3 General Introduction

3.1 Role of the Supplementary EIS

This supplementary EIS provides additional information and responses to comments received during the public consultation process in regard to the release of the EIS for the Guthalungra Aquaculture Project, Draft EIS October 2002 (GAPDE, 2003).

The Guthalungra Aquaculture Project has been declared a significant project. Subsequent processes to be followed and legislation impacting on this development are detailed below in Sections 3.10 Process for completion of the approval and 3.11 List of Acts applying.

The proposed operation would be the largest single prawn farm in that industry. It is spatially distant from other prawn operations, and the nearest other aquaculture venture is operated by GFB Fisheries Ltd south of Guthalungra. That operation is less than 2 Ha in area. There are many considerably larger and successful aquaculture regions around the Australia. The salmon industry in Tasmania is relatively large and densely located as is the Bluefin Tuna industry in South Australia. Many operators in those industries are also considerably bigger than the company that will result from the proposed project, although this project will similarly provide for regional development, regional employment and substantial export earnings.

3.2 Structure of the supplementary EIS

A number of respondents raised similar issues to each other. In order to avoid replication and to facilitate readability, the Supplementary EIS comprises detailed information in the body of this document and is cross-referenced to the relevant sections of the original EIS (GAPDE, 2003).

Appendix 1 provides a table of comments received from the public consultation process and refers the reader to the location in the Supplementary EIS containing the information relevant to the individual comments.

3.3 Description of project, Map and photograph of project

The project will be undertaken on Lot 8 SB 298 and Lot 370 K124643, Parish of Curlewis, County of Salisbury as shown in Section 1.11, GAPDE, 2003. The total area of these lots is 769 Ha.

The total development will cover approximately 525 ha.

The total area of pond development will be 315.1 Ha comprising 259 Ha of growing ponds, an additional 11.3 Ha of seawater storage and 44.8 Ha of settlement ponds/treatment lagoons. In addition to this there will be supply and drainage canals for water distribution and collection and infrastructure.

Intake and discharge pipelines will be constructed along a gazetted road reserve (Coventry Rd, Guthalungra) and into Abbott Bay.

Figure 3.1 is a detailed aerial photograph of the proposed project showing the development in relation to local features.

A detailed discussion of alternative locations including coastal locations is given in Section 5.2 of GAPDE, 2003. Briefly:

- The site has been identified by the Department of State Development, Trade and Innovation and the Bowen Shire Council as being in a region suitable for aquaculture.
- Alternative uses for the land provide much more limited economic return with aquaculture probably providing as great a multiplier of economic return over other uses at this site as at any other site on coastal land in Qld.
- The land is of poor quality for agricultural use (ie it is not GQAL).
- The receiving environment for discharge while important, is already impacted by other land uses and is thus not pristine as are many other marine environments on the Qld coast.
- There is apparently no resource competition for other industries (eg tourism) at this site.

Insert Figure 3.1

Figure 3.1. Composite aerial photograph (1:50,000) of the proposed site and adjacent regions showing the development area and relevant aquatic habitat areas identified as a result of this study.

Insert Figure 3.2

Figure 3.2. Map of the development showing the location of the ponds, treatment areas and pipelines relative to Lots 8 and 370 and the road reserves.

3.4 Comparison with other projects and evaluation of degree of impacts

This proposal will inevitably draw comparison with other proposals and other aquaculture.

One respondent stated that there is "very little difference in prawn farming practices used here than in other countries". Such a statement is clearly wrong. The Australian prawn farming industry is exemplary and was the first in the world to introduce a "Code of Practice". Regulations by Federal and State governments are arguably the toughest in the world, a fact recognized and admired by EU importers.

Locally, two proposals in recent years have drawn public criticism and such considerable negative publicity that they have not progressed. The projects referred to are a prawn farm development in Upstart Bay and a Fish farm development in Moreton Bay. It is worth comparing the Guthalungra project to those proposals to highlight the advantages of the Guthalungra proposal, although such comparison is not intended to express a view by the proponent of the suitability or otherwise of other development proposals. In the end, each must be judged on its own merit.

The present project has substantial community support (GAPDE, 2003) and does not conflict with cultural heritage issues. It does not impact an area rich in seagrass as did the proposal for Upstart Bay and does not compete for resource use with a large population centre as did the Moreton Bay proposal. One respondent (WWF) drew attention to the Moreton Bay proposal and acknowledged that the proposal - to build a fish farm in Moreton Bay - was 'considerably" different to the Guthalungra proposal. We agree. There is no valid comparison between a large project to be situated on the door step of a major capitol city, Brisbane and the Guthalungra proposal. Brisbane mayor Jim Soorley did not want the Moreton Bay project, whereas Bowen Shire mayor Mike Brunker and his councillors are strident supporters of the Guthalungra proposal which will provide a major economic boost to the depressed Bowen and Collinsville region, while not significantly impacting on sensitive ecosystems.

In GAPDE, 2003, Pacific Reef Fisheries asserts that the impacts will be limited and reversible. Pacific Reef Fisheries believes that the impacts are limited because the major area of impact, the area of the ponds, is currently devoted to cattle grazing, is infested with prickly acacia and rubber vine and suffers from significant denuding of plant life. During the dry season, cattle grazing results in a dry and dusty environment. Cattle grazing is an uncontrolled industry and significant amounts of sediment, nitrogen and phosphorus run off into Abbott Bay during rain periods. Unfortunately the impact of this waste on the environment is difficult to accurately quantify. A discussion of the relative contribution of current activities in the Don River Catchment in comparison with the proposed development is contained in Section 7.4 Water Quality Objectives – Future.

Discharge of sediments and nutrients from land degradation due to cattle grazing will cease when the prawn farm operation commences and thus the net effect on the Abbott Bay ecosystem will be less than the raw discharge figures emanating from the prawn farm. In addition, companies related to the proponent have a history of improved environmental outcomes using technology developed by themselves to improve discharge water quality providing a tangible process for reducing nutrient discharge into the GBR lagoon. This compares favourably with limited changes in management practices evident in other adjacent rural industries that are likely to attain similar reductions in nutrient and sediment discharge. The development footprint is comparatively small (by comparison with the total area of each)

in those areas with some ecological value such as the wetland, the dune and beach system and Abbot Bay.

Pacific Reef Fisheries believes the impact is reversible because in each area, recovery from the impact is possible in a relatively short period of time. Seagrasses in the area turnover rapidly and any impacts on the dune and wetland systems can be readily reversed by rehabilitation programs. This is further discussed below in Section 7.

3.5 Economic benefit

This project successfully applies economic benefit at all levels.

- There are clear benefits to the Company from increased growth, income and development providing obvious benefit to the shareholders.
- There are considerable economic benefits to the region from this project, providing jobs and support for additional infrastructure and improved community amenities in the immediate region. The benefits flow to both indigenous and non-indigenous people.
- The economic activity worth approximately $39 million annually in direct turnover provides income to the State and the Nation through export sales of product.
- In environmental terms, the changed land use increases the economic return from the environmental impact by nearly 260x in terms of sediment, more than 5.55x in terms of nitrogen and more than 1.27x in terms of phosphorus.

3.6 Consultation process

The consultation process undertaken during the development of the EIS (GAPDE, 2003) is described in Section 1.4.4 of that document. The consultation process undertaken was as required under the Terms of Reference and included public information sessions, information leaflets distributed widely and additional informal attempts to meet all stakeholders including neighbouring property owners.

Pacific Reef Fisheries believes that every reasonable effort was made to engage with and consult a broad and inclusive cross-section of the community and all affected stakeholders as required and in good faith.

3.7 Evaluation of positive and negative impacts

This section directly addresses concerns raised in two comments from one respondent.

Respondents to the consultation provide conflicting views relating to the impacts of the project. There are also conflicts in State and Federal government policy, some committing to improving water quality in the GBR while others support sustainable regional development.

Pacific Reef believes a balance of policy commitments need to be taken into account when considering development. Our view is that the central premise of this project provides for significant economic development in the region that is beneficial and sustainable, environmentally, economically and socially.

We acknowledge the operation will impact on Abbott Bay and the surrounding area, but such impacts will strictly comply with the parameters laid down by the regulating agencies. These regulations are entirely accepted by the proponent and are rigorously enforced by the

Regulating Agencies. We contend that by setting down such parameters, government authorities are implying that provided the developer can meet the standards, commercial development should proceed.

However, Pacific Reef also has a policy of improvement of technology such that we are seeking to continually improve environmental outcomes. Evidence of this is the proposed incorporation into this project of an off-shore pumping station thereby minimising the effects on the dune and beach system and a sand-filtration system to treat discharge water. In Australian aquaculture, these are leading edge technologies.

3.8 Relationship to Regional Planning process

This section directly addresses concerns raised in two comments from one respondent.

3.8.1 Whitsunday, Hinterland and Mackay Regional Plan

Section 6.8.1.5 GAPDE 2003 describes the relationship between the project and the Whitsunday, Hinterland and Mackay Regional Plan (WHAMRP). Aquaculture features prominently in the WHAMRP in relation to fair access to aquaculture sites, the opportunity to contribute to Regional Economic Development and provide Economic Development. Pacific Reef Fisheries believes the Guthalungra Proposal meets Environmental Sustainable Objectives in terms of water quality of discharge.

The proposal also provides additional impetus for regional development of water, electricity and transport infrastructure and Pacific Reef Fisheries staff have been actively involved in negotiating development of this infrastructure, thereby providing general benefit for the region.

3.8.2 Bowen Shire Strategic Planning Processes

Bowen Shire Council has previously and continues to express support for this proposal. This is most recently stated in the letter attached (Section 11.2 Appendix 2 Letter of support from Bowen Shire Council)

3.9 Relationship with State Coastal Management Plan – Queensland' Coastal Policy

This section directly addresses concerns raised by one respondent.

The proposal includes the installation of intake and discharge pipelines into Abbot Bay. The pipelines will cross open sea bed, sand dune, freshwater wetland and altpan environments. These environments are managed under the Coastal Protection and Management Act.

Section 6.8.1.4 GAPDE, 2003, discusses compliance with the State Coastal Management Plan. In particular reference to Areas of State Significance (Natural Resources) (Policy 2.8.1), it is incumbent on a proponent to demonstrate a "net benefit for the state".
The State Coastal Management Plan provides a definition for net benefit for the state.

"net benefit for the State" - *there is a net benefit (taking into account all financial, social and environmental impacts) to the State as a whole, as distinct from sectoral, commercial, private or regional gain, and the proposal delivers the greatest net benefit of all viable alternatives*

Net benefits are the sum total of positive and negative impacts. GAPDE, 2003, identifies the positive and negative impacts of the proposed project in detail and further discussion on specific points is provided in this document.

3.9.1 Significant Project for the State

The Coordinator-General has declared the Guthalungra Aquaculture Project to be a significant project for which an Environmental Impact Statement (EIS) is required pursuant to the State Development and Public Works Organisation Act 1971 (SDPWO Act).

The basis for such a declaration includes:

- complex approval requirements, including local, State and Commonwealth Government involvement;
- a high level of investment in the State;
- potential effects on infrastructure;
- provision of substantial employment opportunities; and
- strategic significance to a locality, region or the State.

3.9.2 Economic benefit to state

Under the State Coastal Management Plan areas of significant wetlands are designated as "Areas of State Significance (Natural Resources)". Policy 2.8.1 of the State Coastal Management Plan provides that "…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". While the anticipated disturbance for the pipelines will be through an artificially constructed freshwater wetland and will be small, further information on the costs and benefits have been provided in the following section.

3.9.2.1 Building momentum for developing aquaculture in Queensland

The Queensland government has recognised the opportunity that aquaculture provides for economic diversification and employment creation, particularly in regional areas. According to Lobegeiger and Wingfield (2005), Queensland aquaculture production was lower in 2003/04 than in 2001/02 reflecting 1) the difficult operating environment of aquaculture and 2) the difficulty of attracting new investment to the industry. The present proposal has the potential to add over $29 million in value per annum or more than 40% of the state's 2003/04 aquaculture production.

It can be argued that successful completion of the development of the current project will significantly increase confidence in the future of aquaculture in Queensland to the investment community.

3.9.2.2 Alternative developments

A number of alternative developments may be considered for this site. Some are not viable and others do not provide the degree of return while still invoking environmental cost.

Alternative 1 – Retain the land as grazing land.
Retaining the land as grazing land has been considered and described as "No project alternative" in Section 5.1, GAPRFR, 2003. Significant impacts on social and economic well-being of the community and the state have been described in that section. Particularly, the sustainable return using the site for grazing is estimated to be $\$140.Ha^{-1}.yr^{-1}$ compared to the

estimated yield for aquaculture of $88,957.Ha^{-1}.yr^{-1}$ (see Section 7.3.6 Economic implications of the current water quality objectives). Retaining the land for grazing will mean that degradation of the area including wetlands, riparian zones and saltpans will continue (see Section 7.18 Mitigation) with consequent continued erosion, nutrient runoff and weed management problems occurring in the absence of sufficient economic activity to pay for reparation.

Alternative 2 – Alternative agriculture - Horticulture.
Areas close to the site are used for horticulture. This is not an alternative for this site as there is no freshwater available for cultivation.

Alternative 3 –Alternative path for intake and discharge lines.
Early consideration was given to utilising the Elliot River estuary for intake and/or discharge of water from the prawn farm. However, flow dynamics of the Elliot River are such that any development would impact on the estuary. Further, it has been the opinion of officers of GBRMPA that any discharge from land-based aquaculture should be into open waters rather than into an estuary. For these reasons, it is considered inappropriate to utilise the estuary for intake or discharge with substantial environmental benefit to be gained by taking and discharging water into Abbot Bay.

The proposed path for the intake and discharge pipelines to access Abbot Bay crosses land, which is either owned by Pacific Reef Fisheries (Bowen) Pty Ltd, is leased by Cheetham Salt Pty Ltd, or is a public road or public esplanade and seabed. Alternative routes require transiting private property not owned by the proponents.

Alternative 4 - Smaller prawn farm development
Recent budget estimates for the cost of laying the pipelines are in the order of $6.5 million. Whilst a smaller facility would utilise a smaller pipe partially reducing the costs, this effect is minimal as a significant proportion of the cost of the pipeline is independent of size (eg trenching, dredging, recompacting). A smaller development would be unable to provide sufficient return on investment for this magnitude of pipeline infrastructure.

3.9.2.3 Contribution to Gross State Product

The economic return will provide an additional $29 million in turnover, support an additional 118 jobs directly and indirectly and provide a Gross State Product of $16 million as previously described in the Guthalungra Aquaculture Project Draft EIS.

3.9.3 Regional development

Beyond the benefit to the particular region, regional development benefits the state by relieving pressure on infrastructure caused by population concentration and provides impetus and economic viability for the provision of improved services to otherwise under-serviced regions. In this manner, regional development provides for an improved standard of living and well-being for regional inhabitants. Regional economic development of the nature of the proposed project therefore provides opportunity for increasing and spreading the economic basis for Queensland's development.

3.9.4 Environmental impact

3.9.4.1 Economic value to the environment of changed land use

This project will benefit the environment by changing the land use from broad acre cattle grazing, which has low yield and is unlikely to undergo modifications to allow improved

environmental outcomes. It will be replaced by a land use which has identifiable and quantifiable impacts, which has a record of technological innovation and which has a clear path to reducing environmental impacts through technological development.

3.9.4.2 Environmental Economic Value

The environmental cost of the change in land use to aquaculture is a (probable) short term increase in nutrient loading in Abbot Bay and loss of small areas of wetland (1.25 Ha) and remnant vegetation (29 Ha) currently present on the main site. Other impacts will be ameliorated over time with revegetation.

The proponent has been asked to identify the economic value of the impact on the environment to facilitate a simple equation to determine net benefit to the State of Queensland. Determination of economic value of environmental resource, environmental accounting, is imperfect, expensive and controversial. Essentially the question being asked is:

What is the economic value (on a cost basis) of the area of wetland being used for the pipeline and the area of seabed impacted by discharge?

A number of methods are available to answer such a question (IDC on Environmental Economic Valuation, 2003, Anon., undated1). These are summarised in Table 3.1.

Table 3.1. Comparison of methods for Environmental Economic Valuation (Anon., undated 1)

Method	Description
Market Price	Estimates economic values for ecosystem products or services that are bought and sold in commercial markets
Productivity	Estimates economic values for ecosystem products or services that contribute to the production of commercially marketed goods
Hedonic pricing	Estimates economic values for ecosystem or environmental services that directly affect market prices of some other good. Most commonly applied to variations in housing prices that reflect the value of local environmental attributes
Travel cost	Estimates economic values associated with ecosystems or sites that are used for recreation. Assumes that the value of a site is reflected in how much people are willing to pay to travel to visit the site
Damage cost avoided, replacement cost, substitute cost	Estimate economic values based on costs of avoided damages resulting from lost ecosystem services, costs of replacing ecosystem services, or costs of providing substitute services
Contingent valuation	Estimates economic values for virtually any ecosystem or environmental service. The most widely used method for estimating non-use, or "passive use" values. Asks people to directly state their willingness to pay for specific environmental services, based on a hypothetical scenario
Contingent choice	Estimates economic values for virtually any ecosystem or environmental service. Based on asking people to make tradeoffs among sets of ecosystem or environmental services or characteristics. Does not directly ask for willingness to pay—this is inferred from tradeoffs that include cost as an attribute
Benefit transfer	Estimates economic values by transferring existing benefit estimates from studies already completed for another location or issue

The environmental impact of the proposed activity will occur in an isolated area, which does not currently produce a commercially tradeable good. Therefore, the market price, productivity travel cost and damage cost avoided methods are not applicable and the most appropriate methods might be those involving contingent valuation or choices or the transfer of benefit.

However, "Although the contingent valuation method has been widely used for the past two decades, there is considerable controversy over whether it adequately measures people's willingness to pay for environmental quality" (Anon., undated1) and similarly, "Although contingent choice has been widely used in the field of market research, its validity and reliability for valuing non-market commodities is largely untested" (Anon., undated1).

The transfer of benefit method compares existing estimates of value from studies already completed, but the most appropriate studies will have relied on a contingent method with the limitations identified above.

Accordingly, the proponent believes it is not possible to unequivocally and accurately determine the environmental economic value of the proposal.

The proponent has agreed to provide mitigation for various actions by destocking cattle as described in detail in Section 7.18 Mitigation. The mitigation is possible only because an alternative economic use can be found for the whole parcel of land. The mitigation achieved by removing cattle will allow rehabilitation of approximately 59 Ha of wetlands comprising 15 Ha of saltflats, 25 Ha of riparian zone and mangroves along the Elliot River, 8.5 Ha of oxbow lake, and 10.5 Ha of freshwater wetlands. There will be additional rehabilitation of terrestrial areas.

We can assume that 1 Ha of wetland impacted by the project is equivalent in economic value to 1 Ha of contiguous wetland that is rehabilitated, independently of the actual economic value attributed to 1 Ha of wetland in this region.

Therefore, as

- *the largest **likely** impacted area of 2.13 Ha (1.25 Ha of wetland and 0.88 Ha of seabed)*

Or

- *the largest **possible** impacted area of 16.25 Ha (1.25 ha of wetland and 15 Ha of seabed)*

are substantially less than the 59 Ha of rehabilitated wetlands, the net benefit to the state in terms of environmental economic value impact is significant.

3.9.5 Net benefit

This project clearly has a net benefit to the state in all areas. Each of the parameters to be measured - financial, social and environmental impacts - show a positive outcome of considerable size for the State of Queensland.

3.10 Process for completion of the approval

This section directly addresses concerns raised in a total of five comments from three respondents.

The Coordinator-General has declared the Guthalungra Aquaculture Project to be a significant project for which an Environmental Impact Statement (EIS) is required pursuant to the State Development and Public Works Organisation Act 1971 (SDPWO Act).

Under the provisions of the Environment Protection and Biodiversity Conservation Act 1999 (C'wth) (EPBC Act), the Australian Government Minister for the Environment and Heritage has decided that the action is a controlled action. The matters of national environmental significance for this project have been identified as: World Heritage properties; listed threatened species and communities; listed migratory species; and the marine environment.

The Australian Government Minister for the Environment and Heritage has decided that assessment of the relevant impacts of the proposed action will be by an accredited assessment process. The EIS process pursuant to Part 4 of the SDPWO Act and Part 5 of the SDPWO Regulation 1999 is the accredited assessment process. The Draft EIS (GAPDE, 2003) has been prepared to address both State and Australian Government issues.

The Guthalungra Aquaculture Project Draft EIS was made available for comment by the public and advisory agencies from 22 October to 4 December 2003. In order to meet the Australian Government's requirements of the accredited process, the proponent must consider the submissions made on the Draft EIS and prepare a supplementary report providing further advice on how the issues raised will be addressed.

Once the supplementary to the EIS is submitted to the Coordinator-General, the document will be provided to those who made submissions to the draft EIS, to all advisory bodies, local environment centres and council libraries. The supplementary to the EIS will also be placed on the State Development, Trade and Innovation website. The Coordinator-General will then proceed to evaluate the EIS, submissions and other materials and will prepare a report, making recommendations whether the project should proceed and if so, conditions to be attached to the approvals. The Coordinator-General's report will be publicly notified and will be provided to the proponent, the Bowen Shire Council and to the Australian Government Minister for the Environment and Heritage. The Australian Government Minister will make decision on approval under the Environmental Protection and Biodiversity Conservation Act once the Queensland Government provides the Coordinator General's Report and a notice that states all environmental issues have been assessed to the greatest extent practicable.

The development requires approval under the Integrated Planning Act 1997 (IP Act) for a material change of use. The company is required to apply for Development Approval through the Bowen Shire Council. For the purpose of the applications for a material change of use or those requiring impact assessment under the IP Act, the EIS will take the place of the information, referral stage and notification stages and the Coordinator-General's report is taken as the concurrence agency response. For approvals that fall outside of the IP Act (for example, resource allocation or entitlement approvals), the EIS is the primary information source to support those applications. The Coordinator-Generals report is to be taken into consideration by any persons who may give an approval required for the project.

Upon receipt of a recommendation from the Coordinator-General that the project should proceed and approval by the Australian Government Minister, the company will make application for all subsequent licenses, permits and approvals required.

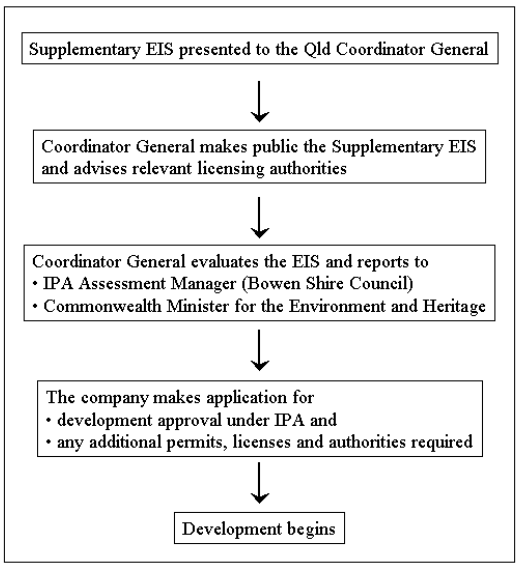

Figure 3.3 Flow chart of process for approval prior to development

3.11 List of Acts applying

This section directly addresses concerns raised by five respondents.

Note that some of these Acts may have been incorrectly named in GAPDE, 2003. A number of these Acts and supporting Regulations require licenses or permits. All appropriate licenses, permits and approvals will be obtained before undertaking any regulated action.

3.11.1 Queensland Legislation

Aboriginal Cultural Heritage Act 2003	ACH Act
Animal Care and Protection Act 2001	Animal Care Act
Coastal Protection and Management Act 1995	CPM Act
Disaster Management Act 2003	DM Act
Environment Protection Act 1994	EPA Act
Fisheries Act 1994	Fisheries Act
Food Act 1981	Food Act
Food Hygeine Regulation 1989	Food Hygeine Reg
Food Production (Safety) Act 2000	FPS Act

Food Standards Code 2000 (and amendments)	Food Standards Code
Health Regulation 1996	Health Reg
Integrated Planning Act 1997	IP Act.
Lands Act 1994	Lands Act
Marine Parks Act 1982	Marine Parks Act
Nature Conservation Act 1994	Nature Cons Act
Queensland Heritage Act 1992	Qld Heritage Act
State Development and Public Works Act 1971	SDPWO Act
Transport Infrastructure Act 1995	Transport Act
Vegetation Management Act 1999	Vegetation Act
Workplace Health and Safety Act 1995	WHS Act
Water Act 2000	Water Act

3.11.2 Australian Government Legislation

Environmental Protection & Biodiversity Conservation Act 1999	EPBC Act
Export Control Act 1982 (and related Orders)	Export Act
Great Barrier Reef Marine Park Act 1975	GBRMP Act
Great Barrier Reef Marine Park Regulations 1983	GBRMP Reg.
Sea Installations Act 1987	Sea Act

3.12 Additional Referral Agencies

This section directly addresses concerns raised by one respondent.

Referral Agencies for this project are listed in Section 1.4.4.4 of GAPDE 2003. The section omitted The Queensland Department of Housing, which is also a referral agency for this project.