Moreton Bay Rail Link

Natural Environment Technical Report
Quality Information

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Executive Summary

An assessment of the natural environment within the Moreton Bay Rail Link corridor (the project area) was undertaken in 2007 to better understand the likely impacts of constructing the proposed rail link. This report identifies the occurrence of Commonwealth and/or State listed plants, animals and ecological communities and habitat occurring in the study zone. The report aims to identify the likely impacts on the natural and physical environment from implementation of the rail corridor and outlines potential mitigation measures to reduce those impacts. The report provides supplementary information to the Moreton Bay Rail Link Project Change Report and builds on the work undertaken for the Final Impact Assessment Study Report (2003) and the field assessments in 2007.

A number of important environmental matters associated with the corridor were identified in the 2007 assessment. Specifically these related to migratory species, the Moreton Bay Ramsar Wetlands, remnant vegetation, Essential Habitat for threatened species and their populations and the contribution of the project area to wildlife corridors.

The majority of the project area has been preserved as a public transport corridor for numerous years. Accordingly, there are a number of vegetation communities that occur, some of which represent systems that are highly altered (i.e. weedy grassland, pine forest, cleared / developed areas) and other that are classified as ‘endangered’ and ‘of concern’ regional ecosystems as defined by the Queensland Herbarium. Two species of plants protected under the Nature Conservation Act 1992, although not observed during the field survey, are likely to occur within the corridor.

There is also a high diversity of fauna, with in excess of 200 native species identified, including a number of species protected under both Commonwealth and Queensland legislation.

The corridor has a significant population of koalas due to the vegetation communities present. As such, any disturbance to the area has the potential to have a significant impact on the species if not managed appropriately.

Numerous wetlands and waterways exist within the corridor. While some of these have been impacted previously from human disturbance and inputs, they provide an important habitat for both aquatic and migratory species. Importantly, these waterways flow into Hays Inlet, an area of the Moreton Bay Ramsar Wetland which is protected under the Environment Protection Biodiversity Conservation Act 1999 (EPBC Act). It is also noted that the riparian zones of these waterways are often used by fauna traversing within the corridor and therefore, structures and culverts that are to be constructed for the corridor should allow for the maintenance of these wildlife movements.

The potential impacts of the rail corridor include: disturbance to migratory species using Hays Inlet and the associated Ramsar Wetlands, clearing of 0.15 ha of the wetlands themselves and potential water quality issues, the removal of approximately 12.5 hectares of remnant and 27.5 ha of regrowth vegetation, potential disturbance to threatened species habitat, in particular koala essential habitat and foraging habitat for grey-headed flying fox (EPBC Act listed), and severance of wildlife corridors.

Due to the potential impacts of the project on Matters of National Environmental Significance such as Ramsar wetlands, flying foxes and migratory species, a self-assessment of the EPBC Act was undertaken in 2007. This assessment indicated that the corridor required a referral to be submitted to the Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) as it may be classed as a ‘controlled action’ requiring additional environmental assessment. The DSEWPC advised in November 2010 that the project is ‘not a controlled action’ and an Environmental Impacts (EIS) will not be required for the project.

A number of mitigation measures can be implemented to reduce the impact of the corridor on the natural environment. For example, compensatory planting (possibly including trees grown from seeds harvested on site) will provide potential habitat for the koalas that could be displaced as well as other significant flora and fauna. The installation of various bird and habitat boxes will compensate for the loss of habitat trees in the project area. The installation of strategically located fauna overpasses and underpasses will allow for the safe movement of fauna across the corridor. For aquatic impacts, the use of bridges over major waterways will ensure continued flow and fauna passage; and gross pollutant traps and sediment basins can reduce the impacts on water quality.

These studies will provide important additional information for the final design and mitigation strategy.
1.0 Introduction

1.1 Background

This report builds on the previous work undertaken for the Final Impact Assessment Study Report (2003) and the natural environment assessment conducted in 2007 to highlight the potential environmental opportunities and constraints within the study zone.

For the purpose of the investigation, all lands that occurred within the preserved corridor between Petrie and Kippa-Ring, plus a buffer of 250 metres either side of this preserved corridor, are referred to as the study zone. The 250 metre buffer was adopted to allow for possible variations in local road and rail alignments during the concept design phase of the project and in order to understand the likely impacts on adjacent natural environments. Subsequent refinement of the rail design has enabled more specific assessment and reporting on the development footprint of the rail corridor rather than the significantly wider 500m study corridor.

The preparation of the report involved an assessment of environmental values to determine if the proposed works would have a detrimental impact on any Commonwealth and/or State listed threatened plant/s or animal/s, their populations, ecological communities or habitats. Water quality will require additional assessment once the final design has been prepared so as to mitigate the potential for impacts on local watercourses. A geotechnical investigation will also be required to determine the properties and the geology of soils within the study area.

This report provides information in addition to the Final Impact Assessment Study Report published in 2003. The report is based upon a literature review and field surveys and aims to identify and address the current legislative requirements for listed significant species and communities.

1.2 Description of Proposed Infrastructure

The corridor as shown in Figure 1 is located approximately 23 kilometres north of the Brisbane CBD within the new local government area of Moreton Bay Regional Council. It extends approximately 12.6 kilometres eastward from Petrie railway station (which is 27.5 kilometres by rail from Central Station) to Anzac Avenue in Kippa-Ring. The corridor passes through the developing residential areas of Petrie, Kallangur, Murumba Downs, Mango Hill, Rothwell and Kippa-Ring.

Any required bus priority measures east of the Bruce Highway are intended to be included with future road upgrading along Anzac Avenue.
1.3 Previous Studies

Several environmental studies have been conducted in and around the study zone, including Fleming and Gibbons, 1989; Chenoweth & Associates, 1995; 1996; Geo-Eng Australia Pty Ltd et al., 1999 and Ison Environmental Planners, 1995 and two specific studies of the public transport corridor between Petrie and Kippa-Ring. These two additional reports, titled Petrie to Kippa-Ring Public Transport corridor Study Report: Mango Hill/Griffin corridor Options Assessment Report prepared in 2000 and the Petrie to Kippa-Ring Public Transport corridor Study: Final Impact Assessment Study Report prepared in 2003 were used as the base literature for this report and are summarised below.


The Petrie to Kippa-Ring Public Transport corridor Study Report: Mango Hill / Griffin corridor Options Assessment Report (MHGCOAR) was submitted to Queensland Transport in 2000. The study was undertaken to meet Queensland’s obligations to identify or relinquish any rights to a corridor through the North Lakes development. This study involved:

- The selection of a preferred mode of transport
- An initial assessment of the viability of public transport within the study zone
- The determination of the preferred corridor alignment in the Mango Hill/Griffin Area.

The preferred corridor option was selected through a criteria evaluation related to the natural environment, the social environment, integrated transport aspects and costing. Consultation with the public and other stakeholders assisted the option evaluation process and the identification of appropriate mitigation measures. Heavy rail was identified as the preferred mode of transport within the corridor resumed by Queensland Rail in the late 1970s.

The second stage of the study involved the completion of technical studies including economic modelling, the selection of the preferred alignment between Petrie Station and the proposed Kallangur Station and the preparation of an Impact Assessment Study (IAS).


Following the work completed in 2000, a Final Impact Assessment Study Report (FIASR) was prepared for Queensland Transport.

The FIASR was more detailed than the MHGCOAR, and was prepared specifically for the recommended heavy rail infrastructure. The FIASR assessed the environmental and social characteristics of the landscape that may be impacted by the development for the Petrie to Kippa-Ring Transport corridor. It included:

- Description of the preferred corridor
- Recommended implementation strategy
- Description of the existing environment in the study zone
- Examination of the likely impacts of the proposed alignment on the environment
- Community consultation survey and analysis
- Environmental Management Plan (EMP).

An assessment of the two specific reports found that the proposed transport corridor was comparatively high in biodiversity when considering its proximity to Brisbane. It further found that areas of significant mangrove communities would be impacted by its development. Mangrove communities are known to provide food resources, trap nutrients, provide habitat for a variety of significant species, and provide shoreline protection against erosion. It was also identified that the corridor would impact upon the important Hays Inlet Fish Habitat Area, this being an area protected by marine legislation. With respect to vegetation, the reports indicated that the proposed corridor occurs on Crown Land and as such, while the Vegetation Management Act 1999 does not apply, there would be changes to Regional Ecosystem (RE) and essential habitat designation under the Act. The FIASR also suggested that the proponents undertake a more detailed assessment of Matters of National Environmental Significance (MNES) protected under the EPBC Act and Queensland’s Nature Conservation Act 1992 (NC Act), specifically the potential to impact on koalas in the region. It must be noted that there are a number of areas that have not previously been surveyed within the FIASR due to the inclusion of previously unknown road design elements and minor changes to rail alignment.

The FIASR (2003) recommended the public transport corridor follow the currently preserved alignment. Where potential adverse impacts on the existing environment were identified, it was considered that in most cases, these impacts could be partly or completely mitigated by the implementation of management measures.

1.4 Study Aims and Objectives

This natural environment assessment determines the occurrence of Commonwealth and/or State listed plants and/or animals and ecological communities and habitat occurring in the study zone. The report aims to identify the relevant impacts on the natural and physical environment and provide mitigation strategies to reduce the potential impacts of the corridor on these environments.

The 2007 assessment supplements the baseline environmental description published by the FIASR (2003). The information gaps arose for a number of reasons:

- The need for more detailed assessment of Matters of National Environmental Significance that may trigger the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
- Changes to RE and essential habitat designation under the Vegetation Management Act 1999 (VM Act)
- Changes to the species conservation status of the koala in SEQ under the Nature Conservation Act 1992 (NC Act) and Conservation Plan and subsequently the SEQ Koala Conservation State Planning Regulation
- The inclusion of new road design elements for areas that had not previously been surveyed
- Minor changes to the rail alignment.

The specific objectives of the flora and fauna assessment were to:

- Determine what, if any, matters of national environmental significance may be adversely impacted by the project
- Map vegetation communities to confirm the location and extent of RE occurring within the study area;
- Identify essential habitat for threatened flora and fauna
- Examine the use of the study area by koala populations
- Investigate areas under consideration for the possible future East Petrie Bypass and Kallangur Bypass for any threatened species or essential habitat value
- Assess the potential impact of the project on the existing natural environment of the corridor and surrounding area
- Assess potential impacts associated with acid sulphate soils
- Provide recommendations for mitigation strategies to reduce these impacts.

1.5 Relevant Legislation and Planning Frameworks

The corridor must comply with the obligations of environmental legislation covering terrestrial and aquatic ecology with respect to Commonwealth and Queensland law. The following provides an overview of the relevant environmental legislation and an indication of likely project compliance.

1.5.1 Commonwealth Law - Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Actions that are likely to have a significant impact on a MNES are subject to a rigorous assessment and approval process under the provisions of the EPBC Act.

MNES should be considered in all environmental assessment processes. Wetlands of International Importance, Commonwealth listed threatened flora and fauna species and ecological communities, and migratory species listed under international agreements (e.g. JAMBA and CAMBA) are located within or in proximity to the study zone. If the works are likely to result in a significant impact upon a MNES, a referral must be made to the Department of Sustainability, Environment, Water, Population and Communities (DESWPC) for determination on whether the works are a “controlled action.”

The Queensland Government is bound by the requirements of the EPBC Act and subsequently this report considers the potential impacts on MNES in Table 13.

1.5.2 Queensland Legislation

1.5.2.1 Coastal Protection and Management Act 1995

The object of the Act is to provide for the protection, conservation, rehabilitation and management of the coast zone, including its resources and biological diversity. The corridor will involve development in a coastal area and will therefore be governed by the State and SEQ Regional Coastal Management Plans, which are statutory instruments under the Coastal Protection and Management Act.

Under Schedule 7 of the Sustainable Planning Act 2009 (SPA), the corridor will require a Tidal Works permit for any works on in tidal waterways within a Coastal Management District as set out under the Act. The Department of Environment & Resource Management (DERM) will be required to assess the application.
1.5.2.2 Fisheries Act 1994
The Fisheries Act 1994 provides for the protection of all aquatic species and marine vegetation including mangrove communities. Hays Inlet is a declared Fish Habitat Area under the Fisheries Act and is located in close proximity to the corridor. A permit will be required under the provisions of the Act for the removal of marine plants such as mangroves and any waterway barrier constructed during works. This application will be assessed by the Department of Primary Industries and Fisheries.

1.5.2.3 Land Protection (Pest and Stock Route Management) Act 2002
The purpose of this Act is to provide for pest management to the land and stock route network management. The Land Protection (Pest and Stock Route Management) Regulation 2003 lists pest animal and plant species as either Class 1, 2 or 3. Class 1 pests are not established within the State but have the potential to cause adverse impacts. Class 2 pests are established and currently are or have the potential to cause adverse impacts. Class 3 pests are similar to those of Class 2; however, they are more widespread or have the potential to become more widespread and generally have greater adverse impacts.

Weed identification is important to consider so that appropriate weed management actions can be undertaken during construction and operation phases of the corridor.

1.5.2.4 Marine Parks Act
The corridor will involve development in a declared Marine Park (Moreton Bay). The Moreton Bay Marine Park Zoning Plan has been created under the Marine Parks Act to balance human uses with conservation interests. Hays Inlet (Saltwater Creek) is part of a Conservation Zone in the Zoning Plan. Section 21(M) of the Act states that the Chief Executive may grant permission for a person to enter or use a conservation zone for the purpose of carrying out an activity that disturbs or impairs the value or usefulness of the zone.

Consistent with the Act, permission may need to be granted for work to be undertaken on the corridor.

1.5.2.5 Nature Conservation Act 1992 (NC Act)
The object of the NC Act is to conserve nature. Nature is defined as ecosystems, and their constituent parts and processes. Conservation is defined as the protection and maintenance of nature while allowing for its ecologically sustainable use.

1.5.2.6 Nature Conservation (Koala) Conservation Plan 2006 and SEQ Koala Conservation State Planning Regulatory Provision 2010 (SEQ Koala SPRP)
The Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006-2016 has been prepared under the NC Act. Since the development of the SEQ Koala SPRP, the koala plan is utilised by State government to guide conservation activities. Development assessment is guided by the Koala SPRP which includes criteria for development assessment according to the value of the habitat to be removed and the activities being conducted. The koala conservation criteria apply only in SEQ within Priority Koala Assessable Development Areas (PKADA) and Koala Assessable Development Areas (KADA).

The section of the corridor between Petrie Station and Hays Inlet is located within the PKADA. Most of the corridor is recognised for its ‘medium rehabilitation value’ and the eastern portion (before Hays Inlet) is recognised as ‘medium value bushland habitat’.

The construction of the corridor is exempt from assessment under the SEQ Koala SPRP because it is community infrastructure owned by the State Government. However, the proponent must still mitigate impacts on koalas in accordance with the agreement between DERM and DTMR.

1.5.2.7 Vegetation Management Act 1999 (VM Act)
One of the main purposes of the VM Act is to regulate the broad scale clearing of vegetation on freehold land in a way that conserves Regional Ecosystems (REs). An RE is a vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil.

The Queensland Government is bound by the requirements of the VM Act in that any impacts on remnant vegetation must be minimised. It is important for this study to identify the presence of REs within the corridor so that they may be considered during the design process.