Submission

to the Queensland Government – Department of State Development, Infrastructure and Planning

on the Environmental Impact Statement for the Abbot Point Growth Gateway Project

by

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Executive Summary

We are considerably encouraged by decisions not to dump dredged materials in the Caley Valley wetlands, the primary focus of our previous submission for the Abbot Point Growth Gateway Project. We are also concerned about dredging in the Great Barrier Reef Marine Park but support no dumping of dredging in this area. We are also less critical about the level of information provided into this project, particularly in relation to modelling of hydrology.

However, we retain concerns about the potential impact of the development on the nationally important wetland , the Caley wetlands (listed on the Directory of Important Wetlands in Australia), a significant community of migratory shorebirds, the endangered Australian painted snipe and the Great Barrier Reef World Heritage Area. Since the last assessment of the environmental impact of this project, two further migratory species found in the Cayley wetlands are now listed as critically endangered: the curlew sandpiper (*Calidris ferruginea*) and the eastern curlew (*Numenius madagascariensis*). The importance of the Caley Valley wetlands and the potential impacts of this project include:

- The Caley wetlands are nationally important for their complex mixture of wetland vegetation, extensive area, support of up to nearly 50,000 waterbirds, up to an estimated 1709 migratory individual shorebirds, a significant population of the endangered painted snipe and 36 species of fish supported by a complex catchment system. They would qualify as a wetland of international importance under the Ramsar Convention.
- The proposal will impact on the hydrology and water quality of the wetlands through the interactions between groundwater and stormwater into the wetland, affecting the wetland ecosystem, its functioning and its waterbirds, including migratory shorebirds and other organisms (fish, frog species, turtles, invertebrates, native vegetation).
- There remains concern about the potential pollution of the wetland with leakage from the levees of dredge material.
- The diversion of stormwater directly into the wetland poses a considerable long-term risk given the potential mobilisation of acidity from acid sulfate soils and heavy metals, driven by extreme rainfall and wave action events.
- Dredging of the port in the Great Barrier Reef World Heritage Area will mobilise fine sediment which will affect marine ecosystems and their fauna and flora, including coral reefs.
- Operation of the port will increase accidents with marine fauna, including whales and turtles, as well as increasing pollution.

The UNSW Centre for Ecosystem Science offers four key recommendations to reduce the impact of the project on the nationally important wetlands, the migratory shorebirds or the Great Barrier Reef World Heritage Area:

1. Establish a suitable drainage network around the development and build a storage on site which diverts leakage and stormwater, allowing for the capture of potential pollutants. The water should be regularly tested to ensure that no pollutants which might affect the viability of the wetlands and its shorebirds are discharged into the natural environment. Discharge of this water could then occur at a time when it is least likely to impact on shorebird populations;

2. Given the importance of the area for migratory shorebirds and the likely impact of initial development works in the area, which will include disturbance and dust mobilisation, the timing of construction works should occur when migratory shorebirds are predominantly in the northern hemisphere (i.e. May –August).
3. The Queensland Government must implement best practice rehabilitation works when removing the western bund and causeway to improve flushing of the wetlands.
4. It is vital that rigorous data is collected on shorebird populations wetland function, water quality and also potential pollutants (i.e. heavy metals, acidity), for a significant period (c. 1-2 years) prior to, during and after construction works A long-term environmental monitoring project should also be initiated, and all data collected should be made publically available for the duration of the monitoring period.

The Centre for Ecosystem Science

The Centre for Ecosystem Science (UNSW, Australia) has a range of expertise and a track record in wetlands and shorebird ecology, including monitoring and assessment. It also completed an aerial survey of the Cayley Valley wetlands in 2008. This submission represents the background expertise and knowledge of wetlands and shorebirds and the range of threats which affect these ecosystems and organisms.

Introduction

The Queensland Government's Abbot Point Growth Gateway Project aims to develop the port while maintaining the viability of the adjacent wetlands and Great Barrier Reef. As such, the Queensland Government has provided "Preliminary Assessment Reports" relevant to the Abbot Point Gatewy Project, currently inviting public comment. The material provided consists of impact assessments of these two developments on the Abbot Point wetland ecosystem and the Great Barrier Reef World Heritage Area.

As the series of Environmental Impacts have stated, the Abbot Point Growth Gateway Project is expected to have short and long-term impacts on several Matters of National Environmental Significance. Our submission focuses on key concerns for these matters and, by critically reviewing information provided in the Environmental Impact Statements for two key issues (1) The state, structure and function of the Caley Valley Wetlands and (2) birdlife of the wetlands, with a particularly focus on migratory shorebirds and other waterbirds.

Caley Valley Wetland Ecosystem

Values

The Caley Valley Wetlands are listed in the Directory of Important Wetlands in Australia. They cover about 5,154ha, making them one of the largest intact wetland systems between Townsville and Bowen. They support a salinity gradient that includes a mosaic of freshwater, brackish and marine habitats and their dependent native biota. Tidal regimes influence the western part of the wetlands, reaching a maximum of 2.4m at Abbot Point. The salinity of wetland ranges from turbid freshwater during floods to seawater salinity during dry periods. The wetlands fluctuate seasonally, expanding to up to 18km by 6km wide during the wet season and drying out during the dry season. Based on an assessment by the Queensland Government, only 0.3% of the wetland is considered artificial or highly modified (http://wetlandinfo.ehp.qld.gov.au/wetlands/facts-maps/diwa-wetland-abbot-point-caley-valley/). The wetlands have high nutrient levels indicative of high productivity, measured at nine sites across the wetlands (Oct-Nov, 2010).

The wetlands provide habitat for a range of animals and plants. There are "up to fifty species of mammal and reptile (including introduced species)…in and adjacent to the wetland". There are two species of freshwater turtle in the wetland and eleven frog species. Ecosystem types within the wetlands include mudflats, forblands, grasslands and woodland as well as freshwater wetlands. The wetland ecosystem also supports a diverse bird community (see next Section, migratory shorebirds and waterbirds).

The Caley Valley Wetlands are also important for fisheries of economic value. They provide 'high quality habitat for fisheries of significance as well as a range of threatened and migratory species'. There are 36 fish species, including only one introduced species (mosquito fish *Gambusia holbrooki*). These include marine and estuarine species, and the fish community is dominated by small bodied and juvenile fish. Some of these fish use marine and freshwater environments. Nine species are found in the wetland system. Several crustaceans of economic value occur within the wetland system, including several prawn species (e.g. banana prawn *Penaeus mareguiensis*) and mud crabs. The western estuary, coastal zones and Saltwater Creek are particularly important fisheries habitat.

Risks

The potential risks to the wetland, compared to the previous proposal of 2014, are considerably reduced, given that the hydrology is largely intact. However, several key risks remain:

1. There will be inevitable changes to the hydrology of the wetlands, given the new structures established and interaction with the wetland through stormwater, leakage and groundwater and surface water interactions. It is not clear how much this risks the habitats of the shorebirds and other aquatic organisms dependent on the wetland but they are increased.
2. Pollution (i.e. altered water quality from natural) continues to be one of the most serious risks. There are three potential sources of such pollution. Pollutants may include increased acidity, altered salinity and heavy metal pollution including:
    a. leakage of polluted waters through the bund walls over time entering the wetland;
    b. seepage of polluted waters into the groundwater which then interacts with groundwater of the wetland and surface water. For example, the EIS estimates that 70ML of dredge material may leak from the base of the ponds in the first week;
    c. stormwater pollution into the wetland, given the quality of water into the wetland and timing of its discharge and effect on wetland ecology are poorly known and;
    d. dust from the development and operational phases which will blow across to the wetland and pollute its waters, a risk which remains poorly defined.

Environmental management plans to manage these risks, such as stormwater and acid sulphate management plans, are yet to be finalised and provide only preliminary plans of how risks will be managed, such as the stormwater, dredging, environmental and acid sulphate soil management plans. Many of these risks are manageable through appropriate implementation of environmental management plans. However, it is vital that ongoing monitoring and adaptive management measures are in place to ensure that no unforeseen impacts occur to the wetland ecosystem.

Environmental Impact Assessment adequacy

There is inadequate information in the assessment on some key impacts that may affect wetland viability and the ability for the wetland to provide a healthy ecosystem for dependent fauna and flora, including migratory shorebirds.

1. Stormwater input. The wetland currently varies in relation to seasonal cycles which produce a complex mosaic of different habitats, varying in their salinity and their wetland productivity. These will vary at the macro as well as the microscale. The input of stormwater will change this complexity and may considerably alter the resultant habitats for dependent organisms. There is little information on how stormwater will be managed and how impacts

will be measured and how ultimately practices may be changed if there are severe environmental impacts.

2. Water quality pollutions (acidity, heavy metals). There is relatively little information on potential mobilisation or exchange of these pollutants with the wetland although this can occur through the stormwater input, leakage and interactions through the groundwater under the site.
3. Airborne pollutants (dust). There is inadequate information or a framework for monitoring potential impacts on the wetland.

Recommendations

These are based on the risks and the adequacy of the environmental impact assessment.

1. Stormwater - establish a monitoring program where there is collection of data before and during operation on the water quality and hydrology in the wetland at different points, nearby to outlets and further away. As well, data should be collected on invertebrate communities, given their importance to many of the organisms, including migratory shorebirds.
2. Water quality (pollutants). Monitor and report on water quality changes into the wetland through the collection of data before during and while the port is operational to determine if there are increased impacts of pollutants. Monitoring should not only focus on water and sediment but also measurement of changes in pollutant levels in wetland organisms (e.g. invertebrates).
3. Airborne pollutants. Monitor and report on airborne pollutants from the development into the wetland through the collection of data before during and while the port is operational to determine if there are increased impacts of these pollutants. Monitoring should not only focus on air but also water and sediment but also measurement of changes in pollutant levels in wetland organisms (e.g. invertebrates). Monitoring should be timed to occur during airborne pollutant events.

Migratory shorebirds and other waterbirds

Values

The wetlands support at least 52 species of waterbirds, including an estimated 48,000 birds in March 2012. Such abundances in the Caley Valley wetland, "…particularly when migratory shorebirds are present over the summer months can be considered a superlative natural phenomenon". There are 16 migratory shorebirds species recorded for the wetlands, a number which "…represents almost half the total number of migratory shorebird species listed under the EPBC Act". Further, the importance of the habitat and its perennial value for migratory shorebirds are indicated by the observation that "it is significant that over half the species found at Abbot Point were recorded on multiple occasions at Abbot Point". Lastly, as the site contains >15 species of migratory shorebird it is considered nationally important habitat for migratory shorebirds (DEH 2014).

During surveys, about 1700 migratory shorebirds were recorded in the wetlands. For two migratory shorebird species, red-necked stint (*Calidris ruficollis*) and sharp-tailed sandpiper *(Calidris acuminata*), numbers exceeded the 0.1% level that classifies a wetland as nationally importance

(DEH 2014), respectively 0.75% and 0.38%. In addition, there were an estimated 63 Latham snipe recorded, well above the threshold of 18 considered for sites of national importance.

Also, there were an estimated 35 Australian painted snipe, recorded (1.87% of the national population), endangered under the EPBC Act 1999. Historically the species also bred in the wetland, with the observations of family groups and breeding recorded in 1978 recording of breeding. There is little opportunity to create habitat for this species in the form of offsets. Two other species occurred in nationally important abundances (>0.1%): Eastern great egret and Caspian tern. It is unlikely that offsets will replace impacts to primary habitat of migratory shorebirds.

The development will affect migratory shorebirds and further contributes to ongoing cumulative impacts. Migratory shorebirds in Australia are the fastest declining order of birds (Szabo et al 2012) and the populations of several species are considered to be collapsing across Australia due to local and international threats.

Risks

There are similar risks to migratory shorebirds as articulated for the wetlands. There are two key issues for consideration in relation to migratory shorebirds and other waterbirds: impacts on foraging habitat and roosting habitat from disturbance, changes to hydrology and potential pollution.

1. Disturbance – the port is adjacent to prime shorebird habitat. It is likely that migratory shorebird populations will be affected considerably by machinery during the early phase of development when there is maximum activity as well as ongoing disturbance during the operation of the port. Shorebirds can be sensitive to impacts of disturbance affecting their success in foraging as well as altering value of roosting habitats. It is not clear whether roosting habitats exist on the site and if they would be affected, information that must be provided before this project can adequately be assessed under the EPBC Act (1999).
2. Altering hydrology. As argued above, the hydrology and water quality will change through the diversion of stormwater into the wetland, potential for leakage and groundwater and surface water interactions. Given that shorebird prey are highly dependent on productive habitats of a certain salinity and hydrology, there is potential for such habitats to be affected by changes in hydrology.
3. Pollutants. There remains considerable risk from pollutants. This includes alteration of salinity through increased flows from stormwater or increased acidity because of mobilisation from exposed acid sulfate soils which may leach from the site or be carried by stormwater runoff into the wetland. These processes are likely to have significant impacts on shorebird populations and their prey.

Environmental Impact Assessment adequacy

The EIS for this project does not adequately consider the range of impacts that threaten migratory shorebirds.

1. There are inadequate data to determine the full spatial and temporal habitat use of different species, essential to a comprehensive assessment of impact.

2. There is also inadequate consideration of the cumulative impacts of this project and several other coastal developments along the east coast of Australia, which is a major migratory network for shorebirds.
3. Information on the migratory network of the key shorebird species that inhabit the wetland, and in particular the critically endangered Eastern Curlew and Curlew Sandpiper, should be provided in the assessment to ensure that cumulative impacts to these species do not further accelerate their trajectory to extinction (Iwamura et al 2013).
4. The project should be compliant with the Draft Wildlife Conservation Plan for Migratory Shorebirds (2014). The Commonwealth Department of the Environment has recently released a wildlife conservation plan for migratory shorebirds that lists the threats to migratory shorebirds within Australia and overseas as well as specific actions required to protect conserve and manage shorebirds species in Australia. This project should explicitly provide information that benchmarks the likely impacts against the threats (Section 8) and actions to achieve the objectives of the wildlife conservation plan (Section 9). Such information should be comprehensive, public, and, by assessing this project against every action in the plan, provide a detailed understanding of how the project complies with the wildlife conservation plan.

Recommendations

These are based on the risks and the adequacy of the environmental impact assessment.

1. Spatial and temporal data on shorebirds - establish a monitoring program where there is comprehensive monitoring of shorebird use in the area in relation to available foraging habitat and also disturbance. This monitoring program should involve collection of data before, during and after development, preferably also from nearby control sites. There is a need to also collect data along a potential gradient of disturbance from the development in relation to disturbance, water quality and altered hydrology.
2. Rehabilitation works and offset habitat should be developed as soon as possible so that any indirect or direct impact of the development on shorebird populations is offset by these measures.

Conclusions

The proposed development and its environmental assessment are considerably improved over the previous proposal with considerably less likely impact on the environment. In this submission, we focus primarily on the wetlands and migratory shorebirds. Despite the reduced predicted impact, there remain considerable uncertainties about the level of impact on these two key aspects. This reflects the poor availability of data but also the inadequate specification of how much impact there will be from stormwater and the possible impacts of pollutants coming from the development site into the wetland (i.e. acidification, salinity, altered hydrology, dust, heavy metals). Should the development be approved, there is a clear need for rigorous monitoring which should trigger changes in management of potential pollutants.

References

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