

# Coordinator-General's Report

## Guthalungra Aquaculture Project

Report evaluating the Environmental Impact Statement,  
pursuant to Section 35 of the *State Development and  
Public Works Organisation Act 1971*

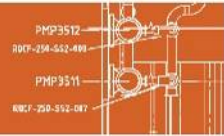
January 2008

# Guthalungra Aquaculture Project

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# Coordinator-General's Report - Synopsis

Pacific Reef Fisheries (Bowen) Pty Ltd (Pacific Reef Fisheries), is proposing to build and operate an aquaculture facility in the Bowen region, North Queensland ("the Project"). The facility will produce 1600 tonnes per annum of black tiger prawns for the domestic and export markets. The Project is located near the coastal town of Guthalungra and adjacent to the Elliot River.

Pacific Reef Fisheries is an experienced operator in the aquaculture industry, and presently owns and operates a substantial aquaculture facility at Ayr growing black tiger prawns, approximately 60 km north of the proposed Project site.

The Project encompasses construction of 259 aquaculture ponds, each approximately one hectare in area, arranged into three independent farm units. The farm will source seawater from Abbot Bay through a purpose built offshore pumping station and pipeline system. Pond waste water will be treated via sand filtration and settlement ponds before being discharged back into Abbot Bay. In addition to the pond area, farm support infrastructure, including a seafood processing facility, feed storage, workshops, office facilities and employee accommodation will be constructed onsite.

Construction of the Project will be undertaken over approximately a four year period and capital investment will be in the order of \$A40 million. The Project includes approximately \$2.25 million additional capital expenditure for the inclusion of sand filtration technology to treat waste water.

On 12 June 2001, the Project was declared to be a "significant project" for which an Environmental Impact Statement (EIS) is required, pursuant to s.26(1)(a) of the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act).

The proposal was declared a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) on 29 January 2001. The controlling provisions under Part 3, Division 1 of the Act are s.12 and 15A (World Heritage); s.18 and 18A (Listed threatened species and communities); s.20 and 20A (Listed migratory species) and s.23 and 24A (Marine environment).

The EIS was advertised in *The Australian* and *The Bowen Independent* on 23 October 2003, inviting submissions from the public until close of business on Thursday, 4 December 2003.

A Supplement to the EIS (SEIS) was prepared, to address matters raised in submissions on the EIS, and forwarded on 20 February 2007 to advisory agencies and individuals and organisations who made submissions were advised.

The management of water quality impacts from the farm's waste water discharge was a key concern in my evaluation of the proposal. In combination with the waste

water settlement ponds, mitigation strategies and proposed environmental offset of rehabilitation of wetland areas, it is predicted that the net discharge from the Project will result in only a small increase in nitrogen and phosphorus loads, and a net reduction in total suspended solid loads, in the Abbot Bay receiving environment.

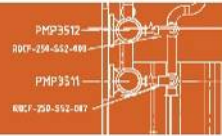
I have determined that, on balance, there is a significant positive net benefit to the community from the development of the Project and that it can proceed, subject to a number of specific recommendations (detailed in the Appendices of this Report) to manage potential impacts associated with the following matters: discharge water quality management; vegetation clearing; construction impacts; hydrology and erosion in sensitive coastal habitats; acid sulphate soils; and cultural heritage.

I recommend that the project can proceed as described in the EIS and SEIS. The potential adverse impacts associated with the project can be adequately addressed through the following measures:

1. Implementation of the project in general accordance with the arrangements described in the EIS and the SEIS and the environmental management commitments nominated therein.
2. Finalisation and implementation of appropriate Environmental Management Plans (EMP) as drafted in the EIS.
3. Implementation of the specific recommendations set down in Appendix A, including entering into a deed of agreement with the State of Queensland to deliver and maintain the offset for the life of the project.
4. Implementation of the recommended conditions in Appendix A1 and A2 for consideration by the Chief Executive for any marine park permit issued pursuant to the *Marine Parks Act 2005* and quarry material allocation issued pursuant to the *Coastal Protection and Management Act 1995*.
5. Attachment of conditions included in the appendices of this report (pursuant to s.47C of SDPWO Act) as conditions for development approvals under the *Integrated Planning Act 1997*.

*Signed Colin Jensen*

.....  
**Colin Jensen**  
**Coordinator-General**  
**Date: 11 January 2008**



# 1 Introduction

This report has been prepared pursuant to s.35 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and s.17 of the *State Development and Public Works Organisation Regulation 1999* (SDPWO Regulation) to evaluate the environmental effects of the proposed Guthalungra Aquaculture Project (“the Project”).

The Project was declared to be ‘significant project’, for which an Environmental Impact Statement (EIS) is required, under s.26 of the SDPWO Act on 12 June 2001.


On 15 January 2001, the Proponent referred the Project to the then Australian Government Minister for the Environment and Heritage under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Referral No. 2001/138). On 29 January 2001, the Minister determined that the proposal constituted a ‘controlled action’ pursuant to s.75 of the EPBC Act. The controlling provisions of Part 3, Division 1 of this Act are sections 12 and 15A (World Heritage); 18 and 18A (Listed threatened species and communities); 20 and 20A (Listed migratory species) and 23 and 24A (Marine environment).

The assessment of the Project, pursuant to s.87 of the EPBC Act, followed the EIS process under Part 4 of the SDPWO Act and Part 5 of the SDPWO Regulation, as accredited by the Australian Government Minister on 9 July 2001.

Subsequent to this decision, the State of Queensland and the Australian Government enacted a bilateral agreement on environmental assessment. This means that the Coordinator-General’s report will constitute the Assessment Report under section 130(2) of the EPBC Act. This Report will be taken into account by the Australian Government Minister for the Environment, Heritage and the Arts in deciding whether to approve the proposal or any conditions that should be attached to the Australian Government approval.

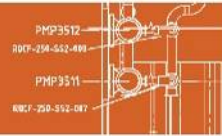
In making my evaluation, I have drawn on the information contained in the EIS. In addition, I have considered all properly made submissions on the EIS; comments on the Supplementary Environmental Impact Statement (SEIS) from Advisory Agencies; matters raised in correspondence with Pacific Reef Fisheries and State and Australian Government agencies and other material relevant to the Project. A summary of the relevant documentation that I considered in making my evaluation of the EIS is provided in section 3.5 of this Report.

For the purposes of this Report, the EIS comprises the “Guthalungra Aquaculture Project, Environmental Impact Statement, October 2003, Volumes I and II”, prepared by Sinclair Knight Merz, Lambert and Rehbein and Seafood Farming Services and the “Guthalungra Aquaculture Project, Supplementary Environmental Impact Statement” prepared by Pacific Reef Fisheries.



The objective of this Report is to summarise the key issues associated with the impact assessment of the Project on the existing physical, social and economic environments at the local, regional, state and national levels. It is not intended to record all the matters that were addressed during the EIS process. The Report focuses on those key issues that were identified, some of which require specific conditioning for the Project to proceed.

The EIS process was managed on behalf of the Coordinator-General by the Department of Tourism, Regional Development and Industry.



## 2 Project description

### 2.1 The Proponent

The Proponent for the Guthalungra Aquaculture Project is Pacific Reef Fisheries (Bowen) Pty Ltd (Pacific Reef Fisheries), a subsidiary of Pacific Reef Fisheries (Australia) Pty Ltd, which is a wholly owned subsidiary of Mitris Management Holdings. The Group has interests in excess of \$100M in property investments, primary production and aquaculture, through the Pacific Reef Group of Companies.

Pacific Reef Fisheries owns the Project site at Guthalungra in freehold title and also operates an existing aquaculture facility at Alva Beach in the Burdekin Shire.

### 2.2 The Project

Pacific Reef Fisheries proposes to construct a major new aquaculture facility to produce 1600 tonnes per annum of black tiger prawns, *Penaeus monodon*, for both the domestic and export markets. The proposed aquaculture facility is located near the coastal town of Guthalungra and adjacent to the Elliot River. A location plan is provided in Figure 1.

The Project will include the following key features:

- 259 aquaculture ponds, each approximately one hectare (hectare) in area and 1.5 m deep;
- An 11.3 ha seawater storage pond of 370 megalitres (ML) storage capacity;
- A discharge remediation area of approximately 47 ha consisting of sedimentation and settlement ponds;
- Integration of sand filtration technology for discharge water treatment;
- Intake and discharge water pipelines to Abbot Bay, approximately 5.5 km long;
- A freshwater storage pond and water reticulation system;
- A seafood processing facility; and
- Farm support infrastructure including feed storage, workshops, general storage and accommodation.

The farm will operate as three totally independent farms on the larger site overall. The three production areas will be the following sizes:

- Production Area 1: 91 ha;
- Production Area 2: 112 ha; and
- Production Area 3: 56 ha.

This arrangement is expected to provide the following benefits:

- reduce the size of each farm entity to maximise operating efficiency;
- allow for each production area to operate independent water supply and exchange systems. This will provide production area managers with full



- control over water quality management and performance of their farm area; and
- reduce the risk of disease by limiting the ability for disease to spread across the farm by water transfer.

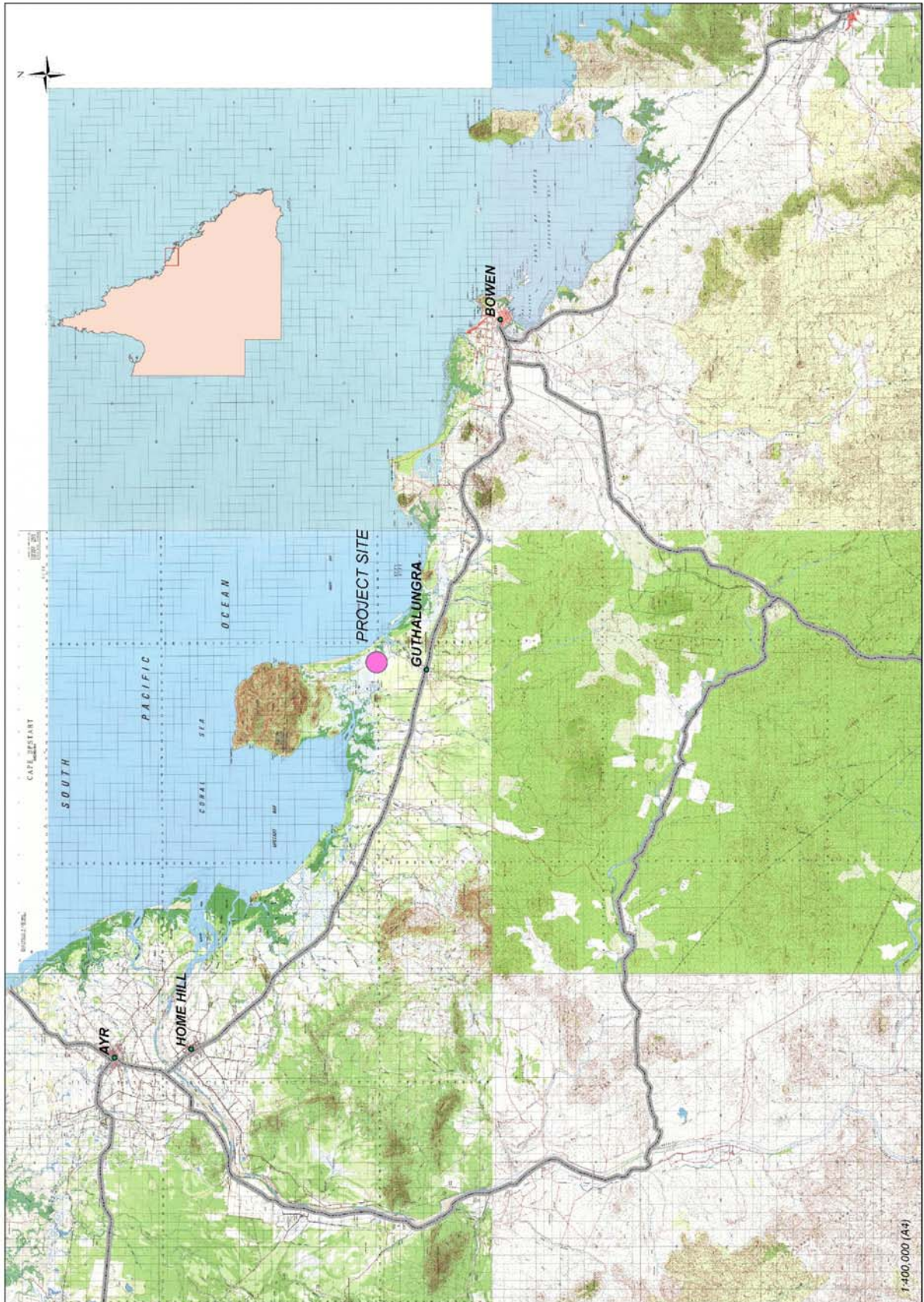
The Project site covers Lot 8 on plan SB298 and Lot 370 on plan K124643 and is owned in freehold title by Pacific Reef Fisheries and is currently designated “rural grazing” in the Bowen Shire Planning Scheme. The total area of both lots is 769 ha.

The vegetation on the main development site is principally eucalypt open woodland, with large areas of cleared or modified vegetation. Clearing of original vegetation was undertaken to facilitate cattle grazing which has been the predominant land use for many years. The vegetation is a ‘not of concern’ Regional Ecosystem (*Vegetation Management Act 1999*). Areas of the site adjacent to the Elliot River are heavily infested with noxious weeds, particularly chinee apple and prickly acacia.

There is an operating prawn hatchery and an evaporation basin for discharge from the hatchery located on Lot 370 on plan K124643. The hatchery facility will be integrated with the full aquaculture facility development and wastewaters from the hatchery will be redirected to the farm treatment ponds at that time.

Overall investment is estimated at around \$40 million, with the aquaculture facility operations expected to require 118 full time employees.

Figure 1: Project Locality Map



## 2.3 Project rationale

The aquaculture industry is Australia's fastest growing primary industry sector, growing in value at approximately 13% per year since 1990. Globally, it is unlikely that greater seafood production can be achieved through wild fishery industries and continuing growth in the aquaculture sector is certain. Ongoing worldwide reductions in wild catch fisheries are anticipated. In light of the growing consumption of seafood both domestically and world-wide, prawn aquaculture presents a unique opportunity for Queensland to supply domestic markets with high quality, fresh and sustainable seafood products, while developing high value export markets.

The Australian consumer prefers to purchase local and Australian products. This is demonstrated by the approximately 30% reduction in sales of imported seafood since June 2006, when retailers were required by law to display country of origin labelling for all seafood products.

Australia imports in excess of 22,000 tonnes of raw and cooked farmed prawns annually, mainly from Vietnam and China. The combined aquaculture and wild catch prawn production in Australia is 23,500 tonnes. Presently, both the aquaculture and wild fishing prawn sectors combined are unable to meet market demand for prawns in Australia. Recent quarantine requirements for raw prawns are anticipated to reduce unprocessed raw prawn imports to Australia.

The development of the Guthalungra Aquaculture Project is anticipated to increase farmed prawn production in Queensland by approximately 50%, from 3,249 to 4,849 tonnes per annum.

## 3 Impact assessment process

### 3.1 Significant Project Declaration and Controlled Action

Pacific Reef Fisheries lodged an Initial Advice Statement for the Project with the Coordinator-General in January 2001. Pursuant to s.26 of the SDPWO Act, the Coordinator-General declared the Guthalungra Aquaculture Project to be a “significant project” on 12 June 2001.

On 15 January 2001, the Proponent referred the Project to the then Australian Government Minister for the Environment and Heritage under the provisions of the EPBC Act (Referral No. 2001/138). On 29 January 2001, the Minister determined that the proposal constituted a ‘controlled action’ pursuant to s.75 of the EPBC Act

### 3.2 Review and refinement of the EIS Terms of Reference

Draft Terms of Reference for the EIS were prepared by the Coordinator-General. Copies of the draft Terms of Reference were distributed to the advisory agencies and for stakeholder comment. The Terms of Reference were publicly released and their availability advertised in *The Bowen Independent* and *The Australian*. Comments were accepted until the close of business on 18 April 2002. On 22 June 2002, following evaluation of all comments received from Advisory Agencies and the public, the Coordinator-General formally issued the Terms of Reference to Pacific Reef Fisheries.

### 3.3 Public review of the EIS

On 10 September 2003, the EIS was approved for release by the Coordinator-General and distributed to Advisory Agencies and other key stakeholders. Advertisements were placed in *The Australian* and *The Bowen Independent* on 23 October 2003, inviting written submissions from the public for six weeks until the close of business on 4 December 2003.

The EIS was placed on public display at the following locations: the Bowen Shire Council offices in Bowen, the State Development Centre in Townsville, Council Libraries at Proserpine and Ayr, the Environmental Protection Agency office at Cape Pallarenda, Townsville, the Naturally Queensland Information Centre in Ann Street Brisbane and the State Library of Queensland.

The EIS could also be inspected via a link from the former Department of State Development and Pacific Reef Fisheries internet web-sites

(www.pacificreef.com.au). Hardcopy and CD-Rom versions of the EIS were available for purchase for \$205 and \$10 respectively from the Proponent.

Following the six week EIS review period, 21 submissions were received by the Coordinator-General. Submissions were received from the following:

Private Individuals

Mr Noel Hickmott  
Ms Jane McLean  
Mr Joe Tuminello  
Mr Billy Tait

Organisations

World Wide Fund for Nature (WWF)  
Sunfish Queensland  
Wildlife Whitsunday  
North Queensland Conservation Council

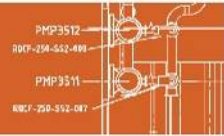
Advisory Agencies

Department of Primary Industries  
Department of Natural Resources and Water  
Department of Local Government, Planning, Sport and Recreation  
Queensland Health  
Department of Housing  
Environmental Protection Agency  
Department of Emergency Services  
Department of Main Roads  
Department of Employment and Training  
Department of Aboriginal and Torres Strait Islander Policy (Now Department of Communities)  
Department of Tourism, Fair Trading and Wine Industry Development  
Great Barrier Reef Marine Park Authority

All responses to the EIS were forwarded to Pacific Reef Fisheries for consideration. Pacific Reef Fisheries prepared additional information or clarification for inclusion in a document entitled "Supplementary Environmental Impact Statement", which was lodged with the Department of State Development in January 2007. The SEIS includes a summary of issues raised in submissions on the EIS along with Pacific Reef Fisheries' response and a column cross-referencing the issue to the relevant section of the EIS.

## 3.4 Review of the Supplementary Environmental Impact Statement

Copies of the SEIS were issued to all Advisory Agencies and other respondents to the EIS were informed that the report was available. The SEIS was available for review on the Pacific Reef Fisheries website, the Townsville State Development



Centre, the Council offices in Bowen and all libraries listed in s.4.3 of this report from 20 February to 19 March 2007.

Advisory agencies were invited to comment on the SEIS and to provide specific advice to the Coordinator-General for consideration for inclusion as conditions or recommendations in this Report. Comments from advisory agencies were due by the close of business on 19 March 2007.

The substantive issues raised in submissions on the EIS were as follows:

- The management of discharge and impact on water quality in Abbot Bay;
- Impacts on marine plants;
- Construction impacts of the intake and discharge pipelines and pumping station;
- Construction of grow-out ponds;
- Acid sulphate soils;
- Cultural Heritage; and
- Socio-economic impacts, specifically housing impacts.

The issues listed above are discussed individually in Section 5 of this report. Any conditions necessary to manage the environmental effects of the development are included in each discussion. Where applicable the reasons for each condition are provided.

### 3.5 Evidence or other material relied upon

Pursuant to s.35 of the SDPWO Act, I have evaluated the environmental effects of the Project and state conditions as set out in this report. In forming my decision, I have had regard to the following materials:

- a. Pacific Reef Fisheries Pty Ltd – Sinclair Knight Merz, Lambert and Rehbein & Seafood Farming Services “Environmental Impact Statement Volumes 1 & 2”, Guthalungra Aquaculture Project, October 2003;
- b. Northern Archaeology Consultancies Pty Ltd – “Cultural Heritage Assessment Report, Proposed Aquaculture Development, Guthalungra, North Queensland” January 2003 (Prepared with the Gudjuda Reference Group Aboriginal Corporation and Birri Gubba Native Title Applicants - Confidential Report);
- c. Pacific Reef Fisheries Pty Ltd – “Guthalungra Aquaculture Project Business Plan” (Commercial in Confidence document) October 2003;
- d. Pacific Reef Fisheries Pty Ltd – “Supplementary Environmental Impact Statement”, Guthalungra Aquaculture Project, February 2007;
- e. Pacific Reef Fisheries Pty Ltd – AEC Group “Guthalungra Aquaculture Project – Net State Benefit Final Report” (Commercial in Confidence document) December 2006;
- f. Pacific Reef Fisheries Pty Ltd – supplementary report document “Executive Summary to the Supplementary Environmental Impact Statement” providing clarifying information on the changes from the original proposal;

- g. Pacific Reef Fisheries Pty Ltd – supplementary report document “Impacts on water quality of the Guthalungra Aquaculture Project” providing information on the proposed environmental offset arrangements for the Guthalungra aquaculture facility;
- h. Pacific Reef Fisheries Pty Ltd – supplementary report document “Assessment against the Standard Criteria of the *Environmental Protection Act 1994*” providing information which assessed the proposal in its entirety against each of the standard criteria;
- i. Pacific Reef Fisheries Pty Ltd – supplementary report document “Does the Guthalungra Aquaculture Project cause a statistical increase in the nitrogen entering Abbot Bay” providing an assessment of the impact on current water quality;
- j. Properly made submissions on the Environmental Impact Statement and Supplementary Environmental Impact Statement received from persons and advisory agencies;
- k. Relevant Queensland Legislation;
- l. Department of Primary Industries and Fisheries letter to Pacific Reef Fisheries Pty Ltd, dated 3 November 2004, regarding likely aquaculture facility discharge impacts on seagrass communities in Abbot Bay;
- m. Environmental Protection Agency letter to Pacific Reef Fisheries Pty Ltd dated 1 December 2005 advising on outstanding issues for assessment of the Guthalungra Aquaculture Project;
- n. Environmental Protection Agency Letter to the Coordinator-General dated 14 August 2006 advising on methodology of determining net state benefit for the Guthalungra Aquaculture Project;
- o. Environmental Protection Agency letter to the Coordinator-General dated 29 August 2006 advising on economic environmental assessment of the Guthalungra Aquaculture Project;
- p. Environmental Protection Agency letter to the Coordinator-General dated 1 September 2006 advising on water quality assessment for the Guthalungra Aquaculture Project;
- q. Reef Protection Steering Committee - “Reef Water Quality Protection Plan – for catchments adjacent to the Great Barrier Reef World Heritage Area”, October 2003; and
- r. Department of Natural Resources and Water Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions, 20 November 2006.
- s. Correspondence between the Environmental Protection Agency and the Department of Tourism, Regional Development and Industry in relation to the Project.

## 4 Approvals for the Project

The following are the major areas of approval and permits that will be required for the Project:

<b>Legislation</b>	<b>Subject</b>	<b>Concurrence or approval Agency</b>
<i>Integrated Planning Act 1997</i>	Development approval for a material change of use	Local Government
<i>Fisheries Act 1994</i>	Material change of use for aquaculture. Removal, destruction or damage of marine plants	Department of Primary Industries and Fisheries
<i>Environmental Protection Act 1994</i>	Environmentally relevant activities: <ul style="list-style-type: none"> <li>• ERA 1 (e) Aquaculture;</li> <li>• ERA 34 Seafood Processing;</li> <li>• ERA 15 (a) Sewage treatment;</li> <li>• ERA 11 (a) Crude oil or petroleum product storing and</li> <li>• ERA 19 Dredging material</li> </ul>	Environmental Protection Agency
<i>Vegetation Management Act 1999</i>	Clearing native vegetation	Department of Natural Resources and Water
<i>Coastal Protection and Management Act 1994</i>	Tidal work. Operational work in a coastal management district	Environmental Protection Agency
<i>Aboriginal Cultural Heritage Act 2003</i>	Cultural Heritage Management Plan	Department of Natural Resources and Water
<i>Marine Parks Regulation 2006</i>	Permit to enter and use a marine park	Environmental Protection Agency
<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwth)</i>	Approval under Part 9 for an action affecting a matter of national environmental significance	Minister for the Environment, Heritage and the Arts
<i>Great Barrier Reef Aquaculture Regulations 1999 (Cwth)</i>	Permit to discharge aquaculture waste in Marine Park	Great Barrier Reef Marine Park Authority
<i>Great Barrier Reef Marine Park Act 1975 (Cwth)</i>	Authority to construct and operate infrastructure in Marine Park	Great Barrier Reef Marine Park Authority

### *Assessment manager*


Bowen Shire Council would be assessment manager for subsequent development approvals under the *Integrated Planning Act 1997*.

### *Resource allocations*

In addition to development approvals, the proponent will be required to obtain a number of resource allocations.

The proposed pipeline route requires access to leasehold land on an adjacent allotment and an existing road reserve. The Proponent has commenced discussions with the leaseholder to negotiate an easement. The Bowen Shire Council have provided views to the Department of Natural Resources and Water expressing support for the pipeline being constructed within the road reserve that lies between

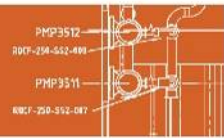




the site and the coastal dunes, provided the road is returned to the same or better condition immediately after construction.

Pacific Reef Fisheries requires a permit to occupy to allow it to construct the pipeline over State land. Land owner's consent is required before development applications can be lodged. The Department of Natural Resources and Water is the administering authority for State land dealings.

Prior to the commencement of dredging of material from within coastal waters, a quarry material allocation under s.73 of the *Coastal Protection and Management Act 1995* is required. The approval of the allocation is outside the Integrated Development Assessment System under the *Integrated Planning Act 1997*. The EPA is the Administering Authority.



## 5 Evaluation of the Environmental Impact Statement

### 5.1 Water quality and management

#### Environmental Impact Statement Findings and/or Key Points

The operation of the proposed aquaculture facility will result in the discharge of suspended solids and nutrients such as nitrogen and phosphorus to Abbot Bay. The impact of the wastewater discharge on water quality in Abbot Bay has been evaluated for the EIS studies.

#### *Ocean outfall*

Discharge from the aquaculture ponds will be treated through a sand filter to remove solids and held in settlement ponds to further reduce nutrients prior to being discharged. The water will be released approximately 500 m offshore, through a diffuser approximately 100 m long and consisting of 300 mm high riser ports, 1000 mm apart and angled at 60 degrees to the seabed to improve mixing.

The average daily discharge during the growing season is 100 ML/d, with this volume rising to a peak of 200 ML/d during February and March. Based on daily nutrient loads, the farm will discharge 453 t/annum suspended solids, 34 t/annum nitrogen and 3.4 t/annum phosphorus. The proponent has proposed an offset for the nutrient discharge of approximately 4498 t/annum of suspended solids, 9.6 t/annum of nitrogen and 1.5 t/annum of phosphorus. This results in an annual net load of 24 t/annum nitrogen and 2 t/annum phosphorus. There will be a net reduction of 4574 t/annum of suspended solids.

#### *Dispersion model*

A numerical dispersion model was employed to evaluate the extent of the discharge impact. Simulations were conducted using a three dimensional hydrodynamic model (5 equal vertical layers) with a horizontal resolution of approximately 70 m and a particle tracking model to investigate the dispersal of the aquaculture facility discharge. Two six month simulations were undertaken using a discharge rate of 200 ML/day and constant nutrient concentration and background nutrient levels. Each simulation used the hydrodynamic forcing produced by the wind, tides and East Australian Current.

Model inputs were based on the worst case scenario, a constant discharge rate of the maximum 200 ML/d and assumed no biological or chemical assimilation of nutrients. The threshold for identifying the area of impact adopted was where the concentration of total nitrogen is greater than 150µg/L and chlorophyll *a* concentration is greater than 2µg/L. These are the trigger levels published in the Australia and New Zealand Environment Conservation Council (ANZECC) 2000 Water Quality Guidelines and by the Great Barrier Reef Marine Park Authority (GBRMPA) for seagrass communities.

The modelling approach was developed and endorsed by a technical working group including representatives of the Environmental Protection Agency (EPA), Department of Primary Industries and Fisheries (DPIF), Department of Natural Resources and Water (NRW), CSIRO and James Cook University. Due to the use of conservative input assumptions in model, it is considered likely that the model predicts a higher level of impact than will be the case for the actual project.

Results of the modelling were presented as contour plots of depth-averaged concentration of total nitrogen, chlorophyll *a* and phosphorus. The dispersion modelling predicts that the area subject to higher than threshold concentrations of nitrogen is about 200 m by 900 m under worst case conditions (low wind conditions and 200 ML/d discharge volume). Concentrations of phosphorus and chlorophyll *a* will only occur above threshold in the immediate vicinity of the diffuser.

For likely conditions (typical wind conditions and 100 ML/d discharge volume), the area of the contour above threshold levels for nitrogen is predicted as 0.88 ha. Concentrations of phosphorus and chlorophyll *a* will occur above threshold only in the immediate vicinity of the discharge outfall.

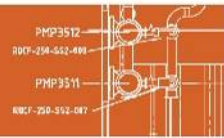
The EIS studies conclude that the project is unlikely to have a significant impact on overall water quality in Abbot Bay. This conclusion includes consideration of the high energy environment in Abbot Bay which, compared to the conservative model assumptions, will have greater dispersion and lower risk of areas being subject to ongoing nutrient concentrations for significant periods. It is likely that a maximum area of approximately 18 hectares in the vicinity of the discharge pipeline will be subject to nitrogen concentrations of approximately 0.25µg/L (the trigger level is 0.15µg/L) for short periods at the peak of the growing season (February and March).

### *Farm design*

The farm has been designed to incorporate comprehensive water treatment prior to discharge and includes sand filtration, sedimentation and settlement ponds to reduce nutrient and sediment loads. The Proponent has designed the grow-out and discharge treatment ponds to allow for integration of new technologies as they are developed and economically proven.

From an environmental impact minimisation perspective, important innovations in the proposed layout unique to this development include:

- Piped ocean intake and discharge (located away from seagrass beds to minimise impact);
- Sand filtration of discharge water;
- Configuration of the layout to provide three independent production areas within the overall farm development, each with its own water supply, drainage, exchange water treatment and re-use facilities;
- Treatment systems incorporating two-stage remediation ponds, allowing for more effective settling of solids and enhanced biological treatment processes; and
- The capacity to increase the operating depth in the sedimentation areas and settlement ponds from 2 m to 3 m when required to accommodate short-term increases in hydraulic or nutrient loads.



### *Offset proposal*

Following investigation of all options to minimise nutrient discharge, the Proponent investigated potential offsets for the nutrient discharge. In October 2003, following public notification of the EIS, the Proponent commenced discussions with the EPA and the DPIF on providing an offset for the nutrient discharge from the facility. In principle agreement was reached to restore riparian and wetland areas located on land adjacent to the Elliot River.

The offset proposed by the Proponent comprises removal of cattle grazing and rehabilitation of the natural environment on the approximately 240 hectare undeveloped area of Lot 370 on plan K124643 (site adjacent to the Elliot River). The site is presently heavily grazed, and has been significantly degraded and infested with weeds. The removal of grazing from the site will immediately reduce the sediment and nutrient runoff from the site itself. In addition, the area contains saltpan, mangrove and riparian vegetation communities which have been degraded over a number of years from the present land use.

This action will provide a reduction in the net nutrient discharge from the aquaculture facility because a significant proportion of the sediment and nutrient impacts to the Great Barrier Reef are derived from overland runoff. These sources carry large amounts of sediments and nutrients to the reef on an annual basis. Rehabilitation of these vegetation communities will filter overland flow, trapping both sediment and nutrients. Data presented in the SEIS shows that approximately 43 km<sup>2</sup> of grazing land within the catchment drains through the rehabilitation site.

The findings of the SEIS studies suggest that the efficiency of nutrient removal by rehabilitated wetlands and riparian buffers is not definitive and will vary with hydraulic loading. However, it is likely that the rehabilitated wetlands will remove at least 80% of sediment, 50% of nitrogen and 55% of phosphorus from runoff flows. An average annual offset of approximately 4498 tonne of suspended solids, 9.6 tonne of nitrogen and 1.5 tonne of phosphorus is predicted. The benefits of the rehabilitated areas will continue for the life of the project and, given the staging of the development over four years, the reduction in sediment and nutrients is likely to occur before full operational capacity of the aquaculture facility is realised.

### **Conclusion**

Water quality management was the key issue raised by the EPA. The EPA expressed concern about the addition of a new point source discharge into Abbot Bay. The agency's position was based on consideration of the Great Barrier Reef Protection Plan and the risk to maintaining water quality objectives in Abbot Bay. The EPA advise that the background nitrogen levels for the waters of Abbot Bay currently exceed the trigger levels in the Queensland Water Quality Guidelines (2006), indicating that there may be reduced capacity for additional nitrogen assimilation.

I will deal with these two issues separately as they relate to a physical constraint and interpretation of a policy as it applies to the Project.

### *Great Barrier Reef Water Quality Protection Plan*

The Great Barrier Reef Water Quality Protection Plan (Reef Plan) states its objectives are to reduce the load of pollutant from diffuse sources in the water entering the reef and rehabilitate and conserve areas of the reef catchments that have a role in removing water borne pollutants. The Plan states it .....”does not deal with urban development or urban diffuse sources of pollution, or point sources of pollution such as sewage, waste from ore processing, mining or aquaculture, which are beyond the scope of the plan”. These industry sectors are dealt with separately under a range of legislation, regulations and strategies. Point source discharges are regulated through licences to control nutrient concentrations and therefore limit environmental impact.

While I consider that the Reef Plan did not intend to limit potential for development of industries requiring point source discharges, the desire to improve water quality entering the reef should be considered in the assessment of the Project. This is in light of the aspirational target reductions identified in the Reef Water Quality Action Plan prepared by the Great Barrier Reef Marine Park Authority.

All actions that will mitigate nutrient concentration in the discharge from the aquaculture facility should be undertaken as detailed in the EIS and SEIS.

### *Extent of impact from discharge*

The second question relates to the likely extent of impacts on seagrass and marine fauna resulting from the discharge of nutrients into Abbot Bay.

I consider that some conservative input values have been used in the modelling to indicate the area that is likely to be subject to nutrient concentrations that exceed ANZECC 2000 and GBRMPA trigger levels.

The proponent has provided 40 months of locally derived water quality data. Statistical analysis provided in the SEIS of the relative contribution from the Project to historical nutrient loads from the Don River Catchment demonstrated that the proposed discharge would not result in a significant difference in the natural annual load. While nutrient trigger levels will be exceeded within the area adjacent to the diffuser during parts of each growing season, the studies do not predict significant impacts on seagrass. This conclusion is supported by the advice provided by DPIF habitat ecologists that the discharge is unlikely to have a measurable impact on seagrass in Abbot Bay.

I consider that the issues related to mitigating nutrient concentrations in the discharge are largely addressed through the proposed farm design improvements and offset arrangements that are identified in the EIS and SEIS.

Based on the information provided in the SEIS, I am satisfied that the proposed offset is likely to significantly reduce nutrients and sediment from the overland runoff, thus providing an offset for the nutrients discharged from the aquaculture

facility. EPA has expressed a preference that as close as practicable to 100% of the nutrient discharge be offset. Nonetheless, I recognise the additional environmental benefits that will accrue from the land rehabilitation program, such as:

- return of the oxbow lake to a state approximating pre-settlement, thereby enhancing the cultural qualities of the area for the traditional indigenous owners;
- increase in habitat and shelter available for wetland fauna species; and
- regeneration of terrestrial habitats of coastal significance.

Therefore, in totality, the land rehabilitation program represents a significant offset for the nutrient discharges from the aquaculture facility.

Notwithstanding the above, the EPA requested I consider the following requirements for the Project to proceed:

- a. Consideration of approving the proposal with a reduced nutrient allowance or conditions that allow for milestone reviews of Best Practice Management with the intent of progressive nutrient load reductions in future as technologies become available;
- b. Comprehensive baseline and ongoing monitoring to identify any impacts from the operation;
- c. Financial assurance be required for site rehabilitation in the event the facility fails financially;
- d. Requirement for a EPA approved Environmental Management Plan (EMP); and
- e. Active rather than passive wetland rehabilitation be required from the outset to ensure that nutrient and sediment offsets are realised early during the development.

I consider that the environmental safeguards requested by the EPA are reasonable and that the conditions in this Report reflect the above suggestions.

Conditions have been included in this Report to manage the potential impacts from the operation of the aquaculture facility, particularly related to disease management and the potential impact on water quality in Abbot Bay. These conditions include:

- a maximum nutrient load permissible in the aquaculture facility discharge;
- a schedule of discharge water quality parameters for monitoring and reporting; and
- implementation of a comprehensive monitoring program over the seagrass and coral communities.

The monitoring program will include statistically robust baseline studies to be completed prior to construction of the farm.

To specifically address the EPA suggestions, conditions are included requiring a Deed of Agreement between the Proponent and the State of Queensland for the offset. This will secure the offset for the life of the project and require active rehabilitation of the land.

The conditions included in Appendix C include the requirement for an annual continuous improvement report. This Report requires the Proponent to provide information on practices and procedures undertaken to reduce nutrient loads from the aquaculture facility each year. That information is to be provided to the EPA on an annual basis.

To ensure that the potential adverse impacts on the environment are appropriately managed, the Proponent will also be required to prepare an EMP. The EMP will be required to cover a number of components of the design, construction and operation of the farm, including the management of water quality, feed management and water treatment. The EMP will also identify appropriate monitoring and corrective actions for potential impacts that are identified. The Proponent is required to obtain EPA endorsement of the EMP prior to commencement of construction.

Conditions for the material change of use for aquaculture have been provided to me by the DPIF and conditions for the associated 'Environmentally Relevant Activities' have been provided to me by the EPA. I am satisfied, based on the information that I have reviewed, that the proposed water quality management measures for the discharge from the aquaculture facility are a feasible solution to manage nutrient loads at acceptable levels and that the Project can be constructed and operated to meet these conditions and to not cause environmental harm.

If the proponent makes an application for development approval for the Project, the conditions provided in Appendix B and C must be attached by the Assessment Manager to approvals under the *Integrated Planning Act 1997*.

I consider that the economic and social benefit that will accrue from the Project are significant and, in making a balanced assessment, consider that the net water quality impacts from the project would be acceptable. I nominate the following Conditions to ensure the effectiveness of the offset arrangements:

### **Condition 1**

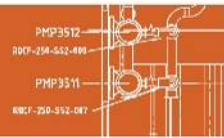
A Deed of Agreement (DoA) to undertake the mitigation (offset) as described in the Supplementary EIS must be completed and approved by the proponent and the State of Queensland prior to the commencement of the operational works for the aquaculture development. The DoA must include timeframes for completion of mitigation works and include but not be limited to the following mitigation (offsets) actions

- Permanent exclusion of all grazing animals (such as cattle) from fish habitats (wetlands) on Lot 370 K124643; and
- Weed management on Lot 370 K124643

I nominate the Department of Primary Industries and Fisheries as the responsible agency for this condition.

### **Condition 2**

Prior to development of the Project, a wetland rehabilitation monitoring program must be developed. This program must be submitted to the Environmental Protection Agency and the Department of Primary Industries and Fisheries for review and comment. Due regard must be given to comments provided by the



Environmental Protection Agency prior to finalisation of the program. The monitoring program must monitor the effectiveness of the wetland rehabilitation works, including the resultant reduction of sediment and nutrient loads entering the marine environment.

I nominate the Environmental Protection Agency as the responsible agency for this condition.

## 5.2 Marine plants

### Environmental Impact Statement Findings and/or Key Points

#### *Construction impacts*

Construction of the aquaculture ponds and intake and discharge pipelines will require the direct disturbance of some scattered salt couch and samphire from the hypersaline flats. Impacts on seagrass may occur during construction of the pump and subtidal sections of the pipeline.

Only temporary disturbance will occur over landward sections of the pipeline. Following construction, natural ground levels will be restored, apart from a maintenance track required for access to the 5m by 5 m bunded and fenced pump control station at the rear of the coastal dune. The track will be approximately 4 m wide and will be constructed with a rock base and incorporate culverts to ensure that the natural hydrology in the saltpan and modified freshwater wetland is not significantly impacted.

Direct physical disturbance of seagrass will not occur during the construction of the subtidal sections of the pipeline. There may be some transient impact on seagrass beds in proximity to the pipeline route as a result of slightly elevated sedimentation during dredging activities to lay the pipeline. The area of sediment disturbance during the dredging process is predicted to be up to 5 m each side of the edge of excavation, resulting in a total impact width of approximately 25 m and 23 m for the co-located and the single pipelines respectively. The total impacted area is anticipated to be less than 1.0 hectare.

The intake and discharge pipeline and submerged pump station has been redesigned as a result of feedback from Advisory Agencies during consultation on the EIS. The path of the submerged sections of pipeline have been realigned so that intake and discharge pipelines are co-located along the entire route. Seagrass surveys undertaken for the environmental impact studies did not find seagrass located in the vicinity of the realigned pipeline route. Mapped seagrass beds are located 180 m to the Northwest and 225 m to the southeast of the realigned pipeline route.

#### *Operational impacts*

Indirect impacts on seagrass are unlikely to occur as a result of wastewater discharge from the aquaculture operations.



The EIS and SEIS evaluated the potential impacts from the wastewater discharge on seagrass. Based on this assessment, long-term impacts on seagrass depth range and density were not predicted. This has been supported by the DPIF, who have advised that the aquaculture facility discharge is unlikely to have a measurable or significant effect on the seagrass ecology of Abbot Bay.

## **Conclusion**

The data in the EIS indicates that the temporary disturbance of salt couch and samphire will not result in a loss of significant areas of natural marine plant habitat. The Proponent has made a number of commitments to reinstate vegetation once construction is complete. I am satisfied that these commitments will minimise any significant permanent impact on marine plants.

Appendix B1 contains conditions provided by the DPIF to manage marine plant disturbance and to minimise the impacts from pipeline construction activities through the salt pan. I recommend these conditions are included in the development approval issued by the Assessment Manager.

In addition to specific conditions in Appendix B1, the Proponent is required to prepare an EMP for the construction of the pipeline. The EMP will ensure the appropriate monitoring of construction activities and the identification of corrective actions in the event of non-compliance. The EMP is to be provided to regulatory agencies prior to the commencement of construction and the Proponent is to have due regard to comments provided.

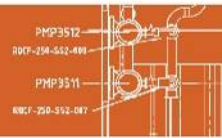
I consider that, in addition to the measures described above, the conditions related to Environmentally Relevant Activity 1(e) Aquaculture will ensure that appropriate discharge limits are met and monitoring of seagrass distribution, viability and seagrass depth surveys are completed. The commencement of the monitoring program prior to construction and operation of the farm, and the staged development over four years until maximum operational capacity, will ensure that any environmental impacts are detected and appropriate corrective actions are implemented in a timely manner.

I am satisfied that, collectively, these conditions will minimise any potential impact of the Project on marine plants.

## **5.3 Pipeline Construction**

### **Environmental Impact Statement Findings and/or Key Points**

Direct disturbance of the terrestrial and marine environment will occur during the construction of the pipeline and offshore pump station. The pipeline runs west to east from the aquaculture facility through to Abbot Bay and will extend for approximately 550 m offshore. A number of ecosystems occur along the proposed intake and discharge pipeline route, including salt pan, freshwater wetlands and coastal dunes.



The disturbance for the construction of the pipeline is predominately temporary, apart from a maintenance track and pump station electrical and services building, located at the rear of the coastal dunes. The track will be constructed with a number of culverts to maintain hydraulic connectivity within the wetland.

During construction of the landward sections of the pipeline, material will be laid aside and backfilled as quickly as possible. The excavated material from the wetland will be treated for acid sulphate soils as required, before placement and re-profiling over the pipeline.

### *Clearing native vegetation*

The vegetation along the pipeline route has been identified as principally being highly modified re-growth consisting of weedy grassland/foreland with scattered shrubs. Two “of concern” Regional Ecosystems are mapped on the Queensland Herbarium Regional Ecosystem maps within the coastal dune section. Regional Ecosystem 11.2.2 Complex of *Spinifex sericeus*, *Ipomoea pes-caprae* and *Casuarina equisetifolia* grassland and herbland on foredunes and Regional Ecosystem 11.2.3 Microphyll vine forest on sandy beach ridges may be disturbed during pipeline construction.

In addition, three vegetation species which are listed as rare under the *Nature Conservation Regulation 1996* are moderately likely to occur in the ephemeral wetland habitats. *Aponogeton queenslandicus* and *Hyrocharis dubia* and *Grewia graniticola* may be encountered during construction of the pipeline.

The Project would permanently disturb less than 0.5 hectare of native vegetation within regional ecosystems described in the Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions (2006).

### *Coastal wetland and dune system*

The seaward section of the intake and discharge pipelines will be co-located for the first 200 m, requiring a maximum width of seabed disturbance of 25 m. The final section of the pipeline will be for the discharge pipe only, requiring a maximum width of disturbance of 23 m.

Water supply to the farm will be provided by three submersible centrifugal pumps, providing a total design capacity of 180 L/s. Pumps will be located approximately 200 m offshore in a reinforced concrete pump enclosure approximately 3.5 m high and protruding 1.5 m above the sea floor to minimise sand intrusion. The enclosure would be approximately 8.9 m diameter, and would include a sand trap and fully enclosed pump chamber. The use of an offshore pumping station removes the requirement for pipes to be at a positive inclination and this allows the excavation trench to be shallower.

The intake and discharge pipeline infrastructure will traverse coastal wetlands and dune systems that are recognised as “areas of state significance – natural resources” under the State Coastal Management Plan. In accordance with this plan, if a use or activity that has adverse effects is to occur within areas of “state

significance – natural resources”, it must have a demonstrated net benefit for the State as a whole.

The Proponent has provided a cost benefit analysis of the development, which was prepared in accordance with EPA guidelines for undertaking environmental economic analysis.

## Conclusions

While there is always debate surrounding the application of economic assessment principles, particularly where they may relate to assessing broader and indirect economic benefits such as environmental costs and benefits, the basic approach undertaken by the Proponent has been comprehensive. I believe the project shows a positive net benefit for the State for a range of scenarios tested, taking into account all the financial, social and environmental impacts.

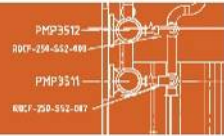
The Proponent has committed to vegetation regeneration, reinstating the hydrology of the modified freshwater wetland, including restoring ground levels along the route across the salt pan so that flows are consistent with those prior to construction, and re-profiling the coastal dunes once construction is completed.

I am satisfied that the conditions included in this Report will minimise the potential impacts from construction of the pipeline and offshore pumping station on the sensitive coastal habitats. These conditions include: a requirement to develop an EMP to comply with the *Coastal Protection and Management Act 1995*, conditions to manage potential erosion of the coastal dune system and for restoration of vegetation and hydrology in the wetland and coastal dunes.

The EMP is required to include specific consideration of threatened species and habitat along the pipeline route, with specific measures to avoid or minimise impacts on plants listed as rare under the *Nature Conservation Regulation 1996*.

To ensure impacts from the construction of the pipeline and offshore pumping station are minimised, I make the following recommendations:

- If the proponent makes an application for development approval for the Project, the conditions in Appendix C1, relating to the ERA 19 - Dredging must be included in the approvals issued by the Assessment Manager.
- It is recommended that the conditions included in Appendix D and Appendix E of this report are attached to approvals for operational work on State coastal land, operational work that is tidal works and clearing native vegetation.
- Clearing of vegetation for the purposes of constructing the non tidal sections of the intake and discharge pipelines must be undertaken in accordance with the provisions in Appendix E of this Report. This condition is to ensure that the permanent disturbance of “of concern” regional ecosystems is minimised and clearing does not exceed 0.5 hectares in area in accordance with the provisions of the Vegetation Management Code.



A quarry material allocation under s.73 of the *Coastal Protection and Management Act 1995* is required prior to an application for development approval under the *Integrated Planning Act 1997*. Should the Proponent make an application for an allocation of quarry materials, it is recommended that the conditions in Appendix A2 are imposed by the EPA, as the administering authority.

## 5.4 Great Barrier Reef Coast Marine Park

### Environmental Impact Statement Findings and/or Key Points

The Environmental Protection Agency has advised that the discharge point in Abbot Bay and intertidal sections of the pipeline are located in the Great Barrier Reef Coast Marine Park (State) – Townsville / Whitsunday Management Area. The area is zoned as a habitat protection zone.

The zoning plan objectives for the habitat protection zone are:

- a) to provide for the conservation of the areas of the marine park within the zone through the protection and management of sensitive habitats that are generally free from potentially damaging activities; and
- b) subject to the objective mentioned in paragraph (a), to provide opportunities for reasonable use of the area.

The habitat protection zone allows for the operation of a facility that is consistent with the objectives of the zone. A permit issued under the *Marine Parks Regulation 2006* is required to authorise the installation, operation and maintenance of the proposed facility, including intake and discharge pipelines, electrical cable and a submerged pump station and for the discharge of aquaculture waste from the facility.

### Conclusions

The key sensitive environments that have been identified in the EIS are the seagrass habitats which are present in Abbot Bay. The Habitat Protection Zoning of Abbot Bay permits the construction and operation of a land based aquaculture facility if “sensitive habitats” are protected.

I am satisfied that the potential for harm to sensitive habitats within the Great Barrier Reef Coast Marine Park can be successfully managed and will be minimised through appropriate development conditions and implementation of appropriate management controls. I am satisfied that the conditions relating to the construction and operation of the aquaculture facility are appropriate to manage the impacts from the development. Furthermore, extensive monitoring will be undertaken for the life of the Project to ensure the protection of sensitive habitats.

The Marine Parks Permit required by the proponent is outside the Integrated Development Assessment System under the *Integrated Planning Act 1997* and the EPA (Queensland Parks and Wildlife Service) is the Administering Authority. EPA has advised of a number of conditions that would be included on the permit.

If the Proponent makes an application for a Marine Park Permit to authorise the installation, operation and maintenance of a facility, including intake and discharge pipelines, electrical cable, a submerged pump station and for the discharge of aquaculture waste, I recommend that the conditions in Appendix A1 (Marine Parks permit) are imposed by the Administering Authority.

## 5.5 Acid Sulphate Soils

### Environmental Impact Statement Findings and/or Key Points

Acid sulphate soils have the potential to be disturbed during construction of the grow-out ponds and the intake and discharge pipelines. Acid sulphate soils occur naturally over extensive low-lying coastal areas, predominantly below 5 m Australian Height Datum. These soils may be found close to natural ground level but may also be found at depth in the soil profile. When acid sulphate soils are exposed to air, oxidation of some chemicals in the soil can cause effects such as lowering of the in-situ pH and that of any surface runoff and groundwater.

Extensive acid sulphate soil investigations have been undertaken in accordance with requirements of the *State Planning Policy 2/02 Planning and Managing Development Involving Acid Sulphate Soils*. The development site is located in a Local Government Area scheduled in the State Planning Policy and will involve development that will disturb land, soil and sediment at, or below 5 m Australian Height Datum.

Geotechnical investigations, including acid sulphate soil tests were conducted across the main development site and the pipeline route. The results indicated that neither actual or potential acid sulphate soils are likely to be encountered across the majority of the proposed pond development site. It is considered probable that only the coastal mud flats are likely to be underlain by acid sulphate soils.

### Conclusion

Based on the investigations undertaken for the EIS, it is likely that actual or potential acid sulphate soils will only be disturbed during the construction of the intake and discharge pipelines. Appendix F states conditions for the management of acid sulphate soils including a requirement that further detailed investigation along the pipeline route is completed and estimated volumes of acid sulphate soils likely to be disturbed are calculated. Target locations for investigations are provided.

To ensure the suitable management and treatment of acid sulphate soils, an appropriate Acid Sulphate Soil Management Plan (ASSMP) is to be prepared and submitted to the Department of Natural Resources and Water prior to any construction works on site. The ASSMP is required to include specific consideration of operational management, contingency planning and a reporting framework for both the construction and operational phases of the project. I am satisfied that these conditions will effectively minimise and mitigate potential impacts from disturbance of acid sulphate soils during construction of the Project.

I am satisfied, based on the materials I have reviewed, that the potential impacts from the disturbance of acid sulphate soils during construction of the growout ponds and pipeline can be managed to mitigate any impacts from acid sulphate soils. If the Proponent makes an application for development approval for the Project, the conditions provided in Appendix F, must be included by the Assessment Manager in the approval.

## 5.6 Construction of aquaculture ponds

### Environmental Impact Statement Findings and/or Key Points

The development will involve the construction of 259 grow-out ponds, approximately 1 hectare in size and 1.5 m deep. In addition, settlement and water treatment ponds totalling approximately 47 hectares will be constructed on the farm site.

The vegetation on the Project site is mapped by the Queensland Herbarium has been predominately an “of concern” Regional Ecosystem, which would be removed during construction. The flora and fauna survey undertaken for the purposes of the environmental evaluation identified the vegetation as being predominantly modified, with a number of areas being a “not of concern” ecosystem. The Department of Natural Resources and Water vegetation management officers undertook an inspection of the site, and determined that the regional ecosystem was a not “of concern” Regional Ecosystem.

The geotechnical site investigations completed for the EIS revealed that approximately 50% of the approximately 769 hectare site contains soils, described as shallow profile 2, which contain clays suitable for pond lining and that are not prone to cracking. The ponds will be constructed using the materials which have been identified as being suitable on site.

It is predicted that approximately 32 million cubic metres of clay is available on the site, which would allow for a lining of approximately 0.9 metres across the whole site. The proposed construction standards for the grow-out and water treatment pond lining will be 0.5 metres thickness, which the Proponent states will achieve appropriate specifications for pond permeability.

### Conclusion

I am satisfied, based on the materials provided to me by the Proponent, that there is sufficient material available on the site to construct the prawn ponds to an appropriate specification which will minimise the likelihood of subsequent impacts from leaking or failure of the ponds.

The Proponent has committed to undertaking pond construction in accordance with the “Guidelines for the Construction and Maintenance of Aquaculture Containment Structures, 2007, Queensland Department of Primary Industries and Fisheries”. I am satisfied that by adhering to these guidelines, the potential impacts from construction of the grow-out ponds will be effectively minimised.

Therefore I nominate the following condition:

### **Condition 3**

Pond Construction and maintenance must be undertaken in accordance with the *Guidelines for the Construction and Maintenance of Aquaculture Containment Structures, 2007*, Queensland Department of Primary Industries and Fisheries, or such versions as become available from time to time.

I nominate the Department of Primary Industries and Fisheries as responsible agency for this condition.

## **5.7 Cultural Heritage**

### **Environmental Impact Statement Findings and/or Key Points**

The EIS included a cultural heritage survey, which was completed in association with the Gudjuda Reference Group Aboriginal Corporation and the Birri Gubba peoples. It also evaluated non-indigenous sites. Given the sensitivity of the area to indigenous culture, the Gudjuda Reference Group Aboriginal Corporation requested that the Coordinator-General withhold the cultural heritage study as a confidential document. The cultural heritage study was not released for public consultation and comment, however copies were provided to key stakeholders involved in the management of indigenous cultural heritage, with the approval of the traditional owners.

The survey concluded that there are a number of culturally significant areas both within and surrounding the development site. Recommendations were provided in the Cultural Heritage Study for the management of specific sites identified on the development area and for preparing a Cultural Heritage Management Plan.

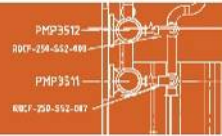
The Aboriginal Cultural Heritage Act 2003 (ACH Act) came into effect on 16 April 2004, prior to the submission of the Supplementary EIS. The Proponent has a 'cultural heritage duty of care' pursuant to s.23 of the ACH Act and under s.87 of that Act is required to have an approved Cultural Heritage Management Plan (CHMP).

### **Conclusion**

In order to comply with the duty of care requirement and effectively manage cultural heritage issues, a CHMP is required to be developed by the Proponent. The requirements of a CHMP are set out in Part 7 of the ACH Act. Therefore, I set the following condition to be included on the Development Approval issued by the Assessment Manager, in accordance with the requirements of the *Integrated Planning Act 1997*.

### **Condition 4**

A Cultural Heritage Management Plan must be prepared prior to development. The Cultural Heritage Management Plan should address issues such as dispute resolution. The Cultural Heritage Management Plan must be provided to the Department of Natural Resources and Water for comment and approval.



Pursuant to s.41 of the SDPWO Act, I nominate the Department of Natural Resources and Water as concurrence agency for this condition.

## 5.8 Socio-economic evaluation

### Environmental Impact Statement Findings and/or Key Points

Farm production will increase in stages, commencing at around 550 tonnes production in the first year. Annual production will progressively rise to around 900 tonnes in Year 2, 1300 tonnes in year 3 and full production of about 1,600 tonnes expected from year 4 onwards.

The direct and flow-on benefits of the Project are identified to be significant and positive to the state of Queensland for both the construction and operational phases of the development. The construction of the farm is expected to add approximately \$21.8 million dollars to Gross State Product and create over 200 full time equivalent jobs through direct and indirect impacts.

The operation of the Project will involve significant economic benefit to the State of Queensland. Through both direct and indirect impacts, the project is expected to deliver almost \$13 million dollars per year to Gross State Product and create 273 full time equivalent jobs. It is expected that nearly half of the economic benefits and most of the employment benefits will be retained in the Bowen Shire.

The EIS provides that there will be substantial employment and training opportunities to be realised in the region from the operation of the aquaculture facility. The Project will directly employ 118 full time equivalents.

The development of the Project will also provide substantial benefits to the community through the production of high quality seafood products. Aquaculture production is important as an alternative source of seafood products for a number of reasons. There is a growing body of evidence that seafood may reduce the incidence of many diseases such as heart disease, stroke, depression and attention deficit hyperactivity disorder. Australia imports in excess of 22,000 tonnes of raw and cooked farmed prawns annually, mainly from Vietnam and China. Both the aquaculture and wild-catch sectors combined are unable to meet market demand in Australia. The development of the Guthalungra Aquaculture Project is anticipated to increase farmed prawn production in Queensland by approximately 50%, from 3,249 to 4,849 tonnes per annum.

While the project is anticipated to contribute considerably to economic development in the region, the Department of Housing has advised that the township of Bowen is experiencing housing pressures in both rental and home ownership markets due to the number and scale of projects that are operating and being proposed for the region.



It is recognised that Bowen has a number of industries and projects that are contributing to housing pressures, particularly in short-term accommodation. In particular, the Department of Housing has raised concerns regarding the number of construction staff required for this project and appropriate local accommodation during the construction stages of the Project.

The EIS provides that the Project will engage local contractors and therefore the expectation is that these firms will employ a significant proportion of local residents, reducing demand for accommodation over the construction period. Given the established industry sectors within the region, the EIS predicts that there would be sufficient local expertise to undertake the construction activities required for the Project. In addition, the Proponent intends to construct 3 onsite houses for operational staff, which will also provide some interim accommodation for some construction staff.

## **Conclusion**

Attraction and retention of staff is a central requirement for commercial viability in the current employment environment. It is predicted that the Proponent will need to create an environment conducive to the attraction and retention of staff and the viability of the business will be improved by positive community relations. Therefore, it is not considered necessary to impose conditions or make recommendations about the housing impacts of the ongoing operation of the farm.

I am satisfied, based on the materials that I have reviewed, that the impact on the regional housing market from construction activities will be minimal. Ongoing operation of the farm is unlikely to contribute to significant housing pressure, given that the majority of staff will be recruited from the local communities. Therefore, I am satisfied that specific conditions are not required to be imposed on the Proponent relating to accommodation requirements of either the construction or operational staff.

## 6 Environmental Management Plans

The purpose of the EMP is to ensure that action in relation to the management of environmental impacts is taken in a timely and effective manner during the construction and operation of the project. The EMP should detail the actions and procedures to be undertaken during the design, construction and operation of the project in order to minimise and mitigate adverse environmental impacts.

A draft framework EMP was included in the EIS and was developed to reflect the following points:

- Regulatory requirements;
- Recommendations arising from the environmental evaluation of the project to minimise identified environmental impacts; and
- Good practice environmental management.

The framework EMP covers the following environmental impacts:

	Environmental Management Program	Construction	Pipeline Construction	Operation
1	Soil erosion and sediment control	X	X	X
2	Acid sulphate soils	X	X	X
3	Contaminated land	X		
4	Hydrology	X		
5	Surface water and stormwater management	X	X	X
6	Groundwater	X	X	X
7	Noise and vibration	X	X	X
8	Air quality	X	X	X
9	Flora and fauna	X	X	X
10	Weed management	X	X	X
11	Cultural Heritage	X	X	X
12	Visual amenity	X	X	X
13	Chemical storage and spill management	X	X	X
14	Waste management	X	X	X
15	Pipeline and pump-station construction		X	X
16	Mosquito management			X
17	Disease			X
18	Discharge containing chemicals and therapeutics			X
19	Stock feed management			X
20	Pond discharge management and monitoring			X
21	Problem species management	X	X	X

The EMP is a living document and will be expanded and refined for each stage of the project. Implementation responsibility may be devolved to principal contractors if appropriate to do so.

The development of the EMP will ensure that the project is undertaken by the proponent in the manner described and fulfils the commitments made in the EIS and SEIS. The EMP manages the operational impacts of the development which are not

subject to specific permit conditions in an effective manner. The effectiveness of the EMP will be able to be determined through the monitoring and reporting protocols, which are to be incorporated within the plans.

In this respect I believe that implementation of the EMPs will serve to accomplish the Management Commitments made in the EIS and SEIS.

Therefore I nominate the following Conditions:

**Condition 5**

The Proponent must prepare Environmental Management Plans (EMPs) in accordance with Chapter 9 of the EIS. Those EMPs must be kept up to date and implemented in accordance those commitments for the duration of the project.

Pursuant to s.41 of the SDPWO Act, I nominate the Bowen Shire Council as being responsible for this condition.

**Condition 6**

The Proponent must submit those elements of the EMPs, prepared in accordance with the conditions provided in this Report, to the Bowen Shire Council, and the relevant agencies where nominated in the conditions in this Report, for comment or approval as required, prior to the commencement of construction for the project.

Pursuant to s.41 of the SDPWO Act, I nominate the Bowen Shire Council as being responsible for this condition.

## 7 Matters of National Environmental Significance

### 7.1 Project assessment and approvals

This section addresses Part 5 of the SDPWO Regulation. The regulation deals with the requirements for the Coordinator-General's Report for projects declared significant and which are assessed under an EIS process accredited under the EPBC Act.

The Guthalungra Aquaculture Project has been declared a significant project by the Coordinator-General, and the former Minister of the Environment and Heritage determined that the Project is a controlled action under the EPBC Act. As a consequence, the proposal will require approval by the Australian Government Minister for the Environment, Heritage and the Arts.

I have evaluated the impacts of the project in accordance with the SDPWO Act and I recommend, from the State's point of view, that the project can proceed subject to certain conditions.

### 7.2 Description of the Project

Pacific Reef Fisheries proposes to construct a major new aquaculture facility to produce 1600 tonnes per annum of black tiger prawns, *Penaeus monodon*, for both the domestic and export markets (the Project). The proposed facility is located near the coastal town of Guthalungra and adjacent to the Elliot River in North Queensland. The site is approximately 40 kilometres north of Bowen and 175 kilometres south of Townsville. The site lies between the Bruce Highway and the coast. The Project will include the following key features:

- 259 prawn grow-out ponds, each approximately one hectare in area and 1.5 m deep;
- Intake and discharge water pipelines to Abbot Bay, each approximately 5.5 kilometres long (landward sections approximately 5 kilometres, seaward section approximately 550 m long);
- An 11.3 hectare seawater storage pond of 370 megalitres (ML) storage capacity;
- Integration of sand filtration technology for discharge water treatment;
- A discharge remediation area of approximately 47 hectares consisting of sedimentation and settlement ponds;
- A freshwater storage pond and water reticulation system;
- A seafood processing facility; and
- Farm support infrastructure including feed storage, workshops, general storage and accommodation.

The farm will operate as three totally independent farms on the larger site overall. The three production areas will be the following sizes:

- a. Production Area 1: 91 hectares;
- b. Production Area 2: 112 hectares; and
- c. Production Area 3: 56 hectares.

This arrangement is expected to provide the following benefits:

- reduce the size of each farm entity to maximise operating efficiency;
- allow for each production area to operate independent water supply and exchange systems. This will provide production area managers with full control over water quality management and performance of their farm area; and
- reduce the risk of disease by limiting the ability for disease to spread across the farm by water transfer.

The Project site, which covers Lot 8 on plan SB298 and Lot 370 on plan K124643 is owned in freehold title by Pacific Reef Fisheries, and is currently designated “rural grazing” in the Bowen Shire Planning Scheme. The total area of these lots is 769 hectares.

The vegetation on the main development site is principally eucalypt open woodland, with large areas of cleared or modified vegetation. Clearing of original vegetation was undertaken to facilitate cattle grazing which has been the dominant land use for many years. The vegetation is predominantly a ‘not of concern’ Regional Ecosystem (*Vegetation Management Act 1999*). Lot 370 on plan K124643, adjacent to the Elliot River, is heavily infested with noxious weeds particularly chinee apple and prickly acacia.

There is an operating prawn hatchery and an evaporation basin for discharge from the hatchery located on Lot 370 on plan K124643. The hatchery facility will be integrated with the full aquaculture facility development and wastewaters from the hatchery will be redirected to the farm treatment ponds.

Prawn ponds are to be filled with sea water accessed directly from Abbot Bay via a purpose-built submerged pumping station and intake and discharge pipelines approximately 5.5 kilometres long. Wastewater treatment will be undertaken through the integration of sand filtration technology and an discharge remediation area of approximately 47 hectares, consisting of sedimentation and settlement ponds.

Other onsite infrastructure will include a freshwater storage pond and water reticulation system, a seafood processing facility and farm support infrastructure including feed storage, workshops, general storage and accommodation.

The Proponent estimates that construction will take approximately four years. The proponent intends to initially construct the pipelines, offshore pumping station and associated infrastructure and production area one of approximately 91 hectares.

## 7.3 Places affected by the project

The places affected by the project are as follows:

1. The approximately 769 hectare freehold site located at Guthalungra, adjacent to the Elliot River;
2. The approximately 13.75 hectare (5km by 25 m corridor) area from the site, along Coventry Road, and across the coastal dunes, which is subject to an application for a permit to occupy under the *Land Act 1994* for placement of intake and discharge pipelines;
3. A corridor with a maximum width of 25m by approximately 550m long, along the seabed in Abbot Bay;
4. An area with a diameter of approximately 8.9 m of seabed, located 200 m offshore in Abbot Bay for housing the submerged pump-station;
5. The Bowen region of Queensland; and
6. The Mackay Statistical Division.

## 7.4 Controlling provisions

On 29 January 2001 pursuant to s.75 of the EPBC Act, the then Australian Government Minister for the Environment and Heritage determined that the Guthalungra Aquaculture Project constituted a controlled action (Referral No. 2001/138). The Part 3, Division 1, controlling provisions were identified as being:

- sections 12 and 15A (World Heritage);
- sections 18 and 18A (Listed threatened species and communities);
- sections 20 and 20A (Listed migratory species); and,
- sections 23 and 24A (Commonwealth Marine environment).

The assessment of the Project, pursuant to s.87 of the EPBC Act, was by the EIS process under Part 4 of the SDPWO Act and Part 5 of the SDPWO Regulation, as accredited by the Australian Government Minister on 9 July 2001.

## 7.5 Summary of relevant impacts

For the purpose of assessing the impacts of the project on matters of National Environmental Significance, this section describes the relevant impacts as defined by s.82 of the EPBC Act. In the case of the Guthalungra Aquaculture Project, the relevant impacts are those that the project has, will have or is likely to have on the controlling provisions. The relevant impacts of the project are summarised below for each of the controlling provisions.

### 7.5.1 World Heritage values

The Project is adjacent to, and will discharge into, the Great Barrier Reef World Heritage Area. The Project includes placement of a submerged pumping station and intake and discharge pipelines in Abbot Bay, which is located within the World Heritage Area and the Great Barrier Reef Marine Park. The discharge diffuser will be located in water approximately 6.0 m deep.

Significant marine communities in the vicinity of the proposed development are fringing coral reefs on Camp Island and seagrass meadows. Seagrass surveys undertaken for the purposes of the EIS identified seagrass beds 180 m to the northwest and 225 m to the southeast of the proposed pipeline route.

Potential impacts from the proposed development on World Heritage values are:

- (1) Direct physical disturbance as a result of construction of the intake and discharge pipelines.
- (2) Indirect impacts from construction activities.
- (3) Modification to coastal processes as a result of the intake and discharge pipelines.
- (4) Disturbance to biological communities and ecological processes as a result of discharge of aquaculture waste from the proposed development.

These potential impacts are evaluated below.

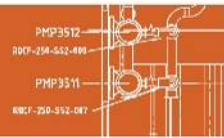
- (1) Direct physical disturbance as a result of construction of the intake and discharge pipelines

Direct physical disturbance of the terrestrial and marine environment will occur during construction of the intake and discharge pipelines.

In the landward section, the intake and discharge pipelines will be co-located in the same trench for the majority of the distance, requiring excavation of a trench 3 m wide and maximum width of disturbance of 15 m. Permanent disturbance to natural surface levels will only occur in the section of pipeline traversing the salt flats and modified freshwater wetland system. This will be for the construction of a 4 m wide vehicle access track to provide service vehicles with all weather access to the 5 m by 5 m pump station and electrical services building.

The Proponent has committed to restoring ground levels along the route across the salt pan and modified freshwater wetland so that flows are consistent with those flows prior to construction. This will prevent any long term significant impact on endemic flora or fauna species. Natural revegetation will occur as a result of dispersion of seeds and propagules from surrounding marine plants and occasional inundation by tides.

In the seaward section, intake and discharge pipelines will be co-located for the first 200 m requiring a maximum width of disturbance of 25 m. The final section of the pipeline (242 m to the start of the diffuser) will be for the discharge pipeline only, requiring a maximum width of disturbance of 23 m. The final 100 m of the pipeline will act as the diffuser, and will be fitted with 300 mm high diffuser ports located along the pipeline every 1000 mm. The intake pump housing will be a reinforced concrete pump enclosure located on the sea floor, approximately 3.5 m high and protruding 1.5 m above the sea floor to minimise sand intrusion. The enclosure will be approximately 8.9 m diameter, and would include a sand trap and fully enclosed pump chamber.



The total area of temporary disturbance during the construction of the seaward section is predicted to be 1.0 hectares. Permanent loss of potential habitat for flora and fauna including seagrass will be limited to the pump station and exposed pipeline sections, an area of approximately 0.05 hectares.

## (2) Indirect impacts from construction activities

Potential impacts may occur from land-based construction activities for example increased sediment runoff in stormwater and disturbance of acid sulphate soils. Extensive acid sulphate soil investigations of the site have been undertaken in accordance with the requirements of the *State Planning Policy 2/02 Planning and Managing Development Involving Acid Sulphate Soils*.

Based on the geotechnical investigations undertaken for the environmental impact evaluation, it is likely that actual or potential acid sulphate soils will be disturbed during the construction of the intake and discharge pipelines.

Further high resolution acid sulphate soil surveys are required as a condition of development approval. To ensure the suitable management and treatment of acid sulphate soils, an appropriate Acid Sulphate Soil Management Plan (ASSMP) is to be prepared and submitted to the Department of Natural Resources and Water prior to any construction works on site. The ASSMP is required to include specific management, monitoring and reporting for both the construction and operational phases of the project. The ASSMP is to include a monitoring program for ground and surface water, which is to continue through operation of the aquaculture facility. The monitoring program will be reviewed by the Queensland Department of Natural Resources and Water two years after operation of the farm commences.

Potential indirect impacts from construction activities on World Heritage values are principally limited to the seaward construction activities required for the installation of intake and discharge pipelines. Sediment disturbance may result in localised increases in turbidity and nutrients (from mobilisation of sediment bound nutrients).

Minimisation of the time frame in which the dredging is undertaken is a key measure in managing the environmental impact from elevated turbidity levels. Construction and installation of the seaward section of pipeline and pump station will be undertaken in stages and is predicted to take approximately 11 weeks.

In nearshore coastal environments, sediment resuspension through current and wave action means that nearshore communities are typically adapted to regular exposure to elevated turbidity and nutrients. It is not predicted that indirect impacts from construction activities, which will be spatially and temporally limited, would result in detectable impacts on marine flora and fauna.

Specific conditions have been imposed to minimise and mitigate potential indirect impacts from construction activities, including limiting the extent of disturbance. The conditions also require the preparation of an EMP to ensure appropriate management, monitoring and corrective actions in the event of any non-compliance.



### (3) Modification to coastal processes as a result of the intake and discharge pipelines

The construction of infrastructure offshore has the potential to impact on longshore movement of sediment and cause changes to localised currents. The net movement of sand in the proposed pipeline area is from south to north.

It is not proposed that seaward sections of the pipeline route will be actively reprofiled following construction as this has the potential to increase the risk of impacts from elevated turbidity as sediment is replaced. Minor changes to the pre-construction bathymetry are predicted in the vicinity of the exposed section of the discharge pipe diffuser and pump station. The nature of these changes are predicted to be limited spatially. It is predicted that, over time, natural processes (e.g. tidal and wind induced waves and currents) will re-establish the sediment profile and structure and provide habitat suitable for recolonisation by marine flora and fauna including seagrass, such that there will be no significant long-term impacts on coastal processes.

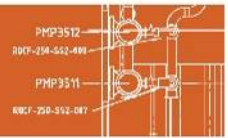
At the coastal crossing, the pipeline is buried to avoid exposure by severe coastal erosion events.

### (4) Disturbance to biological communities as a result of discharge of aquaculture waste from the proposed development

Modelling of discharge dispersion was undertaken using a numerical dispersion model. The modelling adopted a worst case scenario, with the discharge load assumed to have nutrient concentrations of 0.2 mg/L total nitrogen and 0.15 mg/L total phosphate and based on the assumption that there would be no biological or chemical assimilation of nutrients. For the dispersal simulations a constant discharge rate was assumed, even though the discharge rate will vary throughout the farming season. The discharge rate used was 200 ML/d and corresponds to the maximum possible discharge rate during February.

The discharge contains naturally occurring nutrients which, up to moderate concentrations, will have a beneficial effect in the receiving environment. Therefore the relationship between the discharge and the environmental impact may be described by a dose response curve, whereby the essential elements in the effluent will result in beneficial impacts on the receiving environment up to the level where the assimilative capacity is exceeded. Should the assimilative capacity be exceeded, the discharge could result in phytoplankton blooms, increased epiphyte growth on seagrass and corresponding light attenuation. The modelling approach taken was to adopt the nutrient trigger levels published by the Great Barrier Reef Marine Park Authority for seagrass communities as the assumed assimilation threshold.

The worst case water quality modelling predicts that an area of approximately 18 hectares in the vicinity of the discharge would be subject to total nitrogen levels above the Great Barrier Reef Marine Park Authority trigger values. When the more likely scenario of 100 ML/d discharge rate was modelled, the area within the contour that exceeded the trigger value for total nitrogen dropped to 0.88 hectares. The



extent of the discharge is not predicted to impact on fringing corals on Camp Island, which are in excess of 2.5 km from the end of the discharge point and in the opposite direction to the prevailing currents. It is predicted that some seagrass may be exposed to elevated levels of nutrients as a result of the discharge. Seagrass respond favourably to nutrient addition up to the level where optimal nutrient concentrations are exceeded. This favourable response has been documented at Green Island in the northern Great Barrier Reef, where large increases in the area of seagrass beds were associated with the prolonged discharge of untreated sewage from the islands. Shallow coastal seagrass meadows are also dynamic communities, characterised by major variations in distribution and biomass. These variations occur at various time-scales, from regular fluctuations due to seasonal variations in temperature, light intensity and water quality, to massive changes due to episodic events such as floods and cyclones.

The environmental impact assessment process has evaluated the potential impacts on seagrass communities. Based on the assessment, significant long-term impacts on seagrass abundance are not predicted. This conclusion is supported by the Queensland Department of Primary Industries and Fisheries (DPIF), lead agency for the management of marine plants, which has advised that the aquaculture facility discharge may have an effect on the seagrass ecology of Abbot Bay, but that it is unlikely to be measurable or significant. Given the vital role seagrass communities play as nursery areas and a food source for a range of marine fauna including threatened species (e.g. dugongs and turtles), there is not predicted to be any significant long-term or irreversible impacts on World Heritage values.

The EIS proposes “best practice” design, construction and operational measures to mitigate impacts on the World Heritage values of the Great Barrier Reef. The design and placement of the intake and discharge pipelines were modified during the environmental impact evaluation, to minimise potential impact on water quality and coastal environments, particularly that of the Elliot River.

To ensure that the potential for adverse impacts on the environment are minimised, Appendix B and Appendix C state conditions for the development approval for the Guthalungra Aquaculture Project, including a maximum nutrient load permissible in the aquaculture facility discharge, a schedule of discharge water quality parameters for monitoring and reporting and a comprehensive monitoring program of seagrass and coral communities.

Permissible nutrient loads will be approximately half of current industry standards in Queensland. Appendix C provides conditions for the Environmentally Relevant Activity 1 (e) - aquaculture and requires a comprehensive monitoring program to be implemented. The monitoring programs include water quality, seagrass and coral viability surveys and seagrass depth surveys. The monitoring program will include statistically robust baseline studies to be completed prior to construction. The commencement of the monitoring program prior to construction and operation of the farm, and the staged expansion of the farm over four years to maximum operating capacity, will ensure that any environmental impacts are detected and appropriate corrective actions taken to ensure that the environmental values of Abbot Bay are not adversely impacted.

In addition, the proponent will be required to prepare an EMP to manage potential impacts from construction and operation. The EMP will provide for the monitoring of activities and identify corrective actions in the event of non-compliance. The EMP will need to be provided to the regulatory agencies prior to the commencement of construction and due regard had to any comments from the regulatory agencies prior to commencement of construction.

### 7.5.2 Listed Threatened Species and Communities

The EPBC Act lists all of Australia's protected species. Schedule 3 of the *Nature Conservation Act 1992* and *Nature Conservation (Wildlife) Regulation 1994* lists all Queensland's vulnerable wildlife. A number of species listed under this legislation are likely to occur on, or adjacent to, the development site. Information on the species, likelihood of occurrence and habitat was provided in s. 7.3.5 of the EIS.

#### *Marine Species*

##### *Turtles*

Six species of turtle, the Flatback (*Natator depressus*), Green (*Chelonia mydas*), Loggerhead (*Caretta caretta*), Leatherback (*Dermochelys coriacea*), Hawksbill (*Ertmochelys imbricata*) and the Olive Ridley (*Lepidochelys olivacea*) have been recorded in the off-shore, inter-tidal, estuarine and shoreline habitats in the Great Barrier Reef World Heritage area. All of these species of turtle are listed as Endangered or Vulnerable under the EPBC Act and the *Nature Conservation Act 1992*.

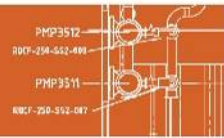
All of these species may potentially occur in waters adjacent to the development site, however only moderate numbers of Flatback turtle have been recorded for Abbot Bay. There is little information about the presence or nesting behaviour of turtles in the Abbot Bay. Surveys were last conducted in 1971 and it is recognised that they were not extensive in nature. Notwithstanding, it is highly likely that there will be at least a low density of Flatback turtles nesting in the area. There was found to be low to moderate likelihood of occurrence of Loggerhead, Green, Leatherback and Hawksbill turtles in Abbot Bay.

The EIS states that potential impacts on turtle species may occur from

- a. Direct loss of feeding and nesting grounds; and
- b. Impacts from light and noise on the foreshore.

Only minor impacts are anticipated on seagrass habitats in Abbot Bay from the operation of the farm. These conclusions are supported by seagrass ecologists from the DPIF, who have advised that impacts on seagrass from aquaculture waste discharge are unlikely to be significant. There are not predicted to be any significant impacts on turtle feeding or nesting grounds from the construction and operation of the aquaculture facility, as not direct removal of seagrass will occur during construction activities.

There will be no permanent loss or disturbance of the foreshore and dunal system from construction. The Proponent has committed to vegetation regeneration and re-



profiling the coastal dunes once construction is completed. There is no ongoing access to the coastal dunes required, as the maintenance of the proposed offshore pump station will occur from barges.

Lighting impacts on turtle species from the operational phase of the project are predicted to be minimal. No lighting will be constructed on the foreshore or in the coastal dune system. Lighting is only required on the main development site, which is five kilometres from the foreshore. Noise impacts from operation of the pumping station are anticipated to be low. The pump will be located 200 m offshore and will be fully submerged and electrically driven. The abundance of turtles in proximity to areas with significant underwater noise levels such as the Great Sandy Straits, Cleveland Bay and Bundaberg, indicate that noise does not appear to act as a significant deterrent to turtles.

### *Dugongs*

Dugongs have wide geographical distribution in shallow tropical and subtropical waters of the indo-pacific region. While Dugongs are present in Abbot Bay, the seagrass communities of the Bay are not as extensive as other areas in the vicinity such as Upstart Bay to the north and Edgecombe Bay to the south, where greater numbers of Dugong are likely to be found. Abbot Bay is not a Dugong Protection Area declared under the *Fisheries Act 1994*.

The EIS states that Abbot Bay is considered to have only moderate overall conservation value for dugong habitat. Feeding trails for dugong were observed in Abbot Bay during seagrass and fringing reef surveys. The EIS identifies that potential impacts on Dugong could occur directly through habitat degradation resulting from changes in seagrass beds from the discharge of aquaculture waste. Most seagrass losses, both natural and anthropogenic are attributed to reduced light intensity due to sedimentation and/or increased epiphyte growth from nutrient enrichment.

A high level of water quality management is proposed for the development and impacts on seagrass beds from ongoing discharge are predicted to be minor. The physical dispersion modelling undertaken indicates that the largest area to be subject to elevated nitrogen and chlorophyll a levels will be 18 hectares in the vicinity of the diffuser.

To ensure that the potential for adverse impacts on the environment are minimised, Appendix B and Appendix C state conditions for the development approval for the Guthalungra Aquaculture Project, including a maximum nutrient load permissible in the aquaculture facility discharge, a schedule of discharge water quality parameters for monitoring and reporting and a comprehensive monitoring program of seagrass and coral communities.

### *Cetaceans and whale sharks*

Seven species of dolphin and five species of whales are known to occur in the World Heritage area. Four of these, the Humpback Whale

(*Megapteranovaeangliae*), Blue Whale (*Balaenoptera musculus*), Irrawaddy Dolphin (*Orcaella brevirostris*) and Indopacific Humpback Dolphin (*Sousa chinensis*) are listed as Endangered or Vulnerable under the EPBC Act or the *Nature Conservation Act 1992*.

Abbot Bay is not a known significant area for whales as the bay is reasonably shallow and it is likely that larger whales would migrate further out to sea. Dolphins are likely to occur in Abbot Bay, however the site is not known to be significant for them. Whale sharks are known to occur near coral reefs, but are more likely to occur well offshore, than in the shallower waters of Abbot Bay.

None of the processes that may threaten cetaceans and whale sharks will occur as a result of the development or operation of the Project.

#### *Other protected species*

Saltwater crocodiles (*Crocodylus porosus*) are declared “vulnerable” under the *Nature Conservation Act 1992* and are protected under both the “marine” and “migratory” provisions of the EPBC Act.

It is unlikely that there will be an impact on Saltwater crocodiles, as there is no disturbance of the adjacent Elliot River, the most likely crocodile habitat in the vicinity of the proposed development site. Nesting habitat for saltwater crocodiles may occur in the wetland areas and along the pipeline route. It is not considered that the impact will be significant, given that only limited areas of the wetland will be disturbed and that the re-instatement of natural wetland hydrology and vegetation will occur once construction is completed.

#### *Terrestrial Species*

##### *Rare and threatened flora*

Assessment of impacts on rare and threatened flora species was undertaken for the environmental impact evaluation. No rare or threatened flora species scheduled under the EPBC Act were identified in ecological surveys conducted in the preparation of the EIS. Specific conditions have been imposed to minimise and mitigate potential impacts from construction activities, including limiting the extent of disturbance where vegetation that is “of concern” under the *Vegetation Management Act 1999* or listed in the *Nature Conservation Act 1992* may be present. The conditions also require the preparation of an EMP for erosion and sediment control to ensure appropriate management, monitoring and corrective actions in the event of any non-compliance.

Disturbance or removal of protected Regional Ecosystems is managed by the Department of Natural Resources and Water. A condition that excavation is not to exceed a width of 10 m within areas of “of concern” Regional Ecosystems will be imposed on the development approvals for the Project.

### Rare or threatened fauna

Habitat for the Bare-rumped Sheath-tail Bat (*Saccolaimus saccolaiumus*) and Black Chinned Honeyeater (*Melithreptus gularis gularis*) is likely to occur on the main development site. There may be a local impact on these species as a result of the removal of scattered poplar gums (*Eucalyptus platyphylla*) that occur over the pond site. The impact is expected to be minimal as habitat disturbance will be localised and the habitat is widely distributed over the surrounding region.

Habitat for the Black-necked Stork occurs through the pipeline route. No significant impact is anticipated given the small area of disturbance (maximum 15 m corridor) and proposed rehabilitation actions, including revegetation.

The EIS states that none of the rare or threatened terrestrial fauna species known to occur on the development site are anticipated to be significantly affected by the Project. This conclusion is based on:

- Potential habitat immediately adjacent to the main development areas and proposed pipeline will not be affected;
- In instances where habitat for rare or threatened fauna is to be disturbed, only small areas are involved; and
- Extensive areas of similar habitat to that on site occur locally and regionally.

### 7.5.3 Listed Migratory Species

A total of five migratory, wetland and marine terrestrial fauna species listed under the EPBC Act are known to utilise the wetland and coastal areas of the site. An additional 22 species are at least moderately likely to occur in the study area. Twelve of these species are listed on both the Japan Australia Migratory Bird Agreement and China Australia Migratory Bird Agreement, another three are Japan Australia Migratory Bird Agreement only listed and seven are China Australia Migratory Bird Agreement only listed.

Based on the information provided in the EIS, none of the species are anticipated to be significantly affected by the proposal since:

- The proposed development is not predicted to result in significant impacts on preferred habitat for these species;
- Habitats immediately adjacent to the main development area and proposed pipeline route will not be affected;
- Only relatively small areas of habitat will be disturbed by the development; and extensive areas of similar habitat occur locally and regionally;
- The terrestrial section of the pipeline will be laid in the winter months during the dry season. Construction will only occur over an 11-16 week period;
- Migratory birds are not likely to be impacted by construction works as they generally do not arrive in Australia until the wet season; and
- The hydrological cycles of the wetland areas will be restored post construction of the pipeline and required access track.

Significant impacts on listed threatened species and communities and listed migratory species are not anticipated from the construction or operation of the Project. Specific conditions have been imposed to minimise and mitigate potential impacts from construction activities, including limiting the extent of disturbance.

The proponent is required, in undertaking the project, to prepare an EMP for a number of components of the design, construction and operation of the proposed aquaculture facility, and in particular the construction, installation and maintenance of the intake and discharge pipeline. The EMP must address the hydrology and functioning of the areas of state significance, including significant wetlands and coastal dunes, such that impacts to these values are minimised or mitigated. The Plan is required to include specific consideration of threatened species and habitat along the pipeline route. The EMP will identify appropriate monitoring and corrective actions to ensure that potential impacts are minimised or mitigated.

#### **7.5.4 Commonwealth marine environment**

Impacts on the Commonwealth marine environment could potentially arise from the activities associated with construction of the pipeline and operation of the aquaculture facility. The discussion of water quality, marine plants, acid sulphate soils, and pipeline construction cover the potential impacts to the Commonwealth marine environment and their management.

The discharge and intake pipeline are located approximately 540 m offshore in Abbot Bay and the anticipated assimilation zone is 500 m from the end of the pipeline. Modelling of the aquaculture waste has shown the dispersal to be predominately northwards, with the prevailing wind and current conditions. The largest area impacted from the discharge of aquaculture waste was predicted to be 18 hectares. Commonwealth marine areas include those marine waters that are outside of the State's limits, e.g. 3 nautical miles from the baseline. Dispersion modelling based on a worst-case scenario has been undertaken and demonstrates that the potential impacts from the discharge will not impact on Commonwealth marine waters.

Minor habitat impacts from the aquaculture facility discharge are predicted to occur in waters in proximity to the discharge pipeline, but distant to the Commonwealth marine environment. A number of marine species and cetaceans that are present in the Commonwealth marine environment are likely to also utilise inshore waters. The assessment of the impacts from the Projects nutrient discharge does not predict a change in water quality (including temperature) outside of the initial mixing zone, that may adversely impact on biodiversity, ecological integrity, social amenity or human health. Construction and operation of the aquaculture facility is not predicted to have a substantial adverse effect on a population of a marine species or cetacean including its life cycle (e.g. breeding, feeding, migration behaviour, life expectancy) and spatial distribution.

The Proponent is required to implement a comprehensive EMP and statistically robust monitoring programs. These requirements are reflected in the conditions to be imposed on the development and attached in the appendices to this Report.

## 7.6 Project alternatives

The following project alternatives were investigated in the EIS (s.1.7.3 to 1.7.5):

- a. alternative of not proceeding with the project;
- b. alternative locations for the project as whole;
- c. alternative layouts within the site;
- d. alternative locations for intake and discharge structures; and
- e. alternative water quality management strategies.

### 7.6.1 Alternative of taking no action

The alternative of not undertaking the project was investigated in the EIS. The no project alternative would result in social, economic and environmental opportunity loss for Queensland and the Bowen region.

The Guthalungra Aquaculture Project is considered to have significant economic benefit to the State for both the construction and operational phases. Through both direct and indirect impacts, the project is expected to deliver approximately \$21.8M to Gross State Product and create over 200 full time equivalent jobs (direct and indirect). Direct and indirect benefits from the operation of the project, will contribute approximately \$13M annually to Gross State Product and create 273 full time equivalent jobs both directly and indirectly.

In excess of \$29M revenue per annum will be foregone if the project does not proceed. It is expected that nearly half of the economic benefits and most of the employment benefits will flow through to the Bowen Shire.

In addition there would be significant impact on the future development potential of the Queensland aquaculture industry should the “no project” alternative be preferred.

Environmentally, the project offers the greatest economic return per hectare. The EIS identifies that the current land use of cattle grazing returns approximately \$140 per hectare to the Queensland economy, while development of the aquaculture facility will result in \$107,660 return per hectare. This equates to increases in economic return from the environmental impact of:

- a. from \$239 per tonne of sediment to \$62,231 per tonne
- b. from \$149,562 tonne of Nitrogen to \$830,000 per tonne; and
- c. from \$0.67M per tonne phosphorus to \$0.85M.

### 7.6.2 Alternative locations for entire project

The EIS undertook an investigation of alternative locations for the project and evaluated the advantages and benefits of the locating the project on the current site as opposed to elsewhere in the State.

The Bowen Shire has been identified as having potential for large-scale aquaculture development, in a joint study undertaken by Queensland Government agencies and the Great Barrier Reef Marine Park Authority (Identification of Aquaculture facility



opportunities in the Bowen region, Department of State Development and Bowen Collinsville Enterprise Ltd, May 2002).

Further benefits to the present site include the proximity to ocean access to minimise discharge impacts, low recreational and commercial use of the area, previously cleared and relatively low ecological value site and access to excellent water quality.

Alternative locations may be available within the region but do not exhibit any greater advantages or less disadvantages than the present site.

### **7.6.3 Alternative layouts within the site**

A number of alternatives for layout within the site were considered. The proposed layout was the optimum design given the engineering requirements and construction sequencing, and ensures that environmental impacts are minimised e.g. discharge, vegetation disturbance, flooding and public amenity.

### **7.6.4 Alternative locations of intake and discharge infrastructure**

Several locations for the intake and discharge infrastructure were considered, including locating pipelines in the Elliot River, discharging to adjacent salt pans and alternative routes to Abbot Bay from the main development site.

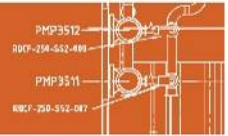
The Elliot River flows were not considered to be sufficient to meet the volume of water required for the operation of the aquaculture facility. In addition discharge of water to the Elliot River or salt pans was not considered to be sustainable and was rejected due to the much greater environmental impact anticipated.

Alternative routes for the pipeline out to Abbot Bay would require placement of at least some of the infrastructure on neighbouring land-owners property. The environmental evaluation has identified the optimal location of seaward sections of the pipeline to avoid direct disturbance of seagrass and minimise potential impacts on seagrass from the discharge.

The present proposal minimises both environmental and social impacts and is therefore the preferred option for location of the discharge and intake infrastructure.

### **7.6.5 Alternative water treatment techniques**

Alternative water treatment techniques were considered, as was the option of “no discharge” from the farm. The Proponent engaged the CSIRO in discussions about the effectiveness and efficiency of the settlement and water treatment ponds proposed. As a result of these discussions, a number of design elements were included in the proposal, such as a pre-treatment pond settling area, smaller treatment ponds that can be regularly emptied to reduce feedback from the sludge layer and, subsequent to consultation on the EIS, integration of sand filtration technology to further reduce suspended sediments. The proposed operational arrangement, with three discrete production units and the layout of water treatment



ponds on the farm, provide the greatest efficiency and reduction in nutrients from the pond discharge.

The EIS states that the “no discharge” alternative has been comprehensively examined in Queensland. While small in-pond experiments have been undertaken, it is not commercially viable to operate a zero discharge facility on the scale and management model proposed.

## 7.7 Conclusion

I have considered the likely impacts that the Project has or will have or is likely to have on each of the controlling provisions and I am satisfied that the taking of the action can be carried out in accordance with the conditions I have imposed in the appendices of this report without causing environmental harm.

In accordance with s.17(2) of the SDPWO Regulation, a copy of this report will be provided to the Commonwealth Minister to enable him to make a decision under Part 9 of the EPBC Act.

Under the provisions of Part 9 of the EPBC Act, the Commonwealth Minister may approve or refuse the taking of the proposed action. In approving a proposed action, the Commonwealth Minister may attach conditions to the approval if he is satisfied that the condition is necessary or convenient to protect a matter of national environmental significance or to repair or mitigate damage to a matter of national environmental significance.

## 8 Conclusion and Recommendations

The documentation provided during the EIS process is considered to have satisfied the requirements of the Queensland Government for environmental impact assessment in accordance with the SDPWO Act. It has provided sufficient information to government and to the community to allow an informed evaluation of the potential environmental impacts which could be attributed to the Guthalungra Aquaculture Project. Careful management of the aquaculture activities should ensure that any potential environmental impacts are minimised or avoided.

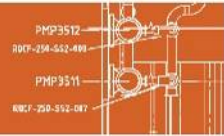
The Project includes approximately \$2.25 million additional capital expenditure for the inclusion of sand filtration technology to treat wastewater. In combination with the settlement ponds, mitigation strategies and the offset proposal, it is estimated that the discharge treatment strategies will result in a small increase in nitrogen and phosphorus, and a net reduction in total suspended solids, in Abbot Bay.

On the basis of the information provided, including advice from advisory agencies, I am satisfied that the adverse environmental impacts associated with the Project are able to be addressed through:

- a. Implementation of the project generally in accordance with the arrangements described in the EIS and the SEIS and the environmental management commitments nominated therein.
- b. Finalisation and implementation of appropriate Environmental Management Plans (EMP) as drafted in the EIS.
- c. Implementation of the specific recommendations set down in Appendix A, including entering into a deed of agreement with the State of Queensland to deliver and maintain the offset for the life of the project.
- d. Implementation of the recommended conditions in Appendix A1 and A2 for consideration by the Chief Executive for any marine park permit issued pursuant to the *Marine Parks Regulation 2006* and quarry material allocation issued pursuant to the *Coastal Protection and Management Act 1995*.
- e. Attachment of conditions included in the appendices of this report (pursuant to s.47C of SDPWO Act) as conditions for development approvals under the *Integrated Planning Act 1997*.

I consider that, on balance, there are appropriate environmental safeguards in place and substantial public benefits which would accrue as a result of the Project. Therefore, I recommend that approval of the Project, as described in detail in the EIS and SEIS and summarised in Section 2 of this Report, be granted.

Pacific Reef Fisheries Pty Ltd and its agents, lessees, successors and assignees, as the case may be, must implement the conditions in this Report and all commitments presented in the EIS and Supplementary EIS. In the event of any



inconsistencies between the EIS documents and the conditions in this Report, the conditions in this Report prevail.

Copies of this report will be issued to the:

- a. Proponent, pursuant to s.35(5)(a) of the SDPWO Act, {This Report should then comprise part of the Proponent's application for development approval pursuant to the *Integrated Planning Act 1997* (Qld)}; and
- b. Assessment Manager pursuant to s.40 of the SDPWO Act (Qld);
- c. The Environmental Protection Agency as the administering authority for a quarry material allocation under s.73 of the *Coastal Protection and Management Act 1995* and a permit issued under the *Marine Parks Regulation 2006* for works in the habitat protection zone of the Great Barrier Reef Coast Marine Park.
- d. Australian Government Minister for the Environment, Heritage and the Arts pursuant to Section 17(2) of the SDPWO Regulations to enable a decision to be made about the controlled actions for this project pursuant to S. 133 of the EPBC Act.

A copy of this Report will also be made publicly available on the Department of Tourism, Regional Development and Industry web site.

# Appendix A

## Conditions of the Coordinator-General

### **Condition 1**

A Deed of Agreement (DoA) to undertake the offset as described in the SEIS must be completed and approved by the proponent and the State of Queensland prior to the commencement of the operational works for the aquaculture development. The DoA must include timeframes for completion of mitigation works and include but not be limited to the following offset actions:

- a. Permanent exclusion of all grazing animals (such as cattle) from fish habitats (Wetlands) on Lot 370 on plan K124643; and
- b. Weed management on Lot 370 on plan K124643.

Pursuant to s.41 of the SDPWO Act, I nominate the Department of Primary Industries and Fisheries as the responsible agency for this condition.

### **Condition 2**

Prior to the construction of the aquaculture facility, a wetland rehabilitation monitoring program must be developed. This program must be submitted to the Environmental Protection Agency and the Department of Primary Industries and Fisheries for review and comment. Due regard must be given to comments provided by the Environmental Protection Agency prior to finalisation of the program. The monitoring program must monitor the effectiveness of the wetland rehabilitation works, including the resultant reduction of sediment and nutrient loads entering the marine environment.

Pursuant to s.41 of the SDPWO Act, I nominate the Environmental Protection Agency as the responsible agency for this condition.

### **Condition 3**

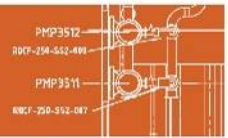
Pond construction and maintenance must be undertaken in accordance with the *Guidelines for the Construction and Maintenance of Aquaculture Containment Structures, 2007*, Queensland Department of Primary Industries and Fisheries, or such versions as become available from time to time.

Pursuant to s.41 of the SDPWO Act, I nominate the Department of Primary Industries and Fisheries as responsible agency for this condition.

### **Condition 4**

A Cultural Heritage Management Plan must be prepared prior to development. The Cultural Heritage Management Plan should address issues such as dispute resolution. The Cultural Heritage Management Plan must be provided to the Department of Natural Resources and Water for comment and approval.

Pursuant to s.41 of the SDPWO Act, I nominate the Department of Natural Resources and Water as concurrence agency for this condition.



### **Condition 5**

The Proponent must prepare the Environmental Management Plans (EMPs) in accordance with Chapter 9 of the EIS. Those EMPs must be kept up to date and implemented in accordance those commitments for the duration of the project.

Pursuant to s.41 of the SDPWO Act, I nominate Bowen Shire Council as responsible agency for this condition.

### **Condition 6**

The proponent must submit those elements of the EMPs, prepared in accordance with the conditions provided in this report, to the Bowen Shire Council, and the relevant agencies that are nominated in the conditions, for comment prior to the commencement of construction for the project.

Pursuant to s.41 of the SDPWO Act, I nominate Bowen Shire Council as responsible agency for this condition.

END OF COORDINATOR-GENERAL'S CONDITIONS APPENDIX A

# Appendix A1

## Recommended Conditions for Marine Parks Permit

### **Condition 1**

All activities must be undertaken in accordance with the provisions of the laws in force from time to time in the State of Queensland

### **Condition 2**

The Permittee must ensure that when operations are conducted in the Marine Park under this permission, this permission (or a certified copy), and any related documents such as the approved EMP are held at the site or sites of operation

### **Condition 3**

The Permittee must inform all participants in the activities permitted herein (including but not limited to, the employees, officers, sub-contractors, and agents of the Permittee) of any relevant restrictions or requirements applying under any zoning plans, plans of management, marine park regulations, this permit, the deed and the EMP.

### **Condition 4**

Within 60 days of the date of commencement of this permission, or prior to the commencement of any works permitted herein, whichever is sooner, the Permittee must execute, seal and deliver as a Deed to the Managing Agency, a Deed in the form to be provided by the administering authority, identified with the permit number and marked "Deed of Agreement".

The Permittee must observe and perform its obligations under and pursuant to such Deed. Any breach of the Deed by the Permittee shall be a breach of this condition.

### **Condition 5**

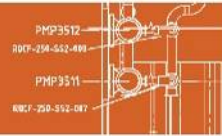
At least 21 days prior to the commencement of any works, the Permittee must provide detailed design construction drawings, including design specifications and exact location of works certified by a Registered Professional Engineer Queensland that the structure meets the design criteria specified in the Great Barrier Reef Marine Park Authority's Structure Policy (2004).

### **Condition 6**

The works must be carried out in accordance with the drawings referred to above, which must be approved in writing by the Queensland Parks and Wildlife Service.

### **Condition 7**

The Permittee must obtain an approved compliance certificate from a Registered Professional Engineer Queensland following installation of the facility to verify that the facility is installed in accordance with the approved drawings and provide those certificates to the Queensland Parks and Wildlife Service within 21 days of being installed.



### **Condition 8**

The Permittee must within 21 days of being issued written notice to do so, provide to the Queensland Parks and Wildlife Service a report duly certified by an appropriately qualified engineer detailing the adequacy of the works permitted herein and advising whether the structural integrity of the works have been maintained to design specifications.

### **Condition 9**

The Permittee must have installed and operated the permitted facility under the permit within four years of the commencement of the Development Approval issued for the Guthalungra Aquaculture Project in accordance with standard *Integrated Planning Act 1997* timeframes.

### **Condition 10**

The Permittee must prepare or have prepared at its direction an EMP. The Permittee must not carry out any of the works permitted herein within the Marine Park unless the Queensland Parks and Wildlife Service has advised the Permittee in writing that the relevant components of the EMP have been approved.

### **Condition 11**

Any modifications to the EMP must be approved in writing by the Queensland Parks and Wildlife Service and prior to implementation the Permittee must:

- a. notify the Queensland Parks and Wildlife Service of any proposed works or maintenance activities not covered by the EMP; and
- b. comply with any directions of the Managing Agency in relation to such works or maintenance activities.

### **Condition 12**

The Permittee, employees, officers, subcontractors and agents of the Permittee must comply with and ensure that all activities undertaken in connection with the permit are undertaken in accordance with the permit and EMP as approved by the managing agency from time to time.

### **Condition 13**

In consultation with the managing agency, the Permittee must, at its own expense, prepare an Environmental Impact Monitoring Program and submit it to the managing agency for approval.

Once approved by the Managing Agency, the Permittee must implement the Environmental Impact Monitoring Program prior to any discharge of aquaculture waste from this facility.

### **Condition 14**

The Permittee must provide in writing to the Managing Agency no less than 21 days prior to the commencement of the works a detailed schedule of works, and the 24 hour contact details of an on-site liaison officer who the Environmental Site Supervisor can contact, as and when required.



### **Condition 15**

The Permittee must ensure that any works permitted herein are supervised by the Environmental Site Supervisor, unless otherwise advised in writing by the Managing Agency.

### **Condition 16**

The Environmental Site Supervisor is authorised to stop or suspend or modify works, which in their opinion have caused or are likely to cause environmental harm.

### **Condition 17**

Where the Environmental Site Supervisor has directed the Permittee to cease works, the Permittee must not recommence works unless authorised in writing by the Environmental Site Supervisor.

### **Condition 18**

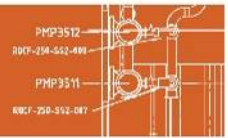
Where the Environmental Site Supervisor directs the Permittee to cease works or to modify the works under the condition above, the conduct of the Permittee in compliance with the order must be in accordance with:

- a. any directions given by the Environmental Site Supervisor; or
- b. the EMP; or
- c. best environmental practice (where (a) and (b) do not apply).

### **Condition 19**

The Permittee and its employees, contractors, and subcontractors, and agents must comply with any reasonable direction given by the Environmental Site Supervisor for the purposes of ensuring compliance with the Permit, Deed of Agreement, EMP or any direction considered necessary by the Environmental Site Supervisor for the conservation, protection and preservation of the marine park and property in the Marine Park.

END OF CONDITIONS FOR APPENDIX A1



## Appendix A2

### Recommended Conditions for Resource allocation of quarry materials pursuant to the *Coastal Protection and Management Act 1995*

#### **Condition 1**

No dredged material shall be removed from the bed or foreshores outside the areas in the drawings, specifications and descriptions contained within the Guthalungra EIS 2003 or the Supplementary EIS, 2006.

#### **Condition 2**

If dredging material has been removed from outside the boundaries of the authorised operating area or from the bed below the levels designated or if the batters are steeper than the designated batters, the dredger shall at its cost or expense repair those areas where over dredging has occurred so that the shape of the removal excavation conforms to the relevant conditions of this permit. Only granular material of a quality and grading approved by the Chief Executive shall be used to repair over dredged areas.

#### **Condition 3**

If, as a result of removal of dredging material or any other cause attributable to the dredger, any bank so displaced, the dredger shall at his cost and expense restore the bank to its original condition and take such other action as is necessary to ensure the stability of the bank to the satisfaction of the Chief Executive.

#### **Condition 4**

Dredging operations must be carried out by the dredger without causing interference to other dredge operators in the vicinity.

#### **Condition 5**

Before dredging commences, and during the whole of the dredging operations, each dredge and each item of equipment carrying out the actual removal of the material shall display a sign which is clearly legible from either side of the dredge or equipment. This sign shall display the name of the dredger and the number of this permit. The lettering on the above sign shall be at least three hundred millimetres high and formed of strokes each a minimum of fifty millimetres wide.

#### **Condition 6**

On completion of the dredging operation or when directed by the Chief Executive to do so, the dredger shall remove all dredge plant and equipment (including pipes, floats and other equipment used in or in connection with the dredging operations) from the site.

### **Condition 7**

Where any damage is done to any navigational aid, wharf, jetty or pontoon, or to any other fixed or floating structure, or to any oyster bank, or to any property, whether located below or partly above and partly below high water mark, by or in consequence of the operations of the dredger, the dredger shall at its cost and expense forthwith make good any such damage to the satisfaction of the Chief Executive and the Harbour Master, in the case of any damage done to any navigational aid. The dredger shall forthwith investigate any complaint made or referred to it in relation to any such damage or the likelihood of any such damage. No such complaint shall be unreasonably or arbitrarily dismissed by the dredger and the dredger shall as soon as practicable after receipt of any such complaint advise the Chief Executive in writing as to what action it has taken or proposes to take in relation to the subject matter of the complaint.

### **Condition 8**

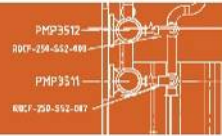
A copy of the conditions pertaining to this resource allocation notice must be available at the dredging site at all times and that all dredging plant personnel must be made aware of the conditions of this notice.

### **Condition 9**

The dredger shall indemnify and save harmless the State of Queensland, its servants and agents and the Chief Executive, his servants and agents, from and against all actions, proceedings, compensation claims, demands, costs, losses, damages or expense whatsoever (and without limiting the generality of the foregoing, including damages for personal injury) by whomsoever made or brought, caused by or arising in consequence of, or in connection with the granting, surrender or cancellation of this permit, or anything done or omitted to be done by the dredger or its servants or agents in the exercise of the authority granted or purporting to be granted to the dredger by this permit and the dredger shall also release and discharge the State of Queensland, its servants, and agents and the Chief Executive, his servants and agents from any action, proceeding, claim, demand, loss, damage or expense which but for the provisions hereof might be brought against or made upon the State of Queensland, its servants and agents and the Chief Executive, his servants and agents by the dredger.

### **Condition 10**

Should it be determined at some future date by any court or tribunal that native title exists over the authorised operating area, this permit may be cancelled at the discretion of the Chief Executive and the dredger, upon receipt of a notice of cancellation of the permit, shall cease all dredging operations forthwith and shall remove all dredge plant and equipment (including pipes, floats and other equipment used in or in connection with the dredging operation) from the site at the dredgers own cost, expense and risk, In that event, no compensation shall be payable to the dredger by the State of Queensland, its servants and agents or the Chief Executive, his servants and agents.



### **Condition 11**

All complaints received must be recorded including investigations undertaken, conclusions formed and action taken. This information must be made available to the Environmental Protection Agency on request.

### **Condition 12**

From the day dredging commences, the permittee must within 20 business days after the end of each month submit to the Chief Executive:

- a. A monthly return of the quantity of dredging material removed, based on the measured volume of dredged material in stockpiles, even if no material has been dredged during that month; and
- b. Pay a fee of \$1.40 per cubic metre of dredged material removed, or such fee as prescribed in the *Coastal Protection and Management Regulation 2003*, as amended from time to time or if any royalty waivers are subsequently granted, the amount stated in the royalty waiver.

Failure to comply with condition may result in cancellation of this permit.

END OF CONDITIONS APPENDIX A2

# Appendix B

## Conditions for material change of use for aquaculture

### **Condition 1**

The operator is authorised to conduct aquaculture on, and harvest the following approved species:

<u>Common Name</u>	<u>Scientific Name</u>
Banana Prawn	<i>Penaeus merguensis</i>
Black tiger prawn	<i>Penaeus monodon</i>
Brown tiger prawn	<i>Penaeus esculentus</i>
Kuruma prawn	<i>Penaeus japonicus</i>

### **Condition 2**

This development approval authorises activities within an approved aquaculture area of 315.1 hectares as defined and described on plan number 2007CA8458AQ0080 (Figure 2 of this report)

### **Condition 3**

Aquaculture authorised under this approval is limited by the following:

Proposal details: Conduct aquaculture on a approved aquaculture area of 317.4 hectares comprising 259 hectares of growing ponds, an additional 11.3 hectares of seawater storage and 47.1 hectares of settlement ponds/treatment ponds on a total land area of 800 hectares

Location Lot 370 on K12643 and Lot 8 SB294, Parish of Curlewis, County of Salisbury

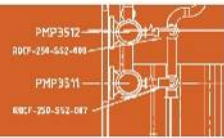
Address Coventry Road, Guthalungra, QLD 4805

### **Condition 4**

Department of Primary Industries and Fisheries must be informed of any changes to the personal contact details for this Development Approval within 28 working days.

### **Condition 5**

An aquaculture production return must be submitted to the chief executive of the Department of Primary Industries and Fisheries, by close of business on 31 July each year during the term of this Development Approval. This includes lodging a “nil return” when no activity has occurred.



### **Condition 6**

Under this approval aquaculture fisheries resources must not be released into Queensland waters other than those waters approved under this Development Approval.

### **Condition 7**

Unless otherwise authorised, fisheries resources that are to be aquacultured and subject to this Development Approval must not be sold, traded, or given away for the purposes of using for bait. This includes the use of whole fish and any part of the fish.

### **Condition 8**

Any Development Approval and/or Resource Allocation Authority area, and any associated areas which are used for activities related to the approved aquaculture operation (including processing), and all records relating to the aquaculture activity, must be made available for inspection by an inspector made under the *Fisheries Act 1994* during reasonable hours.

### **Condition 9**

The species approved under this Authority must not be brought into Queensland for rearing without a health certificate or Pathology Report, issued by the exporting State or Territory's Fisheries or Veterinary authority certifying the animal's health, which must include a statement that the specimens originate from:

- a. A hatchery, farm, aquaculture premises or region which is recognised as free from infection by the diseases on the Queensland Declared Disease List based on the requirements listed in the OIE Manual of Diagnostic Test for Aquatic Animals, current edition (Fourth Edition 2003 or later) for recognition as free from infection; or
- b. A hatchery, farm, aquaculture premises or region in which an appropriate targeted surveillance scheme over two years has been undertaken under the supervision of State or Territory Fisheries Agencies or fisheries approved Veterinary Authorities and where the requirements for recognition as free from infection by diseases of concern for that species are on the OIE Manual of Diagnostic Tests for Aquatic Animals, current edition (Fourth Edition 2003, or later) have been met; or
- c. A single batch of gametes, larvae, fry, post-larvae, spat or early juvenile or adult of a species of finfish, crustaceans, or molluscs, isolated from open waters, which has been tested using suitable techniques (refer to Department of Primary Industries and Fisheries Health Translocation Protocols appropriate for the approved species) to provide evidence that the batch is free from infection by diseases of concern on the Queensland Declared Disease List for that species.

A species of aquatic animal that is not finfish, crustacean or mollusc must not be brought into Queensland for rearing without a specific risk assessment and under a specific translocation protocol for that species.

### **Condition 10**

The species to be farmed under this approval must not be brought into Queensland for rearing unless an “Application to allow the Translocation of Live Aquatic Animals into and within Queensland form” (FDU1398) and Pathology Report has been completed and a DPIF officer has provided written acknowledgement and approval of the “Details of translocation form” and the Pathology Report.

The “Application to allow the Translocation of Live Aquatic Animals into and within Queensland form” and a signed copy of the Pathology Report (as detailed above) must be given to the Department of Primary Industries and Fisheries office nearest to the approved aquaculture area, a minimum of three (3) working days prior to all shipments into Queensland. It is a requirement that the pathology report/health certificate is dated no more than 14 days before the shipment date.

After arrival, any unusual clinical signs or mortalities in the stock must be reported immediately to the District Officer of the nearest Queensland Boating and Fisheries Patrol. If directed by a Department of Primary Industries and Fisheries officer, specimens must be forwarded to a veterinary laboratory as directed by the officer.

### **Condition 11**

This development approval authorises the possession and use of “regulated fishing apparatus” under the *Fisheries Regulation 1995*, Schedule 8, Part 1 and Part 2 (marine), and the *Fisheries (Freshwater) Management Plan 1999*, Part 6 (freshwater), (excluding an electro-fisher) at the approved aquaculture area.

### **Condition 12**

The control over the release of water from all ponds, tanks, and drainage systems within the approved aquaculture area must be maintained at all times.

### **Condition 13**

All reasonable and practicable measures to ensure that all waters (ponds, tanks, aquaria, etc) and associated plumbing, pumps etc. on the approved aquaculture area must be implemented and secured in such a way to prevent the escape of any specimens (eggs, juveniles or adults) into Queensland waters.

### **Condition 14**

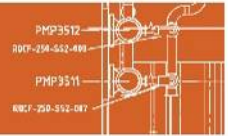
Where waters are introduced for the aquaculture of the approved species, the developer must implement all reasonable measures to ensure all waters are sufficiently screened to prevent the movement of any juvenile or adult wild fauna (excepting zooplankton) into the approved Aquaculture Area.

### **Condition 15**

This development approval authorises the purchase of Broodstock and or culture stock from the holder of a commercial fishing boat licence, a Commercial Fisher, or holder of any other authority that allows the sale of the approved species.

### **Condition 16**

For the movement of live Penaeid Broodstock the developer must comply with the Health Protocol for the Importation of Selected Live Penaeid Species from Outside



Queensland East Coast Waters (i.e. Gulf of Carpentaria, Torres Strait, Northern Territory and Western Australia).

END OF CONDITIONS APPENDIX B



# Appendix B1

## Recommended conditions for marine plant disturbance

### **Condition 1**

Damage, destruction and removal of marine plants is authorised for the construction of the aquaculture production area and is limited to the following areas and extents:

- a. Within the footprint of the aquaculture ponds, channels, drains and roads associated with the facility shown on plan 9217-C-004 (Figure 2 of this report) and a maximum of 5 m beyond the edge of these structures for construction purposes;
- b. Along the path of the intake and discharge pipelines as shown on drawing 9217-C-004 (Figure 2 of this report) for the minimum width necessary to install and bury the pipelines but for a maximum width of 15 m across the intertidal wetlands;
- c. Along the path of the intake and discharge pipelines on the seabed as shown on drawing 9217-C-002 (Figure 3 of this report), for a maximum width of 25 m for the pipeline installations and burial, plus disturbance caused by the dredge spuds; and
- d. Within 15 m radius of the footprint of the proposed intake pump station on the seabed as shown on drawing 9217-C-002 (Figure 3 of this report) and preliminary drawing 9217-C-001 (Figure 4 of this report).

### **Condition 2**

A written notice must be provided to the district officer, Queensland Boating and Fisheries Patrol and the Manager, Fisheries Habitat Management, Department of Primary Industries and Fisheries of the date of commencement of works, at least fifteen (15) days prior to, but no greater than twenty (20) days prior to, the commencement of operational works.

### **Condition 3**

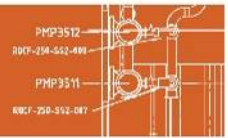
The control over the release of water from all ponds, tanks, and drainage systems within the approved aquaculture area must be maintained at all times.

### **Condition 4**

A written report which details the completed development works must be provided within fifteen days of the completion of development works to the District Officer, Queensland Boating And Fisheries Patrol and the Manager, Fisheries Habitat Management, Department of Primary Industries and Fisheries.

### **Condition 5**

At least three signs must be displayed around the development works site, including one at the main entrance to the property, in positions where these are clearly visible to the public, for fifteen business days prior to the commencement, during and for five business days after all fisheries development works. Signs are to be removed five days after the completion of the works. Each sign must state: "Operational



works involving the removal, destruction or damage of marine plants authorised under development approval conditions. Department of Primary Industries and Fisheries 07 4035 0144”.

END OF CONDITIONS APPENDIX B1

# Appendix C

## Conditions for Environmentally Relevant Activities

Conditions which must be imposed by the Assessment Manager on an application for a Material Change of Use for Environmentally Relevant Activities as follows:

- a. Environmentally Relevant Activity 1 (e) Aquaculture – cultivating marine, estuarine or freshwater organisms (other than molluscs) in ponds or tanks or enclosures in waters (impoundments) (e) if the total area of the impoundments is 20ha or more and wastes are released to waters.
- b. Environmentally Relevant Activity 34 Seafood Processing – Commercially processing seafood, including removing the scales, gills, intestines or shells, filleting, chilling, freezing or packaging seafood in works having a design production capacity of more than 100 tonne per year.
- c. Environmentally Relevant Activity 15 (a) Sewage treatment – operating a standard sewage treatment works having a peak design capacity to treat sewage of 21 or more equivalent persons but less than 100 equivalent persons.
- d. Environmentally Relevant Activity 11 (a) Crude oil or petroleum product storing – storing crude oil or petroleum product in tanks or containers having a combined total storage capacity of – (a) 10 000L or more but less than 5 000 000L.

### **Environmentally Relevant Activity –Aquaculture 1 (e)**

**Cultivating or holding marine, estuarine or freshwater organisms (other than molluscs) in ponds or tanks or enclosures in waters (impoundments) (e) if the total area of the impoundments is 20 ha or more and wastes are released to waters.**

Agency Interest - GENERAL

### **Condition 1 Number and Area of Ponds.**

This approval applies to the operation of not more than 259 grow-out ponds having a combined total area of not greater than 259 hectares.

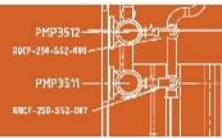
### **Condition 2 Prevent and/or minimise likelihood of environmental harm.**

In carrying out an Environmentally Relevant Activity to which this approval relates, all reasonable and practicable measures must be taken to prevent and / or to minimise the likelihood of environmental harm being caused.

### **Condition 3 Maintenance of Measures, Plant and Equipment.**

The operator of an Environmentally Relevant Activity to which this approval relates must:

- a. install all measures, plant and equipment necessary to ensure compliance with the conditions of this approval; and
- b. maintain such measures, plant and equipment in a proper and efficient condition; and (c) operate such measures, plant and equipment in a proper and efficient



manner.

**Condition 4 Records.**

Record, compile and keep all monitoring results required by this approval and present this information to the administering authority when requested. All records required by this approval must be kept for 5 years.

**Condition 5 Monitoring.**

A competent person must conduct any monitoring required by this approval.

**Condition 6 Determination of the Quality of Contaminants**

All determinations of the quality of contaminants released must be made in accordance with methods prescribed in the Environment Protection Agency Water Quality Sampling Manual, 3rd Edition, December 1999, or more recent additions or supplements to that document as such become available.

**Condition 7 Equipment Calibration.**

All instruments, equipment and measuring devices used for measuring of monitoring in accordance with any condition of this approval must be calibrated, and appropriately operated and maintained.

**Condition 8 Trained / Experienced Operator(s).**

The daily operation of the waste water treatment system and pollution control equipment must be carried out by a person(s) with appropriate experience and/or qualifications to ensure the effective operation of that treatment system and control equipment.

**Condition 9 Site Based Management Plan.**

From commencement of the Environmentally Relevant Activity to which this approval relates, a site based management plan (SBMP) must be implemented. The SBMP must identify all sources of environmental harm, including but not limited to the actual and potential release of all contaminants, the potential impact of these sources and what actions will be taken to prevent the likelihood of environmental harm being caused. The SBMP must also provide for the review and 'continual improvement' in the overall environmental performance of all Environmentally Relevant Activities that are carried out. The SBMP must address the following matters:

- a. Environmental commitments - a commitment by senior management to achieve specified and relevant environmental goals.
- b. Identification of environmental issues and potential impacts.
- c. Control measures for routine operations to minimise likelihood of environmental harm.
- d. Contingency plans and emergency procedures for non-routine situations.
- e. Organisational structure and responsibility.
- f. Effective communication.
- g. Monitoring of contaminant releases.
- h. Conducting environmental impact assessments.
- i. Staff training.
- j. Record keeping.

k. Periodic review of environmental performance and continual improvement.

**Condition 10**

The site based management plan must not be implemented or amended in a way that contravenes any condition of this approval.

Agency Interest - AIR

**Condition 11 Odour Nuisance.**

The release of noxious or offensive odours or any other noxious or offensive airborne contaminants resulting from the activity must not cause a nuisance at any nuisance sensitive or commercial place.

**Condition 12 Dust Nuisance.**

The release of dust and/or particulate matter resulting from the activity must not cause an environmental nuisance at any nuisance sensitive or commercial place.

**Condition 13 Noise Nuisance.**

Noise from the Environmentally Relevant Activity must not cause an environmental nuisance at any nuisance sensitive place or commercial place

Agency Interest - LAND

**Condition 14 Preventing Contaminant Release to Land.**

Contaminants must not be released to land unless authorised under another schedule of this approval.

**Condition 15 Erosion control**

Erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment.

**Condition 16 Acid Sulphate Soils.**

The latest edition of the Queensland Environmental Protection Agency's 'INSTRUCTIONS FOR THE TREATMENT AND MANAGEMENT OF ACID SULPHATE SOILS, 2001' (the Instructions') must be complied with when treating and managing acid sulphate soils.

**Condition 17**

Acid sulphate soils must be managed such that contaminants are not directly or indirectly released to any waters or areas of State Significance, Significant Coastal Wetlands and Significant Coastal Dunes.

Agency Interest – WATER

**Condition 18 Wastewater Release Points**

The location of the aquaculture wastewater release point is described as follows:  
Release Point W 1 - point of release of wastewaters from the diffuser at the end of the wastewater discharge pipeline to waters described as Abbot Bay, as identified in the Supplementary EIS January 2007.

### Condition 19 Wastewater Release to Waters

Wastewater must only be released to waters from the release points and in compliance with the release limits listed in Table 1 - Wastewater release limits.

**Table 1– Wastewater Release Limits**

Release Point	Quality Characteristic	Minimum	Mean <sup>1</sup>	Maximum
W1 – point of release of wastewaters at the end of the wastewater discharge pipeline to waters described as Abbot Bay	pH	6.5	-	
	Dissolved oxygen (%)	4.0 mg/L Or 90% of background water value which ever is greatest	-	-
	Total Nitrogen (mg/ L)	-	1.5 mg/L	2.0 mg/L
	Total Phosphorus (mg/ L)	-	0.15 mg/L	0.30 mg/L
	Total suspended Solids (mg/ L)	-	20 mg/L	30 mg/L
	Filterable reactive phosphorus	-	*	*
	Ammonia Nitrogen	-	*	*
	Nitrate and Nitrite Nitrogen	-	*	*

\* these limits will be established after suitable monitoring has been undertaken

<sup>1</sup> the mean must be determined based on a minimum of three and no more than ten samples

### Condition 20 Volume of Release

The total quantity of wastewater released from release point W1 during any day must not exceed 204 000 cubic metres. The total quantity of wastewater released from release point W1 during one calendar year shall not exceed 22 638 000 cubic metres, being an average of 62 021 cubic m per day.

Should a staged development of the prawn ponds be undertaken or less than the full number of ponds be in operation as part of the grow-out production cycle at one time:

- the volume of wastewater discharged during any day, and
- the total volume of wastewater discharged during one year, must be reduced proportionally according to the number of ponds in operation and the production cycle operating on site in relation to the full development of 259 hectares of prawn grow-out ponds.

For example the proportional volume of wastewater discharged during any day would be calculated as follows:

$$V = (A / B) \times C$$

Where:

V = maximum proportional discharge of wastewater;

A = maximum total quantity of wastewater released from release point W1 during any day (204000 cubic metres);

B = total area of grow-out ponds (259 hectares); and  
C = total area of grow-out ponds currently in operation.

**Condition 21 Measurement of Wastewater Volume**

The daily volume of wastewater released to waters must be determined by use of a method with an accuracy of 5% of the actual amount released.

**Condition 22 Pond Sludge**

Pond sludge removed from the production or settlement ponds must be stored and/or disposed of in a manner that does not cause the release of contaminants to any waters. Contaminated runoff from pond sludge storage areas must be retained within the catchment of the production or settlement ponds.

**Condition 23 Chemical Use**

Chemicals must be used in accordance with manufacturer's requirements and are limited to those approved by the National Registration Authority, prescribed by a veterinarian or which have been declared "Exempt from Registration" and their use shall be in accordance with the label's requirements for aquaculture.

**Condition 24 Pond Construction**

All ponds, channels and containment structures used for the storage, use or treatment of aquaculture waters at or on the authorised place must be constructed, installed and maintained:

- a. so as to minimise the likelihood of any release of aquaculture water through the bed or banks of the ponds, channels or containment structures to any waters (including groundwater); and
- b. so as to ensure the stability of ponds, channels or containment structures' construction; and
- c. in accordance with the Draft Construction and Operation Guidelines for Coastal Land-Based Aquaculture Containment Structures.

**Condition 25 Groundwater Monitoring**

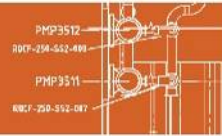
A groundwater monitoring program to help detect and gauge the release of any water through the bed or banks of the ponds, channels or containment structures for both the construction phase and ongoing operations of the aquaculture facility must be developed and submitted to the Environmental Protection Agency for comment prior to the commencement of any construction works on the site. Due regard to comment provided by the Environmental Protection Agency must be had prior to finalisation of the program.

The groundwater monitoring program must be able to determine the impacts of the approved facility on the groundwater quality and height of adjacent areas. The program must include, but not be limited to, the monitoring of salinity and pH. The groundwater monitoring program must be implemented prior to commencement of construction works.

Agency Interest - WASTE

**Condition 26 Burning of Waste**

No waste is to be burned on site or removed and burned at another site.



### **Condition 27 Regulated Waste**

All regulated waste removed from the site must be removed by a person who holds a current approval to transport such waste under the provisions of the Environmental Protection Act 1994.

### **Condition 28 Off Site Movement**

Where regulated waste is removed from the premises (other than by a release as permitted under another schedule of this development approval), the holder of this development approval must monitor and keep records of the following:

- a. the date, quantity and type of waste removed; and
- b. name of the waste transporter and/or disposal operator that removed the waste; and
- c. the intended treatment disposal destination of the waste.

Agency Interest - MONITORING AND REPORTING

### **Condition 29 Notification.**

Telephone the Environmental Protection Agency's Pollution Hotline or local office as soon as practicable after becoming aware of any release of contaminants not in accordance with the conditions of this approval.

### **Condition 30 Information about Spills.**

A written notice detailing the following information must be provided to the administering authority within 14 days of any advice provided in accordance with the above condition on notification:

- a. the name of the operator, including their approval/registration number;
- b. the name and telephone number of a designated contact person;
- c. quantity and substance released;
- d. vehicle and registration details;
- e. person/s involved (driver and any others);
- f. the location and time of the release;
- g. the suspected cause of the release;
- h. a description of the effects of the release;
- i. the results of any sampling performed in relation to the release,
- j. actions taken to mitigate any environmental harm caused by the release; and
- k. proposed actions to prevent a recurrence of the release.

### **Condition 31 Disease Management**

Notify the administering authority of any disease outbreak requiring treatment and/or drainage of pond and/or tank contents. The written approval of the administering authority must be granted prior to disposing of any diseased organisms, or water (waste) which has come into contact with diseased organisms.

Where diseased organisms and/or affected water requires disposal it must be monitored and the following records kept:

- a. the date quantity and type of waste disposed of,



- b. name of the waste transporter and/or disposal operator that removed the waste, and
- c. the intended treatment/disposal destination of the waste.

**32 Complaint Response.**

The operator of the Environmentally Relevant Activity must record the following details for all complaints received and provide this information to the administering authority on request:

- a. Time, date, name and contact details of the complainant;
- b. reasons for the complaint;
- c. any investigations undertaken;
- d. conclusions formed; and
- e. any actions taken.

**33 Water Quality Monitoring points**

Wastewater quality monitoring point M1 – Inspection point located in the wastewater discharge pipeline approximately 25 metres from the pipeline intake, and located within the boundary of Lot 8 SB294.

**34 Water Quality Monitoring**

Conduct monitoring for the quality characteristics at the monitoring points and at the frequency and timing specified in Table 2 - Water Monitoring.

**Table 2 - Water Monitoring**

Monitoring Point	Quality Characteristic	Monitoring frequency / timing
M1	pH	Daily when discharging
	Dissolved oxygen (%)	Daily when discharging
	Total Nitrogen (mg/ L)	Monthly; or Minimum of six times per growing season – when discharge is occurring.
	Total Phosphorus (mg/ L)	
	Total suspended Solids (mg/ L)	At least 3 sampling events, no closer than two weeks apart, during the last 3 months of the growing season.
	Filterable reactive phosphorus	At least 4 sampling events to be in later stages of drain harvest.
	Ammonia Nitrogen	At least two sampling events within 24 hours of an excessive rainfall event. (Excessive Rainfall Event – means rainfall of 100 millimetres or more occurring within a 24 hour period.)
	Nitrate and Nitrite Nitrogen	

**35 Load limits - wastewater releases**

The load of contaminants released from the facility, averaged out over the growing season for the entire farm must not exceed the limits specified in Table 3 - Wastewater - Gross Load Limits. The load is to be calculated as follows:

$$\text{Load} = (A \times B) / (C \times D)$$

Where

A is the average value of the concentration (expressed as mg/L) for the parameter (TN, TP, TSS) determined from 6 consecutive sampling events;

B is the total volume of wastewater released over the growing season;

C is the number of days in growing season; and

D is the number of hectares in production during the growing season.

**Table 3 - Wastewater - Gross Load Limits**

Total Suspended Solids	Total Nitrogen	Total Phosphorus
6.59 kg/ha/day	0.49 kg/ha/day	0.05 kg/ha/day

### 36 Receiving Environment Monitoring .

Prior to development of the aquaculture facility, the following receiving environment programs must be developed and implemented. This includes a Water Quality Monitoring Program and a Seagrass and Coral Monitoring Program. These programs must be submitted to the Environmental Protection Agency for review and comment prior to implementation. Due regard to comment provided by the Environmental Protection Agency must be had prior to finalisation of the programs.

#### (i) Water Quality Monitoring Program

A receiving environment water quality monitoring program for Abbot Bay must be developed, and must include baseline monitoring consisting of at least 12 months prior to first discharge. The program must detail indicators (including but not limited to the param provided in Table 4 – water quality indicators for receiving environmental monitoring in Abbot Bay), water quality objectives for those indicators, sampling locations, frequency and sample timing. Sample locations must be static throughout the monitoring program and easily referenced (e.g. using GPS). No less than six locations must be chosen, three of which are within a specified distance, for example, less than 500m) of the discharge point in a north/south/east orientation. Other locations must be adjacent to the western side of Camp Island and reference locations well north and south of the discharge area. Sampling must occur at least monthly and at the same relative part of the tide, e.g. just before high tide for ease of boat access.

**Table 4 - Water quality indicators for receiving environmental monitoring in Abbot Bay** (from enclosed coastal waters in the Queensland Water Quality Guidelines 2006). Note that monitoring outside of enclosed coastal areas would have different objectives).

Indicator	Recommended median
TSS	15mg/L
TN	0.2mg/L
TP	0.02mg/L
pH	>8.0 <8.4
Dissolved Oxygen	>90% <100%
Turbidity	6 NTU
Secchi	1.5m
Chl a	2µg/L
Ammonia N	8µg/L
Oxidised N	3µg/L
FRP	6µg/L

Monitoring must be undertaken by a suitably qualified person with analysis being conducted at an accredited laboratory. All sampling must comply with the Environmental Protection Agency's Water Quality Sampling Manual (3rd Edition 1999 or later). An annual report must be submitted to the Environmental Protection Agency including data, data interpretation and comparison to water quality objectives/guidelines and historical data. If the water quality indicators (from Table 4 - Water quality indicators for receiving environment monitoring in Abbot Bay) are

exceeded the annual report must also include an investigation into the potential causes of the exceedance and potential mitigation strategies.

(ii) **Seagrass and Coral Monitoring Program**

A habitat monitoring program for Abbot Bay including local seagrass and fringing coral must be developed. This must involve both seagrass and coral surveys (extent, biomass and other indicators of health) and an assessment of seagrass depth range (SDR). SDR surveys must be conducted by a suitably qualified person/s in accordance with the National Resource Management Document "Estuarine, Coastal and Marine Habitat Integrity: Seagrass depth range". SDR surveys are to be completed biannually (summer and winter) to account for temporal variability and sufficient replicate surveys must be conducted to reduce spatial variability. SDR surveys are to be conducted biannually for a period of at least three years after the first discharge and thereafter in biannually every second year. Reference sites must be included to compare how the seagrass is affected within the discharge zone compared to other seagrass at similar depths in Abbot Bay. Surveys must be conducted using a similar approach to that described in Appendix L of the Guthalungra Aquaculture Project EIS (2003).

An initial coral and seagrass survey and SDR assessment must be conducted prior to the development of the aquaculture facility. An annual report must be submitted to the Environmental Protection Agency including data and interpretation.

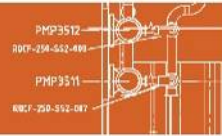
**37 Water Quality Release Continual Improvement Report**

A Water Quality Release Continual Improvement Report must be prepared and should include the following information for each species cultivated, for the year addressed in the report:

- a. number of hectares stocked
- b. stocking rate used
- c. survival rate
- d. production (kg/ha)
- e. feed conversion ratio
- f. Proportion of waste water recycled versus discharged
- g. The loads and concentrations of total nitrogen, total phosphorus and suspended solids released as measured and calculated under the environmental authority, compared with the relevant limits and targets specified in the environmental authority and previous years results
- h. Practices and procedures undertaken during the preceding twelve months to reduce the load of total nitrogen, total phosphorus and suspended solids released discharged into the receiving environment
- i. Practices and procedures that will be implemented to further reduce the load of total nitrogen, total phosphorus, and suspended solids released into the receiving environment for the following year where necessary, i.e. in cases where loads are greater than industry benchmarks achieved using best practice environmental management.

Note: The requirement for a Water Quality Release Continual Improvement Report does not apply in the case that the environmentally relevant activity is carried out:

- a. by recycling effluent during the whole of the growing season and the only contaminant releases to waters that occur (excluding any staged end of season



- pond drainage) are overflows of storm water runoff and waste waters from grow-out and treatment ponds that are solely caused by rainfall causing overtopping of such ponds; or
- b. such that concentration limits for total nitrogen and total phosphorus are complied with and the average load of total nitrogen released to waters as calculated under this environmental authority is zero or below.

### **38 Draft Environmental Management Program - Pipeline**

In accordance with S.332 (1)(b) of the *Environmental Protection Act 1994*, a draft Environmental Management Program must be prepared and submitted to the Environmental Protection Agency for approval prior to any works being undertaken. The Draft Environmental Management Program must identify all sources of environmental harm in relation to pipeline construction, including but not limited to the actual and potential release of all contaminants, the potential impact of these sources and what actions will be taken to prevent the likelihood of environmental harm being caused.

The Environmental Management Program must also address the following matters:

- a. Construction, installation and maintenance of the intake and discharge pipeline (corridor); and
- b. Hydrology and functioning of the Areas of State Significance, Significant Coastal Wetland and Significant Coastal Dunes such that there are no impacts to these values.

### **END OF CONDITIONS ERA 1(e)**

#### **Environmentally Relevant Activity 34 - Seafood Processing**

**Commercially processing seafood, including removing the scales, gills, intestines or shells, filleting, chilling, freezing or packaging seafood in works having a design production capacity of more than 100t a year.**

Agency Interest: GENERAL

#### **Condition 1**

When requested by the administering authority, monitoring must be undertaken to investigate any complaint of environmental nuisance caused by a release to the atmosphere from a release point at the site, and the results thereof notified to the administering authority within 14 days following completion of monitoring.

#### **Condition 2 Prevent and/or minimise likelihood of environmental harm**

In carrying out an Environmentally Relevant Activity to which this approval relates, all reasonable and practicable measures must be taken to prevent and / or to minimise the likelihood of environmental harm being caused.

### **Condition 3 Maintenance Of Measures, Plant and Equipment**

The operator of an Environmentally Relevant Activity to which this approval relates must:

- a. Install all measures, plant and equipment necessary to ensure compliance with the conditions of this approval; and
- b. maintain such measures, plant and equipment in a proper and efficient condition; and
- c. operate such measures; plant and equipment in a proper and efficient manner.

Agency Interest: AIR

### **Condition 4 Nuisance**

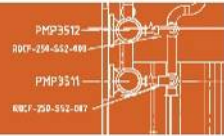
The release of noxious or offensive odours or any other noxious or offensive airborne contaminants resulting from the activity must not cause a nuisance at any nuisance sensitive or commercial place.

Agency Interest: WATER

### **Condition 5**

Treated wastewater from the seafood processing facility shall be disposed of in the aquaculture wastewater treatment ponds.

**END OF CONDITIONS FOR ERA 34**



**Environmentally Relevant Activity 15(a) Sewage treatment operating a standard sewage treatment works having a peak design capacity to treat sewage of 21 or more equivalent persons but less than 100 equivalent persons.**

Agency Interest: GENERAL

**Condition 1**

Prevent and/or minimise likelihood of environmental harm In carrying out an Environmentally Relevant Activity to which this approval relates, all reasonable and practicable measures must be taken to prevent and / or to minimise the likelihood of environmental harm being caused.

**Condition 2 Maintenance Of Measures, Plant and Equipment**

The operator of an Environmentally Relevant Activity to which this approval relates must:

- a. install all measures, plant and equipment necessary to ensure compliance with the conditions of this approval; and
- b. maintain such measures, plant and equipment in a proper and efficient condition; and
- c. operate such measures, plant and equipment in a proper and efficient manner.

**Condition 3 Records**

Record, compile and keep all monitoring results required by this approval and present this information to the administering authority when requested.

**Condition 4 Site Based Management Plan**

From commencement of an Environmentally Relevant Activity to which this approval relates, a Site Based Management Plan must be implemented. The Site Based Management Plan must identify all sources of environmental harm, including but not limited to the actual and potential release of all contaminants, the potential impact of these sources and what actions will be taken to prevent the likelihood of environmental harm being caused. The Site Based Management Plan must also provide for the review and 'continual improvement' in the overall environmental performance of all Environmentally Relevant Activities that are carried out.

The Site Based Management Plan must address the following matters:

- a. Environmental commitments - a commitment by senior management to achieve specified and relevant environmental goals;
- b. Identification of environmental issues and potential impacts;
- a. Control measures for routine operations to minimise likelihood of environmental harm;
- b. Contingency plans and emergency procedures for non-routine situations;
- c. Organisational structure and responsibility;
- d. Effective communication;
- e. Monitoring of contaminant releases;
- f. Conducting environmental impact assessments;
- g. Staff training;
- h. Record keeping; and

- i. Periodic review of environmental performance and continual improvement.

#### **Condition 5**

All records required by this approval must be kept for 5 years.

#### **Condition 6**

The Site Based Management Plan must not be implemented or amended in a way that contravenes any condition of this approval.

#### **Condition 7 Waste Records**

A record of all waste must be kept detailing the following information:

- a. date of pickup of waste;
- b. description of waste;
- c. quantity of waste;
- d. origin of the waste; and
- e. destination of the waste.

Note: Trackable wastes as listed in Schedule 1 of the *Environmental Protection (Waste Management) Regulation 2000* are not covered by this condition. Trackable wastes have similar recording requirements to this condition in accordance with a waste tracking system established under the above Regulation.

#### **Condition 8 Annual Monitoring Report**

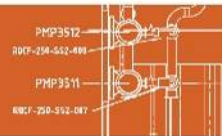
An annual monitoring report must be prepared each year and presented to the administering authority when requested. This report shall include but not be limited to:

- a. a summary of the previous twelve (12) months monitoring results obtained under any monitoring programs required under this approval and, in graphical form showing relevant limits, a comparison of the previous twelve (12) months monitoring results to both this approvals limits and to relevant prior results;
- b. an evaluation/explanation of the data from any monitoring programs;
- c. a summary of any record of quantities of releases required to be kept under this approval;
- d. a summary of the record of equipment failures or events recorded for any site under this approval;
- e. an outline of actions taken or proposed to minimise the environmental risk from any deficiency identified by the monitoring or recording programs;
- f. the number of domestic tenements newly connected to the sewage treatment works during the previous twelve (12) months;
- g. the progressive total number of connections; and
- h. a summary of any trade waste agreements entered into or amended during the year, including the nature of the industry.

#### **Condition 9**

This condition applies to the site based management plan required by condition 4. A suitably qualified third party auditor must certify in writing that the site base management plan as been prepared:

- a. by a suitably qualified person with at least 5 years experience in the relevant area;
- b. in a manner that is consistent with the requirements of condition [AIG4 ]; and



- c. by having regard to, and appropriately applying, the relevant guidelines (being those applicable on a national, state or a regional basis) which the third party auditor considers should be applied in undertaking the site based management plan including relevant Environment Australia, Australia New Zealand Environment and Conservation Council and Environmental Protection Agency guidelines where published.

**Condition 10 Notification**

Telephone the Environmental Protection Agency's Pollution Hotline or local office as soon as practicable after becoming aware of any release of contaminants not in accordance with the conditions of this approval.

**Condition 11 Information About Spills**

A written notice detailing the following information must be provided to the Environmental Protection Agency within 14 days of any advice provided in accordance with condition 10:

- a. the name of the operator, including their approval/registration number;
- b. the name and telephone number of a designated contact person;
- c. quantity and substance released;
- d. vehicle and registration details;
- e. person/s involved (driver and any others);
- f. the location and time of the release;
- g. the suspected cause of the release;
- h. a description of the effects of the release;
- i. the results of any sampling performed in relation to the release,
- j. actions taken to mitigate any environmental harm caused by the release; and
- k. proposed actions to prevent a recurrence of the release.

**Condition 12 Monitoring**

A competent person(s) must conduct any monitoring required by this approval.

**Condition 13 Equipment Calibration**

All instruments, equipment and measuring devices used for measuring or monitoring in accordance with any condition of this approval must be calibrated, and appropriately operated and maintained.

**Condition 14 Trained / Experienced Operator(s).**

The daily operation of the waste water treatment system and pollution control equipment must be carried out by a person(s) with appropriate experience and/or qualifications to ensure the effective operation of that treatment system and control equipment.

**Condition 15 Spill Kit**

An appropriate spill kit, personal protective equipment and relevant operator instructions/emergency procedure guides for the management of wastes and chemicals associated with the environmentally relevant activity must be kept at the site, and in each vehicle used if the activity is a mobile environmentally relevant activity.

Agency Interest: AIR



### **Condition 16          Nuisance**

The release of noxious or offensive odours or any other noxious or offensive airborne contaminants resulting from the activity must not cause a nuisance at any nuisance sensitive or commercial place.

Agency Interest: LAND

### **Condition 17          Land Disposal**

The only contaminants permitted to be released to land are treated sewage effluent to the area designated for the irrigation and in compliance with the limits levels stated in **Table [5] - Contaminant release limits to land.**

### **Condition 18          Disinfection**

Prior to irrigation the final effluent must be chlorinated/treated to achieve the residual chorine level as stated in **Table [5] - Contaminant release limits to land.**

### **Condition 19**

The irrigation of effluent must be carried out in a manner such that:  
vegetation is not damaged;

- a. soil erosion and soil structure damage is avoided;
- b. there is no surface ponding of effluent;
- c. percolation of effluent beyond the plant root zone is minimised;
- d. the capacity of the land to assimilate nitrogen, phosphorus, salts, organic matter as measured by oxygen demand and water is not exceeded; and
- e. the quality of ground water is not adversely affected.

### **Condition 20**

Notices must be prominently displayed on areas undergoing effluent irrigation, warning the public that the area is irrigated with effluent and not to use or drink the effluent. These notices must be maintained in a visible and legible condition.

### **Condition 21**

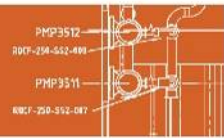
Conduct and keep records of any monitoring programs of contaminant releases from the treatment plant at the monitoring points, frequency, and for the param specified in **Table [6] - Monitoring program.**

### **Condition 22**

Monitoring must be undertaken and records kept of a monitoring program of contaminant releases to the irrigation area at the monitoring points, frequency, and for the parameters specified in **Table [6]- Monitoring program.**

### **Condition 23**

The daily volume of contaminants released to land must be determined or estimated by an appropriate method, for example a flow meter, and records kept of such determinations and estimates.



#### **Condition 24**

When conditions prevent the irrigation of treated effluent to land (such as during or following rain events), the contaminants must be directed to a wet weather storage or alternative measures must be taken to store/lawfully dispose of effluent.

#### **Condition 25**

Pipelines and fittings associated with the effluent irrigation system must be clearly identified. Lockable valves or removable handles must be fitted to all release pipes situated in public access areas.

#### **Condition 26**

A minimum area of 0.5 hectares of land, excluding any necessary buffer zones, must be utilised for the irrigation of treated effluent.

#### **Condition 27            Irrigation Monitoring Program**

Implement and maintain an irrigation monitoring program (IMP) for the release of contaminants to land(s). As a minimum, the IMP must include:

- a. soil and sub-soil analysis, including assessment of the soils including types, structure, phosphorus adsorption capacity, nutrient status, salinity and sodicity, cation exchange capacity and sodium absorption ratio (SAR) of the contaminant
- b. release area(s), to be carried out at no less than six representative sites on an annual basis
- c. ground water monitoring that determines the existence and rate of infiltration of
- d. effluent that has been irrigated to land, and the potential or actual impacts on ground water from such infiltration, to be carried out on an annual basis;
- e. plant analysis to assess nutrient export to be carried out on a bi-annual basis;
- f. determination of the quantity and quality of contaminants applied;
- g. periodic re-assessment, including modelling of the water, nutrient and salt balances and irrigation
- h. rate and return period should be undertaken, if necessary, to ensure sustainable use of the
- i. contaminant release area is being achieved; and
- j. reporting of monitoring results, and an assessment of the impact of the releases on the contaminant release areas.

Agency Interest: NOISE

#### **Condition 28            Noise Nuisance**

Noise from the Environmentally Relevant Activity must not cause an environmental nuisance at any nuisance sensitive place or commercial place.

#### **Condition 29            Noise Monitoring**

When requested by the administering authority, noise monitoring must be undertaken to investigate any complaint of noise nuisance, and the results notified within 14 days to the administering authority. Monitoring must include:

- a. LA 10, adj, 10 mins
- b. LA 1, adj, 10 mins
- c. the level and frequency of occurrence of impulsive or tonal noise;

- d. atmospheric conditions including wind speed and direction;
- e. effects due to extraneous factors such as traffic noise; and
- f. location, date and time of recording.

**Condition 30**

The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's Noise Measurement Manual.

Agency Interest: SOCIAL

**Condition 31 Complaint Response**

The operator of the Environmentally Relevant Activity must record the following details for all complaints received and provide this information to the administering authority on request:

- a. Time, date, name and contact details of the complainant;
- b. reasons for the complaint;
- c. any investigations undertaken;
- d. conclusions formed; and
- e. any actions taken.

Agency Interest: WASTE

**Condition 32**

All waste generated from the activity shall be disposed of at a facility lawfully able to accept such waste.

Agency Interest: WATER

**Condition 33**

Contaminants other than settled/treated stormwater must not be released from the site to surface waters or the bed or banks of surface waters,

**Condition 34 Sewage Pumps**

Sewage pumps must be fitted with stand-by pump and pump-failure alarms. All alarms must be able to operate without mains power.

**Condition 35 Storm Water Management**

There must be no release of stormwater runoff that has been in contact with any contaminants at the site to any waters, roadside gutter or stormwater drain.

**Table 5 - Contaminant release limits to land**

Quality Characteristics	Release Limit		
	Minimum	50 <sup>th</sup> Percentile	Maximum
5 day biochemical oxygen demand	-	-	20mg/L
Suspended solids	-	-	30mg/L
pH	6.5 pH units	-	8.5 pH units
Faecal Coliforms <sup>1</sup>	-	100 cfu <sup>2</sup> per 100 millilitres	<1000
Total Chlorine Residual <sup>3</sup>	0.3mg/L	-	0.7mg/L

<sup>1</sup>Faecal Coliforms The holder may measure E. coli in place of Faecal Coliforms to satisfy the disinfection requirements.

<sup>2</sup>"cfu" Colony Forming Units

<sup>3</sup> "Total Chlorine Residual" Refer to the section 6.3 Disinfection of Recycled Water of "Queensland Water Recycling Guidelines December 2005"

**Table 6 – Monitoring program**

Monitoring Point	Quality Characteristics	Units	Frequency
Final outlet from wet weather storage tank	5 day Biochemical Oxygen demand	mg/L	Monthly
Final outlet from wet weather storage tank	Suspended solids	mg/L	Monthly
Final outlet from wet weather storage tank	Faecal Coliforms	Cfu per 100ml	Monthly
Final outlet from wet weather storage tank	pH	pH units	Daily
Final outlet from wet weather storage tank	Total chlorine residual	mg/L	Daily

**END OF CONDITIONS FOR ERA 15(a)**

**Environmentally Relevant Activity 11(a) - Crude oil or petroleum product storing - Storing crude oil or a petroleum product in tanks or containers having a combined total storage capacity of a) 1000L or more but less than 500 000L**

Agency Interest: AIR

**Condition 1 Dust Nuisance**

The release of dust and/or particulate matter resulting from the Environmentally Relevant Activity must not cause an environmental nuisance at any nuisance sensitive or commercial place.

**Condition 2**

When requested by the administering authority, dust and particulate monitoring must be undertaken to investigate any complaint of environmental nuisance caused by dust and/or particulate matter, and the results notified within 14 days to the administering authority following completion of monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place and at upwind control sites and must include:

- a. for a complaint alleging dust nuisance, dust deposition; and
- b. for a complaint alleging adverse health effects caused by dust, the concentration per cubic metre of particulate matter with an aerodynamic diameter of less than 10 micrometre ( $\mu\text{m}$ ) (PM10) suspended in the atmosphere over a 24hr averaging time.

**Condition 3 Nuisance**

The release of noxious or offensive odours or any other noxious or offensive airborne contaminants resulting from the activity must not cause a nuisance at any nuisance sensitive or commercial place.

Agency Interest: GENERAL

**Condition 4 Prevent and/or minimise likelihood of environmental harm**

In carrying out an Environmentally Relevant Activity to which this approval relates, all reasonable and practicable measures must be taken to prevent and / or to minimise the likelihood of environmental harm being caused.

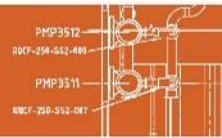
**Condition 5 Maintenance Of Measures, Plant and Equipment**

The operator of an Environmentally Relevant Activity to which this approval relates must:

- a. install all measures, plant and equipment necessary to ensure compliance with the conditions of this approval; and
- b. maintain such measures, plant and equipment in a proper and efficient condition; and
- c. operate such measures, plant and equipment in a proper and efficient manner.

**Condition 6 Site Based Management Plan**

From commencement of an Environmentally Relevant Activity to which this approval relates, a Site Based Management Plan must be implemented. The Site Based



Management Plan must identify all sources of environmental harm, including but not limited to the actual and potential release of all contaminants, the potential impact of these sources and what actions will be taken to prevent the likelihood of environmental harm being caused. The Site Based Management Plan must also provide for the review and 'continual improvement' in the overall environmental performance of all Environmentally Relevant Activities that are carried out. The Site Based Management Plan must address the following matters:

- a. Environmental commitments - a commitment by senior management to achieve specified and relevant environmental goals.
- b. Identification of environmental issues and potential impacts.
- c. Control measures for routine operations to minimise likelihood of environmental harm.
- d. Contingency plans and emergency procedures for non-routine situations.
- e. Organisational structure and responsibility.
- f. Effective communication.
- g. Monitoring of contaminant releases.
- h. Conducting environmental impact assessments.
- i. Staff training.
- j. Record keeping.
- k. Periodic review of environmental performance and continual improvement.

#### **Condition 7**

The site based management plan must not be implemented or amended in a way that contravenes any condition of this approval.

#### **Condition 8 Records**

Record, compile and keep all monitoring results required by this approval and present this information to the administering authority when requested.

#### **Condition 9**

All records required by this approval must be kept for 5 years.

#### **Condition 10 Waste Records**

A record of all waste must be kept detailing the following information:

- a. date of pickup of waste;
- b. description of waste;
- c. quantity of waste;
- d. origin of the waste; and
- e. destination of the waste.

Note: Trackable wastes as listed in Schedule 1 of the Environmental Protection (Waste Management) Regulation 2000 are not covered by this condition. Trackable wastes have similar recording requirements to this condition in accordance with a waste tracking system established under the above Regulation

#### **Condition 11 Notification**

Telephone the Environmental Protection Agency's Pollution Hotline or local office as soon as practicable after becoming aware of any release of contaminants not in accordance with the conditions of this approval.

### **Condition 12 Information About Spills**

A written notice detailing the following information must be provided to the Environmental Protection Agency within 14 days of any advice provided in accordance with condition 10

- a. the name of the operator, including their approval/registration number;
- b. the name and telephone number of a designated contact person;
- c. quantity and substance released;
- d. vehicle and registration details;
- e. person/s involved (driver and any others);
- f. the location and time of the release;
- g. the suspected cause of the release;
- h. a description of the effects of the release;
- i. the results of any sampling performed in relation to the release,
- j. actions taken to mitigate any environmental harm caused by the release; and
- k. proposed actions to prevent a recurrence of the release.

### **Condition 13 Monitoring.**

A competent person(s) must conduct any monitoring required by this approval.

### **Condition 14 Equipment Calibration**

All instruments, equipment and measuring devices used for measuring or monitoring in accordance with any condition of this approval must be calibrated, and appropriately operated and maintained.

### **Condition 15 Trained / Experienced Operator(s)**

The daily operation of the waste water treatment system and pollution control equipment must be carried out by a person(s) with appropriate experience and/or qualifications to ensure the effective operation of that treatment system and control equipment.

### **Condition 16 Spill Kit**

An appropriate spill kit, personal protective equipment and relevant operator instructions/emergency procedure guides for the management of wastes and chemicals associated with the Environmentally Relevant Activity must be kept at the site, and in each vehicle used if the activity is a mobile Environmentally Relevant Activity.

### **Condition 17 Spill Kit Training**

Anyone operating under this approval must be trained in the use of the spill kit.

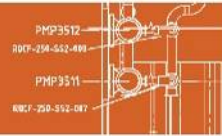
Agency Interest: LAND

### **Condition 18 Preventing Contaminant Release To Land**

Contaminants must not be released to land.

### **Condition 19**

Spillage of all chemicals and fuels must be contained within an on-site containment system and controlled in a manner that prevents environmental harm. NOTE: All petroleum product storage's must be designed, constructed and maintained in



accordance with AS 1940 - Storage and Handling of Flammable and Combustible Liquids.

Agency Interest: NOISE

**Condition 20 Noise Nuisance**

Noise from the Environmentally Relevant Activity must not cause an environmental nuisance at any nuisance sensitive place or commercial place.

**Condition 21 Noise Monitoring**

When requested by, the administering authority, noise monitoring must be undertaken to investigate any complaint of noise nuisance, and the results notified within 14 days to the administering authority. Monitoring must include:

- a. LA 10, adj, 10 mins
- b. LA 1, adj, 10 mins
- c. the level and frequency of occurrence of impulsive or tonal noise;
- d. atmospheric conditions including wind speed and direction;
- e. effects due to extraneous factors such as traffic noise; and
- f. location, date and time of recording.

**Condition 22**

The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's Noise Measurement Manual.

Agency Interest: SOCIAL

**Condition 23 Complaint Response.**

The operator of the Environmentally Relevant Activity must record the following details for all complaints received and provide this information to the administering authority on request:

- a. Time, date, name and contact details of the complainant;
- b. reasons for the complaint;
- c. any investigations undertaken;
- d. conclusions formed; and
- e. any actions taken.

Agency Interest: WATER

**Condition 24**

Erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment.

**Condition 25 Release to Waters**

Contaminants must not be released from the site to any waters or the bed and banks of any water.

**END OF CONDITIONS FOR ERA 11(a)**



# Appendix C1

## Conditions for Environmentally Relevant Activity 19 – Dredging

Conditions which must be imposed by the Assessment Manager on an application for a Material Change of Use for Environmentally Relevant Activities as follows:

**Environmentally Relevant Activity 19 Dredging Material – dredging material from the bed of any waters (other than dredging by a port authority of materials for which a royalty or similar charge is not payable) using plant or equipment having a design capacity of – (a) not more than 5000t a year.**

### **Condition 1**

In carrying out an Environmentally Relevant Activity to which this approval relates, all reasonable and practicable measures must be taken to prevent and/or to minimise the likelihood of environmental harm being caused.

### **Condition 2**

The operator of an Environmentally Relevant Activity to which this approval relates must:

Install all measures, plant and equipment necessary to ensure compliance with the conditions of this approval; and

Maintain such measures, plant and equipment in a proper and efficient condition; and

Operate such measures, plant and equipment in a proper and efficient manner.

### **Condition 3**

All acid sulphate soils must be disposed of or managed within the authorised place

### **Condition 4**

The latest edition of the Queensland Environmental Protection agency's INSTRUCTIONS FOR THE TREATMENT AND MANAGEMENT OF ACID SULPHATE SOILS, 2001 ("the instructions"), must be complied with when treating and managing acid sulphate soils,

### **Condition 5**

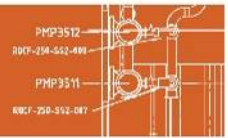
Acid sulphate soils must be managed such that contaminants are not directly or indirectly released to any waters.

### **Condition 6**

Noise from the Environmentally Relevant Activity must not cause an environmental nuisance at any nuisance sensitive place or commercial place.

### **Condition 7**

All sludge from offshore dredging operational shall be transported to the Guthalungra Aquaculture Site pond construction area. The sludge shall be managed



and treated to ensure no contaminants are released to waters or the bed or banks of any waters.

**Condition 8**

The operator of the Environmentally Relevant Activity must record the following details for all complaints received and provide this information to the administering authority on request;

- a. Time, date, name and contact details of the complainant;
- b. Reasons for the complaint;
- c. Any investigations undertaken;
- d. Conclusions formed; and
- e. Any actions taken.

**END OF CONDITIONS FOR ERA 19**

# Appendix D

## Recommended conditions for Coastal Works

Conditions to be attached to the Development Approval granted by the Assessment Manager relating to the following aspects of development:

### **Operational Work on State Coastal Land Operational Work that is Tidal Work**

#### **Condition 1**

An EMP shall be developed to address potential environmental impacts of this activity. The plan shall be supplied to the Environmental Protection Agency and the activity shall be carried out in accordance with this plan. As a component of the EMP, a site specific plan for the management and maintenance of threatened species and their habitat on the site must be prepared by a suitably qualified expert.

#### **Condition 2**

The development will cause no net loss of threatened species or their habitat, both in its extent or integrity.

#### **Condition 3**

Record, compile and keep all monitoring results required by this approval and present this information to the Environmental Protection Agency when requested, in a specified format.

#### **Condition 4**

All records required by this approval must be kept for five years.

#### **Condition 5**

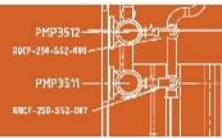
Works must comply with Instructions for the Treatment and Management of Acid Sulphate Soils, 2001, Queensland Government Environmental Protection Agency, or any updates as they become available, hereafter referred to as the ASS Instructions.

#### **Condition 6**

Acid sulphate soils must be managed such that contaminants are not directly or indirectly released from the works to any waters unless otherwise authorised under a condition of this approvals.

#### **Condition 7**

Any sand being placed in the beach must have a fines component <0.075mm diameter comprised of silt, clay or organic material of less than 5%, be free of contaminants as specified in s.31 of the *Environmental Protection Policy (Water) 1997* and must have a median grain size within -25 to +50% of the native beach sand.



### **Condition 8**

No sand is to be removed from the coastal dune system within the erosion prone area or coastal management district.

### **Condition 9**

All areas of exposed sand that are vulnerable to wind erosion and which may impact on adjacent vegetation or cause a nuisance must be stabilised during the construction period.

### **Condition 10**

All reasonable and practicable measures must be taken to stabilise sand dunes against wind erosion including, the re-establishment of native vegetation and the installation of pedestrian control fencing and access tracks to the beach.

### **Condition 11**

No sand shall be permanently removed from the active beach system except as otherwise permitted by a condition of this approval and any surplus clean sand should be placed on the beach seaward of the work.

### **Condition 12**

If, in a severe erosion event, the pipeline is exposed, reinstatement of protection to the pipeline must be undertaken through renourishment of the beach.

### **Condition 13**

Any erosion or loss of sand surrounding the works that occurs because of changes caused by the works must be rectified.

### **Condition 14**

The sources of any new materials (e.g. for beach nourishment) must be recorded and supplied to the Environmental Protection Agency upon request. Following construction of the works

- a. The dunes must be re-profiled to match a natural condition or as near as possible to the condition existing prior to disturbance by the works;
- b. Disturbed areas must be revegetated by re-establishing the endemic native plants common to the site (by planting potted stock and or by replanting vegetative material removed and stored prior to excavation) and fertilising adjacent herbaceous vegetation with appropriate fertiliser to encourage vegetative spread;
- c. Wind erosion of disturbed areas must be controlled following replanting; and
- d. The revegetated area must be fenced off, where necessary, to prevent pedestrian access across the area

### **Condition 15**

Any excavation or filling on site must be constructed, installed and maintained:

- a. So as to maintain the local and regional drainage or hydrological systems;
- b. So that changes in water chemistry will not impact on ecological values on or off site; and
- c. So that any changes in surface water hydrology do not impact on natural wetlands, habitat values, rare and endangered species as listed under the *Nature Conservation Act 1992*.

### **Condition 16**

If tenure of the site of the works is required by the relevant Authority or the Department of Natural Resources and Water, a lease, licence, or permit to occupy of the site of the works from the relevant authority or the Department of Natural Resources and Water must be obtained.

### **Condition 17**

All temporary works associated with the construction of the works are to be removed from the site at the completion of the works and all wastes shall be collected from the site by the permittee and disposed of at a licensed waste facility.

### **Condition 18**

All reasonable and practicable measures must be undertaken to minimise impacts on water quality during the construction activities.

### **Condition 19**

All works are to be constructed in accordance with the drawings, specifications and descriptions contained with the Guthalungra Aquaculture Project EIS 2003 and the Supplementary EIS 2007.

### **Condition 20**

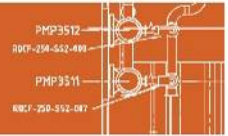
The Chief Executive administering the *Coastal Protection and Management Act 1995* may order the works to be removed or modified within a reasonable time, if the works have or are likely to have a significant effect on coastal management because the works:

- a. Create a navigation hazard or other danger to the public; or
- b. Cause erosion or land degradation; or
- c. Are unstable or have not been constructed according to the approved plans

### **Condition 21**

All reasonable and practicable measures must be taken to prevent pollution of waters as a result of silt run-off, oil and grease spills from machinery, concrete truck washout and alike. Concrete agitator wash out must only be conducted in a specified area to facilitate the removal of waste concrete from the area to landfill. Wastewater from cleaning equipment must not be discharged directly or indirectly to any water courses or stormwater systems

## **END OF CONDITIONS FOR COASTAL WORKS**



# Appendix E

## Recommended conditions for Vegetation Clearing

### **Condition 1**

Clearing may only occur within the area with location overview shown on SKM Drawing 9217-C-004 (Figure 2 of this report) and precisely on Development Permit Plan 2007/006607 (Figure 5 of this report).

### **Condition 2**

Mitigation and monitoring measures of the pipeline will be undertaken in accordance with the Pipeline Construction EMP and Pipeline Operation Management Plan of the Guthalungra Aquaculture Project EIS 2003 (section 9.1.3 and section 9.1.4)

### **Condition 3**

Clearing for the pipeline shall be no more than 10 m where shown as Permit B on Development Permit Plan 2007/006607 (Figure 5 of this report).

### **Condition 5**

The State Planning Policy 2/02 Guideline: Planning and Managing Development Involving Acid Sulphate Soils and Queensland Acid Sulphate Soil Technical Manual, be employed when Potential Acid Sulphate Soils are encountered.

END OF CONDITIONS FOR VEGETATION CLEARING

# Appendix F

## Conditions for Acid Sulphate Soils

### **Condition 1**

The State Planning Policy 2/02 Planning and Managing Development involving Acid Sulphate Soils and Queensland Acid Sulphate Soils Technical Manual must be employed when Potential Acid Sulphate Soils are present.

### **Condition 2**

Prior to the commencement of any operational works, an acid sulphate soils investigation of areas along the pipeline excavation route must be completed in accordance with SPP2/02 and be submitted to the Department of Natural Resources and Water for approval. Target locations and sampling protocol for the investigation are to include:

- a. The pipeline route at 50 metre intervals east across the southern salt flats, 200 metre intervals across the northern sand flats to the back sand dune swale than at 50 metre intervals east from the back dune swale till the end of the proposed disturbance
- b. Delineation of any acid sulphate soils to be disturbed within the Eastern sedimentation pond (about site 39 Appendix F EIS)
- c. Delineation of any acid sulphate soils to be disturbed within the Northern stage 3 ponds (site 15 and 17 Appendix F EIS)
- d. Provision of the laboratory analysis from the dark grey silty clay (hatched soils) within the stage 1 ponds to ensure material is not ASS (soil test pits 49, 51 and 53 identified in Appendix F Guthalungra Aquaculture Project EIS)
- e. At least three representative samples selected for laboratory analysis from each new site
- f. Consideration of using chromium suite analysis and incorporation of a measure of the acid neutralising capacity.

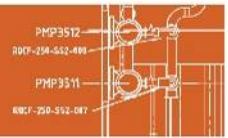
### **Condition 3**

If acid sulphate soils are found, a diagram using cross sectional diagrams indicating acid sulphate soils, non-acid sulphate soils and the extent of the disturbance is to be prepared. The estimated volume of acid sulphate soils disturbance is to be calculated. This information is to be provided to the Department of Natural Resources and Water and due regard to the agency's advice must be had.

### **Condition 4**

Prior to any construction works on site, an appropriate Acid Sulphate Soil Management Plan is to be developed. The Acid Sulphate Soil Management Plan must be submitted to the Department of Natural Resources and Water and must take account of the agency's recommended inclusions to the Acid Sulphate Soil Management Plan. The Acid Sulphate Soil Management Plan must include:

- a. A ground and surface water monitoring program. The program should incorporate diagrams of proposed groundwater monitoring sites and representative sites for monitoring surface water, especially where surface water reports to the receiving environment. Surface and groundwater are to be monitored for pH, EC and dissolved Fe on a fortnightly basis. Provision should be made for more



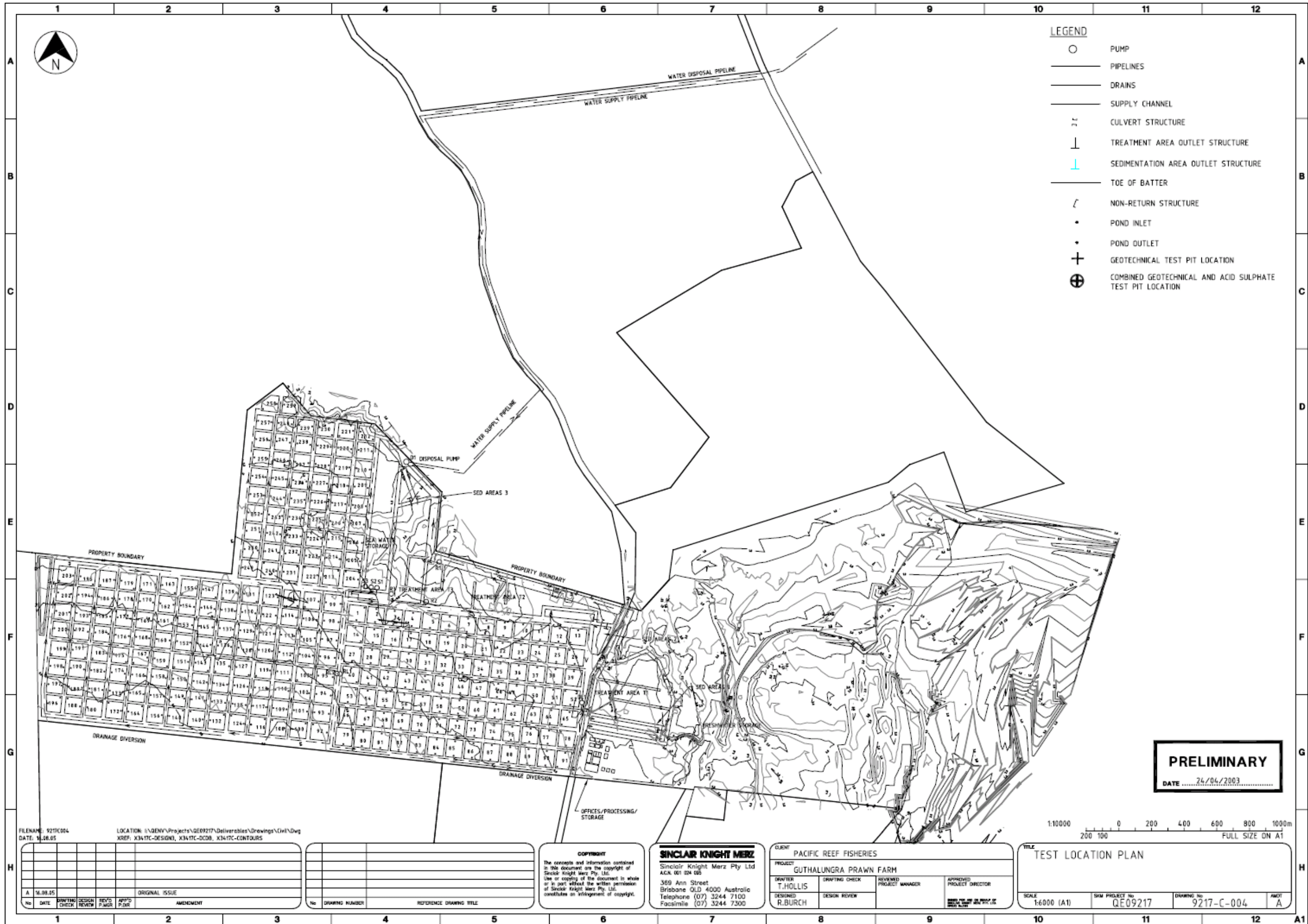
- comprehensive laboratory testing of pH, EC, soluble Fe, soluble Aluminium, Chloride and Sulphate on a quarterly basis.
- b. Groundwater and surface water monitoring must be maintained for two years. If no incidences of non-conformance occur, frequency can be determined in agreement with the Department of Natural Resources and Water and the Environment Protection Agency.

Pursuant to s.41 of the SDPWO Act, I nominate the Department of Natural Resources and Water as concurrence agency for these conditions.

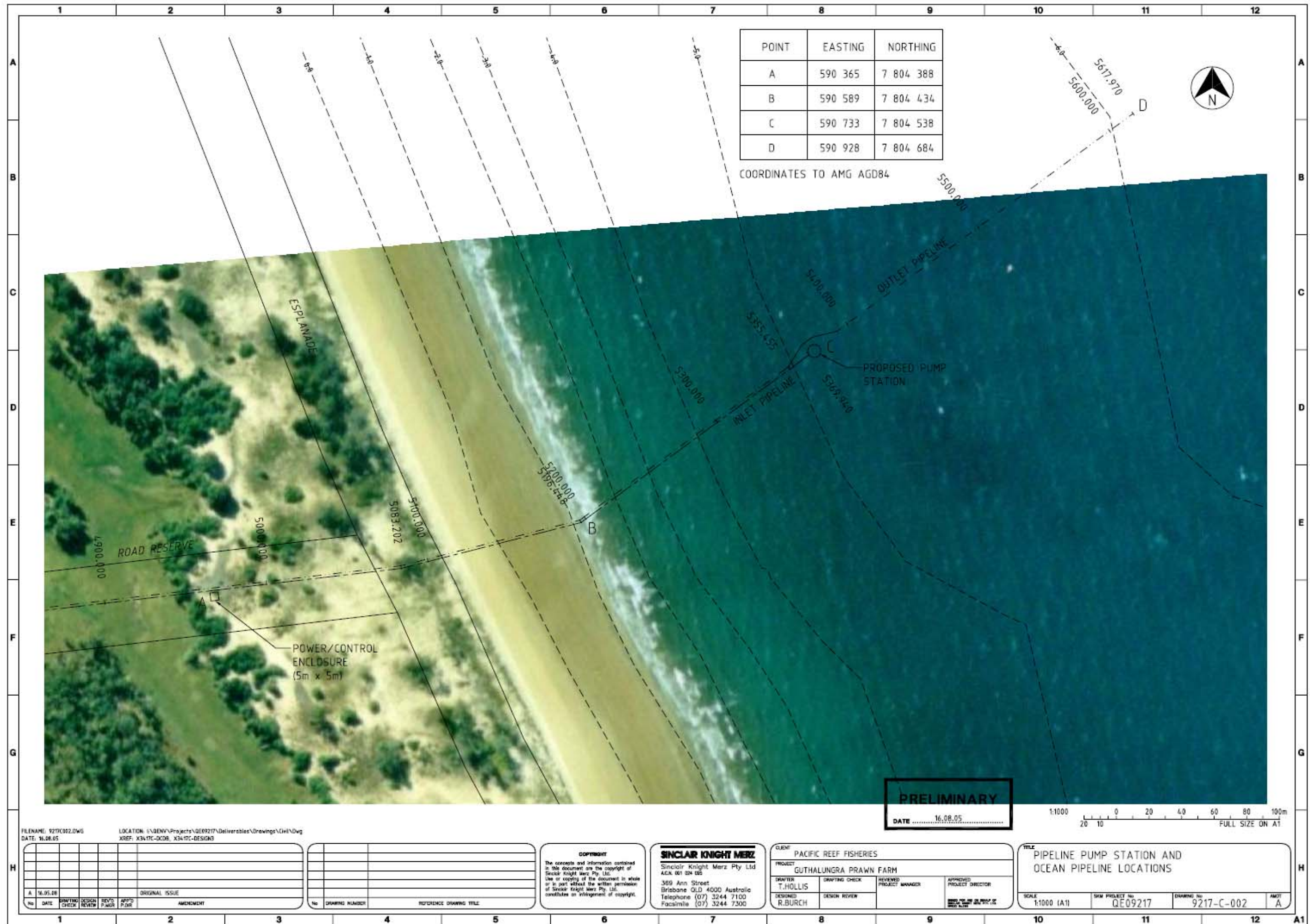
**END OF CONDITIONS FOR ACID SULPHATE SOILS**



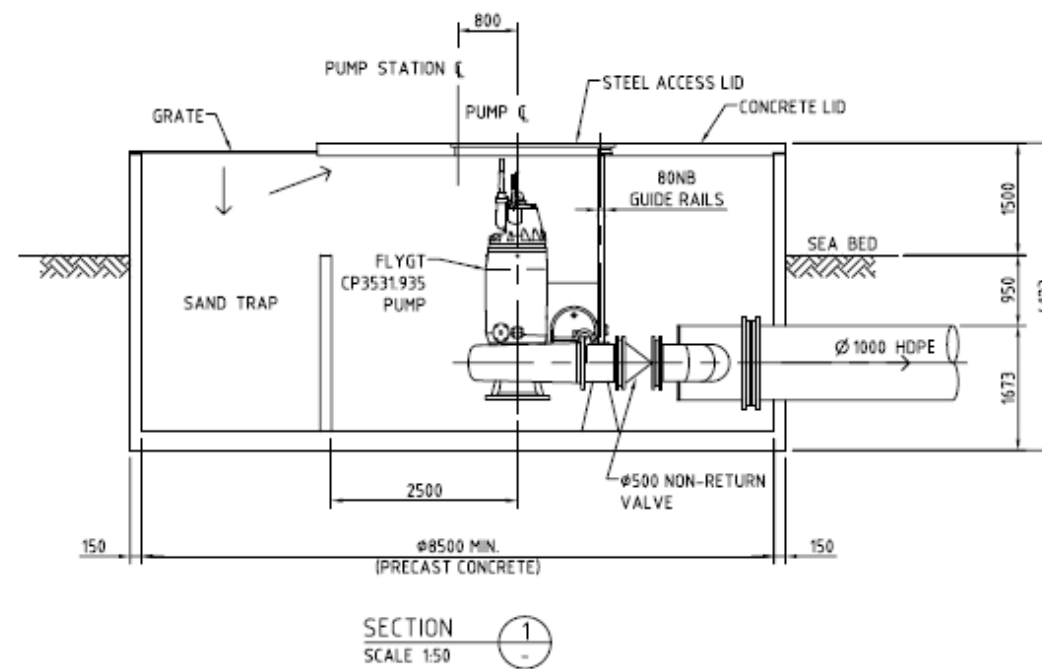
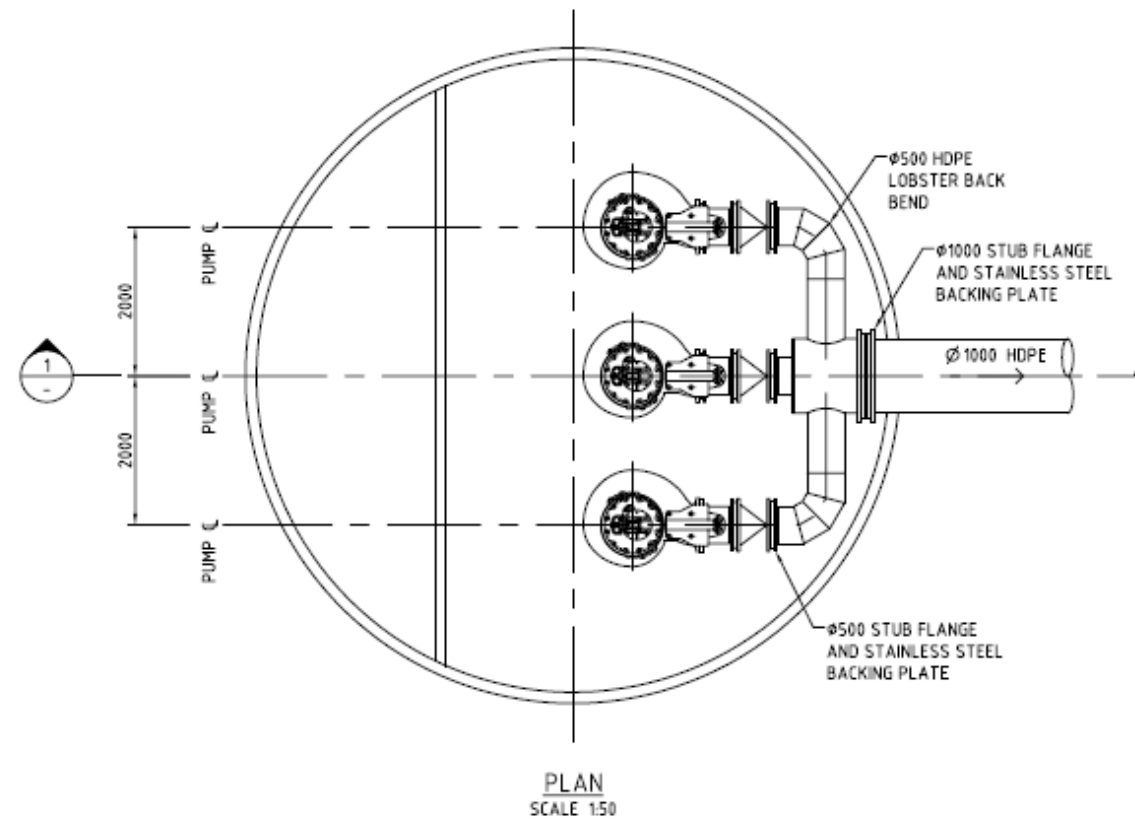
# Figure 2: General layout



# Figure 3: Pump Station and Pipeline Alignment



# Figure 4: Offshore Pump-station Arrangement



NOTES:  
 1. PUMPS DUTY : 700 l/s (APPROX)

**NOT FOR CONSTRUCTION**

**PRELIMINARY**  
 DATE .....26/02/2003.....

**Figure 5: Vegetation Clearing – Development Permit Plan**

