3. Assessment of the environmental effects and ways of managing those effects

This section includes an assessment of the environmental effects of development for the proposed community infrastructure and ways proposed to manage those effects. When addressing the environmental effects of the development, the CID Guidelines require that regard is given to the following:

- The meaning of ‘environment’.
- The matters listed in Schedule 2 of the Guidelines.
- Short-term, long-term and cumulative effects.
- Effects from use and works, during both the construction phase and the operational phase of the proposed community infrastructure.
- On-site and off-site effects.

The NGR maintenance centre will be developed in accordance with Queensland Government’s Environmental Management Principle (MD-12-22), AS/NZS ISO 14001 Environmental Management Systems: Requirements with guidance for use, and any relevant requirements set out in the Contract.

3.1 Definition of ‘environment’

The CID Guidelines define ‘environment’ as including:

a) ‘ecosystems and their constituent parts including people and communities

b) all natural and physical resources

c) those qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony, and sense of community

d) the social, economic, aesthetic and cultural conditions affecting the matters in paragraphs (a), (b) and (c) or affected by those matters’.

3.2 The matters listed in Schedule 2 of the Guidelines

Schedule 2 of the CID Guidelines identifies matters that need to be addressed in the assessment of the environmental effects of the proposed community infrastructure, to the extent that they are relevant to the proposal.
The matters listed in Schedule 2 of the CID Guidelines include:

- soils and geology
- natural resources
- natural hazards
- water quality
- conservation values
- *Environment Protection and Biodiversity Conservation Act 1999*
- cultural heritage
- health, safety, amenity and social impacts
- infrastructure
- traffic and transport.

### 3.2.1 Soils and geology

This section addresses the requirements of Schedule 2, item 1 of the CID Guidelines which requires the following be addressed for the matters of soils and geology:

1. *Soils and geology*

1.1 *Is the proposal compatible with the geology and topography of the site?*

1.2 *Does the site have acid sulfate soils or potential acid sulfate soils?*

1.3 *Do the site’s soils have erosion potential or does the site have potential hillslope stability problems?*

1.4 *Is the site subject to salinity or soil degradation? Is any part of the site subject to an approved project plan for soil conservation under the Soil Conservation Act 1986?*

#### 3.2.1.1 Topography and geology

The NGR maintenance centre site is relatively level, varying from approximately 35 m to 40 m AHD. Lot 27 SP136632 has been significantly cut with informal retaining of the bank at the southern side of the lot to ensure the surface is level with the existing Ipswich-Rosewood rail line. There are several stockpiles of ballast material located adjacent to the rail line in the northern part of Lot 27 SP136632.

The former Dixon Street (west) road reserve contains an unsealed road with a gravel surface connecting Karrabin-Rosewood Road with the western access to Lot 27 SP136632. Fill has been placed and levelled across this portion of the site.

Topography in the site is described by Queensland Department of Natural Resources and Mines (DNRM) Interactive Resource and Tenure Map (V4.2, DNRM 2013) as ‘Terraced valley plains’ and is not considered a hazard or issue for development as it is generally flat. However, cut and fill will be required across the site, as well as the construction of a retaining wall at the southern boundary of Lot 27 SP136632.

DNRM’s Interactive Resource and Tenure Map (V4.2, DNRM 2013) indicates that the site crosses two geological units as follows:
Gatton sandstone – consisting of lithic labile and feldspatic labile sandstone, form the early Jurassic age.

Ts/1-SEQ – consisting of claystone, siltstone and sandstone, from the Tertiary age.

The NGR maintenance centre does not propose to impact the underlying geology of the site and is therefore a compatible land use.

### 3.2.1.2 Acid sulfate soils

It is widely accepted that acid sulfate soils (ASS) and potential acid sulfate soils (PASS) are commonly found below 5 m AHD, particularly in low-lying coastal areas.

The site is located approximately 45 km inland with a minimum elevation of 35 m AHD; therefore, it is unlikely that ASS or PASS would be present within the site.

### 3.2.1.3 Soils

#### Erosion potential and hillslope stability

The DNRM Interactive Resource and Tenure Map (V4.2, DNRM 2013) indicates that the NGR maintenance centre site contains brown and red self-mulching cracking clays exhibiting uniform fine cracking smooth faced peds (Ug5.34, Northcote Factual Key or Vertisol Australian Soil Classification system) as the dominant soil type. This underlying soil type is prone to erosion in certain conditions and standard soil management practises must be implemented during the construction and operation of the NGR maintenance centre to reduce soils loss.

However, historical rail activities in the NGR maintenance centre site have introduced many and varied soils and earth fill so an accurate soil description of the site is unreliable. There are several stockpiles of ballast material located adjacent to the Ipswich-Rosewood rail line in the northern part of Lot 27 SP136632.

The site is relatively level and has been heavily modified by historical land uses including a cut and fill being removed to a depth of 4 m to 5 m which has resulted in a steep bank 5 m high on the southern boundary. Lot 27 SP136632 is level with the existing Ipswich-Rosewood rail line. The 5 m high steep bank will be required to be stabilised during the construction and operation of the NGR maintenance centre.

#### Soil Conservation Act 1986

The site is not subject to an approved project plan for soil conservation under the Soil Conservation Act 1986; therefore the provisions of this Act are not applicable to the NGR maintenance centre.

### 3.2.2 Natural resources

This section addresses the requirements of Schedule 2, item 2 of the CID Guidelines which requires the following be addressed for the matter of natural resources:

2. **Natural resources**

2.1 **Does the site include land identified as good quality agricultural land, or is the site adjacent to agricultural areas? If so, will the proposal be compatible with agricultural activities?**

2.2 **Are there fisheries habitats or fish habitat areas located on or adjacent to the site?**

2.3 **Will the proposal require the removal, destruction or damage of marine plants?**
2.4 Will the proposal involve the construction of waterway barrier works in waterways, or require the construction of a fish way?

2.5 Will the proposal involve taking, using or interfering with the flow of water on, under or adjoining any part of the site?

2.6 Is the site located in or adjacent to a State forest or timber reserve under the Forestry Act 1959?

2.7 Does the proposal include clearing of native vegetation not covered by the item below?

2.8 Does the proposal include clearing native vegetation in:
   (a) a forest reserve or protected area under the Nature Conservation Act 1992; or
   (b) a State forest or timber reserve under the Forestry Act 1959?

2.9 Does the site include or is it adjacent to any identified mineral, oil, gas or extractive resources, pipelines or haul routes servicing these resources?

2.10 Does any part of the site include land that is part of the State Stock Route network?

2.11 Does the site include any part of land leased, reserved, or granted in trust under the Land Act 1994?

2.12 Is any part of the site within a port or on strategic port land?’

3.2.2.1 Agriculture

This section addresses the requirements of Item 2.1 ‘Does the site include land identified as good quality agricultural land, or is the site adjacent to agricultural areas? If so, will the proposal be compatible with agricultural activities?’ as set out in Schedule 2 of the CID Guidelines.

SPP 1/92 Development and the Conservation of Agricultural Land, which governed GQAL expired in December 2012.

Agricultural land is currently protected by SPP 1/12: Protection of Queensland’s strategic cropping land, which commenced in January 2012, in conjunction with the Strategic Cropping Land Act 2011 and Regulation.

DNRM has developed trigger maps to assist in identifying potential strategic cropping land (SCL). Within the SCL mapping, there are two areas defined as ‘protection areas’; these include the Western Protection area and the Southern Protection area, as well as ‘trigger areas’ which provides a broad scale indicator of likely cropping land.

Reference to the DNRM Interactive Resource and Tenure Map (V4.2, DNRM 2013) indicates that the NGR maintenance centre site does not fall within either protection area; nor is it located within the mapped trigger areas.

As the NGR maintenance centre is not located within an area of potential SCL or agricultural land use, it will not conflict with agricultural activities.
3.2.2.2 Fisheries, marine and waterways

This section addresses the requirements of Item 2.2 ‘Are there fisheries habitats or fish habitat areas located on or adjacent to the site’; Item 2.3 ‘Will the proposal require the removal, destruction or damage of marine plants’; and Item 2.4 ‘Will the proposal involve the construction of waterway barrier works in waterways, or require the construction of a fishway?’ as set out in Schedule 2 of the CID Guidelines.

The nearest major watercourse to the NGR maintenance centre site is the Bremer River, which is located within 1 km south-west and north-east of the site, and Ironpot Creek (approximately 800 m north-east).

DEHP’s regrowth mapping (Version 2.1) shows two first order watercourses traversing western parts of the site to form one second order watercourse draining north-east towards Bremer River. Aerial photography and site visits indicate that these watercourses are highly modified and cross the site within an existing culvert.

The Department of National Parks, Recreation, Sport and Racing (DNPRSR) manages 70 declared fish habitat areas along the Queensland coast, which protects more than 1.1 million hectares of high quality fish habitats. The nearest major waterways to the NGR maintenance centre site, Bremer River and Ironpot Creek, are not listed by DNPRSR as fisheries habitats or declared fish habitat areas (DNPRSR 2013).

The site is located approximately 45 km inland and outside of the coastal management zone, therefore the NGR maintenance centre will not require the removal, destruction or damage of marine plants.

Given the three tributary watercourses crossing the site appear to be drainage lines/culverts that are highly modified and ephemeral in nature, the NGR maintenance centre is not likely to involve the construction of waterway barrier works in waterways or require the construction of a fishway.

3.2.2.3 Flow of water

This section addresses the requirements of Item 2.5 ‘Will the proposal involve taking, using or interfering with the flow of water on, under or adjoining any part of the site?’ as set out in Schedule 2 of the CID Guidelines.

The NGR maintenance centre will not involve the taking or using of the flow of water on, under or adjoining any part of the site. The impact to drainage patterns and groundwater flow is addressed in detail in Section 3.2.4.7.

3.2.2.4 Vegetation

This section addresses the requirements of Item 2.6 ‘Is the site located in or adjacent to a State forest or timber reserve under the Forestry Act 1959?’, Item 2.7 ‘Does the proposal include clearing of native vegetation not covered by the item below?’, and Item 2.8 ‘Does the proposal include clearing native vegetation in: (a) a forest reserve or protected area under the Nature Conservation Act 1992; or (b) a State forest or timber reserve under the Forestry Act 1959?’ as set out in Schedule 2 of the CID Guidelines.

State forest or timber reserve

The site is not located in or adjacent to a State forest or timber reserve under the Forestry Act 1959; therefore the provisions of this Act are not applicable to the NGR maintenance centre.

Forest reserve or protected area

The site is not located in or adjacent to a forest reserve or protected area under the Nature Conservation Act 1992 (NC Act); therefore the provisions of this Act are not applicable to the NGR maintenance centre.
Remnant vegetation

Remnant vegetation in Queensland is classified by community type, known as regional ecosystems (REs). REs are vegetation communities that are consistently associated with a particular combination of geology, land form and soil in a bioregion as described by Sattler and Williams (1999). The Queensland Herbarium has mapped the remnant extent of REs for much of the State using a combination of satellite imagery, aerial photography and on-ground studies.

Conservation status for each RE is assigned one of three categories: Endangered, Of Concern or Least Concern under the Vegetation Management Regulation 2000. This status is determined according to its current distribution relative to its pre-European clearing distribution.

There are no areas of remnant vegetation mapped within the NGR maintenance centre site (refer to Figure 3.1). This is confirmed through historical aerial imagery of the site which shows the area existing vegetation had been cleared prior to 1955 (refer to Photo 3.1).

Source: Department of Environment and Resource Management (DERM) 1955

**Photo 3.1** Aerial imagery of the NGR maintenance centre site circa 1955

Essential habitat

Essential habitat is defined by DEHP as habitat essential for a species of wildlife listed as threatened under the NC Act and is recorded on the Essential Habitat Database Version 3.1

There is no mapped VM Act Essential habitat or Essential habitat species records within the NGR maintenance centre site (refer to Figure 3.1). The nearest area of mapped Essential habitat is located approximately 700 m south-east within a small area of mapped remnant vegetation. This area of Essential habitat is associated with the Koala (*Phascolarctos cinereus* (SEQ bioregion)) (DEHP 2013). The Koala, as it relates to the NGR maintenance centre, is discussed in detail in Sections 3.2.5.2 and 3.2.6.3.
High value regrowth vegetation

High value regrowth (HVR) vegetation is mature native vegetation that has not been cleared since 31 December 1989. HVR is designated a conservation status based on the RE represented within the regrowth vegetation. HVR and regrowth watercourses are regulated under the Queensland vegetation management framework and are shown on DEHP Regrowth Vegetation Mapping.

The vegetation occurring within the NGR maintenance centre site is mapped as HVR vegetation containing Of Concern REs (DEHP 2013) (refer to Figure 3.1). The HVR present is RE 12.9-10.7, described as *Eucalyptus crebra* woodland on sedimentary rocks.

The NGR maintenance centre will result in the clearing of all HVR vegetation from the site.

Clearing HVR vegetation comprises operational works assessable under the SP Act, unless the clearing is made exempt under Schedule 24 of the SP Regulation. The following exemptions listed under Schedule 24 of the SP Regulation will apply to the NGR maintenance centre:

a) ‘Under Part 2, item 2(g) – for freehold land, clearing that is for urban purposes in an urban area and the vegetation is regulated regrowth vegetation.

b) Under Part 2, item 2(l) – for freehold land, clearing of regulated regrowth vegetation under the regrowth vegetation code

c) Under Part 2, item 2(n) – for freehold land, clearing for development that is a significant community project to the extent it involves clearing regulated regrowth

d) Under Part 2, item 5(a(i)) – for land that is a road under the Land Act 1994, clearing that is carried out by a local government or by or for the chief executive of the department in which the Transport Infrastructure Act is administered and is necessary to construct road infrastructure or to source construction material for roads

e) Under Part 2, item 5 a(iii) – for land that is a road under the Land Act 1994, clearing that is carried out by a local government or by or for the chief executive of the department in which the Transport Infrastructure Act is administered and in an urban area and the vegetation is shown on the regional ecosystem map or remnant map as other than remnant vegetation.’

As such, it is considered that an application and assessment against the Regional Vegetation Management Code for Southeast Queensland Bioregion by DNRM is not required for clearing of HVR vegetation within the site.
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Figure 3.1
NGR maintenance centre site vegetation