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NORTHEAST BUSINESS PARK

Addendum to Report on Matters of National Environmental Significance

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NORTHEAST BUSINESS PARK

ADDENDUM TO REPORT ON MATTERS OF NES

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

EXECUTIVE SUMMARY

The Northeast Business Park (NEBP) is a multi-use business park and marina concept that will integrate industry, marina facilities, commercial, residential, heritage and recreational open space precincts, and is the creation of Northeast Business Park Pty Ltd (the Proponent). The NEBP is located on a strategically significant 769 hectare freehold landholding on the southern banks of the Caboolture River at Morayfield, close to the heart of Caboolture. The site has a unique set of strategic attributes, making it an ideal location for an integrated development.

The NEBP development was referred to the (then) Department of Environment and Heritage on the 29th of June 2006 and the relevant Minister determined that the NEBP development constituted a controlled action (i.e. requires Commonwealth approval) pursuant to Part 3, Division 1, of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). A stand-alone Report on Matters of National Environmental Significance (January 2008) was prepared in accordance with the Terms of Reference (ToR) for the NEBP Environmental Impact Statement (EIS) and was presented as Appendix L3 of the NEBP EIS.

During the public consultation period, which closed 4 April 2008, a total of 29 submissions were received, of these the 14 were from Government agencies and 15 from private individuals. The Coordinator General on 18 June 2008 requested further information to satisfactorily address the submissions prior to the final evaluation of the EIS. In response to the request for supplementary information, a Supplementary EIS has been prepared which addresses key issues raised in submissions and follows the format of the TOR prepared following the NEBP development proposal designation as a State significant project. This Addendum to the Report on Matters of National Environmental Significance (NES) has been prepared as part of the Supplementary EIS and provides additional information concerning:

1. the role of the various environmental management and monitoring programs proposed as part of the NEBP development in mitigating potential adverse impacts on matters of NES;
2. the impact of dredging operations, increased boating traffic and associated human disturbance on migratory waders, particularly shorebirds utilising the high tide roost sites on or near the Caboolture River;
3. the potential impacts of the NEBP development with regard to the ecological character and listing criteria of the Moreton Bay Ramsar Wetland; and
4. the potential benefits of vegetation offsets to EPBC Act listed species, including details concerning the location, size, condition, and security of tenure and active management arrangements of the proposed offset.

The additional information presented in this report reinforces the conclusions of the Report on Matters of National Environmental Significance (January 2008) that was presented as Appendix L3 of the NEBP EIS. In this respect it is concluded that in the presence of the proposed environmental management and monitoring regime, the construction and operation of the NEBP development is unlikely to have a significant adverse impact of matters of NES.

1. INTRODUCTION

This report is an Addendum to a Report on Matters of National Environmental Significance (January 2008), prepared by Cardno (Qld) Pty Ltd and The Ecology Lab Pty Ltd on behalf on Northeast Business Park Pty Ltd (the Proponent), in respect of the proposed Northeast Business Park (NEBP) development in south-east Queensland. The proposed NEBP development is a multi-use marina and business park concept that will integrate industry, marina facilities, commercial, residential, heritage and recreational greenspace precincts. The NEBP development site encompasses approximately 769 ha of freehold land located on the southern bank of a tidal reach of the Caboolture River. The NEBP development will also involve a program of capital and maintenance dredging within the Caboolture River, potentially impacting on parts of the Ramsar listed wetland of Moreton Bay.

The NEBP development was referred to the (then) Department of Environment and Heritage on the 29th of June 2006 for the Minister to determine whether Commonwealth approval is required for the action. A Decision notice was issued on the 12 July 2006 notifying that the proposal is a controlled action (i.e. requires Commonwealth approval) pursuant to Part 3, Division 1, of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlling provisions were determined to be:

- Sections 16 and 17B (Wetlands of international importance);
- Sections 18 and 18A (Listed threatened species and communities); and
- Sections 20 and 20A (Listed migratory species).

A stand-alone report on Matters of National Environmental Significance (January 2008) was prepared in accordance with the Terms of Reference (ToR) for an Environmental Impact Statement (EIS) for the NEBP development. The ToR was produced by the Coordinator General, Queensland Government, dated December 2006. The stand alone report on the Matters of National Environmental Significance (January 2008) was presented as Appendix L3 of the NEBP EIS. Potential impacts as they relate to matters of National Environmental Significance (NES) were identified and appropriate mitigation measures were proposed to minimise potential impacts on matters of NES.

The NEBP EIS was submitted to the Department of Infrastructure and Planning (DIP), which is coordinating the EIS on behalf of the Coordinator General (CG). The EIS was undertaken in accordance with Part 4 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and was for a period of 45 days available for public and advisory agency review. During the public consultation period, which closed 4 April 2008, a total of 29 submissions were received. This has been deemed the lowest number of submissions received for an EIS in Queensland and this is considered to be a direct result of the extensive consultation undertaken during the EIS preparation by the Proponent.

NEBP EIS submissions indicate that there were a number of issues in the Report on Matters of National Environmental Significance (January 2008) that required further attention. In summary these issues are as follows.

1. The provision of clearer linkages between the objectives of the Environmental Management Plans, the relevant guidelines and standards to be adhered to, and the impacts on matters of NES to be mitigated.
2. The impact of dredging operations, increased boating traffic and associated human disturbance on migratory waders, particularly shorebirds utilising the high tide roost sites on or near the Caboolture River.
3. Further analysis and discussion of the potential impacts of the NEBP development with regard to the ecological character and listing criteria of the Moreton Bay Ramsar Wetland.

4. A discussion of the benefit of vegetation offsets to EPBC listed species is required, including details concerning the location, size, condition, and security of tenure and active management arrangements of the proposed offset.

This Addendum to the Report on Matters of National Environmental Significance (January 2008) provides responses to the above issues.

It is also considered relevant to note the following points concerning the permitting and approvals process for the NEBP development.

1. Prior to the commencement of any physical development activities associated with the NEBP development a number of additional development approvals and permits would be required. Applications for such requisite development permits/approvals would be assessed in accordance with the requirements of the Queensland *Integrated Planning Act 1997* and would be required to demonstrate compliance with:
   - all relevant conditions that may form part of an approval that originates from the current EIS assessment process being carried out in accordance with the provisions of the SDPWO Act; and
   - environmental standards applicable at the time that the requisite approvals are sought.
2. The (now) Department of Environment, Water, Heritage and Arts (DEWHA) has the ability specify conditions to an approval of the NEBP development that is issued in accordance with relevant provisions of the EPBC Act. It would be reasonable and relevant for such conditions to reflect the fact that the NEBP development will occur over a substantial period of time and that further detailed technical assessments and management plans will be generated in support of future applications for requisite State development approvals.

2. ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAMS

One of the themes of submissions concerning the potential impact of the NEBP development upon matters of NES was the need for the provision of clearer linkages between the objectives of the Environmental Management Plans, the relevant guidelines and standards to be adhered to, and the impacts on matters of NES to be mitigated. Also raised in the submissions were questions concerning the proposed reporting mechanisms and pathways for the various environmental management and monitoring programs, particularly in instances where non-compliance with the management objectives and criteria are detected. The following response has been prepared in respect of such submissions.

The NEBP EIS and the associated Report on Matters of National Environmental Significance (January 2008) recognise that several aspects of the NEBP development have the potential to impact both directly and indirectly upon matters of NES. The NEBP EIS and the Supplementary EIS provide details concerning a range of environmental management and monitoring programs that are to be implemented to ensure the appropriate mitigation of potentially adverse environmental impacts associated with various aspects of the NEBP development, including impacts of relevance to matters of NES. A summary of the content and objectives of these various programs is provided in Table 1.

Table 1 NEBP Environmental Management and Monitoring Programs

Program Title, Author and Location	Content and Objectives
NEBP Construction Environmental Management Plan (CEMP). Prepared by Cardno (Qld) Pty Ltd and presented as Appendix X2 of the NEBP EIS.	The CEMP was prepared to provide assurance that the recommendations made in the NEBP EIS technical investigations will be implemented during the construction of the development to avoid potential environmental impacts. Topics addressed in the CEMP include: • Community Awareness. • Earthworks Management. • Erosion and Sediment Control. • Water Quality and Quantity. • Acid Sulfate Soil Management. • Land Contamination. • Flora and Fauna. • Weed Management. • Mosquito and Biting Midge Management. • Air quality. • Noise and Vibration. The CEMP is considered a dynamic document which will be continually reviewed to ensure detailed design investigations are reflected in construction methodology and management techniques and ensure compliance with any relevant conditions imposed by the approval process.
NEBP Marina Site Based Management Plan (SBMP). Prepared by Cardno (Qld) Pty Ltd and presented as Appendix Y1 of the NEBP EIS. and	The Marina SBMP demonstrates the environmental commitment by the Proponent and Operator to carry out activities in accordance with a structured program that: • sets the environmental objectives or standards to be achieved over time; • identifies the potential environmental harm and extraordinary factors that may cause environmental harm resulting from routine operations and establishes and documents measures to avoid and/or manage this harm as far as practicable;

Program Title, Author and Location	Content and Objectives
NEBP - Marina Water Quality Management Plan Prepared by Cardno Lawson Treloar and presented as Appendix B to the Marina SBMP.	• ensures all persons carrying out the activity are aware of environmental risks, and are trained in the measures and contingency plans to deal with them; • implements monitoring of environmental performance to ensure the effectiveness of the measures and contingency plans; • assists the communication authorities; and • provides for continual improvement.
NEBP Dredging Site Based Management Plan (Dredging SBMP). Prepared by Cardno (Qld) Pty Ltd and presented as Appendix R3 of the NEBP EIS.	The NEBP Dredging SBMP outlines the potential impacts of the proposed dredging activity and specifies mechanisms that will be incorporated to ensure environmental impacts associated with the dredging and spoil disposal are minimised as far as practicable. The Dredging SBMP specifies strategies and measures to mitigate and prevent direct and indirect impacts associated with dredging activities in a relatively undeveloped waterway in Southeast Queensland. The Dredging SMBP was presented as Appendix R3 of the NEBP EIS. Topics addressed in the Dredge SBMP include: • Community Awareness. • Air Quality. • Noise Quality. • Water Quality. • Acid Sulfate Soil Management. • Marine Flora and Fauna Management. • Cultural Heritage Management. • Dangerous and Hazardous Materials Management. • Waste Management. • Dredge Spoil Management. • Navigation Safety. • Contingency Planning. As specified in the NEBP Supplementary EIS, the Dredge SBMP will be updated prior to works commencing to incorporate: • notification of appropriate authorities, including the Department of Environment, Water, Heritage and the Arts (DEWHA) in the event of waste spills; • recommendations made in the Supplementary EIS as they relates to dredging works; and • compliance with relevant conditions forming part of any requisite development approvals.
NEBP Acid Sulfate Soil Management Plan (ASSMP). Prepared by Cardno (Qld) Pty Ltd and presented as Appendix D of the NEBP Supplementary EIS	This revised ASSMP specifically addresses compliance with proposed conditions for a preliminary MCU application by the Department of Natural Resources and Water and discusses the effectiveness of the State Planning Policy 2/02 and attendant guidelines for the management of acid sulfate soils in Queensland. The revised ASSMP also addresses identified concerns including that: • excavation of a large amount of earth to create the new basin will activate a significant amount of acid sulfate soil; and • acid sulfate soil has the potential to cause run-of which may significantly harm water quality, killing fish stocks and contributing to blooms of Lyngbya. The ASSMP has been prepared in accordance with the following guidelines which have been effective in the management of acid sulphate issues associated with coastal development in Queensland.

Program Title, Author and Location	Content and Objectives
	• Queensland Acid Sulfate Soil Technical Manual – Soil Management Guidelines, Version 3.8 (November 2002). • Queensland Government State Planning Policy 2/02 Version 2– Planning and Managing Development involving Acid Sulfate Soils (SPP 2/02). • Instructions for the Treatment and Management of Acid Sulfate Soils (Queensland Government, July 2001). • Acid Sulfate Soils Management Plans for Queensland (Dear et al, June 2000). • Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland (CR Ahern, MR Ahern and B Powel, October 1998).
NEBP Stormwater Management Plan (SMP). Prepared by Parsons Brinckerhoff Australia Pty Limited and presented as Appendix H1 of the NEBP EIS.	The NEBP Stormwater Management Plan (SMP) documents the proposed strategies and measures for the preservation of natural flows to the waterways and wetlands and minimisation of any increase in pollutant loads. The SMP provides a framework for water quality management and reporting for the entire development site. It identifies the adopted water quality reporting objectives, relevant design constraints and appropriate management strategies for the development site. In the preparation of the SMP, water quality modelling was undertaken at the conceptual level, based on appropriate water quality treatment measures for each catchment. The SMP outlines the measures and strategies that are designed to achieve the Caboolture Shire Council's (CSC) pollution reduction targets and the Queensland Water Quality Objectives (WQO) for Caboolture River. Compliance with the specified WQO will ensure that the NEBP development does not have adverse effects on the water qualities and associated ecology of waterways and wetlands within and downstream of the NEBP development site. The SMP has been prepared with reference to, and is compliant with, the following relevant water quality guidelines: • Qld *Environmental Protection (Water) Policy 1997*; • South East Queensland Regional Water Quality Management Strategy – Volume 3 Moreton Bay Catchment Region, Healthy Water Ways (2001). • Queensland Water Quality Guidelines 2006. • Caboolture River – Environmental values and water quality objectives (Environmental Protection Agency, 2007). • Caboolture Shire Plan – Part 7, Division 19 Stormwater (Caboolture Shire Council, 2005). • Guidelines on Identifying and Applying Water Quality Objectives in Brisbane City (Brisbane City Council, 2000).
NEBP Landscape Master Plan. Prepared by PLACE Planning and Design and presented as Appendix P to the NEBP EIS.	The NEBP Landscape Master Plan provides a conceptual framework for the Open Space and Recreation Areas included in the NEBP development, including significant enhancement of ecological values, habitat values, Caboolture River water quality, and other environmental values. From an environmental management perspective critical components of the landscape Master Plan include: • revegetated riparian buffer to the Caboolture River; • conservation of remnant vegetation and rehabilitation of disturbances to that vegetation; • buffering zones between conservation areas and built up areas; • artificial wetland establishment as stormwater treatment components under WSUD strategies; • rehabilitation of disturbances from bulk earthworks and flood mitigation works;

Program Title, Author and Location	Content and Objectives
	• rehabilitation and expansion of creek line riparian vegetation buffers; • fauna habitat development planting strategies; • extensive street landscapes; • encourage of community and environment group participation in rehabilitation of the site environment; • sustainable design and materials strategies; • an Environment Centre demonstrating sustainability principles and encouraging such strategies in the private development domain.
NEBP Environmental Monitoring Program. Prepared by Cardno (Qld) Pty Ltd and presented as Appendix I of the NEBP Supplementary EIS.	The environmental monitoring program is a management tool used to assist: • construction and operational staff to identify and minimise the impact to the environment through practical environmental monitoring programs; and • decision makers to understand the range and detail of committed environmental monitoring programs. The environmental monitoring program includes monitoring on and off-site where potential environmental impacts have been forecast in the NEBP EIS, and in particular will provide significant data for determining the ecosystem health of the Caboolture River and the effectiveness of sustainable land uses practices for water quality improvements. Topics addressed in the monitoring program include: 1. On-site Construction and Operational Phase Monitoring of: • Marina Water Quality; • Surface Water Quality; • Groundwater Quality; • Riverbank Erosion; • Marine Flora; • Marine Fauna; • Acid Sulfate Soils; • Contaminated Land; • Terrestrial Flora; • Terrestrial Fauna; and • Environmental Nuisance. 2. Off-site Construction and Operational Phase Monitoring of: • Water Quality; • Hydraulics; • Coastal Siltation; • Marine Flora; • Marine Fauna; • Acid Sulfate Soils; • Shorebird Habitat; and • Environmental Nuisance.

The various environmental management and monitoring programs that form part of the NEBP development are based on adoption of best practice environmental management guidelines and compliance with relevant regulatory standards, including (at a minimium):

- the *Environmental Protection (Water) Policy 1997* (EPP Water) which ensures protection of environmental values from activities that may result in the release of contaminants to waterways or stormwater drains;

- the *Environmental Protection (Air) Policy 1997* (EPP Air) which ensures protection of ambient air quality and specifies indicators and air quality goals for control of the release of airborne contaminants;
- the *Environmental Protection (Noise) Policy 1997* (EPP Noise) which specifies an acoustic quality objective for protection of the well-being and amenity of individuals and the general community;
- the *Environmental Protection (Waste Management) Policy 2000* (EPP Waste) which promotes the efficient use of non-renewable resources and the use of waste as a resource;
- the *Land Protection (Pest and Stock Route Management) Act 2002* which deals with the management of pest plants and animals and application of controls and restrictions on 'declared pests';
- the *Fisheries Act 1994 (Qld)* which provides for the 'use, conservation and enhancement' of fisheries resources and fish habitats through the application of the principles of ecologically sustainable development;
- the *Coastal Management and Protection Act 1995 (Coastal Act)* which provides for the protection, conservation, rehabilitation and management of the coast including its resources and biological diversity;
- the *Marine Parks Act 2004* and the *Moreton Bay Marine Park Zoning Plan*, which provide for the conservation of the marine environment of Moreton Bay;
- State Planning Policy 2/02 Planning and Managing Development Involving Acid Sulfate soils; and
- State Planning Policy 1/03 Mitigating the Adverse Impacts of Flood, Fire and Landslide.

The diversity and complexity of environmental management programs that are required to mitigate the potential for adverse impacts makes it difficult to provide both concise and clear linkages between:

- aspects of the NEBP development that will potentially impact upon matters of NES; and
- the specific management strategies that are proposed to mitigate the potential for adverse impacts, as specified in the various documents described in Table 1.

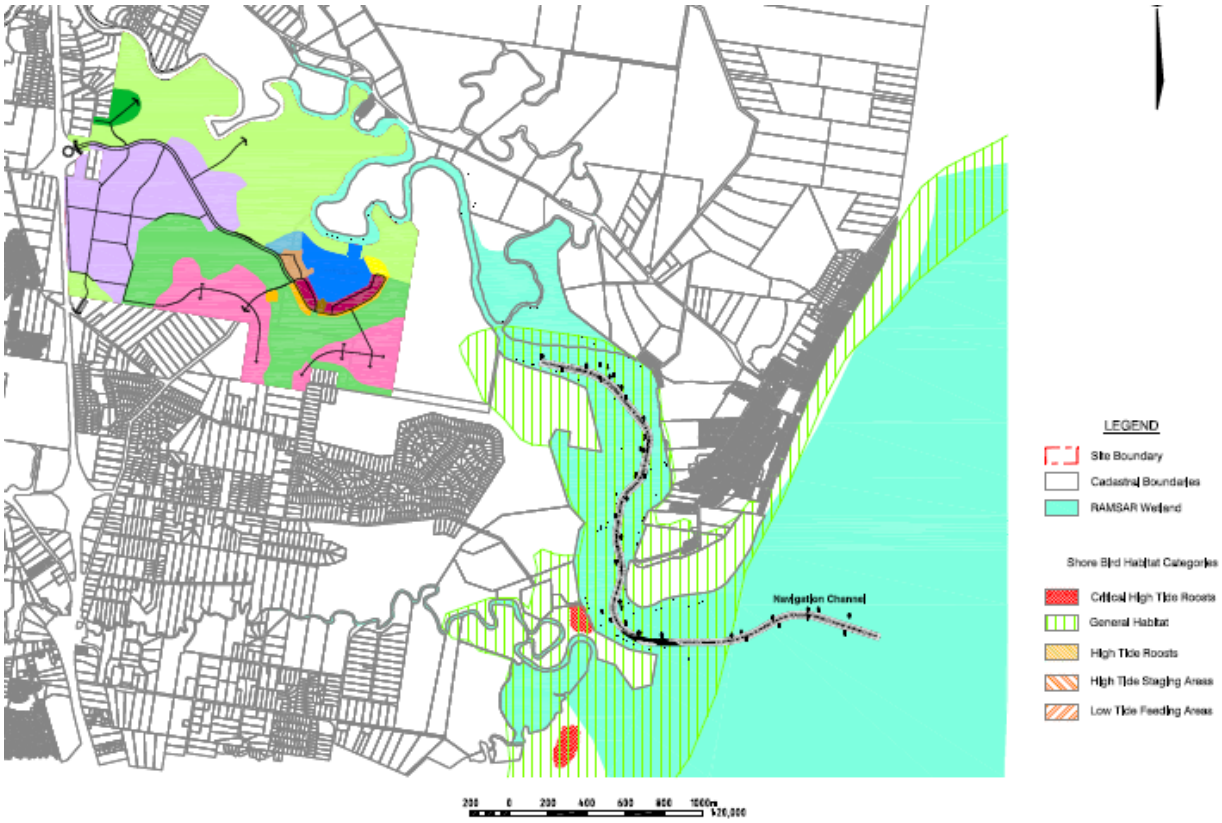
The approach taken to provide additional clarity to this issues has been to reproduce amended versions of the Compliance Assessment Tables 1 to 5 presented in the Report on Matters of National Environmental Significance (January 2008). These amended tables are presented in Appendix A and include references to elements of the different environmental management plans that are of relevance to the performance criteria and impacts being considered for each relevant matter of NES.

The various environmental management and monitoring programs include specifications for the documentation of required management tasks and actions. The Proponent is committed to making such documents and records available to relevant authorities upon request. In the event that monitoring indicates non-compliance with the management objectives and criteria the relevant Local, State and Commonwealth authorities would be notified. It is anticipated that development approval conditions to that effect would be attached to requisite approvals for the NEBP development.

3. MIGRATORY WADERS

Issue: - the impact of dredging operations, substantially increased boating traffic and associated human disturbance on migratory waders, particularly shorebirds utilising the high tide roost sites on or near the Caboolture River.

The existing Caboolture River navigation channel traverses an area of general shorebird habitat and is located to the north of two recognised critical high tide roost sites for migratory waders and shorebirds. The positions of these two recognised critical high tide roost sites, relatively to the Caboolture River navigation channel, are illustrated below.



Potential sources of disturbance to migratory wader and shorebird habitat associated with the NEBP development are limited to disturbance associated with required dredging operations and anticipated increases in boating traffic. It is not anticipated that the NEBP development will increase other forms of disturbance, such as disturbance associated with recreational vehicle usage, domesticated animals etc.

In terms of assessing the potential for dredging of the Caboolture River navigation channel and the anticipated increase in boating traffic that will occur as a result of the NEBP development it is relevant to consider the following questions.

Q1. What are the current characteristics of boating traffic in the Caboolture River in terms of the volume and composition of boating traffic?

There has been no comprehensive long-term surveys of the volume and composition of boating traffic within the Caboolture River. The survey work carried out as part of the NEBP EIS (refer EIS Section 4.5 Table 47) indicates that during the week up to 40 boat movements per day occur within the Caboolture River, including trawlers, tinnies and sailing boats. It is anticipated that, on average, a greater number of boat movements would occur on the weekend.

Q2. What are the anticipated changes to boating traffic volumes and composition that will result from the NEBP development?

The NEBP development will include approximately 900 marina berths and a further 500 dry boat stacker berths and will also include associated shipyard and marine industry infrastructure. As such the NEBP development will increase boat traffic between the development site and the mouth of the Caboolture River.

The anticipated increase in boat traffic within the Caboolture River generated by the development will be related to the number of vessels using the NEBP marina facilities. In this respect Cardno Lawson Treloar have, for the purpose of assessing a number of coastal process issues, made an estimate of the anticipated boasting traffic increase based on assumptions relating to the size and number of vessels using the NEBP marina facilities. These estimates are provided in the NEBP Supplementary Report on Coastal Processes, presented as Appendix E to the NEBP Supplementary EIS, and summarised below.

There will be a degree of disparity between the number of vessel movements on weekends and weekdays, with the peak number of vessel movements most likely occurring on weekends. Table 2 shows an estimate of vessel movements that could potentially be attributed to the NEBP development.

Table 2 Estimated Number of Vessel Movements

Berth Type	***Number of Berths***	***Percentage of Boats***		***Average Daily Boat Movements***
		Weekday	***Weekend***	
Marina Berth	*900*	*2%*	*20%*	*~66*
Dry Berth	*500*	*1%*	*10%*	*~16*
Total	***1400***	***~1.6%***	***~16.4%***	***~82***

Based on the estimates presented in Table 2 there would be an average of 82 boat movements per day. This estimate is intended to provide an approximate number of boat movements and does not account for increases during holidays or decreases on days where the weather is unsuitable for boating.

Using the available information concerning the number of boat movements occurring within the Caboolture River and the estimates presented above, it is anticipated that the NEBP development will result in a substantial increase (i.e. approximately 100%) in the average number of boat movements per day within the Caboolture River.

Q3. Are the anticipated changes to boating traffic volumes and composition associated with the NEBP development likely to result in migratory waders and shorebirds reducing their use of habitat, particularly critical high tide roost habitats, located adjacent to the Caboolture River navigation channel?

The response of migratory waders and other shorebirds to the anticipated increase in boat traffic movements will be primarily determined by the following two factors:

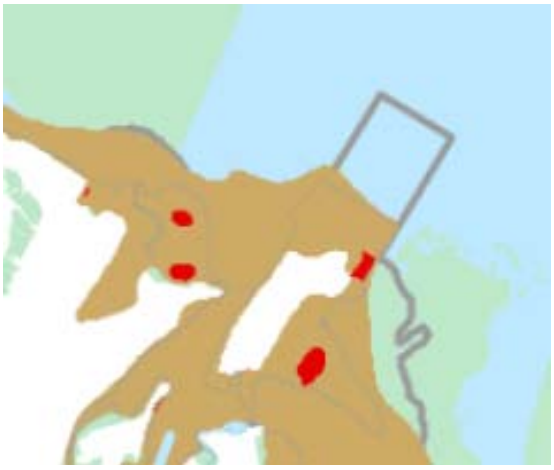
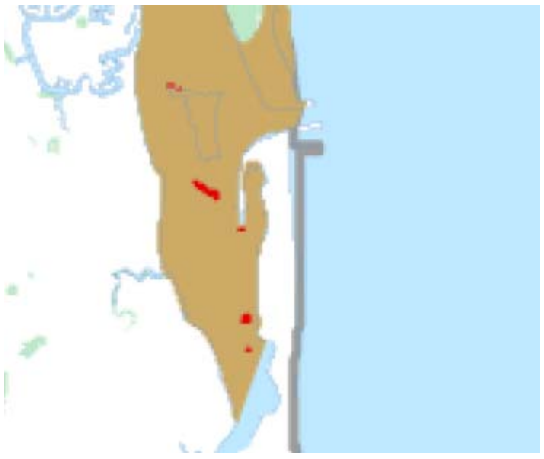
a) the nature of the changes that are anticipated to occur to the ambient environmental conditions that prevail in areas that are currently being utilised by migratory waders and other shorebirds; and

b) the tolerance of migratory waders and other shorebirds to the anticipated changes in ambient environmental conditions.

In respect of the first point it is anticipated that the ambient environmental conditions will change in terms of: the number/frequency of boat movements within the Caboolture River; the average size of boats moving within the Caboolture River; and the overall level of noise generated by boat movements. These are the primary causes of human-

related disturbance to migratory wader and shorebird habitats of the Caboolture River that would be associated with the NEBP development.

There is a general dearth of information within the scientific literature concerning the responses of different species of migratory waders and shorebirds to such changes in ambient environmental conditions. Intuitively one would expect that as the frequency and/or magnitude of alteration to prevailing environmental conditions increases a point would be reached where a species' tolerances are exceeded and the species reduces its usage of the affected area. Available evidence indicates that the magnitude of changes in ambient environmental conditions that are likely to occur in association with the anticipated increase in boating traffic within the Caboolture River is unlikely to exceed the tolerances of most migratory waders and shorebirds that inhabit Moreton Bay. This evidence is obtained by investigating the likely ambient environmental characteristics, in terms of boating traffic and noise emissions from boating and other sources, of other recognised migratory wader and shorebird high tide roost sites and general forage habitats within Moreton Bay. In this respect brief descriptions of the ambient environmental characteristics of two other sectors of Moreton Bay that support both foraging and high tide roost habitat for migratory waders and shorebirds, and that are subjected to a substantially higher level of disturbance than would be anticipated following the NEBP development, are provided below.

Site Characteristics	**Extract from SEQ Regional Coastal Management Plan Map 10A – Biodiversity** Critical Shore Bird Habitat Shore Bird Habitat
Brisbane River Mouth: Habitat Values: Combination of general foraging habitat and critical high tide roost sites. Ambient Environmental Conditions: Major commercial sea port characterised by a significant number of boat movements per day, ranging from small recreational vessels to large freight ships. Exposure to frequent and high magnitude noise emissions associated with boating traffic, industrial facilities and operation of the Brisbane domestic and international airports.	
Southport Seaway and Broadwater: Habitat Values: Combination of general foraging habitat and critical high tide roost sites. Ambient Environmental Conditions: Major commercial and recreational waterway servicing the Gold Coast area, characterised by a significant number of boat movements per day. Exposure to frequent and high magnitude noise emissions associated with boating traffic and commercial activities on the Southport spit.	

In summary, the anticipated increases in boating traffic within the Caboolture River associated with the proposed NEBP development are not likely to alter the ambient environmental conditions to an extent that there is likely to be any significant changes in the migratory wader and shorebird utilisation of foraging and roosting habitat in the locality.

Q4. What is the anticipated impact of dredging operations upon migratory waders and shorebird habitat, particularly high tide roost sites?

The programs of capital and maintenance dredging that would be required as part of the proposed NEBP development have the potential to impact upon migratory wader and shorebird habitat in two primary ways, including:

a) direct physical loss of foraging and roosting habitat associated with dredging operations and associated alterations to coastal processes; and

b) indirect degradation of the values of foraging and roosting habitats due to the physical presence of the dredge and noise emissions associated with its operation.

The proposed program of capital and maintenance dredging operations will result in:

- some minor reduction in the extent of low tide forage habitat located within the defined navigation channel of the Caboolture River; and
- no reduction in the extent, or alteration to the characteristics of, high tide roost sites adjacent to the Caboolture River

In the NEBP Supplementary Report on Coastal Processes, presented as Appendix E to the NEBP Supplementary EIS, it is indicated that the dredging of an entrance channel from the mouth of the Caboolture River into Moreton Bay would not adversely impact of sediment supply to the sand banks and beaches adjacent to the Caboolture River mouth, which provide important forage habitat for migratory waders and shorebirds.

In respect of potential indirect impacts associated with dredging operations it is noted that the migratory wader and shorebird populations of Moreton Bay, including those that utilise the Caboolture River, are habituated to various forms of human-related disturbance associated with activities that are carried out within, over and adjacent to Moreton Bay. For example the identified critical high tide roost site located nearest to the Caboolture River navigation channel is immediately adjacent to the Bribie Island Water Treatment Plant, a commercial boat repair/maintenance facility, and a public boat ramp. These existing uses of land immediately adjacent to a critical high tide roost site are uses and activities that generate a range of noise emissions and other potential forms of disturbance that have the potential to impact on roosting migratory waders and shorebirds. The fact that migratory waders and shorebirds co-exist with these uses provides further evidence of the ability of these species to tolerate various forms and levels of human-based disturbance.

As such the potential for dredging operations to create a level of disturbance that is of sufficient magnitude and/or frequency to significantly affect migratory waders and shorebirds using adjacent sectors of Caboolture River is remote. This potential for adverse impacts will be further reduced by the facts that:

- dredging operations would, to the extent practicable, be scheduled to avoid periods of time when critical high tide roost site are being utilised; and

- the dredging operations would be monitored, in the manner specified in Environmental Monitoring Program presented as Appendix I of the Supplementary EIS, to determine whether dredging operations are affecting migratory waders and other shorebird usage of adjacent habitat resources within and adjacent to the Caboolture River.

In summary, available evidence indicates that the dredging operations that would be carried out in association with the proposed NEBP development are unlikely to have a significant impact on forage or roosting habitat for migratory waders and shorebirds that inhabit Moreton Bay.

4. MORETON BAY RAMSAR WETLAND

Several submissions to the NEBP EIS concerning matters of NES sought further analysis and discussion of the potential impacts of the NEBP development with regard to the ecological character and listing criteria of the Moreton Bay Ramsar Wetland, including:

- additional information concerning the proposed measures for the management of acid sulphate soils to mitigate impacts to matters of NES, particularly the values of the Ramsar listed wetlands of Moreton Bay;
- additional detail and discussion concerning how the proposed stormwater management regime will mitigate impacts on matters of NES, including proposed water quality monitoring programs; and
- additional information concerning the proposed measures for the control of weeds and pests, and how such measures intend to mitigate the impacts on the Ramsar listed wetlands of Moreton Bay.

As detailed in Section 2 and Appendix A of this report, a comprehensive set of environmental management and monitoring programs is proposed as part of the NEBP development to ensure that unacceptable adverse environmental impacts are not caused as a result of:

- the inappropriate management of acid sulfate soils during the construction and operational phases of the NEBP development;
- the inappropriate management of stormwater run-off from the NEBP site during both the construction and operational phases of development; and
- a failure to manage existing infestations of pest species located on the site and the potential for new pest species, both aquatic and terrestrial, to be introduced into the site locality during the construction and operational phases of the NEBP development.

In addition to this information a further analysis and discussion of the of the potential impact of the NEBP upon the Ramsar listed wetlands of Moreton Bay is provided below with specific reference to values that originally lead to the listing of Moreton Bay under the provisions of the Ramsar Convention.

The specific Ramsar Criteria under which Moreton Bay was listed as a wetland of international significance, which occurred prior to May 1999, are summarised in Table 2.

Table 3 Ramsar Criteria under which Moreton Bay was listed as a Wetland of International Significance

Ramsar Criteria	Ecological Values satisfying listing criteria
Criterion 1. Criteria for representative or unique wetlands A wetland should be considered internationally important if: (a) it is a particularly good representative example of a natural or near-natural wetland, characteristic of the appropriate biogeographical region; or (b) it is a particularly good representative example of a natural or near-natural wetland, common to more than one biogeographical region; or (c) it is a particularly good representative example of a	1b - Moreton Bay is one of the largest estuarine bays in Australia which are enclosed by a barrier island of vegetated sand dunes. 1c - Moreton Bay plays a substantial role in the natural functioning of a major coastal system through its protection from oceanic swells providing habitat for wetland development, receiving and channelling the flow of all rivers and creeks east of the Great Dividing Range from the McPherson Range in the south to the north of the D'Aguilar Range.

Ramsar Criteria	Ecological Values satisfying listing criteria
wetland which plays a substantial hydrological, biological or ecological role in the natural functioning of a major river basin or coastal system, especially where it is located in a trans-border position; or (d) it is an example of a specific type of wetland, rare or unusual in the appropriate biogeographical region.	
Criterion 2. General criteria based on plants or animals A wetland should be considered internationally important if: (a) it supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies of plant or animal, or an appreciable number of individuals of any one or more of these species; or (b) it is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna; or (c) it is of special value as the habitat of plants or animals at a critical stage of their biological cycle; or (d) it is of special value for one or more endemic plant or animal species or communities.	2a - Moreton Bay supports appreciable numbers of the vulnerable green and hawksbill turtles, the endangered loggerhead turtle and is ranked among the top ten dugong habitats in Queensland. 2b - Moreton Bay supports over 355 species of marine invertebrates, at least 43 species of shorebirds, 55 species of algae associated with mangroves, seven species of mangrove and seven species of seagrass 2c - It is a significant feeding ground for green turtles and is a feeding and breeding ground for dugong. The Bay also has the most significant concentration of young and mature loggerhead turtles in Australia
Criterion 3. Specific criteria based on waterfowl A wetland should be considered internationally important if: (a) it regularly supports 20,000 waterfowl; or (b) it regularly supports substantial numbers of individuals from particular groups of waterfowl, indicative of wetland values, productivity or diversity; or (c) where data on populations are available, it regularly supports 1% of the individuals in a population of one species or subspecies of waterfowl.	3a - Moreton Bay supports more than 50,000 wintering and staging shorebirds during the non-breeding season. 3b - At least 43 species of shorebirds use intertidal habitats in the Bay, including 30 migratory species listed by JAMBA and CAMBA. 3c - The Bay is particularly significant for the population of wintering Eastern curlews (3,000 to 5,000) and the Grey-tailed tattler (more than 10,000), both substantially more than 1% of the known Flyway population.

The potential for the NEBP development to have a significant impact on the specific values of Moreton Bay which formed the basis for its listing under the Ramsar convention are considered to be low. The specific reasons for this assessment are summarised in Table 3.

Table 4 NEBP Development Impacts to Moreton Bay Ramsar listing criteria values

Ramsar listing criteria values	Impact Analysis and Discussion
1b - Moreton Bay is one of the largest estuarine bays in Australia which are enclosed by a barrier island of vegetated sand dunes.	The NEBP development will not have any impact upon this Ramsar value of Moreton Bay.
1c - Moreton Bay plays a substantial role in the natural functioning of a major coastal system through its protection from oceanic swells providing habitat for wetland development,	The NEBP development will not have any discernible impact upon this value of Moreton Bay. In this respect it is noted that: • the catchment of the Caboolture River (i.e. 590km^2) represents a relatively small proportion of the total catchment of Moreton Bay (i.e. 22,000 km^2);

Ramsar listing criteria values	Impact Analysis and Discussion
receiving and channelling the flow of all rivers and creeks east of the Great Dividing Range from the McPherson Range in the south to the north of the D'Aguilar Range.	• the NEBP development, including the dredging operations within the Caboolture River, will affect a small portion of the Caboolture River and associated flood plain; and • the NEBP development will not interfere with nor modify the natural functioning of the Caboolture River in a manner that will have a discernible impact on the natural functioning of Moreton Bay.
2a - Moreton Bay supports appreciable numbers of the vulnerable green and hawksbill turtles, the endangered loggerhead turtle and is ranked among the top ten dugong habitats in Queensland. 2c - It is a significant feeding ground for green turtles and is a feeding and breeding ground for dugong. The Bay also has the most significant concentration of young and mature loggerhead turtles in Australia	Appendix D of the Report on Matters of National Environmental Significance (January 2008) provides profile for each of these significant marine reptile and mammals, including an assessment of the potential for the NEBP to have a significant adverse impact on the individual species. Therein it is concluded that the NEBP development is unlikely to have a significant adverse impact on these species. Further in this respect the Moreton Bay Zoning Map identifies areas of important habitat for marine turtles and/or dugong within Moreton Bay. The Caboolture River and adjacent sectors of Moreton Bay are not recognised as being areas of particular importance to marine turtles and/or dugong. The Moreton Bay Zoning Map can be accessed online at: www.epa.qld.gov.au/media/parks_and_forests/mbzonemap.pdf The potential for adverse indirect impacts upon the marine turtle and dugong populations will be appropriately mitigated and managed via a combination of: • existing statutory regulations that govern the use of Moreton Bay Marine Park; and • the environmental management and monitoring programs that form an integral part of the NEBP development and which are discussed in Section 2 of this report.
2b - Moreton Bay supports over 355 species of marine invertebrates, at least 43 species of shorebirds, 55 species of algae associated with mangroves, seven species of mangrove and seven species of seagrass.	The NEBP development will not have any significant impact upon the biological diversity of Moreton Bay. Actual physical disturbance to the Ramsar listed sections of Moreton Bay will be limited to: • the breaching of the banks of the Caboolture River to establish an entrance to the marina basin; and • dredging of an existing navigation channel within the Caboolture River; and • an increase in boating traffic within the Caboolture River and adjacent sectors of Moreton Bay. None of these activities will result have an adverse effect on the biodiversity of Moreton Bay. The NEBP development also involves a substantial program of revegetation and habitat offset works, primarily along the banks of the Caboolture River and associated on-site tributaries. This aspect of the NEBP development will have positive biodiversity implications at a local scale. The potential for the NEBP development to have adverse indirect impacts upon the biodiversity values of Moreton Bay will be appropriately mitigated and managed via a combination of: • existing statutory regulations that govern the use of Moreton Bay Marine Park; and • the environmental management and monitoring programs that form an integral part of the NEBP development and which are discussed in Section 2 of this report.
3a - Moreton Bay supports more	For the reasons specified in the Report on Matters of National

Ramsar listing criteria values	Impact Analysis and Discussion
than 50,000 wintering and staging shorebirds during the non-breeding season.	Environmental Significance (January 2008) and in Section 3 of this report, the proposed NEBP development is unlikely to have a significant impact upon the migratory wader and shorebird habitat values of Moreton Bay.
3b - At least 43 species of shorebirds use intertidal habitats in the Bay, including 30 migratory species listed by JAMBA and CAMBA.	
3c - The Bay is particularly significant for the population of wintering Eastern curlews (3,000 to 5,000) and the Grey-tailed tattler (more than 10,000), both substantially more than 1% of the known Flyway population.	

In summary, the NEBP development in the presence of the proposed environmental management and monitoring programs is not likely to have a significant impact on the values of the Moreton Bay that were the basis for its listing as a wetland of international significance under the provisions of the Ramsar Convention.

5. OFFSET BENEFITS TO EPBC ACT LISTED SPECIES

Submissions to the NEBP EIS concerning matters of NES sought further discussion of the benefit of vegetation offsets to EPBC listed species, including details concerning the location, size, condition, and security of tenure and active management arrangements of the proposed offset. A response to such submissions is provided below.

An integral component of the NEBP development is the provision of environmental offsets to compensate for the clearance of some areas of existing vegetation and fauna habitat that is required for the NEBP development to proceed. In this respect a vegetation offset, provided in accordance with Department of Natural Resources and Water's *Policy for Vegetation Management Offsets - 23 August 2007,* is proposed in respect of the clearance of approximately 13 ha of remnant vegetation in the south-western sector of the site.

The Proponent has now secured an appropriate offset for the proposed clearance of remnant vegetation at the NEBP site and details concerning the location and nature of the offset are provided in a Vegetation Offset Proposal Report (February 2008) prepared by Greening Australia (Qld) Inc, and presented as Appendix K to the Supplementary EIS. The proposed offset site is located at Rosewood in south-east Queensland and is approximately 40 ha in extent. The offset proposal involves the on-going management of the subject offset site, which currently does not support remnant vegetation due to the impact of past land clearance episodes and current land uses, such that remnant vegetation is established. The particular forms of remnant vegetation that are proposed to be established within the offset area are:

- RE 12.3.3 - Floodplain (other than floodplain wetlands). *Melaleuca irbyana* low open-forest or thicket. Emergent trees may be present e.g. *Eucalyptus moluccana*, *E. crebra, E. tereticornis* and *Corymbia citriodora*. *Casuarina glauca* or *Acacia harpophylla* occasionally present. Occurs on Quaternary alluvial plains.
- RE 12.9-10.11 - *Melaleuca irbyana* low open-forest or thicket. Emergent trees may be present e.g. *Eucalyptus moluccana*, *E. crebra* and *E. tereticornis*. *Casuarina glauca* or *Acacia harpophylla* occasionally present. Occurs on Cainozoic and Mesozoic sediments.
- RE 12.9-10.7- *Eucalyptus crebra, E. tereticornis* ± *Corymbia tessellaris, Angophora spp., E. melanophloia* woodland. Occurs on Cainozoic and Mesozoic sediments. Major vegetation communities include: 12.9-10.7a: *Eucalyptus tereticornis, E. siderophloia* and/or *E. crebra, Corymbia intermedia* and *Lophostemon suaveolens* woodland. Occurs on Cainozoic and Mesozoic sediments.

In addition to providing the offsets required to achieve the environmental outcomes sought by the *Vegetation Management Act 1999*, the offset proposal will provide benefits to various matters of National Environmental Significance. In this respect it is noted that:

1. both RE12.3.3 and RE12.9-10.11 are recognised as being types of Swamp Tea-tree Forest in South-east Queensland which is listed as a *critically endangered* ecological community pursuant to the EPBC Act;
2. the offset proposal will secure and provide resources for the appropriate long-term management of an existing patch of Swamp Tea-tree Forest (RE12.9-10.11), that is approximately 6.5 ha in extent, situated in the south of the site;
3. the offset proposal will increase the extent of Swamp Tea-tree Forest on the site by approximately 40 ha; and
4. the management and expansion of Swamp Tea-tree Forest on the site will also benefit a number of threatened and migratory species that are considered likely to occur in the site locality, as indicated by the results of an EPBC Act Protected Matters Search Tool and Wildlife On-line database search results for a 5km radius of the proposed offset site.

In respect of the potential benefits to EPBC Act listed species Table 4 provides a list of non-marine *EPBC Act* listed species that, according to the EPBC Act Protected Matters Search Tool, have the potential to occur in the locality of the Ipswich offset site and/or the NEBP development site. From Table 4 it is clear that the proposed off-site offset will provide potential benefits for many of the listed wildlife species that will be potentially affected by the NEBP development.

Table 5 *EPBC Act* listed species considered to have a potential to occur in the locality of the Ipswich offset site and/or the NEBP site

Scientific Name	Common Name	Status	Ipswich	NEBP
Cyclopsitta diophthalma coxrni	Coxen's Fig-parrot	Endangered	✓	✓
Erythrotriorchis radiatus	Red goshawk	Vulnerable	✓	✓
Geophaps scripta scripta	Squatter pigeon	Vulnerable	✓	✓
Lathamus discolor	Swift parrot	Endangered	✓	✓
Rostratula australis	Australian Painted snipe	Vulnerable	✓	✓
Turnix melanogaster	Black-breasted button-quail	Vulnerable	✓	✓
Xanthomyza phrygia	Regent honeyeater	Endangered	✓	✓
Mixophyes iteratus	Southern Barred frog	Endangered	✓	✓
Nannoperca oxleyana	Oxleyan pygmy perch	Endangered		✓
Chalinolobus dwyeri	Large-eared pied bat	Vulnerable	✓	✓
Potorous tridactylus tridactylus	Long-nosed Potoroo	Vulnerable	✓	✓
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	✓	✓
Xeromys myoides	Water mouse	Vulnerable		✓
Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	Vulnerable	✓	✓
Delma torquata	Collared delma	Vulnerable	✓	
Furina dunmalli	Dunmall's Snake	Vulnerable	✓	
Bosistoa selwynii	Heart-leaved Bosistoa	Vulnerable	✓	✓
Bosistoa transversa	Three-leaved Bosistoa	Vulnerable	✓	✓
Cryptostylis hunteriana	Leafless Tongue-orchid	Vulnerable	✓	✓
Notelaea lloydii		Vulnerable	✓	
Sophora fraseri		Vulnerable	✓	
Stemmacantha australis	Native thistle	Vulnerable	✓	
Taeniophyllum muelleri	Minute orchid	Vulnerable	✓	
Thesium austral	Austral toadflax	Vulnerable	✓	
Acacia attenuata		Vulnerable		✓
Anthraxon hispidus	Hairy joint grass	Vulnerable		✓
Dodonaea rupicola		Vulnerable		✓
Macadamia integrifolia	Macadamia nut	Vulnerable		✓
Macadamia ternifolia	Small-fruited Queensland nut	Vulnerable		✓
Phaius australis	Lesser swamp orchid	Endangered		✓
Haliaeetus leucogaster	White-bellied sea-eagle	Migratory	✓	✓
Hirundapus caucacutus	White throated needletail	Migratory	✓	✓
Merops ornatus	Rainbow bee-eater	Migratory	✓	✓
Monarcha melanopsis	Black-faced monarch	Migratory	✓	✓
Monarcha trivirgatus	Spectacled monarch	Migratory	✓	✓
Myiagra cyanoleuca	Satin flycatcher	Migratory	✓	✓
Rhipidura rufifrons	Rufous fantail	Migratory	✓	✓
Xanthomyza phrygia	Regent honeyeater	Migratory	✓	✓
Ardea alba	Great egret	Migratory	✓	✓
Ardea ibis	Cattle egret	Migratory	✓	✓
Arenaria interpres	Ruddy turnstone	Migratory		✓
Calidris ferruginea	Curlew sandpiper	Migratory		✓
Charadrius mongolus	Lesser sand plover	Migratory		✓
Gallinago hardwickii	Latham's snipe	Migratory	✓	✓
Hetroscelus brevipes	Grey-tailed tattler	Migratory		✓
Limosa lapponica	Bar-tailed godwit	Migratory		✓
Nettapus coromandelianus albipennis	Australian cotton pygmy goose	Migratory	✓	✓
Numenius madagascariensis	Eastern curlew	Migratory		✓
Numenius phaeopus	Whimbrel	Migratory		✓
Pluvialis fulva	Pacific golden plover	Migratory		✓
Rostratula benghalensis	Painted snipe	Migratory	✓	✓

Scientific Name	Common Name	Status	Ipswich	NEBP
Xenus cinerus	Terek sandpiper	Migratory		✓
Apus pacificus	Fork-tailed swift	Migratory	✓	✓
Ardea alba	Great egret	Migratory	✓	✓
Ardea ibis	Cattle egret	Migratory	✓	✓
Calonectris leucomelas	Streaked shearwater	Migratory		✓
Macronectes giganteus	Southern giant petrel	Migratory		✓
Macronectes halli	Northern giant petrel	Migratory		✓
Puffinus leucomelas	Streaked shearwater	Migratory		✓
Sterna albifrons	Little tern	Migratory		✓
Thalassarche impavida	Campbell albatross	Migratory		✓

Additional details concerning the location, size, condition, security of tenure and active management arrangements for the proposed offset are provided in Appendix K of the NEBP Supplementary EIS.

Note:

The Department of Environment, Water, Heritage and the Arts' comments concerning some inconsistencies in the reporting of the extent of remnant vegetation that would be affected by the NEBP development are noted. As a matter of clarification these discrepancies are attributed to a typographic error with the correct area being approximately thirteen (13) hectares rather than the one point three (1.3) hectares cited in certain sectors of the EIS.

6. CONCLUSIONS

This Addendum to the Report on Matters of National Environmental Significance (NES) has been prepared as part of the Supplementary EIS and provides additional information concerning:

1. the role of the various environmental management and monitoring programs proposed as part of the NEBP development in mitigating potential adverse impacts on matters of NES;

2. the impact of dredging operations, increased boating traffic and associated human disturbance on migratory waders, particularly shorebirds utilising the high tide roost sites on or near the Caboolture River;

3. the potential impacts of the NEBP development with regard to the ecological character and listing criteria of the Moreton Bay Ramsar Wetland; and

4. the potential benefits of vegetation offsets to EPBC Act listed species, including details concerning the location, size, condition, and security of tenure and active management arrangements of the proposed offset.

The additional information presented in this report reinforces the conclusions of the Report on Matters of National Environmental Significance (January 2008) that was presented as Appendix L3 of the NEBP EIS. In this respect it is concluded that in the presence of the proposed environmental management and monitoring regime, the construction and operation of the NEBP development is unlikely to have a significant adverse impact of matters of NES.

APPENDIX A

Amended Compliance Assessment Tables 1 to 5

TABLE 1: *Compliance Assessment in respect of the EPBC Act performance criteria dealing with Ramsar wetlands of international importance.*

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
The action should not result in areas of the wetland being destroyed or substantially modified.	*The NEBP development will not result in the destruction of any areas of the Ramsar listed wetlands of Moreton Bay.* *Some physical modifications to the Caboolture River will occur as a consequence of the dredging of the existing navigation channel and the construction of the marina entrance. The nature and scale of these modifications is not considered to be such that there would be any discernible impact upon the key ecological characteristics of the Ramsar listed wetlands.* *The NEBP site layout and development proposal, which largely occur outside of the formal boundaries of the Ramsar wetland, does make substantial provision for the appropriate management of on-site wetland habitats that contribute to the Ramsar values of adjacent sectors of the Caboolture River.* <u>Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Dredging SBMP – Section 8 and Elements 4, 5, 6 and 10. • Construction Environmental Management Plan (CEMP) - Elements 3, 4, 5 and 6. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1,3 and 4. • Environmental Monitoring Program – Section 3.
The action should not result in a substantial and measurable change in the hydrological regime of the wetland for example, a substantial change to the volume, timing, duration and frequency of ground and surface water flows to and within the wetland.	*The NEBP development has been specifically designed to minimise alterations to the hydrology and water qualities of the Caboolture River and Moreton Bay. In this respect the following aspects of the NEBP proposal are noted:* • *the proposed marina is to be physically isolated from the Caboolture River via a lock structure to avoid any significant change to the tidal prism of the Caboolture River; and* • *the NEBP site development has been specifically designed to minimise alterations to flood flow levels within the Caboolture River, both upstream and downstream of the site.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Stormwater Management Plan (SMP) – Sections 5 and 6. • Dredging SBMP – Section 8 and Element 10. • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) –

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
	Section 4 and Elements 1 and 3. • Environmental Monitoring Program – Section 3.1.2 and 3.2.10
The action should not result in the habitat or lifecycle of native species dependant upon the wetland being seriously affected.	*The NEBP development will not result in the habitat or lifecycle of native species dependant upon the wetland being seriously affected. Additional consideration of the potential impact of the NEBP proposal upon wetland dependent species is provided in Sections 4.2 to 4.5 herein.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Dredging SBMP – Section 8 and Elements 6. • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1 and 8. • Environmental Monitoring Program – Section 3.1.4, 3.1.5, 3.1.7, 3.2.12, 3.2.13 and 3.2.14.
The action should not result in a substantial and measurable change in the physico-chemical status of the wetland for example, a substantial change in the level of salinity, pollutants, or nutrients in the wetland, or water temperature which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	*The NEBP is not likely to result in any substantial changes in the physico-chemical status of the Caboolture River and Moreton Bay that would adversely impact on biodiversity, ecological integrity, social amenity or human health. In this respect the NEBP development would be carried out in accordance with a number of detailed environmental management plans that have been developed to specifically address water quality issues associated with the construction and operational phases of development.* *In fact the overall intent of the NEBP development is to achieve an improvement in the qualities of water that currently enter the Caboolture River from the site.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Stormwater Management Plan (SMP) – Sections 5 and 6. • Acid Sulfate Soil Management Plan (ASSMP) - Sections 8 and 9. • Dredging SBMP – Section 8 and Elements 4, 5, 8 and 9. • Marina SBMP – Sections 6.3, 6.4, 6.5, 6.7, 6.8, 6.9 and 6.10 . • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1, 4, 5, 6 and 7.

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
	• Environmental Monitoring Program – Section 3.1.1 and 3.2.9.
The action should not result in an invasive species that is harmful to the ecological character of the wetland being established in the wetland.	*The NEBP development will not result in an invasive species that is harmful to the ecological character of the Caboolture River or Moreton Bay being established in the wetland. In fact the NEBP development will provide means of:* *a. actively managing existing infestations of pest flora and fauna species that occur within the NEBP site and which are having an adverse impact on the ecological character of the site locality; and* *b. ensuring that the potential for invasive marine species to be introduced to the locality is minimised by establishing a state of the art marina facility with best practice environmental management.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Dredging SBMP – Section 8 and Element 6. • Marina SBMP – Section 6.5.3. • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1, 8 and 9. • Environmental Monitoring Program – Section 2.1.6, 2.1.9, 2.2.17, and 2.2.19.

TABLE 2: *Compliance Assessment in respect of the EPBC Act performance criteria dealing with threatened terrestrial species.*

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
The action should not lead to a long-term decrease in the size of a population.	*The NEBP development is not likely to cause a long-term decrease in the size of any population of any threatened terrestrial species.* *The NEBP proposal provides opportunities, via a combination of habitat retention and enhancement, for enhancing the long-term viability of local populations of a number of threatened wildlife species such as Lesser Swamp Orchid (Phaius australis) and Australian Fritillary (Argyreus hyperbius inconstans).* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1 and 8. • Environmental Monitoring Program – Section 2.1.9, 2.1.10, 2.2.19, 2.2.20, 3.1.7, 3.2.14.
The action should not reduce the area of occupancy of the species.	*The NEBP development is not likely to reduce the area of occupancy of any threatened terrestrial species.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1 and 8. • Environmental Monitoring Program – Section 2.1.9, 2.1.10, 2.2.19, 2.2.20, 3.1.7, 3.2.14.
The action should not fragment an existing population into two or more populations.	*The NEBP development is not likely to fragment an existing population of any threatened terrestrial species into two or more populations.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1 and 8. • Environmental Monitoring Program – Section 2.1.9, 2.1.10,

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
	2.2.19, 2.2.20, 3.1.7, 3.2.14.
The action should not adversely affect habitat critical to the survival of a species.	*The NEBP development is not likely to adversely affect habitat critical to the survival of a threatened terrestrial fauna species.* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1 and 8. • Environmental Monitoring Program – Section 2.1.9, 2.1.10, 2.2.19, 2.2.20, 3.1.7, 3.2.14.
The action should not disrupt the breeding cycle of a population.	*The NEBP development is not likely to disrupt the breeding cycle of a population of any threatened terrestrial species.* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1 and 8. • Environmental Monitoring Program – Section 2.1.9, 2.1.10, 2.2.19, 2.2.20, 3.1.7, 3.2.14.
The action should not modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	*The NEBP development is not likely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that a threatened terrestrial species is likely to decline.* *The NEBP proposal provides opportunities, via a combination of habitat retention and enhancement, for improving the long-term viability of local populations of a number of threatened terrestrial wildlife species such as Lesser Swamp Orchid (Phaius australis) and Australian Fritillary (Argyreus hyperbius inconstans).* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1 and 8. • Environmental Monitoring Program – Section 2.1.9, 2.1.10, 2.2.19, 2.2.20, 3.1.7, 3.2.14.

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
The action should not result in invasive species that are harmful to a threatened species becoming established in the species´ habitat.	*The NEBP proposal will result in the active management of weeds and vertebrate pest species that currently exist on the NEBP site and which are likely contributors to the general absence of threatened terrestrial species on the NEBP site.* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1, 8 and 9. • Environmental Monitoring Program – Section 2.1.6, 2.1.9, 2.2.17, and 2.2.19.
The action should not interfere with the recovery of the species.	*The NEBP would no interfere with the recovery of any threatened terrestrial species and has the capacity to make a positive contribution towards the recovery of populations of several threatened terrestrial species via a combination of habitat retention, habitat enhancement and environmental education.* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1 and 8. • Environmental Monitoring Program – Section 2.1.9, 2.1.10, 2.2.19, 2.2.20, 3.1.7, 3.2.14.

TABLE 3: *Compliance Assessment in respect of the EPBC Act performance criteria dealing with threatened marine species.*

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
The action should not lead to a long-term decrease in the size of a population.	*It is unlikely that a viable local population of any of the listed species exists in the section of the Caboolture River potentially affected by the proposed marina. Most of the listed species would forage there only occasionally. Given that potential impacts of the proposed marina to the ecology of the river, and the potential of vessel-strike to large fauna, would be minimal and that viable local populations of threatened species are unlikely to occur, the proposal should not lead to a long-term decrease in the size of a population of any of the listed species.* *Honey blue-eye were not sampled as part of the investigations for the EIS, but it is possible that a viable population does occur in the Caboolture River. This species is likely to occur in freshwaters upstream of the weir and in the upper parts of some of the creeks (e.g. King John Creek, Goong Creek and Raff Creek). Raff Creek would be maintained as part of the proposed development thus, if honey blue-eye did occur there, their population should be conserved.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Dredging SBMP – Section 8 and Element 6. • Environmental Monitoring Program – Section 2.1.5, 2.1.6, 2.2.15, 2.2.16, 3.1.4, 3.15, 3.2.12 and 3.2.13.
The action should not reduce the area of occupancy of the species.	*Given that direct physical disturbance to the Caboolture River would be confined to the marina entrance, only a very small portion of the river, if any, would be removed. Potentially, disturbance from increased vessel traffic may cause some individuals to avoid the area but as threatened species are unlikely to reside in the area, or require it to breed, avoidance of the area would not constitute a significant reduction to the area of occupancy of any species.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Environmental Monitoring Program – Section 2.1.5, 2.1.6, 2.2.15, 2.2.16, 3.1.4, 3.15, 3.2.12 and 3.2.13.
The action should not fragment an existing population into two or more populations.	*The parts of the Caboolture River above and below the proposed marina would not be disconnected as a consequence of the proposal.*

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
	Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Environmental Monitoring Program – Section 2.1.5, 2.1.6, 2.2.15, 2.2.16, 3.1.4, 3.15, 3.2.12 and 3.2.13.
The action should not adversely affect habitat critical to the survival of a species.	*The Caboolture River could potentially provide foraging habitat for the threatened species listed above and potentially an area of residence for honey blue-eye (although this species is more generally found in freshwater). However, as the habitat is not critical to the survival of any of the listed species and potential impacts, if any, would be minimal, there would be no adverse effect.* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Stormwater Management Plan (SMP) – Sections 5 and 6; • Acid Sulfate Soil Management Plan (ASSMP) - Sections 8 and 9. • Marina SBMP – Section 6.6. • Environmental Monitoring Program – Section 2.1.5, 2.1.6, 2.2.15, 2.2.16, 3.1.4, 3.15, 3.2.12 and 3.2.13.
The action should not disrupt the breeding cycle of a population.	*Most of the species listed are unlikely to breed in the section of the Caboolture River potentially affected by the proposed development. Whilst not recorded during the study, honey blue-eye could potentially breed in the upper portion of Raff Creek. As this creek will be retained within the development, the action should have little or no effect on honey blue-eye, assuming that they may utilise Raff Creek.* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Marina SBMP – Section 6.6 . • Environmental Monitoring Program – Section 2.1.5, 2.1.6, 2.2.15, 2.2.16, 3.1.4, 3.15, 3.2.12 and 3.2.13.
The action should not modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent	*As described above, there would be little potential for the project to modify or destroy habitat used by threatened species. In addition, given that the listed threatened species would generally use the potentially affected area of the river*

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
that the species is likely to decline.	*occasionally only, it is unlikely that the proposal would cause a decline in a population of any of the species.* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Stormwater Management Plan (SMP) – Sections 5 and 6; • Acid Sulfate Soil Management Plan (ASSMP) - Sections 8 and 9. • Dredging SBMP – Section 8 and Element 6. • Marina SBMP – Section 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9 and 6.10 . • Environmental Monitoring Program – Section 2.1.5, 2.1.6, 2.2.15, 2.2.16, 3.1.4, 3.15, 3.2.12 and 3.2.13.
The action should not result in invasive species that are harmful to a threatened species becoming established in the species´ habitat.	*Construction and ongoing activity of the proposed development is unlikely to result in the establishment of invasive species in the area.* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Marina SBMP – Section 6.5.3. • Landscape Master Plan – Section 4.0. • Environmental Monitoring Program – Section 2.1.6, 2.1.9, 2.2.17, and 2.2.19.
The action should not interfere with the recovery of the species.	*Construction and ongoing activity of the proposed marina would not affect recovery plans for any of the listed threatened species.* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Marina SBMP – Section 6.5.3 and 6.6 . • Environmental Monitoring Program – Section 2.1.5, 2.1.6, 2.2.15, 2.2.16, 3.1.4, 3.15, 3.2.12 and 3.2.13.

TABLE 4: *Compliance Assessment in respect of the EPBC Act performance criteria dealing with terrestrial migratory species.*

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
The action should not substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species.	*The NEBP development will not modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species. In this respect specific consideration has been given in the design of the NEBP development.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Stormwater Management Plan (SMP) – Sections 5 and 6; • Acid Sulfate Soil Management Plan (ASSMP) - Sections 8 and 9. • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1 and 8. • Environmental Monitoring Program – Section 2.1.10, 2.2.19, 3.1.7 and 3.2.14.
The action should not result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species.	*The NEBP development will not result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species. In fact the NEBP development includes provisions for the control of weed and vertebrate pest species that currently occur on the site and which have the potential to degrade the locality's ecological values.* *Provision is also made within the NEBP management plans for the management of any new invasive species that may be identified.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1, 8 and 9. • Environmental Monitoring Program – Section 2.1.6, 2.1.9, 2.2.17, and 2.2.19.
The action should not seriously disrupt the lifecycle (breeding, feeding, migration or resting	*The NEBP development will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour)*

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
behaviour) of an ecologically significant proportion of the population of a migratory species.	*of an ecologically significant proportion of the population of a migratory species. In this respect the main aspect of the NEBP development that has a real potential to disrupt migratory shore birds is the dredging of the existing Caboolture River navigation channel. In this respect it is noted that significant adverse impacts will be avoided by restricting the timing of dredging activities to avoid periods of the year when migratory shore birds are residing in the site locality (i.e. September to March). When dredging cannot be avoided during this period, dredging will be avoided during high tide periods if the adjacent critical high tide roost site is being utilised.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1 and 8. • Environmental Monitoring Program – Section 2.1.10, 2.2.19, 3.1.7 and 3.2.14.

TABLE 5: *Compliance Assessment in respect of the EPBC Act performance criteria dealing with marine migratory species.*

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
The action should not substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species.	*As migratory species are likely to occur only occasionally in the Caboolture River, the river is not considered to provide important habitat to migratory marine species. Given the limited potential of the proposal to affect the ecology of the river it is considered that any potential effects to the habitat of migratory species would be negligible, if any. Further, the proposal would have potential to improve habitat by reducing current anthropogenic nutrient input to the river (see above) and to enhance flushing capabilities by restoring the entrance profile to previous depths.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Stormwater Management Plan (SMP) – Sections 5 and 6; • Acid Sulfate Soil Management Plan (ASSMP) - Sections 8 and 9. • Dredging SBMP – Section 8 and Elements 4, 5, 7,8 and 10. • Marina SBMP – Sections 6.3, 6.4, 6.5, 6.7, 6.8, 6.9 and 6.10 . • Environmental Monitoring Program – Section 3.1 and 3.2.
The action should not result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species.	*Construction and ongoing activity of the proposed marina is unlikely to result in the establishment of invasive species in the area that would be harmful to migratory species.* <u>Relevant Environmental Management and Monitoring Linkages</u> The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Marina SBMP – Section 6.5.3. • Landscape Master Plan – Section 4.0. • Construction Environmental Management Plan (CEMP) – Section 4 and Elements 1, 8 and 9. • Environmental Monitoring Program – Section 2.1.6, 2.1.9, 2.2.17, and 2.2.19.
The action should not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the	*In the worst case, individuals occasionally foraging or resting in the Caboolture River have potential to be injured or, at the least, disturbed by the increased boat traffic that would occur under the proposal. However, given that these instances are most likely to be rare and would only involve*

Significant Impact *Performance Criteria*	***Response* and Specific Environmental Management Monitoring Linkages**
population of a migratory species.	*a few individuals at most from a population, this would not be an ecologically significant proportion of the population.* Relevant Environmental Management and Monitoring Linkages The following NEBP environmental management and monitoring programs, and the specific sections/elements noted, are designed to ensure that this type of significant impact is not realised: • Dredging SBMP – Section 8 and Element 6. • Marina SBMP – Section 6.6. • Environmental Monitoring Program – Section 2.1.6, 2.2.17, 3.1.5 and 3.2. 13.