public view from the locality's waterways. The Applicant notes that public views to the prawn farm from Micalo Road to the north cross flat, featureless pasture land.

The dominant visual elements of the redeveloped farm will be the administration area buildings and the bird netting structures over the pond areas. The Applicant states that it will use colours that blend in with the surrounding landscape. The Applicant considers that the revegetation of the pond and canal walls will further assist the development to blend into the environment, as will landscaping around the administration area.

Whilst the new structures will be visible to the adjoining landowner to the north, the Applicant states they should not be visible from Yamba Road, the northern end of Micalo Road or the waterways. The Applicant does not expect the proposed prawn farm to detract from the existing rural character of the area.

The Applicant states it will incorporate a number of features into the detailed site design in order to minimise the impact of the proposed development. Such measures include the use of materials that will blend in with the existing vegetation of the area, avoidance of the use of reflective materials in structures, implementation of site landscaping in and around the administration area buildings and minimising the clearing of vegetation on site.

Issues Raised in Submissions

No submissions were received that raised visual amenity impacts as being of concern.

Department's Position

The Department is supportive of the Applicant's proposed measures to minimise the visual impact of the proposed development, particularly minimising the removal of existing vegetation

on site. The Department also supports the proposed landscaping around the administration area.

As some elements of the proposal will be operational at night, the Department recommends that any lighting on site be the minimum level of illumination necessary and that it is directed in a manner that minimises impacts on surrounding properties and the nearby nature reserve.

6.14 Impacts on Heritage Items

Applicant's Position

Non-Indigenous Heritage

Micalo Island was first settled and partly cleared for sugar cane growing during the second half of the 19th Century. Extensive earthworks including the construction of drains and channels were undertaken during the period of 1860 to 1910. Historical records show that two cane mills and a school operated on the island but were located in the north. No buildings remain.

The Applicant states that there is one house of minor historical and aesthetic significance located in the north of the island and the remains of a corded road, considered to be of low heritage significance, is located in the north-west portion of the island.

The Applicant states that no items of European historical value are known to exist on, or in the vicinity of the project site.

Indigenous Heritage

An archaeological survey of Micalo Island was undertaken in 1991 as part of another proposal to be located on the island. A site inspection of the project area was also undertaken by representatives (including an elder) of the Yaegl and Birrigan Gargle peoples in November 2001. As a result of these investigations, the Applicant states that there are no Aboriginal relics sites located on the project site, although middens have been identified in the very northern part of Micalo Island and on Joss Island. The Applicant also adds that no sites of spiritual importance to the Yaegl and Birrigan Gargle peoples have been identified on, or in, the immediate vicinity of the site.

Given that the project site has been highly modified in the past it is considered that the likelihood of uncovering any artefacts is small. Notwithstanding, it is recommended that a member of the Aboriginal community be present on site during construction activities particularly involving the grazing lands on site (Areas 3 and 4) which the Applicant is supportive of. Should an artefact be uncovered, all work would halt in the immediate vicinity, pending direction of future action from this representative.

The Applicant notes that there is a Native Title claim over the Clarence River and offshore waters which was lodged in November 1996. To date, this claim has not been registered.

Issues Raised in Submissions

A submission from a private group raised concern regarding Aboriginal heritage citing that the EIS had not identified that two middens and other archaeological items are present in the northern part of Micalo Island. It also considers that the Aboriginal land rights claim should be investigated further.

In its submission, the DEC acknowledge that the Applicant has consulted with the Local Aboriginal Land Council (LALC) and that no relics were uncovered, therefore a section 90 licence pursuant to the *National Parks and Wildlife Act* would not be required. The DEC recommend that a contingency plan be developed in the event any relics are unearthed during

construction and that all works cease in the vicinity if any item is uncovered. The DEC support the Applicant's position to have representatives of LALC on site during construction.

The DEC note that if the Native Title Claim is registered, the Applicant is required to inform the Native Title Claimants in writing of the proposed works.

Department's Position

The Department is satisfied that the proposed development is unlikely to impact on any items of indigenous or non-indigenous heritage significance. This position is considered justified given the extensive modification to the land from the existing prawn farm as well as the sugarcane farming and grazing previous land uses documented for the site reveal that it was used as grazing land hence, the potential for uncovering any relics of non-indigenous heritage is limited. Further, no items of value have been identified on the site or on any heritage registers of environmental planning instruments.

Contrary to the submission from the private group, the Applicant did identify the two middens in the north of the island. The Department is satisfied that the Applicant has adequately consulted the local Aboriginal people in relation to the proposed prawn farm, who indicated that there are no known items of spiritual significance and that the likelihood of finding artefacts was small.

Should the Minister determine to approve the proposal, the Department recommends that if a relic of Aboriginal significance is uncovered during construction works, all works within the immediate vicinity should cease and the DEC (former National Parks and Wildlife Service division) is contacted and any requirements issued by the DEC are followed.

Further, as identified in the EIS, the Department supports the measure to have a member of the local Aboriginal community present on site during construction of Stages 2 and 3.

At the time of this assessment, the Native Title Claim over the Clarence River and offshore waters had not been registered.

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 the merits of the proposed development warrant approval subject to the recommended instrument of consent.

8 RECOMMENDED CONDITIONS OF CONSENT

Should the Minister determine to approve the development application, the Department recommends that a number of conditions be included with the aims of controlling and monitoring the future environmental performance of the proposed prawn farm. The recommended conditions take into account the issues raised in submissions from the public, Council and Government agencies.

The recommended conditions include the key issues identified below:

- **Staged approach** – the Department recommends the proposal be implemented in stages. Progression to subsequent stages of the development (Stages 2 and 3) should be contingent on the Applicant demonstrating it can meet a number of key environmental

performance criteria. These include the health of avifauna and seagrasses as well as meeting specified water quality objectives. The development must also demonstrate consistency with the North Coast Sustainable Aquaculture Strategy and demonstrate compliance with all the conditions of consent, as well as relevant licences, permits or approvals for the development. It is recommended this system be put in place to ensure the development is meeting its performance objectives prior to proceeding to the next stage. This system also provides a mechanism for the Applicant to undertake any remedial works if it is identified that the proposal has had, or is having an effect on the environment.

- **Water quality limits** – stringent water quality limits should be imposed on the construction and operation of the prawn farm. The Applicant should be required to implement a management plan for the operation of the development that details measures to control and manage surface water (including erosion and sedimentation), groundwater, process water and effluent wastewater that is consistent with the measures proposed in the EIS and additional information, and the conditions identified in the recommended instrument.
- **Flora and Fauna impacts** – the Applicant should be required to minimise the removal of vegetation from the site. As part of the ongoing management of the site, the Applicant should be required to implement a Flora and Fauna Management Plan for both terrestrial and aquatic species. These plans should identify measures to manage and minimise the impact of the development on aquatic and terrestrial species, including undertaking regular monitoring and preparing a contingency plan should monitoring identify that the proposal has had, or is having an effect on any species. The Applicant should also be required to make the canals and settlement ponds available for wildlife use.
- **Acid Sulfate Soils impacts** – the Applicant should be required to undertake acid sulfate soils testing for all disturbed soil on the site. The Applicant should be required to implement a comprehensive Acid Sulfate Soils Management Plan that details measures to manage and minimise the risk of acid generation and the release of any acidified material to the surrounding environment.
- **Disease Management** – the Applicant should be required to implement a Disease Prevention Program that details measures to manage and minimise the risk of disease outbreaks at the farm.

The recommended instrument has been provided to the Applicant and key government agencies for comment. Comments from these parties have been incorporated into the instrument where applicable. The Department considers that the recommended instrument of consent will mitigate the environmental impacts of the proposal to an appropriate and acceptable level.

9 CONCLUSIONS

The Department considers that the proposed development is consistent with all local, regional and State planning objectives. The proposed prawn farm will have considerable economical, social and technological benefits at local, regional and national levels in the form of employment and investment as well as providing quality Australian prawns to the market.

The Department considers that all key environmental concerns have now been adequately addressed. It is recommended that the development application be approved subject to the conditions of the recommended instrument of consent. Conditions have been formulated to manage, monitor and mitigate potential environmental impacts.

The Department considers that the recommended conditions of consent provide a rigorous and strict framework for the management, monitoring and reporting on the operation of the site. This includes requirements for the management of flora and fauna, water quality, acid

sulfate soils and disease impacts, and for the undertaking of independent environmental auditing.

The Department is satisfied, through its environmental assessment of the proposal and the application of the consent conditions, which incorporate the General Term of Approval of the DEC and the Department, that environmental impacts can be adequately managed.

10 RECOMMENDATIONS

It is RECOMMENDED that the Minister:

- (i) consider the findings and recommendations of the Department's Assessment Report for DA No. DA-80-3-2002-i (this document, tagged "B");
- (ii) agree to waive minimum performance criteria No.s 2, 3 and 4 in Schedule 1, Part 2, Division 1 of *State Environmental Planning Policy No. 62 – Sustainable Aquaculture* relating to Site location requirements;
- (iii) sign the letter to the Minister for the Environment concerning the consultation undertaken with respect to threatened species (tagged "C");
- (iv) grant consent to development application No. DA-80-3-2002-i, as submitted by Axseven Pty Ltd, subject to the conditions set out in the instrument of consent (tagged "A"); and
- (v) sign the instrument of consent (tagged "A");

Joanna Bakopanos
Environmental Planning Officer
Major Development Assessment

Chris Ritchie
Senior Environmental Planning Officer
Major Development Assessment

ENDORSED:

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

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:

<p><i>The provisions of:</i> <i>(i) any environmental planning instrument</i></p>	<p>The following EPIs apply to the prawn farm redevelopment:</p> <ul style="list-style-type: none"> • <i>State Environmental Planning Policy No. 62 – Sustainable Aquaculture;</i> • <i>State Environmental Planning Policy No. 14 – Coastal Wetlands</i> • <i>State Environmental Planning Policy No. 44 – Koala Habitat Protection</i> • <i>North Coast Regional Environmental Plan 1989;</i> • <i>Macleay Local Environmental Plan 2001.</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>
<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>	<p>There are no draft instruments that apply to the proposed development</p>
<p><i>(iii) any development control plan</i></p>	<p>The following DCP applies to the prawn farm redevelopment:</p> <ul style="list-style-type: none"> • <i>Development Control Plan For Erosion and Sediment Control</i> <p>Section 6.6 of the report addresses erosion and sediment control and it is considered it accords with the principles of the DCP.</p>
<p><i>(iv) any matters prescribed by the regulations that apply to the land to which the development application relates</i></p>	<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 Policy applies to development in the Macleay local government area. Sections 4.2 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>	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.
<i>the suitability of the site for the development</i>	Refer to Section 4.3 and Appendix B for a greater discussion on the suitability of the site for the development. The proposed prawn farm redevelopment is permissible with development consent.
<i>any submissions made in accordance with this Act or the Regulations</i>	A total of 129 submissions were made in response to the exhibition of the development application for the proposed prawn farm redevelopment (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).
<i>the public interest</i>	The recommended instrument of consent imposes a suite of controls, which the Department considers will mitigate for any environmental impacts of the proposal. It is therefore considered that the proposal will be in the public's interest.

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. 62 – Sustainable Aquaculture	
Aims of the Policy:	
(a) to encourage sustainable aquaculture in the State, namely, aquaculture development which uses, conserves and enhances the community's resources so that the total quality of life now and in the future can be preserved and enhanced	The proposed development is for pond-based aquaculture to produce commercial quantities of prawns
(b) to make aquaculture a permissible use in certain areas for which a comprehensive and integrated regional aquaculture strategy has been developed (being a strategy that incorporates the relevant Aquaculture Industry Development Plan under the Fisheries Management Act 1994 and the assessment regime for integrated aquaculture development), and	Refer to section 4.3 of this assessment report
(c) to set out the minimum site location and operational requirements for permissible aquaculture development (the minimum performance criteria)	The proposed development meets 9 out of 12 minimum performance criteria (see below). The implications of this are discussed in section 4.3 of the report
(d) to establish graduated environmental assessment regime for aquaculture development based on the applicable level of environmental risk associated with the site and operational factors, and	The proposed development is categorised as a Class 3 development and is therefore designated. An EIS accompanied the DA.
(e) to apply the Policy in the first instance to pond-based and tank-based aquaculture development in the North Coast Region of the State following the preparation of a strategy for that kind of aquaculture development in that area.	The proposed development is located in the North Coast region of the State and is pond-based aquaculture.
<u>Clause 7 – Pond-based and tank-based aquaculture permissible with consent</u>	
(1) This clause applies to development for the purposes of pond-based aquaculture, or tank-based aquaculture, to which this Policy applies	
(2) A person may carry out any such aquaculture development with development consent if, in the opinion of the consent authority, it complies with the site location and operational requirements set out in Schedule 1 for the development (the minimum performance criteria)	
(3) The requirements set out in Schedule 1 are minimum requirements and do not limit the matters a consent authority is required to take into consideration under the Act or the conditions that it may impose on any	The proposed development is permissible with consent. Refer to section 4.3 of the assessment report for further details

<i>development consent</i>	
<p><u>Clause 9 – Consent authority for permissible aquaculture</u></p> <p><i>The consent authority for development to which this Policy applies (other than State significant development) is as follows:....</i></p>	Not applicable. The proposed development is State significant development by virtue of a declaration made by the Minister for Infrastructure and Planning on 3 August 1999 concerning aquaculture development that will employ more than 20 people on a full-time basis.
<p><u>Clause 10 – Consent Authority to take aquaculture industry development plan into consideration</u></p> <p><i>In determining a development application for aquaculture development to which this Policy applies, the consent authority is to take into consideration such of the provisions of any AIDP as are relevant to the subject of the DA</i></p>	Refer to sections 4 and 6 of the report.
<p><u>Clause 13 – Categorisation of development having regard to project profile analysis</u></p> <p><i>For the purposes of determining the level of assessment of applications for development consent under this Policy, the proposed aquaculture development is to be categorised in accordance with the opinion of the consent authority formed having regard to the relevant project profile analysis</i></p>	The proposed development is classified as a Class 3 – designated development
<p><u>Clause 16 – Existing Development</u></p> <p>(1) <i>This Policy applies if development consent is sought for any alteration of or addition to existing aquaculture development</i></p> <p>(2) <i>However, the Minister may waive (with or without conditions) any of the minimum performance criteria in connection with the continuation of any existing aquaculture development (including the re-establishment of aquaculture development in an area which aquaculture was abandoned before the commencement of this Policy)</i></p>	Refer to section 4.3 and below.

Schedule 1 of SEPP 62

Minimum Performance Criteria	Proposed Development Characteristic	Compliance
<u>Site Location Requirements</u>		
(1) Located in a region to which this Policy applies (the North Coast Region)	The proposed development is located within the local government area of Maclean	Complies.
(2) For pond-based aquaculture, located within areas zoned for rural purposes	Development site is located on land zoned 1(b) Rural Zone and part of land zoned 7(a) Environmental Protection Zone	Complies for the majority of the site, but see section 4.3.
(3) Located within areas that have been identified (in green) in the relevant estuarine aquaculture map gazetted under the relevant aquaculture industry development plan	For this proposal this is the Clarence River Estuary, edition 2, January 2000	Does not comply. The proposal is not located in an area that is highlighted in green on the map.

(4) Located within an area where the mean elevation is above the 1m AHD	The site is located in a flood-prone area. Surface elevations range from RL1.5 to 2.5 AHD. Some parts are less than 1.0m AHD, however, the mean elevation is less than 1m AHD.	Does not comply. The majority of the site consists of disused ponds that have been dredged to a depth of just below sea-level.
(5) Not located within certain Acid Sulfate Soil's classes	The proposal is located within an area of potentially high ASS risk. The studies undertaken for the EIS demonstrate that the risk is moderate and is manageable.	To comply provided an Acid Sulfate Soils Management Plan (approved by DIPNR) is followed.
(6) Not located within an area that is subject to flooding when growing 'high risk species'	Whilst the site is located within a flood-prone area, the site will be designed with flood protection works for a 1 in 100 year ARI flood and the proposed development is not growing species that are considered to be 'high-risk species.'	Not applicable.
(7) Not located within a conservation exclusion zone	Proposal is not located within a conservation exclusion zone.	Complies.
Operational Requirements		
(8) Species of fish cultivated must be consistent with the relevant Aquaculture Industry Development Plan (AIDP)	The proposal will primarily cultivate Black Tiger Prawns, however, there is the potential to cultivate the Brown Tiger Prawn and Eastern King Prawn at a later stage. The Applicant states the species grown will comply with its Aquaculture permit 5164, Class D.	Complies.
(9) Ponds, raceways or dams must be capable of being drained or pumped and then completely dried	The Applicant states the ponds and waterways have been designed to be drained and dried stating that it is an integral part of the harvesting and disease management activities.	Complies.
(10) No discharge of freshwater used to cultivate or keep fish or marine vegetation to natural waterbodies or wetlands	???	???
(11) All saline water discharged from a farm must be held in a reconditioning system for a minimum of 24 hours prior to discharge and must be returned to the tidal reaches of the waterway.	Each of the 4 pond systems includes a settling pond to hold water for reuse or discharge. The Applicant states this is in accordance with its existing Environment Protection Licence issued by the EPA.	Complies.
(12) All outlets from ponds, tanks and other facilities must be screened to avoid the escape of fish	All ponds, inlets and outlets are proposed to be screened in accordance with licence requirements in order to prevent the escape of fish.	Complies.

North Coast Regional Environmental Plan

Rural Development

Agricultural Resources

The objectives of this Plan in relation to agricultural resources are:

- (b) to conserve the productive potential of agricultural land;
- (c) to provide for new forms of agricultural

The proposed development is generally consistent with the objectives of this Plan in relation to agricultural resources

<p>development and changing patterns of existing agricultural development,</p> <p>(d) to ensure that commercial agriculture is not affected adversely by incompatible uses which impair its long term sustainability, and</p> <p>(e) to ensure that industries and services that support agriculture are not disrupted</p>	
<p><u>Clause 12 – Development Control – impact of development on agricultural activities</u></p> <p>The Council shall not consent to an application to carry out development on rural land unless it has first considered the likely impact of the proposed development on the use of adjoining or adjacent agricultural land and whether or not the development will cause a loss of prime crop or pasture land</p>	<p>The proposed development will not impact upon adjacent agricultural land. The proposed development is not located on prime crop or pasture land.</p>
<p><u>Catchment Management</u></p> <p>The objectives of this plan in relation to fisheries and catchment management are to preserve and enhance fishery habitats and associated catchments, and to promote the sustainable use of natural resources</p>	<p>Refer to Section 6 of the report</p>
<p><u>Clause 15 – Development Control – wetlands or fishery habitats</u></p> <p>The council shall not consent to an application to carry out development for any purpose, within, adjoining or upstream of a river or stream, coastal or inland wetland or fishery habitat area or within the drainage catchment of a river or stream, coastal or inland wetland or fishery habitat area unless it has considered the following matters:</p> <p>(a) the need to maintain or improve the quality or quantity of flows of water to the wetland or habitat,</p> <p>(b) the need to conserve the existing amateur and commercial fisheries,</p> <p>(c) any loss of habitat which will or is likely to be caused by the carrying out of the development,</p> <p>(d) whether an adequate public foreshore reserve is available and whether there is adequate public access to that reserve,</p> <p>(e) whether the development would result in pollution of the wetland or estuary and measures to eliminate pollution,</p> <p>(f) the proximity of aquatic reserves dedicated under the Fisheries Management Act 1994 and the effect the development will have on these reserves,</p> <p>(g) whether the watercourse is in an area of</p>	<p>Refer to section 6 of this assessment report.</p>

<p><i>protected land as defined in section 21AB of the Soil Conservation Act 1938 and any measures to prevent soil erosion, and</i></p> <p><i>(h) the need to ensure native vegetation surrounding the wetland or fishery habitat area is conserved, and</i></p> <p><i>(i) the recommendations of any environmental audit or water quality study prepared by the Department of Water Resources or the Environment Protection Authority and relating to the river, stream, wetland, area or catchment</i></p>	
<p><u>Coastal Development</u></p> <p><i>The objectives of this plan in relation to coastal planning are to: enhance the visual quality of the coastal environment, provide for the appropriate recreational use of beaches, protect water quality of the coastal environment, minimise risks to people and property resulting from coastal processes, minimise changes to coastal processes resulting from development, and encourage retention of natural areas and regeneration of those natural areas which are already degraded</i></p>	<p>The Department is satisfied the proposal accords with these objectives. See also Section 6.</p>
<p><u>Clause 32B – Coastal Lands</u></p> <p><i>(1) This clause applies to land within the region to which the NSW Coastal Policy 1997 applies.</i></p> <p><i>(2) In determining an application for consent to carry out development on such land, the council must take into account a) the NSW Coastal Policy 1997, b) the Coastline Management Manual, and c) the North Coast: Design Guidelines.</i></p> <p><i>(3)The council must not consent to the carrying out of development which would impede public access to the foreshore.</i></p> <p><i>(4) The council must not consent to the carrying out of development: a) on urban land at Tweed Heads, Kingscliff, Byron Bay, Ballina, Coffs Harbour or Port Macquarie, if carrying out the development would result in beaches or adjacent open space being overshadowed before 3pm midwinter (standard time) or 6.30pm midsummer (daylight saving time), or b) elsewhere in the region, if carrying out the development would result in beaches or waterfront open space being overshadowed before 3pm midwinter (standard time) or 7pm midsummer (daylight saving time).</i></p>	<p>The Department has taken into account the relevant documents and is satisfied that the proposal accords with their objectives. See also Section 6</p>

Maclean Local Environmental Plan 2001	
The proposed development is partly located on land zoned 1(b) Rural (General Rural Land) Zone and is permissible with consent in this zone.	
<i>The primary aims of this zone are to reserve rural land and encourage the use of rural land in this zone for agriculture and for uses compatible with agriculture</i>	It is considered that aquaculture development is compatible with agriculture
<p><i>The objectives of Zone 1(b) are as follows:</i></p> <ul style="list-style-type: none"> <i>(f) to conserve the productive potential of rural land, and</i> <i>(g) to provide for new forms of agricultural development, and changing patterns of existing agricultural development, and</i> <i>(h) to restrict the subdivision of agricultural land to ensure that suitable land is not withdrawn from production and that the potential for land to be productive is not diminished, and</i> <i>(i) to enable rural tourism, which does not adversely affect the productive potential of the land, and</i> <i>(j) to exclude urban development, and</i> <i>(k) to encourage conservation in farming practices, and</i> <i>(l) to control the clearing of vegetation and encourage the retention of vegetation.</i> 	The proposed prawn farm redevelopment is located on land that is already heavily modified due to an earlier prawn farm development. It is considered that the proposed development will contribute to the productive potential of the land and encourage conservation in farming practices. The proposed development is considered to be generally consistent with the objectives of the Plan.
The proposed development is partly located on land zoned 7(a) Environmental Protection (Ecological Significance) Zone and is permissible with consent in this zone.	
<p><i>The objectives of this zone are as follows:</i></p> <ul style="list-style-type: none"> <i>(a) to identify all land within the local government area of Maclean covered by SEPP 14 and SEPP 26, and</i> <i>(b) to preserve estuarine wetlands and allow them to continue to function as feeding and breeding areas for wildlife, shellfish and fish, and</i> <i>(c) to prohibit development within the zone that is likely to have a detrimental effect on the habitat or landscaping qualities or the flood mitigation function of the wetlands, and</i> <i>(d) to prohibit the clearing of land, except for the careful control of noxious plants by means not likely to be significantly detrimental to the native ecosystem, and</i> <i>(e) to enable the development of land within this zone only where it can be shown that the development will not destroy, damage or compromise the ecological, scenic or scientific attributes of the land.</i> 	Whilst the Development Application is partly located on land zoned 7(a), the Applicant does not propose to develop this section.

<p><u>Clause 11 – Flood Liable Land</u></p> <p>(1) Consent must not be granted to the erection of a building or the carrying out of a work on land to which this plan applies if, in the opinion of the consent authority:</p> <p>(m) the land is within a floodway, and</p> <p>(n) the carrying out of the development is likely:</p> <p>(i) to adversely impede the flow of floodwaters on that land or in its immediate vicinity, or</p> <p>(ii) to imperil the safety of persons on that land or land in its immediate vicinity in the event of those lands being inundated with floodwaters, or</p> <p>(iii) to aggravate the consequence of floodwaters lying on that land or land in its immediate vicinity with regard to erosion, saltation or the destruction of vegetation.</p>	<p>Refer to Section 6.5 of this report</p>
<p><u>Clause 13 – Development within the Coastal Zone</u></p> <p>Before granting consent for any development in the coastal zone as defined in the NSW Coastal Policy 1997, the consent authority must take into consideration the design and location principles as set out in Table 3 entitled “Design and Location Principles for Consideration in LEPs, DCPs and Development Control” in the NSW Coastal Policy 1997.</p>	<p>The proposed development is consistent with the principles set out in Table 3.</p>
<p><u>Clause 18 – Development on land identified on Acid Sulfate Soils Planning Maps</u></p> <p>(1) Consent usually required – A person must not, without development consent, carry out works described in the following Table on land of the class specified for those works, except as provided by subclauses (3), (4) and (8).</p>	<p>The proposed development requires development consent. Refer to Section 6.6 of this assessment report.</p>
<p>(6) Considerations for consent authority – A consent required by this clause must not be granted unless the consent authority has considered:</p> <p>(a) the adequacy of an acid sulfate soils management plan prepared for the proposed development in accordance with the Acid Sulfate Soils Assessment Guidelines, and</p> <p>(b) the likelihood of the proposed development resulting in the discharge of acid water, and</p> <p>(c) the comments received from DLWC within 21 days of the consent authority having sent that Department a copy of the</p>	<p>Refer to Section 6.6 of this assessment report.</p>

<p><i>development application and the related acid sulfate soils management plan</i></p>	
<p><u><i>Clause 61 – Development within environmental protection zones</i></u> <i>(2) Consent to the carrying out of development on land to which this clause applies must not be granted unless the consent authority has determined that the impact of the development on:</i> <i>(a) the visual and scenic quality of the area, and</i> <i>(b) the risk of soil erosion and water pollution, and</i> <i>(c) the important vegetation systems and natural wildlife habitats (including wetlands) of the area,</i> <i>would not be substantially adverse</i></p>	<p>As discussed above, whilst located partly on this land, the DA does not propose to develop this section of land.</p>
<p><i>(3) Subject to subclause (2), consent must not be granted to the clearing of land to which this clause applies unless the consent authority is satisfied that:</i> <i>(a) the clearing is necessary for the reasonable use of the land or the provision of utility services, or</i> <i>(b) the clearing is necessary to reduce the risk of bushfires.</i></p>	<p>As discussed above, whilst located partly on this land, the DA does not propose to develop this section of land.</p>

APPENDIX C – ISSUES RAISED IN SUBMISSIONS

Issues Raised in Response to the First Public Exhibition

No.	Name/ Organisation	Position	Issues
1	Nature Conservation Council of NSW	Object	<ul style="list-style-type: none"> Objects to proposed development: <ul style="list-style-type: none"> Not within area designated for aquaculture under <i>NSW North Coast Sustainable Aquaculture Strategy</i>; and Recommendations from Healthy Rivers Commission suggest proposal is inappropriate for the site. Recommends option of 'doing nothing'. Concern regarding elevation levels on site, which fail to meet requirements of <i>State Environmental Planning Policy No. 62 (SEPP 62)</i>.
2	Private	Objects	<ul style="list-style-type: none"> Site is unsuitable for the proposal: <ul style="list-style-type: none"> High risk location – due to both flooding and acid sulphate soils (ASS). Mapping indicates area is an ASS high risk hotspot. Leakage of ASS into river system has potential for fish kills and could increase fish diseases through damage to skin and gills, including fungal diseases such as 'red spot'; and Proximity to Lake Wooloweyah – an important commercial fishing ground for CRFC. The channels are not suitable for high nutrient discharges. Prolonged nutrient discharge will lead to a long-term decline in water quality. The <i>Healthy Rivers Independent Commission</i> identified Lake Wooloweyah as an area requiring significant protection and recommended the exclusion of any aquaculture development. CRFC not opposed to aquaculture in appropriate locations – Micalo Island site is not an appropriate location. Should the proposed development be approved, CRFC would require as a condition of consent that a bond bank guarantee or insurance is put in place to indemnify the losses to CRFC and its commercial fishermen arising from the operation of the proposed development. The use of bonds is supported in the <i>Final Report of the New South Wales Healthy Rivers Commission</i>. CRFC also reserves the respective legal rights at common law arising from the losses that result from any negligent act or omission by the Applicant during operations of the development, if approved.
3	Private	Object	<ul style="list-style-type: none"> Site is not suitable for aquaculture. EIS is incomplete and of an unacceptably low standard. Axseven may have financial links with previous developer (Sea-Ag Holdings). Expect a rigorous, detailed and transparent assessment of the proposal. Specific concerns: <ul style="list-style-type: none"> The Applicant – CRFC request that consent authority investigates link between Sea-Ag Holdings and Axseven, particularly in light of requirement under Part 2 of Schedule 3 of the EP&A Reg which states that the consent authority must consider previous environmental management and performance; Project need – The need for aquaculture on the NSW North Coast requires investigation; Species to be cultivated – Not suited to surrounding environment in terms of water salinity and temperature requirements;

			<ul style="list-style-type: none"> - Timing – Construction timing is unrealistic without a comprehensive management plan; - Production rates – they are unrealistic and present a high expectation to the community with regard to capital generation and employment; - Disease – Stocking densities are likely to bring about Gill Associated Virus (GAV); - Anticipated level of environmental performance – Many issues have not been adequately addressed in the EIS; - Contribution to the local economy – benefits are unclear; - Regulatory framework – application of clause 16 of SEPP 62; - Community and agency consultation – no meetings or discussions initiated by the Applicant. Level of consultation inadequate; - Decision – need for a bond or insurance in proportion to known risks and cost of remediation; - Construction phase impacts require further consideration; - On-site road closures – should not impede access to any part of the development; - Analysis of existing environment: <ul style="list-style-type: none"> - Wind speed and direction will prevent nutrient from being dispersed; - Wooloweyah Lagoon sensitive area requiring protection; - Site liable to flooding; - Threatened flora – survey inadequate; - Threatened fauna – survey inadequate; - Habitat values of the Clarence Estuary and surrounds; - Habitat value of development site; - Aquatic ecosystem – survey inadequate – impacts on seagrasses likely to be significant; - Value of Wooloweyah Lagoon as a commercial and recreational fishing resource – findings of Independent Inquiry; - Acid Sulphate Soil issues; - Indigenous and non-indigenous heritage; - Water quality – further sampling required; - Feeding procedures; - Disease control protocols; - Water requirements; - Sludge management – further clarification required; - Flood management; - Bird netting – too expensive; - Market limited; - Transportation – membership application required if relying on infrastructure of Co-op; - Decommissioning and rehabilitation; - EIS assessment: <ul style="list-style-type: none"> - Flooding – no analysis of maximum probable flood event; - Acid Sulphate Soils; - Groundwater issues; - Odour issues; - Consideration of alternatives; - Project justification – biophysical and socio-economic considerations; - Ecologically Sustainable Development – precautionary principle and intergenerational equity;
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			- Improved value and pricing of natural resources – use of site as a prawn farm cannot be considered best use of land.
4	Private	Object	<ul style="list-style-type: none"> Concern due to potential impacts on migratory wading bird species: <ul style="list-style-type: none"> Site has become important for bird species; Nutrient loading from discharges into Joss Channel may affect eco-system that presently sustains wading bird population; Lake Wooloweyah now classified as a 'significant' wetland; Particularly concerned about the Black-necked Stork; and Currently object to the proposal, however, should proposal be approved, consideration should be given to leaving some areas un-netted.
5	Private	Support	<ul style="list-style-type: none"> Support proposed development. Residents of Micalo Island – will be affected by the proposed redevelopment. Upgrade of intersection at Micalo and Yamba Road required. Support proposal due to job creation and economic benefits. Site is currently a harbour for a variety of noxious weeds and foxes. Flooding would not be an issue.
6	Private	Object	<ul style="list-style-type: none"> Proposed development does not meet minimum performance criteria for aquaculture. Flooding. Increased nutrients would not be flushed to a level to minimise impacts on eco-system. Micalo Island includes wetlands, mangroves, salt marshes and seagrasses, which should not be removed in the interest of intergenerational equity. Potential to disturb Acid Sulphate Soils. Site significant for bird species.
7	Private	Object	<ul style="list-style-type: none"> Objects to proposed development: <ul style="list-style-type: none"> Poor community consultation; Site important for endangered birds; Nutrient discharge – poor flushing capabilities of Joss Channel; Road access – No public access to the site; Traffic – pressure on intersection and safety implications; Acid Sulphate Soils – DLWC mapping indicates site is a high risk area; Bid netting – expensive and complications including entanglement; Noise – study should be reconsidered as two neighbouring properties will soon house residential dwellings; Poor track record – abandoned prawn farm; Previous debt – Is there a connection between Sea-Ag Holdings and Axseven?; Rehabilitation – who will be responsible for rehabilitation. Bond required; and Mangroves – exist throughout almost every pond.
8	Private	Object	<ul style="list-style-type: none"> Objects to proposed development. If approved: <ul style="list-style-type: none"> Monitoring required; Only half of the ponds should be redeveloped, the second half subject to be redeveloped after two years and assessment of operations; and No development over that proposed in EIS. No public access; and

			<ul style="list-style-type: none"> Increased traffic would have safety implications.
9	Private	Object	<ul style="list-style-type: none"> Objects to proposed development: <ul style="list-style-type: none"> No consideration of future residences in the area; Acid Sulphate Soil issues; Noise pollution; Impacts on wildlife; Odour; Chemical leaks into the environment; Disease outbreak; Flooding; Water source and inlet canal on private property. How will it be serviced and cleaned? Question over rights of use of this easement, particularly with regard to any excavation works; Access issues – intersection not safe for increased traffic; and Economic gains not significant compared to environmental impacts.
10	Private	Object	<ul style="list-style-type: none"> Objects to proposed development: <ul style="list-style-type: none"> Performance of previous prawn farm; The site is returning to its natural state and has significant habitat value; Netting expensive – wildlife will be shot; Potential spread of disease into surrounding environment; and Pumping waste water from ponds into existing drains should not be carried out as drains are not influenced by strong tidal flows.
11	Private	Object	<ul style="list-style-type: none"> Objects to proposed development: <ul style="list-style-type: none"> Exhibition period too short; SEPP 62 – application of minimum performance criteria, which should not be waived. If proposal is assessed under SEPP 62 it would be prohibited development; Since proposal is prohibited under SEPP 62 there is no basis for declaration that it is State Significant Development; Aquaculture permit – existing permit not relevant to proposal – conditions imposed will need to be reviewed; Environment Protection Licence should be revoked; No consideration of site rehabilitation – should the project fail the Applicant should be required to rehabilitate site; Bonds should be required for rehabilitation; Threatened species – no SIS for Black-necked Stork. SIS should also be undertaken for Bush Stone-curlew and the Brolga; Wetlands extremely important – Wooloweyah Lagoon should be given 'significant protection' – recommendation of <i>Healthy Rivers Commission</i>; Acid Sulphate Soils (ASS) – high risk. No testing of disturbed terrain undertaken in EIS; Ground water movement; Discharge of water; Water quality; Suitability of site for Tiger Prawns – salinity and temperature requirements; Netting too expensive – how will predation be managed?; and Flooding.

12	Private	Object	<ul style="list-style-type: none"> • Proposal should not proceed: <ul style="list-style-type: none"> - EIS poorly written and does not address all issues; - EIS fails to adequately describe the importance of the health of Lake Wooloweyah and surrounding wetlands; - Acid Sulphate Soils (ASS) – Poor survey and sampling effort; - Water quality – EIS does not provide an adequate assessment on water quality impacts. Potential nutrient loading impacts significant, and further review of the waste water discharge regime is required. - Potential for spread of disease; - Risks to area as sensitive as Wooloweyah wetland complex should not have to be contemplated; - Waste storage area should be bunded to prevent material being washed into waterways; - Alternatives sites not investigated; and - Bond required for rehabilitation.
13	Public Interest Group	Did not State	<ul style="list-style-type: none"> • Misleading statement in EIS – YDCC not consulted. • Concern regarding tourism and commercial and recreational fishing impacts. • Bond for rehabilitation.
14	Public Interest Group	Object	<ul style="list-style-type: none"> • Impacts on ecology of Micalo Island and surrounding area, in light of findings of <i>Healthy Rivers Commission</i>. • NUTRIENT LOADING AND ALGAL BLOOMS. • Consideration of cumulative impacts of existing developments on estuary. • Reduced habitat for wading birds, including Bush Stone-curlew, Brolga and Black-necked Stork. • Impacts on local bird species due to predation control – netting required. No shooting of birds should be allowed due to economic hardship. • Development not compatible with adjacent nature reserve. • Acid Sulphate Soils; • Low-lying land and potential flooding impacts due to climate change; • SEPP 62 - Proposal does not qualify as an existing development. Therefore claim that proposal falls within transitional provisions of SEPP 62 is not justified; • SEPP 62 minimum performance criteria cannot be met.
15	Private	Object	<ul style="list-style-type: none"> • Objects to proposed development due to habitat loss, habitat threat, and economic viability issues. • Habitat loss: <ul style="list-style-type: none"> - Area significant habitat for migratory birds, including threatened species; - 98% of wetlands in Clarence Valley have been impacted upon by human activity, therefore Wooloweyah Lagoon wetland complex, including Micalo Island, Joss Channel and Oyster Channel represent significant habitat; - One of three most significant wader sites in NSW; - Redevelopment proposal will result in a loss of important habitat; - Particularly important for the Common Greenshank and the Black-necked Stork; - SIS required for the Black-necked Stork; - SIS's should also be carried out for the Beach Stone-curlew, Bush Stone-curlew and the Brolga; and - If approved, the Eastern Settling Pond, Pond 1 and Ponds 2/3 and 24 should remain unmodified as habitat for these species. • Threat to habitat: <ul style="list-style-type: none"> - Joss Channel (channel between Micalo Island and Joss Island) is an important feeding site and the Island is an important roosting site. It has poor flushing capabilities, and any nutrient discharge would impact on seagrasses. Discharge into Joss

			<ul style="list-style-type: none"> Channel is therefore unacceptable. Economic viability: <ul style="list-style-type: none"> Netting to control predation too expensive. Project is therefore not economically viable.
16	Private	Concerned	<ul style="list-style-type: none"> Do not object to the development in principle, but have three main concerns: <ul style="list-style-type: none"> Impact on endangered bird life; Road access issues and upgrading of road; and Impact on waterways.
17	Private	Object	<ul style="list-style-type: none"> Oppose proposed development: <ul style="list-style-type: none"> Previous performance of prawn farm; and Economic issues including a lack of funding.
18	Private	Concerned	<ul style="list-style-type: none"> Request consideration of the following issues: <ul style="list-style-type: none"> Raised flood levels; Waste outlet drain and disposal of waste water – poor flushing capabilities; Initial waste removal - poor flushing capabilities; Alternative use – no investigation into alternative use for site; Bond required; Inlet canal dredging and pumping – no assessment of dredging, including method, depth and width of inlet canal; Road usage – inaccurate traffic calculations for existing use of roads; Preferred access and impacts of upgrading existing road; Noise; Acid Sulphate Soils (ASS); Disease; Boat wash and canal use; and Proposed road closures.
19	Private	Object	<ul style="list-style-type: none"> Concerned, but ultimately object: <ul style="list-style-type: none"> Significance of Wooloweyah wetland complex; Performance of previous prawn farm; EIS did not adequately address issues; ASS testing inadequate; Water quality impacts – discharge from Joss Channel; Impacts on birds; Cost of netting; Findings of <i>Healthy Rivers Commission</i>; More suitable alternative uses for site; and Bond required.
20	Private	Object	<ul style="list-style-type: none"> Object to proposal: <ul style="list-style-type: none"> Safety implications for intersection at Yamba Road and Micalo Road; Noise issues associated with traffic generated by proposal; Wildlife – impacts on migratory bird species; and Acid Sulphate Soil issues.

21	Private	Object	<ul style="list-style-type: none"> Object to proposal: <ul style="list-style-type: none"> Contamination of surrounding sensitive environment with effluent from the ponds; No public access onto the property – road improvements required; and Legal right of carriageway.
22	Private	Object	<ul style="list-style-type: none"> Object to proposed development: <ul style="list-style-type: none"> Impacts on surrounding wetlands and Lake Wooloweyah based on performance of previous prawn farm.
23	Private	Concerned	<ul style="list-style-type: none"> Concerned: <ul style="list-style-type: none"> Significance of wetlands; Failure of past prawn farming operations; Abandoned site now a well functioning wetland area, supporting migratory birds; Nutrient loading due to poor flushing capabilities; Acid Sulphate Soils; Noise; Odour; and Increases in traffic, and safety implications for intersection of Yamba Road and Micalo Road.
24	Private	Objects	<ul style="list-style-type: none"> Proposal should be rejected: <ul style="list-style-type: none"> No proposal should be considered until <i>Clarence Estuary Management Plan</i> has been completed; Poor consultation; Previous performance of prawn farm Nutrient loading and poor flushing capabilities of Lake Woolewayah; Flooding; Global warming and sea level rise; Acid Sulphate Soils; Impacts on wildlife including migratory bird species; Loss of habitat; Impacts on seagrasses considered unacceptable; Noise impacts; Road safety implications; Employment benefits not guaranteed; and Too much uncertainty with the proposal.
25	Private	Object	<ul style="list-style-type: none"> Object to proposed development: <ul style="list-style-type: none"> Impacts on migratory birds; Netting to expensive to maintain; Performance of previous prawn farm operations; Acid Sulphate Soils; Odour emissions; Road upgrading and intersection issues; Nutrient loading – low water flow; and Flooding issues.
26	Private	Object	<ul style="list-style-type: none"> Opposes proposed development due to potential impacts on Lake Wooloweyah and surrounding environment.

			<ul style="list-style-type: none"> • Lake Wooloweyah identified by the <i>Healthy Rivers Commission</i> as one of the State's coastal lakes in urgent need of improved planning and management. • Classification under the category of Significant Protection indicates need for preservation. • According to <i>Clarence Estuary Management Study</i> it is among the most poorly flushed areas of the estuary, taking 30-50 days to flush.
27	Private	Object	<ul style="list-style-type: none"> • Disgrace that original prawn farm was ever allowed to be built • Current ponds are slowly recovering and there are huge amounts of birdlife feeding in the ponds • Enough damage has been done already, don't want it to happen again
28	Private	Object	<ul style="list-style-type: none"> • Should never be a prawn farm at Lake Woolewayah due to toxic runoff from these types of development • L. Woolewayeh already under stress due to prawn trawling
29	Private	Object	<ul style="list-style-type: none"> • Volumetric flow from Joss's Creek is too low to handle the amount of effluent that will be discharged from the farm; • Effluent would be taken into Lake Wooloweyah which will be detrimental to the lake itself and to the fishing industry; • Considers that there is no way to stop effluent from returning into the Lake and therefore Joss Ck will be ruined
30	Roads and Traffic Authority	DNS	<ul style="list-style-type: none"> • Yamba Road will require upgrading to a Type B left turn rural treatment and a Type B right turn treatment as shown in AUSTROADS Part 5 Intersection at Grade, Figures 5.17 and 5.21. Length of turning bays should be in accordance with a design speed of 80km/hr. • The intersection of Yamba Road and Micalo Road will require upgrading of tapes and curve radii to the desirable treatment shown in Figure 5.16 in AUSTROADS Part 5 Intersection at Grade. • Micalo Road should be upgraded in accordance with Maclean Shire Council's requirements. • Section 94 contributions based on haulage rates to and from the development should be made to Council to allow for future maintenance works on Micalo Island.
31	National Parks and Wildlife Service	DNS	<ul style="list-style-type: none"> • Migratory Shorebirds: <ul style="list-style-type: none"> - Clarence Estuary, including Wooloweyah Lagoon, is a priority 2 Coastal Wetland, as it has counts exceeding 1% of the estimated NSW population for the Golden Plover, Mongolian Plover and Whimberel. In addition, the Clarence Estuary is one of only two regular sites for the small NSW populations of the Large Sand Plover and Great Knot; - Survey effort inadequate to assess the value of the site for migratory shorebirds; - NPWS recommend that the proposal be modified to maintain shorebird habitat on the site; and - Measures such as setting aside of ponds, or constructing additional ponds, would reduce the impacts of the proposal. • Threatened Species: <ul style="list-style-type: none"> - SIS required for the Black-necked Stork. • NPWS Estate: <ul style="list-style-type: none"> - EIS does not sufficiently address indirect impacts (specifically the discharge of wastewater) on the Clarence Estuary Nature Reserve; - It is an offence to pollute the waters of lands managed under the <i>National Parks and Wildlife Act 1974</i> without the consent of a park authority; - Discharge of waters will therefore need to be regulated; and - Information requested by EPA would help clarify this issue. • Aboriginal Cultural Heritage: <ul style="list-style-type: none"> - Contingency plan should be prepared in the case that any relics are unearthed during construction; and - Consideration should be given to the Native Title claim for the Clarence Rivers and off-shore waters. • Predator Management:

			<ul style="list-style-type: none"> - Management of predators, particularly native bird species, particularly important; - NPWS supports proposal to screen ponds with nets; and - Mesh size should be smaller than the proposed 75mm to reduce potential for bird entanglements.
32	Department of State and Regional Development	Supports	<ul style="list-style-type: none"> • DSRD supports proposal: <ul style="list-style-type: none"> - Working with Applicant to facilitate progress of proposal; - Proposal to revitalise the area and redevelop the industry is supported; - Maclean Shire unemployment rate approx. 10.5% - close to twice rate for NSW. Investment and job creation therefore needed; and - The proposal will provide a critical mass to the prawn farming industry on the Clarence, appropriate to the <i>North Coast Sustainable Aquaculture Strategy</i>.

Issues Raised In Response to the Second Public Exhibition

No.	Name/ Organisation	Position	Issues
1	Private	Objects	<ul style="list-style-type: none"> • Property is an important habitat for migratory birds and native Australian spp.; • Netting of ponds will prevent birds from accessing an important feeding area; • Opening of canals and establishment of more ponds will pollute the Clarence Estuary.
2	Private	Objects	<ul style="list-style-type: none"> • Property is being used by wading bird species and migratory waders; • Feeding stopover; • Australia signatory to Ramsar which includes protected site for waders but Lake Wooloweyah not included; • Threatened species would be adversely affected; • Concerned with low tidal flushing since fish habitat may be adversely affected; • Proposed that an alternative site be found and the subject property be purchased by the National Heritage Trust.
3	Private	Objects	<ul style="list-style-type: none"> • Very unique and fragile environmental area and attempts in the past have not been successful.
4	Private	Objects	<ul style="list-style-type: none"> • Disruption to bird life in the past has been devastating; • There is a chance of sulphate and acid sulphate release into this fragile environment; • Land is flood prone.
5	Private	Objects	<ul style="list-style-type: none"> • Significant habitat for a number of endangered faunal species; • Location has been subject to high rainfall and severe flooding. • Run-offs from the proposed prawn farm pose a risk of contamination to the lake during flooding; • Lake Wooloweyah and its adjoining river systems are under stress with heavy silting and poor tidal flow due to incompetent management by previous governments; • Property plays a vital role in the breeding and growth of wild fish species, mudcrabs, blueswimmers and other significant marine life; • Previous attempt to develop property as a prawn farm left area 'gutted and scarred' and a person involved in the previous development is involved with the current developers.
6	Private	Objects	<ul style="list-style-type: none"> • Potential impacts to sensitive wetlands areas; • Concerned with the twelve threatened bird species;

			<ul style="list-style-type: none"> Land should be purchased and added to the Clarence Estuary Nature Reserve.
7	Private	Objects	<ul style="list-style-type: none"> Potential impacts to sensitive wetlands areas; Concerned with the twelve threatened bird species; Land should be purchased and added to the Clarence Estuary Nature Reserve.
8	Private	Objects	<ul style="list-style-type: none"> Can see degradation of the lake and surrounding waterways due to past and present misuse
9	Private	Objects	<ul style="list-style-type: none"> Concerned with that threatened bird species would be driven out by loss of habitat, continual disturbance and netting of ponds; The site is an important feeding and roosting area for migratory waders; Important drought refuge for ducks and red-necked avocets; Does not agree with the statement in the SIS that if the present habitat was lost to development, the birds would utilise superior habitat elsewhere; Concerned with the construction works being done during the dry season. The dry season is a stressful time for the birds; Construction activities, at any time of the day, will prevent roosting and feeding; Major concern is the effluent run-off since it would cause serious impact on Lake Wooloweyah and the adjacent Clarence Estuary Nature Reserve and its mangrove; Unrealistic long-term management strategies such as Pest Control Plan, Weed Control Plan and Fauna Monitoring Program. Strategies such as these would be quickly forgotten; Presumptuous to suggest that the local birdwatching organisation carry out the Fauna Monitoring Program. This should be left to trained government employees with enforcement powers; The government should purchase land.
10	Private	Concerned	<ul style="list-style-type: none"> There might be a need for prawn farming in the lower Clarence area but should be done in places that can affect our eco-system; The Clarence Estuary Nature Reserve should have this land included in their area; It would only take one mistake by the proposed prawn farm and the pollution to the lake and wetlands would be irreversible.
11	Private	Objects	<ul style="list-style-type: none"> The scale of the proposed prawn farm could destroy their lifestyle and endanger the 12 threatened species mentioned in the SIS; Netting of ponds may kill birds; The property value of their property would depreciate due to the close proximity of the proposed development; Noise associated with the development would be heard throughout the island affecting the family and the local birds; The Clarence River Wetland Complex could not sustain the tonnage of effluent that would into the shallow waterways; The adjoining Lake Wooloweyah could become polluted and the abundance of river fish currently drawing tourists to Yamba could diminish; The previous prawn farms were short-lived and left behind scars both environmentally and economically; Supports the scheme to purchase and add it to the adjacent Clarence Estuary Nature Reserve.
12	Private	Supports	<ul style="list-style-type: none"> Confident that modern and proper facilities are in place to ensure environmental protection and this will enhance and ensure the prosperity of business and the local community;
13	Private	Objects	<ul style="list-style-type: none"> Proposed development is unsuitable for the location due to unacceptable environmental impact, threats to wildlife and there will be no social or economic benefits to the community; Removal of habitat from the subject site; Sedimentation and erosion; Increased nutrient levels and introduction of disease during floods; Accidental release of nutrient from untreated pond water or prawns;

			<ul style="list-style-type: none"> • Entanglement in netting (birds); • Increased traffic along the length of Micalo Island.
14	Private	Objects	<ul style="list-style-type: none"> • Concerned that the Oyster Channel is already suffering stress from pollutants and excess nutrients that may be discharged and also from sedimentation; • Loss of bird habitat especially threatened species; • Would like to see subject land dedicated to the Clarence Estuary Nature Reserve.
15	Private	Objects	<ul style="list-style-type: none"> • Removal of habitat from the subject site; • Sedimentation and erosion; • Increased nutrient levels and introduction of disease during floods; • Accidental release of nutrient from untreated pond water or prawns; • Entanglement in netting (birds); • Increased traffic along the length of Micalo Island; • Threatened species likely to be adversely affected.
16	Private	Objects	<ul style="list-style-type: none"> • Swims and fishes in the Lake Wooloweyah and would like the water not to be polluted from a prawn farm.
17	Private	Objects	<ul style="list-style-type: none"> • Loss of habitat; • Threat to habitat; • Economic viability; • Ameliorative measures – information in the SIS lacks detail and is vague, construction works will always disturb the migratory species, birds could become entangled in the netting, monitoring issues; • The EMP – concerned that it is not yet devised, Mr Whale is the coordinator of the Clarence Valley Birdos and they have not been asked and do not feel it is appropriate for them to do surveys; • Water Quality – does not agree with the disposing of waste using the outgoing tide, margin of error too small. Concerned that wastewater could threaten the fishing industry and tourism.
18	Private	Objects	<ul style="list-style-type: none"> • Concerned with the intersection between Micalo Road and Yamba Road -extra traffic on Yamba Road would create more problems at this intersection; • Extra traffic noise; • Haven for wildlife; • Acid sulphate soil run-off.
19	Private	Objects	<ul style="list-style-type: none"> • Concurs with the findings of Axseven's SIS citing six potential negative impacts and 12 threatened species; • Supports inclusion of the area into the Clarence Estuary Nature Reserve.
20	Private	Objects	<p>Form Letter</p> <ul style="list-style-type: none"> • Proposed development does not meet the minimum performance criteria in SEPP 62; • If the ponds are netted, it would make it easier for people to shot the birds; • Concerned with the current practice by existing prawn farms of burning of polystyrene boxes. Better controls of this practice are required before further developments are allowed; • Land is too low and floods and there is also the risk in relation to acid sulphate soils.
21	Private	Objects	<ul style="list-style-type: none"> • Concerned with the negative impacts and the threat to birds;
22	Private	Objects	<ul style="list-style-type: none"> • Removal of site habitat; • Erosion and sedimentation;

			<ul style="list-style-type: none"> • Accidental release of untreated pond water or prawns; • Entanglement of netting of birds; • The use of scare guns to keep birds out of the ponds; • Impact of development on the 12 threatened species; • Micalo Island is an important area for migratory shorebirds; • The government should purchase land.
23	Private	Objects	<ul style="list-style-type: none"> • Protect our environment
24	Private	Objects	<ul style="list-style-type: none"> • The SIS report is of particular concern - decline of habitat in the locality for the threatened and migratory species; • The Upper North (UNC) Catchment Management Board Blueprint Part B, Table 2: lists the Clarence Coastal Floodplains as the <i>highest priority landscape for revegetation and conservation</i>; • Lake Wooloweyah experiences low level of flushing and is a major nursery ground for several species of fish, crustaceans and other terrestrial and aquatic life; • Accumulative impacts of industry, agriculture, commercial fishing, tourism and coastal development need to be considered; • 'Best Practice' is not explained or what it would achieve.
25	Private	Objects	<ul style="list-style-type: none"> • Aquaculture IV student – concerned regarding the size of the proposed development and that such a large scale prawn farm would produce 6 tonnes/day of effluent and the lake and surrounding waterway would foul up in 2-4 years; • At the 'Shallow Channel' end of Micalo Island, the water flow does not meet the Clarence because of the road built in 1937; • Proposed that the prawn farm be scaled down by 1/5.
26	Private	Objects	<ul style="list-style-type: none"> • Very fragile, estuary wetland environment which is already under pressure. In the last 50 years bird life and fish have diminished in their thousands; • Area must be incorporated into the Clarence Estuary Nature Reserve.
27	Private	Objects	<ul style="list-style-type: none"> • This type of development has been tried and failed on the same land numerous of times in the last 20 years; • It is a threat to the environment.
28	Private	Objects	<ul style="list-style-type: none"> • Dramatic impact on Oyster Channel and Lake Wooloweyah; • Proposed development is too risky; • The SIS outlines a number of potential impacts on threatened species and surrounding ecological communities; • Area should be added to the Clarence River Nature Reserve.
29	Private	Objects	<ul style="list-style-type: none"> • Disastrous impact on threatened species of birds, fish breeding areas and the already fragile Lake Wooloweyah.
30	Private	Objects	<ul style="list-style-type: none"> • Development on mainly less than 1 m AHD within an area proven to have high level Acid Sulphate Soils. Any disturbance would cause large quantities of acid and toxic dissolved aluminium to enter the waterways; • For every Kg of product (prawns) produced in aquaculture over 1.6 to 2 kg of native fish stocks are required as food. Native fish stocks must be preserved; • Several threatened and endangered species will be denied habitat; • The state government should buy the site and incorporate to the Clarence Estuary Nature Reserve.
31	Private	Objects	Form letter, see submission 20
32	Private	Objects	<ul style="list-style-type: none"> • Significant threat to the vital functioning of Lake Wooloweyah; • Urban sprawl has already diminished the wetlands of the area; • The threat of additional nutrients released by the proposed prawn farm can be left to chance; • The state government should buy the site and incorporate to the Clarence Estuary Nature Reserve.

33	Private	Objects	<ul style="list-style-type: none"> Environmental reasons including threatening many bird species; Would like to see Micalo Island purchased and added to the Clarence Estuary Nature Reserve.
34	Private	Objects	<ul style="list-style-type: none"> The SIS mentions that it is a redevelopment but this is not correct as the old prawn farm has been closed since 1991 and only covered 95 hectares compared to 175.81 hectares for the present development; Concerned about the total area required for the four separate systems. It should be 119.32 hectares;
35	Private	Objects	<ul style="list-style-type: none"> Disastrous impact on threatened species, fish breeding areas and the already fragile Lake Wooloweyah.
36	Private	Objects	<ul style="list-style-type: none"> Disastrous effect on the threatened species of birds currently inhabiting the area;
37	Private	Concerned	<ul style="list-style-type: none"> Netting over ponds likely to affect threatened birds and bats; Oxidation of acid sulphate soils and release of acidic water into waterways represents a major threat; Concerned about impacts on the Lake Wooloweyah wetland system and its wader bird habitat; The Precautionary Principle should apply if there is any potential for damage due to increased nutrients, sedimentation and disease.
38	Private	Concerned	<ul style="list-style-type: none"> The Oyster Channel – Lake Wooloweyah system is a vital nursery, many creatures: fish, crustacean and bird rely on this waterway for continued growth and reproduction; People rely on it for their livelihood as tourism and commercial fishing; The whole waterway should be added to the Clarence River Nature Reserve
39	Private	Objects	Form letter – see submission 13
40	Private	Objects	Form letter – see submission 13
41	Private	Objects	<ul style="list-style-type: none"> SIS makes it clear that the proposal must be rejected because of the list of threatened species and risk of serious pollution. Micalo Island and adjoining wetlands and channels represent one of the most valuable and important bird habitats. Also important fisheries and fish habitats; The government should purchase the land under the \$2.5 billion Natural Heritage Trust and add it to the Clarence Estuary Nature Reserve.
42	Private	Objects	<ul style="list-style-type: none"> Was Chief Town Planner at Maclean Council for 17 years; Micalo Island is low lying, flood liable and is vitally integral with the estuarine ecology of the Lower River System; Has already been subjected to environmental destruction in the early 1980s; Acid sulphate sediments are readily extracted from the wall of one of the abandoned prawn ponds.
43	Private	Objects	<ul style="list-style-type: none"> The environment is devastated far too much already; The proposal would have huge impact on the native fauna and flora by removing the remaining habitat as a result of sedimentation and erosion. The predator nets may kill or injure some of the threatened species and bats; Untreated pond water or prawns could wipe out the recreational and fishing industry in the Lower Clarence and surrounding areas; Increased nutrients in the river will effect riparian vegetation as well as aquatic fauna and flora.
44	Private	Objects	Form letter, see submission 20
45	Private	Objects	Form letter, see submission 20
46	Private	Objects	Form letter, see submission 20
47	Private	Objects	Form letter, see submission 20

48	Private	Objects	Form letter, see submission 20
49	Private	Objects	Form letter, see submission 20
50	Private	Objects	Form letter, see submission 20
51	Private	Objects	Form letter, see submission 20
52	Private	Objects	Form letter, see submission 20
53	Private	Objects	Form letter, see submission 20
54	Private	Objects	Form letter, see submission 20
55	Private	Objects	Form letter, see submission 20
56	Private	Objects	Form letter, see submission 20
57	Private	Objects	Form letter, see submission 20
58	Private	Objects	Form letter, see submission 20
59	Private	Objects	Form letter, see submission 20
60	Private	Objects	Form letter, see submission 20
61	Private	Objects	Form letter, see submission 20
62	Private	Objects	Form letter, see submission 20
63	Private	Objects	<ul style="list-style-type: none"> • SIS identified 12 threatened bird species and listed potential impacts development would have; • If the DA is approved who monitors and policies the conditions? • Consider the long term benefits against a potentially dangerous and short term business venture; • Supports purchasing the land and turn into a nature reserve.
64	Private	Concerned	<ul style="list-style-type: none"> • Fragile and vulnerable area and the proposal will have a dramatic impact on Oyster Channel and Lake Wooloweyah; • Concerned with the long term effects the proposal will have on an area already under stress. Worried about the discharge of pond waste into the shallow, slow flowing waters of the area; • The area should be added to the Clarence River Nature Reserve.

65	Private	Objects	<ul style="list-style-type: none"> • Removal of habitat; • Modification of habitat attributes; • Sedimentation and erosion; • Increase in nutrient levels; • Potential of accidental release of untreated pond water; • Proposes that the subject land be purchased and added to the Clarence Estuary Nature Reserve.
66	Private	Concerned	<ul style="list-style-type: none"> • A study in 2001 determined that nutrients or otherwise which enter Lake Wooloweyah tend to remain there as the lake 'experiences very poor flushing'; • Nine threatened species have been identified and the impact on these species would be devastating; • Priority should be the need of the community rather than a company seeking profits;
67	Private	Objects	<ul style="list-style-type: none"> • Previously rejected and does not agree that precious resources be spent in revisiting this issue again; • Decline in the habitat for many bird species; • Sedimentation and erosion of habitat areas; • Accidental release of untreated pond water and prawns will contaminate the river; • In the event of flood, there is greater possibility of nutrient levels be increased and introduced; • Fishing and tourism industry will be greatly affected; • The state government should buy the site and incorporate to the Clarence Estuary Nature Reserve.
68	Private	Objects	<ul style="list-style-type: none"> • SIS acknowledges that there will be incremental decline in habitat – would like to add that the proposal will put incredible pressure on the other remaining habitats on the Lower Clarence and insufficient consideration is given to this; • The proposed site should be rehabilitated as a wetland site and added to the Lower Clarence Estuary.
69	Private	Objects	<ul style="list-style-type: none"> • The proposal is situated on high potential and actual acid sulphate soils as mapped by DLWC. The SIS fails to address the potential impact on threatened species and seagrass with regard to acid sulphate soils; • Saltmarsh is a community of significance to fisheries and forms an important foraging ground on lower tides for birds, amphibians and fauna. The SIS fails to map this species on any of its vegetation maps or discuss the likely impacts; • The SIS did not investigate the possible effect of this development on SEPP 14 areas surrounding the subject site and contained within the study area; • The SIS did not provide adequate information or consideration to allow for the protection of threatened species. Failed to employ the most effective management planning tools; • Water quality will be affected in many ways due to acid sulphate soils, effluent discharge including bacterial and other micro-organisms. The discharge point along Joss Channel is unsuited to prawn farm effluent discharge; • No depth in the management strategies; • The government should assist the community to purchase the site for inclusion into the Clarence Estuary nature Reserve; • There are alternative sites eg the main arm of the Clarence River.
70	Private	Objects	<ul style="list-style-type: none"> • The first prawn farm was a disaster – why perpetuate this? • Low level tidal flushing from the Lake; • For too long the waterways have been used to facilitate sewerage disposal.
71	Private	Objects	<ul style="list-style-type: none"> • Valuable and important habitat for bird life • Nine threatened species have been identified. Every effort should be made not only to preserve but also to increase these species.
72	Private	Objects	<ul style="list-style-type: none"> • The SIS supports original objections

			<ul style="list-style-type: none"> • The SIS relies too much on the fact the privately owned lands in the environs of the subject site also contain habitat suitable to the needs of the identified threatened species. The land on Micalo Island is predominately rural capable of further modification; • 84.7% of NSW's population lives within fifty kilometres of the coast with this trend likely to continue in the future and it will continue to put pressure on the Clarence River Estuary System; • The six long term management strategies are incapable of effective monitoring by state government agencies or Maclean Shire Council • Bird netting is not consistent with minimal impact on threatened species. • SIS admits the potential for the proposed waste water discharge and/or disease outbreak to impact on Oyster Channel. • The SIS fails to demonstrate compelling reasons as to why minimum locational performance criteria should be abandoned for aquaculture on the subject site; • The speculative nature of the acquisition of Portions 260 and 368
73	Private	Concerned	<ul style="list-style-type: none"> • No considerations have been made for residents of the island – reside on portions 251 and also own 363 and 367 which are next to the Prawn Farm site; • High Acid Sulphate levels and pollution from the prawn ponds will cause contamination to the easement channel that runs through their property and out to Oyster Channel; • Noise pollution – although the hours of operation have been stated to be Mon-Fri and no night time, concerned that an existing prawn farm operates 24 hours a day; • Safety of wildlife; • Odour due to chemical treatments, fertilisers, diseased crops, sludge and spoils; • Possible contamination to waterways may occur from introduced feed for the prawns and even disease from the prawns themselves; • Wastewater from the ponds into the existing man-made drains should not be an option as the drains may be tidal but are not influenced by strong tidal flows.
74	Private	Concerned	<ul style="list-style-type: none"> • Land is rehabilitating itself and returning to its natural state as a wetland after the previous prawn farm; • Netting of the ponds will only be a temporary practice since it is not cost-effective; • Chemical leaks into the environment and risk of disease , exposure to acid sulphate soils; • There is no fast tidal flow or deep waters to allow for flushing out. Do not want the inlet canal on our property widened or touched in any way without consultation and approval; • Main Road and Micalo Island turn off is not safe for increased traffic; • Flood risks on surrounding properties if prawn farm goes ahead; • Closure of road reserve – this road is the only access to portions 363 and 367; • This site should be bought and added to the Clarence Estuary Nature Reserve.
75	Private	Concerned	<ul style="list-style-type: none"> • There are no conditions in the proposed DA that can guarantee the safety of the environment or the waterways; • The last attempt at a prawn farm was a failure; • The lake and estuaries are a breeding ground for fish and other wildlife. These areas should be protected for the benefit of the fishing and tourism industries.
76	Private	Objects	<ul style="list-style-type: none"> • A recent bird survey by the NSW Waders Study group counted 884 waders on Micalo Island; • A study in 2001 noted that Lake Wooloweyah experiences very poor flushing. Nutrients that enter the lagoon tend to stick around. • Additional nutrients, high BOD levels, chemicals and disease pathogens could create a disaster. • The SIS Environmental Management Plan is questionable. The proposals lack details;

			<ul style="list-style-type: none"> • The use of netting may trap or kill the bats and birds it is supposed to safeguard; • Access to the proposed farm is a problem since the owner of the private road, will not give access; • PlanningNSW informed a landowner that access to the proposed farm had changed. The proposed access runs directly through sensitive wetlands and frequented by the 12 threatened species. Residents have not been fully informed; • Traffic increase of 60 to 80 vehicles per day. Severe impact on Micalo / Yamba Rd intersection. C
77	Private	Objects	<ul style="list-style-type: none"> • The widening and deepening of the trunk drain may experience major erosion problems. The drain is the inlet channel of the prawn farm which runs through 3 private land holders; • Flood level in view of the extension of the prawn farm is another major concern.
78	Private	Objects	<ul style="list-style-type: none"> • Removal of habitat from the subject site; • Sedimentation and erosion; • Increased nutrient levels and introduction of disease during floods; • Accidental release of nutrient from untreated pond water or prawns; • Entanglement in netting (birds); • Increased traffic along the length of Micalo Island; • Purchase land and add it to the Clarence Estuary Nature Reserve.
79	Private	Objects	<ul style="list-style-type: none"> • Removal of habitat from the subject site; • Increased traffic along the length of Micalo Island; • Threatened bird species likely to be adversely affected; • Large aquaculture developments of this kind have been damaging and unpopular elsewhere; • Purchase land and add it to the Clarence Estuary Nature Reserve
80	Private	Did not state	<ul style="list-style-type: none"> • Bought Lot 5 • Has not been approached regarding acquiring legal access to private road but Ax-seven people have been using it. C
81	Private	Concerned	<ul style="list-style-type: none"> • Risk of serious damage to estuarine system; • The possible loss of fauna species due to diminishing habitat; • Increased stress on an already ailing waterways;
82	Private	Objects	<ul style="list-style-type: none"> • Member of YAWHO (Youth of Angourie/Wooloweyah Hang Out) • Poster
83	Private	Objects	<ul style="list-style-type: none"> • Member of YAWHO (Youth of Angourie/Wooloweyah Hang Out) • Poster
84	Private	Objects	<ul style="list-style-type: none"> • Member of YAWHO (Youth of Angourie/Wooloweyah Hang Out) • Poster
85	Private	Objects	<ul style="list-style-type: none"> • Member of YAWHO (Youth of Angourie/Wooloweyah Hang Out) • Poster
86	Private	Objects	<ul style="list-style-type: none"> • Member of YAWHO (Youth of Angourie/Wooloweyah Hang Out) • Poster
87	Private	Objects	<ul style="list-style-type: none"> • Member of YAWHO (Youth of Angourie/Wooloweyah Hang Out) • Poster
88	Private	Objects	<ul style="list-style-type: none"> • Member of YAWHO (Youth of Angourie/Wooloweyah Hang Out)

			<ul style="list-style-type: none"> • Poster
89	Private	Objects	<ul style="list-style-type: none"> • Member of YAWHO (Youth of Angourie/Wooloweyah Hang Out) • Poster
90	Private	Objects	<ul style="list-style-type: none"> • Member of YAWHO (Youth of Angourie/Wooloweyah Hang Out) • Poster
91	Public Interest Group	Object	<ul style="list-style-type: none"> • 91 ha of netting over the ponds poses a threat of entanglement to threatened birds and bats. The Healthy Rivers Commission Independent Inquiry into the Clarence River recommended that native bird flight paths in the siting of new aquaculture ponds; • Nutrient levels will build up in Lake Wooloweyah which is subject to poor flushing. HRC report states that the levels of various contaminants contained in prawn ponds effluent typically exceed that found in receiving ponds; • Acid sulphate soil hotspot mapping undertaken by DLWC identifies Micalo Island a high risk hotspot; • Removal and degradation of habitat for threatened and migratory species of birds and bats; • Should the development proceed ask for, as recommended in the HRC report, the imposition of a bank guarantee for the rehabilitation of the site.
92	Public Interest Group	Concerned	<ul style="list-style-type: none"> • The commercial fishing industry working in the area of the proposed development and other areas of the Clarence River have on numerous occasions reported incidences of waste from various prawn farms entering the river system and polluting the aquatic environment; • The subject development is located in the vicinity of Lake Wooloweyah as well other water courses all of which run into the lake which is a very significant habitat area for prawns and other commercial species of fish.
93	Public Interest Group	Concerned	<ul style="list-style-type: none"> • The saltation of Oyster Channel; • The affect on threatened species of birdlife as listed in the SIS; • The discharge of nutrients into Lake Wooloweyah which then flushes through Oyster Channel (a change in nutrient levels will affect mangrove growth and fish stocks); • Would like to see the area added to the Clarence River Nature Reserve.
94	Public Interest Group	Objects	<ul style="list-style-type: none"> • There is a history of failed developments on Micalo Island and the consequent destruction of significant habitat show failings in process that need to be addressed; • Need for approval schemes to include a requirement for rehabilitation should the venture fail; • Processes for assessing the environmental impact and sustainability of developments should consider broader ecological principles; • There is the problem for the independence of consultants who are employed by the proponents of developments. PlanningNSW should consider developing a system that allows the assignment of suitably registered consultants, who can work at arm's length from the proponent; • No indication in SIS what is meant by 'minimise' or 'minimal' • Does not agree with the statement that the 'best use' for the site is for aquaculture purposes; • Traffic is recognised as a problem; • There should be independent and regular inspections if the proposal proceeds with the power to order stop work, fines or remedial action if breaches occur; • The ameliorative measures outlined in the SIS are not comprehensive and leave concerns that the environment will suffer unacceptable impact.
95	Public Interest Group	Objects	<ul style="list-style-type: none"> • The loss of habitat to threatened bird species; • Danger of waterbirds becoming entangled in the pond netting;

			<ul style="list-style-type: none"> Increased nutrient levels from the release of pond water into the adjacent waterways; The potential of acid-sulphate run-off into the river.
96	Public Interest Group	Objects	<ul style="list-style-type: none"> Has received legal advice that the proposal is prohibited development, the DA should have been submitted under s89 of the Act. Therefore the DA is invalid; Proposed development is governed by SEPP 62 – amendments apply and is not an existing aquaculture development;; Fails to meet three of the minimum performance as per SEPP 62; Pond-based aquaculture is only permissible within areas zoned for rural purposes. Part of the area is zoned 7(a) under Maclean Shire's LEP; Most of Micalo Island is excluded from the area coloured green on the Estuarine Aquaculture Map because it is not suitable for aquaculture development; Acid Sulphate Soils risk codes: Please refer to submission.
97	Public Interest Group	Objects	<ul style="list-style-type: none"> Mis-management of this delicate ecological site could have catastrophic impacts on two major industries in the lower Clarence: tourism and fishing (both commercial and sports); Lake Wooloweyah is not well drained and if effluent were to enter, enormous damage could be done to native species of fish and other wildlife; Wetland restorations are being actively undertaken throughout the Clarence River Valley. In light of this, it seems incredible that PlanningNSW would be prepared to take any chances with Lake Wooloweyah; If approval is granted a significant bond should be applied to the developer for a 5 or 10 year period to cover the possible cost of environmental problems or cleanups.