Landsborough to Nambour

Rail Project

Supplementary Report

August 2010

Environmental Impact Statement

Queensland Government

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Supplementary Report to the Environmental Impact Statement

APPENDICES

Queensland Government

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Rail Project

Glossary

ARI	Average recurrence interval
ASS	Acid Sulfate Soils
BoM	Bureau of Meteorology
CAMCOS	Caboolture to Maroochydore Corridor Study
Climate Q	ClimateQ: Toward a Greener Queensland
Connecting SEQ 2031	Connecting SEQ 2031: An Integrated Regional Transport Plan for South East Queensland
Coastal Act	*Coastal Protection and Management Act 1995*
CPTED	Crime Prevention through Environmental Design
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DD Act	*Disability Discrimination Act 1992*
DEEDI	Department of Employment, Economic Development and Innovation
DERM	Department of Environment and Resource Management
DFE	Defined Flood Event
DIP	Department of Infrastructure and Planning
DSPAT	Disability Standards for Accessible Public Transport
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPA	Environment Protection Agency (now part of DERM)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPP Water	Environmental Protection (Water) Policy
ESD	Environmentally Sensitive Design
GIS	Geographic Information System
HES	High Ecological Significance
HRA	Hazard and risk assessment
IDAS	Integrated Development Assessment System

IPA	*Integrated Planning Act 1997* (now replaced by SPA)
IPCC	Intergovernmental Panel on Climate Change
KADA	Koala Assessable Development Area
Koala SPRP	SEQ Koala State Planning Regulatory Provisions
NTA	*Native Title Act (Cwth) 1993*
P & G Act	*Petroleum and Gas (Production and Safety) Act 2004*
PKADA	Priority Koala Assessable Development Area
QR Limited/QR	Queensland Rail Limited/ Queensland Rail
RE	Regional ecosystem
SCRC	Sunshine Coast Regional Council
SDPWO Act	*State Development and Public Works Organisation Act 1971*
SEIS	Supplementary Environmental Impact Statement
SEQ RCMP	South East Queensland Regional Coastal Management Plan
SEQ Regional Plan	South East Queensland Regional Plan 2009-2031
SEQIPP	South East Queensland Infrastructure Plan and Program 2009-2026
SPA	*Sustainable Planning Act 2009*
SPP	State Planning Policy
TMR	Department of Transport and Main Roads
TOR	Terms of Reference
TWCMP	Total Water Cycle Management Plans
VM Act	*Vegetation Management Act 1999*
VMP	Vegetation Management Plan
WMP	Weeds Management Plan
WSUD	Water Sensitive Urban Design

1 Introduction

1.1 Project Background

The Department of Transport and Main Roads (TMR), as Project Proponent, propose the Landsborough to Nambour Rail Project (the Project). The Project involves construction of a double track railway along a predominantly new route, with provision to accommodate up to two additional tracks if required in the future. The Project will improve the efficiency, service frequency, operating speeds and reliability of services, and cater for increasing demand for rail services in the region arising from population and freight transport growth.

The selection of the preferred corridor for the Project is documented in the Route Identification Report, released in 2008. Various consultation activities have been undertaken to inform the assessment process, and provide feedback to the community about project objectives and milestones. These are detailed in Chapter 1 of the EIS (Section 1.9).

1.2 The Environmental Impact Statement

On 3 July 2007, the Coordinator-General declared the Project to be a 'significant project for which an Environmental Impact Statement is required', pursuant to the *State Development and Public Works Organisation Act 1971* (SDPWO Act). This declaration was made due to the Project's potential impact on significant infrastructure, potential environmental effects, and its strategic significance.

The Project was referred to the Commonwealth Minister for the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) but was not declared a controlled action and therefore does not require assessment and approval by the Commonwealth Government.

The Environmental Impact Statement (EIS) was prepared in accordance with the requirements of the Terms of Reference (TOR) for the Project which were issued by the Coordinator-General pursuant to Part 4 of the SDPWO Act in October 2008.

The EIS investigates the preferred corridor for the Project, and identifies the nature of potential impacts or benefit, and the requirements for management or mitigation.

The EIS was released for comment in July 2009.

1.3 Purpose of a Supplementary Report

Upon review of the 57 submissions received on the Environmental Impact Statement, in December 2009 the Coordinator-General requested the Proponent prepare a Supplementary Report (SEIS) in response to the submissions and other information relevant to the Landsborough to Nambour Rail Project.

While the main purpose of the SEIS is to formally address and respond to issues raised in these submissions, the SEIS also provides:

- clarification of data
- additional information for consideration by the Coordinator-General
- a considered response to the issues raised in the submissions
- documentation of project changes since the release of the EIS
- documentation of relevant legislative and policy changes since the release of the EIS.

The SEIS will be provided to the Coordinator-General for consideration in preparing the Coordinator-General's report, which evaluates the EIS.

Information within this SEIS is current up to the time of publishing.

1.4 Consultation and Public Notification

An open and transparent community engagement strategy has been implemented for the Project. The purpose of the strategy was to inform and educate the community about the Project, whilst providing opportunities for the community to participate in and comment on the route selection, preliminary design and EIS phases of the Project.

The consultation process has included communities located in and around the Project area, elected State and Local Government representatives and state and local government officers, industry sectors, traditional owners, interested individuals, groups and organisations.

The submission period for the EIS ran from 13 July 2009 through to 24 August 2009.

During this period six information sessions were held in Landsborough, Mooloolah, Eudlo, Palmwoods, Woombye and Nambour.

A description of the consultation activities undertaken for the Project to date is included in the EIS. The EIS document is available for download from the Department of Planning and Infrastructure website at www.dip.qld.gov.au/projects, the Project website www.landsborough-nambour.com.au or requested in CD (pdf) format from the study team (phone 1800 221 991 or email planning.projects@tmr.qld.gov.au).

1 Introduction

1.5 Terminology

In this SEIS, the following terms are used:

- Proponent: the Department of Transport and Main Roads (TMR).
- Contractor: the party responsible for construction works.
- The Precautionary Principle: The Sunshine Coast Regional Council (SCRC) submission has queried the use of the precautionary principle. This principle has been applied to the ecological assessments undertaken for the EIS. For example, if a particular species was not observed on the day of field survey, that does not mean it doesn't occur in that location, where assessments identify that habitat is suitable, and other records indicate its presence.

1.6 Limitations of this document

This SEIS has been prepared by TMR and their consultants (Arup), in response to public submissions, as directed by the Coordinator-General.

In some cases it is not possible to fully respond to queries or requests raised in submissions, given the preliminary nature of the design for the Project. However, the Proponent is committed to undertake future detailed investigations and consult with affected communities and relevant stakeholders prior to detailed design and construction.

Whilst Arup and its consultants have taken care in the preparation of this report, it does not accept any liability or responsibility whatsoever in respect of:

- any use of this report by any third party
- any third party whose interests may be affected arising out of or in connection with this document, including any decision made or action taken by TMR.

2 Submissions

2 Submissions

2.1 Submission Coordination

As the EIS process is being conducted under the SDPWO Act, DIP, on behalf of the Coordinator-General, coordinated the placement of newspaper advertisements and also managed the public submission process.

A total of 57 submissions, one with an attached petition totalling 314 signatures, were received by DIP. Submitters included government agencies (state and local government), community groups, businesses and private individuals.

2.2 Submission Response Methodology and Report Structure

Submissions were forwarded from DIP to TMR, for review and response.

This SEIS is intended to address the valid issues raised in submissions during the public comment period.

To make this a streamlined and useful process, this SEIS has been structured to provide the following:

- submission responses, grouped by theme
- an overview of project changes since the EIS was released
- an overview of legislative changes since the release of the EIS. Notably a significant number of new or amended policies and legislation have been released, which are considered relevant to the Project or the Project area
- errors and issues requiring further clarification from the EIS document.

Appendix A contains a summary and quick reference guide to where issues raised in submissions have been addressed in this SEIS.

Appendix B provides further detail of the EIS Study Team and contributors.

Appendix C contains a revised outline Environmental Management Plan (EMP), updating the EMP presented in Chapter 22 of the EIS.

Appendix D presents amended drawings, as discussed in section 3.4 of this SEIS.

Appendix E provides a summary of the Proponent's commitments.

2.3 Summary of the Submissions

A summary of the submissions is provided below and the submissions are included in full in Appendix A. Due to TMR's obligations under the *Queensland information Privacy Act 2009*, submissions from private landholders have not been included in this report and names have been replaced with Submitter Numbers. Private landholders who have provided a submission to the EIS will be informed of their Submission Number.

- Nine submissions were received from Queensland Government Departments. These submissions generally acknowledge the importance of the Project to the region and the adequacy of proposed mitigation measures. The clarifications or issues raised included weed management, impacts to wetlands in the coastal zone, the management and assessment of impacts over the lifetime of the Project, suggested changes to road realignments, safety at intersections, management of noise, vibration and air quality impacts and mosquito control. Issues of flooding and drainage were also raised, as were the management of community safety during construction. The Department of Environment and Resource Management (DERM) identified the need for fauna culverts in Dularcha National Park, recommended the rehabilitation and incorporation of a section of the decommissioned line into Eudlo National Park, and requested compensatory habitat equal to or greater than the habitat removed.
- The SCRC prepared a comprehensive submission, raised a number of issues or queries, including the impacts of the Project to towns, businesses and special management areas in the study area and appropriate mitigation measures. The submission also raised issues relating staging and implementation of the Project timeframes, and responsibilities.
- Seven community groups provided submissions on the EIS. The issues raised by these groups are generally issue or location-specific, for example the Wildlife Preservation Society submission is largely concerned with ecological impacts. The issues raised include mitigation measures for flora and fauna, weeds and construction management. Other community group submitters include the Sunshine Coast Environment Council, Palmwoods Progress Association, Petrie Creek Catchment Care Group, Save Mooloolah Valley, Nambour Futures and the Eudlo Public Hall and Recreation Grounds Association.

- Seven submissions were received from businesses in the Project area that are directly or indirectly affected by the Project. The issues raised in these submissions relate to the potential impacts to these properties arising from the Project and the mitigation of adverse effects. This includes noise, visual, access, timing of acquisition and compensation, and the potential hazards and safety impacts.
- 33 submissions were received from private individuals. These submitters included individuals directly affected by a land requirement for the Project, and those who do not have a land requirement. These issues ranged from the process and fairness of the property acquisition process, to the final design and the management of construction impacts. Private submissions were generally received from the local community, and two submissions were received from well outside the Project area.

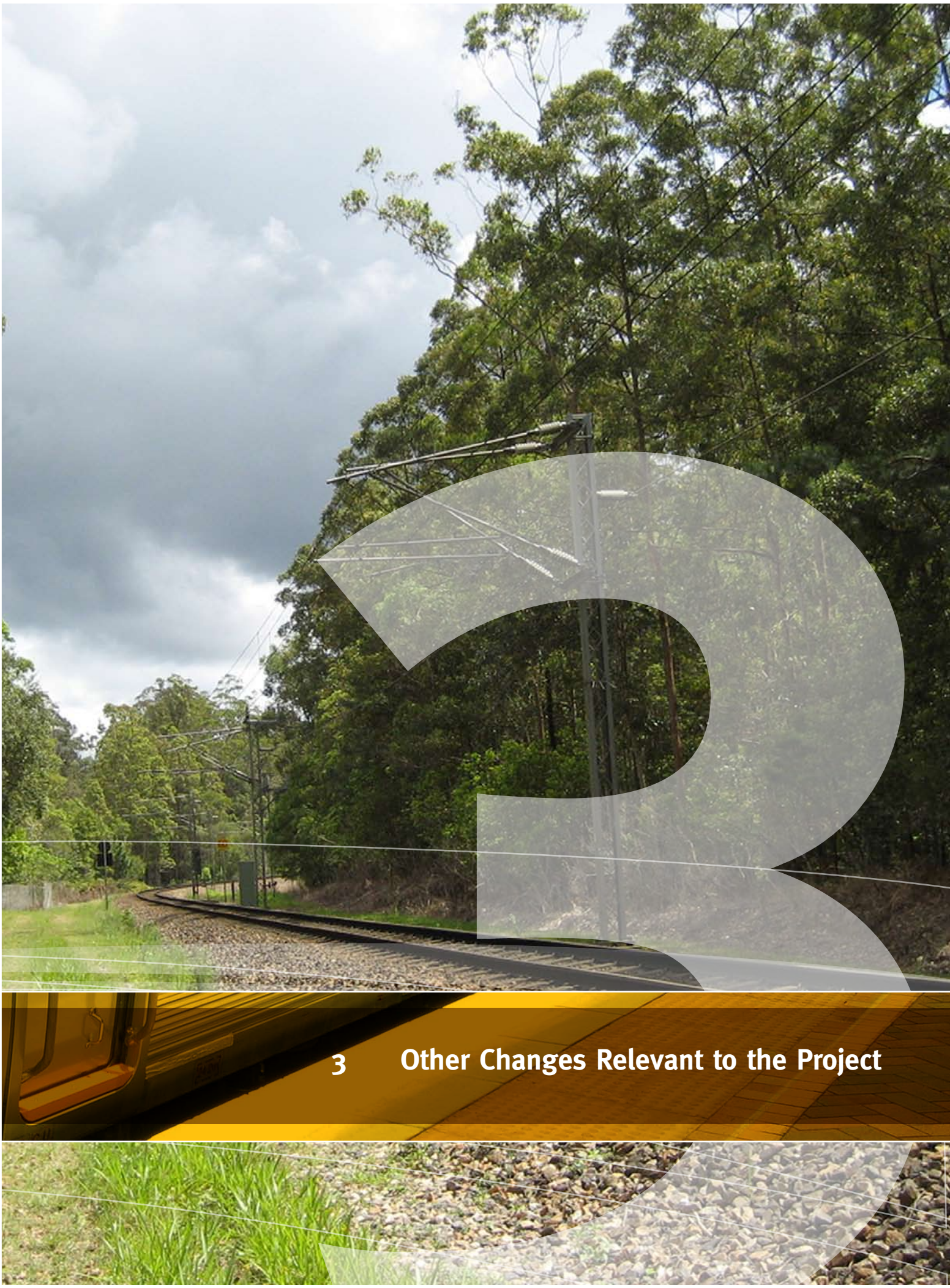
2.4 Key Themes

The following key themes were identified after a review of the submissions received. These are not presented in order of significance, as the number of responses does not allow for statistical inferences.

- Mooloolah Open Level Crossing- whether it is needed, the timing, the implications for commercial activities and accessibility through Mooloolah.
- Management and control of construction impacts.
- Visual impact on townships and insufficient visualisations.
- Noise and property impacts for properties adjacent to the new railway.
- Suggested alternate alignments to the Project.
- Impact on Federation Walk at Eudlo.
- Need for a 4-track corridor and whether clearing beyond two tracks can be delayed until it is required.
- Weed management.
- Project timing and the uncertainty this creates for property owners.
- Allowance for future changes in design/planning standards.
- Length of tunnel through Dularcha National Park and possible extension to avoid/ minimise ecological damage.
- Alternative road alignment for Neill Road.
- The compensation process and who is eligible.
- Extent of ecological survey undertaken.
- Location of train stabling.
- Does flooding/design life consider the implications of climate change.
- Management of contaminated rail land and future uses.
- Additional heritage sites for consideration.
- Station design and maintaining heritage architecture.
- Transport connections with cycle, pedestrian, bus networks.
- Need for firm guidelines on the integration of station design and precincts into the existing township character.
- Coordination of local and state planning processes and capital expenditure on local infrastructure in the lead up to project implementation.

These key themes are addressed in section 4 of this report.

One of the more significant key issues raised was that the EIS doesn't clearly acknowledge the significant opportunity that this Project delivers in the chance to forward plan the precincts around the station to 'create vibrant and attractive public spaces'. The EIS identifies the spatial opportunities for such outcomes, and attempted to identify potential uses for areas of surplus land (and surrounding areas, both of which are beyond the scope of this EIS). However it is important to recognise that such outcomes will be the product of collaborative planning efforts, and will require significant time and financial investment by council and TMR and the community to realise outcomes. This is a desirable outcome; however it would be speculative of the EIS to go beyond the issues addressed in the document.



3 Other Changes Relevant to the Project

3.1 Recent Changes to Relevant Legislation

Since the publication of the EIS, there have been a number of significant changes to legislation with a bearing on the future development and approval of the Project and project elements. It is acknowledged that in the lead up to the Project, further changes are likely, and therefore regular updates of relevant legislation and triggers will need to be maintained.

3.1.1 *The Sustainable Planning Act 2009*

The *Sustainable Planning Act 2009* (SPA) came into effect on 18 December 2009. The SPA replaces the *Integrated Planning Act 1997*. The implications for this Project are that development applications for the Project will now occur under the SPA rather than IPA, although the process for assessment and approval (that is, the Integrated Development System, or IDAS) is similar between the Acts. The future SCRC planning scheme will also need to comply with the SPA rather than IPA. Other changes likely to affect the Project include development that is assessable under Schedule 4 of the *Sustainable Planning Regulation 2009*.

3.1.2 *The Regrowth Vegetation Code*

The Project alignment traverses areas of vegetation classified as High Value Regrowth by the *Regrowth Vegetation Code* under the *Vegetation Management Act 1999* (VM Act). The *Regrowth Vegetation Code* came into effect in October 2009. According to the *Regrowth Vegetation Code*, clearing can occur within any High Value Regrowth area for the purpose of constructing 'necessary built infrastructure' such as the rail upgrade. However, where the clearing affects an *Endangered* Regional Ecosystem or 'restricted area' within an *Of Concern* or *Least Concern* Regional Ecosystem an 'exchange area' must be provided. This is further discussed in section 3.2.5.

3.1.3 *The Vegetation Management and Other Legislation Amendment Act 2009*

The *Vegetation Management and Other Legislation Amendment Act 2009* came into effect in October 2009 and makes amendments to the VM Act and minor amendments to the repealed IPA (now the SPA) and the *Land Act 1994*. The amendments to the VM Act largely relate to the provisions for regulated regrowth as described above.

Since the publication of the EIS, the regional ecosystem data has been updated to version 6. Hence, some of the maps appearing in the EIS have been superseded as follows:

- Figure 11.3a is now replace by Figure 3.1.3a
- Figure 11.3b is now replaced by Figure 3.1.3b
- Figure 11.3c is now replaced by Figure 3.1.3c.

3.1.4 *The Queensland Information Privacy Act 2009*

The *Queensland Information Privacy Act 2009* came into effect on 2 December 2009. This Act provides for the fair collection and handling of personal information in the public sector, and for the right of access to and amendment of personal information in the government's possession unless contrary to the public interest. This Act is relevant to the handling of private submissions received on the EIS for the Project.

3.1.5 Approvals list

Table 3.1.5 provides a summary of the relevant approvals and permits, taking into consideration the recent changes in legislation as noted above. It will be necessary for this table to be maintained and updated where required, in response to future legislative changes and amendments.

Figure 3.1.3a: Vegetation Management Type (regional ecosystem v6)

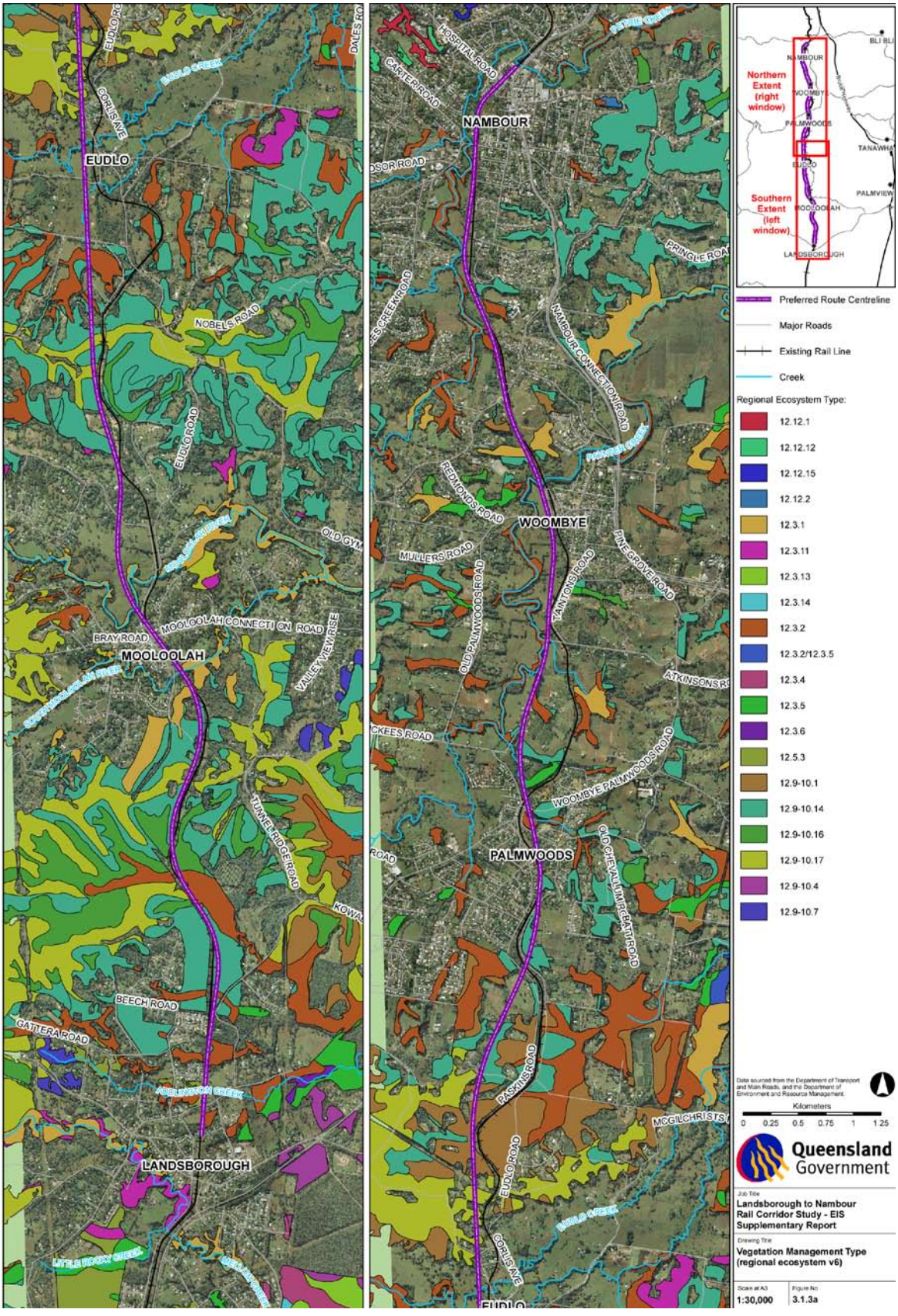


Figure 3.1.3b: Vegetation Management Status (regional ecosystem v6)

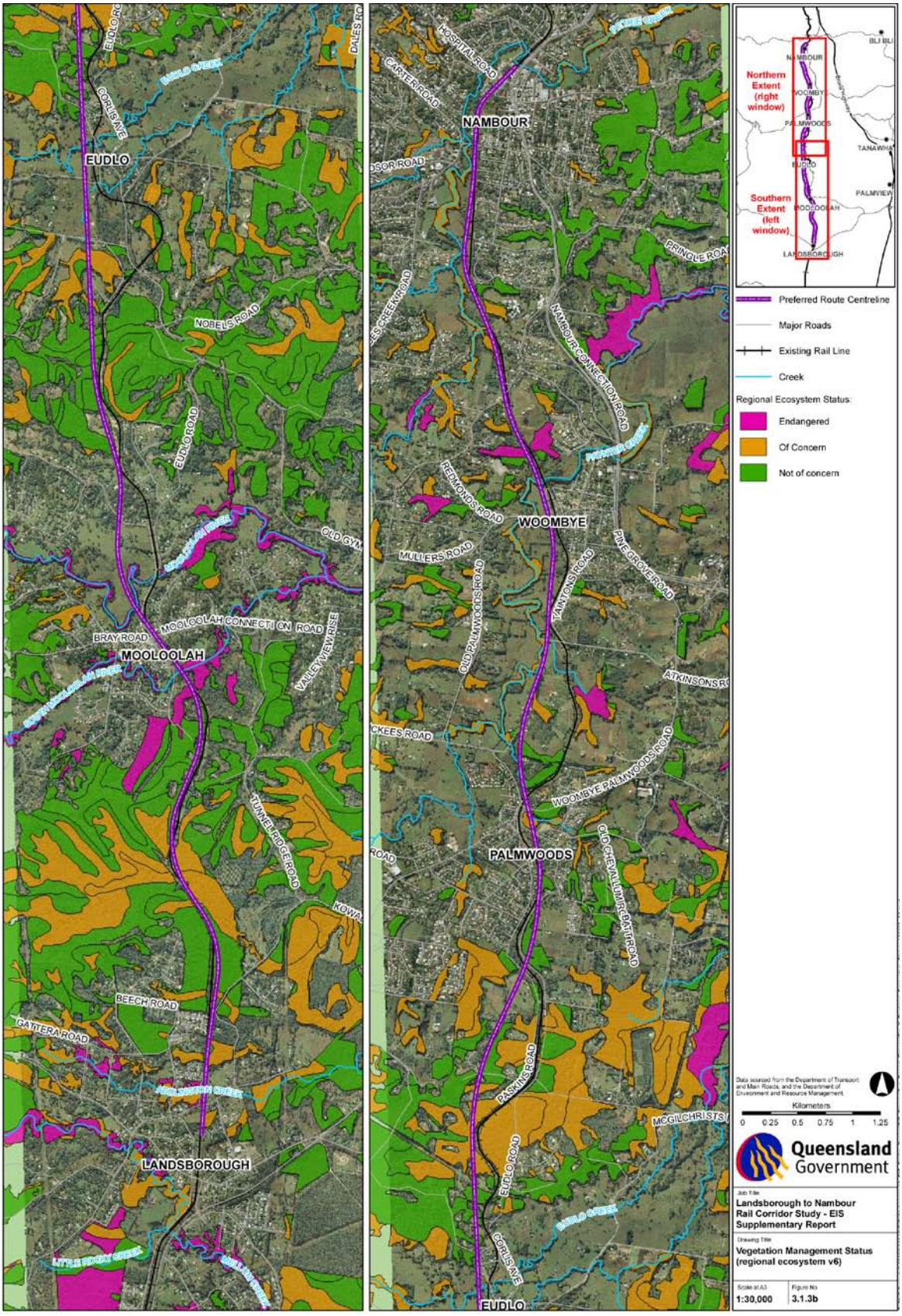


Figure 3.1.3c: Recommended changes to RE Map

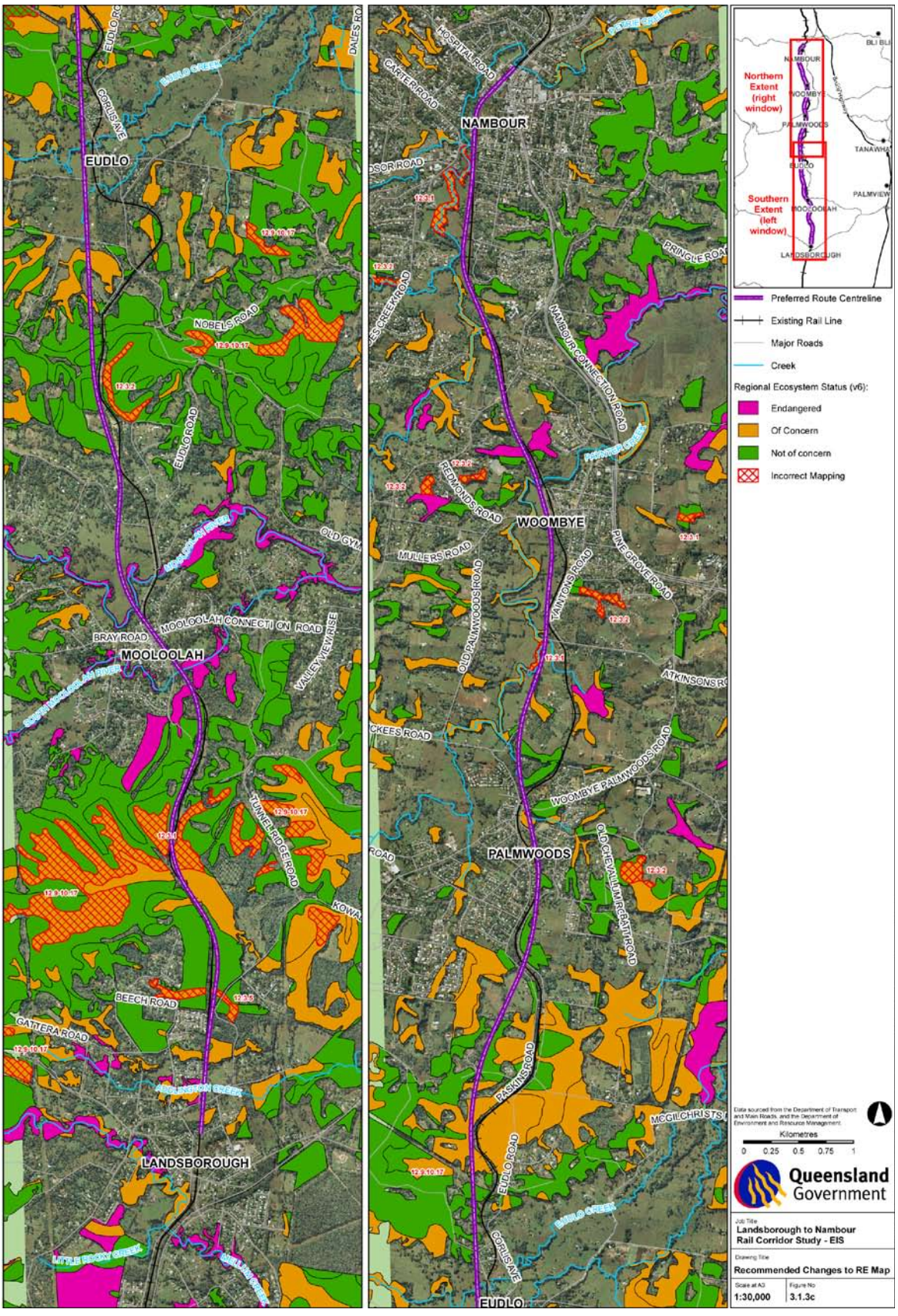


Table 3.1.5: Approvals List

Approval/Permit/ Licence Type	Approval Authority	Regulating Legislation	Trigger / Relevant Aspect of Project
Development Permit (Operational Works)	Queensland Department of Environment and Resource Management	*Vegetation Management Act 1999*	Clearing of native vegetation subject to the VM Act To ensure compliance with the Regional Vegetation Management Code for Southeast Queensland Bioregion, 20 November 2006 all clearing of assessable vegetation must be undertaken in accordance with an Environmental Management Plan that incorporates the following: Sediment and erosion control plan, clearing management plan, rehab/reveg plan, week management plan. The vegetation offset must meet all of the offset criteria in the Policy for Vegetation Management Offsets, 28 September 2007 or the offset policy relevant at the time of lodgement.
Certified Regional Ecosystem and Essential Habitat Mapping amendment	Queensland Department of Environment and Resource Management, Queensland Herbarium	*Vegetation Management Act 1999*	Areas of incorrect mapping discovered in the certified Regional Ecosystem Mapping and Essential Habitat Mapping should be corrected through a Regional Ecosystem map amendment to the QLD Herbarium prior to lodging any Operational Works Vegetation Clearing application with DERM.
Riverine Protection Permit	Queensland Department of Environment and Resource Management	*Water Act 2000*	Destruction of vegetation, excavation or placing fill within the bed and banks of a watercourse, lake or spring. DERM has advised: Activities (including destruction of native riparian vegetation, excavation, and placement of fill) which may be associated with the crossing construction would normally require authority under the riverine protection permitting provisions of section 269 the *Water Act 2000*. However, the Proponents (DTMR), and the proposed construction authority (Queensland Rail), are exempt from the normal requirement to obtain riverine protection permits for the proposed activities, because they are listed as entities in the *Water Regulation 2002*, provided that the activities are undertaken in accordance with the DERM Guideline 'Activities in a watercourse, lake or spring carried out by an entity'.
Water Permit	Queensland Department of Environment and Resource Management	*Water Act 2000*	Temporary water extraction ancillary to project works. The Proponents may source water for construction purposes from watercourses in the vicinity of the Project area. The taking of water from any watercourses as defined under the *Water Act 2000* would require an authorisation under the *Water Act 2000*. A water permit, if granted, would normally be subject to terms and conditions, including conditions restricting the amount of water taken, Note that any activities proposed within the watercourses which would be outside of the scope of the Guideline (e.g. stream diversions, structures that interfere with flow), would require approval by means of a water licence under the *Water Act 2000*. Applications for water licences are subject to rigorous and potentially lengthy assessment processes, and must also be publicly notified. Officers from the Department's regional Water Services office at Gympie, telephone 5480 5316, are available to assist with clarifying the requirements associated with the proposed stream crossing works, and to undertake any watercourse determinations under the *Water Act 2000* for un-named drainage features which may be affected by the proposed Project.

3 Other Changes Relevant to the Project

Approval/Permit/ Licence Type	Approval Authority	Regulating Legislation	Trigger / Relevant Aspect of Project
Licence to take water – resumed properties	Queensland Department of Environment and Resource Management	*Water Act 2000*	The new railway alignment will presumably encroach on and through a number of existing parcels of land. Some parcels of land may be land attached to water licences to take water issued under the *Water Act 2000* (e.g. irrigation licences). The resumption and / or purchase of land and subsequent subdivision and disposal of land in the railway corridor may trigger the provisions of section 229 of the *Water Act 2000*, resulting in the expiry of affected water licences to take water. The Proponents may wish to contact the Department's regional Water Services office at Gympie, to (a) identify whether there are any water licences which may be affected by the Project and b) to ascertain whether any allocation could or should be taken to amend the affected water licences to prevent them expiring under Sec 229 of the *Water Act 2000*.
Development Permit (Operational Works)	Queensland Department of Environment and Resource Management	*Water Act 2000*	Removal of quarry material from a watercourse as a result of construction works.
Development Permit (Material Change of Use) Registration Certificate	Queensland Department of Environment and Resource Management	*Environmental Protection Act 1994*	Commencing a mobile or temporary Environmentally Relevant Activity/ies (ERA) for which a code of environmental compliance has not been made under the *Environmental Protection Regulation 2008*.
Disposal Permit	Queensland Department of Environment and Resource Management	*Environmental Protection Act 1994*	Works involving the disturbance of contaminated soil.
Development Permit (Operational Works)	Queensland Department of Employment, Economic Development and Innovation	*Fisheries Act 1994*	Construction of a waterway barrier (temporary or permanent).
Approval of Cultural Heritage Management Plan	Queensland Department of Environment and Resource Management	*Aboriginal Cultural Heritage Act 2003*	Management of potential impacts on Aboriginal cultural heritage.
Development Permit	Queensland Heritage Council	*Queensland Heritage Act 1992*	Development on a Queensland Heritage Place.
Ancillary Works and Encroachments Agreement	Queensland Department of Transport and Main Roads	*Transport Infrastructure Act 1994*	Works on or interfering with a State-controlled Road.
Wayleave Permit Licence to Enter and Construct	Queensland Rail	*Transport Infrastructure Act 1994*	Works on or interfering with Rail Corridor Land.
Development Permit (Building Works)	Private Certifier	*Building Act 1975*	Building works that are assessable against the *Building Regulation 2006*.
Clearing Permit	Queensland Department of Environment and Resource Management	*Nature Conservation Act 1992 and the Nature Conservation (Protected Plants) Conservation Plan 2000*	Destroying protected plants.

Approval/Permit/ Licence Type	Approval Authority	Regulating Legislation	Trigger / Relevant Aspect of Project
Wildlife Movement Permit / Damage Mitigation Permit	Queensland Department of Environment and Resource Management	*Nature Conservation Act 1992 and the Nature Conservation (Wildlife) Regulation 2006*	Taking or interfering with a protected animal.
Approval for an Interest in a Protected Area	Queensland Department of Environment and Resource Management	*Nature Conservation Act 1992*	For works within a National Park.
Permit to change or interfere with a local road: Local Law No 09 – Former Caloundra City Council Local Law No 20 – Former Maroochy Shire Council	Sunshine Coast Regional Council	*Local Government Act 1993*	Works on or interfering with a local road.
Flammable and Combustible Liquids Licence	Sunshine Coast Regional Council	*Dangerous Goods Safety Management Act 2001*	Storage of certain quantities of flammable and combustible liquids.
Approval to acquire land	Queensland Department of Environment and Resource Management	*Acquisition of Land Act 1967*	Land acquisition associated with realignment of the railway corridor.
Permit to Occupy	Queensland Department of Environment and Resource Management / Sunshine Coast Regional Council	*Land Act 1994*	Short term occupation and construction within road reserves (excl. State-controlled Roads).
Native Title	Department of Environment and Resource Management	*Native Title Act (Cwth) 1993*	Native title must be addressed for the Project in accordance with the *Native Title Act (Cwth) 1993* (NTA). In some cases this will involve the provision of procedural rights to the relevant native title parties before the approval can be granted. Procedural rights for example under section 24HA of the NTA include both a Notification and an opportunity to comment.
Clearing on State Land	Department of Environment and Resource Management	*Forestry Act 1959*	Clearing must be undertaken in accordance with the *Forestry Act 1959* in relation to the clearing of remnant and non-remnant vegetation on State Land. Before clearing of vegetation on State Land occurs, the Forest Products business unit of DERM must be contacted to determine if any valuable mill-able timber is present.
Cultural Heritage Management Plan	Department of Environment and Resource Management	*Aboriginal Cultural Heritage Act 2003*	Cultural Heritage Management Plan to be prepared, and implemented for project.

3 Other Changes Relevant to the Project

3.2 Recent Changes to Relevant Policies and Plans

Since the publication of the EIS, there have been a number of changes to other State and local plans and policies, these are described below.

3.2.1 *Sunshine Coast Regional Council Statement of Proposals*

The SCRC *Statement of Proposals* is an initial step in the development of the SCRC Planning Scheme and sought community input on the key principles and key directions for the new planning scheme. The *Statement of Proposals* was available for public comment between October and December 2009. Of relevance to this Project, key principles for access and connectivity in the region include the following:

- Minimise the environmental impact of major transport corridors by application of sensitive corridor design and ecological offset requirements and by incorporating appropriate environmental management measures including effective fauna fencing and crossings and low intensity lighting.
- Ensure that existing and planned major transport corridors are complemented by attractive landscaping and urban design elements.

The *Sustainable Transport Discussion Paper* (October 2009) that accompanies the Statement of Proposals also highlights the importance of public transport to the region and identifies the North Coast Line as a key element of the Sunshine Coast public transport network.

3.2.2 *Temporary State Planning Policy (SPP) 2/09 Acceleration of Compliance Assessment*

The *Temporary State Planning Policy (SPP) 2/09 Acceleration of Compliance Assessment* commenced on 18 December 2009, and will remain in effect until 17 December 2010. The result of this SPP is that reconfiguring a lot and associated operational works require compliance assessment under Schedule 18 of the *Sustainable Planning Regulation 2009 (Regulation)*. Under the IPA, these types of developments were assessable development requiring a development permit. Under the new legislation these developments will now only require compliance assessment. Requests for these types of development will be assessed against a standard code contained in the temporary *State Planning Policy 2/09: Accelerating Compliance Assessment* (SPP 2/09). This is a temporary instrument; however it may be applicable to the approvals required for the Project.

3.2.3 *The South East Queensland Regional Plan 2009–2031*

The *South East Queensland Regional Plan 2009–2031* (SEQ Regional Plan) and associated regulatory provisions were released on 28 July 2009. This plan supersedes the previous South East Queensland Regional Plan 2005-2026. The transport components of the SEQ Regional Plan will be underpinned by the development of *Connecting SEQ 2031: An Integrated Regional Transport Plan for South East Queensland* (Connecting SEQ 2031). This will be the primary transport plan for the region and is currently in development by TMR. It is expected to be released in mid-2010.

3.2.4 *The Environmental Protection (Water) Policy 2009*

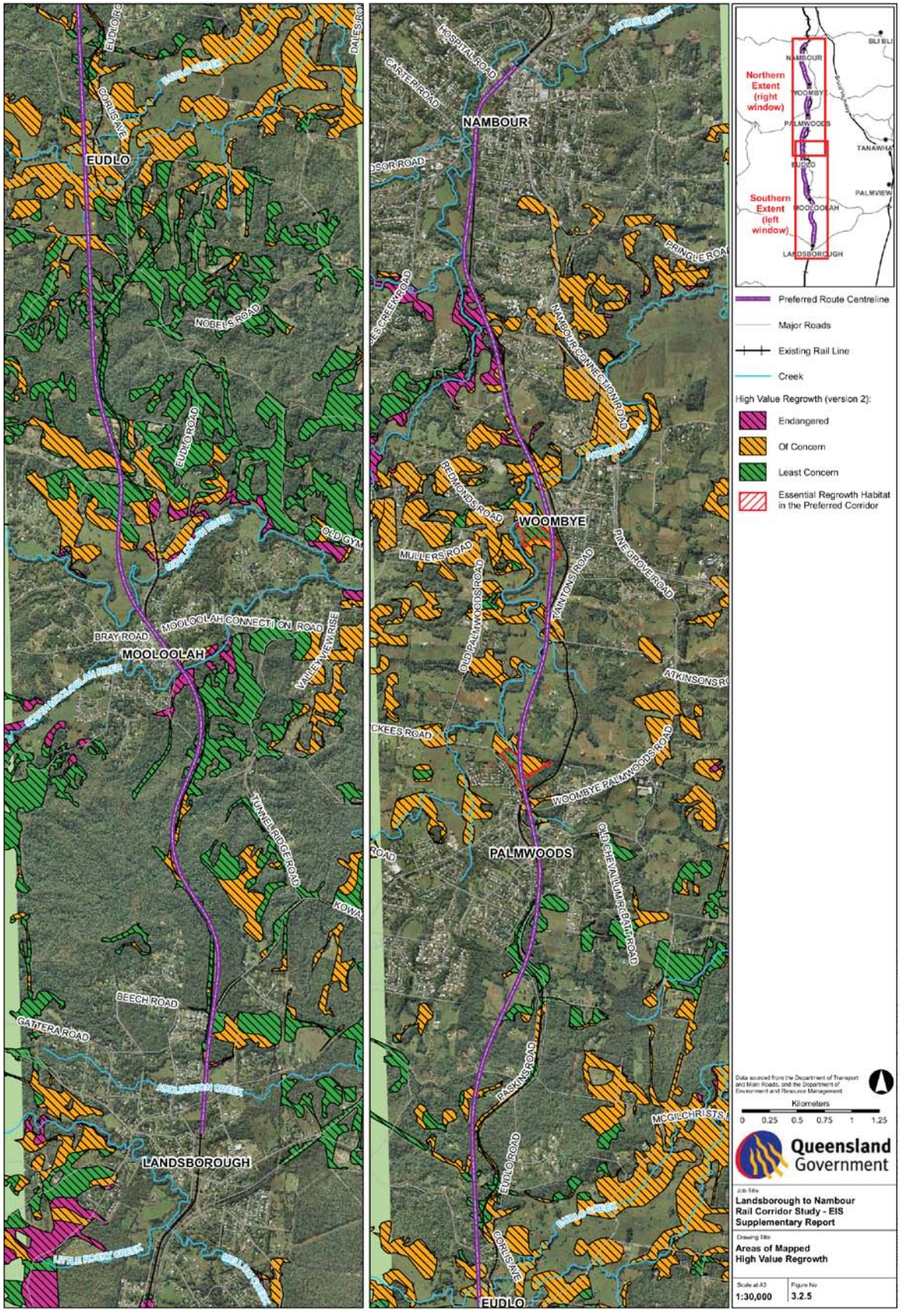
The *Environmental Protection (Water) Policy 2009 (EPP Water)* was released in August 2009 and replaces the *Environmental Protection (Water) Policy 1997*. As previously, the EPP Water sets the Environmental Values and Water Quality Objectives for Queensland waters. The new EPP requires local governments to prepare *Total Water Cycle Management Plans* (TWCMP). Any future TWCMP prepared by SCRC could influence the management of stormwater and wastewater during the construction phase of the Project, which will need to be reflected in the environmental management procedures for the future design, construction and operation of the Project.

3.2.5 Impacts to Areas Mapped As 'regulated regrowth' Under *Vegetation Management Act 1999*

The Project alignment traverses areas of vegetation classified as High Value Regrowth in the *Regrowth Vegetation Code* under the VM Act. This *Regrowth Vegetation Code* came into effect in October 2009. The High Value Regrowth affected by the Project includes areas containing *Endangered* Regional Ecosystems, *Of Concern* Regional Ecosystems and *Least Concern* Regional Ecosystems. There are also small areas of *Essential Regrowth Habitat*, stream protection zones (which is dependent on stream order), wetlands and steep slopes (>12%) potentially impacted by the Project. These areas are classified as 'restricted areas' under the VM Act. Refer to Figure 3.2.5 for areas of mapped High Value Regrowth affected by the Project.

Under the VM Act, clearing of remnant vegetation or high value regrowth can only occur if it is for a 'relevant purpose' under Section 22A of the VM Act. The Project satisfies this requirement due to it being a 'state-significant project' under the SDPWO Act. According to the *Regrowth Vegetation Code*, clearing can occur within any *High Value Regrowth* area for the purpose of constructing 'necessary built infrastructure' such as the rail upgrade. However, where the clearing affects an *Endangered* Regional Ecosystem or 'restricted area' within an *Of Concern* or *Least Concern* Regional Ecosystem an 'exchange area' must be provided.

Figure 3.2.5: Areas of Mapped High Value Regrowth



Exchange areas operate like offsets under the VM Act. There are three requirements that an exchange area must satisfy in order to be accepted, these are:

- The exchange area must be currently unprotected, i.e. regulated regrowth where clearing would normally be allowed (as per the code) or non-regulated regrowth that is at least 10 years old and/or 2m in height.
- The ratio of the size of the exchange area to the size of the area cleared must be a minimum of 2:1, but must not be less than 1 ha.
- The exchange area must be no less than 50m wide.
- The amount of High Value Regrowth affected by the Project and the exchange area implications are shown below in Table 3.2.5.

Table 3.2.5: High Value Regrowth

Description of values	Area cleared	Exchange area required
Endangered RE	4.82	9.7
Of Concern RE		
essential habitat		
stream protection zone	4.85	9.7
wetlands		
steep slopes	7.56	15.12
Least Concern RE		
essential habitat	1.66	3.32
stream protection zone	1.25	2.5
wetlands		
steep slopes	10.59	21.18
	TOTAL	61.52

The process that Proponents must go through for clearing of regulated regrowth is a notification process, rather than an application process. Clearing can only be undertaken if it satisfies the relevant code and then it must be notified to DERM, such that DERM are aware of the area to be cleared and the area proposed as an 'exchange area'.

3.2.6 Koala Legislation

At the time of writing the EIS the *Koala Plan 2006 - 2016* (EPA 2006) and draft *SEQ Koala State Planning Regulatory Provisions* (Koala SPRP) (DIP 2008) were the relevant legislative instruments protecting koala habitat. The *SEQ Koala Conservation State Planning Regulatory Provisions* is now the relevant guideline for development within koala habitat as at 31 May 2010. From this date the elements of the *Koala Plan 2006 – 2016* that deal with development assessment and all preceding drafts of the SEQ Koala SPRP will be superseded.

Under the new *SEQ Koala Conservation SPRP* there are two types of assessable development areas; Priority Koala Assessable Development Area (PKADA) and Koala Assessable Development Area (KADA). Within each of these areas several types of koala habitat are recognised, including bushland habitat, areas that are suitable for rehabilitation and other areas of value. The alignment is affected by two patches of KADA at Landsborough (between Vidler Court and the southern boundary of Dularcha National Park) and Mooloolah (from Mooloolah Connection Road to the northern boundary of properties on Neil Road). The habitat type affected at Landsborough is low value rehabilitation. The habitat type at Mooloolah ranges from low value rehabilitation to medium value bushland habitat. Refer to Figure 4.10.15.

As the Project is a 'significant project' declared under the SDPWO Act it will be exempt from assessment under these SEQ Koala Conservation SPRP. However, there has been a Cabinet Directive issued that requires Queensland Government departments to negotiate with the DERM to develop a Memorandum of Understanding (MoU) with regard to development in areas mapped as assessable development areas under the SEQ Koala Conservation SPRP. At the time this document was being drafted the MoU was still being negotiated.

3.3 Draft Policies and Plans

The following policies and plans are draft and have been released for public consultation but have not been finalised. These are not government policy, and until finalised, these do not have an official bearing on the Project but can be expected to come into effect in 2010. These are identified as they could have implications for future stages of the Project.

3.3.1 Connecting SEQ2031: An Integrated Regional Transport Plan for South East Queensland

As noted in section 3.2.3, the transport components of the SEQ Regional Plan will be underpinned by the development of *Connecting SEQ 2031: An Integrated Regional Transport Plan for South East Queensland* (Connecting SEQ 2031).

This will be the primary transport plan for the region and is currently in development by TMR. It is expected to be released in mid-2010.

3.3.2 Draft State Planning Policy for Healthy Waters

The draft *State Planning Policy for Healthy Waters* (and the associated guideline) was released for consultation in late 2009. Once in effect this SPP will ensure that development for urban purposes under the SPA including community infrastructure, is planned, designed, constructed, and operated to manage stormwater and waste water in ways that protect the environmental values prescribed in the EPP Water. The EPP Water and the SPP are therefore complementary in the management of water in Queensland, and will apply to future stages of design, construction and operation of the Project.

3.3.3 Draft State Planning Policy: Air, Noise and Hazardous Materials

The draft *State Planning Policy: Air, Noise and Hazardous Materials* was consulted on until February 2010. Primarily, the proposed SPP, where appropriate, will separate land zoned for industrial uses from land zoned for sensitive uses (e.g. residential development). This may have some implications for the future land use planning for station precincts, as well as the siting of construction sites and compounds.

3.3.4 Draft State Coastal Plan and Draft State Planning Policy Coastal Protection

The Draft *State Coastal Plan* is anticipated to be finalised in 2010, replacing the *SEQ Regional Coastal Management Plan* (SEQ RCMP). This will result in the *State Planning Policy Coastal Protection* coming into force and development being assessed under the provisions of the policy.

Although the Project will be exempt development against the SCRC planning scheme due to SPA, the *Draft State Coastal Plan* will still be a consideration for development that is assessable by virtue of Schedule 4 of the *Sustainable Planning Regulation*.

The *Draft State Planning Policy Coastal Protection* has been prepared by DERM under the *Coastal Protection and Management Act 1995* (Coastal Act). The purpose of the draft policy is to provide policy direction and guidance on managing coastal land in Queensland in line with the objectives of the Coastal Act.

3.4 Changes to the Project

Since the release of the EIS, one change has been made to the corridor for the Project. In Palmwoods, the indicative land requirements associated with the bridge structure have been refined, based on current land use and QR's advised current maintenance requirements. Further discussions with SCRC, surrounding land users and QR, combined with future bridge design will determine the ultimate corridor requirements. Indicative changes to the corridor in this location are shown in Appendix D, and replace the previous EIS drawings sheets C019, C020, C119, C120, SK009, SK010, SK109, and SK110. The land requirement area associated with the bridge will be derived from bridge design standards at the time of future design, however the intent will be to maintain access and surrounding land uses to the greatest extent possible in the vicinity of the bridge structure.

3.5 Errata and Clarifications

Some submissions have identified errors or issues requiring further clarification. These include:

- The draft Nambour Structure Plan is currently being reviewed by SCRC. Any references to the draft plan should be used for discussion purposes only as they may not accurately represent future land uses for Nambour.
- Caloundra, Maroochy and Noosa Shire Councils merged to form the SCRC in March 2009. Any reference to Caloundra or Maroochy Shire Council should be prefaced with 'former'.
- The SCRC should have been listed in table 1.9.3 of the EIS as a level 1 stakeholder, with "*an active interest in the issues or with the potential to be directly impacted, physically, socially or economically*".
- The EIS notes 'agreement with the SCRC' in several locations. Whilst Council officers have been consulted during the preparation of the EIS, no 'agreements' are officially in place between TMR and SCRC regarding this Project. In particular, this relates to the proposed layout of Eudlo School Road, Beech Lane and Ash Lane. This area has been discussed with SCRC; however no agreements are in place.
- Table 13.3.3: *Aquatic macrophytes recorded by BMT WBM* in chapter 14 of the EIS, identifies the Senegal Tea Plant as occurring in the study area. An amendment to this table needs to be made to identify that the Senegal Tea plant is a Class 1 declared weed under the *Land Protection (Pest and Stock Route Management) Act 2002* and is also on the Australian Government Alert List for Environmental Weeds. This amendment is shown in bold on the following page.

Scientific Name	Common Name	Life Form	Origin
Gymnocoronis spilanthoides	Senegal Tea	Emergent	Introduced - **Class 1 Declared Weed under the Land Protection (Pest and Stock Route Management) Act 2002 and on the Federal Government Alert List for Environmental Weeds**

- Further to this, a statement in Section 13.3.3 of the EIS also requires correction as follows (new text shown in bold):

  Introduced weed species were commonly observed at survey sites, forming approximately one third of the aquatic macrophyte flora. One of these introduced species is a declared weed under the Land Protection (Pest and Stock Route Management) Act 2002. ***This is the Senegal Tea plant which is a Class 1 Declared Weed and on the Australian Government Alert List for Environmental Weeds.***

- Chapter 20 of the EIS, Page 747*:* Change "*Water Resources Act 2000*" to "*Water Act 2000"*
- The following paragraph (located at p295 of the EIS) has been withdrawn as it refers to a development that has not been approved by SCRC.

  'Another significant factor is the redevelopment of the Moreton Mill site on Mill St in the Nambour study area. The redevelopment of this 4.46ha site is still subject to council approval however the site is proposed to be redeveloped as a shopping complex. Stage one of the complex, currently being processed by council for approval, will contain:

  - *basement car parking of 969 car parking bays (including 50 dedicated Queensland Rail (QR) Limited car parks)*
  - *20,210sqm GFA shopping complex (level one)*
  - *5,100sqm GFA showroom development*
  - *cinema (3,100sqm GFA with 1,171 seats – level two)*
  - *offices with 1,200sqm GFA (level two)*
  - *car parking comprising of 364 bays (level two)'.*
- Artists impression 4, on page 713 of the EIS shows overhead lifts at Eudlo Station. Due to the station's elevation, access to platforms is anticipated to be gained from below; overhead lifts should not be shown in this image.
- Inconsistency was noted between figure 3.2b (p82) and figure 3.5a (page 114). Figure 3.2b depicts observed land uses, and figure 3.5a depicts zoning. Figure 3.2b, observed land use, incorrectly shows an area to the west of Jones Street (Mooloolah) as commercial, where it is a residential area. This has been amended in figure 3.5.
- Figure 3.3b of the EIS shows an Energex Gas Pipeline, whereas under the *Petroleum and Gas Act 2004*, the only gas pipeline in the Project area is that held by Allgas Pipelines Operations Pty Ltd.
- Several submissions have made reference to potential or inferred future land uses in the Project area, particularly in considering the appropriateness of these parcels for future development. It should be noted that the SCRC is primarily responsible for future land use planning decisions within the Project area, these decisions cannot be made in isolation by the Proponent. Therefore, mapping shown in the EIS (figures 21.7e, 21.7f, 21.11b, 21.13b, and 21.15b) have no official status, and are in no way representative of land use outcomes endorsed or sought by the SCRC.
- A number of submissions have identified amendments or additions to be made to the EMPs, originally included in Chapter 22 of the EIS. These are further discussed in section 4.21 of this SEIS, and incorporated into Appendix C, Outline Environmental Management Plan.

3.5.1 Eudlo School Road bridge structure

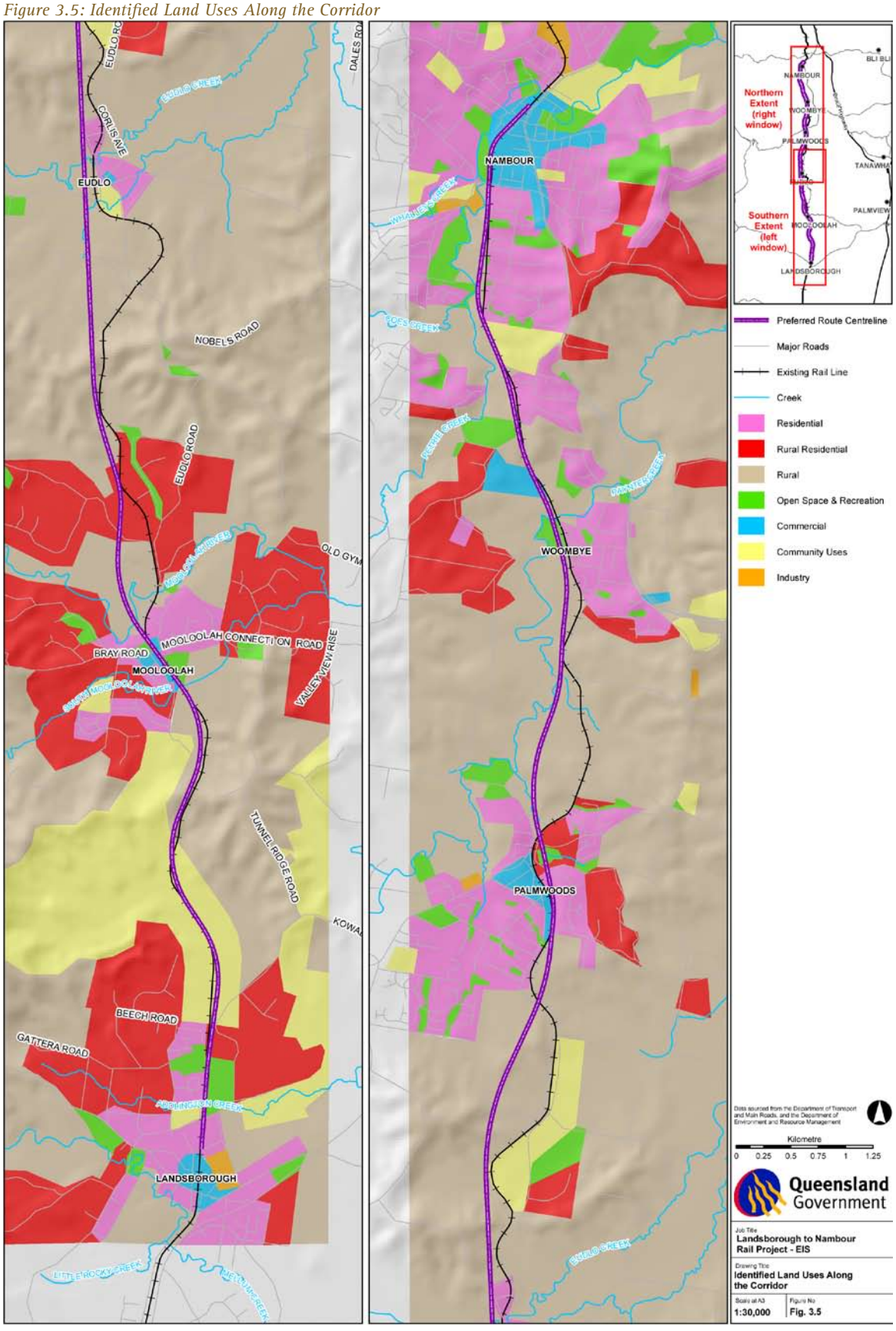
The proposed crossing of the railway at Eudlo School Road (shown on drawings C014, C114, SK004 and SK104) needs to take into consideration the surrounding ground levels, form and also that of the proposed works. The railway at the Eudlo School Road area passes through a short and local area of cut, with the more significant area of cut being from approximately chainage 91580 to 91700. Due to the short area of cut which would provide suitable clearance between the railway and the underside of a structure for the road, this area has been reviewed as being not suitable to be constructed as a section of cut and cover tunnel.

The EIS inconsistently describes both a tunnel and bridge in this location. The bridge as shown in drawings C014, C114, SK004, and SK104 is the proposed solution in this area. A noise barrier is proposed in this location, as shown in figure 15.7a, sheet 2 of 7. The following text is incorrect and is withdrawn:

> *Based on earlier design, noise barriers were previously proposed at chainage 91600, in Eudlo. However as the design has been refined to a cut and cover tunnel at this location, there is no longer a need for the provision of noise barriers to mitigate noise impacts associated with the Project.*

Therefore noise treatments are likely to be required at this location. These will be determined through future stages of design and consultation.

Figure 3.5: Identified Land Uses Along the Corridor



4 Responses to Submissions

A review of submissions was undertaken in the preparation of the SEIS. A summary table outlining issues and identifying where each issue is addressed in the SEIS is included in Appendix A.

4.1 EIS Introduction

The EIS provides a description of all currently relevant legislation and its relevance to the Project at numerous locations throughout the document. The Proponent (TMR) must comply with all relevant legislation (including future acts that may come into force prior to future project phases) and has controls in place to ensure all legislation is adhered to. Further legislative approvals will be required beyond the EIS approval, as documented in 1.10 of the EIS. The EMP provided in Section 22.0 of the EIS, and updated in Appendix C of the SEIS, explains how measures will be implemented during construction and operation to manage and comply with legislative requirements. Future stages of the Project's design and construction will be conducted under appropriate contractual conditions, incorporating the requirements of the Coordinator General's report and other agreements and statutory obligations.

4.1.1 Alternatives to the Project

Several submissions requested consideration of alternate routes to the east, leaving the existing line as it is for heritage rail uses or local commuter services. Suggestions included utilisation of the Bruce Highway corridor, or a coastal service, utilising the Caboolture to Maroochydore Corridor Study (CAMCOS) corridor.

The North Coast Line between Landsborough and Nambour is a multi-use corridor, servicing the needs of local, commuter, and long distance passengers, as well as freight. It provides public transport options for residents along the corridor, and the wider Sunshine Coast region. Constructing and operating a separate line (whether along the Bruce Highway or the coastal strip) for freight purposes whilst retaining passenger services along the current line is not considered an economically or operationally viable solution.

The upgrade of the North Coast Line is identified as a deliverable in the *SEQ Regional Plan 2009-2026*, the *South East Queensland Infrastructure Plan and Program 2009-2031* (SEQIPP), and the *TransLink Network Plan*.

The CAMCOS corridor is intended for the future provision of public transport services to the coastal strip. It branches off from Beerwah, travelling through Caloundra and up to Maroochydore. The CAMCOS corridor is not intended to be a freight line. It also does not reconnect back to the North Coast line in the north. Whilst future transport network planning may result in future northern connections, this is well beyond the planning horizons for this Project. The CAMCOS corridor and the upgrade of the North Coast line between Landsborough to Nambour are both included in both the SEQ Regional Plan and the *TransLink Network Plan*. They are both part of a regional transport network plan for the Sunshine Coast region.

4.1.2 EIS Authors

Section 7.4 of the Terms of Reference for the EIS requires that the qualifications and experience of the EIS contributors should be provided. The table provided in Appendix B responds to this requirement.

4.1.3 Project Timing

The Project is a long term planning project with the objective of securing the corridor in advance of future phases of the Project. Section 2.5 of the EIS describes the timing and construction staging as is currently known. The Project is currently proposed to be operational by 2026, in accordance with the SEQIPP, subject to whole-of-government priorities and funding availability. The potential to bring forward the construction timing would be subject to whole of government funding priorities, and determined through future reviews of SEQIPP.

It is considered likely that the Project would be constructed in stages. No construction plan or program has been endorsed by government at the time of writing of the EIS or the SEIS; however Section 2.5 of the EIS provides an outline of possible construction staging, in order to meet the planned operational timeframe of 2026. To meet this timeframe, detailed design would need to commence by 2018, with construction to commence by 2020.

The Proponent (TMR) will be working towards clearer definition of construction timing and staging details and this is expected to be defined in future State Government planning documents and updates such as SEQIPP and the upcoming Connecting SEQ 2031.

Once the construction timing is known in further detail, this information will be provided to the community. This will include updates to individual landowners once the resumption timing and process details are determined.

The Proponent (TMR) will engage with the SCRC in determining any benefits from bringing forward elements of the Project (such as road upgrades). This will be further defined through discussions between the Proponent and the SCRC.

The EIS prepared for this Project was undertaken to provide TMR with sufficient information to protect a corridor for the rail upgrade, and identifying the environmental impacts and management measures to be implemented. The assessment process under the SDPWO Act was selected so as to provide a robust and transparent assessment process.

It is acknowledged that there are a number of future investigations and studies that will need to be completed prior to developing a comprehensive approach to environmental management for this Project. TMR is committed to the ongoing implementation of these activities in the lead up to the design and construction of the Project.

4 Responses to Submissions

In the lead up to the infrastructure delivery phase, TMR will proceed with the acquisition of property by application from land owners under the department's hardship policy or in accordance with the *Acquisition of Land Act 1967*, through a formal resumption process as part of the land procurement phase of the Project. Further details can be found on the TMR website: http://www.tmr.qld.gov.au/About-us/For-community/Property-information/Land-and-property-resumptions.aspx

Figure 1.2c of the EIS provides an outline of the anticipated timeframe for delivery of the various project activities and approvals in the lead up to construction. Figure 4.1.3 of the SEIS provides further detail on the various investigations, approvals, and activities that will need to occur prior to the construction of the Project. It is noted that this may occur in stages, depending on how the Project is funded.

Construction may be undertaken in stages, based on funding and land use decisions which may be made in the future. These will require application of the environmental, social, and cultural heritage management and protection measures based in the EIS and this SEIS, and subsequent management documentation.

4.1.4 Requirement for a new EIS and future approvals

The EIS was prepared in accordance with the provisions of the SDPWO Act. Due to the lead time to implementation, the Coordinator-General may require the Proponent to do further work or assessment before the Project can proceed. Should there be a substantial or material change to the current design, the Proponent is required to notify the Coordinator-General and an evaluation of the proposed change will be undertaken under Section 35c of the Act, and will be subject to further community consultation. Any resultant changes would be documented in subsequent supplementary documentation.

Regardless of whether a re-evaluation is required, the Proponent will continue to liaise closely with all stakeholders, including the local community, Queensland Rail Ltd (QR), government and the SCRC through the future project phases.

4.1.5 Clarification of Legislative Requirements

4.1.5.1 *Forestry Act 1959*

Section 1.10 of the EIS summarises legislation and policy requirements relevant to the Project. No State Forest, Timber Reserve or Forestry Entitlement Area is traversed by the Project and no clearing will occur; therefore the *Forestry Act 1959* was not identified as relevant to the Project and therefore this was not addressed in the EIS.

4.1.5.2 *Water Act 2000*

The summary of the Project's obligations under the *Water Act 2000* provided in Section 1.10.1 of the EIS refers to the need to obtain a Riverine Protection Permit only. There may be a further requirement for permits to be sought during construction for interfering with flow, taking water from a watercourse or stream diversion. The need to obtain permits under the Act will be confirmed closer to construction.

Furthermore, the Project will traverse a number of properties that have a current licence to take water (e.g. irrigation licences). Where acquisition of private land for the Project occurs, the Proponent is aware that these permits will expire and will notify the Department of Environmental and Natural Resources accordingly.

4.2 Description of the Project

4.2.1 Issues outside the scope of the EIS

A number of submitters raised questions about sites or issues that are outside of the scope of the EIS. Information is provided below to clarify why an issue has not been addressed in this document.

4.2.1.1 Beerwah Rail Grade Separation Project

The Project team notes the concerns raised regarding the Beerwah grade separation project, although it is outside the assessment scope of this Project. It is however important to acknowledge that the design standards for railway alignments include flat grades and large radii curves, which when considered with existing land uses and road networks can provide limited options for grade separation.

4.2.1.2 Location of Stabling Yards

A number of submitters have raised questions about the location of stabling yards within the Project area. A broader TransLink study is examining stabling opportunities along the North Coast line. Should the outcome of the TransLink study identify a suitable location for stabling yards within the Project area, there would be a requirement for community consultation and, if outside the existing or upgraded alignment, environmental assessment. The relevant stakeholders and communities will be consulted on the proposed location as investigations progress. Approval of this Project will not preempt decisions or locations of future stabling.

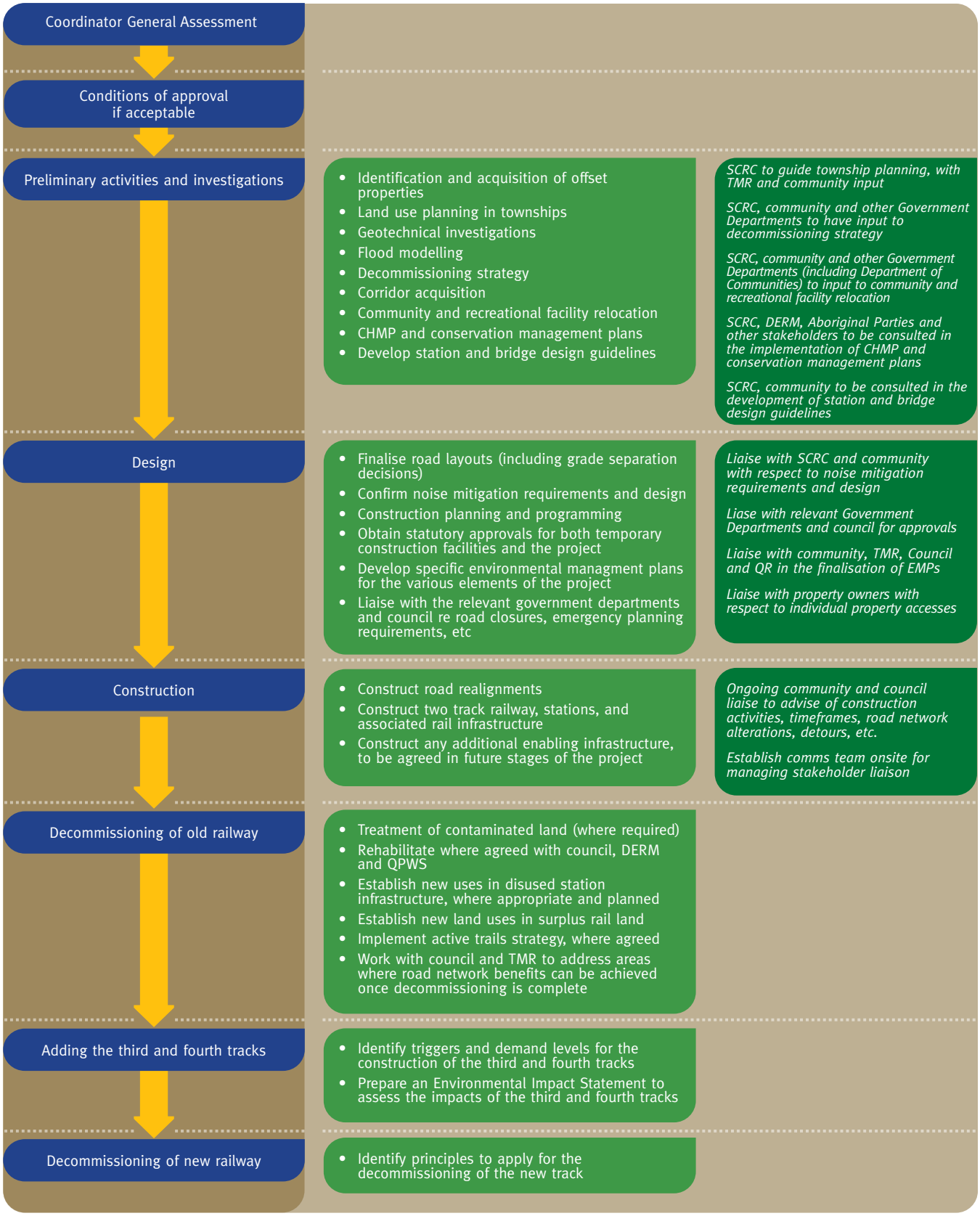
4.2.1.3 Landsborough Open Level Crossing and Station

Several submissions raised the issue of grade separation of the railway at Caloundra Street and Maleny Street in Landsborough. The Proponent acknowledges that grade separation in this location warrants investigation, however it is outside the scope of the EIS, given that the Project begins to the north of Landsborough station. Therefore it will be examined through a separate process, for which the timing and extent of investigation is yet to be determined.

4.2.1.4 Connections at Caboolture

Submission 4 noted that connecting with services at Caboolture can increase travel times. Coordination across the wider rail network, in response to capacity improvements on the Caboolture to Nambour section of the corridor, in time is anticipated to address this issue.

Figure 4.1.3 ongoing activities



4.2.1.5 Car Parking at Landsborough

The Project starts to the north of Landsborough Station; subsequently car park access and layout at Landsborough station are outside the scope of this EIS. However, it is expected that the TransLink Transit Authority will be investigating this in the future.

4.2.2 Design Issues

It is acknowledged that given the lead time to the Project, design standards and legislative requirements are likely to change before construction of the Project. Future design stages will need to comply with the requirements current at that time.

4.2.2.1 Tunnel Height and Double-stacked Containers

Currently double stack containers are not carried on the QR network where the railway is electrified, as the overhead wiring restricts the height of containers and freight. It is not considered necessary at this time for the tunnels to allow for double stack containers as it would not be used until network is changed for the whole region. To illustrate, this would necessitate the redesign and re-electrification from Brisbane to Rockhampton, and would also include raising of all road bridges over rail. Therefore it is more likely that freight capacity will be increased by the running of longer freight trains.

However, tunnel design parameters should be reviewed during future stages of design, in the event that future design standards for rail in Queensland are revised to accommodate double stack containers. This would also have a flow on effect on the design height of any bridges over the railway in the Project area.

4.2.2.2 Planning for Four Tracks

The Project is described as "involving construction of a double track railway, with provision for up to two additional tracks if required in the future". This is a planning decision that the Queensland Government has adopted for rail upgrade projects on the suburban section of the North Coast Line (i.e. south of Nambour).

Planning for the Caboolture to Landsborough upgrade accommodates up to four tracks, although only two have been constructed between Caboolture and Beerburrum to date. It is therefore appropriate to continue this approach from Landsborough to Nambour. To do anything less could result in future scenarios where additional land take is required or future rail operations are compromised due to capacity constraints. Planning for four tracks does not necessarily mean that the full extent of the corridor will be cleared or constructed, and criteria for this will be established in future stages of the Project, to minimise physical disturbance wherever possible.

Future stages of design will need to clearly define the limits of the Project, and review these against the vegetation clearance areas identified in the EIS. It is important to note that whilst clearing areas and offset requirements identified in the EIS are for the four track corridor, the construction of the Project should result in a lesser net requirement.

By reserving a wider corridor than that initially required for the two track construction, the Proponent is guarding against the need for future disruption to the community through acquisition of additional land for the corridor (beyond that identified to date) and allows for greater certainty in land use and infrastructure planning around station areas and the corridor in general. Further assessment of the impacts and benefits of additional tracks would be undertaken at the time their requirement is identified.

Future stages of the design process should be based on the two track drawings, that is, only those areas required for the safe construction and operation of the two track corridor should be cleared. This decision will have to weigh up the requirements in terms of maintenance and emergency access, as well as bushfire management.

4.2.2.3 Design Speeds

A speed of 160 km/hr is the desirable design speed for the Project, with 80km/hr is the absolute minimum in constrained areas. The average design speed of the corridor is 120-140km/hr. Submitter 4 suggests that as the current trains cannot achieve these speeds, the environmental and community impacts of the 160km/hr corridor cannot be justified.

4.2.2.4 Service frequency

Submission 4 suggests that the number of proposed Citytrain services may not be achieved. The operational modelling was undertaken to determine whether the capacity of the two track solution could cater for future growth in the corridor, and comply with a 30 minute off peak and 15 minute peak service provision.

4.2.2.5 Passing loops

Submission 4 also suggested that passing loops would address the current capacity constraints. However, this solution would not address the vertical and horizontal alignment constraints of the current track, resulting in similar issues as discussed for the upgrade of the existing track, in section 1.6.2 of the EIS.

4.2.2.6 Re-use of Excess Spoil

The EIS estimates that excess spoil will be generated by the Project and will require disposal. However, this may vary depending on how the construction of the Project is staged, and therefore this will be an important consideration for future stages of design and construction planning.

Further testing of spoil material will be required to determine the quality of this spoil and its potential reuse. Options include using excess spoil in and around the Project for uses such as batter slopes or selling it to the local area as clean fill. Spoil from rock excavations would be likely to be tested to see if it is suitable for road base materials or similar uses. It is desirable that topsoil is retained in the environment and not disposed to landfill. Based on the initial investigations undertaken as part of the EIS, the

majority of spoil from the Project is anticipated to be suitable for fill material only. Any good quality topsoil will be reused within the Project site wherever possible for batters, landscaping etc. If there is additional topsoil remaining that cannot be reused on site, the Proponent will consider providing this material for community use, including sports field or community greening projects. The excess spoil will also be investigated with the design for the proposed decommissioned use of the existing corridor to see if there are any suitable locations for fill to be placed.

As the existing railway will not be decommissioned until after the new railway is fully operational this may limit the reuse of spoil in the existing corridor.

Local planning schemes do not allow for the placement of fill in flood prone areas as this can exacerbate flooding. The use of any excess spoil from the Project will need to comply with local and state planning requirements.

The movement of spoil and construction traffic will be further defined during future stages of the Project design. An assessment of the capacity and suitability of the local road network will be undertaken in these later stages, to identify deficiencies in the existing road network. Any works required to enable use of the local road network for construction purposes would need to be considered as part of the Project.

4.2.2.7 Re-use of disused rail tunnels

The current railway tunnels will not be required by the new scheme. This is due to the proposed tunnels being at a lower level, different alignment and different gradient to the existing tunnels. It is proposed that the new tunnels enclose all the services required for the railway, are suitable for two tracks and include the appropriate requirements for emergency egress and ventilation at the time of detail design.

The current tunnels which are not required when the proposed scheme is built will be assessed to see if they are structurally sound to continue and the appropriate use/ purpose will be assessed. They will have limited capacity to be used for maintenance for the new railway alignment as they will be at a different level and the portals will not be in similar locations. The heritage significance of these tunnels should also be considered in any future use.

4.2.2.8 Quarry and Ballast Material

A further review of quarries in the area notes that while the Parklands Blue Metal resource area is noted as the closest source of ballast, there is one other that is closer (by road) to the Project. The Parklands Blue Metal resource area is to the north of Nambour. Holcim Australia has a site at Bli Bli that is a hardrock quarry producing road base and 50mm rail ballast. This could be considered as an alternative to Parklands Blue Metal. There is also a hard rock quarry at Image Flat; however, this is slightly further away from the Project than the ones at Parklands and Bli Bli.

The Boral Quarry at Mooloolah is a fine sand quarry only.

Given that construction of the Project is not anticipated to begin until around 2020, as noted in section 2.1.4 of the EIS, there may be other hard rock resources that come on line in the meantime. The potential for these resources to become scarcer must also be considered, and therefore these materials may have to be sourced from farther afield. This will be an important factor in the construction costing and estimates in future stages of the Project.

4.2.2.9 Re-use of redundant rail infrastructure

Submission 16 and 21 suggests that the new railway and associated road infrastructure elements could re-use materials and buildings from the existing corridor. The SCRC submission also requests further consideration of reusing existing station and community buildings at Mooloolah, Palmwoods and Woombye. This issue warrants further consideration during future stages of design, however the following will need to be considered:

- structural integrity and suitability of materials
- visual appearance of materials
- timing of the decommissioning, as existing railway components cannot be re-used whilst the corridor is in use, and the replacement infrastructure must be in place before it is decommissioned.

4.2.3 Pedestrian Access to Landsborough Station

It is currently possible to access Landsborough Station from the end of Leach Avenue via a pedestrian link. This access will not be affected by the two track upgrade, but it may need to be relocated if and when the third and fourth tracks are required. Lift access at Landsborough station will remain in place, in order to achieve compliance with the *Disability Discrimination Act 1992* (DD Act).

4.3 Land Use and Infrastructure

4.3.1 Station Design

4.3.1.1 Disabled Access and lift provision

To satisfy the Commonwealth's *Disability Standards for Accessible Public Transport* (DSPAT) and the DD Act, QR has developed station layout parameters and is committed to providing services that give access to all passengers. These require lifts and/ or ramps (where possible) to provide access to the platforms. It is intended that there will be lifts at each of the upgraded stations included in this study. The guidelines also consider access to the ticket window, waiting areas, security and lighting.

For Mooloolah, Woombye and Nambour stations it is expected that there will be lifts and pedestrian access above the platform, where as for Eudlo and Palmwoods it is expected that there will be lifts on the platform with pedestrian access under the platform. Based on current station requirements it is expected that there

will be a station building on the platform as well as covered waiting areas. These may add to the impact on the visual amenity, however the lift structure would be subject to architectural design and would be integrated into the form of the station.

It is noted that page 713 of the EIS, Artists impression 4, shows lift access at Eudlo Station, from above the platforms. As noted above and in section 3.5 of this SEIS, access to Eudlo station is anticipated to be from underneath the platforms.

4.3.1.2 Station Inclusions

The Sunshine Coast Regional Council has recommended that Environmentally Sensitive Design (ESD), Water Sensitive Urban Design (WSUD) and Crime Prevention through Environmental Design (CPTED) principles be included in station design. These are all fundamental elements of station design and will be addressed in future stages of design in accordance with the latest State and Council Guidelines, including:

- minimising station energy and potable water use
- utilisation of environmentally friendly materials
- capture and reuse of stormwater
- swales and bioretention systems for treatment of stormwater runoff prior to discharge
- provision of informal surveillance opportunities
- provision of adequate lighting and surveillance systems
- end-of-trip bicycle facilities.

Submission 26 suggests that additional shelter facilities be included in station design to cater for increased passenger numbers. This will be a consideration for the design of both new stations and upgrades to existing stations.

Climate resilience principles will also be considered in future stages of design.

4.3.1.3 Architectural style and visual integration

Submissions 7, 27 and 41 suggest that the architectural style of the proposed new stations considers the style of the existing townscape community buildings which will be within the same vista.

This is an important consideration of the design, given the heritage values of the railway townships in the Project area. Future design should respond to the local architectural fabric, giving consideration to materials and form that are compatible with the existing historical buildings.

4.3.1.4 Public Transport interchange

At each station, it is intended to provide appropriate interchange facilities for other modes of public transport and active transport, therefore bus bays and end of trip facilities will be planned for at stations. Requirements for end of trip facilities may vary from station to station. The opportunity for integrated service provision will need to be further developed in association with TransLink.

4.3.2 Proposed uses of Decommissioned Railway

Rail trails are suggested as a possible future use for the decommissioned rail line. Other possible uses include provision of green space; road transport infrastructure, and use for historical steam train rides. DERM have identified specific areas where rehabilitation of the decommissioned line and incorporation into adjoining areas of National Park (i.e. Eudlo Creek National Park) would be a preferred outcome.

Page 469 of the EIS recommends rehabilitation of the following sections of the decommissioned corridor:

- Addlington Creek (north)
- Dularcha National Park
- Rose Road and surrounds
- Mooloolah River
- The Pinch Lane and surrounds
- Eudlo Creek National Park.

Rehabilitation activities are identified on page 470 of the EIS.

With regard to rail trails, these have been recommended for such uses as walking, horse riding and cycling. The use of motorised trail bikes would be incompatible with these uses. Strategies to prevent motorised trail bikes from entering could include:

- implementation of gates and bollards
- use of chicanes
- signage
- surveillance.

The future use of the decommissioned corridor will need to fully consider the potential for environmental impact to adjoining areas (National Parks, wildlife corridors, habitats), and how these can be effectively mitigated. User safety will also need to be considered. Decommissioned sections of tunnel could present personal safety risks, and therefore it may not be appropriate for the full length of the decommissioned corridor to be used for this purpose.

Should rail trails be adopted for parts of the decommissioned corridor, strategies to prevent trail bikes accessing the rail trails and adjoining private land will be further investigated. These will need to be further monitored once operational, to ensure environmental damage and trespass do not become prevalent.

Research has been undertaken into the link between publicly accessible trails and crime rate. Research suggests that there is no evidence for a positive relationship between the two factors, essentially saying that trails do not generate crime (Rail-to-Trails Conservancy, 1998). The implementation of fencing, signage, patrols and lighting will aid in deterring offenders. Recreational activities should further increase usage providing additional surveillance. Research has been undertaken into best practice fencing methods that have been utilised on other rail trails. It has been identified that fencing of private properties that adjoin the rail trail is the most widely used option. This maintains landholder's

privacy and keeps stock off the rail trail. Fauna movements and fauna friendly fencing will need to be considered should a rail trail be determined for the future use of the decommissioned corridor.

Responsibilities for the operation and maintenance, and environmental management of a rail trail and associated infrastructure would be determined as part of the process for selecting the most appropriate future use of the rail corridor.

The Department of Communities has recommended the development of an 'Active Trails Strategy' and 'Master Plan for Outdoor Recreation' to be developed collaboratively between TMR and the SCRC. This will be dependent on future decisions as to how the decommissioned corridor will be used. The Department of Communities recommends these strategies incorporate the following principles:

- accessibly
- connectivity
- sustainable recreation
- regionally significant open space
- recreational setting diversity
- natural landscapes
- cultural and heritage features
- significant and endangered ecosystems.

These strategies could also address the relocation of community facilities impacted by the rail corridor, such as the sporting facilities in Woombye.

Heritage aspects of the decommissioned line should be considered in the identification of appropriate recreational uses.

Potential environmental impacts caused by utilising the decommissioned corridor as a rail trail would be managed by EMPs. A Weeds Management Plan (WMP) will be used to guide strategies to keep weeds under control. The WMP forms part of the EMPs. The WMP will use a number of techniques to manage weeds along the decommissioned track, including:

- removing weed invasions along the existing alignment and preventing further spread
- implementing buffer plantings along the newly exposed forest edges
- rehabilitation and management of vegetation to a stage where it is resilient to weed invasion
- visual inspection of rehabilitation zones monthly for 12 months and then quarterly until the vegetation is self-managing.

The WMP can be found in Appendix C of this SEIS.

It is noted that the decommissioned corridor may contain contaminanted land, and remediation/ treatment of the corridor would be required prior to use for community purposes.

No decision has been made about the future use of the decommissioned line. This will require consideration by the Proponent and appropriate stakeholders including the SCRC and the local community.

4.3.3 Amendments to legislation, planning documents, technical specifications and future land use

The EIS has referred to existing studies, planning schemes and policies, as outlined in Chapter 3.0 (Land Use and Infrastructure). In addition, field investigations and extensive community consultation with local residents and other stakeholders, particularly the SCRC, has been undertaken to gain an understanding of future land use planning.

It is recognised that these studies represent a 'point in time' and as such, can't address future land use planning processes that may require different outcomes. As the project progresses, information gathered for the EIS will be updated and any key changes to land use planning will be identified. This may result in a need for further investigations into specific land use matters in the future. In addition, all current and relevant design standards will be used at the time of detailed design.

The SCRC submission notes that the EIS makes reference to potential or inferred future land uses in the Project area, particularly in considering the appropriateness of these parcels for future development. The SCRC are primarily responsible for future land use planning decisions within the Project area and that these decisions cannot be made in isolation by the Proponent. Therefore, mapping shown in figures 21.7e, 21.7f, 21.11b, 21.13b, and 21.15b have no official status, and are in no way representative of land use outcomes endorsed or sought by the SCRC.

The SCRC is currently in the process of amalgamating the existing Maroochy, Noosa and Caloundra Planning Schemes into a single document. The planning scheme amalgamation will involve opportunities to engage with the community on future land use decisions. All future planning documents for the study area will need to take the Project into account.

The Department of Employment, Economic Development and Innovation (DEEDI) has suggested that surplus rail land could be used for agribusiness purposes. As discussed above, future land uses will be determined through SCRC planning processes, including consideration of agribusiness and other rural enterprises.

The EIS refers to several draft or withdrawn Council land use planning documents e.g. the draft Nambour Structure Plan. These plans are subject to change and in some cases have not yet been consulted on, and any reference to proposed future land uses within the EIS should not be viewed as official Council policy. Readers should refer to the current SCRC Planning Scheme for an understanding of existing land use plans that apply to the Project.

4.3.3.1 Petroleum and Gas Production and Safety Act 2004

A submission from the DEEDI notes that sections 807 and 808 of the Petroleum and Gas (P&G) Act require that construction or changes in surface level within the pipeline easement can only be carried out with the consent of the holder of the pipeline licence. The following paragraph from Page 122 of the EIS includes this modification (new text shown in bold):

> *The proposed Gatton to Gympie gas pipeline crosses the project at chainage 87000. As it has not yet been designed, and the timeframe for construction is unknown, further design stages for the gas project can be refined to take the project requirements into account. A memorandum of understanding or wayleave agreement between the authority responsible for the pipeline and the future railway is likely to be required* **under the Sections 807 and 808 of the P&G Act, that require the consent of the holder of the pipeline licence** (emphasis added). *This is so that the interface between these two infrastructure elements can be safely operated and maintained.*

The DEEDI submission also notes that the Gatton to Gympie pipeline easement aligns with and crosses the decommissioned railway easement to the northeast of the Mooloolah township. The above mentioned requirements of the P&G Act will therefore continue to apply to future uses of the easement.

The DEEDI submission notes an error on Figure 3.3b of the EIS which shows an Energex Gas Pipeline, whereas under the P&G Act, the only gas pipeline in the Project area is that held by Allgas Pipelines Operations Pty Ltd.

The DEEDI submission also identifies that avoidance of minimisation of cumulative impacts resulting from the close proximity of the proposed railway crossing and the future pipeline would require consideration of the width of access tracks required for pipeline construction, and the potential impact that any railway structures would have on such access. It is also noted that Sections 426, 429, 430, 807 and 808 of the P&G Act should be considered during the design of the relocation of Neill Road. These requirements are noted for future planning of the Project. The submission also notes the Project needs to consider the potential for the pipeline to be constructed before the rail upgrade.

4.3.4 Council Reserves and Recreational Facilities

The EIS identifies several community facilities, council and recreational reserves that will be affected by the Project.

Table 4.3.4 provides a summary of the impacts and proposed management measures for these facilities.

4.3.4: Community, Recreational Facilities and Council Reserves

Site	Impact	Proposed Mitigation
Landsborough Primary School sports fields	Eastern edge of sports field affected by corridor boundary. Existing mature vegetation will be within the corridor boundary, but earthworks are not likely to impact this area.	Further consultation with school in the lead up to detailed design to ensure integrity of sports fields can be maintained. Identify appropriate fencing and screening requirements.
Pound Reserve/ Old Mellum Cemetery	The western edge of this property is within the proposed corridor, however no earthworks or track work is likely to occur within this site.	Conduct further archaeological investigations to determine the precise location of memorial as recorded in section 4.9.5 of this SEIS.
Landsborough Sports Ground and Recreational Reserve	Western edge of this facility is within the corridor, and is likely to be impacted by earthworks. This may affect proposed future circulation/ access road around the site	Further consultation with SCRC in the lead up to detailed design to ensure integrity of sports fields can be maintained. Identify appropriate fencing and screening requirements, refine the design to use retaining walls instead of batters, ensure construction works likely to generate dust and noise can be scheduled around events at the site.
Vidler Park	The eastern edge of Vidler Park is affected by the Project corridor, however no earthworks are proposed within the existing park boundary.	Review construction access requirements, establish 'no go' zone for vegetation clearance, and maintain pedestrian access to park.
Reserve, Paget Street, Mooloolah	Referred to by council as lot 101, RP881340, appears to be lot 8 RP881340.	Further consultation with SCRC to identify appropriate offset requirements, in conjunction with other offset investigations.

Site	Impact	Proposed Mitigation
Mooloolah Pony Club	The western edge of the Mooloolah Pony Club is affected by both the rail corridor and the proposed grade separation in Mooloolah.	The proposed grade separation bridge structure crossing the Pony Club area should be on open structure. Discussions with SCRC and the Pony Club executive will need to be undertaken in the lead to detailed design to ensure the Pony Club can remain operational, whilst and after the grade separation is constructed. This is all subject to the timing of the construction of the grade separation.
Martin Rungert Park	The eastern edge of the park, including several mature trees and 9 car parking bays are affected by the realignment of the intersection of Neill Road and Bray Road.	Identification of appropriate location to reinstate car parking , in close proximity to the Park. Translocation or revegetation to replace lost trees. Undertake a detailed study of the park and its elements to ensure amenity values can be appropriately reinstated within the remaining park area, as a project deliverable.
Federation Walk	Potential vegetation clearance to maintain visibility and access to Eudlo Station.	Refer 4.20.3.3 for additional issues raised in submissions.
Kolora Park	Visual impacts, vegetation clearance, aquatic habitats	Refer Section 4.20.6.2.
Palmwoods Bowls Club	Visual impacts, noise, temporary car park loss, economic impacts, access	Refer section 4.20.6.6.
Woombye Recreational Grounds	The area used for the Pony Club and the Soccer club are affected by the corridor, by station land requirements.	Proponent to liaise with club representatives and SCRC to identity appropriate re-location package and process. This must be done prior to any construction works to ensure continuity of the community group.
Victory Park	The eastern edge of Victory Park, between the netball courts and the current railway is affected by the Project. This area includes grass courts and informal car parking.	Proponent to liaise with club representatives and SCRC to identity appropriate re-location package and process. This must be done prior to any construction works to ensure continuity of the community group.
Woombye Scouts	Loss of facility.	Proponent to liaise with Scout representatives and SCRC to identity appropriate re-location package and process. This must be done prior to any construction works to ensure continuity of the community group.
Lutheran Church, Woombye	The Project has a direct land requirement from this property, bringing the railway closer to the church.	Further consultation to be undertaken with church representatives. Investigate the potential for establishing noise barriers on the edge of the two track corridor requirement, thus offsetting the area required for the 3rd and 4th tracks they are needed.
Nambour Christian College	The western edge of this property is within the corridor and a land requirement has been identified. No earthworks are currently expected within this area.	Further consultation with School management to determine fencing requirements.

4.3.5 Land use surrounding train stations

The townships of Nambour, Woombye, Palmwoods, Eudlo, Mooloolah and Landsborough are all identified as being within the SEQ Regional Plan Urban Footprint. Extensive studies and consultation have been undertaken to determine the most appropriate locations for urban development during preparation of the Plan, as part of a separate process. Land uses within the Urban Footprint are expected to intensify around existing urban centres and high-frequency public transport corridors to reduce impacts of further urban development on existing rural living areas. The SCRC will be the instrument for refining the desired use of land and development within the Urban Footprint. As noted in section 3.5 of this SEIS, the concepts identified in the EIS for surplus land reuse around stations are not endorsed by council and future land use planning in these areas will be subject to council planning processes.

4.3.6 Paskins Road realignment

The proposed road network changes involving Paskins Road, Leeons Road and Toby Court have been raised in a submission. This is related to the increased travel time for residents south of the crossing of the rail and Paskins Road, and the potential implications this could have on future land use, given the area's classification in the SEQ regional plan as part of the urban footprint.

The proposed road network configuration in this area has resulted from the need to maintain property accesses during construction, whilst the existing railway remains operational. It may be possible in the future to utilise part of the decommissioned corridor to provide a direct link from the northern section of Paskins Road to Eudlo Road, however this will not be a possibility until after the new railway is fully operational and the old corridor is decommissioned.

The environmental impacts of the Paskins Road realignment have been considered in the overall assessment of the Project, though not specifically mentioned in the EIS document. Impacts associated with the realignment with Paskins Road will include vegetation clearance, and maintaining fauna movements. These are further discussed in section 4.10.8 and 4.10.9 of this SEIS. Environmental issues associated with the construction of the Project, as well as potential benefits resulting from the decommissioning of the old railway are discussed in Chapter 21 of the EIS, pages 714 to 717. Drawings C016 and C116 in the EIS indicate that further refinement of the interface between the rail and realigned Paskins Road will be required, due to the need to conduct detailed geotechnical investigations.

4.3.7 Asset ownership and maintenance

A number of assets and infrastructure elements delivered by the Project are likely to be transferred to SCRC for ownership and ongoing maintenance. The SCRC has identified the need for a 12 month maintenance program prior to accepting any works delivered as part of the Project. Consideration of the responsibilities for future operation and maintenance of infrastructure elements such as drainage and fencing, needs to be addressed during detailed design stages, and include the relevant stakeholders (i.e. SCRC, QR).

Where infrastructure or assets require relocation as a result of the Project, i.e. roads, drainage or water supply, the design of these elements should be undertaken in such a way that the asset life can be maximised. Determination of appropriate infrastructure requirements to service future community needs will be determined by the appropriate stakeholders at the time of construction. The Proponent will liaise with these stakeholders in the lead up to and during the design process to incorporate reasonable and appropriate requirements into the design.

4.4 Land: Geology and Soils

4.4.1 Contaminated land

The EMP for the Project (revised in Appendix C of this SEIS) outlines the proposed measures for the management of contaminated land, including the performance criteria that no residual land contamination is to remain following the completion of construction. It is also identified that sites of potential contamination should be subject to a sampling plan to determine the extent of contamination and appropriate mitigation measures, if feasible. In most cases, the subsequent land use will require treatment of rail land for contamination. TMR is committed to the appropriate treatment of contaminated land to prevent impacts to the environment or public as a result of the use of the decommissioned rail corridor.

All potentially contaminated material will be tested in accordance with DERM standards prior to any disturbance. Should contamination levels above recommended standards be identified, the soil will remain within the rail corridor and will not be used for another purpose. Alternately, the soil will be treated to remove contaminants and disposed of at an acceptable facility that is licensed to take hazardous substances or treated in situ to acceptable levels.

Where contamination levels are below recommended standards, this material may be reused for other purposes only after approval by DERM.

4.4.2 Erosion and Sediment Control

Submission 45 identifies that the Sunshine Coast Regional Council *Erosion and Sediment Control Manual* should be adhered to during the construction process.

The Manual is a comprehensive document, reflecting current best practice in erosion and sediment control, mostly for urban developers. Many of the principles outlined in this document have been included in the EIS EMP. The Queensland Environmental Protection Agency and the South East Queensland Healthy Waterways Partnership also provide useful advice on this issue.

Construction however is some years away, and it is likely that these guidelines will have been updated during this time to reflect an improved standard of practice. The Contractor will be required to comply with the best available standards at the time of construction.

4.4.3 Geotechnical investigations

The SCRC submission notes that no detailed geotechnical investigations have been undertaken to date. This is not unusual for a project in the planning stage, and preliminary desktop investigations have been undertaken to provide early information. Future investigations will require boreholes and test pits. A detailed geotechnical investigation will be required to inform future design processes. The revised EMP included in Appendix C of this

SEIS will also apply to geotechnical investigations. This will also inform tunnel length and construction methods. It is noted that submission 43 states a preference of tunnelling (bored) over cut and cover tunnel construction methods. Submissions 20 and 45 also request extension of the bored sections of tunnels, to limit the extent of cut and cover tunnel construction method required, particularly to reduce the impact on areas of National Park and habitat. These matters will be taken into consideration during the detailed design stage of the Project.

4.5 Landscape and visual amenity

4.5.1 Visual impact on properties within close proximity of railway

Submission 4 suggests that the residual visual impact on local topography will be extremely adverse for some existing properties, rather than *moderate adverse* as was assessed in the EIS.

Visual amenity is a subjective issue and different opinions about significance of impacts are hard to avoid. The Project team has endeavoured to justify its approach to impact assessment by developing significance criteria documented in section 6.2.3 and table 6.2.3 of the EIS, supported by the information in tables 6.2.2a and 6.2.2b.

The approach to the visual assessment for the EIS was based on a representative sample of viewpoints. The assessment as moderate adverse is therefore considered appropriate as an overall assessment of impact from the viewpoints assessed.

It is acknowledged that the Project will permanently alter the visual amenity of some areas. This is an unavoidable result of infrastructure projects wherever they are located, and whatever type of environment they traverse.

Future stages of the design will need to incorporate appropriate mitigation measures, such as those described in the EIS, including:

- landscape planting within the railway reserve to screen the Project from views, where feasible. This may also assist with slope stabilisation, erosion control and habitat connectivity
- landscape planting in strategic locations outside the railway reserve to provide additional screening, where possible
- opportunities exist to integrate landscaping with noise barriers to reduce the visual impact of noise mitigation barriers
- mitigation measures developed in the detailed design phase may include opportunities to provide screening to individual properties.

4.5.2 Visual impacts to the Evangelical Lutheran Trinity Church

Submission 25 expressed concern about the assessment of visual impact to the Evangelical Lutheran Trinity Church in Woombye.

The assessment undertaken in the Chapter 6, Landscape and Visual Amenity assessed the impact to representative viewpoints along the alignment and did not provide an assessment for each individual property. The closest viewpoint assessed in the EIS was viewpoint number 23 which is at the Woombye Pony Club north of the Church. The assessment at this viewpoint acknowledges that there is likely to be a high adverse visual impact in this location due to the large reduction in visual amenity likely to result from the Project.

As a result of the change in the railway alignment, and land requirement from the adjoining property, the existing screening vegetation between the current railway and the church property will be lost.

The mitigation measures proposed in the EIS include the use of appropriate landscaping to provide screening, and the design of the rail structure to minimise the visual impact where possible. Drawing C123 in the EIS shows proposed noise barriers on the edge of the four track corridor. However, it may be appropriate to establish noise barriers on the extent of the land requirement for the two track corridor in this location. During the future design phases of the Project, consultation will be undertaken with affected stakeholders to determine the most appropriate measures for the minimisation of visual impacts. This should include replanting of screening vegetation between the Church and the proposed noise barrier, at the edge of the two track corridor land requirement.

4.5.3 Views from Rose Road

Impacts to the views from Rose Road to Dularcha National Park were highlighted in submission 45, with a request for further information of site specific mitigation for this area.

Dularcha National Park and Rose Road are included in the EIS as one of the Special Management Areas, due to the importance of the area and the potential for adverse impacts. The view from Rose Road is an important outlook point in the study area and as such screening from this point would be inappropriate, but rather visual mitigation would be focused on maximising the integration of the new rail corridor into the adjacent landscape.

Chapter 21 of the EIS outlines the location specific mitigation measures for this area, of which some relate to visual amenity:

- The Project is as close as possible to the existing rail and utilises the majority of the existing corridor.
- Clearing along the proposed rail corridor shall be limited to the amount necessary to undertake earthworks and provide for maintenance access, with the aim to minimise the construction footprint within the corridor where possible.
- Areas impacted by construction, but not required for the operation of the future railway shall be rehabilitated to reduce the long-term loss of remnant vegetation.
- The existing rail through Dularcha National Park shall be decommissioned and rehabilitated. As part of the measures above, consideration will be given to the planting of vegetation within the rail reserve and vegetation of cut and fill batters to minimise the visual amenity impact from Rose Road.

4.5.4 Light nuisance

Light nuisance from train headlights has been raised as a concern in submission 8. This issue will be noted for future stages of design, and can be addressed through appropriate landscaping and/or noise barrier treatments.

4.5.5 Landscape treatments and screening

Landscape treatments indicated in the artists impressions in the EIS are indicative only, and will be subject to further consultation with SCRC, the local community, and future design processes. It is not possible to show screening of rail infrastructure, however landscaping guidelines should be developed in future stages of the Project.

The visual impact and effect of secure fencing on severance and access will also need to be carefully considered in future stages of design and land use planning.

4.5.6 Further visual assessments

As part of the future design development process, TMR should engage directly with the community and the Sunshine Coast Regional Council in the definition of visual design guidelines for the detailed design and landscaping/ urban design of the Project. Refer to the Proponents commitments for further information.

Figure 4.5.6a and 4.5.6b provides representative images of Palmwoods and Woombye prepared for consultation activities conducted prior to the release of the EIS.

Figure 4.6.5a: representation of Palmwoods with the Project.

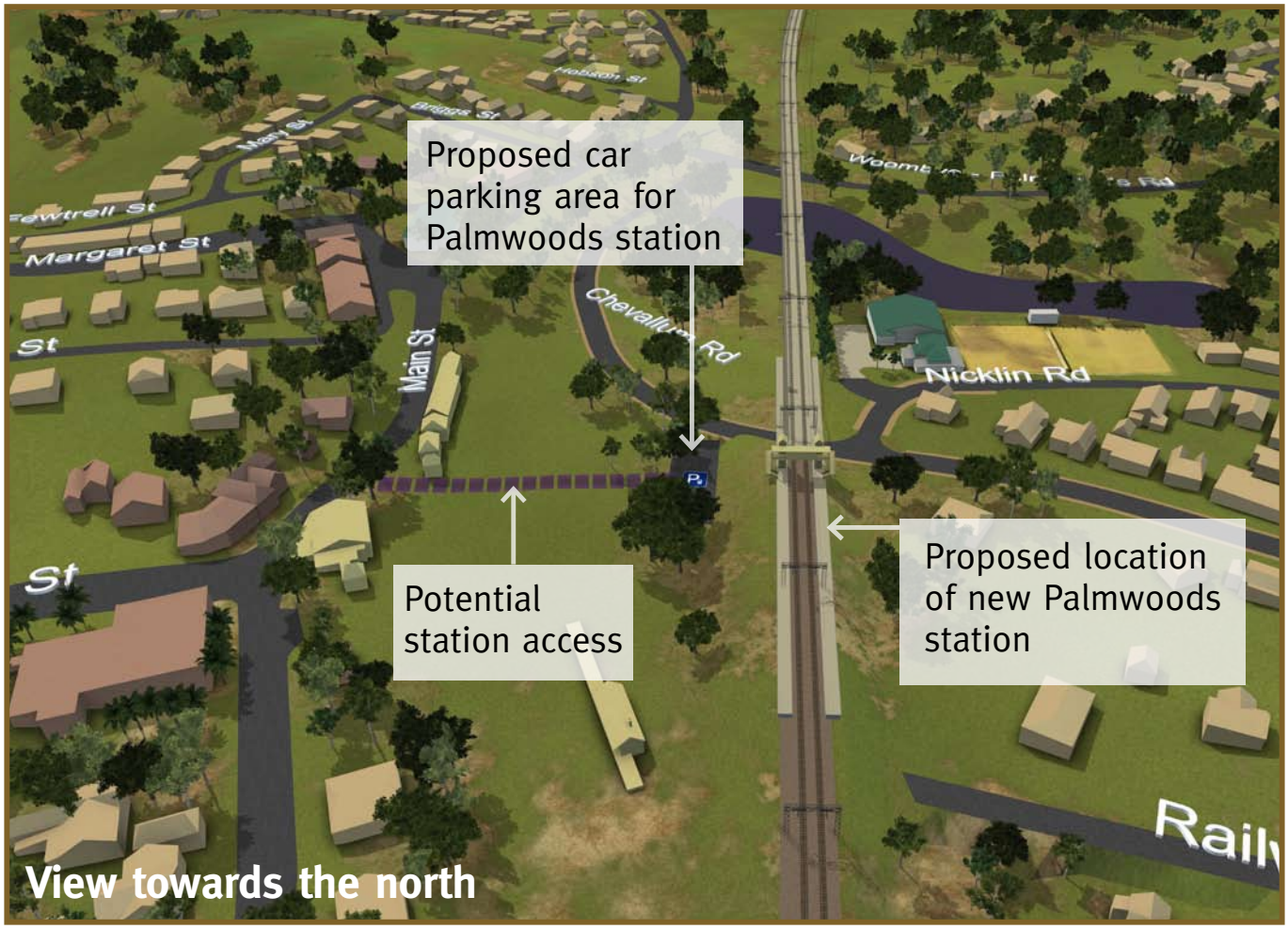
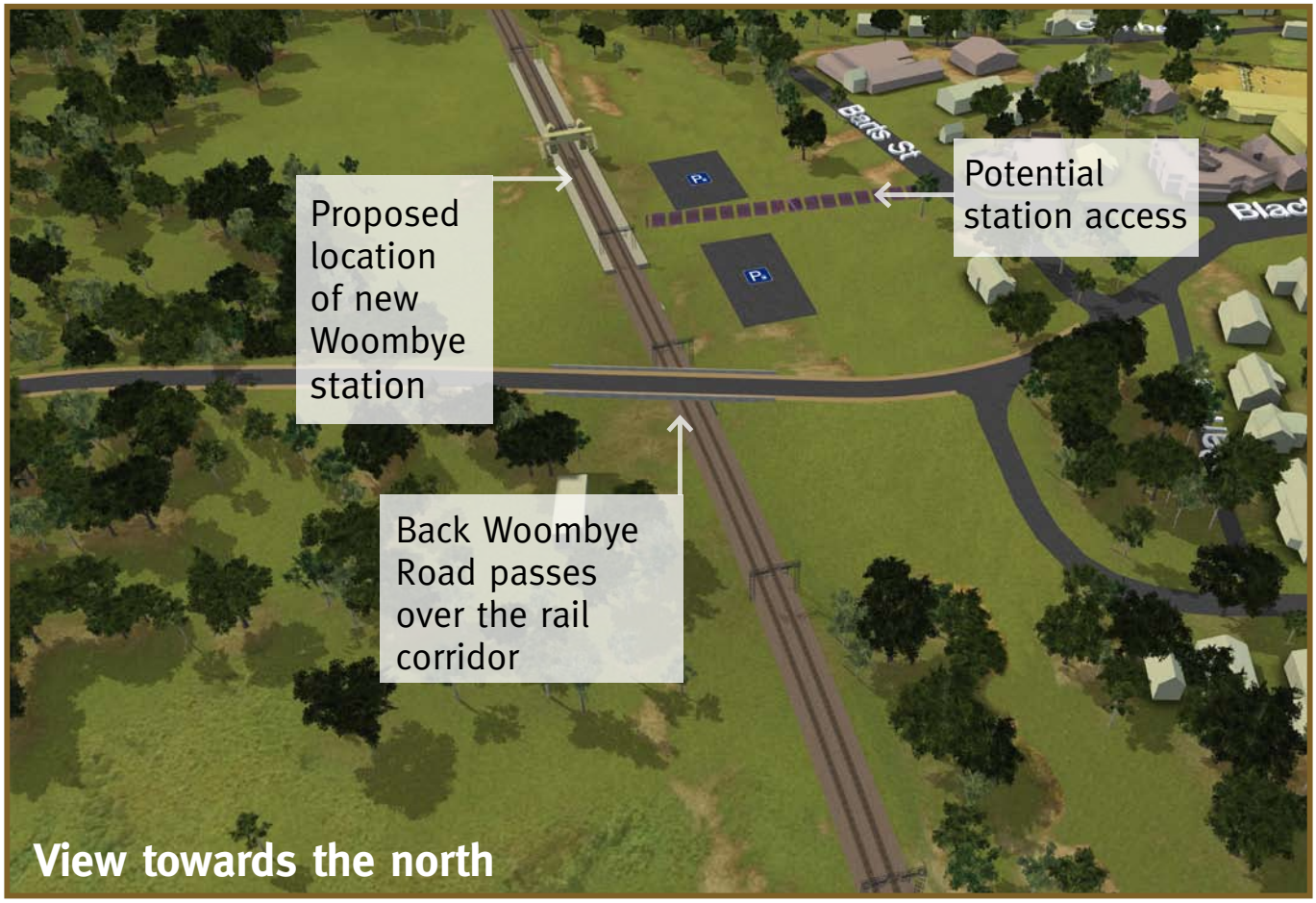


Figure 4.6.5b: representation of Woombye with the Project.



4.6 Transport

4.6.1 Roads to be utilised for construction traffic

The following local roads are likely to be used for construction traffic:

- Caloundra Street
- Tytherleigh Avenue
- Gympie Street North
- Cribb Street
- Tunnel Ridge Road
- Rose Road
- Jones Street
- Paget Street
- Hatten Street
- Neill Road
- Karanne Drive
- Knox Road/ Old Gympie Road/ Mooloolah Road/ Rosebed Street
- Logwoods Road
- Highlands Road
- Eudlo School Road
- Anzac Road
- Corlis Avenue/ Eudlo Road
- Beach Lane
- Ash Lane
- Paskins Road/ Main Street
- Nicklin Road
- Margaret Street
- Jubilee Drive
- Spackman Lane
- Taintons Road/ Wakefield Street
- Blackall Street
- Keil Street
- Pine Grove Road
- Back Woombye Road/ Old Palmwoods Road
- Blackall Range Road
- McKenzie Road
- Arundell Avenue
- Colless Lane
- Lamington Terrace/ Currie Street/ Coronation Avenue
- Civic Way
- Mill Street
- Price Street
- Bli Bli Road.

Major roads were listed in the EIS. Caloundra Street and Bli Bli Road are also expected to carry significant amounts of construction traffic, whereas some of those roads noted above will carry limited amounts of traffic most likely for local construction works.

It can reasonably be expected that construction traffic will use Neill Road, especially as there are road works planned at the Mooloolah end of this road and bridge works.

The local road network may also change between now and the construction of the scheme which may alter the roads listed above. There may be requirements for localised upgrades to accommodate the construction traffic movements associated with the Project. This will be examined through future stages of the design process, in consultation with SCRC and TMR, prior to construction.

4.6.2 State Controlled Roads affected by the Project

State controlled roads in the Project area are listed on page 221 of the EIS. The following lists them by their gazetted state controlled name:

- Mooloolah Connection Road
- Palmwoods – Mooloolah Road (Eudlo Road, Rosebed Street, Corlis Avenue, Eudlo Road, Chevallum Road)
- Woombye – Montville Road
- Nambour Connection Road.

The following State controlled roads are impacted by the Project:

- Mooloolah Connection Road (possible grade separation)
- Palmwoods- Mooloolah Road (Eudlo Road)- realignment as shown in EIS Drawings SK007, SK008, SK107, SK108
- Palmwoods- Mooloolah Road (Chevallum Road)- realignment as shown in EIS Drawings SK009, SK109.

A new bridge structure will span the Woombye – Montville Road in Palmwoods, and submissions 16, 41 and 48 have identified the potential for significant upgrades to this road as a result of the future decommissioning of the railway. This is further discussed in section 4.20.6.1 of this SEIS.

The function of these roads will be maintained through the following:

- identifying any opportunities for early works packages that could minimise disruption to the road network
- preparing and using traffic management plans for construction phases to maintain flows
- designing for flood immunity and vehicle clearance consistent with current road design standards, and subject to review in future should design standards change.

4.6.3 Vehicle movements associated with spoil removal

As noted in sections 4.2.2.6 and 4.2.2.8 of this SEIS, overall there is an excess of fill, and suitable material will also need to be imported from various sites for construction of the Project.

The staging of the Project will determine the cut/fill balance for each stage of the Project that is constructed, therefore it is not possible at this stage of the Project to provide additional detail regarding vehicle movements.

As each stage of the Project is designed and construction planning commences, vehicle movements, sources of fill and spoil re-use will need to be determined and the impacts to local traffic managed. Movement of spoil/fill to and from the site will need to comply with the environmental standards applicable at the time of construction, which will be included in the construction environmental management plans.

4.6.4 Public Transport Connections to Coastal Regions

Submission 8 proposes that if the Project corridor had been located closer to the highly populated coastal strip, the benefits could have been greater. This issue is addressed in section 4.1.1 of this SEIS. This submission also highlights the importance of public transport connections between the hinterland and the coastal region, and not just connections to Brisbane. The EIS discusses the strategic priorities of the TransLink Network Plan, in particular noting:

- Making services connect: provision of more interconnecting bus services
- Greater coordination of services from key transfer locations including Landsborough, Nambour and coastal centres.

4.6.5 Work Trips Demand

The transport chapter of the EIS, Chapter 7, notes that long distance (to Brisbane) home based work trips are likely to reduce as a proportion of the travel along the rail line. Chapter 8, Economic Development, states that improved rail service will facilitate residents working in major centres to the south. Submission 8 considers that these statements contradict each other. However, whilst the proportion of long distance home-based work trips may reduce, they will still represent a portion of the total trips on the line, and the improved service along the rail corridor will facilitate these trips.

4.6.6 Cycle and Pedestrian Links – active transport

The following existing bikeway and pedestrian links will be affected by the Project:

- Gympie Street North, Landsborough
- Bray Road and Neill Road, Mooloolah
- Local bikeways in Eudlo, Palmwoods, Woombye and Nambour.

Generally these links are associated with existing road infrastructure, and where impacted will be reinstated.

With the redevelopment of surplus rail land, and consideration of the future re-use of the decommissioned rail corridor for

rail trails, there is a real opportunity to deliver a regional hinterland bikeway network, enhancing the accessibility of rail stations in the Project area by cycling and walking. Inclusion of end of trip facilities at these stations will make these modes more attractive.

The SCRC submission and submission 8 requests clarification of the responsibility for the provision of pedestrian and cycle facilities in the decommissioned corridor. The use of the decommissioned line for rail trails is not yet confirmed, and the process and responsibilities for decommissioning and remediation (where required) is also to be determined. Generally, local government takes responsibility for the provision and management of future cycle and pedestrian links. Relevant facilities at stations will be provided.

Provision of public transport interchange and active transport facilities is discussed in section 4.3.1.4 of this SEIS.

4.6.7 Freight movements

Whilst the Project will benefit freight transport, it is not intended solely as an improved freight corridor, with the additional benefits outlined in Chapter 8 of the EIS, Economic Development.

4.6.8 Construction impact on Palmwoods Bowls Club Access and Parking

Preliminary design indicates that land to the west of the Bowls Club buildings, often used as an overflow car park, will be directly affected by the Project. The bridge design in this area has been reviewed, reducing the bridge footprint and subsequently the area of impact. This is shown in Appendix D.

It will be important to maintain access and adequate parking provisions for the duration of construction. It is envisaged that there should be no loss of parking spaces in the overflow area after construction of the bridge and associated roadwork is completed.

Strategies to minimise these impacts should include:

- Early works packages to deliver upgrades of associated roadwork. This would include Chevallum Road and intersection improvements at Nicklin Road.
- Provision of allocated on-street parking.

Management of other impacts to this facility are discussed in section 4.15.3 and 4.20.6.6 of this SEIS.

4.6.9 Construction - Traffic impacts and parking

The SCRC has concerns about the implications of construction traffic on the local road network and requests that the Proponent liaise with the Council regarding haul routes and traffic management plans to minimise traffic impacts, and make efforts to maintain two lane (and in some cases for short term, single lane) flow.

The traffic and transport management plan within the Planning EMP (Chapter 22 of the EIS) identifies that a Road Use Management Plan will be developed for construction vehicles. This plan will include traffic management measures for local roads and the Council will be consulted in the development of the Road Use Management Plan.

The SCRC submission also queries the arrangements for parking for the construction workforce as this can have impacts on residents and businesses if not appropriately managed. Whilst the details of parking arrangements for the construction workforce will be developed in later stages of the Project, the principles for parking arrangements will be to:

- encourage the construction workforce to car pool or use alternative transport to the site
- identify parking areas suitable for the construction workforce that do not reduce the amount of parking available for businesses or residences
- provide temporary car parking where necessary
- strictly enforce parking protocols for the Project to ensure that parking does not occur outside of designated areas.

The Department of Community Safety notes road closures need to be carefully planned so that emergency access and response times are not jeopardised.

4.7 Economic Environment

4.7.1 Economic Benefits of the Project

It has been questioned whether the Project will create a reduction in road accidents, social connectivity and social exclusion, as described in the EIS Executive Summary. These benefits of the Project are further outlined in Chapter 8 of the EIS, Economic Development. A reduction in road accidents is a potential benefit of the Project, given that the Project will contribute to more efficient public transport in the region and in conjunction with other public transport networks will reduce reliance on private vehicle transport.

Improved public transport also contributes to social connectivity by allowing greater ease of movement between centres and there is the potential for social connectivity to be enhanced through the provision of affordable housing in close proximity to the rail stations. Such development would need to be sensitive to existing character of the townships.

A reduction in social exclusion is described in Chapter 8 as a possible benefit of the Project through a focus on local benefits, including employment, training, and local sourcing of inputs. There should be a focus on capacity building and benefits that will sustain the area beyond the construction phase. These aspects are addressed through the adherence of the Project to State Policies such as the *10 Percent Policy*, the *Indigenous Employment Policy* and the *Local Industry Policy*.

4.7.2 Impacts to property prices and compensation

Submissions 4 and 22 suggest that property prices for properties left adjacent to the corridor could be affected, and should therefore be compensated. In developing a response to this submission, the following factors have been considered:

- By the time this Project is constructed and operational, property values in the Project area are likely to be influenced by many variables, not just this Project.
- Proposed improvements in public transport accessibility (and associated land use and road network improvements) is likely to result in positive impacts to property values.
- Noise and visual mitigation will be a major consideration at the local scale in future stages of the Project design, this is expected to help mitigate any adverse effects at a local level.

The provisions of the *Acquisition of Land Act 1967* or wider common law do not allow for compensation to property owners where there is no land requirement taken.

4.7.3 Employment and workforce accommodation

The economic modelling documented in the EIS identifies the potential for the generation of new jobs.

An Accommodation Strategy is recommended in the EIS. The EIS also states that rail project workers will be drawn from the local area 'where possible'. Local employment and the use of local businesses and contractors will be guided by a Local Industry Participation Plan and Local Industry Policy. However, where the workforce is drawn from outside the local area, the issue of short to medium term accommodation demand and its effect on the local housing market will need to be managed. The economic conditions, labour market conditions and housing occupancy rates at the time of construction will have a significant influence on these aspects. Therefore the EIS concludes that these factors should be assessed nearer to the time of construction to inform the preparation of the Accommodation Strategy.

4.7.4 Economic Benefits to the wider Sunshine Coast Region

This Project is one part of a number of proposed public transport infrastructure projects for the Sunshine Coast Region, to support the objectives of the South East Queensland Regional Plan. Therefore the implementation of this Project, the proposed CAMCOS project, and future east-west connections will result in the delivery of an improved regional public transport network. Benefits of the wider public transport network may include:

- encouragement of businesses to locate in the hinterland townships
- improved accessibility for tourists, including access to the Sunshine Coast Airport
- improved economic self-containment of the region
- reduced dependency on private vehicle trips from the coastal strip to railway towns to access rail services.

These outcomes are likely to require more than just the implementation of this Project, and should be considered in the planning and funding of future public transport projects in the Sunshine Coast region.

4.7.5 Job creation resulting from the Project

Submission 8 queries the anticipated number of jobs created by the Project. The economic analysis undertaken for this Project identifies the following:

Area	Direct	Indirect / flow on	Total
South East Queensland (SEQ)	659	1269	1,928
Queensland	850 (including SEQ)	1936 (including SEQ)	2,786

It must be noted that as the start dates for design and construction of the Project are as yet unknown, these figures may change. These figures may also differ based on the way the Project is staged. Therefore the figures presented in the EIS are intended to provide guidance for future stages of the Project planning and construction planning, and it is not possible to provide a more detailed breakdown of the employment figures.

The EIS notes that the jobs created by the Project are expected to be highest during the middle of the construction period, and less at each end, but would average the figures given above.

4.7.6 Relocation of community facilities

The Project will impact on a number of community and recreational facilities, as listed in table 4.3.4 of the SEIS.

SCRC and the Department of Communities have highlighted the importance of these facilities to the local and regional community. Strategies for relocation or re-establishment of impacted facilities will be developed prior to the Project's design or construction.

These strategies should include:

- definition of the impact to the facility, and extent of mitigation required
- assessment of re-use/ redevelopment potential at the existing location
- identification of potential future sites
- assessment of impacts to local businesses/community resulting from the loss of the facility from its present location
- assessment of impacts/ benefits to local community resulting from the relocation of the facilities
- economic analysis
- funding options
- timeframe for re-establishment
- guidance for engaging with the affected community groups/ users
- process and protocols for liaison between TMR and the SCRC.

4.8 Social Environment

4.8.1 Town segregation

Community severance in townships has been raised as an issue that received limited attention in the EIS document. The railway townships along this section of the north coast line are already segregated by the existing railway. Access across the corridor is limited. Crossing points include level crossings, road over-bridges, road underpasses, a pedestrian underpass at Nambour station, and a pedestrian crossing in Palmwoods. The Project plans for grade separation, and reinstatement of bridges and underpasses. In some cases, such as at Woombye, the provision of a road bridge over the rail will have significant benefits in terms of safety and accessibility to community members travelling to the west of the existing railway.

The proposed re-use of surplus railway land, and associated land use planning activities, landscape design and station design provides the opportunity to plan for cohesive development around stations and access nodes, to address the town segregation issue. This issue is raised in the SCRC submission, and is further discussed in section 3.20.1 of this SEIS.

4.8.2 Social impact assessment

The SCRC submission considers the social impact assessment undertaken in the Project EIS as a macro level assessment, unsuitable for managing the likely change to occur in the Project area in the lead up to construction and after construction.

There are a number of social impacts that can be directly attributed to the Project, including:

- community severance
- displacement and relocation of community facilities, including sports and recreational facilities
- loss of some commercial and industrial facilities
- changes to the local road network
- visual impacts
- changes in the noise and vibration profile.

It is important to remember that the railway townships within the Project area are already divided by the existing North Coast rail line. This Project provides the opportunity for considered land use decisions around the future rail corridor that deliver liveable, walkable, commercially viable, and ultimately desirable community places.

The townships along the Project area are also likely to undergo significant changes in the lead up to construction, as a result of ongoing development pressures, within the urban footprint (perhaps with the exception of Eudlo).

The Project delivers a significant opportunity for the community, SCRC and TMR to work together in the identification of desirable land use within these townships, in particular the surplus railway areas. This is particularly relevant given council is currently preparing its new planning scheme.

4.9 Cultural Heritage

4.9.1 Retention of station infrastructure for community purposes

The Mooloolah Station pedestrian rail bridge and waiting shed do not meet current design standards, and it is likely they cannot be retained in situ. The pedestrian rail bridge is not long enough to go over the additional track, and the waiting shed is not of sufficient size to cater for future demands. Similarly, the heritage structures at Palmwoods and Woombye cannot be retained for these reasons. A Scout Hut near the Woombye station will also require relocation as it is in the direct line of the rail alignment.

Following structural and maintenance assessments, the relocation of these structures will be considered further and all options for reuse explored. It is possible that the waiting sheds can be reused in some form within the station precinct. A Conservation Management Plan will be prepared which considers options to best mitigate impacts on the stations' heritage significance.

It will be important to deliver new stations that are consistent with the context of the historic townships, reflecting the character and scale of surrounding buildings. Station design guidelines will be developed for the Project, to provide a clear and consistent framework for station design. The guidelines should take their cues from the surrounding townscape, and ultimately deliver outcomes like the recently refurbished Landsborough station, which reflects its railway and timber heritage and uses heritage colours. Community input into both the guidelines and the station designs should be sought.

4.9.2 Buderim to Palmwoods Tramway

Submission 16 has provided detailed information about potential archaeological material from the Buderim to Palmwoods Tramway that may be directly impacted by the Project. The Tramway is protected by the *Queensland Heritage Act 1992*. The submission suggests that a full archaeological evaluation and recovery of this material should be undertaken.

The EIS recommends that a Conservation Management Plan be prepared that considers all options to mitigate impacts on the cultural heritage significance of this material. It is confirmed that archaeological monitoring and recording is one of the mitigation options that will be explored as part of the Conservation Management Plan. Should investigations conclude that recovery is necessary to protect cultural heritage significance; this will be undertaken as part of the Project.

4.9.3 Sites of historical value not identified in the EIS

4.9.3.1 Evangelical Lutheran Church

The cultural heritage chapter identifies the church in Table 10.6.2 as a 'previously unknown site in or immediately adjacent to the Project area'. However no assessment of the impact of the Project on the church is documented. The heritage values of the church will need to be established, prior to determining the future use of this site. The church building itself is not directly impacted by the Project, and should be able to be retained. The position of noise barriers and screening vegetation is further discussed in section 4.5.2 of this SEIS. The Project has also been designed so that access to the church can be reinstated.

4.9.4 Rose Road Tunnel

This disused tunnel is listed on the National Trust Register and is located approximately 400 metres to the west of the Project. Concern about disturbance to the bat colony in the disused tunnel resulting from vibration is raised in the DERM submission.

The condition of the existing tunnel has not yet been assessed. The Project will undertake a condition survey of the tunnel to determine if it would be susceptible to vibration damage from construction of the future tunnel. Vibration monitoring will also be undertaken during construction to ensure that site construction activities do not exceed vibration levels likely to cause damage. The Project will be responsible for damage attributable to construction vibration and for returning the property to pre-construction condition. Should vibration levels approach levels at which structural damage could occur construction activities giving rise to the vibration will be stopped and methodologies reviewed to identify alternative options. Generally, operational and construction vibration from railways rarely causes building damage in structurally sound buildings, therefore it will be important to establish the existing conditions through survey prior to construction so management measures can be established.

4.9.5 Old Mellum Cemetery

This heritage feature is identified on p380 of the EIS, but not directly assessed.

The Old Mellum Cemetery is understood to be located within Pound Reserve, off Gympie Street North in Landsborough. The property description is M 332060. Its current tenure is lands leased, and is understood to be part of the lease for the North Coast Rail line. Previous documentation in the *CAMCOS Corridor Assessment Report (1998)* identifies the site as containing 'a memorial stone with brass plaque' and is understood to be the burial site of local pioneers including 'Lawrence Graves and Elizabeth Orrell'. The corridor for the Project extends over part of this property, however no earthworks are proposed within this property.

Management measures will include detailed heritage survey to confirm the exact location of this memorial site, and to ascertain whether the Project will have a direct impact on any heritage aspect associated with this site.

4.9.6 Murphys House

The SCRC submission also requested further consideration of Murphy House, which is recorded in their heritage register. The exact location of this property is being confirmed with council, as our records place it at 10 Mooloolah Connection Road, and Council lists it as 8 Mooloolah Connection Road. There is no land requirement from 10 Mooloolah Connection Road for the Project, and 8 Mooloolah Connection Road is a vacant lot.

4.9.7 Mitigation for other identified sites

The SCRC submission notes that the EIS identifies a number of sites that may be impacted by the Project, but does not clearly specify individual mitigation measures for each site.

Procedures for future consideration of these sites are identified in the EIS. This includes specialist assessments, site specific conservation management plans, and the appointment of archaeologists for the construction period. The specialist assessments and site specific management plans will require consultation with the Council, local community and any other stakeholders regarding mitigation and management of impacts.

4.9.8 Cultural heritage and design

Submission 16 notes that the cultural heritage values and features in the Project area must be taken into account in future stages of design. This relates not only to station and station precincts, but areas and features encountered along the way. In particular the heritage features in the Kolora Park area, both indigenous and historic, need to be observed.

The Department of Communities submission notes that as part of the cultural heritage management process, photographic records of significant sites should be prepared prior to construction, to be used for education purposes. There is also the potential for the incorporation of heritage features and places into interpretive signage within and between the townships, particularly if rail trails are developed along part or all of the decommissioned rail line.

4.10 Nature Conservation: Terrestrial Flora

4.10.1 Weed and pest species Identification

A flora survey was undertaken as part of the EIS. The flora survey was targeted at various sites within the study area, rather than along the full length of the alignment. This was considered an adequate level of detail for the EIS. The results of these surveys are shown in Appendix F in the EIS.

Prior to construction a more detailed flora survey will be undertaken to assess native and exotic species within the new rail corridor. At

this time a species list will be provided to Bio-security Queensland for assessment of declared species and Class 1 weeds will be notified. The development of this species list will enable species specific management plans to be undertaken prior to construction.

It was considered inappropriate to conduct a survey at this level of detail for the EIS because the timeframes associated with the commencement of construction are at least 5 years away and within this time a different cohort of weeds could be present.

A Fire Ant Management Plan will be undertaken at detailed design stage, when more detail is known about the sourcing of materials and construction equipment.

4.10.2 Weed and Pest Management

The weed control plan in the EMP (updated in Appendix C of this SEIS) will be implemented during construction and operation of the Project. This identifies that the aim should be to leave the site in equivalent condition (or better, in terms of weeds) to prior to construction.

The actions being undertaken to minimise weeds are consistent with those identified in the *Land Protection (Pest and Stock Route Management) Act 2002* and *Land Protection (Pest and Stock Route Management) Regulation 2003*. Further information on these weed management techniques can be found in the weeds management EMP, included in Appendix C of this SEIS.

Weed eradication is an element of the WMP developed as part of the EIS. Areas targeted for weed eradication will be based on future site surveys of the corridor, and these will take place closer to construction. Any rehabilitated weed infested areas will be periodically monitored for weed density. Through vegetation management practices it is planned that all rehabilitated areas over the length of the corridor are to become weed resistant and achieve a self-managing status. This will lead to native plants making up an increased portion of the undergrowth and a reduced need for regular on-going management.

Whilst previous management measures for weeds, such as Lantana, may not have been effective along the rail corridor, the EIS identifies that Lantana is the most significant weed along the preferred corridor, and a focus on this species by weed control contractors should control the majority of weed biomass.

The control of pest animals is not limited to the species listed in the EIS or this document. The EMP includes provision for the control of pest animals as follows:

- an ongoing trapping and eradication program that targets pest animals will be designed and implemented
- trapping procedures will be undertaken by suitably trained personnel
- an ongoing systematic monitoring program will be designed and implemented to detect the occurrence of feral animals and to assess the success of the trapping and eradication program.

In the course of construction, operation or decommissioning activities private properties may be required to be accessed for weed management purposes. These properties would therefore fall into the designated 'project area'. This therefore means that these properties are subject to the weeds management EMP.

In the case of entering and leaving private properties, mitigation measures for spreading weeds will only be applied. The Government will not provide funding or resources for the rehabilitation of infested areas already existing on the property.

Weed control measures (such as spraying or hand removal) will only be actively conducted within the rail corridor where weeds will be identified, mapped and have management plans. Weeds within operational weed corridors will be managed by QR as custodians of the rail. Once the old rail is decommissioned, parts of it will be rehabilitated or utilised as part of a rail trail network. QR will be responsible for the rehabilitation of the decommissioned line and will be expected to undertake monitoring and maintenance upon all areas of rehabilitation to ensure weeds are under control and rehabilitation efforts are largely successful. Weed management strategy forms part of the EMP, included in Appendix C of this EIS.

The DEEDI submission makes reference to Biosecurity Queensland's *Annual Pest Distribution Survey 2008 data* and predictable pest maps on the DEEDI website.

The most significant weed species observed in the Project area and their impacts and management measures are listed in table 11.6 of the EIS. The DEEDI submission notes a number of other weed species are known to be present in the local government area, but not listed in the EIS. These include:

- Alligator weed *Alternanthera philoxeroides*
- Senegal tea plant *Gymnocoronis spilanthoides* (refer to errata section)
- Honey Locust *Gleditsia triacanthos*
- Rubber vine *Cryptostegia grandiflora*
- Fireweed *Senecio madagascariensis*
- Annual ragweed *Ambrosia artemisiifolia*
- Olive Hymenachne *Hymenachne amplexicaulis*
- American rat's tail grass *Sporobolus jaquemontii*
- Giant rat's tail grass *Sporobolus pyramidalis* and *S. natalensis*
- Parramatta grass *Sporobolus africanus*
- Hygrophila *Hygrophila costata*
- Cabomba *Cabomba caroliniana*
- Water hyacinth *Eichhomia crassipes*
- Parthenium weed *Parthenium hysterophorus*
- Water lettuce *Pistia stratiotes*
- Salvinia *Salvinia molesta*.

Management measures for these weed species have been included in the Environmental Management Plan Management of weed and pest species will also take into account the SCRC local laws and procedures with regard to weeds and pest species.

4.10.3 The Pinch Lane Vegetation Clearance

The existing tunnels were not constructed for electric trains, as steam trains were operating at the time of their construction. Hence the tunnels are not large enough to cater for the overhead electrification required to run today's trains. When the railway was electrified some cables were run over the top of the tunnel, leading to some vegetation clearance.

The new tunnels will be large enough to cater for all over head electricity cables within the tunnel, therefore there will be no need to clear vegetation to run electricity through the tunnels. Upon decommissioning of the old railway, the electricity supply over the mountain at The Pinch Lane will be removed. There may be some clearing within the existing electricity easement in order to remove the poles and wires; however, once the old electricity infrastructure is removed the easement can be revegetated.

Requirement for ventilation of tunnels is yet to be determined, and will be subject to design requirements at the time of detailed design. Avoidance of areas of fauna and habitat significance will be important factors in the selection of appropriate locations and methods for tunnel ventilation.

4.10.4 Retention of old growth trees and significant vegetation

Areas of significant vegetation were considered in the route selection and design process of the Project and have been avoided where possible. However, due to the linear nature of the Project it will not be possible to avoid all old growth trees, habitat trees and significant vegetation. Where these elements are located on the outer boundaries of the rail corridor, it may be possible to minimise the clearance / construction zone by making a minor adjustment at the time of detailed design or construction.

Several mitigation measures have been suggested in the EMP to mitigate the loss of these features:

- clearing to remain within the defined corridor, which will be defined by exclusion fencing
- areas that contain significant vegetation will be flagged on site
- pruning trees on the construction boundary (rather than clearing to manage overhanging branches)
- salvaging of hollows and hollow logs for placement in retained areas
- any construction access tracks to be located in conjunction with an environmental officer to minimise clearing of significant vegetation
- where construction works do encounter threatened species that have not been picked up in previous surveys, work is to cease in the immediate area until translocation or other appropriate management can be arranged.

For further information, refer to Section 11.5.3 of the EIS which discusses 'old growth trees' and Section 11.5.7 which discusses 'culturally significant trees'. It is not possible to retain all these trees within the alignment, but where they have to be cleared they will be used for habitat enhancement.

4.10.5 Revegetation of Construction Zone

Section 11.5.1 of the EIS and the Vegetation Management Plan (included in Appendix C of this EIS) states that areas used for construction but not required for the operational phase of the railway will be rehabilitated. It is intended that details of the rehabilitation phase will be addressed within a Vegetation Management Plan (VMP) produced at the time of detailed design and prior to construction.

Buffer planting will be implemented to reduce the edge effects within areas of remnant vegetation that have become exposed to disturbance through the construction of the rail. These are discussed in the EMP (Appendix C of this SEIS). This section states that the details of the buffer planting will be incorporated into the rehabilitation and landscaping strategy within the construction VMP.

4.10.6 Requirement for Offsets

The requirement for offsets is discussed in Section 11.6 of the EIS. Offsets are governed by the *Policy for vegetation management offsets* (DERM, October 2009) and they operate on the basis of ecological equivalence. This means that they are required to be the same broad vegetation type and within close proximity to the site of the clearing. DERM (Queensland Parks and Wildlife Service) has requested compensatory land of equal or greater conservation value in lieu of cleared areas. An area twice that of the protected area impacted is requested. During the detailed design phase of the Project, there will be an opportunity for consultation between DERM, TMR and SCRC to achieve the best outcomes for the Project. This would include consideration of compensatory habitat provisions.

The EIS states that the Proponent will conduct investigations into the suitability of land already owned by them as part of the offsets package provided for the Project. Under the 2009 policy the proposed offsets must satisfy several criteria that determine whether it is a suitable offset or not, particularly:

- offset limitations
- values and regional ecosystems
- ecological equivalence.

The first of these criteria (offset limitations) states that vegetation shown as remnant on an RE map is not suitable as an offset unless it has prior approval for clearing. This means that

areas already mapped as remnant on these properties cannot be considered as an offset. However, areas of regulated regrowth (provided they are not within a restricted area) can be.

During detailed design, the amount of remnant vegetation to be cleared will be refined to the exact areas required for the construction of the rail. Clearing will be minimised where possible through the minimisation of the construction zone, use of retaining walls and steepening of batters and cuttings where possible. The extent of offsets required under the VMA, will be further refined and identified during this stage. The methodology for locating and securing these offset areas will be subject to consultation with EcoFund (part of DERM that will deal with offsets). Several submissions suggest particular sites or properties which could be secured for offsets purposes, this information will be considered during consultation with EcoFund.

The cumulative impacts of the Project, and other projects and development across the region should be considered in the identification and securing of offsets.

4.10.6.1 Offsets for disturbance to wetland north of Palmwoods

Submission 39 notes that the State Government's vegetation offsets policy should incorporate wetland communities that are affected by the rail corridor. It is a requirement of the 'Policy for vegetation management offsets' (DERM 2009) that should wetland areas mapped as remnant vegetation be cleared, they must be replaced by an offset area of ecological equivalence.

There is one area that is recognised as a wetland that will be affected by the Project. The wetland area just north of Palmwoods is associated with Lot 1 and 2 RP190651. During the route selection process the current alignment was favoured because it had the least impact on the remnant wetland vegetation and the least property impacts. The construction and operation of the rail will impact upon 0.18 ha of remnant RE12.3.5 and 1.4 ha of regulated regrowth (*Not of Concern*) that is within a restricted area, being essential habitat for Wallum Froglet (*Crinia tinnula*) and Wallum Rocketfrog (*Litoria freycineti*). Tusked Frog (*Adelotus brevis*) was also noted nearby during the surveys conducted for the EIS. Whilst the rail will be on structure in this location (with 7 to 13 metres clearance), there is still potential for the construction to result in some clearing. Any clearing in this area will be mitigated through the implementation of offsets. There is potential for the offset to contribute to the areas of regrowth wetland on these two lots (Lot 1 and 2 RP190651) so that they are rehabilitated and protected in perpetuity.

4.10.7 Methodology of Field Survey

Flora and fauna investigations involved the following steps:

- Review of Existing Information (held in various public databases and available through studies for other projects in the area).
- Field Investigations.

The field investigations were largely utilised to ground-truth the information that came from the review of existing information and highlight any major potential environmental issues. Field investigations were targeted at areas of particular interest to the Project, for example:

- waterway crossings
- large areas of remnant vegetation
- national Parks
- conservation Areas
- bioregional Wildlife Corridors
- areas where significant species have been recorded.

Field investigations consisted of a preliminary site reconnaissance to assist in the selection of areas for more detailed survey. This was followed by two rounds of detailed field assessments. Each survey period lasted for 5 days (and nights, where appropriate). The aim of the surveys at this point was to provide a list of vegetation communities, habitat types and species that are associated with the Project area, rather than gain information about population sizes. Hence, the survey has been designed to ascertain the presence or absence of certain species.

The level of detail achieved is considered to be sufficient for the Route Selection and EIS phases of the Project and is consistent with the TOR issued for the Project. It is noted that to date a detailed flora and fauna survey of the entire final alignment has not been undertaken. This detailed survey will occur at the detailed design and construction phases of the Project. This approach is consistent with the stage that this Project is in.

The specific survey methodology for flora is explained in Section 11.2 of the EIS and the specific survey methodology for fauna is explained in Section 12.2 of the EIS.

4.10.8 Impact of Paskins Road upgrade on Eudlo National Park

There is a section of Paskins Road running adjacent to the existing rail line through Eudlo National Park. This road is currently an unsealed road that provides access to several private properties neighbouring Eudlo National Park. The Project will result in a realigned connection between Leeons Road and Palmwoods, which will be a sealed road. The sealing of the road is not considered to create anymore risk from weed invasion than the existing situation. Once built the road will be managed by the SCRC and weed management will be undertaken by SCRC. The existing section of Paskins Road is unaffected by the Project (south of the rail corridor), and is not proposed to be sealed as part of the Project, and would remain for access to properties along the road.

4.10.9 Impact of widening Leeons Road

Submission 15 notes that the vegetation on 12 Leeons Road (Lot 1 CG2604) has been identified incorrectly. The Queensland Herbarium's mapping indicates that the eastern boundary of this property is affected by a narrow strip of RE12.9-10.14. The submission also indicates a small area of RE12.3.1 in this location. The mapping cannot be used to map areas less than two hectares in size. The Queensland Herbarium's mapping was relied upon for identification of vegetation communities in this area and hence the small area of RE12.3.1 has not been picked up. A detailed survey was not undertaken in this area for the EIS. It is anticipated that a detailed survey of the road reserve for Leeons Road will occur at detailed design phase.

It is noted that this property is not indicated to be affected by construction works, as the road widening will occur within the existing road reserve.

4.10.10 Damage to vegetation from surveying works

Surveyors are required to notify the environmental officer if their line of site / test drilling requires clearing as per p427 of the EIS, and Appendix C of this SEIS. The exact location and timing of drilling is not known at present. Surveyors will be required to apply for clearing permits if the vegetation is protected. If these activities involve clearing of protected vegetation or landscaped areas, rehabilitation will be conducted after activities are completed.

4.10.11 Presence of significant species in The Pinch Lane

It is anticipated that individual specimens of significant species will be located in the detailed survey of the proposed alignment that will be conducted at detailed design stage. The potential presence of these species has been noted as follows:

- *Alyxia magnifolia* in vicinity of southern cutting and tunnel entrance in Dularcha National Park
- *Phaius australis* in the vicinity of The Pinch Lane.

It should be noted that tunnels are proposed in both these locations and it is likely that the plant species will remain unharmed provided they are not within the area to be disturbed by cuttings.

4.10.12 Rehabilitation of decommissioned railway

Rehabilitation plans will be produced at a later stage, once the existing rail ceases to operate. The rehabilitation plans will deal with different portions of the decommissioned rail. The process of rehabilitation is generally described on page 428 of the EIS. It will involve removal of ballast and restoration of topography to suit the existing landscape.

4.10.13 Cumulative Impacts associated with maintenance of powerlines at Culgoa Road

There are existing powerlines traversing the area around Culgoa Road. The proposed alignment will intersect with these lines. Currently the plans show that most of the area where the rail intersects the powerlines is within a cut-cover tunnel, emerging to an open cut on the northern side. The power lines associated with the rail will run through the tunnel or within the cutting, well below the existing powerlines. At detailed design stage there is likely to be investigations as to whether it is best to extend the tunnel to manage the area under the powerlines or not.

The EIS for the SunCoast project, which addresses the upgrade of the power lines, was reviewed during the preparation of the Landsborough to Nambour EIS.

From an ecological perspective, the cut and cover tunnel (once rehabilitated) will provide a land-bridge to continue wildlife movement in an east-west direction. The management of regrowth within the power easement that will run over the rail will be a matter for Powerlink.

4.10.14 Updates to Biodiversity Mapping

Section 11.3.2 of the EIS discusses the biodiversity values of the Project area by making reference to the *Biodiversity Planning Assessment* (BPA) (DERM 2005) mapping version 3.4. Since this information was written the BPA data base has been updated to version 3.5, hence the information within Section 11.3.2 needs to be updated.

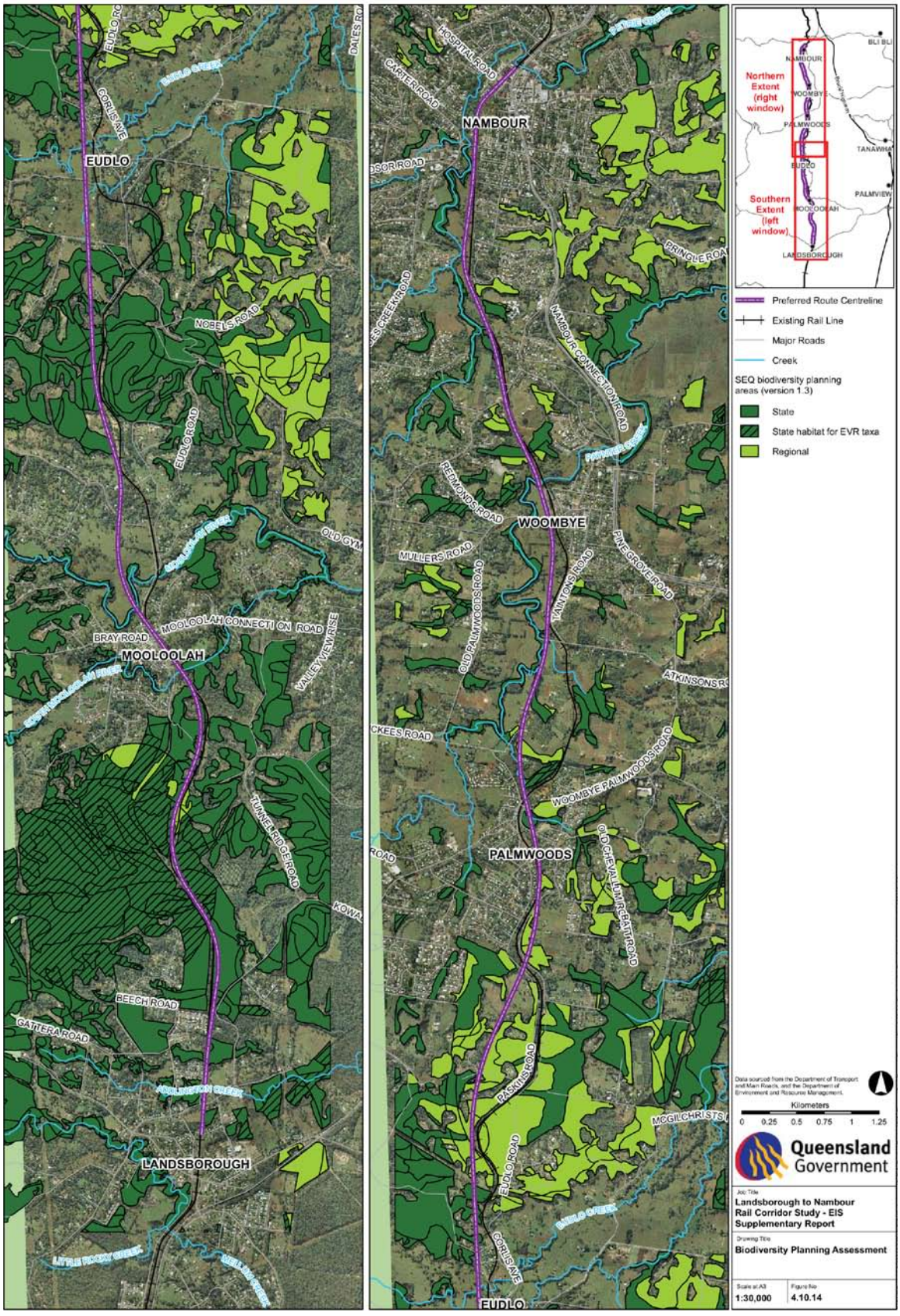
A map of the Project area with the new BPA areas is shown in **Figure 4.10.14**.

The BPA mapping still indicates the Project area to be associated with high biodiversity value with a large portion of the remnant vegetation being mapped as having 'State significance'. The basis for this ranking is that many areas of remnant vegetation contain at least one Endangered RE (Criteria B1), which is likely to represent the narrow areas of RE12.3.1 along creek lines.

The vegetated areas around Dularcha National Park and The Pinch Lane (the higher country between Mooloolah and Eudlo) are still recognised as having particularly high biodiversity value on the following grounds:

- remnant contains at least one *Endangered* or two *Vulnerable* or *Rare* species (CRITERIA A)
- remnant represents poorly conserved RE's (CRITERIA B2)
- vegetation condition is natural (CRITERIA E)
- remnant has ecosystem diversity in the top quartile (CRITERIA F)
- remnant is highly connected to other areas of remnant and forms a buffer to endangered vegetation (CRITERIA G)
- remnant contains core habitat for priority taxa (CRITERIA H)
- remnant forms part of a bioregional corridor (CRITERIA J).

Figure 4.10.14: Biodiversity Planning Assessment



The Pinch Lane is also associated with a number of unique biodiversity values, as follows:

- remnant contains an RE that is one of the largest of its type in the bioregion (CRITERIA D1)
- Special Biodiversity Values – high species richness and variation in composition and valuable wildlife refugia (CRITERIA I)
- remnant is part of a tract that is one of the largest in the bioregion (CRITERIA C).

Other locations that are associated with high biodiversity values are Addlington Creek, South Mooloolah River, Mooloolah River, Eudlo Creek NP, Paynter Creek and parts of Petrie Creek.

Most of these areas are associated with high scores for Criteria B1 (RE type), Criteria E (vegetation condition), Criteria H (core habitat for significant species) & Criteria I (wildlife refugia). The area around Eudlo National Park is 'regionally significant' (as opposed to State significant), which implies slightly lower values for each of the criteria listed.

A comparison of the new mapping (v3.5) with the old mapping (v3.4) that was described in Table 11.3.2 has identified the following differences:

- remnant vegetation along Addlington Creek is now mapped as State Significant
- riparian vegetation along South Mooloolah and Mooloolah river are now mapped as State significant
- vegetation south of Eudlo Creek (just south of Logwoods Road) is now mapped as State significant
- reduction in area of vegetation mapped as significant around Eudlo NP, but more of the vegetation that is mapped is State significant.
- remnant vegetation around Kolora Park is now mapped as Regionally significant
- wetland just north of Palmwoods is now mapped as State significant
- refinement of mapping along Paynter Creek
- new areas of regional / state significance north of Woombye station
- new areas of regional / state significance adjacent to Nambour Christian College
- parts of Petrie Creek are no longer mapped as state significant.

It appears that most of the changes to the BPA mapping relate to changes in remnant regional ecosystem mapping. As such the conservation issues in most of these areas have already been addressed by the EIS. **Table 4.10.14** below shows a list of the new areas that have been added to the BPA mapping along the alignment and how these areas have been addressed.

Table 4.10.14 Addressing new areas recognised by BPA mapping

Area	Issue	Mitigation
Addlington Creek	Removal of riparian vegetation and fauna movement	Implementation of a fauna underpass to facilitate movement of frog species in particular. A bridge was not feasible in this area at this time (Section 21.4.3).
South Mooloolah River	Removal of riparian vegetation and fauna movement	Implementation of a bridge structure to minimise riparian vegetation clearing and facilitate fauna movement (Section 21.6).
Mooloolah River	Removal of riparian vegetation and fauna movement	Implementation of a bridge structure to minimise riparian vegetation clearing and facilitate fauna movement (Section 21.8).
Logwoods Rd	Clearing of remnant *Of Concern* RE12.3.2 along small tributaries of Eudlo Creek and continued fauna movement.	The rail will be mostly on fill to a height of 5 – 8m in this section of the alignment, which makes it difficult to address issues of clearing. It is suggested that this be reviewed in detailed design with regards to the feasibility of extending the structure at Eudlo Creek south or implementing a fauna crossing.
Eudlo NP	Clearing of remnant vegetation and continued fauna movement.	The position of the alignment through Eudlo National Park will allow for consolidation of the park. Currently the existing rail way dissects the park. Rehabilitation will be conducted within the decommissioned rail. Refer to Section 21.12.
Kolora Park	Clearing of remnant *Of Concern* Re12.3.2 along the edge of the duck ponds.	The rail will be on structure in this location to allow for the retention of vegetation less than 12 metres in height (Section 21.13).
Palmwoods wetland	Clearing of wetland vegetation and habitat for significant species.	The alignment of the rail in this location was selected to minimise impacts on the wetland. The rail is also on structure at this point and will allow for some vegetation to be retained and the continuation of wildlife movement.
North of Woombye Station	Clearing of remnant *Endangered* RE12.3.1 along small tributaries of Paynter Creek and continued fauna movement.	The alignment through this area is on embankment and is adjacent to the existing rail. However, to reduce the construction footprint a retaining wall is to be implemented on the west side and the batter on the east side has been reduced. A fauna underpass has been planned for the tributary to allow for continued fauna movement. The existing rail will be decommissioned and rehabilitated.
Nambour Christian College	The vegetation is unaffected by the proposed alignment.	N/A

4.10.15 Updated Koala mapping

Section 12.3.4 (page 462) of the EIS discusses the values of the Project area for koalas. It makes reference to the Koala Habitat Mapping of *the Koala Plan 2006 - 2016* (EPA 2006) and 'urban koala areas' that were affected by the draft SEQ Koala State Planning Regulatory Provisions (Koala SPRP) (DIP 2008). Since this information was written the draft SEQ Koala State Planning Regulatory Provisions have been revised two times– in July and November 2009, and was finalised in May 2010. From this date the elements of the *Koala Plan 2006 – 2016* that deal with development assessment and all preceding drafts of the SEQ Koala SPRP will be superseded.

Under the new *SEQ Koala Conservation SPRP* there are two types of assessable development areas; Priority Koala Assessable Development Area (PKADA) and Koala Assessable Development Area (KADA). Within each of these areas several types of koala habitat are recognised, including bushland habitat, areas that are suitable for rehabilitation and other areas of value. The alignment is affected by two patches of KADA at Landsborough (between Vidler Court and the southern boundary of Dularcha National Park) and Mooloolah (from Mooloolah Connection Road to the northern boundary of properties on Neil Road). The habitat type affected at Landsborough is low value rehabilitation. The habitat type at Mooloolah ranges from low value rehabilitation to medium value bushland habitat.

Figure 4.10.15 shows how the mapping affects the Project area.

As there is the possibility of changes to koala protection legislation prior to the design and implementation of the Project, compliance with the relevant policy will need to be assessed again at the detailed design phase of the Project.

4.10.16 Tunnelling options in Eudlo National Park

Chapter 21, Section 21.12 discusses the mitigation measures that will be in place to protect the biodiversity values of Eudlo National Park. It describes the placement of a tunnel to the south of the park, rehabilitation of the decommissioned rail to consolidate the park and the treatment of the waterway with a bebo arch at chainage 92640.

It should be noted that the bebo arch is adjacent to a span bridge (for property access) and hence the feasibility of continuing the bridge south to incorporate the waterway could be investigated at detailed design.

4.10.17 Clearing of non-remnant vegetation

It was a priority for the Project to reduce the clearing of vegetation. As there is generally a higher density of vegetation within remnant areas, these were avoided where possible. This has meant that the alignment will impact upon unmapped RE's. Vegetation clearance in these areas will be managed as described in the revised EMP (in Appendix C of this SEIS) and will include:

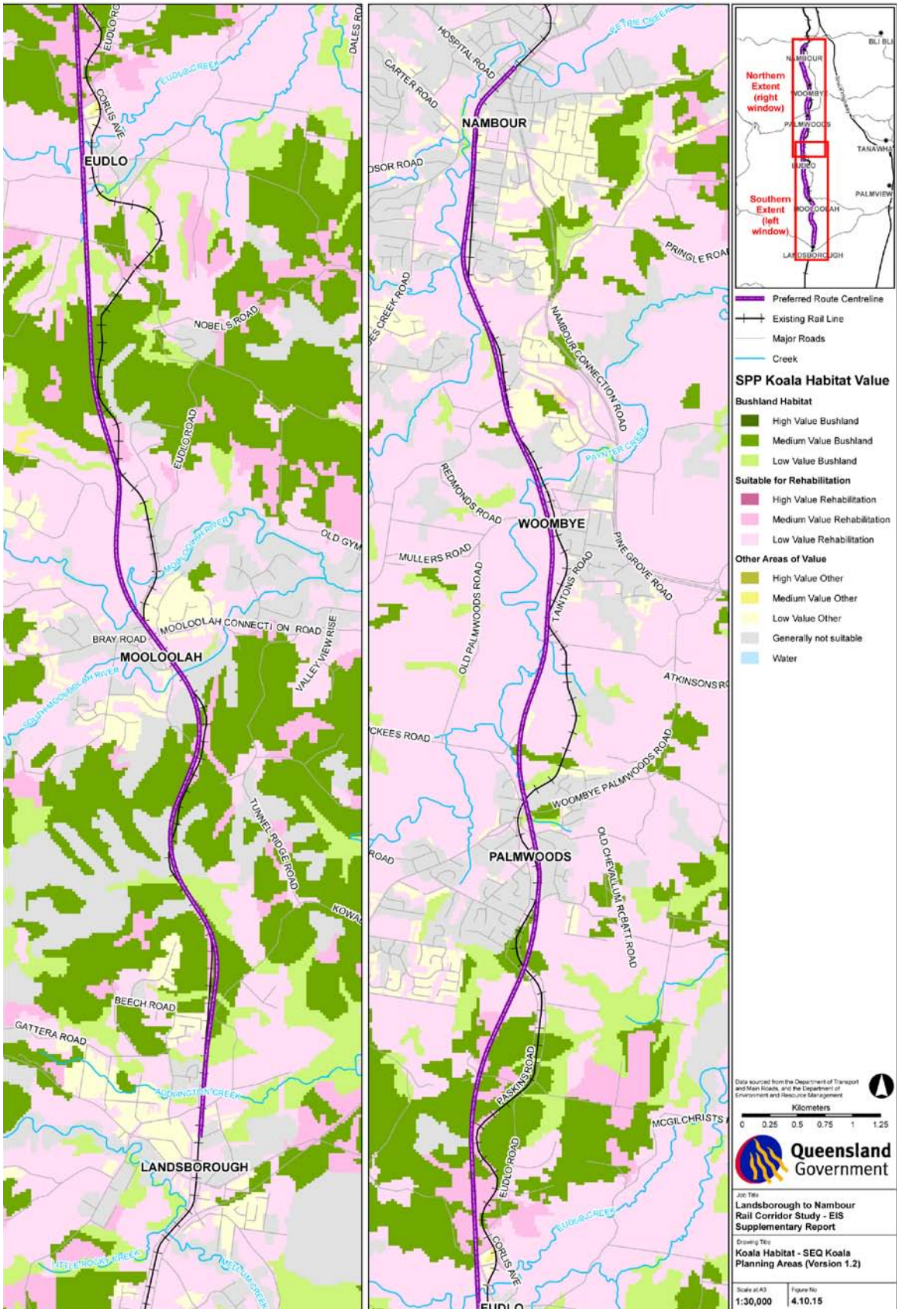
- clearing within designated areas only and limited to the amount necessary
- minimisation of construction access disturbance
- locating of stockpiles in already cleared areas
- avoidance of highly diverse areas where possible
- lopping or pruning of overhanging trees rather than removal
- salvaging of logs for habitat
- slashing to minimise ground disturbance where possible (e.g. where earthworks are not required)
- rehabilitation of areas only required for construction.

Management of aquatic areas and creek crossings is described in Sections 11.5.6, 13.5 and 22.3.8 of the EIS.

4.10.18 Updated Regional Ecosystem Mapping

Since the release of the EIS, updates to the regional ecosystem mapping have occurred. Therefore figures 11.3a, 11.3b and 11.3c from the EIS are superseded by figures 3.1.3a, 3.1.3b and 3.1.3c in this SEIS. It is likely that there will be future updates in the lead up to the Project's implementation.

Figure 4.10.15: Koala Habitat - SEQ Koala Planning Areas (Version 1.2)



4.11 Nature Conservation: Terrestrial Fauna

4.11.1 Fauna Movement Corridors

4.11.1.1 Land Bridges

Land bridges were looked at early in the environmental assessment and rail design process as a potential method to maintain connectivity between areas of habitat east and west of the rail alignment (Section 12.5.2). The tunnels provided near Rose Road and The Pinch Lane essentially create land bridges by keeping the railway at a subterranean level and allowing a terrestrial connection over the top of the rail.

There are several reasons why land bridges have not been utilised in other locations along the alignment in the final design:

- The requirement for railway electrification and signalling supporting masts along the railway would mean that land bridges would be very high. As such the construction footprint of the bridges would extend far beyond the rail corridor on both sides in order to achieve the gradient required to go over the rail way and still be functional for fauna movement. The reinforcement in the structures that is required to hold enough earth for vegetation to grow would mean that these would be massive and extremely costly structures that were likely to reduce the landscape amenity of the area.
- Similarly rope / arboreal bridges were considered where the rail intersects with the National Parks; however, the height of the railway electrification is likely to preclude this. This could be investigated further during detailed design.
- The combination of tunnels underneath bioregional wildlife corridors (Rose Road and The Pinch Lane) and a total of 22 fauna underpasses are considered to be sufficient to allow for the continued movement of native fauna in an east –west direction across the rail. The provision of fauna underpasses in the upgraded alignment will be a marked improvement on the current situation, which provides no fauna underpasses.

There is a section of road that cuts through the Eudlo Creek National Park, where an arboreal bridge may be of benefit. This issue has been identified for further consideration in future stages of the Project's design.

4.11.1.2 Replacement of culvert with a bridge at Addlington Creek crossing

A bridge crossing structure was intended at Addlington Creek during the very early stages of the design process to cater for the continued movement of the Giant Barred Frog that is known to be in the area. However, due to the terrain and the required levels for the railway this was not considered to be a feasible solution at this location.

The height of a bridge at this location would only leave 0.2 – 0.5m of clearance along the northern bank and no clearance over the southern bank. This would mean that the opportunity for movement of other fauna species would be very limited and there would be no retention of native vegetation within the space under the bridge, which is likely to become infested with weeds. Weed infestation and confined spaces are not conducive to the movement of Giant Barred Frog, which needs sparse ground cover and leaf litter (which is encouraged by a dense rainforest canopy) to move through. The added expense of the bridge structure could not be justified due to the lack of benefits that it would provide. In this case it was considered that providing wet and dry culverts for fauna movement would cater for a better fauna movement outcome than the bridge structure. This will be an improvement on existing conditions, where the culverts are permanently submerged and unsuitable for fauna passage. This area is to be revisited during detailed design, and may require further consultation with the Commonwealth Department of Environment, Heritage and the Arts.

This issue around Addlington Creek was discussed within Section 21.4 of the EIS.

4.11.2 Utilisation of tunnels for fauna habitat

There will be no tunnels created specifically for construction access. However, upon decommissioning of the rail there will be two old disused tunnels remaining under Rose Road and The Pinch Lane. The conversion of these old tunnels into fauna habitat is dependent upon the requirement for these tunnels as part of the rail trail network. If they are not required, bats can be encouraged to roost within the tunnels. This would be achieved by putting steel mesh at the entrance points, allowing bats to fly through and the roof surface of the tunnels would be roughened to allow for footholds for roosting microbats.

4.11.3 Monitoring of culverts for train strike

Guide fencing around culverts is one of the design components considered within the EIS for the construction of fauna underpasses (Section 12.5.2). The guide fencing is intended to prevent fauna from crossing the rail corridor above ground and direct them to the purpose built underpasses that have been created for their safe passage. The risk of fauna mortality on the rail corridor is discussed in Section 12.5.5 of the EIS.

The monitoring of fences, underpasses and train strike incidents is part of the monitoring program suggested in the Fauna Management Plan (Section 22.3.7). Fences will be monitored to ensure there has been no damage and they remain intact. The underpasses will be monitored to ensure that they remain free of built up debris and water levels are appropriate. Any fauna strikes will be reported so that hot spots can be identified and appropriate mitigation measures put in place to ameliorate the problem (e.g. fencing).

4.11.4 Construction timed to avoid breeding periods for significant species

Section 12.5.5 and the Fauna Management Plan (Section 22.3.7) in the EIS states that a fauna spotter-catcher will be employed during clearing operations and clearing will be timed to avoid the optimum breeding periods for significant species, where possible.

4.11.5 Impact of Paskins Road on local ecology

The realignment of Paskins Road results in a continuation of Toby Court for approximately 870m until it reaches the existing Paskins Road where the proposed rail crosses the existing rail. The realigned Paskins Road runs parallel and directly adjacent to the proposed railway. It traverses mostly cleared rural land with the exception of two small patches of remnant vegetation, resulting in the clearing of approximately 0.2 ha of *Not of Concern* RE12.9-10.14 and 0.02 ha of *Of Concern* RE12.9-10.1.

The presence of the rail corridor on the western side and cleared areas on the eastern side of the realigned road means that it is less likely for wildlife to be traversing the new Paskins Road at this point. There is a fauna underpass provided just to the south of Toby Court that will provide safe passage under the road and the rail in this location (**Figure 12.5** in the EIS).

Utilising the significance criteria defined in **Table 12.2.4** of the EIS, it is predicted that the impacts of the realignment will be *low adverse*.

4.11.6 Fauna-friendly Culverts at Dularcha National Park

There are a total of five culverts in Dularcha National Park. Three of these are fauna underpasses. Of the two culverts that are not underpasses, one (Chainage 83900) is unsuitable for an underpass due to the topography of the land. It is possible to upgrade the culvert at Chainage 83400, however, the exit point on the eastern side would be compromised by ground that slopes up immediately and could be perceived by some fauna as a barrier. The waterway at this point has been redirected south along the rail corridor to avoid this. A list of culverts and underpasses appear in Table 13.5 in the EIS.

4.11.7 Rose Road Tunnel Bat Colony

The bat colony within the operational tunnel is already dealing with the passage of passenger and freight trains, as such are likely to be desensitized to noise and vibration disturbance. In any case, the vibration caused by the drilling of the tunnels will be monitored and should it become excessive the drill head or speed of drilling can be changed to lessen vibration. Information to date is that it is unlikely that blasting will be undertaken.

4.11.8 Habitat Connectivity

The DERM submission notes that a large area of *Of Concern* remnant vegetation is likely to be impacted by the Project, and measures for reconnecting such as culverts should be considered in future stages of design.

4.12 Nature Conservation: Aquatic Biology

4.12.1 Preservation of Mooloolah and South Mooloolah Rivers at railway crossings

This is addressed within the Special Management Areas chapter, particularly Sections 21.6 and 21.8. More general information about the management of flora, fauna and water quality can be found in the EMP, included in Appendix C of this SEIS. The success of the management measures will be monitored by the environmental officer during construction. Any breaches will be rectified and/or reported to the relevant authority as necessary.

4.12.2 Impacts to areas mapped as 'coastal wetlands' under the South East Queensland Regional Coastal Management Plan

The Project is within the *SEQ Regional Coastal Management Plan* (SEQ RCMP) (EPA 2006) area. The SEQ RCMP describes how the coastal zone within the SEQ region is to be managed and provides direction for implementing the State Coastal Management Plan under the *Coastal Protection and Management Act 1995*. The SEQ RCMP identifies the areas surrounding Petrie Creek to the south of Nambour as being coastal wetlands (**Figure 4.12.2a**). The Coastal Wetlands Policy for the SEQ RCMP identifies that development activities affecting coastal wetlands must protect and enhance the current extent and diversity of these wetlands. Under Schedule 8, Part 1, Table 4, Item 5(b) of the IPA 1997, operational work that is carried out completely or partly within a coastal management district, is triggered as assessable development with DERM as a concurrence agency. In addition, the wetlands of Petrie Creek are also identified as a 'referable area', requiring that developments within the 100m buffer of this wetland require referral to DERM.

The EMP provides a range of management measures to be implemented during construction that would reduce the impact to wetland areas such as at Petrie Creek:

- Minimise the construction footprint as far as possible – this has been achieved by implementing a retaining wall in this location as opposed to a sloping batter.
- Implement erosion and sediment control to maintain existing water quality conditions within waterways and adjoining tributaries.

Figure 4.12.2a: Coastal Management and Wetlands (SEQ Coastal Management Plan)

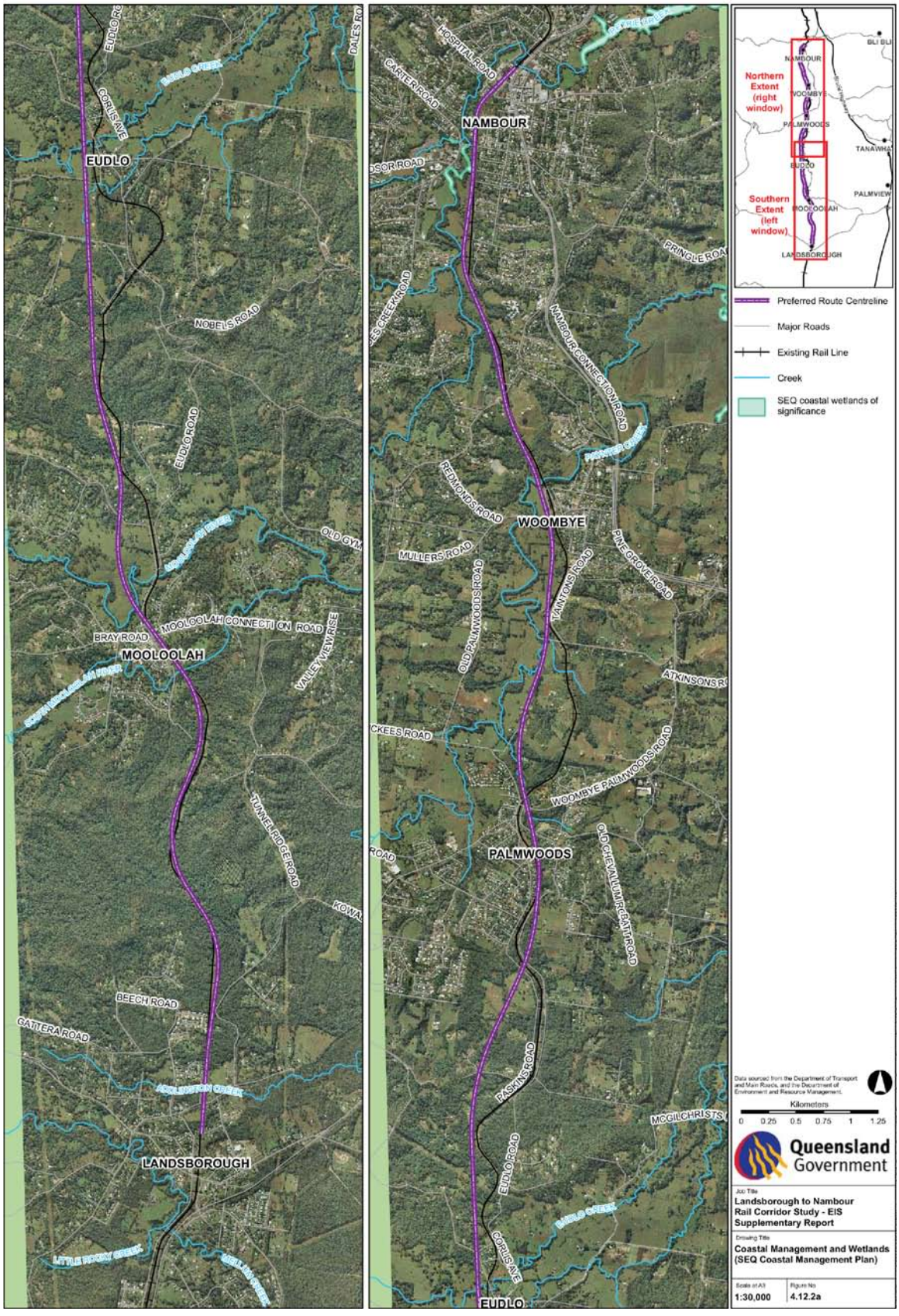
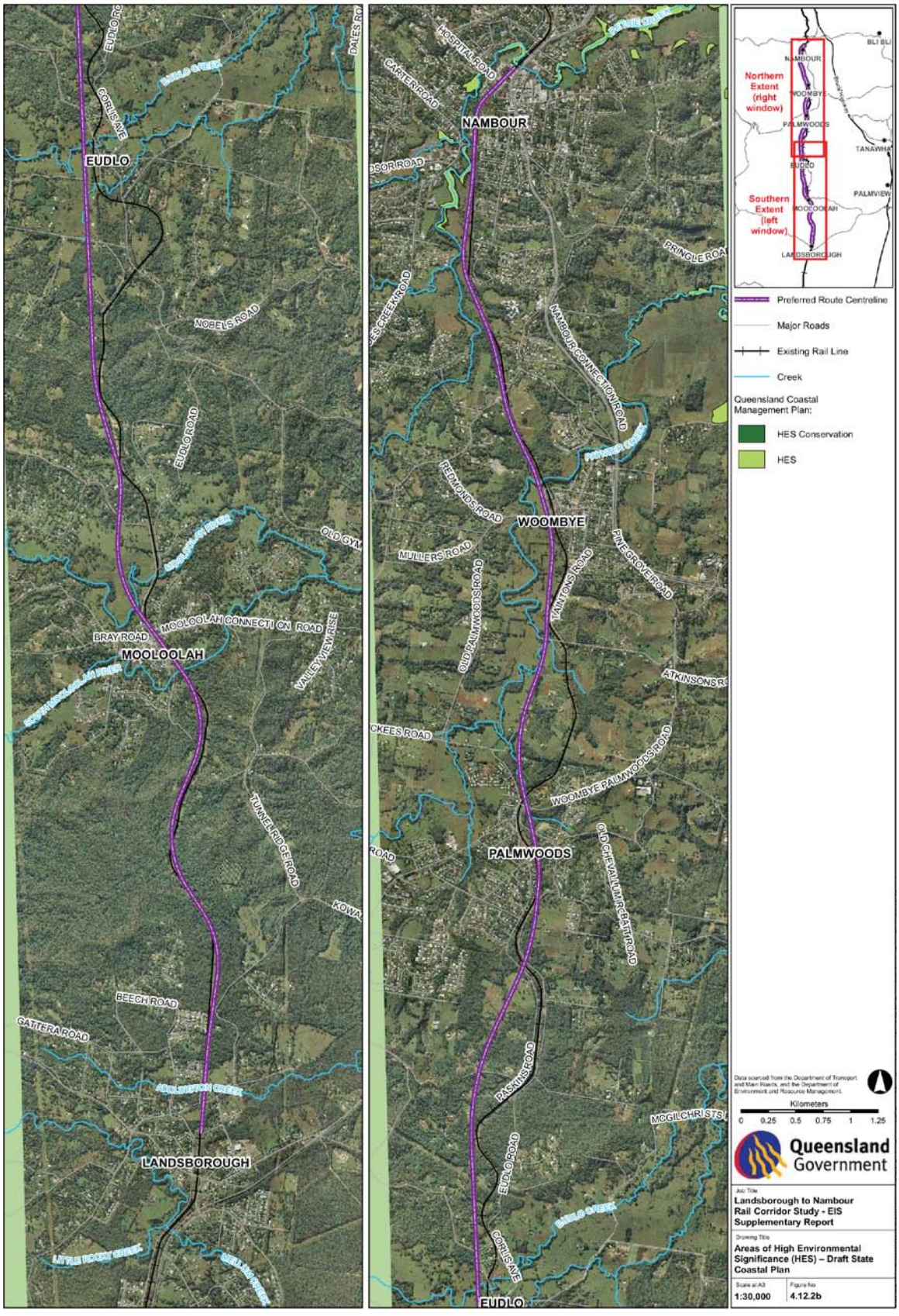


Figure 4.12.2b: Areas of High Environmental Significance (HES) - Draft State Coastal Plan



- Areas required for construction, but not needed for operation of the railway should be stabilised immediately after construction has ceased. Stabilisation will be in the form of vegetative rehabilitation, landscaping or constructed stabilisation depending on the location.

The *Draft State Coastal Plan* will replace the *SEQ Regional Coastal Management Plan (SEQ RCMP*) in late 2010. The State Coastal Plan will result in the *State Planning Policy (SPP) Coastal Protection* coming into force and development being assessed under the provisions of the policy. The public consultation period ended on 30 November 2009 and DERM is currently reviewing submissions and making amendments to the document and related policies.

Under the *Draft State Coastal Plan*, the areas surrounding Petrie Creek are indicated as High Ecological Significance (HES) within the terrestrial coastal zone (Figure 4.12.2b). Clearing of vegetation within an area of HES is assessable under the proposed *SPP Coastal Protection* and the SPP requires that harm to these areas is minimised as far as possible and an offset provided. DERM would assess any requirement for clearing with HES prior to final planning approval of the Project.

As the final form of the *State Coastal Plan* and *SPP Coastal Protection* is unknown, compliance with the relevant policy will need to be assessed again at the detailed design phase of the Project.

4.13 Water Resources

4.13.1 Drainage Design and Property Damage

The SCRC submission and submissions 2 and 43 consider drainage to be an important issue for the Project, from a flooding and ecological perspective. The issue of drainage is discussed in Chapter 14 of the EIS, Section 14.5.5. Of particular relevance, the EIS discusses the mitigation measures that will be in place to manage the potential impacts to surface flows. This includes the following:

- implementation of bridges and culverts to allow continued water movement
- rail on structure over flood plains
- rail designed to suit flood levels of 100 year average recurrence interval (ARI)
- minimise use of in-stream barriers during construction
- implementation of stormwater management devices
- in the situations where bridge crossings are constructed, the bridge shall be built with a drainage system that collects stormwater and drains it to either end of the bridge
- the stormwater from the bridge is either discharged into a bioretention basin to remove contaminants or discharged down a vegetated slope to the waterway (where the vegetation will filter out contaminants and sediment before it reaches the waterway).

The assessment of impacts to surface water flow is assessed as *negligible* to *low adverse* in the EIS.

The detailed design stage will review drainage and inflow requirements for water storage and dams on private properties.

Further details of the potential drainage impacts and mitigation measures are provided in Chapter 14 of the EIS.

4.13.2 Flood Modelling

The SCRC submission requests that more detailed flood modelling be undertaken, incorporating allowance for climate change impacts.

The EIS design has utilised Geographic Information System (GIS) data in part provided by SCRC which is based on historical flooding information. The GIS data is produced by hydraulic computer models which predict statistically based design flood events. Further, more advanced hydraulic modelling will be undertaken at the detailed design stage. This modelling will include an allowance for climate change, based on the latest available projections which are currently provided by the State Government in ClimateQ: Toward a Greener Queensland. These projections are based on the Intergovernmental Panel on Climate Change (IPCC) scenarios which provide the established international source of climate change data. They have been adapted to Queensland regional conditions by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Bureau of Meteorology (BoM). Any updates to this data will be utilised in the detailed hydraulic modelling.

The EIS discussed the impact of climate change on extreme weather events, including droughts and flooding. Further clarification was sought on specific local impacts for the waterways within the Project area.

Historical rainfall data shows that the average rainfall in the last decade in South East Queensland fell nearly 16 per cent compared to the previous 30 years. Models have projected a range of rainfall changes from an annual increase of 17 per cent to a decrease of 30 per cent by 2070. Rainfall projections for Queensland contain a degree of uncertainty due to local variations in topography, vegetation and broader weather patterns (e.g. El Nino). The best estimate for South East Queensland does show a decrease in annual rainfall under all emission scenarios. Projections do indicate however, that although the total amount of rainfall will be reduced, falls will be concentrated in more extreme events likely to exacerbate flooding. It is therefore difficult to accurately estimate the climate change impact on specific waterways and existing flooding levels within the Project area at this point in time. It is acknowledged that extreme weather events including flooding and high winds currently occur in the Sunshine Coast hinterland throughout the year currently and may have an impact on both the construction and operational phase of the Project. The potential impact of both historical and projected weather data have been assessed in the Risk Assessment undertaken for

the Project (refer to Section 19.0 of the EIS) and management measures to reduce the risk of harm to infrastructure, property, wildlife or humans from extreme weather events will be provided in the Construction and Operation Safety Plans prepared closer to project commencement.

The rail has been designed using existing flood information for an average recurrence interval (ARI) of 100 years. The design is based on the edge of the rail formation being 600mm above the 1 in 100 year ARI flood level. Climate change projections indicate that more intense rainfall events will occur, modifying statistical predictions of rainfall and flood levels.

It is understood that the SCRC is currently reviewing its Flood Planning Levels to include an allowance for climate change. During detailed design the dimensions of bridges and culverts will be refined to ensure that allowances are made for the revised Flood Planning Levels.

The Department of Community Safety has requested that in additional to designing to 100 year ARI flood levels:

a) *avoid any reductions of on-site flood storage capacity and contain within the subject site any changes to depth/ duration/velocity of flood waters of all floods up to and including the Defined Flood Event (DFE); or*

b) *does not change the flood characteristics at the DFE outside the subject site in ways that result in:*

   - loss of flood storage
   - loss of/changes to flow paths
   - acceleration or retardation of flows
   - any reduction in flood warning times elsewhere on the floodplain.

Chapter 14 of the EIS provides details on the flood criteria used for the Project and confirms that the Project will not have a significant impact on flood storage capacity or flooding outside of the Project area. The design assessed in the EIS is considered to be conservative, in that given the lack of information about some areas, bridge spans and conveyance areas may be oversized.

Detailed flood modelling will need to be undertaken in future stages of design to:

- confirm sizing of bridge spans and conveyance areas
- confirm that no property will be adversely affected by flooding as a result of the Project
- confirm the implications of decommissioning the existing rail corridor (e.g. removal or replacement of bridges, restoration of natural terrain where embankments are currently located
- determine location of any additional flood mitigation/ storage requirements resulting from changes to the design
- determine spatial requirements for stormwater treatment and spill containment.

4.13.3 Use of recycled water

It is understood that recycled water for non-potable purposes is not currently readily available in large volumes in the vicinity of the Project. It is anticipated that a suitable source of recycled water will become available prior to construction commencing. The exact source cannot be confirmed at present, however it is likely to be sourced from Council e.g. recycled water from sewer treatment plant. A health assessment will determine whether the use of recycled water is suitable on site. Should it be determined that it is safe to use recycled water for construction (non-potable) purposes, a Recycled Water Management Plan will be prepared.

Recycled water should be used for construction purposes, with limited amounts of potable water for drinking purposes. Where it is necessary to store potable water on site, it will be stored separately to rainwater or recycled water in a sealed tank. Water stored in the tank will be regularly tested to ensure drinking water meets Australian drinking water standards. Water will also be regularly delivered so that it is stored for only a short period of time before use.

4.14 Noise and Vibration

4.14.1 Use of construction materials to reduce noise levels

At the EIS stage detailed design has not commenced and the actual form of bridge construction is not known. For the purposes of noise assessment a concrete structure with ballasted track has been assumed as the most likely bridge form and includes a +3dB correction factor accordingly. This type of structure is the type currently constructed for railways. Should detailed design identify an alternative bridge construction the contractor will need to incorporate appropriate noise mitigation to achieve an equivalent noise at the worst affected receptor. Measures such as resilient rail systems and low level noise barriers would typically be considered.

4.14.2 Impacts of construction and operational vibration

Operational and construction vibration from railways rarely causes building damage in structurally sound buildings, especially on elevated sections of railway. The Project will undertake condition surveys of properties susceptible to vibration damage from construction of the railway prior to construction of the railway. Vibration monitoring will also be undertaken during construction to ensure that site construction activities do not exceed vibration levels likely to cause damage. The Project will be responsible for damage attributable to construction vibration and for returning the property to pre-construction condition. Should vibration levels approach levels at which structural damage could occur construction activities giving rise to the vibration will be stopped and methodologies reviewed to identify alternative options. It should be noted

that vibration resulting from construction activities is rarely of sufficient magnitude to cause structural damage to a structurally sound property. Cosmetic damage i.e. minor cracks can occur. The Project will be responsible for repair of damage that occurs as a result of the construction activities i.e. to return the property to pre-construction condition.

With regard to noise levels, it should be noted that the Project's noise commitments are not distance related. They are a maximum noise level to be complied with at a property regardless of how close or far it is from the railway. The calculation methodology for predicting rail noise accounts for train frequency and distance amongst other factors, therefore the noise predictions presented in the EIS encompass all significant noise determining features in the modelling. With regard to vegetation between the noise monitors and the existing railway line, it should be noted that to provide noise screening of significance it is necessary to have a solid barrier. Trees and vegetation provide useful visual screening but allow sound to pass around and between them, thus providing negligible noise reduction.

4.14.3 Typical construction activities and noise levels

The construction activities used in the noise assessment are typical of those used in the construction of a railway and provide indicative noise levels that maybe expected. Detailed construction noise predictions will be undertaken once contractors have been appointed and a detailed construction methodology determined to ensure that construction is undertaken appropriately.

4.14.4 Operational Noise Levels

Noise predictions from individual properties have been based on designing to railway noise criteria. The noise sources for trains used in the acoustic modelling is based on actual noise levels from new generation trains available on the current international market and in line with what maybe expected to operate on Queensland railways. Trains do not generate significant braking noise and any noise produced by braking can be expected to be counteracted by the significant benefits of the alignment straightening which will significantly reduce wheel squeal noise produced on curves. Train speeds do affect noise levels emitted by train operation; this is factored into the train noise prediction methodology employed for the Project. Noise barriers will only be installed to mitigate noise levels that are modelled to be above the railway noise criteria. For trains operating on ballasted track vibration is significantly reduced by the ballast which is an efficient vibration isolator. Community members who currently have a perception of vibration from the railway could be experiencing poorly maintained track surfaces, track joints, track switches or geological anomalies. The Project proposes to replace the railway with a continuous welded rail thereby removing issues associated with rail joints. Rail switches cannot be provided with resilient vibration isolation for safety reasons and geological anomalies can only be determined through detailed geological survey which will be undertaken at the detailed design stage. It should also be noted that there are no vibration criteria applicable to railway operation against which mitigation can be determined.

It is confirmed that the prediction methodology for noise accounts for additional noise generated by structures. With regard to the use of dense vegetation to provide noise mitigation we advise that dense vegetation provides minimal sound attenuation, although it can provide useful visual screening. Therefore any vegetation provided will be for visual purposes only. Assessment of bridge structures and associated noise levels will be undertaken during the detailed design to account for detailed information that will only be available at that stage. Should it be necessary to incorporate additional noise mitigation for structures due to variation from the assumptions in the EIS, mitigation can be provided through low level noise barriers or resilient track systems as appropriate if detailed design assessment identifies the need in order to reduce noise levels to comply with railway noise criteria.

Noise barriers are the most effective method for reducing airborne noise to receivers. In order to reduce the effects on visual amenity created by noise barriers options will be investigated during the detailed design phase of the Project to reduce visual impacts of the noise barriers. The detailed design will refine the noise barrier heights from the feasibility level utilised in the EIS, options for low level noise barriers placed closer to the railway will be investigated. Contouring and landscaping treatments may provide appropriate solutions in some locations, where space is available.

The noise modelling undertaken for the Project has identified where noise barriers are likely to be required in order to comply with established criteria and thresholds. Some residential properties are in close proximity to the existing rail, and future rail corridor, and do not have a noise barrier proposed. During future stages of design, the noise modelling undertaken at the EIS phase will be reviewed, and this outcome may change. However at the time of preparing the EIS, only those barriers required to comply with established criteria and standards have been included.

4.14.5 Increased frequency of train trips and impact on noise levels

Whilst increased train frequency may increase noise levels, the Project has to be designed in accordance to mitigate noise levels in excess of railway noise criteria. The railway noise prediction methodology accounts for increased train noise due to the number and frequency of train movements.

4.14.5.1 Noise due to decommissioning activities

Decommissioning activities would fall under construction processes and will be subject to legislative requirements for construction activities.

4.14.5.2 Tunnel ventilation

The EIS notes that tunnel ventilation plant will be required for safe operation of the tunnels. The requirements for this will be determined in future stages of the Project's design, and will need to be compliant with the appropriate noise and emissions standards at the time.

4.15 Air Quality

4.15.1 Meteorological Data

A question was raised whether more representative data for Mooloolah Valley could be provided. Whilst the Caloundra Weather station was used to provide an indication of weather data in the Project area, it is acknowledged that conditions along the corridor are likely to vary to those on the coastal areas. A review of the climatic data for the weather station at Nambour is presented in Table 4.15.1, indicating that the mean maximum and minimum temperatures are higher and lower respectively than at Caloundra. Humidity at Nambour is generally lower than at Caloundra and annual rainfall is marginally higher.

The implications of these differences for the Project are minimal; however future planning (for example the construction Environmental Management Plan) will make use of the most locally relevant data.

Table 4.15.1: Selected Nambour Weather Station Data

	Nambour	Caloundra
Mean Maximum Temperature	25.8	23.8
Mean Minimum Temperature	14	16.5
Mean annual 9am humidity	67%	73%
Mean annual 3pm humidity	59%	67%
Mean annual rainfall	1693.8 ml	1578.1ml

4.15.2 Rainwater Tanks and dust generation

Section 16.5.1 of the EIS outlines potential air quality impacts from construction. Fugitive dust arising from construction activities has a limited ability to remain airborne, and would return to the surface within 60 to 90m of the emission source, subject to weather conditions.

With appropriate dust control, adverse effects from dust emitting activities can be greatly reduced or eliminated. Should these measures not be effective, dust may accumulate on the roofs of properties within close proximity of construction over the short term.

Rainwater tanks build up a sediment layer over time, and this is considered normal. Sediment will settle out of the water column and can be regularly cleaned out. Where a rainwater tank is used for drinking purposes, or connected to showers, washbasins or kitchens, the Queensland Development Code requires the first 20L of first flush from a roof that can contain dust, bird droppings and leaves to be diverted to sewer before it enters the tank. Most tanks are likely to already be fitted with a first flow diverter, or in some cases a carbon filter, to prevent discolouration of water. The EMP establishes strategies for monitoring dust events and complaints, for residents with water storage identified in close proximity to the construction zone.

4.15.3 Palmwoods Bowls Club and dust generation

During the decommissioning, construction and operational phases there will be mitigation measures in place to prevent dust generation. These mitigation techniques will follow the 'avoid, recycle, minimise, manage' hierarchy. Techniques used for mitigation include but are not limited to; planning to prevent dust emissions where possible, in the first instance, rather than applying dust suppression method, and restricting vehicle speeds on haul roads and other unsurfaced areas of the site.

To further communicate individual grievances associated with the disturbance of dust, reference should be made to the complaints register identified in the EMP (Appendix C). This register will be developed in accordance with the EMP.

4.15.4 Emissions from Queensland Rail Locomotives

Advice from QR has indicated the following:

Emission rates vary according to the age of the locomotive and the engine technology employed on each individual unit. As part of continuous improvement, QR currently has a program underway for the replacement of older diesel-electric locomotives with newer, lower emission units. This program requires that the specifications of all new diesel-electric locomotives must meet United States Environmental Protection Agency Tier 2 emission standards for locomotives. These standards are listed in Table 4.1.5.4a and b.

Table 4.15.4a: Emissions standards

Tier 2 Emission Standards	Grams/brake horse power per hour
Total Hydrocarbon	0.3
Carbon Monoxide	1.5
Nitrogen Oxide	5.5
Particulate Matter	0.2

Table 4.15.4b: Locomotive Smoke Standards

Tier 2 Locomotive Smoke Standards	% opacity - normalised
Steady-state	20
30 second peak	40
3 second peak	50

QR has also advised that "On the issue of how far the exhaust emissions are likely to disburse, no specific modelling relevant to the area has been undertaken to this point (by QR, or for this Project). The concentration of emissions and distances the emission clouds are carried will vary greatly along the corridor. This is due to a combination of factors including the varying topography along the corridor and the ever changing climatic conditions experienced in the area throughout each year.

4.16 Climate and Natural Disasters

4.16.1 Use of Alternative Energy for Railway Operation

Technologies including solar and wind power are available currently and could feasibly be used to provide some energy for train propulsion. They are unlikely to provide 100% of energy required cost effectively at present. By the time the Project is completed however, it is likely that renewable energy options will be more widely available at a reasonable cost.

In addition, new technologies such as regenerative breaking and fuel cells are currently being trialled internationally to make rolling stock more energy efficient. Regenerative brakes installed on rollingstock convert the energy generated by braking into a usable form of energy which is fed back into the supply system. It is estimated this could provide energy savings of up to 20%. Hydrogen fuel cells combine hydrogen and oxygen to generate electricity which is stored in a battery on-board, emitting water and heat as a by-product. It has been estimated this technology is two or three times more efficient than current diesel trains.

4.16.2 Climate Change Predictions

The Queensland Government, with assistance from CSIRO, has recently published a detailed analysis of climate change projections for South-east Queensland in ClimateQ: Toward a Greener Queensland (Climate Q). The projections were developed using the Intergovernmental Panel on Climate Change (IPCC) emissions scenarios. Historical weather data was also examined to ascertain any changes to South-east Queensland's climate.

Climate Q does report that there is some uncertainty around rainfall projections for Queensland, with some models showing increases, and some decreases. This is because rainfall is strongly influenced by other factors such as topography, vegetation and broader weather patterns such as the El-Nino southern oscillation patterns.

The best estimate shows a decrease in annual rainfall in all regions, however rainfall events are expected to be more intense which causes increased flooding and may affect water, sewer, stormwater and transport infrastructure.

Given this, it is reasonable to assess the risk of more frequent flooding and the impact this may have on the Project.

The projections predict a slight decrease in tropical cyclone frequency by 2070; however they also simulate an increase in the number of long-lived and severe cyclones. There is also a projected southward shift in cyclone development which could result in a greater cyclone impact in South-east Queensland.

4.17 Waste

4.17.1 Construction and Operational Waste Management

It is a legislative requirement that the commitments in the EIS are adhered to, and external auditing will be undertaken regularly throughout the construction phase to ensure that the commitments of the EIS are being implemented. There is also a complaints procedure outlined in the EIS, so that in the event that waste disposal or the behaviour of construction personnel during construction is causing a nuisance to surrounding landowners, complaints can be addressed to the appropriate project personnel. The situation can then be responded to or rectified in the specified timeframes.

The waste EMP details numerous measures that will be employed during the decommissioning, construction and operational phases to reduce waste impact on individual properties. In regards to waste from construction personnel, the following measures will be employed.

- appropriately placed litter bins to avoid the dispersal of litter and regular site maintenance duties
- regular monitoring of waste generation and clean up should waste escape beyond the construction site boundary
- waste sorting, composting and recycling
- sealable litter bins to minimise the attraction of vermin, insect and pests
- frequent collection and transportation of waste by a licensed contractor with disposal at a suitable landfill facility.

It is expected that following the implementation of these measures the impact of waste from construction personnel will be negligible.

General waste management on the Project will follow the Waste Management Hierarchy, this being:

- avoid waste by optimising construction, operation and decommissioning methods
- re-use waste by identifying sources that can utilise the waste
- recycle waste by identifying facilities that are able to recycle waste
- energy recovery from waste
- disposal of waste at an appropriate facility.

To communicate individual grievances associated waste generation, reference should be made to the complaints register identified in the EMP (Appendix C). This register will be developed in accordance with the EMP.

4.18 Hazard and Risk

4.18.1 Bushfire Management

The EIS (Section 19.2.1) acknowledges that the forested area around The Pinch Lane and Rose Road has been identified as a 'high bushfire hazard area' in the local planning scheme and under the State Planning Policy 1/03 (Mitigating the Adverse Impacts of Flood, Bushfire and Landslide). The risk of bushfire will be a relevant consideration during the construction and operation of the Project.

Construction

During construction the following issues will need to be considered:

- location for storage of flammable substances and materials
- emergency vehicle access (6m clearance, including 4m formed width)
- emergency egress
- removal of felled timber and debris (no burning off).

Typically, the construction access is also utilised as emergency vehicle access and egress from the construction site. Hence there is no additional clearing required for emergency access and egress during the construction phase of the Project. The location of stockpile areas and the location of hazardous materials will be decided during the detailed design stage of the Project. The EMP states that these areas shall be located in the construction zone or areas of existing disturbance.

Operation

During the operational phase of the Project, bushfire will pose a risk to the rail infrastructure and potentially to patrons and rail employees. In order to reduce the bushfire hazard, the rail corridors are wide enough to allow for rail tracks and maintenance / emergency access on either side of the tracks. In the event of a bushfire adjacent to the railway, the operation of the rail would cease until the hazard no longer posed a risk.

It is generally accepted that the rail corridor is of a sufficient width to incorporate adequate bushfire buffers, so additional clearing adjacent to the rail corridor will not be conducted by QR Limited. Despite the provision of buffers it is still possible that extremely hot bushfires could burn electricity poles / wires and warp tracks, but if this were to occur the damage would simply be repaired. Additional management of bushfire is typically beyond the control of QR Limited and is conducted outside of the rail corridor. For example, land owners or government agencies conduct controlled burning in vegetated areas to reduce fuel loads and bushfire risk.

As The Pinch Lane and Rose Road are affected by a considerable length of tunnel, fire management within the tunnel becomes a relevant issue. Tunnels are also constructed with maintenance and emergency access on either side of the track configuration.

There is also likely to be other emergency measures in place in accordance with the relevant design guidelines, such as:

- cross-tunnels connecting the two tunnels (should the second tunnel be required for the ultimate 4 lane alignment)
- ladders leading to manholes on the surface above the tunnels
- ventilation stacks on the surface above the tunnels
- fire detection systems and management.

The dimensions, number and location of these emergency measures will be considered at the detailed design phase of the Project.

4.18.2 Storage of hazardous or explosive substances

Submission 8 raises concern regarding the storage of explosive or hazardous substances at construction sites and the potential for large mulch piles to combust.

The Hazard and Risk Assessment undertaken as part of the EIS identified the use and storage of hazardous or explosive substances as being of Medium Risk. It further identifies that a Construction Safety Plan will be prepared to manage this risk, including the potential for injury of community members and property to occur.

The *Explosives Act 1999* requires explosive storage areas to be licensed prior to use, inspected and regularly monitored. There is also an Australian Standard for the storage area design and management which will be followed. All applicable legislation for the storage of explosives will be adhered to, with compliance monitored during construction.

Mulch stockpiles can generate heat and have been known to spontaneously combust. The Construction Safety Plan will consider this issue. Management measures outlined in the Plan may include:

- locating the stockpile away from potential hazard areas, including residential areas
- limiting stockpile height (stockpiles less than 2m in height are very unlikely to combust)
- regular temperature monitoring and turning or watering if temperature exceeds thresholds.

4.18.3 Queensland Fire and Rescue Service

The Department of Community Safety Queensland Fire and Rescue Service submission identifies that urban and rural fire services and local council should be kept informed of the location of hazardous goods storage areas and the access and egress to these areas. The submission also notes that it would be beneficial if a 24 hour emergency contact list was circulated for emergency situations. These requirements are noted, and will be included in the Project construction EMP and communication plan.

The revised EMP (Appendix C of the SEIS) identifies that an Emergency Management Plan will be developed for the construction phase, including emergency contact details. Chapter 22 also notes that hazardous goods waste will be transported by a licensed contractor to a designated site approved by the local authority.

4.18.4 Risk of damage to property or persons from derailment

Risks associated with derailment are discussed in Chapter 19 of the EIS. In addition to this, the design standards and design objectives adopted for this Project, including platform lengths, grade separation, and horizontal and vertical geometry are intended to provide reduced risk to property and persons.

4.18.5 Risk of damage to Palmwoods Bowls Club from Construction

The hazard and risk chapter (Chapter 19 of the EIS) is designed to help identify areas of risk and hazard in the Project and develop appropriate mitigation measures. In addition to those mitigation measures listed in the EMP, the following can also be considered for inclusion:

- visual checks of club infrastructure for cracking, splitting or general damage of buildings
- signage targeting patrons to be aware of heavy machinery, general equipment and changed pedestrian conditions
- review of all evacuation procedures for the club
- pedestrian traffic management plan to be developed for area.

4.18.6 Land Slide Risk

The geological investigations for the Project are based on a desk top study, followed by a two day site visit. A detailed geotechnical sampling study including boreholes and sampling will be undertaken to inform the detailed design process.

As described in Chapter 19 of the EIS (p640), the area in the vicinity of Rose Road and The Pinch Lane could be potential landslide hazard areas. Cut and cover tunnels are proposed for these areas and a detailed landside risk assessment will be undertaken prior to detailed design to maintain the safety of people and property, including road obstruction, both during construction and long-term. The assessment will be undertaken in accordance with the processes outlined in *State Planning Policy 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide.*

4.18.7 Mosquito Management

Queensland Health has recommended that a Mosquito Management Plan is prepared. In order to treat stormwater generated by the Project during construction and operation, detention basins and other stormwater quality treatment devices will be installed. If they are not adequately designed, there is a potential that they will create mosquito and other biting insect breeding areas.

The Queensland Health *Guidelines to Minimise Mosquito and Biting Midge Problems in New Development Areas* will be referenced when designing stormwater treatment devices. In addition, the Caloundra and Maroochy Planning Schemes provide guidance on specific measures to prevent the creation of breeding areas. Potential measures to be considered during detailed design include:

- avoiding dense plantings that could harbour mosquitoes
- consider locating wetlands where wind direction enhances wave action which discourages mosquitoes
- avoid shallow wetlands with emergent vegetation that encourage aquatic plants which may harbour mosquitoes
- provide access to wetland areas for treatment purposes.

4.18.8 Severe weather events

The SCRC submission notes that there is the potential for severe weather events at any time during the year. Consideration of this, plus climate change considerations will need to be incorporated into future flood modelling undertaken for the Project.

4.19 Cumulative Impacts

4.19.1 Consideration of Sunshine Coast Regional Council 5 year works program

The Council suggests incorporating their planned projects (with reference to the Five Year Capital Works Program) into Chapter 20 of the EIS (cumulative impacts).

The mitigation of cumulative impacts has not been discussed directly. Instead Table 20.6 has referred to the relevant chapters that address the types of cumulative impacts that are predicted. The process to address cumulative impacts will be a combination of:

- collaboration between government agencies to co-locate infrastructure to minimise the total footprint of development
- where co-location is not possible, each project must address the environmental impacts associated with it
- where development footprints are aligned or impact zones intersect, intergovernmental cooperation should occur to identify areas of cumulative impact and agree on mitigation strategies.

4.20 Special Management Areas

Due to the updating of Queensland's regional ecosystem mapping since the release of the EIS to version 6, some of the figures for the Special Management Areas are now superseded as follows:

- Figure 21.4 (Addlington Creek) is now replaced with Figure 4.20a
- Figure 21.5a (Dularcha National Park) is now replaced with Figure 4.20b
- Figure 21.6 (South Mooloolah River) is now replaced with Figure 4.20c
- Figure 21.7a (Mooloolah Township – Road Option 1) is now replaced with Figure 4.20d
- Figure 21.7b (Mooloolah Township – Road Option 2) is now replaced with Figure 4.20e
- Figure 21.8 (Mooloolah River) is now replaced with Figure 4.20g
- Figure 21.9 (The Pinch Lane) is now replaced with Figure 4.20h
- Figure 21.10 (Eudlo Creek) is now replaced with Figure 4.20i
- Figure 21.11a (Eudlo) is now replaced with Figure 4.20j
- Figure 21.12 (Eudlo Creek National Park) is now replaced with Figure 4.20k
- Figure 21.13a (Palmwoods) is now replaced with Figure 4.20l
- Figure 21.14 (Paynter Creek) is now replaced with Figure 4.20m
- Figure 21.15a (Woombye) is now replaced with Figure 4.20n
- Figure 21.16 (Petrie Creek) is now replaced with Figure 4.20o
- Figure 21.17 (Nambour) is now replaced with Figure 4.20p.

4.20.1 Landsborough

4.20.1.1 Landsborough School

During consultation, it was identified that the car park and access layout to the Landsborough State Primary School requires further consideration. Prior to the finalisation of the design for this area, further consultation with council, the School and the Queensland Education Department will be required to ensure the needs of the school community and the local community can be met through the Project. The bridge structure of the railway overpass may be visible from school buildings, however existing vegetation will play some part in screening.

Any construction activities with the potential for noise and dust generation should occur outside normal school time, such as during school holidays. Construction timing and management will need to take into consideration school operational requirements, including the need to access the sports facilities on the southern side of Gympie Street North. Mitigation to address the edge of the playing fields impacted by the Project should be determined through discussions with council, the school, Education Queensland and TMR.

4.20.1.2 Landsborough Sportsground

The SCRC planning to significantly upgrade facilities at the Landsborough Sports and Recreational Grounds. The Project will impact the western edge of the Sportsground, and it was identified that this would have some impact on the proposed circulation roads within the site.

Further consultation with SCRC in the lead up to the re-development of this site and the Projects' implementation should assist in the management of impacts. Construction activities generating noise and dust should take account of scheduled events at the site. Screening and landscaping requirements between the railway and the future sportsground use are to be developed in future stages of the Project design.

4.20.2 Mooloolah

4.20.2.1 Grade Separation

The proposed grade separation option at Mooloolah was raised in submission 3,5,8,20 and 46 in the following context:

- impact to businesses
- impact to east west access through the town for pedestrians, cyclists, equestrians
- visual impact
- uncertainty over timing and triggers for grade separation.

A decision on the timing and triggers for the grade separation at Mooloolah has not been made at the time of writing this supplementary EIS. The Project design standards required planning for all road and rail crossings in the Project area. Ultimately, the intent of including planning for grade separation in Mooloolah in the EIS was to establish the footprint for a grade separation solution, so that:

- the area required can be preserved until the need for the grade separation is realised
- land use planning activities in the town centre to respond to the changes resulting from the new rail and station upgrades, taking into consideration the potential future land requirements for the grade separation
- the community is aware of the proposed grade separation option.

It is responsible for planners and designers to consider possible future safety and access issues at the time of project planning, rather than leaving it for others to address 'if and when' it is required.

Early construction of the grade separation could be beneficial for traffic management during construction of the rail project, however this is only one of many aspects to be considered.

Notwithstanding this, the current project design also allows for a level crossing option in Mooloolah, as shown in **Appendix D**.

Figure 4.20a: Addlington Creek Crossing

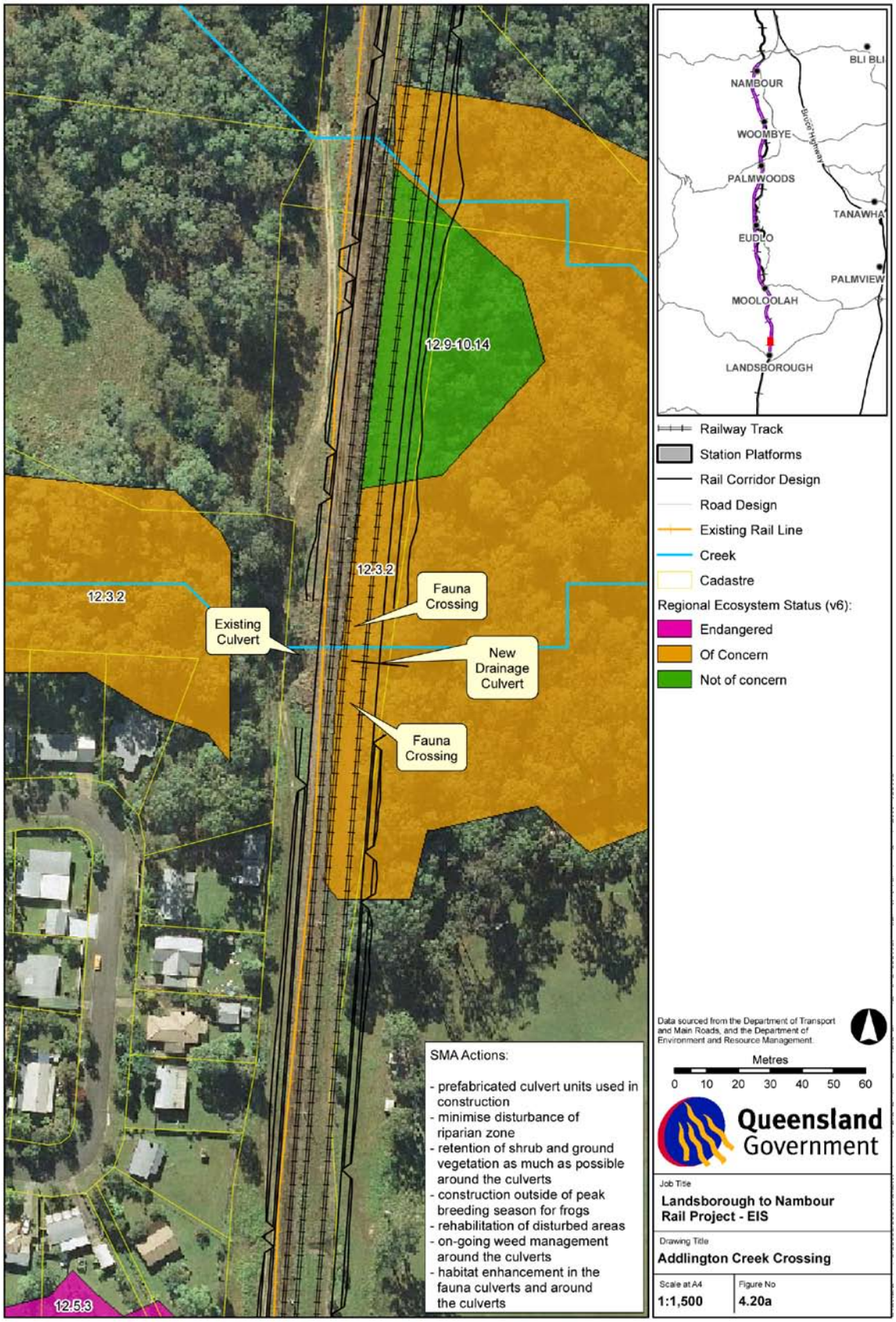


Figure 4.20b: Dulchara National Park

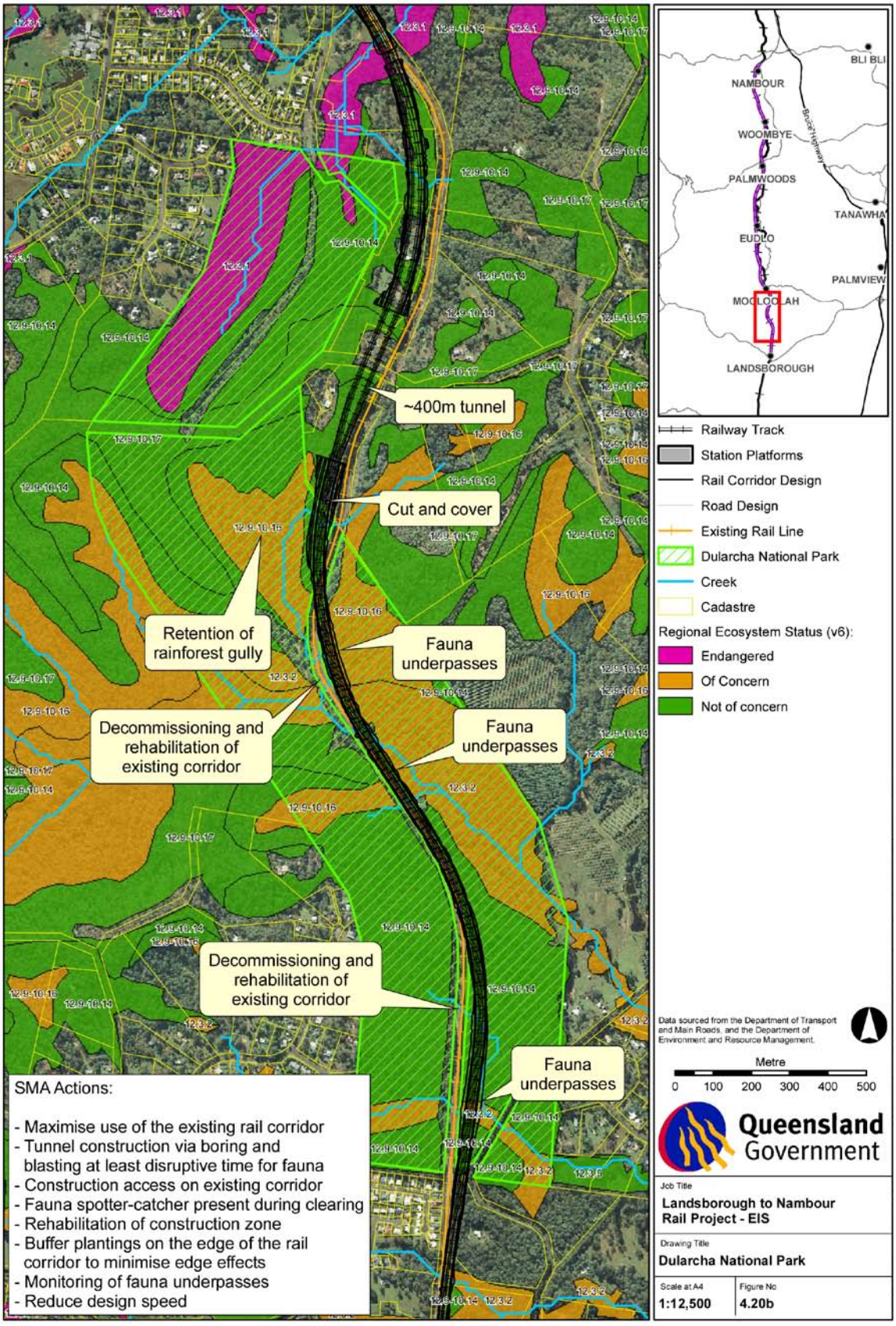


Figure 4.20c: South Mooloolah River

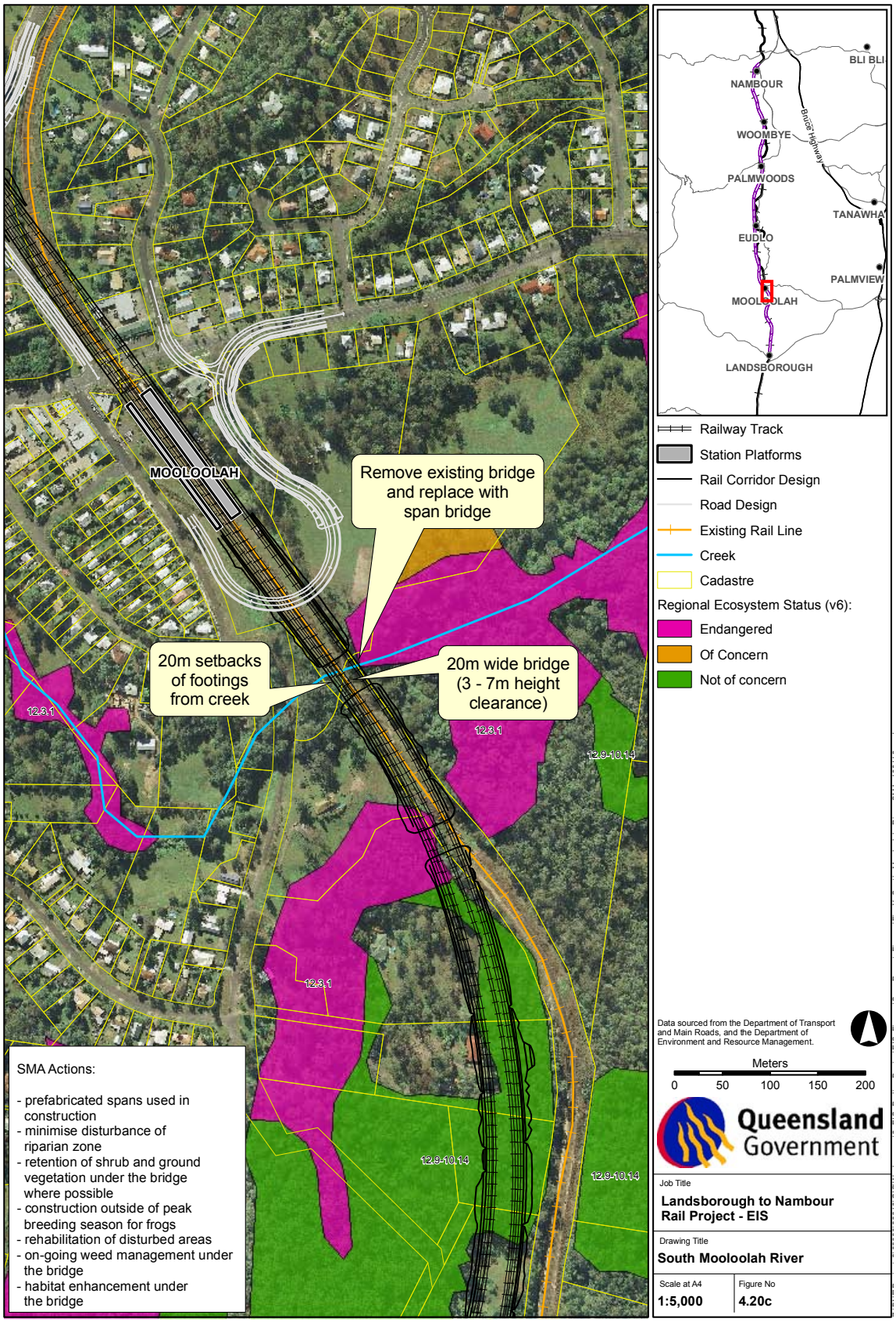


Figure 4.20d: Mooloolah - Road Option 1

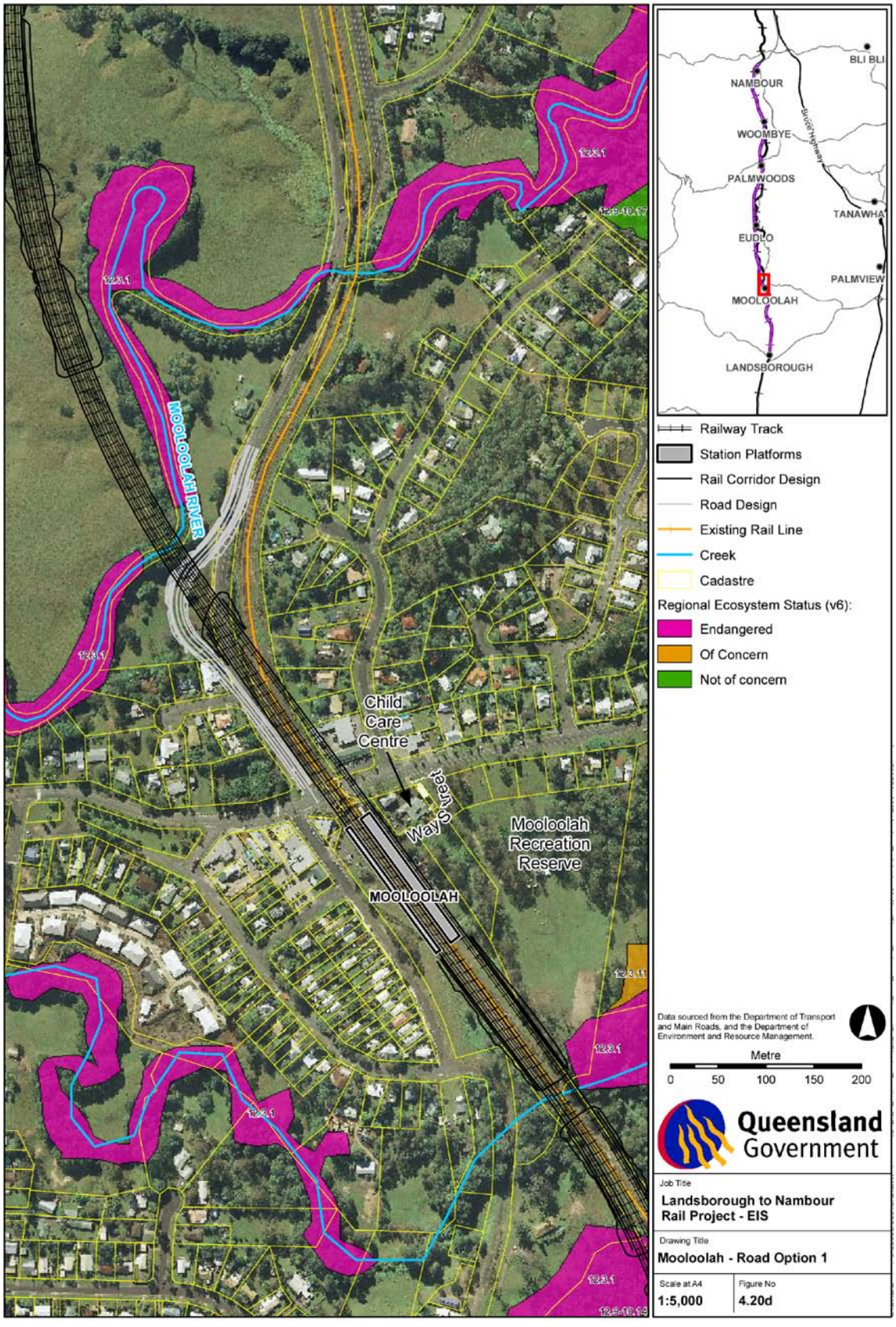


Figure 4.20f: Mooloolah - Road Option 3

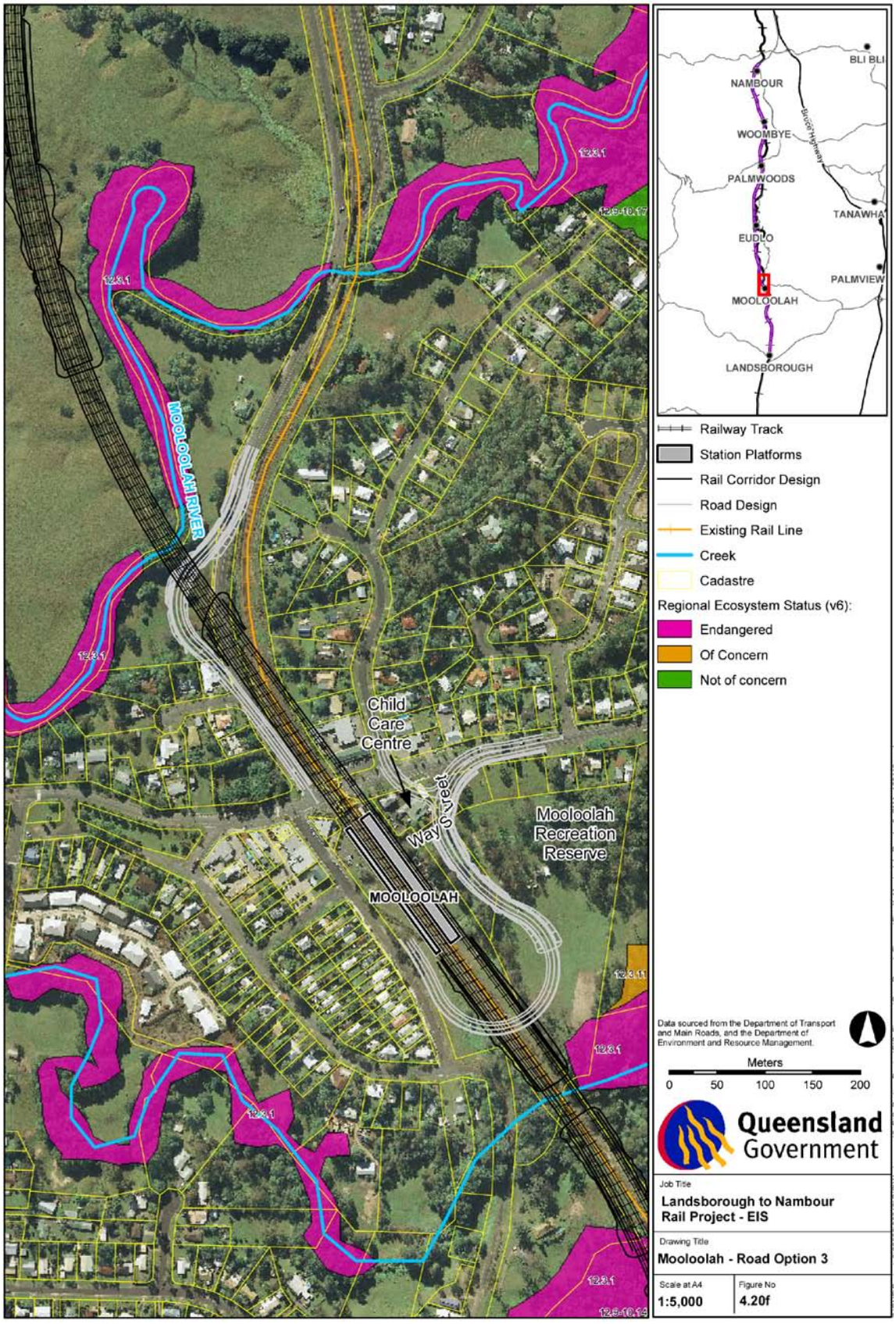


Figure 4.20g: Mooloolah River

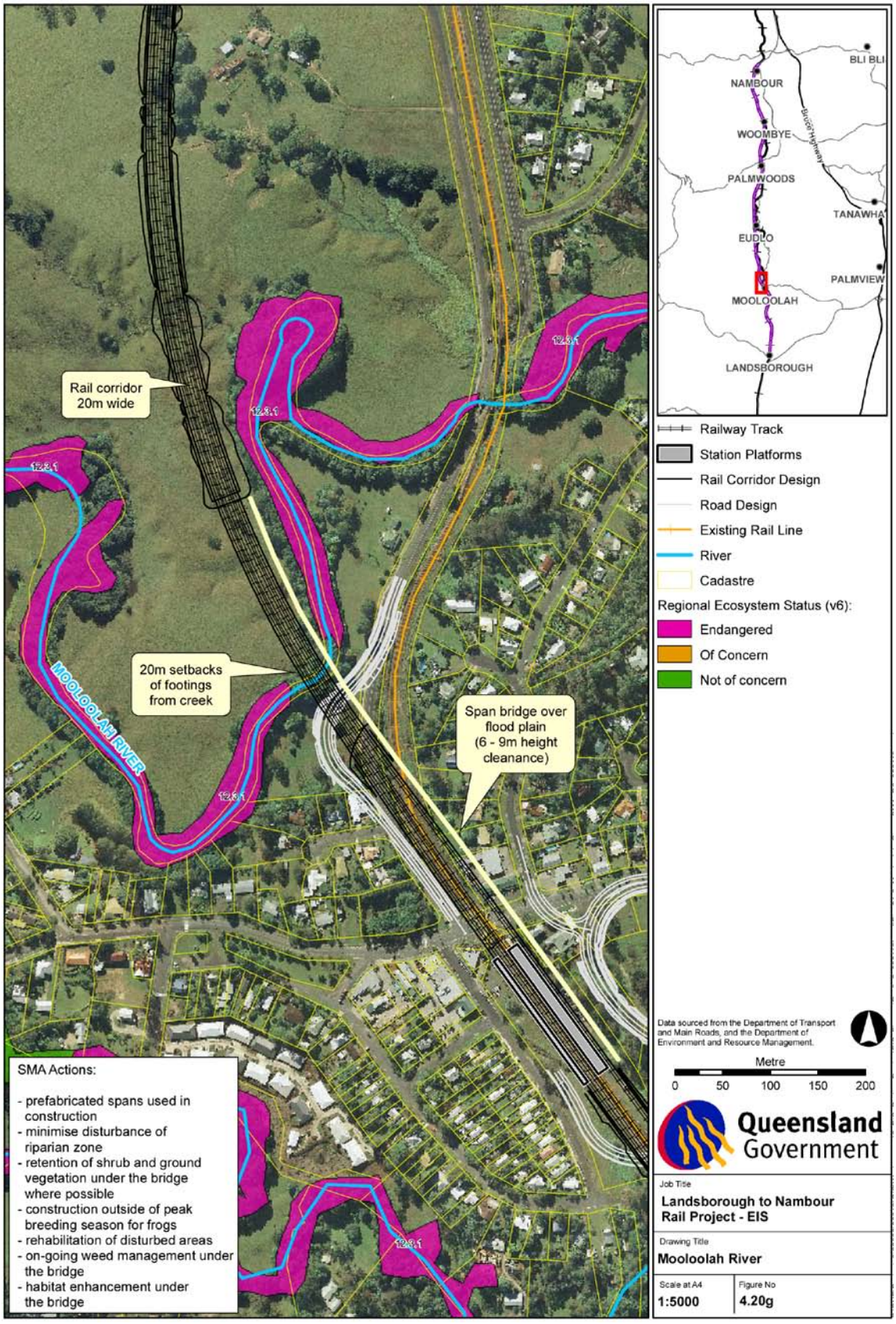


Figure 4.20h: The Pinch Lane

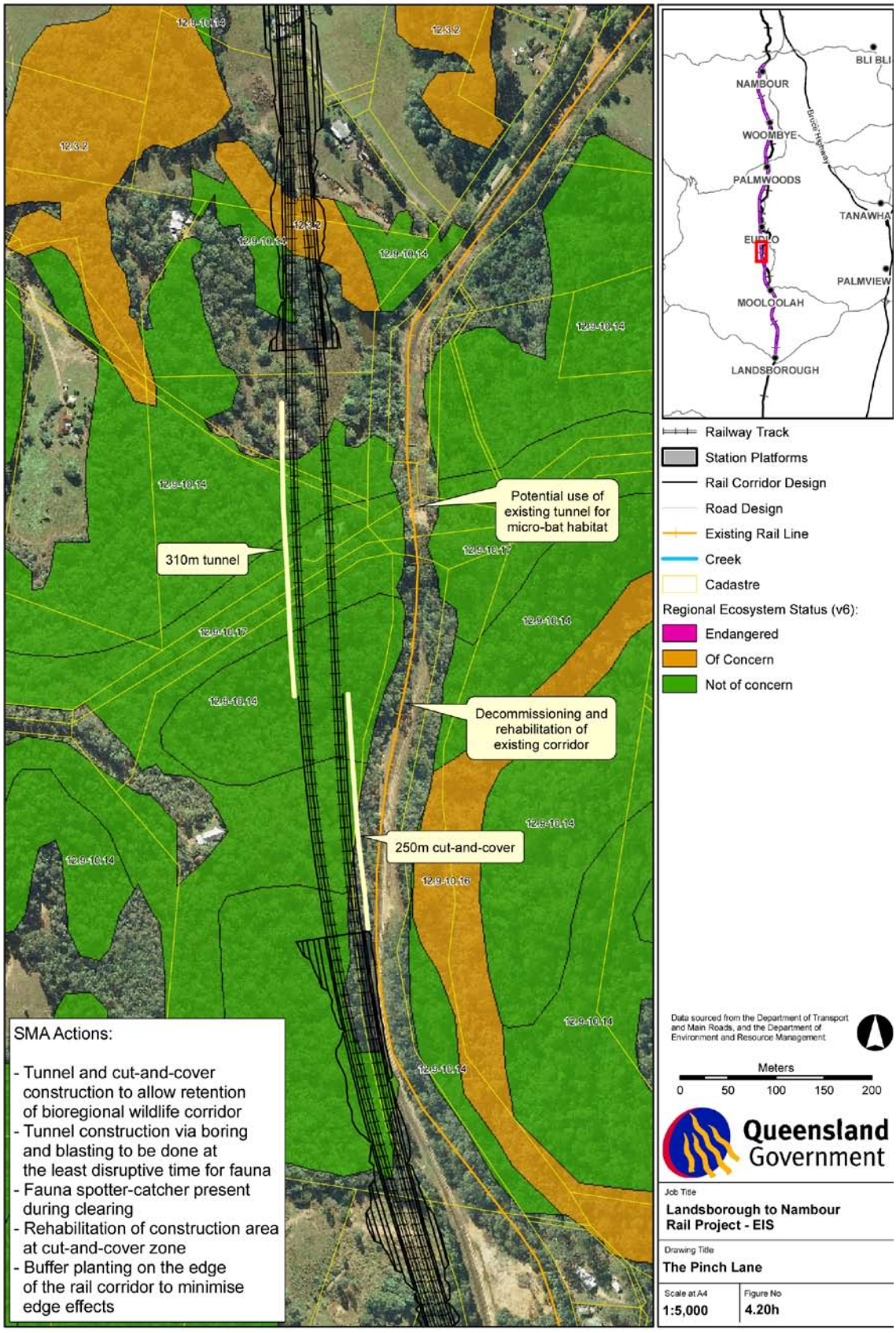


Figure 4.20i: Eudlo Creek

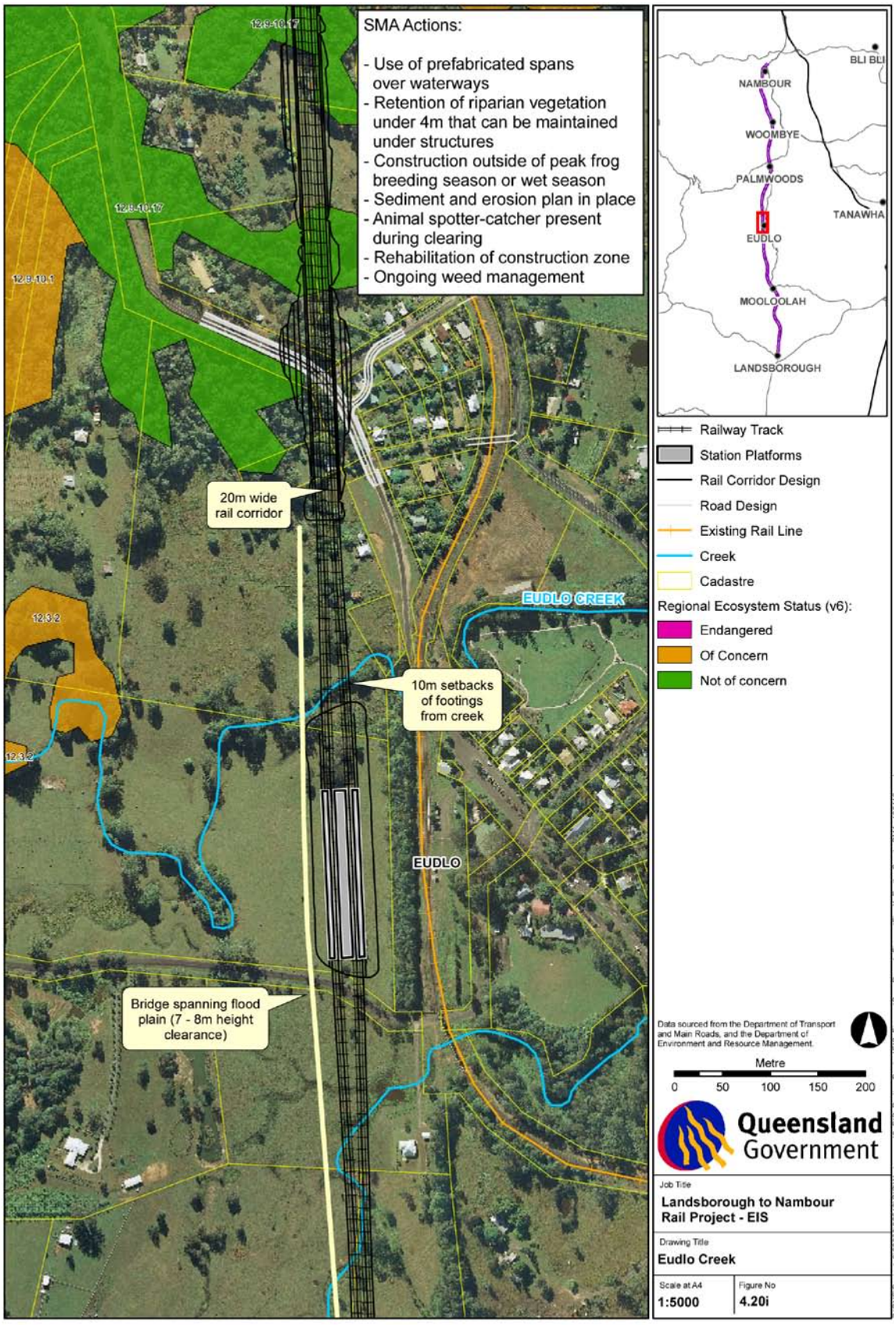


Figure 4.20j: Eudlo

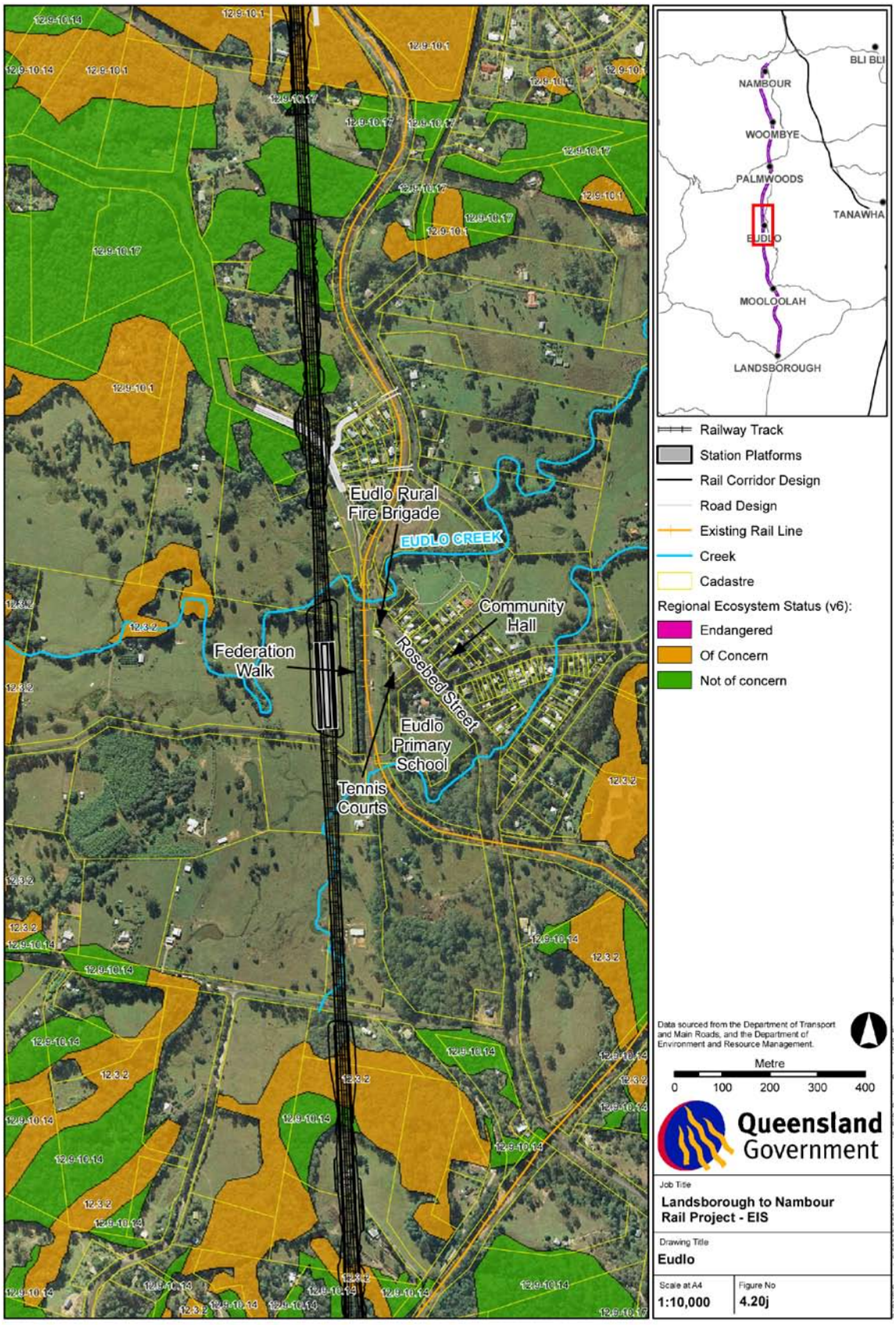


Figure 4.20k: Eudlo Creek National Park

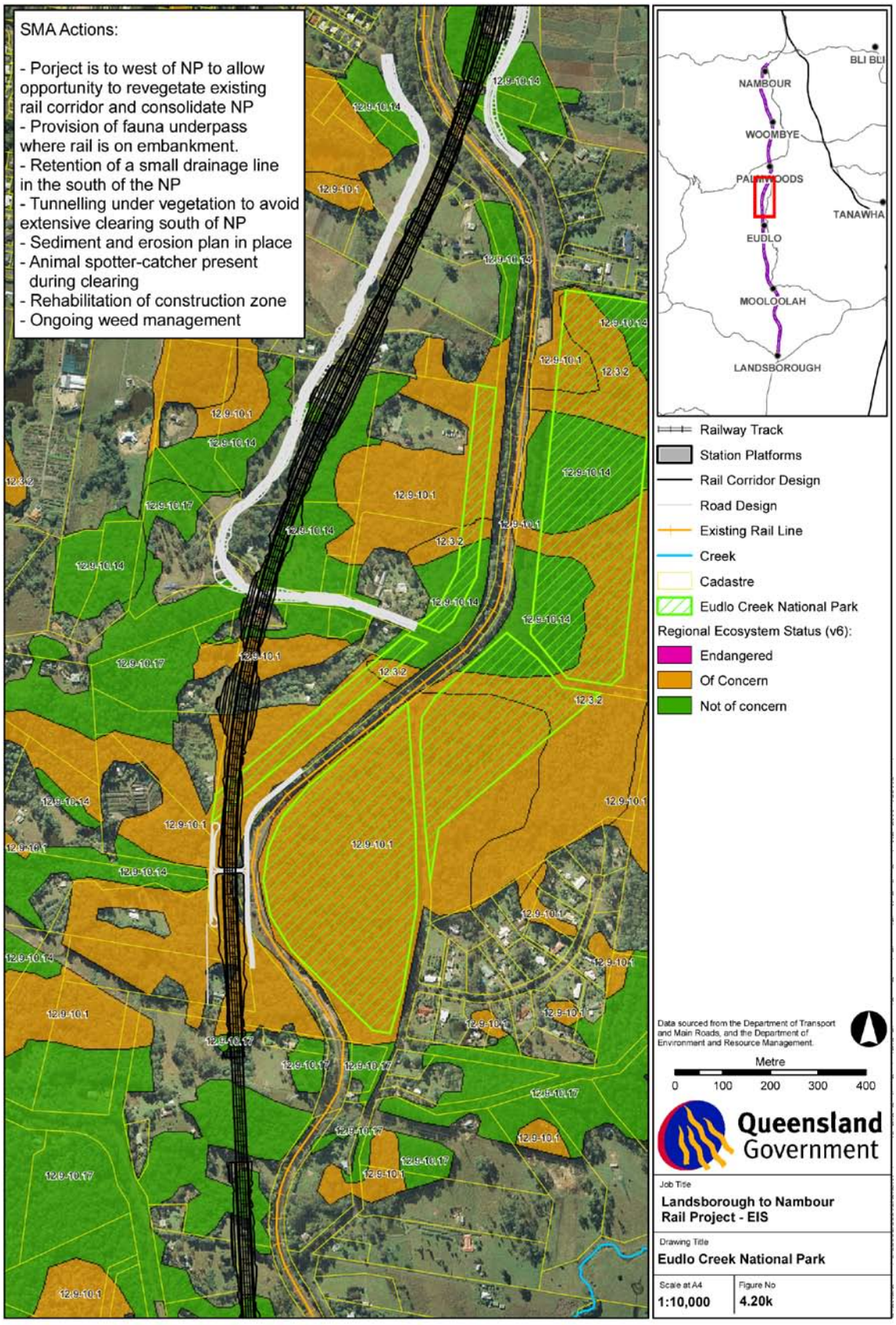


Figure 4.20l: Palmwoods

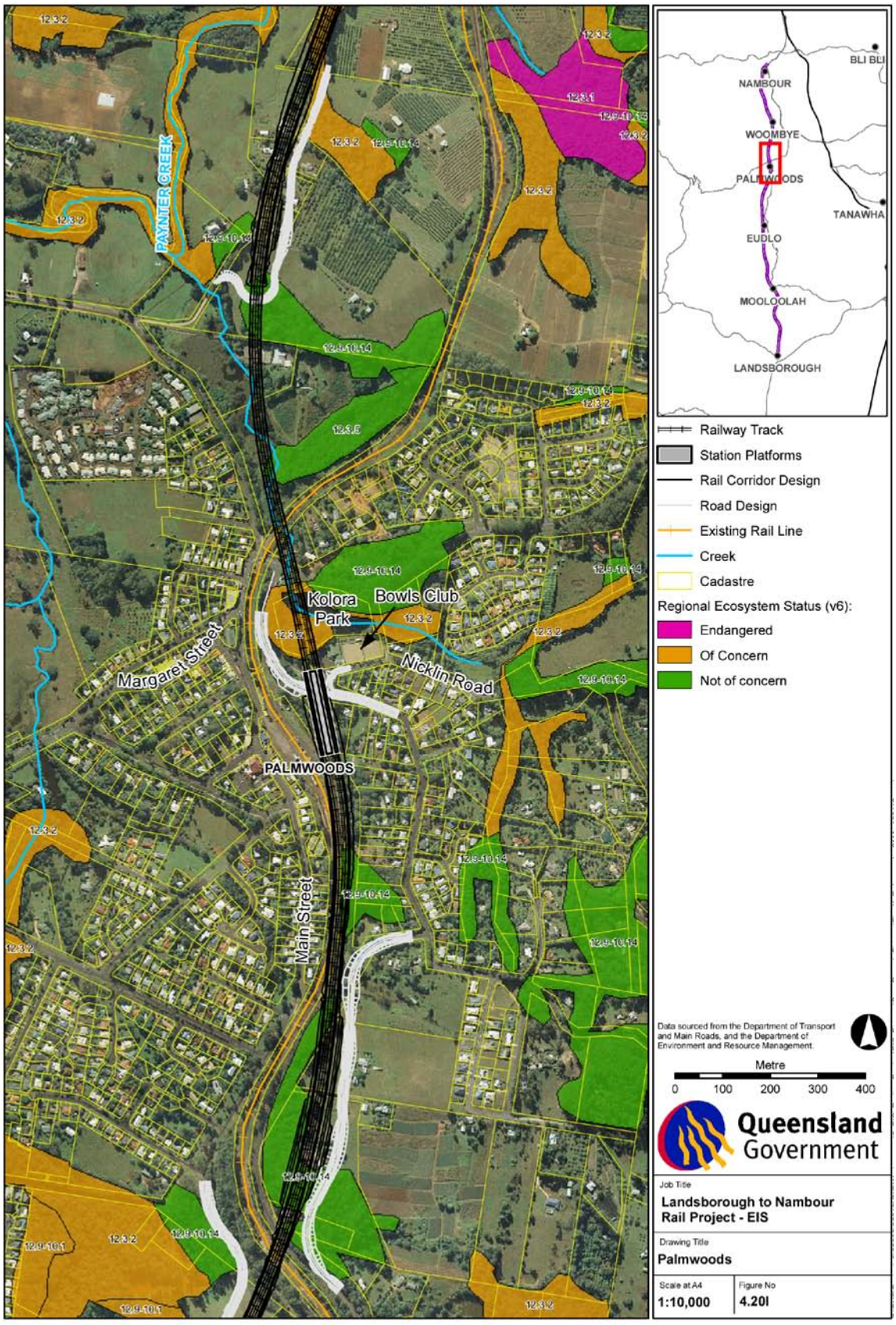


Figure 4.20m: Paynter Creek

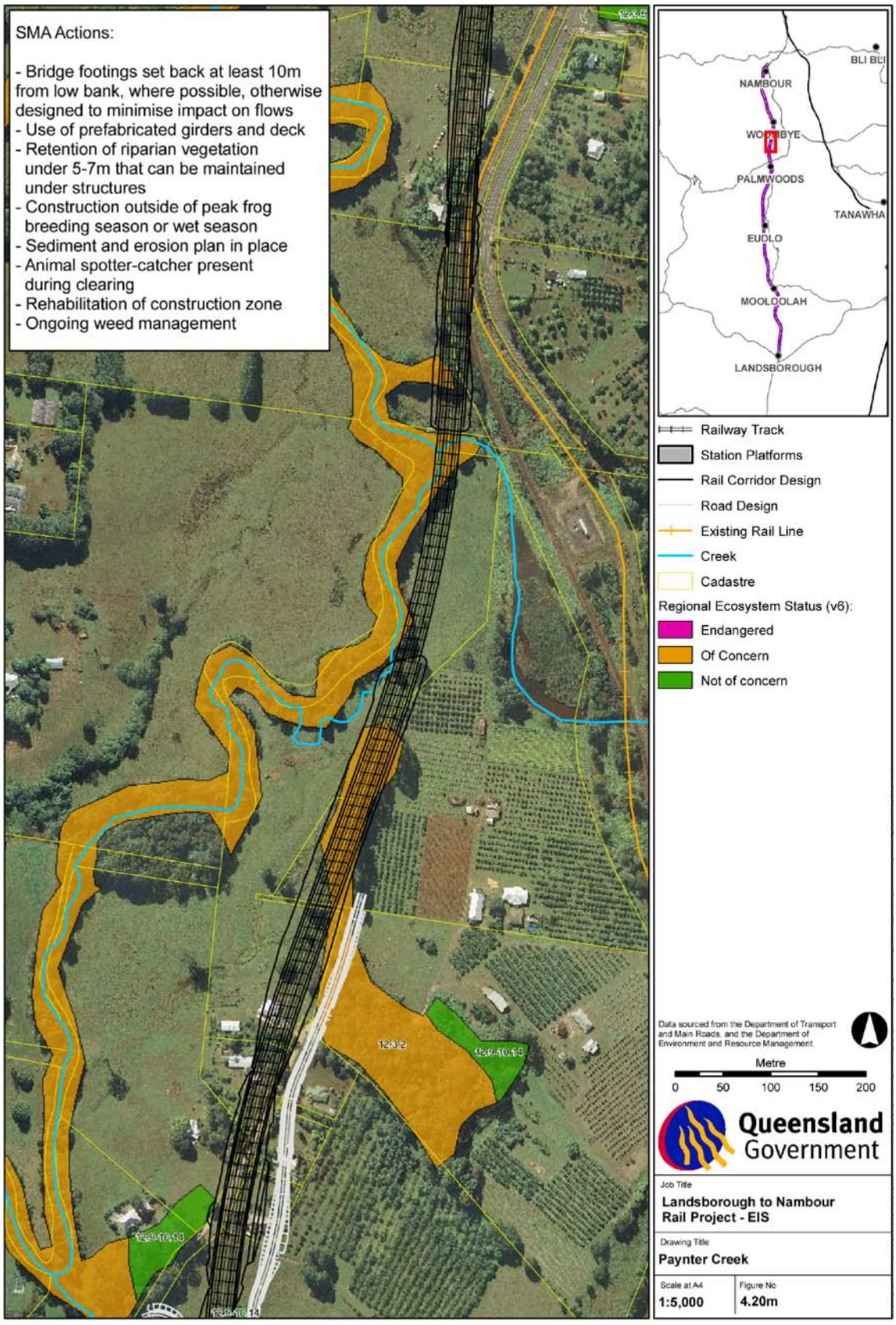


Figure 4.20n: Woombye

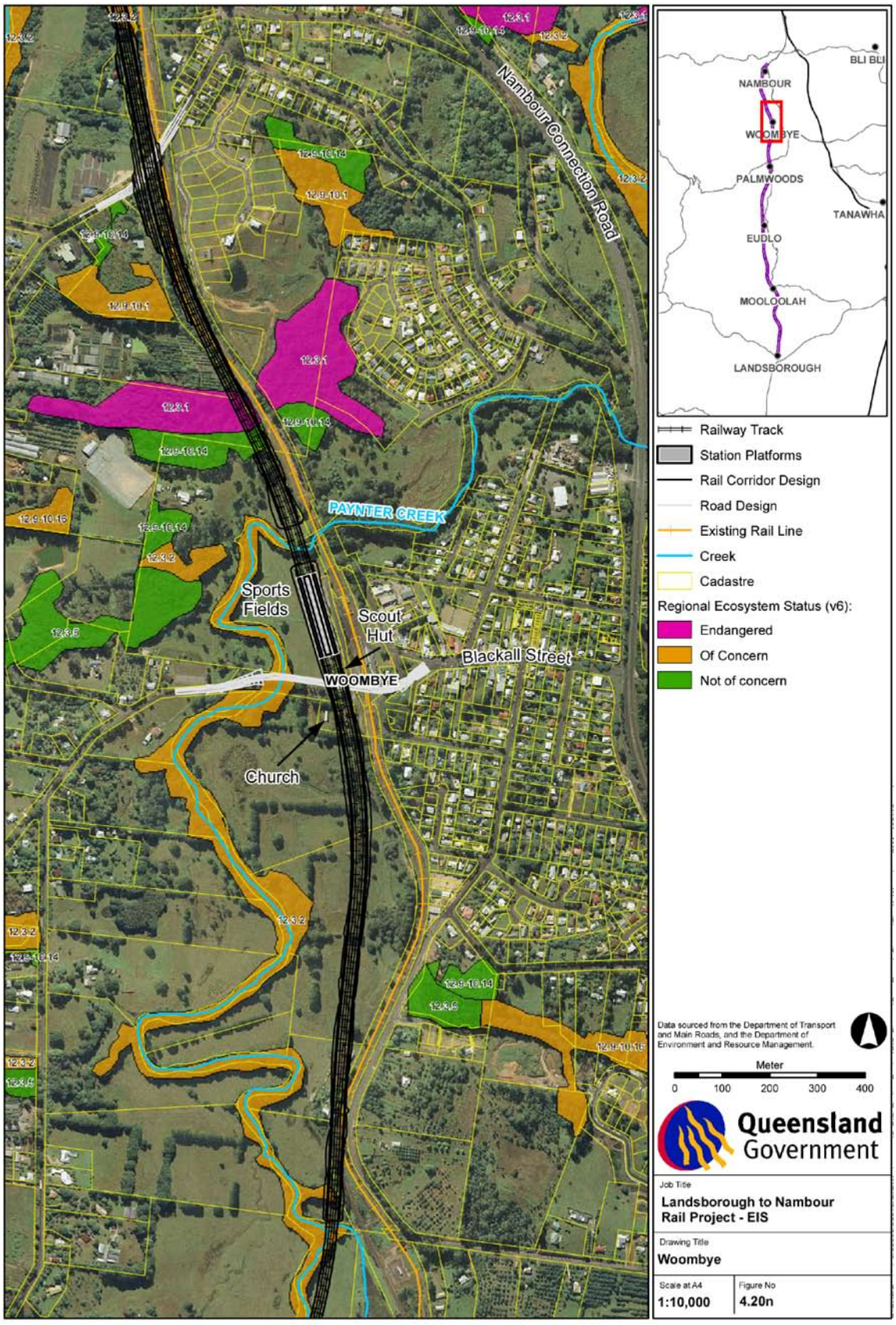


Figure 4.20o: Petrie Creek

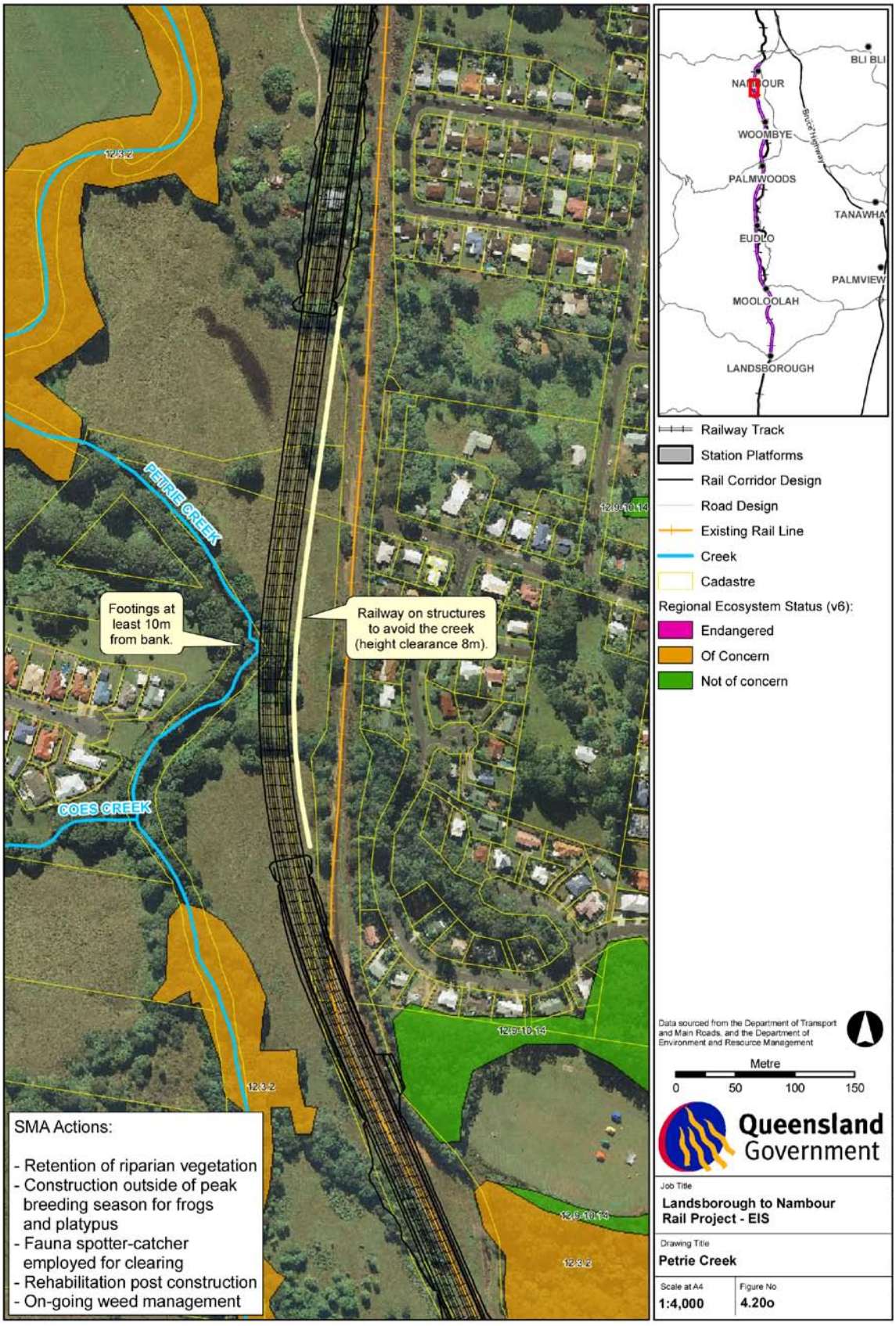
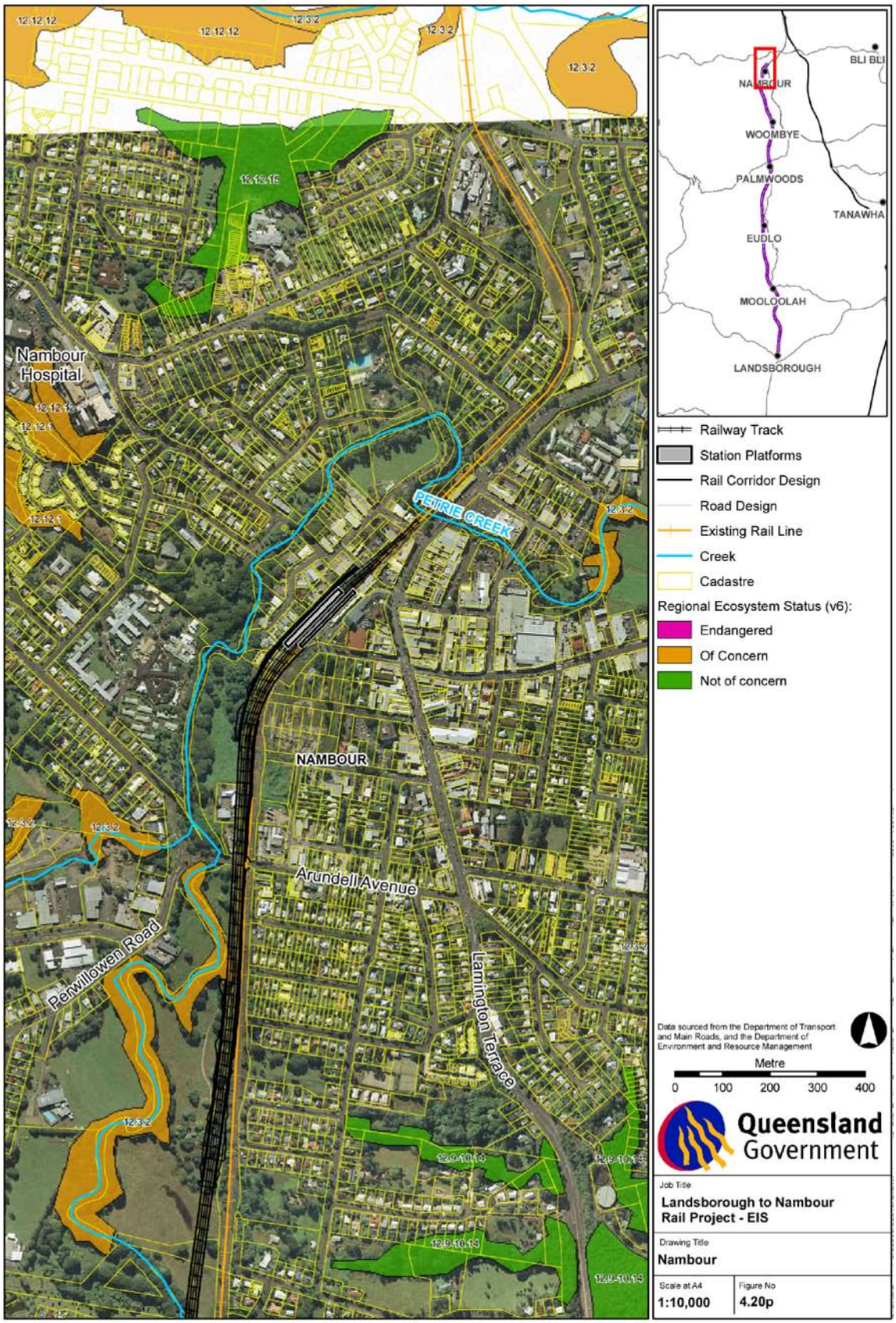


Figure 4.20p: Nambour



The timing of the grade separation as noted in section 21.7.3 of the EIS will be at a time when the risk exposure to users of both the road and railway and traffic congestion considerations determine the need for the closure of the level crossing. The traffic growth modelling used to determine the need for the removal of the open level crossing is based on Bureau of Statistics historical data from census data which shows a population growth of approximately 2 percent per annum in the Project area.

The decision for the proposed upgraded railway line to remain in a similar location with a similar footprint in Mooloolah as the existing alignment resulted from the assessments undertaken within the study focus area and previous community consultation. While the proposed alignment has an impact on the town the area was reviewed to provide a solution that keeps the impact to a minimum, and as noted in section 21.7.3 of the EIS, the proposed solution notes the initial three track layout (an expansion of the existing two tracks, which are to be retained) for the new railway that is wholly within the existing railway corridor in Mooloolah.

The surrounding ground levels, flood levels and environmental issues associated with the South Mooloolah and Mooloolah Rivers were key drivers for the vertical and horizontal alignment of the proposed railway through Mooloolah. Therefore it was not considered feasible for the proposed railway to pass under Mooloolah Connection Road,

A hazard and risk assessment (HRA) was completed as part of the EIS, in accordance with the principles set out in AS/NZS Risk Management Standard 4360: 2004. The HRA sought to identify risks during the construction, operational and decommissioning phases of the Project and to document proposed mitigation and management measures.

One of the risks considered in the HRA was the risk of an accident as a result of the use of road or rail crossings, with the potential to result in death or injury to personnel or the public. The mitigation measures identified for this risk include the design features at railway crossings and the implementation of operational safety plans. The resulting risk level was identified as medium, meaning that the risk requires specific ongoing monitoring and review to ensure level of risk not increase.

The identification and monitoring of hazards risks during operation of the railway is an ongoing process which will occur throughout the Project life.

4.20.2.2 Mooloolah Road Network

Submission 20 highlights the importance of Mooloolah Connection Road as the visual and physical gateway to Mooloolah. Whilst the Project has been designed so that the existing level crossing can remain operational, there are possible road network changes associated with the proposed grade separation.

The road alignment through Mooloolah as proposed in the EIS includes a priority route along Mooloolah Connection Road, over the rail line and to Bray Road. Side roads are connected to that route by priority controlled intersections. The intersection of Mooloolah Connection Road and Karanne Drive is a priority controlled intersection, with Karanne Drive giving way. The alignment of Mooloolah Connection Road was determined to maintain a 50km/h speed for through traffic while minimising property requirements.

Roundabout solutions have been previously considered in this general location as part of the EIS development of grade separation options for Mooloolah, however, a number of traffic and geometry issues meant this was not adopted. These concerns include:

- The land requirements for roundabouts are typically greater than for other intersection types.
- A roundabout breaks the flow of the priority route traffic. The intention of the EIS design was to maintain the Mooloolah Connection Road movement as the major movement. This reinforces to motorists the direction of the major route while a roundabout, particularly one that requires a left- or right-turn for the priority route, may result in confusion with drivers inadvertently going down side roads and performing undesirable manoeuvres to return to the main route.
- A roundabout would introduce disruptions to the main traffic flow with the following consequences. The need to stop and start will result in delays to the main traffic flow and increased vehicle emissions. The disruption to traffic flow will disperse traffic bunches and result in fewer gaps in downstream traffic which will make it more difficult for vehicles to enter and exit the roadway.
- Roundabouts create safety concerns for pedestrians: drivers at roundabouts typically only look to their right to give way and may not see a pedestrian crossing on the left, queues on the approach side can be difficult to negotiate, dispersed traffic on the departure side reduces available gaps for pedestrians to cross. Given the proximity to the heart of Mooloolah, the alternate roundabout proposed in submission 5 would be in a location with relatively high pedestrian activity.
- Roundabouts create safety concerns for cyclists endeavouring to negotiate them. Vehicles tracking wide and right turn movements are particularly difficult for cyclists to negotiate. In this location, eastbound cyclists would need to turn right through the intersection. It is noted that a potential rail trail could attract cyclists through Mooloolah.
- A roundabout would require a greater than 270 degree movement or less than 90 degree movement for a large proportion of the movements (i.e. vehicles travelling west to east). This has implications for heavy vehicles (delivery trucks, horse floats with shifting loads) in terms of speed and geometry.
- Roundabouts are typically installed at locations where the approach volumes are relatively balanced and turning movements are high as this results in equal opportunity for traffic to enter the roundabout. The Karanne Drive/Mooloolah Connection Road intersection is expected to have very unbalanced turning movements.

Nevertheless, a preliminary comparison of the traffic operating performance of a roundabout versus a priority controlled intersection was undertaken and it was determined that a roundabout would result in approximately 40% more delay to all traffic through the intersection. Combined with the geometrical constraints and operational concerns outlined above, it is not recommended that a roundabout be installed at this location. It is noted that it is physically possible to construct a roundabout on a similar area of land requirement to the priority solution depicted in the EIS, however, such an intersection form is not considered to be the most effective solution in this area.

Various alternative connections to the west have been considered during the EIS process, including connection to Paget Street, which is discussed in the EIS document on page 694.

The suggestion of realigning Neill Road to connect with Palmwoods – Eudlo Road on the eastern side of the road has been made in a submission from TMR. This could result in improved road geometry and flood immunity, but as this section of Neill Road is not affected by the rail Project, no change has been proposed as a result. This is a potential road network solution that TMR should consider in future stages of design of the Project.

Design of the Neill Road underpass under the rail has been developed to provide a 20 year flood immunity, and road vehicle clearance of 5.5m. Further design refinements and modelling will be undertaken during future design stages, and will need to comply with design and safety standards at the time.

The SCRC submission raised concerns about pedestrian access, as the proposed underpass of Neill Road under the rail is approximately 600m from the town centre. At the time of grade separation, appropriate pedestrian access will need to be provided. It is envisaged that this could be provided via the station facilities (i.e. lifts, ramps or stairs), however further design considerations will need to take into account the desire to retain direct access across the railway in this location.

4.20.2.3 Third Track through Mooloolah

Submission 20 raised the third track through Mooloolah as a concern, in particular its use for a passing loop. The initial three track layout was the outcome of investigations in this area to reduce the overall footprint of the corridor, minimising the impact to surrounding commercial property, as discussed in section 2.3.2 of the EIS. The through running central track, while not servicing a platform, is at a similar location and level as one of the existing tracks through Mooloolah. This service will allow long distance passenger and freight services to travel through the station without stopping. The third track is likely to provide operational benefits, as a staging interface during construction. It would be possible to site a passing loop elsewhere in the Project area, however this would need to be identified during future stages of design. The passing loop length is established by QR design and operational standards.

Submission 20 also notes that the description of the track elements through Mooloolah was not clear in the EIS. To clarify, one new track will be built to the west of the existing two tracks (one of which is a passing loop). The existing western track will become the through running central track, and the existing eastern track will need to be rebuilt. This approach has been developed to allow for staged construction through this area, maintaining an operational platform at all times. This submission also asserts that the two existing tracks through Mooloolah could form part of the upgraded corridor. This was considered during the route selection and EIS process, however issues were identified with the track gradient, flood immunity, and road crossing height at Eudlo Road, north of the Mooloolah River.

4.20.3 Eudlo

4.20.3.1 Eudlo Station design and access

It is noted that page 713 of the EIS, Artists impression 4, shows a lift access at Eudlo Station, from above the platforms. As noted above and in section 3.5 of this SEIS, access to Eudlo station is anticipated to be from underneath the platforms.

Car parking layout and access from Highlands Road is shown in the EIS, on Drawings C013 and C113. Submission 27 requests access from Eudlo School Road be considered. This would necessitate the construction of a road bridge over Eudlo Creek, which would generate additional impacts to the riparian vegetation along Eudlo Creek. The existing road bridge (which also passes under the existing rail, with a documented vehicle clearance of 2.4m) does not meet current road design standards. This issue will require further consideration, and should be discussed with Council, to determine if there are broader impacts or benefits to be realised through reconfiguration of the network.

Submission 7 notes that the proposed access via Highlands Road may be compromised by flooding. The submission suggests that a combined vehicle and pedestrian link is constructed between the town and the new station, utilising sensitive construction techniques to minimise impacts through Federation Walk. The submitter also notes that this cannot be constructed until after decommissioning of the old railway. The decommissioning would also provide the opportunity for rehabilitation/ revegetation of an area adjacent to Federation Walk. This proposal should be further considered during future stages of the design process.

4.20.3.2 Future Land Uses

Figure 21.11b of the EIS shows a number of possible land uses for the surplus rail corridor land, as well as other land areas within the Eudlo township. As noted in section 3.5 of this SEIS, these maps have no status.

It is understood that council is currently investigating opportunities at the Olsen Mill Park. This should be carried out in conjunction with land use planning for surplus rail corridor land. This may include reconfiguration of existing community or recreational facilities, however this will be determined through future planning activities.

4.20.3.3 Federation Walk, Eudlo

Submissions 11, 17, 18, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37 and 49 have expressed concerns about potential impacts to Federation Walk, which is a linear strip of revegetated land between the Eudlo Township and the proposed station. Federation Walk is considered valuable to the local community for its visual appeal, habitat value and as a commemoration of Eudlo's heritage. The site is not legislatively recognised as being significant for its environmental or heritage values. It has been revegetated, but it is understood that the area is within railway reserve.

The EIS proposes to thin some vegetation in order to maintain physical and visual connectivity between the station and the township. The vegetation thinning is necessary to provide safety for station users. It is important to achieve a balance between environmental, community and economic outcomes. In this instance, the chosen option provides for the safety of community members whilst minimising significant harm to the environment. A general principal of providing a safe environment around train stations is to allow adjoining buildings and spaces to have a visual connectivity, known as 'passive surveillance'. This provides an opportunity to intervene if assistance is needed, even if observers are not in a close enough position to offer direct assistance. It also acts as a disincentive for antisocial and criminal activities.

It has been suggested that an elevated walkway above the vegetation would be a solution to avoid tree removal. An elevated walkway would require a substantial structure, including lifts to provide universal access. Some submissions identified that pedestrian access in this area could be compromised as it is low lying and subject to inundation in sections, therefore this would need to be addressed in the development of any station access plans. As noted previously, a submission has also suggested that a combined vehicle and pedestrian access be constructed through this area, which may address the access and visibility issues. Once the old railway has been decommissioned, there is potentially a large area adjoining Federation Walk which could be revegetated. This issue is going to require further consideration and consultation with council and the community in future stages of design should assist in reaching an outcome.

It has also been suggested that the thinning of vegetation would promote weeds. This would have the potential to increase weed invasion unless it is managed in the long term. This land will be managed by QR, who will be responsible for weed management. There may be opportunity for continued community involvement. The thinning of trees in Federation Walk is not expected to cause significant damage to the services/ experience that this walk currently provides. The EIS has recommended a number of strategies in order to mitigate the effect any thinning of trees in the walk that may possibly cause an increase in weeds. The EIS proposes the following:

- Planting of appropriate native understorey species such as those present within the walk itself.
- Native species to be planted at a level of density that will provide adequate protection to the forest in terms of shading, weed inhibition and microclimate control in general.

In addition the general weeds EMP will be applied to this site which incorporates ongoing management resources.

SCRC has suggested that a detailed plan showing pedestrian activity and likely extent of clearing be provided to help community in planning where additional planting may occur. This will be developed in future stages of design.

There may also be further opportunities for community involvement in rehabilitation projects in the area. This will be progressed as the offsets program is established.

4.20.4 Preservation of Paynter and Petrie Creek

Submission 16 requests that additional care be taken to preserve the ecological values of Paynter and Petrie Creeks. The management of Paynter and Petrie Creek has been discussed in detail within the Special Management Areas chapter, specifically Sections 21.14 and 21.16. Best practice methods will be utilised as described in these Sections and in the EMP, in Appendix C of this SEIS.

A fauna spotter catcher will be engaged for pre-clearing surveys and during clearing as outlined in the EMP (Appendix C). The fauna spotter-catcher will identify any platypus burrows prior to commencement of construction and these will be avoided accordingly.

Platypus is known to breed in Petrie Creek between July and October and raise young from November to March. This leaves only April to June for construction activities, which may not be feasible. It is considered more important to avoid disruption during the period where they are raising young in burrows (November to March).

Rehabilitation will be undertaken using locally sourced plant stock, as outlined in Appendix C.

4.20.5 Eudlo Creek National Park

The DERM submission calls for the rehabilitation of the decommissioned sections of the track adjacent to Eudlo Creek National Park. This is also recommended in the EIS.

The EIS discusses a tunnel option at chainage 92100. This has been incorporated into the EIS design, and will help to facilitate east-west fauna movement in the vicinity of Eudlo Creek National Park.

4.20.6 Palmwoods

The EIS recognises that the Project will result in a significant visual change through Palmwoods. The design of the station, span bridge over Kolora Park and the surrounding road network will need to be sensitively developed in future stages of the Project. Further consultation with the SCRC, local community, businesses and representative groups should be undertaken to develop appropriate design guidelines for this area, especially with respect to the bridge structure crossing Kolora Park. This includes the selection and location of noise barriers or other suitable treatments.

4.20.6.1 Palmwoods Road Network and pedestrian links

Submissions 16, 41 and 48 suggest that the rail upgrade will allow upgrade of the Palmwoods-Woombye Road/ Jubilee Road intersection. Whilst the Project will not directly result in the upgrade of this intersection, it will deliver the opportunity to consider reconfiguration of the local road network. The timing of the road upgrade can only follow the decommissioning of this section of the track, therefore this will be subject to the overall staging of the design and construction of the Project. This issue will require further consideration by TMR and the SCRC, who recognise the benefit of close working between State and Local government working in these significant land use and transport planning decisions. The Project will deliver an upgrade of the Chevallum Road/ Palmwoods-Woombye Road intersection, which is noted as the main access route south to Eudlo and Mooloolah.

4.20.6.2 Kolora Park

Submissions 8, 16 and the SCRC submission raise concerns about the Kolora Park and the Palmwoods Duck Pond. The historical, environmental and social significance is this area is recognised. Whilst Chapter 6 of the EIS identifies that the view is considered to be of local significance, this relates to the scale at which the view can be seen, rather than to the level of significance placed on the view by the local community. It is also acknowledged that there is likely to be a large reduction in the amenity of the view from this viewpoint, therefore resulting in an assessment of the impact as High Adverse.

The steep sloping terrain in Palmwoods means that a significant proportion of the Project will be on structure through the town, at a height that allows for reconnection of roads, open space, and reuse of rail land underneath the bridge. Whilst this has a resulting visual impact, the use of the structure through Palmwoods will also allow for the conservation of Kolora Park and Paynter Creek and the associated regional ecosystems.

The community consultation undertaken during the EIS process identified a range of preferred actions for the mitigation of impacts in Palmwoods. These are documented in Section 21.13.3 of the EIS. The EIS also identifies that future stages of design should address the visual effects of such a structure in consultation with the local community.

Chapter 6 of the EIS, Landscape and Visual Amenity, assesses the visual impact to Kolora Park as *high adverse* given the local significance of the view and the large degree of visual modification. Chapter 21, Special Management Areas includes mitigation measures for Palmwoods as follows:

- The use of the structure through Palmwoods will allow for the conservation of Kolora Park and Paynter Creek and the associated regional ecosystems.
- Clearing along the proposed rail corridor shall be limited to the amount necessary to undertake earthworks and provide for maintenance access. It will aim to minimise the construction corridor where possible.
- Vegetated areas under structure will be selectively cleared to maintain vegetation up to 10 metres in height.

In addition to the above measures, a further consideration will be given during the detailed phase to minimisation of the visual impacts of the structure through the design and also through the identification of appropriate revegetation measures. TMR recognises the importance of minimising the impacts in this area, and will work with the community in future stages of the Project to identify mitigation opportunities.

4.20.6.3 Retention of Piccabeen Palms

The removal of these palms will be avoided wherever possible. The rail is on structure at a height of 10 – 12m; vegetation below this height will be retained, however Piccabeen palms are known to grow up to 25m tall. The surface hydrology should be unaffected, and there should be no alteration to species composition as a result. Water from the rail structure is collected in pipes and taken to discharge points where it is treated in a filtration system or vegetated swale before being released (Section 13.5.2 of the EIS).

4.20.6.4 Aquatic Weed Management

As the Project will be on structure in this area, the disturbance to the duck ponds at Kolora Park will be minimal. The land will remain within the ownership of Sunshine Coast Regional Council and as a local park it is expected that the weed problem will be managed by the Council.

4.20.6.5 Construction Methods for bridge installation

Submission 16 recommends particular construction methods, to minimise the disruption of bridge construction to Kolora Park and the surrounding community and commercial properties. Future stages of design will determine the appropriate methods and materials. These must respond to the issues raised in the EIS and supplementary reporting.

4.20.6.6 Palmwoods Bowls Club

Concerns about access, economic viability and patron safety/ amenity have been raised in submission 23. The proximity of the new bridge structure to the Bowls Club will result in a significant change to the outlook of the Club over the existing car park. This is further discussed in sections 4.6.8, and 4.18.5 of this SEIS.

4.20.7 Dularcha National Park, Eudlo Creek National Park and The Pinch Lane

The mitigation measures described in Section 21.5 and Section 21.9 of the EIS will be combined with those in the EMP to address the full range of issues that may be present within Dularcha National Park, Eudlo Creek National Park and at The Pinch Lane.

Any lost trail connections will be reinstated or trails redirected, as appropriate. The maintenance trail on the western side of the existing track will be re-instated within the proposed rail corridor. It should be noted that the park is already dissected by a rail corridor. As the proposed rail alignment is only marginally different to the existing one and there are no trails that cross the existing rail, it is not anticipated that the new rail will result in dissection of trails.

4.20.8 Woombye

The SCRC submission requested further information regarding the potential alternative uses for the surplus rail land in Woombye. Section 21.15.3 of the EIS identifies some potential uses for the surplus rail land. However, the planning of future land uses is the jurisdiction of the SCRC. It is not possible at this point in time to identify what the final strategy for the reuse of this land will be, until further investigations have been undertaken.

The re-provision of community facilities affected through a land requirement will be a key consideration for future land use planning in Woombye. TMR and the SCRC will work closely with affected organisations to identify suitable solutions. This will be an ongoing process that can run independently of the Project, but should be resolved prior to construction or any preliminary works associated with the Project. Flood immunity and access will need to be considered in the identification of suitable alternate sites for these community facilities.

The SCRC submission also notes that the visual impact arising from the Keil Street overpass is not clear.

The EIS assessed the visual impact of the Project from representative viewpoints. The nearest representative viewpoint to the Keil Street overpass is Viewpoint 22 at Memorial Park, approximately 150m north of Keil Street. The assessment at this viewpoint is not representative of the Keil Street overpass as the overpass will be at a greater elevation.

The TMR submission noted that the Project will need to be consistent with the outcome of current safety investigations in the Woombye area, namely the Nambour Connection Road/Blackall Street intersection. The proposed overpass at Keil Street, and other road relocations will need to be considered in the context of current and future State controlled and local road network upgrade proposals.

4.20.9 Nambour

4.20.9.1 Car Parking and Station Precinct

The number of car parks located at Nambour Station was determined through consultation with TransLink. There will be further opportunities to re-evaluate the requirements from both a public transport and precinct planning perspective, and TMR will continue to liaise with SCRC in the lead up to the Project. The car parking layout included in the EIS design is intended to identify the land requirements for future service provision, therefore the final car parking layout may differ to that shown in the EIS. The car parks provided in the EIS are in addition to those managed by the SCRC.

TMR can only acquire property that is required for the Project, therefore as the need for additional parking is not recognised at this point in time, TMR has no reason to acquire additional land in the vicinity of Nambour station.

Station precinct planning will be strongly influenced by the planning for the reuse of the Mill site. Pedestrian connectivity is understood to be a key priority for this area. As the outcomes for this area will be vitally important to the future function and form of Nambour, decisions about this cannot be made in isolation. Therefore the Proponent will be required to work closely with the SCRS. Council has noted the importance of the mill site in any redevelopment of this area as a catalyst project for revitalisation of the precinct.

The importance of the existing pedestrian underpass in connecting the east and west sides of Nambour has been recognised in the SCRC submission. It is noted that its inclusion should be considered in future stages of design, however these will be governed by Crime Prevention through Environmental Design (CPTED) principles.

4.20.9.2 Business impacts, Price Street

The Project impacts on approximately 20-30 businesses in the Price Street Precinct in Nambour, which are located within 15 properties from which a land requirement has been identified. The nature of the businesses affected include commercial and light industrial, including mechanics, smash repairs, and printers.

It is recognised that the supply of industrial land in South East Queensland is currently under pressure. The relocation of these businesses may in turn place pressure on nearby businesses not affected by a land requirement, particularly given the desire of the SCRC to investigate planning for a transit focused precinct around the station, incorporating the Mill site. Future land use planning in this area will be subject to council planning processes.

4.21 Environmental Management Plans

4.21.1 Construction Management

Submission 8 suggests that the EMP will not be adequately monitored and enforced, based on observations of current corridor management. Mention is made on several occasions to recent construction projects in the area that have had a detrimental impact for residents from the creation of dust, noise, waste and construction traffic, along with the management of the existing corridor. Submission 4 also raises the concern that as the construction of the Project is anticipated to be ongoing for a number of years, the severity of impacts assessed are understated. These concerns are taken seriously, and the Proponent is committed to a construction management process that minimises nuisance to the community in both the short and longer term. Further information on how the construction contractor and operational manager's performance will be monitored is provided below and will be discussed with the community regularly prior to and during construction.

Accurate determination of project staging opportunities, and communication of these to the local community will be an essential construction management tool. Key issues will include how to minimise effects to the local road network and how to limit residents and other community members exposure to disruptive activities such as noise, light and vibration disturbance, and dust suppression. An overall construction management strategy should be developed, that considers the various activities that will occur across the entire Project area, and how these can be managed. This can only be developed once the Project's implementation process is determined, but should include penalties/ compensatory triggers for activities occurring outside agreed and scheduled timeframes.

The EIS contains a preliminary EMP that the Contractor will be required to adhere to as part of their contractual obligations. This EMP outlines:

- Performance Criteria that clearly outline the minimum level of performance required to be met by the Contractor
- minimum monitoring required to be carried out by the Contractor to ensure compliance with the Performance Criteria
- reporting of compliance with relevant legislation, permits, Construction Environmental Management Plan and Performance Criteria
- environmental management responsibilities of the Contractor.

As part of the tender specifications, the Contractor will be required to provide a more detailed Construction EMP that outlines specific details about how the environmental management requirements, as identified in the Project EMP, will be implemented and managed on site. The Contractor's EMP will detail how the contractor will mitigate construction impacts and documents the contractor's response to inspecting, monitoring, verifying, internal auditing and correcting or improving environmental performance. A number of hold points can be placed in the contract so that high risk activities can be inspected and approved by TMR prior to commencement. For example, a hold point may be nominated for the installation of erosion and sediment controls or to confirm that adequate noise mitigation measures are in place before noisy activities occur.

Construction sites are constantly changing and systems will be put in place to review and modify control measures to maintain their effectiveness. Therefore, frequent inspection, verification, monitoring and auditing will be a contractual requirement to maintain and improve the effectiveness of on-site management plans. The Contractor will be required to undertake their own internal auditing, however regular inspections and auditing will also be performed by an independent external auditor to ensure the effectiveness of the Contractor's EMP in achieving environmental best practice and meeting community expectations.

In the event of detecting a non-conformance with the Contractor's EMP the following activities will be undertaken:

- halting of works if there is a non-conformance with performance criteria and/or environmental damage has, or is likely to, occur. Works will not be able to recommence unless the non-conformance is resolved
- inspection of the non-conformance on site
- investigation of the reasons for non-conformance
- development of appropriate measures to correct the non-conformance
- implementation of corrective action to prevent recurrence
- submission of non-conformance report to the Department of Transport and Main Roads
- communication of the corrective action to be undertaken to the affected community member or complainant
- adjustment of the Contractor's EMP, if required, to reflect the approved corrective action requirements.

Further to the above, all personnel involved in the Project have an obligation to observe due diligence with respect to all aspects of environmental management for the Project. The EMP outlines the particular responsibilities of TMR (the Principal), the design consultant, the construction contractor and the maintenance contractor. All parties are required to undertake their work in accordance with all relevant Acts, Policies and Regulations. Compliance with the construction EMP and the attainment of relevant approvals, are the main aspects of environmental management for the prevention or minimisation of environmental harm

The contractor will be required to provide TMR with a regular status report on the implementation of the Contractor's EMP during the currency of the contract. Reports are to include details of all environmental aspects of the Project including: construction update summary; environmental issues; mitigation measures implemented; effectiveness of control measures; maintenance of controls; results of monitoring against project criteria; audit results and corrective action; environmental induction and training; complaints summary; and other relevant information in relation to environmental management of the Project.

The Contractor will be required to liaise with the community and all relevant stakeholders affected by works about the construction process, and will be kept regularly informed of progress and any construction issues that may impact them such as traffic changes, hours of operation, and activities that may generate noise or dust. This may be in the form of newspaper advertisements, flyers, factsheets, websites, newsletters, radio announcements, SMS updates, door-to-door contact. A Community Liaison Officer would be appointed to provide a point of contact for the community and to receive and respond to any complaints received in a timely manner.

A revised environmental Management Plan is included in Appendix C of this SEIS.