

Jilalan Rail Yard Upgrade Project



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Initial Advice Statement Jilalan Rail Yard Upgrade Project Queensland Rail

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QR Environmental Statement

Appendix B

Ecological Database Search Results

Appendix B

Ecological Database Search Results

1. Introduction

1.1 Background

Queensland Rail (QR) proposes to upgrade the existing Jilalan Rail Yard situated approximately 3 km south east of Sarina and approximately 35 km south of Mackay. The Jilalan Rail Yard was commissioned in 1971, and is located within Sarina Shire. It is utilised by QR for maintaining and servicing coal trains utilising on the Goonyella Rail System, which facilitates the transportation of coal to export terminal facilities at the Port of Hay Point.

Figure 1 illustrates the locality of the project area.

The proposed Jilalan Rail Yard Upgrade Project (JRYUP) will increase the capacity and operational efficiency of the Goonyella Rail System, in line with other infrastructure expansions at the Hay Point Services Coal Terminal (HPSCT) and the Dalrymple Bay Coal Terminal (DBCT).

This Initial Advice Statement (IAS) has been prepared on behalf of QR to identify potential environmental impacts associated with the proposed construction and operation of the JRYUP.

The preparation of an IAS is the initial phase in the process of an Environmental Impact Statement (EIS). The IAS also assists in the initial community and land owner consultation, project scoping and definition of the proposal together with enabling the Queensland Coordinator-General (CG) to declare the project "significant" under the *State Development and Public Works Organisation Act 1971*.

This document provides:

- Background information regarding the proposal;
- The need and justification for the project;
- A brief description of the proposed works; and
- An outline of the existing environment and potential environmental impacts associated with construction and operational phases of the proposed development.

1.2 Outline of the Proposal

The proposal is to expand the existing Jilalan Rail Yard at Sarina to accommodate an expected increase in rail traffic due to expansions at the HPSCT and DBCT. The increase in rail traffic will necessitate the upgrade of provisioning and maintenance facilities.

The JRYUP will involve the following key components:

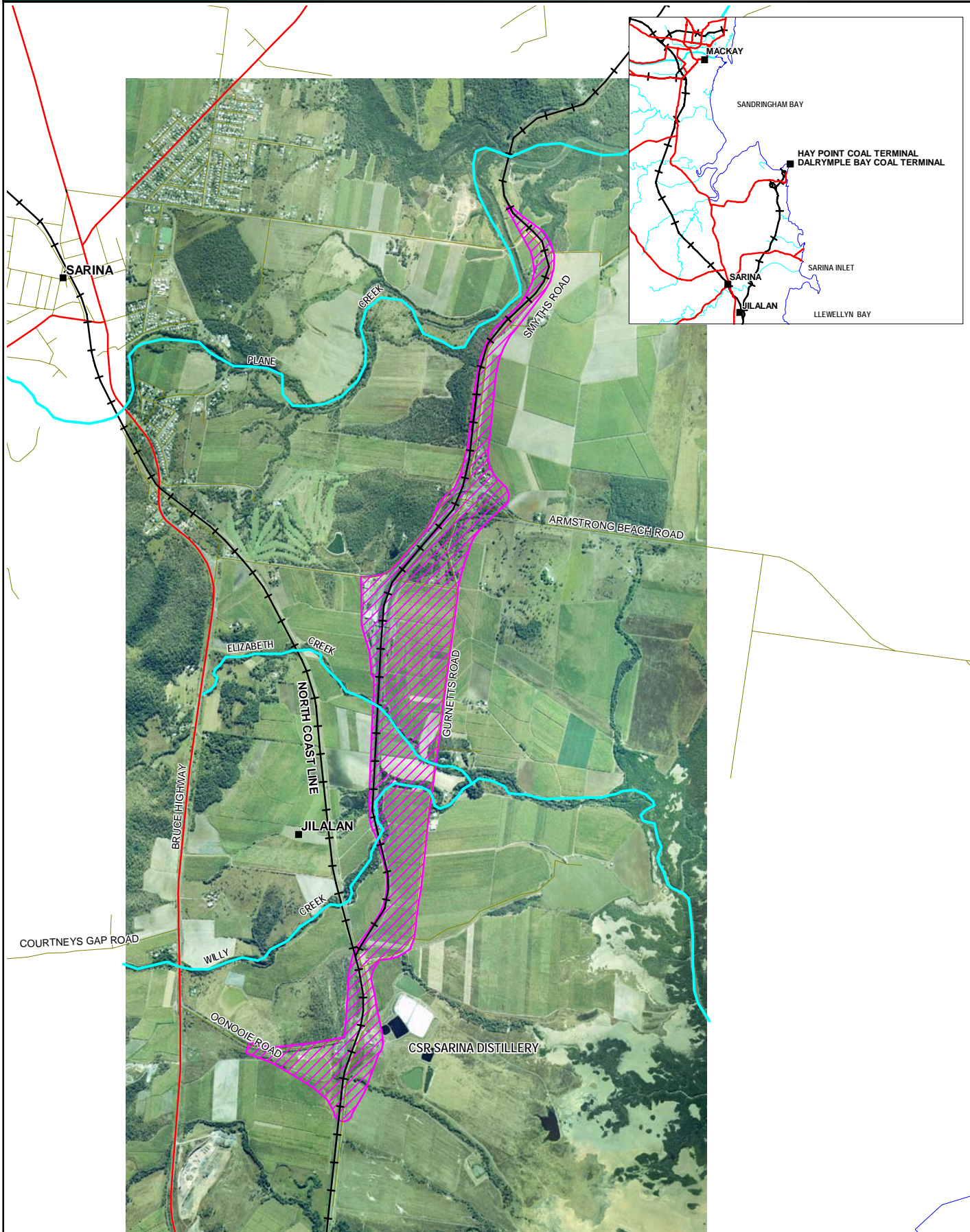
- Construction of new bypass tracks to allow trains traveling to/from the coal export terminals the Port of Hay Point to avoid having to enter the yard unnecessarily;
- Construction of a new locomotive provisioning facility and associated trackwork;
- Construction of a new wagon maintenance facility and associated trackwork;
- Modifications of the existing yard into a locomotive maintenance facility; and
- Miscellaneous roadworks and bridges.

1.3 Land Tenure

The existing Jilalan Rail Yard is located on land comprising of QR corporate freehold land parcels and existing 'rail corridor land' that is administered by Queensland Transport on behalf of the State and subleased to QR.

The proposed JRYUP will require the acquisition of additional land from various adjoining land parcels. Based on the initial concept design, approximately 14 freehold properties may be directly affected as a result of the proposal.

JILALAN RAIL YARD



LEGEND

- Existing Railway
- Area of Works

LOCALITY PLAN

FIGURE 1

0 1250 (m)
Scale 1:25 000 (m) (@ A3 size)



2. Need for the Project

2.1 Overview

The demand for coal has increased considerably in the last decade due to its low cost and stable supply compared to other fossil fuels. This growth is expected to remain strong and has seen recent surges in global demand due to accelerated world economic growth. While the recent rate of global economic growth is not expected to be sustained over the long term, there is sufficient demand to trigger the expansion of existing coal loading facilities in the Mackay region.

Queensland's Bowen Basin produces high quality coking coal, pulverised coal injection (PCI) coal and thermal coal that is exported to Japan, Korea, Taiwan, China, India, Europe and Brazil. The region represents a significant economic driver for the State and National economies. Continuing improvements in mining techniques at existing coal mines, as well as the development of new mines in the area, is resulting in growing supply to meet increasing demand for export coal requiring increased output capacities at Queensland ports.

2.2 Goonyella System

The Goonyella System is a purpose built railway used primarily to service coal mines in the northern and central areas of the Bowen Basin. Coal is transported from a number of locations to unloading facilities at the terminals of Dalrymple Bay and Hay Point. The system boundaries extend from Blair Athol to the west, south to the Gregory Branch junction, north to North Goonyella mine and east to the Port of Hay Point (QR Network Access 2006).

Currently, coal terminals at Hay Point utilise four unloading pits (two at each). Both terminals are undergoing expansions. These facilities are currently undergoing staged expansions to increase their throughput capacity to meet the growing demand for coal on an international level.

For the 2005/2006 financial year, QR carried 82.4 mt of coal through the Goonyella corridor. QR's present system shows that the rail infrastructure is capable of transporting approximately 92 mtpa. Analysis (QR Network Access 2006) has shown that existing infrastructure cannot deliver the tonnage increases required to meet the planned port expansions without complimentary rail systems enhancements.

The DBCT expansion will see capacity increased from 54.5 mtpa to greater than 84 mtpa by 2010. This facility primarily serves mines at Blair Athol, German Creek, Riverside, Oaky Creek, North Goonyella, Moranbah North, Burton, Hail Creek, Coppabella and Moorvale Foxleigh.

The HPSCT expansion will see capacity increased from 34 mtpa to 55 mtpa by 2010. This facility primarily serves mines at Goonyella, Peak Downs, Saraji, Norwich Park, Gregory/Crinum and South Walker Creek.

2.3 Export Coal Markets

All of Queensland's export coal is transported to port via the extensive coal rail network managed and operated by QR across the following five corridor systems in Queensland:

- Newlands to Abbot Point;
- Goonyella to Hay Point and Dalrymple Bay;
- Blackwater to Gladstone;
- Moura to Gladstone; and
- Surat/West Moreton to Brisbane.

The Goonyella Rail System is critical to the supply chain servicing the coal terminals at the Port of Hay Point.

The Queensland export coal supply chain comprises of five interdependent logistical networks:

- the specific coal mines (coal recovery, wash plant, stockpiling, outloading);
- the below rail infrastructure (train path availability);
- the above rail infrastructure (rolling stock and operations);
- the port infrastructure (inloading pits, stockpiles, ship loaders, berths); and
- shipping.

The efficiency of an overall coal supply chain from mines to shipping is a function of the efficiency of each of the component logistics networks (mine-rail-port), and the effectiveness of the interfaces between each network.

In recent years, QR has reduced train cycle times by 15% and increased carrying capacity by 20% throughput the system which has lifted transport efficiencies. With the increased throughput capacities planned at HPST and DBCT and increased production from the mines, QR is responding with plans for significant and ongoing investment in improved rail infrastructure and rollingstock.

The proposed JRYUP is a strategic and essential rail infrastructure investment by QR to meet increasing demands on the Goonyella Rail System.

2.4 Jilalan Rail Yard

To meet the demands of industry growth within the coal market, the Goonyella Rail System will require significant infrastructure developments. The upgrade at Jilalan will ensure the Goonyella Rail System has the ability to cater for the increased number of trains expected to be operating in this system.

The Jilalan facility requires upgrading and expansion, including a larger rail holding yard, additional provisioning facilities and an additional maintenance workshop together with bypass lines to allow through traffic to pass without entering the servicing facility as occurs at present.

The upgrade of the existing Jilalan Rail Yard will ultimately ease congestion in the heavy trafficked area from Jilalan to the junction to the DBCT/HPST loops and provide additional infrastructure to reach the targeted sustainable throughput capacity of 140 mtpa for the Goonyella Rail System.

2.5 No Action Option

The inability of the Goonyella Rail System to meet coal export demands would significantly curtail further investment in the Queensland coal industry. The JRYUP will significantly improve the efficiency of the coal supply chain along with planned infrastructure upgrades at HPST and DBCT, to ensure additional export revenue for Australia, increased State revenue and additional employment opportunities within the broader region.

3. Project Description

3.1 Introduction

The proposed JRYUP will expand the existing Jilalan Rail Yard to better support the increasing demands on the Goonyella Rail System, and will also improve the safety and efficiency of rail/road interfaces through proposed improvements to the surrounding road infrastructure.

A concept layout of the proposal is illustrated in Figure 2 and the key components of the development include:

- Construction of new bypass tracks to allow trains travelling to/from the coal export terminals at the Port of Hay Point to avoid having to enter the yard unnecessarily;
- Construction of new locomotive provisioning facility and associated trackwork;
- Construction of a new wagon maintenance facility and associated trackwork;
- Modifications of the existing yard into a locomotive maintenance facility; and
- Miscellaneous roadworks and bridges.

3.2 Rail Infrastructure

The scope of railway works included in the JRYUP comprises the following:

- Rail connections from the existing Goonyella Rail System to the proposed new tracks;
- Realigned trackwork in the north near the existing Smyths Road crossing;
- Bypass tracks with crew change facilities;
- Provisioning roads and associated locomotive provisioning facilities;
- Maintenance tracks and associated locomotive and wagon maintenance facilities;
- Civil structures for the bypass tracks and provisioning tracks passing over the existing North Coast Railway Main Line and adjacent Cane Tramway; and
- Additional trackwork and facilities within the existing Jilalan Rail Yard area.

The full scope of rail infrastructure including any staged delivery will be investigated during subsequent studies.

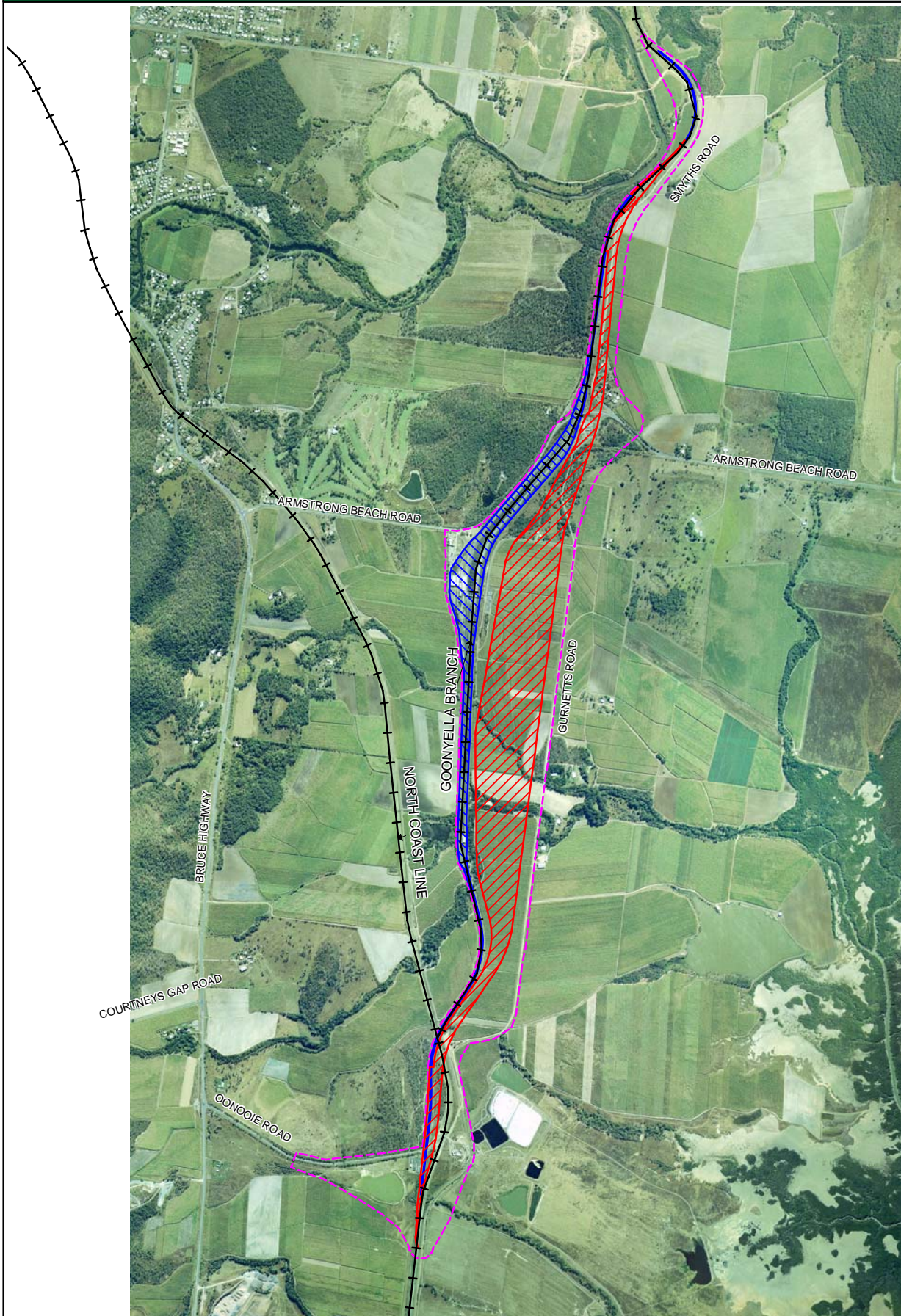
3.3 General Infrastructure

3.3.1 Onsite Infrastructure

Onsite infrastructure may include the following, in isolation or in combination:

- Buildings, including offices, workshops, amenities, substations and security;
- Site roads, comprising a combination of sealed and unsealed roads;
- Car and heavy vehicle parking;
- Fencing;
- Landscaping;
- Lighting;
- Stormwater drainage;
- Culverts/bridges over Elizabeth and Willy Creeks;
- Sediment ponds;
- Water and sewage networks and treatment plants as required;
- Power distribution; and
- Provision of fire fighting facilities.




The full scope of onsite infrastructure including any staged delivery will be determined during subsequent studies.



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LEGEND

-  Existing Rail Area
-  Proposed Rail Area
-  Indicative Extent of Proposed Works

SITE LAYOUT

FIGURE 2

0 1000 (m)
Scale 1:20 000 (m) (@ A3 size)



3.3.2 Offsite Infrastructure

Offsite infrastructure may include following, in isolation or in combination:

- Provision of access to land potentially isolated by the new rail tracks;
- Closure of the existing Smyths Road level crossing;
- New road underpass structure at Smyths Road;
- Realignment of Smyths Road between the proposed underpass and Armstrong Beach Road;
- Extension of the existing Armstrong Beach Road overpass structure to accommodate the bypass tracks, provisioning tracks and wagons maintenance/storage tracks or complete new structure to suit;
- Realignment of the northern end of Gurnetts Road and a new intersection with Armstrong Beach Road;
- Closure of the existing Oonooie Road level crossing;
- Potential provision of an overpass at Oonooie Road linking with Gurnetts Road; and
- Utility infrastructure connections (eg electricity, water and telecommunications).

The full scope of offsite infrastructure including any staged delivery will be determined during subsequent studies.

4. Existing Environment

4.1 General

The existing Jilalan Rail Yard is situated approximately 3 km south east of Sarina and approximately 35 km south of Mackay. The proposed JRYUP represents an upgrade and expansion of the existing facilities, along with consequential modifications to adjacent road infrastructure.

4.2 Climate

Jilalan and the surrounding Mackay/Sarina region is characterised by subtropical weather with heavy rainfall during the summer months and dry conditions during the winter months.

The climate data for the Mackay/Sarina region is summarised in Table 4.1.

Table 4.1 Mackay Aerodrome – Climate Data (1950-2004)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Mean Daily Max Temp (°C)	29.9	29.9	29.1	27.5	25.1	22.9	22.3	23.3	25.5	28.0	29.2	30.56	26.9
Mean Daily Min Temp (°C)	22.9	23.2	21.9	19.3	15.5	12.5	10.9	11.8	14.5	18.1	20.2	22.1	17.7
Mean Rainfall (mm)	498.6	455.9	309.7	226.2	125.1	63.1	45.9	39.9	18.5	50.0	87.5	111.9	2032
Mean 9am Relative Humidity (%)	75	79	77	80	79	79	78	74	67	65	64	67	74
Mean 3pm Relative Humidity (%)	70	73	69	70	67	65	64	63	61	61	62	64	66
Mean 9am Wind Speed (km/hr)	16.2	15.1	16.8	14.9	13.4	12.8	11.5	12.5	14.4	15.5	16.4	15.4	14.5
Mean 3pm Wind Speed (km/hr)	21.3	21.1	22.5	20.5	19.6	21.0	19.5	21.5	21.9	20.9	21.4	21.0	21.0

Table Notes:

Ann – Annual Average

4.3 Soils and Geology

The site is underlain by Carmilla beds, Mountain View volcanics and Quaternary alluvium. The Carmilla beds comprise volcanolithic pebble to cobble conglomerate and minor sandstone. The Mountain View volcanics comprise andesitic to rhyolitic lava flows, volcanichastics and sandstone and the Quaternary alluvium is composed of sands, silts, clays and gravels.

Preliminary geotechnical investigations from November 2006 investigated subsurface conditions within selected areas of the project area by drilling and sampling twelve (12) boreholes to depths between 0.8 and 6.0 m. Basalt was encountered at a number of boreholes in this vicinity; otherwise the dominant bedrock geology was siltstone/sandstone. The ground condition investigated generally shows the following succession:

- Fill;
- Alluvial soil;
- Residual soil; and
- Extremely weathered rock.

At this stage it is not known whether acid sulfate soils (ASS) are present on site. Prior to construction an investigation will be undertaken to determine the presence of ASS, particularly in those areas adjacent to watercourses.

4.4 Land Use

The Sarina Shire Council planning scheme denotes adjoining areas as predominately 'Rural', with a small area of 'Open Space' to the north. The existing rail yards are located in the Community Purposes Zone.

The existing Jilalan Rail Yard is primarily centred within an area of cane production and dry land grazing. The dominant land uses within the broader project area are agriculture (sugar and dry land grazing), forestry and fishing. Several industries are located within close proximity to the proposed project including the CSR Sarina Distillery at Oonooie, which ferments molasses and grain to produce ethanol. It also produces fertiliser from waste generated by the Plane Creek Sugar Mill at Sarina.

4.5 Water Quality

The project area traverses Elizabeth and Willy Creeks which discharge into Llewellyn Bay, part of the Great Barrier Reef World Heritage Area (WHA) and Great Barrier Reef Marine Park (Marine Park).

Upstream waters of Elizabeth and Willy Creeks are ephemeral, while downstream waters are tidally influenced. The environmental values of the waterways within the area have been impacted by land use activities within the catchment. This includes the water quality of Elizabeth and Willy Creeks which is influenced by a number of anthropogenic activities, predominately sugar cane and grazing production.

It is likely that downstream waters are highly influenced by elevated nutrients (particularly nitrogen and phosphorus), sedimentation and pesticides, given the surrounding land uses and highly modified floodplain. However, existing water quality information for Elizabeth and Willy Creeks is limited.

The northern extent of the project area is located within Plane Creek catchment. The lower reaches of Plane Creek flow parallel to the project area and in a north easterly direction prior to discharging into Sarina Inlet, part of the Great Barrier Reef WHA and Marine Park.

Land use within the area of the works is primarily irrigated cropping which has impacted on the buffering capacity of the system (ie removal of riparian vegetation and intertidal wetlands). Previous water quality information for Plane Creek indicates relatively high levels of sediment, nutrients and pesticides.

Further water quality and aquatic ecology investigations will need to be undertaken during the planning phase of the project to determine the environmental values within the affected creek systems.

4.6 Air and Noise Quality

Major industry in the immediate area, including the CSR Sarina Distillery, existing rail activities (including the North Coast Rail and the Hay Point Rail Line) and other local industries all contribute to local noise and dust levels. Road traffic on the adjoining roadways, Armstrong Beach Road, Smyths Road, Oonooie Road and the Bruce Highway in particular, also contribute to local noise levels.

Sections of Smyths Road and Gurnetts Road within the project area are unsealed and have the potential to generate dust from vehicle use. Multiple sensitive receptors have been identified within the vicinity of the project area, specifically residential properties along Gurnetts Road, Armstrong Beach Road and Smyths Road.

Further air and noise quality investigations will need to be undertaken during the planning phase of the project.

4.7 Ecology

During November 2006, a preliminary ecological assessment was undertaken of the project area which included a review of existing background data and a preliminary field survey. Database searches included the following:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Report;
- WildNet Sightings Search;
- Wildlife Online database search;
- Regional Ecosystem (RE) mapping database search;
- Regional Vegetation Management Code for Coastal Bioregions; and
- HERBRECS database search.

Further ecological investigations will need to be undertaken during the planning phase of the project.

4.7.1 Background Data

Significant Areas

The project area is located in the lower reaches of the Plane Creek catchment and a number of coastal catchments (Willy Creek and Elizabeth Creek). These waterways discharge into areas of international, national and state significance, including:

- Great Barrier Reef World Heritage Area (GBRWHA) which encompasses an area of approximately 348,000 km², extending from the low water mark of the mainland and includes all islands, internal Queensland Waters and *Sea and Submerged Lands Act 1973* exclusions;
- Great Barrier Reef Marine Park (Marine Park) extends from the mean low water mark out toward the 200 nautical mile Economic Exclusion Zone, but excludes Queensland owned islands, internal waters of Queensland and exclusions under the *Seas and Submerged Lands Act 1973*. The Marine Park is legislated by the Queensland government under the *Marine Parks Act 2004*, *Marine Parks Regulation 2006* and *Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004*.

Figure 3 illustrates the location of significant environmental areas in relation to the project area.

Significant Species

An EPBC Act Protected Matters Report was obtained for the project area from the Department of Environment and Heritage (DEH) website (Appendix B). This report identifies the occurrence or likely occurrence of nationally threatened species pursuant to the EPBC Act.

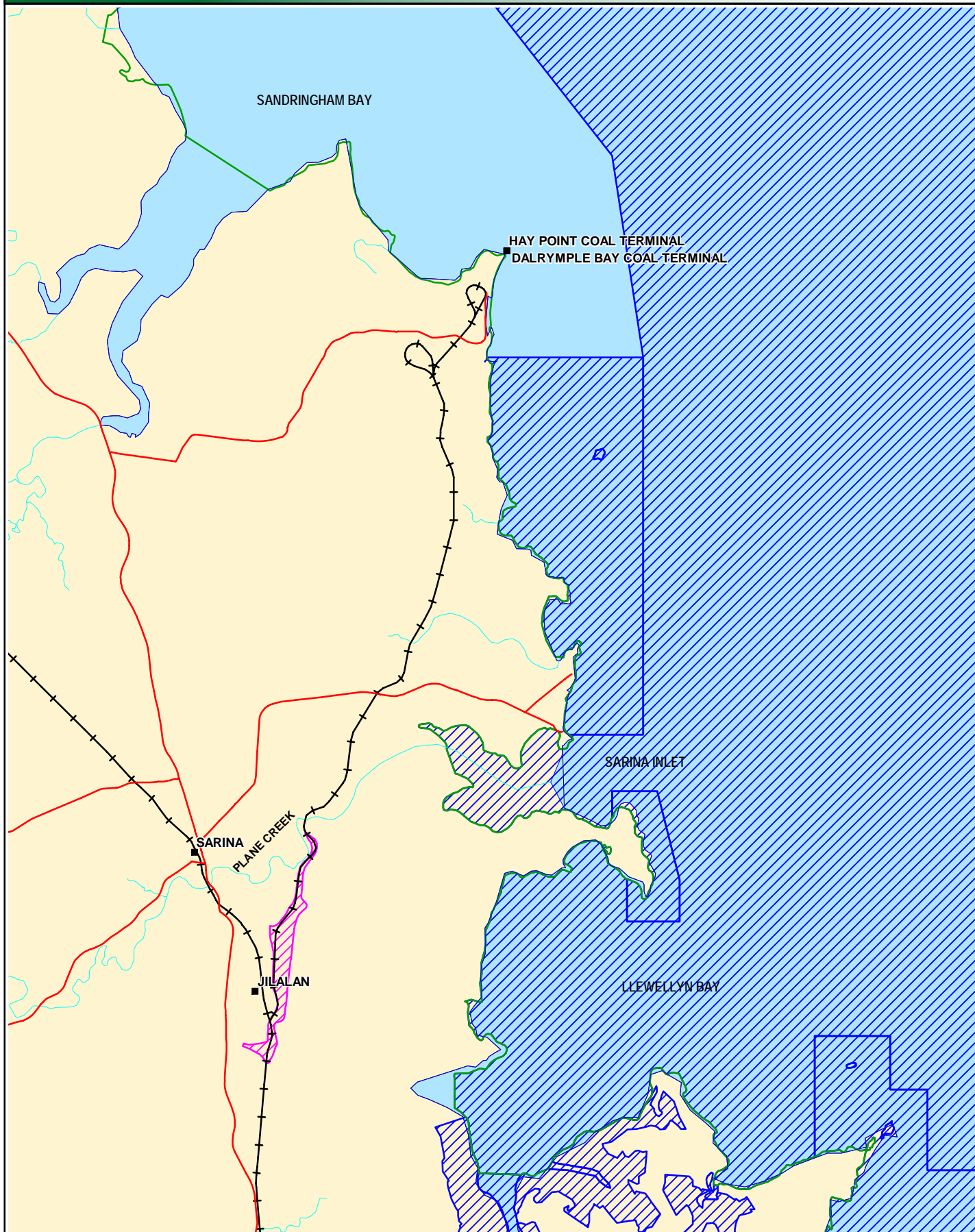
No threatened ecological communities were identified within the vicinity of the project area. However the following two (2) threatened flora species pursuant to the EPBC Act were identified to potentially inhabit the project area:

- *Eucalyptus raveretiana* (Black Iron Box); and
- *Leucopogon cuspidatus*.

Both species are listed as Vulnerable under the EPBC Act and Queensland *Nature Conservation Act 1992* (NC Act).

In addition, the EPBC report identified seven (7) species of threatened fauna were identified which may potentially inhabit or with suitable habitat with the project area. Table 4.2 summarises the conservation significance, habitat association and likely occurrence of these species.

JILALAN RAIL YARD



SIGNIFICANT AREAS

FIGURE 3

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LEGEND

- Area of Works
- World Heritage Area
- Great Barrier Reef Marine Park (State and Commonwealth)

0 1250 (m)
Scale 1:25 000 (m) (@ A3 size)



Table 4.2 EPBC Act Protected Matters Report

Species	Status	Habitat Association	Likely Occurrence
<i>Eucalyptus raveretiana</i> (Black Iron Box)	Vulnerable (EPBC)	A tall tree that occurs in riparian woodlands on alluvial flats along river banks on sandy and/or alluvial soils (Calvert <i>et al</i> 2005) Associated with RE8.3.3 (Not of Concern) which is located within the northern section of the works between Armstrong Beach Road and Plane Creek (Refer Figure 4)	Low-Moderate Suitable habitat within and adjacent the project area
<i>Leucopogon cuspidatus</i>	Vulnerable (EPBC)	Small dense shrub up to 1.2m tall. Usually occurs on mountain tops on poor skeletal soils, amongst granite or serpentine outcrops (Calvert <i>et al</i> 2005)	Low Lack of suitable preferred habitat and high level of disturbance within project area.
Threatened Birds			
<i>Erythrotriorchis radiatus</i> (Red Goshawk)	Vulnerable (EPBC) (NCA)	Open forest and woodland near water, rainforest edges (Pizzey and Knight 1999). Need large areas of habitat because of low population densities and large home ranges. Breeding pairs use the same territories year after year (Marchant and Higgins 1993) Not identified from ecological databases and supporting field investigations	Low - Moderate Suitable habitat within and adjacent the project area
<i>Geophaps scripta scripta</i> (Squatter Pigeon-southern subspecies)	Vulnerable (EPBC) (NCA)	Woodlands/ grasslands. Prefer areas of sandy soil dissected by low gravelly ridges, which have the shortest cover of grasses. Nearly always found near permanent water (Marchant and Higgins 1993) Not identified from ecological databases and supporting field investigations	Low Lack of suitable preferred habitat and high level of disturbance within project area. More suitable habitat occurs in areas adjacent to the project area.
<i>Rostratula australis</i> (Australian Painted Snipe)	Vulnerable (EPBC) (NCA) ¹ Migratory (CAMBA)	Freshwater (occasionally brackish) wetlands. Mostly south east Australia. Possibly part-migratory moving north into Queensland in summer (Marchant and Higgins, 1993) Not identified from ecological databases and supporting field investigations	Low Lack of suitable preferred habitat within project area. More suitable habitat occurs in areas adjacent to the corridor.

Species	Status	Habitat Association	Likely Occurrence
Threatened Mammals			
<i>Dasyurus hallucatus</i> (Northern Quoll)	Endangered (EPBC)	Range of open woodland and open forest types preferring rocky areas. Within Queensland a number fragmented populations, including dense populations within Mackay-Whitsunday areas. Species is associated with RE 8.12.12 which is located in the southern section of the project area (Refer Figure 4). Not identified from ecological databases and supporting field investigations	Low - Moderate Suitable habitat within and adjacent the southern section of project area Area is highly fragmented and disturbed
<i>Pteropus conspicillatus</i> (Spectacled Flying-fox)	Vulnerable (EPBC)	In and around rainforests between Ingham and Cooktown of the Wet Tropics and the McIlwraith and Iron Ranges of Cape York Peninsula (DEH 2003). Favours nectar and pollen of eucalyptus and corymbia blossoms and native and introduced fruits. Not identified from ecological databases and supporting field investigations	Low Outside current known geographical range and lack of suitable habitat
<i>Xeromys myoides</i> (Water Mouse)	Vulnerable (EPBC) (NCA)	Build "nesting" mounds in inner edges of freshwater swamps, reed zone or supra littoral bank behind mangroves and feed in mangroves proper as tide ebbs (Van Dyck 1998) Essential habitat were identified within the downstream receiving environment (intertidal wetland of Plane Creek and Sarina Inlet and Llewellyn Bay) (Refer Figure 4)	Low Absence of suitable habitat within project area. However, suitable habitat occurs in areas downstream and adjacent the project area. Some of these areas are recognised as Essential Habitats
Threatened Reptiles			
<i>Egernia rugosa</i> (Yakka Skink)	Vulnerable (EPBC) (NCA)	Open dry sclerophyll forest or woodland and rocky areas where it lives in communal burrow complexes, often under heaped dead timber, and in deep rock crevices; often uses rabbit warrens and has also been recorded under shearing sheds and other rural buildings. Its presence may be recognised by communal defecation site (Wilson 2005; Cogger 1992). Not identified from ecological databases and supporting field investigations	Low Absence of suitable habitat within project area. Suitable habitat occurs in areas adjacent to the project area.

Table Notes:

CAMBA – China Australia Migratory Bird Agreement

1 - Listed as *Rostrallula benghalensis* sp. however is now regarded as full species

The Australian Government is actively involved in the conservation of migratory species and habitats through its involvement with a number of international agreements. They include the Ramsar Convention and the Convention on Migratory Species (CMS/Bonn Convention), the China-Australia Migratory Bird Agreement (CAMBA) and the Japan-Australia Migratory Bird Agreement (JAMBA) throughout the East Asian-Australasian Flyway.

Species listed in these agreements and conventions are pursuant to the EPBC Act. An EPBC report for the area identified 13 migratory and listed marine species (refer Table 4.3) which potentially inhabit the area. The Australian Painted Snipe is also listed as Vulnerable (refer Table 4.2). An additional four listed marine species were also identified from the area.

Table 4.3 Migratory species potentially inhabiting the project area

Species	Status	Habitat Association	Likely Occurrence
Migratory Birds			
<i>Gallinago hardwickii</i> (Latham's Snipe)	Migratory Wetland Species CAMBA JAMBA	Soft wet ground or shallow water with tussocks and other green or dead growth to scrub or open woodland; samphire areas on saltmarshes and mangrove fringes. Although it doesn't breed in Australia, it is a regular summer migrant with its stronghold in south east Queensland to southern South Australia (Pizzey and Knight, 1999).	Low – Moderate Suitable habitat within the project area May inhabit downstream environs
<i>Haliaeetus leucogaster</i> (White-bellied Sea Eagle)	Migratory CAMBA	Large freshwater lakes, dams and rivers and in coastal areas around saltwater lakes, estuaries and coastal islands. They generally nest on tree branches especially of Forest Red Gum (<i>Eucalyptus tereticornis</i>) (Pizzey and Knight, 1999). Less common in urban areas than other marine raptors (eg Osprey, Brahminy Kite).	Low – Moderate Suitable habitat within the project area
<i>Numenius minutes</i> (Little Curlew)	Migratory Wetland Species CAMBA JAMBA	Open short grasslands not necessarily close to water and tidal mudflats (Flegg 2002).	Low Due to lack of suitable habitat May inhabit downstream intertidal wetlands
<i>Hirundapus caudacutus</i> (White-throated Needletail)	Migratory CAMBA JAMBA	Aerial over forests, woodlands, farmlands, plains, lakes coasts and towns. Feeding frequently along favoured hilltops and timber ranges. Although not breeding in Australia, this species migrates to eastern Australia between October and April (Pizzey and Knight, 1999).	Low – Moderate Suitable habitat within the project area
<i>Hirundo rustica</i> (Barn Swallow)	Migratory CAMBA JAMBA	Coastal areas; aerial over open country, agricultural land, especially near water, and urban areas (Flegg 2002; Pizzey and Knight, 2003). Non breeding migrant during northern hemisphere winter.	Low – Moderate Suitable habitat within the project area
<i>Merops ornatus</i> (Rainbow Bee-eater)	Migratory JAMBA	Aerial species found over coastal woodlands, open forests and mangroves. Nests in burrows in sandy banks and ground. Recorded from the area (Appendix B)	High Suitable habitat within the project area
<i>Monarcha melanopsis</i> (Black-faced Monarch)	Migratory	Prefers wet sclerophyll forest; rainforest, open forest and mangrove forest but will utilise gardens. It nests on tree branches, generally 1 to 12 metres above the ground in south-east Australia from August to April.	Low – Moderate Suitable habitat within the project area
<i>Monarcha trivirgatus</i> (Spectacled Monarch)	Migratory	Understorey of mountain/lowland rainforests; thickly wooded gullies; waterside vegetation; mostly well below canopy.	Low-Moderate Suitable habitat within the project area

Species	Status	Habitat Association	Likely Occurrence
<i>Myiagra cyanoleuca</i> (Satin Flycatcher)	Migratory	Heavily vegetated gullies in forests, taller woodlands, usually above shrub-layer; during migration, coastal forests, woodlands, mangroves, tree in open country and gardens. Summer breeding in south-east Australia and winters in north-east Queensland.	Low – Moderate Suitable habitat within the project area
<i>Nettapus coromandelianus albigennis</i> (Australian Cotton Pygmy-goose)	Migratory Wetland Species	Deeper freshwater swamps, lagoons, dams with waterlilies and other semi emergent water plants mainly in eastern Queensland. Nesting sites are high in hollow tree near water with breeding November to April. Species is locally dispersive in dry season (Pizzey & Knight, 1999).	Low Suitable habitat does not occur within the project area but may inhabit downstream environs
<i>Rhipidura rufifrons</i> (Rufous Fantail)	Migratory	Undergrowth of rainforests/ wetter eucalypt forests/ gullies; monsoon forests, paperbarks, sub inland and coastal scrubs; mangroves, watercourses; parks and gardens (Pizzey & Knight, 1999).	Low – Moderate Suitable habitat within the project area
Migratory Marine Reptiles			
<i>Crocodylus porosus</i> (Salt-water Crocodile)	Migratory	Coastal rivers, swamps, estuaries and open sea north of about Rockhampton (Wilson 2005).	Low Suitable habitat does not occur within the project area May inhabit downstream environs
Listed Marine Species			
<i>Ardea alba</i> (Great Egret)	Migratory CAMBA JAMBA	Freshwater wetlands and intertidal mudflats. Nests colonially in trees.	Moderate Suitable habitat within the area and downstream environs May overfly area
<i>Ardea ibis</i> (Cattle Egret)	Migratory CAMBA JAMBA	Freshwater wetlands and adjoining pasture areas. Nests colonially in melaleuca forests.	Moderate Suitable habitat within the area and downstream environs May overfly area
<i>Apus pacificus</i> (Fork-tailed Swift)	Migratory CAMBA JAMBA	Aerial over coasts, urban areas and arid areas (Simpson & Day 2004).	Low – Moderate Suitable habitat within the project area May overfly area
<i>Anseranus semipalmata</i> (Magpie Goose)		Rush and sedge-dominated swamps, floodplains and rice crops (Simpson & Day 2004).	Moderate No suitable habitat within project area. Suitable habitat in adjoining habitats and downstream environs Observed over-flying project area

A WildNet 2006 and Wildlife Online database search of the project area was conducted to establish if any confirmed recordings of threatened species had occurred within and in close proximity to the project area. No threatened species pursuant to the EPBC Act were recorded within the project area, with the exception of the Radjah shelduck (*Tadorna radjah*), which is also listed as Rare under the NC Act.

During the wet season this species inhabits most shallow waters, including fresh, salt and brackish swamps, mangrove-lined coastal creeks and shallow river margins (Pizzey and Knight 2003). During the dry season the species concentrates on larger permanent lagoons, paperbark swamps, artificial wetlands, mangroves, tidal mudflats and estuaries. It nests in tree hollows usually in or near water. There was no suitable habitat noted within the project area during field surveys, but adjacent areas may be suitable.

Rainbow bee-eater (*Merops ornatus*) is also noted for the area. This species is listed under the EPBC Act Protected Matters Report for the area as a Listed Marine Species because the species or species habitat may occur within the area.

An Essential Habitat is a habitat identified by the Queensland EPA for a species listed as 'Endangered', 'Vulnerable', 'Near Threatened' or 'Rare' under the NC Act. An Essential Habitat for Water Mouse (*Xeromys myoides*) was identified to the east and downstream of the project area (refer Figure 4). This species is listed under the EPBC Act as Vulnerable, and Rare under the NC Act. Although the proposed works will not directly impact any of the Essential Habitat area care will need to be taken to minimise downstream impacts from works within Plane Creek, Elizabeth Creek and Willy Creek.

Regional Ecosystem Mapping

The Queensland Government Regional Ecosystem (RE) maps show remnant vegetation and its underlying geology throughout the state of Queensland. To qualify as remnant vegetation it must have the following characteristics:

- 50% of the predominant canopy cover that would exist if the vegetation community were undisturbed;
- 70% of the height of the predominant canopy that would exist if the vegetation community were undisturbed; and
- Composed of the same floristic species that would exist if the vegetation community were undisturbed.

Table 4.4 summaries the characteristics of the RE classification.

Table 4.4 Regional Ecosystems Classifications

RE Classification	Characteristics of Classification
Endangered	less than 10% of the pre-clearing extent remains, or 10-30% of the pre-clearing extent remains (but the area of remnant vegetation is less than 10,000 hectares) or if the community is considered rare (ie less than 10,000ha in Queensland) and subject to threatening processes.
Of Concern	10% to 30% of the RE type left undisturbed or more than 30% of the pre-clearing extent remains (but the area of remnant vegetation is less than 10,000 hectares).
Not of Concern	30% of the pre-clearing extent remains and the area of remnant vegetation is more than 10,000 hectares

Source: EPA (2006)

The status of a RE is gazetted under the *Vegetation Management Act 1999* (VM Act). The purpose of the VM Act is:

- To regulate the clearing of remnant and other protected vegetation;
- To maintain ecological processes;
- To reduce greenhouse gas emissions;
- To prevent land degradation; and
- To prevent the loss of biodiversity.

Table 4.5 summarises the REs within the project area.

Table 4.5 Regional Ecosystems within the project area

RE 8.1.1	Open-shrubland to closed forest of mangrove species forming a variety of associations.	Not of Concern
RE 8.3.3	<i>Melaleuca leucadendra</i> or <i>M. fluviatilis</i> ± <i>Casuarina cunninghamiana</i> Open forest to woodland, fringing watercourses	Not of Concern
RE 8.3.5 ¹	<i>Corymbia clarksoniana</i> + <i>Lophostemon sauveolens</i> + <i>Eucalyptus platyphylla</i> woodland, or <i>E. platyphylla</i> woodland on alluvial plains	Of Concern
RE 8.12.12	Mixed woodland to open forest of <i>Corymbia intermedia</i> ± <i>Eucalyptus portuensis</i> ± <i>E. platyphylla</i> ± <i>E. drepanophylla</i> ± <i>E. tereticornis</i> . Occurs on lower and mid-slopes of mountains and hills formed on Mesozoic to Proterozoic igneous rocks	Not of Concern
RE 8.12.22	<i>Eucalyptus drepanophylla</i> ± <i>E. platyphylla</i> ± <i>Corymbia clarksoniana</i> ± <i>E. exserta</i> ± <i>C. trachyphloia</i> woodland including small areas of <i>E. portuensis</i> and <i>C. intermedia</i> , and stands of <i>E. melanophloia</i> . Hills and ranges at low to moderate altitudes, in drier areas	Not of Concern

Table Note:

- 1 "threshold regional ecosystem" to the extent that further clearing will cause a change in its conservation status from "Of Concern" to "Endangered" (DNRW 2006b)

A number of threatened plant species may potentially inhabit the REs present within the project area.

RE 8.3.3 may support the following significant floral species:

- Black ironbox (*Eucalyptus raveretiana*) a tree listed as Vulnerable under the NC Act and EPBC Act;
- *Rhamphicarpa australiense*, a herb listed as Rare under the NC Act. Its known distribution does not include the project area or surrounding region;
- *Eulophia bicallosa*, a terrestrial orchid listed as Rare under the NC Act. It often occurs on sandy soils in a range of habitats from open woodlands to rainforests and flowers in spring and (Stanley and Ross 1989, Jones 2006). It has been located in the Mackay region (Queensland Herbarium);
- Byfield spider flower (*Grevillea venusta*), a shrub listed as Vulnerable under the NC Act and EPBC Act. It occurs in coastal Queensland from Many Peaks Range to Shoalwater Bay, often in rocky situations or beside creeks, in sandy often granitic soils (ABRSa). Its known distribution does not include the project area or surrounding region;
- *Persoonia amaliae*, a shrub or tree listed as Rare under the NC Act. It generally grows on granite and other well drained substrata (ABRSb). Its known distribution does not include the project area; and

- *Pratia podenzanae*, an herb listed as Rare under the NC Act. Its known distribution does not include the project area or surrounding region.

RE 8.12.22 provides potential habitat for the following threatened plant species:

- *Cycas ophiolitica*, a cycad listed as Vulnerable under the NC Act. It is found in central Queensland from Marlborough to Rockhampton. Its known distribution does not include the subject area or surrounding region; and
- *Acacia jackesiana* a shrub to 1 m high listed as Rare under the NC Act. It is known only from its type locality near Argentine Mine 60 km west south west of Townsville (ABRSc). Its known distribution does not include the project area or surrounding region.

Clearing Activities

Under the VM Act clearing of Endangered and Of Concern REs on freehold and leasehold land in rural areas is prohibited without approval. In urban areas clearing without approval of Endangered REs on freehold land is prohibited and Endangered and Of Concern REs on leasehold land.

Under the VM Act and *Integrated Planning Act 1997* (IPA) the clearing of native remnant vegetation on freehold land is regarded as Operational Works which, if deemed assessable, requires a Development Permit for Operational Works. To obtain a permit an IDAS application must be submitted to and assessed by the Department of Natural Resources and Water (DNRW).

Although QR benefits from a number of exemptions under Schedule 9 of the IPA, these are generally limited to clearing vegetation within existing QR subleased land and where vegetation interferes with the operational safety and efficiency of the railway.

Vegetation

In November 2006 a site inspection of the project area was undertaken to assess the vegetation communities present within the project area and validity of the desktop data. The location of the major vegetation communities found within the project area is shown in Figure 5.

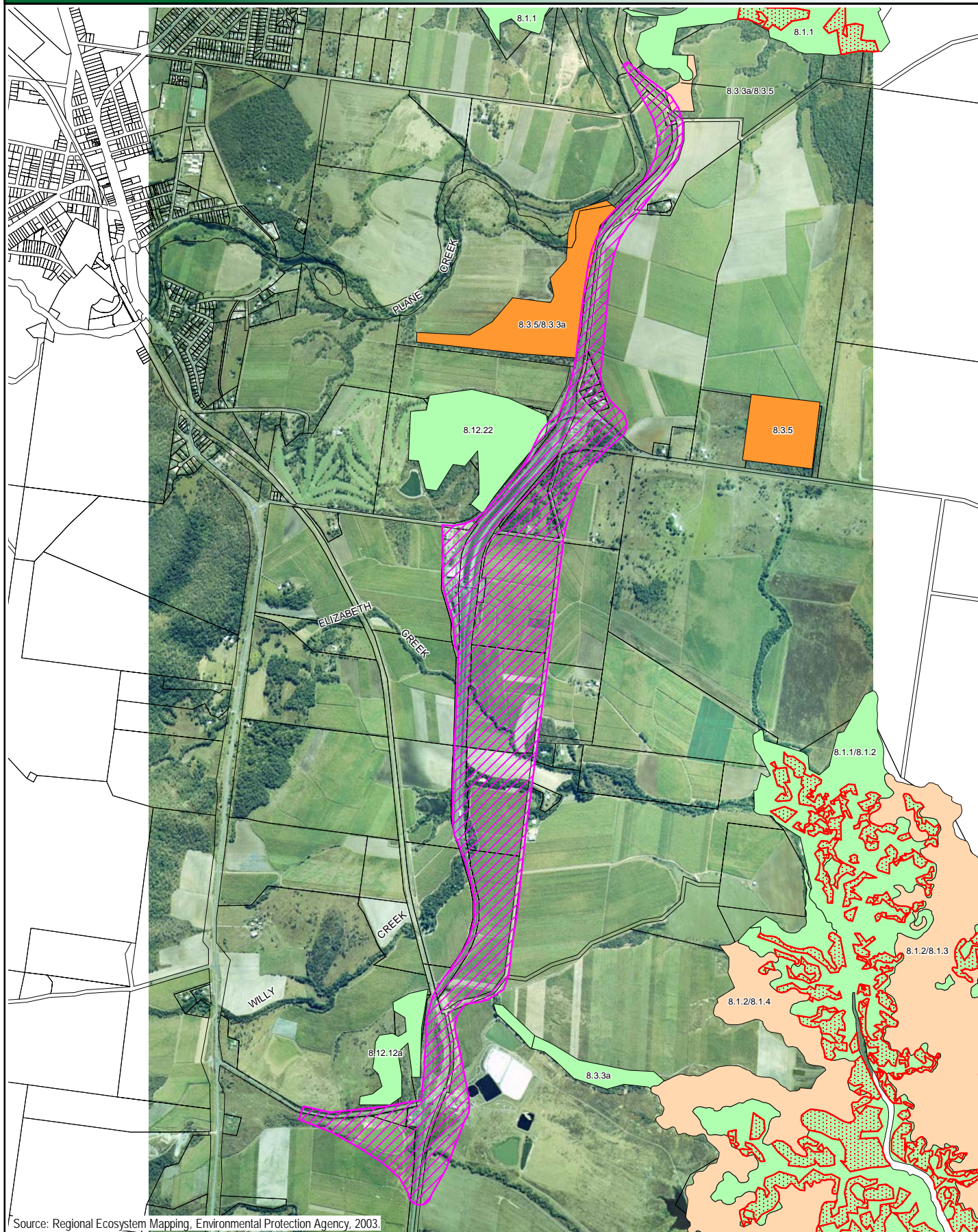
The vegetation communities along Plane Creek to the north and east of the project area are mapped as RE 8.1.1 (refer Figure 4). This includes an area along Smyths Road which is a mix of intertidal wetlands including mangroves, saline grasslands and saltmarsh communities (refer Figure 5). RE 8.1.1 is classified Not of Concern, however marine plants (including mangroves) are protected under Section 123 of the *Fisheries Act 1994*. A permit from the Department of Primary Industries and Fisheries (DPIF) is required to remove or damage marine plants.

The existing railway embankments and a thin strip adjacent to them are dominated by introduced shrubs and grasses. To the east of the project area adjoining the intertidal wetlands is an area, approximately 2 ha, classified as RE 8.3.3/8.3.5 (refer Figure 4).

A large area of vegetation, approximately 25 ha, adjoins the western boundary of the project area along Smyths Road between Plane Creek and Armstrong Beach Road. The vegetation and geology in this area is consistent with RE 8.3.5/8.3.3 as mapped (refer Figure 4). It is unlikely to be directly affected by the proposed works.

A large area of vegetation, approximately 30 ha, adjoins the western boundary of the project area along Armstrong Beach Road to Smyths Road/Armstrong Beach Road junction. The vegetation and geology in this area is consistent with RE 8.12.22 as mapped (refer Figure 4). It is unlikely to be directly affected by the proposed works.

JILALAN RAIL YARD



Source: Regional Ecosystem Mapping, Environmental Protection Agency, 2003.

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LEGEND

Regional Ecosystem Status

- Endangered - Dominant
- Endangered - Sub dominant
- Of Concern - Dominant
- Of Concern - Sub dominant
- Not of Concern

Project Area

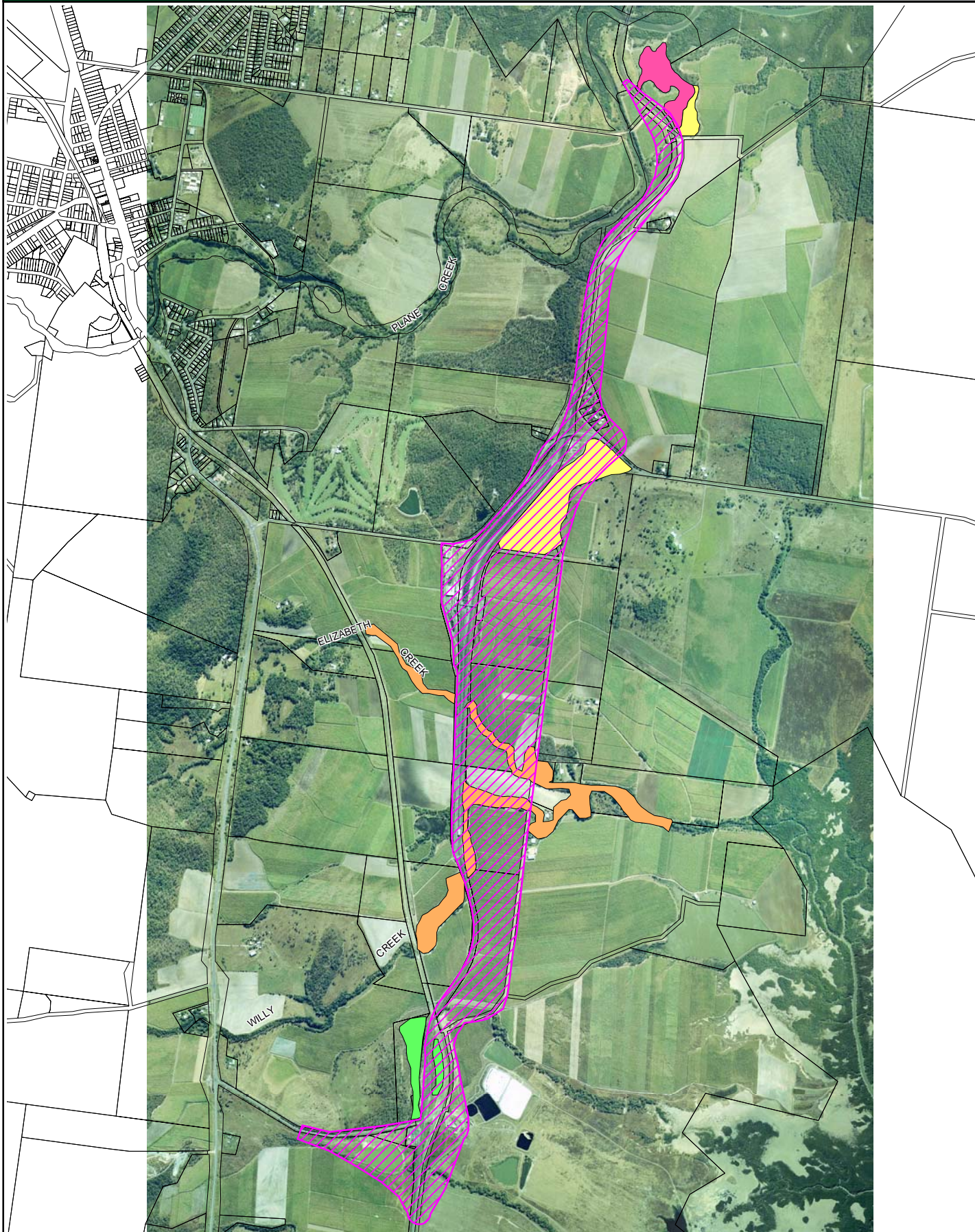
Essential Habitat
(Water Mouse - *Xeromys myoides*)

REGIONAL ECOSYSTEMS AND ESSENTIAL HABITATS

FIGURE 4

0 1000 (m)
Scale 1:20 000 (m) (@ A3 size)





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LEGEND

- Regrowth *Eucalyptus drepanophylla*/*E. platyphylla*/*Corymbia clarksoniana*/*E. exserta*/*C. trachyphloia* woodland with a low shrub layer of grass trees (*Xanthorrhoea* sp)
- Melaleuca leucadendra*/*Casuarina cunninghamiana* open forest with a rainforest understorey
- Corymbia Clarksoniana*/*Lophostemon suaveolens*/*Eucalyptus platyphylla* woodland
- Mixed intertidal community
- Project Area

VEGETATION COMMUNITIES

FIGURE 5

0 1000 (m)
Scale 1:20 000 (m) (@ A3 size)



A vegetation community, approximately 10 ha, is located within the project area to the east of Gurnetts Road and south of Armstrong Beach Road (refer Figure 5). The vegetation community within this area consists of *Corymbia clarksoniana*, *Lophostemon suaveolens* and *Eucalyptus platyphylla* woodland with a canopy approximately 10 m tall and a mid stratum dominated by smaller native trees and shrubs. The ground layer is highly modified by cattle grazing and was dominated by exotic grasses.

The vegetation is not mapped as a remnant RE due to the pressures from cattle grazing and clearing, and hence the area does not contain sufficient characteristics to be considered an RE.

The vegetation community of the Elizabeth Creek riparian zone consists of a very narrow band of *Melaleuca leucadendra* and *Casuarina cunninghamiana* open forest with a rainforest understorey on both banks with a 15 m average wide from edge to edge. The canopy contains some large mature trees but the understorey is highly disturbed (refer Figure 5). However, the riparian zone of Elizabeth Creek is not classified as an RE as a result of land use pressures (ie area adjoining riparian zone is primarily cropping (sugar cane)).

The species mix and geology in this sub-area is consistent with RE 8.3.3, however due to the area and the degree of disturbance the vegetation is not mapped as remnant vegetation. RE 8.3.3 is currently classified as Not of Concern under the VM Act.

The vegetation within the riparian zone of Willy Creek consists of *Melaleuca leucadendra* and *Casuarina cunninghamiana* open forest with a rainforest understorey and is dominated by very large mature Weeping teatree (*Melaleuca leucadendra*) and River oak (*Casuarina cunninghamiana*).

The community is in better condition than the vegetation found along Elizabeth Creek because of its width, which varied between 20 m and 30 m, greater species diversity and because there is less weed infestation. However, the riparian zone of Willy Creek is not classified as an RE as a result of land use pressures (ie area adjoining riparian zone is primarily cropping (sugar cane)).

The species mix and geology in this sub-area is consistent with RE 8.3.3, however due to the area and the degree of disturbance the vegetation is not mapped as remnant vegetation. RE 8.3.3 is currently classified as Not of Concern under the VM Act.

Located in the southern section of the project area, west of the North Coast Rail Line and north of Oonooie Road is an area mapped as RE 12.12.12 (refer Figure 4). However, the community within and adjoining the project is more consistent with RE 8.12.22.

The community consisted of regrowth *Eucalyptus drepanophylla*, *E. platyphylla*, *Corymbia clarksoniana*, *E. exserta* and *C. trachyphloia* woodland with a low shrub layer of grass trees (*Xanthorrhoea* sp) (refer Figure 5). The canopy is approximately 10 m tall, including Grey ironbark (*Eucalyptus drepanophylla*) and Broad-leaf paperbark (*Melaleuca viridiflora*).

Within the downstream environs of Plane Creek and Willy Creek catchments the area is primarily intertidal wetlands including mangrove and saltmarsh communities and saline grasslands (refer

Table 4.6). With lower reaches of Willy Creek and Llewellyn Bay intertidal wetlands encompass an area of approximately 1,000 ha, while in the lower reaches of Plane Creek and Sarina Inlet intertidal wetlands encompass an area of approximately 1,000 ha.

Table 4.6 Regional Ecosystems within the downstream environs

Regional Ecosystem	Description	Status
RE 8.1.1	Open-shrubland to closed forest of mangrove species forming a variety of associations	Not of Concern
RE 8.1.2	Samphire open forland to isolated clumps of forbs on salt pans and plains adjacent to mangroves	Of Concern
RE 8.1.3	<i>Sporobolus virginicus</i> grassland on marine sediments	Of Concern
RE 8.1.4	<i>Paspalum</i> spp. and <i>Fimbristylis ferruginea</i> sedgeland/grassland (estuarine wetland). Includes areas of deep open water with clumps of <i>Schoenoplectus littoralis</i> ± <i>Eleocharis dulcis</i>	Of Concern

Fauna

No rare and threatened fauna were located during the initial surveys, however the search of the ecological databases identified the Radjah shelduck (*Tadorna radjah*), which is listed as Rare under the NC Act. The vegetation communities present within and/or adjacent the project area have the potential to support the following significant species:

- Rufous owl (*Ninox rufa*) listed as Vulnerable under the NC Act. It inhabits rainforest, patches of monsoon forest, vine scrub and gallery forest along creeks (Pizzey and Knight 2003). Its known distribution includes the project area; and
- Grey goshawk (*Accipiter novaehollandiae*) listed as Rare under the NC Act. It inhabits rainforests, forests, forest gullies and valleys, taller woodlands, timber on watercourses and open country in autumn dispersal (Pizzey and Knight 2003). Its known distribution includes the project area.

It is likely that the habitat within the area supports a greater diversity of fauna species, including species of state and/or national significance. A search of the ecological databases identified 48 species, including two amphibians, 42 bird and four mammalian species.

The project area is located within an area that has been heavily cleared for the cultivation of sugar cane with scattered patches of eucalypt woodland and thin strips of paperbark open forest which line the banks of Elizabeth Creek and Plane Creek. The vegetation along Plane, Elizabeth and Willy Creeks form wildlife corridors between the large areas of remnant vegetation to the east on the coastal plain and to the west of the project area associated with the Connors Range. There is another wildlife corridor approximately 8 km to the south of the project area along Plumtree Creek.

4.8 Visual Amenity

The visual character of the project area is largely dominated by the infrastructure associated with the existing Jilalan Rail Yard, and surrounding areas of sugar cane production.

The main views of the project area will likely be from the following viewpoints:

- The southern outskirts of the township of Sarina;
- Bruce Highway;
- North Coast Rail Line
- The Sarina Golf Course on Armstrong Beach Road; and
- A number of homesteads on the neighbouring sugar cane farms.

Although there is already existing (and extensive) rail infrastructure at Jilalan the main visual landscape character is sugar cane production with scattered patches of remnant forest and fringing forest along the banks of creeks and private property. The area is bound to the west by the Connors Range and to the east by forest and woodland on coastal plain.

Further visual assessment investigations will need to be undertaken during the planning phase of the project.

4.9 Traffic and Transport

There are several road/rail interfaces (rail crossings) within and adjacent to the project area. A preliminary traffic assessment is currently being undertaken to inform the project design phase as to which of the various alterations/options is most appropriate in terms of safety, operations and cost.

A further detailed traffic and transportation investigation will be undertaken as part of the planning phase of the project in consultation with key stakeholders including Sarina Shire Council, Department of Main Roads (DMR), CSR and Canegrowers.

4.10 Cultural Heritage

A search of the Heritage Register on the EPA website revealed that the project area does not contain any listed non-Indigenous cultural heritage sites under the *Queensland Heritage Act 1992*. No sites were listed under the Commonwealth National Estate Register for the project area.

A search of the Native Title Tribunal database identified two possible Native Title Claimant Groups within the vicinity of the project area, Yuibera People (QC98/37) and Wiri # 2 People (QC98/11).

Further Indigenous cultural heritage investigations will need to be undertaken during the planning phase of the project.

4.11 Socio-Economic

The total population of the Sarina Shire area (according to the Mackay Whitsunday Regional Economic Development Corporation) is reported to be approximately 10,000 persons with the majority within the administrative centre of Sarina. These figures will have changed slightly as they are based upon the 2001 census figures which are currently being updated to reflect the 2006 census.

The median age for Queensland is 35 years. When compared with Queensland as a whole, the Sarina Shire region has a noticeably greater distribution of people in the age groups of 0-14, 20-34 and 35-39. The Mackay Whitsunday region compared to Queensland also has relatively fewer people in the 65 and over age grouping.

The population growth in the Sarina/Mackay region in recent times has occurred as a result of increasing major industry growth. Table 4.7 illustrates the employment by occupation in the Sarina Shire region.

Table 4.7 Employment by Occupation

Occupation	Percentage (based on 2001 consensus information)
Managers and Administration	10.3
Professional	8.9
Associate professional	8.3
Advanced clerical and service workers	2.5
Inter clerical, sales and service workers	12.0

Occupation	Percentage (based on 2001 consensus information)
Elementary clerical, sales and service workers	6.9
Labourers and related workers	11.6
Inadequately described or not stated	3.2

5. Potential Environmental Impacts

5.1 Land Use

Land uses within and adjacent to the project area, being largely cane production and dry land grazing, may be affected as a result of the proposed JRYUP. Given its catchment area, operations at the CSR Sarina Distillery at Oonooie, may also be affected, together with local traffic disruptions.

It is likely that the Community Infrastructure Designation (CID) process under IPA will be adopted for the JRYUP. However, recent amendments to IPA community infrastructure exemptions may apply and hence negate the need for CID for at least some aspects of the project. Should a CID or the community infrastructure exemptions not apply to the JRYUP in its entirety, a Material Change of Use under Sarina Shire Council's planning scheme may be considered. Regardless of the approach taken, community and stakeholder consultation will be undertaken during the planning phase of the project and associated land acquisition processes.

5.2 Soils and Geology

The proposed JRYUP is located in the vicinity of Plane, Elizabeth and Willy Creeks. If suitable control measures are not implemented during construction and operations, there will be the potential for disturbance of these creeks and their associated flora and fauna. There may also be the potential for the destabilisation of the creek banks and substrates. Potential impacts such as creek bank destabilisation and disturbance will be managed through the implementation of an appropriate Construction Environmental Management Plan (CEMP).

If ASS are identified onsite, there may be potential for exposing these soils to the atmosphere during earthworks and excavation, which may in turn produce sulfuric acid runoff and contaminate downstream waters, including the Sarina Inlet and/or Llewellyn Bay. An investigation will be undertaken to determine if ASS exist within or adjacent to the project area.

5.3 Water Quality

The construction and operational works of the project have the potential to negatively impact on the existing water quality of Elizabeth, Willy and Plane Creeks and the receiving waters of Llewellyn Bay and Sarina Inlet.

Direct and indirect impacts may occur to waterways within and adjacent to the project area.

Potential pollutants may include hazardous and chemical substances (such as hydrocarbons from oil spills, solvents, cement slurry, wash waters and sludge) and litter may be generated particularly during construction if not managed properly.

During the construction and operational phases the potential sources of surface water contamination will need to be managed appropriately. Potential sources of contamination include:

- Disturbance of ASS;
- Sediment from disturbed areas, including instream sediments;
- Pesticides from adjoining land;
- Hydrocarbon or chemical leaks and small scale spills from vehicles and storage areas;
- Discharges from temporary sewerage and site facilities; and
- Storage and disposal of waste material.

The Environmental Management Plans (EMPs) for the construction and operational phases will include mitigation measures to ensure compliance with relevant guidelines.

5.4 Air Quality

During construction, heavy earthworks will be required to prepare the site for construction of the proposed project, and together with increased vehicle traffic, there is the potential for increased dust generation and local air quality impacts. During operation there is also the potential for a localised reduction of air quality due to elevated emissions of coal dust from train movements.

Dust generation will be addressed in the Construction and Operational EMPs, which will state the mitigation measures to be implemented, to ensure air quality levels remain within the recommended guidelines.

A predictive modelling study of potential dust emissions (both construction and operation) from the JRYUP will be undertaken as part of the planning phase of the project.

5.5 Noise and Vibration

During the construction phase of the project there will likely be a temporary rise in ambient noise levels within the immediate vicinity of construction activities. The noise generated from the increased activity has the potential to generate noise that will be audible from adjoining properties and industry.

Once the JRYUP is operational, there will likely be an increase in noise levels due to an increase in train movements.

The potential increase in noise levels, during construction and operation, is to be mitigated through a combination of environmental management strategies, appropriate infrastructure design criteria and separation distances to sensitive receptors. Operational noise levels will comply with QR's operational noise criteria.

Furthermore, the potential for vibration impacts during construction and operation are expected to be minimal, with limited vibration impacts occurring as part of the operational phase.

5.6 Ecology

There is the potential for the works to impact on the ecological value of the receiving environments, including significant areas (ie Great Barrier Reef WHA and Essential Habitat Area for Water Mouse (*Xeromys myoides*)).

The works also have the potential to indirectly impact on the biodiversity of the area, including significant flora and fauna species. The main threat is clearing native vegetation, particularly within existing wildlife corridors.

The increase severing of the wildlife corridor, particularly along Willy Creek, may effect the movement of forest dependant fauna from the mountain ranges to the coastal lowlands in the region. The vegetation along Plane, Elizabeth and Willy Creeks provides habitat for forest dependant fauna in a highly modified landscape and contributes to the biodiversity of the local area. It is also likely to act as fauna refuge during drought and after sugar cane harvesting.

Clearing of mapped REs will require approval under the VM Act and will need to demonstrate compliance with the *Regional Vegetation Management Code*. Clearing or disturbance to mangroves would also require a permit from DPIF.

5.7 Visual Amenity

The proposed JRYUP will have an impact on the visual character of the surrounding area from predominantly sugar cane fields and remnant vegetation (refer Photo 1), to an increased area of rail transport-related infrastructure (refer Photo 2). The major visual impact will be to the adjacent residents along Gurnetts Road and Armstrong Beach Road (east). The existing and proposed infrastructure will

also be visible for passengers travelling along the North Coast Rail Line and vehicular traffic along the Bruce Highway.



Photo 1 Sugar cane fields and remnant vegetation typical of project area



Photo 2 Existing Jilalan Rail Yard

5.8 Traffic and Transport

The project will generate an increase in road traffic to and from the site during construction. It will also generate additional rail and road traffic during operations. The impact of this additional traffic will be addressed as part of the EIS process.

A risk assessment on the potential risks and safety impacts for any non-barrier and/or level crossings over the rail lines will be conducted as part of standard QR process for new projects.

5.9 Cultural Heritage

The potential impacts on cultural heritage of non-Indigenous origins are expected to be low as no known cultural heritage sites are located in the vicinity of the project area. Previous ground disturbances have occurred during past construction, maintenance and agricultural activities. However, there is always a possibility of uncovering artefacts during initial clearing and excavation works.

Consultation with relevant Traditional Owner groups will occur as required, and the methodology to be adopted for the planning phase of the project will comply with the *Aboriginal Cultural Heritage Act 2003* and associated Cultural Heritage Duty of Care Guidelines.

5.10 Socio-Economic

The local socio-economic impact of the JRYUP will occur primarily during the construction phase although there will likely be an increase in QR personnel during operations.

The JRYUP will aid in the continued strengthening of the Bowen Basin coal supply infrastructure which will have a significant positive flow-on economic effects for the Queensland export coal industry and the regional communities which support the industry.

Potential social impacts and economic benefits will be further assessed as part of the planning phase of the project.

6. Environmental and Risk Management

6.1 Introduction

In accordance with QR's Environmental Statement (refer Appendix A) and Environmental Management System (EMS), QR is committed to the continual improvement of environmental management and sustainable development.

6.2 QR Environmental Statement and Environmental Management System

QR is committed to effective management of its environmental risks. Appendix A contains QR's Environmental Statement.

QR is taking a proactive approach to meeting its environmental obligations and continually improving environmental performances through an EMS that is consistent with ISO14001 and AS3806 Compliance Programs. QR's EMS sits under the Governance and Management System Framework which applies risk principles to various disciplines in QR. Under this framework QR Board approved policies are supported by management systems, which detail how the policy goals are to be achieved in QR. This gives effect to the QR Board Governance Charter including the Director's responsibility for, as well as the organisational role in managing the interaction between economic efficiency, social obligations and environmental responsibility.

QR's EMS is designed to provide the framework for ensuring that the associated Policy is implemented, achieved, reviewed and maintained. The EMS includes standards and specifications which are mandatory and associated documents which are guidelines to assist with implementation.

QR issued their EMS in August 1999 recognising that the system would need to be refined over time with the benefit of experience, input from the Business Groups and changing internal and external environments. QR's EMS is currently being substantially revised to align and integrate QR's recently revised Governance and Management System Framework and to reflect risks identified in QR's Environmental Risk Report.

6.3 Project Environmental Management

The environmental impacts and risks associated with the project will be managed by the development and implementation of an Environmental Management Plan (EMP) for the construction (Construction EMP) and operation (Operation EMP) phases of the project. This will allow necessary planning to ensure all reasonable measures are taken to protect the environmental values which may be impacted upon by the construction and operation activities and related infrastructure.

The purpose of an EMP is to detail the actions and procedures to be carried out during the implementation phase of the project in order to mitigate adverse, and enhance beneficial, environmental and social impacts.

The EMP will address proposed environmental safeguards and control measures and establish the framework to ensure they are implemented. In effect, the EMP will become the key reference document whereby it converts the undertakings and recommendations into a set of actions and commitments to be followed by designers, constructors and operators.

The EMP will serve as the framework for measuring the effectiveness of environmental protection and management. This is achieved by specifying the monitoring, reporting and auditing requirements, including responsibilities, timing and format in order to meet the necessary performance criteria. The EMP also makes provision, as appropriate, for unseen events by outlining corrective actions which may be implemented in these situations. The EMP will be written as a stand alone "living" document.

6.4 Environmental Design Report

An Environmental Design Report will be undertaken during the detailed design phase of the project. The purpose of the Environmental Design Report is to review the designer's awareness of the environmental issues of the project throughout the design phase. The report will demonstrate the integration of the project's environmental issues into the design.

The report also has an auditing purpose to ensure all the issues identified in the EMP are addressed in the design and/or contract documentation.

6.5 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) ensures the environmental safeguards proposed as a result of the planning and environmental assessments associated with the project are enacted in an appropriate and timely fashion.

Design and construction measures/strategies will ensure that all reasonable measures are taken to protect the environmental values, which may otherwise be impacted during construction activities associated within the proposed project.

The CEMP details the performance objectives, actions and procedures to be carried out during the construction phase of the project to minimise potential environmental impacts. The CEMP defines the environmental issues and risks of the proposed development by addressing the following:

- The environmental policies of the Construction Contractor;
- Environmental responsibilities;
- Environmental site induction;
- Environmental monitoring;
- Environmental reporting;
- Environmental incidents/complaints;
- Environmental audits; and
- A management plan for each environmental element.

With the effective implementation of the developed CEMP during the construction phase and the EMP during operation, it is expected that environmental risks can be managed to meet all legislative requirements and stakeholder's expectations.

6.6 Hazard, Risk and Health and Safety Issues

There will be a number of potential hazards and associated risks with both the construction and operation of the JRYUP. A hazard is a source, or situation with a potential for harm in terms of:

- Human injury or ill health;
- Damage to property;
- Damage to the environment; or
- A combination of these.

A risk is the likelihood and consequence of an injury or harm occurring as a result of a hazard. Risk management is the systematic application of management policies, procedures and practices to the tasks of establishing the context, identifying, analysing, assessing, controlling and monitoring risk.

To enable effective risk management, some form of formal risk assessment is required to identify the risk associated with the construction and operation of the project. The formal risk assessment process follows the methodology outlined in the Australian Standard AS4360 Risk Assessment. This process is based on:

- Establishing the context;
- Identifying the risks;
- Analysis of the risks;
- Evaluating the risks; and
- Treating the risks.

At various stages of the project, formal risk assessments will be conducted to ensure that effective risk management of all risks (including health and safety risks) occurs during both the construction and operational phases of the project.

7. Environmental and Planning Approval Process

7.1 Overview

This section describes the project approval framework and the relevant legislation to be addressed by the proposed JRYUP, and considers the project within a broader project development process.

Due to the location, scale and nature of the project there will be a need for various approvals from Commonwealth, State and Local Government.

The likely approvals required for the project are provided below.

7.2 Commonwealth Approvals

Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act provides the primary environmental assessment and approval legislative framework for the Commonwealth Government. The EPBC Act establishes the requirement for the approval by the Commonwealth for actions which have, will have or are likely to have a significant impact on matters of national significance.

The current list of matters of national environmental significance are:

- The world heritage values of a declared World Heritage property;
- The ecological character of a declared Ramsar wetland;
- Listed threatened species and ecological communities;
- Listed migratory species;
- Nuclear actions; and
- Commonwealth marine areas.

While the proposal is unlikely to significantly impact on any of the matters of national environmental significance as listed above, consideration will be given to the need for submitting an EPBC Referral to the Commonwealth Department of Environment and Heritage during the planning phase of the project.

7.3 State Approvals

7.3.1 Current QR Environmental Approvals

QR currently holds a development approval with the EPA for the following Environmentally Relevant Activities (ERAs) for the existing Jilalan Rail Yard:

- 11a - Crude oil or petroleum product storing;
- 15b - Sewage treatment;
- 72 - Railway facility; and
- 85 - Regulated waste treatment.

In addition to undertaking a comprehensive environmental impact assessment process, a number of other planning and environmental approvals will need to be secured prior to construction and operation of the JYRUP. These may include:

- Community Infrastructure Designation under IPA;
- Material Change of Use for an Environmentally Relevant Activity (ERA) under the *Environmental Protection Act 1994* and IPA;
- Material Change of Use under the Sarina Shire Council's planning scheme;
- Amended Registration Certificate for ERAs under the *Environmental Protection Act 1994*;
- Cultural Heritage Management Plan under the *Aboriginal Cultural Heritage Act 2003*;

- RE Vegetation Clearing under the VM Act and IPA;
- Marine Plant Removal Permit under the *Fisheries Act 1994* and IPA;
- Building or Raising Water Barrier Works Permit under the *Fisheries Act 1994* and IPA;
- Tidal Works Permit under the *Coastal Protection and Management Act 1995*; and
- Riverine Protection Permit (RPP) under the *Water Act 2000*.

8. Conclusion

The proposed Jilalan Rail Yard Upgrade Project (JRYUP) will increase the capacity and operational efficiency of the Goonyella Rail System servicing the Bowen Basin coalfields, in line with other coal supply chain infrastructure expansion at the Hay Point Services Coal Terminal (HPSCT) and the Dalrymple Bay Coal Terminal (DBCT).

A declaration of the proposal as a 'Significant Project' under the *State Development and Public Works Organisation Act 1971* will ensure that all environmental aspects associated with the project are adequately assessed and managed in a coordinated and sustainable manner.

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