ADDENDUM

to the

COORDINATOR-GENERAL'S REPORT

on the

SUPPLEMENTARY ENVIRONMENTAL IMPACT STATEMENT

for the

PORT OF AIRLIE MARINA DEVELOPMENT PROJECT

April 2004

CONTENTS

1. INTRODUCTION

The purpose of this Addendum is to consolidate my evaluation of the Supplementary Environmental Impact Statement ("SEIS") for the project in terms of the matters required under the provisions of the Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) ("EPBC Act").

2. ASSESSMENT OF THE RELEVANT IMPACTS OF THE PROJECT ON MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

This section addresses those requirements of Part 5 of the *State Development and Public Works Organisation Regulation 1999* ("SDPWO Regulation 1999") which deal with the requirements of the Coordinator-General's report for projects declared as significant projects and for which the Commonwealth Minister for the Environment and Heritage ("Commonwealth Minister") has decided under the EPBC Act that assessment of the relevant impacts will be by accredited assessment under the *State Development and Public Works Organisation Act 1971* ("SDPWO Act").

2.1 The Project

The Port of Airlie project ("POA") is located in Boathaven Bay, at the eastern end of the tourist, commercial and retail precinct of Airlie Beach. The development site has an area of approximately 30 ha for which the Proponent holds a Permit to Occupy over the seabed below the high water mark issued under Part 4 of the *Land Act 1994*.

The project comprises a marina complex which integrates boating and tourism operations with a mix of residential and commercial facilities.

The main components of the proposed development are:

- approximately 240 marina berths for vessels up to 30m in length;
- passenger ferry terminal for inter-island ferries and tourist charters;
- 3 lane public boat ramp with parking for 70 car-trailer units;
- public and private carparks for approximately 920 cars/car-trailer units;
- a pedestrian mall/village square linking the harbour and other facilities to the existing commercial and tourist area of Airlie Beach;
- public open space including landscaped parklands totalling 6,300m^2, a beach and harbour promenades around the marina foreshore;
- approximately 4,400m^2 of marina retail and commercial space;
- approximately 140 resort apartments;
- approximately 365 residential units/apartments;
- 7 detached residences;
- a possible maritime training academy; and
- an area of approximately 8,845m^2 for treatment of dredge spoil.

An investment of about $125 million will be required for the POA and it is estimated that it will create up to 195 jobs during construction and 300 jobs during operation.

2.2 Places affected by the Project

The places affected by the project are as follows:

- the approximately 30ha site located at Boathaven Bay adjacent to Airlie Beach and included within a Permit to Occupy;
- the Mackay-Whitsunday Region of Queensland; and
- the Mackay Statistical Division.

2.3 Controlling provisions for the project

On 22 June 2001, the Commonwealth Minister determined that the POA project constituted a controlled action pursuant to s.75 of the EPBC Act. The controlling provisions for the project are:

- sections 12 and 15A (World Heritage);
- sections 18 and 18A (Listed threatened species and communities); and
- sections 20 and 20A (Listed migratory species).

2.4 Summary of the Project's 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 POA 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.

2.4.1 World Heritage

The World Heritage values for the Great Barrier Reef World Heritage Area ("GBRWHA") are set out in the table below. The POA development has the potential to impact on these values.

Although the marina footprint is not within the GBRWHA, the access channel required for the marina extends approximately 1 kilometre into the World Heritage Area. The potential impacts of the project on World Heritage values of the Great Barrier Reef are addressed by the Proponent in the SEIS (s 9.3.3 and s19.3) and are summarised below:

Great Barrier Reef World Heritage Values	Impacts
Criterion (i) an outstanding example representing a major stage of the earth's evolutionary history. The Great Barrier Reef is by far the largest single collection of coral reefs in the world. The World Heritage values of the property include: • 2904 coral reefs covering approximately 20 055km^2; • 300 coral cays and 600 continental islands: • reef morphologies reflecting historical and on-going geomorphic and oceanographic processes: • processes of geological evolution linking islands, cays, reefs and changing sea levels, together with sand barriers, deltaic and associated sand dunes; • record of sea level changes and the complete history of the reef's evolution are recorded in the reef structure; • record of climate history, environmental conditions and processes extending back over several hundred years within old massive corals; • formations such as serpentine rocks of South Percy Island, intact and active dune systems, undisturbed tidal sediments and "blue holes"; and • record of sea level changes reflected in distribution of continental island flora and fauna.	• Properly conditioned, the project will not impact on any features of geological or geomorphological significance. • Properly conditioned, the project will not diminish the historical geological or climatological record of the World Heritage Area.

Criterion (ii) an outstanding example representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment.
Biologically the Great Barrier Reef supports the most diverse ecosystem known to man and its enormous diversity is thought to reflect the maturity of an ecosystem, which has evolved over millions of years on the northeast Continental Shelf of Australia. The World Heritage values include:
• the heterogeneity and interconnectivity of the reef assemblage;
• size and morphological diversity (elevation ranging from the sea bed to 1142m at Mt. Bowen and a large cross-shelf extent encompass the fullest possible representation of marine environmental processes);
• on going processes of accretion and erosion of coral reefs, sand banks and coral cays, erosion and deposition processes along the coastline, river deltas and estuaries and continental islands;
• extensive *Halimeda* beds representing active calcification and sediment accretion for over 10000 years;
• evidence of the dispersion and evolution of hard corals and associated flora and fauna from the "Indo-West Pacific centre of diversity" along the north-south extent of the reef;
• inter-connections with the Wet Tropics via the coastal interface and Lord Howe Island via the East Australia current;
• indigenous temperate species derived from tropical species;
• living coral colonies (including some of the world's oldest);
• inshore coral communities of southern reefs;
• five floristic regions identified for continental islands and two for coral cays;
• the diversity of flora and fauna, including:
  • Macroalgae (estimated 400-500 species);
  • Porifera (estimated 1500 species, some endemic, mostly undescribed);
  • Cnidaria: Corals - part of the global centre of coral diversity and including:
  • hexacorals (70 genera and 350 species, including 10 endemic species);
  • octocorals (80 genera, number of species not yet estimated);
  • Tunicata: Ascidians (at least 330 species);
  • Bryozoa (an estimated 300-500 species, many undescribed);
  • Crustacea (at least 1330 species from 3 subclasses);
  • Worms:
  • Polychaetes (estimated 500 species);
	• The project will result in a loss of 16 ha of seagrass from Boathaven Bay. This represents approximately 15%, 3% and 0.00003% of that recorded for the Boathaven Bay, greater Pioneer Bay and the GBRWHA respectively. Of this less than 1 ha of seagrass is within the WHA. The loss of this area of seagrass is not expected to place any limitations on the range and abundance of species such as dugong and turtles which depend on seagrass habitat. This conclusion is based on there being no evidence of overgrazing of seagrasses in the immediate vicinity of the project (Pioneer Bay).
	• The project will result in a loss of 4 ha of mangroves from Boathaven Bay. This represents approximately 5 %, 0.2% and 0.00002% of that recorded for Boathaven Bay, the Whitsunday region and the GBRWHA respectively. While mangroves affected are outside the WHA boundary, the loss of these slightly diminishes the availability of mangrove habitat for fish dependent on this habitat. It should be noted that the mangroves to be removed have been affected by anthropogenic influences.
	• The area of intertidal habitat for seabirds will be reduced by 10.5 ha (0.1% of Whitsunday region). Given the proximity of this habitat to human settlement, this loss is not considered to be significant. None of the

• Platyhelminthes: include free-living Tubelleria (number of species not yet estimated), polyclad Tubelleria (up to 300 species) and parasitic helminthes (estimated 1000's of species, most undescribed); • Phytoplankton (a diverse group existing in two broad communities); • Mollusca (between 5000-8000 species); • Echinodermata (estimated 800 extant species, including many rare taxa and type specimens); • fishes (between 1200 and 2000 species from 130 families, with high species diversity and heterogeneity; includes the Whale Shark *Rhynchodon typus*); • seabirds (between 1.4 and 1.7 million seabirds breeding on islands); • marine reptiles (including 6 sea turtle species, 17 sea snake species, and 1 species of crocodile); • marine mammals (including 1 species of dugong (*Dugong dugon*), and 26 species of whales and dolphins); • terrestrial flora: see "Habitats: Islands" and; • terrestrial fauna, including: • invertebrates (pseudoscorpions, mites, ticks, spiders, centipedes, isopods, phalangids, millipedes, collembolans and 109 families of insects from 20 orders, and large over-wintering aggregations of butterflies); and • vertebrates (including seabirds (see above), reptiles: crocodiles and turtles, 9 snakes and 31 lizards, mammals); • the integrity of the inter-connections between reef and island networks in terms of dispersion, recruitment, and the subsequent gene flow of many taxa; • processes of dispersal, colonisation and establishment of plant communities within the context of island biogeography (e.g. dispersal of seeds by air, sea and vectors such as birds are examples of dispersion, colonisation and succession); • the isolation of certain island populations (e.g. recent speciation evident in two subspecies of the butterfly *Tirumala hamata* and the evolution of distinct races of the bird *Zosterops spp);* • remnant vegetation types (hoop pines) and relic species (sponges) on islands. • evidence of morphological and genetic changes in mangrove and seagrass flora across regional scales; and • feeding and/or breeding grounds for international migratory seabirds, cetaceans and sea turtles.	intertidal habitat to be lost is within the WHA but it is immediately adjacent to the boundary. • Properly conditioned, the project will have no impact on corals and other associated species not mentioned above. • Properly conditioned, the project will not impact on any indigenous terrestrial species. • Properly conditioned, the project will not impact on the integrity of ecosystems or ecological processes or interconnections. • The Cannonvale-Airlie Beach-Jubilee Pocket area has been identified at the local and regional level as a focus for tourism development in the Whitsundays. The cumulative impacts associated with the project are limited to the urban area of Cannonvale-Airlie Beach-Jubilee Pocket which has already been disturbed by residential and tourism development. Further development in this area will be limited by the boundary of the WHA and GBRMP on the seaward side and the Conway National Park on the landward side.

Criterion (iii) contain unique, rare and superlative natural phenomena, formations and features and areas of exceptional natural beauty. The Great Barrier Reef provides some of the most spectacular scenery on earth and is of exceptional natural beauty. The World Heritage values include: • the vast extent of the reef and island systems which produces an unparalleled aerial vista; • islands ranging from towering forested continental islands complete with freshwater streams, to small coral cays with rainforest and unvegetated sand cays; • coastal and adjacent islands with mangrove systems of exceptional beauty; • the rich variety of landscapes and seascapes including rugged mountains with dense and diverse vegetation and adjacent fringing reefs; • the abundance and diversity of shape, size and colour of marine fauna and flora in the coral reefs; • spectacular breeding colonies of seabirds and great aggregations of over-wintering butterflies; and • migrating whales, dolphins, dugong, whale sharks, sea turtles, seabirds and concentrations of large fish.	• The project will not significantly affect views of, within or from the WHA as it is located adjacent to a coastal landscape that has already been extensively modified by buildings and other development.

Criterion (iv) provide habitats where populations of rare and endangered species of plants and animals still survive.
The Great Barrier Reef contains many outstanding examples of important and significant natural habitats for *in situ* conservation of species of conservation significance, particularly resulting from the latitudinal and cross-shelf completeness of the region. The World Heritage values include:
• habitats for species of conservation significance within the 77 broadscale bioregional associations that have been identified for the property and which include:
  • over 2900 coral reefs (covering 20 055km^2) which are structurally and ecologically complex;
  • large numbers of islands, including:
  • 600 continental islands supporting 2195 plant species in 5 distinct floristic regions;
  • 300 coral cays and sand cays;
  • seabird and sea turtle rookeries, including breeding populations of green sea turtles and Hawksbill turtles; and
  • coral cays with 300-350 plant species in 2 distinct floristic regions;
  • seagrass beds (over 5000km^2) comprising 15 species, 2 endemic;
  • mangroves (over 2070km^2) including 37 species;
  • *Halimeda* banks in the northern region and the unique deep water bed in the central region; and
  • large areas of ecologically complex inter-reefal
	• The project will result in a loss of 16 ha of seagrass from Boathaven Bay. This represents approximately 15%, 3% and 0.00003% of that recorded for the Boathaven Bay, greater Pioneer Bay and the GBRWHA respectively. Of this less than 1 ha of seagrass is within the WHA. The loss of this area of seagrass is not expected to place any limitations on the range and abundance of species such as dugong and turtles which depend on seagrass habitat. This conclusion is based on there being no evidence of overgrazing of seagrasses in the immediate vicinity of the project (Pioneer Bay).
	• The project will result in a loss of 4 ha of mangroves from Boathaven Bay. This represents approximately 5

and lagoonal benthos; and • species of plants and animals of conservation significance.	%, 0.2% and 0.00002% of that recorded for Boathaven Bay, the Whitsunday region and the GBRWHA respectively. While mangroves affected are outside the WHA boundary, the loss of these slightly diminishes the availability of mangrove habitat for fish dependent on this habitat. It should be noted that the mangroves to be removed have been affected by anthropogenic influences. • The amount of intertidal habitat for seabirds will be reduced by 10.5 ha (0.1% of Whitsunday region). Given the proximity of this habitat to human settlement, this loss is not considered to be significant. None of the intertidal habitat to be lost is within the WHA but it is immediately adjacent to the boundary. • No other species or habitats of conservation significance are expected to be affected by this project.

The following section identifies the aspects of the development which have been identified as having the potential to have relevant impacts on World Heritage values, analyses the likelihood of impacts and states any conditions of approval for the project imposed to address the likely impacts on matters of national environmental significance including any monitoring, enforcement and review procedures which will apply to the project.

Removal of Marine Plants

Approximately 16 ha of seagrass are proposed to be removed from Boathaven Bay for the development. This area of seagrass represents:

- 15 % of the seagrass recorded in Boathaven Bay
- 3 % of the seagrass recorded in greater Pioneer Bay
- 0.00003 % of the seagrass recorded in the GBRWHA.

Approximately 4 ha of mangroves are proposed to be removed from Boathaven Bay for the development. This area of mangroves represents:

- 5 % of the mangroves recorded in Boathaven Bay
- 0.2 % of the mangroves recorded in the Whitsunday region
- 0.00002 % of the mangroves recorded in the GBRWHA.

All marine plants, including mangroves, seagrass and saltmarsh plants that grow on intertidal and subtidal lands are protected under s.123 of the *Fisheries Act 1994* (Qld).

It is generally acknowledged that there is considerable annual and seasonal variation in the distribution and density of seagrasses in Boathaven Bay. However, the time at which the seagrass surveys were conducted for the SEIS is considered to represent the optimal conditions for the identification, distribution and density of seagrasses at this location. This is supported by the results of the seagrass surveys of Boathaven Bay and Pioneer Bay which have been undertaken by the Department of Primary Industries and Fisheries ("DPIF") (previously the Department of Primary Industries) and FRC Environmental in the last 16 years. It is also recognised that there are limitations in comparing the results of different surveys which utilised different survey techniques and sampling methodology, as is the case in this situation.

However, based on current estimates, construction of the access channel, marina basin and reclaimed area will result in the removal of some 16 ha of seagrass from Boathaven Bay. This represents approximately 15 %, 3 % and 0.00003 % of that recorded for the Boathaven Bay, greater Pioneer Bay and the GBRWHA respectively. Less than 1 ha of the seagrass lies within the WHA. The proposed removal of marine plants for the project has the potential to impact on World Heritage values as stated in Criteria (ii) and (iv) - see table above.

Approximately 4 ha of mangroves will also be required to be removed from Boathaven Bay for the development. This represents approximately 5 %, 0.2 % and 0.00002 % of that currently recorded in Boathaven Bay, the Whitsunday region and the GBRWHA respectively.

The SEIS proposes 'best practice' design, construction and operational measures to mitigate impacts on the WHA. An extensive list of possible mitigation measures is set out in section 9.3.4 (pages 9-34 to 9-36) of the SEIS and section 9.8 (pages 9-13 to 9-14) of the Addendum to the SEIS which the Proponent contends may mitigate the predicted loss of habitat. The mitigation measures proposed by the Proponent include:

- timing of activities to minimise disturbance to fish reproduction activities;
- habitat productivity enhancement;
- restoration, replacement or creation of fish habitat;
- fisheries resources research and education support; and
- fisheries stock enhancement.

In the Addendum (section 9.8, page 9-13) the Proponent has committed to a financial sponsorship of habitat research to assist compensation for habitat loss. These commitments include:

- making space available in the marina complex for interpretive material on environmental and social issues in the Whitsunday region (information on issues such as protection of the reef by visitors; dugong and turtles; traditional indigenous presence and uses in the area; and community initiatives);
- construction of a boardwalk through the Campbell's Creek mangroves;
- financial support of research initiatives or monitoring programs by DPIF, GBRMPA or James Cook University;
- financial support of community initiatives such as *Seagrass Watch*; and
- further surveys in Campbell's Creek to determine whether water mice occur in the estuary.

Removal of marine plants requires a permit under the s.51 of the *Fisheries Act 1994* (Qld). As part of the permit process, the Proponent will be required to negotiate mitigation measures within DPIF's policy, *Management and Protection of Marine Plants,* to offset the loss of fish and marine species habitats as a result of the development. Mitigation

measures, such as those described above and subsequently negotiated with DPIF would then be incorporated into any conditions of the s.51 permit.

While it is recognised that seagrass and mangroves will need to be removed to construct the marina, resulting in a loss of natural habitat in the area, it is considered that the extent of loss is insignificant on a regional scale (i.e. seagrass: 3 % of the greater Pioneer Bay and 0.00003 % of the GBRWHA; mangroves: 0.2 % of the Whitsunday region and 0.00002 % of the GBRWHA). It is also considered that the s.51 permit (incorporating appropriate mitigation measures agreed to by DPIF) and the implementation of a seagrass monitoring program will limit and offset impacts which may result from the removal of seagrass from the area.

The following condition has been imposed to ensure that the removal of marine plants does not have an adverse environmental impact on Boathaven Bay, the greater Pioneer Bay or the World Heritage values of the adjacent WHA.

Condition 1

(a) A permit must be obtained to remove protected marine plants, including saltcouch, mangroves and seagrass, under section 51 of the *Fisheries Act 1994*. The permit, which is to include mitigation measures, is to be obtained prior to construction commencing.

(b) A monitoring program for seagrass adjacent to the development site must be prepared in consultation with the Department of Primary Industries and Fisheries and submitted as part of all applications for development permits for the project. The monitoring program is to be developed in accordance with the Department of Primary Industries and Fisheries policy *FHMOP 001 (2002) Management and Protection of Marine Plants* and is to address, in accordance with *FHMOP 005 (2002) – Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss,* unacceptable impacts on seagrass beds and contingency measures for responding should those impacts be observed. Monitoring under the program is to be implemented as soon as possible prior to the commencement of construction and continue for a minimum of three years after construction of earthworks.

Acid Sulfate Soils

Acid Sulfate Soils (ASS) have the potential to be disturbed through removal of mangroves, reclamation of the building sites and dredging of the marina basin and access channel. When ASS are exposed to air (for example as part of the dredging and excavation), 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.

Treatment of ASS usually involves neutralisation of acid in sediments with lime (calcium carbonate or $CaCO_3$). The proportion of lime to be mixed with the ASS will depend on the potential acidity of the sediment using a minimum safety factor of 1.5. Another method is reburial, however, the Proponent has indicated that this latter method would not be used due to the site's close proximity to the GBRMP and GBRWHA.

The Proponent has committed to investigate, treat and manage ASS in accordance with the State Planning Policy (SPP 2/02) and QASSIT Guidelines.

Limited sampling to date has not identified significant occurrence of ASS in Boathaven Bay. As part of the proposal, the Proponent has committed to the conduct of a full ASS

investigation after the impact assessment process. This approach to the identification and management of ASS is considered acceptable as no earthworks will be permitted to occur until such surveys are undertaken and management plans are in place. Further, it is considered that completion of ASS investigations prior to site works, the preparation of and adherence to an appropriate ASS Management Plan and the development of a background groundwater monitoring program in accordance with the Environmental Protection Agency ("EPA") requirements will prevent impacts which may otherwise result from the disturbance of ASS during dredging and construction.

The following condition has been imposed to control and limit potential impacts of ASS on waters and ecological systems (and consequently World Heritage values) by requiring appropriate investigation of the potential of ASS in Boathaven Bay and the greater Pioneer Bay and providing for any necessary management during development and use.

Condition 2

(a) Prior to the commencement of any site works an Acid Sulfate Soil (ASS) investigation must be undertaken for all land, seabed, soil and sediment at or below 5m Australian Height Datum (AHD) and where:

- **excavation is proposed; or**
- **filling of land involving more than 500m^3 of material at greater than an average depth of 0.5m is proposed.**

(b) The ASS investigation must:

- **be in accordance with the methods prescribed in the *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland* (Ahern *et al* 1998) and the *Queensland Government Instructions for the Treatment and Management of Acid Sulfate Soils 2001.* Soil and/or sediment profiles should be mapped at a suitable scale and described according to the *Australian Soil and Land Survey Field Handbook* (McDonald *et al* 1990) and *Australian Soil Classification (*Isbell. 1996);**
- **be conducted by a certified professional soil scientist;**
- **be submitted to the Department of Natural Resources, Mines and Energy prior to any proposed works commencing; and**
- **where the investigation indicates that construction activity may be detrimental to the marine environment, serve as the basis for an ASS Management Plan, prepared in accordance with the guidelines and instructions above and the draft Environmental Management Plan, as outlined in the Supplementary Environmental Impact Statement, for implementation in a manner acceptable to the Department of Natural Resources, Mines and Energy.**

(c) In the event that sampling reveals ASS to be present, a background groundwater monitoring program must be undertaken for areas adjoining the proposed development in accordance with the requirements of the Environmental Protection Agency prior to commencement of any works within the development lease area.

Dredging of the marina and access channel and disposal of dredge spoil

Construction of the marina basin and access channel will require the removal of approximately 555,000m^3 of material. The marina access channel (1000m x 50m) will be excavated using a cutter suction dredge with the dredge spoil pumped to the nearby disposal area. The proposed construction technique involves placing a perimeter wall with sheet piling and dewatering the area to enable material to be excavated in the dry wherever possible.

Dredging operations for the project have the potential to adversely impact on marina flora and fauna in Boathaven Bay and consequently, indirectly, on World Heritage values. Potential impacts may include increased suspended sediment levels and consequent sediment deposition within the Bay and adjoining waters, possibly blanketing seagrass, and a release of nutrients from the disturbed sediments which may impact negatively on local benthic organisms. As the Bay has been used for mooring boats for some years it is likely that tributyl tin, an anti-fouling agent used in marine paints, will be present in the sediments. These could also be re-suspended by dredging operation.

In response to concerns raised in submissions about the SEIS, the Proponent modified the project by reducing the width of the entry channel and the size of the dredge spoil disposal area.

To minimise dispersion of sediment, the dredge spoil disposal area will comprise a sheet piling or an earth and rock bund perimeter within which dredge spoil will be placed. The construction of a bunded wall involving the initial spreading of fill over the seabed is only to be undertaken during the bottom half of the tide (prior to and after low tide) to minimise the dispersal of sediments.

It is considered that modifications to the design of the project to reduce the quantity of dredge spoil, and preparation and implementation of a Dredge Management Plan will limit impacts of dredging to an acceptable level. Agreed seagrass monitoring will also provide information which can be used by the Proponent to modify dredging methods and timing.

The following condition has been imposed to ensure that the dredging operation does not have an adverse impact on Boathaven Bay, the greater Pioneer Bay or the World Heritage values of the adjacent WHA.

Condition 3

(a) A Dredge Management Plan must be prepared in consultation with the Environmental Protection Agency, Department of Primary Industries and Fisheries and the Great Barrier Reef Marine Park Authority and be submitted as part of all applications by the proponent for development permits for the project. The Plan is to cover dredging for construction and maintenance, and disposal of dredge material especially contaminated sediments.

(b) Arrangements to ensure that construction does not re-suspend sediments, particularly those contaminated with tributyl tin, into the water column or any discharge waters must be included in the Dredge Management Plan.

(c) Construction channel dredging should take place between March and August in any year to minimise impacts on seagrasses and corals and to avoid the cyclone season.

(d) As a requirement of tenure designation under the *Land Act 1994*, following reclamation works, the proposed dredge spoil disposal area marked 'R' on plan 'SK-031 by ML Design' as shown on page 2-17 of the Port of Airlie Addendum to the Supplementary EIS (April 2003) is to be maintained as a 'dredge spoil rehandling area' which is defined as "*a purpose built area into which spoil from maintenance dredging of the adjoining marina and associated access channel shall be stored until it is in a consolidated form that enables transportation to a facility that can lawfully accept such material".*

(e) The dredge spoil disposal area must be stringently managed to ensure that adjacent fish habitats, including marine plant and coral communities are not adversely or permanently impacted. Management of this area is to be an integral element of the Dredge Management Plan.

(f) Water quality baseline monitoring of turbidity, sediment pollutant concentrations and other parameters, within Boathaven Bay, Pioneer Bay and Campbell's Creek estuary, is to be undertaken prior to the commencement of construction.

(g) The findings of the water quality monitoring program are to be used to determine water quality parameters for the Dredge Management Plan and trigger levels for each parameter above which work practices will need to be reviewed or suspended.

Stormwater Runoff

The SEIS considers issues in relation to stormwater runoff from the site and its effect on water quality, and subsequently seagrass and mangroves (and therefore World Heritage values). The SEIS indicates that the project will use catch pits and trash racks on stormwater flows generated in the Coconut Grove and POA catchments to assist in removing some sediment and gross solids from the stormwater and to lead to a reduction in sediment and gross discharges to Boathaven Bay.

The boat repair and hardstand facilities will have separate stormwater management systems. Oil/sediment separation facilities, catch pits and trash racks will be in accordance with the *Queensland Urban Drainage Manual* and relevant standards and requirements of the EPA and Whitsunday Shire Council.

It is considered that these measures together with the implementation of best practice technology will limit and control any potential adverse impacts, on marine flora and fauna in Boathaven Bay, the greater Pioneer Bay and on the World Heritage values of the adjacent WHA. The following condition has been imposed to ensure that the impacts arising from poor water quality particularly from stormwater discharge from the site, are mitigated to an acceptable level.

Condition 4

A detailed design of stormwater systems including an assessment of the stormwater runoff volume and any changes in quantity or quality of this runoff, as a result of the development, is to be prepared.

(a) The findings of the stormwater runoff assessment are to be submitted to the Environmental Protection Agency, prior to submission of all applications for development permits for the project for the Environmental Protection Agency's review and comment of any further action which may be required by the development. The findings and any comments by the Environmental Protection Agency are to be submitted as part of all applications for development permits for the project.

(b) Best practice environmental management technology sediment and litter control devices must be included on stormwater systems within the development in consultation with the Environmental Protection Agency.

Noise and Vibration

The excavation and reclamation stage of the development is expected to take approximately nine months. The vibration and noise from construction through air and water may impact on avifauna and marine animals and therefore World Heritage values. For example, birds, fish and marine animals may be discouraged from visiting the area or may leave the area due to the noise and vibration from construction activities.

As construction of the marina is to be undertaken in the dry (i.e. within bunds) and during the bottom half of the tide (i.e. prior to or after low tide) it is expected that the vibration impacts through the water from pile driving will be reduced.

The following conditions have been imposed which will require that the Proponent ceases work when dugong and turtles, migratory birds and other species of conservation significance are sighted within specified distances from the site.

In addition, the imposition of maximum operational noise emission levels and monitoring requirements will be placed on the development as set out in Attachment 1.

Further, the Proponent is required to limit the noise emissions from the site by:

- preparing a Construction Noise Management Plan; and,
- abiding by EPA noise emission and construction schedule and restrictions.

It is considered that the proposed construction method, development of a Construction Noise Management Plan and adherence to EPA noise level limits and the proposed construction schedule and restrictions negotiated during the course of the SEIS will mitigate the impact of noise on avifauna and marine animals in Boathaven Bay, and the adjacent WHA.

Condition 5

(a) A protected species management plan must be prepared in consultation with the Environmental Protection Agency and submitted as part of all applications for development permits for the project. The plan is to include:

- **procedures for the observation and recording of dugong and turtle sightings in the area surrounding the site prior to and during dredging and pile driving activities, and the cessation of these works while dugongs and turtles are within the "exclusion zone" (i.e. within 150 metres of dredging or pile driving activities)**
- **procedures for cessation of any works while migratory birds are within the "construction activity area" (i.e. within 25 metres of any construction activity) and minimisation of illumination of the intertidal area to the east of the site.**
- **procedures for the temporary cessation of any works in the event that a species of conservation significance, which has not been identified during studies undertaken since 1985, is found to occur in the area.**

(b) Dredging and pile driving for project construction must not be carried out whilst dugongs and turtles are within the exclusion zone.

(c) Construction must not be carried out whilst migratory birds are within the construction activity area.

(d) If significant Acid Sulfate Soil is encountered during preconstruction surveys, a survey of the Campbell's Creek area is to be undertaken by the proponent, prior to construction commencing, to determine the presence of any water mice. The survey is to be provided to the Environmental Protection Agency for review.

(e) If water mice are detected, a targeted monitoring and management program is to be established, in consultation with the Environmental Protection Agency, prior to construction commencing, to ensure that disturbance of Acid Sulfate Soil and discharge of water from the site does not impact adversely on the species.

Condition 6

A Construction Noise Management Plan is to be prepared in consultation with the Environmental Protection Agency and submitted as part of all application for development permits for the project. The plan is to include consultation with affected members of the community and measures to minimise impacts on these individuals.

Hydrodynamic Modelling

Extensive hydrodynamic modelling was undertaken for the original Impact Assessment ("IAS) in 1998. Because the previous hydrodynamic studies for the significantly larger proposal showed little impact on water flows/circulation patterns/current velocities in Boathaven Bay, the Proponent has not undertaken new studies for the current proposal which is smaller and less complex than the previous proposal and could reasonably be expected to have less impact.

However, the Proponent has committed to undertake hydrodynamic modelling prior to commencement of site works. The imposition of the following condition requires the Proponent to undertake detailed hydrodynamic modelling at the detailed design stage in accordance with requirements of the EPA. This modelling would be expected to identify any potential problems due to changing flow patterns etc and provide an opportunity to alter the design to mitigate these effects.

It is considered that this condition will ensure that the likely impacts of the development on Boathaven Bay's hydrodynamic regime (and the adjacent WHA) are able to be identified prior to any construction taking place and that a plan will be prepared and implemented.

Condition 7

(a) Hydrodynamic modelling of Boathaven Bay is to be undertaken in the detailed design stage prior to construction commencing, to ascertain impacts on the bay's hydrodynamic regime. The detailed hydrodynamic modelling is to be undertaken in accordance with the requirements of the Environmental Protection Agency and will include:

- **assessment of storm surge level;**
- **assessment of sedimentation rates;**
- **dredge plume modelling; and**
- **assessment of erosion processes on the artificial beach.**

(b) The findings of hydrodynamic modelling must be submitted as part of all applications for development permits for the project.

(c) Management responses/actions considered relevant by the Environmental Protection Agency and Department of Primary Industries and Fisheries must be included in the Dredge Management Plan.

Blasting

The vibration and noise from blasting may impact on marine animals.

The Proponent has indicated in its Method Statement (outlined in the SEIS and Addendum) that it does not anticipate the need for blasting during construction. If rock is present in the excavation area, it will be drilled to allow the insertion of marina piles.

In the event that blasting is required for construction the following condition to be attached to the Development Approval for the commencement of Environmentally Relevant Activities, will require that no blasting occurs in areas that are not separated from tidal waters by steel sheet piling.

Condition 8

(a) If blasting is required for construction, it may only be undertaken after prior consultation with the Environmental Protection Agency.

(b) No blasting is to occur in areas that are not separated from tidal waters by steel sheet piling.

Great Barrier Reef – Tourism and Visitation

The proposed site for the POA marina (i.e. Boathaven Bay) lies adjacent to the Great Barrier Reef Marine Park (GBRMP). The GBRMP is a multiple-use protected area which provides for human activity with in the Marine Park and the WHA under the governance of ecologically sustainable practices. Ecologically Sustainable Development (ESD) of the Great Barrier Reef region involves balancing economic, environmental and social values.

This multiple use philosophy is embedded in the *Great Barrier Reef Marine Park Act 1975* (Cwlth) which provides for reasonable use of the Great Barrier Reef region as well as providing for conservation of the Great Barrier Reef.

The GBRMP is covered by a Zoning Plan which provides the strategic framework for the management of the region including human activity such as tourism, fishing and boating. POA is adjacent to the Whitsunday section of the GBRMP. The Zoning Plan for this section recognises the potential for extensive tourism and related opportunities.

As well as recognising and maintaining the outstanding values of the Marine Park, in particular its biodiversity, World Heritage values and ecological integrity and ensuring existing and future uses of the Marine Park are ecologically sustainable, the Zoning Plan recognises the Marine Park's cultural, tourism and recreational values. A project such as POA, bordering on the Great Barrier Reef region, is not inconsistent with the management philosophy for the region, provided the impacts of the project are well understood, and appropriate management strategies are implemented.

The POA project with its marina facilities is expected to provide greater opportunity for tourists and fishermen etc to access areas of the Great Barrier Reef. It is likely that the marina will increase the number of boats accessing the GBRMP, therefore impacting on World Heritage values. However, it is expected that many of the boats which will use the marina are boats already accessing the area.

The regulation of the number of boats and passengers able to access the Marine Park is a matter for GBRMPA through the Zoning Plan. The GBRMPA is responsible for the issuing of permits for commercial boats as well as restricting access for commercial and private boats to certain areas.

2.4.2 Listed Threatened Species and Communities

The EPBC Act lists all Australia's protected species.

Schedule 3 of the Nature Conservation Act 1992 and Nature Conservation (Wildlife) Regulation 1994 lists all Queensland's vulnerable wildlife.

Marine Species

Of those species, concern has been raised in submissions on the SEIS about the impact of the POA project on dugongs and turtles.

Dugongs

Dugongs are protected under both the 'marine' and 'migratory' provisions of the EPBC Act. Dugong populations in the southern Great Barrier Reef region are listed as 'critically endangered' by the International Union for the Conservation of Nature (IUCN). However,

Boathaven Bay is not a Dugong Protection Area (DPA), nor is it in close proximity to a DPA.

The SEIS indicates that while Dugong feeding trails have been observed, sightings within Boathaven Bay are rare. Findings from the report by Dr Helene Marsh of James Cook University (An Evaluation of the Likely Impacts of the Proposed Port of Airlie Marina on the Dugong and its Seagrass Food – Answers to Questions Posed by the EPA Staff, 2003), appears to support the SEIS statements on dugong presence in Boathaven Bay. Key points of the Marsh Report include:

- the Whitsunday region supports a relatively small population of dugong some of which feed in Boathaven Bay;
- knowledge of the use of the proposed site by dugongs is anecdotal at best;
- the Whitsunday region is not a major dugong area in the context of the eastern coast of Queensland as a whole;
- the seagrasses in the area include food species preferred by dugong;
- the distribution and biomass of seagrass off the Queensland coast vary over time;
- as seagrass meadows which support the preferred food species of dugongs are patchy in the Whitsundays, the loss of any of these meadows is likely to have some impacts on dugongs;
- given the area of seagrass in Boathaven Bay is relatively small, Marsh considered that most of the dugongs which now use the area would cease to do so if a significant portion of the seagrass is lost due to development construction and maintenance dredging. Whether this would cause these animals to delay breeding would depend on the availability of alternative seagrass habitat;
- dugongs would certainly be able to relocate to other areas;
- the presence of the marina would be likely to increase mortality of dugongs (e.g. from boat strike) should they continue to use the nearby remaining areas of seagrass. However, this is expected to be low, as information available suggests that Boathaven Bay area is not regionally important dugong habitat. Nonetheless, it could be regionally significant in view of the relatively low dugong density in the Whitsunday area;
- it would be prudent to introduce speed limits for vessels as in the Moreton Bay Marine Park;
- high levels of vessel traffic could prevent dugongs from accessing available seagrass. This could be regionally significant given the limited aerial extent of seagrass usually considered high quality dugong habitat in the Whitsunday region.

Removal of seagrass beds in Boathaven Bay may impact of the presence of dugong in the Bay as a dugong food source will be removed. The increase in boating numbers in the area as a result of the POA marina may impact on the presence of dugong as the possibility of boat strike may increased.

The most recent survey of seagrass undertaken by FRC Environmental in August 2003 states that:

- of the dominant species of seagrass in Boathaven Bay (and the greater Pioneer Bay), *Halodule uninervis*, *Halodule pinifolia*, *Halophila ovalis* and *Halophila spinulosa* are probably most favoured by dugong;
- in tropical Queensland, dugong preferentially feed on seagrass of low density;
- it is likely that dugong will be more frequently associated with the seagrass meadows of eastern Boathaven Bay, and of greater Pioneer Bay offshore and to the north-west of Boathaven Bay, rather than of western Boathaven Bay (i.e. the proposed marina site).

Turtles

The green, flatback, leathery and hawksbill turtles are listed as 'vulnerable' under the EPBC Act. The loggerhead turtle is listed as 'endangered'. All sea turtles are protected under the 'marine' and 'migratory' provisions of the EPBC Act.

Two species of turtle (green turtle, *Chelonia mydas* and flatback turtle, *Natator depressa*) have been observed in Boathaven Bay. Additionally the leathery turtle (*Dermochelys coriacea*), hawksbill turtle (*Eretmochelys imbricata*) and loggerhead turtle (*Caretta caretta*) are known to be within the Whitsunday region, although they have not been recorded in Boathaven Bay.

Boathaven Bay is likely to provide suitable feeding areas for all of the above turtles. The Bay is unlikely to support turtle nesting. On the basis of available information, the SEIS concluded that, Boathaven Bay is likely to have moderate conservation value for sea turtles at regional and national scales.

EPA raised concern about the impact of the POA proposal on turtles. EPA suggests that the loss of vegetated (comparisons noted above) and unvegetated (approximately 10.5 ha representing approximately 6.5 % of the intertidal area in the eastern part of Boathaven Bay and less than 0.1 % of the Whitsunday region) benthic environs and increased boat traffic (greater possibility of boat strike) in Boathaven Bay has the potential to impact on the use of the area by turtles. Green Turtles, for example, are known to feed on seagrass whereas Loggerhead Turtles are known to feed on crustaceans such as crabs, mantis shrimps and snails usually present in vegetated and unvegetated benthic environs. Removal of these environs has the potential to impact on the number of turtles in the area.

Other Protected Species

The SEIS (Section 9.2.2) listed the following species which may exist in the local area:

Saltwater crocodiles (*Crocodylus porosus*), which are declared 'vulnerable' under the *Nature Conservation Act 1993* and are protected under the 'marine' and 'migratory' provisions of the EPBC Act, have been recorded in Campbell's Creek, but are considered to be uncommon.

The Common dolphin (*Delphinus delphis*) and bottlenose dolphin (*Tursiops truncates*) inhabit Boathaven Bay. The 'rare' Indo-Pacific hump-back dolphin (*Sousa chinensis*) is also likely to use the area. Several other species of dolphin, including the Irrawaddy River dolphin (*Orcaella brevirostris*), Risso's dolphin (*Grampus griseus),* the pantropical spotted dolphin (*Stenella attenuate*) and the spinner dolphin (*Stenella longirostris*), have a range that potentially includes Boathaven Bay, but it is unlikely that it would provide significant habitat for these species. All dolphins are protected under the 'cetacean' provisions of the EPBC Act.

Whilst whale sharks (*Rhincodon typus*) and great white sharks (*Carcharodon carcharias*) have a range that includes the Whitsunday coast, and are both listed as 'vulnerable' under the EPBC Act, it is unlikely that they would frequently enter Boathaven Bay. Great white sharks are protected under the 'migratory' provisions of the EPBC Act.

A number of syngathid (sea horse, sea dragon and pipe fish) species, and solenostomid (ghost pipefish) species are likely to inhabit the area. Species in these families are protected marine species under the EPBC Act.

The SEIS noted these species but did not specifically address impacts. However, no concerns were raised about these species by Advisory Agencies or public submissions in relation to potential impacts on these species.

During dredging operations, the SEIS states that visual monitoring will be carried out before and during dredging, to detect dugong and turtles that may swim into the area. Dredging will not commence if dugong and turtles are in the vicinity of the dredging vessel.

The following conditions have been imposed to ensure that the likelihood of any relevant impacts is minimised:

Condition 1 requires that measures to mitigate the removal of marine plants are to be negotiated prior to the commencement of construction. A monitoring program to determine unacceptable impacts on seagrass beds, and consequently threatened species, is to be established.

Condition 5 requires the preparation of a protected species management plan in consultation with EPA. The Plan will include procedures for observation, recording and cessation of works should dugongs and turtles enter an exclusion zone (i.e. within 150 metres of dredging and pile driving activities).

During operation of the marina, there is potential for boat collisions to cause injury to dugongs and turtles in the area. The risk of fatalities can be reduced by the enforcement of boat speed limits.

Boating speed limits, and number and location of speed limit signs are determined by Maritime Safety Queensland (Department of Transport) in accordance with s.206A of the *Transport Operations (Marine Safety) Act 1994*. The enforcement of speed limits is the responsibility of the Queensland Boating and Fisheries Patrol and the Queensland Water Police (Queensland Police Service).

Based on discussions with GBRMPA and dugong researchers at James Cook University, the Proponent has suggested that a speed limit of 4 knots per hour be placed on vessels in the marina access channel.

It is considered that the requirements imposed in the following condition will minimise the impact of boats on marine animals in Boathaven Bay.

Condition 9

(a) Boat speed signs are to be erected and maintained within the marina and access channel area by the proponent as directed by Maritime Safety Queensland (Department of Transport) in accordance with s206A of the *Transport Operations (Marine Safety) Act 1994*.

(b) Educational signs explaining the importance of adhering to boat speed limits within the marina area and access channel are to be erected and maintained by the proponent. The specific number and location of, and information to be displayed on, the signs must be determined in consultation with Maritime Safety Queensland (Department of Transport) and the Environmental Protection Agency.

Terrestrial Fauna

The Department of the Environment and Heritage and EPA's databases record the following significant fauna species that may be located within the area:

Class	Species	Common Name	Commonwealth Conservation Status[1]	Queensland Conservation Status[2]
Aves	*Erythrotriorchis radiatus*	Red goshawk	Vulnerable	Endangered
Aves	*Geophaps scripta scripta*	Squatter pigeon (southern)	Vulnerable	Vulnerable
Aves	*Pterodroma neglecta neglecta*	Kermadec petrel (western)	Vulnerable	-
Aves	*Numenius madagascariensis*	Eastern curlew	-	Rare
Aves	*Esacus neglectus*	Beach stone thick-knee	-	Vulnerable
Aves	*Nettapus coromandelianus*	Australian cotton pygmy goose	-	Rare
Aves	*Rostratula benghalensis*	Painted snipe	-	Rare
Reptilia	*Egernia rugosa*	Yakka skink	Vulnerable	Vulnerable
Mammalia	*Petrogale persephone*	Proserpine rock wallaby	Endangered	Endangered
Mammalia	*Pteropus conspicillatus*	Spectacled flying-fox	Vulnerable	-
Mammalia	*Xeromys myoides*	Water mouse	Vulnerable	Vulnerable

1. Environment Protection and Conservation Regulation 2000

2. Nature Conservation (Wildlife) Regulation 1994

From the list above only the Eastern curlew (*Numenius madagascariensis*) was sighted during the field surveys conducted for the IAS in 1998 and the SEIS in 2002.

The SEIS states that the construction of the marina has the potential to impact on coastal faunal communities associated with Boathaven Bay through:

- clearing of fringing mangrove habitats;
- reclamation of intertidal feeding areas;
- flow-on effects from the disturbance of acid sulfate soils; and
- construction activity and noise.

Water mice (*Xeromys myoides*) are listed as 'vulnerable' under the EPBC Act.

Concern has been raised about the impact of the project on water mice. Surveys undertaken as part of the SEIS provide no indication of the presence of water mice in the vicinity of the proposed development. However, the Addendum acknowledged that, should water mice be using habitat within Campbell's Creek which is not directly disturbed by the development, indirect impacts such as changes in water quality leading to reduction in crustacean numbers (food for water mice) could affect the viability of any water mouse population. In addition Condition 2 requires that, in the event of significant

ASS being encountered on site, a survey of Campbell's Creek will be completed prior to the commencement of construction. The survey will be provided to EPA for review.

Measures have been proposed in Condition 4 to determine water quality parameters for the Dredge Management Plan which will to aid in the protection of water mice.

If water mice are detected, a targeted monitoring and management program will be established, in consultation with EPA, prior to construction commencing, to ensure that disturbance of ASS and discharge of water from the site does not impact adversely on the species.

2.4.3 Listed Migratory Species

As noted below, seven types of bird classified as migratory under the EPBC Act were recorded in the intertidal zone during surveys carried out for the IAS and SEIS. A further nine types of bird are recorded on the DEH database and may occur in the area.

Class	Species	Common Name	Sighted in IAS/SEIS Surveys
Aves	*Haliaeetus leucogaster*	White-bellied sea-eagle	Yes
Aves	*Hirundapus caudacutus*	White-throated needletail	No
Aves	*Hirundo rustica*	Barn swallow	No
Aves	*Monarcha melanopsis*	Black-faced monarch	No
Aves	*Monarcha trivirgatus*	Spectacled monarch	No
Aves	*Myiagra cyanoleuca*	Satin flycatcher	No
Aves	*Ardea alba*	Great egret	Yes
Aves	*Numenius madagascariensis*	Eastern curlew	Yes
Aves	*Limosa lapponica*	Bar-tailed godwit	Yes
Aves	*Gallinago hardwickii*	Latham's snipe, Japanese snipe	No
Aves	*Rostratula benghalensis*	Painted snipe	No
Aves	*Numenius minutus*	Little curlew, Little whimbrel	Yes
Aves	*Numernius phaeopus*	Whimbrel	Yes
Aves	*Anseranas semipalmate*	Magpie goose	No
Aves	*Nattapus coromandelianus albipennis*	Australian cotto pygmy-goose	No
Aves	*Riphidura rufrifrons*	Rufous fantail	Yes

The loss of 10.5 ha of unvegetated soft sediment substrates in the intertidal and shallow subtidal areas has the potential to adversely affect populations of migratory wader birds through the direct loss of feeding habitat and indirectly through the loss of tidal areas that will not be used by the species due to the close proximity of human activities. This represents approximately 6.5 % of the intertidal area in the eastern part of Boathaven Bay and 0.1 % of the Whitsunday region.

Over 150 ha of intertidal area will remain in the eastern part of Boathaven Bay. These areas will continue to be available to those birds currently using the bay, although it is possible that noise and lighting from the marina and extra boat traffic may reduce the suitability of the area for some birds. The extent of impact will depend on the extent to which the birds become accustomed to noise and illumination of the marina at night.

Migratory birds have been known to forage and roost in close proximity to marina developments.

The construction of the marina will result in the localised loss of feeding opportunities. However, as the area is already densely populated, is very popular for recreational boating, and experiences activity, noise and lights from vehicles using Shute Harbour Road, it is not expected that human activities in and around the marina precinct will have any major impact on the presence of wader birds.

In relation to any migratory wader birds species which may be found in the construction area, the SEIS states that Proponent will minimise illumination of the intertidal area to the east of the marina by orienting lighting away from that area and relocate any nests in consultation with EPA and this activity will require a permit under the *Nature Conservation Act 1992.*

EPA has advised that any attempt to drive protected fauna from the works area would be an offence under s.88 of the *Nature Conservation Act 1992*. This Act does not provide for the conditional removal or relocation of fauna. Accordingly, on the recommendation of EPA, Condition 5 has been imposed on the Proponent to ensure the protection of migratory wader birds.

Condition 5 also requires a protected species management plan to be prepared in consultation with EPA. The plan will include procedures for the cessation of any works while migratory birds are within the "construction activity area" (i.e. within 25 metres of any construction activity) and minimisation of illumination of the intertidal area to the east of the site. Construction activities will not be permitted to occur whilst migratory birds are within the construction activity area.

I consider that the implementation of other management plans/programs, such as those for water quality management and ASS, will minimise any impacts on migratory species which may arise as a result of construction of the marina.

The potential impact of construction noise on migratory birds has been considered above in the section on noise.

3. PROJECT ALTERNATIVES

3.1 Current Site

The Whitsunday Region Marina Demand Analysis (2001) commissioned by the Whitsunday Coastal Developments Inter-departmental Committee, identified the potential for growth in the medium and long-term demand for marina berths in the Whitsunday Area (Bowen to Mackay). The Marina Demand Analysis identified the POA site as the most suitable location in the region based on key criteria.

The POA site is identified in Whitsunday Shire Council's Strategic Plan as a "Mainland Urban Tourist Facility". However, it should be noted that the majority of the site will only be included within the Local Government Area once reclamation occurs. The proposal has been developed to align with Council's Strategic Plan and Planning Scheme as well as the Whitsunday Hinterland and Mackay Regional Plan, Whitsunday Tourism Strategy, Vision Airlie Strategy and the Draft Whitsunday Retail Strategy. The POA has been developed to take into account each of these plans and strategies.

The Proponent assessed a number of alternatives for the marina proposal during the EIS process including:

- alternative sites within the region;
- alternative layouts;
- marina only option;
- marina and commercial only option; and
- no project option.

3.2 Alternative Sites

Following review of the SEIS, EPA advised it preferred the relocation of the proposal to a new site within the Whitsunday region that does not have substantial impacts on sensitive areas and consequently requested that the Proponent conduct further investigation into alternative sites for the marina.

In response to EPA's request, the Proponent provided a desktop assessment of 24 embayments along the Whitsunday mainland coast to identify any other sites that might compare favourably to Boathaven Bay having regard to the principles of ecologically sustainable development ("ESD"). Section 3.3.2, of the Addendum Report summarises this assessment of the bays which included:

- Hydeaway Bay;
- Dingo Beach;
- West of Olden Island;
- Earlando;
- Western Double Bay;
- Woodcutters Bay; and
- Shute Harbour.

The study provided comparative data including the likely impacts on seagrass, mangroves and dugongs; and the availability of infrastructure and road access. In summary, most of the sites identified are relatively undisturbed compared to Boathaven Bay. Records of seagrass beds were available for the majority of the sites. The Proponent concluded that Boathaven Bay is the most suitable location for a marina development along the Whitsunday mainland coast (i.e. the site is more harmonious with the principles of ESD than any other site in the region).

The Shute Harbour site identified above, which is in close proximity to the POA site, was not considered a suitable alternative as it is subject to a Special Lease and Permit to Occupy issued pursuant to the *Land Act 1994* and is currently the subject of an Environmental Impact Statement for a marina development under the SDPWO Act. This site was also identified in the Marina Demand Analysis as the second most suitable site for a marina in the Whitsunday region. Wildlife Whitsunday (Wildlife Preservation Society of Queensland – Proserpine/Whitsunday Branch) has stated that development at the Shute Harbour site would have "a lot less environmental impact". (Comments on COG Report on the SEIS for POA, January 2004.)

In response to the additional information provided by the Proponent in the Addendum, EPA acknowledged that the Proponent "has not been able to identify a suitable alternative location that has a lower level of impact to the environment".

3.3 Alternative Layouts/Marina Only Alternative

Section 3.1.2 of the Addendum Report provides an evaluation of three alternative "marina only" footprint scenarios for a marina in Boathaven Bay. The Proponent advised that, although all of the alternatives would have lesser impacts on the intertidal zone than the current POA proposal, they are not financially feasible. The Proponent states that the costs of construction of the development could not be recouped by the combined income generated from the future sale or lease of marina berths and income generated from the operation of the marina and marina facilities. The Proponent asserts that all three alternatives would require a mix of commercial, residential and tourism outlets to be developed in conjunction with the marina to be financially viable.

Both EPA's and DPIF's stated second preference was for a marina only option for the development. However, it was recognised that all options provided would have an impact on sub-tidal seagrass and unvegetated communities in the bay but to a lesser extent than the current proposal. EPA has acknowledged that the marina only options could possibly place the development at a greater risk from coastal processes and coastal hazards (e.g. erosion, wave action etc).

3.4 No Project Option

EPA and DPIF originally acknowledged that their preferred option would be the "no project option" as this would avoid the immediate and direct impacts on Boathaven Bay and the WHA including those on marine plants and the mud flat habitat together with visual impacts associated with a marina development. However, both agencies recognised the growing demand for safe marina berths in the region and acknowledged that a marina is required in the region.

The Proponent (refer to section 3.3.9 of the SEIS) argues that the no project option will not ensure continued preservation of marine habitat in Boathaven Bay as future development (including development currently approved or planned) in the catchment of Boathaven Bay will place increasing pressure on these habitats (e.g. additional untreated stormwater). Initiatives to be introduced by the Proponent such as "best practice" stormwater drainage and filtration is expected to reduce the amount of waste from the Airlie Beach catchment area currently piped into Boathaven Bay.

It is considered that if the project were not to proceed the social and economic benefits (including direct and indirect employment and capital expenditure) of the project for the region would not be realised; and demand for marina berths in the area will not be met.

4. CONCLUSION

I have considered the likely impacts that the Port of Airlie 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 .

A copy of this Addendum to the Coordinator-General's Report will be provided to the Proponent and publicly notified by placing it on the Department of State Development and Innovation's website. Further, in accordance with s.17(2) of the SDPWO Regulation 1999, a copy of this Addendum 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.

Denis Cook
Deputy Coordinator-General

Date 15/4/04

ATTACHMENT 1

Conditions to be attached to a Development Approval for the commencement of Environmentally Relevant Activities by Environmental Protection Agency

SCHEDULE 1D - NOISE

(1D-1) The holder of this authority must utilise and maintain Best Available Control Technology (BACT) to all potential emitters of noise for the duration of works on the site. Contractors should familiarise themselves with methods of controlling noisy machinery and alternative construction procedures as explained in Australian Standard AS2436-1981 *Guide to Noise Control on Construction, Maintenance and Demolition Sites*. This document details typical plant and equipment sound power levels, provides advice on project supervision, and gives guidance on noise control and reduction.

Site Noise and Vibration Management Plan

(1D-2) Prior to the commencement of any works on site, the holder of this authority must develop a Site Noise and Vibration Management Plan that addresses all potential emitters of noise and ground vibration (including pile driving) for the site for the duration of authorised works on the site. The plan must include the following items:

(i) an ambient noise monitoring program prior to the commencement of activities at the site to verify long-term background levels in which:
  (a) measurements are taken at least hourly, over at least 7 days, at locations representative of the authorised site and noise affected premises that may be impacted upon by the site activities; and
  (b) measurements must be measured as separate levels for daytime (7am-6pm), evening (6pm-10pm) and night-time (10pm-7am), each of which is the arithmetic mean of all the daytime, evening or night-time measurements during the program; and
  (c) the statement of the long-term background levels includes the standard deviation of the mean of the measurements used to calculate each of the daytime, evening and night-time levels and details of any extraneous noise; and

(ii) appropriate noise modelling to assess the impact of site noise against long-term background levels which includes a statement of the following:
  (a) the model, and any variation on the model, used for the assessment;
  (b) a statistical analysis of probable error in the predicted results;
  (c) the methods, assumptions or uncertainties used in the model; and

(iii) the measures to be taken under the plan to minimise the adverse effects of the site activities on surrounding noise affected premises and vibration sensitive places; and

(iv) who is responsible for carrying out each of the measures; and

(v) selection of plant and equipment; and

(vi) hours of operation; and

(vii) background noise levels for daytime, evening and night-time; and

(viii) calculated ***authorised*** $L_{Amax,adj,15min}$ noise levels for daytime, evening and night-time for the site activities based on Schedule 1D - Table 1; and

(ix) outcomes of liaison with residents prior to the commencement of site activities; and

(x) processes for dispute resolution that the applicant must follow to deal with complaints received about the impact of noise and/or vibration from the site activities; and

(xi) proposed noise monitoring at noise affected premises including:
  (a) $L_{Amax,adj,15min}$;
  (b) $L_{eq,adj,15min}$;
  (c) $L_{AmaxPeak,15min}$;
  (d) the level and frequency of occurrence of impulsive or tonal noise;
  (e) atmospheric conditions including wind speed and direction, humidity and temperature
  (f) effects due to extraneous factors such as traffic noise; and
  (g) location, date and time of recording; and

(xii) proposed ground vibration monitoring at vibration sensitive places including:
  (a) peak particle velocity (mm/s); and location, date and time of recording; and
  (b) location of the pile driving within the site; and

(c) atmospheric conditions including temperature, relative humidity and wind speed and direction; and
(d) effects due to extraneous factors; and
(e) location, date and time of recording; and

(xiii) reporting to the administering authority on the implementation of the final Site Noise Management Plan including noise monitoring and dispute resolution results.

(1D-3) The Site Noise and Vibration Management Plan (outlined in condition 1D-2) must be conducted and prepared by an experienced and appropriately qualified person.

(1D-4) The holder of this authority must submit the Site Noise and Vibration Management Plan (outlined in condition 1D-2) to the administering authority at least 28 days prior to the commencement of any works on site.

(1D-5) If the administering authority gives to the holder of this authority any comment on the Site Noise and Vibration Management Plan (outlined in condition 1D-2) within 21 days of receiving the documents, the holder of this authority must have due regard to those comments when implementing the Site Noise Management Plan.

(1D-6) The holder of this authority must implement the final Site Noise and Vibration Management Plan (outlined in condition 1D-2) when undertaking any activities at the site (including pile driving) to which the Site Noise Management Plan pertains.

Noise nuisance

(1D-7) All noise from site activities (excluding pile driving) must not exceed the levels specified in Schedule 1D Table 1 outside habitable rooms with doors and windows open or closed at any noise affected premises.

Schedule 1D - Table 1

Noise level dB(A) measured as	**Monday to Friday**			**Saturday**
	7am – 6pm	**6pm – 10pm**	**10pm - 7am**	**8am - 1pm**
$L_{Amax,adj,15min}$	70dBA or equal to the background plus 10dBA, whichever is least	65dBA or equal to the background plus 10dBA, whichever is least	60dBA or equal to the background plus 3dBA, whichever is least	70dBA or equal to the background plus 10dBA, whichever is least
Noise level dB(A) measured as	**Saturday before 8am and after 1pm; Sundays and public holidays**			
$L_{Amax,adj,15min}$	60dBA or equal to the background plus 3dBA, whichever is least			

Background noise levels for the purpose of Schedule 1D - Table 1 are taken from the results of the ambient noise monitoring program required under condition (1D-2)(i) for the respective time periods.

(1D-8) No pile driving is to occur:

(i) on Sundays;
(ii) Monday to Saturday
(a) before 8 am;
(b) between 12 noon and 2 pm; and
(c) after 5pm.

Ground Vibration Conditions

(1D-9) Vibration emitted from activities must not cause a nuisance at any vibration sensitive place.

(1D-10) Vibration emitted from pile driving activities must not exceed the levels specified in British Standard BS6472:1992 *Guide to Evaluation of Human Exposure to vibration in buildings (1Hz to 80Hz)* or equivalent.

Noise monitoring

(1D-11) The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's Noise Measurement Manual.